Click on index title to jump directly to the section

Home

Residential Quick Reference

Home

JTG/MUIR
Manufacturer's Representative
A Sensible Technologies Inc. Company

JTG Muir Reference Catalog

Registration

Please remove, fill out and fax to 510-434-3142

In order to receive product and pricing updates, you must register this catalog.

Name: _____

Company: _____

Address: _____

City: _____ State: _____ Zip: _____

Telephone: _____ Fax: _____

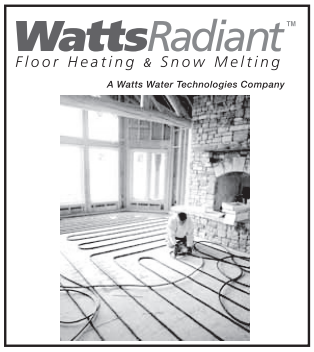
Email: _____

Date Received: _____

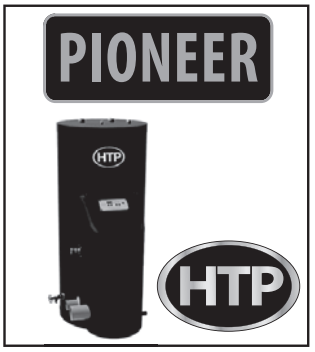
❒ I NEED _____ Additional Catalogs

800-493-8432 | www.jtgmuir.com

Featured Products: 2011 • New and Important Products from JTGMuir



Watts Radiant; The Best and Broadest Radiant Manufacturer

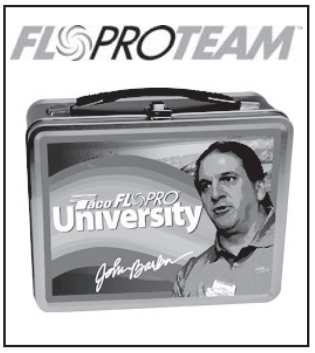


Pioneer: High Mass Hydronic

Combined Hydronic Solution

Watts Radiant
Radiant Works Radiant Software

Taco Ball Valve
Sentry Zone Valve
The Best In Industry

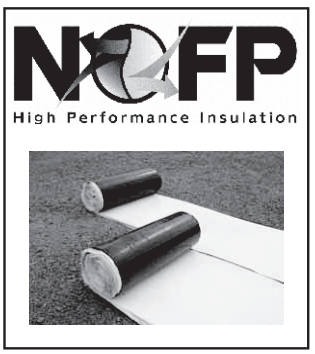


TacoFlo Pro University:
On Line Hydronic Training

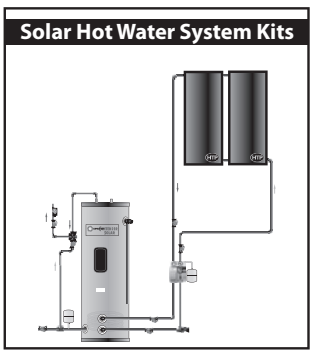
Super Low Temperature - Baseboard; Open and Closed Loop

Fernox: System Corrosion Protection

Bio Antifreeze: Bast New Antifreeze in Years; More Durable & Green



NOPF: Roll Out Foam Insulation

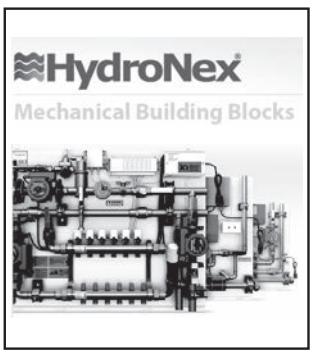


Solar Hot Water Kits

Phoenix Versa Hydro Solar

Myson Fan Convectors

Taco VDT Variable Speed ΔT Circulators



Hydro Nex Mechanical Module

TF1 Magnetic System Filter + Feeder

JTG/MUIR
Manufacturer's Representative

A Sensible Technologies Inc. Company

JTGMuir is a Manufacturer's Representative for a range of quality products that participate in applied hydronic hot water and solar hot water systems.

Wholesale Sales Channel: JTGMuir sells exclusively through wholesale distribution partners who support and supply our manufactures products. If installing contractors cannot find the information required we are pleased to assist both the contractor and wholesaler.

Regional Oakland Warehouse: To support immediate access to our manufacturers' products, we have a multimillion dollar inventory in Oakland that our wholesalers can draw upon to support their own inventory.(rick..image of warehouse/forklift)

Application Support: You want the right products, so we are here to assist you and your wholesaler in getting the right information by telephone, e mail or fax.

Contractor Support: Need application or technical advice? We are here to help. Need to find a wholesaler that can support specific products in this catalog? Again, please give a call.

Specification Support: We regularly work with architects, Engineers and general contractors with application advice, schematics, CSI format specifications and CAD and Revit files. For large projects we provide radiant tubing layout with submits.

Finding Stuff Made Easy

You can always find a current, searchable version of our catalog at JTGMuir.com along with the current retail list pricing. Our web site has the same organization arrangement as the catalog, as does the price booklet. This catalog and our list pricing are available on CD and is automatically updated, if your computer is connected to the internet. Our web site has much more information available on each product, so please use this resource if convenient.

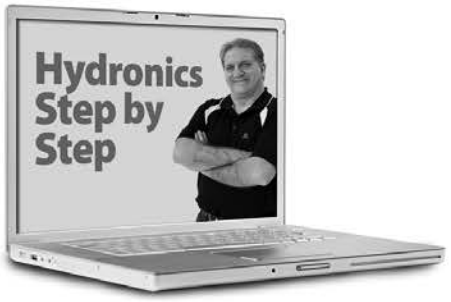
Thanks,

JTGMuir Staff

Free Learning.

Taco turns e-learning into free learning with FloPro® University. Designed for HVAC professionals, FloProU offers an ever-expanding library of video refresher courses to help you grow your HVAC business. It's convenient, fun, and free to all FloPro team members. Visit www.taco-hvac.com/flopro to sign up!

Why attend the FloPro University?



- Training that's convenient, comprehensive, clear and concise.
- Courses designed for you to learn at your own pace.
- View and review lessons as often as you want.
- Self-testing to reinforce what you learned.

HVAC e-classes

Available online, free to FloPro® Team members. Taught by John Barba.

The Universal Hydronics Formula
It's the hydronic cornerstone, the foundation for heating-heat loss, pipe sizing, circulator selection and troubleshooting, to name a few. To fully understand how hydronic heating systems work, you have to understand the Universal Hydronics Formula.

Hydronics Step By Step
Learn the entire process of building a hydronic heating system, step by step right through start up. Course highlights include how to analyze and calculate heat loss, how to select the right boiler, how to read pump curves, how to choose the right circulator and the ideal location for correctly-sized circulators in your systems.

Variable Speed Pumping
Learn about the many benefits of variable speed pumping and how to use variable speed circulators in the systems you design and install. You'll learn how variable speed circulators respond to heating load changes to deliver greater comfort and energy efficiency.

Anatomy of a Circulator
Go inside a typical wet rotor circulator to learn how it differs from a pump and how it uses centrifugal force to create the flow that is vital to every hydronic system. You'll inspect all the parts of a circulator and learn how each affects the specific performance characteristics of that circulator.

Taco FLOPRO® University

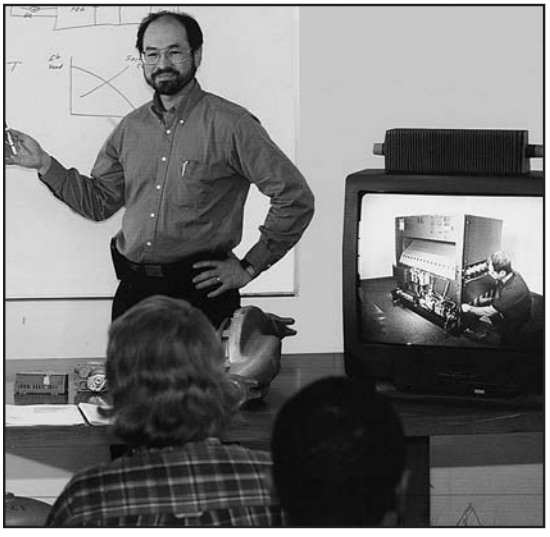
www.taco-hvac.com/flopro

FloPro University is Taco's name for its online learning resources and is not accredited by any educational or trade association.

4723 Tidewater Ave. | Oakland, CA 94601 | Tel: 800-493-8432 | jtgmuir.com

Showroom

Our operations showroom features radiant, radiator and hydronic equipment. The showroom is open to contractors, designers and their clients. Please call for an appointment.



Classes

JTG regularly sponsors hydronic radiant, boiler control and service classes for the trade. Please consult our website for the latest offering.

Mobile Training

Our operational mobile training truck is available for counter days and on-site technical training.

HTP

Advanced Heating
& Hot Water Systems

High Efficiency Residential & Commercial Space Heating

HTP Made In America ○ HTP Made In America ○

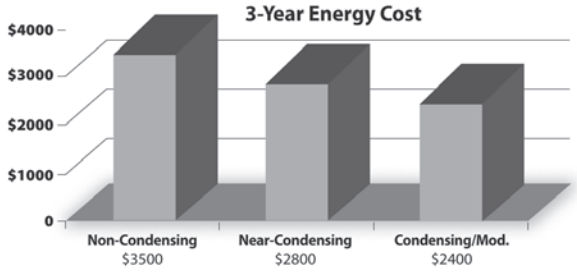
4723 Tidewater Ave. | Oakland, CA 94601 | Tel: 800-493-8432 | jtgmuir.com

A Product For Every Heating Need

APPLICATION	Mod Con	Elite	MC Series	Pioneer	Versa-Flame	Versa-Hydro	Phoenix
RADIANT FLOOR	X	X	X	X	X	X	
FAN COIL	X	X	X	X	X	X	X
BASE BOARD	Max 180°temp	Max 180°temp	Max 180° temp	Max 180° temp	Max 180° temp	Max 160° temp	
SNOW MELT	X	X	X	X	X		
HEATING & DHW	w/ Indirect Tank or VWH	w/ Indirect Tank or VWH	w/ Indirect Tank	w/ Indirect Tank	X	X	X
COMBINED HEATING/DHW					X	X	
SOLAR VERSIONS						X	X
POOL HEATER	w/ Indirect Tank	w/ Indirect Tank	w/ Indirect Tank	w/ Indirect Tank	w/ Indirect Tank		
HIGH TEMP. SANITATION							X
ASME	X	X					
CO-GENERATION HEAT RECOVERY						X	X
Domestic Hot Water	VWH	VWH			X	X	X
Requires Primary/ Secondary Piping Configuration	Yes	Yes	Yes	No	No	No	No
Integrated Buffer Tank – Hydronic Stabilization	No	No	No	Yes	Yes	Yes	Yes

Combined DHW & Space Heating

Cost of Operation



Condensing Technology

The cost of fuel continues to rise! HTP high efficiency modulating gas boilers provide a maximum payback on fuel savings. Savings can result in payback periods of less than 3 years. Depending on the age of your present equipment, our products could save you as much as 50% on your fuel bills.

HTP

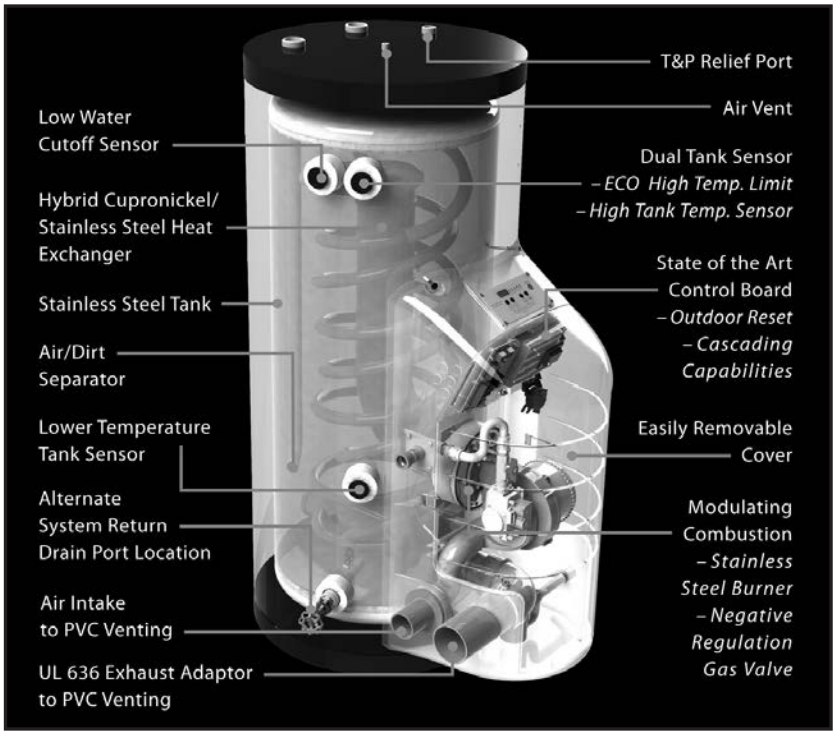
PIONEER

Back to Basics: Pioneer High Mass Heat Source

95% Thermal Efficiency

A very common condition for modern hydronic systems is excessive on/off cycling of the boiler due to many small loads (zones) and light loads. Despite modulation the loads are very often below the lowest firing rate. The Result? Excessive wear of the heat source and lower system efficiency. The Solution? More system water volume as provided by the Pioneer. The Result? Longer component life, fewer components, longer heat exchanger life, higher system efficiency. Simple is good.

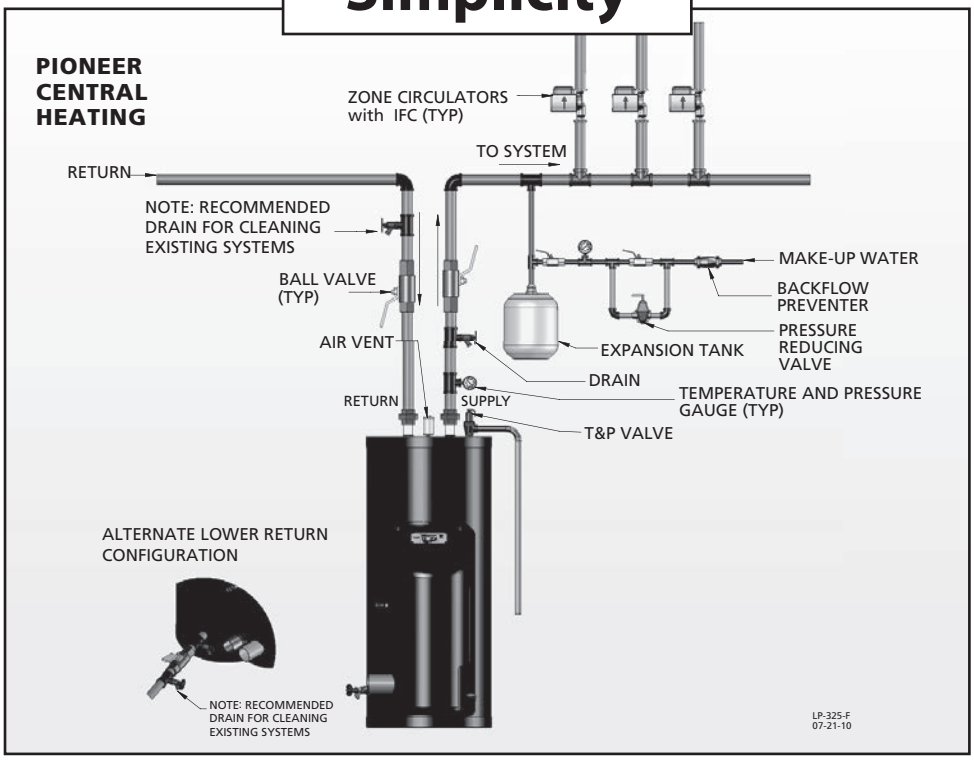
- **Simpler, Faster Installation**
- **No Boiler Loop Pump.**
- **No Boiler Loop Piping or Labor.**
- **Micro Air Removal Included**
- **Single Pipe Retrofit Flex Venting**



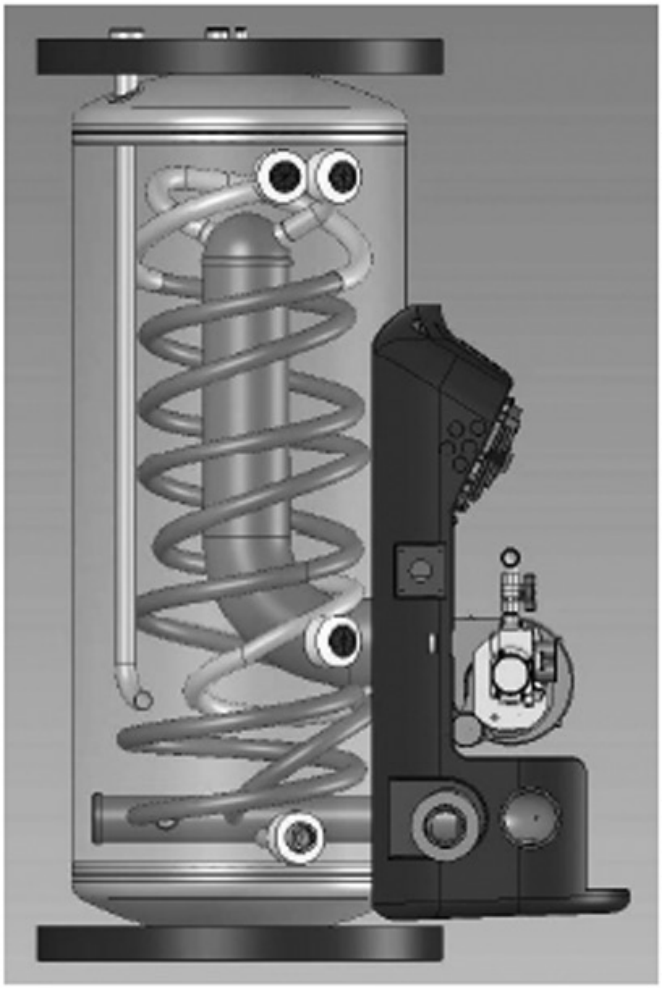
Read the Expert:
John Siegenthaler
"The Ultimate High Efficiency Heat Source"

Low Mass Is Out
High Mass Is In

Simplicity



PIONEER



Stable Hydraulic Design

- Zoning… No problem
- High Water Volume with 3/1 turndown: virtually no unnecessary cycling
- Near zero pressure drop: Lower pump energy losses

Reliability

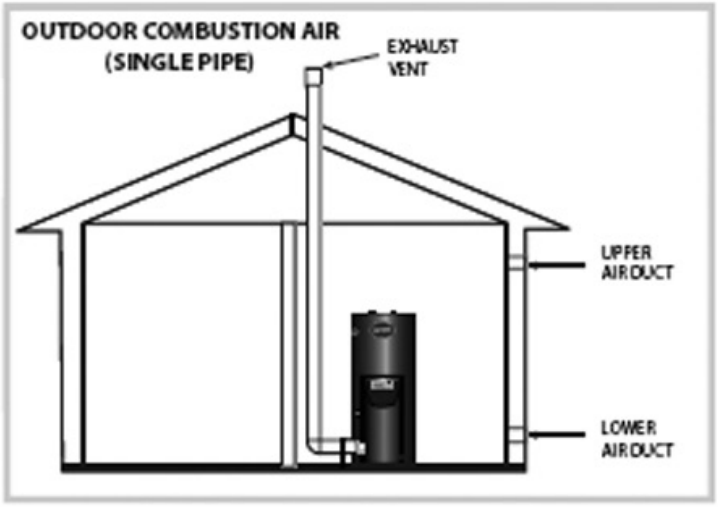
- Time tested gas/blower/control assembly has been reliably employed, and improved upon during 11 years, in over 150,000 HTP boilers and water heaters

Ultra Low Service Requirements

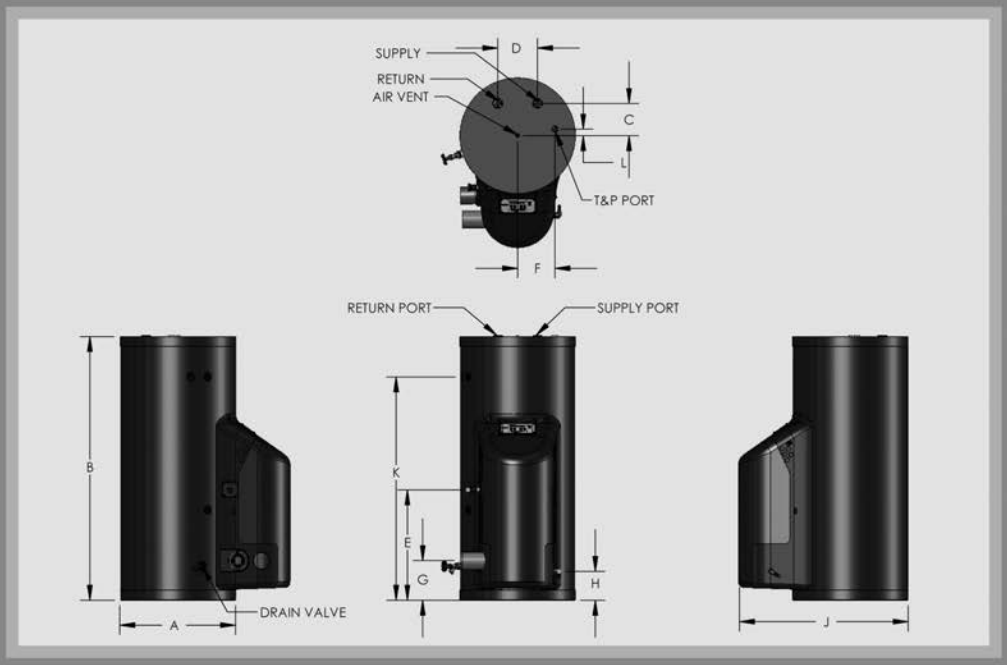
- No-clog fire tube combustion chamber: No cleaning required
- Condensate backup near impossible
- No Clogged Water Tubes: no flashing, no cleaning

Easy Venting

- Balanced or unbalanced PVC/Polypropylene venting
- Vertical one pipe venting with mechanical room intake (New!)
- Flexible venting for pipe-in-pipe single vent discharge (New!)
- 85' venting combined: To roof or side wall



PIONEER



PIONEER DIMENSIONS AND SPECIFICATIONS

MODEL #	MODULATION RANGE	AIR INTAKE/ EXHAUST VENT SIZE	SUPPLY/ RETURN SIZE	AIR VENT	GAS CONN.	SHIPPING WT. (lbs.)	GAL.	A	B	C	D	E	F	G	H	J	K	L
PHR100-55	35,000- 100,000	2"	1-1/4" NPT	1/8" NPT	3/4"	175	55	23"	53"	6-1/2"	8"	22"	7-1/2"	8"	6"	34"	45"	1-1/4"
PHR130-55	35,000- 130,000	2"																
PHR160-55	40,000- 160,000	3"				182												
PHR199-55	40,000- 199,000	3"																

All standard Pioneers are built as natural with LP conversion kits included.

STANDARD FEATURES

- Up to 95% Thermal Efficiency
- Modulating Burner
  - 5:1 Turndown Ratio
- Venting Options
  - Room Air Intake
  - Concentric
  - Flexible Vent Pipe
  - Up to 200 combined ft.
- Single Loop Installation
- 12 Year Limited Warranty

INCLUDED IN THE BOX

- Pressure and Temperature Gauge
- 30 PSI Temperature and Pressure Relief Valve
- Intake PVC Tee w/ Screens
- Exhaust PVC Coupling w/ Screens
- Installation Manual
- Outdoor Sensor

OPTIONAL EQUIPMENT

- System Sensor
- Indirect Tank Sensor
- 3", 4", 6" Stainless Steel Outside Termination Vent Kit
- 3" PVC Concentric Vent Kit
- U.L. 353 Compliant Low Water Cutoff w/ Manual Reset
- Alarm System to Monitor Failures
- PC Connection Kit
- Condensate Neutralizer

SEE PAGE 44 FOR THE COMBI PIONEER VERSA-FLAME

Elite Heating Boiler®

Low Water Volume

Turndown Ratio: 5 to 1

The Elite boiler has an outstanding turndown ratio: 5 to 1. Greater turndown allows this appliance to modulate at lower firing rates which reduces short cycling, conserves energy and improves component reliability.

Best Range: 6 inputs, floor or wall mount

The Elite Heating Boiler® offers six input options ranging from 80,000 to 399,000 BTUs. This range will offer you the flexibility that you need to properly size your installation.

Venting: 200 Feet

Up To 98% AFUE

Maximize your venting options. The Elite Heating Boiler® offers an impressive combined 200 vent length feet allowing incredible installation flexibility. All Elite Heating Boilers are vented in easy to install PVC venting and utilize a built in ULC S636 compliant CPVC adaptor.

New Boiler Innovations

All New Appliance Finish

This new boiler boasts an exterior design that sets it apart from the competition. This unique looking boiler was designed to offer customers elegant controls and a sophisticated appearance.

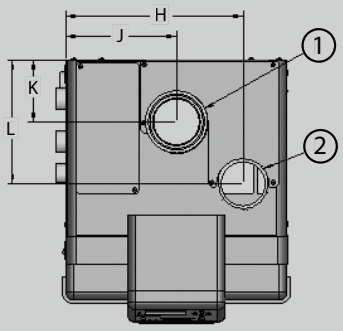
Floor or Wall Mounted

Reduce the complexity of carrying multiple models by purchasing the Elite Heating Boiler®. This new boiler can be floor mounted, as standard or hung on the wall quickly and easily by installing simple optional brackets on the back of the boiler and securing them to a suitable wall surface by approved methods.

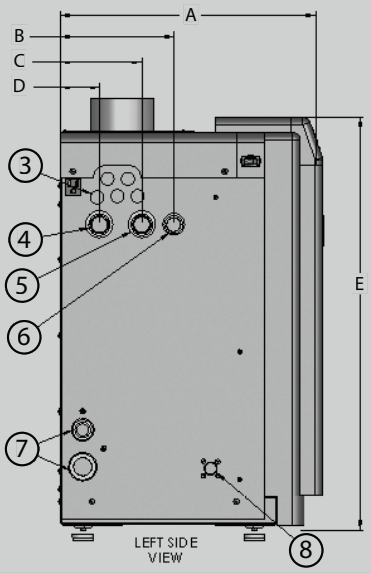
TSC TOTAL SYSTEM CONTROL

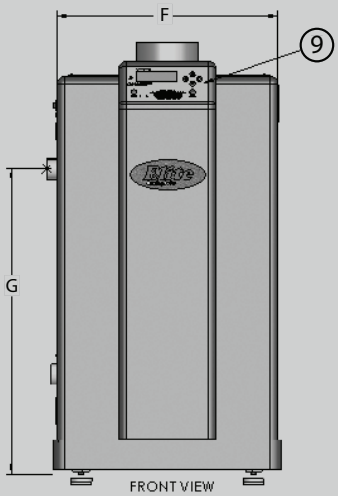
HTP is proud to introduce Total System Control, which incorporates advanced monitoring and system controls to our lineup of products. The Elite Heating Boiler® gives homeowners and contractors alike the security of having an advanced system that monitors boiler performance, allows the unit to be cascaded (up to 8 boilers), offers outdoor reset and easily integrates system components. TSC® has programmable maintenance features that inform the homeowner when service should be performed and is displayed on a newly designed 40-character multi-line display.

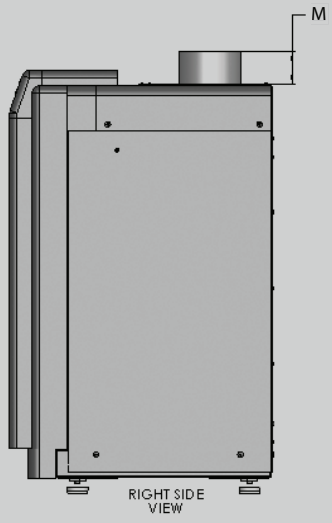
Exhaust Vent Connection ①
Combustion Air Inlet Connection ②
Electrical Connection ③
System Return ④



⑤ System Supply
⑥ Relief Valve
⑦ Condensate Connection
⑧ Gas Line Connection
⑨ Display / Control Panel







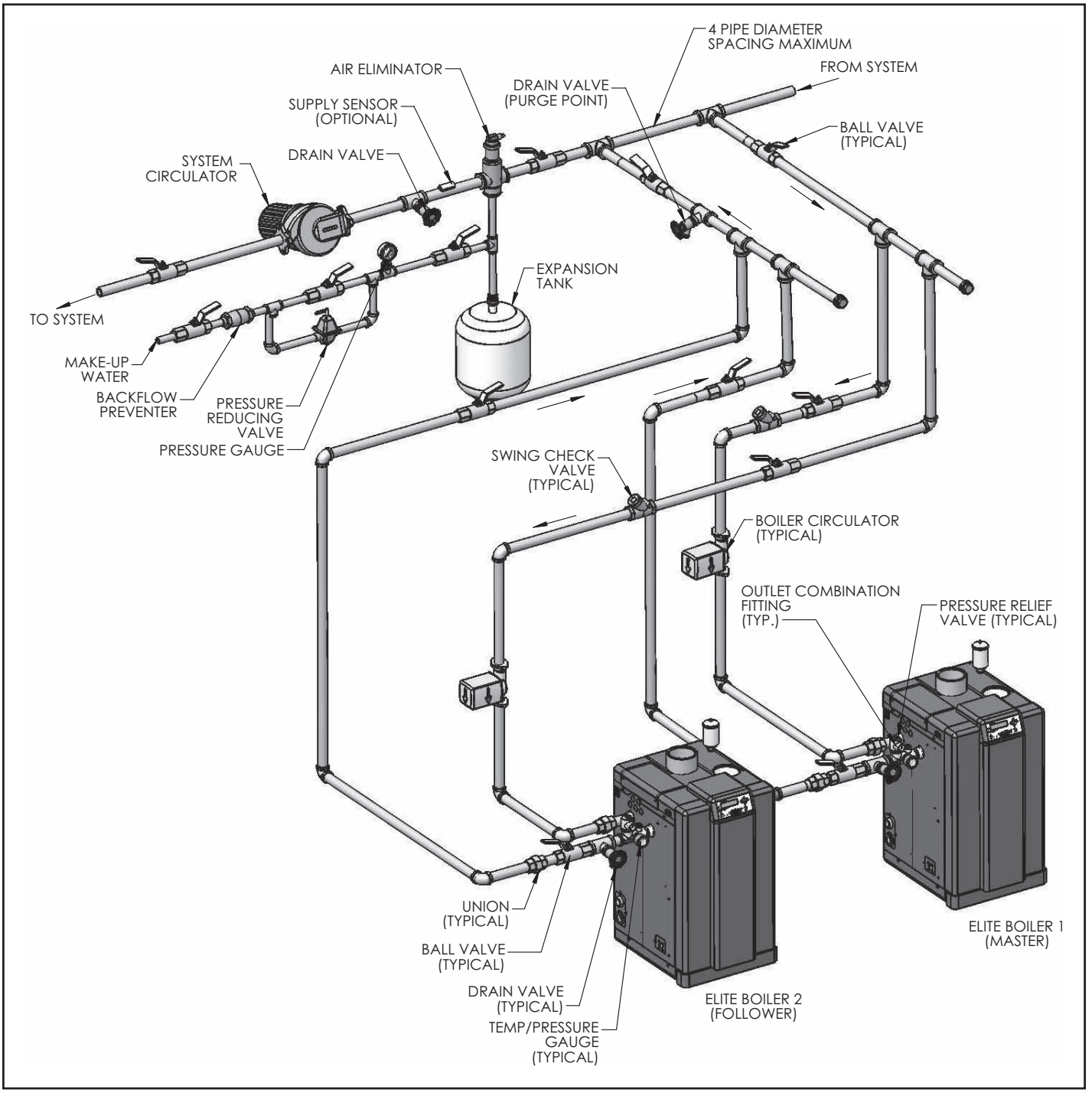
Model*	A	B	C	D	E	F	G	H	J	K	L	M	BTU / Input Range	Supply / Return	Exhaust / Air Inlet	Gas Connection	Boxed Weight	AFUE/TE
EL-80	17.00	7.50	5.50	2.50	27.25	14.50	20.00	11.75	7.38	4.25	8.50	2.18	16,000 - 80,000	1"	3 "	3/4"	104 lbs	94.4
EL-110	17.00	7.50	5.50	2.50	27.25	14.50	20.00	11.75	7.38	4.25	8.50	2.18	22,000 - 110,000	1"	3 "	3/4"	109 lbs	94.0
EL-150	19.50	10.50	8.25	2.50	27.25	14.50	20.00	11.75	7.38	4.25	8.50	2.18	30,000 - 150,000	1"	3 "	3/4"	122 lbs	94.0
EL-220	26.50	17.50	15.25	6.00	27.25	14.50	20.00	11.75	7.38	4.25	8.50	2.18	44,000 - 220,000	1"	3 "	1"	164 lbs	98.0
EL-299	23.75	13.50	6.38	2.25	36.50	14.50	21.00	11.00	7.88	4.25	8.50	3.00	60,000 - 299,000	1-1/4"	4 "	1"	200 lbs	96.0
EL-399	30.75	20.50	9.75	2.75	36.50	14.50	21.00	11.00	7.38	4.25	8.50	3.00	80,000 - 399,000	1-1/2	4 "	1"	240 lbs	95.4**

* Add **N** Suffix for Natural Gas or Add **LP** Suffix for Liquid Propane,
Also Add VWH Suffix if a Volume Water Heater Unit
** Efficiency is Reported as Thermal Efficiency for this Appliance

www.htproducts.com
(Checkout Our Elite Movies online)

MKTLIT-02 - 10 / 2010 © HTP

SEE COMBI PIONEER-VERSA FLAME ON PAGE 49


4 PIPE DIAMETER SPACING MAXIMUM
AIR ELIMINATOR
FROM SYSTEM
DRAIN VALVE (PURGE POINT)
SUPPLY SENSOR (OPTIONAL)
BALL VALVE (TYPICAL)
DRAIN VALVE
SYSTEM CIRCULATOR
EXPANSION TANK
TO SYSTEM
MAKE-UP WATER
BACKFLOW PREVENTER
PRESSURE REDUCING VALVE
PRESSURE GAUGE
SWING CHECK VALVE (TYPICAL)
BOILER CIRCULATOR (TYPICAL)
OUTLET COMBINATION FITTING (TYP.)
PRESSURE RELIEF VALVE (TYPICAL)
UNION (TYPICAL)
BALL VALVE (TYPICAL)
DRAIN VALVE (TYPICAL)
TEMP/PRESSURE GAUGE (TYPICAL)
ELITE BOILER 2 (FOLLOWER)
ELITE BOILER 1 (MASTER)

CONTENDER

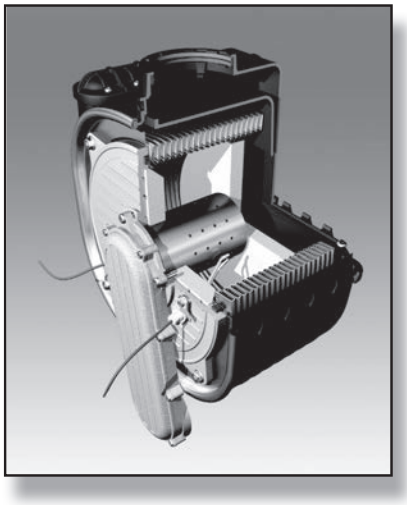
MC Series - Wall Hung

Fighting the High Cost of Heating

Automated Heat Exchanger Production = Lower Cost

- *Advanced 21st century space age composite construction provides extra durability and long life in a fully condensing appliance*
- *Quiet operation*
- *Compact design*
- *Light weight plastic cabinet for dent resistance*
- *Ease of serviceability*
- *Fully modulating burner*
- *Up to .95 EF*
- *Stainless steel heat exchanger for higher corrosion resistance*
- *Pre-wired field connections for ease of nstallation of optional Vision 1, 2 and 3 control systems*
- *Ability to cascade up to 8 heaters*
- *Wall hung with all mechanical connections on bottom of unit*
- *Vents with 2" Schedule 40 PVC pipe*
- *Environmentally friendly*
- *Ultra low NOx emission*
- *Micro-processor control system*
- *Optional Vision 1 provides DHW priority when using the SuperStor Ultra Indirect Water Heater*

50MBH - 80MBH - 99MBH - 120MBH



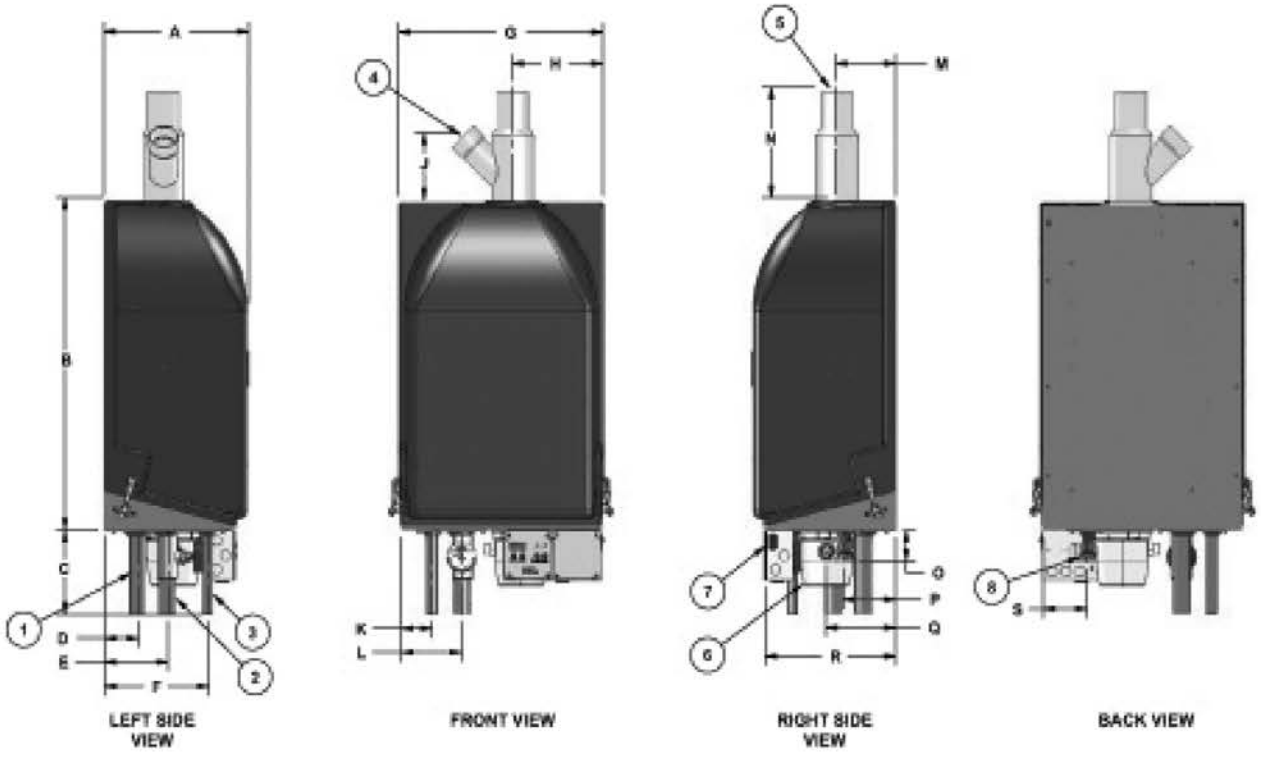
Today's customers are making higher demands regarding ease of operation and energy consumption. High efficiency condensing technology is *the efficient solution*. HTP introduces the 21st century solution, the MC Series Condensing Gas Fired Heater. MC Series heaters are not only easy to install, but are highly efficient and will provide years of service free operation.

The Benefits of Condensing Technology

The major advantage of condensing technology is to extract more heat from the exhaust gas compared to conventional systems. The heat exchanger incorporates a larger surface area, constructed of high quality stainless steel. This additional surface area allows the unit to extract all the latent energy from the combustion process and recapture heat from the water vapor contained within the exhaust gas. Condensing heaters extract so much heat that they can be vented with standard plastic pipe! The MC Series heater burns less gas to produce the same amount of heat as a conventional system.

MC Series Heater Dimensions and Specifications

1. SYSTEM RETURN
2. SYSTEM SUPPLY
3. SYSTEM RELIEF
4. COMBUSTION AIR INLET CONNECTION
5. EXHAUST VENT CONNECTION
6. CONDENSATE CUP/DRAIN ASSEMBLY
7. ELECTRICAL BOX/CONTROL PANEL
8. GAS LINE CONNECTION



Standard Features on all models

- Modulating Burner: 3 to 1 turndown
- Two Stage Operation for Central Heating and DHW
- Energy Star Rated
- Direct Vent Sealed Combustion 2" PVC Venting
- 30 PSI Relief Valve
- Direct Spark Ignition System
- High Grade Stainless Steel Woven Fiber Mesh Burner
- Ultra Low NOx Operation
- Low Gas Pressure Operation
- Zero Clearance to Combustibles
- Terminal Strip for Ease of Field Wiring
- Natural to LP Gas Conversion
- Inlet and Outlet Temperature Sensors
- Central Heating Pump Relay w/Freeze Protection
- Wall Mounts Save Floor Space
- On/Off Switch
- 12 Year Limited Warranty
- Alarm Contact
- Digital Operating Control
- LED Display System Operation
- 120 Volt Convenience Outlet for Condensation Pump
- Outside Termination Fittings - Tee 2" and Coupling 2"

Optional Equipment

- Vision 1 - Outdoor Sensing and DHW Priority
- Condensation Neutralization Kit (Part #N1100)
- Side Wall Vent (Part #V500)
- Concentric Vent Kit (Part #KGAVT0501CVT)
- Condensation Pump (Part #554200)

Model Number	BTU/HR Input Low Fire	BTU/HR Input High Fire	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S
MC50	18,000	50,000	12.50	27.50	7.00	2.75	5.25	9.00	17.25	7.75	5.50	2.75	5.25	5.00	9.00	2.75	4.00	6.50	10.25	4.00
MC80	19,000	80,000	12.50	27.50	7.00	2.75	5.25	9.00	17.25	7.75	5.50	2.75	5.25	5.00	9.00	2.75	5.25	6.50	10.25	4.00
MC99	44,000	99,000	13.50	27.50	7.00	2.75	6.50	10.25	17.25	7.75	5.50	2.75	5.25	6.00	9.00	2.75	7.75	6.50	11.25	4.00
MC120	44,000	120,000	13.50	27.50	7.00	2.75	6.50	10.25	17.25	7.75	5.50	2.75	5.25	6.00	9.00	2.75	7.75	6.50	11.25	4.00

Model Number	Combustion Air Input/Exhaust Vent Connection Size	System Relief Pipe Size	System Supple/ System Return/ Pipe Size	Gas Line Connection	Heater Volume	Energy Factor EF_1	Approx. Shipping Weight
MC50	2.00	.75	1.25	.75	.58	.93	71 LBS
MC80	2.00	.75	1.25	.75	.67	.93	74 LBS
MC99	2.00	.75	1.25	.75	.96	.95	84 LBS
MC120	2.00	.75	1.25	.75	.96	.95	84 LBS

1 Tested by independent laboratories to 10 CFR 430.23 2005.

VENTING HTP CONDENSING HEAT SOURCES

Location of exit terminals of mechanical draft and direct-vent venting systems.
(Reference: National Fuel Gas Code ANSI Z223.1/NFPA 54 2002).

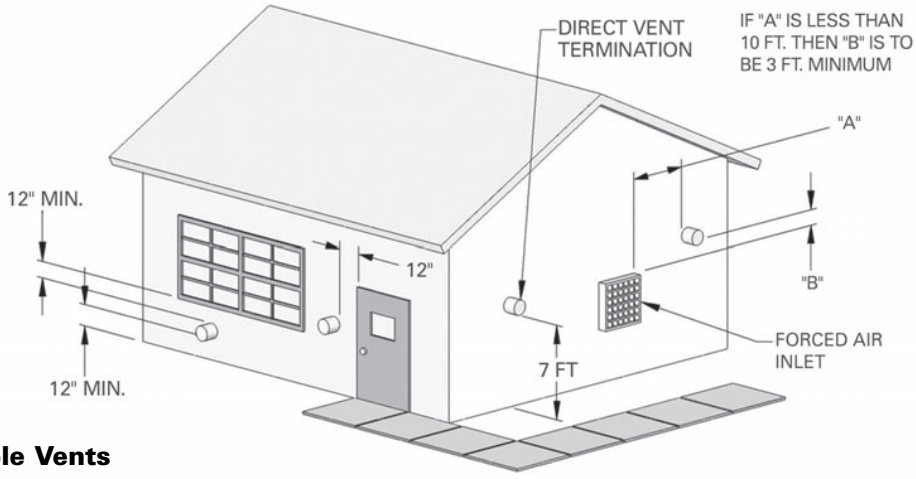


Fig. 6-3 Multiple Vents

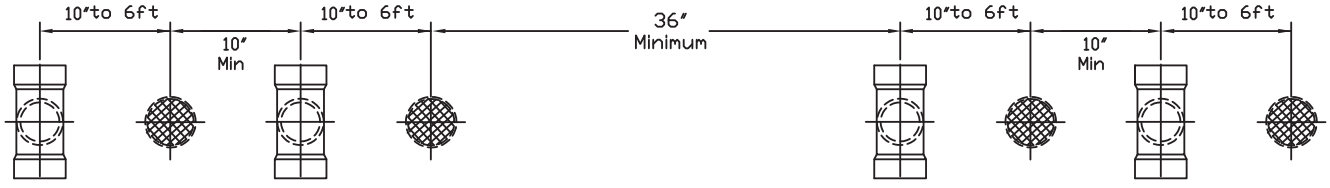


Fig. 6-4 Multiple Vent Spacing*
*Note: Exhaust must extend out 1 foot. There should be no more than 2 vents and 2 intakes then a space of 36" to the next set of vents.
*Note: There must be a minimum of 36" spacing between every 2 kit grouping.

Multiple "V" Series Vents

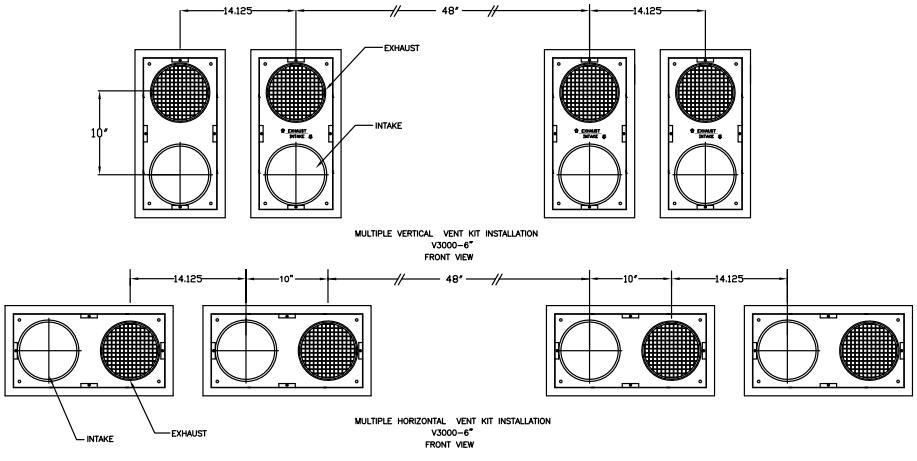


Fig. 6-5 Multiple Stainless Steel Horizontal Vent Kit Installation – Front View

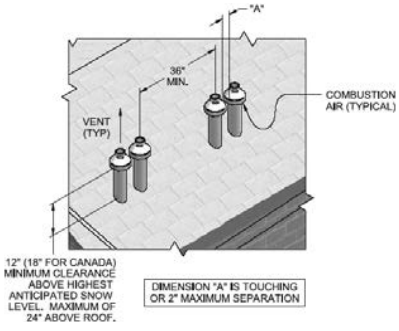


Fig. 6-6 Multiple Concentric Vent Spacing – Vertical

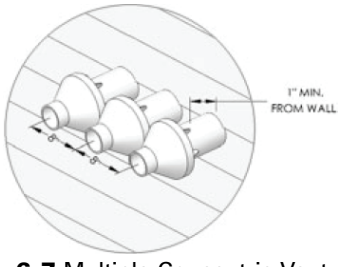


Fig. 6-7 Multiple Concentric Vent Spacing – Horizontal

I. DIAGRAMS FOR SIDEWALL VENTING

SIDEWALL VENTING W/TEE (INTAKE) AND COUPLING (EXHAUST)

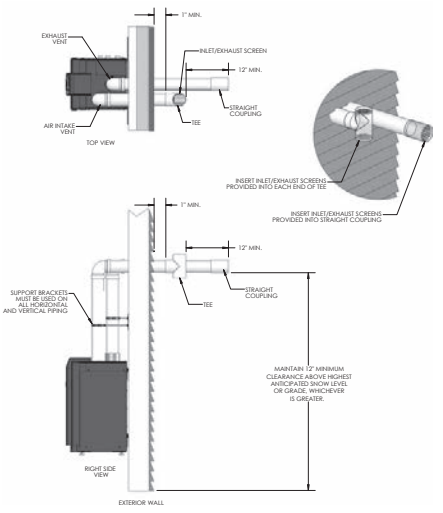


Figure 6-9 LP-293-D Rev. 9/22/08

SIDEWALL VENTING WITH KIT

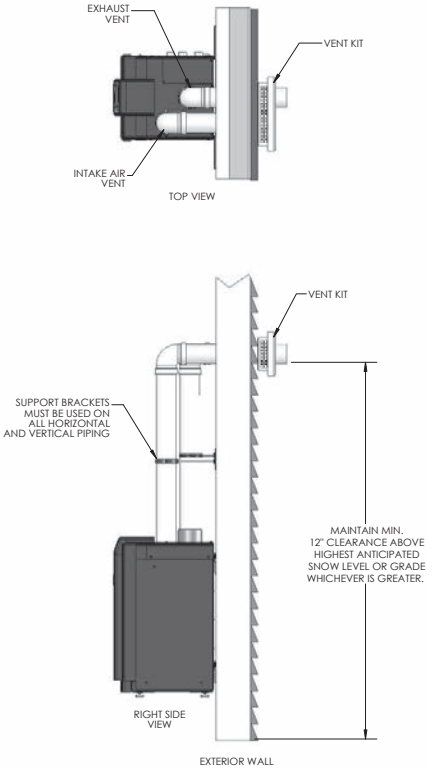
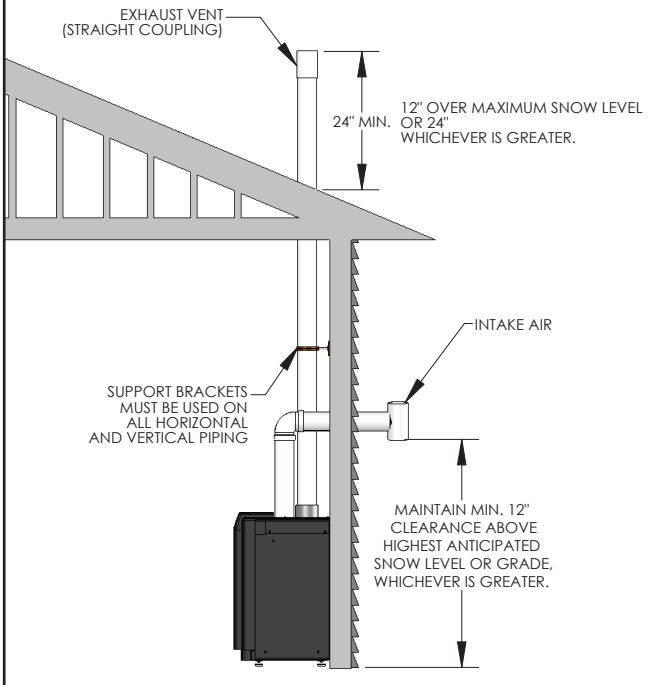


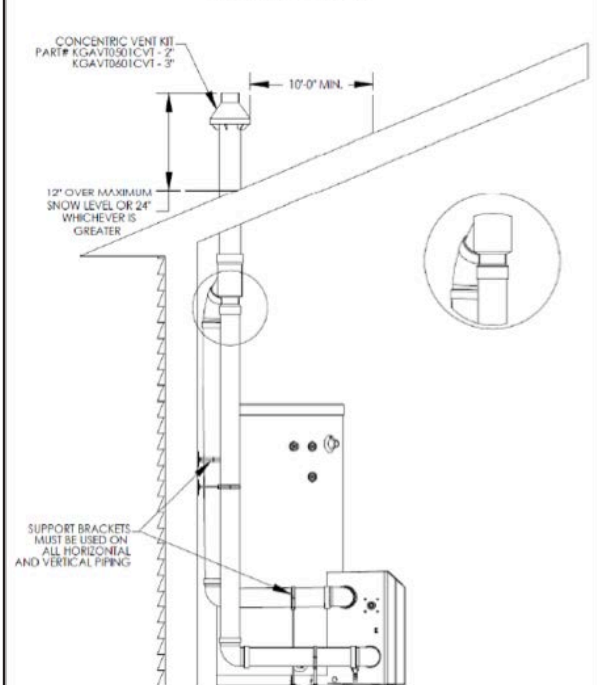
Figure 6-10 LP-293-E Rev. 9/22/09

NOTE: Vent piping should be 12" over anticipated maximum snow level.

UNBALANCED FLUE / VERTICAL VENT

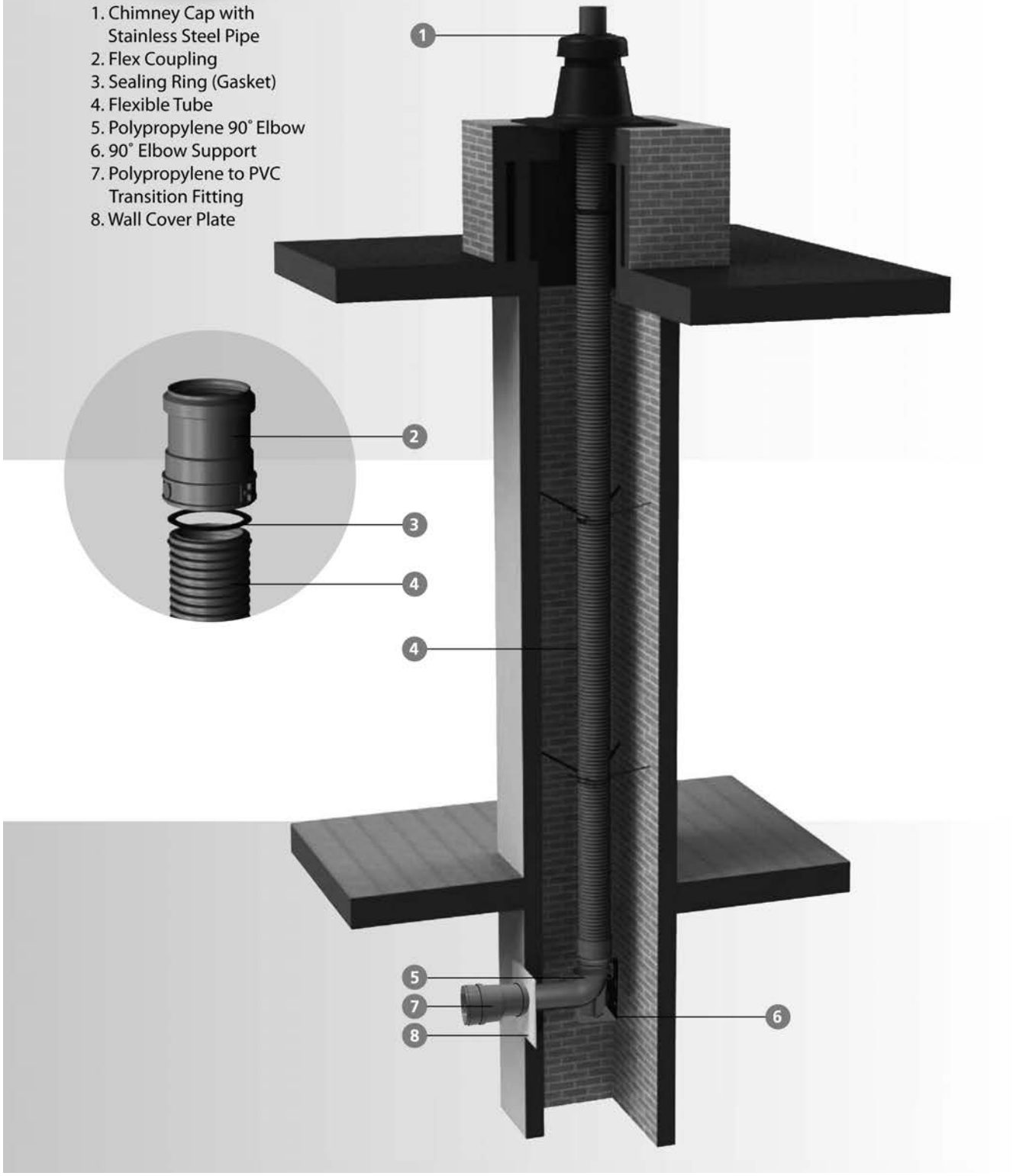


ROOF VENT WITH CONCENTRIC VENT KIT



Easy Flex PolyPro Vent System

1. Chimney Cap with Stainless Steel Pipe
2. Flex Coupling
3. Sealing Ring (Gasket)
4. Flexible Tube
5. Polypropylene 90˚ Elbow
6. 90˚ Elbow Support
7. Polypropylene to PVC Transition Fitting
8. Wall Cover Plate



Easy Flex PolyPro Vent System

- Flexible vent constructed of Polypropylene material provides excellent resistance to flue gas condensation in the exhaust vent of a gas fired condensing heating appliance
- Vent system is constructed from flame retardant plastic (Polypropylene rated for maximum temperature of 230F/110C
- Light weight construction, easy to install
- Certified ULC636 venting system
- Protects chimney or B vent system from harmful corrosion from a condensing heating appliance
- Flexible Pipe: 45 degree maximum bending radius in vertical system allows installers installation flexibility to line virtually any chimney
- Specially designed for category IV approved HTP appliances
- Installation kit provides all the parts needed to connect the flexible Polypropylene to the PVC exhaust vent from the HTP appliance
- Standard roll of the Flex vent system comes in either 32 feet or 49 feet
- Flexible couplings can be purchase and attached to excess Flex roll material, preventing waste
- Double wall construction
- Smooth inner wall so condensation drains
- Competitively priced versus transitional stainless steel vent system
- Vertical vent installation avoids many of the installation pitfalls associated with horizontal vent system installation:

    1) Proper pitch for condensate drainage
    2) Exterior exhaust plume
    3) Snow drifting
    4) Freezing vents

AXIOM INDUSTRIES LTD.

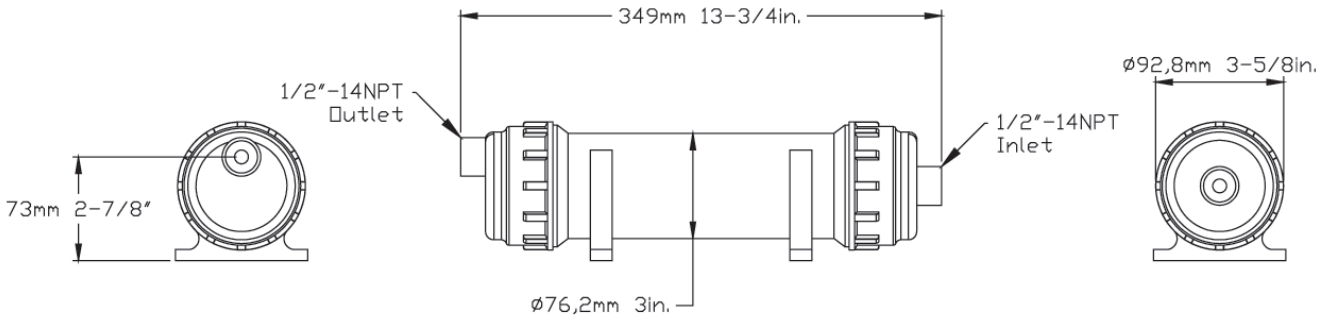
MODEL NC-1 'NeutraPal' CONDENSATE NEUTRALIZATION KIT

NeutraPal

- ***1.6 Gal/hr (6.05l/hr)***
- *NeutraPal prevents acidic condensate from corroding drains and sewer systems*
- *Neutralized condensate is more environmentally friendly*
- *Fast and easy installation*
- *Helps maintain a neutral environment for bacteria in septic systems*
- *Low profile design for appliances with a near floor condensate drain*
- *All corrosion resistant materials*
- *Suitable for use on all types of Natural Gas and Propane appliances*
- *Includes initial charge of neutralizing agent*
- *Can be mounted in horizontal or vertical position (see installation instructions)*

Tech Note:
* Check with the appliance manufacturer for condensate flowrate. As a guideline 150,000 BTU/hr at 100% efficiency will produce approximately 1.6 Gal/hr.

The condensate neutralization capsule shall be AXIOM INDUSTRIES LTD. model NC-1. System shall include 1 litre (0.26 U.S. gallon) capsule made from of corrosion resistant materials with two 3" fill/access openings, ½"-14NPT threaded inlet, ½"-14NPT threaded outlet, three ½" NPT to ½' hose barb fittings, ½" barbed Y fitting, six hose clamps, 10 ft of 1/2" ID vinyl tubing, two base/wall mounting clamps



AXIOM INDUSTRIES LTD.

MODEL MF200 'PRESSURE PAL' MINI SYSTEM FEEDER

The 'PRESSURE PAL' is ideal for feeding and pressurizing closed hydronic systems that do not require cold static fill pressures higher than 170 kPa (25 psig). It is compatible with both water and glycol/water solutions. Perfect for small boiler/chiller systems, snow/ice melt circuits, outside air heating/cooling glycol coils, solar heating systems.

FEATURES and BENEFITS

- *25 liter (6.6 US gallon) tank for storage and mixing*
- *Power supply plugs into any standard 115 VAC outlet*
- *Diaphragm pump can run dry without damage*
- *No direct connection to potable water supply eliminates need for backflow prevention*
- *Make-up fluid stored in the feeder tank can be pre-treated*
- *Diverter valve allows easy purging of air on initial start-up, and manual agitation of solution*
- *Prevents major floods - in the event of system rupture, only the contents of the tank will be pumped into the system*
- *Provides leak detection - dropping fluid level provides immediate notice that the system has developed a leak*
- *Fluid drained for service can easily be put back into the system*
- *Fluid level switch shuts the pump off if the storage tank level gets too low*
- *Auxiliary dry contact included for remote low pressure alarm (alarm optional or by others)*

Hydronic system feeder shall be AXIOM INDUSTRIES LTD. Model MF200. System shall include 25 litre (6.6 U.S. gallon) storage/mixing tank with molded-in level gauge, 125 mm (5") fill/access opening and cover; pump suction hose with inlet strainer and check valve; pressure pump with fuse protection; low fluid level pump cut-out float switch; manual diverter valve for purging air and agitating contents of storage tank; pressure switch with snubber and two sets of SPST dry contacts, each individually adjustable from 70 kPa (10 psig) to 170 kPa (25 psig) cut-out pressure; factory cut-out pressure set to 104 kPa (15psig); and liquid filled pressure gauge. Unit to be c/w fused power supply adapter with LED power indicator light, 115/60/1 to 24 VDC 50 watts AC, supplied loose for field installation.

Feeder shall be compatible with glycol solutions of up to 50% concentration. Pump shall be capable of running dry without damage. The second set of contacts in the pressure switch shall be wired to a terminal strip for use as low pressure alarm contacts for remote alarm circuit supplied by others. Unit shall be completely assembled.

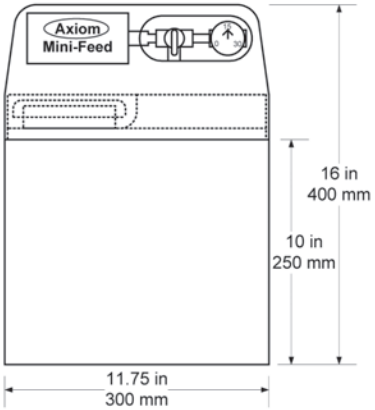
WEIGHT - 3.2 kg, 7 lbs.

ELECTRICAL

Fused Power supply adapter
115/60/1 to 24 VDC
Rated 50 watts AC
LED Power Light

PUMP PERFORMANCE

0.04 l/s (0.7 gpm) @ free flow
Self-priming up to 1.2 m (4 feet)



Depth - 11.75 in 300 mm
Clearances - Sides and Top - 12 in 305 mm
Weight When Full 60 lbs/27 kg.
Discharge 1/2" FPT

AXIOM INDUSTRIES LTD.

Condensate Removal

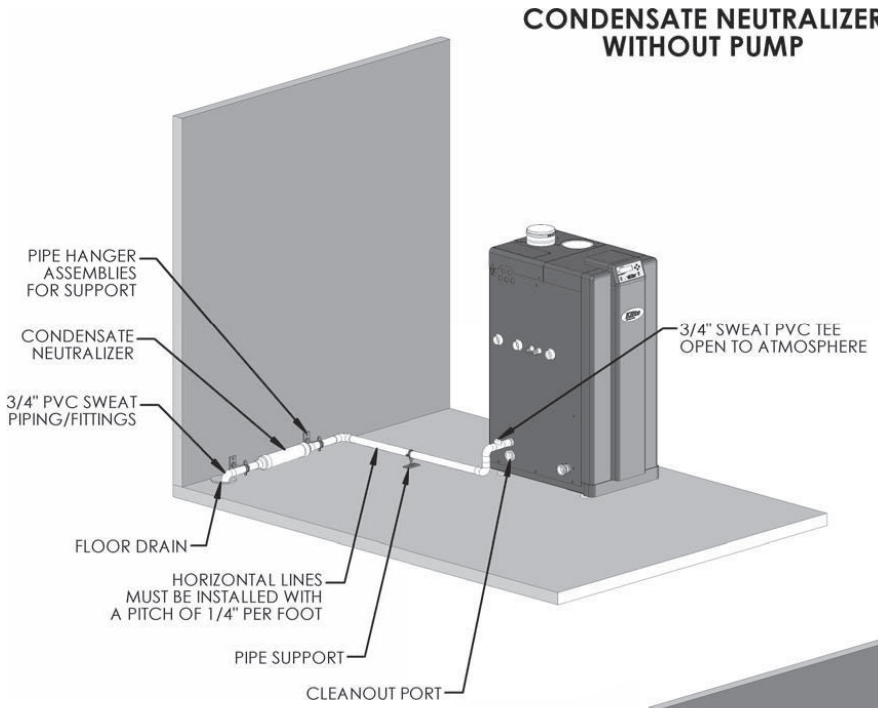


Fig. 6-1

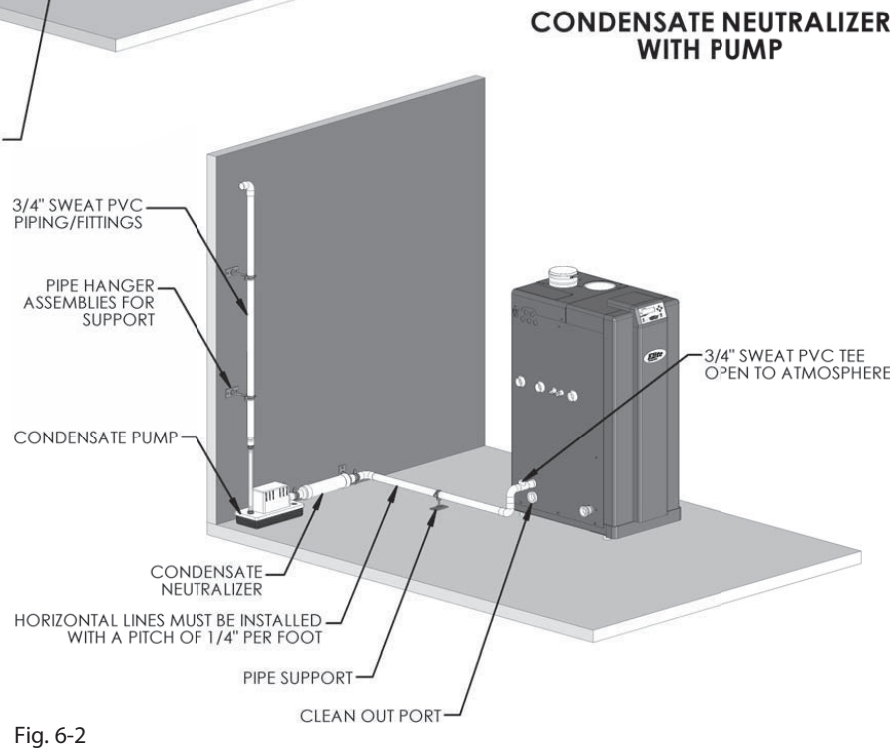


Fig. 6-2

ELIMINATE HYDRONIC SYSTEM CORROSION

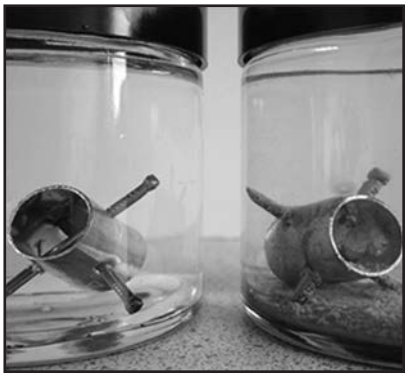
FERNOX
MAKES WATER WORK

Hydronic system cleaning made easy with 30 psi pressured cans serving 26 gallons system capacity. Fluids can be injected via 1/2" FIP connection or air vents.

Why Fernox?

As the world leader in closed loop hydronic system chemistry, Fernox offers easy to use non toxic Green products without nitrates or phosphates to clean and condition hydronic systems. Use of Fernox improves system efficiency and prevents system clogging leading to circulator and heat exchanger failure.

Fernox eliminates bimetal corrosion seen so commonly in boiler systems and works effectively with all metals, including aluminum. Fernox is now recommended by virtually every boiler manufacturer. Do not mix with other boiler chemicals.



First use Fernox F5 cleaner according to instructions and then add Fernox F1 Protector. Test for proper concentration with Fernox test strips. No further service required unless additional air or water are added to the system.

Using plain water in a hydronic system is just not good enough

For complete hydronic system cleaning and conditioning information visit: www.jtgmuir/fernox

FERNOX MAKES WATER WORK

Fernox is available in bulk packages for commercial applications

Cleaners and Limescale — For sludged and blocked systems - Open Loop

DS40 System Cleaner 1.9Kg
Code: 61102 Carton Qty 6
- Powerful acid descaler and sludge remover
- Eliminates boiler noise

System Neutraliser 2Kg
Code: 61009 Carton Qty 6
- Neutralises system water after using DS-40 System Cleaner
- Free flowing powder for easy use when powerflushing

DS-3 Limescale Remover
Code: 250g: 61028 Carton Qty 12
2kg: 61027 Carton Qty 4
30kg: 24066 Carton Qty 1
- Powerful acid limescale remover
- Suitable for all types of appliances

Commercial — For HVAC commercial systems - Closed Loop

Protector CH-3 25 litre
Code: 24004 Carton Qty 1
- Central heating protector for commercial and cooling systems
- Maintains efficiency of system

Cleaner IC-20 25 litre
Code: 24010 Carton Qty 1
- Central heating cleaner for commercial and cooling systems
- Removes sludge and scale

Equipment and Test Kits — For HVAC commercial systems

Boiler Commissioning Kit
Code: 59480 Carton Qty 1
- Maintain the design specification and energy efficiency
- Inhibit the formation of scale and sludge

Water Analysis Test Kit
Code: 38983 Carton Qty 1
- Rapid on-site analysis of central heating system water
- Simple colour charts for measuring concentrations

TDS Meter
Code: 37641 Carton Qty 1
- For easy on-site measurement of total dissolved solids
- Ideal for use when powerflushing

Protector Test Kit
Code: 37906 Carton Qty 1
- Gives rapid on-site analysis of the concentration of all Fernox protectors
- Kit includes sufficient reagent for 25 system checks

System Health Check
Code: 61161 Carton Qty 20
- Identifies defects in the system or treatment
- All major water parameters tested

Powerflow Flushing Pump MKII
Code: 56779 Carton Qty 1
- Powerful, acid-proof flushing pump
- For effective removal of corrosion debris, sludge and scale

Flush Buddy
Code: 55333 Carton Qty 1
- Premium quality, magnetic filter for use during powerflushing
- Connects directly on to any powerflushing machine

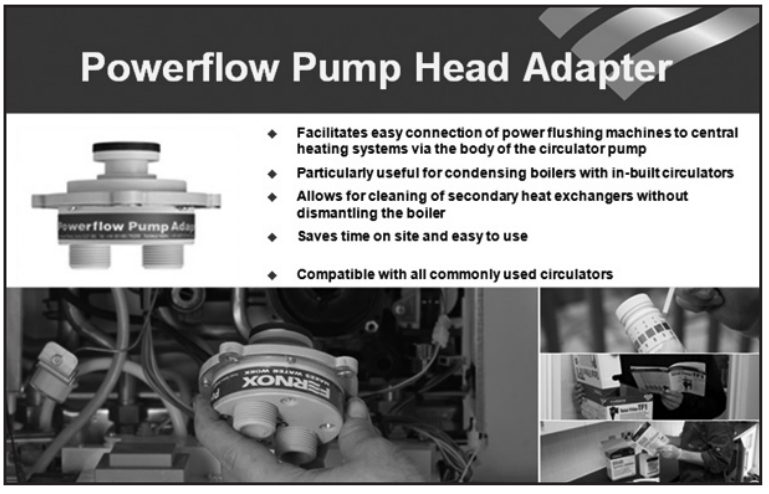
Powerflow Pump Head Adapter
Code: 55568 Carton Qty 1
- For easy connection of power flushing machines to central heating systems via the body of circular pump

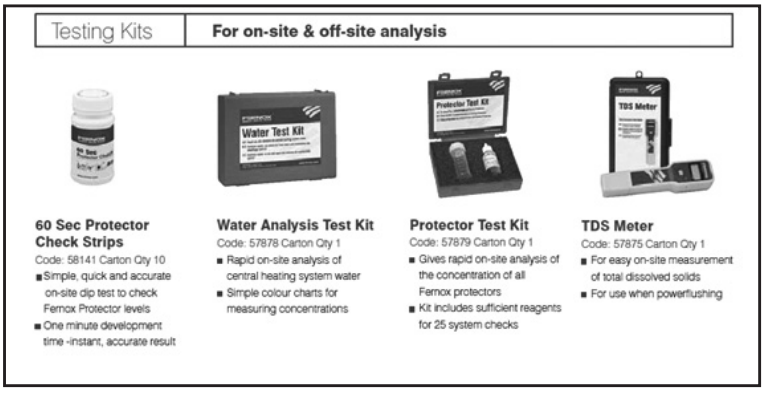
For complete hydronic system cleaning and conditioning information visit: www.jtgmuir/fernox

FERNOX
MAKES WATER WORK

One Visit System Flushing

Servicing most systems involves injecting Fernox F5 Cleaning Agent and running the system 24 hours before replacing the fluid with Fernox F1 Protector. The power flush system permits 2 hour complete flushing and protection of the system. The tools for Pros.





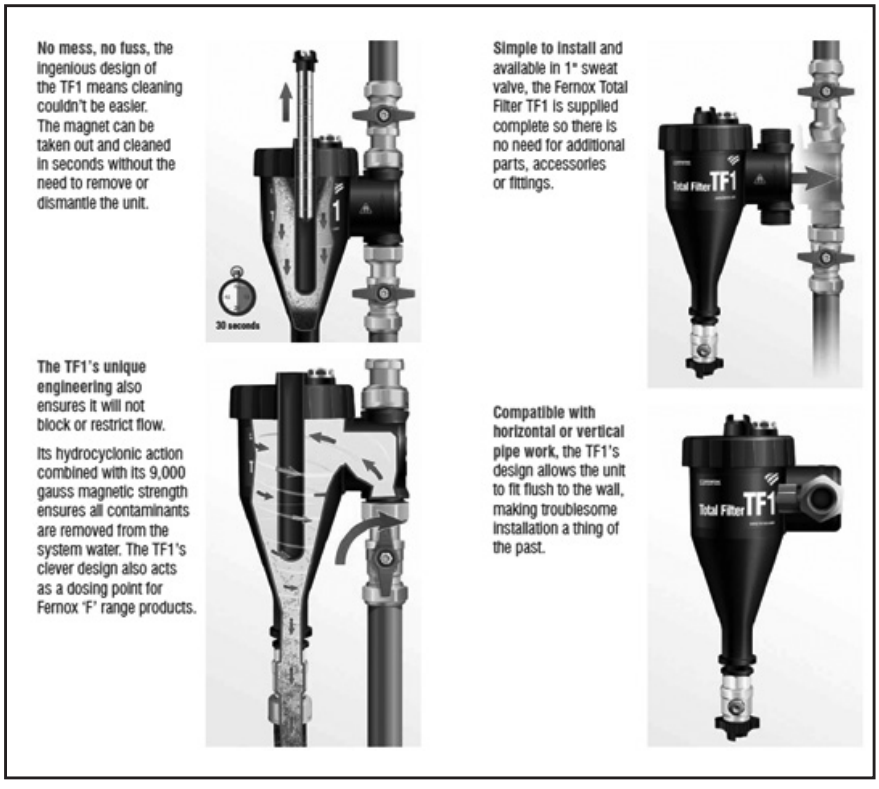
For complete hydronic system cleaning and conditioning information visit: www.jtgmuir/fernox

MINI MAGNETIC POT FEEDER

FERNOX
MAKES WATER WORK

Want your systems to perform well in the long term? For a small cost, the TF1 eliminates ferrous solids from closed loop systems and keeps them out.

- Unique action, removes magnetic and non-magnetic contaminants
- Fits vertical and horizontal pipe work
- Dosing point for Fernox 'F' range products
- Cleaned in seconds without removal or disassembly
- Will not block or restrict flow
- All valves and fittings included



For complete hydronic system cleaning and conditioning information visit: www.jtgmuir/fernox

Frequently Asked Questions

1) How much Fernox F1 Protector do I need for a system with ten radiators?
One pack of Fernox F1 Protector will treat a typical system with ten single panel radiators. If you have double panel radiators, you should count these as two items when calculating how much Fernox will be needed. If the calculated dose rate is in between carton sizes, dose to the higher

2) Can I overdose with Fernox F1 Protector?
No! Overdosing is not detrimental and it is important to ensure that there is always sufficient treatment present. There is a test kit and a postal testing service available to check your Protector concentration. See Protector Test Kit product data sheet.

3) How long will Fernox F1 Protector last?
A treatment of Fernox protector will last for the life of your boiler. However if the system is fully or partially drained at any time (eg. removing a radiator when decorating) then it will need to be re-treated with a further full dose of Protector. You can check if the system is properly dosed with the Fernox Protector Test Kit

4) Is it safe to empty central heating water down the drain?
You should only drain your central heating system into your foul water drain or a septic tank. Never drain your system into road drains or rain water gullies, as these go directly into rivers without treatment. Never pour water from a central heating system on the garden or a lawn.

5) What causes knocking noises in boilers?
Boiler noises result from localised boiling of the water. This happens when the inside surface of the boiler becomes too hot due to scale or baked on sludge deposits. All systems over about five years can suffer noise and new boilers in old systems are especially vulnerable. Either add Fernox F2 Boiler Noise Silencer or preferably descale the boiler with Fernox DS-40 and then protect with Fernox F1 Cleaner.

6) How many kg of DS-40 do I need for 2% solution in a 100 litre system?
Since 1 litre of water weighs 1 kg, then 2 kg of DS-40 per 100 litres of system volume makes a 2% solution.

7) Can Fernox Leak Sealers be used in combination boilers?
Yes all Fernox internal leak sealers, such as Fernox F4, are safe for use with combination and other low water content boilers. They will not block valves or vents. We recommend our Superconcentrate Leak Sealer for all pressurised systems as this can be added via a radiator in a few minutes, without draining out any water.

8) Does Fernox F3 Cleaner need to be flushed out of the system?
Fernox F3 Cleaner should be allowed to circulate around the system for at least 1 hour and up to 7 days, then drained out and the system flushed before adding Fernox F1 Protector.

9) Can I use Fernox F1 Protector on old systems?
Fernox F1 Protector may be used on systems of all ages. However it would be advantageous to clean the system with Fernox F3 in order to remove sludge before adding the F1 Protector.

10) When I dose with Silencer, do I also need to use Protector?
Yes. Fernox F2 Silencer is designed for use with any Fernox Protector. It should be left permanently in the system with the Protector and be replaced when the Protector is replaced.

Fernox Technical Helpline +44(0)870 870 0362

FERNOX

Trouble Shooting Guide

Symptom	Possible Cause	Action
Top of radiator not getting hot.	Air or gas in radiator. Take care as gas could be hydrogen.	Vent radiator & check for leaks. Clean system with Fernox F3, powerflush, protect with Fernox F1 and seal leaks with Fernox F4 if necessary.
Recurrent gas accumulating in radiators and pipework.	Corrosion within heating system. Take care as gas could be hydrogen.	Vent radiators & check for leaks. Clean system with Fernox F3, powerflush, protect with Fernox F1 and seal leaks with Fernox F4 if necessary.
System water is rusty red.	Fresh oxygen getting into system. Could be caused by system pumping over, check system layout.	Check for leaks and use Fernox F4 leak sealer if necessary. Clean system with Fernox F3, powerflush and protect with Fernox F1.
Bottom of radiator not heating up.	Sludge in system restricting flow of hot water.	Clean system with Fernox F3 cleaner, powerflush and protect with Fernox F1. For long term protection fit a Fernox Boiler Buddy magnetic filter.
System water is black.	Black iron oxide (magnetite) in system.	Clean system with Fernox F3 Cleaner, powerflush and protect with Fernox F1. For long term protection fit a Fernox Boiler Buddy magnetic filter.
Boiler Buddy magnetic filter is full of black debris.	Corrosion in system causing black iron oxide (magnetite) build up.	Clean system with Fernox F3, powerflush, protect with Fernox F1 then clean and refit Boiler Buddy.
Combi boiler - hot water not heating sufficiently.	Limescale on secondary heat exchanger.	Clean heat exchanger with Fernox DS-40. Fit a Fernox Quantomat Limescale preventer to avoid recurrence of problem in future.
Boiler is noisy.	Limescale on heat exchanger.	Use Fernox F2 boiler noise silencer or preferably descale the boiler with Fernox DS-40 and then protect system with Fernox F1.
Hard water area - customer wants to prevent limescale problems.	Problems could be higher fuel bills due to loss of boiler efficiency, poor heating and poor flow due to limescale build up in system.	Protect system with Fernox F1 and fit a Fernox Quantomat scale preventer.
Pin hole leaks in radiator(s).	Crevice corrosion or anearobic corrosion under debris inside radiator.	Clean system with Fernox F3, powerflush and protect with Fernox F1. Replace rad(s) or repair with Fernox Fix-It putty.

For more help and advice on water treatment please phone the Fernox technical helpline on +44(0) 870 870 0362

Bio Antifreeze

The New Standard in Freeze Protection

Solar, Hydronics, Snowmelt, Geothermal, Ice Storage
The Big Breakthrough in Anti Freeze: **BIO ANTIFREEZE**

BIO ANTIFREEZE Is a non toxic blend of 1,3 propanediol (Susterra ™) made from renewable resources. (Corn Background banner from PDF Supplied) **BIO ANTIFREEZE** is corn based NSF listed anti freeze with performance significantly superior to petroleum based propylene glycol.

Significantly Lower Acidic Degradation:
BIO ANTIFREEZE glycol out performs regular inhibited polypropylene in resistance to acidic degradation and oxidation. At a boiling point of 425F, **BIO ANTIFREEZE** has a ~ 100°F higher boiling temp than propylene glycol. Acidity degradation occurs primarily at a products boiling point. **BIO ANTIFREEZE** is a must for high temperature solar applications. Result: far longer service time between glycol replacements.

No Inhibitors Required. No clogging.
Years of complaints about inhibitors coming out of suspension at high temperatures (180°F+) and clogging circulators is now resolved. Anti acidity inhibitors are not required. Corrosion inhibitors are not required in truly closed loop applications.

The Right Performance:
BIO ANTIFREEZE has lower viscosity requiring 2.4X less pumping energy than petroleum based Propylene glycol.

The Right Price:
When oil prices go up, so does petroleum based propylene glycol. Corn based **BIO ANTIFREEZE** glycol is a lower cost alternative to conventional Propylene glycol with more stable cost when oil prices are rising.

Truly Green:
The production of **BIO ANTIFREEZE** uses 40% less energy and reduces green house emissions by 20% when compared to petroleum based propylene glycol.

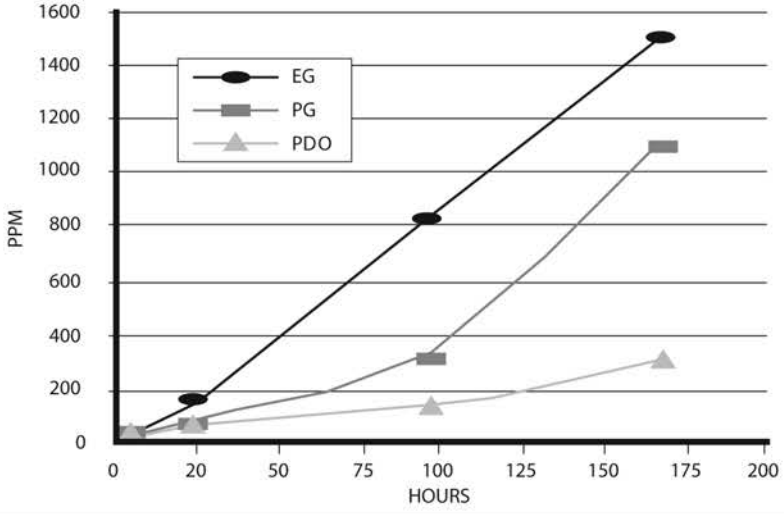
The Chemistry:
BIO ANTIFREEZE is produced from a proprietary fermentation process using corn sugar instead of petroleum-based feedstock's. **BIO ANTIFREEZE** is a chemical variant of conventional petro based 1,2 propanediol (H3C-CH-CH2_OH). **BIO ANTIFREEZE** is a 1,3 propanediol (HO-CH2-CH2-CH2-OH).

Premixed 50/50 or Concentrate:
BIO ANTIFREEZE is available as a concentrate or a 50/50 mix. It is packaged in 1, 5 and 55 gallon containers. Bulk purchases of concentrate and 50/50 are available. **BIO ANTIFREEZE** is stocked regionally in Oakland, Ca.

BIO ANTI FREEZE

Glycol Degradation Comparison

Testing measured the concentration of acids formed under constant pressure and temperature by ion chromatography



EG= Ethylene Glycol,
PG= propylene glycol,
PDO = BIO ANTI FREEZE

Test temperature= 150°C (302°F)

Recommended Replacement @ 5000 ppm organic acids

Comparison of Pumping Pressure - PG vs PDO

At -10 C, a 40% PG/ 60% water solution requires 2.4x's the pumping energy as a 40% PDO/60% water solution.

Thermophysical Properities at -10C	40.5 wt% (~14mol%) 1,2-propanediol	40 wt% (13.6mol%) 1,3-propanediol
Absolute Viscosity (cP)	24.48[1]	15.5[2]
Density (g/ml)	1.05[1]	1.06[2]
Specific Heat ($kJKG^{-1}K^{-1}$)	3.602[1]	3.495[4]
Thermal Conductivity (WmK^{-1})	.374[1]	.39[5]
Kinematic Viscosity (cSt)	23.3	15.5
Fp (C)	-20[3]	-20[7]

BIO ANTI FREEZE

Freeze Point Protection

Volume%	FP °F	FP °C
0	32	0
5	29.3	-1.5
10	26.4	-3.1
15	23.2	-4.9
20	19.3	-7.1
25	14.6	-9.7
30	9.4	-12.6
35	3.4	-15.9
40	-4.1	-20.1
45	-11.5	-24.2
50	-20.5	-29.2
55	-33.9	-36.6
60	-49.8	-45.4
65	-65.1	-53.9
70	-82	-63.3
75	-105	-76.1
80	-130	-90
85	-125	-87.2
90	-64	-53.3
95	-32.8	-36
100	-13.3	-25.2

For complete technical Data and MSDS visit: www.jtgmuir.com/biogreen

COMBINED HYDRONICS WITH WATER HEATERS

Certain water heaters can be an excellent choice for combined hydronics when the maximum system temperature required is below 150F and where the dominate load is domestic hot water.

Open Loop/Closed Loop: The mechanical code required a closed loop system isolated via a heat exchanger from the domestic hot water when using radiant heating, radiators and traditional baseboard. Circulating domestic hot water for heating is permitted by code for devices using Type M or thicker walled copper tubing such as most air handlers, Myson fan convectors and the new Hawkstone low temperature baseboard. When utilizing an open loop combined hydronic design a timer must be utilized to exercise the circulator daily.

Tank Water Heaters:

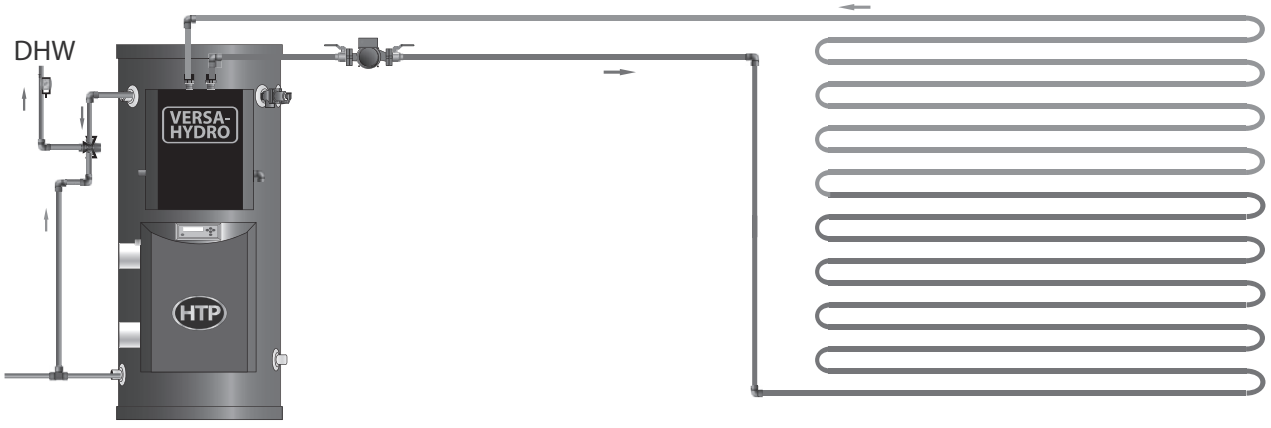
Atmospheric, Bottom Burner Water Heaters: Atmospheric gas tank water heaters are very inefficient and prone to damage from condensing but can be used for very low space heating load projects. Sizing should be undertaken carefully given the occasional competition between space heating and water heating.

Condensing Water Heaters: Condensing water heaters that modulate are ideal for combined low supply water temperature hydronic applications where domestic hot water capacity is important.

Tankless Water Heaters: There are several technical boundaries that have resulted in operating efficiencies far lower than claimed (high cycling) and durability (small tubing, wrong controls). All the tankless manufacturers offer much shorter warranties for hydronic recirculation applications and several have introduced separate hydronic boilers to their line to combat the many shortcomings of tankless applied to hydronic heating. Generally speaking, we do not recommend tankless water heaters.high temperatures. Systems that have maximum temperature requirements below 140F, such as radiant heating, can use either a water heater or a boiler.

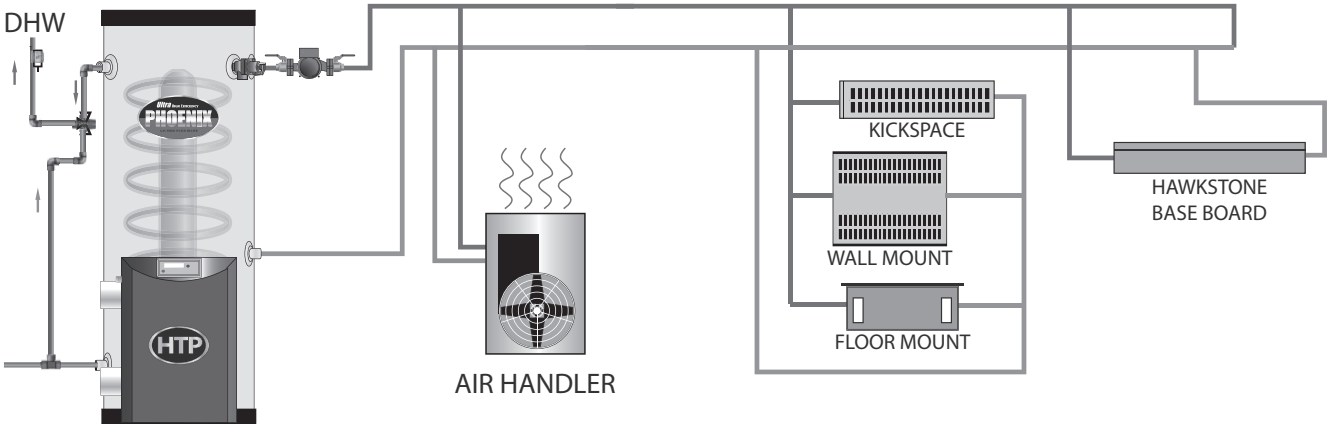
Phoenix Versa Hydro With Heating Distribution

Closed Loop Combined Hydronic



Phoenix Combination Systems With Heating Distribution

Open Loop Combined Hydronic



HTP

CLOSED LOOP COMBINED HYDRONICS

Phoenix Versa-Hydro

Ultimate Gas Fired Heat Source: A "Wet Heads Dream,"

The leading technical engineering writer for the hydronic industry wrote an article recently speculating on what would be the ideal characteristics of the ultimate hydronic heat source of the future. The Phoenix Versa-Hydro meets all his requirements…and he had not seen an Phoenix Versa-Hydro. Dig deeper into the Phoenix Versa-Hydro and discover that it is not only simple but it solves the key technical limitations of all the low mass boilers/water heaters on the market today.

John Siegenthaler: July P&M magazine

"To me, the ultimate gas-fired heat source must have five characteristics (in no particular order of importance)"

- High combustion efficiency.

- Low head loss.

- Low standby heat loss.

- Thermal mass.

- Minimum 20-year design life.

Visit JTGMuir.com/versa_hydro for full article.

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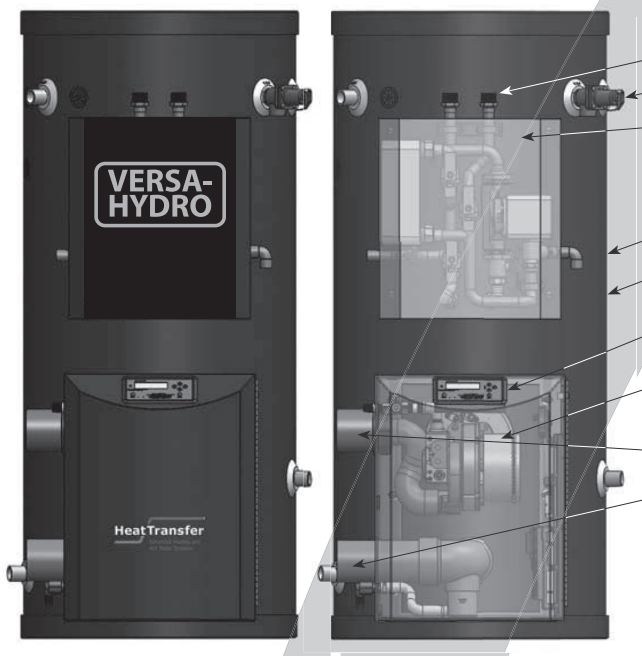
Phoenix Versa-Hydro

HTP

95% EFFICIENT



- Closed loop heating system supply and return connections
- Temperature and pressure relief valve
- Space Heating Module
  - Brazed Plate Heat Exchange
  - Variable Speed Pump allows for modulating flow from tank to accurately control supply temperature
- 316L Stainless Steel Construction
- 2" Foam Insulation (1/2 degree per hour heat loss)
- Digital Text Display for system monitoring and temperature adjustment
- Modulating Burner Assembly (3 to 1 Turndown)
- Intake Connection
- Exhaust Connection

- High efficiency boiler
- Indirect fired water heater
- Piping and controls

One compact, high output appliance.

You may know the Phoenix Versa-Hydro as the very popular Phoenix water heater with a new integrated heat exchange space heating module. Either way this appliance results in less space requirements, lower parts and installation costs, improved system efficiency and reliability.

Simple is Good

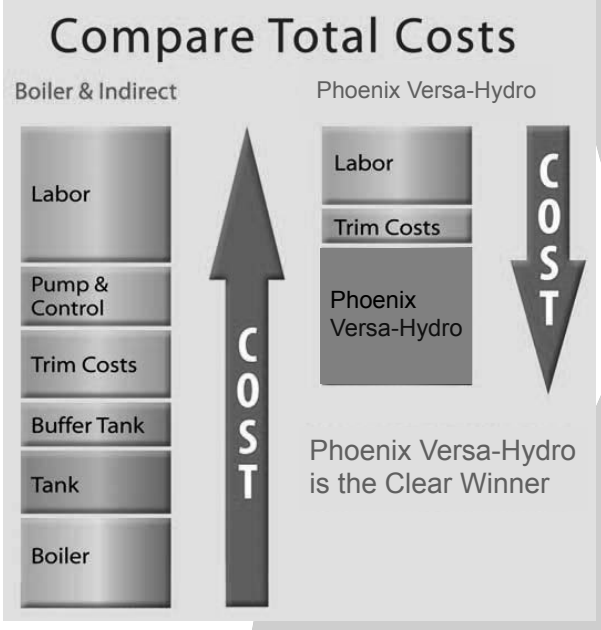
Until now hydronic has been too complicated resulting in too many unsatisfactory installations.
The Phoenix Versa-Hydro hydronic appliance removes many arcane technical decisions and fancy piping seen in many boiler hydronic systems while providing a technically superior solution for radiant heating.

The Phoenix Versa-Hydro reduces the clutter of multi-piece systems

Phoenix Versa-Hydro

Lower Installed Cost

Phoenix Versa-Hydro components cost less than all the components required for a conventional boiler/ indirect water heater system and it also costs less to install. The installation labor of the mechanical equipment in a hydronic radiant system provides the single best opportunity to reduce the installed costs of a radiant system and increase contractor profits at the same time by permitting more accurate installation labor cost estimates. Simple means less expensive.



Proven Technology: Reliability & Durability

The Phoenix Versa-Hydro has proven to be a highly durable heater utilizing a stainless tank and cupronickel combustion chamber employed reliably in over 100,000 jobs and utilizing components used in millions of condensing boilers worldwide.

The Right Sizes

- Radiant Heating to 135,000BTU
- Plenty of Hot Water

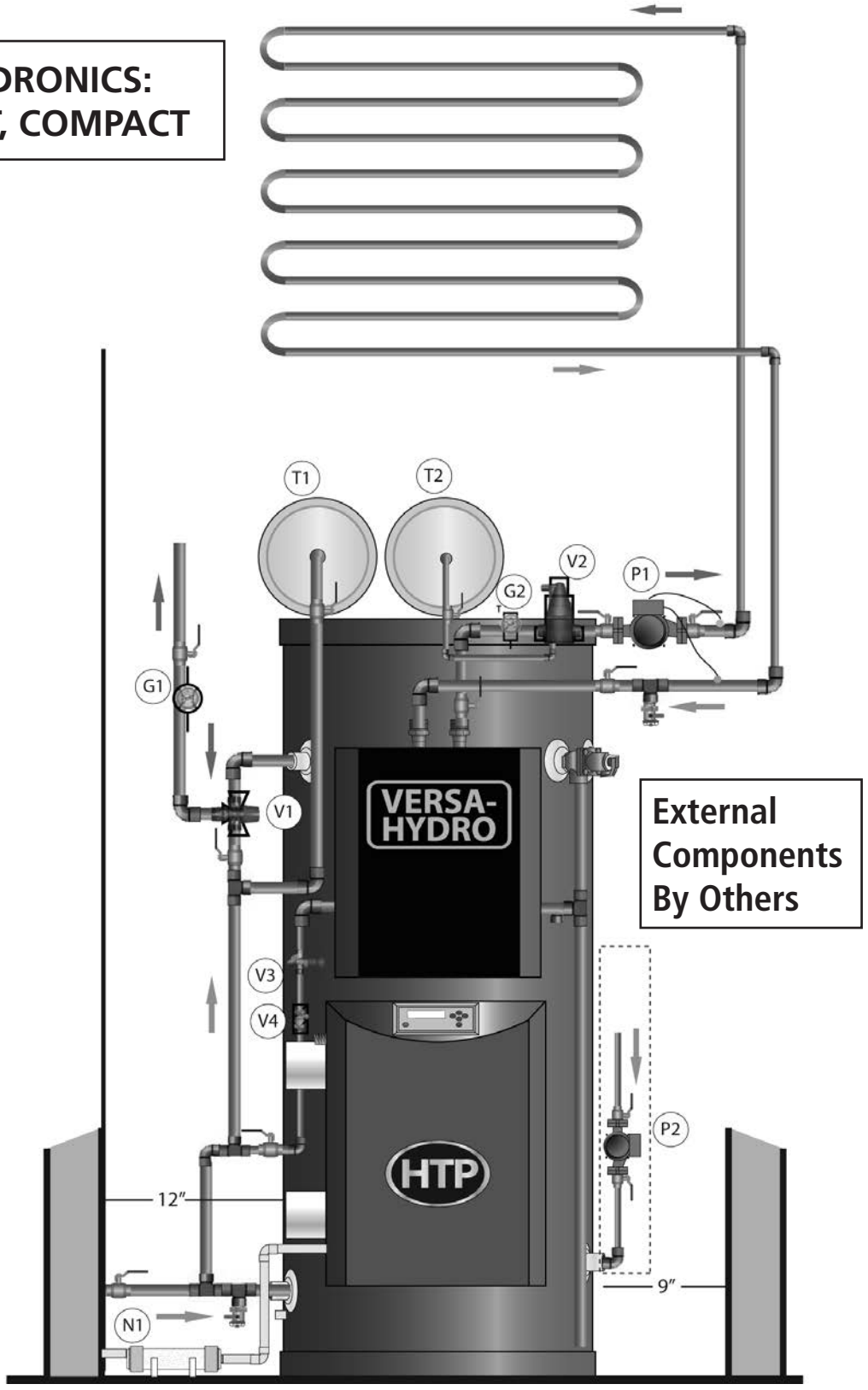
The Phoenix Radiant module can seamlessly supply 1,000 btu to 135,000 btu for a radiant heating system serving 1000 to 6,000 square feet. At the same time the Phoenix Versa-Hydro/Phoenix Versa-Hydro Solar can also provide copious amounts of domestic hot water for the high peak loads experienced in custom homes due the combination of high recovery rates and hot water storage. No more multiple tankless water heaters!

Sizing:

A single Phoenix plus heater has three btu capacities (100,130,199) for space heating for homes up to 5,500 sq ft while the storage tank capacity options (55,80,119) help meet the peak domestic hot water demands of most custom homes.

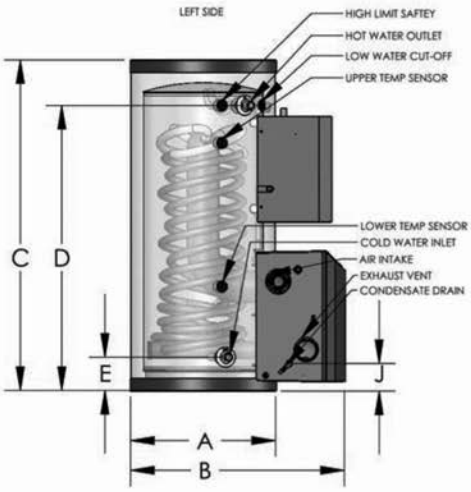
Phoenix
Versa-Hydro

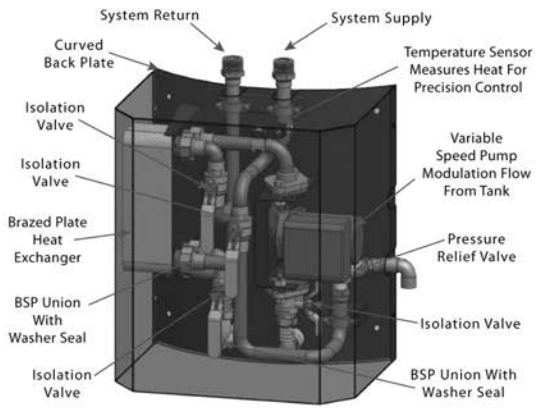
COMBINED HYDRONICS:
SIMPLE, SMART, COMPACT

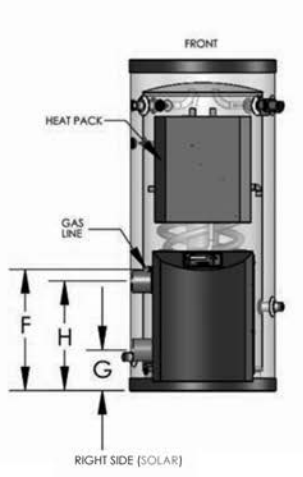


External Components By Others

Phoenix
Versa-Hydro







VERSA-HYDRO WATER HEATER DIMENSIONS

MODEL #*	GALLONS	A	B	C	D	E	F	G	H	J	K	L	M		
PHE130-55 / PHE199-55	55	23"	34"	53"	46"	5½"	19½"	7-3/8"	14½"	5"	14"	46"	46"		
PHE130-80 /PHE199-80	80	23"	34"	72"	61"	5¾"	20½"	8-3/8"	15½"	6"	13"	61"	64½"		
PHE130-119 /PHE199-119	119	27"	37"	74"	65¾"	7½"	20½"	8-3/8"	15½"	6"	14¼"	65¾"	66½"		

*NHX (No Heat Exchanger) Version of the Versa-Hydro is available.

VERSA-HYDRO WATER HEATER SPECIFICATIONS

MODEL #*	GALLONS	BTU'S	SPACE HEATING MODULE BTU'S	AIR INTAKE/ EXHAUST VENT SIZE	MAXIMUM SPACE HEATER TEMP.	WATER INLET/ OUTLET SIZE	AUX. CONN.	GAS LINE CONN.	SYSTEM RELIEF PIPE SIZE	SHIPPING WEIGHT
PHE130-55 / PHE199-55	55	130,000	100,000	2"	160°	1" NPT	1"	3/4"	3/4"	205 LBS.
		199,000	135,000	3"						
PHE130-80 / PHE199-80	80	130,000	100,000	2"	160°	1" NPT	1"	3/4"	3/4"	265 LBS.
		199,000	135,000	3"						
PHE130-119 / PHE199-119	119	130,000	100,000	2"	160°	1" NPT	1"	3/4"	3/4"	435 LBS.
		199,000	135,000	3"						

VERSA-HYDRO SOLAR WATER HEATER SPECIFICATIONS

MODEL #*	GALLONS	BTU'S	SPACE HEATING MODULE BTU'S	AIR INTAKE/ EXHAUST VENT SIZE	MAXIMUM SPACE HEATER TEMP.	WATER INLET/ OUTLET SIZE	AUX. CONN.	GAS LINE CONN.	SYSTEM RELIEF PIPE SIZE	SHIPPING WEIGHT
PHE130-80S / PHE199-80S	80	130,000	100,000	2"	160°	1" NPT	1"	3/4"	3/4"	275 LBS.
		199,000	135,000	3"						
PHE130-119S/ PHE199-119S	119	130,000	100,000	2"	160°	1" NPT	1"	3/4"	3/4"	445 LBS.
		199,000	135,000	3"						

Model	First Hour Rating At 100 Deg. F. Rise
PHE 130-119	250 GPH
PHE 130-55	289 GPH
PHE 130-80	220 GPH
PHE 199-119	335 GPH
PHE 199-55	279 GPH
PHE 199-80	300 GPH

* No suffix denotes natural gas and suffix "LP" denotes propane gas

In keeping with its policy of continuous product improvement, HTP reserves the right to make changes without notice.

12 Year Limited Warranty

OPEN LOOP COMBINED HYDRONICS

Ultra High Efficiency PHOENIX GAS FIRED WATER HEATER 96%

Modulating Combi Water Heater

Phoenix is the pinnacle of 10 years product evolution and field experience resulting in a super durable, reliable, quiet and cost effective ultra high efficiency water heater.

Super Efficient
- 96% combustion efficiency
- 2"+ foam insulation 0.5%/hr standby heat loss
- Load matching modulation

Super Reliable
- 316L Stainless steel tank
- Cupronickel/Stainless Steel heat exchanger & combustion chamber
- Millions of key components in worldwide use
- 3:1 modulation reduces cycling, adds component life
- 30 years of tank manufacturing experience including 75,000 condensing water heaters
- Spark ignition
- Euro reliable field tested components

Super Quiet
- Whisper quiet: .45 DB at 5 ft

Simple Installation
- Flexible venting, balanced flue of 100' each way or unbalanced flue 100' exhaust

Ample Hot Water
Modern homes with multiple bathrooms and whirlpool baths need high capacity water heaters to meet large peak loads. The Phoenix is the perfect fit.

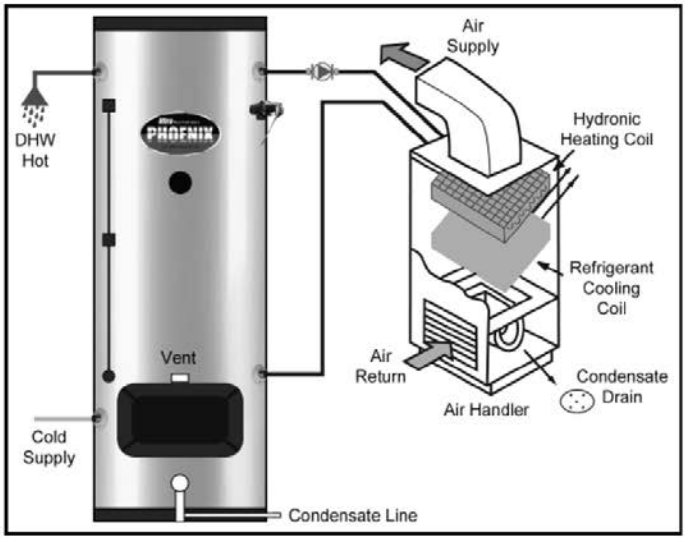
The Green Choice: LowNox
The Phoenix reduces carbon emissions over standard efficiency heaters by TONS over 10 years.

Affordable
High efficiency is more cost effective than ever!

OPEN LOOP COMBINED HYDRONICS

Phoenix... The Big Payoff

96% Efficient Hot Water and Heating



Flexible System Distribution Design

With Phoenix the designer has the choice of different types of heat distribution to solve heating and cooling, zoning, ducting and comfort challenges. These types of distribution can used solely or combined within a given building.

AIR HANDLERS
Heating and Cooling

- Heating and cooling with DX or Chilled Water
- Reduced ducting with multiple units
- Easy zoning with multiple units
- No vent or gas line
- Two stage or variable speed

FAN CONVECTORS Heating

- No ducting required
- Individual room zoning
- Many styles: Kickspace, wall types, floor models

Hydro Comfort Systems™

ITS SIMPLE

- One vent
- One gas line
- One flame

Real Whole House Efficiency
Lower Operating Cost

Using one 96% efficient Phoenix hot water heat source to provide both domestic hot water and space heating provides the fastest payback on your investment by saving energy in two ways!

In many homes the annual domestic hot water load and space heating load are approximately equal, so a high efficiency furnace only does ½ the job.

Hot Water Zoning
Saves Energy and Space

Zoning lowers energy bills by allowing the end user to reduce energy use in unoccupied areas. Hot water from the Phoenix can flow to remotely located air handlers, fan convectors, radiant heating etc., reducing or eliminating duct energy losses while very cost effectively providing energy efficient zoning.

This strategy reduces space requirements, system energy usage and reduces the installed cost over homes using multiple furnaces and water heaters.

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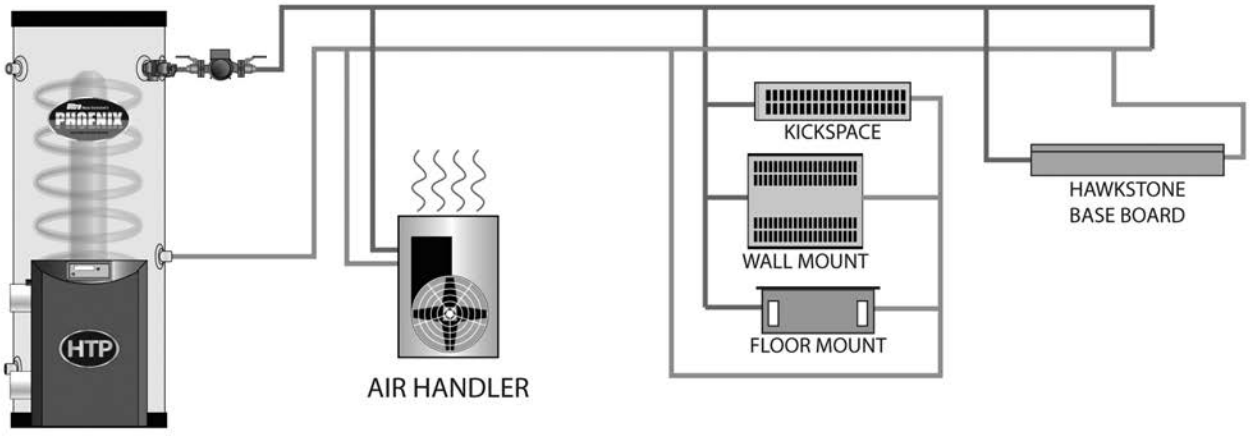
OPEN LOOP COMBINED HYDRONICS

See page 66 for Dimensions and Specifications

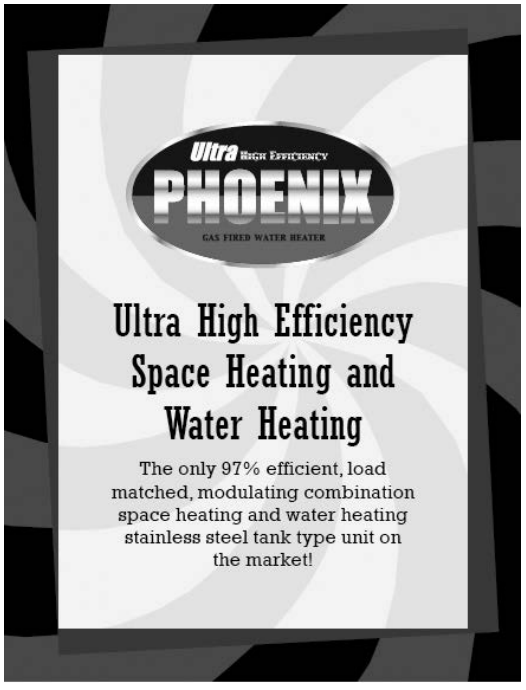
Phoenix Combination Systems With Heating Distribution

Open Loop Combined Hydronic



Air handlers, Myson Fan Convectors, Hawkstone Open Loop, Baseboard

Ask for our 16 page guide on designing and installing air handlers with Phoenix ultra high efficiency



HTP

Advanced Heating
& Hot Water Systems

Versa-Flame

HYDRONIC SPACE HEATING AND INSTANTANEOUS HOT WATER

SEPARATE BOILER AND TANKLESS:
- Two vents
- Two connections

VERSA FLAME:
- One vent
- One connection

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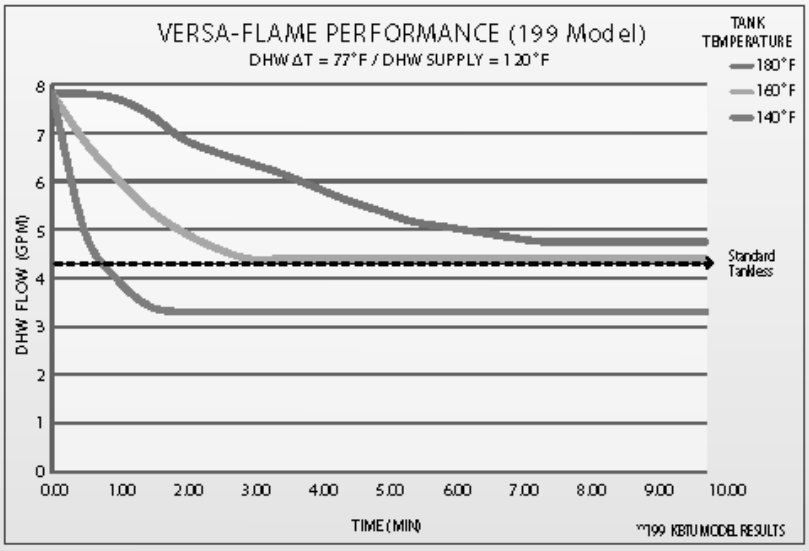
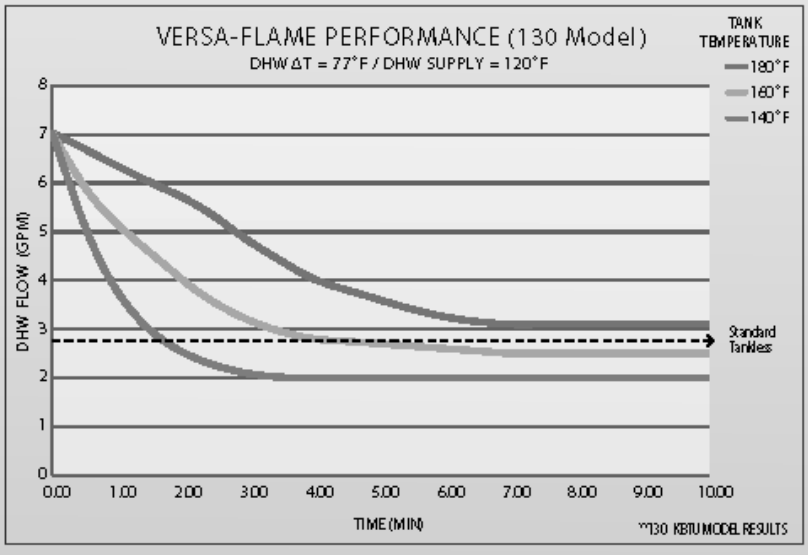
Versa-Flame vs Competition





Condensing Technology Saves!

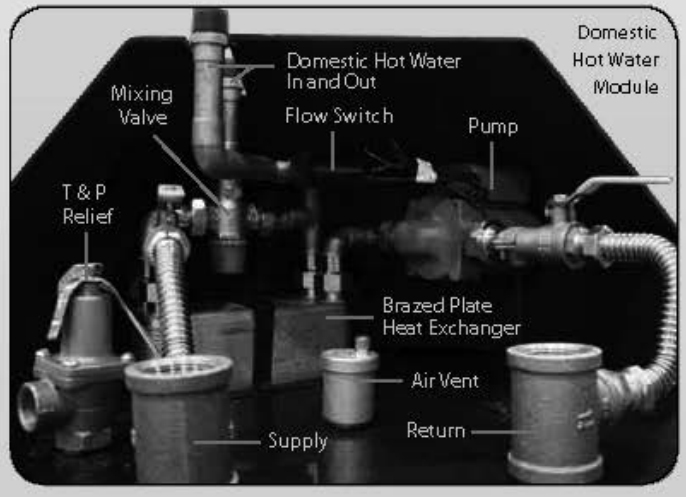
The Versa-Flame's state of the art condensing technology is **95% Efficient.** That means that 95¢ of every heating dollar spent is used to heat your home. Compare that to the traditional non-condensing boilers, where as much as 40¢ of every heating dollar could quite literally be going up the chimney!

The Versa-Flame Out Performs Standard Tankless Combi Units!

DHW Source	199,000 BTUs @ 77° F Rise
Versa-Flame	Upto 57 Gallons For 10 Min. Draw
Tankless (is less)	Upto 42 Gallons For 10 Min. Draw

Versa-Flame VS Competition		
Combi Appliance	HTP Versa-Flame	Competition
Single Loop Design (eliminates need for primary secondary circulation)	YES	NO
High Mass	55 Gallons	NO
Low Pressure Drop	YES	NO

Specifications



12 Year Warranty

Versa-Flame Dimensions									
A	B	C	D	E	F	G	H	J	K
23"	53"	8"	6.5"	68"	7.5"	22"	8"	6"	34"

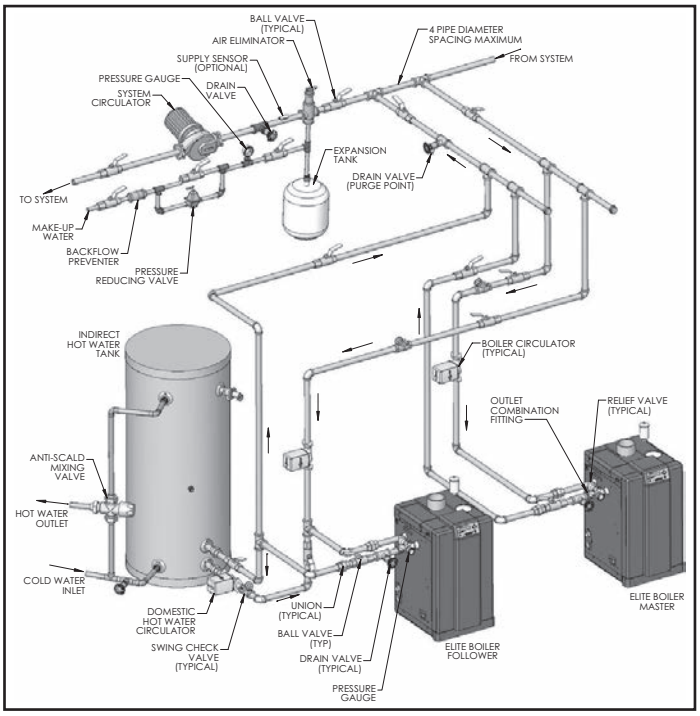
Versa-Flame Specifications			
Supply - Return Sizes	Air Vent	Gas Conn	Vent Size
1.25" NPT	1/8"	3/4" NPT	2" (130) 3" (160, 199)

High Efficiency Combination **Space Heating** & **Endless Hot Water Appliance**

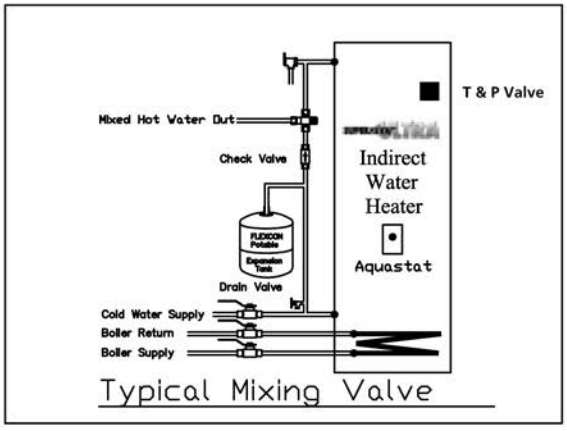
Versa-Flame Model	BTU / Input Range	Tank Size	Approx. Shipping Weight	Gallons per minute @ 77° rise	First Hour Rating @ 77° rise	Height	Diameter
PHR-130-55C	35,000-130,000	55 Gallons	190 lbs.	3.2	210 GPH	68"	23"
PHR-160-55C	40,000-160,000	55 Gallons	197 lbs.	3.85	250 GPH	68"	23"
PHR-199-55C	40,000-199,000	55 Gallons	197 lbs.	4.8	300 GPH	68"	23"

COMBINED HYDRONICS
INDIRECT WATER HEATING WITH BOILERS

Combined hydronics is the use of a single heat source to provide both hot water space heating and domestic water heating. This approach is inherently more efficient. Only one flame and one vent are used for two jobs and this advantage receives ample credit under California Title 24 energy compliance code for new construction.



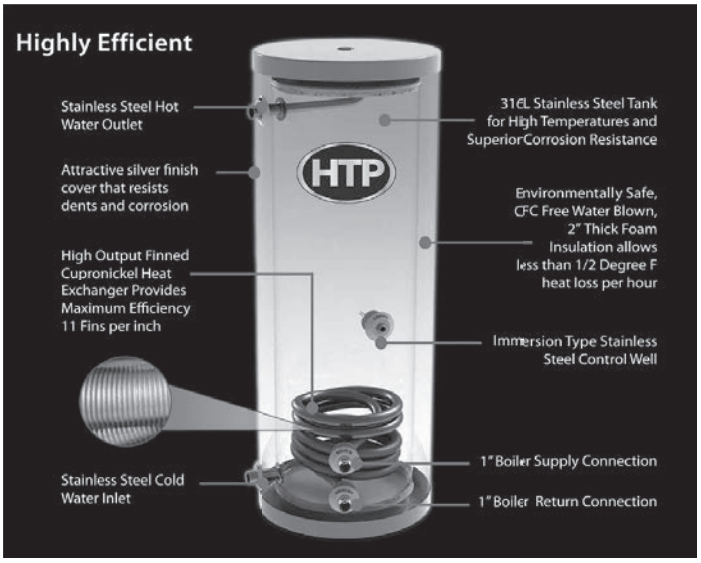
Indirect water heaters are storage tanks with integral heat exchangers. Hot water generated by a hydronic heating boiler flows through the tank'sintegral heat exchanger which heats the potable water in the tank "indirectly". Indirect water heaters are extremely durable and with ample foam insulation are very energy efficient. Indirect water heaters typically have very high recovery rates because the hydronic boiler often exceeds 75,000 BTUH. We recommend using priority circulators (Taco, of course) to supply sufficient flow to the indirect.



SUPERstor ULTRA

SINGLE COIL STAINLESS INDIRECT WATER HEATERS

- Features & Benefits
- 316L Stainless Steel Tank
- 1-1/4" Cupronickel Heat Exchanger
- Super-Insulated: Less than 1.2%/hr.
- High Recovery
- Plastic Jacket
- 1" NPT Boiler Connections
- P&T Not Included



ULTRA Residential Series Spefications and Performance Ratings

Model	Ht.	Dia.	Cap.	Heat Exch. Surface	Rec' Flow Rate	Pres Drop (Feet)	180° F Boiler Water First Hour Ratings*		200 ° F Boiler Water First Hour Ratings*	
							140° F	115 °F	140 ° F	115 ° F
SSU-20	27″	19 1/4″	20	15 sq ft	8	6.0	121 gal	168 gal	136 gal	185 gal
SSU-30	39 1/2"	19 1/4"	0	15 sq ft	8	6.0	154 gal	212 gal	172 gal	234 gal
SSU-30LB	28 1/2″	23 1/4″	30	15 sq ft	8	6.0	169 gal	234 gal	189 gal	257 gal
SSU-45	52 1/2"	19 1/4"	45	20 sq ft	10	7.9	212 gal	292 gal	237 gal	322 gal
SSU-60	52 1/2″	23 1/4"	60	20 sq ft	10	7.9	266 gal	370 gal	298 gal	405 gal
SSU-80	72″	23 1/4"	80	34 sq ft	12	9.1	330 gal	440 gal	370 gal	503 gal
SSU-119	73 1/2″	27″	119	34 sq ft	14	11.3	423 gal	564 gal	474 gal	645 gal

*DOE test method based on 90° F. Temperature rise, 95°/145° with boilerwater at 180°F

Model	Floor to Boiler		Floor to Domestic		Pressure		Ship Weight	180° F	200 ° F
	Supply	Return	Out	Connections	Test	Working		Boiler BTU/Size	
SSU-20	9″	4 1/2″	22″	3/4 MPT	300 psi	150 psi	60 lb	84,000	87,000
SSU-30	9″	4 1/2″	34″	3/4 MPT	300 psi	150 psi	72 lb	102,000	117,000
SSU-30LB	9″	4 1/2″	23″	3/4 MPT	300 psi	150 psi	79 lb	114,000	131,000
SSU-45	9″	4 1/2″	46″	3/4 MPT	300 psi	150 psi	88 lb	141,000	161,000
SSU-60	9″	4 1/2″	46″	1″ MPT	300 psi	150 psi	110 lb	174,000	198,000
SSU-80	29″	6″	69-1/4″	1 1/2″ MPT	300 psi	150 psi	141 lb	212,000	241,000
SSU-119	30 1/4″	7 1/4″	66″	1 1/2″ MPT	300 psi	150 psi	210 lb	269,000	301,000

Note: Tank recovery from cosd start will be between 10-13 minutes when sized with correct flow rate, boiler size and pressure drop ratings from list in above chart.

** REDUCED BOILER INPUT, SIZING GUIDE			
Model	Gross Output BTU/H	115° 65° T First Hour Rating Gallons	140° 90° T First Hour Rating Gallons
SSU-20	40,000	73	53
	60,000	112	81
	84,000	168	121
	100,000	168	121
	120,000	168	121
	140,000	168	121
SSU-30	40,000	83	60
	60,000	125	90
	84,000	160	115
	102,000	212	154
	120,000	212	154
	140,000	212	154
SSU-30LB	40,000	84	60
	60,000	128	92
	84,000	166	120
	108,000	234	169
	120,000	234	169
	140,000	234	169
SSU-45	40,000	94	68
	60,000	138	99
	80,000	180	130
	100,000	210	152
	127,000	266	193
	140,000	292	212
	160,000	292	212
SSU-60	100,000	221	160
	120,000	244	176
	140,000	251	181
	160,000	309	206
	180,000	370	266
	200,000	370	266
	220,000	370	266
	240,000	370	266
	240,000	370	266
SSU-80	100,000	297	216
	120,000	305	223
	140,000	314	230
	160,000	367	269
	180,000	424	311
	200,000	489	359
	220,000	503	370
	240,000	503	370
	260,000	503	370
	280,000	503	370
	300,000	503	370
SSU-119	140,000	333	216
	160,000	384	251
	180,000	444	290
	200,000	457	335
	220,000	470	345
	240,000	543	399
	260,000	627	460
	280,000	645	474
	300,000	645	474
	320,000	645	474

SUPERstor's PRODUCT LINE CONSISTS VARIOUS MODELS, AVAILABLE IN DIFFERENT SIZES CALL THE FACTORY FOR PRODUCT AND WARRANTY INFORMATION!

"DW" (double wall heat exchanger) models are available in the 45,60, 80, and 11 9 U.S. gallon sizes

"CB" (coil booster) models operate in conjunction with a tankless heater, to increase hot water storage capacity. Models are available in 30, 45, 60, 80, and 1 i 9 U.S. gallon sizes.

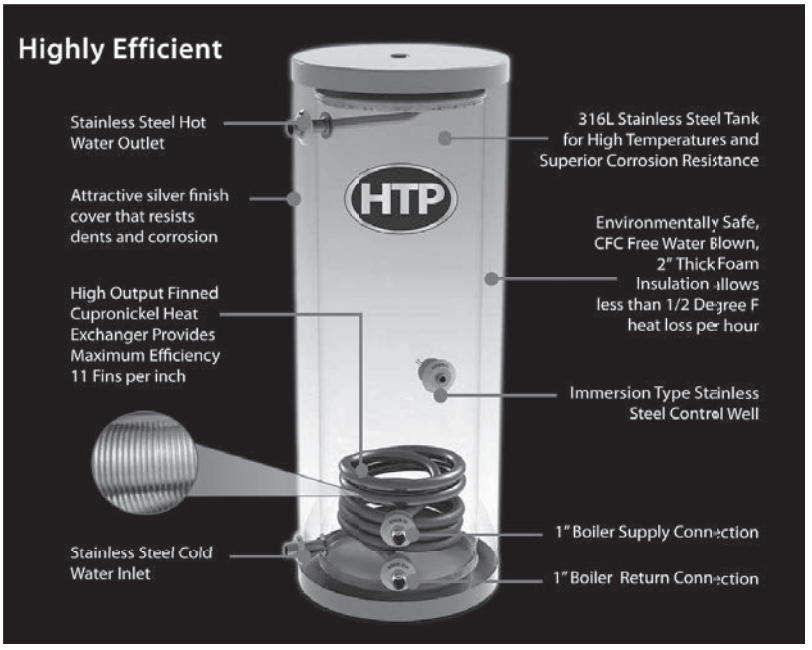
"C" commercial models for dual systems or commercial applications; use one coil for wood boiler, the other for the oil boiler; adaptable to solar systems as well; also good for hotels, motels, and apartments. Models are available in the 45,60, 80, and 11 9 U.S. gallon sizes.

****SEE THE ENGINEERING & SPECIFICATION MANUAL FOR OUR COMPLETE COMMERCIAL LINE & SIZING GUIDE!**

SUPERstor ULTRA

DOUBLE WALL STAINLESS INDIRECT WATER HEATERS

- Features & Benefits
- 316L Stainless Steel Tank
- 1-1/4" Cupronickel Heat Exchanger
- Super-Insulated: Less than 1.2%/ hr.
- High Recovery
- Plastic Jacket
- 1" NPT Boiler Connections
- P&T Not Included



Specifications Double Wall Heat Exchanger Models

Model	Cap. Gal.	Dia. (in)	Height (in)	Heat Exch. Surface	First Hour Performance @ 140°	First Hour Performance @ 115°	Wt. (lb)
SS-40DW	40	19 1/4	52 1/2	20 Sq. Ft.	110 GPH	152 GPH	85
SS-60DW	60	23 1/4	52	20 Sq. Ft.	126 GPH	174 GPH	105
SS-80DW	80	24	72	20 Sq. Ft.	160 GPH	221 GPH	146
SS-119DW	119	27	73 1/2	25 Sq. Ft.	180 GPH	240 GPH	225

SUPERstor ULTRA

DUAL COIL STAINLESS INDIRECT WATER HEATERS

COMMERCIAL OUTPUT
200 MBH PER COIL CAPACITY

- Features & Benefits
- 316L Stainless Steel Tank
- 1-1/4" Cupronickel Heat Exchanger
- Super-Insulated: Less than 1.2%/hr.
- High Recovery
- Plastic Jacket
- 1" NPT Boiler Connections
- P&T Not Included

Superstor ULTRA Commercial Series Specifications and Performance Ratings

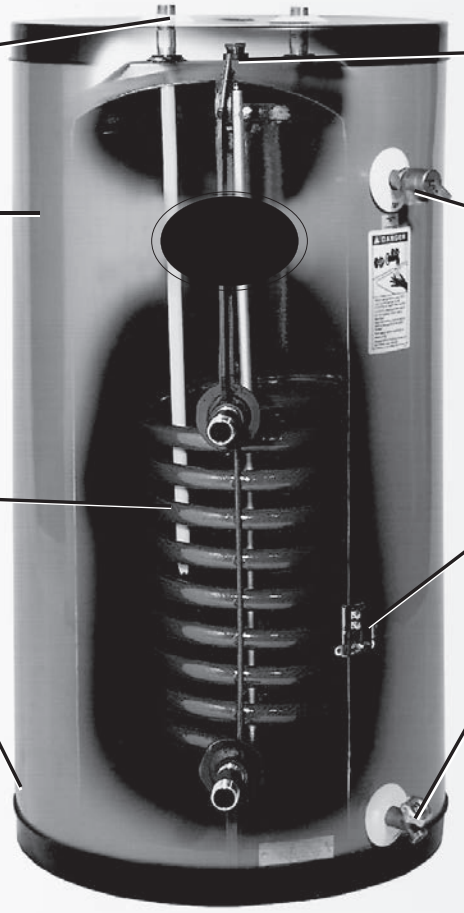
Model	Dimensions		Capacity	Heat Exchanger Surface	Recom-mended Flow Rate	Pressure Drop Feet	First Hour Ratings *			
							180 F Boiler Water		200 Boiler Water	
	Ht.	Dia.					140 F	115 F	140 F	115 F
SSU-45C	42"	23-1/4"	40	40 Sq.Ft.	20	6.8	314 Gal	414 Gal	351 Gal	477 Gal
SSU-60C	52-1/2"	23-1/4"	60	40 Sq.Ft.	22	9.2	354 Gal	467 Gal	396 Gal	539 Gal
SSU-80C	72"	23-1/4"	80	68 Sq.Ft.	24	10	490 Gal	647 Gal	548 Gal	745 Gal
SSU-119C	73-1/2"	27"	119	69 Sq.Ft.	28	12.7	637 Gal	841 Gal	713 Gal	970 Gal

* DOE test method based on 90 F. Termperature rise, 95 F / 145 F with boiler water at 180° F

Tank Size	Floor to				Pressure		Shipping Weight	BTU / Size	
	Boiler		Domestic		Test	Working		180 F Boiler Water	200 F Boiler Water
	Supply	Return	Out	Connections					
SSU-45C	9"	4-1/2"	46"	3/4" MPT	300 PSI	150 PSI	99 Lbs.	215,000	246,000
SSU-60C	9"	4-1/2"	46"	1"MPT	300 PSI	150 PSI	115 Lbs.	245,000	270,000
SSU-80C	29"	6	69-1/4"	1-1/2" MPT	300 PSI	150 PSI	141 Lbs.	331,000	374,000
SSU-119C	30-1/4"	7-1/4"	66"	1-1/2" MPT	300 PSI	150 PSI	210 Lbs.	425,000	490,000

GLASS LINED INDIRECT WATER HEATER

CONTENDER

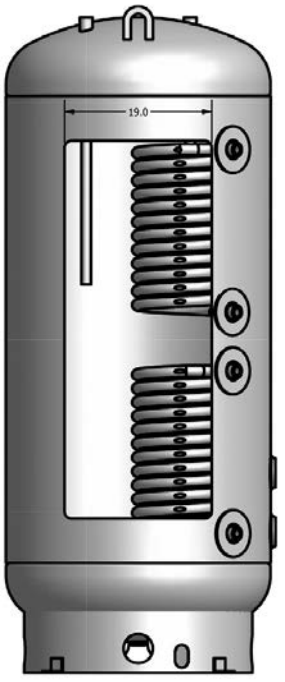


SPECIFICATIONS AND PERFORMANCE RATINGS

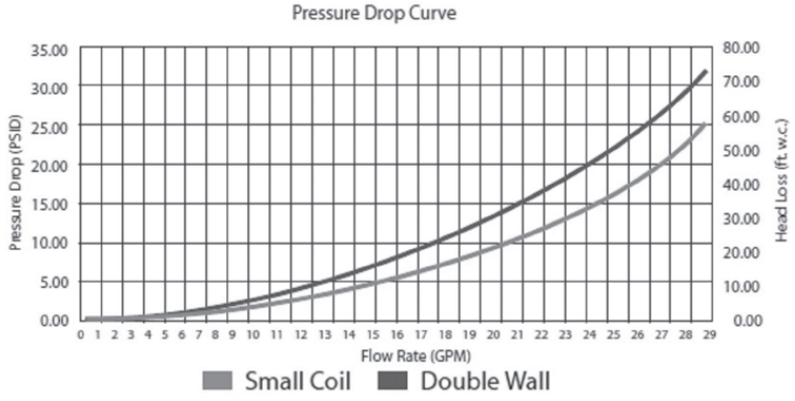
Contender Model	140°F 90°F ΔT	115°F 65°F ΔT	Height / Diameter	Gallon Capacity	Test Pressure	Working Pressure	Floor to Boiler Supply	Floor to Boiler Return	Floor to Drain Valve	Domestic Connections	Shipping Weight
SSC-35	112 GPH	152 GPH	36.25″/23″	35	300 PSI	150 PSI	8″	18″	8 1/2″	3/4″ NPT Male	141 LBS
SSC-50	190 GPH	258 GPH	46.5"/23"	50	300 PSI	150 PSI	7 1/2″	25 1/2″	8 1/4″	3/4″ NPT Male	172 LBS
SSC-80	198 GPH	270 GPH	71.25"/23"	80	300 PSI	150 PSI	7 3/4″	25 3/4″	8 1/2″	1 1/2″ NPT Male	232 LBS
SSC-119	268 GPH	364 GPH	67"/28"	119	300 PSI	150 PSI	10 1/2″	21 3/4″	10 3/4″	1 1/2″ NPT Male	300 LBS

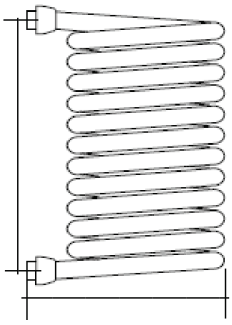
NOTE: Above chart is based on boiler size conforming to the minimum BTU/H required to achieve first hour ratings. The mass of the boiler will affect recovery time. More boiler mass equals longer recovery time. TANK RECOVERY FROM COLD START WILL BE BETWEEN 12–15 MINUTES WHEN SIZED WITH CORRECT FLOW RATE, BOILER SIZE AND PRESSURE DROP RATINGS FROM INSTALLATION INSTRUCTIONS.

GLASS LINED - LARGE VOLUME INDIRECT WATER HEATERS



- Multiple coils available per tank
  Coils sizes are 7" diameter, 21" length
- Glass lined for high temperatures
- Topcoat insulation offers a R-16 insulation value
- Available with insulation and steel jacket
- Vertical and horizontal
- Tank sizes up to 1,000 gallons
- Electric or boiler backup
  Electric backup requires additional flanged fittings
- 5 year warranty
- Lifting lugs standard
- ASME Rated





Part #	Nominal Gal. Cap.	Gal. Cap.	Dia.	Vert. Hgt.	Horiz. Hgt.	E	H	L	D	A	B	C	Weight at 125 #
916-035	193	175	30"	67"	39"	4"	17.5"	63"	18"	2.5"	1"	3"	303
916-036	229	210	30"	79"	39"	4"	17.5"	75"	24"	2.5"	1"	3"	347
916-037	260	240	30"	89"	39"	4"	17.5"	85"	29"	2.5"	1"	3"	383
916-041	344	310	36"	82"	45"	4"	19"	78"	24"	2.5"	1"	3"	527
916-042	375	340	36"	89"	45"	4"	19"	85"	27.5"	2.5"	1"	3"	569
916-043	397	360	36"	94"	45"	4"	19"	90"	30"	2.5"	1"	3"	599
916-048	504	453	42"	88"	51"	4"	20.5"	84"	25.5"	3"	1"	3"	716
916-049	558	505	42"	97"	51"	4"	20.5"	93"	30"	3"	1"	3"	848
916-050	630	575	42"	109"	51"	4"	20.5"	105"	36"	3"	1"	3"	934
916-054	572	500	48"	77"	57"	4"	22"	73"	18.5"	3"	1"	3"	1025
916-056	752	675	48"	100"	57"	4"	22"	96"	30"	3"	1"	3"	1173
916-057	846	765	48"	112"	57"	4"	22"	108"	36"	3"	1"	3"	1301
916-059	1128	1040	48"	145"	57"	4"	22"	141"	52.5"	3"	1"	3"	1652

SUPERstor

STAINLESS STEEL STORAGE TANKS 60 – 119 GALLON

- Open Loop Storage - No Coils
- 316L Stainless Steel
- Super Insulated Less Than 1/20 Heat Loss Per Hour
- Plastic Jacket
- Lightweight
- Standard Clip-on Aquastat on 30, 40, and 60 gallon units Immersion aquastat well on 80 & 119 gallon models aquastat not included
- Long Life Expectancy
- 10 Year Warranty

Model	Dimensions Ht	Dia.	Floor TO Drain	Floor TO Inlet	Floor TO Outlet	Fittings S/R	Work Press.	wgt #
SS-60CB	52-1/2"	23-1/4"	5"	15"	46"	1"	150 P.S.I	90
SS-80CB	72"	24"	3"	13"	65"	1-1/2"	150 P.S.I.	129
SS-119CB	73"	27"	7"	17"	65"	1-1/2"	150 P.S.I.	178

HTP

SUPERSTOR GL

GLASS LINED STORAGE TANK

Available in 50-, 80-, 119-, and 175-Gallon Models

The most efficient way to store hot water for residential and commercial applications.
More hot water and increased storage capacity. Installed individually or in multiple applications, The SuperStor Coil Booster Glass Lined Storage Tank can provide 80% draw capability without an appreciable temperature decrease in single temperature applications.

Construction Features

- **Long life tank design**
  Unique steel formulation with high-temperature porcelain enamel to maximize corrosion resistance resulting in a superior tank design. Heavy duty magnesium anode rod(s) are installed for longer tank life.
- **Efficient design**
  Rigid polyurethane foam insulation provides superior insulating qualities that allow less than 1 degree F per hour heat loss (24 degreess F in 24 hrs.) resulting in reduced operating costs. The patented process of injecting foam into the insulating cavity adds additional durability and toughness to the tank.
- **Tank Openings**
  Circulating line connections and hot outlets are 3/4" NPT on the GL-50, 2" NPT on the GL-80 and GL-119 and 2-1/2" NPT on the GL-175. Other openings are provided for relief valve and temperature control. The GL-175 is equipped with a hand-hole cleanout.

Certifications and Ratings

- **Optional ASME Construction**
  ASME construction is available on storage models GL-80 ASME/GL-119 ASME/GL-175 ASME. Certified to ASME boiler and pressure vessel code standards.

Limited Warranty

- This product features a five-year limited warranty against tank leaks. See warranty brochure for complete details.

Dimensional Information

Plastic Jacketed (Non-ASME)

Model Number	Units	A	B	C	D	E	Water Connections		Tank Capacity		Maximum Working Pressure	Approximate Shipping Weight
							Hot Outlet	Front Side	Gallons	Liters		
GL-50 (non-ASME)	inches	52"	19-1/4"	14"	7"	45"	3/4" NPT-M	3/4" NPT-M	50	189	150 PSI	120 lbs.
	mm	1320	489	355	177	1143	19	19			1034 kPa	54 kgs
GL-80 (non-ASME)	inches	59"	23-1/4"	13"	7"	51-1/4"	2" NPT-M	2" NPT-M	80	303	150 PSI	165 lbs.
	mm	1498	590	330	177	1302	50	50			1034 kPa	75 kgs
GL-119 (non-ASME)	inches	64"	27"	13"	4-1/16"	55"	2" NPT-M	2" NPT-M	115	435	150 PSI	250 lbs.
	mm	1625	685	330	177	1397	51	51			1034 kPa	113 kgs

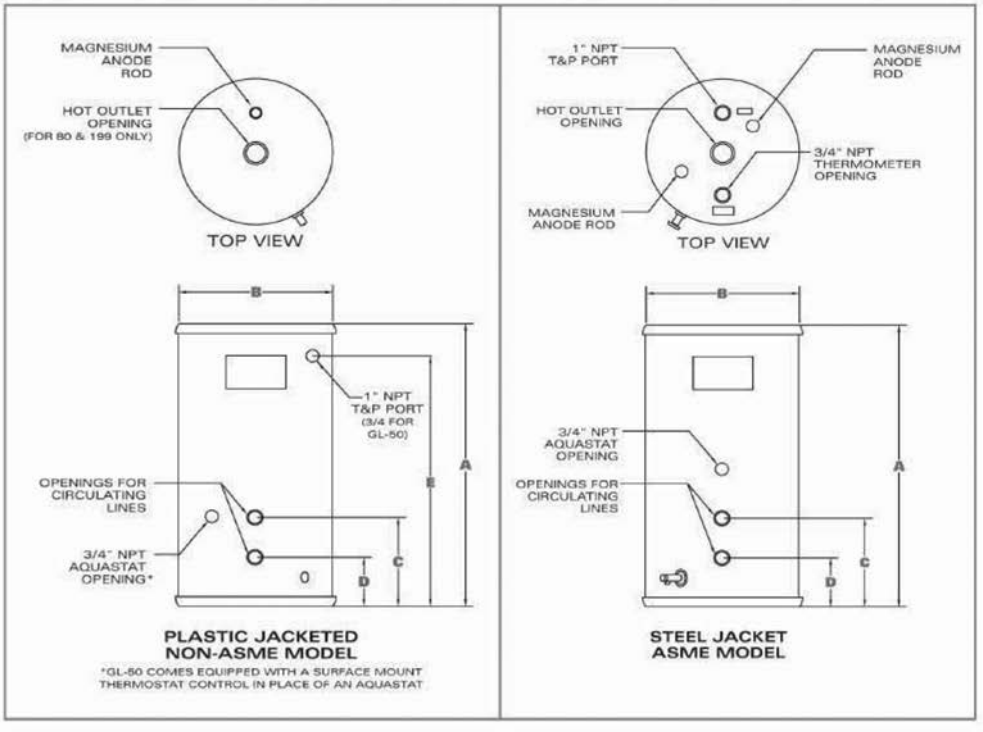
Metal Jacketed (ASME)

Model Number	Units	A	B	C	D	Water Connections		Tank Capacity		Maximum Working Pressure	Approximate Shipping Weight
						Hot Outlet	Front Side	Gallons	Liters		
GL-80 ASME	inches	58-5/16"	24-7/16"	13-3/16	6-3/16	2" NPT-M	2" NPT-M	80	303	125 PSI	260 lbs.
	mm	1481	621	335	157	51	51			862 kPa	118 kgs
GL-119 ASME	inches	59-1/4"	28-1/4"	11-1/16"	4-1/16"	2" NPT-M	2" NPT-M	115	435	160 PSI	340 lbs.
	mm	1505	718	281	103	51	51			1103 kPa	154 kgs
GL-175 ASME*	inches	67-1/4"	32-1/4"	12-9/16"	5-9/16"	2-1/2" NPT-M	2-1/2" NPT-M	175	662	150 PSI	600 lbs.
	mm	1708	819	319	141	64	64			1034 kPa	272 kgs

*Also available in non-ASME model

Specifications

Tank(s) interior shall be coated with a high temperature porcelain enamel and furnished with two magnesium anode rods rigidly supported for the metal jacketed and one magnesium anode for the plastic jacketed. Storage Tank(s) shall exceed the efficiency requirement of ASHRAE Standard 90.1b-2001. Tank(s) shall have a working pressure rating of 150 psi, and shall be completely assembled. Tank(s) shall be insulated with rigid polyurethane foam insulation. Storage Tank(s) shall be covered by a five year limited warranty against tank leaks.



ASME Constructions

Metal Jacketed Storage Tank(s) shall be constructed in accordance with the requirements of the ASME Boiler Pressure Vessel Code, Section IV Part HLW.

GLASS LINED HOT WATER STORAGE TANKS
JACKETED & INSULATED TANKS

- Glass Lined Steel Tank – Glass lining is applied to the interior surface of the steel providing a tough wear resistant lining which minimizes the effects of high temperature hot water.
- Designed for 180° F.
- Sturdy Steel Jacket – Heavy gauge steel jacket.
- 2" High Density Foam Insulation – Minimizes heat loss with an R value of 12.5.
- Magnesium Anode Rod – for protection and longer service life.
- Two ¾" Aquastat NPT Fittings – Located in the lower and upper part of the tank.
- All Tanks are constructed and Certified – In accordance with ASME IV, Part HLW for 125 PSI (862 kPa).
- Five Year Limited Warranty on Steel Tank – Provide warranty protection against tank failure resulting from defects in materials and workmanship.
- Ten Year Limited Warranty on Steel Tank (with double glass lining) Provide superior warranty protection against tank failure. Double glass lining is not an inventory item, built upon request.

GLASS LINED LARGE VOLUME STORAGE TANKS

Vertical Storage Tanks

Meet or exceed ASHRAE 90.1b (current standard)

Part #	Nominal Gal. Cap.	Actual Gal. Cap.	Vert. Height	Horiz Height	"L"	"D"	Base Clearance	"H"	Dia.	Tapping A	Tapping B	Tapping C	Weight @125#
916-035	193	175	71"	41"	67"	18"	2"	19.5'	34"	2.5"	1"	3"	438
916-036	229	210	83	41	79	24	2	20	34	2.5	1	3	493
916-037	260	240	93	41	89	29	2	20	34	2.5	1	3	539
916-038	303	280	107	41	103	36	2	20	34	2.5	1	3	603
916-039	340	320	119	41	115	42	2	20	34	2.5	1	3	658
916-040	318	285	80"	47"	76"	21"	2"	21"	40"	2.5"	1"	3"	667
916-041	344	310	86	47	82	24	2	21	40	2.5	1	3	710
916-042	375	340	93	47	89	28	2	21	40	2.5	1	3	760
916-043	397	360	98	47	94	30	2	21	40	2.5	1	3	796
916-044	449	415	110	47	106	36	2	21	40	2.5	1	3	881
916-045	502	465	122	47	118	42	2	21	40	2.5	1	3	967
916-046	555	515	134	47	130	48	2	21	40	2.5	1	3	1053
916-047	486	435	89"	53"	85"	24"	2"	22.5'	46"	3"	1"	3"	917
916-048	504	453	92	53	88	26	2	23	46	3	1	3	942
916-049	558	505	101	53	97	30	2	23	46	3	1	3	1017
916-050	630	575	113	53	109	36	2	23	46	3	1	3	1117
916-051	702	645	125	53	121	42	2	23	46	3	1	3	1217
916-052	774	720	137	53	133	48	2	23	46	3	1	3	1317
916-053	846	790	147	53	143	53	2	23	46	3	1	3	1400
916-054	572	500	81"	59"	77"	18.5"	2"	24"	52"	3"	1"	3"	1176
916-055	658	580	92	59	88	24	2	24	52	3	1	3	1310
916-056	752	675	104	59	100	30	2	24	52	3	1	3	1456
916-057	846	765	116	59	112	36	2	24	52	3	1	3	1602
916-058	940	840	128	59	124	42	2	24	52	3	1	3	1748
916-059	1128	1040	149	59	145	53	2	24	52	3	1	3	2003

W-H-196 Test = 7.0 - 8.0 mg/in2

The W-H-196 Test is required for water heaters sold to the U.S. Government.
The test consists of exposing the enamel to a boiling (212 F) 4/10% solution of Sodium Bicarbonate for eight (8), eighteen (18) hour cycles. Maximum weight loss after eight cycles is not to exceed 15 mg/in2 .

PEI T-21 Spot Acid Test = Class A

PEI T-21 Spot Acid Test is used to determine enamel resistance to acids. The test area is examined for visible effects on the enamel and is graded from Class AA (no sign of etching) to Class D (etched surface).

Impact resistance = Class 4 to 5

The Impact Resistance Test is used to determine the adhesive qualities of enamel to the substrate. The enamel is graded from Class 1 (worst) to Class 5 (best), fractured glass adhering solidly to the impact area. Class 3 is acceptable.

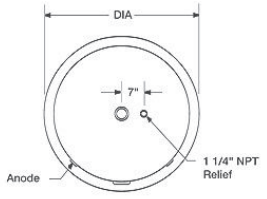
Hi-Pot Test Less than 20

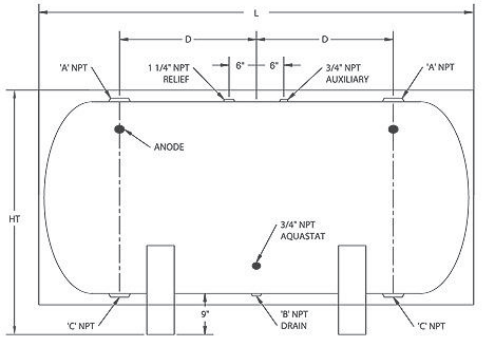
The HYPO Test is a measurement of the continuity of the glass coating (Spark Test). Fifty (50) breakthroughs or fewer are the usual specification for HWT's.

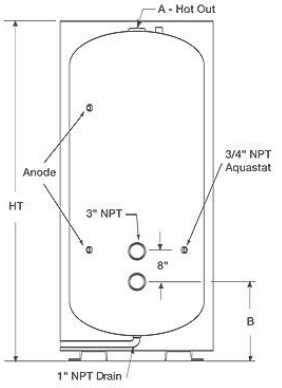
Factory Options Include:

Epoxy Lining . . . . . EX
Double glass coating . . . . . DG **
Manway 12" x 16" . . . . . MW
Hand hole 4" x 6" . . . . . .
Lifting Lugs LL
Stainless Steel construction . . . . . SS
150 psi 5
Add suffix on model number to indicate options

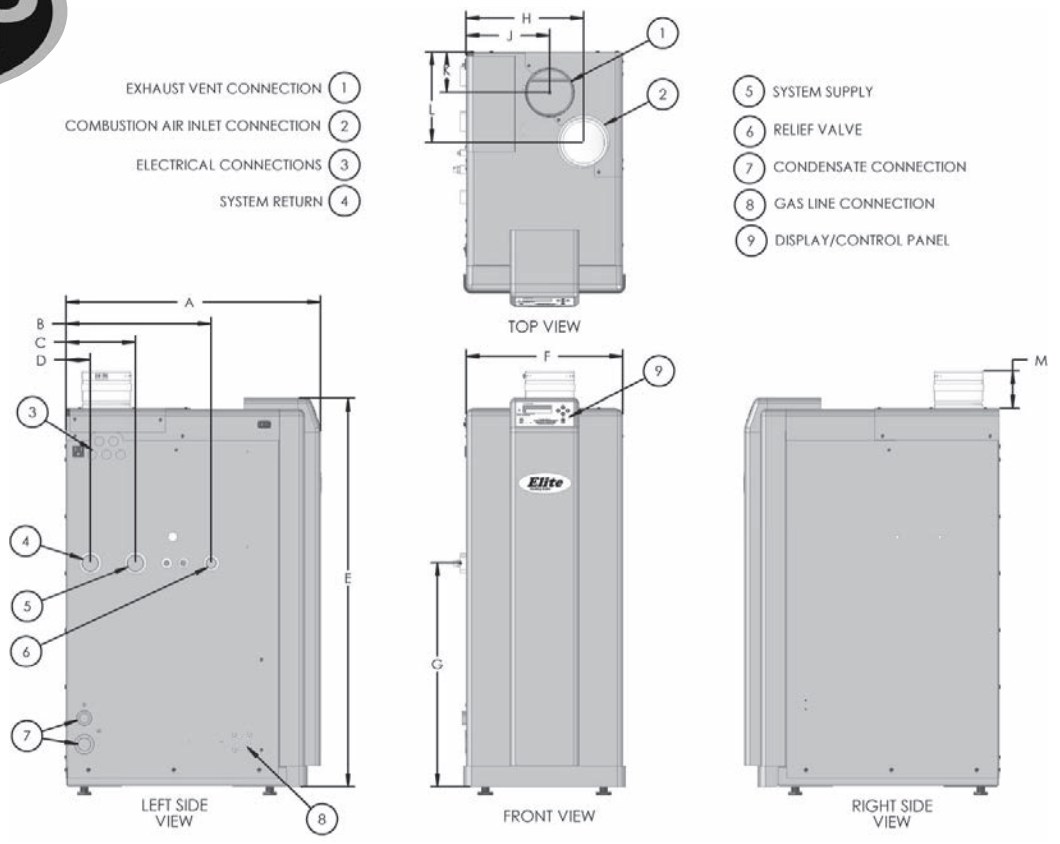
**Not Available below 240 gallons







ELITE VOLUME WATER HEATERS



Model	A	B	C	D	E	F	G	H	J	K	L	M	BTU / Input Range	Supply / Return	Exhaust / Air Inlet	Gas Connection	Boxed Weight	Thermal Efficiency	Optional Pump (Flange)
EL-80VWH	17.00	7.50	5.50	2.50	27.25	14.50	20.00	11.75	7.38	4.25	8.50	2.18	16,000 - 80,000	1"	3 "	3/4"	104 lbs	94.4	7450P-242*
EL-110VWH	17.00	7.50	5.50	2.50	27.25	14.50	20.00	11.75	7.38	4.25	8.50	2.18	22,000 - 110,000	1"	3 "	3/4"	109 lbs	94.0	7450P-242*
EL-150VWH	19.50	10.50	8.25	2.50	27.25	14.50	20.00	11.75	7.38	4.25	8.50	2.18	30,000 - 150,000	1"	3 "	3/4"	122 lbs	94.0	7450P-242*
EL-220VWH	26.50	17.50	15.25	6.00	27.25	14.50	20.00	11.75	7.38	4.25	8.50	2.18	44,000 - 220,000	1"	3 "	1"	164 lbs	98.0	7450P-242*
EL-299VWH	23.75	13.50	6.38	2.25	36.50	14.50	21.00	11.00	7.88	4.25	8.50	3.00	60,000 - 299,000	1-1/4"	4 "	1"	200 lbs	96.0	7250P-242*
EL-399VWH	30.75	20.50	9.75	2.75	36.50	14.50	21.00	11.00	7.38	4.25	8.50	3.00	80,000 - 399,000	1-1/2"	4 "	1"	240 lbs	95.4	7250P-242*

*All Elite VWH pumps are sold separately

• Add N Suffix for Natural Gas or Add LP for Liquid Propane

Total System Control

- 2 line, 40 Character Display
- Dual Level Password Security
- Built in Cascading Sequencer for up to 8 Water Heaters
- Building Management System Integration w/ 0-10 VDC Input
- Low Water Flow Safety Control & Indication
- Inlet & Outlet Temperature Sensors & Readout
- Flue Temperature Sensor
- Water Heater Pump Control
- Pump Delay w/ Freeze Protection
- Time Clock
- Service Reminder
- **High Voltage Terminal Strip**
  - 120 VAC/ 60 Hertz/ 1 Phase Power Supply
  - Pump Control Contacts
- **Low Voltage Terminal Strip**
  - Flow Switch
  - Alarm on Any Failure
  - Tank Sensor
  - Cascade Communication Via Cat5 Cable

Standard Features

- Up to 98% AFUE
- Modulating Burner
  - 5 to 1 Turndown Ratio
- **Venting Options**
  - Direct Vent
  - Vertical w/ Sidewall Air
  - 200 Feet
  - Concentric
- Intake PVC Tee w/ Screens
- Exhaust PVC Coupling w/ Screens

Included In The Box

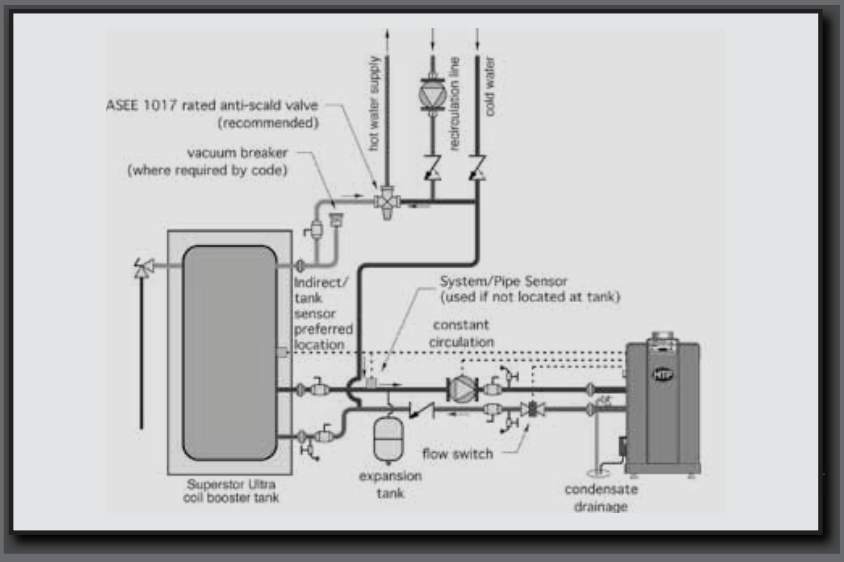
- Pressure and Temperature Gauge
- Indirect Sensor
- Outdoor Sensor
- Pressure Relief Valve
- Outlet Combination Fitting
- Flow Switch and Paddles
- Installation Manual
- Warranty
- Indirect Tank Sensor

Optional Equipment

- Wall Mount Bracket
- System Sensor
- 3", 4", 6" Stainless Steel Outside Termination Vent Kit
- 3" PVC Concentric Vent Kit
- U.L. 353 Compliant LWCO Interface Kit w/ Manual Reset
- Alarm System
- PC Connection Kit
- Condensate Neutralizer
- SS Circulators with SS flange Set

Installation

Elite Piping Concepts Water Heating



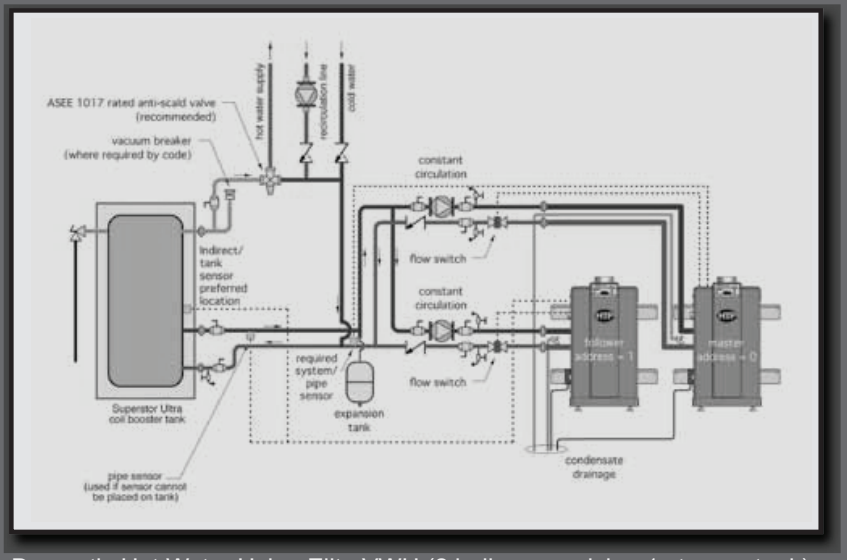
Domestic Hot Water Using Elite VWH (1 boiler supplying 1 storage tank)

Floor or Wall Mounted
- *Wall Mount Kit Optional*

0 Clearance from Combustibles
- *At Back and Right Side of Unit*

Combined vent length of 200 feet

PVC- CPVC- Stainless Steel Venting



Domestic Hot Water Using Elite VWH (2 boilers supplying 1 storage tank)

This unit gives you the ability to cascade up to 8 boilers. The benefits of installing multiple units provides greater turndown, an abundant supply of hot water and additional cost savings.

Elite VWH First Hour Ratings With Storage Tank

Elite 80 VWH						
Inlet Temp.	Outlet Temp.	Recovery Gallons Per Hour	F.H.R. w/ 60 Gal. Tank	F.H.R. w/ 80 Gal. Tank	F.H.R. w/ 119 Gal. Tank	F.H.R. w/ 175 Gal. Tank
40°	80°	227	272	287	316	352
40°	90°	181	226	241	270	306
40°	100°	151	196	211	240	276
40°	110°	129	174	189	218	254
40°	120°	113	158	173	202	238
40°	130°	101	146	161	190	226
40°	140°	91	136	151	180	216
40°	150°	82	127	142	171	207
40°	160°	76	121	136	165	201
40°	170°	70	115	130	159	195
40°	180°	65	110	125	154	190

Elite 110 VWH						
Inlet Temp.	Outlet Temp.	Recovery Gallons Per Hour	F.H.R. w/ 60 Gal. Tank	F.H.R. w/ 80 Gal. Tank	F.H.R. w/ 119 Gal. Tank	F.H.R. w/ 175 Gal. Tank
40°	80°	310	355	370	399	435
40°	90°	248	293	308	337	373
40°	100°	207	252	267	296	332
40°	110°	177	222	237	266	302
40°	120°	155	200	215	244	280
40°	130°	138	183	198	227	263
40°	140°	124	169	184	213	249
40°	150°	113	158	173	202	238
40°	160°	103	148	163	192	228
40°	170°	95	140	155	184	220
40°	180°	89	134	149	178	214

Elite 150 VWH						
Inlet Temp.	Outlet Temp.	Recovery Gallons Per Hour	F.H.R. w/ 80 Gal. Tank	F.H.R. w/ 119 Gal. Tank	F.H.R. w/ 175 Gal. Tank	
40°	80°	423	483	512	548	
40°	90°	338	398	427	463	
40°	100°	282	342	371	407	
40°	110°	242	302	331	367	
40°	120°	212	272	301	337	
40°	130°	188	248	277	313	
40°	140°	169	229	258	294	
40°	150°	154	214	243	279	
40°	160°	141	201	230	266	
40°	170°	130	190	219	255	
40°	180°	121	181	210	246	

Elite 220 VWH					
Inlet Temp.	Outlet Temp.	Recovery Gallons Per Hour	F.H.R w/ 80 Gal. Tank	F.H.R w/ 119 Gal. Tank	F.H.R w/ 175 Gal. Tank
40°	80°	647	707	736	772
40°	90°	517	577	606	642
40°	100°	431	491	520	556
40°	110°	370	430	459	495
40°	120°	323	383	412	448
40°	130°	287	347	376	412
40°	140°	259	319	348	384
40°	150°	235	295	324	360
40°	160°	216	276	305	341
40°	170°	199	259	288	324
40°	180°	185	245	274	310

Elite 299 VWH					
Inlet Temp.	Outlet Temp.	Recovery Gallons Per Hour	F.H.R w/ 80 Gal. Tank	F.H.R w/ 119 Gal. Tank	F.H.R w/ 175 Gal. Tank
40°	80°	861	921	950	986
40°	90°	689	749	778	814
40°	100°	574	634	663	699
40°	110°	492	552	581	617
40°	120°	431	491	520	556
40°	130°	383	443	472	508
40°	140°	344	404	433	469
40°	150°	313	373	402	438
40°	160°	287	347	376	412
40°	170°	265	325	354	390
40°	180°	246	306	335	371

Elite 399 VWH					
Inlet Temp.	Outlet Temp.	Recovery Gallons Per Hour	F.H.R. w/ 80 Gal. Tank	F.H.R. w/ 119 Gal. Tank	F.H.R w/ 175 Gal. Tank
40°	80°	1142	1202	1,231	1,267
40°	90°	914	974	1,003	1,039
40°	100°	761	821	850	886
40°	110°	653	713	742	778
40°	120°	571	631	660	696
40°	130°	508	568	597	633
40°	140°	457	517	546	582
40°	150°	415	475	504	540
40°	160°	381	441	470	506
40°	170°	351	411	440	476
40°	180°	326	386	415	451

Elite VWH Water Flow At Various Temperature Rise

		20˚Δt	30˚Δt	40˚Δt	50˚Δt	60˚Δt	70˚Δt	80˚Δt	90˚Δt	100˚Δt	110˚Δt	120˚Δt	130˚Δt	140˚Δt
Model	AFUE	RECOVERY RATE IN GAL. PER HOUR BASED ON TEMP. RISE BETWEEN INLET TEMP. AND OUTLET TEMP.												
Elite 80VWH	0.944	453	302	227	181	151	129	113	101	91	82	76	70	65
Elite 110VWH	0.94	620	414	310	248	207	177	155	138	124	113	103	95	89
Elite 150VWH	0.94	846	564	423	338	282	242	212	188	169	154	141	130	121
Elite 220VWH	0.98	1294	862	647	517	431	370	323	287	259	235	216	199	185
Elite 299VWH	0.96	1722	1148	861	689	574	492	431	383	344	313	287	265	246
Elite 399VWH	0.954	2284	1523	1142	914	761	653	571	508	457	415	381	351	326

HTP

Ultra High Efficiency
PHOENIX
GAS FIRED WATER HEATER

96% Commercial Gas Fired Water Heaters

The Best Value In High Efficiency Water Heating!

- Recovery efficiency of 96% dramatically reduces operating costs
- 316L stainless steel tank
- Corrosion resistant, high efficiency 90/10 Cupronickel stainless combustion chamber
- Very Quiet: 45dB at 5'
- Direct venting PVC pipe - 85' equivalent length
- Load matching 3:1 modulation
- Zero clearance to any combustible surface; can be installed in almost any closet
- No burning pilot light. Spark ignition
- Low Nox/SCAQMD listed
- Plastic jacket with 2" environmentally-safe, CFC-free, polyurethane, water-blown foam insulation
- Less that 1/2 degree F per hour heat loss (R17)
- Electronic low water cutoff
- Self-diagnostic electronic control
- Temperature range from 70 degrees F to 160 degrees F
- Front access cover to equipment is easily accessible
- Commercial: 1 yr. parts/3 yr. tank

BTU RANGE
100 MBH
130 MBH
199 MBH

TANK SIZE
55 Gallon
80 Gallon
119 Gallon


Apartments


Laundromats


Hotels


Food Service

SUPERIOR STAINLESS STEEL CONSTRUCTION

Why Choose A Stainless Steel Tank?

HTP has produced more stainless steel tanks in North America since 1976, than any other company in the industry.



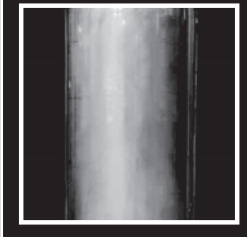
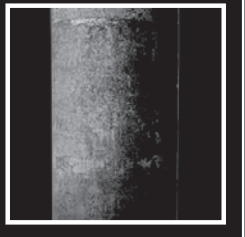
Our Components are Made of Durable Stainless Steel Materials:

Dip Tubes
Port Outlets
Heat Exchanger
Tank Construction

Made with
High Grade
316L and 800H
Stainless Steel
Materials

The Advantages

Stainless Steel VS. Glass-Lined

HTP's
119 GAL. Tank
405 LBS.

Top Competitor's
119 GAL. Tank
555 LBS.

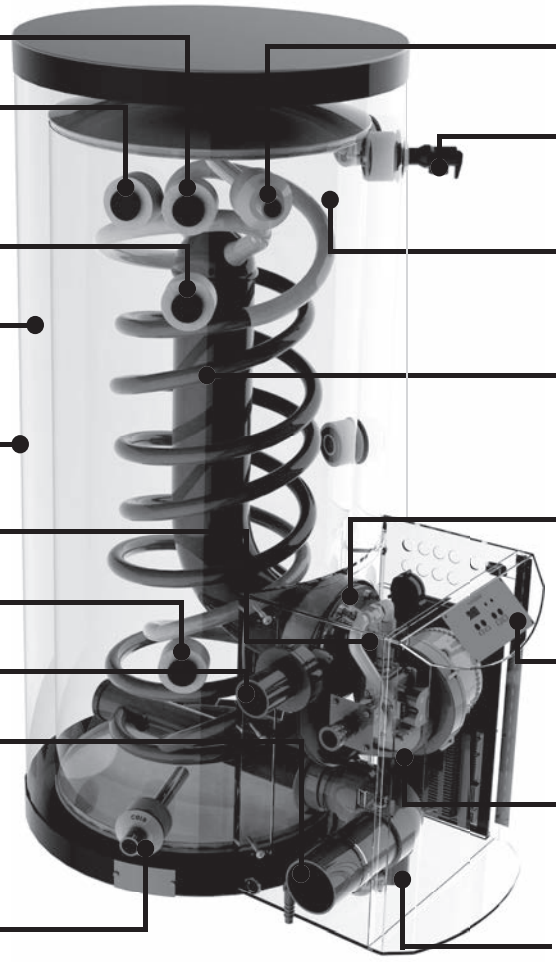
Eliminates Scale Build-up
Prolongs Tank Life
No Need for Anode Rods
Light Weight Construction

NO Anodes Needed!

All coated tanks require anodes to delay the inevitable corrosion and tank failure. The average commercial water heater lasts about 6 years. The Commercial Phoenix stainless steel tank will outlast any coated steel tank in the market.

....Because They Are Built To Last!

SPECIFICATION GUIDE



High limit safety sensor

Low water cutoff sensor

Upper hot water temperature sensor

Insulated w/ water blown foam
- 2" thick in the side wall w/ a rating of R14.2
- 3" thick in the top w/ a rating of R21.3

Plastic jacket encloses insulation
- resists dents and corrosion

Direct spark ignition

Lower cold water temperature sensor

Air intake to PVC/ CPVC venting

Exhaust adaptor to PVC/ CPVC venting

Venting Options:
- Direct vent side wall
- Direct vent vertical
- combined vent length of 200ft

Cold water inlet
- stainless steel

Hot water outlet
- stainless steel

Factory installed ASME rated temperature and pressure relief valve

Heater tank constructed of 316L stainless steel

Combustion heat exchanger
-body constructed of 90/10 cupronickel
- top section constructed of 800H stainless steel

Stainless steel burner
- 120 volt motor w/ wave modulation control

Digital LED display system monitoring and temperature adjustment

Components located on front of heater for easy service access, all related hardware is made of stainless steel studs and brass nuts

Condensate trap assembly

PG&E Test Report: Phoenix Water Heater is Top Performer

Performance Study Results

	HTP's Phoenix is #1	The Runner Up
Tested Recovery Efficiency	94.2%	83%
Tested Energy Factor	.833	.722

"The Heat Transfer Products Phoenix modulating condensing water heater outperformed all of the other units, achieving the greatest efficiency at most levels of use."

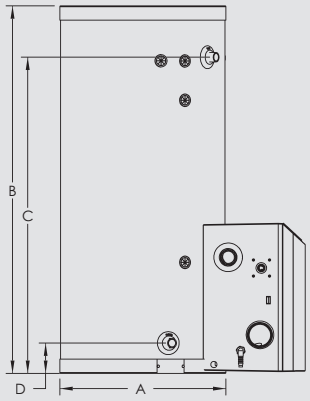
Specify the Best: The brand name water heaters are an easy default selection. Break the habit with the higher value choice.

#1 in Durability: Stainless steel/cupronickel construction lasts far longer than coated steel construction which fails rapidly if acidic condensate is trapped. Load matching modulation leads to far less cycling and longer component life.

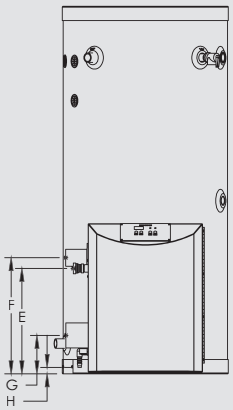
#1 in Reliability: Again, Phoenix load matching modulation rapidly reduces component wear associated with the cycling of standard on/off heaters. The Phoenix gas valve/blower/control module has been successfully used by millions of boilers world wide, and over 70,000 boilers and water heaters manufactured by HTP.

To view the full report, please visit http://www.2hsc.com/pdfs/phoenix/PGEWaterHeaterReport.pdf

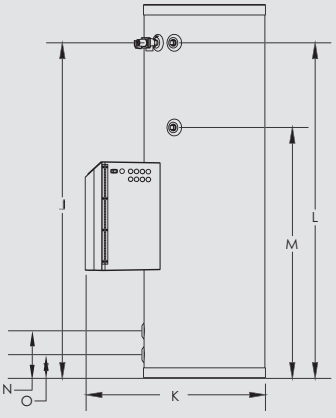
LEFT SIDE



FRONT VIEW



RIGHT SIDE SOLAR



PHOENIX WATER HEATER AND SANITIZER BOOSTER DIMENSIONS													
MODEL	GAL.	A	B	C	D	E	F	G	H	J	K	L	M
PH100-55/ PH130-55 PH160-55/ PH199-55	55	23”	52”	45”	5”	14-3/4”	16-1/4”	5-1/4”	1”	45”	34-1/4”	45”	27-1/2”
PH100-80/ PH130-80 PH160-80/ PH199-80	80	23”	72”	64”	5”	17”	18-1/2”	7-3/4”	3-1/4”	64”	34-1/4”	64”	29-3/4”
PH100-119/ PH130-119 PH160-119/ PH199-119	119	27”	74”	66-1/4”	7-1/2”	18-3/4”	21-1/2”	10-1/2”	5”	66-1/2”	38-1/2”	66-1/2”	31”
PH130-55SA/ PH199-55SA	55	23”	52”	45”	5”	14-3/4”	16-1/4”	5-1/4”	1”	45”	34-1/4”	45”	27-1/2”

PHOENIX WATER HEATER AND SANITIZER BOOSTER SPECIFICATIONS								
MODEL	BTU’s	AIR INTAKE/ EXHAUST VENT SIZE	INLET/ OUTLET SIZE	AUXILIARY CONN.	GAS LINE CONN.	SYSTEM RELIEF PIPE SIZE	SHIPPING WEIGHT	MAX. TEMPERATURE LIMIT
PH100-55	100,000	2”	1” NPT	1”FNPT	3/4”	3/4”	175 LBS	160 F
PH130-55	130,000	2”	1” NPT	1”FNPT	3/4”	3/4”	175 LBS	160 F
PH160-55	160,000	3”	1” NPT	1”FNPT	3/4”	3/4”	175 LBS	160 F
PH199-55	199,000	3”	1” NPT	1”FNPT	3/4”	3/4”	175 LBS	160 F
PH100-80	100,000	2”	1-1/2” NPT	1”FNPT	3/4”	3/4”	235 LBS	160 F
PH130-80	130,000	2”	1-1/2” NPT	1”FNPT	3/4”	3/4”	235 LBS	160 F
PH160-80	160,000	3”	1-1/2” NPT	1”FNPT	3/4”	3/4”	235 LBS	160 F
PH199-80	199,000	3”	1-1/2” NPT	1”FNPT	3/4”	3/4”	235 LBS	160 F
PH100-119	100,000	2”	1-1/2” NPT	1”FNPT	3/4”	3/4”	405 LBS	160 F
PH130-119	130,000	2”	1-1/2” NPT	1”FNPT	3/4”	3/4”	405 LBS	160 F
PH160-119	160,000	3”	1-1/2” NPT	1”FNPT	3/4”	3/4”	405 LBS	160 F
PH199-119	199,000	3”	1-1/2” NPT	1”FNPT	3/4”	3/4”	405 LBS	160 F
PH130-55SA	130,000	2”	1” NPT	1”FNPT	3/4”	3/4”	175 LBS	184 F
PH199-55SA	199,000	3”	1” NPT	1”FNPT	3/4”	3/4”	175 LBS	184 F

PHOENIX SOLAR WATER HEATER SPECIFICATIONS									
SRCC SYSTEM AVAILABLE	MODEL	BTU’s.	AIR INTAKE/ EXHAUST VENT SIZE	INLET/ OUTLET SIZE	AUXILIARY CONN.	GAS LINE CONN.	SYSTEM RELIEF PIPE SIZE	SHIPPING WEIGHT	MAX. TEMPERATURE LIMIT
PH-80S	PH130-80S PH130-119S	130,000	2”	1”NPT	1”	3/4”	3/4”	245 LBS	160 F
PH-119S	PH199-80S PH199-119S	199,000	3”	1”NPT	1”	3/4”	3/4”	415 LBS	160 F

Note: All units are compatible with natural gas or liquid propane, but must be specified upon placing an order.

STAINLESS ELECTRIC WATER HEATERS

Features

Temperature & Pressure Relief Valve

Thermostat and High Limit Controls

Provides adequate temperature control and overheat protection. Adjustable temperature range.

Hot Water Outlet Connection

Provides a natural thermo trap reducing the amount of energy normally lost with a top outlet connection.

Stainless Steel Elements

Stainless Steel incoloy element with brass screw base reduces chances of element burn out and provides longer service life versus conventional elements.

Environmentally Friendly Heavy-Duty Foam

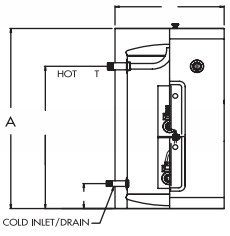
Provides the lowest industry standby loss an electric tank can offer.

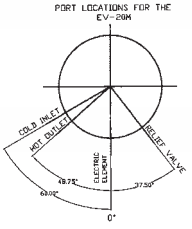
Stainless Steel Tank

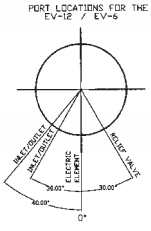
Provides the finest protection against harsh water condition. For a lifetime of durability against leaks.

Cold Water Connection

Directs cold water to the heating element near the bottom of the tank and minimizes mixing of cold water providing long draws of hot water.







Recovery = wattage/2.42 x temp. rise F

Example: $\frac{4500W}{2.42 \times 90}$ = 21 GPH

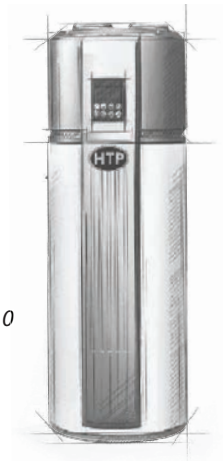
SINGLE PHASE/NON-SIMULTANEOUS WIRING

Description		Features			Dimensions					
Gal. Cap.	Model Number	Wattage	Voltage	Approx. "R" Factor	Tank Height A	Diameter B	Floor to inlet C	Floor to outlet D	Inlet —— Outlet	Approx. Ship Wt. (lbs.)
Point of Use (single element)										
6	EV-6	1500/NA	120/240	R-20	16½"	14¼"	4½"	9¼"	½"/¾"*	19
12	EV-12	1500/4500	120/240	R-20	19"	16¼"	3½"	12¼"	½"/¾"*	26
20	EV-20	1500/4500	120/240	R-20	27"	19¼"	4¾"	22"	¾"	41

The EV-12 & EV-20 may be ordered at 1500 or 4500 Watts

*¾" Inlet/Outlet coming soon for the EV-6 & EV-12

HYBRID HEAT PUMP WATER HEATER



The Most Energy Efficient 50-Gallon Electric Water Heater You Can Buy

Over Twice The Efficiency of Standard Electric Water Heaters

2.26 Energy Factor: EF (energy factor) is the over all efficiency rating of the water heater. The higher the EF the more efficient the model.

Standard Electric WateHeater:0.90 EF Versus
HTP Hybrid Heat Pump WateHeater:2.26 EF
HTP's Hybrid has an EF that's more than 2.5 times better Standard Electric. That's Real Energy savings!
HTP's Hybrid also exceeds energy star performance of 2.0

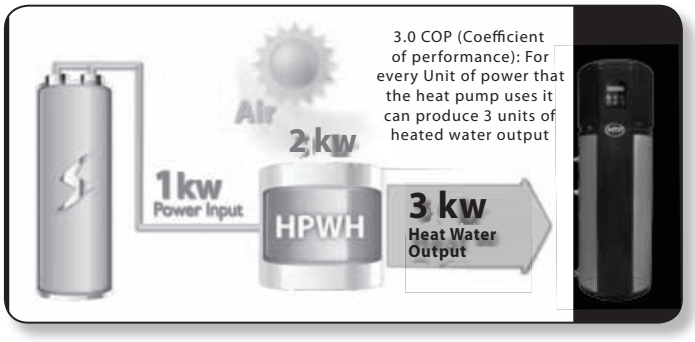
Fast Recovery

60 GPH First Hour Rating

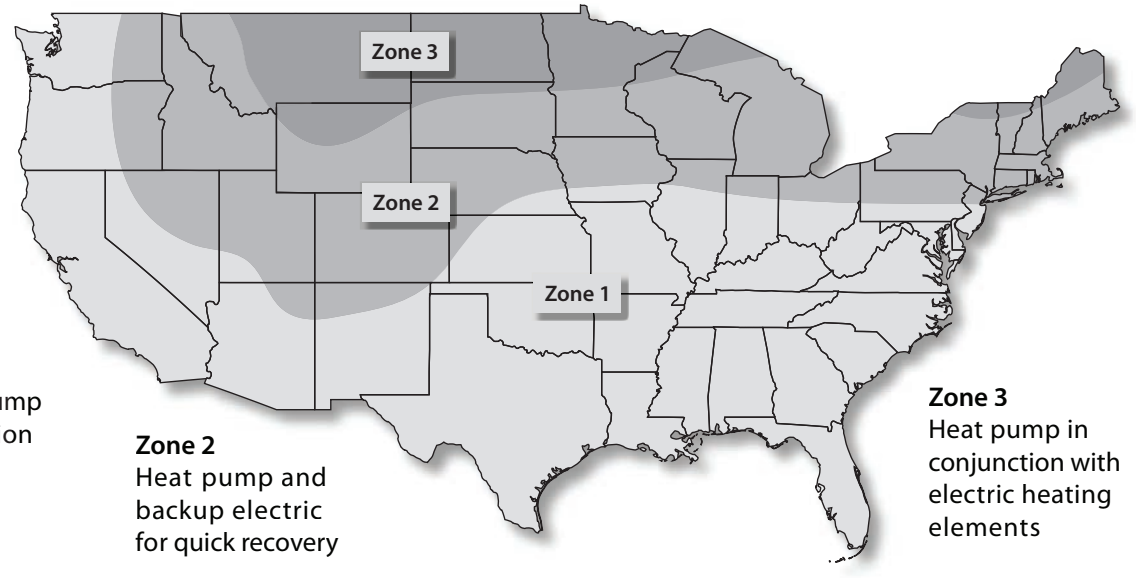
Easy Installation

Eco Friendly - Low NOx & Low CO_2 Emissions

Electric Backup



Save The Most Where Electricity Rates Are Highest And Where The Weather Is The Warmest



Zone 1
Mostly heat pump operation

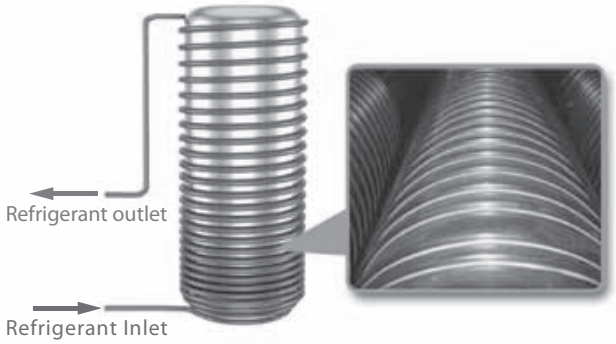
Zone 2
Heat pump and backup electric for quick recovery

Zone 3
Heat pump in conjunction with electric heating elements

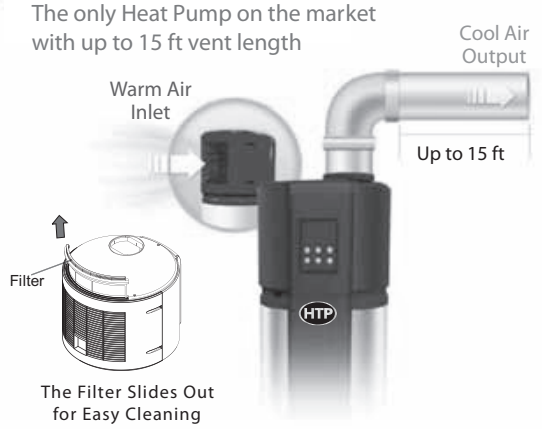
10 Year Warranty

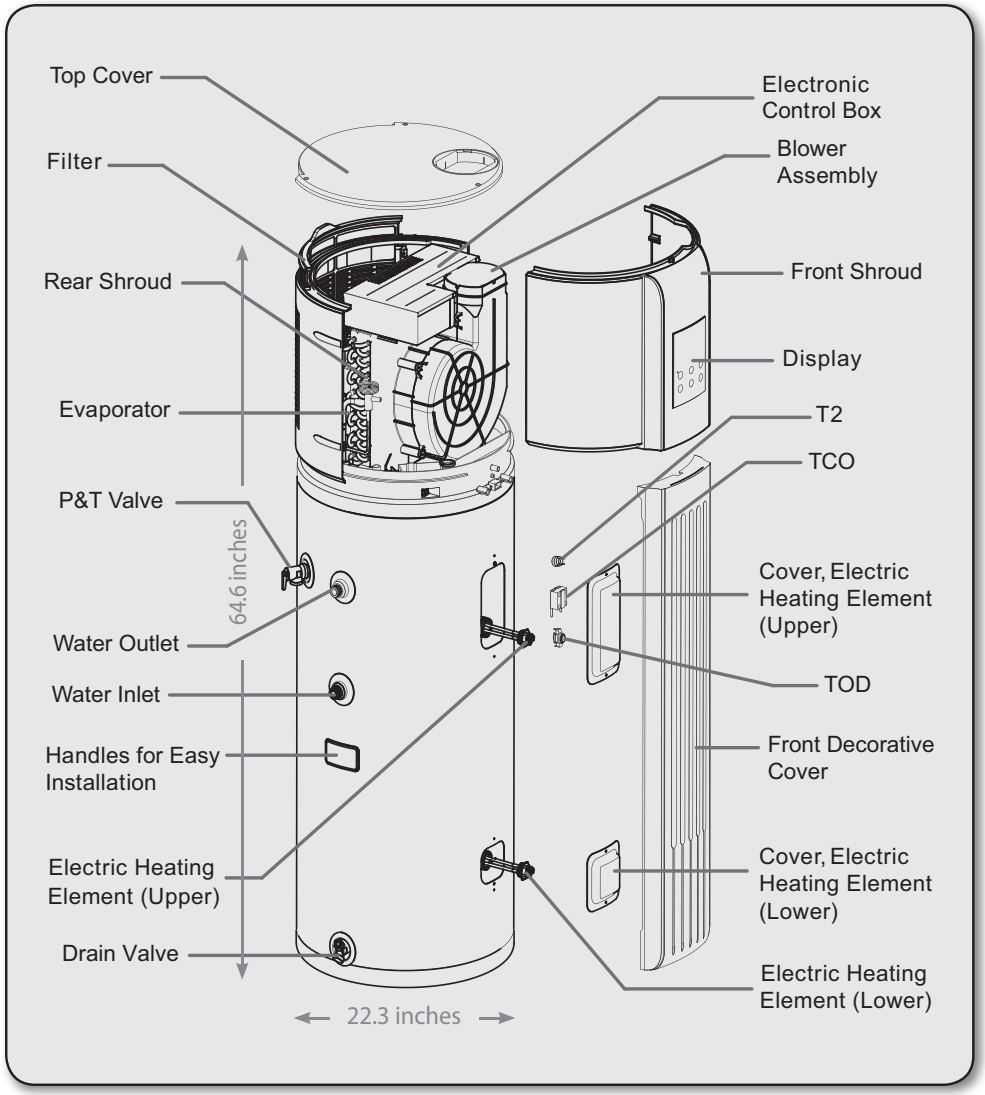
Recycle Conditioned Exhaust Air to Dehumidify or Cool Your Home

Coil is wrapped outside the tank. No contamination potential.



The only Heat Pump on the market with up to 15 ft vent length





Demand Response

HTP's Hybrid Heat Pump Water Heater has the ability to utilize the*Demand Response System* that many utility company's use. This water heater, equipped with a DR module, will automatically recognize which energy cost rate is available and adjust its mode and temperature setting to use less energy when rates are at their highest and then adjust to utilize more energy when rates are at their lowest. *This is a real money saver!*

HTP Heat Pump Water Heater
Model: HRW-50-6
Weight: 200 lbs.
First Hour Rating: 60 Gal.
COP: 3.0
EF Rating: 2.26
Ambient Temp: up to 115°F
Water Temp: 110° to 140°F
Height: 64.6"
Diameter: 22.3"
50 Gallon

ENERGY STAR

Solar Domestic Hot Water

Residential

OG300 Certified

Solar Hot Water Packages

Easy To Ship

Buying a Solar Hot Water Package

We provide packages that include solar collectors, tank and the circulators, controls and other components for a particular application. There are variations for each system, such as the racking system, size of tank and size and number of collectors. The following section will assist in making those decisions. We stand by to answer any questions you may have.

Solar Domestic Hot Water

SOLAR HOT WATER CERTIFICATIONS/TAX CREDITS/REBATES

Certifications: SRCC

The Solar Rating and Certification Corporation (SRCC) was established in 1986 to provide industry consensual performance standards for solar hot water systems to assist consumers in comparing the relative performance of solar products in the marketplace, not unlike GAMA for water heaters or the ARI for air conditioners. The current federal tax credit require the use of SRCC certification as does the California CSI Thermal rebate programs.

OG 100: This is a test of the solar collector performance. This test provides a rated BTU output per day/collector under different conditions. This test is required to receive a federal tax credit.

OG300: This is a test of a particular type of system, such as a drain back or closed loop system, that includes a specific tank size matched with specific solar collectors. The test provides information about the number of BTU/KW provided by the system under different conditions. This test is required for the California CSI Thermal program.

Federal Tax Credits

There is a 30% tax credit for both residential and commercial solar hot water systems based upon the total installed cost of the eligible equipment currently set to expire 12/31/2016.

California Utility Rebates

The California PUC has directed the 4 major utilities to provide cash rebates for natural gas and electric customers for both residential and commercial solar hot water systems. Contractors must participate in program training to qualify. While these rebates are generous, they also require careful study and significant paperwork and inspections. Additional information is available through the utilities and www.csithermal.com

Current Information: For current information on all federal and state efficiency and solar programs, including tax forms, visit www.dsireusa.or

Solar Domestic Hot Water

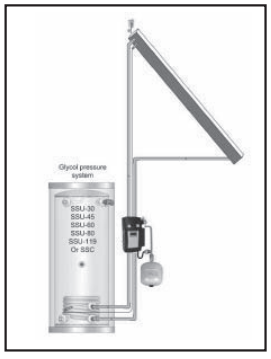
Types of Systems

Active Systems or Passive Systems

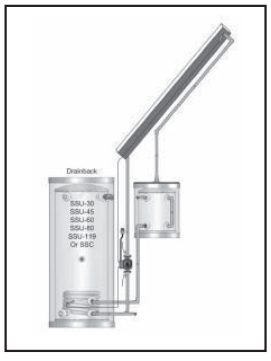
Active solar systems are those that employ a circulator and solar control to actively circulate water through the solar collector(s). Passive Systems are those without a circulator/control that rely on natural thermosyphon of heat from a tank or direct heating of a tank on the roof (batch heating). Solar Spectrum provides active systems because they are typically more efficient, more esthetically attractive, and can store solar energy more efficiently.

Freeze Protection

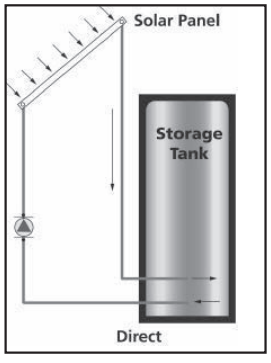
Many thousands of solar systems where lost to freezing collectors and water corrosion in the 1980s'. This is why we recommend only systems that are isolated from potable water and have positive freeze protection.



Closed Loop/ Glycol: Solar Spectrum Preferred Systems
These systems use a heat exchanger to isolate domestic hot water from the solar collectors. They use anti freeze within the solar loop to provide the best positive freeze protection. This type of system also reduces system corrosion for a long system service life.



Drainback
Drainback systems are designed to drain the water in the system from the solar collector(s) so there is no fluid to freeze in the collectors. These are very effective systems when adding additional solar surface area to a system for space heating or other applications. The pipes must be slanted correctly to assure draining the collectors.



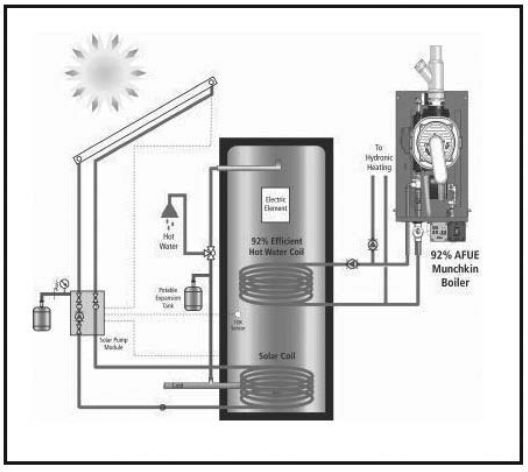
Open Loop
These solar systems circulate potable water directly through the solar collectors. Due to freeze problems and corrosion in the past, Solar Spectrum does not recommend the use of these systems in California/Nevada.

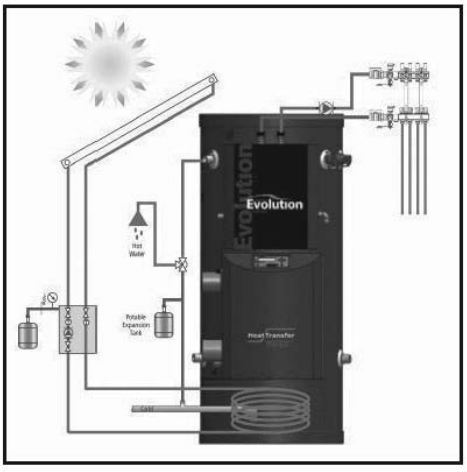
Solar Domestic Hot Water

Single Tank and Two Tank System Design

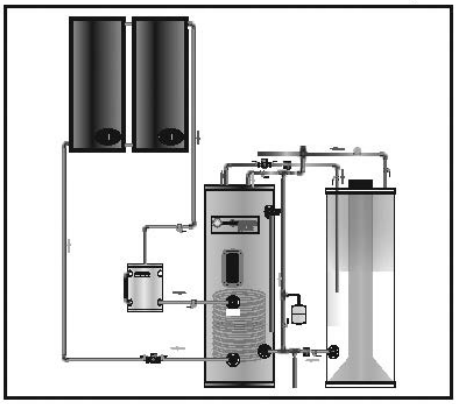
A single tank design, which is very popular in Europe, stores both the solar and conventional hot water in a single tank with special thermal traps. These systems save both equipment costs, space and offer the advantage of incorporating very high efficiency gas fired conventional systems simply and effectively. Single tank systems, with reduced storage for gas fired hot water, will meet their capacity with roughly three bathrooms or about 4,000 sq ft. Consult us for hot water demand sizing. Two tank designs are useful for large homes with very large hot water demands or when a client wants a larger solar space heating participation with a Phoenix Solar system.

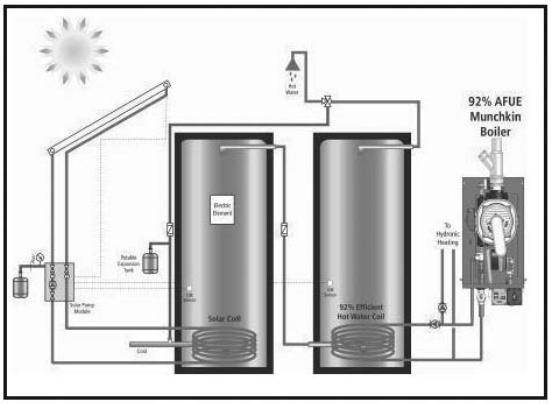
EXAMPLES: Single Tank Systems





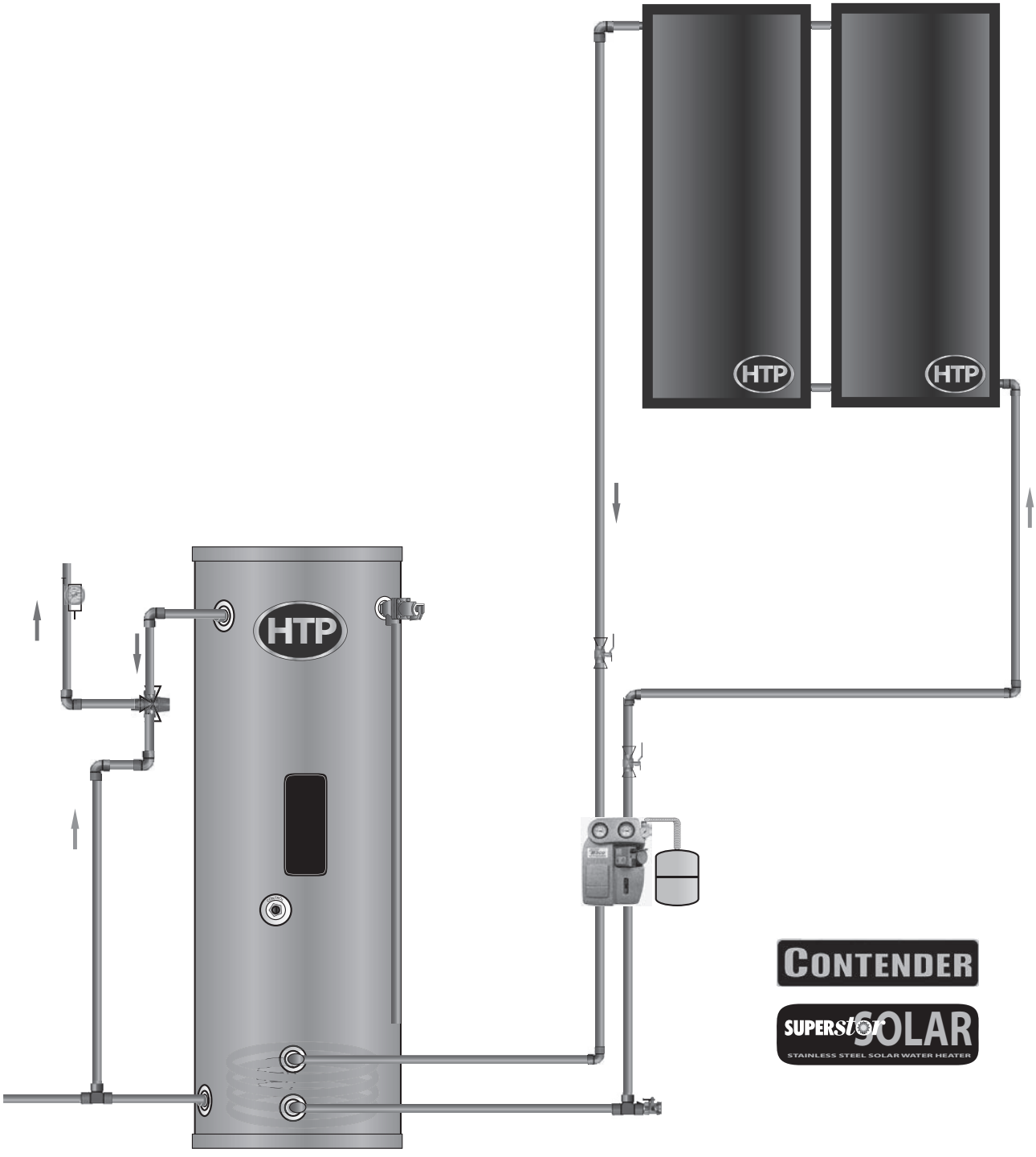
EXAMPLES: Double Tank Systems





Solar Domestic Hot Water

SOLAR HOT WATER CLOSED LOOP INTERNAL HEAT EXCHANGE



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Solar Domestic Hot Water

SOLAR HOT WATER DRAINBACK SYSTEM

Solar Domestic Hot Water

SYSTEM SIZING

Residential Solar Hot Water Sizing

Residential solar hot water systems work within the daily rhythm of heating the water circulating through the collector(s) during the day and storing the energy in a tank for use during the evening and the following morning. The system needs to offer the most economically sized storage tank and the proper amount of solar collector square footage to meet the hot water demands of a home. The objective is to provide a 65-75% annual solar fraction, which is the amount conventional fuel use avoided by the solar energy contribution. It is important to avoid providing too many square feet of solar collector for a given amount of storage. Such over sizing can result in over heated systems resulting in reduced system longevity and poor economics.

Systems are sized according to the daily hot water demand for a building which is determined by the fixture count and the expected number of people to be occupying the building. Below are standard equipment selection guidelines for different household occupancy in Mediterranean zone California/Nevada. More exacting sizing, required for Title 24, can be utilizing by utilizing the F-Chart sizing program available through Solar Spectrum or the program can be downloaded free of charge from the California Energy Commission web site *www.energy.ca.gov/title24/swh_calculator/index.html*

Recommended Tank/Collector Sizing: OG300 packages next page

Load /People	1-2	2-4	4-6	6-8
Tank Gallons	50-60	60-80	80-119	119
Collector Sq Ft Flateplate	32-40	40-64	60-80	80-96
Evacuated Tube		1-30 Tube	1-30 Tube	2-30 Tube

This sizing presumes a 65%-75% solar fraction, 35 degree inclination and orientation within 15 degrees +/- of South.

If there are additional loads than domestic hot water, such as space heating, a spa or pool, the solar collector surface area may be increased according to the size and occurrence of the additional load (see Heat Dumping).

Sizing Single Tank Phoenix Solar/ Boiler Solar:

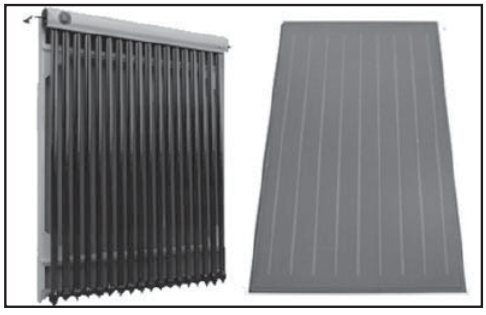
While the top of each tank in a single tank solar design is heated by conventional fuel (gas or electric), solar will heat all the tank, including that portion in the top of the tank. Single tank system should be sized with the same methodology as shown above.

Solar Domestic Hot Water

Solar Hot Water Package Components

HTP supplies SRCC listed solar packages that include the tank, solar collector(s), racking, Solar Pump/Control module and selected accessories. These packages permit easy, predictable, pre-engineered installation of solar hot water systems.

SOLAR COLLECTORS



HTP Flateplate: OG100 Certified

HTP provides OG100 certified quality 4'x8' and 4'x10' flateplate solar collectors available with selective surface. These collectors offer proven efficiency, skylight aesthetics and ease of installation.

HTP Evacuated Tube: OG100 Certified

Heat Transfer Products provides 30 tube evacuated tube solar collectors that can provide high temperatures and excellent performance in fog or diffuse sunlight. These collectors must be sized carefully to avoid over heating the system.

SOLAR TANKS

Stainless or Coated Steel Construction

HTP provides a range of open and closed loop solar tanks constructed with either premium stainless steel or flow coated steel .

Closed Loop Storage Tanks

Single Coil with Electric backup (Superstor or Contender)

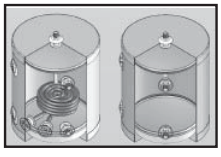
These tanks have immersed solar heat exchangers that provide excellent performance with 240V electric elements for single tank electric backup applications.

Double coil with Boiler Backup

These tanks are designed for use with boiler for single tank efficiency and space saving.

Phoenix Solar Tanks

Integrated Solar and Gas Fired Tanks available in 80 and 119 gallons and 130 and 199 MBH.



Drainback Tanks

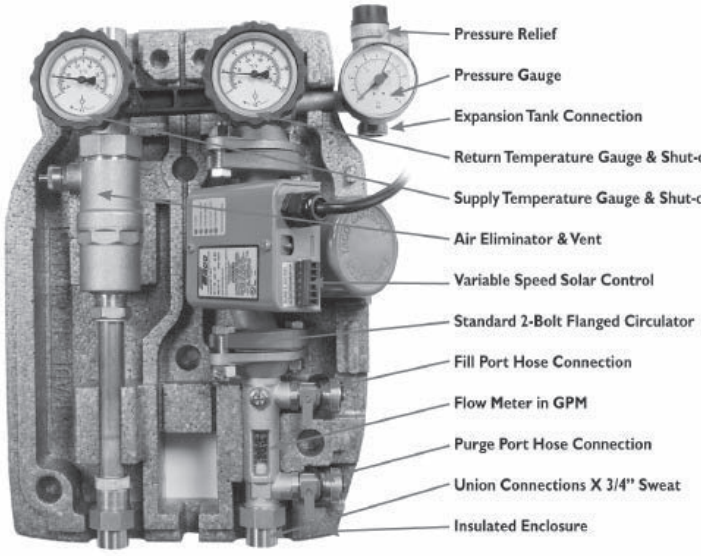
HTP offers drainback tanks from 5-20 gallons, with or without an internal heat exchanger, all including a site glass.

Solar Domestic Hot Water

SOLAR PACKAGE COMPONENTS

CLOSED LOOP INSTALLATION KITS

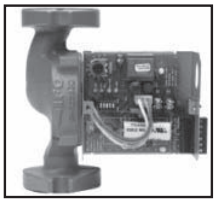
Each Installation Kit includes our pre-plumbed modules with the circulator, control, pressure relief valve, check valve, temp/pressure gauge, purge valves, expansion tank and expansion tank connection and tempering valve. Anti-freeze fluid must be purchased separately.

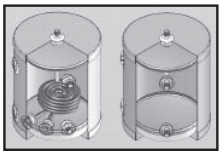


Drainback Installation Kits

Each drainback system will require a drainback tank, a bronze or stainless steel circulator and a solar control, in addition to the solar tank and collector(s). The Taco SPS series integrated pump/control is a good choice for drainback systems because they use less energy. Drainback tank size must be selected according to the water volume in the solar system from the top of the drainback tank to the top of the highest collector.

High efficiency Variable Speed Solar Control
The control included in the TACO module operates the circulator at variable speed which has been tested to enhance system performance by 20% and reduce circulator energy use by 50%. This control has many additional functions such as excess heat dump and dual tank control. See the Components section for details.





Solar Domestic Hot Water

CLOSED LOOP GLYCOL SOLAR SYSTEMS:

- A storage tank for storing solar energy
- Tempering valve for the DHW Discharge
- Solar collector(s)
- A heat exchanger preferably built into the tank but external heat exchangers can be used.
- Pumping station or the components to make a pump station which should included but is not limited to the following.
  1. A pump sized for the GPM and flow resistance of the solar system piping and components. (Taco 008 typical)
  2. Supply and return temperature sensors ranging from 32f deg to 250f deg.
  3. A fill and purge port to facilitate adding of liquid and purging of air or removal of spent glycol.
  4. System flow indicator.
  5. Pressure relief valve.
  6. Pressure gauge 1-150 PSI.
  7. Expansion tank and connection.
  8. Isolation ball valves
- Solar Controller.
- Optional air vent with isolation valve placed at highest point of system.
- Racking system for project roof type.

Other items to consider: Copper or stainless piping, high temperature (250f +) outdoor rated insulation, 18 Ga. thermostat wire, food grade glycol.

DRAINBACK SOLAR SYSTEM:

- A storage tank for storing solar energy.
- Tempering valve for the DHW Discharge.
- DrainBack tank with site glass sized to receive liquid from solar system when in off cycle.
- Solar collector.
- A heat exchanger preferably built into the tank but external heat exchangers can be used.
- Pump sized for required flow at total height of head to overcome initial flow on startup.
- Solar Controller.
- Optional air vent with isolation valve placed at highest point of system.
- Racking system for project roof type.

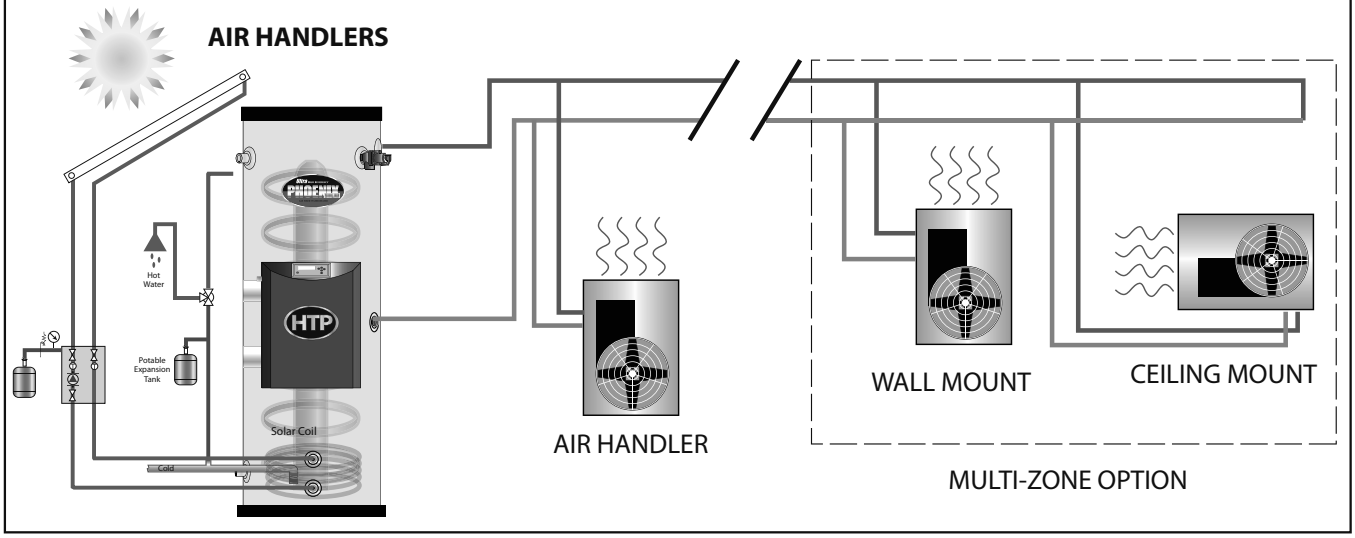
Other items to consider: Copper or stainless piping, high temperature (250f +) outdoor rated insulation, 18 Ga. thermostat wire.

INTEGRATED COMBINED HYDRONICS AND SOLAR HOT WATER

HTP is the first company to offer a fully integrated Domestic Hot Water, Space Heating and Solar Hot Water system. The Phoenix Solar Series provide a very a large percentage of the domestic hot load and a modest percentage of the space heating load thus utilizing a larger portion of the solar energy available to the solar collectors. While they are more expensive, we also can supply solar hot water systems that integrate with boilers and indirect water heaters.

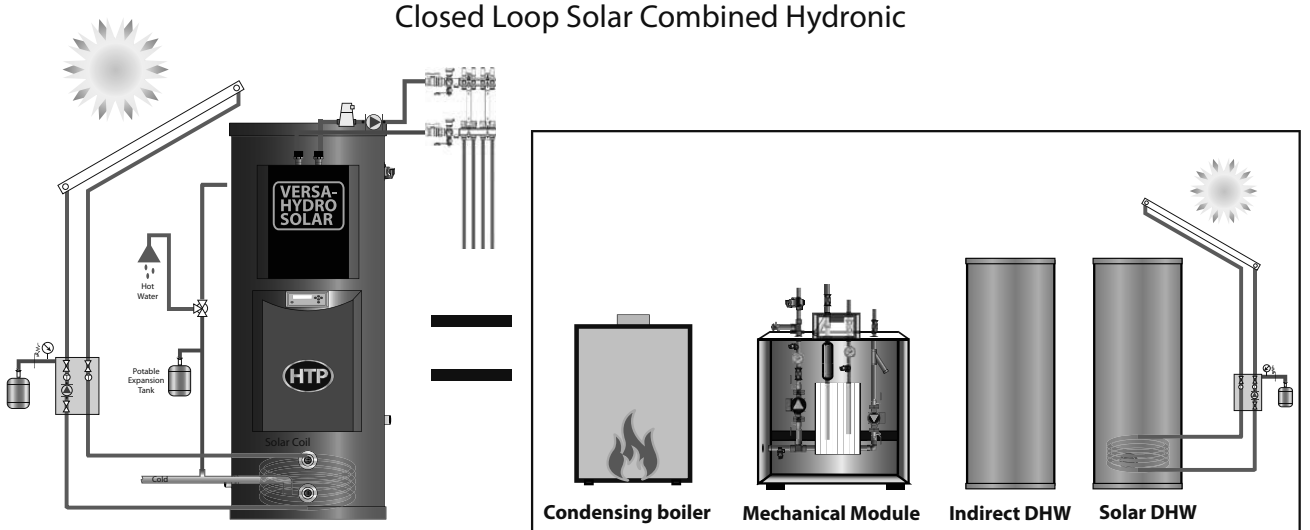
Phoenix Solar With Heating Distribution

Open Loop Solar Combined Hydronic



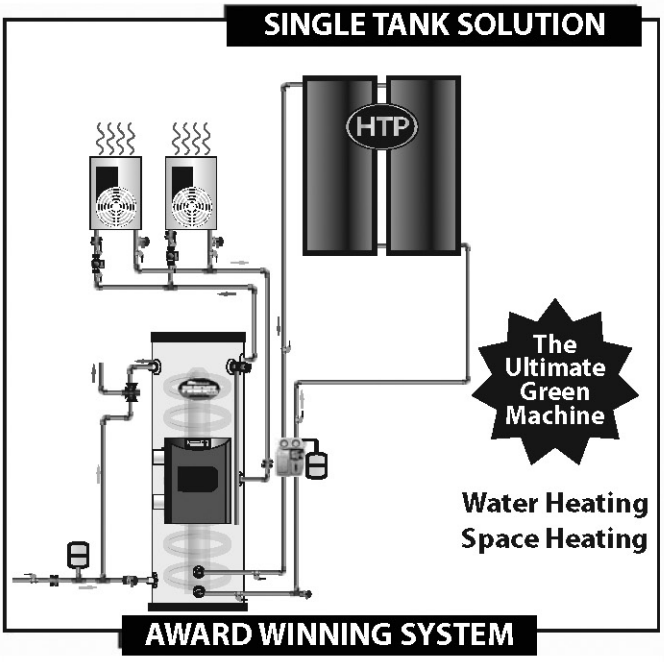
Phoenix Versa Hydro Solar With Heating Distribution

Closed Loop Solar Combined Hydronic



Phoenix Solar Evolution

A 96% GAS FIRED WATER HEATING, SPACE HEATING AND SOLAR HEATING APPLIANCE



Total System Efficiency

- 96% Gas Fired Efficiency
- Single Tank Solution
- Low Standby Loss (.5% hr)
- Load Matching Modulation
- Small Footprint
- Finned Cupernickel SolarHeat Exchanger
- Stainless Steel Tank
- Super Quiet
- PVC Venting
- Sealed Combustion
- Preplumbed Solar Module

Phoenix Solar combines the superb features of the Phoenix 96% modulating stainless steel combi water heater with solar thermal…all in one SRCC OG300 performance certified appliance! This merging of existing technologies not only provides superb energy performance but excellent value by eliminating redundant components, making installation easier and saving space.

The Optimum Mix - All In One

Phoenix Solar Systems provide the optimum financial mix of high solar domestic hot water solar fraction (65% to 75% of total load), a small, cost effective solar space heating solar fraction (10% to 20% of total load) and very high efficiency utilization of conventional fuel sources.

New Construction Value

The addition of solar to the Phoenix water heater provides an excellent investment while producing ample Title 24 credit and displacing TONS of carbon emissions over 10 years.

Single Tank Design

The Phoenix Solar is designed as a fully stratified one tank system. While solar can heat all the tank, the gas fired storage is completely thermally isolated in the top ? of the tank to provide primary hot water and space heating requirements. Care should be taken in sizing the system. For example, a 119 gallon Phoenix Solar tank will have 60 gallons of gas fired storage available, so care should be taken in estimating the peak hot water loads for the building, with special attention to whirlpool baths. Rated input of the heater can be increased to provide greater hot water recovery, if required.

Residential and Commercial

A single Phoenix Solar system is available in a variety of capacities that can serve the needs of a 2000 sq ft home or a 6000 sq ft mansion. For commercial applications, large loads combined with the 30% uncapped federal solar hot water tax credit and ultra high efficiency utility rebates, in some areas, make for very attractive returns on investment for a wide range of commercial building owners. Multiple Phoenix Solar heaters can meet large water and space heating loads.

Phoenix Solar Package: A Complete SRCC OG300 Certified System

Each System Includes:

Collector(s): HTP Flatplate or Evacuated Tube , Phoenix Solar Tank and Solar Installation Kit. Refer to "Building a Package" in this booklet.

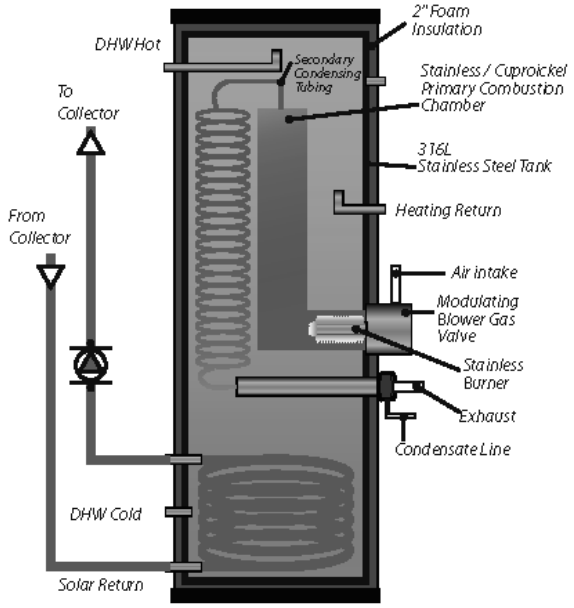
Phoenix Solar Ready?

The Phoenix Solar may also be purchased and installed for high efficiency water heating and hydronic heating, permitting the client to add solar collectors in the future at a much lower installed cost.

HOW DOES PHOENIX SOLAR WORK?

The Phoenix Solar starts as a durable stainless steel tank featuring an immersed, cupronickel combustion chamber, surrounded by potable water with a super eÀcient, direct gas Àred, modulating burner system. The com bustion chamber is located in the middle of the tank permitting the use of a cupronickel Ànned heat exchanger coil in the bottom of the tank for transfer of solar energy to the surrounding water. As the solar energy is collected during the day the hot water is stacked in the tank, disabling a call for gas Àred hot water generation. The solar energy preheats the domestic hot water or hydronic space heating.

Phoenix Solar System: Each Phoenix Solar is a package that includes the Phoenix Solar, solar collectors, pump/control station and valves that have been certìed as a solar system by the Solar Rating and Certìcation Corporation, the performance rating system for the industry and required for compliance with the solar tax credits and pending state rebate programs. SRCC certìcation is a must for residential solar hot water systems and the only source for independent performance evaluation.

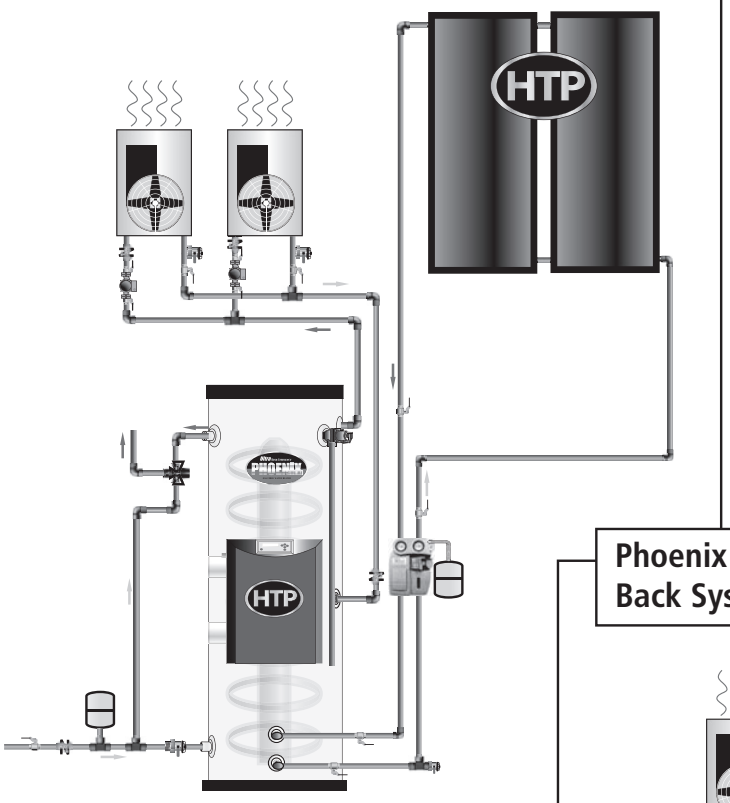


SPECIFICATIONS

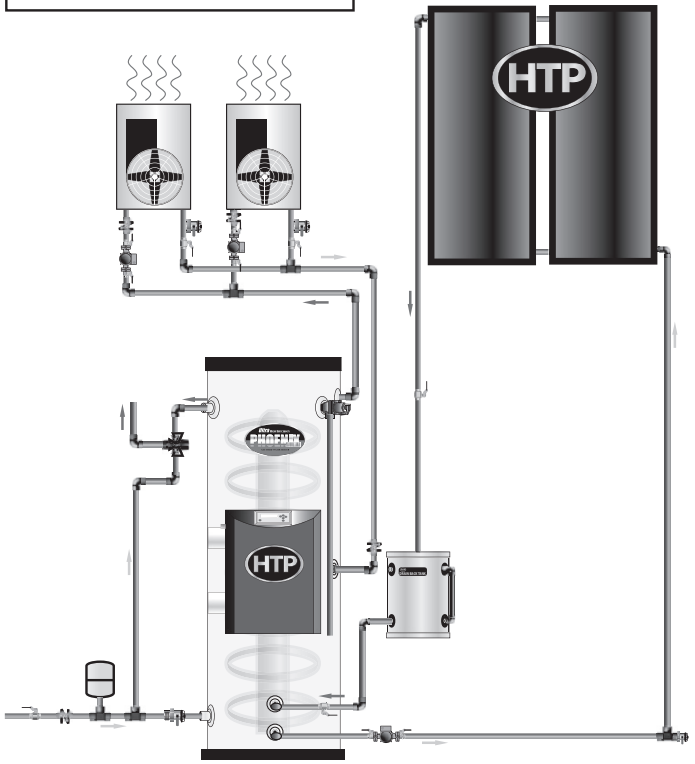
MODEL	GALLON CAPACITY	NET STORAGE CAPACITY	INPUT BTU/HR NATURAL & LP GAS	TEMP. RISE IN DEGREES FAHRENHEIT		FIRST HOUR RATING	THERMAL EFFIC. %	SOLAR EXCHANGE SQUARE FEET	VENT SIZE	HIGHT	WIDTH	DEPTH	SHIP WEIGHT
				100									
PHS199-119	119	61	199,000	GPH GPM	363 6	335	97%	13.5	3″	74″	27-1/4″	46″	425 lbs
PHS199-80	80	41	199,000	GPH GPM	363 6	300	96%	13.5	3″	72″	27-1/4″	36″	255 lbs
PHS130-119	119	61	130,000	GPH GPM	236 3.9	250	97%	13.5	3″	74″	27-1/4″	46″	425 lbs
PHS130-80	80	41	130,000	GPH GPM	236 3.9	220	96%	13.5	3″	72″	27-1/4″	36″	255 lbs

PHOENIX CLOSED LOOP OR DRAINBACK SOLAR HYDRONICS

Phoenix Solar Closed Loop System Package



Phoenix Solar Drain Back System Package



PHOENIX VERSA HYDRO SOLAR

INTEGRATED CLOSED LOOP HYDRONIC SPACE HEATING, DOMESTIC HOT WATER AND SOLAR

See Versa Hydro Section on page 36
For additional information

Best Value: The combination of so many functions in one heater makes the Phoenix Versa Hydro Solar the lowest cost solution for those desiring radiant heating, domestic hot water and solar thermal on a project.

Best Energy Utilization: Phoenix Versa Hydro Solar uses the same solar heated water in the tank to provide both solar domestic hot water and/or solar space heating. Collecting solar is not economic unless it is utilized to the maximum. Maximum annual solar utilization equals the best value.

Title 24 Champion: Using both high efficiency combined hydronics and solar hot water on a project provides enormous credit permitting greater design flexibility and the boost to exceed Title 24 by the 15% required for solar electric rebates.

A Package: Phoenix Versa Hydro Solar is provided as a complete package including solar collector(s) and associated equipment. Certain packages are also OG300 listed.

David Gottfried, Founder U.S. Green Building Council Endorses Phoenix Solar

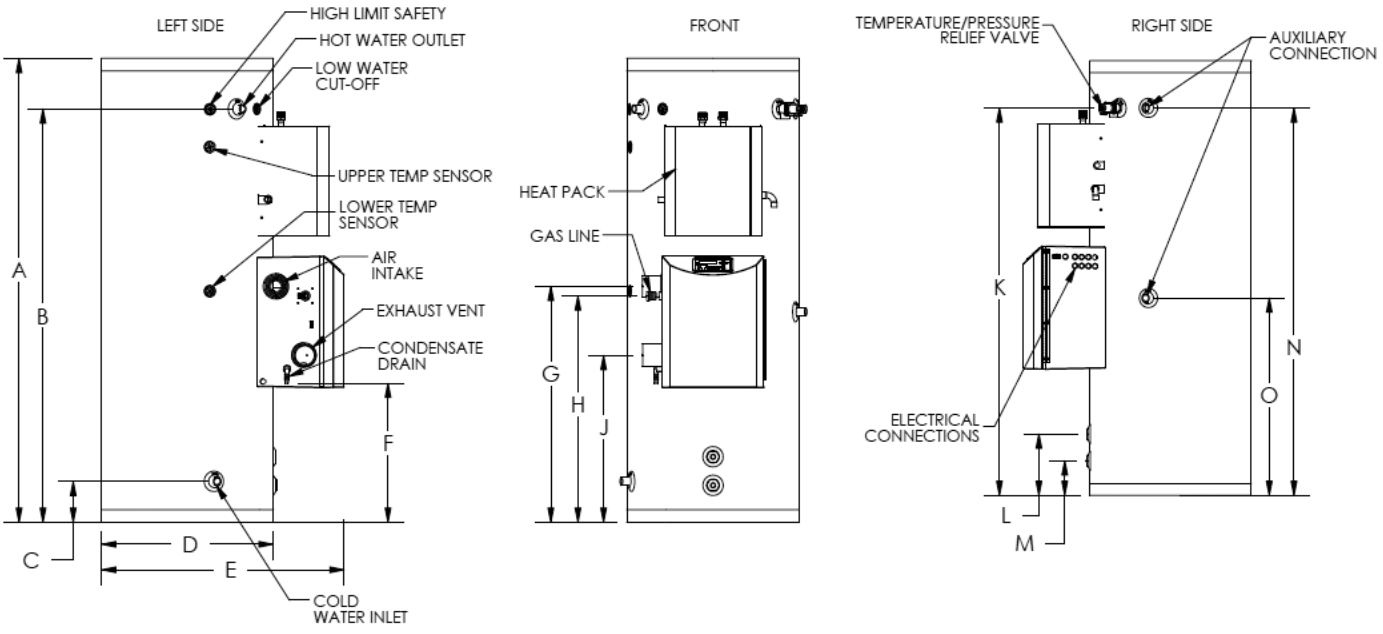
"I have put Phoenix Solar in my home, intending to be the first LEED for Home Platinum residential remodel project in the Bay Area, because this one appliance provides multiple benefits. I receive 96% efficient domestic hot water, comfortable 96% efficient hydronic heating and solar hot water, all in one sealed combustion, PVC vented package that is connected to the solar collectors on my roof"

David Gottfried
Founder of the U.S. Green Building Council

• • •

Founder of the World Green Building Council

PHOENIX VERSA HYDRO SOLAR



VERSA-HYDRO SOLAR WATER HEATER DIMENSIONS															
MODEL #*	GALLONS	A	B	C	D	E	F	G	H	J	K	L	M	N	O
PHE130-80S/PHE199-80S	80	72"	64-1/2"	5-3/4"	23"	34"	24"	37-1/2"	36"	27"	64-1/2"	9-3/4"	5-1/4"	64-3/4"	48-3/4"
PHE130-119S/PHE199-119S	119	74"	66"	7-1/4"	27"	37"	24"	37"	35-1/2"	26"	66"	11-1/2"	6-3/4"	66-1/4"	32"

* No suffix denotes natural gas and suffix "LP" denotes propane gas

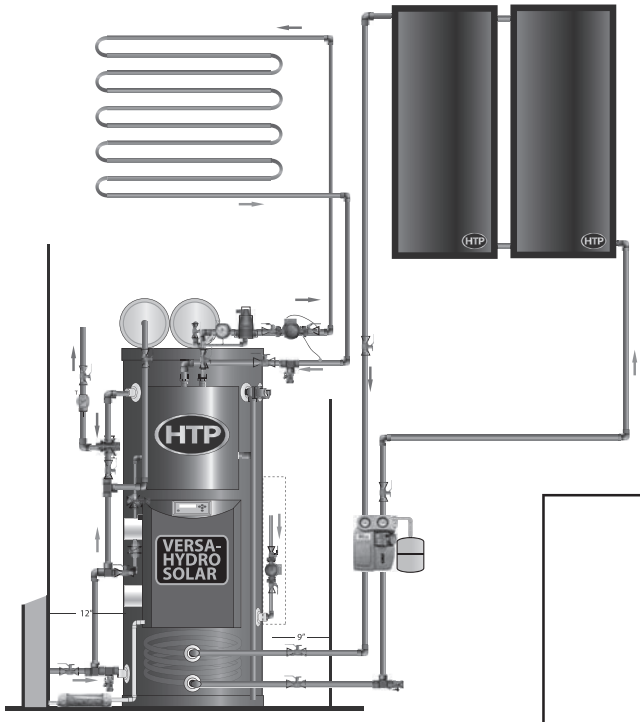
VERSA-HYDRO SOLAR WATER HEATER SPECIFICATIONS								
MODEL #*	GALLONS	BTU'S	AIR INTAKE/EXAUST VENT SIZE	WATER INLET/OUTLET SIZE	AUXILIARY CONN.	GAS LINE CONN.	SYSTEM RELIEF PIPE SIZE	SHIPPING WEIGHT
PHE130-80S/PHE199-80S	80	130,000	2"	1" NPT	1"	3/4"	3/4"	275
		199,000	3"					
PHE130-119S/PHE199-119S	119	130,000	2"	1" NPT	1"	3/4"	3/4"	445
		199,000	3"					

* Suffix "NHX" denotes no solar heat exchanger (119 gallon only)

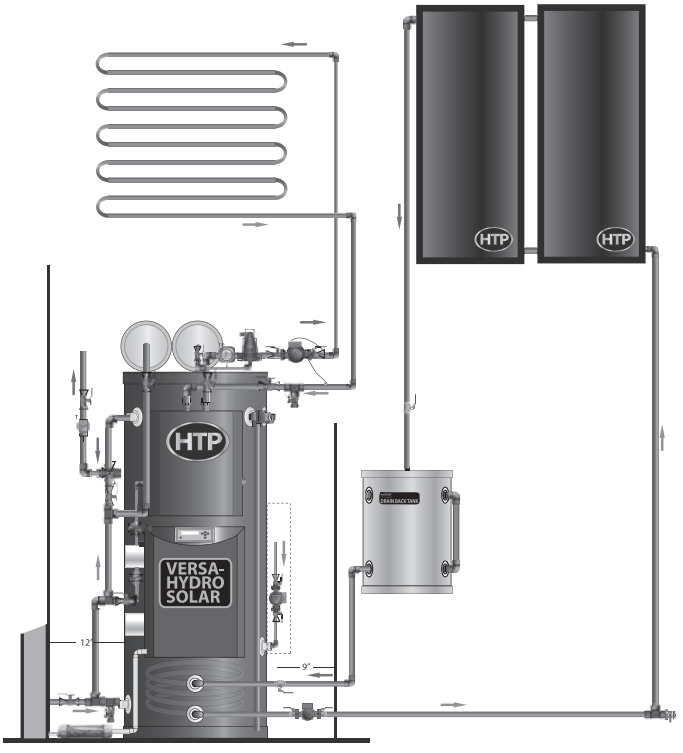
SOLD AS A PACKAGE: We also provide the Phoenix Versa Hydro Solar complete with solar collectors and mechanical components.

CLOSED LOOP SOLAR HYDRONICS OR DRAINBACK SYSTEM

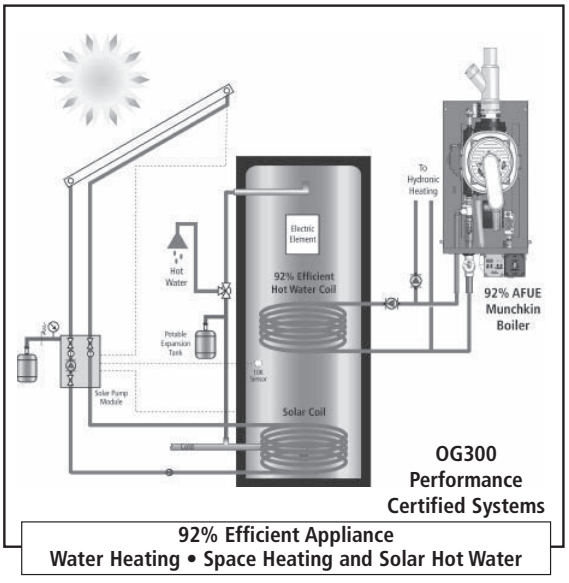
Phoenix Versa Hydro Solar Closed Loop System



Phoenix Versa Hydro Solar Drainback System

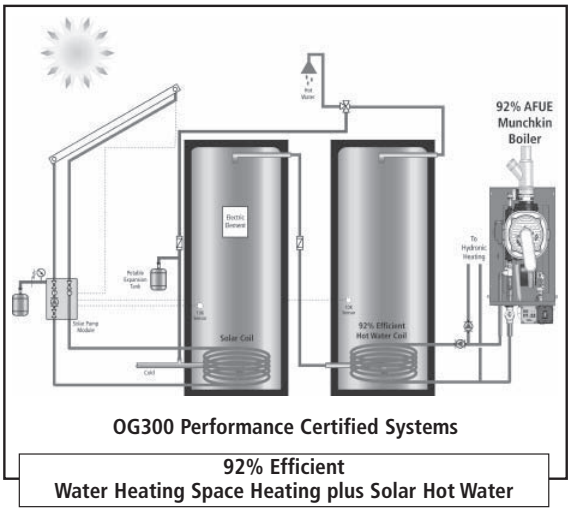


Boiler Solar



92% Efficient Appliance
Water Heating • Space Heating and Solar Hot Water

The single tank Boiler Solar System saves space and installation costs using a single tank for solar and conventional hot water.



92% Efficient
Water Heating Space Heating plus Solar Hot Water

The dual tank Boiler Solar System provides more solar storage for high capacity hot water systems.

BOILERS AND SOLAR DOMESTIC HOT WATER

Solar Integration with a Hydronic Boiler

Integrating a condensing boiler with solar hot water heating provides the great efficiency advantages of 95%+ combined hydronics with renewable energy in one lean package which is a far superior solution to tankless or conventional hot water heaters.

Single Tank Systems: Save Space and $

A single tank systems employ a storage tank with two hot water heat exchanger coils, the solar one in the bottom of the tank and the indirect fired coil in the upper portion of the tank. These tanks are designed for thermal isolation of the top and bottom portion of the tank. This system is very popular in Europe because it saves both space and the additional cost of a separate tank.

Single Tank Sizing

Because only one of the storage tank can be counted upon for gas fired water heating storage, care should be taken in sizing the system. For example, a 119 galloon tank will have 60 gallons of gas fired storage available, so care should be taken in estimating the peak hot water loads for the building, with special attention to whirlpool baths. Generally speaking, homes with more than 3 bathrooms should employ a two tank system design.

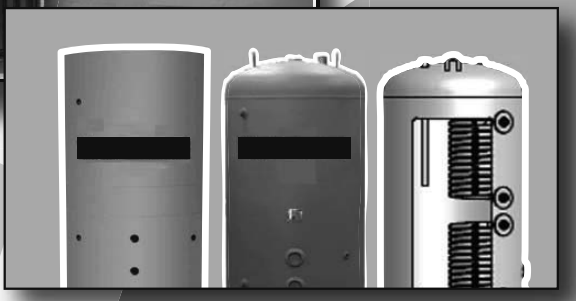
Two Tank High Capacity Systems

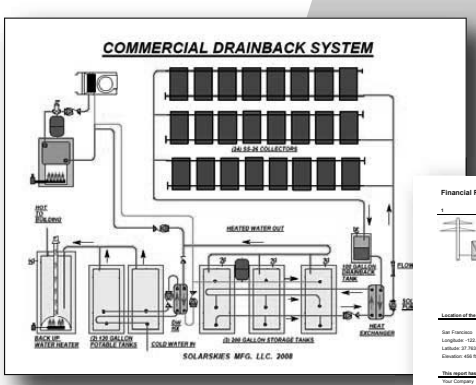
Two tank Boiler/Indirect systems work very much like a conventional solar system with a gas fired water heater backup, except that the gas fired portion of the system is far more effcient. These systems provide both extra solar and gas fired storage for high capacity systems used in large homes. This system can also use the Storage+ control and piping strategy to further expand solar utilization.

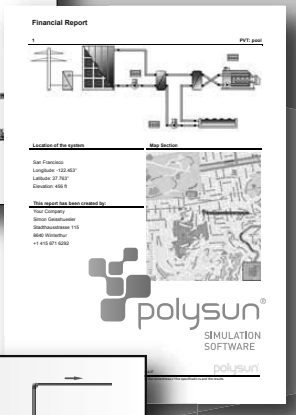
Commercial Solar Hot Water

The Right Products

- *The Best Flate Plate Solar Collector*
- *Pre-Engineered Solar Thermal Module*
- *Tanks, Pumps, Solar Controls*

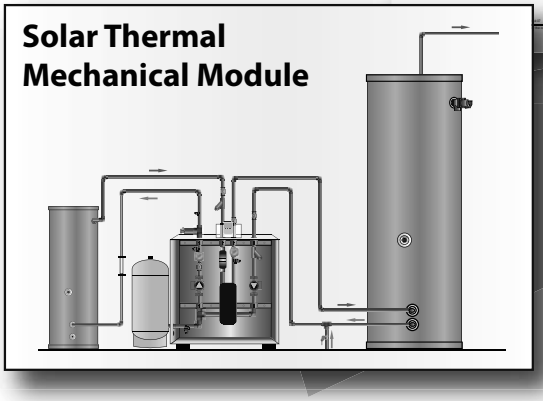






The Right Services

- *Commercial Solar of Any Scale*
- *System Sizing*
- *Polysun System Cost Benefit Analysis*
- *System Schematics*
- *Specifications*



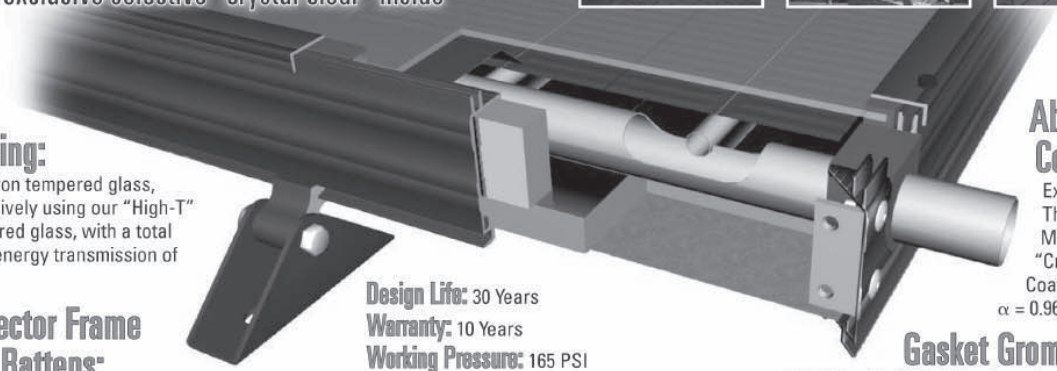
The Right Support

- *35 Years of practical design and Installation consultation*

FLATPLATE SOLAR COLLECTORS

Solar Spectrum Collectors

with exclusive selective "Crystal Clear" inside



Glazing:

Low-Iron tempered glass, exclusively using our "High-T" tempered glass, with a total solar energy transmission of 90%.

Collector Frame and Battens:

Type 6063-T6 extruded aluminum frame and battens with electrostatic bronze plate finish that facilitates long life and strength.

Insulation:

Polyisocyanurate foam board insulation. Foil-faced, glass fiber-reinforced, rigid board Thermax sheathing (1-1/4" in the bed / 3/4" in the sidewalls).

Mounting Hardware:

The variable "Quick Lock" mounting hardware reduces mounting time and makes it simple for anyone to install. The Quick Lock System allows the highest flexibility in mounting and is tested to wind load conditions of 195 mph. Mounting possibilities include: Pitched roof, Flat roof, Ground, Balcony, and Facade mounting.

Design Life: 30 Years
Warranty: 10 Years
Working Pressure: 165 PSI
Flow Rate: 0.5 to 1.8 GPM (recommended)

Absorber Plate:

Manufactured by Thermafin™ Mfg., a 100% copper absorber plate, the fin and the riser tube are molecularly bonded by high-frequency forge welding.

Specifications

Collector	FP-26SC	FP-32SC	FP-40SC
Length (in)	77.187	97.187	121.187
Width (in)	47.187	47.187	47.187
Height (in)	3.137	3.137	3.137
Gross Area (ft^2)	25.3	31.8	39.7
Transparent Area (ft^2)	23.6	29.9	37.4
Dry Weight (lbs)	90	113	153

Absorber Coating:

Exclusively by Thermafin™ Mfg., a Selective "Crystal Clear" Coating.
$\alpha = 0.96$ $\epsilon = 0.08$

Gasket Grommets:

A UV durable EPDM, U-channel gasket with molded corners which prohibits water penetration and assures long life. Extruded Silicone Grommet with 1-1/8" Bore.

Corner Bracket:

Architectural aluminum angles inside with aircraft-grade pin grip rivets to ensure high stability.

Fasteners:

5056 Aluminum rivets secure the backsheet. Batten screws are 18-8 SS, 10-24 x 3/8", hex head screws, and black oxide coated.

Backsheet:

Type 3105-H14, 0.019" stucco embossed aluminum sheet (bronze) pop-riveted to aluminum frame.

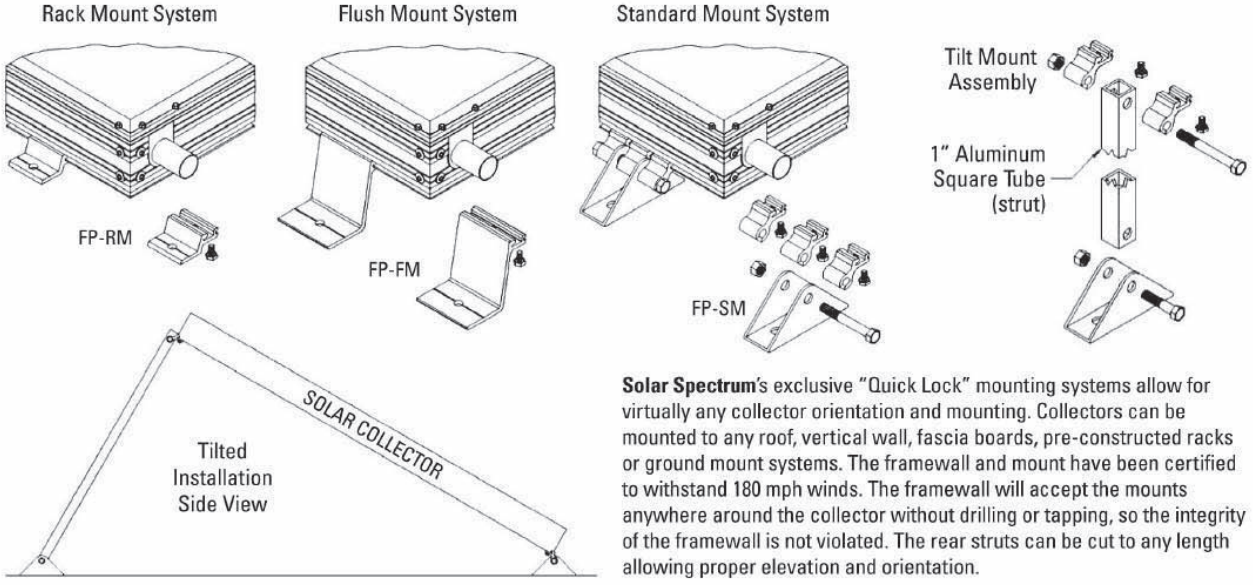
Solar Spectrum Collector Ratings Solar Rating Certification Corp.

Metric (SI) Units / English (Inch-Pound Units)

Model No. ▶	FP-26SC			FP-32SC			FP-40SC		
	Kilojoules/Thousands of Btus per panel per day						Megajoules/Thousands of Btus per panel per day		
Weather ▶ / Category (Ti-Ta) ▼	Clear Day 2000 Btu/ft².d	Mildly Cloudy Day 1500 Btu/ft².d	Cloudy Day 1000 Btu/ft².d	Clear Day 2000 Btu/ft².d	Mildly Cloudy Day 1500 Btu/ft².d	Cloudy Day 1000 Btu/ft².d	Clear Day 2000 Btu/ft².d	Mildly Cloudy Day 1500 Btu/ft².d	Cloudy Day 1000 Btu/ft².d
A (–9F)	35 / 33	26 / 25	18 / 17	44 / 42	33 / 31	23 / 21	55 / 52	41 / 39	28 / 27
B (9F)	32 / 30	23 / 22	15 / 14	40 / 38	29 / 28	19 / 18	50 / 47	36 / 35	23 / 22
C (36F)	27 / 25	18 / 17	10 / 9	33 / 32	23 / 22	13 / 12	42 / 40	29 / 27	16 / 15
D (90F)	16 / 15	8 / 8	2 / 2	20 / 19	11 / 10	2 / 2	25 / 24	13 / 13	3 / 3
E (144F)	6 / 6	1 / 1	—	8 / 7	1 / 1	—	10 / 9	1 / 1	—

FLATPLATE SOLAR COLLECTORS

Solar Spectrum Collectors Mounting Hardware Options



Solar Spectrum's exclusive "Quick Lock" mounting systems allow for virtually any collector orientation and mounting. Collectors can be mounted to any roof, vertical wall, fascia boards, pre-constructed racks or ground mount systems. The framewall and mount have been certified to withstand 180 mph winds. The framewall will accept the mounts anywhere around the collector without drilling or tapping, so the integrity of the framewall is not violated. The rear struts can be cut to any length allowing proper elevation and orientation.

Engineering Specification

Solar collectors shall be as provided by Heat Transfer Products, Inc.

Model No._____, and shall be of the glazed, flat plate liquid type. The number of collector for this project is_____ at _____ ft² per panel, equaling a total collector area of _____ft².

Collectors shall be _____" in length, _____" in width , and _____" in height. The enclosure box frame shall be an aluminum extrusion (alloy: 6063-T5) with anodized or electrostatic paint finish , architectural bronze in color. The collector back plate shall be painted, textures aluminum and not less than .019" thick. The collector cover back plate shall be a minimum 1/8", low iron oxide, tempered glass with a minimum transmissivity of 91%. All screws and bolts shall be of 18-8 stainless steel. Gaskets and grommets shall be of silicone or EPDM high temperature rubber. Insulation in the bed of the box shall be non-absorbing, closed cell polyisocyanurate foam board, foil faced on both sides, 1-1/4" thick in a box bed, 5/8" thick in box sides.

Absorber plate shall be of (0.008" thick) corrugated copper fin /copper tube construction welded together using a high-frequency, forged welding process.

Each plate must be factory pressure tested to 90 psig. Fluid passageways must not be less than ½" O.D. copper tube. All manifold connections shall be brazed.

Absorber surface shall be selective Crystal Clear™ coated with a minimum absorptivity of 0.96% (96%) and a maximum emissivity of 0.08 (8%).

Collector instantaneous efficiency curve shall not have less than a first order Y- Intercept of 0.06 and a Slope of not more than 0.865 Btu/hr.ft².°F.

The complete collector assembly shall be structurally certified to withstand a wind load of 141 mph or 51 psf.

Collectors shall have a design life of 30 years and shall be warranted for not less than 10 years. Collectors shall be certified by FSEC and SRCC.

Code Approvals

Solar Spectrum Collectors have been designed and constructed to meet major applicable nationwide codes, including the following:

Solar Rating and Certification Corporation SRCC Standard 100 – *Test Methods and Minimum Standards for Certifying Solar Collectors (ASHRAE Std 93-1986)*

Florida Solar Energy Center – *Test Methods and Minimum Standards for Solar Collectors (ASHRAE Std 93-1986)*

Miami Testing Laboratory *Wind Load Test (ASTM E 3300) Certification No. 94-1028.01*

International Association of Plumbing Mechanical Official (IAPMO) *Uniform Solar Energy Code (USEC) File No. S-5038*

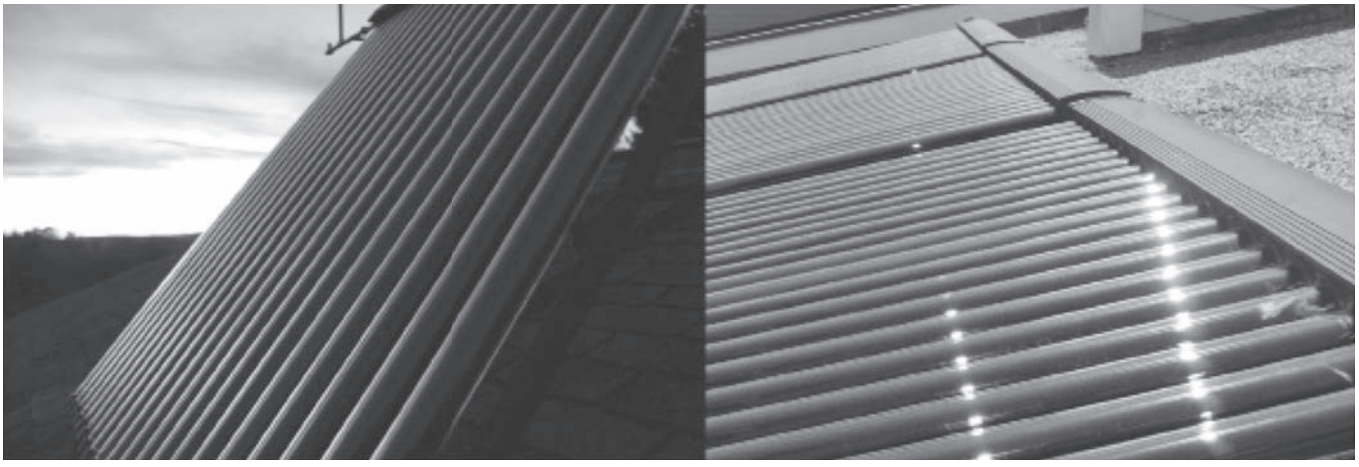
International Testing

Bodycote Materials Testing Canada Inc. *Report No. 02-08-0513*

TÜV Bayern Sachen e.V. (DIN 4757) Report No. 28600399

Bundesforschungs – und Prüfzentrum Arsenal *ÖNORM M 7714 - Order No. M 4 015*

EVACUATED TUBE SOLAR COLLECTORS

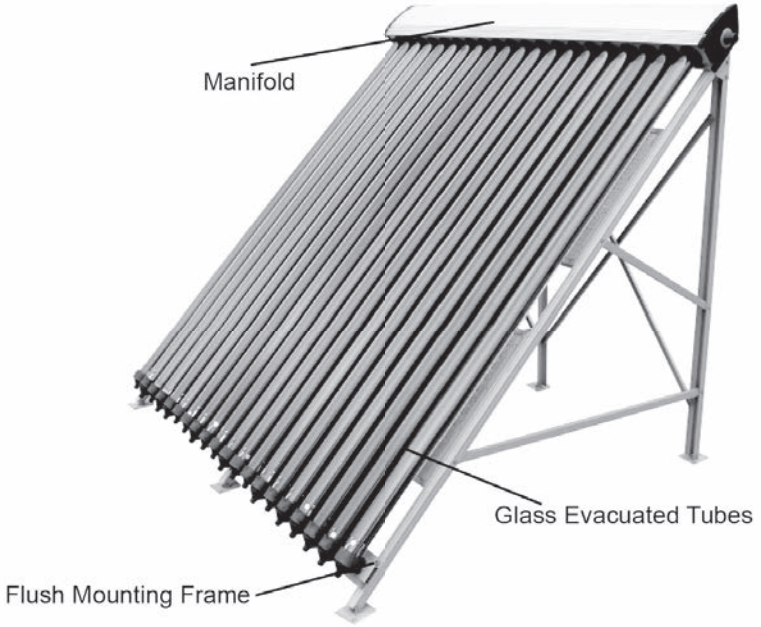


Series Specifications

Tube Length	70″
Outer Tube Diameter	2.2″
Inner Tube Diameter	2.1″
Tube Thickness	0.1″
Tube Material	Borosilicate Glass
Tube Coating	Al - N/Al
Thermal Expansion	3.3 x 10 -6
Absorption Efficiency	> 92%
Emittance	< 8%
Vacuum P	< 5x10 -3 Pa
Heat Loss	< 0.7 W/m^{2}C
Maximum Strength	1.0 MPa
Stagnation Temperature	> 428 °F
Flow Rate	0.028 GPM/tube
Fittings	1″ NPT
Warranty	10 Years

Collector Specifications

Model	HP-30SC
# of Tubes	30
Dimensions (in)	101 x 79
Weight (lbs.)	252
Net Aperture Area (ft^2)	30.04
Storage Tank Size (G)	70+
Nominal Flow Rate (G/min)	0.84

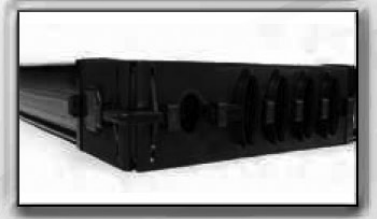


Performance Specifications

City	HP-30SC
	BTU/yr
New York	6,750,000
Philadelphia	7,320,000
Miami	12,150,000
Chicago	7,080,000
Denver	8,670,000
Los Angeles	6,750,000

COMPOSITE SOLAR COLLECTOR

Proprietary Overheat Venting



Impact-Resistant Glazing

Proprietary Composite Formulation

PEX (Or Copper) Install

Engineered overheat protection allows full installation with flexible PEX piping.

Warranty Protection
eco FLARE panels are backed by an exceptional 10-year warranty.

Durable, Lightweight Freeze-Proof Solar Panel

AVAILABLE FALL 2011

- 10-Year Full Warranty with Freeze & Overheat Protection
- Lightweight
- Scale and Calcification-Free
- Corrosion-Free
- Significantly Reduces Installation Time
- Impact-Resistant Glazing
- Replaces Glass that May Shatter
- Strong Composite Absorber Replaces Costly Metal Absorbers

ECO FLARE™

Now, Open-Loop Solar Without Freeze Protection is Possible

4723 Tidewater Ave. | Oakland, CA 94601 | Tel: 800-493-8432 | jtgmuir.com

TECHNICAL SPECIFICATIONS

ECO FLARE™

Mechanical Stability

Water Temperature		68°F	104°F	140°F	176°F
Operating Pressures	Bar	16	10	6	4
	PSI	232	145	92	63

Dimensions & Specs

Model	SLEF-23
Gross Area [square feet]	23.14
Net Area [square feet]	19.91
Length [inches]	84.6
Width [inches]	39.4
Height [inches]	3.1
Weight (empty) [lbs]	41.9
Fluid Capacity [gallons]	1.59
Operating Pressure [psi]	72.5
Test Pressure [psi]	145
Freezing Resistance [°F]	14°F

Absorber
117 individual composite tubes connected to a unique square manifold header by overmolding injection technique

Glazing
Multiwall polycarbonate glazing with additional UV blocking tissue. Extreme impact resistance (200 times more than glass).

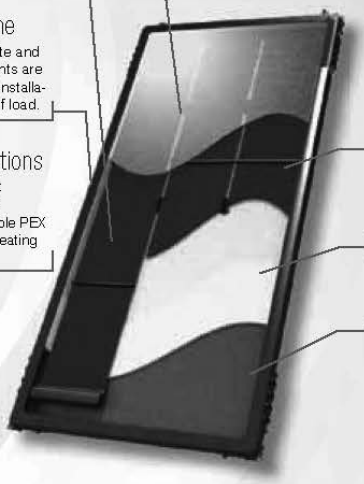
Casing & Frame
Reinforced composite and aluminum components are lightweight for easy installation and minimal roof load.

Material
Specially formulated material, all composite made, tested in authorized labs and proven to be stabilized against the effects of sustained UV radiation, extreme weather conditions, corrosion, limescale, salts and seawater. High resistance to freezing and pressure.

Piping Connections
Engineered overheat protection allows full installation with flexible PEX piping instead of sweating copper piping.

Insulation
The collector is encased in polyurethane foam and polyester coated aluminum foil.

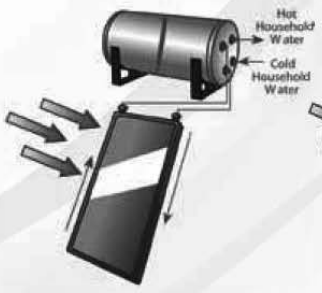
Back Plate
UV stabilized polypropylene back plate



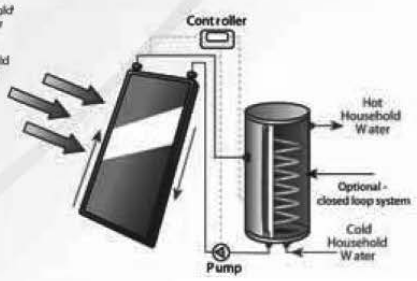
Collector Output

Water Temperature	Model/Units	SLEF-23
Cool 95°F	BTU/day	30,050
	Kcal/day	7,626
Medium 122°F	BTU/day	26,600
	Kcal/day	6,751

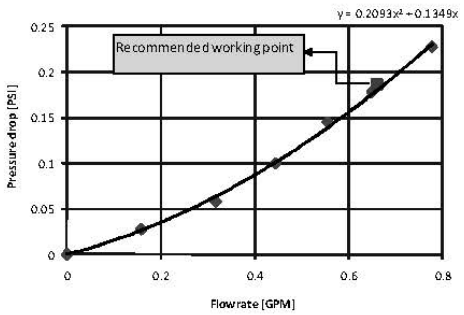
Thermosiphon (natural convection) Solar System



Pumped Solar System

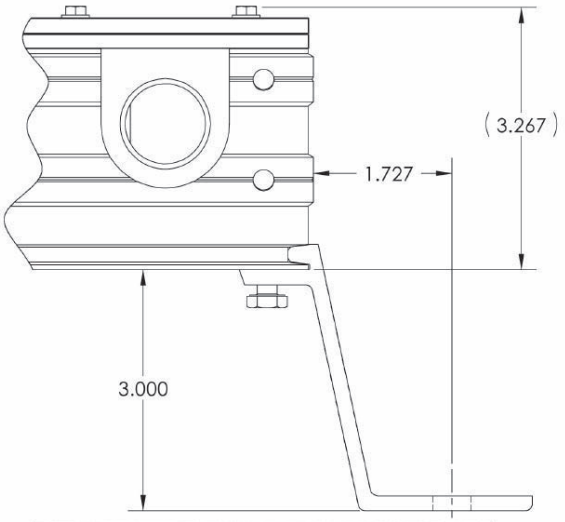


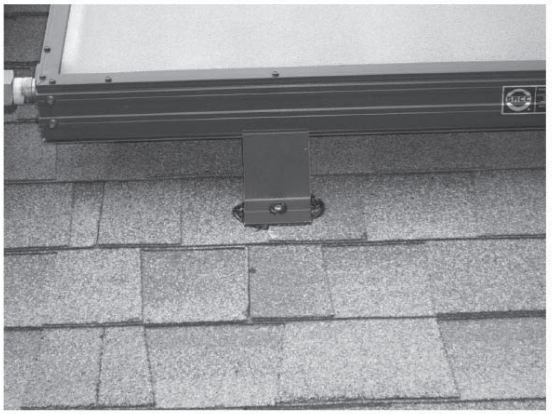
Pressure Drop

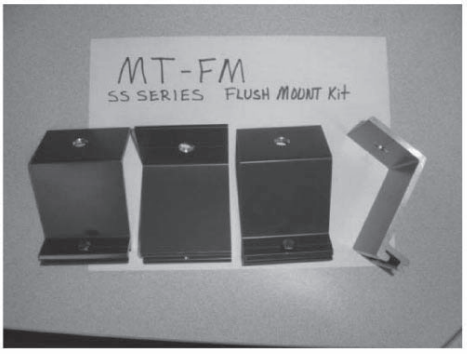


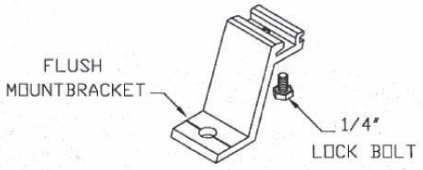
ECO FLARE™ | UMA SOLAR

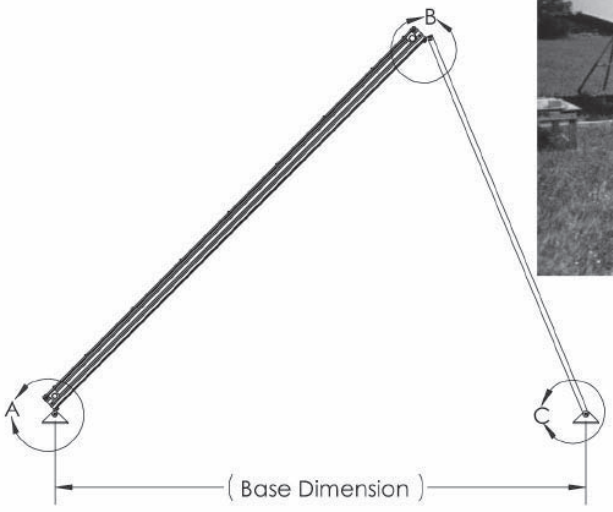
MT-FM Flush Mount Kit (4 PER KIT)

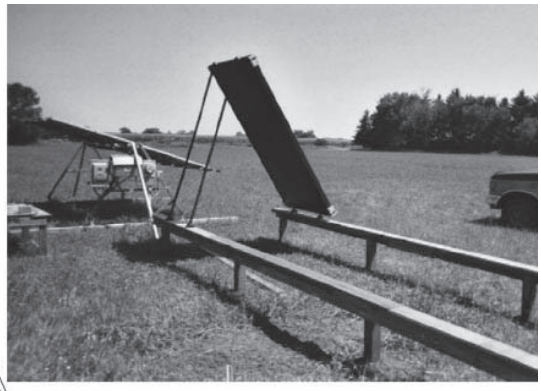




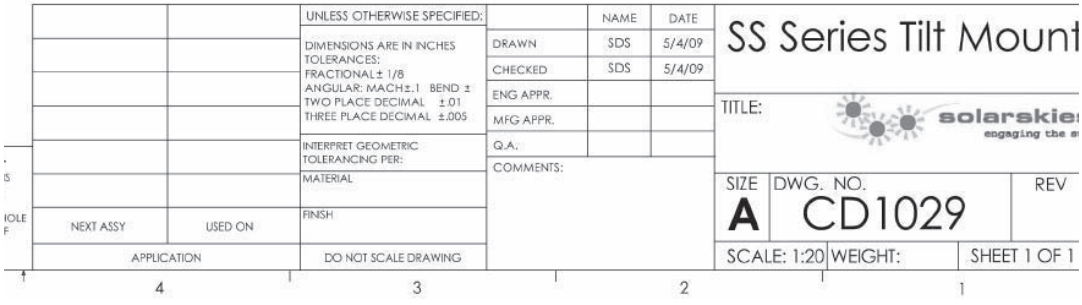








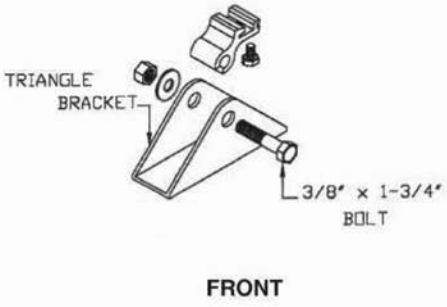
Collector	SS-21	SS-24	SS-26	SS-28	SS-32	SS-40
Base Dimension	86	98	78	86	98	122

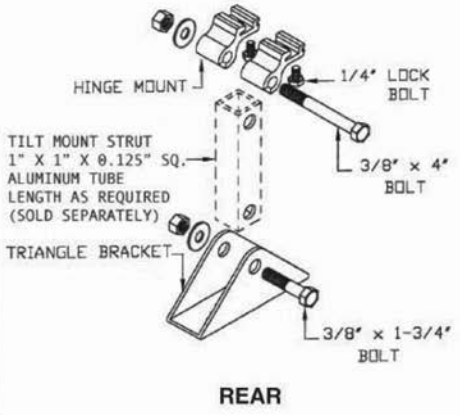


MT-TM Tilt Mount

(*strut not included)

(2 FRONT, 2 REAR PER KIT)*

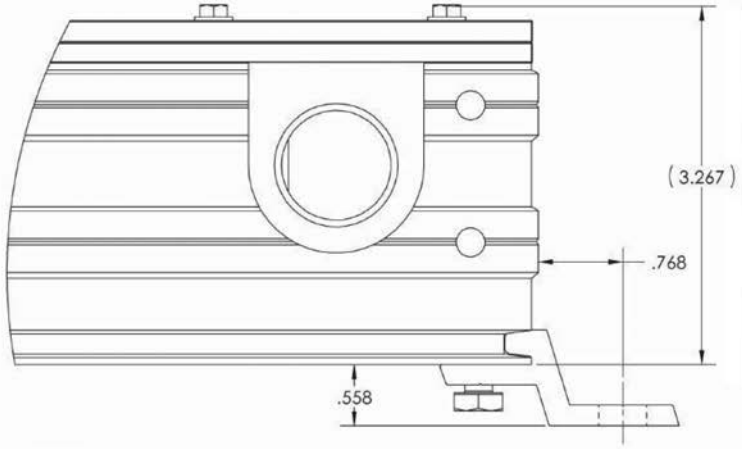


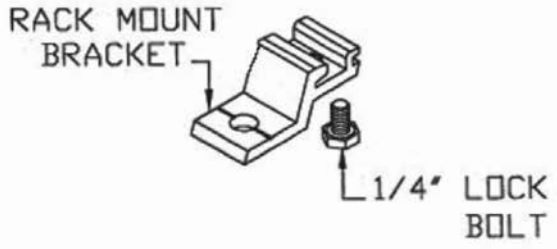


Add Strut as required: MT-STUT 6′ or 10′

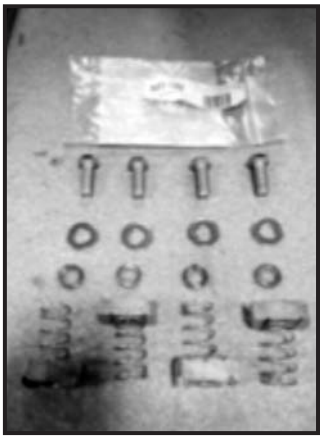
Small Attachment Clips

MT-RM Rack Mount Kit (4 PER KIT)
Clipping To Superstrut

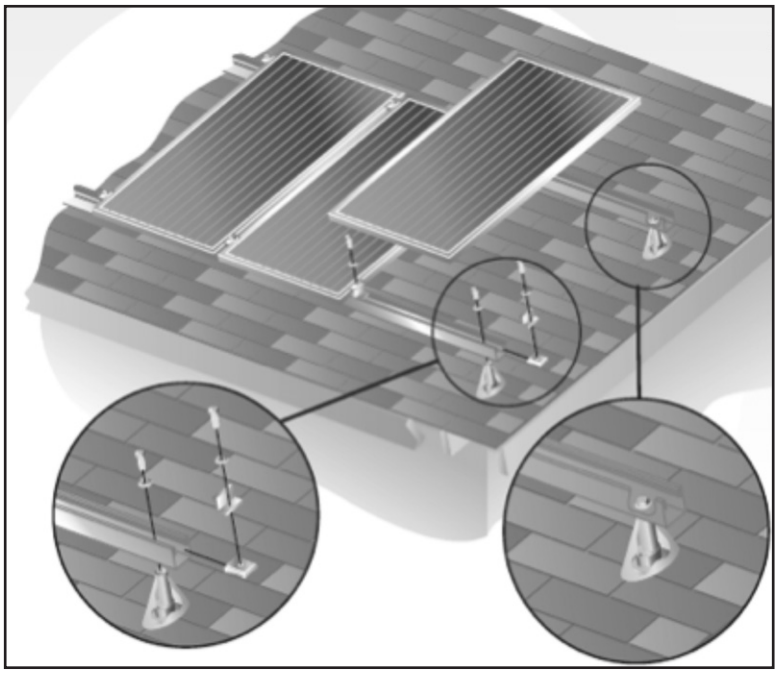




MT-SM: Clip to Rail Attachment



COLLECTOR RAIL MOUNTING METHOD: FLUSH MOUNT

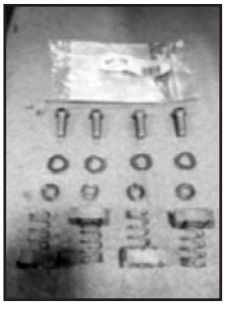


What You Need:

Anodized Channel Rails:
Two rails in Kit: Top and Bottom

- One collector: MT-ES-54
- Two Collectors: MT-ES-108
- Three Collectors: MT-ES-162

Clip Kits:
MT-RM: Collector Clip
MT-SN: Clip to Rail Attachment



- One Collector: (1) MT-RM Clip Kit + (1) MT-SN Rail Attachment Kit
- Two Collectors: (2) MT-RM Clip Kit + (2) MT-SN Rail Attachment Kit

COLLECTOR RAIL MOUNTING METHOD: FLUSH MOUNT

Fast Jacks:
Standard Stocked FastJack
FJ-450 4-1/2" and FJ-750 7-1/2"

- One Collector: (4) Fast Jack Kits
- Two Collectors: (6) Fast Jack Kits

Flashing: Standard 1" Oatey. By contractor.

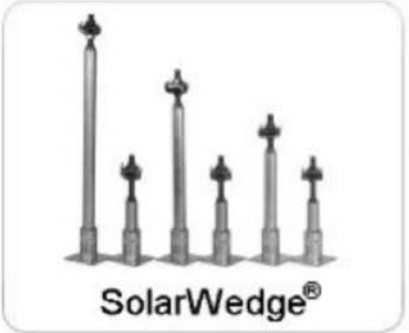
Collector Mounting

There are many types of mounting systems used to deal with Shake, Tile, Asphalt, Foam, Metal and other kinds of roofs. Please call for special solutions.


FastJack®


FastJack® E-Series


Commercial FastJack® E-Series


SolarWedge®


FoamJack®

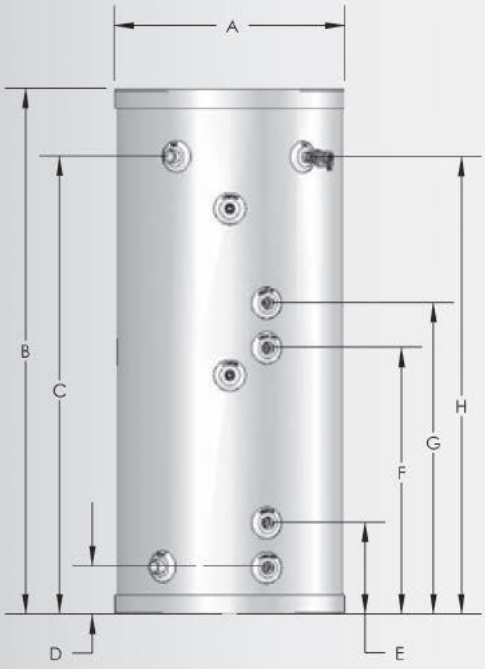
Solar Tanks

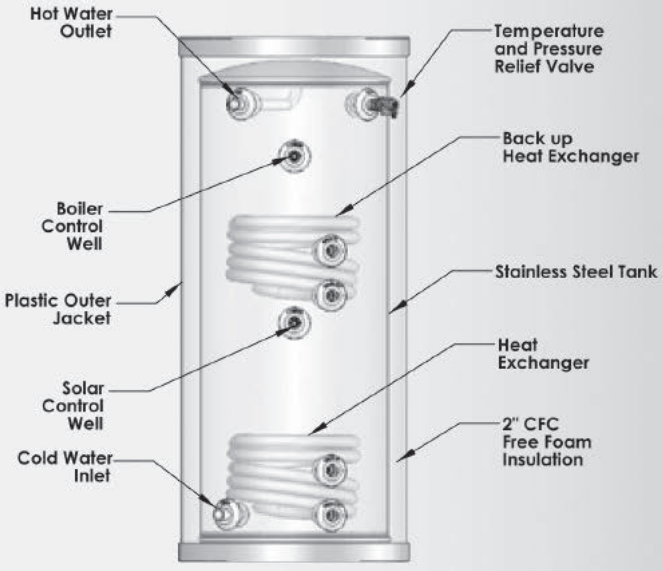
SUPERSTOR SOLAR STAINLESS STEEL SOLAR WATER HEATER — Solar Water Heater (with Back-up Heat Exchanger)

SB SERIES

Features:

- Tank constructed of type 316L Stainless Steel with tolerance for high temperatures. Superior resistance to corrosion.
- High output heat exchanger for both the boiler back up heat exchanger and solar heat exchanger
- Environmentally safe CFC free water blown, extra thick foam insulation allows less than 1/2 degree F per hour heat loss, the best in the industry
- Outer shell constructed of silver finished durable plastic for rust and impact resistance
- Limited lifetime warranty – 7 year commercial and lifetime residential
- Easy to install and maintain
- Factory supplied Temperature and Pressure Relief Valve
- SRCC OG300 Certified – applies to Federal Tax Credit when connected to a solar panel





SUPERSTOR SOLAR WATER HEATER DIMENSIONS

MODEL #	GAL.	DIMENSIONS							
		A	B	C	D	E	F	G	H
SSU-60SB	60	23"	52"	46"	5"	9-1/4"	26-1/2"	31"	46"
*SSU-80SB	80	23"	72"	64-1/2"	5"	9-1/4"	36-1/2"	41-1/2"	64-1/2"
*SSU-119SB	119	27"	74"	66-1/2"	7-1/2"	11-1/4"	38-1/2"	43-1/2"	66-1/2"

SUPERSTOR SOLAR WATER HEATER SPECS

MODEL #	GAL.	HEAT EXCHANGER OUTLET SIZE	INLET/ OUTLET SIZE	DRY WEIGHT	WET WEIGHT	SHIPPING WEIGHT (lbs)
SSU-60SB	60	1" NPT	1" NPT	100	492	120
*SSU-80SB	80	1" NPT	1" NPT	131	656	151
*SSU-119SB	119	1" NPT	1" NPT	210	1722	220

* DW SOLAR COIL MODELS SPECIAL ORDER, CONSULT FACTORY

SUPERSTOR SOLAR SB SERIES

MODEL	HX VOLUME GALLONS		HEATED WATER VOLUME OF BACK UP	MAX. OPERATING PRESSURE OF COIL	RECOVERY OF BACK UP IN MINUTES		BOILER OUTPUT FOR TEST RECOVERIES	FIRST DRAW *	
	SOLAR	BOILER			65° RISE	90° RISE		65° RISE	90° RISE
SSU-60SB	1 GAL	1 GAL	35 GAL	150 PSI	11 MIN	16 MIN	104,000 BTU/HR	40 GAL	28 GAL
SSU-80SB	1 GAL	1 GAL	49 GAL	150 PSI	14 MIN	19 MIN	114,000 BTU/HR	60 GAL	40 GAL
SSU-119SB	1 GAL	1 GAL	64 GAL	150 PSI	22 MIN	31 MIN	121,000 BTU/HR	90 GAL	60 GAL

* AMOUNT OF WATER DRAWN OUT OF STORAGE TANK WITHOUT ANY ENERGY INPUT

LP-196
5/15/08

All tank dimensions are approximate. Heat Transfer reserves the right to make product changes or updates without notice. Heat Transfer will not be held liable for typographical errors in literature. For questions, please consult the factory.

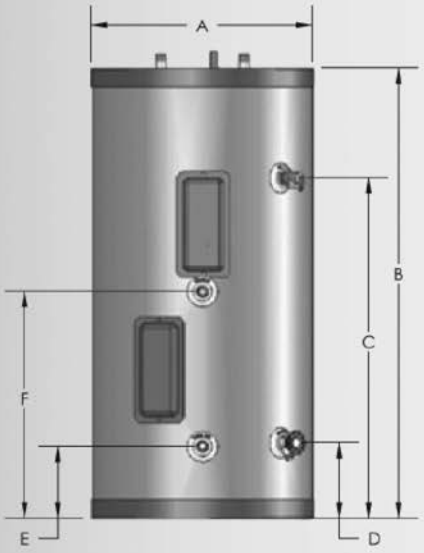
Solar Tanks

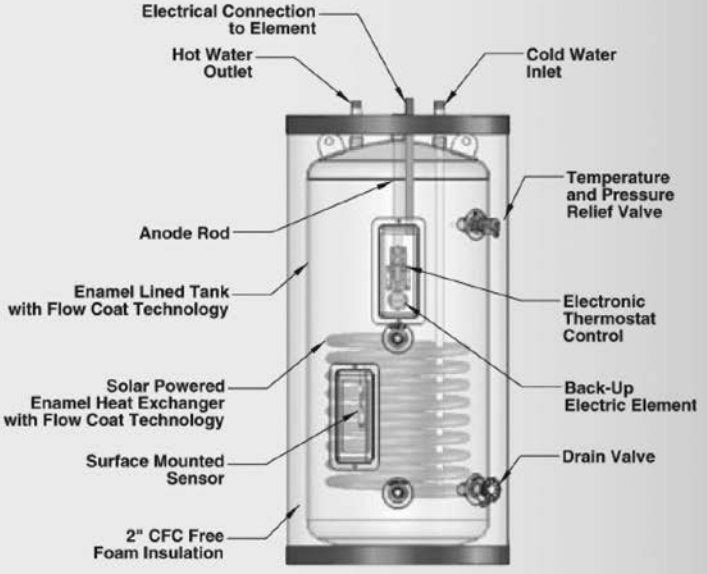
SUPERSTOR CONTENDER SOLAR Solar Water Heater (with Back-up Electric Element)

GLASS LINED SE SERIES

Features:

- Specially formulated Enamel Flow Coat guarantees 100% tank coverage. No exposed welds
- Solar Heat Exchanger - provides maximum heat transfer of solar energy into hot water
- Back-Up Electric Element - provides back-up heat source from Electric Element if Solar fails to keep up with hot water demand
- Environmentally safe CFC free water blown, extra thick foam insulation allows less than 1/2 dgree F per hour heat loss, the best in the industry
- Outer Shell constructed of silver finished durable plastic for rust and impact resistance
- Limited warranty – 5 years commercial and 7 years residential
- Factory Supplied Temperature and Pressure Relief Valve and Drain Valve
- SRCC OG300 Certified – applies to Federal Tax Credit when connected to Solar Panel





CONTENDER SOLAR WATER HEATER DIMENSIONS

		DIMENSIONS					
MODEL #	GAL.	A	B	C	D	E	F
SSC-50SE	50	23"	46-1/2"	36-1/2"	8"	7-3/4"	23-1/2"
SSU-80SE	80	23"	71-1/2"	60-1/4"	8"	7-3/4"	33-1/2"
SSU-119SE	119	27"	64"	51"	10-1/2"	10"	27"

ALL DIMENSIONS ARE APPROXIMATE

CONTENDER SOLAR WATER HEATER SPECS

MODEL #	GAL.	HEAT EXCHANGER OUTLET SIZE	INLET/ OUTLET SIZE	SHIPPING WEIGHT (LBS)
SSC-50SE	50	1"	3/4" NPT	175
SSC-80SE	80	1"	1-1/2" NPT	237
SSC-119SE	119	1"	1-1/2" NPT	336

CONTENDER SOLAR GLASS LINED SE SERIES

MODEL	SOLAR HX VOLUME GALLONS	HEATED WATER VOLUME OF BACK UP	RECOVERY OF BACK UP IN MINUTES		FIRST DRAW *	
			65° RISE	90° RISE	65° RISE	90° RISE
SSC-50SE	2 GAL	18 GAL	38 MIN	53 MIN	20 GAL	14 GAL
SSC-80SE	2 GAL	37 GAL	78 MIN	108 MIN	38 GAL	26 GAL
SSC-119SE	2 GAL	67 GAL	141 MIN	196 MIN	70 GAL	46 GAL

* AMOUNT OF WATER DRAWN OUT OF STORAGE TANK WITHOUT ANY ENERGY INPUT

LP-197
03/27/08

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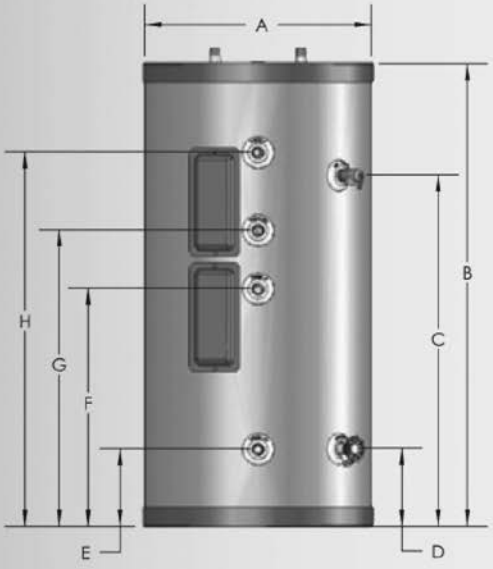
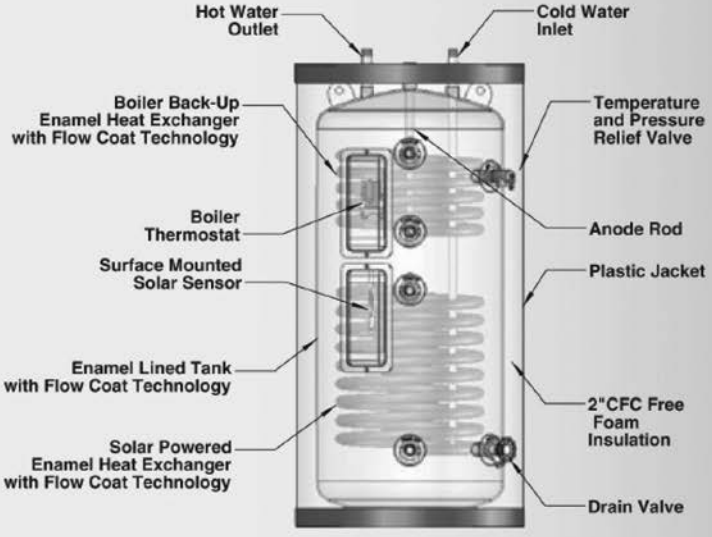
Solar Tanks

SUPERSTOR CONTENDER SOLAR GLASS LINED SB SERIES Solar Water Heater (with Back-up Heat Exchanger)

Features:

- Specially formulated Enamel Flow Coat guarantees 100% tank coverage. No exposed welds
- Solar Heat Exchanger - provides maximum heat transfer of solar energy into hot water
- Back-Up Boiler Heat Exchanger - provides back-up heat source from the boiler if the solar fails to keep up with the hot water demand
- Environmentally safe CFC free water blown, extra thick foam insulation allows less than 1/2 degree F per hour heat loss, the best in the industry
- Outer Shell constructed of grey finished durable plastic for rust and impact resistance
- Limited warranty – 5 years commercial and 7 years residential
- Factory supplied Temperature and Pressure Relief Valve and Drain
- SRCC OG300 Certified – applies to Federal Tax Credit when connected to Solar Panel





CONTENDER SOLAR WATER HEATER DIMENSIONS

		DIMENSIONS							
MODEL #	GAL.	A	B	C	D	E	F	G	H
SSC-50SB	50	23"	46-1/2"	36-1/2"	8"	7-3/4"	23-1/2"	30"	37-3/4"
SSC-80SB	80	23"	71-1/2"	60-1/4"	8"	7-3/4"	33-1/2"	43"	55-1/2"
SSC-119SB	119	27"	64"	51"	10-1/2"	10-1/2"	27"	36"	47-1/4"

ALL DIMENSIONS ARE APPROXIMATE

CONTENDER SOLAR WATER HEATER SPECS

MODEL #	GAL.	HEAT EXCHANGER OUTLET SIZE	INLET/ OUTLET SIZE	SHIPPING WEIGHT (lbs)
SSC-50SB	50	1" NPT	3/4" NPT	187
SSC-80SB	80	1" NPT	1-1/2" NPT	286
SSC-119SB	119	1" NPT	1-1/2" NPT	367

CONTENDER GLASS LINED SOLAR SB SERIES

MODEL	HX VOLUME GALLONS		HEATED WATER VOLUME OF BACK UP	RECOVERY OF BACK UP IN MINUTES		BOILER OUTPUT FOR TEST RECOVERY	FIRST DRAW*	
	SOLAR	BOILER		65° RISE	90° RISE		65° RISE	90° RISE
SSC-50SB	2 GAL	1.5 GAL	18 GAL	12 MIN	17 MIN	80,000 BTU/HR	20 GAL	14 GAL
SSC-80SB	2 GAL	1.5 GAL	37 GAL	17 MIN	24 MIN	90,000 BTU/HR	38 GAL	26 GAL
SSC-119SB	2 GAL	1.5 GAL	67 GAL	22 MIN	31 MIN	100,000 BTU/HR	70 GAL	46 GAL

* AMOUNT OF WATER DRAWN OUT OF STORAGE TANK WITHOUT ANY ENERGY INPUT

LP-198
06/22/07

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HTP

SUPERstor GL

GLASS LINED STORAGE TANK

Available in 50-, 80-, 119-, and 175-Gallon Models

The most efficient way to store hot water for residential and commercial applications.
More hot water and increased storage capacity. Installed individually or in multiple applications, The SuperStor Coil Booster Glass Lined Storage Tank can provide 80% draw capability without an appreciable temperature decrease in single temperature applications.

Construction Features

- **Long life tank design**
  Unique steel formulation with high-temperature porcelain enamel to maximize corrosion resistance resulting in a superior tank design. Heavy duty magnesium anode rod(s) are installed for longer tank life.
- **Efficient design**
  Rigid polyurethane foam insulation provides superior insulating qualities that allow less than 1 degree F per hour heat loss (24 degreess F in 24 hrs.) resulting in reduced operating costs. The patented process of injecting foam into the insulating cavity adds additional durability and toughness to the tank.
- **Tank Openings**
  Circulating line connections and hot outlets are 3/4" NPT on the GL-50, 2" NPT on the GL-80 and GL-119 and 2-1/2" NPT on the GL-175. Other openings are provided for relief valve and temperature control. The GL-175 is equipped with a hand-hole cleanout.

Certifications and Ratings

- **Optional ASME Construction**
  ASME construction is available on storage models GL-80 ASME/GL-119 ASME/GL-175 ASME. Certified to ASME boiler and pressure vessel code standards.

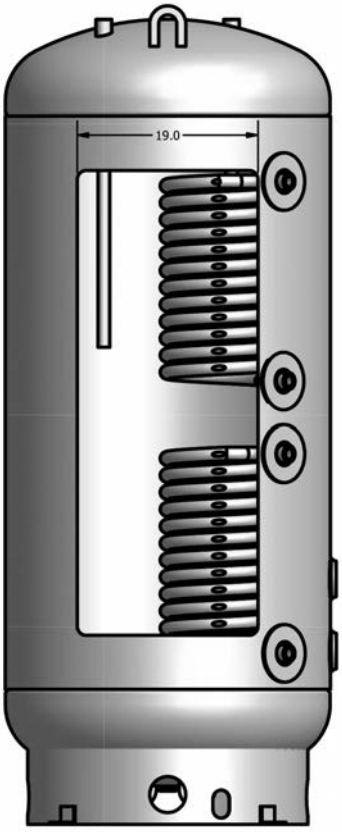
Limited Warranty

- This product features a five-year limited warranty against tank leaks. See warranty brochure for complete details.

4723 Tidewater Ave. | Oakland, CA 94601 | Tel: 800-493-8432 | jtgmuir.com

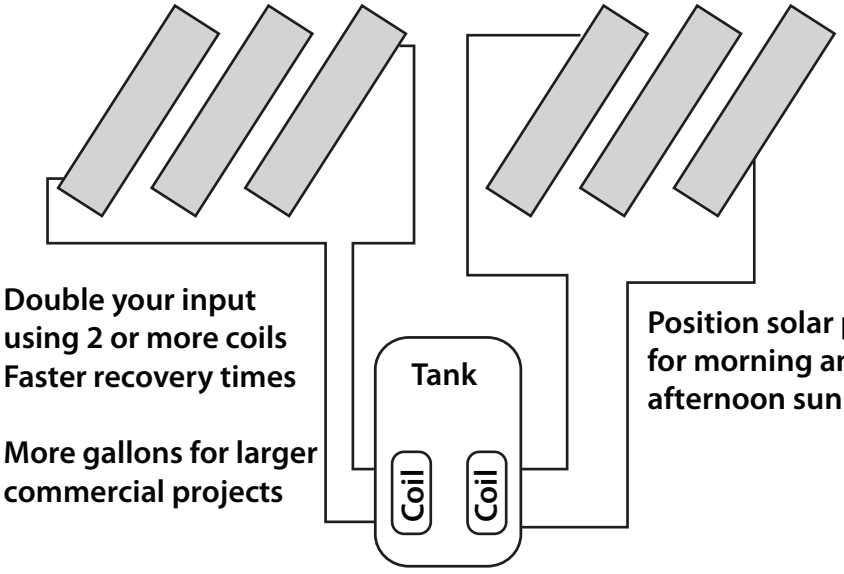
LARGE VOLUME SOLAR TANKS WITH HEAT EXCHANGER

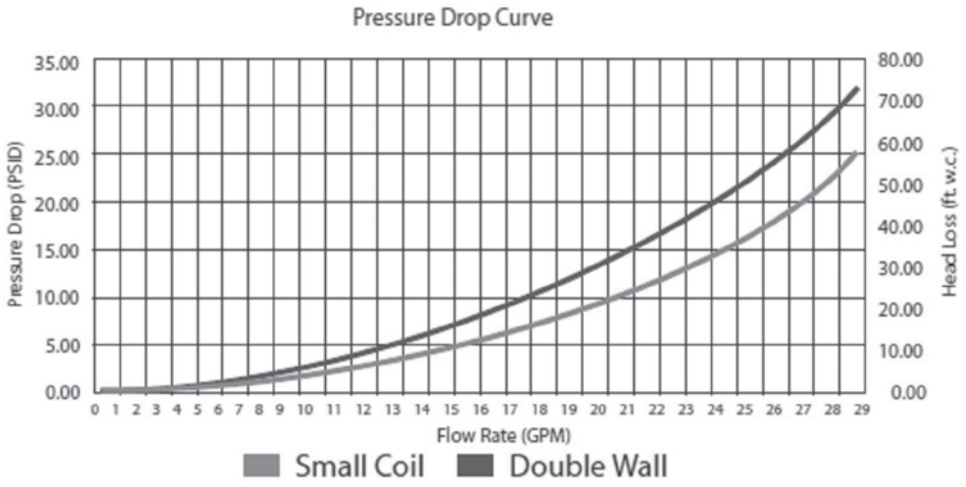
- Multiple coils available per tank
  Coils sizes are 7" diameter, 21" length
- Glass lined for high temperatures
- Topcoat insulation offers a R-16 insulation value
- Available with insulation and steel jacket
- Vertical and horizontal
- Tank sizes up to 1,000 gallons
- Electric or boiler backup
  Electric backup requires additional flanged fittings
- 5 year warranty
- Lifting lugs standard
- ASME Rated

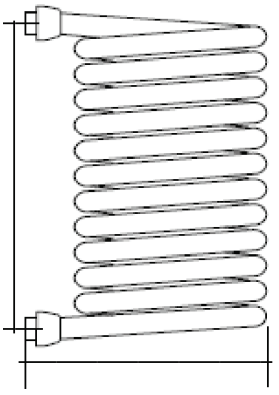


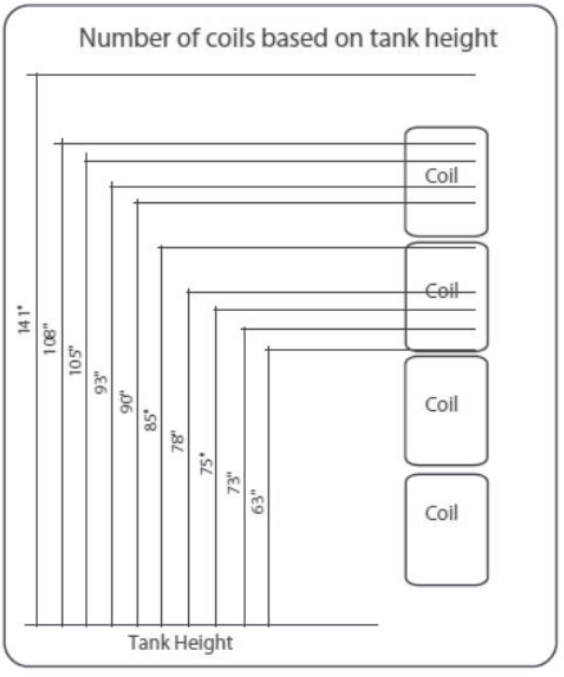
Heat Transfer Ratings 27,000 btu/hr/coil

Based on 100 degree incoming water temperature from solar panels



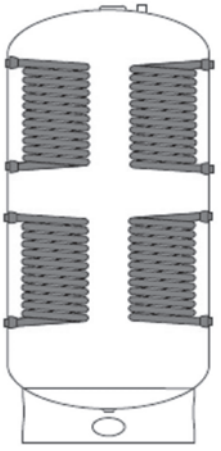


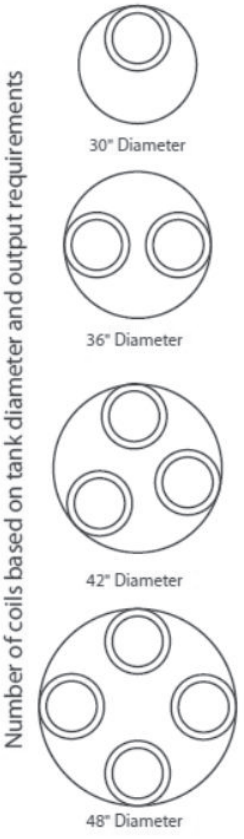




From the solar collector – 100
Incoming water temperature – 40 degrees
40 degree rise
3 GPM

Coil Btu Output 27,000 Btu/hr x (4)



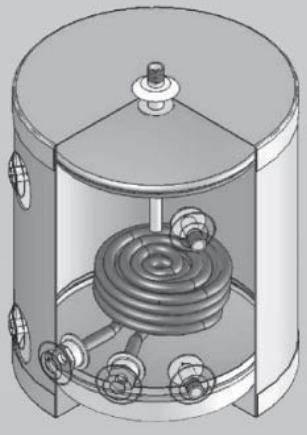


Part #	Nominal Gal. Cap.	Gal. Cap.	Dia.	Vert. Hgt.	Horiz. Hgt.	E	H	L	D	A	B	C	Weight at 125 #
916-035	193	175	30"	67"	39"	4"	17.5"	63"	18"	2.5"	1"	3"	303
916-036	229	210	30"	79"	39"	4"	17.5"	75"	24"	2.5"	1"	3"	347
916-037	260	240	30"	89"	39"	4"	17.5"	85"	29"	2.5"	1"	3"	383
916-041	344	310	36"	82"	45"	4"	19"	78"	24"	2.5"	1"	3"	527
916-042	375	340	36"	89"	45"	4"	19"	85"	27.5"	2.5"	1"	3"	569
916-043	397	360	36"	94"	45"	4"	19"	90"	30"	2.5"	1"	3"	599
916-048	504	453	42"	88"	51"	4"	20.5"	84"	25.5"	3"	1"	3"	716
916-049	558	505	42"	97"	51"	4"	20.5"	93"	30"	3"	1"	3"	848
916-050	630	575	42"	109"	51"	4"	20.5"	105"	36"	3"	1"	3"	934
916-054	572	500	48"	77"	57"	4"	22"	73"	18.5"	3"	1"	3"	1025
916-056	752	675	48"	100"	57"	4"	22"	96"	30"	3"	1"	3"	1173
916-057	846	765	48"	112"	57"	4"	22"	108"	36"	3"	1"	3"	1301
916-059	1128	1040	48"	145"	57"	4"	22"	141"	52.5"	3"	1"	3"	1652

DRAIN BACK TANK

Product Specifications Sheet

The **Drain Back Tank** is designed to allow the solar collectors to drain all the water from collector and related pipe connections into the drain back tank reservoir to protect the system from both freezing and overheating. The Drain Back Tank comes with either an internal heat exchanger for use with a storage tank or without a heat exchanger to be connected to a tank with an internal heat exchanger or plate frame heat exchanger. Drain back systems are a smart choice when designing a solar thermal system to supplement central heating and domestic hot water heating when overheating during the warmer months is a problem. Drain back systems have less components, so maintenance is reduced, compared to a pressurized glycol system. Drain back systems also provide protection where water quality may be a problem.



SSU-DBX with Heat Exchanger

SSU-DB without Heat Exchanger

Drain Back Features

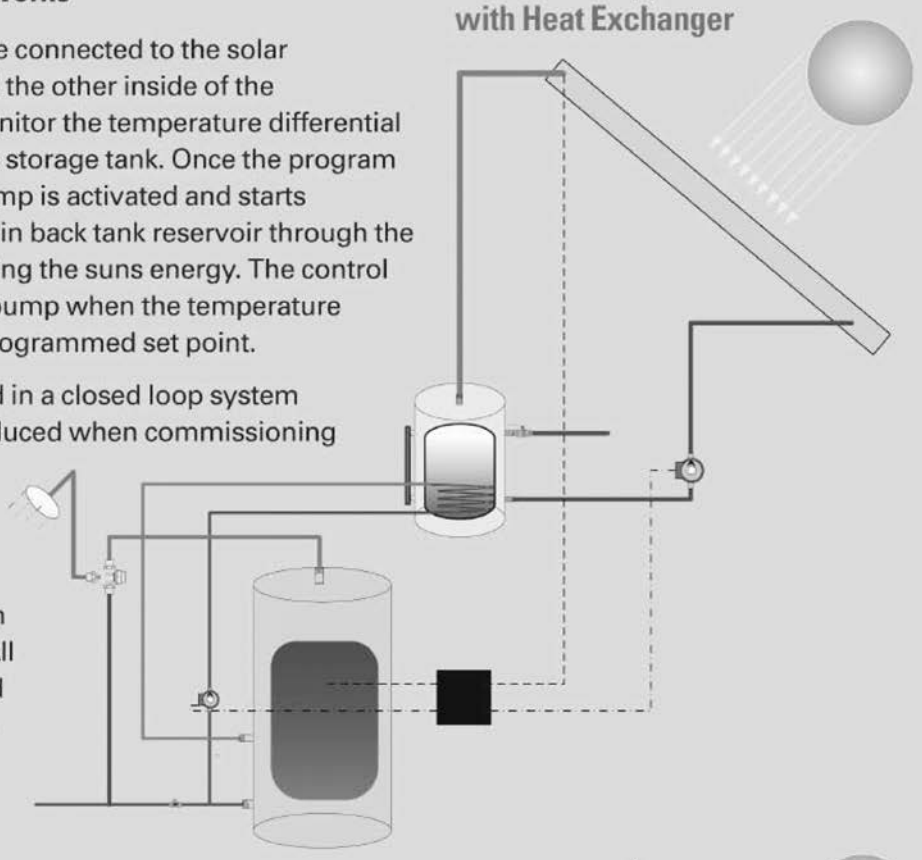
- Tank constructed of durable 304 stainless steel
- Plastic Jacket will not dent
- Light weight construction
- Maintenance free operation
- 5 year warranty against leaks
- Available with or without heat exchanger
- Highly efficient Copper Heat Exchanger with large surface area
- Site Glass to monitor water level
- Internal dip tube enhance heat exchanger performance

How the Drain Back Tank works

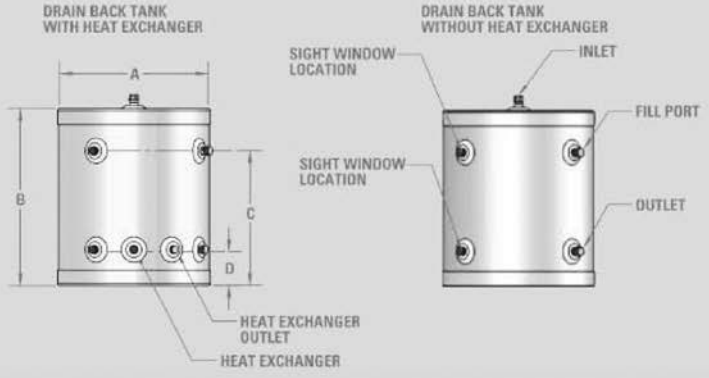
There are two sensors that are connected to the solar control – one on collector and the other inside of the storage tank. The sensors monitor the temperature differential between the collector and the storage tank. Once the program differential is reached, the pump is activated and starts circulating water from the drain back tank reservoir through the solar collector to start absorbing the suns energy. The control will deactivate the circulator pump when the temperature difference drops below the programmed set point.

The drain back system is used in a closed loop system where the water is only introduced when commissioning the system. When the circulator shuts down, all the water must drain back into the tank reservoir so any exposed piping or system components will not freeze. All drain back tanks are equipped with a site glass to determine water level inside the tank.

Drain Back Application with Heat Exchanger

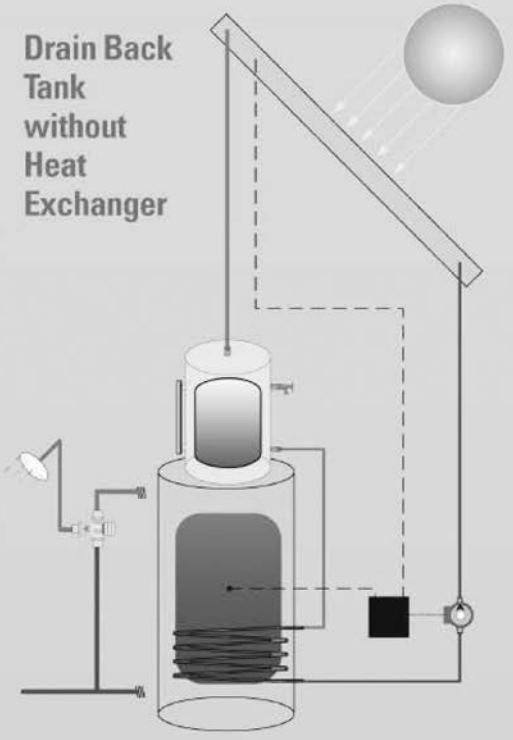


Specifications



Model	A	B	C	D	Inlet/Outlet	Capacity	Heat Hx	Shipping Weight
SSU-10 DB	16.25	19.00	14.60	2.60	3/4" NPT	10 Gal	N/A	25 lbs.
SSU-10 DBX	16.25	19.00	14.60	2.60	3/4" NPT	10 Gal	10 Sq. Ft.	31 lbs.
SSU-15 DB	19.25	23.00	17.00	4.50	3/4" NPT	15 Gal	N/A	37 lbs.
SSU-15 DBX	19.25	23.00	17.00	4.50	3/4" NPT	15 Gal	15 Sq. Ft.	44 lbs.
SSU-20 DB	19.25	27.00	21.80	4.50	3/4" NPT	20 Gal	N/A	44 lbs.
SSU-20 DBX	19.25	27.00	21.80	4.50	3/4" NPT	20 Gal	20 Sq. Ft.	55 lbs.

Drain Back Tank without Heat Exchanger

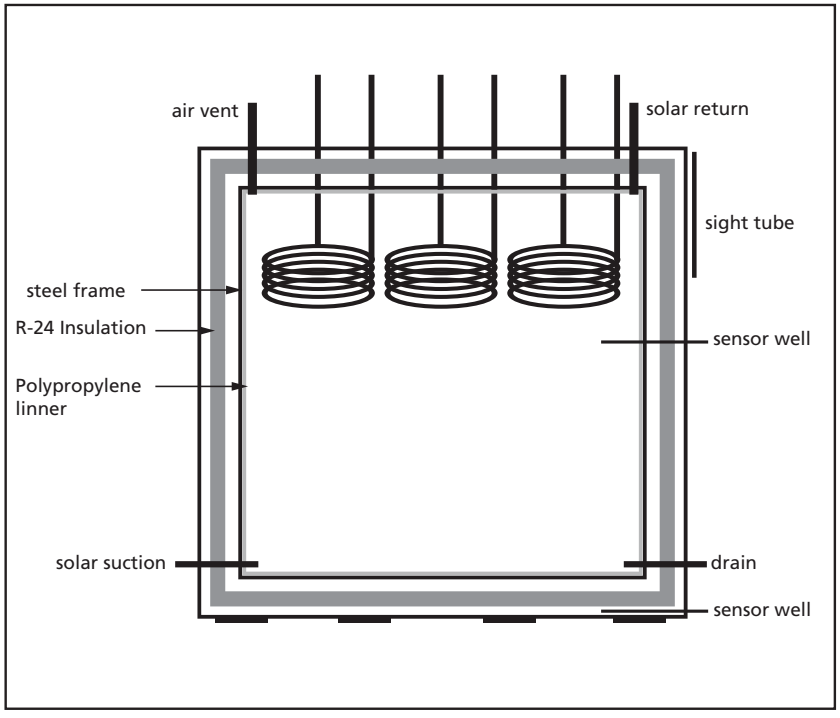


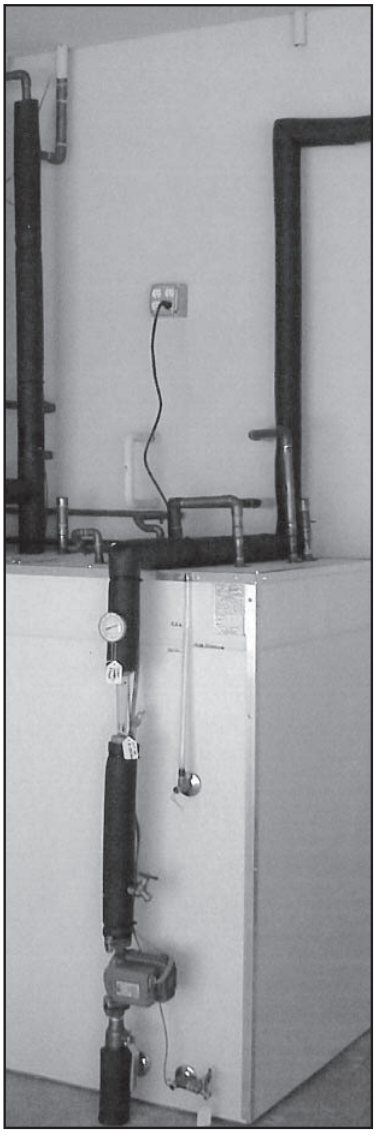
LP-267 Rev. 9/22/08

Solar Tanks

High Capacity Drain Back Tanks

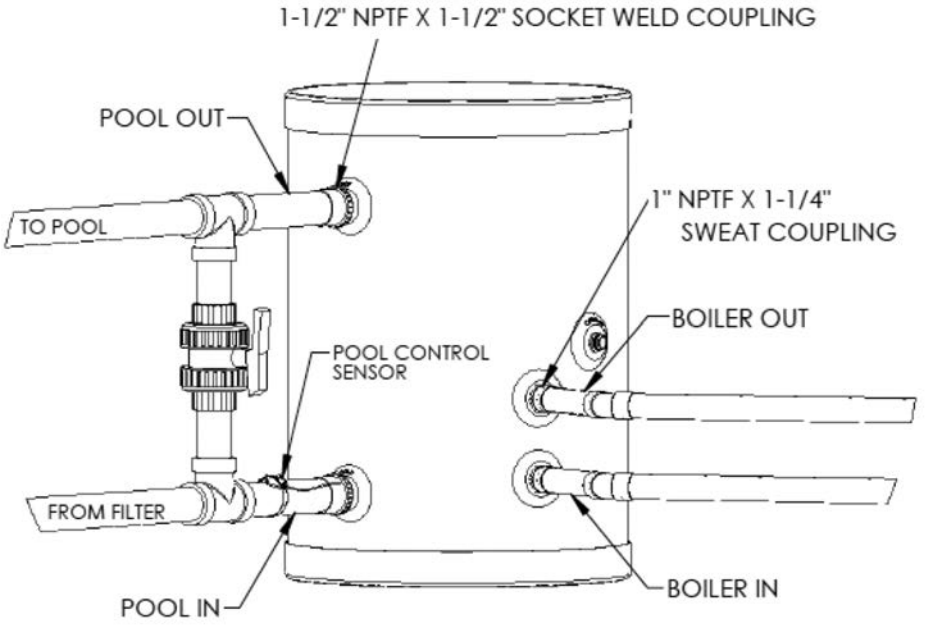
Solar Spectrum custom polypropylene lined, insulated tanks are ideal for multiple load designs including domestic hot water, pool heating, space heating or spa heating.

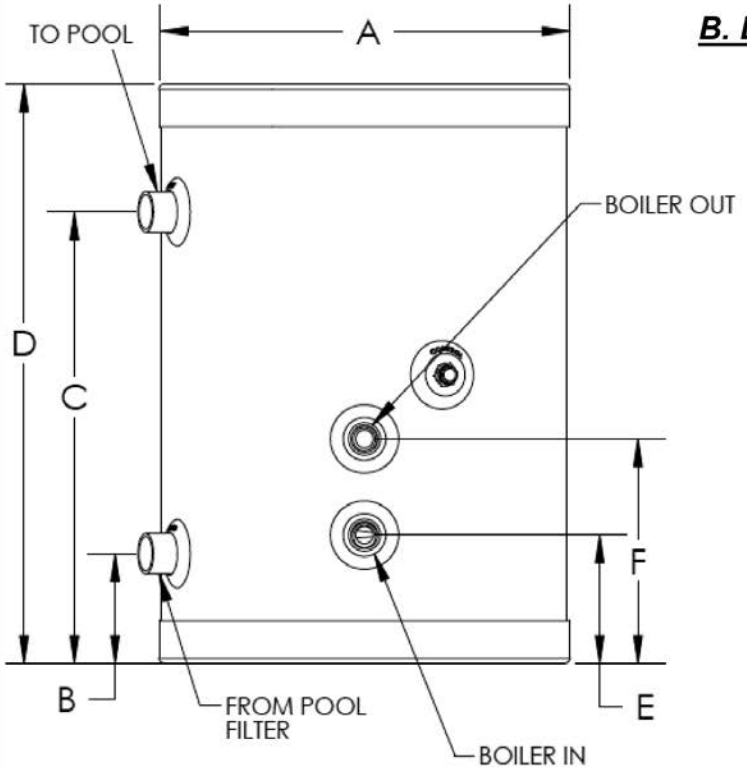




60 - 2000 Gallon Capacity

SUPERSTOR POOL HEATER: MODEL SSU-20PH
SWIMMING POOL AND SPA HEAT EXCHANGE





B. LOCATING THE WATER HEATER

If the pool heater is to be located outdoors, it must be in a covered area, protected from the rain and sun.

For winterizing, the pool heater must be completely drained and have one gallon of non-toxic, food-grade propylene glycol, FDA rated as GRAS (Generally Recognized As Safe) pumped into the heat exchanger to prevent freezing.

DIMENSIONS

MODEL	A	B	C	D	E	F	INLET/OUTLET
SSU-20PH	19.25"	5.00"	21.00"	27.00"	6.00"	10.50"	1-1/2"

SWIMMING POOL AND SPA HEAT EXCHANGE

A. PIPING TO THE POOL FILTER

The pool water side piping (pool in and pool out, see Figure 2) is recommended to be 1 ½" PVC. A bypass will be necessary between the inlet and outlet of the pool heater (see Figure 2). The bypass will allow the boiler to keep up with the pool heater. If the bypass is not installed, the boiler may not be able to provide adequate temperature.

B. PIPING TO THE BOILER

Piping between the boiler and pool heater should be 1 ¼" copper. It is very important to properly size the boiler circulator to match total system flow rates, pressure drop (feet of head), and boiler output (see Table 1). For example, if the boiler is 100,000 BTU/H, the system requires a 6 GPM flow rate through the heat exchanger. If the boiler is 125,000 BTU/H, the system requires a 7 GPM flow rate through the heat exchanger.

MODEL	REQ. BTU OUTPUT	RECC. FLOW RATE	HEAT EXCH. PRESSURE DROP	DIMENSIONS	
				DIA.	HEIGHT
SSU-20PH	100,000	6	4.5'	19 1/4"	27"
	125,000	7	7.0'	19 1/4"	27"
	150,000	8	9.2'	19 1/4"	27"
	195,000	9	10.6'	19 1/4"	27"
	200,000	10	12.5'	19 1/4"	27"

Table 1 – Pressure Drop through the Heat Exchanger

To achieve proper flow rates, calculate friction loss for the length of piping, plus the number of fittings, elbows, tees, pool heat exchanger, etc. Pool heat exchanger friction loss is 4.5' at 6 GPM, 7' at 7 GPM, and 9.2' at 8 GPM. The minimum boiler temperature must be maintained at 160oF or higher. Low boiler temperature will dramatically reduce the life of the boiler.

WATER HEATER SIZING FOR SWIMMING POOLS AND BAPTISTRIES						
HEATING TIME IN HOURS	FACTOR					
	20 DEG. F. RISE	25 DEG. F. RISE	30 DEG. F. RISE	40 DEG. F. RISE	50 DEG. F. RISE	60 DEG. F. RISE
6	40	50	60	80	100	120
12	20	25	30	40	50	60
24	10	12.5	15	20	25	30
48	5	6.3	*7.5	10	12.5	15
72	3.4	4.25	5.1	6.8	8.5	10.2
96	2.5	3.0	3.75	5.0	6.25	7.5
120	1.7	2.0	2.5	3.3	4.25	5.0
144	1.4	1.7	2.2	2.8	3.5	4.25
168	1.3	1.6	2.1	2.7	3.4	4.1
192	1.2	1.5	2.0	2.6	3.3	4.0
216	1.1	1.4	1.9	2.5	3.2	3.9
240	1.0	1.25	1.8	2.4	3.1	3.8

Table 2 – Water Heating Sizing - *Depending on Chart

Submittal Data Information
Solar Pumping Station – SPS-PC

Features

- All-in-One Pre-insulated and Pre-plumbed Module
- Ball Valves on Supply and Return with:
  - Temperature Gauges
  - Solar Check Valves
- Flow Meter graduated in GPM with Integral Balancing Valve
- Safety Group:
  - Pressure Gauge
  - Pressure Relief Valve
  - Expansion Tank Connection
- Fill and Purge Valves
- Air Eliminator with Manual Vent
- Expansion Tank Bracket and Flex Tubing
- Standard 2-Bolt Flanged Circulator
- Variable Speed Solar Differential Control
  - Matches Output of Collector
  - No Short Cycling of Circulator
  - +20% Increased Performance
- User Definable Line Voltage Output, Supports:
  - External Heat Exchanger
  - Collector Sink / Dump
  - Storage Tank Supplement
  - 1 or 2 Storage Tanks

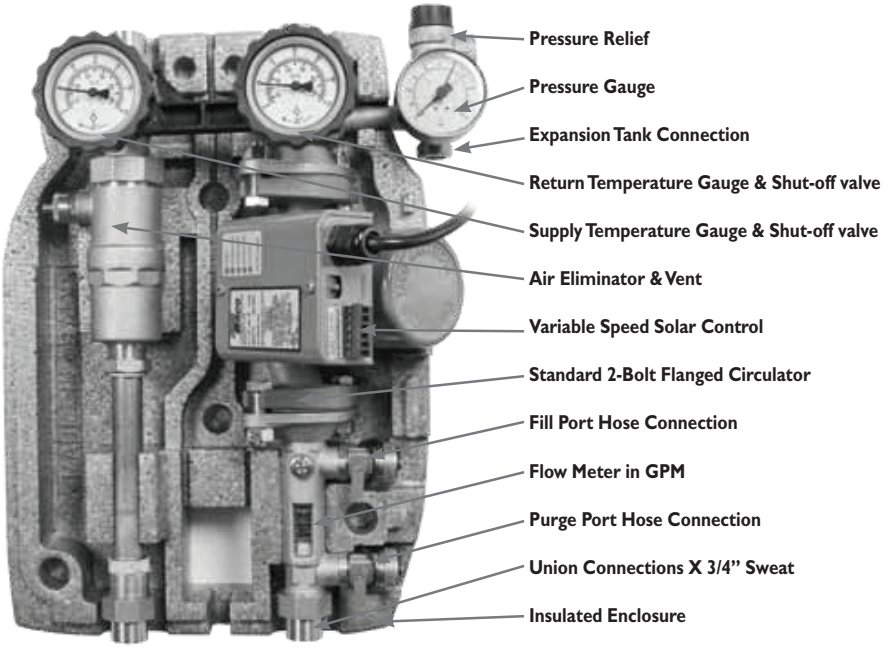
Specifications

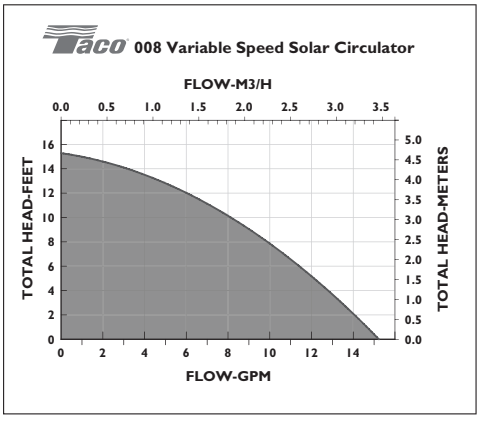
Body Construction	Bronze / Brass
Insulating Enclosure	EPP
Maximum Working Temp. (Excluding Circulating Pump)	250˚F (120˚C)
Short Time	320˚F (160˚C) for 20 Seconds
Pressure Relief Setting	87 PSI (6BAR)
Temperature Gauges	30-250˚F (0-120˚C)
Pressure Gauges	0-145 PSI (0-10BAR)
Flow Meter	0 - 3.25 GPM (0-12 l/min)
Exp. Tank Connections	3/4" BSP or NPT
End Connections	3/4" FM Copper Sweat X 1" Union
Unit Dimensions	12.1" x 17" x 6.6"
Shipping Weight	25 LBS

Variable Speed Pays Big Performance Dividend:

The variable speed circulator in the Solar Pumping Station continuously optimizes the flow through the collector to achieve maximum energy gain. For example, there is no benefit of pulling 80° water out of the collector when you are trying to maintain 120° in a tank. If a proper Delta-T is maintained through the collector then higher source temperatures can be achieved over longer periods of time, no matter the weather conditions.

The Solar Pumping Station truly simplifies your closed loop solar water heating installation. With just a few connections, you install the heart of the system; circulator, solar control and all safety and measurement equipment.





Taco® solar made easy

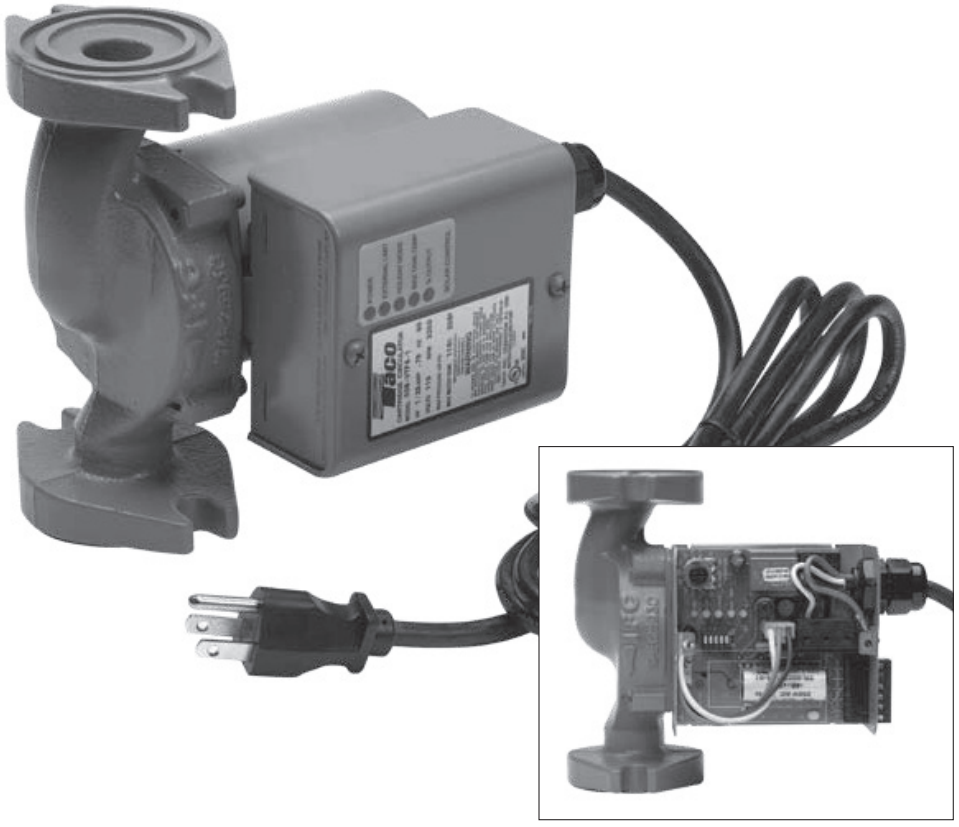
VT SOLAR SERIES

Circulator with Integral Variable Speed Solar Control

The Taco Variable Speed Solar Control Circulators combine the advanced features of our external speed and solar controls with the reliability and convenience of our 00® Cartridge Circulators. All the wiring for power and sensors is done directly to the circulator while the LED status panel makes it easy to check functionality. Dip switch based user configurable settings makes for a fast set-up, no matter the solar application. The circulator continually adjusts its speed, maximizing the output of the collector, increasing the usable higher temperature water throughout the day, eliminating short cycling and increasing system performance by 20%.

VARIABLE SPEED
Add 20% to Solar System Performance

at the same price as On/Off Circulator+ Separate Control



MULTIPLE FUNCTION SOLAR CONTROL

VT SOLAR SERIES

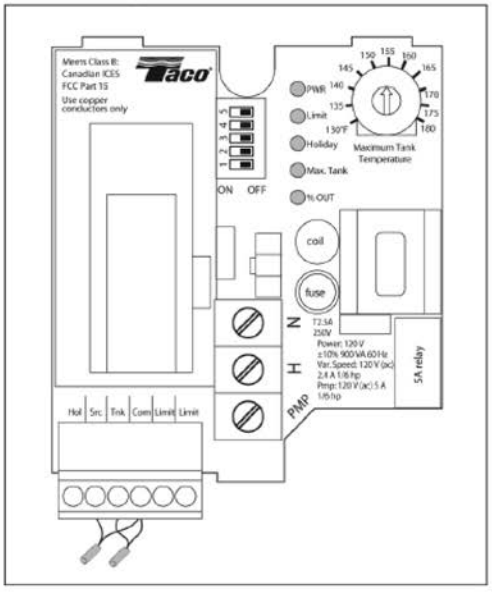
Features:

- All-in-One Pump and Variable Speed Solar Control
- Variable Speed Benefits
  - Matches Output of Collector
  - No Short Cycling of Circulator
  - +20% Increased Performance
- Available in Several Sizes, 006, 008, 009 and 0011
  - Cast Iron and Non-Ferrous
- User Definable Line Voltage Output, Supports
  - External Heat Exchanger
  - Collector Sink / Dump
  - Storage Tank Supplement
  - Booster Pump Function
- Supports Drain Back Applications
- Freeze Protection for Open Systems
- Holiday Function, Minimizes Collector Stagnation
- Factory Installed Line Cord
- Adjustable Storage Tank Maximum Setting
- LED Status Panel
- Supports 1 or 2 Storage Tank(s)
- External Limit Input
- Exercising of Collector Circulator
- 2 Sensors Included
- Snap-in PC Board
- UL Approved

c UL us LISTED

FOR INDOOR USE ONLY

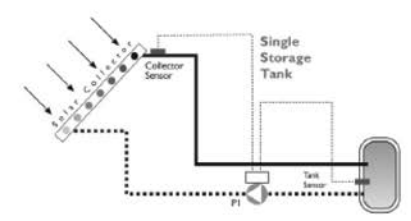
PC Board Layout

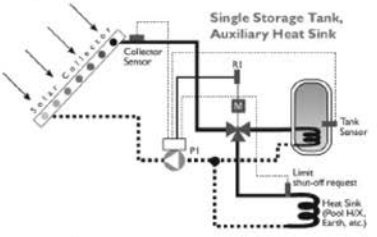


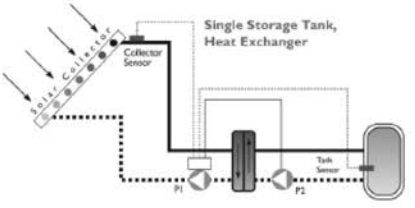
Variable Speed Pays Big Performance Dividend

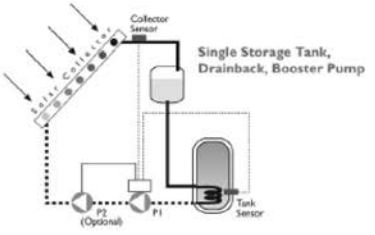
The Solar Variable Speed Circulator (00-VT) continuously optimizes the flow through the collector to achieve maximum energy gain. For example, there is no benefit of pulling 80° water out of the collector when you are trying to maintain 120° in a tank. If a proper delta T is maintained through the collector then higher source temperatures can be achieved over longer periods of time, no matter the weather conditions.

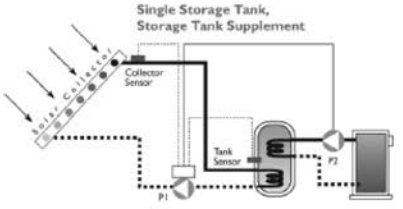
With the flip of a dip switch the Taco all-in-one Solar Circulator can be easily set-up to work in numerous solar applications, some of the most popular are detailed below. For additional application and installation information go to **www.taco-hvac.com**.

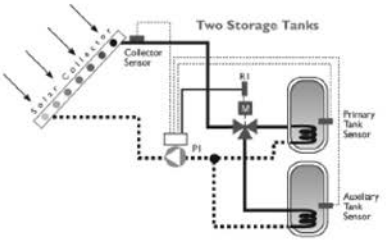




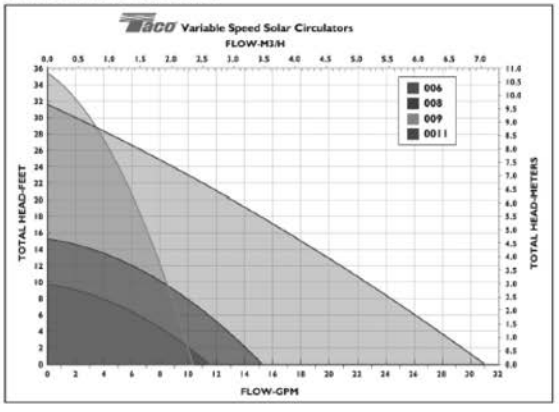








Performance Curves



tekmar®

Solar Capable Controls

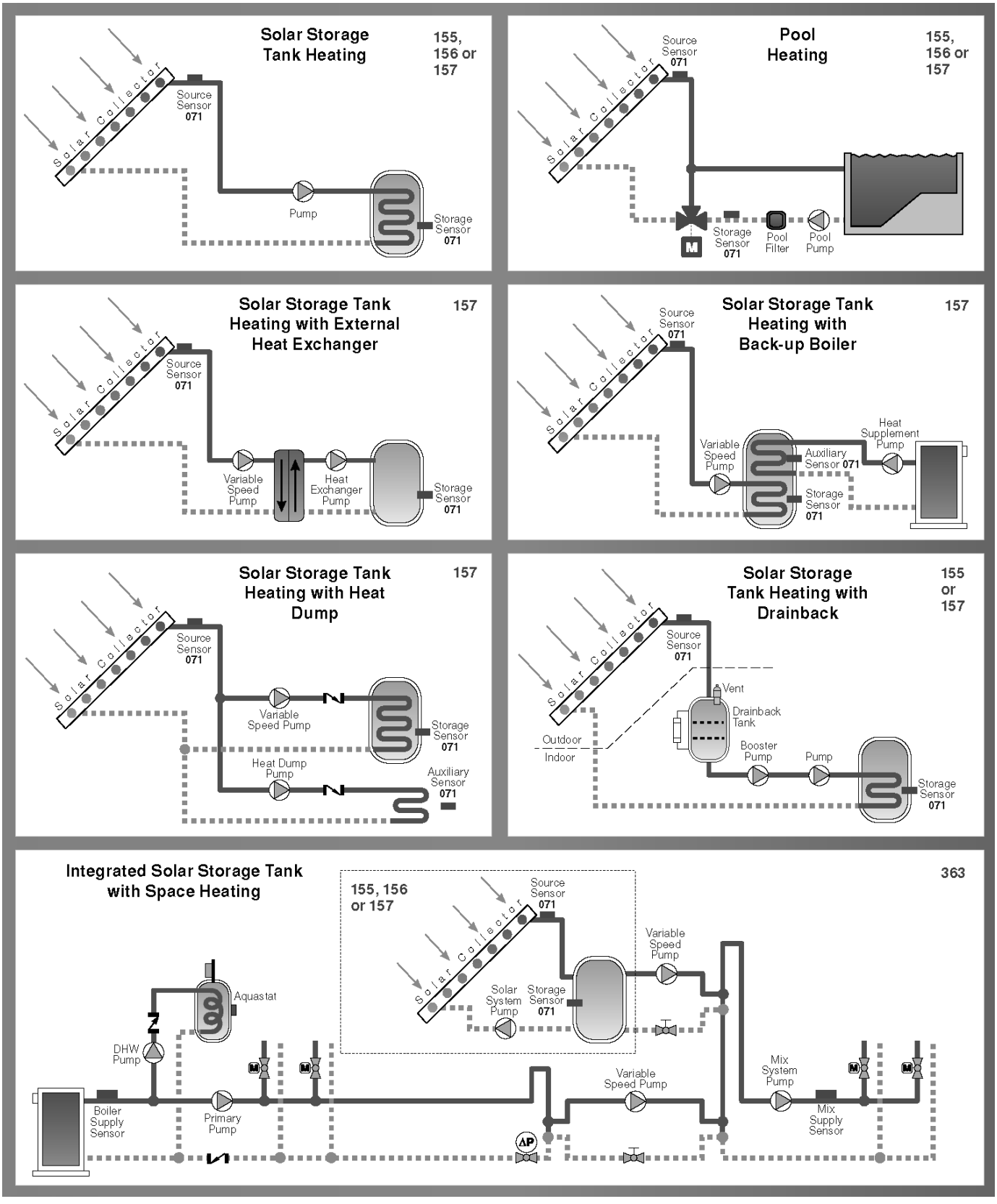
Difference Setpoint Control 156
- On/Off Pump Control
- Cost Effective Solar Controller

Difference Setpoint Control 155
- On/Off Pump Control
- Drainback/Draindown Operation

Difference Setpoint Control 157
- Variable Speed Pump Control
- Two Pump Outputs
- Four Modes of Operation

Universal Reset Control 363
- Storage Tank Mode Incorporates Solar System with Space Heating System

	156	155	157
Difference Setpoint Operation			
On / Off Pump Control	o	o	
Variable Speed Pump Control			o
Source Sensor	o	o	o
Storage Sensor	o	o	o
Auxiliary Sensor			o
Protection Features			
Solar Drainback Operation		o	o
Solar Draindown Operation		o	
Heat Dump Operation			o
Maximum Storage Setpoint	o	o	o
Minimum Source Setpoint	o	o	o
Smart Features			
External Heat Exchanger Operation			o
Supplemental Heat Operation			o
Freeze Protection			o
Test Routine			o
Energy Calculation	o	o	o
Display			
ΔT Temperature	o	o	o
Source Temperature	o	o	o
Storage Temperature	o	o	o
Variable Speed Pump % Output			o
Backlight			o
Power Requirements			
AC Power Supply	24 V	24 V	24 V
DC Power Supply	24 V	30 V	


Solar Storage Tank Heating
155, 156 or 157
Solar Collector
Source Sensor 071
Pump
Storage Sensor 071
Pool Heating
155, 156 or 157
Source Sensor 071
Solar Collector
Storage Sensor 071
Pool Filter
Pool Pump
M
Solar Storage Tank Heating with External Heat Exchanger
157
Solar Collector
Source Sensor 071
Variable Speed Pump
Heat Exchanger Pump
Storage Sensor 071
Solar Storage Tank Heating with Back-up Boiler
157
Source Sensor 071
Solar Collector
Variable Speed Pump
Auxiliary Sensor 071
Heat Supplement Pump
Storage Sensor 071
Solar Storage Tank Heating with Heat Dump
157
Solar Collector
Source Sensor 071
Variable Speed Pump
Storage Sensor 071
Heat Dump Pump
Auxiliary Sensor 071
Solar Storage Tank Heating with Drainback
155 or 157
Source Sensor 071
Solar Collector
Vent
Drainback Tank
Outdoor
Indoor
Booster Pump
Pump
Storage Sensor 071
Integrated Solar Storage Tank with Space Heating
363
155, 156 or 157
Source Sensor 071
Solar Collector
Solar System Pump
Storage Sensor 071
Variable Speed Pump
Aquastat
DHW Pump
Boiler Supply Sensor
Primary Pump
Variable Speed Pump
Mix System Pump
Mix Supply Sensor
ΔP
M

SOLAR PUMP BLOCK

taco solar made easy

External Heat Exchange Solar Package
Circulators • Control • Heat Exchanger

Features

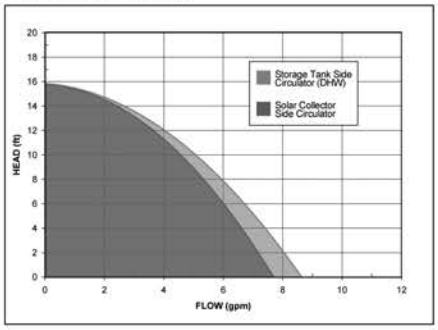
- All-in-One Heat Exchanger, Dual Circulators and Variable Speed Solar Control Package
- Variable Speed Benefits:
  - Matches Output of Collector
  - No Short Cycling of Circulator
  - +20% increased Performance
- Brazed Plate Heat Exchanger:
  - Provides Complete Isolation
  - Stainless Steel
  - Easily Removable
- User Definable Output, Supports:
  - Collector Sink / Dump
  - Storage Tank Supplement
  - Booster Pump Function
- Only 4 Pipe Connections Required:
  - Greatly Decreases Installation Time
- Supports Drain Back Applications
- Freeze Protection for Open Systems
- Holiday Function:
  - Minimizes Collector Stagnation
- Displays Energy Collected in kW / Hours (When optional flow sensor is connected)
- Bronze Casing for Open or Closed Systems
- Replaceable Cartridge Design
- Maintenance Free, Wet-Rotor Circulators
- Pump Operation / Control Override Switch
- Supports 1 or 2 Storage Tank(s)
- Large LCD Display
- 3 Strap-on Sensors included

Performance Data

Flow Range: 0 – 7.5 GPM
Head Range: 0 – 15.5 Feet
Maximum Storage Tank Temperature: 185°F (85°C)
Maximum Working Pressure: 125 psi
Connection Sizes: 3/4" NPT

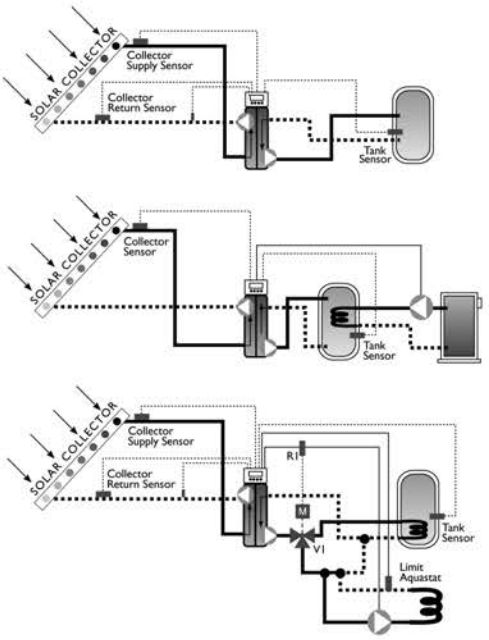
c UL us LISTED **FOR INDOOR USE ONLY**

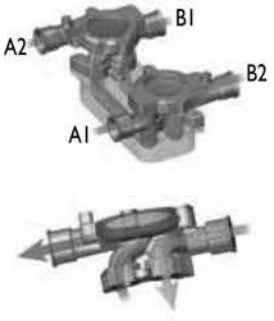
Performance Field



All-in-One Solution

The Solar X-Pump Block (SXPB) is a complete solar thermal solution with an attached brazed plate, counterflow style heat exchanger for system isolation. Integral to the unit is a variable speed heat source circulator, constant speed heat sink circulator, heat exchanger, and the electronics to drive it all. The Solar SXPB can be set up to maintain a setpoint differential between the solar collector and a primary and optional auxiliary storage tank, can support a booster pump as part of a drainback system, features an intelligent heat dump option, freeze protection, and conveniently displays the energy collected by the collector on its display. With just four pipe connections needed, the SXPB greatly reduces the time and space required for installation.



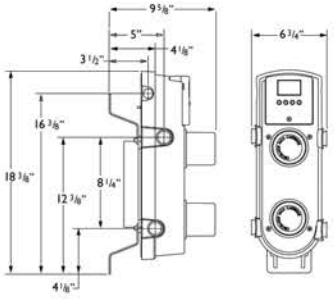


Operation

Hot water from the solar collector enters the X-Pump Block's integral heat exchanger at port (A1) and exists at (A2). The variable speed circulator controls the speed of the water flowing through the A side of the heat exchanger to satisfy the heat transfer requirements between the A side of the heat exchanger and the B side while maintaining the proper delta T. The heat exchanger is a counterflow style, so potable water from storage tank enters at port (B1) and exits at port (B2). A constant speed circulator moves the potable water for the storage tank around the B side of the heat exchanger.

Electrical & Weight Data

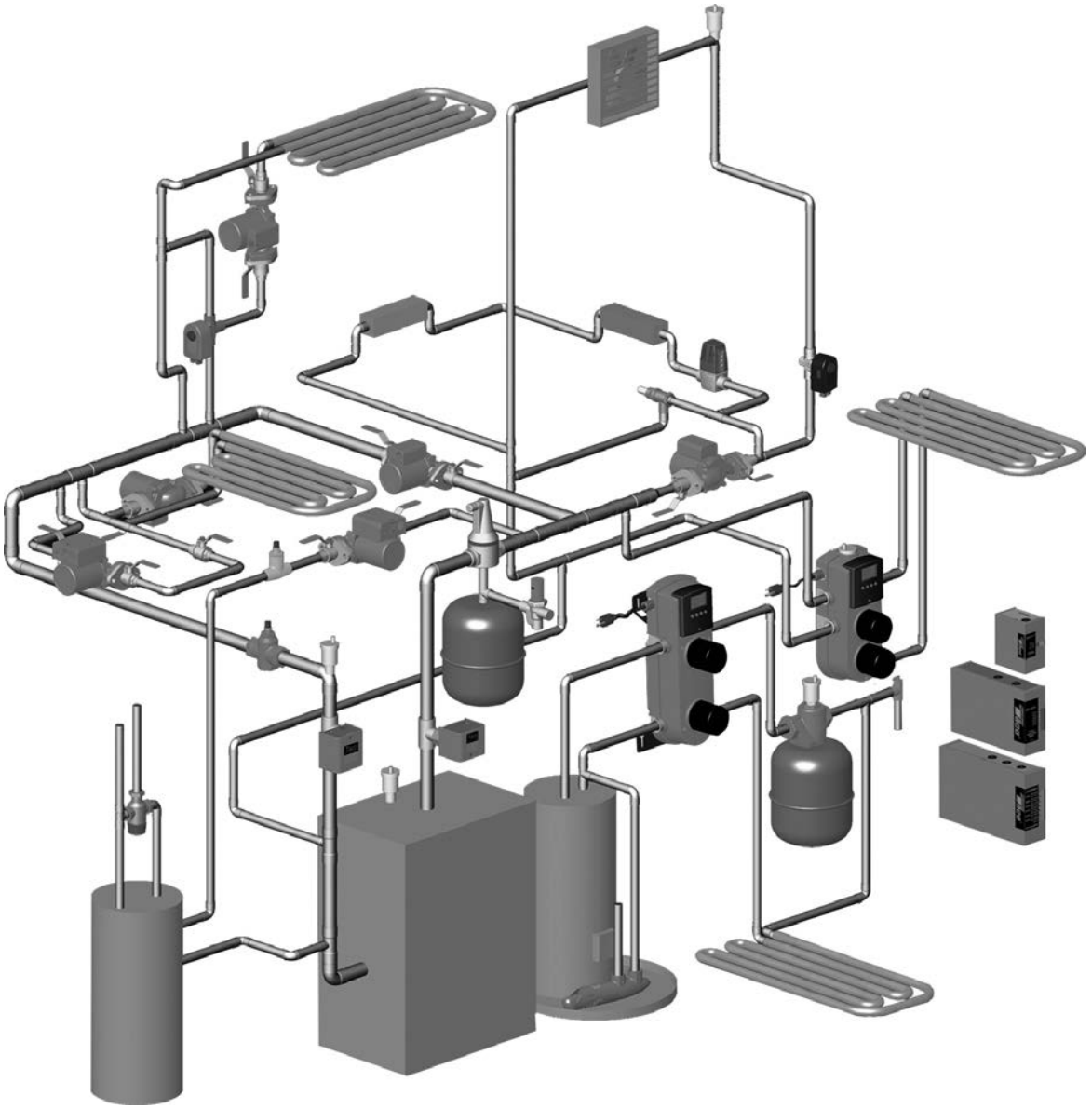
Model	Volts	Hz	Ph	Amps	RPM	HP	Ship Wt.	
SXPB-1	120	60	1	2	3250	2 @ 1/25	lbs.	Kg
Motor Type	Permanent Split Capacitor Impedance Protected						26.5	12.0

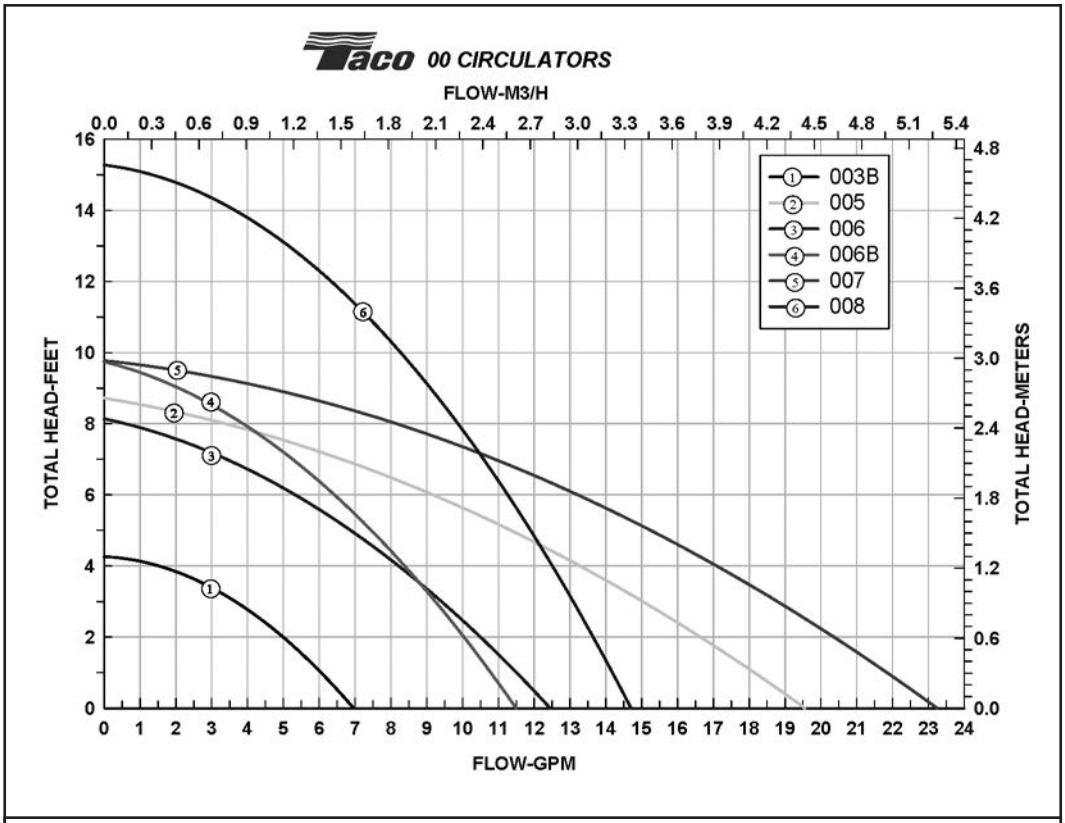


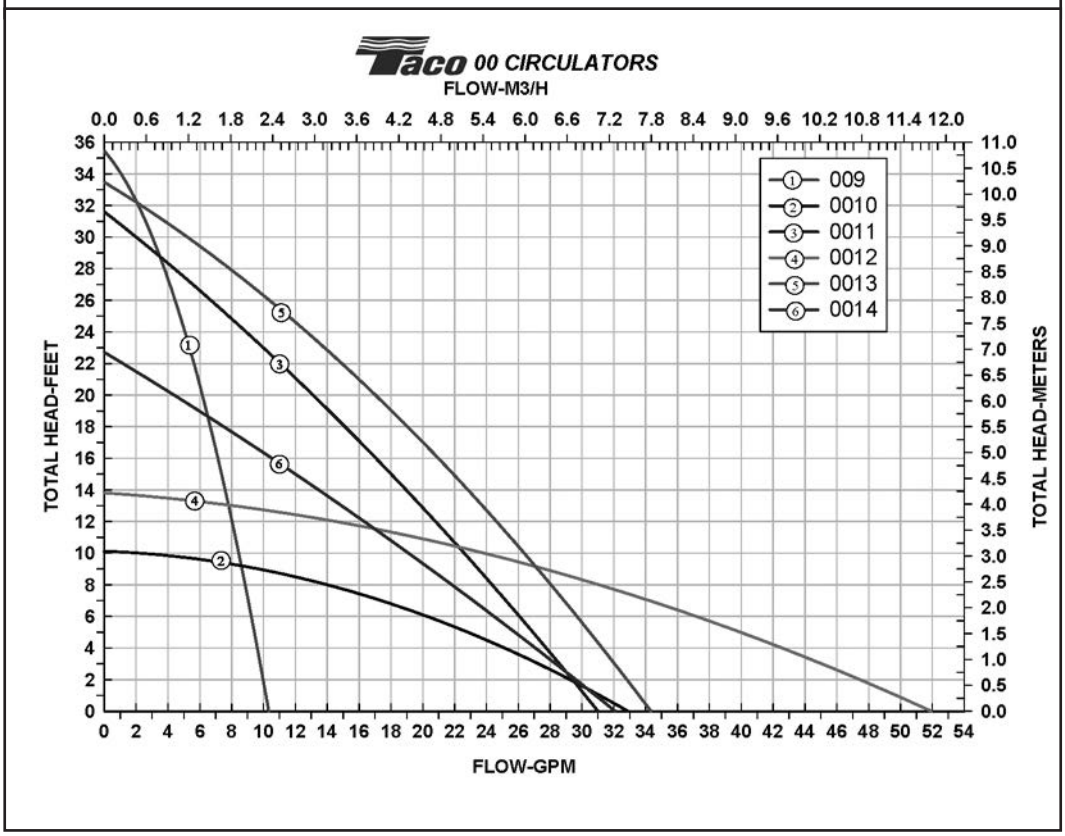
The Taco Mechanical Room

Taco is the American leader is manufacturing a wide range of components for hydronic hydronic systems and providing the training to help contractors and engineers understand their use.

- Circulators
- Vents
- Controls
- Valves
- Guages
- Hydronic modules




Taco 00 CIRCULATORS
FLOW-M3/H
0.0 0.3 0.6 0.9 1.2 1.5 1.8 2.1 2.4 2.7 3.0 3.3 3.6 3.9 4.2 4.5 4.8 5.1 5.4
TOTAL HEAD-FEET
TOTAL HEAD-METERS
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLOW-GPM
1 003B
2 005
3 006
4 006B
5 007
6 008


Taco 00 CIRCULATORS
FLOW-M3/H
0.0 0.6 1.2 1.8 2.4 3.0 3.6 4.2 4.8 5.4 6.0 6.6 7.2 7.8 8.4 9.0 9.6 10.2 10.8 11.4 12.0
TOTAL HEAD-FEET
TOTAL HEAD-METERS
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54
FLOW-GPM
1 009
2 0010
3 0011
4 0012
5 0013
6 0014

Do it once.
Do it right.®

Taco "00" Wet Rotor Circulator Competitive Model # Cross Reference						
Taco "00"		**Grundfos**	**Laing**	**Armstrong**	**B&G**	**Wilo**
Closed Systems - Cast Iron Construction						
006F		UP15-10F/R	-	Astro 20	NRF-9F	Star 5
005F		UPS15-58FC spd 3	-	-	-	-
007F		UP15-42F/R. UPS15-58FC spd 2	-	-	NRF-22	-
008F		UP15-42F/R, UPS15-58FC spd 2	-	Astro30	NRF-22	Star 16
009F		UP15-100	-	Astro70	-	Star 32
0010F		UPS43-44FC spd 2	-	-	NRF-33	-
0011F		UP26-96F, UPS26-99FC spd 3	-	-	-	Star 30
0012F		UP43-75F,UPS43-44FC spd 3	-	-	-	-
0013F		UP26-99F,UP26-116F	-	-	-	-
0014F		UP26-64F, UP43-64,UPS26-99FC spd 3	-	Astro50	-	Star 21
Open Systems- Bronze Construction						
003B		UP15-10B5/7	SM-303	Astro20B	NBF-8S	Star 3B
006B		UP15-18B5/7	SM-909	Astro25B	NBF-8S,9U	Star 5B, 8B
005-BF		-	-	-	-	Star 11BF
007-BF		UP15-42SF	-	-	NBF-12F	-
008-BC		UP15-10B7, UP15-42B7	SM-909	-	NBF-10S,18S	-
008-BF		UP15-42SU,SF	-	Astro30B	NBF-22	Star 16BF
009-BF		-	-	Astro70BF	-	Star 32BF
0010-BF		-	-	-	NBF-33	
0011-BF		UP26-96BF	-	-	-	
0012-BF		UP43-75BF	-	-	-	
0013-BF		UP26-99,UP26-116BF	-	-	-	
0014-BF		UP25-64SF	-	Astro50B	-	Star 21BF

THE TACO "00" SERIES

HYDRONIC COMPONENTS & SYSTEMS
Do it once. Do it right.® Taco®

Meet the "00 " Family..

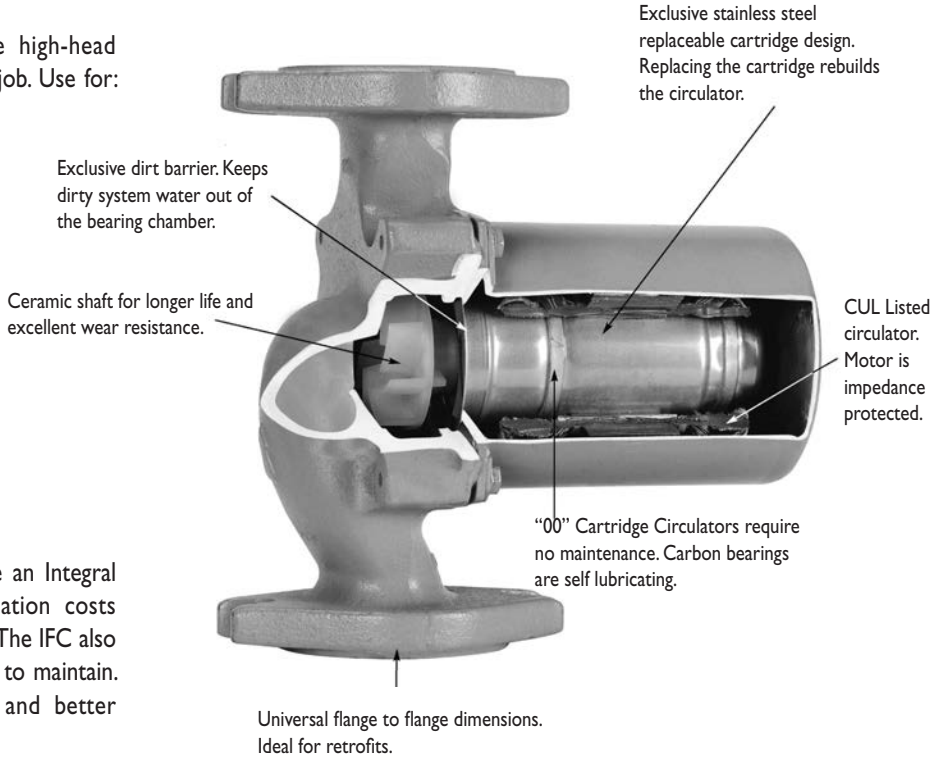
Every Taco "00 " cartridge circulator is designed to make your job easier. Installation is quick and easy, and maintenance is a snap. With no mechanical seal, the self-lubricating design provides unmatched reliability. Every "00 " features a field—replaceable cartridge that contains all the moving parts. Replacing the cartridge rebuilds the circulator! Additional features include:

- Standard High Capacity Output
- Direct Drive, Low Power Consumption
- Universal Flange To Flange Dimension

We 've got you covered.

From the compact,low flow 003 to the high-head 0013, there 's a Taco Circulator to fit your job. Use for:

- Hydronic Heating
- Radiant In—Floor/Panel Heating
- Indirect Domestic Water Heating
- Solar Heating
- Heat Recovery
- Water Source Heat Pumping
- Domestic Water Recirculation
- Chilled Water Cooling Systems
- Small to Large Residential Applications
- Light Commercial Applications



Innovation all the way.

Our new IFC Cartridge Circulators feature an Integral Flow Check, eliminating additional installation costs associated with separate in-line flow checks. The IFC also improves system performance and is a snap to maintain. What could be better than lower cost and better performance?

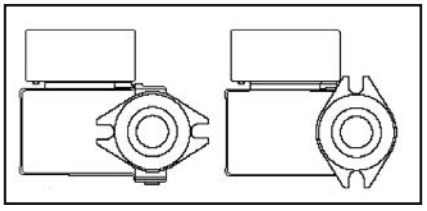
Support, support, support.

Every pump we sell is included in our TacoNet 7.0 software,so product selection and specification is as easy as typing in a few numbers. Contact us online at www.taco-hvac.com to get your TacoNet 7.0 software. And while you're there, browse our product lines,ask us a question, or just get to know Taco a little better. You'll see why we're known industry-wide as the easiest company to do business with.

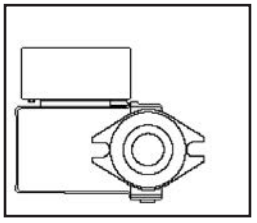
Submittal Data Information

Flange Orientation

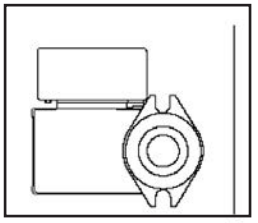
007



005,008,0010,0012

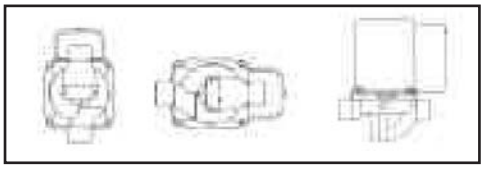


009,0011,0013,0014



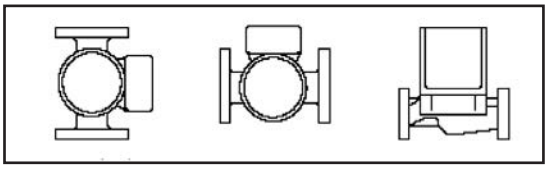
Mounting Positions

Sweat Models



Standard Optional OK if over 20 psi

Flanged Models



Standard Optional OK if over 20 psi

Features

- Standard High Capacity Output-Compact Design
- Quiet,Efficient Operation
- Direct Drive-Low Power Consumption
- Unique Replaceable Cartridge Design-Field Serviceable
- Self Lubricating
- No Mechanical Seal
- Unmatched Reliability-Maintenance Free

Materials of Construction	003,006	005,007,008	009-0014
Casing (Volute):	Bronze Only	Cast Iron or Stainless	Cast Iron or Stainless
Stator Housing:	Steel	Steel	Aluminum
Cartridge:	Stainless Steel	Stainless Steel	Stainless Steel
Impeller:	Non-Metallic	Non-Metallic	Non-Metallic
Shaft:	Ceramic	Ceramic	Ceramic
Bearings:	Carbon	Carbon	Carbon
O-Ring &Gaskets:	EPDM	EPDM	EPDM

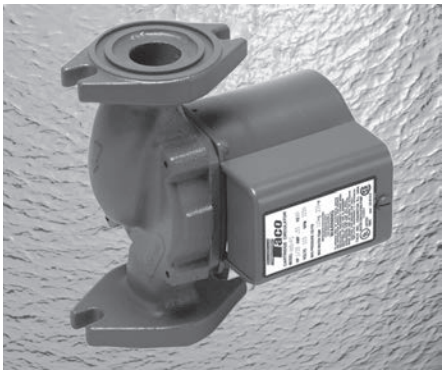
Performance Data	003, 006	005	007	008 -0014
Minimum Fluid Temperature:	40˚F (4˚C)	40˚F (4˚C)	40˚F (4˚C)	40˚F (4˚C)
Maximum Fluid Temperature:	220˚F (104˚C)	220˚F (104˚C) Bronze 230˚F (110˚C) Cast Iron	230˚F (110˚C) Bronze 240˚F (115˚C) Cast Iron	230˚F (110˚C)
Maximum Working Pressure:	125 psi	125 psi	125 psi	125 psi

FOR INDOOR USE ONLY

Hydronic Components & Systems

Do it once. Do it right. Taco

Model 005 Cartridge Circulator



Application

- Hydronic Heating/Cooling
- Radiant
- Indirect Water Heaters
- Hydro-Air Fan Coils
- Domestic Water Recirculation
- Solar Thermal

The Taco 005 is designed for a wide range of residential and light commercial water circulating applications. It's unique replaceable cartridge contains all of the moving parts and allows for easy service, instead of replacing the entire circulator. Compact, direct-drive, low power consumption design is ideal for high efficiency jobs.

Pump Dimensions & Weights

		A		B		C		D		F		G		Ship Wt.	
Model	Casing	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	Kg
005-F2	Cast Iron	5-5/8	143	4	102	3-3/16	81	2-15/16	75	4-3/4	121	6-3/8	162	8.0	3.6
005-SF2	St. Steel	5-5/8	143	4	102	3-3/16	81	2-15/16	75	4-3/4	121	6-3/8	162	7.0	3.2

Model Nomenclature

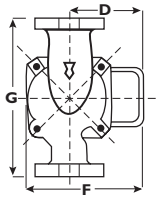
F – Cast Iron, Flanged
SF – Stainless Steel, Flanged

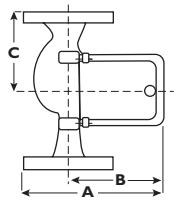
Variations:

Z – Zoning Circulator
J – Bronze Cartridge with Cast Iron Casing

Performance Data

Flow Range: 0 – 19 GPM
Head Range: 0 – 9 Feet
Connection Sizes: 3/4", 1", 1-1/4", 1-1/2" Flanged

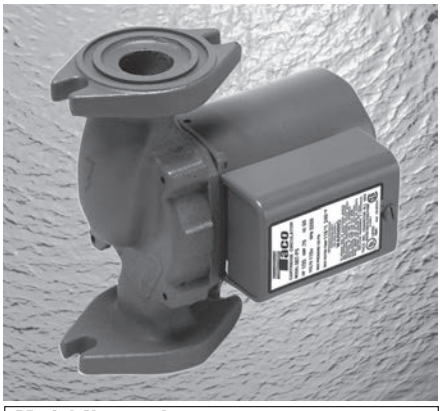




Electrical Data

Model	Volts	Hz	Ph	Amps	RPM	HP
005-F2	115	60	1	.52	3250	1/35
005-SF2	115	60	1	.54	3250	1/35
Motor Type	Permanent Split Capacitor Impedance Protected					
Motor Options	220/50/1, 220/60/1, 230/60/1, 100/110/50/60/1					

Model 007 Cartridge Circulator



Application

The Taco 007 is a cartridge style, maintenance free, wet-rotor, in-line, single stage circulator pump. It is designed for quiet operation in Hydronic heating, Radiant heating, Hydro-Air fan coils, Indirect water heaters, Chilled fresh water, and Domestic Water Recirculation systems. Available in Cast Iron or Stainless Steel construction with universal flanged connections. The unique replaceable cartridge contains all of the moving parts and allows the circulator to be easily serviced instead of replacing the entire unit. Ideal for a wide range of applications.

Pump Dimensions & Weights

		A		B		C		D		F		G		Ship Wt.	
Model	Casing	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	Kg
007-F5	Cast Iron	6-3/8	162	4-1/2	114	3-3/16	81	2-15/16	75	4-3/4	121	6-3/8	162	8.0	3.6
007-F5-5	Cast Iron	6	152	4-1/2	114	3-3/16	81	2-15/16	75	4-3/4	121	6-3/8	162	8.0	3.6
007-SF5	St. Steel	6-3/8	162	4-1/2	114	3-3/16	81	2-15/16	75	4-3/4	121	6-3/8	162	7.0	3.2

Model Nomenclature

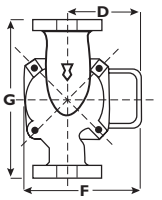
F – Cast Iron, Flanged
SF – Stainless Steel, Flanged

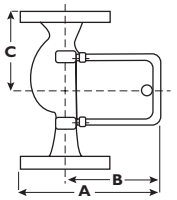
Variations:

Z – Zoning Circulator
J – Bronze Cartridge with Cast Iron Casing

Performance Data

Flow Range: 0 – 20 GPM
Head Range: 0 – 10 Feet
Connection Sizes: 3/4", 1", 1-1/4", 1-1/2" Flanged





Electrical Data

Model	Volts	Hz	Ph	Amps	RPM	HP
007-F5	115	60	1	.71	3250	1/25
007-SF5	115	60	1	.76	3250	1/25
Motor Type	Permanent Split Capacitor Impedance Protected					
Motor Options	220/50/1, 220/60/1, 230/60/1, 100/110/50/60/1					

Model 008 Cartridge Circulator

Application

The Taco 008 is designed for a wide range of residential and light commercial higher-head water circulating applications. Typical uses include hydronic heating, radiant in-floor/panel heating and closed-loop solar heating systems. The Stainless Steel or can be used in higher-head heat recovery, water source heat pump, open-loop solar heat and domestic water recirculation systems. The unique replaceable cartridge contains all of the moving parts and allows for easy service, instead of replacing the entire circulator. Compact, direct-drive, low power consumption design is ideal or high-efficiency jobs.

Pump Dimensions & Weights

Model	Casing	A		B		C		D		F		G		Ship Wt.	
		in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	Kg
008-F6	Cast Iron	6	152	4	102	3-3/16	81	2-15/16	75	4-3/4	121	6-3/8	162	8.0	3.6
008-SF6	St. Steel	6	152	4	102	3-3/16	81	2-15/16	75	4-3/4	121	6-3/8	162	8.0	3.6

Model Nomenclature

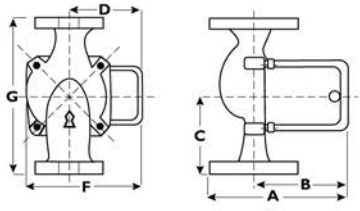
F – Cast Iron, Flanged
SF – Stainless Steel, Flanged

Variations:

Z – Zoning Circulator
J – Bronze Cartridge with Cast Iron Casing

Performance Data

Flow Range: 0 – 14 GPM
Head Range: 0 – 16 Feet
Connection Sizes: 3/4", 1", 1-1/4", 1-1/2" Flanged, 3/4" Sweat



Electrical Data

Model	Volts	Hz	Ph	Amps	RPM	HP
008-F6	115	60	1	.79	3250	1/25
008-BF6	115	60	1	.84	3250	1/25
008-BC6	115	60	1	.84	3250	1/25
Motor Type	Permanent Split Capacitor Impedance Protected					
Motor Options	220/50/1, 220/60/1, 230/60/1, 100/110/50/60/1					

Model 009 Cartridge Circulator

Application

The Taco 009 is designed for a wide range of residential and light commercial higher-head/lower-flow water circulating applications. Typical uses include hydronic heating, radiant in-floor/panel heating and closed-loop solar heating systems. The Stainless Steel 009 can be used in higher-head/lower-flow heat recovery, open-loop solar heating and light commercial domestic water recirculation systems. The unique replaceable cartridge contains all of the moving parts and allows for easy service, instead of replacing the entire circulator. Compact, direct-drive, low power consumption design is ideal for high-efficiency jobs.

Pump Dimensions & Weights

Model	Casing	A		B		C		D		F		G		Ship Wt.	
		in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	Kg
009-F5	Cast Iron	7	178	5-11/16	144	3-3/16	81	3-5/16	84	4-1/8	105	6-3/8	162	9.5	4.3
009-SF5	St. Steel	7	178	5-11/16	144	3-3/16	81	3-5/16	84	4-1/8	105	6-3/8	162	9.5	4.3

Model Nomenclature

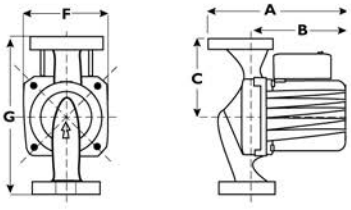
F – Cast Iron, Flanged
SF – Stainless Steel, Flanged

Variations:

Z – Zoning Circulator
J – Bronze cartridge with Cast Iron casing

Performance Data

Flow Range: 0 – 10 GPM
Head Range: 0 – 35 Feet
Connection Sizes: 3/4", 1", 1-1/4", 1-1/2" Flanged



Electrical Data

Model	Volts	Hz	Ph	Amps	RPM	HP
009-F5	115	60	1	1.40	3250	1/8
009-BF5	115	60	1	1.40	3250	1/8
Motor Type	Permanent Split Capacitor Impedance Protected					
Motor Options	220/50/1, 220/60/1, 230/60/1, 100/110/50/60/1					

Model 0010 Cartridge Circulator

Application

The Taco 0010 is designed for a wide range of large residential/light commercial water circulating applications. Typical uses include hydronic heating, radiant heating, primary-secondary loops, indirect water heaters, chilled water cooling, and potable hot water systems. The Stainless Steel 0010 is designed for all open-loop, fresh water systems. The unique replaceable cartridge contains all of the moving parts and allows for easy service, instead of replacing the entire circulator. Compact, direct-drive, low power consumption design makes it ideal for high-efficiency jobs.

Pump Dimensions & Weights

		A		B		C		D		F		G		Ship Wt.	
Model	Casing	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	Kg
0010-F3	Cast Iron	7-1/4	184	5-5/16	135	3-3/16	81	3-5/16	84	5-3/8	137	6-3/8	162	10	4.5
0010-SF3	St.Steel	7-1/4	184	5-5/16	135	3-3/16	81	3-5/16	84	5-3/8	137	6-3/8	162	9	4

Model Nomenclature

F – Cast Iron, Flanged

SF – 304 Stainless Steel, Flanged

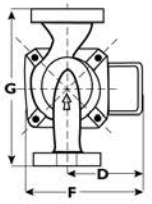
Variations:

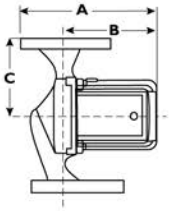
Z – Zoning Circulator

J – Bronze Cartridge with Cast Iron casing

Performance Data

Flow Range: 0 – 32 GPM
Head Range: 0 – 10 Feet
Connection Sizes: 3/4", 1", 1-1/4", 1-1/2" Flanged





Electrical Data

Model	Volts	Hz	Ph	Amps	RPM	HP
0010-F2	115	60	1	1.10	3250	1/8
0010-BF2	115	60	1	1.17	3250	1/8
Motor Type	Permanent Split Capacitor Impedance Protected					
Motor Options	220/50/1, 220/60/1, 230/60/1, 100/110/50/60/1					

Model 0011 Cartridge Circulator

Application

The Taco 0011 is specifically designed for high head / medium flow applications in large residential / light commercial closed loop hydronic heating and chilled water cooling systems. Ideal for high pressure drop boilers, fan coil units, heat exchangers, large radiant heating and heat recovery/geothermal systems. The Stainless Steel 0011 can be used on open loop systems. The unique replaceable cartridge contains all of the moving parts and allows for easy service instead of replacing the entire circulator. Universal flange to flange dimensions and orientation allows the 0011 to easily replace other models. Compact, low power consumption design makes it ideal for high-efficiency jobs.

Pump Dimensions & Weights

		A		B		C		D		F		G		Ship Wt.	
Model	Casing	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	Kg
0011-F4	Cast Iron	7-1/2	191	6-1/8	156	3-1/2	89	3-3/8	86	5-5/8	143	6-1/2	165	12.0	5.5
0011-SF4	St.Steel	7-1/2	191	6-1/8	156	3-1/2	89	3-3/8	86	5-5/8	143	6-1/2	165	11.0	5.0

Model Nomenclature

F – Cast Iron, Flanged

SF – 304 Stainless Steel, Flanged

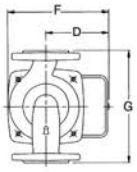
Variations:

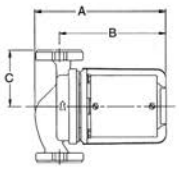
Z – Zoning Circulator

J – Bronze Cartridge with Cast Iron Casing

Performance Data

Flow Range: 0 – 31 GPM
Head Range: 0 – 31 Feet
Connection Sizes: 3/4", 1", 1-1/4", 1-1/2" Flanged





Electrical Data

Model	Volts	Hz	Ph	Amps	RPM	HP
0011-F4	115	60	1	1.76	3250	1/8
0011-SF4	115	60	1	1.76	3250	1/8
Motor Type	Permanent Split Capacitor Impedance Protected					
Motor Options	220/50/1, 220/60/1, 230/60/1, 100/110/50/60/1					

Model 0012 Cartridge Circulator

Application

The Taco 0012 is specifically designed for high flow / medium head applications in large residential and light commercial systems. Ideal for large BTUH Boilers, 2" recirculation loops, Primary/Secondary loops, commercial water heaters and light commercial heating and cooling systems. The Stainless Steel 0012 can be used on open loop systems. The unique replaceable cartridge contains all of the moving parts and allows for easy service instead of replacing the entire circulator. Universal flange to flange dimensions and orientation allows the 0012 to easily replace other models. Compact, low power consumption design makes it ideal for high-efficiency jobs. The 0012-F4 is a direct replacement for the HV Series and the 0012-F4-1 is a direct replacement for the 2" Series using existing flanges.

Pump Dimensions & Weights

• Flanges included.

Model	Flange	Casing	A		B		C		D		F		G		Ship Wt.	
			in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	Kg
0012-F4	1-1/2"	Cast Iron	8-5/8	219	6-3/8	162	4-1/4	108	3-5/16	84	5-1/2	140	8-1/2	216	13.0	5.9
0012-SF4	1-1/2"	St. Steel	8-5/8	219	6-3/8	162	4-1/4	108	3-5/16	84	5-1/2	140	8-1/2	216	13.0	5.9
0012-F4-1	2	Cast Iron	9	229	6-3/8	162	4-1/4	108	3-5/16	84	5-1/2	140	8-1/2	216	13.0	5.9

Model Nomenclature

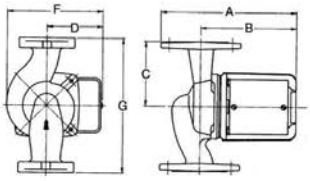
F – Cast Iron, Flanged
SF – Stainless Steel, Flanged

Variations:

Z – Zoning Circulator
J – Bronze Cartridge with Cast Iron Casing

Performance Data

Flow Range: 0 – 52 GPM
Head Range: 0 – 14.5 Feet
Connection Sizes: 1-1/4", 1-1/2"or 2" Flanged



Electrical Data

Model	Volts	Hz	Ph	Amps	RPM	HP
All Models	115	60	1	1.33	3250	1/8
Motor Type	Permanent Split Capacitor Impedance Protected					
Motor Options	220/50/1, 220/60/1, 230/60/1, 100/110/50/60/1					

Model 0013 Cartridge Circulator

Application

The Taco 0013 is specifically designed for high head / high flow applications in Large Residential and Light Commercial systems. Ideal for high pressure drop Boilers, Fan Coil units, Heat Exchangers, larger Radiant systems, Heat Recovery and Geothermal systems. The Stainless Steel 0013 should be used on open loop systems. The unique replaceable cartridge contains all of the moving parts and allows for easy service instead of replacing the entire circulator. Universal flange to flange dimensions and orientation allows the 0013 to easily replace other models. Compact, low power consumption design makes it ideal for high-efficiency jobs.

Pump Dimensions & Weights

Model	Casing	A		B		C		D		F		G		Ship Wt.	
		in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	Kg
0013-F3	Cast Iron	7-1/2	191	6-3/8	162	3-1/2	89	3-7/8	98	6	152	6-1/2	165	12.0	5.5
0013-SF3	St. Steel	7-1/2	191	6-3/8	162	3-1/2	89	3-7/8	98	6	152	6-1/2	165	11.5	5.2

Model Nomenclature

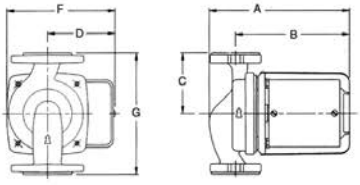
F – Cast Iron, Flanged
SF – 304 Stainless Steel, Flanged

Variations:

Z – Zoning Circulator
J – Bronze Cartridge with Cast Iron Casing

Performance Data

Flow Range: 0 – 34 GPM
Head Range: 0 – 33 Feet
Connection Sizes: 3/4", 1", 1-1/4", 1-1/2" Flanged



Electrical Data

Model	Volts	Hz	Ph	Amps	RPM	HP
All Models	115	60	1	2.0	3250	1/6
Motor Type	Permanent Split Capacitor Impedance Protected					
Motor Options	220/50/1, 220/60/1, 230/60/1, 100/110/50/60/1					

Model 0014 Cartridge Circulator

Hydronic Components & Systems
Do it once. Do it right. Taco

Application

The Taco 0014 is specifically designed for medium head / medium flow applications in large residential and light commercial systems. Ideal for large BTUH boilers, primary/secondary loops, commercial water heaters, and light commercial heating and cooling systems. The Stainless Steel 0014 should be used on open loop systems. The unique replaceable cartridge contains all of the moving parts and allows for easy service instead of replacing the entire circulator. Universal flange to flange dimensions and orientation allows the 0014 to easily replace other models. The compact, direct-drive, low power consumption design makes it ideal for high-efficiency jobs.

Model Nomenclature

F – Cast Iron, Flanged
SF – Stainless Steel, Flanged

Variations:

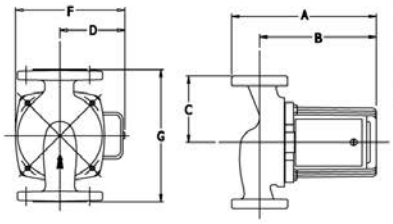
Z – Zoning circulator
J – Bronze cartridge with Cast Iron casing

Performance Data

Flow Range: 0 – 32 GPM
Head Range: 0 – 22 Feet
Connection Sizes: 3/4", 1", 1-1/4", 1-1/2" Flanged

Pump Dimensions & Weights

		A		B		C		D		F		G		Ship Wt.	
Model	Casing	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	Kg
0014-F1	Cast Iron	7-1/4	184	5-13/16	148	3-1/4	83	3-5/16	84	5-3/8	137	6-1/2	165	12.0	5.5
0014-SF1	St. Steel	7-1/4	184	5-13/16	148	3-1/4	83	3-5/16	84	5-3/8	137	6-1/2	165	12.0	5.5



Electrical Data

Model	Volts	Hz	Ph	Amps	RPM	HP
0014-F1	115	60	1	1.45	3250	1/8
0014-SF1	115	60	1	1.45	3250	1/8
Motor Type	Permanent Split Capacitor Impedance Protected					
Motor Options	220/50/1, 220/60/1, 230/60/1, 100/110/50/60/1					

Variable Speed Delta-T 00® Circulators

Taco Variable Speed Delta-T Circulator's all-in-one design combines a microprocessor based variable speed differential controller with the reliability and convenience of our 00® Cartridge Circulators. Simply dial in the design Delta-T of the system or zone (from 5 – 50°F) and then sit back and watch the circulator automatically adjust its performance to match the systems ideal BTU/hr output, while conserving energy and eliminating velocity noise.

Cast Iron Casing	Stainless Steel Casing
008-VDTF6	008-VDTSF6
0012-VDTF4	0012-VDTSF4
0013-VDTF3	0013-VDTSF3

Taco comfort made easy®

Effective Date: 9/11/09
Printed in USA

What You Should Know
Variable Speed Circulators

00-VDT Variable Speed Circulator Overview
Taco Variable Speed Delta-T Circulator's all-in-one design combines a micro-processor- based variable speed temperature differential controller with the reliability and convenience of our 00® Cartridge Circulators. Simply dial in the design delta-T of the system or zone (from 5 – 50°F) and then sit back and watch the circulator automatically adjust its performance to match the system's ideal BTU/hr output, while reducing system fuel consumption by 4-5% and eliminating velocity noise.

Why use a Variable Speed Circulator?
First understand that the heating load literally changes with the weather. As the outdoor temperature changes, the overall heating load of the structure changes. In addition, when you have multiple zones in a heating system, the load at any given point in time will change based on how many zones happen to be calling at that moment. By varying the speed of the pump the specific amount of heat delivered to the structure can be optimized to match the heating load requirements of the structure.

Why use a Delta-T based Circulator?
Delta-T works, it has to, it's part of the Universal Hydronics Formula which governs everything from pipe sizing to circulator selection and states:

GPM = BTUH ÷ (ΔT x 500)

Basic math tells us that if we change the heat load required while the Delta-T and the 500 constant remain the same, the GPM required to deliver the heat has to change (variable speed pumping). The pump will automatically speed up if the heat load increases and slow down if it decreases.

Delta-P is NOT part of this equation!

At best, Delta-P is a guess (and even when guessed properly it's based on design conditions, not 20-55° where the majority of degree days occur). Delta-P can still over or under-pump a zone and does little to improve system comfort.

How Much can Delta-T Save?
We estimate that by using a 00-VDT circulator as part of the system a homeowner can save $50 -$60 in annual fuel savings – roughly 15 to 19 times the component electrical savings seen with a "more efficient" European ECM based ΔP circulator. If used instead of a standard Taco 007, it would take over 20 years to payback the additional cost of a European Delta-P variable speed circulator.

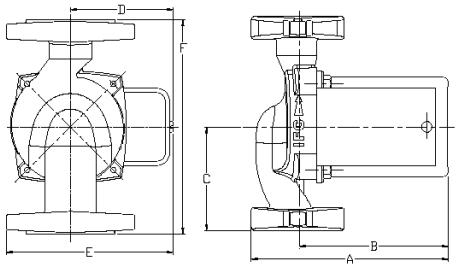
Where to Use Variable Speed Pumps?
- Multi-Zone Radiant Manifolds Systems with Loop Actuators
- Series Loop Systems Using Zone Valves

Taco® comfort made easy®

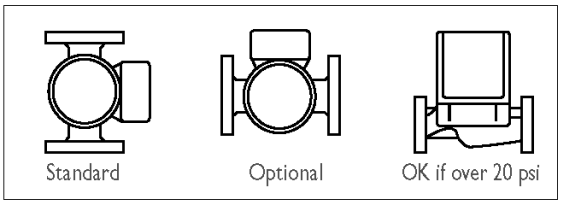
Submittal Data Information
Variable Speed Delta-T 00® Circulators

Pump Dimensions & Weights

Model	Casing	A		B		C		D		E		F		Ship Wt.	
		in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	Kg
008-VDTF6	Cast Iron	5-15/16	151	4-1/2	114	3-3/16	81	2-15/16	75	5-9/16	143	6-3/8	162	9	4.0
0012-VDTF4	Cast Iron	8-1/16	205	6-3/8	162	4-1/4	108	4	102	6-5/8	168	8-1/2	216	13	5.8
0013-VDTF3	Cast Iron	7-1/2	191	6-3/8	162	3	76	3-7/8	98	6	152	6-1/2	165	14	6.2
008-VDTSF6	Stainless Steel	6	152	4	102	3-3/16	81	2-15/16	75	5-9/16	143	6-3/8	162	8	3.6
0012-VDTSF4	Stainless Steel	8-5/8	219	6-3/8	162	4-1/4	108	4	102	6-5/8	168	8-1/2	216	12	5.4
0013-VDTSF3	Stainless Steel	7-1/2	191	6-3/8	162	3	76	3-7/8	98	6	152	6-1/2	165	14	6.2



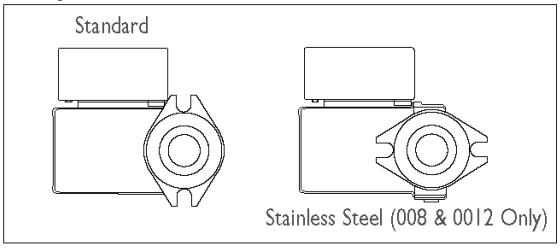
Mounting Positions



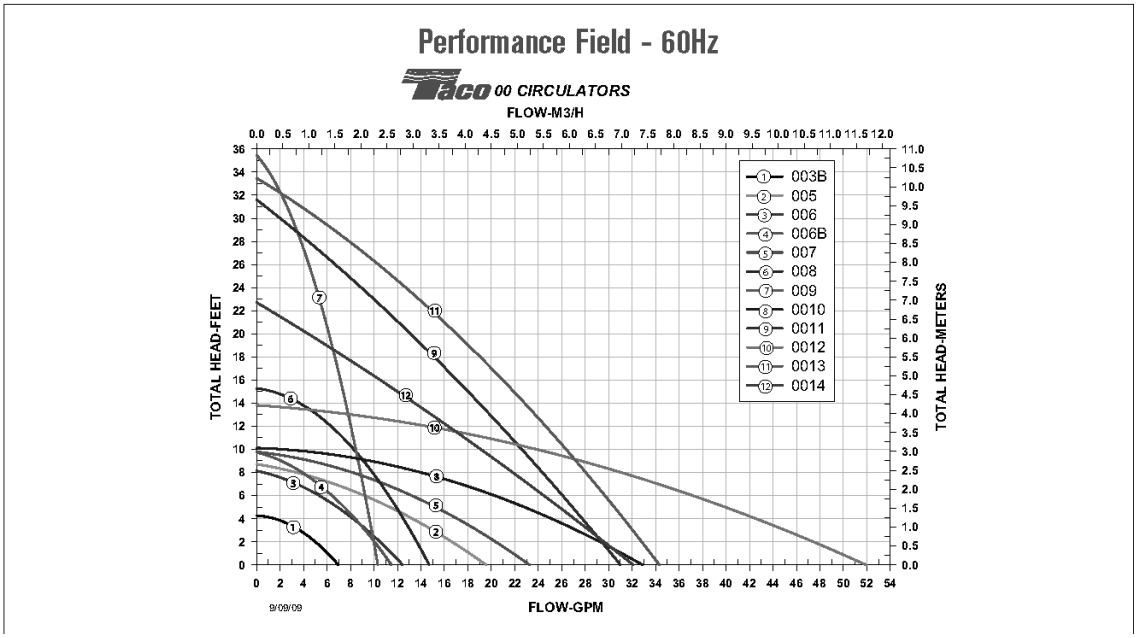
Electrical Data

Model	Volts	Hz	Ph	Amps		HP
				C.I.	S.S.	
008	115	60	1	.79	.84	1/25
0012	115	60	1	1.33	1.33	1/8
0013	115	60	1	2.0	2.0	1/6
Motor Type	Permanent Split Capacitor Impedence Protected					

Flange Orientation



Performance Field - 60Hz



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VDT DATA

HYDRONIC COMPONENTS & SYSTEMS
Do it once. Do it right.® Taco®

Submittal Data Information
Variable Speed Delta-T 00® Circulators

Product Features

- All-in-One Pump & Control
- Sensors Included
- Easy to Install:
  - Attach 2 Sensors
  - Dial in the Desired Delta-T
- UL Approved
- Snap-in PC Board, replaceable
- LED Status Panel
- Fuse Protected
- Plug-in Low Voltage Wiring Terminal
- Optional Integral Flow Check (IFC®)

Operational Benefits

- Increases System Efficiency
- Pump Always Runs at Minimum Required Speed
- Eliminates Velocity Noise
- Eliminates Need for a Pressure By-pass Valve
- Conserves Energy
- Achieves System Design Goals, even when Installed System Varies from Original Design
- Pump Automatically Adjusts to Current System Conditions
- Spend Less Time Figuring Out Pressure Drop (for proper pump sizing) when Servicing Existing Systems.
- Pump Exercise
- Delivers Ideal BTU/hr Heat Transfer for All Styles of Emitters

c UL US LISTED

FOR INDOOR USE ONLY

Optimal Pumping Simplified

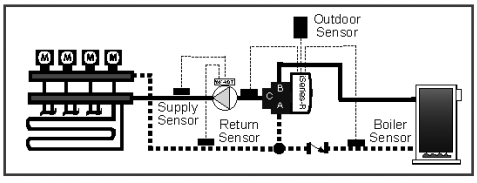
No matter how good your original system design and heat loss calculations were, they included estimates and rules of thumb. What are the design conditions for those systems you "inherited" or have to service? Have a zone valve system or multi-zone radiant manifolds running off a common circulator? Your system needs a circulator that automatically adjusts to deliver the optimal heat transfer based on the actual operation of the system, every day, under all load conditions – even when those conditions change.

With the Taco Variable Speed Delta-T 00® Circulators you simply dial in your desired temperature drop across the system or zone (5-50°F), attach a supply and return sensor directly to the pump and it will automatically vary its performance to deliver optimal heat, efficiency and comfort.

Applications

There are a few hydronic applications that can benefit greatly from the use of a Taco Variable Speed Delta-T Circulator.

Example 1 : Multi-Zone Radiant Manifolds with Loop Actuators

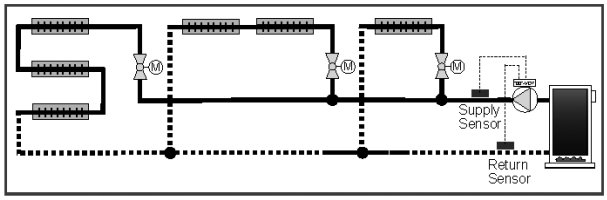


Residential radiant floor heating systems often feature several zones on a single manifold, using manifold valve actuators, designed around a 10° Delta-T. The circulator is sized to provide enough flow and head pressure to satisfy all zones calling at the same time. At any given point, however, a single, small zone, such as a bathroom or bedroom, may be the only zone calling, with a required flow rate of only, say, 0.4 GPM. The attached 008 circulator, however, can generate over 9 GPM. The result? Poor heat transfer and performance due to a greatly reduced delta T, as well as considerable velocity noise – both likely resulting in callbacks from unsatisfied customers.

The solution? The 008-VDT or 0013-VDT for larger systems! It will automatically adjust the circulator's speed to maintain the proper heat transfer by maintaining a 10°Delta-T across the radiant zone. The 00-VDT will also eliminate velocity noise by slowing the actual flow rate through the zone to the minimum required to deliver proper heat. If other zones on the manifold open, the 00-VDT will increase its speed to deliver the required BTU's, while at the same time maintaining the designed for 10° Delta-T across the radiant system.

Example 2: Series Loop Systems Using Zone Valves

As with the previous example, the circulator for this system is sized to provide enough flow and head pressure to satisfy all zones calling simultaneously under design conditions. As zone valves close, less heat is required. But with a fixed speed circulator, the open zones will see an increase in flow, with a corresponding drop in the design delta T of 20°. This will result in poor heat transfer and considerable velocity noise. In addition, when using a cast-iron boiler, the higher return water temperatures may cause the boiler to short-cycle, reducing its overall efficiency and resulting in higher fuel bills for the customer.



The solution? The Taco 00-VDT circulator will automatically adjust its speed to maintain the designed for 20°delta T across the open zones. The circulator will speed up or slow down as needed, as zones open or close, always maintaining a 20° Delta-T. This will increase overall comfort and sharply reduce boiler short-cycling. The 00-VDT will also control velocity noise issues in the system, eliminating the need for a pressure differential bypass valve.

See **www.taco-hvac.com** for additional applications for the 00-VDT Circulators.

Water Circulation

freedom Flanges®
Bronze Half-Unions

- Taco's new flanges fit all 00® circulators, and free you from scraped knuckles and jury-rigged tools of yesteryear! Their Easy-On / Easy-Off and sweat designs make quick work of pump installation and maintenance. Now available in Cast Iron, Stainless Steel or Bronze.
- New bronze half-unions and shut-off unions allow for easy installation and service of Taco's 003 & 006 Union Connection models. Available in 1/2" and 3/4", threaded or sweat connections.

HYDRONIC COMPONENTS & SYSTEMS
Do it once. Do it right.® Taco®

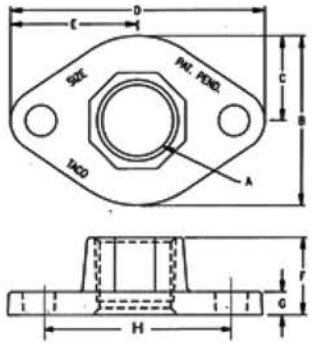
Submittal Data Information
Cast Iron and Stainless Steel *freedom* Flanges®

Flanges

At last, freedom from scraped knuckles and jury-rigged tools. Taco's new flanges give you lots of ways to make quick work of your installation:

- Fits All 00® circulators
- Easy-On, Easy-Off with a common Adjustable Wrench
- Available in:
  - Cast Iron, 3/4" - 2"
  - Bronze Threaded, 3/4" - 2"
  - Bronze Sweat, 1/2" - 1-1/2"
  - Stainless Steel, 3/4" - 2"

A



Cast Iron *freedom* Flanges®

Cast Iron Freedom Flange® Sets (005 thru 0011, 0013, 0014, 110-113, 1400-10, 1400-20, 1400-45, 1400-50)

Figure	Product #	Size A	B	C	D	E	F	G	H
A	110-251F	3/4" NPT	2-3/4"	1-3/8"	4-1/8"	2-1/16"	1"	3/8"	3-1/8"
A	110-252F	1" NPT	2-3/4"	1-3/8"	4-1/8"	2-1/16"	1"	3/8"	3-1/8"
A	110-253F	1-1/4" NPT	2-3/4"	1-3/8"	4-1/8"	2-1/16"	1"	3/8"	3-1/8"
A	110-254F	1-1/2" NPT	2-3/4"	1-3/8"	4-1/8"	2-1/16"	1"	3/8"	3-1/8"

Cast Iron Freedom Flange® Sets (0012/HV, 1400-30, 1400-40)

Figure	Product #	Size A	B	C	D	E	F	G	H
A	194-1540F	1-1/4" NPT	2-15/16"	1-15/32"	4-3/4"	2-3/8"	1-3/16"	9/16"	3-7/16"
A	194-1542F	1-1/2" NPT	2-15/16"	1-15/32"	4-3/4"	2-3/8"	1-3/16"	9/16"	3-7/16"

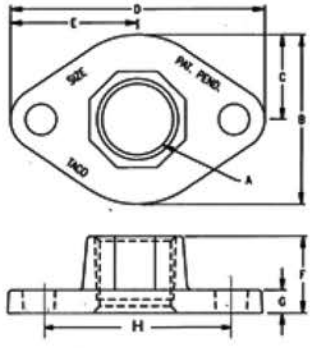
* 1-1/2" Flange set included in each 0012-F4 box.

Cast Iron Freedom Flange® Sets (0012/2", 1400-50/2)

Figure	Product #	Size A	B	C	D	E	F	G	H
A	194-1543F	1-1/2" NPT	3-5/8"	1-13/16"	5-9/16"	2-25/32"	1-3/4"	9/16"	4-1/8"
A	194-2124F	2" NPT	3-5/8"	1-13/16"	5-9/16"	2-25/32"	1-3/4"	9/16"	4-1/8"

** 2" Flange set included in each 0012-F4-1 box.

A



Stainless Steel *freedom* Flanges®

Stainless Steel Freedom Flange® Sets for (005, 007-0011, 0013, 0014, 110-113, 1400-10/20/45/50)

Figure	Product #	Size A	B	C	D	E	F	G	H
A	110-251SF	3/4" NPT	2-3/4"	1-3/8"	4-1/8"	2-1/16"	1"	7/32"	3-1/8"
A	110-252SF	1" NPT	2-3/4"	1-3/8"	4-1/8"	2-1/16"	1"	7/32"	3-1/8"
A	110-253SF	1-1/4" NPT	2-3/4"	1-3/8"	4-1/8"	2-1/16"	1"	7/32"	3-1/8"
A	110-254SF	1-1/2" NPT	2-3/4"	1-3/8"	4-1/8"	2-1/16"	1"	7/32"	3-1/8"

0012 Stainless Steel Freedom Flange® Sets for (0012/HV, 1400-30/40)***

Figure	Product #	Size A	B	C	D	E	F	G	H
A	194-1540SF	1-1/4" NPT	2-15/16"	1-15/32"	4-3/4"	2-3/8"	1"	7/32"	3-7/16"
A	194-1542SF	1-1/2" NPT	2-15/16"	1-15/32"	4-3/4"	2-3/8"	1"	7/32"	3-7/16"

*** 1-1/2" Flange set included in each 0012-SF4 box.

0012 Stainless Steel Freedom Flange® Sets (0012/2", 1400-50/2)****

Figure	Product #	Size A	B	C	D	E	F	G	H
A	194-2124SF	2" NPT	3-5/8"	1-13/16"	5-9/16"	2-25/32"	1"	7/32"	4-1/8"

**** 2" Flange set included in each 0012-SF4-1 box.

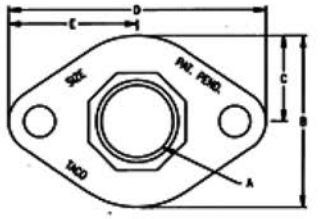
Submittal Data Information
Bronze *freedom* Flanges®

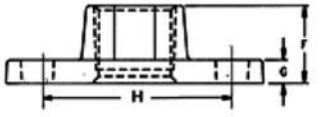
Bronze *freedom* Flanges®

Bronze Threaded Freedom Flange® Sets (005, 007-0011, 0013, 0014, 110-113)

Figure	Product #	Size A	B	C	D	E	F	G	H
A	110-251BF	3/4" NPT	2-3/4"	1-3/8"	4-1/8"	2-1/16"	1-1/4"	3/8"	3-1/8"
A	110-252BF	1" NPT	2-3/4"	1-3/8"	4-1/8"	2-1/16"	1-1/4"	3/8"	3-1/8"
A	110-253BF	1-1/4" NPT	2-3/4"	1-3/8"	4-1/8"	2-1/16"	1-7/16"	3/8"	3-1/8"
A	110-254BF	1-1/2" NPT	2-3/4"	1-3/8"	4-1/8"	2-1/16"	1-7/16"	3/8"	3-1/8"

A





0012 Bronze Threaded Freedom Flange® Sets (0012/HV, 1400-30/40)***

Figure	Product #	Size A	B	C	D	E	F	G	H
A	194-1540BF	1-1/4" NPT	2-15/16"	1-15/32"	4-3/4"	2-3/8"	1-9/16"	9/16"	3-7/16"
A	194-1542BF	1-1/2" NPT	2-15/16"	1-15/32"	4-3/4"	2-3/8"	1-9/16"	9/16"	3-7/16"

*** 1-1/2" Flange set included in each 0012-BF4 box.

0012 Bronze Freedom Flange® Sets (0012/2")****

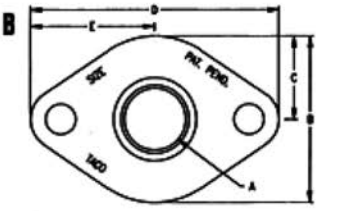
Figure	Product #	Size A	B	C	D	E	F	G	H
A	194-1543BF	1-1/2" NPT	3-5/8"	1-13/16"	5-9/16"	2-25/32"	1-3/4"	9/16"	4-1/8"
A	194-2124BF	2" NPT	3-5/8"	1-13/16"	5-9/16"	2-25/32"	1-3/4"	9/16"	4-1/8"

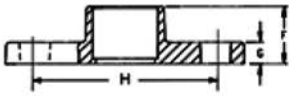
**** 2" Flange set included in each 0012-BF4-1 box.

Bronze Sweat Freedom Flange® Sets (005, 006, 007-0011, 0013, 0014, 110-113, 1400-10/20/45/50)

Figure	Product #	Size A	B	C	D	E	F	G	H
B	110-522BSF	1/2" Swt	2-3/4"	1-3/8"	4-1/8"	2-1/16"	7/8"	3/8"	3-1/8"
B	110-523BSF	3/4" Swt	2-3/4"	1-3/8"	4-1/8"	2-1/16"	7/8"	3/8"	3-1/8"
B	110-524BSF	1" Swt	2-3/4"	1-3/8"	4-1/8"	2-1/16"	1"	3/8"	3-1/8"
B	110-525BSF	1-1/4" Swt	2-3/4"	1-3/8"	4-1/8"	2-1/16"	1-1/8"	3/8"	3-1/8"
B	110-526BSF	1-1/2" Swt	2-3/4"	1-3/8"	4-1/8"	2-1/16"	1-1/4"	3/8"	3-1/8"

B





Submittal Data Information
Bronze Half-Unions, Shut-Off Unions

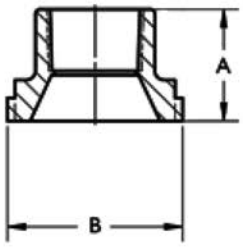
FLANGES

The perfect union! Match up our new Bronze Half Unions or Shut-Off Unions with Taco's 003 & 006 Union Connection models for an easy-to-service installation.

Features

- Fits all 003 & 006 Union Connection models
- Easy-to-Install, Easy-to-Service
- Available in 1/2" or 3/4" sizes
- Sweat, Threaded and Shut-off options

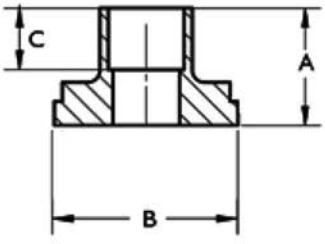
Threaded Half Union



Bronze Half-Union Set

Product #	Size	A	B	C
110-556	1/2" NPT	15/16"	1-1/2"	—
110-557	3/4" NPT	15/16"	1-1/2"	—
110-558	1/2" Swt	15/16"	1-1/2"	1/2"
110-559	3/4" Swt	15/16"	1-1/2"	3/4"

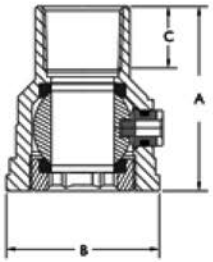
Sweat Half Union



Bronze Shut-Off Union

Product #	Size	A	B	C
258-1	1/2" NPT	1-7/8"	1-1/2"	—
258-2	3/4" NPT	1-7/8"	1-1/2"	—
258-3	1/2" Swt	1-7/8"	1-1/2"	1/2"
258-4	3/4" Swt	1-7/8"	1-1/2"	3/4"

Bronze Shut-Off Union



HYDRONIC COMPONENTS & SYSTEMS
Do it once. Do it right. Taco

Submittal Data Information
Shut-Off *freedom* Swivel-Flange®

Features

- Easy 1/4-turn Open/Close Operation
- Positive Shut-off, Leak Free Design
- Swivel Flange allows 360° rotation
- Solid Brass Construction
- Chrome/Brass Valve Ball
- High Quality Teflon® Seats
- Full Port Ball Valve For Unrestricted Flow
- 150# WP
- Available Sizes: 1/2" — 1-1/2" NPT
  1/2" — 1-1/2" Sweat
- Includes Bolts and Nuts

Materials of Construction

Valve Body: Solid Brass

Valve Ball: Chrome Plated Brass

Flange: Epoxy Powder Coated Steel

Packing Seal: Teflon®[1]

Valve Seat : Teflon®

Valve Stem: Brass

Handle: Chrome Plated Steel/Vinyl Cover

[1]Teflon is a Trademark of El Dupont de Nemours, Inc.

Operating Data

Maximum WP = 150 psi

Maximum Operating Temp: 240°F (115C°)

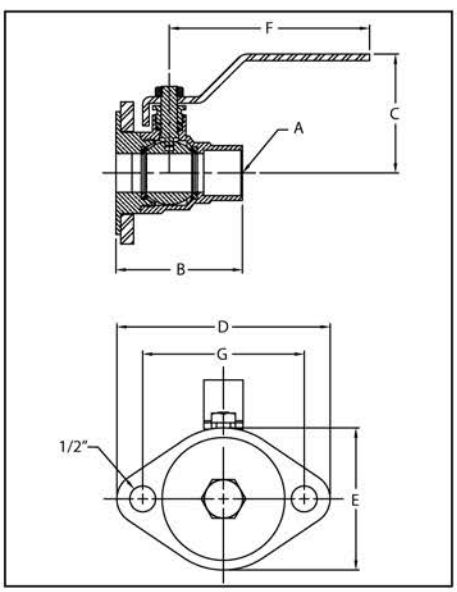
Application

The Taco Shut-Off *freedom* Swivel-Flange® is a combination full port shut-off ball valve and swivel companion flange for most Taco circulators. The simple quarter turn, lever handle operation allows for easy isolation, removal and service of circulators without draining the system. Each flange set includes bolts and nuts. Available in sizes 1/2" to 1-1/2", NPT and Sweat connections, rated for 240°F, 150# WP.

Dimensions & Weights

Model #	A Size	B in (mm)	C in (mm)	D in (mm)	E in (mm)	F in (mm)	G in (mm)	Wt./Set lbs. (kg)
SF-050T	1/2" NPT	2 (51)	2 (51)	4-1/8 (105)	2-3/4 (70)	3-7/8 (98)	3-1/8 (79)	2.5 (1.1)
SF-075T	3/4" NPT	2-1/4 (57)	2 (51)	4-1/8 (105)	2-3/4 (70)	3-7/8 (98)	3-1/8 (79)	3.0 (1.4)
SF-100T	1" NPT	2-1/2 (64)	2-1/2 (64)	4-1/8 (105)	2-3/4 (70)	4-1/2 (114)	3-1/8 (79)	3.5 (1.6)
SF-125T	1-1/4" NPT	2-3/4 (70)	2-7/8 (73)	4-1/8 (105)	2-3/4 (70)	4-1/2 (114)	3-1/8 (79)	4.0 (1.8)
SF-150T	1-1/2" NPT	3-7/8 (98)	3-1/2 (89)	4-1/8 (105)	2-3/4 (70)	5-1/2 (140)	3-1/8 (79)	5.2 (2.3)
SF-125T-0012	1-1/4" NPT*	2-3/4 (70)	2-7/8 (73)	4-1/2 (114)	3 (76)	4-1/2 (114)	3-1/2 (89)	4.7 (2.1)
SF-150T-0012	1-1/2" NPT*	3-7/8 (98)	3-1/2 (89)	4-1/2 (114)	3 (76)	5-1/2 (140)	3-1/2 (89)	6.9 (3.1)
SF-050S	1/2" Swt.	2 (51)	2 (51)	4-1/8 (105)	2-3/4 (70)	3-7/8 (98)	3-1/8 (79)	2.5 (1.1)
SF-075S	3/4" Swt.	2-1/2 (64)	2 (51)	4-1/8 (105)	2-3/4 (70)	3-7/8 (98)	3-1/8 (79)	3.0 (1.4)
SF-100S	1" Swt.	2-3/4 (70)	2-1/2 (64)	4-1/8 (105)	2-3/4 (70)	4-1/2 (114)	3-1/8 (79)	3.5 (1.6)
SF-125S	1-1/4" Swt.	3 (76)	2-3/4 (70)	4-1/8 (105)	2-3/4 (70)	4-1/2 (114)	3-1/8 (79)	4.0 (1.8)
SF-150S	1-1/2" Swt.	4-1/8 (105)	3-1/2 (89)	4-1/8 (105)	2-3/4 (70)	5-1/2 (140)	3-1/8 (79)	6.0 (2.7)
SF-125S-0012	1-1/4" Swt.*	3 (76)	2-3/4 (70)	4-1/2 (114)	3 (76)	4-1/2 (114)	3-1/2 (89)	4.7 (2.1)
SF-150S-0012	1-1/2" Swt.*	4-1/8 (105)	3-1/2 (89)	4-1/2 (114)	3 (76)	5-1/2 (140)	3-1/2 (89)	6.9 (3.1)

Dimensions and weights are approximate.



Shut-off Flanges for Taco® Circulator Models

Size	Model # NPT	Model # Sweat	Taco® Circulator Model #
1/2"	SF-050T	SF-050S	006,005,007,008,009,0010
3/4"	SF-075T	SF-075S	0011,0013,0014, 00R
1"	SF-100T	SF-100S	110,111,112,113
1-1/4"	SF-125T	SF-125S	1400-10,1400-20, 1400-45,1400-50
1-1/2"	SF-150T	SF-150S	
1-1/4"	SF-125T-0012	SF-125S-0012	0012-F4
1-1/2"	SF-150T-0012	SF-150S-0012	1400-30, 1400-40

2400 Series High Capacity Circulators

Taco 2400 Series High Capacity Circulators are specifically designed for quiet, efficient, dependable operation in a wide range of medium to high flow/head hydronic heating, chilled water cooling and hot water recirculation applications. The space saving, close-coupled, maintenance free motor with permanently lubricated, sealed-for-life bearings, Noryl® impeller and durable, carbon/silicon-carbide mechanical seal provide unmatched reliability. Available in Cast Iron or Stainless Steel construction.

Taco systems made easy

Effective Date: 12/14/09
Printed in USA

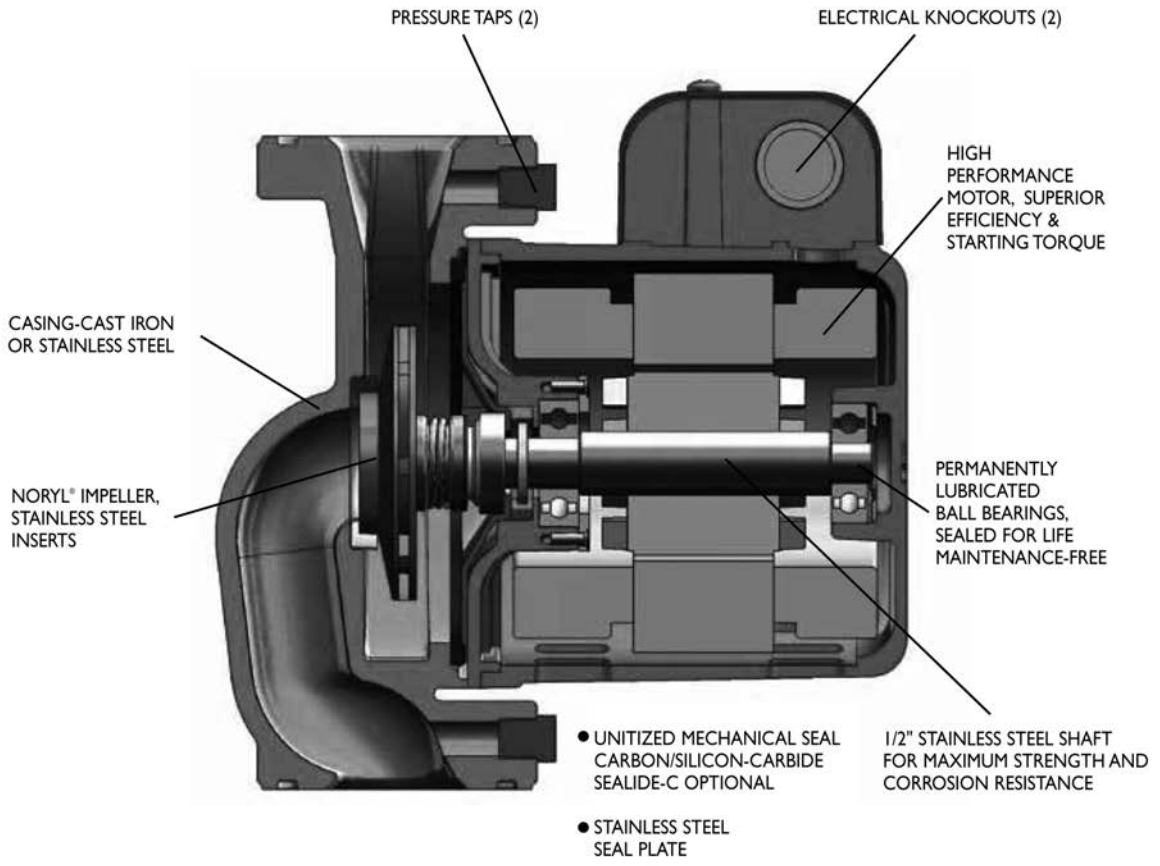
Features & Benefits
2400 Series High Capacity Circulators

Features

- Compact, space saving design
- Powerful close-coupled, maintenance free motor
- Superior efficiency, high starting torque
- Permanently lubricated, sealed for life bearings
- Rugged 1/2" Stainless Steel Shaft
- Carbon/Silicon-Carbide mechanical seal for long life
- Universal flange to flange dimensions - Ideal for retrofits
- Anti-Condensate design for chilled water
- Dual electrical knock-outs
- Dual pressure taps, suction/discharge

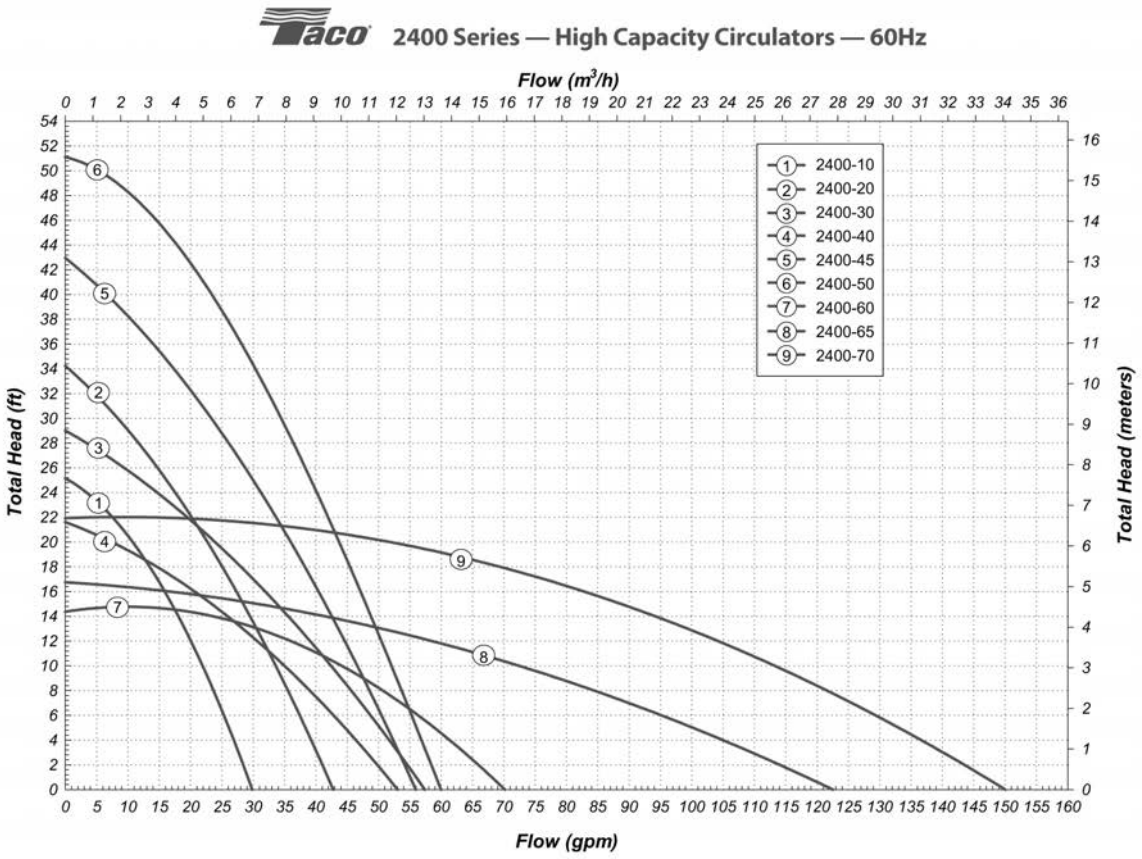
Application

The compact 2400 Series High Capacity Circulators are designed for quiet, efficient, maintenance-free operation in a wide range of larger residential and commercial hydronic systems. Typical applications include hydronic heating, in-floor radiant, snow melt, high pressure drop boilers, outdoor wood boilers, chilled water cooling, geothermal heat pumps, primary/secondary loops and hydro air fan coils. The Stainless Steel 2400 Series should be used for open, domestic water recirculation systems. The unitized, carbon/silicon-carbide mechanical seal is easy to service in only a few minutes.



Performance Curves
2400 Series High Capacity Circulators

Performance Field - 60Hz



Submittal Data Information
2400 Series High Capacity Circulators

Materials of Construction

Casing: Cast Iron or Stainless Steel
Seal Face Plate: Stainless Steel
Motor Housing: Aluminum
Impeller: 30% Glass-filled Noryl®
Impeller Insert: Stainless Steel
Shaft: Stainless Steel
Mechanical Seal: Carbon/Silicon-Carbide
Motor Bearings: Permanently lubricated ball bearing
O-Ring/Flange Gaskets: EPDM

Model Nomenclature

S — Stainless Steel, Flanged
Y — 230V/60/1 Motor

Performance Data

Flow Range: 0-147 GPM
Head Range: 0-51 Feet
Minimum Fluid Temp: 40°F (4°C)
Maximum Fluid Temp: 225°F (107°C)
Maximum Working Pressure: 150 psi

c UL us LISTED
FOR INDOOR USE ONLY

Electrical Data

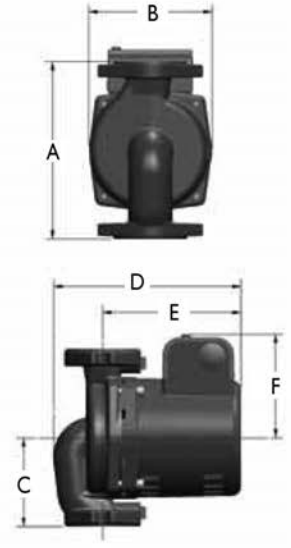
Model No.	Hz	Ph	115V Amps	230V Amps	RPM	HP
2400-10	60	1	1.4	.54	3450	1/10
2400-20	60	1	1.9	1.0	3450	1/6
2400-30	60	1	1.9	1.0	3450	1/6
2400-40	60	1	1.9	1.0	3450	1/6
2400-45	60	1	3.6	1.7	3450	1/3
2400-50	60	1	4.9	2.4	3450	1/2
2400-60	60	1	1.9	1.0	3450	1/6
2400-65	60	1	3.6	1.7	3450	1/3
2400-70	60	1	4.9	2.4	3450	1/2
Motor Type	Open Drip Proof, Permanent Split Capacitor, Thermally Ptotected					

Noryl® is a registered trademark of General Electric Co.

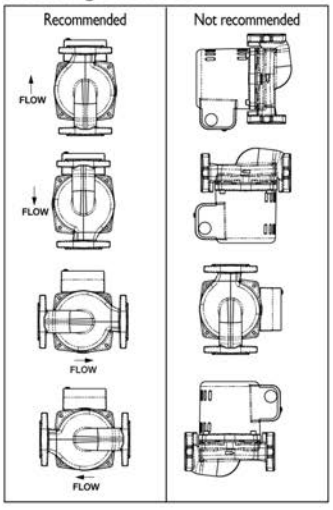
Pump Dimensions & Weights

All dimensions and weights are approximate.

Cast Iron	Stainless Steel	A		B		C		D		E		F		Ship Wt.	
		in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	Kg
2400-10	2400-10S	6-3/8	162	4-1/2	114	3-3/16	82	6-7/8	175	5	127	3-3/4	95	11.5	5.3
2400-20	2400-20S	6-3/8	162	4-1/2	114	3-3/16	82	6-7/8	175	5	127	3-3/4	95	12.0	5.5
2400-30	2400-30S	8-1/2	216	4-3/4	121	4-1/4	108	8	203	5-1/4	133	3-3/4	95	14.5	6.6
2400-40	2400-40S	8-1/2	216	4-3/4	121	4-1/4	108	8	203	5-1/4	133	3-3/4	95	14.5	6.6
2400-45	2400-45S	6-3/8	162	4-5/8	119	3-3/16	82	8-3/4	222	6-7/8	175	3-3/4	95	15.0	6.8
2400-50	2400-50S	6-3/8	162	4-5/8	119	3-3/16	82	8-3/4	222	6-7/8	175	3-3/4	95	16.0	7.3
2400-50/2	2400-50S/2	6-3/8	162	5-1/4	133	3-3/16	82	8-3/4	222	6-7/8	175	3-3/4	95	16.5	7.5
2400-60	2400-60S	8-1/2	216	5-3/16	132	4-1/4	108	7-7/8	200	5-1/4	133	3-3/4	95	18.0	8.2
2400-65	2400-65S	8-1/2	216	5-1/2	140	4-1/4	108	9-7/8	251	7-1/4	184	3-3/4	95	22.0	10.0
2400-70	2400-70S	8-1/2	216	5-1/2	140	4-1/4	108	9-7/8	251	7-1/4	184	3-3/4	95	23.0	10.4
2400-70/3	2400-70S/3	8-1/2	216	6-5/8	168	4-1/4	108	10-1/2	267	7-1/4	184	3-3/4	95	29.0	13.2



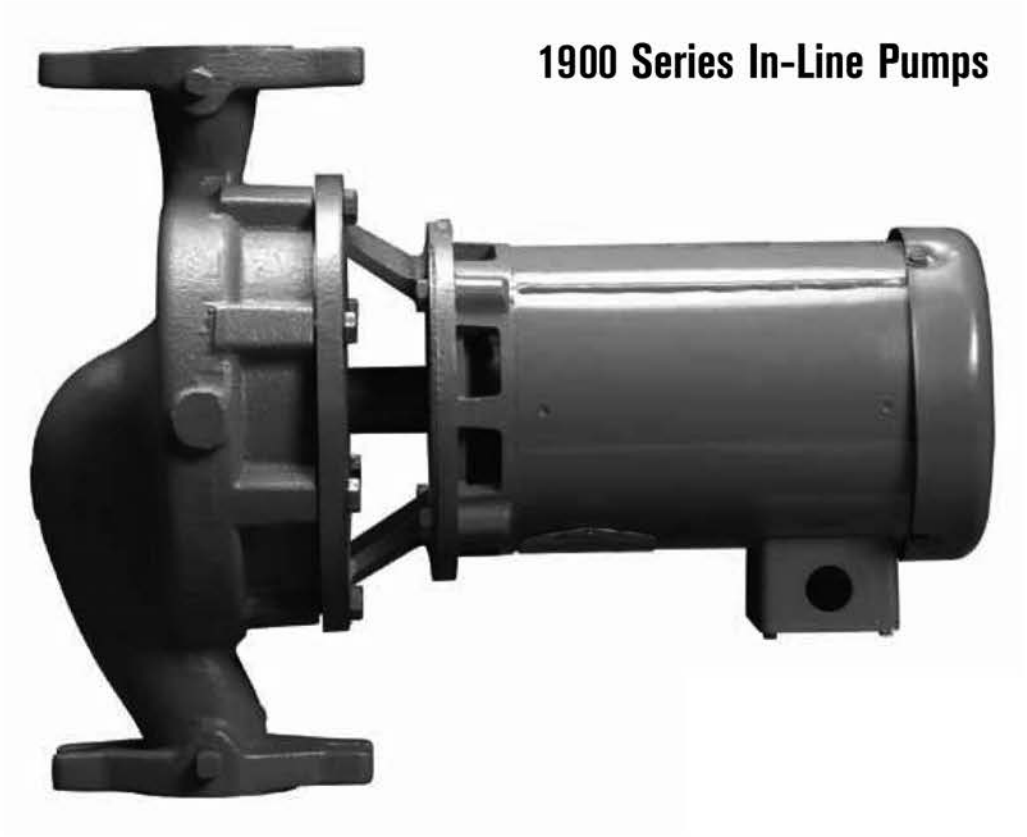
Mounting Positions



2400 Series Companion Flange Sets

Models	Connection	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"
2400-10/10S	Iron NPT	110-251F	110-252F	110-253F	110-254F	---	---	---
2400-20/20S	S. Steel NPT	110-251SF	110-252SF	110-253SF	110-254SF	---	---	---
2400-45/45S	Bronze SWT	110-523BSF	110-524BSF	110-525BSF	110-526BSF	---	---	---
2400-50/50S	Shut-Off NPT	SF-075T	SF-100T	SF-125T	SF-150T	---	---	---
	Shut-Off SWT	SF-075S	SF-100S	SF-125S	SF-150S	---	---	---
2400-50/50S/2	Iron NPT	---	---	---	---	194-2124F	---	---
2", 2 bolt	S. Steel NPT	---	---	---	---	194-2124SF	---	---
2400-30/30S	Iron NPT	---	---	194-1540F	194-1542F	---	---	---
2400-40/40S	S. Steel NPT	---	---	194-1540SF	194-1542SF	---	---	---
	Shut-Off NPT	---	---	SF-125T-0012	SF-150T-0012	---	---	---
	Shut-Off SWT	---	---	SF-125S-0012	SF-150S-0012	---	---	---
2400-60/60S 2400-65/65S 2400-70/70S	Iron NPT	---	---	---	---	185-086C	---	---
	Bronze NPT	---	---	---	---	185-086B	---	---
2400-70/70S/3	Iron NPT	---	---	---	---	---	185-112C	185-113C
3", 4 bolt	Bronze NPT	---	---	---	---	---	185-112B	185-113B

Water Circulation Pumps & Circulators



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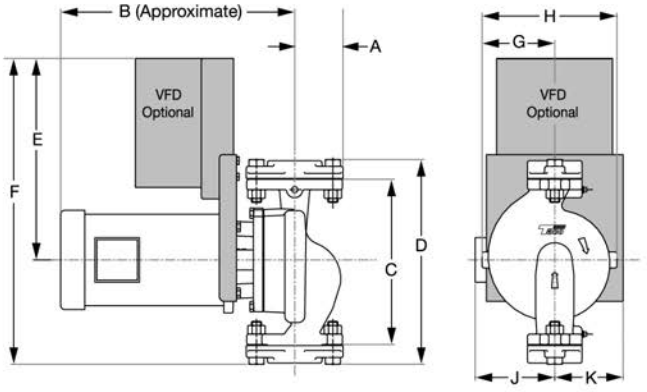
Commercial Hydronic Application Information



Materials of Construction

Description	Standard	Optional
Casing	Cast Iron	Bronze
Impeller	One Piece Cast Bronze	---
Shaft	Alloy Steel	---
Shaft Sleeve	Cupro-Nickel	---
Bracket	Cast Iron	Cast Iron with S/S Face Plate

Pump Dimensions & Weights

English dimensions are in inches. Metric dimensions are in milimeters. Metric data is presented in ( ). Do not use for construction purposes unless certified. * 1/4 HP AVAILABLE IN 1 PHASE ONLY.

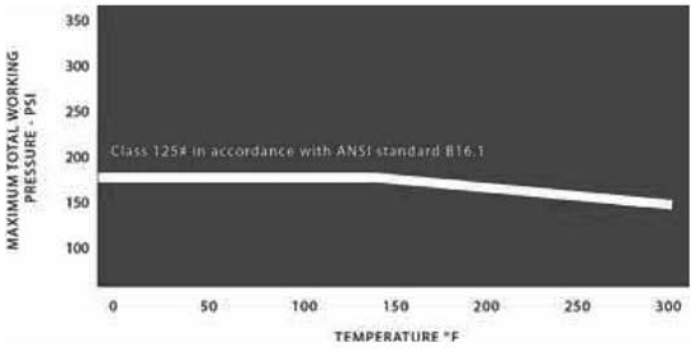
Model No.	Speed	Flange Size	H.P.	Dimensions (inches)									
				A	B	C	D	E	F	G	H	J	K
1911	1760	1-1/2" (38)	1/4* (.19)	3" (75)	14.0 (356)	10-1/4 (260)	12-7/8 (327)	14.8 (376)	21.24 (539)	4.52 (115)	8.38 (213)	5 (127)	4.25 (108)
			1/3 (.25)		14.0 (356)								
			1/2 (.37)		14.0 (356)								
			1 (.75)		15.0 (381)								
			1-1/2 (1.1)		15.5 (393)								
	3500		2 (1.5)		15.5 (393)								
			3 (2.25)		15.5 (393)								
			5 (3.75)		16.5 (420)							7 (175)	
1915	1760	1-1/2" (38)	1/3 (.25)	3-1/8" (80)	14.0 (356)	13-1/2 (368)	16-1/8 (410)	14.8 (376)	22.86 (580)	5.15 (131)	9.75 (248)	5 (127)	4.25 (108)
			1/2 (.37)		14.0 (356)								
			3/4 (.56)		15.0 (381)								
			1 (.75)		16.0 (406)								
			1-1/2 (1.1)		16.0 (406)								
	3500		2 (1.5)		16.0 (406)								
			3 (2.325)		16.0 (406)								
			5 (3.75)		17.0 (432)								
			7.5 (5.6)		17.0 (432)			19.2 (497)	28 (703)			7 (175)	
1919	1760	2" (51)	3/4 (.56)	3" (75)	14.75 (375)	14-1/2 (419)	17-3/8 (441)	14.8 (376)	23.49 (---)	5.74 (146)	11.19 (284)	5 (127)	4.25 (108)
			1 (.75)		15.75 (483)								
			1 1/2 (1.1)		15.75 (400)								
			2 (1.5)		17.5 (445)								
1935	1760	2" (51)	1/2 (.37)	3-1/2" (89)	13.75 (350)	13-1/2 (343)	16-1/8 (410)	14.8 (376)	22.86 (580)	5.39 (137)	9.90 (251)	5 (127)	4.25 (108)
			3/4 (.56)		14.75 (375)								
			1 (.75)		15.75 (483)								
			1-1/2 (1.1)		15.75 (400)								
	3500		2 (1.5)		15.75 (400)								
			3 (2.37)		16.0 (406)								
			5 (3.75)		17.0 (432)								
			7.5 (5.6)		17.0 (432)			19.2 (497)	28 (703)			7 (175)	
1941	1760	2" (51)	1-1/2 (1.1)	3-5/8" (92)	15.75 (400)	16-1/2 (419)	19-1/2 (495)	14.8 (376)	24.55 (623)	6.97 (177)	13.83 (326)	5 (127)	4.25 (108)
			2 (1.5)		17.5 (445)								
			3 (2.37)		24 (610)								

Commercial Hydronic Application Information

Applications

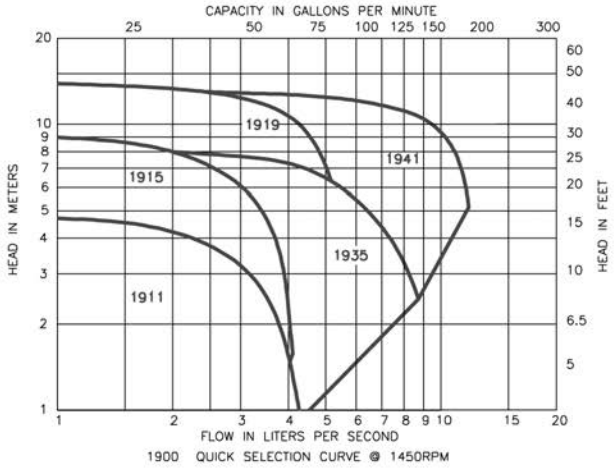
LoadMatch® Systems	Cooling Towers
Air Conditioning Systems	Golf Courses
Recirculation	Dry Cleaning Plants
Booster Service	Livestock Watering
Heating Systems	Bottle Washers
Laundry Equipment	Lawn Sprinklers

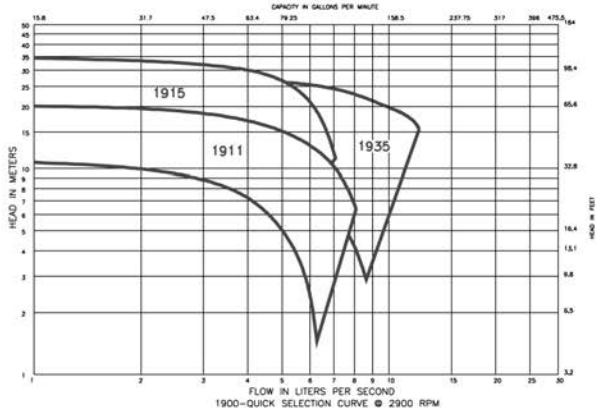
Pressure Temperature Ratings



1900 Series Performance Field 50 Hz

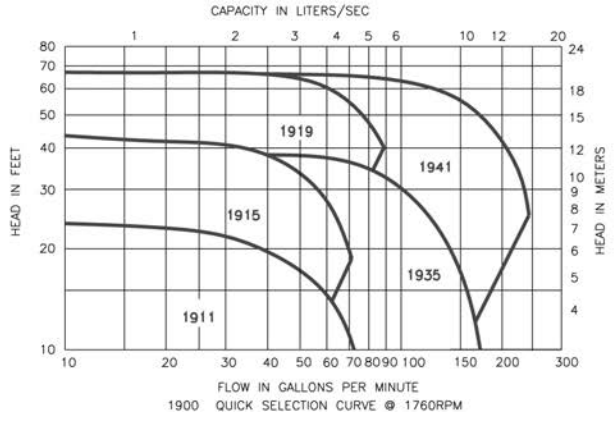
Curves also available on TacoNet®

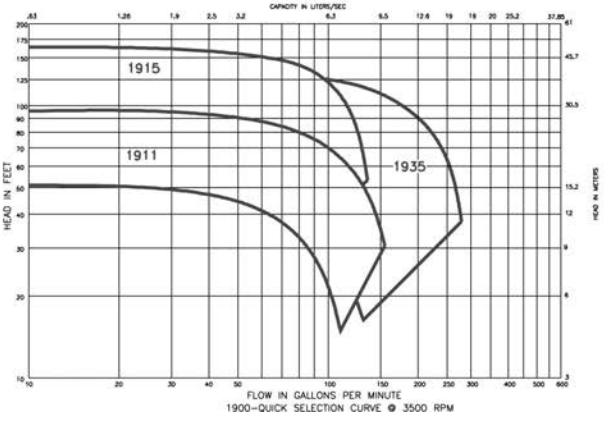




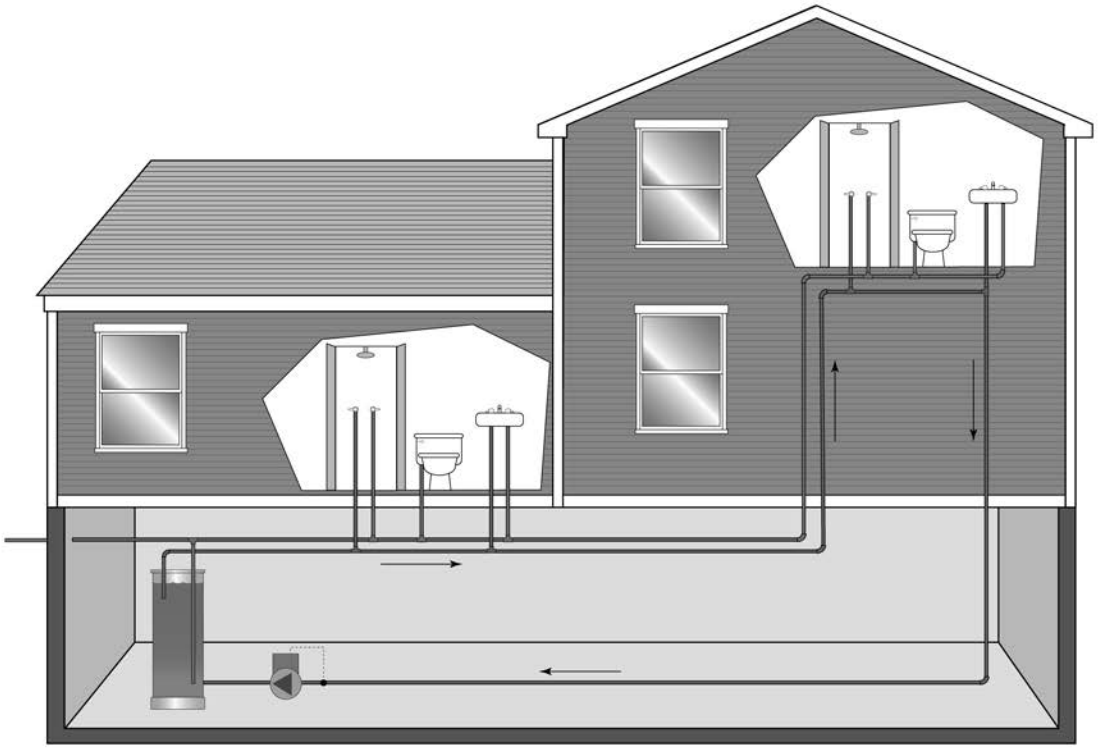
1900 Series Performance Field 60 Hz

Curves also available on TacoNet®





Domestic Hot Water Recirculation Systems
Application, Selection & Installation Guide



HYDRONIC COMPONENTS & SYSTEMS

Do it once.
Do it right.® Taco®

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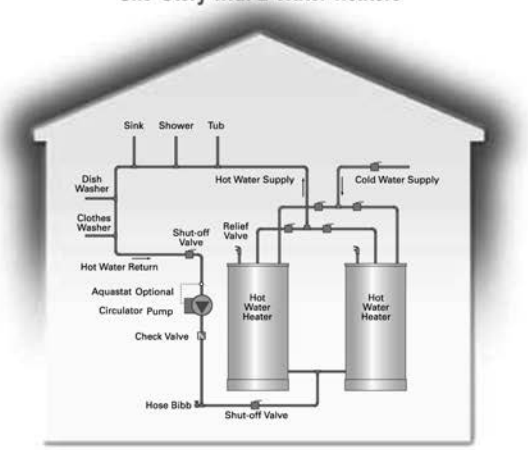
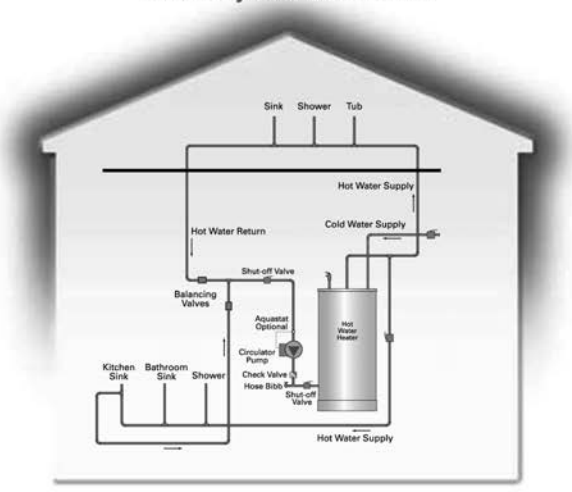
Typical Installation & Piping

One-Story with 1 Water Heater

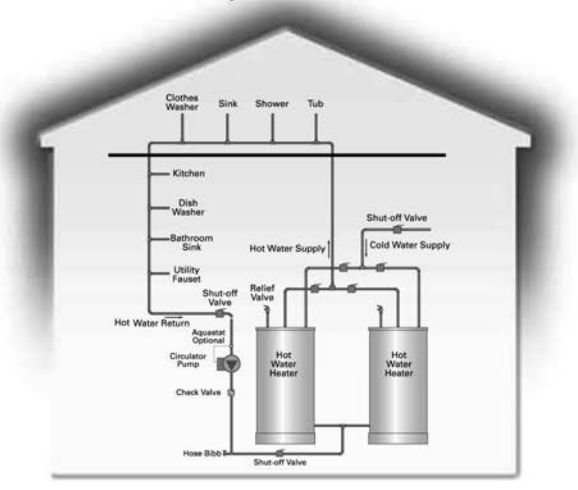
One-Story with 2 Water Heaters



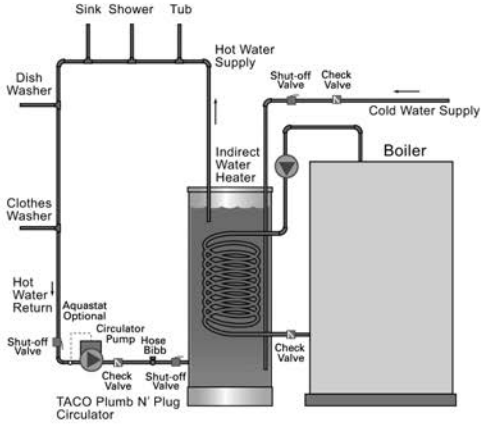
Multi-Story with 1 Water Heater



Multi-Story with 2 Water Heaters



Recirculation Piping with Indirect Water Heater



Recirculation Piping with Storage Water Heater & Mixing Valve

Features & Benefits:
Plumb n' Plug Circulators

- Removable stainless steel cartridge - contains all moving parts
- Patented, removable Integral Flow Check (IFC) option
- Bronze construction
- 1/2" & 3/4" sweat, 3/4" npt, union or flanged connections
- Pre-wired power cord
- Pre-wired 24-hour analog or 7-day programmable timer
- Durable Noryl® impeller
- Ceramic shaft, carbon bearings
- Quiet running, low power consumption
- Low maintenance, unmatched reliability
- UL Listed

Standard Models

		Plumb n' Plug® (PNP) Pre-Wired Models					
Standard Model #	System Connection	24 Hr Analog Timer	7 Day Digital Timer	Line Cord Only	HP	Voltage	Amps
003-BC4	1/2" Sweat	003-BC4-PNP	003-BC4-8PNP	003-BC4-4PNP	1/40	115/60/1	0.43
003-B4	3/4" Sweat	003-B4-PNP	003-B4-2PNP	003-B4-1PNP	1/40	115/60/1	0.43
003-BT4	3/4" NPT	003-BT4-PNP	003-BT4-2PNP	003-BT4-1PNP	1/40	115/60/1	0.43
003-BC4-1	Union	003-BC4-1PNP	003-BC4-9PNP	003-BC4-5PNP	1/40	115/60/1	0.43
006-BC4	1/2" Sweat	006-BC4-PNP	006-BC4-4PNP	006-BC4-2PNP	1/40	115/60/1	0.52
006-B4	3/4" Sweat	006-B4-PNP	006-B4-2PNP	006-B4-1PNP	1/40	115/60/1	0.52
006-BT4	3/4" NPT	006-BT4-PNP	006-BT4-2PNP	006-BT4-3PNP	1/40	115/60/1	0.52
006-BC4-1	Union	006-BC4-1PNP	006-BC4-5PNP	006-BC4-3PNP	1/40	115/60/1	0.52
008-BC6	3/4" Sweat	---	---	---	1/25	115/60/1	0.84
008-BF6	Flanged	---	---	---	1/25	115/60/1	0.84

Integral Flow Check (IFC) Models

		Plumb n' Plug® (PNP) Pre-Wired Models					
Standard Model #	System Connection	24 Hr Analog Timer	7 Day Digital Timer	Line Cord Only	HP	Voltage	Amps
003-BC4-IIFC	1/2" Sweat	003-BC4-3PNP	003-BC4-11PNP	003-BC4-7PNP	1/40	115/60/1	0.43
003-BC4-IFC	3/4" Sweat	003-B4-2PNP	003-BC4-10PNP	003-BC4-6PNP	1/40	115/60/1	0.43
003-B4-2IFC	Union	003-B4-3PNP	003-B4-4PNP	---	1/40	115/60/1	0.43
006-BC7-1IFC	1/2" Sweat	006-BC7-1PNP	006-BC7-5PNP	006-BC7-3PNP	1/40	115/60/1	0.52
006-BC7-IFC	3/4" Sweat	006-BC7-PNP	006-BC7-4PNP	006-BC7-2PNP	1/40	115/60/1	0.52
006-B7-IFC	Union	006-B7-PNP	006-B7-1PNP	---	1/40	115/60/1	0.52
008-BC6-IFC	3/4" Sweat	---	---	---	1/25	115/60/1	0.84
008-BF6-IFC	Flanged	---	---	---	1/25	115/60/1	0.84

Domestic Hot Water Circulator Accessories

Freedom Flange	System Connection	Sweat	NPT
Shut-Off	1/2"	242-2	242-1
	3/4"	243-2	243-1
Bronze	1/2"	110-522BSF	---
	3/4"	110-523BSF	110-251BF

Unions	System Connection	Sweat	NPT
Half Unions	1/2"	110-558	110-556
	3/4"	110-559	110-557
Shut-Off Unions	1/2"	258-3	258-1
	3/4"	258-4	258-2

Plumb n' Plug Accesories	Model #
Analog Timer Kit	265-1
Digital Timer Kit	265-3
Aquastat	563-2

Freedom Flange

Shut-off Freedom Flange

265-1 Analog Timer

265-3 Digital Timer

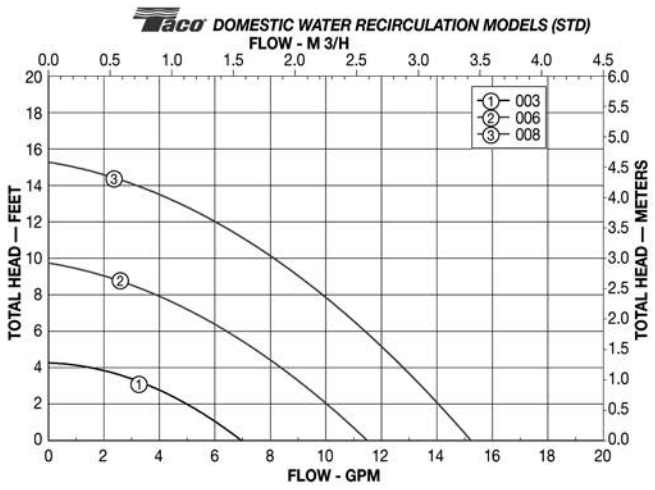
Half Unions

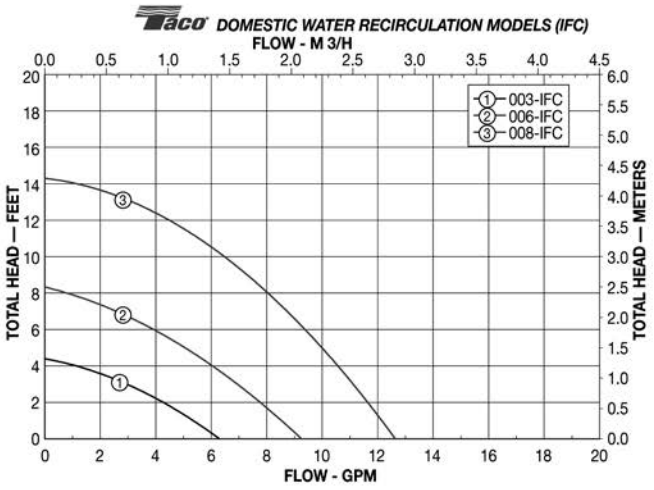
Shut-off Unions

563-2 Aquastat

c UL us LISTED

Performance Field Information - 60 Hz





Pump Selection Charts

This information is provided as a guide only. Larger models are available. For larger systems, consult your local Taco representative. Find the table below that best describes the design you plan to use. Select the pump model based on the supply and return pipe length, size and pump options. Do not oversize the pump or high velocity noise and erosion corrosion of system piping may result.

1/2" Supply & 1/2" Return Lines

Model #	Supply Pipe Maximum Length (ft.)	Total Maximum Pipe Length (ft.)
003	50	100
006	150	300
008	275	550
003-IFC*	50	100
006-IFC*	125	250
008-IFC*	250	500

* With Integral Flow Check

3/4" Supply & 3/4" Return Lines

Model #	Supply Pipe Maximum Length (ft.)	Total Maximum Pipe Length (ft.)
003	350	700
006	900	1,800
008	1,450	2,900
003-IFC*	350	700
006-IFC*	750	1,500
008-IFC*	1,350	2,700

* With Integral Flow Check

3/4" Supply & 1/2" Return Lines

Model #	Supply Pipe Maximum Length (ft.)	Total Maximum Pipe Length (ft.)
003	100	200
006	275	550
008	450	900
003-IFC*	100	200
006-IFC*	275	550
008-IFC*	425	850

* With Integral Flow Check

1" Supply & 1/2" Return Lines

Model #	Supply Pipe Maximum Length (ft.)	Total Maximum Pipe Length (ft.)
003	125	250
006	325	650
008	525	1050
003-IFC*	130	260
006-IFC*	275	550
008-IFC*	500	1,000

* With Integral Flow Check

1" Supply & 3/4" Return Lines

Model #	Supply Pipe Maximum Length (ft.)	Total Maximum Pipe Length (ft.)
003	600	1,200
006	1,500	3,000
003-IFC*	1,200	1,200
006-IFC*	2,500	2,500

* With Integral Flow Check

Assumptions:

Flow = 1 GPM

Max. Velocity = 3 ft./sec.

Allowances have been added for pressure drop of other typical system components

Type L Copper Tubing

Supply & Return Piping are equal in length.

RECIRCULATION SYSTEM

TacoGenie™ SAVE ENERGY • SAVE WATER • SAVE MONEY

e-smart

See Taco Catalog #100-15 and Submittal Datasheet 101-150 for full details.

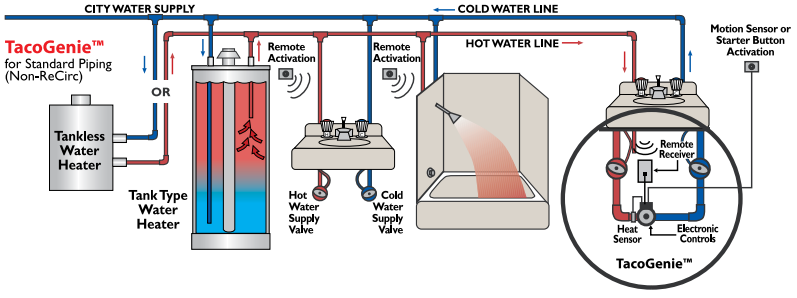
NSF Certified to NSF/ANSI 372

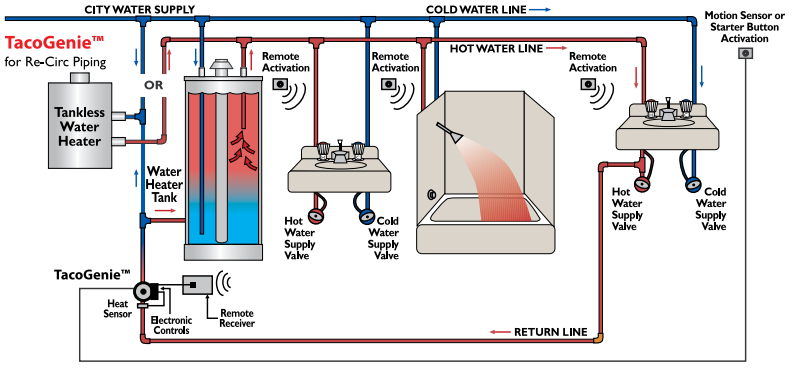
For New or Retrofit Installations

Using the existing cold water line as the return line, TacoGenie™ is ideal for both new and retrofit installations. Typically installed at the furthest fixture from the water heater, TacoGenie fits out of the way, under any bathroom vanity. Connections are made from the hot and cold lines to the suction and discharge side of the pump using adapter tees and stainless flex lines provided. When hot water is needed, the pump is activated by pressing a starter button, runs only long enough to supply hot water to the fixture and then automatically stops. This prevents hot water from entering the cold line. A spring-loaded Integral Flow-Check valve (IFC®) prevents cold water from entering the hot line. Optional wireless RF or motion sensor starters are also available.

Features and Benefits of the TacoGenie™

- Instant Hot Water Comfort
- Maximum Water & Energy Savings
- 24 Hour operation
- Maintenance free circulator - unmatched reliability
- Removable stainless steel cartridge - contains all moving parts
- UL listed
- Integral Flow-Check (IFC®) to prevent thermo-siphoning or gravity flow
- Pre-wired power cord and integral temperature sensor
- Adapter tees & stainless steel flex lines included
- RF wireless remote or motion sensor starter-optional
- Ideal for tankless water heaters





TacoGenie™ includes:

- TacoGenie Circulator
- Hard Wire Push Button
- (2) Copper T's
- (2) Flex Hoses
- RF Wireless Starter Kit (Optional)
- Motion Sensor (Optional)

MATERIALS OF CONSTRUCTION

Circulator:

Casing (Volute).....Stainless Steel
Stator Housing.....Steel
Cartridge.....Stainless Steel
Impeller.....Noryl
Shaft.....Ceramic
Bearings.....Carbon
O-Ring.....EPDM

Integral Flow Check (IFC®):

Body & Plunger.....Acetal
O-Ring.....EPDM

Standard Piping:

Tank Type Water Heater

Size of Home	Total length of Pipe (ft)	Model
Small	50	006-CT-USK
Medium	100	008-CT-USK
Large/Commerical	Over100	0011-CF-USK

Tankless Water Heater

Size of Home	Total length of Pipe (ft)	Model
Small / Medium	<60	008-CT-USK
Large/Commerical	60+	0011-CF-USK

Recirculation Piping:

Tank Type Water Heater

Size of Home	Total length of Pipe (ft)	Model
Small	100	006-CT
Medium	200	008-CT
Large/Commerical	200+	0011-CF

Tankless Water Heater

Size of Home	Total length of Pipe (ft)	Model
Small / Medium	<2500	008-CT
Large/Commerical	2500+	0011-CF

C = TacoGenie
T = Threaded
F = Flanged
USK = under sink kit

TacoGenie System Accessories

Model	Description
554-7	RF Remote Transmitter/Reciever Kit
554-8	RF Individual Remote Transmitter Button
554-3	Hardwired Individual Starter Button Round
554-4	Motion Sensor Kit

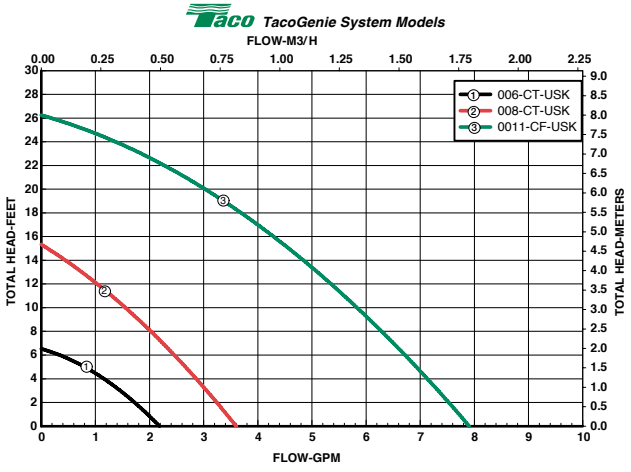
Standard TacoGenie with USK*
(Under Sink Kit) option

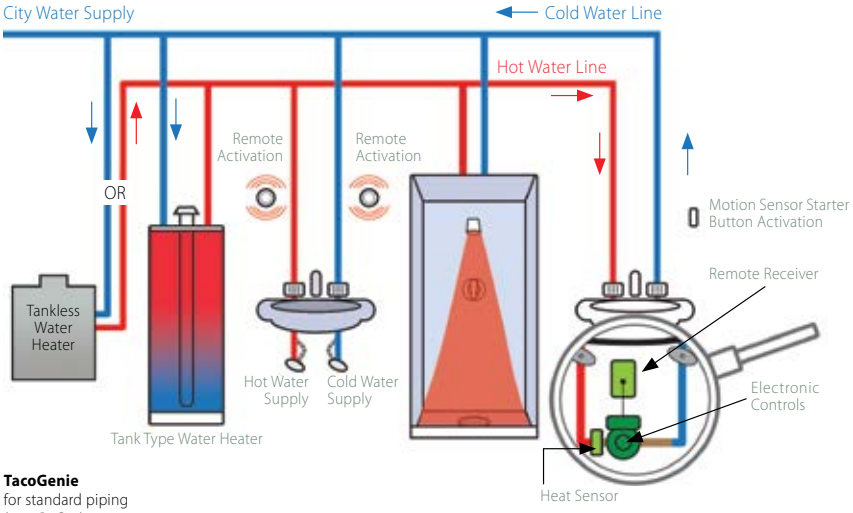
RF Wireless Starter Kit
(554-7)

Available in 006, 008 and 0011 circulators

Motion Sensor
(554-4)

Performance Field Information - 60 Hz





TacoGenie
for standard piping
(non-ReCirc)

How TacoGenie works…

The TacoGenie is a small, silent pump attached to your hot and cold water lines in the cabinet under your most remote kitchen or bath fixture. When TacoGenie is activated, the cool water you normally let run down the drain is circulated back to the water heater through the cold water line.

Instantly the pump circulates hot water from the water heater, and returns the cooled water back through the cold water line. When the hot water arrives at the faucet, the TacoGenie heat sensor and control board shut off the pump to prevent pumping excess hot water into the cold water line.

Activate the TacoGenie only when you need it.

TacoGenie only runs when you tell it to, and it's smart enough to know when the water currently in the line is hot enough. TacoGenie can be activated with the push of a button, or with an optional wireless remote transmitter/receiver or optional hard-wired motion sensor.

TacoGenie is easy to install.

NO NEW PIPING REQUIRED.

The TacoGenie not only saves water and energy, it saves in construction costs as well. No new return line is necessary; no need to drain the system; no demolition and repair. In fact, TacoGenie can be installed in just **eight simple steps**.

Step 1:
Select the most distant fixture from the water heater

Step 2:
Remove Angle Stops

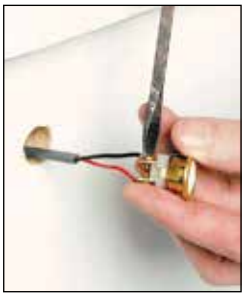
Step 3:
Install T's

Step 4:
Reattach Angle Stops

Step 5:
Connect Flex Lines

Step 6:
Connect to the TacoGenie Circulator

Step 7:
Install Starter Button and Plug-in

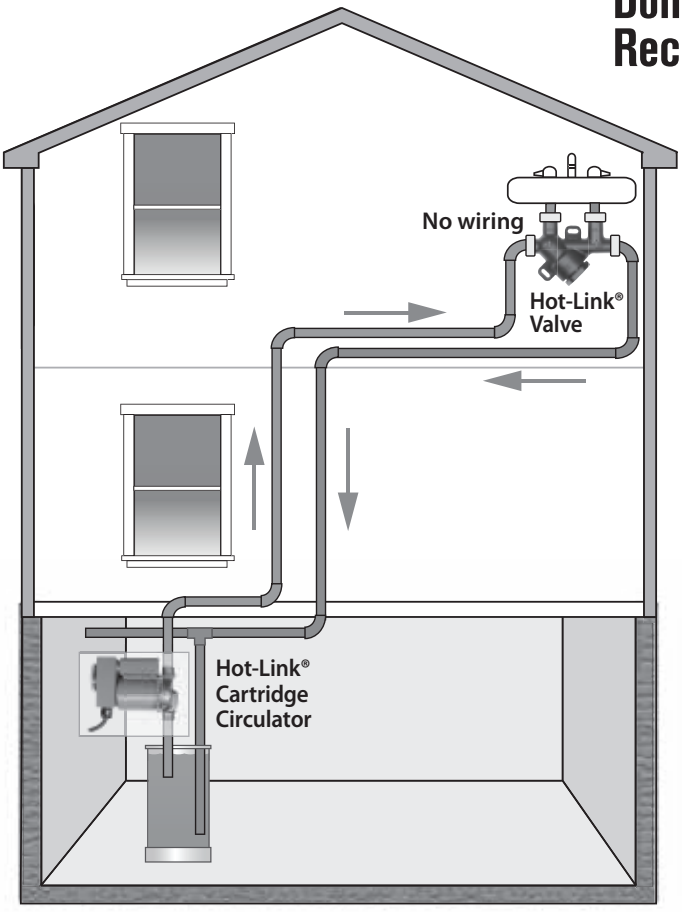


Step 8:
Enjoy Hot Water in Seconds!

Gas Water Heater						
Saved Gal. Per Day	Saved Gal. Per Year	BTU Savings ($0.62 Therms)	Reduced Settings	Sewage Savings ($0.004/Gal.)	Water Savings ($0.002/Gal)	Annual Savings
40	14,400	57.53	37.05	57.60	28.80	180.98
50	18,000	71.16	46.31	72.00	36.00	225.47

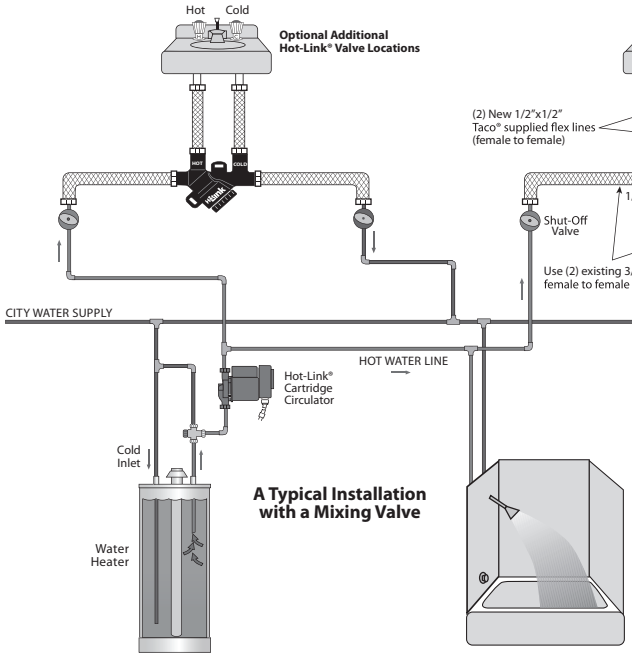
Hot-Link®

Domestic Hot Water Recirculation System



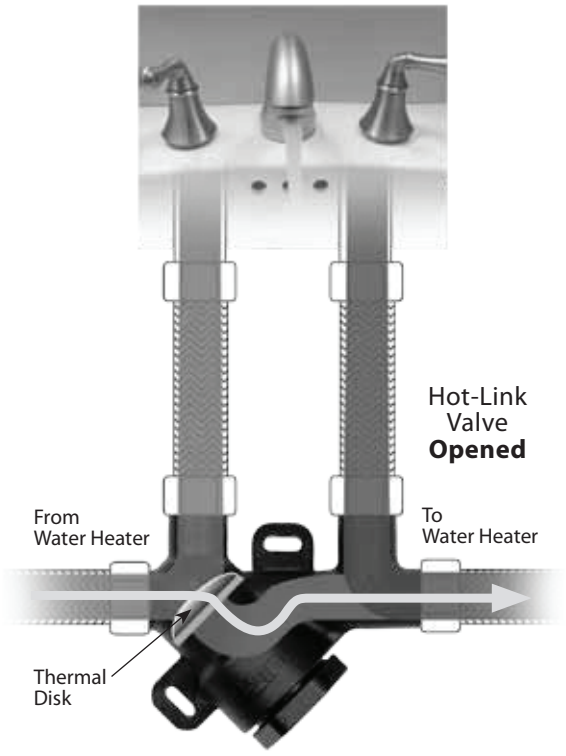
Features:

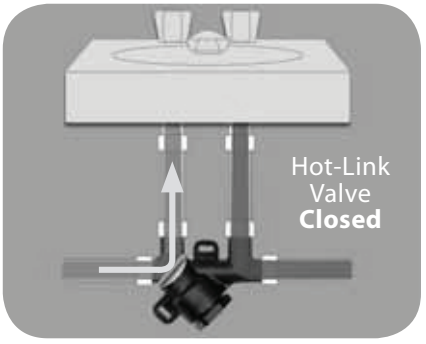
- Creates a domestic hot water recirculation system without dedicated return loop piping
- Easy to retrofit to existing plumbing system; no electrician necessary
- Conserves water by greatly reducing the time it takes to get hot water
- Analog pump timer allows youto set the system to work during peak hours or to work continuously
- Includes Hot-Link®System Cartridge Circulator, a Hot-Link® bypass valve, flex hoses & hardware
- NSF® ≤ .25% Lead Compliant Meets California AB 1953 & Vermont Act 193



Thermal disk technology tells Hot-Link® Valve what to do.

No under-sink electricity is needed. The Hot-Link® Circulator is mounted at the water heater.





Hot water without the waste!

The Taco Hot-Link® System (HLS-1) for domestic hot water recirculation reduces the time it takes for hot water comfort to reach showers and faucets by recirculating "cooled" water back to the water heater; hot water lines remain hot. The Hot-Link® System can save an average family up to 12,000 gallons per year — water that normally goes down the drain while waiting for hot water.

How the Hot-Link ® System works.

A quiet and efficient Hot-Link circulator is installed at the water heater and a Hot-Link bypass valve is easily installed at the faucet furthest away from the hot water heater. The thermal disk technology tells the Hot-Link bypass valve what to do. No under sink electricity is needed.

Hot-Link ® System is easy to install.

The Hot-Link® System circulator is installed at the water heater. Simply plug the 6' power cord into any standard 120V electrical outlet; no electrician required. Everything needed to install and operate the Hot-Link System is included in the box. Simply set the Hot-Link circulator timer to work during peak hours or to work continuously.

Benefits of the Hot-Link ® System.

Saves energy, water and time while providing instant hot water comfort. What's more, it's made by Taco, known by plumbing professionals as a world leader in high quality hydronic components since 1920.

Taco®
comfort made **easy**®
www.taco-hvac.com

HLS-1 Includes:

Hot-Link®Valve

Hot-Link® Circulator

(2) Braided Flex Hoses

3/4" Bronze Union

Materials of Construction ——Pump & Union

Casting (Volute)	Stainless Steel
Stator Housing	Steel
Cartridge	Stainless Steel
Impeller	Noryl
Shaft	Ceramic
Bearings	Carbon
O-Ring	EPDM
Union	Bronze

Materials of Construction —— Hot-Link®Valve

Body	Nylon
Thermal Disk Actuator	Bi-Metal
O-Ring Seals	EPDM
Integral Flow Check (IFC®)	
Body, Plunger	Acetal
O-Rings	EPDM
Screen	304 SS
Stem	Nylon
Actuator Cartridge	Low Lead Brass
Braided Flex Hoses	Stainless Steel

Pump Performance Data

Pump Flow Range	0-11 gpm
Head Range	0-10 ft.
Min. Fluid Temperature	40˚F (4˚C)
Max. Fluid Temperature	220˚F (104˚C)
Max. Working Pressure	125 psi

c UL us LISTED

FOR INDOOR USE ONLY

NSF® ≤ .25% Lead

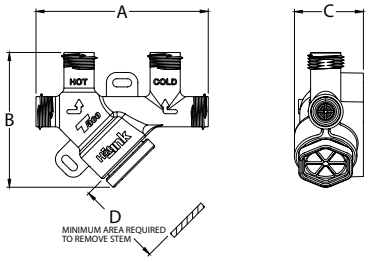
Complies with California Health and Safety Code Section 116875 / AB1953 and Vermont Act 193

Application

The Taco Hot-Link® System for domestic hot water recirculation reduces the time it takes for hot water comfort to reach showers and faucets by recirculating "cooled" water back to the water heater; hot water lines remain hot. The Hot-Link system can save an average family up to 12,000 gallons of water per year – water that normally goes down the drain while waiting for hot water.

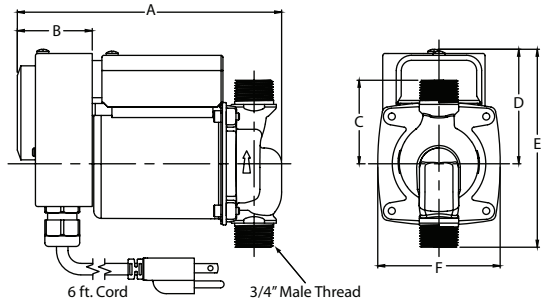
Dimensions & Weights Hot-Link® Valve

Connection	A		B		C		D		Ship Wt.	
	in.	mm	in.	mm	in.	mm	in.	mm	Lbs.	Kg
1/2" MNPT	4	102	3-1/8	79	1-5/8	41	2	51	0.30	0.14



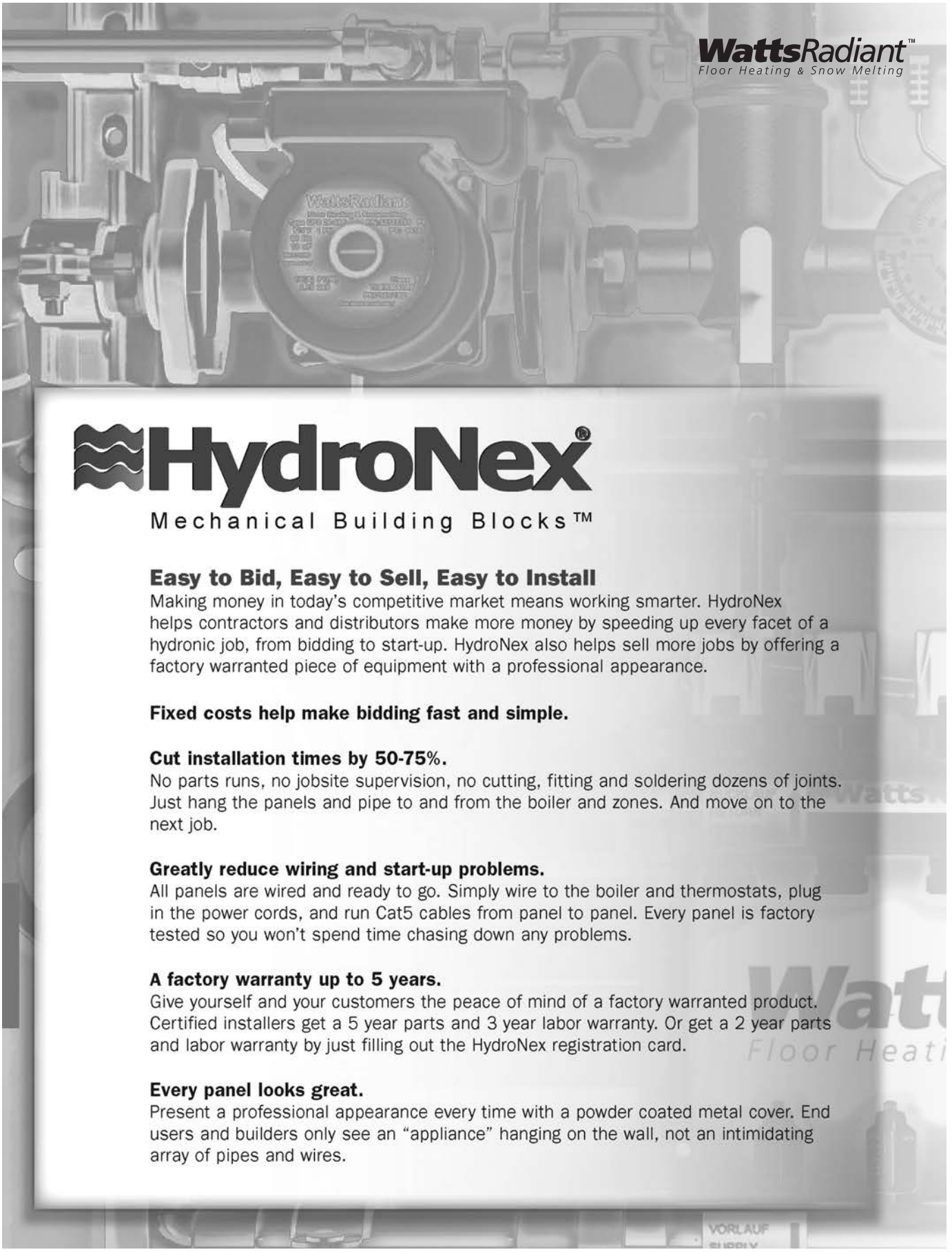
Hot-Link® Circulator

A		B		C		D		E		F		Ship Wt.	
in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	Lbs.	Kg
7-1/4	184	1-15/16	49	2	51	3-1/16	78	5-1/4	134	3-5/16	84	7.0	3.2



Electrical Data

Model	Volts	Hz	Ph	Amps	RPM	HP
Hot-Link® Circulator	115	60	1	.55	3250	1/40
Motor Type	Permanent Split Capacitor Impedance Protected					



Easy to Bid, Easy to Sell, Easy to Install

Making money in today's competitive market means working smarter. HydroNex helps contractors and distributors make more money by speeding up every facet of a hydronic job, from bidding to start-up. HydroNex also helps sell more jobs by offering a factory warranted piece of equipment with a professional appearance.

Fixed costs help make bidding fast and simple.

Cut installation times by 50-75%.
No parts runs, no jobsite supervision, no cutting, fitting and soldering dozens of joints. Just hang the panels and pipe to and from the boiler and zones. And move on to the next job.

Greatly reduce wiring and start-up problems.
All panels are wired and ready to go. Simply wire to the boiler and thermostats, plug in the power cords, and run Cat5 cables from panel to panel. Every panel is factory tested so you won't spend time chasing down any problems.

A factory warranty up to 5 years.
Give yourself and your customers the peace of mind of a factory warranted product. Certified installers get a 5 year parts and 3 year labor warranty. Or get a 2 year parts and labor warranty by just filling out the HydroNex registration card.

Every panel looks great.
Present a professional appearance every time with a powder coated metal cover. End users and builders only see an "appliance" hanging on the wall, not an intimidating array of pipes and wires.

STAND ALONE

Please note that Model Numbers for HydroNex Panels have changed.

Condensing Boiler Panels — Stand alone panel to interface with most condensing boilers. This panel includes a 1-1/4" primary loop, air remover, optional auto fill assembly, distribution manifold with up to 8 actuators, and indirect DHW zone.

Model	Description
SCA-1 or SCM-1	Includes Zone Circulator, 1-1/2" distribution manifold
SCA-3 or SCM-3	Includes Primary, Zone, and DHW circulators, 1-1/2" distribution manifold

Primary Panels — Primary panels circulate water through the 1-1/4" primary loop, remove air, and provide essential service and monitoring capabilities. An auto-fill assembly and an indirect DHW zone are options.

Model	Description
PA-_-PO	With AutoFill assembly
PM-_-PO	With manual fill assembly
PA-_-PD NEW	With AutoFill assembly and DHW zone circulator
PM-_-PD NEW	With manual fill assembly and DHW zone circulator

Distribution Panels — Distribution (secondary) panels send heat to fancoils, baseboards, radiant floors, or indirect water heaters.

Model	Description
DD	1 to 5 circulator zones - No mixing device, Boiler temperature fluid
DM	1 to 3 circulator zones - Single mix valve providing fixed supply fluid temperature
DMH	2 to 4 circulator zones - Single mix valve providing fixed supply fluid temperature - also supplies boiler temperature fluid
DI	1 to 5 circulator zones - Outdoor reset with variable injection mixing - Single supply fluid temperature
DIH	2 to 5 circulator zones - Outdoor reset with variable injection mixing - also supplies boiler temperature fluid
DH	1 circulator zone for radiant or snow melt with 2 heat exchanger options

MOST POPULAR

Zone Panels — Zone panels use 1" stainless steel manifolds to distribute water to radiant circuits. Pre-installed in steel cabinets for remote "in the wall" installation. A zone pump, mix valve and pre-wired actuators are all options.

Model	Description
ZB-A or ZB-N	Zone manifold, with or without actuators - 2 to 12 circuits
ZC-A or ZC-N	Zone manifold with zone pump; with or without actuators - 2 to 7 circuits
ZM-A or ZM-N	Zone manifold with zone pump and mix valve; with or without actuators - 2 to 7 circuits

SOLAR & GEOTHERMAL FRIENDLY

Specialty Panels — These panels are designed to tie HydroNex panels into storage tanks for Ground Source Heat Pumps, Solar, Wood Boilers and other alternative heat sources.

Model	Description
SG NEW	Cycles between 1,2, or 3 ground source heat pumps and storage tank
SS NEW	Cycles between 2 independent heat sources, such as solar, geothermal, or a wood boiler and a back up

It's Easy to choose HydroNex Panels

1. Select the heat source.
- a. Condensing boiler
- b. Non-condensing boiler
- c. Solar, geothermal, or wood fired heat source with boiler back up

2. Determine the number of different supply temperatures required.
- a. Different radiant temperature groups (radiant slab, radiant underfloor)
- b. High temperature zones such as baseboard, fan coils, panel radiators.
- c. Domestic Hot Water (DHW)

3. Select mixing options.
- a. Fixed temperature mix valve ----------→ DM
- b. Injection mixing with outdoor reset -------→ DI
- c. Direct (no mixing) ----------→ DD or SC with Condensing boiler
- d. Heat Exchanger ----------→ DH
- e. Multiple/Combinations

4. Determine number of small zones to be served with manifold actuators rather than zone circulators.
----------→ Zone Panels with Actuators

For **Condensing boilers,** choose *an SC-1 or SC-3 Panel* or a *Primary Panel* and *DD Panels.*

For **Non-condensing boilers,** choose a Primary, and *DD, DM,DI, or DH Panel(s).*

For **Solar with boiler back up,** choose *SS Panel* with a *Primary Panel* and *DD, DM, DI, or DH Panel(s).*

For **Geothermal with boiler back up,** choose *SS Panel* with a *Primary Panel* and *DD, DM, DI, or DH Panel(s).*

For **Wood fired boiler with gas or electric boiler back up,** choose *SS Panel* with a *Primary Panel* and *DD, DM, DI, or DHn Panel(s).*

For **Geothermal only heat source,** choose *GeoThermal Panel* with a *Primary Panel* and *D Panel(s)*

The Word from the Field about HydroNex . . .

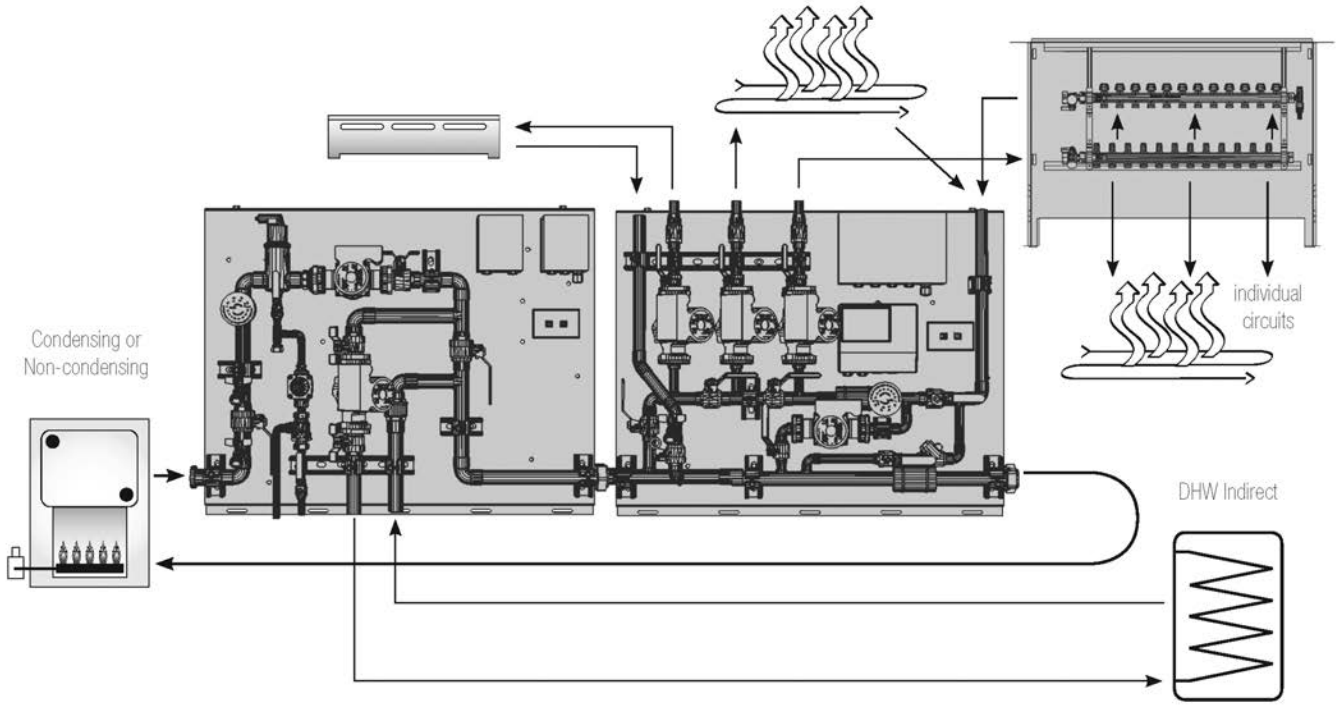
"The HydroNex panels were chosen for this project for their quick installation, their clean appearance and the pre-wired zone control. We at LD Mechanical LLC are very satisfied with this product and will look forward to using them in the future."

—Lance Daniel
LD Mechanical LLC
Montrose, CO

A few examples of HydroNex systems - the possibilities are endless...

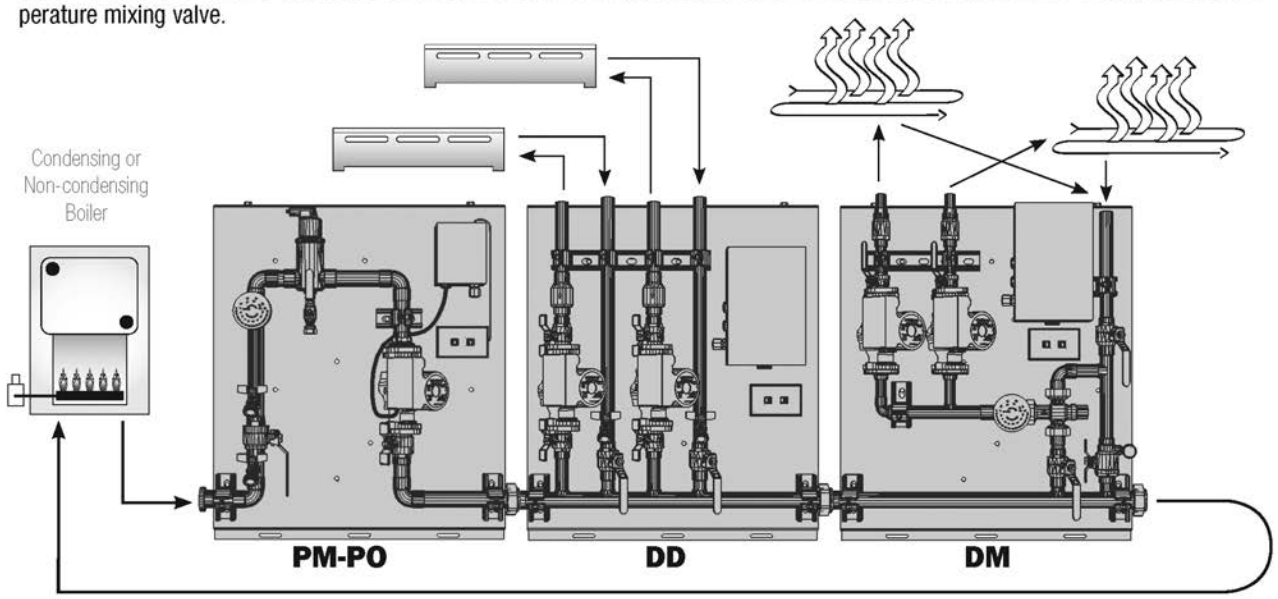
Primary panel with DHW, baseboard zone, and Radiant zones with outdoor reset/ injection pumping

Description:
Provides a single supply temperature to radiant zones and high temperature boiler water to select zones. The DI-H panel provides modulating radiant supply temperature with outdoor reset. The Primary Panel has an automatic fill assembly and an indirect DHW zone.



Primary panel with baseboard or fan coils and radiant

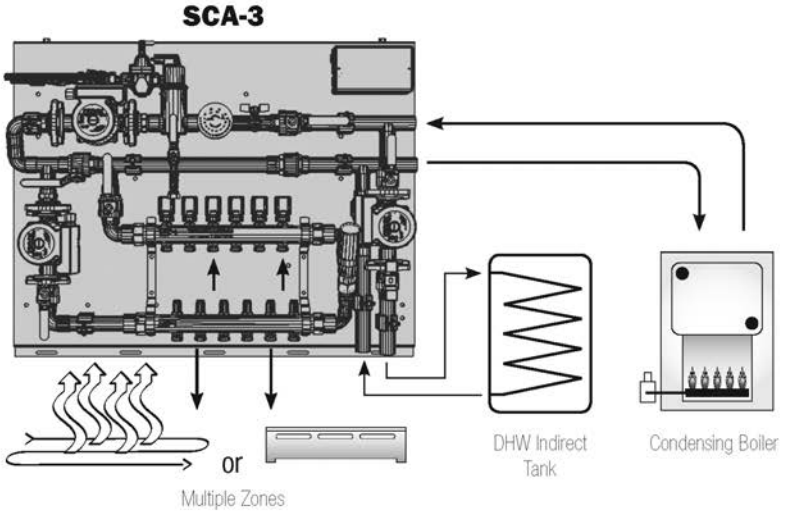
Description:
Provides a single supply temperature to radiant zones and high temperature boiler water to baseboard zones. The DD panel provides boiler temperature water to baseboard or fan coil zones. The DM panel supplies lower temperature radiant zones through a fixed temperature mixing valve.



A few examples of HydroNex systems (continued)

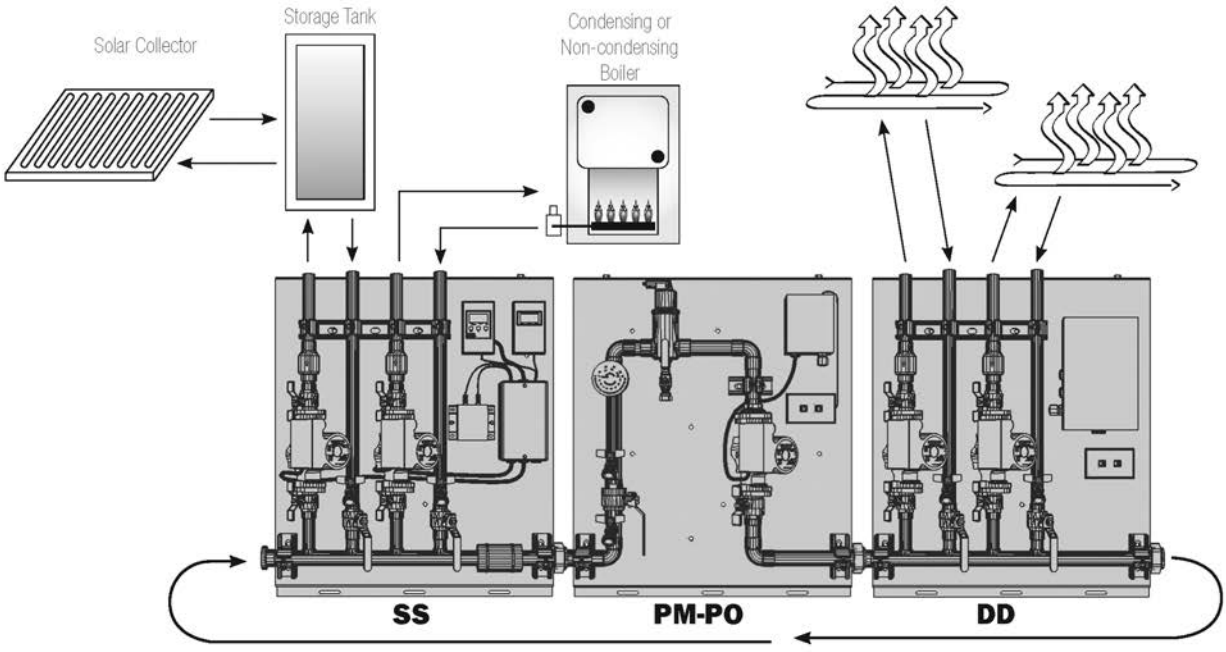
Condensing Boiler Panel

Description:
This stand alone panel provides a single supply temperature to radiant zones and high temperature boiler water to an indirect water heater. Each panel is designed to interact directly with the condensing boiler control. Reset, domestic water priority, and other features are dependant on the boiler control.

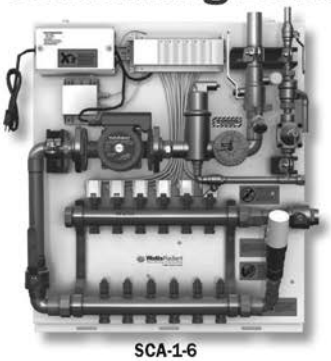


Source Select™ system - for solar and a gas-fired boiler back up, serving radiant zones.

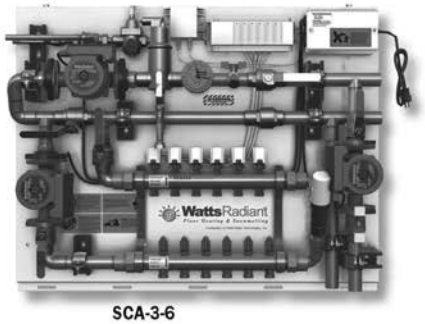
Description:
SS (Source Select) HydroNex panels are designed to go before the Primary panels and manage two heat sources, typically an alternative source such as solar, and a boiler back up. The required system temperatures will determine which distribution panel is used. In this example, a low temperature radiant system is shown with a DD panel.



Condensing Boiler Panels (Stand Alone)



SCA-1-6



SCA-3-6

Use this model number configuration to order.

1: Type 1 (Zone Circulator only)
3: Type 3 (Primary, Zone, and DHW Circulators)

SCA: Auto Fill
NEW SCM: Manual Fill

# of circuits
options: 4, 5, 6, 8

CONDENSING PANELS

DESCRIPTION	MODEL #	WT. (lbs)	SIZE
Type 1 Zone pump only (Watts Radiant 2699) For boilers with primary circulators	SCA/SCM - 1 - 4	60-70	S
	SCA/SCM - 1 - 5	60-70	S
	SCA/SCM - 1 - 6	60-70	S
	SCA/SCM - 1 - 8	60-70	S
Type 3 Boiler, Zone, and DHW pumps (all Watts Radiant 2699s)	SCA/SCM - 3 - 4	150-160	M
	SCA/SCM - 3 - 5	150-160	M
	SCA/SCM - 3 - 6	150-160	M
	SCA/SCM - 3 - 8	150-160	L

S = 28" wide x 31.5" tall x 12" deep
M = 40" wide x 31.5" tall x 12" deep
L = 52" wide x 31.5" tall x 12" deep

Condensing Boilers

These stand alone panels work with most condensing boilers. The Type 1 panel provides only a secondary circulator, and works with condensing boilers that supply their own primary circulator. The Type 3 panel provides primary, secondary, and DHW circulators. Both panels include a 1-1/4" primary loop with air remover and expansion tank connection (no tank) as well as optional auto-fill assembly. All circulators are energy-saving 3 speed models, which enables the installer to adjust flows for optimal temperature drops. The entire panel is enclosed in a powder coated steel enclosure for a professional, appliance style appearance.

The 1-1/2" stainless steel distribution manifold is equipped with thermal actuators on each circuit, and can supply up to 4 gpm to each separate zone. Each zone has a balance valve and flow meter for precise flow balancing. A pressure differential bypass eliminates velocity noise and helps extend the life of the system components.

Standard equipment includes:

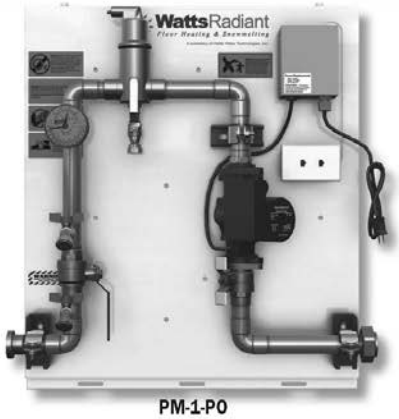
- 1-1/4" copper primary and secondary piping, 1" copper DHW piping
- Primary, secondary, and DHW circulators, pre-wired and tested (Secondary circulator only on Type 1)
- High performance 1-1/4" micro-bubble air remover with expansion tank connection (tank not included) including a 10 ft piece of 3/8" Onix for mounting tank outside of enclosure
- Isolation valves for easy servicing of circulators and easy air purging
- Spring check valves in primary loop and DHW piping
- 0-50 psi/60-320 °F gauge
- 1-1/2" stainless manifold with thermal actuators, balance valves, flow meters and pressure differential bypass
- Zone actuator control, pre-wired and tested
- 9 ft 120V power cord
- Powder coated steel enclosure
- Optional Auto-fill assembly (Watts 9-11S M3 pressure reducing valve and backflow preventer)

Manifold adapters are required to transition to the distribution piping. PEX, PAP, copper or Onix can be used for distribution from the panel to the radiant zones. **Order manifold tube adapters separately.**

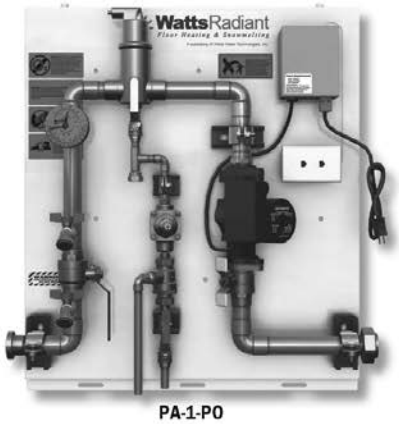
The panel circulators are controlled by the boiler via field wiring. Outdoor reset, DHW priority and other features are dependent on the boiler control.

Maximum flow rate is approximately 22 gpm. Each Watts Radiant 2699 circulator is capable of providing approximately 15 gpm at 20 ft hd on high speed.

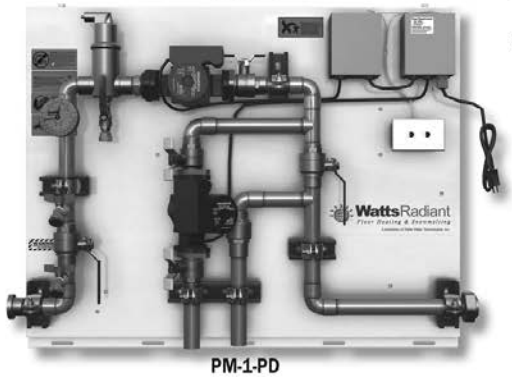
Primary Panels



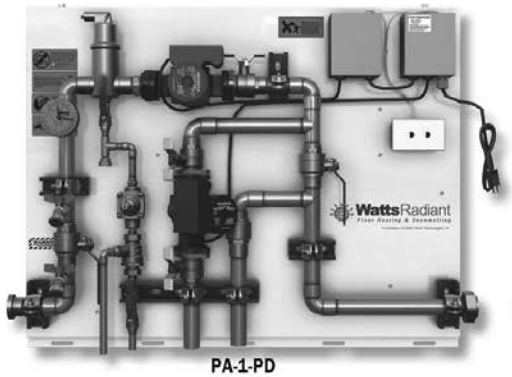
PM-1-PO



PA-1-PO



PM-1-PD



PA-1-PD

Use this model number configuration to order.

PA: Auto Fill
PM: Manual Fill

Circulator Options
1. Watts Radiant 1558
2. Watts Radiant 2699
3. B&G NRF 22
4. B&G PL 30
5. Taco 008
6. Taco 0011

NOTE: Primary circulator and the DHW circulator are the same brand/model

PO: Primary Only
PD: Primary and DHW Circulators

PRIMARY PANELS

DESCRIPTION	MODEL #	WT. (lbs)	SIZE
P-Panel with Manual Fill	PM - ____ - PO	55-60	S
P-Panel with Auto Fill	PA - ____ - PO	55-60	S
NEW P-Panel with Manual Fill and DHW	PM - ____ - PD	65-70	M
NEW P-Panel with Auto Fill and DHW	PA - ____ - PD	65-70	M

S = 28" wide x 31.5" tall x 12" deep
M = 40" wide x 31.5" tall x 12" deep

Primary Panels

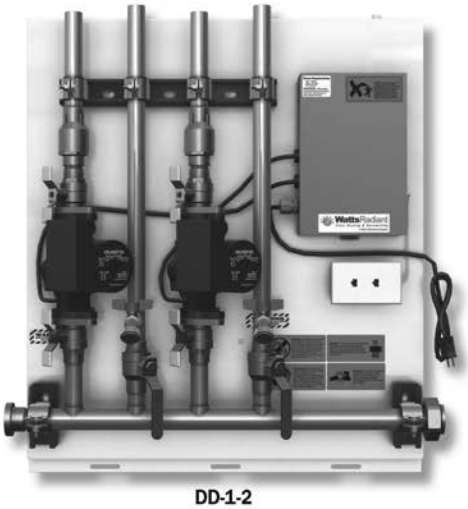
This panel includes a 1-1/4" primary loop with air remover and expansion tank connection (tank not included) as well as optional auto-fill assembly and DHW zone. O-ring sealed threaded unions on the primary loop and Cat 5 wiring connections allow for fast coupling to other HydroNex panels. The entire panel is enclosed in a powder coated steel enclosure for a professional, appliance style appearance.

Standard equipment includes:

- 1-1/4" copper primary and 1" copper DHW piping
- Primary circulator, pre-wired and tested
- **Optional energy-saving 3 speed Watts Radiant circulators**
- High performance 1-1/4" micro-bubble air remover and expansion tank connection (tank not included) including a 10 ft piece of 3/8" Onix for mounting tank outside of enclosure
- Isolation valves for easy servicing of circulators and easy air purging
- Spring check valve in DHW piping
- 0-50 psi/60-320 °F gauge
- O-ring sealed threaded unions
- Cat 5 cable electrical connection for fast and easy connection to D Panels
- 9 ft 120V power cord
- Powder coated steel enclosure
- Optional auto-fill assembly (Watts 9-11S M3 pressure reducing valve and backflow preventer)
- Optional DHW zone with spring check valve on return, pre-wired and tested
  (DHW circulator is the same selection as the primary circulator)

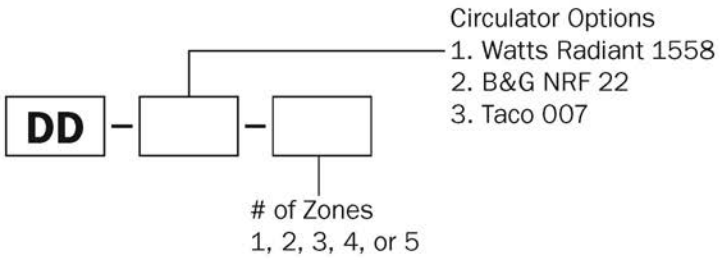
Maximum total flow rate is approximately 22 gpm.

Distribution Direct



DD-1-2

Use this model number configuration to order.



DISTRIBUTION DIRECT PANELS

DESCRIPTION	MODEL #	WT. (lbs)	SIZE
1 Zone D-Direct	DD - ____ - 1	55-60	S
2 Zone D-Direct	DD - ____ - 2	90-95	
3 Zone D-Direct	DD - ____ - 3	120-125	M
4 Zone D-Direct	DD - ____ - 4	155-160	
5 Zone D-Direct	DD - ____ - 5	185-190	L

S = 28" wide x 31.5" tall x 12" deep
M = 40" wide x 31.5" tall x 12" deep
L = 52" wide x 31.5" tall x 12" deep

Distribution Direct

These panels are ideal for any high temperature hydronic application such as fan coils, baseboards, panel radiators, or underfloor radiant. A Direct panel could also be used with a Primary panel on a condensing boiler.

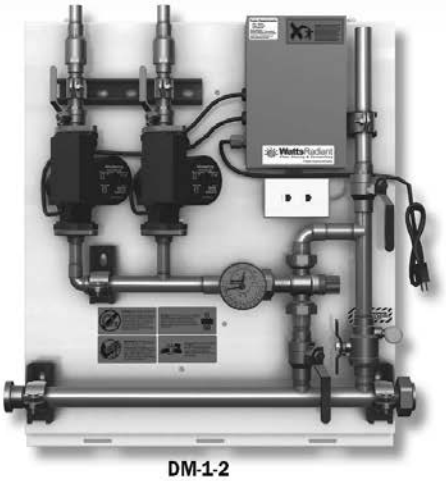
Each panel is equipped with O-ring sealed threaded unions on the primary loop and Cat 5 wiring connections for fast connection to other HydroNex panels. The entire panel is enclosed in a powder coated steel enclosure for a professional, appliance style appearance.

Standard equipment includes:

- 1-1/4" copper primary and 1" secondary piping
- Zone circulators, pre-wired and tested
- **Optional energy-saving 3 speed Watts Radiant circulators**
- Isolation valves for easy servicing of circulators and easy air purging
- Spring flow check valves on each zone
- O-ring sealed threaded unions
- Cat 5 cable electrical connection for fast and easy connection to P or D Panels
- 9 ft 120V power cord
- Powder coated steel enclosure

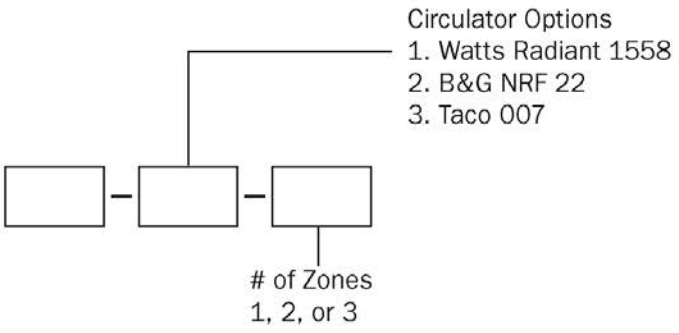
Maximum flow for entire panel is approximately 22 gpm. Maximum for each 1" secondary is approximately 8 gpm.

Distribution Mix Valve



DM-1-2

Use this model number configuration to order.



DISTRIBUTION PANELS

DESCRIPTION	MODEL #	WT. (lbs)	SIZE
1 Zone D-Mix	DM -____ - 1	60-65	S
2 Zone D-Mix	DM - ____ - 2	80-85	M
3 Zone D-Mix	DM - ____ - 3	95-100	

S = 28" wide x 31.5" tall x 12" deep
M = 40" wide x 31.5" tall x 12" deep

Distribution Mix Valve

These panels are used for lower temperature hydronic applications such as panel radiators, or radiant. A thermostatic, 3-way mixing valve can deliver temperatures between 100 and 160°F.

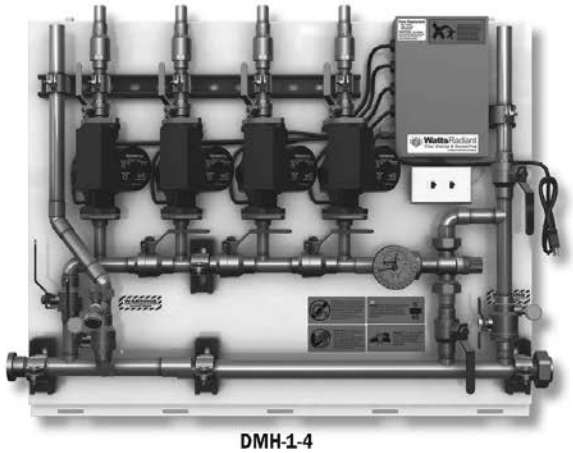
Each panel is equipped with O-ring sealed threaded unions on the primary loop and Cat 5 wiring connections for fast connection to other HydroNex panels. The entire panel is enclosed in a powder coated steel enclosure for a professional, appliance style appearance.

Standard equipment includes:

- 1-1/4" copper primary, 3/4" secondary piping, and a 1" common return
- Zone circulators, pre-wired and tested
- **Optional energy-saving 3 speed Watts Radiant circulators**
- Thermostatic, 3-way mixing valve with 0-50 psi/60-320°F gauge
- Isolation valves for easy servicing of circulators and easy air purging
- Spring flow check valves on each zone
- O-ring sealed threaded unions
- Cat 5 cable electrical connection for fast and easy connection to Primary or Distribution Panels
- 9 ft 120V power cord
- Powder coated steel enclosure

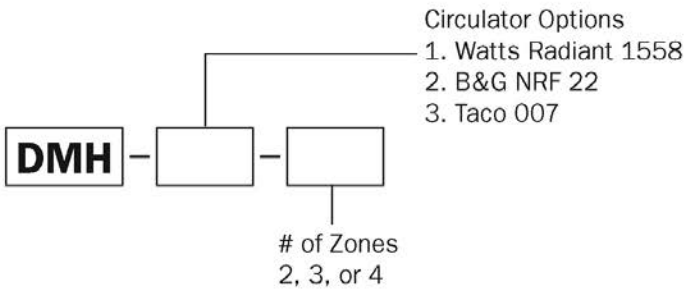
Maximum total flow rate through the mixing valve is approximately 3.5 gpm.

Distribution Mix Hybrid



DMH-1-4

Use this model number configuration to order.



DISTRIBUTION Mix Hybrid Panels

DESCRIPTION	MODEL #	WT. (lbs)	SIZE
2 Zone DMix Hybrid	DMH - ____ - 2	85-90	M
3 Zone DMix Hybrid	DMH - ____ - 3	105-	
4 Zone DMix Hybrid	DMH - ____ - 4	150-	L

M = 40" wide x 31.5" tall x 12" deep
L = 52" wide x 31.5" tall x 12" deep

Distribution Mix Hybrid

The hybrid panel adds field selected boiler temperature zones to the Distribution Mix panel. Two radiant slab zones and one fan coil zone can easily be incorporated into this single panel. Selecting which zones get boiler or mix valve temperature water is as simple as adjusting two valves.

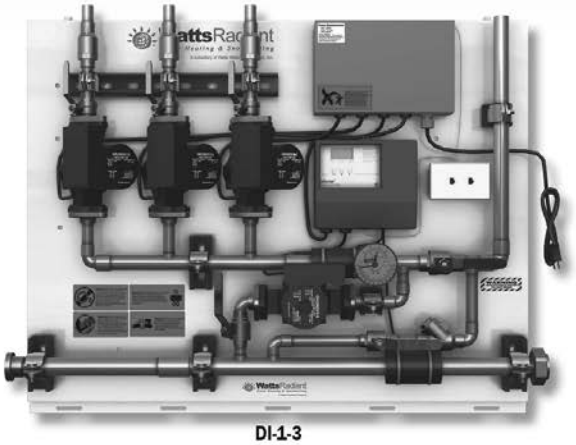
Each panel is equipped with O-ring sealed threaded unions on the primary loop and Cat 5 wiring connections for fast connection to other HydroNex panels. The entire panel is enclosed in a powder coated steel enclosure for a professional, appliance style appearance.

Standard equipment includes:

- 1-1/4" copper primary, 3/4" secondary piping, and a 1" common return
- Isolation valves to adjust which zones are fed boiler or mixed water temperature
- Zone circulators, pre-wired and tested
- **Optional energy-saving 3 speed Watts Radiant circulators**
- Thermostatic, 3-way mixing valve with 0-50 psi/60-320°F gauge
- Isolation valves for easy servicing of circulators and easy air purging
- Spring flow check valves on each zone
- O-ring sealed threaded unions
- Cat 5 cable electrical connection for fast and easy connection to P or D Panels
- 9 ft 120V power cord
- Powder coated steel enclosure

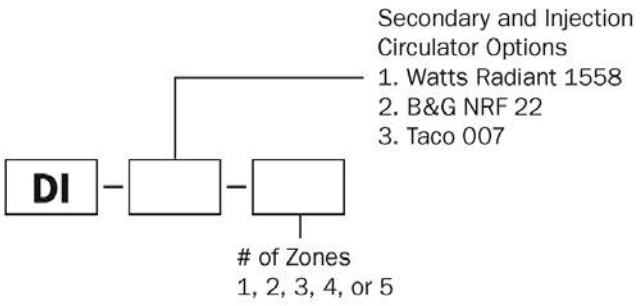
Maximum total flow rate through the mixing valve is approximately 3.5 gpm. Maximum total high temperature flow rate is approximately 8 gpm.

Distribution Injection Mix



DI-1-3

Use this model number configuration to order.



DISTRIBUTION Injection Mixing Panels

DESCRIPTION	MODEL #	WT. (lbs)	SIZE
1 Zone D Injection Mix	DI - ____ - 1	85-90	S
2 Zone D Injection Mix	DI - ____ - 2	120-125	M
3 Zone D Injection Mix	DI - ____ - 3	140-145	
4 Zone D Injection Mix	DI - ____ - 4	170-175	L
5 Zone D Injection Mix	DI - ____ - 5	200-205	

S = 28" wide x 31.5" tall x 12" deep
M = 40" wide x 31.5" tall x 12" deep
L = 52" wide x 31.5" tall x 12" deep

Distribution Injection Mix

These panels deliver automatically adjusted, weather-responsive heat to any hydronic system. The panel resets system water temperature based on outside temperatures. The Tekmar® 361 control adjusts the speed of the injection pump to accurately regulate supply water temperatures, giving the ultimate in comfort and energy efficiency.

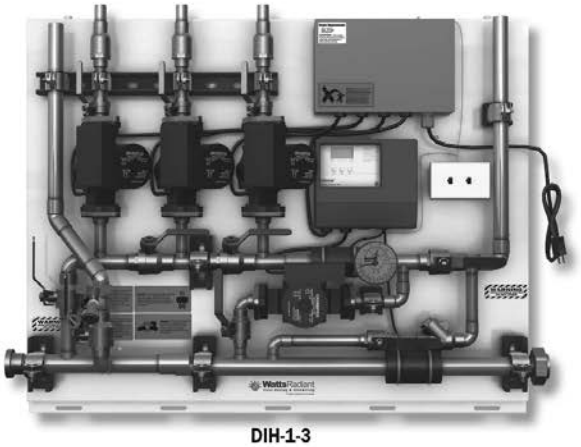
Each panel is equipped with O-ring sealed threaded unions on the primary loop and Cat 5 wiring connections for fast connection to other HydroNex panels. The entire panel is enclosed in a powder coated steel enclosure for a professional, appliance style appearance.

Standard equipment includes:

- 1-1/4" copper primary, 3/4" secondary supply and 1" common return piping
- Zone circulators and injection circulator, pre-wired and tested
- **Optional energy-saving 3 speed Watts Radiant circulators**
- Tekmar 361 outdoor reset mixing control
- 0-50 psi/60-320°F gauge
- Isolation valves for easy servicing of circulators and easy air purging
- Spring flow check valves on each zone.
- O-ring sealed threaded unions
- Cat 5 cable electrical connection for fast and easy connection to P or D Panels
- 9 ft 120V power cord
- Powder coated steel enclosure

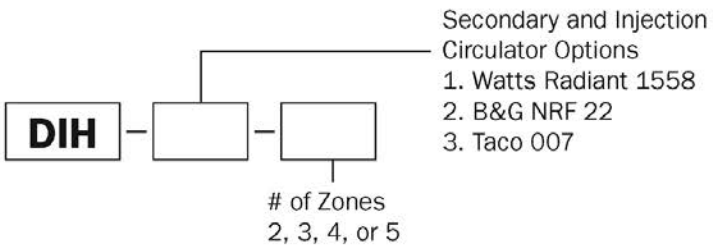
Maximum flow rate for entire panel is approximately 22 gpm. Maximum flow rate for each 3/4" secondary is approximately 5 gpm.

Distribution Injection Mix Hybrid



DIH-1-3

Use this model number configuration to order.



DISTRIBUTION Injection Mixing Hybrid Panels

DESCRIPTION	MODEL #	WT. (lbs)	SIZE
2 Zone D Injection Mix Hybrid	DIH-____-2	115-120	M
3 Zone D Injection Mix Hybrid	DIH-____-3	140-145	
4 Zone D Injection Mix Hybrid	DIH-____-4	170-175	L
5 Zone D Injection Mix Hybrid	DIH-____-5	200-205	

S = 28" wide x 31.5" tall x 12" deep
M = 40" wide x 31.5" tall x 12" deep
L = 52" wide x 31.5" tall x 12" deep

Distribution Injection Mix Hybrid

The hybrid panel adds field selected boiler temperature zones to the Distribution Injection Mix panel. Two different water temperatures can easily be incorporated into this single panel. Selecting which zones get boiler or mixed temperature water is as simple as adjusting two valves.

The panel resets the lower system water temperature based on outside temperatures. The Tekmar® 361 control adjusts the speed of the injection pump to accurately regulate supply water temperatures, giving the ultimate in comfort and energy efficiency.

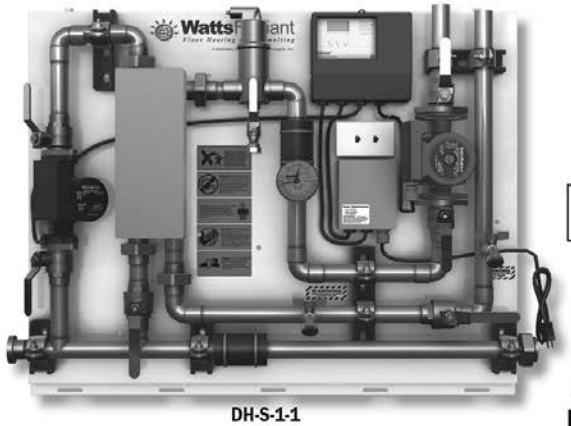
Each panel is equipped with O-ring sealed threaded unions on the primary loop and Cat 5 wiring connections for fast connection to other HydroNex panels. The entire panel is enclosed in a powder coated steel enclosure for a professional, appliance style appearance.

Standard equipment includes:

- 1-1/4" copper primary, 3/4" secondary supply and 1" common return piping
- Isolation valves to adjust which zones are fed boiler or reset water temperature
- Zone circulators and injection circulator, pre-wired and tested
- **Optional energy-saving 3 speed Watts Radiant circulators**
- Tekmar 361 outdoor reset mixing control (outdoor sensor included)
- 0-50 psi/60-320°F gauge
- Isolation valves for easy servicing of circulators and easy air purging
- Spring flow check valves on each zone
- O-ring sealed threaded unions
- Cat 5 cable electrical connection for fast and easy connection to P or D Panels
- 9 ft 120V power cord
- Powder coated steel enclosure

Maximum flow rate for entire panel is approximately 22 gpm. Maximum flow rate for each 3/4" secondary is approximately 5 gpm. Maximum total high temperature flow rate is approximately 8 gpm.

Distribution with Heat Exchanger



DH-S-1-1

Distribution with Heat Exchanger

Heat Exchanger panels with a Tekmar 665 make it easy to add a snow melting zone to any HydroNex system. Or select the radiant option with a Tekmar 361 for a glycol loop in a garage or shop that requires isolation. The Tekmar 361 control adjusts the speed of the injection pump on the "A" side of the heat exchanger to accurately regulate supply water temperatures, giving the ultimate in comfort and energy efficiency. The heat exchanger options can transfer approximately 150,000 btu/hr or 250,000 btu/hr with 180°F boiler supply/130°F snow melt/radiant supply and a 30°F Delta T.

Each panel is equipped with O-ring sealed threaded unions on the primary loop and Cat 5 wiring connections for fast connection to other HydroNex panels. The entire panel is enclosed in a powder coated steel enclosure for a professional, appliance style appearance.

Use this model number configuration to order.

Circulator Options for 150 MBH panels
1. Watts Radiant 1558 w/ 2699 secondary
2. B&G NRF 22 w/ PL30 secondary
3. Taco 007 w/ 0014 secondary

[ ] – [ ] – [ ] – [ ]

R: Radiant Heating (Tekmar 361®)
S: Snow Melting (Tekmar 665®)

Heat Exchanger Size
1: 150 MBH

DISTRIBUTION Heat Exchanger Panels (150 MBH)

DESCRIPTION	MODEL #	WT. (lbs)	SIZE
Radiant Heating (150 MBH)	DH-R-___-1	115-120	M
Snow Melting (150 MBH)	DH-S-___-1	115-120	

M = 40" wide x 31.5" high x 12" deep

Circulator Options for 250 MBH panels
1. B&G PL30 w/ PL36 secondary
2. Taco 0013 w/ 0014 secondary

DH – [ ] – [ ] – 2

R: Radiant Heating (Tekmar 361)
S: Snow Melting (Tekmar 665)

Heat Exchanger Size
2: 250 MBH

DISTRIBUTION Heat Exchanger Panels (250 MBH)

DESCRIPTION	MODEL #	WT. (lbs)	SIZE
Radiant Heating (250 MBH)	DH-R-___-2	140-145	M
Snow Melting (250 MBH)	DH-S-___-2	140-145	

M = 40" wide x 31.5" high x 12" deep

Standard equipment includes:

- 1-1/4" copper primary and secondary supply piping
- Circulators on A and B side of heat exchanger, pre-wired and tested
- Flat plate stainless steel heat exchanger with unions
- **Optional energy-saving 3 speed Watts Radiant circulators**
- Tekmar 665 snow melt control (093 slab sensor must be ordered separately) or 361 outdoor reset mixing control
- High performance 1-1/4" micro-bubble air remover and expansion tank connection (tank not included)
- 0-50 psi/60-320°F gauge
- Isolation valves for easy servicing of circulators and easy air purging
- O-ring sealed threaded unions
- Cat 5 cable electrical connection for fast and easy connection to P or D Panels
- 9 ft 120V power cord
- Powder coated steel enclosure

Zone Basic (with or without actuators)

ZB-N-12
No Actuators

ZB-A-4
With Actuators

Use this model number configuration to order.

A: With Actuators
N: No Actuators

ZB – [ ] – [ ]

# of Circuits:
options: 2-12

Zone Basic

DESCRIPTION	MODEL #	WT. (lbs)	SIZE
2 Circuit	ZB - ___ - ___	30-40	M
3 Circuit		30-40	
4 Circuit		30-40	
5 Circuit		50-65	
6 Circuit		50-65	L
7 Circuit		50-65	
8 Circuit		50-65	
9 Circuit		50-65	
10 Circuit		50-65	
11 Circuit		50-65	
12 Circuit		50-65	

M = 29.25" high x 25.5" wide x 4.5" deep
L = 29.25" high x 41.5" wide x 4.5" deep

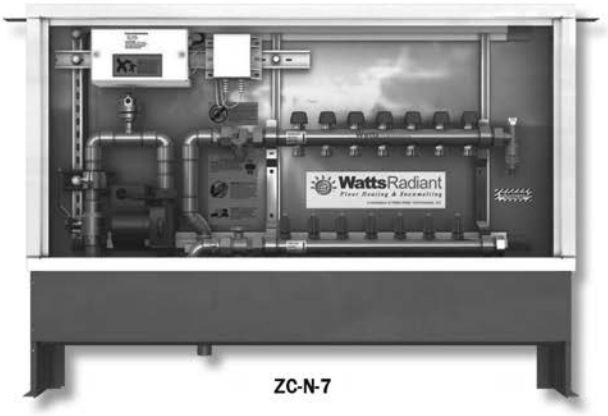
Zone Panels (with or without actuators)
Zone panels with pre-wired actuators and actuator control are our most popular panel. With a professional appearance, multiple radiant tube options and the wiring already done, it's easy to see why.

This Zone panel includes a 1" stainless steel manifold housed in a powder-coated steel enclosure with a latching door. The panel includes manifold isolation valves with temperature gauges and a vent/purge assembly. The enclosure is designed to be recessed in the wall.

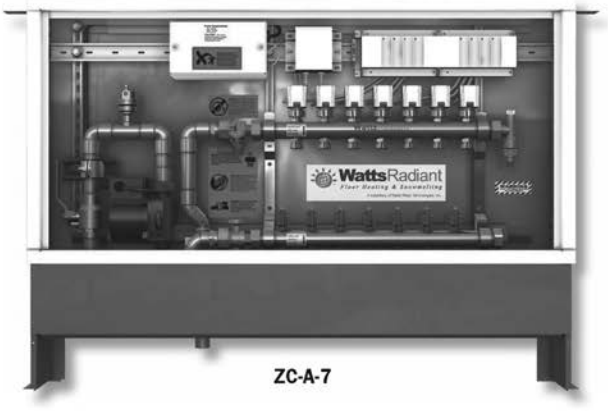
Maximum flow rate for entire manifold is 12 gpm. Individual circuit flow meters are 0-2 gpm.

Panels with actuators may require an optional pressure differential by-pass valve (ordered separately). If the by-pass valve is used, the maximum manifold size in a box is reduced by 2 circuits, and the maximum manifold is an M-10.

Zone Pump (with or without actuators)



ZC-N-7



ZC-A-7

Use this model number configuration to ord

A: With Actuators
N: No Actuators

ZC – ____ – ____

# of Circuits:
options: 2–7

ZONE with Zone Circulator

DESCRIPTION	MODEL #	WT. (lbs)	SIZE
2 Circuit	ZC - ____ - ____	65-70	L
3 Circuit		65-70	
4 Circuit		65-70	
5 Circuit		70-75	
6 Circuit		70-75	
7 Circuit		70-75	

L = 29.25" high x 41.5" wide x 4.5" deep

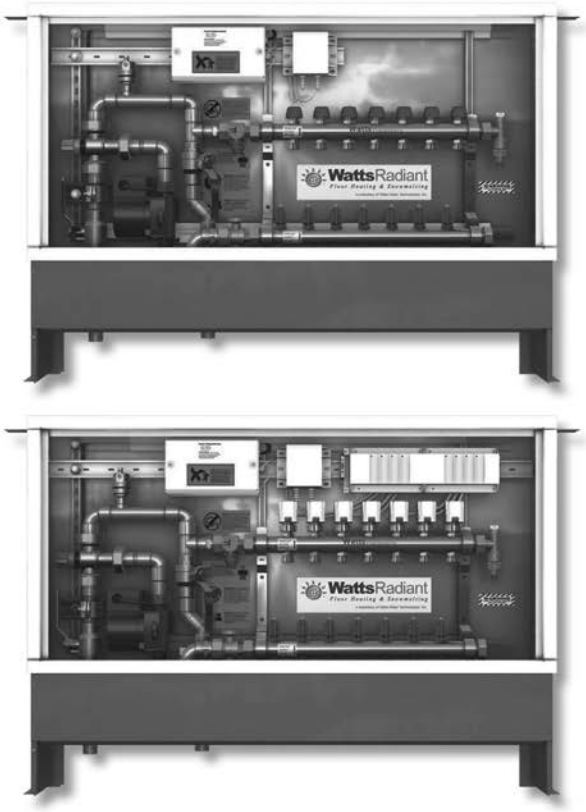
Zone Pump Panels (with or w/o actuators)
The Zone Pump panel adds a Watts Radiant 1558 circulator to a Zone Basic Panel. It is used when the radiant manifold does not have a dedicated circulator in the mechanical room (to save space, for example).

This Zone panel includes a pre-wired Watts Radiant 1558 circulator, and a 1" stainless steel manifold housed in a powder-coated steel enclosure with a latching door. The panel includes manifold isolation valves with temperature gauges and a vent/purge assembly. The enclosure is designed to be recessed in the wall. The single speed 1558 circulator produces approximately 10 gpm at 10 ft hd.

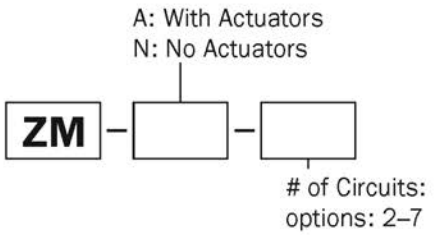
Maximum flow rate for entire panel is approximately 8 gpm. Individual circuit flow meters are 0-2 gpm.

Panels with actuators may require an optional pressure differential by-pass valve (ordered separately). If the by-pass valve is used, the maximum manifold size allowed is an M-5.

Zone Mix Pump (with or without actuators)



Use this model number configuration to order.



ZONE with Mix Valve & Zone Circulator

DESCRIPTION	MODEL #	WT. (lbs)	SIZE
2 Circuit	ZM - ____ - ____	70-75	L
3 Circuit		70-75	
4 Circuit		70-75	
5 Circuit		75-80	
6 Circuit		75-80	
7 Circuit		75-80	

L = 29.25" high x 41.5" wide x 4.5" deep

Zone Mix Pump Panels (with or w/o actuators)
The Zone Mix Pump panel adds fixed temperature mixing capability to the Zone Pump Panel. It includes a 3 way mixing valve (max flow rate approximately 3.5 gpm) a pre-wired Watts Radiant 1558 circulator, and a 1" stainless steel manifold housed in a powder-coated steel enclosure with a latching door. The panel includes manifold isolation valves with temperature gauges and a vent/purge assembly. The enclosure is designed to be recessed in the wall. The single speed 1558 circulator produces approximately 10 gpm at 10 ft hd.

Maximum flow rate for entire panel is approximately 4 gpm. Individual circuit flow meters are 0-2 gpm.

Panels with actuators may require an optional pressure differential by-pass valve (ordered separately). If the by-pass valve is used, the maximum manifold size allowed is an M-5.

SPECIALTY GeoThermal Panel

SG-2

# of GeoThermal Units
1, 2, or 3

SG – [ ]

SPECIAL GeoThermal Panels

DESCRIPTION	MODEL #	WT. (lbs)	SIZE
1 Geothermal Unit	SG-1	60-65	S
2 Geothermal Units	SG-2	80-85	M
3 Geothermal Units	SG-3	95-100	M

S=28" wide x 31.5" high x 12" deep
M=40" wide x 31.5" high x 12" deep

GeoThermal Panel

These panels tie highly efficient water/water ground source heat pumps to a radiant system. This panel comes with an outdoor reset control that adjusts the temperature of the buffer tank based on outdoor conditions. This allows the heat pump to operate at the lowest possible water outlet temperature, ensuring maximum efficiency and extending compressor life.

The hydronic system should be carefully designed, with consideration given to both the heat loss and floor coverings. Most heat pumps can supply a maximum water temperature of approximately 115 °F. This panel is designed for use with a thermal buffer tank, a Primary panel, and a Distribution panel. The SG panel is typically connected to the inlet side of any HydroNex Primary panel. Buffer tanks limit short-cycling of the compressor, maximizing compressor life.

The heat pump will only run when the temperature of the buffer tank falls below the outdoor reset control set point. If there is no call for heat from the system, the solenoid valve will remain closed, directing hot water into the buffer tank until the set point temperature is met. When the radiant system calls for heat, the solenoid valve will open, allowing hot water to flow from the tank and/or heat pump.

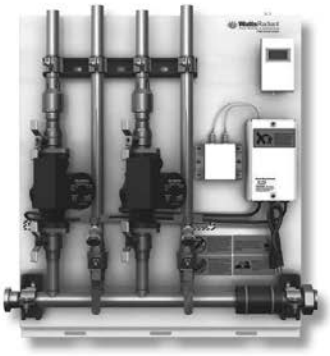
Standard equipment includes:

- 1-1/4" copper primary and 1" secondary supply piping
- **Energy-saving 3 speed Watts Radiant 2699 circulators, pre-wired and tested**
- Tekmar® 274 staging control (includes outdoor sensor)
- 0-50 psi/60-320°F gauge
- Isolation valves for easy servicing of circulators and easy air purging
- O-ring sealed threaded unions
- System solenoid to regulate flow through buffer tank or heat pump.
- Cat 5 cable electrical connection for fast and easy connection to Primary or Distribution Panels
- 9 ft 120V power cord
- Powder coated steel enclosure

Maximum flow rate is approximately 22 gpm. Each Watts Radiant 2699 circulator is capable of providing approximately 15gpm at 20 ft hd on high speed.

SPECIALTY Source Select

NEW



Use this model number configuration to order.

SS – [ ]

1: No injection or outdoor reset (Tekmar 150)
2: Injection & outdoor reset for 1 source (Tekmar 361)
3: Injection & outdoor reset for 2 sources (Tekmar 361)

SPECIAL Source Select Panels

DESCRIPTION	MODEL #	WT. (lbs)	SIZE
No injection or outdoor reset	SS-1	90-95	S
Injection & outdoor reset for 2 sources	SS-2	90-95	S
Injection & outdoor reset for 2 sources	SS-3	90-95	S

S = 28" wide x 31.5" tall x 12" deep

Source Select panels

These panels are designed to control two independent heat sources. The Source Select is used when combining a solar system, geothermal system, wood boiler or other alternative heat source with a gas or oil-fired boiler as a back up. The primary source, typically, solar or geothermal, must utilize a water storage or buffer tank.

The alternative heat source is utilized first as long as the tank temperature is sufficient. In the event the alternative heat source is unable to satisfy the system load, the Source Select panel will use the secondary heat source until the primary source has been replenished. This panel is designed for use with a buffer tank, a Primary panel, and a Distribution Panel. Source Select panels are typically connected to the inlet side of any HydroNex Primary panel. A 2-conductor 18 gauge thermostat wire must be connected between terminals in the Source Select panel relay box and the P-Series panel.

Standard equipment includes:

- 1-1/4" copper primary and 1" secondary piping
- Tekmar 361 mixing control with outdoor reset (only on SS-2 and SS-3)
- Watts Radiant 1558 circulators are energy-saving 3 speed models, pre-wired and tested
- Isolation valves for easy servicing of circulators and easy air purging
- Spring flow check valves on each zone
- Quick connect unions
- 9 ft 120V power cord
- Powder coated steel enclosure

Maximum flow for entire panel is approximately 22 gpm. Maximum flow for each 1" secondary is approximately 8 gpm. Each Watts Radiant 1558 circulator is capable of providing approximately 10 gpm at 10 ft hd.

DESCRIPTION	MODEL #	ORDER #
Replacement 504EXP Relay Box	334504	81003694
Replacement 506EXP Relay Box	334506	81003983
Replacement 501 Relay Box	334500	81004279
Replacement 4 Zone Master Valve Control Box	P-2329	81005192
Replacement 6 Zone Master Valve Control Box	P-2331	81005190
Replacement 4 Zone Slave Valve Control Box	P-2330	81005246
Replacement 6 Zone Slave Valve Control Box	P-2332	81005191
Replacement Thermal Actuator	PZ656104	81001541
Replacement Differential By-Pass Valve (SCA & SCM panels	PZ4662C1	81005518
Zone panel Manifold Differential By-Pass Valve (optional)	D4402050	81005345
Replacement Watts Radiant 15-58 Circulator (flange) to be used with Primary, Distribution, and Specialty	313025	81005542
Replacement Watts Radiant 26-99 Circulator	GUPS2699115	81009645
Replacement Watts Radiant 15-58 Circulator (thread) to be used with Zone panels	313026	81005553
Tekmar® 093 Slab Sensor (for DHS panel)	300109	81000122

HydroControl®

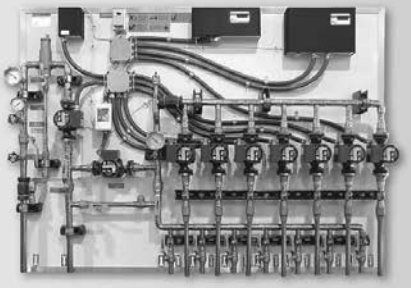
Our custom mechanical packages help ensure fast, efficient, trouble-free installations in any application. Watts Radiant has been designing and building custom mechanical panels for over 25 years. We supply OEM mechanical components to many major hydronic manufacturers as well as independent contractor and mechanical installers. Put our experience to work for you.

Custom HydroControl and HydroSkid mechanical packages are manufactured exactly to your project specifications, with capabilities up to 6 inch copper. Each package is fully tested, factory warranted, and ready for installation.

HydroControls and HydroSkids feature professional-grade components from companies you trust- Watts®, Bell and Gossett, Taco®, and Tekmar® to name a few. Our expertise in manufacturing and our selection of quality components ensure trouble-free operation and longevity.

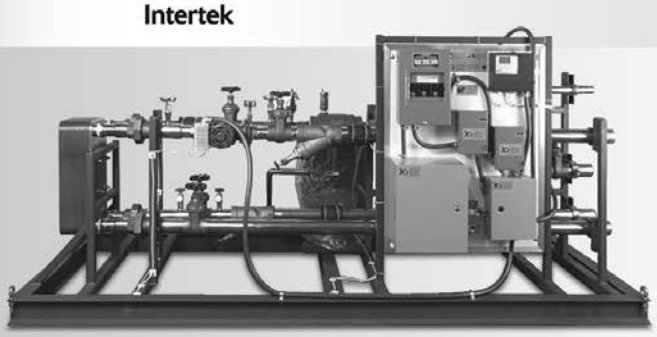
Send us your project specifications and/or a RadiantWorks mechanical summary and we'll prepare a quote.

Intertek



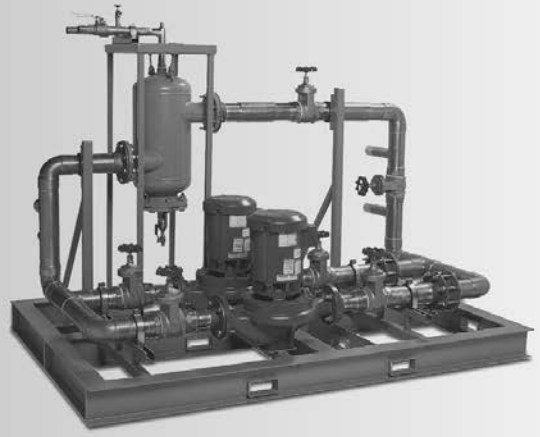
Versatile Custom Panels fill a variety of needs

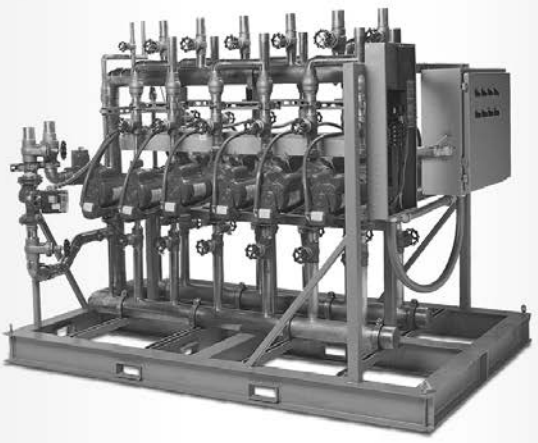
Watts Radiant custom HydroControl panels fill the mechanical needs of any radiant, snow melting, turf warming, or permafrost project. From small residences to commercial spaces to industrial facilities, we have the capability to engineer the perfect solution.



Custom HydroSkids™ for Commercial and Industrial Radiant Heating or Snow Melting

Offer your commercial and industrial clients the comfort and energy saving benefits of radiant floor warming or the protection and convenience of a snow melting system. Let the design team at Watts Radiant work with you to design customized system solutions for radiant heating, snow melting, or permafrost protection.





X-PUMP BLOCK

Application

The X-Pump Block (XPB) is a complete mixing system with an attached brazed plate, counterflow style heat exchanger for system isolation. Integral to the unit is a variable speed heat source circulator, constant speed system circulator and the electronics to drive it all. The XPB can be set up to operate as an outdoor reset control, a setpoint control or a delta T limiting control. This unparalleled flexibility within a single unit creates a pumping and control package that can be used in systems combining any style heat source (boiler, water heater, etc.) with any style heat delivery method or system condition (radiant tubing, glycol based snowmelt, open system, etc.). With just 4 piping connections needed, the XPB greatly reduces the time and space required for installation.

Features

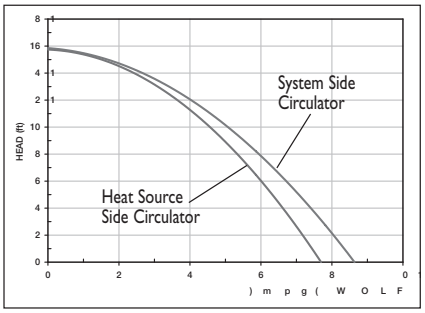
- All-in-One Heat Exchanger, Dual-sided Circulators and Mixing Control Package
- Brazed Plate Heat Exchanger
  - Provides Complete Isolation
  - Stainless Steel
  - Easily Removable
  - Double Wall Optional
- Only 4 Pipe Connections Required
- Plug-in Low Voltage Connections
- Solid State Microprocessor Design
- Greatly Decreases Installation Time
- Substantial Space Savings
- Line Cord Included, Hard Wire Option
- Bronze Casing for Open or Closed Systems
- Replaceable Cartridge Design
- Maintenance Free, Wet-Rotor Circulators
- 2 Operation Modes: Outdoor Reset and Setpoint with or without Delta T Limiting
- Main System Pump Contact
- 100% Pump Operation / Control Override Switch
- Automatic Pump Exercise
- Adjustable Reset Ratio
- Warm Weather Shutdown
- Large LCD Display
- Outdoor and 2 Strap-on Sensors included

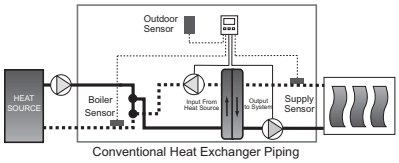
Performance Data

Flow Range: 0 – 7.5 GPM
Head Range: 0 – 15.5 Feet
Minimum Fluid Temperature: 32°F (0°C)
Maximum Fluid Temperature: 185°F (85°C)
Maximum Working Pressure: 125 psi
Connection Sizes: 3/4" NPT

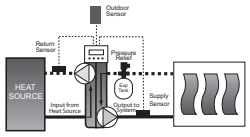
FOR INDOOR USE ONLY

Performance Field





Conventional Heat Exchanger Piping

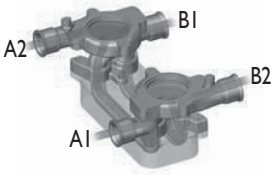


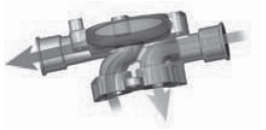
X - Pump Block (XPB)

The features of the X-Pump Block makes it easy and cost effective to include a hydronic based radiant floor warming system in any kitchen and bath remodel project, especially in homes which have an air based heating system. The XPB also makes the perfect companion for basement "radiant ready" packages, jobs where space is at a premium, and small snowmelt areas such as handicap accessible building entrances.

Operation

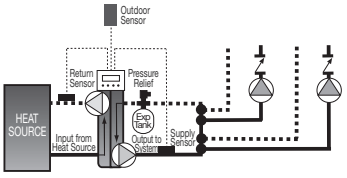
Hot water from the heat source, such as a boiler, enters the X-Pump Block's integral heat exchanger at port (A1) and exists at (A2). The variable speed circulator controls the speed of the water flowing through the A side of the heat exchanger to satisfy the heat transfer requirements between the A side of the heat exchanger and the B (system) side. The heat exchanger is a counterflow style, so system water enters at port (B1) and exits at port (B2). A constant speed circulator moves the water around the B (system) side. In certain applications, such as snowmelt, the system pump motor can be switched with the variable speed motor in order to protect the heat exchanger from freezing up by ensuring constant flow on the heat source side.



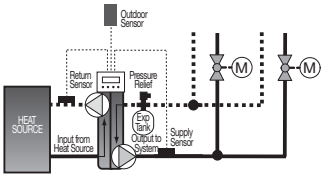


Sizing and Piping

The X-Pump Block can handle transfer loads of up to approximately 50,000 BTU. Your current method of piping virtually remains the same; yet complete system isolation is achieved. The only addition needs to be a separate expansion tank and relief valve on the system side. 1 outdoor sensor, 2 strap-on sensors and a line cord are included for fast plug n' play wiring.



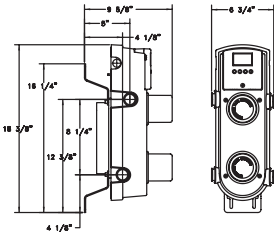
X - Pump Block (XPB), Multiple Zones - Circulators



X - Pump Block (XPB), Multiple Zones - Zone Valves

Electrical & Weight Data

Model	Volts	Hz	Ph	Amps	RPM	HP	Ship Wt.	
XPB-1	120	60	1	2	3250	2 @ 1/25	lbs.	Kg
Motor Type	Permanent Split Capacitor Impedance Protected						26.5	12.0



RADIANT MIXING BLOCK

Features

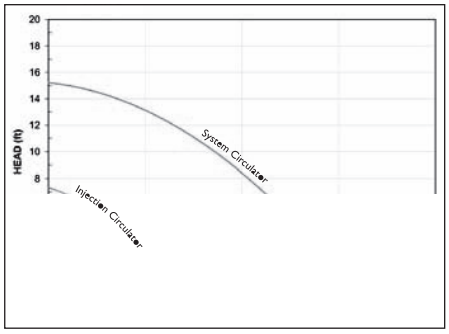
- All-in-One Injection Piping, Pumping, Air Elimination, & Control Package
- Only 4 Pipe Connections Required
- Plug-in Low Voltage Connections
- Solid State Microprocessor Design
- Greatly Decreases Installation Time
- Substantial Space Savings
- Line Cord Included, Hard Wire Option
- Bronze Casing for Open or Closed Systems
- Replaceable Cartridge Design
- Maintenance Free, Wet-Rotor Circulators
- 2 Operation Modes: Outdoor Reset and Setpoint with or without Delta T Limiting
- Powered or Unpowered Demand Signal
- Integral Check Valve
- Main System Pump Contact
- 100% Pump Operation / Control Override Switch
- Automatic Pump Exercise
- Adjustable Reset Ratio
- Warm Weather Shutdown
- Boiler Control or Enable Setting
- Boiler Protection
- Large LCD Display
- C° or F°
- Outdoor and 2 Strap-on Sensors included

Performance Data

Flow Range: 0 – 15.5 GPM
Head Range: 0 – 15 Feet
Minimum Fluid Temperature: 32˚F (0˚C)
Maximum Fluid Temperature: 185˚F (85˚C)
Maximum Working Pressure: 125 psi
Connection Sizes: 3/4" NPT

c UL us LISTED **FOR INDOOR USE ONLY**

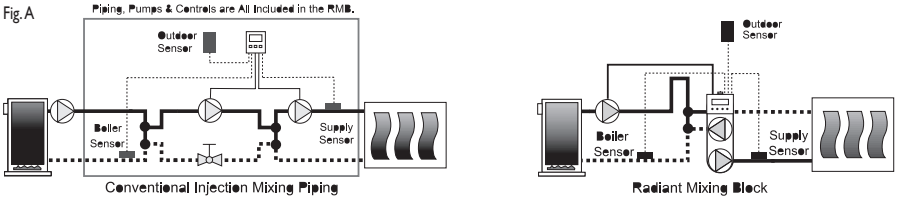
Performance Field



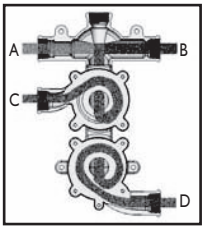
Application

The Taco Radiant Mixing Block (RMB) is a complete injection mixing system. Integral to the unit is a variable speed injection circulator, constant speed system circulator, air elimination, and the electronics to drive it all. With only four piping connections needed, the RMB greatly reduces the time and space required for installation (see Fig. A). The RMB can be set up to operate as an outdoor reset control or a setpoint control with or without delta T limiting, creating flexibility never seen before in a single unit.

Fig. A



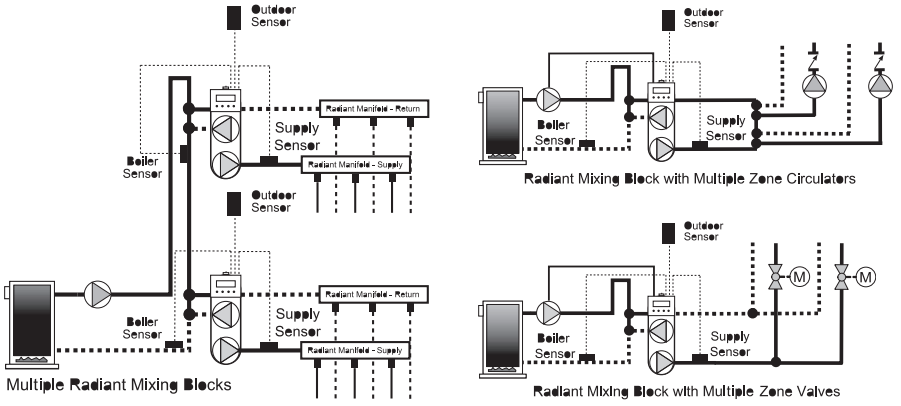
Operation



Hot water from the boiler loop enters the RMB at the Boiler Supply port (A). The cooler return water from the radiant loops enters at the System Return port (B). In the middle of these two ports, any air in the system is purged through the integral Taco Hy-Vent. The injection circulator varies in speed to blend the two temperatures, injecting the excess required temperature back through the Boiler Return port (C). The constant speed system circulator delivers the required blended water temperature to the radiant loop through the Radiant Supply port (D).

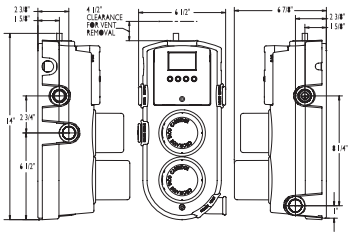
Sizing and Piping

The Radiant Mixing Block can handle radiant load demands of up to 120,000 BTU's. Your current method of zoning the radiant loops (manifolds, zone valves, etc.) does not change with the installation of the RMB. Multiple Radiant Mixing Blocks can be used to separate the distinctive temperature requirements between manifolds. No special piping, just 4 connections and your installation is complete.



Electrical & Weight Data

Model	Volts	Hz	Ph	Amps	RPM	HP	Ship Wt. lbs.	Ship Wt. Kg
RMB-1	120	60	1	2	3250	1/40 & 1/25	18.5	8.4
Motor Type	Permanent Split Capacitor Impedance Protected							



Elbi's XT_XTV Series Expansion Tanks… Hydronic

The XT-XTV Series diaphragm expansion tanks are available in sizes from 2 to 80 gallons in either in-line or stand models (see chart). Designed and manufactured by Elbi since 1975, the XT-XTV Series expansion tanks are solid and have proven reliable in millions of installations worldwide.

The two shell welded construction allows the tank to withstand high pressure ratings and therefore adds safety to your system. The BUTYL diaphragm separates the air from the water and prevents waterlogging while saving space and energy. Product is intended for use in hot water, solar and cooling systems and is compatible with glycol. Call our factory for compatibility and suitability in special applications.

FEATURES AND BENEFITS

FEATURE	BENEFIT
• WELDED STRONG CONSTRUCTION	Steel shells are designed to withstands high pressure loads and add safety to your installation. Tanks are sturdy and built to last while at the same time they are lightweight, easy to handle and simple to install.
• HEAVY DUTY BUTYL DIAPHRAGM	Withstands temperatures as high as 240°F. Of solid construction, manufactured in house through an injection molding process. Made of proprietary food quality compound which will not release taste or odors in the water. Compatible with glycol, solar and cooling systems.
• EPOXY GRAY PAINT FINISH	Provides an attractive, durable appliance like finish obtained through an oven baking process of the epoxy paint powder.
• 12 PSI FACTORY PRECHARGE ON ALL MODELS	Suits most common installations. The precharge can be manually adjusted on site.

DIMENSIONAL DATA

Model Number	Capacity (Gal.)	Acceptance Volume* (Gal.)	Conn. NPTM (in.)	Max. Working Pressure (PSIG)	Factory[1] Precharge (PSIG)	Max.Working Temperature (° F)	Diameter (in.)	Height (in.)	Weight (lbs.)
IN-LINE MODELS									
XT-15	2.1	1.4	1/2 "	150	12	210	8	11 3/4	6.34
XT-30	5.0	3.0	1/2 "	150	12	210	10 1/2	15	11.50
XT-60	6.5	4.2	1/2 "	150	12	210	10 3/4	17	13.72
XT-90	13	8.5	1"	150	12	210	15 3/4	20	24
STAND MODELS									
XTV-30	13	8.5	1"	150	12	210	15 3/4	25	27.16
XTV-40	21	14	1"	90	12	210	15 3/4	32	41.16
XTV-60	27	17	1"	90	12	210	20	29 1/2	48.16
XTV-90	40	26	1"	90	12	210	20	38	63.16
XTV-100	53	36	1"	90	12	210	24	42 1/3	80.16
XTV-110	66	42	1"	90	12	210	26	40 1/2	90.2
XTV-160	80	52	1"	90	12	210	26	45	111.16

* At 60 PSIG; Maximum working pressure allowed in Canada: 30 PSIG
** When installed in normal environmental conditions. By normal enviromental conditions it is meant environments which are free of acids, scale or chemical deposits or other factors known to affect paints, coatings and metals.
1) Factory precharge can be affected by variations in environmental conditions (ex. temperature changes) and systems conditions (ex. pressure changes). Product should be carefully inspected upon receipt and all charges should be adjusted to fit your particular system installation.

XT-XTV EXPANSION TANKS - SELECTION TABLES

TABLE 1 - TYPE OF RADIATION

Boiler Net Output* baseboard	Fin tube baseboard or radiant panels	Convectors or unit heaters	Cast iron radiators	Cast iron baseboard
25	XT-15	XT-15	XT-15	XT-15
50	XT-15	XT-15	XT-30	XT-30
75	XT-30	XT-30	XT-30	XT-60
100	XT-30	XT-30	XT-60	XT-60
125	XT-30	XT-60	XT-60	XT-90
150	XT-30	XT-60	XT-90	XT-90
175	XT-60	XT-60	XT-90	XT-90
200	XT-60	XT-60	XT-90	XT-90
250	XT-60	XT-90	XT-90	XTV-40
300	XT-90	XT-90	XT-90	XTV-40
350	XT-90	XT-90	XTV-40	XTV-60
400	XT-90	XTV-40	XTV-40	XTV-60

* in 1000s BTU/Hour - Fill pressure 12 PSIG/ Relief Pressure 30 PSIG/Average System Temperature 200° F

TABLE 2 - SYSTEM CONTENT

System Content	100°F	110°F	120°F	130°F	140°F	150°F	160°F	170°F	180°F	190°F	200°F	210°F
25	XT-15	XT-15	XT-15	XT- 15	XT-15	XT-15	XT-15	XT-15	XT-15	XT-15	XT-30	XT-30
50	XT-15	XT-15	XT-15	XT-15	XT-15	XT-30	XT-30	XT-30	XT-30	XT-30	XT-30	XT-30
75	XT-15	XT-15	XT-15	XT-30	XT-30	XT-30	XT-30	XT-30	XT-60	XT-60	XT-60	XT-90
100	XT-15	XT-15	XT-30	XT-30	XT-30	XT-30	XT-60	XT-60	XT-90	XT-90	XT-90	XT-90
200	XT-30	XT-30	XT-30	XT-60	XT-90	XT-90	XT-90	XT-90	XTV-40	XTV-40	XTV-40	XTV-40
300	XT-30	XT-60	XT-90	XT-90	XT-90	XT-90	XTV-40	XTV-40	XTV-40	XTV-60	XTV-60	XTV-90
400	XT-60	XT-90	XT-90	XT-90	XTV-40	XTV-40	XTV-40	XTV-60	XTV-90	XTV-90	XTV-90	XTV-90
500	XT-90	XT-90	XT-90	XTV-40	XTV-40	XTV-60	XTV-60	XTV-90	XTV-90	XTV-90	XTV-100	XTV-100
600	XT-90	XT-90	XTV-40	XTV-40	XTV-60	XTV-60	XTV-90	XTV-90	XTV-100	XTV-100	XTV-100	XTV-110
700	XT-90	XT-90	XTV-40	XTV-60	XTV-60	XTV-90	XTV-90	XTV-100	XTV-100	XTV-110	XTV-110	XTV-160
800	XT-90	XTV-40	XTV-40	XTV-60	XTV-90	XTV-90	XTV-100	XTV-100	XTV-110	XTV-110	XTV-160	XTV-160
900	XT-90	XTV-40	XTV-60	XTV-90	XTV-90	XTV-90	XTV-100	XTV-110	XTV-110	XTV-160	XTV-160	2 x XTV-100
1000	XTV-40	XTV-40	XTV-60	XTV-90	XTV-90	XTV-110	XTV-100	XTV-110	XTV-160	XTV-160	2 x XTV-100	2 x XTV-100

Fill pressure: 12 PSIG, Relief pressure: 30 PSIG, System Fill Temperature: 40°F

MAINTENANCE

It is recommended that a periodic maintenance inspection of the complete heating system be performed by a professional licensed plumber. The inspection must be done at least once a year and, during such check, the tank's precharge should be tested and adjusted to the correct pressure if necessary. Failure to perform periodic maintenance will void all warranty.
We strongly recomend the use of dielectric union when connecting dissimilar metals.

PACKAGING AND SHIPPING DATA

Model Number	Packaging Dimensions (in.)	Volume (cu.ft.)	Quantity per Pallet
IN-LINE MODELS			
XT-15	8.43x8.43x12.60	0.35	162
XT-30	10.83x10.83x17.52	1.06	70
XT-60	13.00x13.00x14.76	1.41	70
XT-90	16.14x16.14x21.06	3.08	33
STAND MODELS			
XTV-30	16.14x16.14x24.02	3.52	33
XTV-40	16.14x16.14x33.86	4.96	22
XTV-60	20.08x20.08x32.68	7.40	10
XTV-90	20.08x20.08x40.94	9.27	8
XTV-100	24.02x24.02x41.34	13.40	8
XTV-110	25.98x25.98x47.64	18.07	6
XTV-160	25.98x25.98x50.39	19.11	6

*Quantity per pallet may vary depending on the size of the pallets and the limitations presented by the means of transportation used when shipping out the product to its final destination. In case there are differences between the quantities per pallet listed here and the actual quantity per pallet loaded, you will be contacted by one of our staff members.

WARRANTY

Elbi's XT - XTV Series tanks are guaranteed to be free of workmanship or material defects for a period of five (5) years from the date of manufacturing. For a complete description of our warranty policy consult the literature which comes with the product or call our offices to request a copy.

AUTOMATIC AIR VENTS

A quality automatic air vent for hot water heating system, solar heating systems and steam convectors at an excellent price. 150 psi.

- Heavy weight forged brass construction
- Totally non-corrosive materials
- Polysulfone seat
- Can be opened to permit flushing

MODEL	DESCRIPTION
TACO 400-3	1/8" MPT
TACO 416	1/8" MPT Air Vent
TACO 426	1/4" MPT
TACO 418	1/2"/3/4" MPT
TACO 409	Slim Line 3/4" Cast Iron/300 psi
TACO 414-1	Universal Waste Connector

COIN AIR VENTS

A manual or automatic small coin vent ideal for remote locations. Dimensions: 1 1/4"H x 1/2"W. Maximum PSI: 75 lb.

MODEL	DESCRIPTION
TACO 417	1/8" IPS
110-338	1/8" IPS
110-340	KEY

THRIFT BRASS BASEBOARD

A simple and inexpensive way to vent remote baseboards, radiant manifolds, etc. Add Taco 418 or Manual 417 Air Vent.

MODEL	DESCRIPTION
302-243	3/4" with vent
302-253	3/4" x 1/8" x 3/4"

VorTech® & 4900 Series Air Separators

Taco's family of air elimination products delivers the most complete and effective means of air removal on the market. The ultimate micro bubble separation of the 4900 Series Air Separator or the enhanced level of the VorTech® Air Separator eliminates the damaging effects and irritating noise caused by unwanted system air. Available in 3/4" – 2" sizes, they require no minimum run of pipe and have a convenient 1/2" tapping for easy installation of an expansion tank.

4900 SERIES AIR SEPARATOR

Application

The Taco 4900 Series Air Separators are designed for the complete elimination of air from closed loop heating and cooling systems up to a maximum temperature of 240°F and a maximum pressure of 150 psi. The principle on which the Taco 4900 Series Air Separator is based is a patented and proven method of removing gases from water: the PALL ring process.

Features

- Patented PALL Ring Design
- Eliminates Air Induced System Noise
- Minimal Pressure Loss
- Vent can be Closed
- Large Surface Contact Area
- Protective Vent Plate
- Rugged Dependability
- Maximum Air Removal
- Convenient Expansion Tank Connection Tapping
- No Minimum Run of Pipe Requirement
- Bidirectional Flow

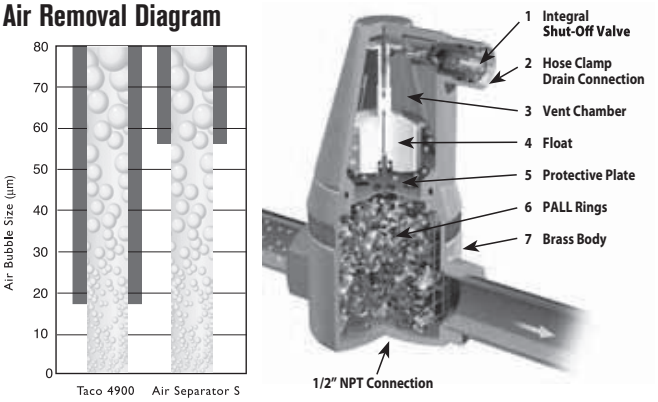
The PALL Ring Process Removes Air:

- Present Before or During the Filling of the System
- That Collects after the System is Filled
- Present in System Water in the Form of Small Bubbles and Micro-bubbles Entrained in the Water
- Dissolved in the System Water

The Presence of Air can Lead to:

- Irritating Noises
- Reduced Efficiency
- Reduced Operational Life of the System as a Result of Internal Corrosion of Essential Parts such as the Boiler and Radiators
- Cavitational Erosion of the Pump Impeller
- Degraded Operation of the Circulation Pump

Air Removal Diagram



The Coalescence Effect

Both small air bubbles and micro-bubbles will adhere to a surface and join together to form larger air bubbles. These combined bubbles then traverse up through the water and into the air chamber to be released by the vent.

4900 Air Separators Were Proved to be Better!

Tests carried out at the Delft Technical University have unequivocally proved that 4900 Air Separators remove all micro-bubbles from 15 microns and up. This is three times better than comparable Air Separators!

Pall Rings

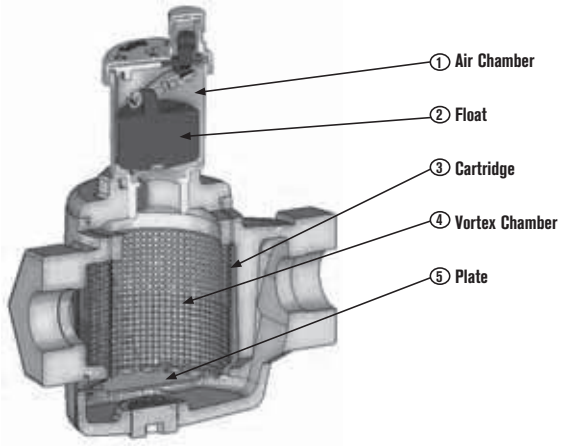
An optimum coalescence effect is achieved by the 4900 Series' use of the patented pall ring process. The PALL Ring chamber is engineered to optimize the collision of the flowing system water with the PALL Rings. As a result of this collision, all of the gas containing water particles are brought into contact with the entire pall ring surface area. Even the smallest micro-bubble present in the water will adhere to the surface of a pall ring, allowing coalescence to occur and air to be removed.

Pall Rings

VORTECH® AIR SEPARATOR

Application

The Taco VorTech® Air Separator is designed to provide an enhanced level of air removal in hydronic heating, cooling or combinational systems. Air is quickly and effectively separated and vented through a factory installed Taco 3/4" Hy-Vent® up to a maximum pressure of 150 psi and a maximum temperature of 240°.



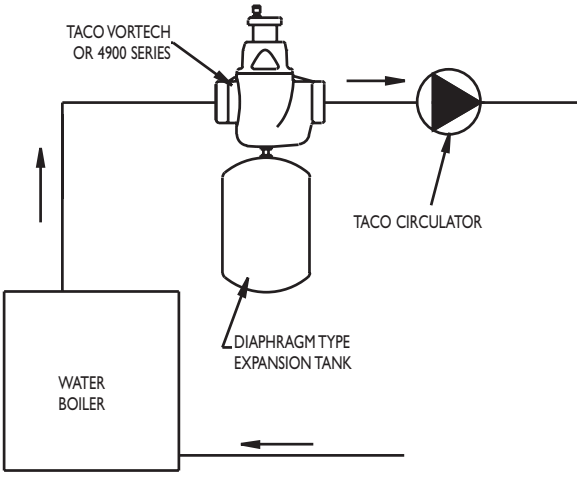
Operation

The VorTech® Air Separator features a primary separation chamber where the process of air elimination is controlled and optimized. The specially designed tangential primary chamber creates a swirling effect, or "vortex," similar to a tornado. This swirling effect forms a low-pressure area in the center of the chamber. Air is drawn toward this lower pressure, and then once there it moves freely upward and out through the Taco 3/4" Hy-Vent®. Combined with the Bubble Breaker Cartridge and a downward direction change in the flow of water before exiting, air is quickly and effectively removed from the system.

Features

- Unique Water Flow Pattern
- Works Efficiently with both Low Velocity Water and High Velocity Water
- 100% Factory Tested
- Unique Bubble Breaker Cartridge
- Replaceable High Capacity Hy-Vent®
- Enhanced Air Removal
- Convenient Expansion Tank Connection Tapping
- No Minimum Run of Pipe Required
- Vent can be Closed
- Eliminates Air Induced System Noise

Typical Installation of VorTech or 4900 Series



4900 Materials of Construction

Housing: Brass
PALL Rings: Stainless Steel
Venting Unit Components: Stainless Steel, EPDM, Viton, Brass, and Engineered Plastics

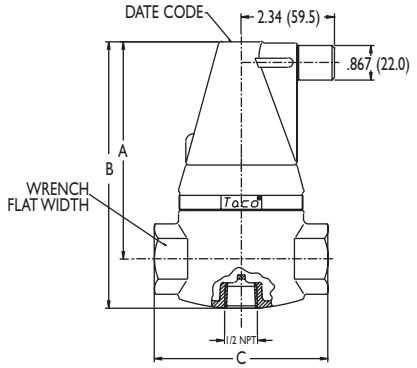
4900 Ratings

Maximum Operating Pressure: 150 psi
Maximum Operating Temperature: 240°F
Minimum Operating Temperature: 25°F
Media: Water or Water/Glycol
Maximum Velocity: 5 feet/sec

Product	Cv	Kv
49-075	14	12
49-100	24	20
49-125	37	32
49-150	49	42
49-200	73	63

4900 Dimensions & Weights Nominal Dim: inches (mm)

Model	Conn. Size	A	B	C (NPT)	C (SWT)	Wrench Flat Width	Approx. Shipping Weights Lbs.	Kg.
49-075	3/4"	4-3/4 (121)	5-15/16 (151)	3-3/4 (96)	4-3/16 (107)	1-1/2 (38)	3.5	1.6
49-100	1"	5-1/2 (139)	6-3/4 (171)	4-3/8 (111)	4-13/16 (122)	1-3/4 (44)	4.5	2
49-125	1-1/4"	6-1/16 (154)	7-9/16 (192)	4-1/2 (114)	5-3/16 (132)	2-1/4 (57)	5.3	2.4
49-150	1-1/2"	6-1/16 (154)	7-9/16 (192)	4-1/2 (114)	5-7/16 (138)	2-1/2 (64)	5.4	2.5
49-200	2"	6-5/8" (169)	8-7/16 (214)	5-3/16" (131)	N/A	2-3/4" (70)	6.0	2.7



VorTech® Materials of Construction

Body & Cap:	Cast Iron
Cartridge & Plate:	Stainless Steel
O-Ring:	Viton
Vent:	Taco 419 Hy-Vent®

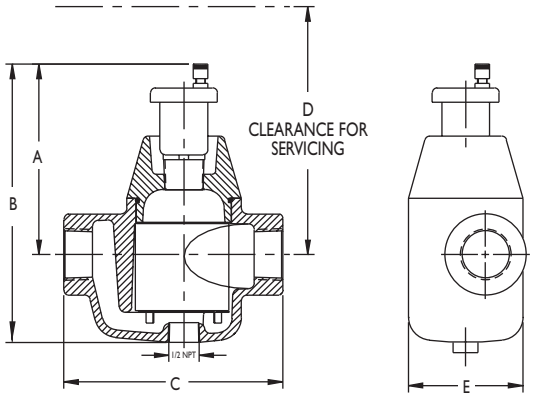
VorTech® Ratings

Maximum Operating Pressure: 150 psi
Maximum Operating Temperature: 240°F
Media: Water or Water/Glycol
Recommended Velocity: 4 feet/sec
Maximum Velocity: 8 feet/sec

Product	Cv	Kv
VRTX075	14	12.5
VRTX100	15.5	14.1
VRTX125	21.4	17.0
VRTX150	34.8	30.1
VRTX200	42.7	36.9

VorTech® Dimensions & Weights Nominal Dim: inches (mm)

Model	Conn. Size	A	B	C	D	E	Approx. Shipping Weights Lbs.	Kg.
VRTX075	3/4" NPT	5 (127)	7 5/8 (194)	5 3/4 (146)	6 1/2 (165)	3 (76)	7	3.2
VRTX100	1" NPT	5 (127)	7 5/8 (194)	5 3/4 (146)	6 1/2 (165)	3 (76)	7	3.2
VRTX125	1 1/4" NPT	5 (127)	7 5/8 (194)	5 3/4 (146)	6 1/2 (165)	3 (76)	7	3.2
VRTX150	1 1/2"NPT	5 3/4 (146)	9 1/8 (232)	8 1/4 (210)	7 1/4 (184)	4 7/8 (124)	15	6.8
VRTX200	2" NPT	5 3/4 (146)	9 1/8 (232)	8 1/4 (210)	7 1/4 (184)	4 7/8 (124)	15	6.8



PRESSURE REDUCING/AUTOMATIC FILL VALVES

Automatic fill valves are used to maintain the hydronic system pressure by automatically opening when water is required to increase system pressure and closing when the system point is set. Taco auto fill valves are suited for all hydronic heating systems which utilize a diaphragm type expansion tank precharged to 12 psi.

TACO – PRV

CARTRIDGE STYLE ADJUSTABLE PRESSURE REDUCING VALVE (#3350)

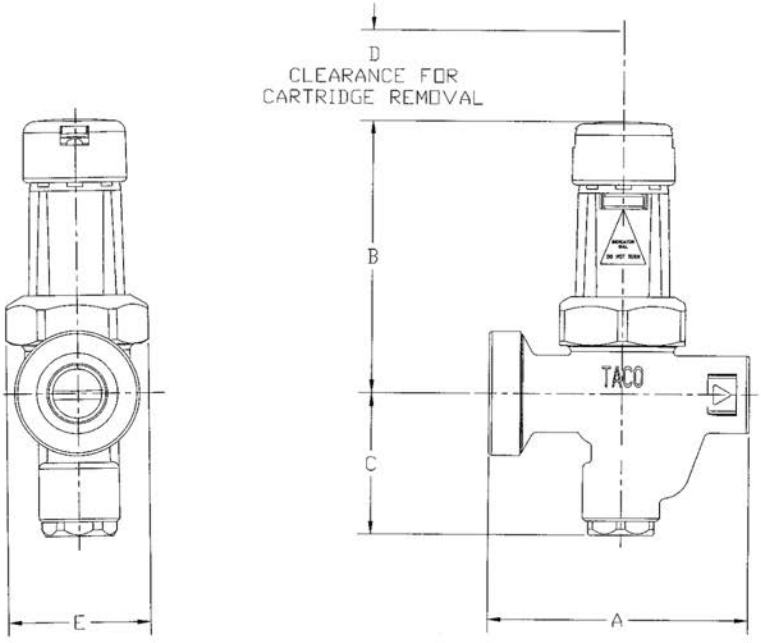
1-Dial-up pressure setting eliminates need for pressure guage

2-Cartridge construction permits easy servicing without draining system

3-One hand fast fill / 2.1 cv.

Dimensions

Product Number	Size Description	Max. Inlet Pressure	Max. Fluid Temperature	Adjustment Range	Factory Preset	Dimensions A	B	C	D	E
3350-T	1/2" NPT	230 psi	180°F	10-50 psi	12 psi	3 9/16"	3 3/4"	2"	1 5/8"	1 15/16"



Boiler Feed Valves
Pressure Reducing Valves, Dual Controls

Taco Boiler Feed Valves have set the standards for dependable service. Each valve is adjustable from 10 to 25 psi, has a built-in check to prevent the emptying of the system if incoming pressure fails, and the easy to use fast fill lever is lockable. The Dual Control combines the Boiler Feed with an in-line Pressure Relief Valve.

Submittal Data Information
Pressure Reducing Valves, Dual Controls

Features

- Fast Fill Rate on All Models.
- Exclusive Fast Fill Lever Lock.
- Built-In Check to Prevent Emptying the System if Incoming Pressure Fails.
- Adjustable Set Pressure of 10 to 25 psi.
- Pressure Setting Adjustment Separated from Fast Fill Lever for Easy, Fast Adjustment.

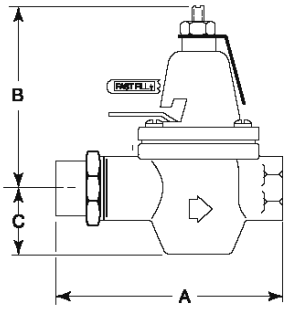
Purpose

To automatically feed water to a system whenever pressure in the system drops below the pressure setting of the valve. The Dual Control combines the Boiler Feed Valve with an in-line Pressure Relief Valve connected at the outlet end.

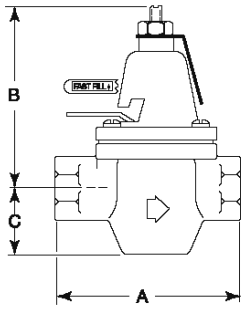
Pressure Reducing Valves Dimensions & Weights

		A		B		C		Ship Wt.		Ship Wt. Ctn. 6	
Model	Material	in.	mm	in.	mm	in.	mm	lbs.	Kg	lbs.	Kg
329	Cast Iron	4-1/4	108	3-3/4	95	1-3/8	35	2.4	1.4	30	14
329-T	Cast Iron	4-3/8	111	3-3/4	95	1-3/8	35	2.4	1.4	30	14
335	Bronze	3-3/4	95	3-3/4	95	1-3/8	35	2.4	1.4	30	14

Models 329 & 329-T



Model 335



Performance Data
Pressure Reducing Valves

Maximum Fluid Temperature: 212°F (100°C)

Maximum Supply Side Pressure: 100 psi (689kpa)

Set Pressure Range: 10 - 25 psi (69 - 172kpa)

Factory Setting of System Side: 12 psi (83kpa)

Performance Data
Dual Controls

Maximum Fluid Temperature: 212°F (100°C)

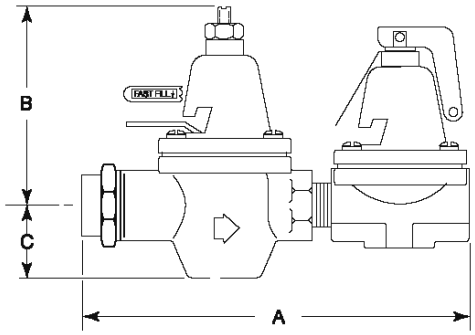
Maximum Supply Side Pressure: 100 psi (689kpa)

Relief Valve Set to Release at: 30 psi (207kpa)

Dual Controls Dimensions & Weights

		A		B		C		Ship Wt.		Ship Wt. Ctn. 6	
Model	Material	in.	mm	in.	mm	in.	mm	lbs.	Kg	lbs.	Kg
334	Cast Iron	7-1/4	184	3-3/4	95	1-3/8	35	3.9	1.8	24	11
334-T	Cast Iron	7-3/8	187	3-3/4	95	1-3/8	35	3.9	1.8	24	11

Models 334 & 334-T



Connection Sizes

Model 329: 1/2" Sweat Union Inlet, 1/2" NPT Outlet

Model 329-T: 1/2" NPT Union Inlet, 1/2" NPT Outlet

Model 335: 3/4" NPT Union Inlet, 3/4" NPT Outlet

Model 334: 1/2" Sweat Union Inlet, 1/2" NPT Outlet

Model 334-T: 1/2" NPT Union Inlet, 1/2" NPT Outlet

Submittal Data Information
Differential Bypass Valve

Application

Differential Bypass Valves are used to control excess flow velocities that can be created when there is a reduction in the demand for heat. This reduced heat demand would typically occur as zone thermostats are satisfied and their corresponding zone valves close, causing the system pump to try and force more water through the remaining zones. By installing a Taco Differential Bypass Valve between the discharge of the system pump and somewhere before the inlet of the pump, usually on the system return, an automatically regulated flow path is created. This regulated flow path will prevent unacceptable velocities from being pumped through the zones that remain open during reduced demand periods. Differential Bypass Valves should also be used to prevent dead heading of the circulator in systems where parallel piped heat emitters are controlled by thermostatic radiator valves.

Operation

The Bypass Valve uses an adjustable spring loaded seat that opens and closes to allow flow through the valve. This opening and closing is based on the system pressure applied to the valve seat and the set point of the valve.

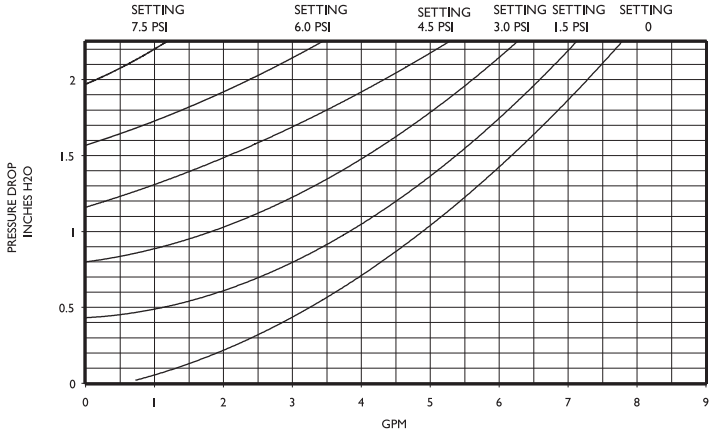
Materials of Construction

Body:	Brass
Indicator:	Brass
Union Nut:	Brass
Internals:	Stainless Steel and Engineered Plastics
O-Ring:	EPDM
Gasket:	Non Asbestos Phenolic

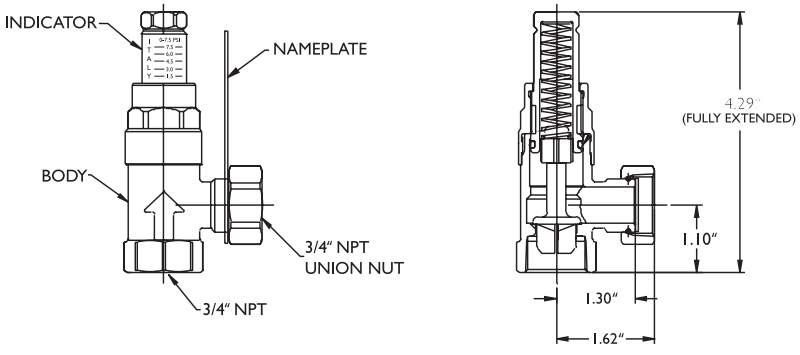
Differential Bypass Valve Ratings

Maximum Pressure:	200 PSI
Maximum Temperature:	200°F
Adjustment Range:	0 to 7.5 PSI

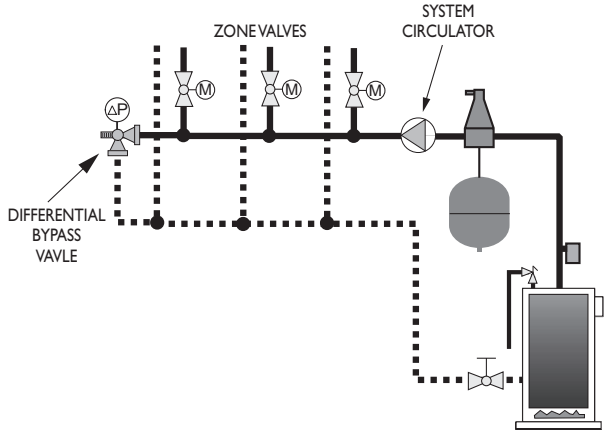
Flow Characteristics By Setting



Dimensions



Typical Installation



5120 Series Low Lead Mixing Valve

This NSF 61 approved mixing valve provides the ultimate performance for domestic hot water installations. The 5120 Series allows for domestic hot water storage at temperatures high enough to kill harmful bacteria and still be delivered at a safe 120˚F or less.

Submittal Data Information
5120 Series Low Lead Mixing Valve

Features

- ≤ .25% Lead
- NSF 61 Certified
- Suitable for use in Potable Water
- Available ½", ¾", 1"
- High Flow
- Snap on Protective Cover
- No Routine Maintenance Required

Performance

Cv:	½"	2.12
	¾"	1.63
	1"	1.37
Max. Flow:	½"	17 gpm
	¾"	18.5 gpm
	1"	20 gpm

Hot Supply Temperature:
104-210°F (60-100°C)

Cold Supply Temperature:
39-80°F (5-27°C)

Max. Inlet Pressure:
200 psi (13.8 Bar)

Max. Differential Pressure Between Hot and Cold: 2:1

Min. Temperature Differential Between Hot Supply and Mixed: 25°F (14°C)

Outlet Temperature Range:
95°-130°F (35-55°C)

Factory set to:
120°F (49°C)

Materials

Body: Forged Brass, Nickel Plated

Internal Brass Components: Brass

Seals: Viton

Spring: Stainless Steel

Piston: Polysulfone

Fittings: Brass, Copper (1")

Gaskets: EPDM

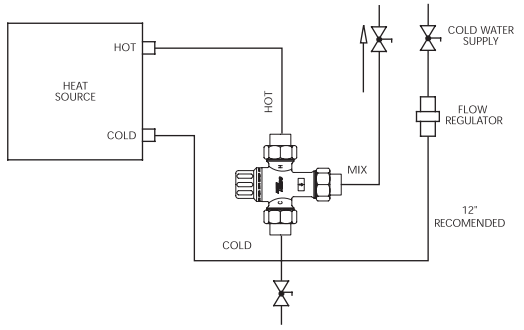
Approvals/Listings

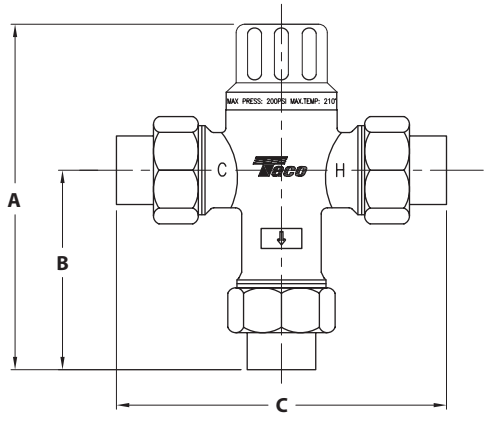
NSF 61
ASSE 1017
cUPC
CSA125.3

Application:

The 5120 Series Mixing Valve is designed for use at the water heater to distribute controlled water temperatures to the domestic hot water system. The high flow, low head loss characteristics of the NSF 61 certified 5122 Series mixing valve make it ideal for use in the distribution of water through a domestic hot water system. The valves unique design and advanced thermostatic element ensures a stable mixed water temperature throughout the valves adjustable range.

Domestic Water Installation



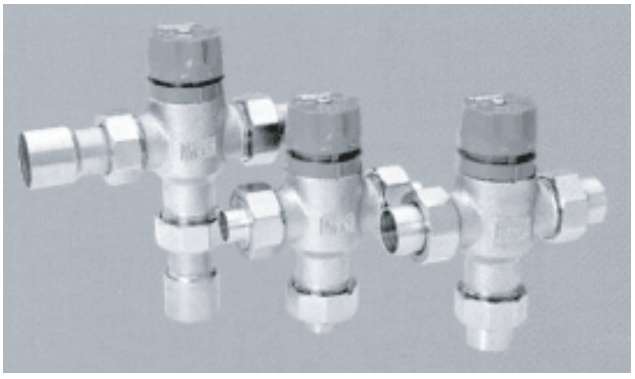


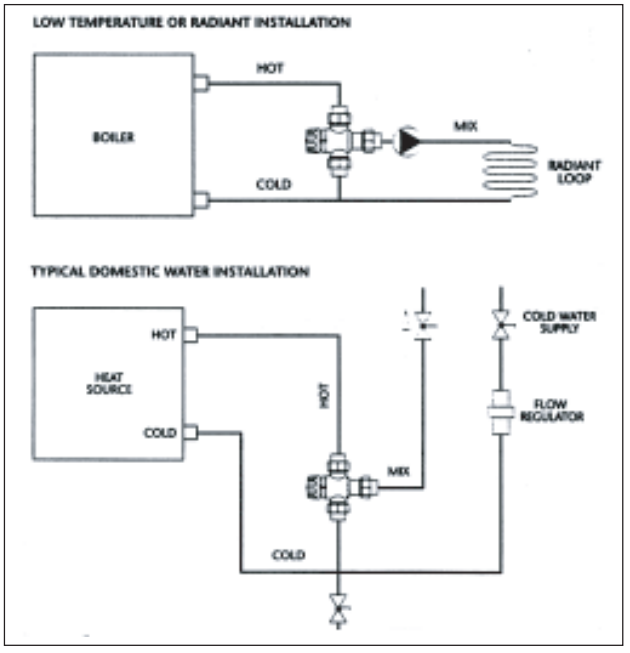
DIMENSIONS FOR REFERENCE ONLY

TACO MODEL	VALVE SIZE	A	B	C
5122	1/2" (15 MM)	4.6 (117)	2.76 (70)	4.41 (112)
5123	3/4" (20 MM)	4.85 (123)	3.00 (76)	4.88 (124)
5124	1" (25 MM)	6.03 (153)	4.17 (106)	7.24 (184)

CLOSED LOOP ONLY — MIXING & DIVERTING VALVE

- High Flow/Low Head Radiant Mixing Valve
- Radiant Floor Heating
- Unions Allow for Easy Servicing





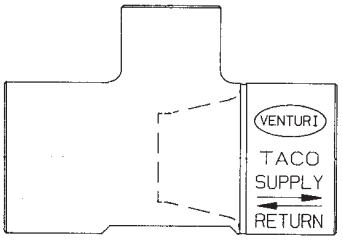
Specifications

PERFORMANCE:		
CV*	1/2"	33.
	3/4"	53.
	1"	8 3.
Max Flow	1/2" & 3/4"	10.6 gpm
	1"	22.5 gpm
Max Temperature	210 •F (100 •C)	
Max Design Pressure	200 psi (13.8 bar)	
Max Working Pressure	150 psi (10 bar)	
Min Working Pressure	1.5 psi (0.1 bar)	
Max Differential Pressure Between Hot & Cold	10:1	
Controlled Outlet Temp	85 •-150 •F (29 •-66 • C)	
Hot Water Inlet Temp	120 •-210 •F (49 •-100 •C)	
Cold Water Inlet Temp	39 •-70 •F (3.8 •-21 •C)	
Factory Temp Setting	130 •F	
Maintains Constant Outlet Temperature to	3.6 •F (2•C)	

*Flow curves available from factory upon request.

5000 Series Mixing Valve

5002-C1	1/2"	NPT	100-145F
5003-C1	3/4"	NPT	110-145F
5004-C1	1"	NPT	110-145F



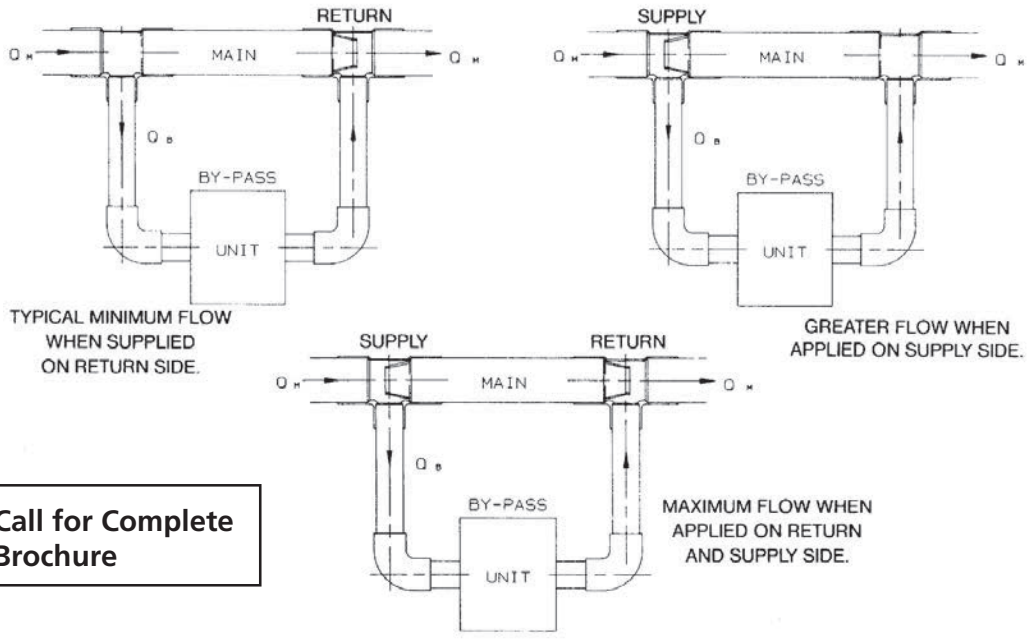
VENTURI TEE FITTINGS

Venturi fittings are designed to divert water from a given loop to a bypass loop.

Typical Installation

Install the Taco Venturi Fitting in a zone where flow needs to be automatically diverted to an existing radiation unit, or an additional add-on radiation unit. Install the Venturi Fitting on the return side. Where additional flow is required through the by-pass, place the Venturi Fitting on the supply side or, for maximum flow through the by-pass, use two Venturi Fittings (one on the return side and one on the supply side). Make sure that the arrows on the Venturi Fittings are pointing in the proper direction for return or supply installation.

TYPICAL INSTALLATION:



Call for Complete Brochure

Model	Size
TACO VF-075-050	3/4" x 1/2"
TACO VF-100-050	1" x 1/2"
TACO VF-100-075	1" x 3/4"
TACO VF-125-50	1 1/4" x 1/2"
TACO VF-125-075	1 1/4" x 3/4"

i Series Mixing Valve

Smart, Low Cost Temperature Mixing Solution

Taco iSeries Mixing Valves are a breakthrough in precision, cost effective temperature control for heating systems. Available in 2-way mixing or 3-way injection configurations, iSeries valves provide either outdoor reset control or fixed water supply temperature. Additionally, iSeries valves protect the boiler against flue gas condensation. A microprocessor-based control is built into the valve actuator, to which all wiring connections are made. All-in-one iSeries Mixing Valves deliver optimum zone-by-zone temperature control, with built-in boiler protection.

Submittal Data Information
i Series Mixing Valves

iSeries Features
- 2-Way Injection or 3-Way Mixing
- Operates Off Constant Power or Relay End Switch
- Ball Valve Design, High Cv
- Manual Operation Button
- Solid State Microprocessor Design
- Compact Design
- Easy, One-handed Actuator Removal
- 125 PSI Shutoff Pressure
- Plug-in Low Voltage Connections
- Multi-Status LED Indicator Light
- Fail Safe Mode
- Sensors Included

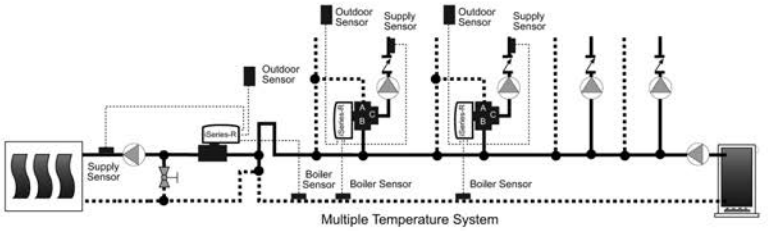
Additional Outdoor Reset Features
- Selectable Maximum Supply Temperature (110°F, 130°F, 150°F, or Off)
- Selectable Minimum Supply Temperature (85°F, when max. supply temp. is set to 150°F or Off)
- Adjustable Minimum Boiler Return Temperature (120°F, 135°F, or Off)
- Warm Weather Shutdown (70°F or Off)
- Adjustable Heating Curve (0.2-2.2 Reset Ratio)

Additional Setpoint Features
- Adjustable Setpoint Dial (80°F to 180°F)
- Selectable 15°F Setback
- Optional Boiler Protection (Set at 135°F)

Specifications
- **Maximum Operating Pressure:** 300 psi, (2,100 kPa)
- **Fluid Temperature Range:** 20°F to 240°F (-7°C to 115°C) @ 135°F (57°C) ambient
- **Ambient Conditions:** Indoor Use Only, -22°F to 185°F (-30°C to 85°C), < 90% Non-Condensing
- **Service:** Closed Systems, Hot and Chilled Water, up to 50% Glycol
- **Seat Leakage:** Drop-Tight Close Off
- **Power Supply:** 24 VAC ±10% 50/60 HZ
- **Electrical Rating:** 24 VAC, 60 HZ, 0.16 Amps. Do not exceed number of valves per transformer rating. Example: Do not use more than 12 valves per 40VA transformer
- **Sensors:** NTC Thermistor, 10 kΩ @ 77°F (25°C ±0.2°C) β=3892

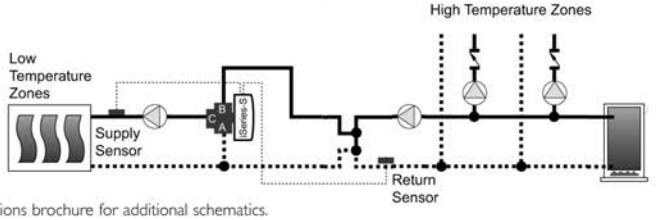
Outdoor Reset Application
Use the Taco Outdoor Reset iSeries Mixing Valves instead of a conventional injection system. With a full featured outdoor reset control built right into the actuator there is no need for an externally mounted reset control or expensive control valve. The iSeries valves can also be set up to do zone-by-zone outdoor reset, providing optimal comfort control for every zone.

The direct drive actuator modulates a 2-way or 3-way valve that injects different rates of hot water, supplying virtually any water temperature to the heating system. Working off an adjustable reset ratio, the valve's maximum and minimum system supply temperatures can be adjusted to support all types of jobs, including staple-up radiant floors that require a higher starting temperature. The iSeries valves include an adjustable boiler protection function which prevents low water temperatures from returning to the boiler. With a multi-status LED indicator light, plug-in wiring connections and an easy to remove actuator, the installation could not be easier.



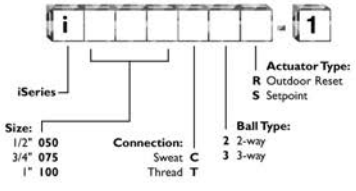
See applications brochure for additional schematics.

Setpoint Application
Use the Taco Setpoint iSeries Mixing Valves instead of a thermostatic mixing valve for precise dial-in temperature control to a heating system. The direct drive actuator modulates a 2-way or 3-way valve to inject different rates of hot water into the cooler system return water. In combination with the optional boiler protection sensor, the iSeries valves provide the unique benefit of optimal temperature control with boiler protection. The setpoint temperature is adjustable from 80°F to 180°F using a dial located on top of the actuator. A 15°F setback of the supply water can be initiated for additional unoccupied or nighttime setback control. An external multi-status LED indicator light, plug-in wiring connections and an easy to remove actuator makes installation and diagnostics a snap.



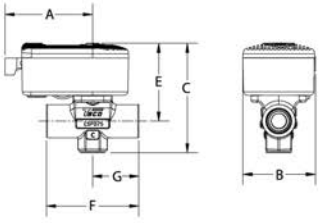
See applications brochure for additional schematics.

iSeries Ordering



Dimensions

Valve Size	A	B	C		E	F	G
			2-Way	3-Way			
1/2"	3"	2-3/8"	3-9/16"	4-9/16"	2-9/16"	3-1/8"	1-9/16"
3/4"	3"	2-3/8"	3-3/4"	4-7/8"	2-5/8"	3-1/8"	1-9/16"
1"	3"	2-3/8"	3-11/16"	5"	2-5/8"	3-1/8"	1-9/16"



Zone Sentry® Zone Valve

BEST ZONE VALVE IN THE INDUSTRY

- **Now Super Quiet**
- **Ball Valve Design**

Zone Sentry® Dimensions: (FOR REFERENCE PURPOSES)

Valve Size	A		B		C		D		E (Sweat)		E (Threaded)		F		G		Weight (Valve + Actuator)	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	Lbs.	Kg
1/2"	3"	76.2	2.375"	60.3	4.125"	104.7	2.06"	52.3	3.125"	79.3	4.750"	120.6	1.562"	39.7	2.312"	58.7	0.85	0.385
3/4"	3"	76.2	2.375"	60.3	4.125"	104.7	2.12"	53.8	3.125"	79.3	3.312"	84.1	1.562"	39.7	2.312"	58.7	0.90	0.408
1"	3"	76.2	2.375"	60.3	4.125"	104.7	2.12"	53.8	3.875"	98.4	3.875"	98.4	1.875"	47.6	2.312"	58.7	1.10	0.498

HYDRONIC COMPONENTS & SYSTEMS

Do it once. Do it right. Taco®

Submittal Data Information
Zone Sentry® Ball Valve Zone Valve

Product Specifications

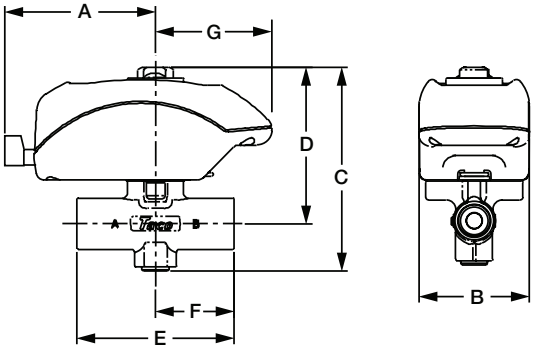
Max. Operating Pressure	300 PSI (2100 kPa)
Max. Shutoff Pressure	125 PSI (875 kPa)
Fluid Temperature Range	20-240˚F (7˚-115˚C)
Service	Water or Water/Glycol up to 50% Glycol Close Systems (Open System — Option Available)
Ball Rotation Speed	(90˚ turn), Approximately (after charge time)
Electrical Rating	24 VAC, 60Hz 0.48 Amps
Power Consumption (Charging)	11.4 W, 0.48 Amps
Power Consumption (Power On)	1.44W, 0.06 Amps
Heat Anticipator Setting	0.5 Amps
End Switch Rating	1 Amp @ 24 VAC

Materials of Construction, Actuator:

Body	High Performance Engineered Polymer
Gears	High Performance Internally Lubricated Engineered Polymer

Materials of Construction, Valve:

Body	Forged Brass
Stem	Brass
Press Ring	Brass
Ball	Brass (Chrome Plated)
Seat	Modified Teflon®
O-Rings	EPDM



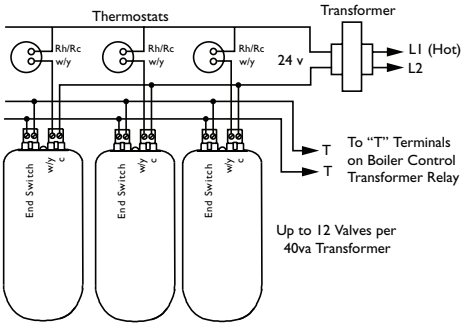
Application:

Taco Zone Sentry® Zone Valves provide on-off, normally open or normally closed control in both open and closed hydronic systems. The valves can be used in a wide variety of heating and non condensing cooling applications, primarily designed for use with baseboad, fan coils, radiators, convectors, air handlers, heat pumps and radiant applications.

Ease of Installation / Operation:

The Taco Zone Sentry® is the most technologically advanced zone valve ever made. It's also simple to install and operate. The valve can be installed in any direction, in any orientation. We then went a step further, allowing the operator to be mounted to the valve body in either direction, great for those tight baseboard jobs. Snap-in quick connects on the back of the valve make for a simple, secure and fast wiring hook-up. A green LED light shows full functionality of the valve's operation and thermostat status. Under a no power situation the manual override button located on the top of the valve allows the ball to be rotated up to 90° and is also marked with a slot to indicate the position of the valve.

Typical Zone Sentry Zone Valve Wiring:



Valve Size	Cv (Kv) / Ft. of Pipe Equiv.**	Close-Off Pressure (kPa)
1/2"	4.9 (4.3) /9.5	0-125 psi (0-862 kPa)
3/4"	10.3 (8.9) / 8.4	0-125 psi (0-862 kPa)
1"	8.9 (7.7) / 47.4	0-125 psi (0-862 kPa)

**At 4' per second
(Maximum recommended residential flow rate).

HEAT MOTOR - THE OLD STANDBY

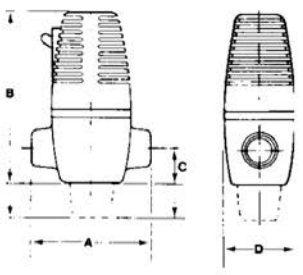
ELECTRIC ZONE VALVES

Standard Hydronic 2- and 3-way N/C Zone Valves. 125 psi. 55' Pump Head.

Model	Description
TACO 570	1/2" Sweat – 2-way
TACO 571	3/4" Sweat – 2-way
TACO 572	1" Sweat – 2-way
TACO 573	1-1/4" Sweat – 2-way
TACO 560	1/2" Sweat – 3-way
TACO 561	3/4" Sweat – 3-way
TACO 562	1" Sweat – 3-way

570 ZONE VALVE DIMENSIONS

Prod. No.	Size Conn's. Ins.	Normal Flow Range GPM	Press Drop Thru-Valve Ft. of Pipe Equiv.	Pump Head Ft. of Water	Maximum Work Press. PSI	Oper. Temp. Range F.	Amp. Rating	Volts Frequency	Dimensions A	B	C	D	Appr. Ship. Wht. Lbs.
570	½	0-4½	10	65	125	40-240	0.9	24V-60Hz	3⅛	4 1¼/16	15/16	2	2¼
571	¾	4½-6	20						3⅛	4 13/16	15/16	2	2¼
572	1	6-10	60	65	125	40-240	0.9	24V-60Hz	3⅛	4 13/16	15/16	2	2¼
573	1¼	10-16	130						3⅛	4 13/16	15/16	2	2¼



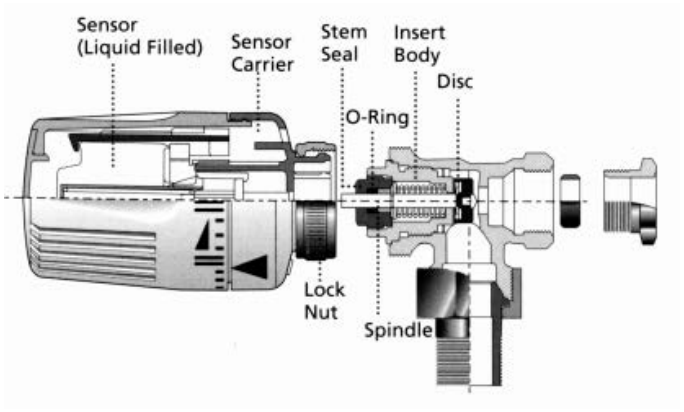
GEOTHERMAL ZONE VALVES - POTABLE

Potable water zone valve with bronze body and corrosion resistant internal parts. Slow acting: Avoids water hammer.

Model	Description
TACO 556-G2	3/4" Sweat - 2-way
TACO 557-G2	1" Sweat - 2-way
TACO 5101-G2	3/4" Threaded

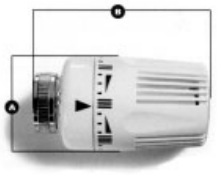
MYSON

THERMOSTATIC RADIATOR VALVES



The Myson TRV II:

- Controls the level of heat in individual rooms, much like a zone valve;
- Automatically shuts off when the need for heat is satisfied;
- Has a locking or limited range adjustment to prevent tampering;
- Provides optimum comfort while reducing energy waste & heating costs.



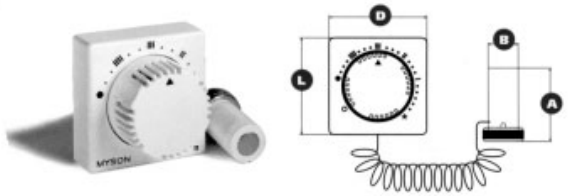
TRV II	A	B
2TRVIID	1-15/16"	3-9/16"

Setting range of temperature with proportional band of <4°F

✱	I	II	III	IIII	●
42°F	50°F	57°F	64°F	72°F	79°F

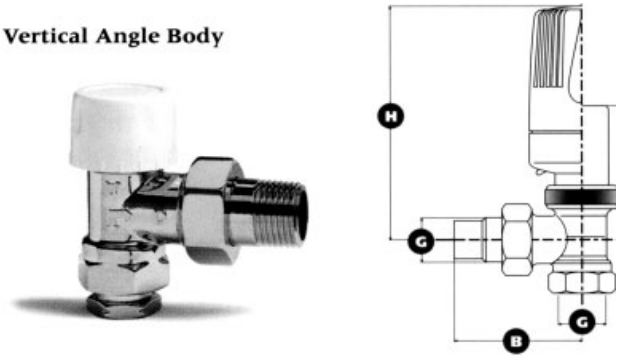
Myson's *Remote Adjuster* allows easy temperature control where manual access to the valve would be difficult.

The *Remote Adjuster* can be wall-mounted anywhere at 6' or 15' away from the valve. The *Remote Adjuster* is positioned where the air cannot continually pass freely over the valve.

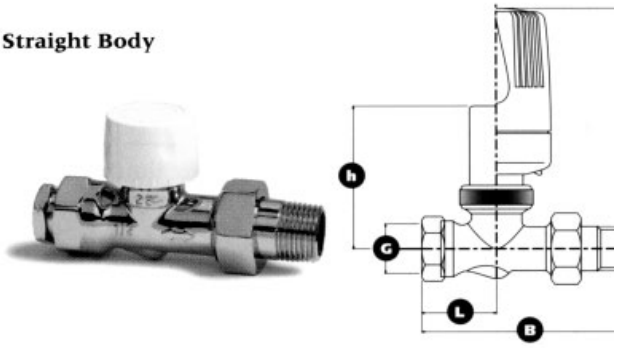


STANDARD CAPILLARY LENGTHS		A	B	D	L
6' 2TRVRA2	15' 2TRVAS5	2-1/8"	1-9/32"	3-1/8"	3-1/8"

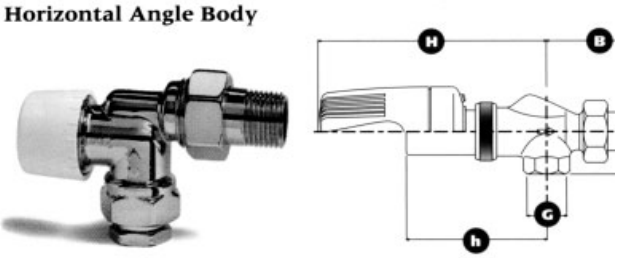
Vertical Angle Body



Straight Body



Horizontal Angle Body



VERTICAL ANGLE BODY		G	B	L	H*
DN16	2TRV16ANP	1/2"	2-1/4"	1-1/16"	4-1/4"

STRAIGHT BODY		G	B	L	H*
DN16	2TRV16SNP	1/2"	3-3/4"	1-3/8"	4-7/16"

HORIZONTAL ANGLE BODY		G	B	L	H*
DN16	2TRV16INP	1/2"	2-1/16"	1-7/16"	4-1/2"

MYSON

Non-Electric Zoning

The MYSON *Fullflow Heavyweight Valve* is a high performance valve for providing on/off control.

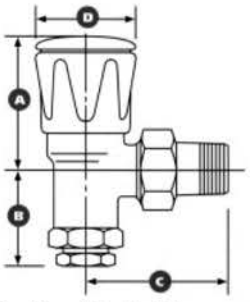
The non-rising spindle mechanism uses a double O-ring seal capable of withstanding 145psi at 245°F in either the full open or closed position. Because the applications to which the *FullFlow* is suited have higher operation demands, the mechanism has been ingeniously designed to allow maintenance while in service. The spindle may be removed for servicing while the plunger remains securely sealed, preventing sudden escapes of system water.

The *FullFlow* handwheel and lockshield cover are manufactured in high quality ABS and are screw-fixed to the valve spindle. The handwheel has a smooth appearance and easy-to-clean surface.

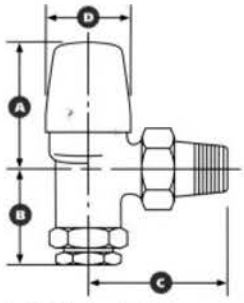
- Maximum operating pressure 145psi
- Maximum water temperature 248°F
- Conforms to ISO-9002
- Available in high quality polished chrome finish.
- One valve for copper compression or iron pipe threads - 1/2"; 3/4"*
- Double O-ring seal and non-rising spindle
- O-ring seal on union guarantees water tight seal

The pipe entry connection is set up for copper compression **and** iron pipe threads thereby minimizing the need to carry wide stock ranges.

*All valves are shipped with the base tapped for nominal 1/2" or 3/4" threads and with a matching compression nut and ferrule.



Wheelhead Angle Valve



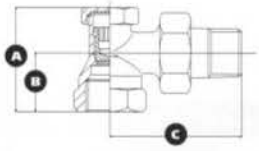
Lockshield Angle Valve

FULLFLOW RANGE VALVES		G	A	B	C	D
WHEELHEAD ANGLE	FF16WAV	1/2"	2-5/32"	1-3/4"	2-5/32"	1-17/32"
LOCKSHIELD ANGLE	FF16WAC	1/2"	2-1/16"	1-3/4"	2-5/32"	1-3/8"

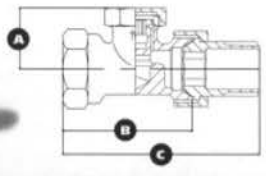
LOCKSHIELD BODY FOR TWO-PIPE HEATING SYSTEMS

Myson offers two adjustable valve bodies for Two-Pipe Heating Systems: Vertical Angle and Straight Body

- Stamped Brass, Nickel Plated
- Maximum Operating Pressure 145psi
- Maximum Water Temperature 248°F



VERTICAL ANGLE BODY		Size	A	B	C
DN16	LKD16AN	1/2"	1-3/4"	1-1/32"	2-1/4"



STRAIGHT BODY		Size	A	B	C
DN16	LKD16SN	1/2"	15/16"	2"	3-1/8"

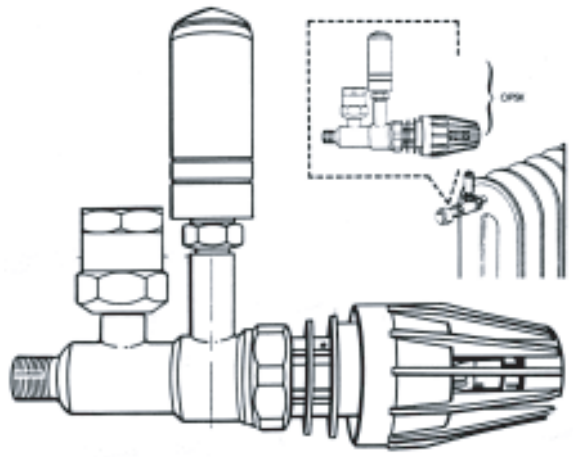
To determine flow through the lockshield valves, choose the body style* and design pressure drop in psi. The chart below shows the C_v** factor for each style and valve setting. Use this equation to calculate flow -Flow[gpm]=$C_v\sqrt{dP[psi]}$

Turns	.25	.50	.75	1.0	1.25	1.50	1.75	2.0	2.25	2.50	2.75	3.0	3.25	3.50	3.75	4.0	4.25	4.50	4.75	5.0
Vertical Angle	0.22	0.36	0.55	0.80	0.96	1.10	1.26	1.51	1.71	1.88	2.07	2.29	2.46	2.62	2.76	2.97	3.13	3.31	3.43	3.57
Straight Body	0.29	0.35	0.43	0.51	0.61	0.71	0.79	0.87	0.97	1.06	1.13	1.20	1.27	1.32	1.36	1.40	1.43	1.45	1.47	1.48

*Each valve body is shipped in the closed position **C_v=gpm@1psi differential pressure

MACON

TRV-ONE PIPE STEAM VALVE ASSEMBLY



One Pipe Steam Valve Assembly

Model	Description
B2400 NTB	Direct Mount Operator
1/8" Vent	Steam Vent
1/8" VB	Vacuum Breaker
OPS	Valve Body
OPSK	Complete Kit

Thermostatic Operators

Model	Description
NBT B24000	Direct Mount
ENT B26000	Direct Mount
ENTZ B36000	Remote Sensor
ENTL B46000	Remote Temp. w/ Built in Sensor
ENTLZ B56000	Remote Temp Setting Dial

Valves

Model	Description
N10677	1" Angle
N10777	1" Straight
N10877	1" Side Mount Angle
N10970	1" Copper x Copper
N10697	1.25" Angle
N10797	1.25" Straight
N10897	1.25" Side Mount Angle

OPERATION

The Macon one-pipe steam valve assembly consists of the reliable B24000 direct mounting thermostat. The thermostatic head contains a temperature sensitive wax that expands and contracts on a rise and fall of temperature in the sensed area. When the temperature rises above the temperature selected, pressure from the expanding wax closes the valve, preventing or restricting the flow of steam through the radiation unit. When the room temperature drops below the selected temperature, the valve opens and allows an increase of steam flow through the radiation unit. This modulating process continues automatically to maintain the temperature you selected.

Important:

1. Installing the Macon one-pipe steam valve assembly does not eliminate other controls in the system. The boiler must be cycled in some manner.
2. If the boiler is cycled from a space thermostat in one zone, do not apply a radiator valve to that zone's radiation.
3. Do not apply a radiator valve in a one-pipe steam system that does not use steam air vents venting to the atmosphere on each radiation unit.
4. The VB-18 is optional. Integral installation - reduces vacuum problems.

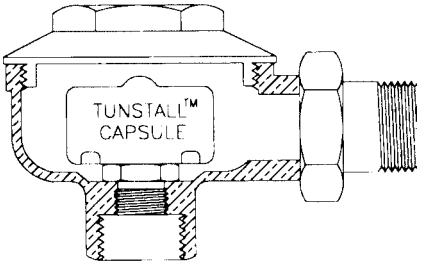
Note: Replacement inserts for Danfoss, Dunham Bush, Hoffman, Flair, Honeywell Braukmann are available.

Tunstall®
Est. 1958

Steam Products

Steam Traps, Steam Capsules
Steam Traps, Radiator Valves

At **TUNSTALL** we specialize in the manufacturing of interior thermostatic elements for steam traps using state-of-the-art technology. For maximum reliability and long term performance our **Tunstall Steam Trap Capsules®** are made of a 10 plate TIG welded stainless steel bellows and feature **orifice diameters up to 5/16", custom tooling, a two-year warranty, and pressure ratings from vacuum to 125 psig.** Each capsule is individually tested and calibrated before shipment. Now you can economically increase the performance of your old steam traps by replacing the interiors with new **Tunstall** technology. Made to retrofit almost all thermostatic steam traps, **Tunstall** Steam Trap Capsules® are by far the best choice for repairing or upgrading existing traps.



Having been in service since 1985, with virtually failure-free performance, Tunstall Capsules® can offer your system years of trouble-free service.

T-431

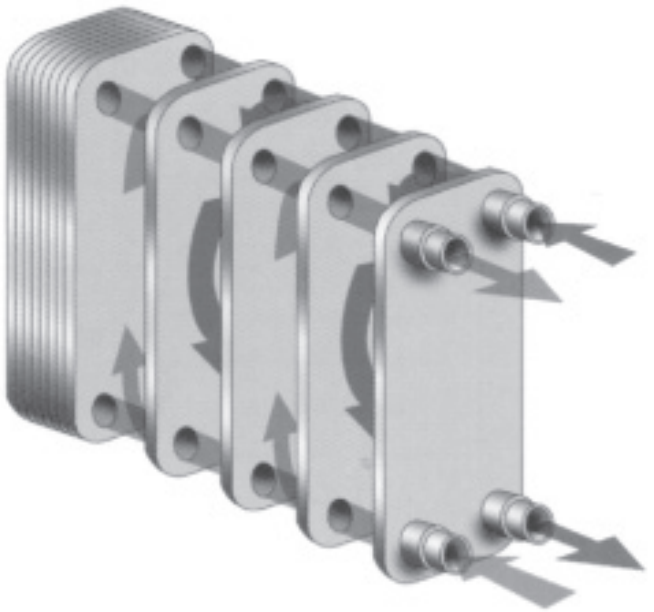
Steam Angle Radiator Valves

MODEL	DESCRIPTION
110-103	1/2" T-431- I.P.S
110-104	3/4" T-431- I.P.S
110-105	1" T-431- I.P.S

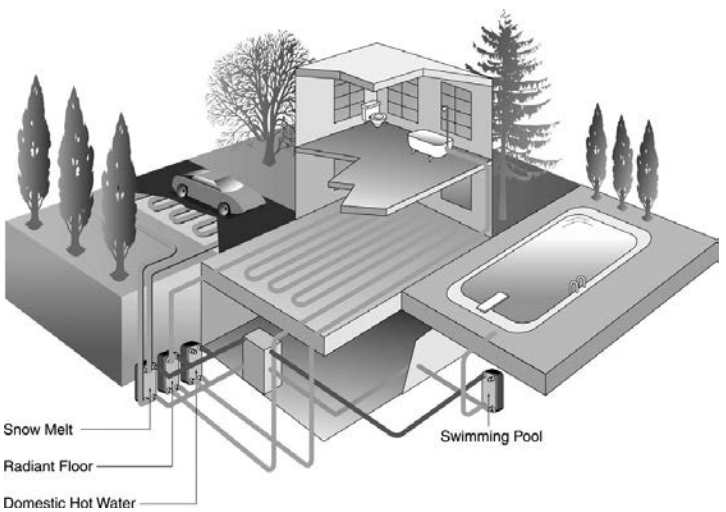
FlatPlate®

BRAZED PLATE HEAT EXCHANGERS, COMMERCIAL / RESIDENTIAL

Brazed stainless steel heat exchangers have been displacing traditional tube-in-steel heat exchangers due to their superior performance characteristics and small size. They are ideal for hydronic radiant heating, snowmelt, domestic hot water, pool heating.



- **Double Wall Vented**
- **Low Cost 3"x 8" Models**
- **Same Day Computer Sizing**
- **Free Sizing Program**
- **ASME Available**
- **Low Pressure Drop Models**
- **Made in USA**



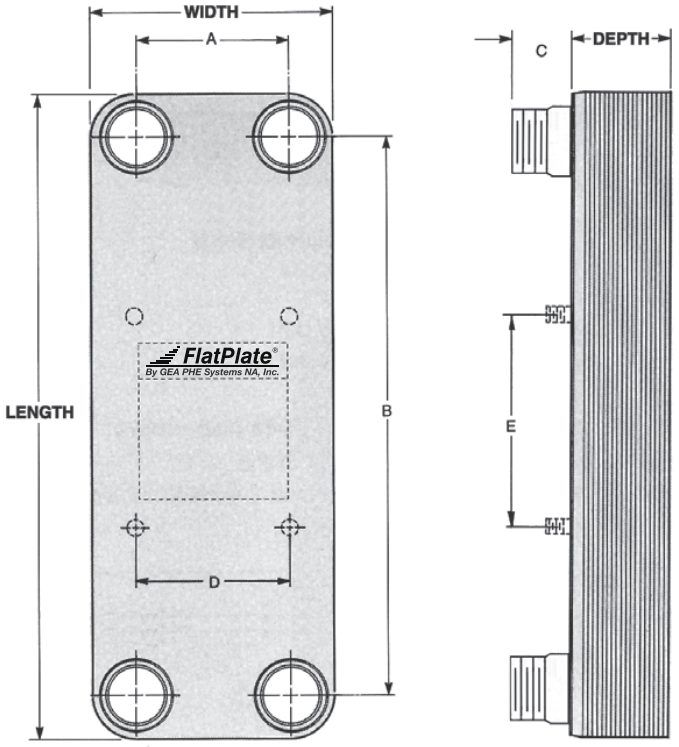
FP Series
Hydronic

	No. of	Width	Length	Depth	Connections	GPM @ 7.5 psig PD		Weight
10"x20" Models	Plates	(inches)	(inches)	(inches)	MPT	Side-A	Side-B	(lbs)
FP10X20-20 (1-1/2" MPT)	20	9.8	20.3	2.2	1-1/2"	25.6	27.5	33
FP10X20-24 (1-1/2" MPT)	24	9.8	20.3	2.6	1-1/2"	31.3	33.0	37
FP10X20-30 (1-1/2" MPT)	30	9.8	20.3	3.2	1-1/2"	39.6	41.0	44
FP10X20-36 (1-1/2" MPT)	36	9.8	20.3	3.7	1-1/2"	48.0	49.0	50
FP10X20-40 (1-1/2" MPT)	40	9.8	20.3	4.1	1-1/2"	53.5	54.5	55
FP10X20-50 (2" MPT)	50	9.8	20.3	5.1	2"	67.0	67.5	66
FP10X20-60 (2" MPT)	60	9.8	20.3	6.0	2"	80.0	80.0	77
FP10X20-70 (2" MPT)	70	9.8	20.3	6.9	2"	93.0	93.0	88
FP10X20-80 (2" MPT)	80	9.8	20.3	7.9	2"	105.0	105.0	99
FP10X20-90 (2-1/2" MPT)	90	9.8	20.3	8.8	2-1/2"	117.0	117.0	110
FP10X20-100 (2-1/2" MPT)	100	9.8	20.3	9.8	2-1/2"	128.0	128.0	121
FP10X20-110 (2-1/2" MPT)	110	9.8	20.3	10.7	2-1/2"	139.0	139.0	132
FP10X20-120 (2-1/2" MPT)	120	9.8	20.3	11.6	2-1/2"	149.0	149.0	143
FP10X20-130 (2-1/2" MPT)	130	9.8	20.3	12.6	2-1/2"	158.0	158.0	154
FP10X20-140 (2-1/2" MPT)	140	9.8	20.3	13.5	2-1/2"	168.0	168.0	165
FP10X20-150 (2-1/2" MPT)	150	9.8	20.3	14.5	2-1/2"	176.0	176.0	176
FP10X20-160 (2-1/2" MPT)	160	9.8	20.3	15.4	2-1/2"	184.0	184.0	187
FP10X20-170 (2-1/2" MPT)	170	9.8	20.3	16.3	2-1/2"	192.0	192.0	198
FP10X20-180 (2-1/2" MPT)	180	9.8	20.3	17.3	2-1/2"	200.0	200.0	209
FP10X20-190 (2-1/2" MPT)	190	9.8	20.3	18.2	2-1/2"	206.0	206.0	220
FP10X20-200 (2-1/2" MPT)	200	9.8	20.3	19.2	2-1/2"	212.0	212.0	231

	No. of	Width	Length	Depth	Connections	GPM @ 7.5 psig PD		Weight
10"x20L" Models	Plates	(inches)	(inches)	(inches)	MPT	Side-A	Side-B	(lbs)
FP10X20L-20 (1-1/2" MPT)	20	9.8	20.3	2.2	1-1/2"	62.5	66.0	33
FP10X20L-24 (1-1/2" MPT)	24	9.8	20.3	2.6	1-1/2"	75.5	78.5	37
FP10X20L-30 (2" MPT)	30	9.8	20.3	3.2	2"	94.5	97.0	44
FP10X20L-36 (2" MPT)	36	9.8	20.3	3.7	2"	112.5	114.0	50
FP10X20L-40 (2" MPT)	40	9.8	20.3	4.1	2"	124.0	125.0	55
FP10X20L-50 (2-1/2" MPT)	50	9.8	20.3	5.1	2-1/2"	150.0	150.0	66
FP10X20L-60 (2-1/2" MPT)	60	9.8	20.3	6.0	2-1/2"	174.0	174.0	77
FP10X20L-70 (2-1/2" MPT)	70	9.8	20.3	6.9	2-1/2"	193.0	193.0	88
FP10X20L-80 (2-1/2" MPT)	80	9.8	20.3	7.9	2-1/2"	211.0	211.0	99
FP10X20L-90 (2-1/2" MPT)	90	9.8	20.3	8.8	2-1/2"	224.0	224.0	110
FP10X20L-100 (2-1/2" MPT)	100	9.8	20.3	9.8	2-1/2"	236.0	236.0	121
FP10X20L-110 (2-1/2" MPT)	110	9.8	20.3	10.7	2-1/2"	249.0	249.0	132
FP10X20L-120 (2-1/2" MPT)	120	9.8	20.3	11.6	2-1/2"	256.0	256.0	143
FP10X20L-130 (2-1/2" MPT)	130	9.8	20.3	12.6	2-1/2"	265.0	265.0	154
FP10X20L-140 (2-1/2" MPT)	140	9.8	20.3	13.5	2-1/2"	272.0	272.0	165
FP10X20L-150 (2-1/2" MPT)	150	9.8	20.3	14.5	2-1/2"	277.0	277.0	176
FP10X20L-160 (2-1/2" MPT)	160	9.8	20.3	15.4	2-1/2"	283.0	283.0	187
FP10X20L-170 (2-1/2" MPT)	170	9.8	20.3	16.3	2-1/2"	287.0	287.0	198
FP10X20L-180 (2-1/2" MPT)	180	9.8	20.3	17.3	2-1/2"	291.0	291.0	209
FP10X20L-190 (2-1/2" MPT)	190	9.8	20.3	18.2	2-1/2"	295.0	295.0	220
FP10X20L-200 (2-1/2" MPT)	200	9.8	20.3	19.2	2-1/2"	301.0	301.0	231

For ASME versions, put "-UM" after the model number; Example FP10x20-20 (1-1/2" MPT)-UM
For International versions, corrections are BSPT; Example FP10x20-20 (1-1/2" BSPT)

FP Series
Hydronic



Connections (a)		
# of Plates	Standard Threaded (MPT)	C
10X20 Models		
20 thru 40	1-1/2"	1.500
50 thru 80	2"	1.750
90 thru 200	2-1/2"	2.000
10X20L Models		
20 and 24	1-1/2"	1.500
30 thru 40	2"	1.750
50 thru 200	2-1/2"	2.000

(a) Connections the same on both sides
(b) Heat exchanger may be installed in vertical or horizontal position (except steam application)
(c) Heat exchanger must be piped in counterflow arrangement
(d) A water strainer MUST be installed in the water inlet circuit (16-20 mesh minimum, 20-40 mesh recommended)
(e) Water quality should be maintained at a PH of 6.5 to 8.0
(f) Use MPN Marine Series for steam, chlorinated water and pool water applications

Stud Bolts:
- 1/2-13 x 1-3/8"L standard on all 10 x 20 Models

	Length	Width	Depth	A	B	C (Min)	C (Max)	D	E	Approximate
Models	(inches)	(inches)	(inches)	(inches)						Weight (lbs)
FP10X20	20.3	9.8	0.094 x #plates + 0.36	6.5	17.0	1.50	2.00	4.0	5.5	1.1 x #plates + 10.7
FP10X20L										

Specifications

c UL us LISTED

UM Optional ASME Certified

CE Optional European Code

Plate Material:	316L Stainless Steel
Braze Material:	Copper
Maximum Working Temperature:	350˚F
Minimum Working Temperature:	-320˚F
Maximum Working Pressure:	450 psi

- Approvals:
  - U.L. (Underwriters Laboratory) USA and Canada-standard
  - ASME Certification (optional)
  - Canadian CRN
  - CE (optional)
- Optional Floor Mount Brackets and Strainers
- Standard and Custom units available including **Nickel brazed**, FPN (300psi) versions.

MPN Series
Swimming Pool

The MPN Series is designed specifically for Swimming Pool applications, where chlorine, biological elements or low concentrations of acids are present. The MPN Series is rugged, yet very compact, representing the latest technology in corrosion resistant plate heat exchangers. It's Nickel brazed, 254SMO Stainless Alloy plates offer significant improvements in reliability over traditional stainless materials and has high efficiency heat transfer for applications up to 200 gpm per unit. All MPN Series models have male pipe thread fittings and mounting stud bolts. Maximum allowable working pressure, 300 psig.

MPN Series applications include:

Swimming Pool
- Swimming Pool to Boiler
- Swimming Pool to Heat Pump Water Loop

Process
- Brackish Water
- Treated Steam to Fluid
- Steam Condensate to Fluid
- Cooling Tower Water
- Low Acid Concentrations

	No. of	Width	Length	Depth	Connections	GPM @ 5.0 psig		GPM @ 7.5 psig		Net Wt.
5"x12" Models	Plates	(inches)	(inches)	(inches)	Side A & B	Side-A	Side-B	Side-A	Side-B	(lbs)
MPN5X12-4 (1" MPT)	4	4.9	12.2	0.7	1" MPT	1.1	2.1	1.6	3.1	14.7
MPN5X12-6 (1" MPT)	6	4.9	12.2	0.9	1" MPT	2.1	3.1	3.2	4.7	15.5
MPN5X12-8 (1" MPT)	8	4.9	12.2	1.0	1" MPT	3.2	4.2	4.8	6.4	16.2
MPN5X12-10 (1" MPT)	10	4.9	12.2	1.2	1" MPT	4.2	5.2	6.4	8.0	16.9
MPN5X12-16 (1" MPT)	16	4.9	12.2	1.7	1" MPT	7.3	8.3	11.1	12.7	19.1
MPN5X12-20 (1-1/4" MPT)	20	4.9	12.2	2.0	1" MPT	9.3	10.3	14.2	15.7	20.6
MPN5X12-24 (1-1/4" MPT)	24	4.9	12.2	2.4	1-1/4" MPT	11.3	12.3	17.3	18.7	22.1
MPN5X12-30 (1-1/4" MPT)	30	4.9	12.2	2.9	1-1/4" MPT	16.6	17.5	25.3	26.7	24.3
MPN5X12-40 (1-1/4" MPT)	40	4.9	12.2	3.7	1-1/4" MPT	18.9	19.7	28.8	30.0	28.0
MPN5X12-50 (1-1/4" MPT)	50	4.9	12.2	4.6	1-1/4" MPT	25.4	26.0	38.7	39.7	31.6
MPN5X12-60 (1-1/4" MPT)	60	4.9	12.2	5.4	1-1/4" MPT	26.6	27.3	40.6	41.6	35.3
MPN5X12-70 (1-1/4" MPT)	70	4.9	12.2	6.3	1-1/4" MPT	29.8	30.5	45.5	46.5	39.0
MPN5X12-80 (1-1/4" MPT)	80	4.9	12.2	7.1	1-1/4" MPT	33.0	33.4	50.3	50.9	42.7

	No. of	Width	Length	Depth	Connections	GPM @ 5.0 psig		GPM @ 7.5 psig		Net Wt.
10"x20" Models	Plates	(inches)	(inches)	(inches)	Side A & B	Side-A	Side-B	Side-A	Side-B	(lbs)
MPN10X20L-20 (1-1/2" MPT)	20	9.8	20.3	2.2	1-1/2" MPT	50.0	53.0	62.0	66.0	32.7
MPN10X20L-24 (1-1/2" MPT)	24	9.8	20.3	2.6	1-1/2" MPT	61.0	63.5	75.0	78.0	37.1
MPN10X20L-30 (2" MPT)	30	9.8	20.3	3.2	2" MPT	76.0	78.5	94.0	97.0	43.7
MPN10X20L-36 (2" MPT)	36	9.8	20.3	3.7	2" MPT	91.0	92.0	112.0	114.0	50.3
MPN10X20L-40 (2" MPT)	40	9.8	20.3	4.1	2" MPT	100.0	101.0	124.0	125.0	54.7
MPN10X20L-50 (2-1/2" MPT)	50	9.8	20.3	5.1	2-1/2" MPT	121.0	121.0	149.0	150.0	65.7
MPN10X20L-60 (2-1/2" MPT)	60	9.8	20.3	6.0	2-1/2" MPT	141.0	141.0	173.0	173.0	76.7
MPN10X20L-70 (2-1/2" MPT)	70	9.8	20.3	6.9	2-1/2" MPT	156.0	156.0	193.0	193.0	87.7
MPN10X20L-80 (2-1/2" MPT)	80	9.8	20.3	7.9	2-1/2" MPT	171.0	171.0	210.0	210.0	98.7
MPN10X20L-90 (2-1/2" MPT)	90	9.8	20.3	8.8	2-1/2" MPT	183.0	183.0	224.0	224.0	109.7
MPN10X20L-100 (2-1/2" MPT)	100	9.8	20.3	9.8	2-1/2" MPT	194.0	194.0	236.0	236.0	120.7

NOTES: 1. Made with 254SMO Stainless Alloy, Nickel Brazed.
3. Stainless steel MPT fittings and mounting stud bolts.
4. Design Working Pressure: 300 psig.

Application:
Swimming Pool Applications - See Page 16, 17

Radiant Floor
Selections

Many radiant floor applications utilize FlatPlate® heat exchangers to reduce overall installed costs of the radiant floor system. This is possible when using cast-iron boilers and radiant tubing (with lower cost, no oxygen barrier), and for applications where isolation of the boiler to radiant floor loops are needed. This simplifies the installation and minimizes cost.

FlatPlate® models also make it possible to interface steam boilers to radiant floor systems, both low pressure and high pressure steam systems (up to 300 psi) using the MPN Series.

Another strong application is using a domestic hot water heater to provide heat to a radiant floor system bathroom radiant floor, or for add-on projects. This is easily accomplished using a FlatPlate® model to isolate the domestic water from the radiant floor loop.

SELECTIONS - Radiant Floor

Connected to Boiler; 180°F Supply

	Radiant Floor: 80°F Return, 100°F Supply Boiler Return 150°F					*Radiant Floor: 100F Return, 120°F Supply Boiler Return 150°F*					*Radiant Floor: 120°F Return, 140°F Supply Boiler Return 160°F*				
	Capacity	Side-A (Boiler)		Side-B (Radiant)		Capacity	Side-A (Boiler)		Side-B (Radiant)		Capacity	Side-A (Boiler)		Side-B (Radiant)	
5"x12" Models	(Btu/hr)	(GPM)	PD (psi)	(GPM)	PD (psi)	(Btu/hr)	(GPM)	PD (psi)	(GPM)	PD (psi)	(Btu/hr)	(GPM)	PD (psi)	(GPM)	PD (psi)
FP5X12L-4 (3/4" MPT)	46,500	3.2	4.6	4.7	2.9	21,500	1.4	1.0	2.1	0.6	12,000	1.2	0.7	1.2	0.2
FP5X12L-6 (3/4" MPT)	100,000	6.8	5.1	10.0	5.6	50,000	3.4	1.4	5.0	1.5	37,500	3.8	1.7	3.8	0.8
FP5X12L-8 (3/4" MPT)	145,000	9.8	4.8	14.5	6.6	85,000	5.7	1.8	8.5	2.4	55,000	5.6	1.8	5.5	1.0
FP5X12L-10 (1" MPT)	185,000	12.6	4.5	18.5	6.9	120,000	8.1	2.0	12.1	3.0	80,000	8.1	2.0	8.1	1.3
FP5X12L-12 (1" MPT)	220,500	15.0	4.1	22.1	6.8	155,000	10.5	2.1	15.6	3.4	105,000	10.7	2.2	10.6	1.6
FP5X12L-14 (1" MPT)	255,000	17.3	3.8	25.6	6.7	200,000	13.6	2.4	20.1	4.2	130,000	13.3	2.3	13.1	1.8
FP5X12L-16 (1" MPT)	289,000	19.7	3.7	29.0	6.7	225,000	15.3	2.3	22.6	4.1	175,000	17.9	3.0	17.7	2.5
FP5X12L-20 (1-1/4" MPT)	360,000	24.5	3.5	36.1	6.7	300,000	20.4	2.5	30.2	4.7	232,000	23.7	3.3	23.5	2.8
FP5X12L-24 (1-1/4" MPT)	435,000	29.6	3.5	43.6	7.0	365,000	24.8	2.5	36.8	4.9	275,000	28.1	3.2	27.8	2.8
FP5X12L-30 (1-1/4" MPT)	525,000	35.8	3.3	52.7	6.9	500,000	34.0	3.1	50.4	6.1	325,000	33.2	2.9	32.9	2.7
FP5X12L-36 (1-1/4" MPT)	610,000	41.5	3.3	61.2	7.0	585,000	39.8	3.0	59.0	6.3	450,000	46.0	4.0	45.6	3.8
FP5X12L-40 (1-1/4" MPT)	650,000	44.3	3.2	65.2	6.8	625,000	42.6	3.0	63.0	6.2	515,000	52.7	4.4	52.2	4.2
FP5X12L-50 (1-1/4" MPT)	765,000	51.1	3.2	75.6	7.0	750,000	51.1	3.2	75.6	7.0	575,000	58.8	4.1	58.3	4.0
FP5X12L-60 (1-1/4" MPT)	810,000	55.2	3.1	81.3	6.9	815,000	55.5	3.2	82.2	6.9	675,000	69.1	4.8	68.4	4.8
FP5X12L-70 (1-1/4" MPT)	840,000	57.2	3.1	84.3	6.9	840,000	57.2	3.1	84.7	6.8	825,000	84.4	6.6	83.6	6.6
FP5X12L-80 (1-1/4" MPT)	915,000	62.3	3.6	91.9	7.9	915,000	62.3	3.6	91.9	7.8	915,000	93.7	7.9	92.7	7.9

1. Larger units are available.
2. Design Working Pressure: 300 psig.

	Radiant Floor: 80°F Return, 100°F Supply Boiler Return 150°F					*Radiant Floor: 100°F Return, 120°F Supply Boiler Return 150°F*					*Radiant Floor: 120°F Return, 140°F Supply Boiler Return 160°F*				
	Capacity	Side-A (Boiler)		Side-B (Radiant)		Capacity	Side-A (Boiler)		Side-B (Radiant)		Capacity	Side-A (Boiler)		Side-B (Radiant)	
10"x20" Models	(Btu/hr)	(GPM)	PD (psi)	(GPM)	PD (psi)	(Btu/hr)	(GPM)	PD (psi)	(GPM)	PD (psi)	(Btu/hr)	(GPM)	PD (psi)	(GPM)	PD (psi)
FP10X20L-20 (1-1/2" MPT)	500,000	34.0	4.9	50.2	9.8	515,000	35.1	5.2	51.9	9.8	500,000	51.2	10.0	50.7	8.9
FP10X20L-24 (1-1/2" MPT)	610,000	41.5	4.9	61.2	10.1	625,000	42.6	5.2	63.0	10.0	610,000	62.4	10.0	61.8	9.2
FP10X20L-30 (2" MPT)	760,000	51.8	4.8	76.3	10.1	770,000	52.5	4.9	77.6	9.8	770,000	78.8	9.9	78.0	9.4
FP10X20L-36 (2" MPT)	910,000	62.0	4.7	91.4	10.1	930,000	63.4	4.9	93.8	10.0	940,000	96.2	10.1	95.3	9.8
FP10X20L-40 (2" MPT)	1,005,000	68.5	4.6	100.9	10.0	1,030,000	70.2	4.8	103.9	10.0	1,040,000	106.5	10.0	105.4	9.8
FP10X20L-50 (2-1/2" MPT)	1,240,000	84.5	4.5	124.5	10.0	1,250,000	85.2	4.6	126.1	9.7	1,300,000	133.1	10.0	131.8	10.0
FP10X20L-60 (2-1/2" MPT)	1,450,000	98.8	4.4	145.6	9.8	1,500,000	102.2	4.6	151.3	9.9	1,500,000	153.6	9.5	152.1	9.6
FP10X20L-70 (2-1/2" MPT)	1,670,000	113.8	4.4	167.7	9.9	1,720,000	117.2	4.6	173.5	10.0	1,750,000	179.2	9.8	177.4	9.9
FP10X20L-80 (2-1/2" MPT)	1,875,000	127.8	4.4	188.3	10.0	1,925,000	131.2	4.6	194.2	10.1	1,950,000	199.7	9.8	197.7	10.0
FP10X20L-90 (2-1/2" MPT)	2,050,000	139.8	4.4	205.9	10.0	2,100,000	143.2	4.6	211.8	10.1	2,140,000	219.1	9.9	216.9	10.1
FP10X20L-100 (2-1/2" MPT)	2,200,000	150.0	4.4	221.0	10.0	2,250,000	153.4	4.6	226.9	10.0	2,250,000	230.4	9.5	228.1	9.7

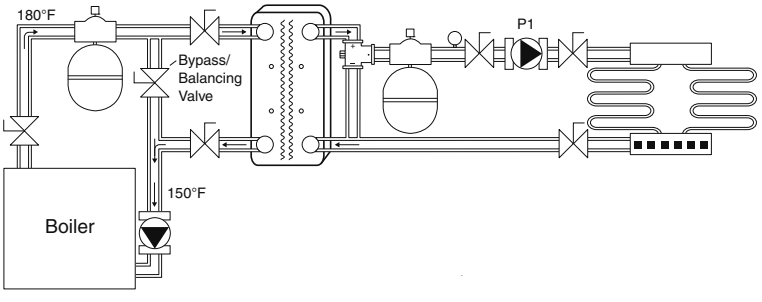
1. Larger units are available.
2. Design Working Pressure: 450 psig.

To select a Heat Exchanger for a **Boiler to Radiant Floor** application:

Step 1 Select the BTUH capacity required.

Step 2 From the table, select the Heat Exchanger model shown.
Use FP models for water boilers.
Use the closest matching MPN model for steam boilers.

Step 3 Select your pump(s) based on the minimum recommended flow rates shown on the table.



Radiant Floor
Selections

Radiant Floor - Hot Water Heater

Hot Water Heater; 140°F Supply, 120° Return

	Radiant Floor: 80°F Return, 100°F Supply						Radiant Floor: 100°F Return, 120°F Supply				
	Capacity	Side-A (Boiler)		Side-B (Radiant)			Capacity	Side-A (Boiler)		Side-B (Radiant)	
5"x12" Models	(Btu/hr)	(GPM)	PD (psi)	(GPM)	PD (psi)	*5"x12" Models*	(Btu/hr)	(GPM)	PD (psi)	(GPM)	PD (psi)
FP5X12L-4 (3/4" MPT)	6,500	0.6	0.2	0.6	0.1	**FP5X12-4 (3/4" MPT)**	9,500	0.9	2.6	0.9	0.8
FP5X12L-6 (3/4" MPT)	17,500	1.7	0.4	1.7	0.2	**FP5X12-6 (3/4" MPT)**	18,500	1.8	2.5	1.8	1.2
FP5X12L-8 (3/4" MPT)	30,000	3.0	0.5	3.0	0.4	**FP5X12-8 (3/4" MPT)**	32,000	3.2	3.2	3.2	1.9
FP5X12L-10 (1" MPT)	47,500	4.8	0.8	4.7	0.6	**FP5X12-10 (3/4" MPT)**	42,500	4.3	3.2	4.2	2.2
FP5X12L-12 (1" MPT)	61,500	6.2	0.8	6.1	0.7	**FP5X12-12 (3/4" MPT)**	55,000	5.5	3.4	5.5	2.5
FP5X12L-14 (1" MPT)	75,500	7.6	0.8	7.5	0.7	**FP5X12-14 (3/4" MPT)**	80,500	8.1	5.0	8.1	3.8
FP5X12L-16 (1" MPT)	90,000	9.1	0.9	9.0	0.7	**FP5X12-16 (3/4" MPT)**	93,500	9.4	4.9	9.4	3.9
FP5X12L-20 (1-1/4" MPT)	118,000	11.9	0.9	11.8	0.8	**FP5X12-20 (1" MPT)**	120,000	12.1	4.9	12.1	4.1
FP5X12L-24 (1-1/4" MPT)	179,000	18.1	1.5	17.9	1.3	**FP5X12-24 (1" MPT)**	146,000	14.8	4.9	14.7	4.3
FP5X12L-30 (1-1/4" MPT)	230,000	23.3	1.6	23.1	1.4	**FP5X12-30 (1-1/4" MPT)**	186,500	18.9	5.0	18.8	4.5
FP5X12L-36 (1-1/4" MPT)	281,000	28.4	1.7	28.2	1.6	**FP5X12-36 (1-1/4" MPT)**	225,000	22.8	5.0	22.6	4.6
FP5X12L-40 (1-1/4" MPT)	316,000	32.0	1.8	31.7	1.7	**FP5X12-40 (1-1/4" MPT)**	250,000	25.3	5.0	25.2	4.7
FP5X12L-50 (1-1/4" MPT)	402,000	40.7	2.1	40.3	2.1	**FP5X12-50 (1-1/4" MPT)**	305,000	30.9	4.9	30.7	4.6
FP5X12L-60 (1-1/4" MPT)	488,000	49.4	2.6	49.0	2.6	**FP5X12-60 (1-1/4" MPT)**	359,000	36.4	4.9	36.2	4.7
FP5X12L-70 (1-1/4" MPT)	574,000	58.2	3.3	57.6	3.3	**FP5X12-70 (1-1/4" MPT)**	410,000	41.5	5.0	41.3	4.9
FP5X12L-80 (1-1/4" MPT)	660,000	66.9	4.2	66.3	4.2	**FP5X12-80 (1-1/4" MPT)**	450,000	45.6	5.0	45.3	4.9

NOTES: 1. Larger units are available.
2. Design Working Pressure: 300 psig.
3. All units are standard models.
4. Made with 316L Stainless Alloy, Copper Brazed.
5. Stainless steel MPT fittings and mounting stud bolts.

To select a Heat Exchanger for a **Hot Water Heater to Radiant Floor** application:

Step 1 Select the BTUH capacity required.

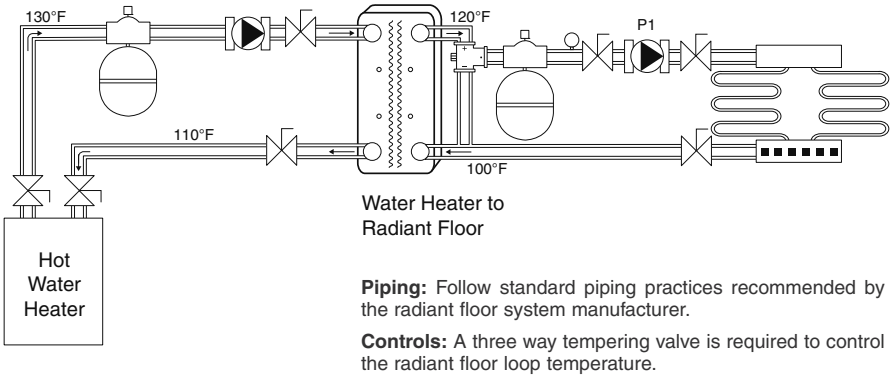
Step 2 From the table on Page 8, select the Heat Exchanger model using the second column. This allows a 130˚F water heater to provide 120˚F supply water to the radiant floor mixing loop.

Use FP models for city water and softened water.

Use MPN models for hard water, well (ground) water, and coastal waters.

For example: For a 40,000 BTUH requirement, select model FP5x12-20 (1"MPT). If well water use the closest matching model, MPN5x12-20 (1"MPT) from page 8.

Step 3 Select your pump(s) based on the minimum recommended flow rates shown on the table.



Water Heater to Radiant Floor

Piping: Follow standard piping practices recommended by the radiant floor system manufacturer.

Controls: A three way tempering valve is required to control the radiant floor loop temperature.

Start-up: Adjust the 3 way tempering valve to obtain the desired radiant loop set point. Then, with the radiant floor loop at or near full load, adjust the boiler side bypass/balancing valve to obtain the proper water temperature return to the boiler (ie, 150˚F)

Domestic Hot Water
Selections

For Domestic Hot Water heating applications, FlatPlate® heat exchangers are ideal and offer a compact, high output capacity. Used in both hot water boiler (FP Series) and steam applications (MPN Series) these heat exchangers offer significant advantages over shell & tube, tank & coil, U-tube bundles, and older technologies. These advantages include 1/5 the size and weight, easier installation and rigging, easy maintenance, faster response and rugged long life use.

FlatPlate® models are excellent for both new construction and replacement applications.

Three types of piping installations are typical.

Recirc to Tank only: In most residential and light commercial applications, a re-circ pump to the hot water tank is typical.

Recirc Loop in Building: For many commercial and industrial applications, a re-circ loop in the building is used, with or without a hot water storage tank.

Instantaneous: In a few installations, instantaneous hot water heating can be used.

To select a heat exchanger for all three of the above Domestic Hot Water heating applications:

Step 1 Select the BTUH capacity required.

Step 2 From the table, select the Heat Exchanger model shown.
Use FP models for water boilers.
Use MPN models for steam boilers.

Step 3 Select your pump(s) based on the minimum recommended flow rates shown on the table. Note: Table 1 is based on 50˚F to 140˚F standard temperature rise, and the minimum flow rates are 1.5x the corresponding flow for this temperature rise, to maximize BTUH output, and minimize scaling.
(If instantaneous hot water heating, same heat exchanger applies, but no minimum flow required.)

Domestic Hot Water

***Boiler*: 180°F Supply, 150° Return *Domestic*: 50°F Return, 140° Supply**

3"x8" Models	No. of Plates	Capacity (Btu/hr)	Side-A (Domestic) (GPM)	Side-A (Domestic) PD (psi)	Side-B (Boiler) (GPM)	Side-B (Boiler) PD (psi)
FG3X8-14 (3/4" MPT)	14	18,000	0.4	0.1	1.2	0.2
FG3X8-14 (3/4" MPT)	14	50,000	1.1	0.2	3.4	1.2
FG3X8-14 (3/4" MPT)	14	75,000	1.6	0.5	5.1	2.6
FG3X8-20 (3/4" MPT)	20	100,000	2.2	0.4	6.3	2.5

***Boiler*: 180°F Supply, 150° Return *Domestic*: 50°F Return, 140° Supply**

5"x12" Models	No. of Plates	Capacity (Btu/hr)	Side-A (Domestic) (GPM)	Side-A (Domestic) PD (psi)	Side-B (Boiler) (GPM)	Side-B (Boiler) PD (psi)
FG5X12-4 (3/4" MPT)	4	18,000	0.4	0.7	1.2	1.1
FG5X12-4 (3/4" MPT)	4	30,000	0.6	1.4	2.0	2.8
FG5X12-4 (3/4" MPT)	4	40,000	0.8	2.4	2.7	4.8
FG5X12-6 (3/4" MPT)	6	50,000	1.1	1.1	3.4	3.4
FG5X12-6 (3/4" MPT)	6	60,000	1.3	1.4	4.0	4.8
FG5X12-8 (3/4" MPT)	8	70,000	1.5	1.0	4.7	3.7
FG5X12-8 (3/4" MPT)	8	80,000	1.7	1.3	5.4	4.8
FG5X12-10 (3/4" MPT)	10	90,000	2.0	1.0	6.1	3.9
FG5X12-10 (3/4" MPT)	10	100,000	2.2	1.2	6.8	4.8
FG5X12-12 (3/4" MPT)	12	125,000	2.7	1.2	8.5	5.2
FG5X12-14 (3/4" MPT)	14	150,000	3.3	1.2	10.2	5.4
FG5X12-16 (3/4" MPT)	16	175,000	3.9	1.2	11.9	5.7
FG5X12-20 (1" MPT)	20	200,000	4.4	1.0	13.6	4.8
FG5X12-24 (1" MPT)	24	250,000	5.5	1.0	17.0	5.2
FG5X12-24 (1" MPT)	24	300,000	6.7	1.3	20.4	7.3
FG5X12-24 (1" MPT)	24	350,000	7.8	1.6	23.8	9.7
FG5X12-30 (1" MPT)	30	400,000	8.9	1.5	27.2	8.3
FG5X12-36 (1" MPT)	36	450,000	10.0	1.3	30.6	7.5
FG5X12-36 (1" MPT)	36	500,000	11.1	1.4	34.1	9.1
FG5X12-40 (1-1/4" MPT)	40	600,000	13.4	1.6	40.9	10.6
FG5X12-50 (1-1/4" MPT)	50	700,000	15.6	1.5	47.7	9.8
FG5X12-60 (1-1/4" MPT)	60	800,000	17.8	1.5	54.5	9.5
FG5X12-70 (1-1/4" MPT)	70	900,000	20.1	1.5	61.3	9.6
FG5X12-80 (1-1/4" MPT)	80	1,000,000	22.3	1.5	68.2	10.0

***Boiler*: 180°F Supply, 150° Return *Domestic*: 50°F Return, 140° Supply**

10"x20" Models	No. of Plates	Capacity (Btu/hr)	Side-A (Domestic) (GPM)	Side-A (Domestic) PD (psi)	Side-B (Boiler) (GPM)	Side-B (Boiler) PD (psi)
FP10X20L-20 (1-1/2" MPT)	20	700,000	15.6	1.5	47.7	7.4
FP10X20L-24 (1-1/2" MPT)	24	900,000	20.1	1.6	61.3	8.4
FP10X20L-30 (2" MPT)	30	1,000,000	22.3	1.3	68.1	6.9
FP10X20L-36 (2" MPT)	36	1,250,000	27.9	1.3	85.2	7.5
FP10X20L-40 (2-1/2" MPT)	40	1,500,000	33.5	1.5	102.2	8.6
FP10X20L-50 (2-1/2" MPT)	50	1,750,000	39.1	1.3	119.3	7.8
FP10X20L-50 (2-1/2" MPT)	50	2,000,000	44.6	1.7	136.3	9.8
FP10X20L-60 (2-1/2" MPT)	60	2,250,000	50.2	1.5	153.4	9.1
FP10X20L-70 (2-1/2" MPT)	70	2,500,000	55.8	1.4	170.4	8.6
FP10X20L-80 (2-1/2" MPT)	80	2,750,000	61.4	1.4	187.5	8.5
FP10X20L-80 (2-1/2" MPT)	80	3,000,000	67.0	1.6	204.5	9.9

Larger models are available.

Domestic Hot Water
Selections

Diagram 1-Recirc to Tank

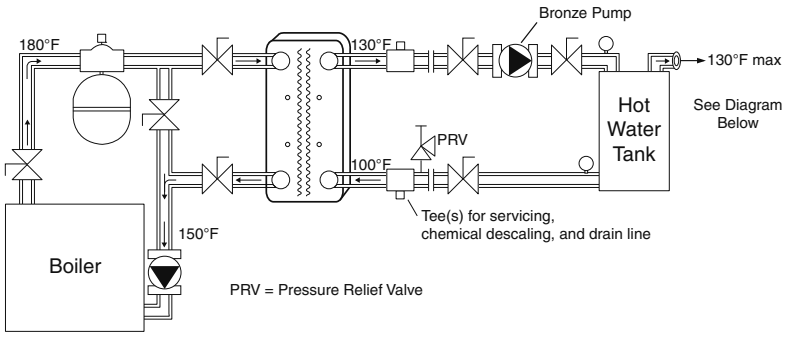


Diagram 2-Recirc to Building Loop

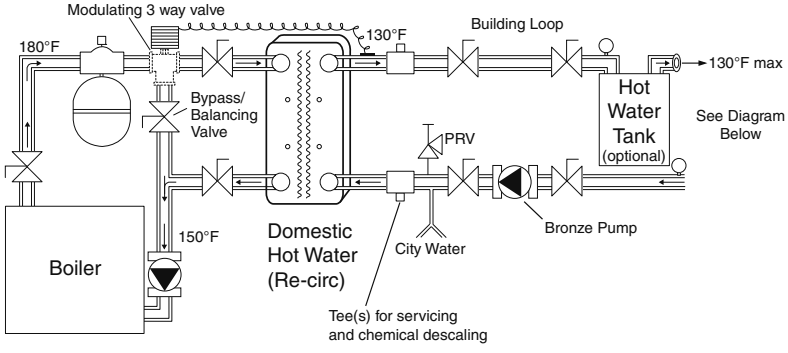
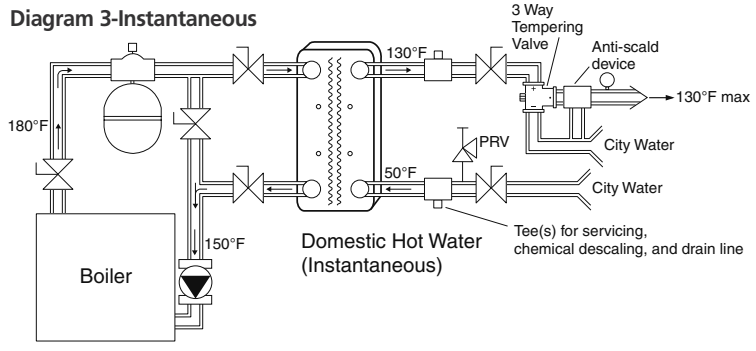


Diagram 3-Instantaneous



Piping: Tee(s) on the output side of the HX are recommended for convenience in event that future chemical descaling and cleaning is required.

Controls: Typical control of the pumps (Recirc to Tank only) should use an aqua stat in the hot water storage tank to maintain set point temperature (ie, 130˚F).

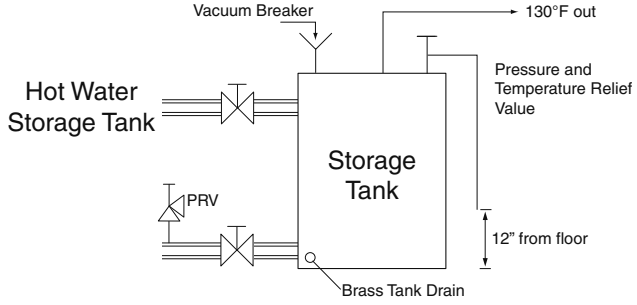
Controls for Re-circ Loops: For re-circulated domestic hot water systems (ie apartments, hospitals, factories and office buildings), a motorized three way mixing valve is *required on the boiler side*, to be modulated based on *leaving water temperature* leaving the heat exchanger into the domestic water loop. The hot water loop pump runs continuously. This maintains the hot water set point for the loop and storage tank. The re-circ pump should flow 100% of the return loop water through the heat exchanger, then to the storage tank (if required, depending upon boiler capacity) at all times to minimize scaling and maximize BTUH output. City water inlet is recommended before the heat exchanger and after the pump, to maximize the heat exchanger capacity.

Controls for Instantaneous Water Heating: A three way tempering valve is required, as well as an anti-scalding safety device must be installed. The boiler pump should run continuously.

Controls for Steam Systems: A modulating steam valve and proper steam trapping is required.

Start-up: The bypass/balancing valve should be adjusted at full load to obtain the proper return water temperature to the boiler.

For applications with a recirc domestic hot water loop, the modulating 3 way valve should be adjusted so that it maintains proper domestic water temperature, and does not hunt or overshoot. *Slow to medium response rate is recommended.*



NOTE: Storage tanks over 120 gals. or 200,000 BTU must have ASME Certification.

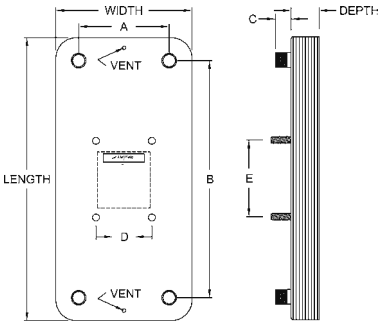
Domestic Hot Water/Double Wall
Selections

The DW Series is a Double Wall, Vented Heat Exchanger designed to meet local and state plumbing codes for double separation of potable water from boiler water, and other non-potable fluids. As a cost effective, full range heat exchanger, the DW Series is a "TRUE" Double Wall Vented design, with double wall plates and double seal fluid ports, both of which have positive leak detection. The DW Series also has "FULL THICKNESS" 316L copper brazed plates for longer life and reliability. Highly compact and easy to install. Ideal for new construction or shell & tube replacement. UL Listed. Optional ASME Code.

Double Wall, Vented

***Boiler*: 180°F Supply, 150° Return *Domestic*: 50°F Return, 140° Supply**

10"x20" Models	No. of Plates	Capacity (Btu/hr)	Side-A (Boiler) (GPM)	Side-A (Boiler) PD (psi)	Side-B (Domestic) (GPM)	Side-B (Domestic) PD (psi)
DW10X20-6 (1" MPT)	6	27,500	1.8	5.0	0.6	0.4
DW10X20-10 (1" MPT)	10	55,000	3.7	5.0	1.2	0.8
DW10X20-14 (1" MPT)	14	82,000	5.5	5.0	1.8	0.8
DW10X20-18 (1" MPT)	18	110,000	7.5	5.0	2.4	1.2
DW10X20-22 (1" MPT)	22	135,500	9.2	5.0	3.0	1.2
DW10X20-30 (1-1/4" MPT)	30	177,500	12.1	4.4	3.9	1.2
DW10X20-42 (1-1/4" MPT)	42	240,000	16.3	4.0	5.3	1.2
DW10X20-50 (1-1/2" MPT)	50	283,000	19.2	4.0	6.3	1.2
DW10X20-62 (1-1/2" MPT)	62	347,000	23.6	4.0	7.7	1.2
DW10X20-74 (1-1/2" MPT)	74	411,000	28.0	4.0	9.1	1.2
DW10X20-94 (2" MPT)	94	515,000	35.1	4.0	11.5	1.2
DW10X20-110 (2" MPT)	110	600,000	40.9	4.0	13.4	1.2
DW10X20-134 (2" MPT)	134	730,000	49.7	4.0	16.3	1.2
DW10X20-154 (2" MPT)	154	839,500	57.2	4.0	18.7	1.2
DW10X20-198 (2" MPT)	198	1,075,000	73.3	4.0	24.0	1.2



DW 10"x20" Models	No. of Plates	Width (inches)	Length (inches)	Depth (inches)	Connections MPT	GPM @ 5 psig PD Side-A & B	Weight (lbs)
DW10X20-6 (1" MPT)	6	9.8	20.3	1.0	1"	1.8	18
DW10X20-10 (1" MPT)	10	9.8	20.3	1.4	1"	3.7	22
DW10X20-14 (1" MPT)	14	9.8	20.3	1.8	1"	5.5	26
DW10X20-18 (1" MPT)	18	9.8	20.3	2.1	1"	7.5	31
DW10X20-22 (1" MPT)	22	9.8	20.3	2.5	1"	9.2	35
DW10X20-30 (1-1/4" MPT)	30	9.8	20.3	3.3	1-1/4'	12.1	44
DW10X20-42 (1-1/4" MPT)	42	9.8	20.3	4.4	1-1/4"	16.3	57
DW10X20-50 (1-1/2" MPT)	50	9.8	20.3	5.1	1-1/2"	19.2	66
DW10X20-62 (1-1/2" MPT)	62	9.8	20.3	6.3	1-1/2"	23.6	79
DW10X20-74 (1-1/2" MPT)	74	9.8	20.3	7.4	1-1/2"	28.0	92
DW10X20-94 (2" MPT)	94	9.8	20.3	9.3	2"	35.1	114
DW10X20-110 (2" MPT)	110	9.8	20.3	10.8	2"	40.9	132
DW10X20-134 (2" MPT)	134	9.8	20.3	13.0	2"	49.7	158
DW10X20-154 (2" MPT)	154	9.8	20.3	14.9	2"	57.2	180
DW10X20-198 (2" MPT)	198	9.8	20.3	19.0	2"	73.3	229

NOTES: 1. Design Working Pressure: 450 psig.
2. All units are standard models.
3. Made with 316L Stainless Alloy, Copper Brazed.
4. Stainless steel MPT fittings and mounting stud bolts.
5. For ASME versions, put "-UM" after the model number; Example DW10x20-50 (1-1/2" MPT)-UM
6. For International versions, connections are BSPT; Example DW10x20-50 (1-1/2" BSPT)

Swimming Pools & Spas
Selections

Selecting a FlatPlate® Heat Exchanger for Swimming Pool Applications is quick and easy, based on the Total Pool Capacity (gallons), Heat Loss of the pool and the Heat Up Rate desired. MPN Series is designed for Swimming Pool applications where chemically treated water and biological elements are present.

Note: MPN Series Heat Exchangers use a special 254SMO Stainless Alloy and MUST be used in pool environments. Materials such as 316 Stainless steel will corrode and fail due to chlorine, and other chemical and biological elements typical in pool water.

Swimming Pools

To select a Heat Exchanger for Boiler to Pool Water Heating:

Step 1 Select the Heat Up Rate Desired

Pool Use	Heat Up Rate
Periodic Use Only (weekends, holidays)	2˚F/hour
Extended Use (summer season)	1˚F/hour

Step 2 Determine Pool Capacity

Rectangular Pools
Capacity (gallons) = _____Length (ft) x _____Width (ft) x _____Average Depth (ft) x 7.5 gallons/cu ft

Circular Pools
Capacity (gallons) = _____Diameter^2 (ft) x _____Avg Depth (ft) x .785 x 7.5 gallons/cu ft

Swimming Pools & Spas

1∞F/hr Heat Up Rate					2∞F/hr Heat Up Rate			
Pool Capacity (Gallons)	Boiler Output Required (Btu/hr)	Boiler Side Minimum (GPM)	Pressure Drop (psig)	*GEA FlatPlate Models*	Boiler Output Required (Btu/hr)	Boiler Side Minimum (GPM)	Pressure Drop (psig)	*GEA FlatPlate Models*
1,000	8,345	2	8.7	**MPN5X12-4 (1" MPT)**	16,690	2	8.7	**MPN5X12-4 (1" MPT)**
2,000	16,690	2	8.7	**MPN5X12-4 (1" MPT)**	33,380	2	2.4	**MPN5X12-6 (1" MPT)**
4,000	33,380	2	2.4	**MPN5X12-6 (1" MPT)**	66,760	4	4.1	**MPN5X12-8 (1" MPT)**
6,000	50,070	3	5.1	**MPN5X12-6 (1" MPT)**	100,140	7	6.9	**MPN5X12-10 (1" MPT)**
8,000	66,760	4	4.1	**MPN5X12-8 (1" MPT)**	133,520	9	11.0	**MPN5X12-10 (1" MPT)**
10,000	83,450	6	5.1	**MPN5X12-8 (1" MPT)**	166,900	11	5.7	**MPN5X12-16 (1" MPT)**
12,000	100,140	7	6.9	**MPN5X12-10 (1" MPT)**	200,280	13	7.8	**MPN5X12-16 (1" MPT)**
15,000	125,175	8	8.0	**MPN5X12-10 (1" MPT)**	250,350	17	8.1	**MPN5X12-20 (1-1/4" MPT)**
20,000	166,900	11	5.7	**MPN5X12-16 (1" MPT)**	333,800	22	9.2	**MPN5X12-24 (1-1/4" MPT)**
25,000	208,625	14	9.0	**MPN5X12-16 (1" MPT)**	417,250	28	9.3	**MPN5X12-30 (1-1/4" MPT)**
30,000	250,350	17	8.1	**MPN5X12-20 (1-1/4" MPT)**	500,700	33	7.4	**MPN5X12-40 (1-1/4" MPT)**
35,000	292,075	18	9.1	**MPN5X12-20 (1-1/4" MPT)**	584,150	36	8.7	**MPN5X12-40 (1-1/4" MPT)**
40,000	333,800	19	6.9	**MPN5X12-24 (1-1/4" MPT)**	667,600	38	6.6	**MPN5X12-50 (1-1/4" MPT)**
45,000	375,525	21	5.4	**MPN5X12-30 (1-1/4" MPT)**	751,050	43	8.4	**MPN5X12-50 (1-1/4" MPT)**
50,000	417,250	24	7.0	**MPN5X12-30 (1-1/4" MPT)**	834,500	48	7.6	**MPN5X12-60 (1-1/4" MPT)**
60,000	500,700	29	5.8	**MPN5X12-40 (1-1/4" MPT)**	1,001,400	57	8.4	**MPN5X12-70 (1-1/4" MPT)**
70,000	584,150	33	7.5	**MPN5X12-40 (1-1/4" MPT)**	1,168,300	60	13.6	**MPN10X20L-20 (1-1/2" MPT)**
80,000	667,600	38	6.6	**MPN5X12-50 (1-1/4" MPT)**	1,335,200	69	12.1	**MPN10X20L-24 (1-1/2" MPT)**
90,000	751,050	43	8.3	**MPN5X12-50 (1-1/4" MPT)**	1,502,100	77	9.8	**MPN10X20L-30 (2" MPT)**
100,000	834,500	48	7.6	**MPN5X12-60 (1-1/4" MPT)**	1,669,000	86	11.7	**MPN10X20L-30 (2" MPT)**
125,000	1,043,125	60	9.2	**MPN5X12-70 (1-1/4" MPT)**	2,086,250	107	12.5	**MPN10X20L-36 (2" MPT)**
150,000	1,251,750	54	10.8	**MPN10X20L-24 (1-1/2" MPT)**	2,503,500	129	9.6	**MPN10X20L-50 (2-1/2" MPT)**
175,000	1,460,375	75	9.3	**MPN10X20L-30 (2" MPT)**	2,920,750	150	9.3	**MPN10X20L-60 (2-1/2" MPT)**
200,000	1,669,000	86	11.7	**MPN10X20L-30 (2" MPT)**	3,338,000	171	9.2	**MPN10X20L-70 (2-1/2" MPT)**

NOTES:
1. Typical Design Conditions: 180°F Boiler Water and 80°F Pool Water to the Heat Exchanger.
2. Install a Zine Anode on the Pool side piping when using an Electronic Chlorinator.
3. Bypass/Balancing valve on Pool side of Heat Exchanger REQUIRED to allow for full pool pump flow.
4. Pool side pressure drop for all models ranges from 4.0 psig or higher depending on setting of Bypass/Balance valve.
5. For 160°F Boiler Water, increase product model size by 1.5 (ie, MPN5x12-16 at 180°F, use MPN5x12-24 at 160°F).
6. For 200°F Boiler Water and Steam, use the same model size, multiply minimum Boiler GPM by 0.60.
7. Materials used are; 254SMO Stainless Alloy, Nickel Braze, Stainless Steel MPT fittings and mounting studs.
8. Design Working Pressure: 300 psig.
9. Conversion from psig to ft-head. Multiply psig value by 2.31.

Swimming Pools & Spas

Selections

Step 3 Select the Heat Exchanger and Boiler Output Required.

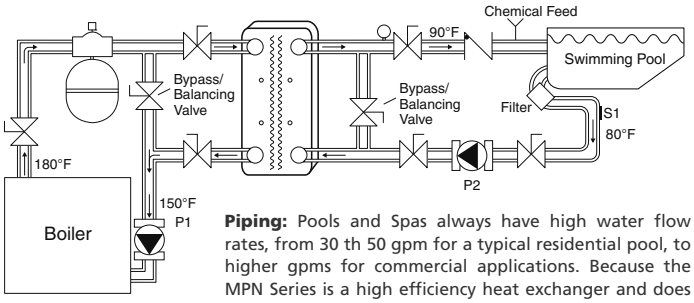
From the Selection table, based on the Pool Capacity (gallons) select the appropriate heat exchanger and boiler capacity based on the Heat Up Rate.

For Example: For a 15x30 ft pool, averaging 5.5 ft deep, the pool capacity is 18,563 gallons. Using the Selection table, a 1˚F/hr heat up rate, requires 166,900 BTUH and a MPN5x12-16 heat exchanger.

Step 4 Check for Heat Loss to surroundings.

Heat Loss (BTUH) = 12 x _____Pool Surface Area (sq ft) x _____(Desired Pool Temp(˚F) – _____Coldest Ambient Temp During Use (˚F))

Use this calculation to verify that the Boiler output exceeds the heat loss to surroundings.



Piping: Pools and Spas always have high water flow rates, from 30 th 50 gpm for a typical residential pool, to higher gpms for commercial applications. Because the MPN Series is a high efficiency heat exchanger and does not require the full pool gpm flow, a BYPASS balancing valve is required to bypass 50% to 80% of the pool water. This bypass/balancing valve should be adjusted and permanently set at start-up.

Chemical feeds MUST be down stream from the heat exchanger, and a check valve should also be installed to prevent back-flow of chemicals into the heat exchanger when the pump is not in operation.

Controls: Temperature control of the pool should be based on a return water temperature stat, controlling (on/off) the boiler and boiler pump. Temperature control of the 90-100˚F feed to the pool should be controlled by permanent adjustment of the bypass valve.

Startup: Start up the system, and adjust the pool side bypass valve so that the pool heats up no faster then 2˚F/hr, initially. After the pool reaches approximately 78-80˚F, and the boiler water is entering at 180˚F, adjust the pool side bypass/balancing valve to obtain 90˚F to 100˚F water to the pool. Then adjust the boiler bypass/ balancing valve so that approximately 150˚F water is being returned to the boiler.

***NOTE:** The use of Electronic Chlorinators requires the installation of a Zinc Anode in the pool/spa side piping.

Spas

To select a MPN Series Heat Exchanger for a Spa:

Step 1 Determine the Capacity (gallons) of the Spa or Hot Tub. (See Step 2 in Pool calculations)

Step 2 From the Spa selection table, based on the Spa Capacity (gallons) select the appropriate heat exchanger and boiler capacity based on the Heat Up Rate.

Note: A spa is typically operated at 100˚F to 105˚F, requires a faster heat up rate, and due to aeration, has a higher loss to ambient surroundings. The table below is based on 3F/hr plus ambient losses due to aeration.

2˚F/Hr Heat up Rate, plus Aeration			
Spa Capacity Gallons	Boiler Output Required (BTUH)	Boiler Side Minimum GPM	**GEA FlatPlate Model**
750	31,300	2	**MPN5x12-6 (1" MPT)**
1,000	41,725	3	**MPN5x12-8 (1" MPT)**
1,500	62,588	4	**MPN5x12-10 (1" MPT)**
2,000	83,450	6	**MPN5x12-16 (1" MPT)**
4,000	166,900	11	**MPN5x12-20 (1-1/4" MPT)**
6,000	250,350	17	**MPN5x12-30 (1-1/4" MPT)**
8,000	333,800	22	**MPN5x12-40 (1-1/4" MPT)**

NOTES:
1. Typical Design Conditions: 180˚F Boiler Water to Heat Exchanger and 105˚F Spa Water.
2. Bypass/Balancing valve on Spa side of Heat Exchanger REQUIRED to allow for full spa pump flow.
3. Spa side pressure drop for all models ranges from 4.0 psig or higher depending on setting of Bypass/Balance valve.
4. For 160˚F Boiler Water, increase product model size by 1.5 (ie, MPN5x12-16 at 180˚F, use MPN5x12-24 at 160˚F).
5. For 200˚F Boiler Water and Steam, use the same model size, multiply minimum Boiler GPM by 0.60.
6. Materials used are; 254SMO Stainless Alloy, Nickel Braze, Stainless Steel MPT fittings and mounting studs.
7. Design Working Pressure: 300 psig.
8. Conversion from psig to ft-head. Multiply psig value by 2.31.

Snow Melt
Selections

FlatPlate® heat exchangers are very cost effective in Snow Melt applications and provide high output, fast response and separation of the fluids. Used for Boiler water to Glycol heat transfer, and in some applications, zone isolation, the FP Series provides an easy solution to Snow Melt systems.

Typical Snow Melt systems are Boiler Water to Glycol 10% to 40% (typical) depending upon location and weather conditions, with the heat exchanger providing isolation of the glycol from the boiler water, providing an oxygen barrier to the boiler and protecting other components in the boiler system.

To Select a Heat Exchanger for a Snow Melt application:

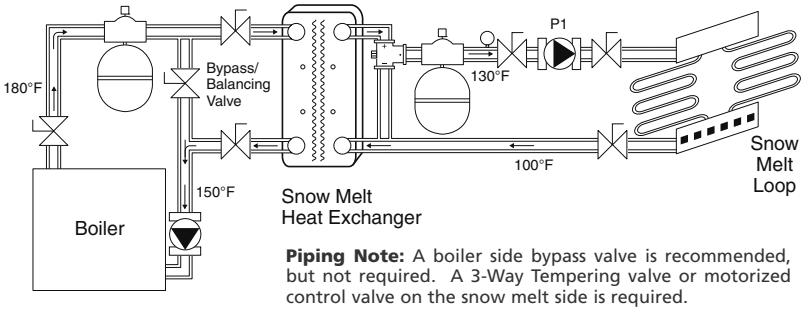
Step 1 Determine the Total BTUH required (from guidance from your Radiant Tube supplier) for the Snow Melt system.

Step 2 Select the appropriate FP Model from the table, based on the Total BTUH required.

If the Boiler water temperature is 180˚F or higher, or steam, use the Table shown. If the Boiler water temperature is less than 180˚F Contact your local GEA FlatPlate Representative.

Step 3 Check the total GPM required. If the GPM requirement of the snow melt system is greater than the GPM listed in the selection table, select a larger model to match the GPM and pressure drop needs, or install a Bypass balancing valve. This will allow full flow and optimum pressure drop for the pump. This applies to the GPM (s) on both Boiler and Glycol sides.

For Example: For a snow melt system requiring a 122,000 BTUH, from the Table, Model FP5x12-14 (3/4" MPT) would be selected. If the GPM requirement is greater than 8.3 use the next larger model to match the pump requirement.



Snow Melt
Heat Exchanger

Piping Note: A boiler side bypass valve is recommended, but not required. A 3-Way Tempering valve or motorized control valve on the snow melt side is required.

Controls: A 3-Way Tempering Valve is required to allow for adjustment of the snow melt side, and to limit the temperature of the glycol. For radiant tubing in sand maximum glycol temperature is 140˚F. In asphalt and concrete, maximum temperature is typically 150˚F. Recommended set point 130˚F for the glycol snow melt side.

Start-up: Adjust the 3-Way tempering valve to 130˚F or the desired set point.

Snow Melt

***Boiler*: 180°F Supply, 150° Return** ***Snow Melt*: 100°F Return, 130° Supply (40% PG)**

	No. of	Capacity	Side-A (Boiler)		Side-B (Snow Melt)	
5"x12" Models	**Plates**	**(Btu/hr)**	**(GPM)**	**PD (psi)**	**(GPM)**	**PD (psi)**
FG5X12-4 (3/4" MPT)	4	20,500	1.3	4.9	1.4	2.5
FG5X12-6 (3/4" MPT)	6	41,000	2.7	4.9	2.9	4.0
FG5X12-8 (3/4" MPT)	8	61,000	4.1	4.9	4.4	4.8
FG5X12-10 (3/4" MPT)	10	82,000	5.5	4.9	5.9	5.5
FG5X12-12 (3/4" MPT)	12	102,000	6.9	4.9	7.3	5.8
FG5X12-14 (3/4" MPT)	14	122,000	8.3	4.9	8.8	6.1
FG5X12-16 (3/4" MPT)	16	144,000	9.8	5.0	10.3	6.4
FG5X12-20 (1" MPT)	20	185,000	12.6	5.0	13.3	6.7
FG5X12-24 (1" MPT)	24	225,000	15.3	5.0	16.2	6.9
FG5X12-30 (1" MPT)	30	282,000	19.2	4.9	20.3	7.0
FG5X12-36 (1-1/4" MPT)	36	337,000	22.9	4.8	24.3	7.0
FG5X12-40 (1-1/4" MPT)	40	372,500	25.4	4.8	26.9	7.0
FGP5X12-50 (1-1/4" MPT)	50	457,000	31.1	4.7	33.0	7.0
FG5X12-60 (1-1/4" MPT)	60	600,000	40.9	5.8	43.3	8.5
FG5X12-70 (1-1/4" MPT)	70	675,000	46.0	5.8	48.7	8.5
FG5X12-80 (1-1/4" MPT)	80	800,000	54.5	6.7	57.7	9.7

***Boiler*: 180°F Supply, 150° Return** ***Snow Melt*: 100°F Return, 130° Supply (40% PG)**

	No. of	Capacity	Side-A (Boiler)		Side-B (Snow Melt)	
10"x20" Models	**Plates**	**(Btu/hr)**	**(GPM)**	**PD (psi)**	**(GPM)**	**PD (psi)**
FP10X20L-20 (1-1/2" MPT)	20	500,000	34.0	4.9	36.1	6.8
FP10X20L-24 (1-1/2" MPT)	24	650,000	44.3	5.5	46.9	7.9
FP10X20L-30 (2" MPT)	30	850,000	57.9	5.8	61.3	8.5
FP10X20L-36 (2" MPT)	36	1,050,000	71.6	6.0	75.8	9.0
FP10X20L-40 (2" MPT)	40	1,175,000	80.1	6.1	84.8	9.2
FP10X20L-50 (2-1/2" MPT)	50	1,525,000	103.9	6.5	110.1	10.0
FP10X20L-60 (2-1/2" MPT)	60	1,875,000	129.5	7.1	137.2	10.9
FP10X20L-70 (2-1/2" MPT)	70	2,150,000	153.4	7.5	162.4	11.5
FP10X20L-80 (2-1/2" MPT)	80	2,500,000	170.4	7.4	180.5	11.3
FP10X20L-90 (2-1/2" MPT)	90	2,750,000	187.5	7.5	198.6	11.3
FP10X20L-100 (2-1/2" MPT)	100	3,000,000	204.5	7.7	216.6	11.6

NOTES: 1. Larger models are available. Contact your local FlatPlate® representative
2. For 200° F Boiler Water use the same model size, multiply minimum Boiler GPM by 0.60.

Close Approach
Selections

FlatPlate® heat exchangers can be used in applications whereby the "Approach Temperatures" can be 10˚F or less, and as low as 2˚F. This means that the Heating (or Cooling) Source will Heat (or Cool) the Secondary load side to within a 2˚F to 10˚F of the Source temperature. This allows for a wide range of applications and versatility for utilizing FlatPlate® heat exchangers. FlatPlate® heat exchangers can be used for many Fluid to Fluid applications where a Heating (or Cooling) Source is used to transfer heat to a Load. Many applications include:

- **Boiler Water to Process**
- **Chilled Water to Process**
- **Glycol to Process Water**
- **Process Water to Process Water**
- **Hot Water Heater to Radiant Floor**
- **Cooling Tower/Free Cooling to Chilled Water loop**
- **Engine Water to Process**
- **High Pressure (300psi) Isolation to Low Pressure (150psi) Equipment**
- **Sea Water to Process (MPN Series)**

Diagram 1-Standard Piping Arrangement 10˚F and Higher Approach

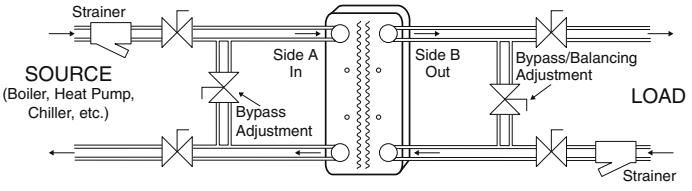
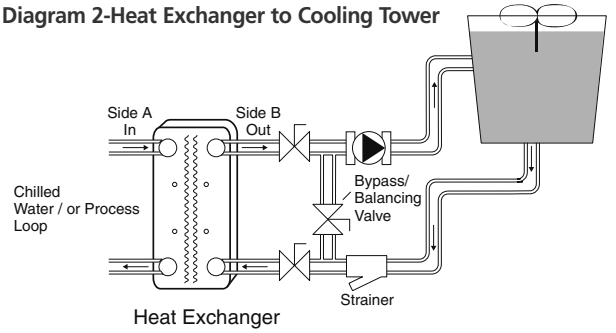


Diagram 2-Heat Exchanger to Cooling Tower



Heat Exchanger to Cooling Tower

"Approach Temperature" = Side A (Source) Entering Temperature (˚F) - Side B (Load) Leaving Temperature (˚F)

For Example:
Side A: 95˚F in , 85˚F out
Side B: 77˚F in , 87˚F out = 8˚F Approach

Temperature Difference (TD) of (Side A or Side B) are defined as:

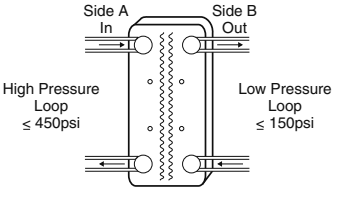
Entering Temperature - minus Leaving Temperature
For Example:
Side A: 95˚F in , 85˚F out = 10˚F TD for Side A
Side B: 77˚F in , 87˚F out = 10˚F TD for Side B

Optimum "Approach temperature" for a Brazed Plate Heat Exchanger is typically 10˚F for cost effective selections, yet 3˚F and 4˚F Approach temperatures are possible for special applications.

Ideal "Temperature Difference" (TD) is typically 10˚F and is widely prefered in many applications.

To select a Close Approach Heat Exchanger, use the Selection Tables.

Diagram 3-High Pressure Isolation



High Pressure Isolation (Interceptor)

Step 1 Determine the BTUH Heat transfer required

Step 2 Select the Approach Temperature desired for your application, then use the appropriate Table.

For example: For 100,000 BTUH Boiler water at 180˚F, to be used to heat water to 172˚F, an 8˚F approach, Model FP5x12-36 can be selected from the 8˚F Approach table. Note, the tables assume 10˚F temperature split on both the boiler (180˚F in/170˚F out) and 10˚F temperature split on the load side (162˚F in/172˚F out).

Step 3 For fluid temperatures below 80˚F, use the Temperature Correction Factor Table. Multiply the Correction Factor times the last two digits of the model number to obtain the appropriate model.

For example: If a FP5x12-50 is selected and one of the fluids is entering at 55˚F, multiply the last two digits of the model number by 1.21 (FP5x12-50) to obtain a FP5x12-60 as the appropriate selection.

Replacement HX'S
Plate

FlatPlate®'s heat exchangers are easy replacement models for several import brands used in a wide range of HVAC/R equipment. Because FlatPlate®'s design is a "Next Generation" design, all FlatPlate® models meet or exceed performance and design pressure ratings of these models. **Use the Selection Chart below,**

Find the FlatPlate® Model which has the:
1) Closest model match, and
2) Design Applications/performance required, and
3) Approximate Unit dimensions

REPLACEMENT HX'S - Selection Table

Fluid to Fluid

GEA FlatPlate Models	Replaces SWEP, Elge Models	Replaces ALFA-LAVAL Models	Replaces Triangle & Weil McLain Models
FP3X8-14 (3/4" MPT)	B5*14	CB12-14 and CB14-14	TTP1-14E and WMBP1-14E
FP3X8-20 (3/4" MPT)	B5*20	CB12-20 and CB14-20	TTP1-20E and WMBP1-20E
FP3X8-30 (3/4" MPT)	B5*30	CB12-30 and CB14-30	TTP1-30E and WMBP1-30E
FP5X12L-4 (3/4" MPT)	B8*10	CB25-6 and CB26-6	TTP1-14E and WMBP1-14E
FP5X12L-6 (3/4" MPT)	B8*10	CB25-8 and CB26-8	TTP1-14E and WMBP1-14E
FP5X12L-8 (3/4" MPT)	B8*16	CB25-12 and CB26-12	TTP1-20E and WMBP1-20E, TTP3-14 and WMBP3-14
FP5X12-10 (3/4" MPT)	B8*20	CB25-14 and CB26-14	TTP4-10 and WMBP4-10
FP5X12-12 (3/4" MPT)	B8*20	CB25-16 and CB26-16	TTP1-30E and WMBP1-30E, TTP3-20 and WMBP3-20
FP5X12-14 (3/4" MPT)	B5*36 and B10*20	CB25-16 and CB26-16	TTP4-14 and WMBP4-14
FP5X12-16 (3/4" MPT)	B8*24	CB25-24 and CB26-24	TTP3-40 and WMBP3-40, TTP4-14 and WMBP4-14
FP5X12-20 (1" MPT)	B8*36 and B10*30	CB25-28 and CB26-28	TTP3-40 and WMBP3-40
FP5X12-24 (1" MPT)	B8*40 and B10*30	CB25-34 and CB26-34	TTP4-24 and WMBP4-24
FP5X12-30 (1" MPT)	B10*40	CB25-44 and CB26-44	TTP4-30 and WMBP4-30
FP5X12-40 (1" MPT)	B10*50	CB25-54 and CB26-54	Not Available
FP5X12-50 (1" MPT)	B10*60	CB25-64 and CB26-64	TTP4-50 and WMBP4-50
FP10X20-20 (1-1/2" MPT)	B45*20 and B50*20	CB75-20 and CB76-20	TTP7-20 and WMBP7-20
FP10X20-24 (1-1/2" MPT)	B45*24 and B50*24	CB75-24 and CB76-24	TTP7-24 and WMBP7-24
FP10X20-30 (1-1/2" MPT)	B45*30 and B50*30	CB75-30 and CB76-30	TTP7-30 and WMBP7-30
FP10X20-40 (1-1/2" MPT)	B45*40 and B50*40	CB75-40 and CB76-40	TTP7-40 and WMBP7-40
FP10X20-50 (2" MPT)	B45*50 and B50*50	CB75-50 and CB76-50	TTP7-50 and WMBP7-50
FP10X20-60 (2" MPT)	B45*60 and B50*60	CB75-60 and CB76-60	TTP7-60 and WMBP7-60
FP10X20-70 (2" MPT)	B45*70 and B50*70	CB75-70 and CB76-70	TTP7-70 and WMBP7-70
FP10X20-80 (2" MPT)	B45*80 and B50*80	CB75-80 and CB76-80	TTP7-80 and WMBP7-80

For Larger Models contact your local GEA PHE Systems representative.

Dimensional Fit
For replacement applications, check the dimensional fit for the following units which maybe slightly larger or smaller than the unit it is replacing.
B5, E5, CB14, TTP1, WMBP1 models are 2.7"W x 8"H, to be replaced with a FlatPlate® 3x8 model, 3.3"W x 7.8"H
B10, CB25, CB26, TTP4, WMBP4 models are, 4.0"- 4.5"W x 12"H, to be replaced with a FlatPlate® 5x12 model, 4.9"W x 12"H
B45, B50, TTP7, WMBP7 models are, 9.5"-10"W x 20"H, to be replaced with a FlatPlate® 10x20 model, 9.8"W x 20"H
CB75, CB76 models are 7.5"W x 24.5"H to be replaced with a FlatPlate® 10x20 model, 9.8"W x 20"H

Pressure Rating
All FlatPlate® FP series models are rated for 450 psig, equal to or greater than the units listed above.
NOTE: TTP1… and WMBP1… models are 150 psig rating.
FlatPlate® models can be substituted at 300 psig rating.

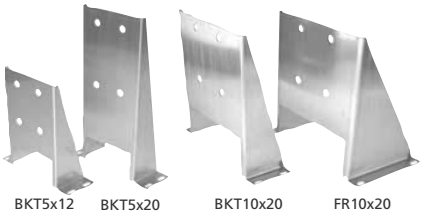
Failure Analysis
If the unit being replaced has been in service for less than 5 years (Plate Heat Exchanger or Shell & Tube), the cause or mode of failure may repeat itself, due to water quality, and other factors.
A failure analysis report can be performed by FlatPlate® for non-FlatPlate® models, for a nominal cost, as part of a replacement heat exchanger order.

Plate & Frame Replacements
Many Plate and Frame heat exchangers (with gaskets) sometimes fail over time and can also be replaced with a FlatPlate® model.
Information needed for replacement includes dimensions of the plates, number of plates, and GPM flow rates.
Please contact your local FlatPlate® representative for assistance.

Accessories

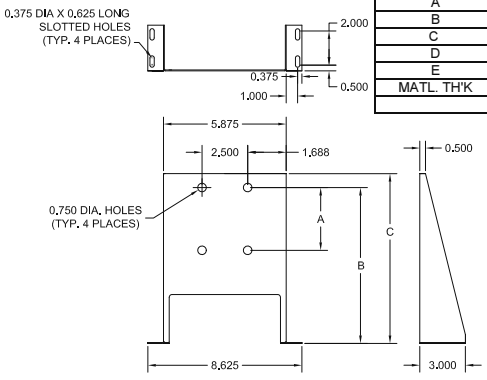
Mounting Brackets

Mounting of any brazed plate unit can be accomplished by 1) using a bar across the face of the unit, or, 2) mounting to a steel strut, or 3) by using a mounting bracket. Mounting brackets are designed for easy use, where applicable. BKT and FR models are all stainless steel.



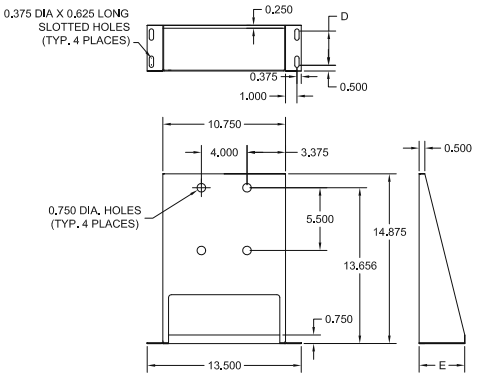
Bracket Model	Type
BKT5x12	Mounting Bracket for 5x12 models
BKT5x20	Mounting Bracket for 5x20 models
BKT10x20	Mounting Bracket for 10x20 models, 10 to 80 plates
FR10x20	Rugged Floor Mounting Frame for 10x20 models, 90 to 200 plates

BKT5x12 & BKT5x20



PART #	BKT10X20	FR10X20	BKT5X20	BKT5X12
PLATE COUNT	10-100 PL	110-220 PL	ALL	ALL
A			5.500	3.500
B			13.625	8.625
C			14.875	9.750
D	3.000	7.000		
E	4.000	8.000		
MATL. TH'K	14 GA	10 GA	14 GA	14 GA
MATERIAL: SA-240, 304 SS				

BKT & FR10x20



"Y" Strainers

A Water strainer is required for proper protection of the brazed plate fluid side for chillers, condensers, and fluid to fluid units. These strainers are cast bronze, FPT female pipe connection and rated for 400 psi working pressure at 150°F.

Model	Female Pipe connection	Mesh Strainer	GPM @ 1 psi PD	GPM @ 2 psi PD
STR3/4	3/4" FPT	20 mesh	18	26
STR1	1" FPT	20 mesh	28	40
STR1-1/4	1-1/4" FPT	20 mesh	42	60
STR1-1/2	1-1/2" FPT	20 mesh	70	100
STR2	2" FPT	20 mesh	110	140
STR2-1/2	2-1/2" FPT	20 mesh	140	190
STR3	3" FPT	20 mesh	180	260
STR4	4" FPT	20 mesh	300	420

For higher working pressure models or stainless steel versions, please contact the factory.

Zinc Anode

A Zinc Anode is required for all MCN & MPN models used in Swimming Pools with electronic chlorinators and for ALL applications where galvanic corrosion is possible. A Zinc Anode is installed and shipped with all MCN Condensers, and not provided with MPN fluid to fluid models.

Model	Female Pipe Connection
ANODE 3/8	3/8" FPT

Accessories

Insulation Kits

Insulation Kits are available and recommended for FP and all other FlatPlate® models to prevent heat loss and for other applications, such as low temperature glycols. Designed to be applied quickly in 10 minutes or less, the Insulation Kits consist of three sections: a pre-cut front, back and side panel made from 1/2" black Armaflex, with extra strength adhesive backing.

Minimum operating temperature: -40°F. Maximum operating temperature: 220°F

Insulation Kit Model 3x8" Models	Use with GEA FlatPlate Model FP & FPN
IN-FP3x8-14	FP3x8-14
IN-FP3x8-20	FP3x8-20
IN-FP3x8-30	FP3x8-30
IN-FP3x8-40	FP3x8-40

Insulation Kit Model 5x12" Models	Use with GEA FlatPlate Model FP, FPN & MPN
IN-FP5x12-8	FP5x12-8
IN-FP5x12-10	FP5x12-10
IN-FP5x12-12	FP5x12-12
IN-FP5x12-16	FP5x12-16
IN-FP5x12-20	FP5x12-20
IN-FP5x12-24	FP5x12-24
IN-FP5x12-30	FP5x12-30
IN-FP5x12-36	FP5x12-36
IN-FP5x12-40	FP5x12-40
IN-FP5x12-50	FP5x12-50
Larger models, use IN520-XX side wall, cut to 32.25" length	

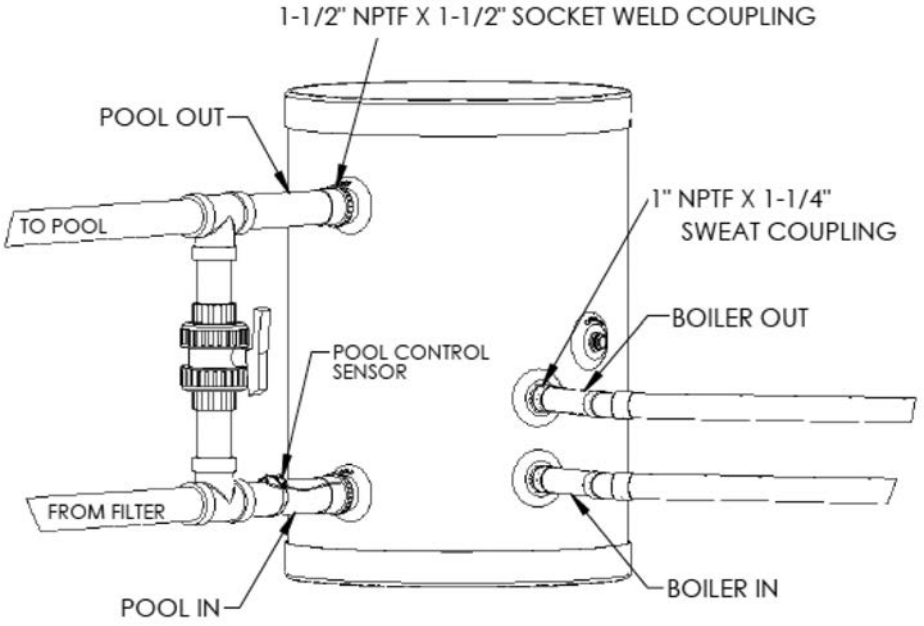
Insulation Kit Model 5x20" Models	Use with GEA FlatPlate Model FP, FPN
IN-FP5x20-8	FP5x20-8
IN-FP5x20-10	FP5x20-10
IN-FP5x20-12	FP5x20-12
IN-FP5x20-14	FP5x20-14
IN-FP5x20-20	FP5x20-20
IN-FP5x20-24	FP5x20-24
IN-FP5x20-30	FP5x20-30
IN-FP5x20-40	FP5x20-40
IN-FP5x20-50	FP5x20-50
IN-FP5x20-60	FP5x20-60
IN-FP5x20-70	FP5x20-70

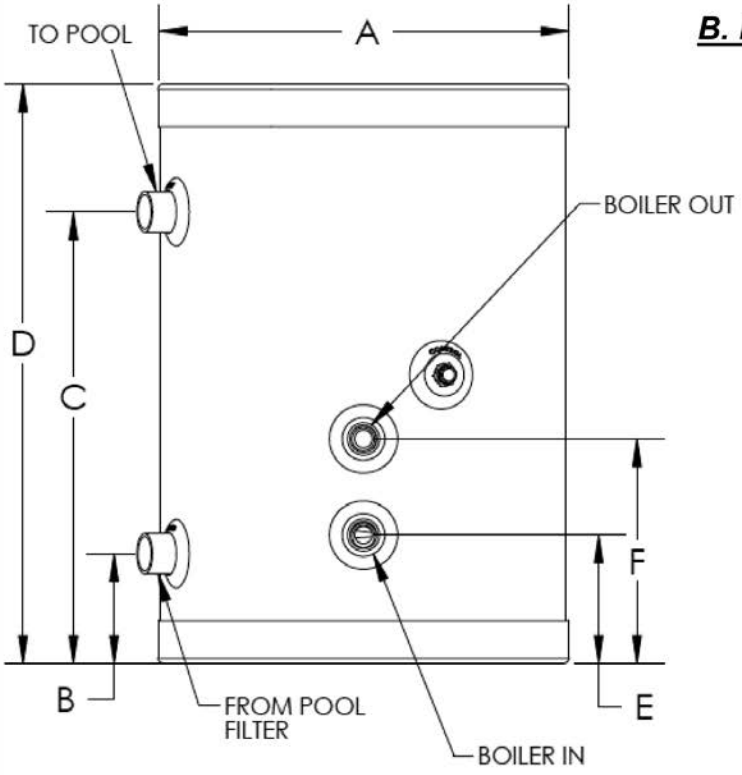
Insulation Kit Model 10x20" Models	Use with GEA FlatPlate Model FP, FPN & MPN
IN-FP10x20-20	FP10x20-20
IN-FP10x20-30	FP10x20-30
IN-FP10x20-40	FP10x20-40
IN-FP10x20-50	FP10x20-50
IN-FP10x20-60	FP10x20-60
IN-FP10x20-70	FP10x20-70
IN-FP10x20-90	FP10x20-90
IN-FP10x20-100	FP10x20-100
IN-FP10x20-130	FP10x20-130
IN-FP10x20-150	FP10x20-150
IN-FP10x20-170	FP10x20-170
IN-FP10x20-190	FP10x20-190

Models not shown, use the next size larger.

NOTES: 1. All insulation Kits are three piece die cut, with front, back and side wrap-a-round, 1/2" Armaflex, with peel off pre-glued backing.
2. Rated for 220°F maximum temperatures.
3. For <20°F, Two insulation kits recommended. Consult the Factory for correct models.

SUPERSTOR POOL HEATER: MODEL SSU-20PH
SWIMMING POOL AND SPA HEAT EXCHANGE





B. LOCATING THE WATER HEATER

If the pool heater is to be located outdoors, it must be in a covered area, protected from the rain and sun.

For winterizing, the pool heater must be completely drained and have one gallon of non-toxic, food-grade propylene glycol, FDA rated as GRAS (Generally Recognized As Safe) pumped into the heat exchanger to prevent freezing.

DIMENSIONS

MODEL	A	B	C	D	E	F	INLET/OUTLET
SSU-20PH	19.25"	5.00"	21.00"	27.00"	6.00"	10.50"	1-1/2"

SWIMMING POOL AND SPA HEAT EXCHANGE

A. PIPING TO THE POOL FILTER

The pool water side piping (pool in and pool out, see Figure 2) is recommended to be 1 ½" PVC. A bypass will be necessary between the inlet and outlet of the pool heater (see Figure 2). The bypass will allow the boiler to keep up with the pool heater. If the bypass is not installed, the boiler may not be able to provide adequate temperature.

B. PIPING TO THE BOILER

Piping between the boiler and pool heater should be 1 ¼" copper. It is very important to properly size the boiler circulator to match total system flow rates, pressure drop (feet of head), and boiler output (see Table 1). For example, if the boiler is 100,000 BTU/H, the system requires a 6 GPM flow rate through the heat exchanger. If the boiler is 125,000 BTU/H, the system requires a 7 GPM flow rate through the heat exchanger.

MODEL	REQ. BTU OUTPUT	RECC. FLOW RATE	HEAT EXCH. PRESSURE DROP	DIMENSIONS	
				DIA.	HEIGHT
SSU-20PH	100,000	6	4.5'	19 1/4"	27"
	125,000	7	7.0'	19 1/4"	27"
	150,000	8	9.2'	19 1/4"	27"
	195,000	9	10.6'	19 1/4"	27"
	200,000	10	12.5'	19 1/4"	27"

Table 1 – Pressure Drop through the Heat Exchanger

To achieve proper flow rates, calculate friction loss for the length of piping, plus the number of fittings, elbows, tees, pool heat exchanger, etc. Pool heat exchanger friction loss is 4.5' at 6 GPM, 7' at 7 GPM, and 9.2' at 8 GPM. The minimum boiler temperature must be maintained at 160oF or higher. Low boiler temperature will dramatically reduce the life of the boiler.

WATER HEATER SIZING FOR SWIMMING POOLS AND BAPTISTRIES						
HEATING TIME IN HOURS	FACTOR					
	20 DEG. F. RISE	25 DEG. F. RISE	30 DEG. F. RISE	40 DEG. F. RISE	50 DEG. F. RISE	60 DEG. F. RISE
6	40	50	60	80	100	120
12	20	25	30	40	50	60
24	10	12.5	15	20	25	30
48	5	6.3	*7.5	10	12.5	15
72	3.4	4.25	5.1	6.8	8.5	10.2
96	2.5	3.0	3.75	5.0	6.25	7.5
120	1.7	2.0	2.5	3.3	4.25	5.0
144	1.4	1.7	2.2	2.8	3.5	4.25
168	1.3	1.6	2.1	2.7	3.4	4.1
192	1.2	1.5	2.0	2.6	3.3	4.0
216	1.1	1.4	1.9	2.5	3.2	3.9
240	1.0	1.25	1.8	2.4	3.1	3.8

Table 2 – Water Heating Sizing - *Depending on Chart

MILJOCO CORPORATION

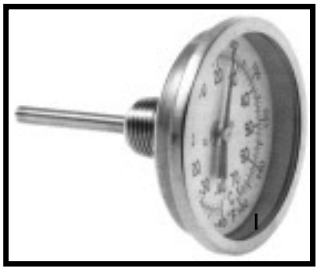
COMMERCIAL GRADE PRESSURE GAUGES

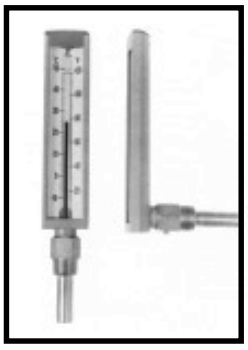
MODEL	DESCRIPTION	
MIL P4598L-04	Commercial Pressure Gauge 0-60 PSI, 4 1/2" Dial, Glass Lens, 1/4" NPT Connection. Lower Connection.	
PLF 2598L04	2 1/2", Dial 0/60 PSI liquid filled guage 1/4" NPT Lower Connection.	
MIL 1200	1/4" NPT Snubber to Elimination Pressure Pulsations & Clogging.	
MIL 1000	1/4" NPT Tee Handle Gauge for Quick Service-Glandless Valve.	
MIL 1300	1/4" NPT CRS Coil Syphon Use with Gauges on Steam Lines to Avoid Gauge Damage.	
MIL P1508L-04	Economy Pressure Gauge 0 to 60 PSI, Plastic Lens, 11/2" Dial 1/8" NPT Conn. Lower Connection.	
MIL P1508R-04	Economy Pressure Gauge 0 to 60 PSI, Plastic Lens 11/2" Dial, 1/8" NPT Conn. Rear Connection.	

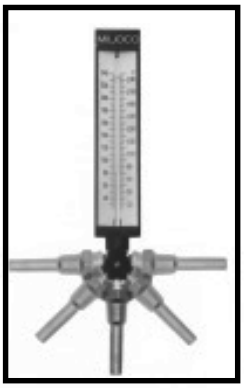
MILJOCO CORPORATION

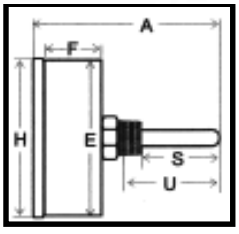
COMMERCIAL GRADE THERMOMETERS

MODEL	DESCRIPTION
MIL B3099-2-54	21/2", Stainless, Glass Lens Rear Connection- 0˚ to 250˚ F.
MIL BW02B	Well for B3099-2-54 3/4" NPT-2" Length.
MIL S551S	5" Commercial Vertical 30⁰ to 240⁰F - Straight Glass Lens-1/2" NPT.
MIL S551A	5" Commercial Vertical 30⁰ to 240⁰F - Straight.
MIL SX 935-50	9" Commercial Swivel Thermometer 30˚ to 240˚F, Glass Lens. Spirit Filled.
MIL W 35B	Well for MX or SX935-50 3/4" NPT/21/2" Immersion Length.
PB3008042	Pressure & Temperature 0-60 psi-70-250F 1/2" MPT Back Connection.
MILPB3008L042	Pressure & Temperature 0-60 psi-70-250F 1/2" MPT Lower Connection.









Hydronic Accessories

Watts Combination Temp./Press. Gauge — back mount, 60°–320°F/0–200 PSI.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Combination Gauge, 60°–320°F/0–200 PSI	1	705100	81003656	1

Temperature Gauge

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Temperature Gauge, 0°–200°F	1	704621	81000720	1

These **Temperature Gauges** are 3" in diameter. They are made with a continuously welded, stainless steel housing with a 2-1/2" long stem and 1/2" NPT threads. The black-on-white dials are marked in °F and °C, and are protected by a rugged crystal lens. Back mounted.

Brass Well for Temperature Gauge

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Brass Well for Temp. Gauge	1	850071	81000755	1

Brass Wells are used with temperature gauges to allow gauge removal or installation without draining the system. Made of solid brass with a 3/4" MNPT to transition to copper and 1/2" FNPT to accept the temperature gauge.

Pressure Gauge

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Pressure Gauge, 0–60 PSI	1	850031	81000752	1

These **Pressure Gauges** are made of stainless steel construction with black numbers in psi and kpa on a white dial face covered with a durable lens. Back mounted.

StickTemps™ — a Watts Radiant exclusive!

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
StickTemp	1	850100	81000757	1

These liquid-crystal, digital **StickTemp** thermometers are an inexpensive, quick way to take temperature readings at various points on a system. Use one at each point a temperature reading is desired. For 3/4" or larger pipe. Peel off the backing paper and apply to any clean surface. Temperature range from 100° to 200° F.

Differential By-pass Valves

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/4" Differential By-pass Valve	1	PZ4661C34	81005517	2
1" Differential By-pass Valve	1	PZ4662C1	81005518	2

Noise can be present in a multiple-actuator manifold if only one or two actuators are open. The pump is sized for the total flow rate and highest pressure drop of all the circuits. With just one or two circuits calling for heat, the pump is oversized, possibly causing noise. The **Pressure Differential By-pass Valve** eliminates water velocity noise and water hammer. With this valve, high-pressure pumps cannot exceed actuator close-off pressure. Pump life increases because of minimal pressure surging as actuators open and close. There is always correct and constant flow regardless of the number of actuators open.

The valve adjusts from 2.18 psi (5.0 feet water) to 11.6 psi (26.8 feet water) using a graduated knob. Water by-pass capacity is 0.6 gpm to 9 gpm. Maximum pressure is 145 psi, maximum temperature is 230° F. The knob is set and locked with a set screw to prevent tampering.

ISTEC

FLOW VALVE / METER

FLOW GUARD

Balancing with Rate Display!

ISTEC'S Flow Guard is a device used to balance and verify the flow in heating, cooling, solar, heat pump systems, etc. It is the perfect combination of a balancing valve and a flow rate indicator.

The Flow Guard is a very simple and accurate flow adjustment device. The multi-turn regulating valve is used to adjust the flow rate to the desired range. The flow indicator always shows the instantaneous flow rate, allowing for easy and fast verification of the flow, without the need for additional equipment. This combination enables easy balancing and verification of complex systems.

Advantages

- Accurate flow balancing with valve
- Visual indication of flow rate
- Self-contained direct reading system
- Easy installation
- Works in any position
- Sturdy and attractive design

Materials:

- Brass body
- High temp. plastic flow indicator
- Stainless steel spring
- EPDM Rubber O-Ring seals

Technical Specifications:

Model #	Size	Indicator Range	Cv	Temp Range*	Max. Pressure
2907	3/4"MPT	0.5 - 4 GPM	3.5	0∞F - 212∞F	150 psi
2908	3/4"MPT	1 - 9 GPM	4.1	0∞F - 212∞F	150 psi
2911	1"MPT	1 - 13 GPM	6.4	0∞F - 212∞F	150 psi
2912	1-1/4"MPT	2 - 21 GPM	10.5	0∞F - 212∞F	150 psi

*Accurate reading even with Glycol

ZVC – Taco Zone Valve Controls

Features:

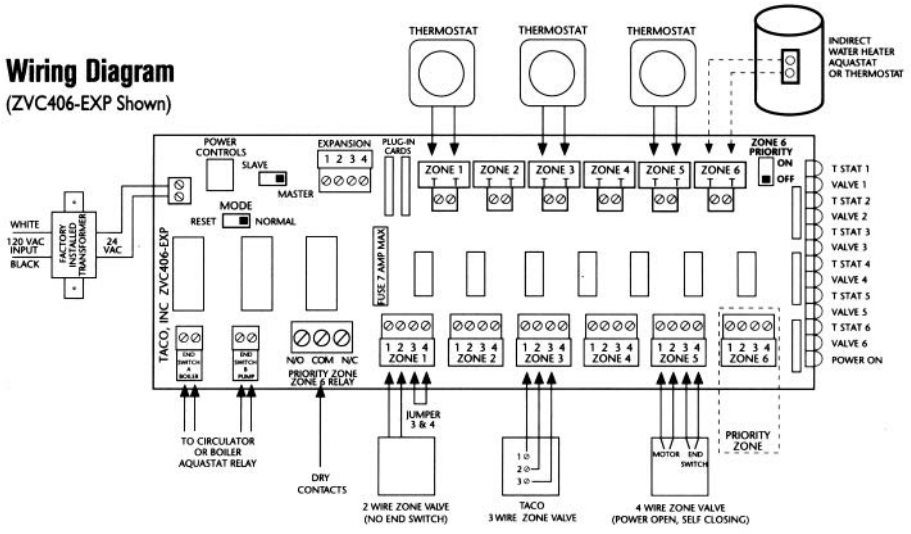
- External Indicator Lights
- Simplified Wiring
- Priority Options
- Extra Set of Dry Contacts

(Ideal for Water Heater Jobs)

Call for Taco Control Wiring Book

This control box permits a clean, central wiring of any motorized or heat motor type zone valve. Reduces installation time and reduces errors with quick connect terminals.

MODEL	DESCRIPTION
TACO ZVC403	For 3 Zones (40VA)
TACO ZVC404	For 4 Zones (40VA)
TACO ZVC404EXP	4 Zones* (40VA)
TACO ZVC405	5 Zone Control (75VA)
TACO ZVC406	6 Zone Control w/ Priority (75VA)
TACO ZVC406EXP	6 Zones* (75VA)

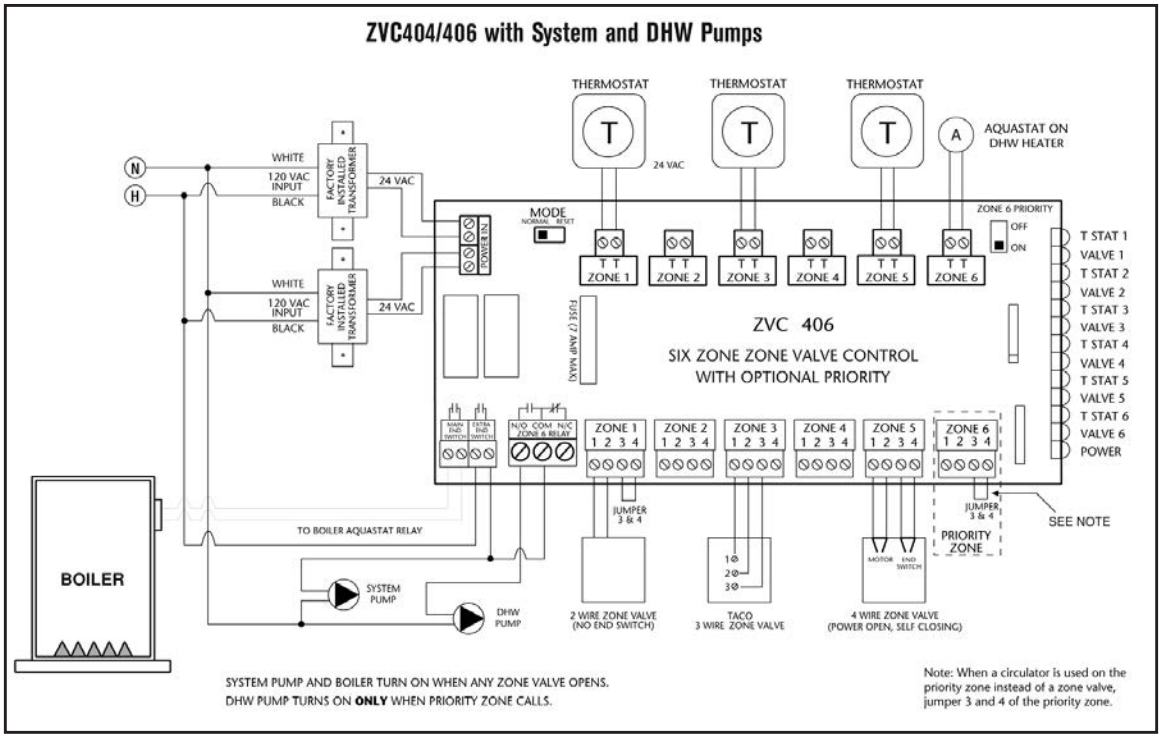


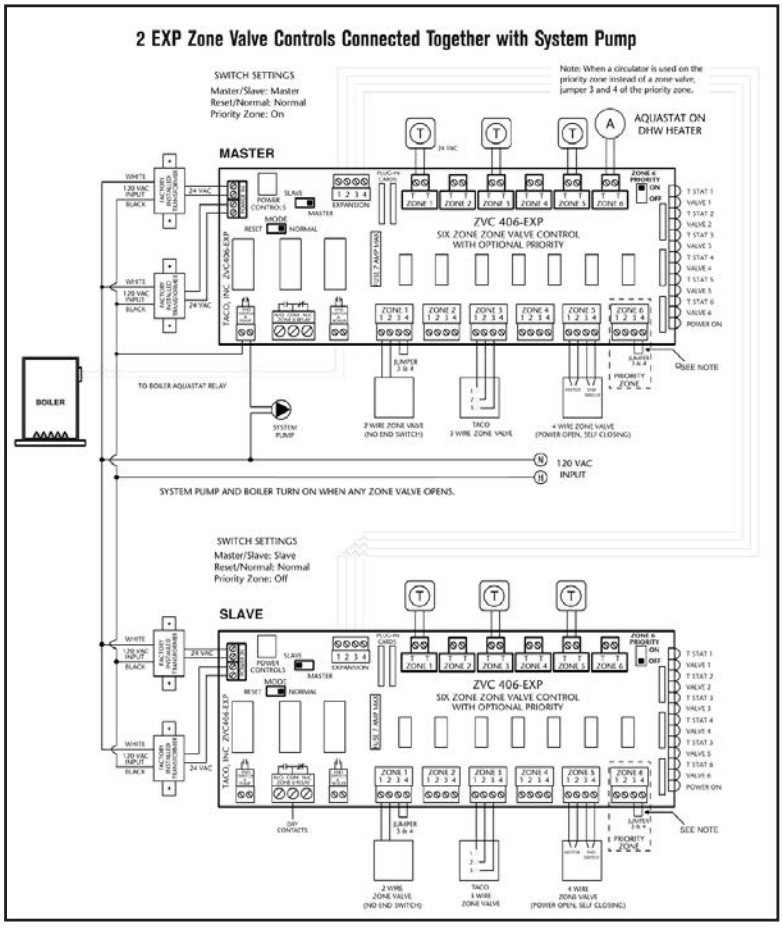
Note: 6-Zone Control shown for illustration.

ZVC Exp. Controls can be easily linked with weather responsive controls.

Taco ZVC Application Diagrams

Many additional application drawings are available on line at www.taco-hvac.com. Search for wiring diagrams. Call JTGMuir for a printed catalog of drawings and application advice.





SR-Taco Zone Circulator Controls

These UL Listed controls provide one compact, complete control box for connecting thermostats and zone circulators and regulating the heat source. Replaceable, plug-in relays (DPST).

Features:

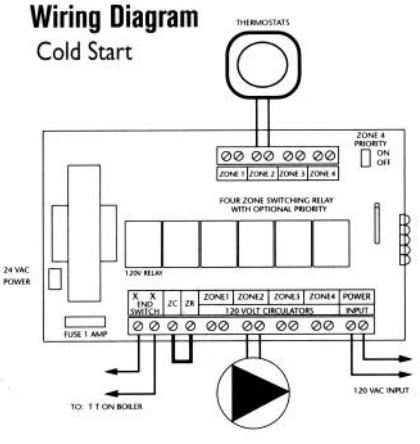
- **External Indicator Lights**
- **Simplified Wiring**
- **Priority Options**
- **Extra Set of Dry Contacts (Ideal for Water Heater Jobs)**

Call for Taco Control Wiring Book

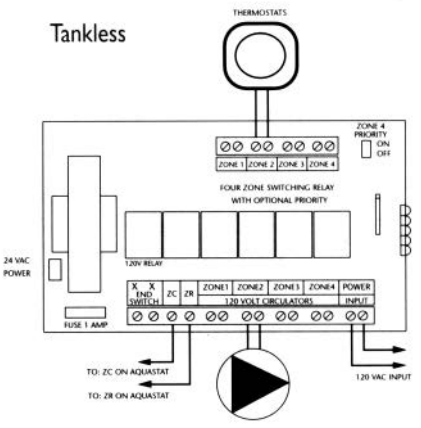
		COMBINED LOAD MAX
TACO SR502	2 Zone Circulator Control or 1/1 Priority Switch w/Led	(7.2A)
TACO SR503	3 Zone Circulator Control or 2/1 Priority Switch w/Led	(15A)
TACO SR503EXP	3 Zone Circulator Control or 2/1 Priority Switch w/Led	(15A)
TACO SR504	4 Zone Circulator Control w/ Priority Switching W/Led	(20A)
TACO SR504EXP	4 Zone Circulator Control w/ Priority Switching W/Led	(20A)
TACO SR506	6 Zone Circulator Control w/ Priority Switching W/Led	(20A)
TACO SR506EXP	6 Zone Circulator Control w/ Priority Switching W/Led	(20A)

Any SR-EXP series controls can be easily plugged into TACO weather responsive controls.
See Section xx
***Daisy chain to other EXP controls up to 20 zones. Power port capable plug-in (see 22.3). Reset compatible (see 21.4 & 24.2).**

Wiring Diagram
Cold Start



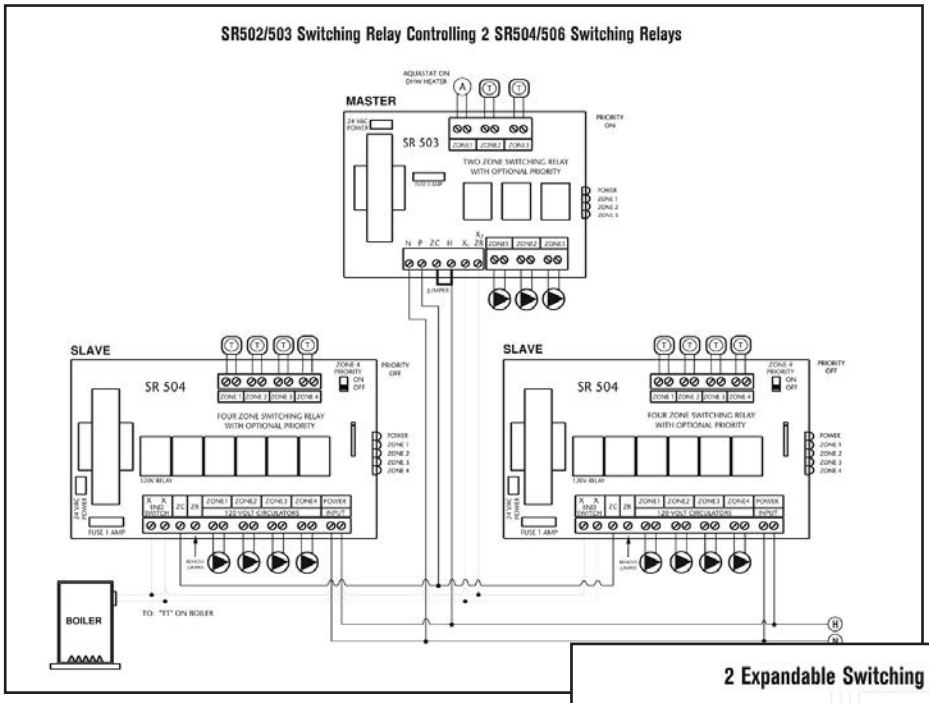
Tankless

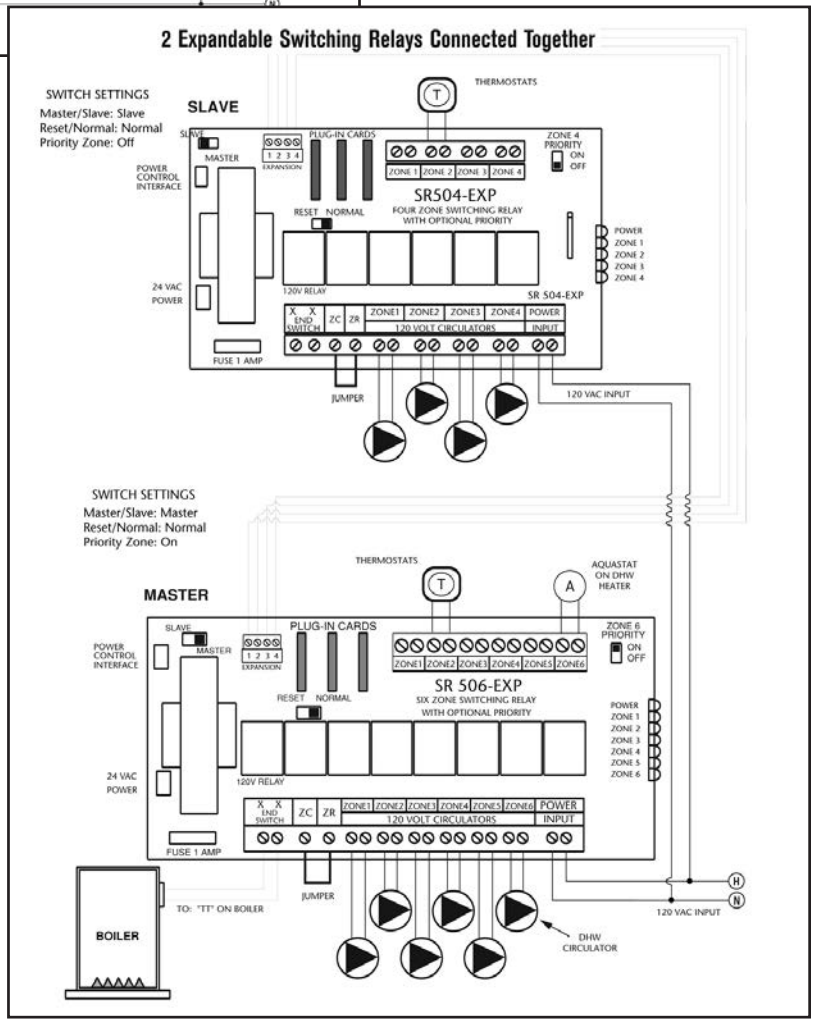


Note: 3-Zone Control shown for illustration.

SR Relay Sample Control Diagrams

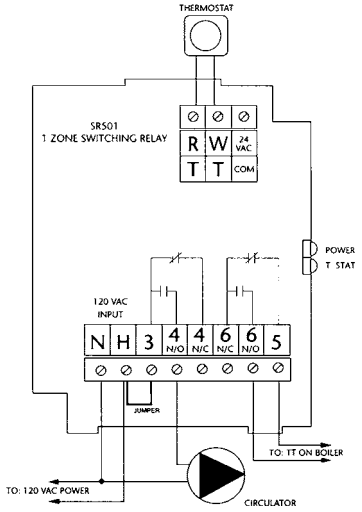
Many additional application drawings are available on line at www.taco-hvac.com. Search for wiring diagrams. Call JTGMuir for a printed catalog of drawings and application advice.





SR-TACO SWITCHING RELAY/TRANSFORMER

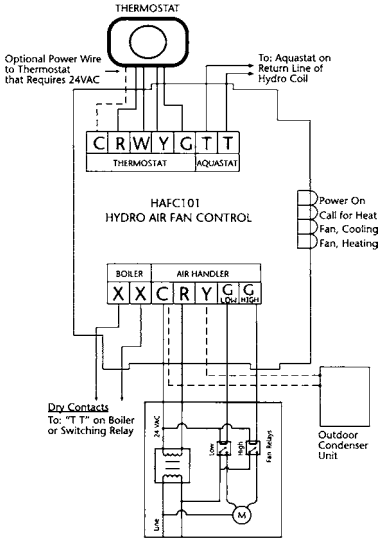
Wiring Diagram for Typical Installation



MODEL	DESCRIPTION
SR501	DPDT Relay Transformer Single Zone, 7.2 amps
SR50845RP	Universal Replacement Board for SR501, & Honeywell Snap in.

Taco SR501 Replacement Cross-Reference

Manufacturer	Model	Connections										
Taco	SR501	H	N	3	4 N/O	4 N/C	5	6 N/O	6 N/C	R/T	W/T	COM
	SR501-845RP	LI	L2	3	4		5	6		R/T	W/T	
Argo	AR821	I	2	3	4		5	6		T	T	
	AR822	LI	L2	3	4 NO	4 NC	5	6 NO	6 NC	R/T	G/T	C
Columbus	MR10	LI	L2	3	4 NO	4 NC	5	6 NO	6 NC	R/T	G/T	C
Erie	SR100	LI	N	3	4 NO	4 NC	5	6 NO	6 NC	R/T	G/T	C
Honeywell	RA89A	I	2	3	4					T	T	
	RA832A	I	2	3	4		X	X		T	T	
	R845A	I	2	3	4		5	6		T	T	
White-Rogers	889-189	I	2	3	4					T	T	
	829-845	I	2	3	4		5	6		T	T	



2 Speed Air Handler*

Taco Hydro Air Fan Control

MODEL	DESCRIPTION
SR501-F	DPDT/5 amp 1/6 hp

The Hydro Air Fan Control is an interface between the thermostat and air handler. It also has an isolated end switch to start the boiler and/or pump. When the thermostat calls for heat, the Fan Control energizes the end switch relay and allows the fan to operate at low speed when the water is above the optional aquastat setting. When the thermostat calls for cooling, the Fan Control energizes the condenser and operates on high speed. The HAFC201 also includes three built-in fan time delay options, two selectable pump exercise modes, a secondary aquastat connection for freeze protection and the ability to switch a pump and / or boiler.

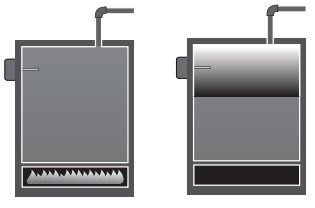
LOW WATER CUTOFF

Application

The Taco LWCO provides reliable protection for all types of boilers, from small residential hot water boilers to large industrial steam boilers. The boiler's minimum safe operating water level is specified by each manufacturer. Should the water level dip below that specified level, heat will accumulate quickly causing significant damage to the boiler and a potential external safety hazard. The Taco LWCO prevents this hazard from occurring. The LWCO can be used as a primary or secondary low water cutoff on steam boilers up to 250 psi, a primary limit control on hot water boilers or to protect pumps from running dry in condensate receiver tank applications. The LWCO can also activate alarm systems or automatic water feeders.

Probe Style LWCO

A probe uses the boiler's water to complete an electrical circuit. As long as water covers the probe, the electronic circuit will be maintained. If the water level drops below the probe, the circuit is broken, shutting down the burner and protecting the boiler.



Normal operation *Low water condition*

In a low water situation, if the burner continues to fire, damage can occur to the boiler and create a potential disaster. A Taco Low Water Cutoff turns off the burner and signals that a low water situation has occurred.

Worry Free Operation

Every LWCO has been upgraded to incorporate our patented signal processing technology to deliver the best low water protection available. It's so smart it will even tell you when the probe should be cleaned, eliminating the need for yearly maintenance.

Simplified Installation & Wiring

The plug n' play wiring harness for 24 VAC or tri-barrier terminals for 120 VAC wiring makes meeting code, including CSD-1, a snap.

Confidence

A test button verifies that the wiring and installation was done correctly before leaving the job. LED lights eliminate the guess work on service calls by identiying if the cause of the low water condition was a dirty probe or lack of water.

Selection Made Easy

The LTR, LTA-2 and LF Series of Low Water Cutoffs match the safety and installation requirements of any style system while featuring the simplicity, reliability and unmatched quality you've come to expect from Taco Electronic Controls.

Seamless Integration

Pairs perfectly with the Taco Electric Water Feeder to maintain safe water content in the boiler. See Taco Catalog #100-36 to see all of its advanced and patent pending feaures.

LTR

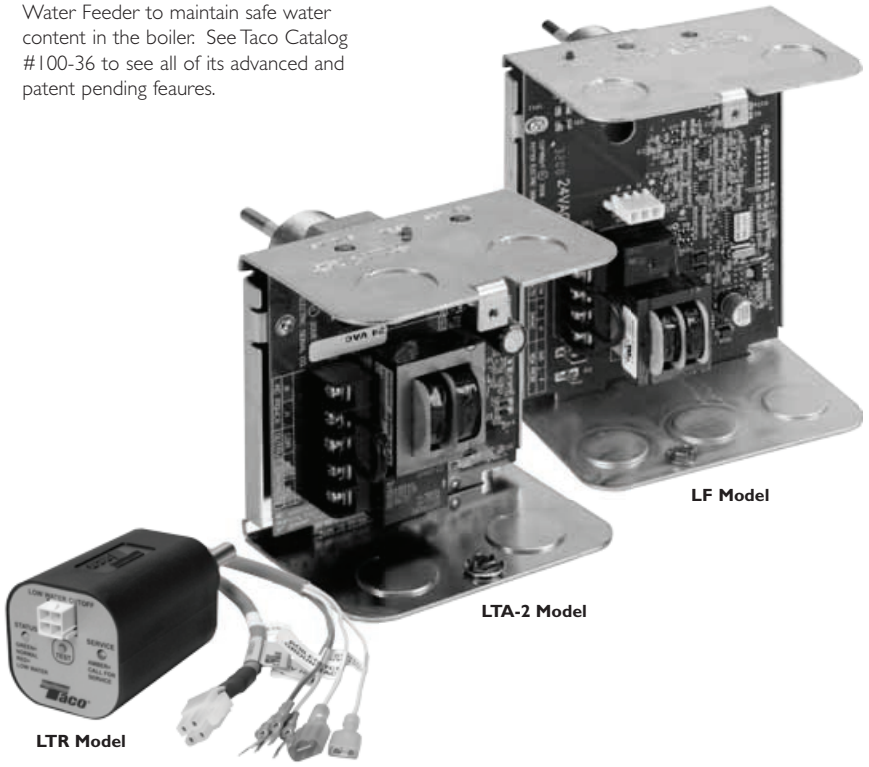
The LTR is a 1-piece, sealed design for use with residential hot water boilers. The auto reset LTR comes complete with a test button, LED lights and a plug-in 24 VAC wiring harness so you can meet code while having the confidence the control was wired correctly the first time.

LTA-2

The LTA-2 models are used on smaller hot water boilers (usually under 400,000 BTU). Available in 24 and 120 VAC auto reset models, the LTA-2 has a compact full metal enclosure with direct probe mounting, a test button, external LED lights and easy-to-wire tri-barrier terminals. Built with the same patented signal processing technology as the LTR, the LTA-2 is a great solution for upgrading the safety of current systems or when traditional 120 VAC hard wiring is required.

LF

The LF model is the ultimate LWCO control for use with hot water or steam boilers. The LF uses Taco's patented DualVision® technology to know the difference between foam, water, and



LF Model

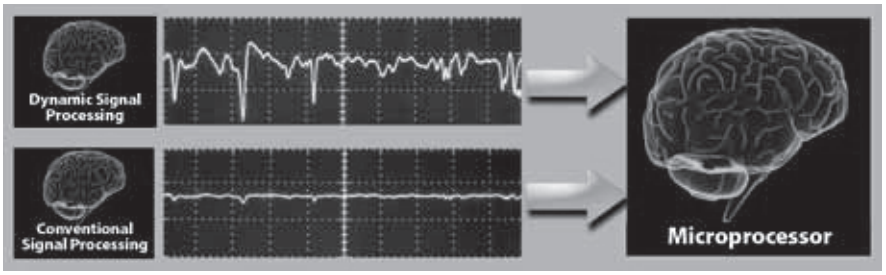
LTA-2 Model

LTR Model

Taco controls made easy®

SEE PAGE 225
LOW WATER CUTOFF

Patented DualVision® Technology



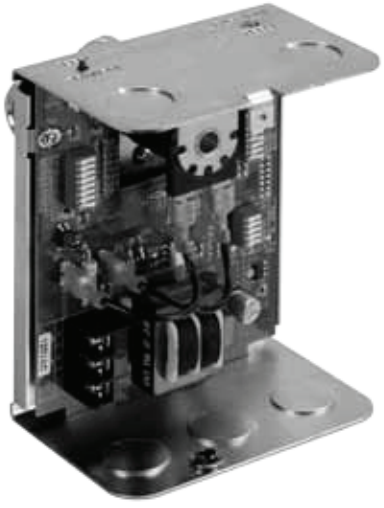
even probe buildup. So unlike the competition, the LF won't shut down your boiler on a false low water condition due to a dirty probe, or shut down every 10 minutes to check for proper water level. You can now run your steam boiler flat out for a significant gain in efficiency and operational safety.®

By processing and comparing two separate signals coming back through the standard probe, the DualVision technology automatically determines the required delay on make (DOM) and delay on break (DOB) settings for any style steam boiler under any system conditions. The LF's patented smarts means no more dip switches to set or dials to program. External LEDs and a test button verify that everything is installed and wired correctly before you leave the job. You can even wire in an alarm or electric water feeder.

The LF Series is available in 24 or 120 VAC models, automatic or manual reset models, ½" and ¾" NPT process connection sizes and a number of probe lengths to match your job requirements.

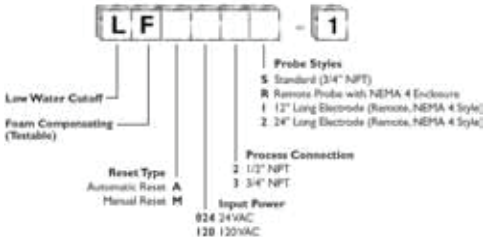
Feature Comparisons of LF, LTA-2 and LTR Models:

Feature	LF	LTA-2	LTR
120 VAC	X	X	
24 VAC	X	X	X
Automatic Reset	X	X	X
Manual Reset	X		
Foam Compensating	X		
Automatic Delay on Make (DOM)	X		
Automatic Delay on Break (DOB)	X		
Direct Probe to Control Connection	X	X	X
NEMA 4 Remote Probe	X		
Extended Length Remote Probes	X		
Steam Applications	X		
Hot Water Boiler Applications	X	X	X
External LEDs	X	X	X
Test Button	X	X	X
Service LED	X	X	X
Tri-barrier Terminal Blocks	X	X	Molex
CSD-1 Compliant	X	X	X
Listings and Approvals	UL, CUL, FM	UL, CUL	UL, CUL
Probe Connections	1/2" & 3/4" NPT	3/4" NPT	3/4" NPT
Electrical Knock-outs	Five	Four	N/A
Made in the USA	X	X	X

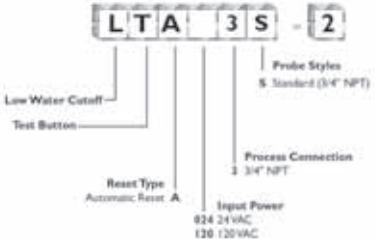


Electric Water Feeder

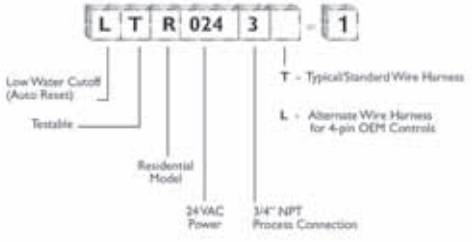
LF Model Ordering



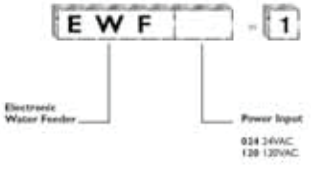
LTA-2 Model Ordering



LTR Model Ordering



Electronic Water Feeder Ordering



Low Water Cutoff Submittal Data Information

Submittal Data # 101-081
Supersedes: 10/01/08

Effective: 01/28/11

Listings/Approvals

UL GUIDE (MBPR) for Limit Controls per UL Standard 353 Limit Controls

UL GUIDE (MBPR7) Controls, Limit Certified for Canada CSA Standard C22.2

UL GUIDE (MCUR2) for Electrode Assemblies – Component (remote probes)

FM Approved (LF only)

Fully complient with CSD-1 requirements

Material of Construction

LTA-2 and LF Control Unit: NEMA Type 1 (For indoor use only). Formed sheet metal with powder coat/plated finish enclosure, knock-outs for 1/2" conduit fittings.

LTR Unit: UL 94 V0 rated engineered plastic enclosure

Remote Probe: NEMA Type 4. Drawn sheet metal with powder coat/plated finish enclosure. Opening for 1/2" conduit fitting.

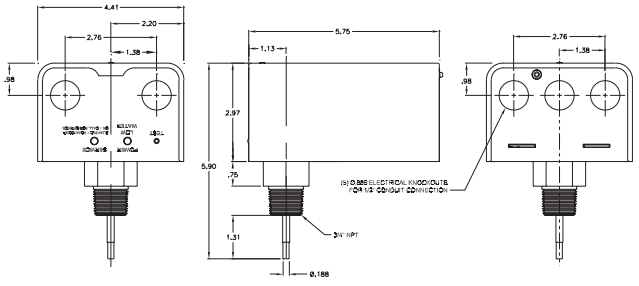
All models are not for use in hazardous locations

Performance Data

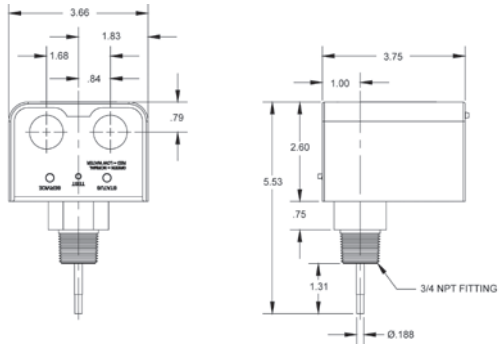
Category	LF Model	LTA-2 Model	LTR Model
Maximum Pressures Steam	250 psi (17.6 kg/cm^2)	NA	N/A
Maximum Pressures Hot Water	250 psi (17.6 kg/cm^2) @250°F (121°C)	250 psi (17.6 kg/cm^2) @250°F (121°C)	160 psi (11.2 kg/cm^2) @ 250°F (121°C)
Maximum Ambient Temp.	150°F (66°C)	150°F (66°C)	120°F (49°C)
Delays	Automatic	N/A	N/A
Probe Sensitivity	20K Ohms, extended operation to 40K Ohms	20K Ohms, extended operation to 40K Ohms	20K Ohms, extended operation to 40K Ohms
Control Power Consumption	3VA @ 120VAC, 3VA @ 24VAC	2.8VA @ 120VAC, 2.8VA @ 24VAC	1.5VA @ 24VAC
Input Supply Voltage	120VAC, 24VAC*	120VAC, 24VAC*	24VAC*

*24VAC supplied by a Class 2 power source

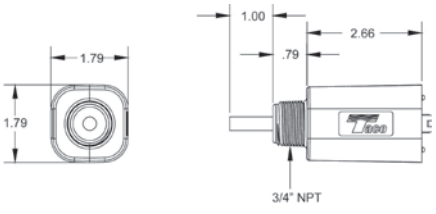
Model LF Dimensions



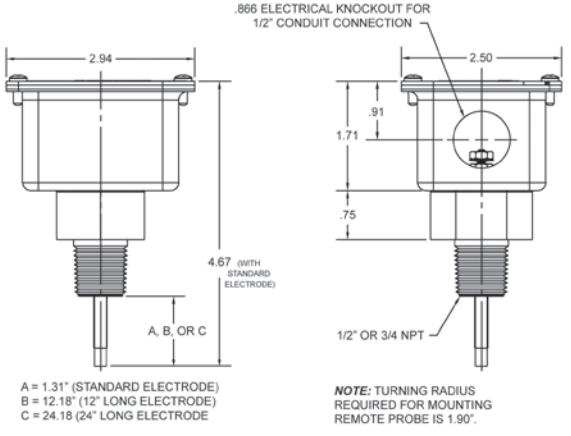
Model LTA-2 Dimensions



Model LTR Dimensions



Remote Probe Dimensions

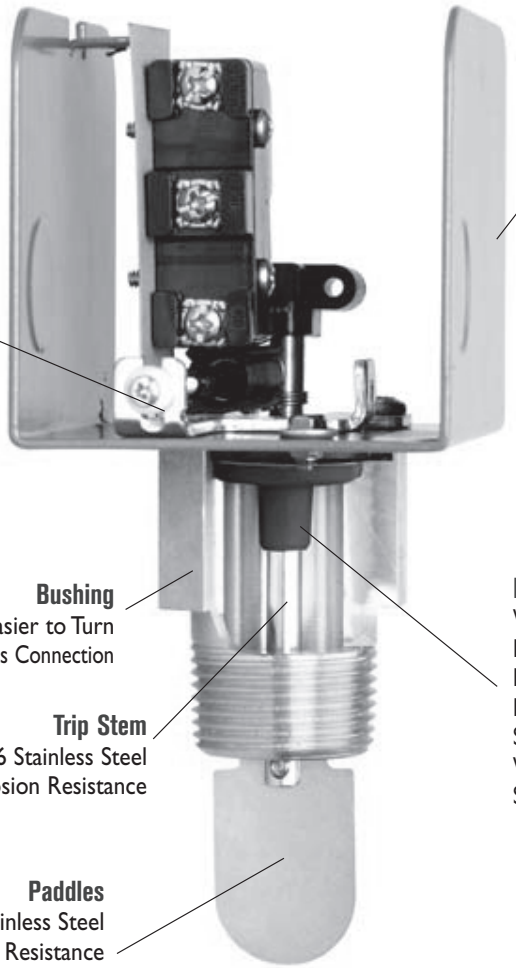


FLOW SWITCH

Features

- 3 Year Warranty
- EPDM Seal Superior to Competitor's Mechanical Bellows
- Little Mechanical Wear or Fatigue
- Greater Flow Sensitivity and Wider Adjustment Range
- Higher Pressures, 250 PSI Standard
- 250°F Temperature Rating
- Stainless Steel Paddles & Trip Rods
- NEMA 1 and NEMA 4 Models
- Single or Double Switch Models
- High Current Models Available
- For Use on 1" to 8" Diameter Pipe
- UL, CSA, CE Approved

Better Materials Lead to Better Performance



Enclosures
Sturdier 20 Gauge Steel Covers
16 Gauge Steel Bases Ensures Robustness

Flow Sensitivity Adjustment
Wide Adjustment Range

Bushing
Larger Wrench Flats – Easier to Turn
1" NPT Brass or Stainless Steel Process Connection

Trip Stem
316 Stainless Steel
Corrosion Resistance

EPDM Seal
Will Not Harden, Crack and Subsequently Develop a Leak as is the Case with a Bellows Design
Improves Performance in High Pressure Systems
Withstands 100 PSI More Than Any Other Standard Flow Switch

Paddles
316 Stainless Steel
Corrosion Resistance
Rigid Paddles Available
Paddles For 1" to 8" Pipes Included with Every IFS

FLOW SWITCH

Listings/Approvals
- UL Guide (NKPZ) for industrial control equipment per UL Standard 508 Industrial Control Equipment
- UL Guide (MFHX) for heating/cooling appliance switch per UL Standard 353 Limit Controls
- CSA Class (321106) for industrial control equipment per CSA Standard C22.2 No. 14-M Industrial Control Equipment
- CE (Except IFSH1/H2)

Maximum Service Pressure
- 250 PSI

Enclosure
- Model IFS01/02/H1/H2: NEMA Type 1 (For indoor use only). Formed sheet metal with powdercoat finish.
- Model IFSWS/W2: NEMA Type 4 (For indoor or outdoor use). Die-cast housing and high impact resistant polycarbonate cover.

Switch Contacts
- IFS01/H1/WS: One SPDT (Form C) switch
- IFS02/H2/W2: Two sets of SPDT (Form C) switches to provide versatility in wiring two separate circuits
- IFS01/02/W2: 15 Amps at 125/250VAC, .5 Amps at 125VDC, .25 Amps at 250VDC
- IFSH1/H2: 22 Amps at 125/250VAC
- IFSWS: 10 Amps at 125/250VAC, .5 Amps at 125VDC, .25 Amps at 250VDC
- IFS01/02/W2 Motor Ratings : 120VAC, 1/8 HP, 3.8 AC F.L.A. 22.8 AC L.R.A; 240VAC, 1/4 HP, 2.9 AC F.L.A., 17.4 AC L.R.A
- IFSH1/H2 Motor Ratings : 120VAC, 1/2 HP, 9.8 AC F.L.A. 58.8 AC L.R.A; 240VAC, 1 HP, 8.0 AC F.L.A., 48.0 AC L.R.A
- IFSWS Motor Ratings : 120VAC, 1/3 HP, 7.2 AC F.L.A. 43.2 AC L.R.A; 230VAC, 1/3 HP, 3.6 AC F.L.A., 21.6 AC L.R.A

Pilot Duty Rating
- IFS01/02/H1/H2/W2: 125 VA, 120/240 VAC
- IFSWS: 332 VA, 120/240 VAC

Ambient Temperature Range
- IFS01/02/H1/H2/W2: 32°F - 176°F (0°C - 80°C)
- IFSWS: 32°F - 151°F (0°C - 66°C)

Media Temperature Range
- IFS01/02/H1/H2/W2: 32°F - 250°F (0°C - 121°C)
- IFSWS: -20°F - 250°F (-29°C - 121°C)

Pipe Connections
- 1" NPT Brass on models IFSxxB
- 1" NPT 316 Stainless Steel on models IFSxxS

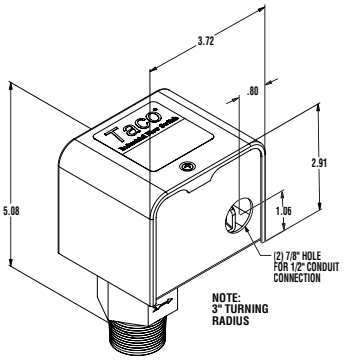
Conduit Entrance
- IFS01/02/H1/H2: Two openings for 1/2" conduit
- IFSWS/W2: One opening for 1/2" conduit

Usage
- For pipe sizes 1" - 8"

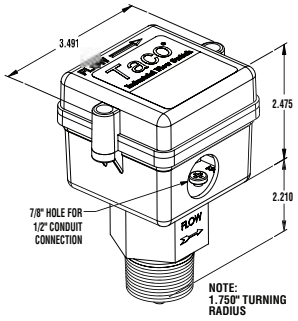
Caution
- This device is not intended for applications in explosive environments or hazardous locations

Dimensions

IFS01/02/H1/H2 Models



IFSWS Models



GPM Required to Actuate Switch

Specifications

Typical Flow Rates-GPM Required to Actuate Switch (For vertical pipe installations)

Pipe Size (inches)		1	1-1/4	1-1/2	2	2-1/2	3	4	5*	6	8*
Minimum Adjustment	Flow Increase	4.5	4.5	6.0	7.5	13.5	18	35	50	70	210
	Flow Decrease	3.5	3.5	5.0	5.5	9.5	13	25	40	60	190
Maximum Adjustment	Flow Increase	9.5	10	13.5	20.0	29	50	70	120	180	410
	Flow Decrease	7.0	8.5	10.5	18.5	26	45	65	105	160	380

Notes:
1. Typical flow rates for 1" to 1-1/2" pipe sizes are averages which may vary approximately ±1 GPM with the use of a bronze reducing tee.
2. Typical flow rates for 2" to 8" pipe sizes are averages which may vary approximately ±10% GPM with the use of a 1" weldolet.

(*) Flow rates for these sizes are calculated.

tN4-House Controls

tekmarNet® Feature Comparison

tekmarNet® House Controls	400	401	402
Number of Boilers	1	1	1
Modulating Boiler (0-10 V (dc))	o	o	o
Number of On-Board Zones	4	4	4
Zone Valves (v) or Pumps (p)	v	p	v
Number of Water Temperatures	1	1	2
Zone Expansion Capacity	24	24	24 + 24
tN4 Boil Expansion	o	o	o
tN4 Mix Expansion	-	-	o
Boiler Operation			
Boiler Outdoor Reset	o	o	o
Boiler Auto Differential	o	o	o
DHW Operation			
Selectable DHW Priority	o	o	o
DHW through Pump	o	o	o
Setpoint Operation			
Adjustable Setpoint Target	o	o	o
Mixing Operation			
Mixing Outdoor Reset	-	-	o
Variable Speed Output	-	-	o
Floating Action Output	-	-	o
Analog 0-10 V (dc)*	-	-	o
Boiler Return Protection	-	-	o
System Maximum Supply	o	o	o
Energy Saving Features			
Warm Weather Shut Down	o	o	o
Energy Use Monitor	o	o	o
Energy $aving Indicator	o	o	o
DHW Disable During Away	o	o	o
Boiler Post Purge	o	o	o

*When using On/Off Boiler

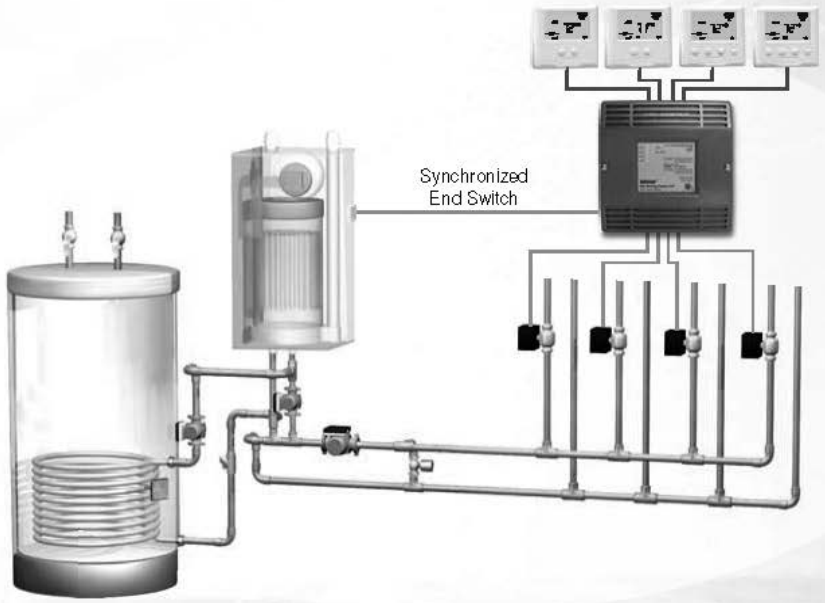
tekmarNet® Wiring Centers	313	314
2 Wire / tekmarNet®2	o	o
Zone Pumps	-	4
Zone Valves	4	-
tN4 Expansion	o	o

tekmarNet® Thermostats	527	528	530
2 Wire / tekmarNet®2	o	o	o
Heat Stages	1	1	1
Cool Stages	-	-	1
Fan Stages	-	-	1
Auxiliary Sensor Inputs	-	1	-
Aux Outdoor Sensor	-	o OR	-
Aux Floor Sensor	-	o	-
Heating			
Floor Warming	-	o	-
Zone Synchronization	o	o	o
Zone Post Purge	o	o	o
Auto Heating Cycle	o	o	o
Cooling & Ventilation			
Auto Heat-Cool Switchover	-	-	o
Cool Group Master	-	-	o
Cool Group Member	o	o	-
Cool Min On and Off Times	-	-	o
Auto/Adjustable Cooling Cycle	-	-	o
Cooling Interlock	-	-	o
Ventilation Fan	-	-	o
Setback			
Optimum Start	o	o	o
Schedule Member	o	o	o
Scenes	o	o	o
Away Override Temperature	o	o	o

COMMUNICATING ZONE SOLUTIONS

Demand Efficiency

tekmarNet® Thermostats and Wiring Centers improve efficiency in all boiler types by enabling longer running times with reduced short cycling. While non-communicating thermostats can cycle the boiler on and off at the whim of every zone, tekmarNet® Thermostats work together with the Wiring Center to synchronize boiler cycles. This synchronization results in greater energy savings and less wear on the boiler.



EFFICIENCY FEATURES

Synchronized End Switch

The Wiring Center uses information from tekmarNet® Thermostats to deliver a synchronized call for heat to the boiler. This reduces short cycling and improves efficiency.

Centralized Setback

There is no need to put costly programmable thermostats in every zone. Attach a tekmarNet® Timer to the system and provide a setback schedule for every zone in the house from a centralized location.

Cooling Groups

Conflicts between heating zones and central cooling are no longer an issue. "Cooling Groups" coordinate heat/cool operation for the entire house.

CONVENIENCE FEATURES

Simple Thermostats

Non-polarity sensitive 2-wire connections and easy up/down temperature adjustment make installation and operation a breeze.

One-Touch Control

A tekmarNet® User Switch enables every zone in the house to come in or out of setback with the touch of a button, with or without a timer installed.

Outdoor Temperature

tekmarNet® Thermostats share everything, including outdoor temperature. An outdoor sensor connected to a single thermostat allows outdoor temperature to be viewed on every tekmarNet® Thermostat.

COMMUNICATING ZONE SOLUTIONS

tN2 Wiring Centers

313 & 314

- Synchronized End Switch
- For Use with tN2 Thermostats
- Expandable up to 24 Zones
- Compact Enclosure
- Simple Wiring

Features	313	314
Zone Valves	●	-
Zone Pumps	-	●
Number of Zones	4	4
Zone Status LED's	●	●

tN2 Thermostats

527, 528 & 530

- 2-Wire, Non-Polarity Sensitive
- Simple Temperature Adjustment
- Outdoor Temperature Display

Features	527	528	530
Heat Stages	1	1	1
Cool Stages	-	-	1
Fan Stages	-	-	1
Auxiliary Sensor Inputs	-	1	-
Floor Temperature Control	-	●	-
Schedule Member*	●	●	●
Auto Heating Cycle	●	●	●
Scenes**	●	●	●
Cool Group Master	-	-	●
Cool Group Member	●	●	-
Ventilation Fan	-	-	●

*Add Timer 033 for Schedule Capabilities
**Add User Switch 479 to Enable Scenes

Also Available in Four Wire
tN4 Thermostats & Wiring Centers are available for multiple stage heating or cooling applications. Visit tekmarcontrols.com for information.

Accessories

User Switch 479

- One Touch setback for tekmarNet® Thermostats
- Signals all thermostats to use either occupied, unoccupied, or away temperature

Timer 033

- Schedule Entire System with One Device
- Up to 4 Unique Schedules
- 2 or 4 Events per Day
- 5-1-1, 5-2, 7 Day, or 24 hr Schedule

The Next Step...
Take full advantage of the savings tekmarNet® has to offer with a House Control managing the whole system. See page 4 for a sample application.

SNOW MELT CONTROL

Snow Melting Controls

Snow Detector & Melting Control 665
- Controls On/Off Heat Source
- Automatic Snow Detection

Snow Detector & Melting Control 667
- Variable Speed Injection Mixing
- Automatic Snow Detection

Snow Detector & Melting Control 664
- Two Zone, Two Stage Boiler, Mixing
- Automatic Snow Detection

Snow/Ice Sensor 090
- Automatic Snow & Ice Detection
- Measures Slab Temperature

Slab Sensor 072/073
- Measures Slab Temperature

Remote Start/Stop Module 039
- Start or Stop the System from a More Convenient Location
- Adjustable Run Time

Remote Display Module 040
- Access Snow Melt Control Settings from a More Convenient Location
- Adjustable Run Time & Digital Display

	665	667	664
Energy Saving Features			
Slab Outdoor Reset	●	●	●
Warm Weather Shut Down	●	●	●
Cold Weather Cut Off	●	●	●
Temporary Idle	●	●	●
Snow Melt Operation			
Melting Setpoint	●	●	●
Idling Setpoint	●	●	●
Number of Zones	1	1	1 or 2
Protection Features			
Boiler Minimum Protection		●	●
Maximum System ΔT		●	●
Maximum System Supply		●	●
Exercising	●	●	●
Start / Stop Options			
Automatic Start / Stop*	●	●	●
Manual Start / Stop	●	●	●
Manual Start - Run Time	●	●	●
Manual Start - Remote Enable	●	●	●
Remote Start / Stop Module 039	●	●	●
Remote Display Module 040	●	●	●
Mixing Operation			
Floating Action			●
4-20 mA Output			●
Variable Speed Injection Pump		●	●
Heat Source			
Electric Cable	●		
Electric Boiler	●	●	●
Steam to Water Heat Exchanger	●		●
Dedicated Condensing Boiler	●		●
Dedicated Non-Condensing Boiler		●	●
Two On / Off Stages			●

* Requires Snow/Ice Sensor 090

tekmar® Application Groups

HVAC Systems

- Boiler Outdoor Reset Controls
- Mixing Outdoor Reset Controls
- tekmarNet® House Controls
- tekmarNet® Outdoor Reset Modules
- tekmarNet® Mixing Expansion Modules
- tekmarNet® Power Managers

HVAC Systems

Multi-Staging

- Pump Controls
- Multi-Stage Boiler Controls

Multi-Staging

Alternative Energy

- Differential Setpoint & Pump Controls
- Alternative Energy Heating Controls

Alternative Energy

Zoning

- tN2 Wiring Centers
- tN4 Wiring Centers
- Zone Managers
- Zone Expansion Modules
- Thermostats
- tekmarNet® 2 Thermostats
- tekmarNet® 4 Thermostats

Zoning

Snow Melting

- Automatic Snow Melting Controls
- Automatic Snow / Ice Sensor

Snow Melting

Setpoint

- Setpoint Controls
- tekmarNet® 4 Setpoint Controls
- DHW Controls

Setpoint

Accessories

- Valves and Actuators
- Timers and Remote Access
- Sensors
- Miscellaneous

Accessories

HVAC Systems

Heating, Ventilation & Air Conditioning

Classic Series

Classic series controls operate hydronic heating equipment to provide outdoor reset to a building to achieve both indoor temperature comfort and energy savings. Each control operates as a stand-alone unit.

Product	Type	Description	Included
	256	Boiler Control 256 One Stage Boiler	1 x Outdoor Sensor 070 1 x Universal Sensor 071
	260	Boiler Control 260 One Stage Boiler & DHW	1 x Outdoor Sensor 070 1 x Universal Sensor 082
	261	Boiler Control 261 Two Stage Boiler & Setpoint	1 x Outdoor Sensor 070 1 x Universal Sensor 082
	270	Boiler Control 270 One Modulating Boiler & DHW	1 x Outdoor Sensor 070 1 x Universal Sensor 082
	279	Steam Control 279 One Stage	1 x Outdoor Sensor 070 1 x Universal Sensor 071
	356	Mixing Control 356 Variable Speed	1 x Outdoor Sensor 070 2 x Universal Sensor 071
	360	Mixing Control 360 Floating Action	1 x Outdoor Sensor 070 2 x Universal Sensor 082
	361	Mixing Control 361 Variable Speed	1 x Outdoor Sensor 070 2 x Universal Sensor 082
	362	Mixing Control 362 Floating Action / Variable Speed	1 x Outdoor Sensor 070 2 x Universal Sensor 071
	374	Universal Reset Control 374 Two Mixing, Two Stage Boiler, DHW & Setpoint	1 x Outdoor Sensor 070 3 x Universal Sensor 082

Performance Series

Performance series controls use communication between the hydronic heating control and the thermostat to optimize both indoor comfort and energy savings. This series supports a single boiler and / or single mixing water temperature system.

Included	Description	Type	Product
1 x Outdoor Sensor 070 1 x Universal Sensor 082	House Control 400 Boiler, DHW & Setpoint, Four Zone Valves	400	
1 x Outdoor Sensor 070 1 x Universal Sensor 082	House Control 401 Boiler, DHW & Setpoint, Four Zone Pumps	401	
1 x Outdoor Sensor 070 2 x Universal Sensor 082	House Control 402 Boiler, DHW & Setpoint, Mixing, Four Zone Valves	402	
1 x Outdoor Sensor 070 2 x Universal Sensor 082	House Control 403 Boiler, DHW & Setpoint, Mixing, Four Zone Pumps	403	

Designer Series

Designer series controls use communication between the hydronic heating control and the thermostat to optimize both indoor comfort and energy savings. This series supports multiple boiler and multiple mixing water temperature systems for use in advanced applications.

Included	Description	Type	Product
1 x Outdoor Sensor 070 1 x Universal Sensor 082	Boiler Reset Module 420 One tN4, Boiler, DHW, & Setpoint	420	
1 x Outdoor Sensor 070 2 x Universal Sensor 082	Mixing Reset Module 421 One tN4, Mixing	421	
1 x Outdoor Sensor 070 2 x Universal Sensor 082	Universal Reset Module 422 Two tN4, Mixing, Boiler, DHW & Setpoint	422	
1 x Outdoor Sensor 070 1 x Universal Sensor 082	Universal Reset Module 423 Four tN4, Two Boiler, DHW & Setpoint	423	
1 x Universal Sensor 082	Mixing Expansion Module 440 Variable Speed / Floating Action	440	
1 x Universal Sensor 082	Mixing Expansion Module 441 Actuating Motor	441	
1 x Universal Sensor 082	Mixing Expansion Module 444 Variable Speed / Floating Action / Modulating	444	
None	Power Manager 345 One Auxiliary Pump	345	
None	Power Manager 346 Three Auxiliary Pumps, Four Demands	346	

Note: Each Designer Series reset module must be paired together with a Power Manager or Zone Manager located in the Zoning section.

Multi-Staging

Multiple Boilers & Pumps

Classic Series

Classic series controls stage multiple heat sources to provide outdoor reset for hydronic heating and provide domestic hot water tank heating. Each control operates as a stand-alone unit.

Product	Type	Description	Included
	132	Pump Sequencer 132 Stand-by / 2-Stage	None
	262	Boiler Control 262 Two Stage Boiler & DHW Control / Two Stage DHW	1 x Outdoor Sensor 070 1 x Universal Sensor 071
	263	Boiler Control 263 Two Stage / One Modulating Boiler, DHW & Setpoint	1 x Outdoor Sensor 070 1 x Universal Sensor 082
	265	Boiler Control 265 Three Modulating Boiler & DHW / Setpoint	1 x Outdoor Sensor 070 2 x Universal Sensor 071
	268	Boiler Control 268 Nine Stage Boiler & DHW / Setpoint	1 x Outdoor Sensor 070 2 x Universal Sensor 082

Performance Series

Performance series controls operate multiple heat sources to provide outdoor reset for hydronic heating and provide domestic hot water tank heating. This series can also operate two stand-by system pumps for greater system reliability. Each control can operate as a stand-alone unit or combined together with communicating thermostats and / or a gateway for remote access and monitoring.

Product	Type	Description	Included
	274	Boiler Control 274 One tN4, Four Stage Boiler & DHW / Setpoint	1 x Outdoor Sensor 070 2 x Universal Sensor 082
	275	Boiler Control 275 One tN4, Four Modulating Boiler & DHW / Setpoint	1 x Outdoor Sensor 070 2 x Universal Sensor 082

Classic Series

Classic series controls operate the heat transfer from a solar thermal, wood boiler or other alternative energy source to a storage tank or to transfer heat from a storage tank to a hydronic heating system. Each control operates as a stand-alone unit.

Included	Description	Type	Product
1 x Universal Sensor 071 1 x Solar Sensor 085	Difference Setpoint Control 155	155	
1 x Universal Sensor 071 1 x Solar Sensor 085	Difference Setpoint Control 156 On / Off	156	
1 x Universal Sensor 071 1 x Solar Sensor 085	Difference Setpoint Control 157 Variable Speed	157	
1 x Outdoor Sensor 070 2 x Universal Sensor 071	Universal Reset Control 363 Mixing, Boiler & DHW	363	

Zoning

Thermostats & Zoning Controls

Classic Series

Classic series stand-alone thermostats operate an on / off hydronic heating zone.

Product	Type	Description	Auxiliary Sensor Options
	507	Thermostat 507 One Stage Heat	None
	508	Thermostat 508 One Stage Heat	Room, Floor, Outdoor
	509	Thermostat 509 (508 & 079)	Room, Floor, Outdoor
	510	Programmable Thermostat 510 One Stage Heat	Room, Floor, Outdoor, Remote
	511	Programmable Thermostat 511 (510 & 079)	Room, Floor, Outdoor, Remote
	512	Programmable Thermostat 512 Two Stage / Heat - Cool	Room, Floor, Outdoor, Remote
	315	tN4 Wiring Center 315 Six Zone Valves	None
	316	tN4 Wiring Center 316 Four Zone Pumps	None

Performance Series (2 Wire)

Performance series communicating thermostats operate an on / off hydronic heating zone. Communication allows the thermostats to work together and with the boiler control to provide superior comfort and optimal efficiency. Two-wire thermostats allow for easy point-to-point wiring in retrofit installations.

Product	Type	Description	Auxiliary Sensor Options
	527	tekmarNet® 2 Thermostat 527 One Stage Heat	None
	528	tekmarNet® 2 Thermostat 528 One Stage Heat	Room, Floor, Outdoor
	529	tekmarNet® 2 Thermostat 529 Two Stage Heat	Room, Floor, Outdoor
	530	tekmarNet® 2 Thermostat 530 One Stage Heat, One Stage Cool, One Fan	None
	313	tN2 Wiring Center 313 Four Zone Valves	None
	314	tN2 Wiring Center 314 Four Zone Pumps	None

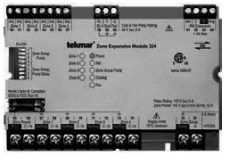
Performance Series (4 Wire)

Performance series communicating thermostats operate an on / off hydronic heating zone. Communication allows the thermostats to work together and with the boiler control to provide superior comfort and optimal efficiency. Four-wire thermostats allow for either point-to-point or daisy chain wiring configurations and are best suited for new construction.

Auxiliary Sensor Options	Description	Type	Product
None	tekmarNet® 4 Thermostat 537 One Stage Heat	537	
Room, Floor, Outdoor	tekmarNet® 4 Thermostat 538 One Stage Heat	538	
None	tekmarNet® 4 Thermostat 540 One Stage Heat, One Stage Cool, One Fan	540	
None	tN4 Wiring Center 315 Six Zone Valves	315	
None	tN4 Wiring Center 316 Four Zone Pumps	316	

Designer Series (2 Wire)

Designer series communicating thermostats operate multiple stages of heating and cooling. Communication allows the thermostats to work together and with the boiler control to provide superior comfort and optimal efficiency. Two-wire thermostats allow for easy point-to-point wiring in retrofit installations.

Auxiliary Sensor Options	Descriptions	Type	Product
None	tN2 Zone Expansion Module 324 Four Zones, Cooling & Fan	324	
None	tN2 Zone Manager 334 Four Zones, Cooling & Fan	334	

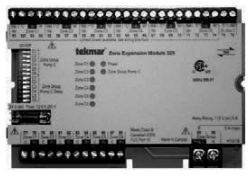
Note: Each Zone Manager must be paired together with an HVAC Systems–Designer Series reset module. Each Zone Expansion Module must be paired together with a Zone Manager or Power Manager.

Zoning

Thermostats & Zoning Controls

Designer Series (4 Wire)

Designer series communicating thermostats operate multiple stages of heating and cooling. Communication allows the thermostats to work together and with the boiler control to provide superior comfort and optimal efficiency. Four-wire thermostats allow for either point-to-point or daisy chain wiring configurations and are best suited for new construction.

Product	Type	Description	Auxiliary Sensor Options
	541	tekmarNet® 4 Thermostat 541 One Stage Heat	Room, Floor, Outdoor
	542	tekmarNet® 4 Thermostat 542 One Stage Heat	Room, Floor, Outdoor, Remote
	543	tekmarNet® 4 Thermostat 543 Two Stage Heat	Room, Floor, Outdoor, Remote
	544	tekmarNet® 4 Thermostat 544 One Stage Heat, One Stage Cool, One Fan	Room, Floor, Outdoor, Remote
	545	tekmarNet® 4 Thermostat 545 Two Stage Heat, One Stage Cool, One Fan	Room, Floor, Outdoor, Remote, Duct, Coil
	546	tekmarNet® 4 Thermostat 546 Two Stage Heat, One Stage Cool, Two Fan	Room, Floor, Outdoor, Remote, Duct, Coil
	325	tN4 Zone Expansion Module 325 Six Zone Valves	None
	326	tN4 Zone Expansion Module 326 Three Zone Pumps	None
	335	tN4 Zone Manager 335 Six Zone Valves	None
	336	tN4 Zone Manager 336 Four Zone Pumps	None
	337	tN4 Zone Manager 337 Three + Three Zone Valves	None

Note: Each Zone Manager must be paired together with an HVAC Systems–Designer Series reset module. Each Zone Expansion Module must be paired together with a Zone Manager or Power Manager.

Classic Series

Classic series stand-alone controls provide either manual operation using a slab sensor or fully automatic operation using a snow / ice sensor.

Included	Description	Type	Product
1 x Outdoor Sensor 070 1 x Slab Sensor 072	Snow Melting Control 650 Pulse Width Modulation	650	
1 x Outdoor Sensor 070 3 x Universal Sensor 082	Snow Detector & Melting Control 664 Two Zone, Two Stage Boiler & Mixing	664	
1 x Outdoor Sensor 070	Snow Detector & Melting Control 665 Pulse Width Modulation	665	
1 x Outdoor Sensor 070 3 x Universal Sensor 082	Snow Detector & Melting Control 667 Variable Speed	667	
None	Snow / Ice Sensor 090 65 ft. (20 m) Wire	090	
None	Snow / Ice Sensor 094 210 ft. (64 m) Wire	094	
None	Snow / Ice Sensor Socket 091	091	

Setpoint

Domestic Hot Water Tanks, Pools & Hot Tubs

Classic Series

Classic series stand-alone controls operate the mechanical equipment to maintain a fixed heating or cooling temperature at the sensor location.

Product	Type	Description	Included
	150	One Stage Setpoint Control 150	1 x Universal Sensor 071
	152	Two Stage Setpoint Control 152	1 x Universal Sensor 071
	153	Mixing Setpoint Control 153 Floating Action	1 x Universal Sensor 071
	257	DHW Control 257 Two Stage	1 x Universal Sensor 071

Performance Series

Performance series communicating setpoint controls operate the mechanical equipment to maintain a fixed heating or cooling temperature at the sensor location. Communication allows the setpoint control to work together with the boiler control to provide superior comfort and optimal efficiency.

Product	Type	Description	Included
	161	tekmarNet®4 Setpoint Control 161 One Stage Heat	1 x Universal Sensor 071
	162	tekmarNet®4 Setpoint Control 162 One Stage Heat/Cool	1 x Universal Sensor 071

Accessories

Valves, Actuators, Timers, Remote Access, Sensors & More

Valves and Actuators

Description	Type	Product
3-Way Mixing Valve 710 - 3/4" Brass	710	
3-Way Mixing Valve 711 - 1" Brass	711	
3-Way Mixing Valve 712 - 1-1/4" Brass	712	
3-Way Mixing Valve 713 - 1-1/2" Brass	713	
3-Way Mixing Valve 714 - 2" Brass	714	
4-Way Mixing Valve 720 - 3/4" Brass	720	
4-Way Mixing Valve 721 - 1" Brass	721	
4-Way Mixing Valve 722 - 1-1/4" Brass	722	
4-Way Mixing Valve 723 - 1-1/2" Brass	723	
4-Way Mixing Valve 724 - 2" Brass	724	
Actuator Motor 741 6 N•m Rotary Motion	741	

Timers and Remote Access

Description	Type	Product
tekmarNet®4 Timer 033	033	
tN4 User Switch 479 Pre-Programmed	479	
tN4 User Switch 480 Three Inputs	480	
tN4 User Switch 481 Three Outputs	481	
tN4 Gateway 482 RS232 (for Home Automation Systems)	482	
tN4 Gateway 483 USB (for Internet Access)	483	

Accessories

Valves, Actuators, Timers, Remote Access, Sensors & More

Sensors

Product	Type	Description
	070	Outdoor Sensor 070
	071	Universal Sensor 071 1' (300 mm) wire
	072	Slab Sensor 072 20' (6 m) wire
	073	Slab Sensor 073 40' (12 m) wire
	076	Indoor Sensor 076 G Enclosure
	077	Indoor Sensor 077 Cover Plate
	078	Universal Sensor 078 15' (4.6 m) wire
	079	Slab Sensor 079 10' (3 m) wire

Product	Type	Description
	080	Universal Sensor Enclosure 080
	081	Three Outdoor Sensor Module 081
	082	Universal Sensor 082 8' (2.4 m) wire
	083	Duct Sensor 083 6" Probe
	084	Indoor Sensor 084 Flush Mount
	085	Solar Sensor 085 5' (1.5 m) Wire
	090	Snow / Ice Sensor 090 65 ft. (20 m) Wire
	094	Snow / Ice Sensor 094 210 ft. (64 m) Wire
	091	Snow / Ice Sensor Socket 091

Accessories

Valves, Actuators, Timers, Remote Access, Sensors & More

Miscellaneous

Description	Type	Product
10K Temperature Simulator 002	002	
Relay 003 24 V (ac) coil	003	
Relay 004 120 V (ac) coil	004	
0-135 Ω Converter 005	005	
Adaptor Plate 007	007	

Description	Type	Product
24 V (ac) Transformer 009	009	
24 V (ac) Transformer Kit 009K Mounting Box	009K	
Remote Start / Stop Module 039	039	
Remote Display Module 040	040	
Snow Melt Kit 092 (039, 071 & 072) Includes: 1 x Start / Stop Module 039 1 x Universal Sensor 071 1 x Slab Sensor 072	092	

Replacement Parts

Type	Description
054	Room Temperature Unit (RTU) 054
063	Room Temperature Unit (RTU) 063 Display
M3017	Valve Flap Assembly – 1”
M3019	Valve Flap Assembly – 2-1/2”
M3020	Valve Flap Assembly – 3”
M3021	Valve Flap Assembly – 4”
M3022	Seal Kit – 1” to 2”
M3023	Seal Kit – 2-1/2”
M3024	Seal Kit – 3” to 4”
M3025	Valve Handle Kit
M3031	Replacement Shear Pins (3/pkg)
M3045	Actuating Motor Handle Kit for 741
M3046	Coupling Kit for Brass Valves

Type	Description
M3048	Mixing Valve Handle Kit for Brass Valves
M3051	Replacement Fuses (5/pkg) 1.25 A 250 V (ac)
M3052	Replacement Fuses (5/pkg) 15 A 250 V (ac)
M3053	Replacement Fuses (5/pkg) 2.5 A 250 V (ac)
M3056	O-Ring Kit for 3/4” to 1-1/4” Brass Valves
M3057	O-Ring Kit for 1-1/2” to 2” Brass Valves
M3061	Mixing Valve Adapter Kit
M3062	Belimo Actuator - GMB24-3
M9303	DIN Snap Kit (10/pkg)

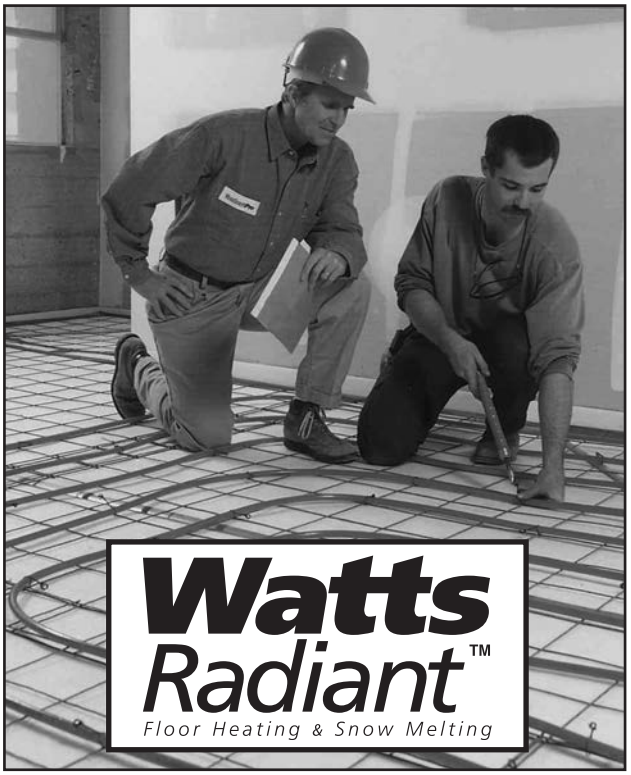
tekmarNet® Thermostat Feature Comparison

Functions	527	528	530	537	538	540	541	542	543	544	545	546
4 Wire / tekmarNet®4				•	•	•	•	•	•	•	•	•
2 Wire / tekmarNet®2	•	•	•									
Heat Stages	1	1	1	1	1	1	1	1	2	1	2	2
Cool Stages			1			1				1	1	2
Fan Stages			1			1				1	1	2
Stand Alone Operation				•	•	•	•	•	•	•	•	•
Auxiliary Sensor Inputs		1			1		1	2	2	2	2	3
Aux Outdoor Sensor		•			•		•	•	•	•	•	•
Aux Floor Sensor		•			•		•	•	•	•	•	•
Aux Remote Room Sensor							•	•	•	•	•	•
Aux Remote Display Sensor							•	•	•	•	•	•
Aux Coil Sensor											•	•
Aux Duct Sensor											•	•
Heating												
Floor Warming		•			•		•	•	•	•	•	•
Zone Synchronization	•	•	•	•	•	•	•	•	•	•	•	•
Zone Post Purge	•	•	•	•	•	•	•	•	•	•	•	•
Auto Heating Cycle	•	•	•	•	•	•	•	•	•	•	•	•
Adjustable Heat Cycle Length							•	•	•	•	•	•
Adjustable Heat Terminal							•	•	•	•	•	•
Radiant Base Load											•	•
Warm Weather Shut Down								•	•	•	•	•
Cooling & Ventilation												
Auto Heat-Cool Switchover			•			•				•	•	•
Cool Group Master			•			•					•	•
Cool Group Member	•	•		•	•		•	•	•		•	•
Cool Min On and Off Times			•			•				•	•	•
Auto/Adjustable Cooling Cycle			•			•				•	•	•
Cooling Interlock			•			•				•	•	•
Ventilation Fan / ERV / HRV			•			•				•	•	•
Fan Coil Min/Max											•	•
Filter										•	•	•
Heat/Cool Priority										•	•	•
Cold Weather Shut Down										•	•	•
Setback												
Optimum Start	•	•	•	•	•	•	•	•	•	•	•	•
Schedule Master								•	•	•	•	•
Schedule Member	•	•	•	•	•	•	•	•	•	•	•	•
Scenes	•	•	•	•	•	•	•	•	•	•	•	•
Away Override Time								•	•	•	•	•
Adjustable Away Temperature		•	•		•	•	•	•	•	•	•	•
Temporary Hold							•	•	•	•	•	•
Daylight Savings Time											•	•
Separate Heat & Cool Schedules											•	•
Miscellaneous												
Monitor Outdoor Hi's & Lo's								•	•	•	•	•
Monitor Room Hi's & Lo's										•	•	•
Monitor Room Hot & Cold Alarms										•	•	•
Monitor Relay On Times										•	•	•
Test Menu										•	•	•
Exercise	•	•	•	•	•	•	•	•	•	•	•	•
Copy Settings Feature							•	•	•	•	•	•

JTG/MUIR
Manufacturer's Representative

Radiant Heating Supply Experts since 1986

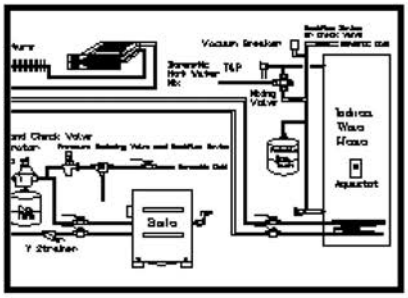
JTG Muir is a pioneering manufacturer's representative for the radiant heating industry having supplied residential, multi-family and commercial systems throughout California and Nevada.



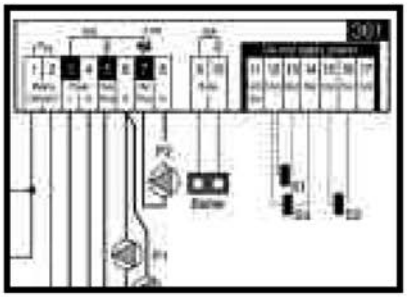
As specialists, we are staffed to meet the technical and product needs of contractors and the specification community.

Complete System Supply

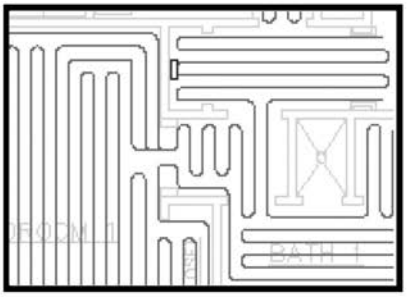
At JTG Muir we have the ability to supply complete radiant systems. We have all the specialty products a wholesaler needs for a system, plus judgement to match the proper components for a given application.



Complete Mechanical



Complete Zoning



Watts Radiant™ Tubing/Manifolds

4723 Tidewater Ave. | Oakland, CA 94601 | Tel: 800-493-8432 | jtgmuir.com

Consultations

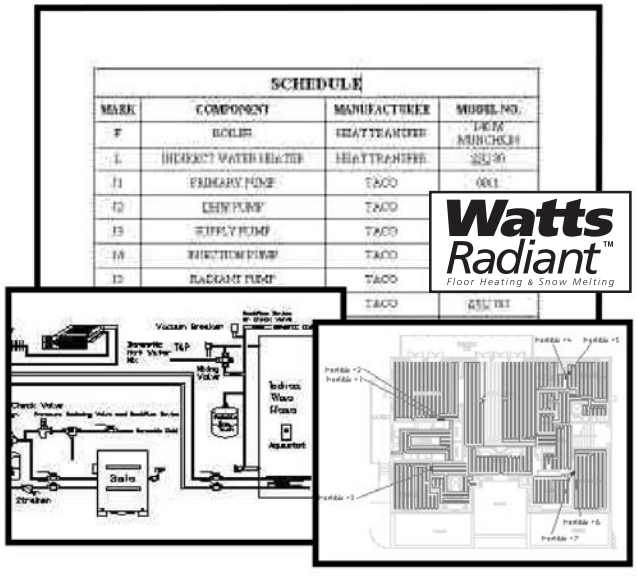
We regularly consult with our wholesalers, along with engineers, architects and contractors to devise the best mechanical solution for specific applications. The flexibility of hydronics offers many potential solutions to heating challenges.

Quotations

Free detailed quotations are available through wholesale distribution, for qualified plumbing, heating and mechanical contractors.

Submittals

For both commercial and large residential projects we make available to our contractors submittals which can include system schematics, control wiring diagrams and CAD tubing layout.



JTG/MUIR Manufacturer's Representative

Project Submittal Form

To provide you an estimate we will require the following information. Please contact us if you have a question about any portion of this questionaire. Fax (510) 434-3141

Company Name	JTG Muir Contact
Contact Name	Project Name
Address	Project City Location
Telephone	Fax
Submittal Date	Project Start Date
Due Date	

Mechanical Requirements

Total Gross Heated Square Footage of Project: _____

New Construction ☐ Retrofit ☐

Residential ☐ Multifamily ☐ Commercial ☐

Number of Zones Desired _____

Type of Heat Source Desired (if known) _____

Fuel Type _____ Fuel Efficiency _____

Mechanical Room Location _____

Roof Vent ☐ Side Vent ☐ Vent Distance _____

Indirect Water Heater? ☐ Gallons _____

Number of Baths _____

Size of Baths _____

Swimming Pool ☐ Gallons _____ Surface Square Feet _____

Radiant Floor Heating

Type of Radiant Heating _____ Locations _____

Thermalboard _____

Raised Floor w/ Topping _____

Slab on Grade _____

Underfloor _____

On Slab w/ Topping _____

Number of Zones Desired _____ Locations _____

Snowmelt

Total Heated Area _____

Construction Type Concrete ☐ Asphalt ☐ Pavers ☐

Tubing Depth Residential _____ Commercial _____

Automatic Controls ☐ Manual Controls ☐

Edge Insulation ☐ Underslab insulation ☐

JTG/MUIR
Manufacturer's Representative

Project Submittal Form - Page 2

Project Name _____

Radiators / Baseboards / Convectors

Select Type of Radiation Desired: (Radiation Type)

Hawkstone	HS	Column	C
Select	S	Bench	B
Select IVC	IVC	Cast Iron	CI
Low Surface Temperature	LST	Towel Warmer	TW
Décor	D	Kickspace Convector	KC
		Infloor Convector	IC
		Wall Convector	WC

Room	Location	Radiation Type	Room Sq. Ft.
1.)			
2.)			
3.)			
4.)			
5.)			
6.)			
7.)			
8.)			
9.)			
10.)			
11.)			
12.)			
13.)			
14.)			

Notes:

ONIX™

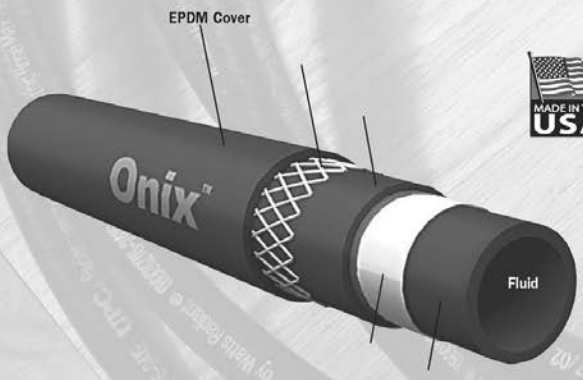
KING OF UNDERFLOOR

Onix Radiant Tubing Onix Clamps Onix Fittings

Onix is an EPDM-based, aramid fiber reinforced tube with an aluminum oxygen barrier. Its unmatched flexibility and durability make Onix the best tubing for underfloor radiant, cold weather installations, and snow melt.

- **Proven in tens of thousands of installations across North America.**
- **Onix is Easy to Install at Any Temperature, Cutting Installation Times by as Much as 50%!**
- **Onix Does Not Expand or Contract, and will Never Make Any Noise.**
- **Onix has Excellent UV Resistance.**
- **Onix is Not Damaged by Kinking.**

Unlike PEX, Onix does not expand and contract and it always stays in contact with the subfloor, making it ideal for Underfloor applications.



MADE IN THE USA

Underfloor radiant lets builders construct a home the way they normally do, without pouring concrete, double plating, or other special considerations that can stop a radiant project in its tracks.

With remodels on the rise, Onix is a great way to tap into this growing market. You can easily snake Onix through floor joists, around nails, piping, ducts and other obstacles you're sure to find in a remodel project.

Onix carries a 25-year warranty for residential and commercial heating and snowmelting applications.

WattsRadiant™
Floor Heating & Snow Melting

4723 Tidewater Ave. | Oakland, CA 94601 | Tel: 800-493-8432 | jtgmuir.com

Onix™ Radiant Tubing

Standard Onix Coils — Oxygen barrier tubing for radiant heating, snow melting, and supply & return piping.

DESCRIPTION	MODEL #	ORDER #	WT. (lbs)
3/8" Onix			
3/8" Onix x 120' Coil	086061-120	81001556	22
3/8" Onix x 140' Coil	086061-140	81001557	25
3/8" Onix x 160' Coil	086061-160	81001558	29
3/8" Onix x 180' Coil	086061-180	81001559	32
3/8" Onix x 200' Coil	086061-200	81001560	36
3/8" Onix x 600' Spool	086061-600	81001565	108
1/2" Onix			
1/2" Onix x 200' Coil	086081-200	81001579	46
1/2" Onix x 250' Coil	086081-250	81001582	58
1/2" Onix x 300' Coil	086081-300	81001584	69
1/2" Onix x 400' Spool	086081-400	81001587	92
1/2" Onix x 600' Spool	086081-600	81001590	138
5/8" Onix			
5/8" Onix x 50' Coil	086101-50	81001612	13
5/8" Onix x 100' Coil	086101-100	81001600	25
5/8" Onix x 200' Coil	086101-200	81001603	50
5/8" Onix x 300' Spool	086101-300	81001605	75
5/8" Onix x 400' Spool	086101-400	81001609	100
5/8" Onix x 600' Spool	086101-600	81001616	150
3/4" Onix			
3/4" Onix x 50' Coil	086121-50	81001635	18
3/4" Onix x 100' Coil	086121-100	81001627	35
3/4" Onix x 200' Coil	086121-200	81001629	70
3/4" Onix x 300' Spool	086121-300	81001631	105
3/4" Onix x 400' Spool	086121-400	81001634	140
1" Onix			
1" Onix x 50' Coil	086161X-50	81001647	28
1" Onix x 100' Spool	086161X-100	81001642	55
1" Onix x 200' Spool	086161X-200	81001644	110

Onix with AlumaShield oxygen barrier is rated to 180°F at 100 psi.

Onix tubing can be special ordered in other lengths; round 3/8" Onix to the nearest 20' length desired, and all other sizes to the nearest 25'.

Onix is tested to relevant portions of several ASTM standards and carries the UPC mark as approved by the International Association of Plumbing and Mechanical Officials (IAPMO).

ICC See ICC-ES Legacy Report No. 95-47.02

The Word from the Field about Onix . . .

"Onix is our preferred tubing for staple-up. It flexes like rope, can be doubled-up and pushed through holes, and flattens slightly during staple-up, greatly improving heat transfer."

—Dave Yates
F. W. Behler, Inc.

Onix Baseboard Coils — for connecting to baseboard, fan coils, or kick space heaters.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Onix x 50'	1	086081-50	81001588	12
1/2" Onix x 100'	1	086081-100	81001576	24
5/8" Onix x 50'	1	086101-50	81001612	13
5/8" Onix x 100'	1	086101-100	81001600	25
5/8" Onix x 200'	1	086101-200	81001603	50
3/4" Onix x 50'	1	086121-50	81001635	18
3/4" Onix x 100'	1	086121-100	81001627	35
3/4" Onix x 200'	1	086121-200	81001629	70

Onix Baseboard/Kickspace Fitting Kits — Make connections to baseboard or kickspace heaters even simpler with these kits.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Onix Baseboard Fittings Kit	1	ONIXBBKIT500	81012659	1
5/8" Onix Baseboard Fittings Kit	1	ONIXBBKIT625	81012660	2
3/4" Onix Baseboard Fittings Kit	1	ONIXBBKIT750	81012661	2

Each kit contains the following items:
– (1) Onix x Female Sweat elbow
– (1) Onix x Male Sweat elbow
– (2) Onix x Male Sweat barbs
– (4) Onix SelfTite Clamps

Onix™ is fast, quiet, hassle free, and remains highly flexible in cold conditions.

Onix Fittings

SelfTite™ Clamps — Pre-tensioned for easy field installation. The chrome-vanadium spring steel maintains a constant tension on the Onix under all operating conditions. SelfTites incorporate a zinc coating to guard against corrosion.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/8" SelfTite Clamp (19 mm)	10	663019-10	81000523	3
3/8" SelfTite Clamp (19 mm)	50	663019-50	81000524	8
1/2" SelfTite Clamp (22 mm)	10	663022-10	81000526	4
1/2" SelfTite Clamp (22 mm)	50	663022-50	81000527	10
5/8" SelfTite Clamp (25 mm)	10	663025-10	81000529	4
5/8" SelfTite Clamp (25 mm)	50	663025-50	81000530	10
3/4" SelfTite Clamp (29 mm)	10	663029-10	81000532	5
3/4" SelfTite Clamp (29 mm)	50	663029-50	81000533	11

TorqueTite™ Clamps — our best stainless steel screw clamps.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/8" TorqueTite Clamp (17–19 mm)	10	6641117-10	81002913	2
3/8" TorqueTite Clamp (17–19 mm)	50	6641117-50	81002914	6
1/2" TorqueTite Clamp (21–23 mm)	10	6641524-10	81002916	2
5/8" TorqueTite Clamp (25–27 mm)	10	6641928-10	81002919	2
3/4" TorqueTite Clamp (29–31 mm)	10	6642232-10	81002922	2
1" TorqueTite Clamp (37–40 mm)	10	6643244-10	81002925	3

The Onix **TorqueTite** is a rugged, stainless steel clamp capable of withstanding large pressures and temperatures while being easy to install. Do not overtighten!

SST20 Onix Swivel Fittings — for Stainless Steel, and Custom Tubular Manifolds.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/8" Onix x 3/4" BSP Swivel Fitting	10	689001-10	81000679	1
1/2" Onix x 3/4" BSP Swivel Fitting	10	689002-10	81000681	1
5/8" Onix x 3/4" BSP Swivel Fitting	10	689003-10	81000683	2
3/4" Onix x 3/4" BSP Swivel Fitting	10	689004-10	81000684	2

Use these female **Onix T20 Fittings** to connect Onix to our Stainless Steel, and Custom Tubular compression manifolds. Order Onix SelfTite or TorqueTite clamps separately.

Note: BSP threads are not compatible with NPT.

Onix Barb x Male Sweat Fittings — for transitioning Onix to sweat fittings.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/8" Onix x 1/2" Male Sweat Adapter	10	684001-10	81000659	1
3/8" Onix x 1/2" Male Sweat Adapter	50	684001-50	81000660	4
1/2" Onix x 1/2" Male Sweat Adapter	10	685001-10	81000663	1
1/2" Onix x 1/2" Male Sweat Adapter	50	685001-50	81000664	4
5/8" Onix x 1/2" Male Sweat Adapter	10	686001-10	81000667	1
5/8" Onix x 1/2" Male Sweat Adapter	50	686001-50	81000668	4
3/4" Onix x 3/4" Male Sweat Adapter	10	687001-10	81000671	2
3/4" Onix x 3/4" Male Sweat Adapter	50	687001-50	81000672	9
1" Onix x 1" Male Sweat Adapter	10	688001-10	81000675	4

Sweat **Onix Barbs** into copper tees or ball valves for easy field manifold construction

Onix Fittings

Onix Barb x MNPT Fittings — for transitioning Onix to female NPT fittings.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/8" Onix x 1/2" MPT	10	180806-10	81005046	1
1/2" Onix x 1/2" MPT	10	180808-10	81005047	1
5/8" Onix x 1/2" MPT	10	180810-10	81005048	1
3/4" Onix x 3/4" MPT	10	181212-10	81005051	2
1" Onix x 3/4" MPT	10	181213-10	81005052	3
1" Onix x 1" MPT	10	181214-10	81005053	4

T20 3/4" Male BSP x Male Sweat Fittings — for use with SST20 Onix swivel fittings.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/4" Male BSP x 1/2" Male Sweat Fitting	10	PX690500-10	81001507	1
3/4" Male BSP x 3/4" Male Sweat Fitting	10	PX690750-10	81001510	1

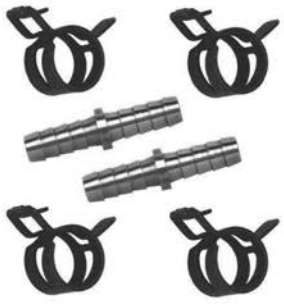
These fittings are manufactured for use with SST20 Onix swivel fittings (threaded female), and are offered in two sizes to fit 1/2" or 3/4" copper fittings.

Note: BSP threads are not compatible with NPT.

Onix Sweat Elbow Fittings — for connecting Onix supply lines to baseboard, fan coils, or kick space heaters.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Onix x 3/4" Female Sweat	10	185074-10	81000116	3
5/8" Onix x 3/4" Female Sweat	10	185625-10	81000120	3
3/4" Onix x 3/4" Female Sweat	10	185075-10	81000118	3
1/2" Onix x 3/4" Male Sweat	10	186074-10	81010464	3
5/8" Onix x 3/4" Male Sweat	10	186625-10	81010466	3
3/4" Onix x 3/4" Male Sweat	10	186075-10	81010465	3

Use these all brass **Onix Elbow Fittings** to make transitions to baseboards, radiators, or fan coils when using Onix as supply/return piping.



SelfTite™ Onix Repair Kits — preassembled kits for field repairs. Each repair kit includes two splices and four SelfTite clamps.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/8" SelfTite Onix Repair Kit	1 kit	660075	81000507	1
1/2" SelfTite Onix Repair Kit	1 kit	660085	81000509	1
5/8" SelfTite Onix Repair Kit	1 kit	660105	81000511	2
3/4" SelfTite Onix Repair Kit	1 kit	660125	81000513	2

Onix Fittings

TorqueTite™ Onix Repair Kits — pre-assembled kit for field repairs. Each repair kit includes two splices and four TorqueTite clamps.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/8" TorqueTite Repair Kit	1 kit	660076	81000508	1
1/2" TorqueTite Repair Kit	1 kit	660086	81000510	1
5/8" TorqueTite Repair Kit	1 kit	660106	81000512	2
3/4" TorqueTite Repair Kit	1 kit	660126	81000514	2
1" TorqueTite Repair Kit	1 kit	660166	81000515	4

Onix Couplings — for making field repairs.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/8" Onix Coupling	10	677062-10	81000611	1
1/2" Onix Coupling	10	677082-10	81000615	1
5/8" Onix Coupling	10	677101-10	81000618	1
3/4" Onix Coupling	10	677121-10	81000621	1
1" Onix Coupling	10	677122-10	81000623	2

Use **Onix Couplings** to make field repairs and connections when necessary. Be sure to use Watts Radiant's TorqueTite or SelfTite clamps when making all field splice repairs and closely follow all

Mini Ball and Balancing Valves — for circuit isolation and balancing on field-built manifolds.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/8" Onix x 1/2" Male Sweat MBV (0.44"	1	446105	81000366	3

Use **Mini Ball Valves** to isolate and/or regulate the flow of individual tubing circuits on field built manifolds.

15

RadiantPEX+™

Cross-linked Polyethylene Tubing w/EVOH Barrier

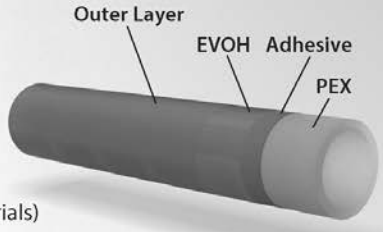
RadiantPEX+ Tubing CrimpRing Fittings CinchClamp Fittings Compression Fittings

Superior Protection

RadiantPEX+™

Now, all 3/8" through 1" Watts RadiantPEX+ has an **outer layer** for greater protection. This outer layer adds several benefits:
- Easier to pull through joists
- Reduces expansion noise in walls and floors
- Protects the oxygen barrier from job-site abuse
- Protects the oxygen barrier against moisture
- Improves flexibility

All of our barrier PEX offers these benefits over traditional piping systems:
- Light and easy to transport and store
- Extremely flexible
- Maintenance free
- Corrosion resistant
- Connection systems that are fast and reliable



Commercial Approvals:
- Conforms to UL 263 (fire test of building and construction materials)
- Conforms to ASTM E-84

Silane Cross-linking is Better

Our Superior Silane technology enables higher burst strengths and higher anti-oxidant protection than other PEX manufacturing methods. Silane manufacturing is the most widely used process to manufacture PEX, and has been proven world-wide for over 30 years.

WattsRadiant™
Floor Heating & Snow Melting

MADE IN THE USA

Codes, Listings and Standards

- RadiantPEX+ and RadiantPEX are manufactured to American Standard Testing Methods (ASTM F-876 and F-877) and to SDR9 dimensions. These standards include requirements and testing methods for materials, workmanship, dimensions, environmental stress cracking, sustained hydrostatic pressure strength, bend strength, and degree of cross-linking. RadiantPEX and RadiantPEX+ meet or exceed these standards.
- RadiantPEX+ and RadiantPEX are tested and listed by the National Sanitation Foundation to NSF-14 (rfh).
- RadiantPEX+ and RadiantPEX conform to ASTM E-84 (Standard Test Method for Surface Burning Characteristics of Building Materials) and UL 263 (Fire Tests of Building Construction and Materials).
- RadiantPEX+ and RadiantPEX are listed by the International Code Council Evaluation Service (ICC) to Report #ESR-1155, and PMG-1008 which give compliance to IPC, IMC, UMC, and UPC.
- All RadiantPEX+ and RadiantPEX pipe is certified to CSA Standard B137.5.
- All RadiantPEX+ and RadiantPEX carries a 25-year warranty for residential and commercial heating and snowmelting applications.

PMG

PLASTICS PIPE INSTITUTE® Member Company

NSF-rfh C US

NSF U.P. Code

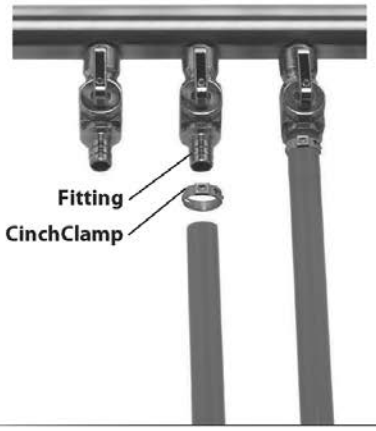
ASTM

RadiantPEX+ and RadiantPEX® Coils — Oxygen Barrier PEX tubing for radiant heating, snowmelting, and supply and return piping. Use sticks up to 2" for hydronic supply and return piping

	DESCRIPTION	MODEL #	ORDER #	WT. (lbs)
4 Layer Pex	3/8" RadiantPEX+ x 600' Coil	PB032061-600	81000850	26
	NEW 1/2" RadiantPEX+ **custom length coil**	PB032081-1	81010820	–
	1/2" RadiantPEX+ x 100' Coil	PB032081-100	81001680	6
	1/2" RadiantPEX+ x 300' Coil	PB032081-300	81003406	17
	1/2" RadiantPEX+ x 600' Coil	PB032081-600	81001682	27
	1/2" RadiantPEX+ x 1000' Coil	PB032081-1000	81001681	55
	NEW 5/8" RadiantPEX+ **custom length coil**	PB032101-1	81010815	–
	NEW 5/8" RadiantPEX+ x 100' Coil	PB032101-100	81010422	10
	NEW 5/8" RadiantPEX+ x 300' Coil	PB032101-300	81009852	27
	NEW 5/8" RadiantPEX+ x 500' Coil	PB032101-500	81009711	43
	5/8" RadiantPEX+ x 600' Coil	PB032101-600	81001684	51
	5/8" RadiantPEX+ x 1200' Coil	PB032101-1200	81001683	102
	NEW 3/4" RadiantPEX+ **custom length coil**	PB032121-1	81010819	–
	3/4" RadiantPEX+ x 100' Coil	PB032121-100	81001685	11
	3/4" RadiantPEX+ x 300' Coil	PB032121-300	81005303	27
	NEW 3/4" RadiantPEX+ x 500' Coil	PB032121-500	81001687	44
	3/4" RadiantPEX+ x 600' Coil	PB032121-600	81001688	53
	NEW 3/4" RadiantPEX+ x 1000' Coil	PB032121-1000	81009868	88
	3/4" RadiantPEX+ x 1200' Coil	PB032121-1200	81001686	106
	3/4" RadiantPEX+ x 20' sticks (bundle of 25)	PB32121-20	81007368	42
	NEW 1" RadiantPEX+ **custom length coil**	PB032161-1	81010965	–
	1" RadiantPEX+ x 100' Coil	PB032161-100	81004923	18
	1" RadiantPEX+ x 300' Coil	PB032161-300	81009361	26
	1" RadiantPEX+ x 600' Coil	PB032161-600	81002954	107
	1" RadiantPEX+ x 20' sticks (bundle of 5)	PB032161-20	81007367	16
3 Layer Pex	1-1/4" RadiantPEX x 100' Coil	PB032181-100	81009109	26
	1-1/4" RadiantPEX x 300' Coil	PB032181-300	81009110	73
	1-1/4" RadiantPEX x 20' sticks (bundle of 5)	PB032181-20	81009118	24
	NEW 1-1/2" RadiantPEX x 100' Coil	PB032201-100	81009994	32
	NEW 1-1/2" RadiantPEX x 300' Coil	PB032201-300	81009995	95
	NEW 1-1/2" RadiantPEX x 20' sticks (bundle of 5)	PB032201-20	81009993	32
	NEW 2" RadiantPEX x 100' Coil	PB032221-100	81010853	43
	NEW 2" RadiantPEX x 300' Coil	PB032221-300	81010854	129
	NEW 2" RadiantPEX x 20' sticks (bundle of 5)	PB032221-20	81010855	43

Unlike some PEX connection systems, our three choices for RadiantPEX+ connections can be quickly made and immediately pressure tested.

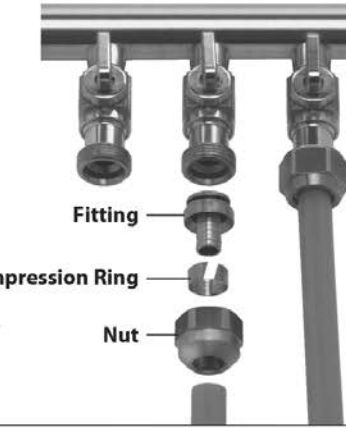
CinchClamps™ unique stainless steel design allows for easier connections in tight, hard-to-reach spaces.



CrimpRings™ are precision-formed, ductile copper connectors. When crimped to brass crimp fittings, these connectors form a permanent seal.

Crimping technology has been proven by hundreds of millions of connections over the last three decades.

SST-20 Compression fittings do not require any special tools. A simple crescent wrench is all that is needed.



Non-Oxygen Barrier PEX Tubing

Non-barrier PEX — for heating and snow melting.

DESCRIPTION	MODEL #	ORDER #	WT. (lbs)
5/8" WaterPEX x 600' Coil, White	P022101-600W	81004125	48
5/8" WaterPEX x 1200' Coil, White	P022101-1200W	81004126	96
1/2" WaterPEX x 300' Coil, White	P022081-300W	81006282	16
1/2" WaterPEX x 1000' Coil, White	P022081-1000W	81006287	55
3/4" WaterPEX x 500' Coil, White	P022121-500W	81006288	45
3/4" WaterPEX x 1000' Coil, White	P022121-1000W	81004122	106
1" WaterPEX x 100' Coil, White	P022161-100W	81006292	18
1" WaterPEX x 500' Coil, White	P022161-500W	81004124	106
1-1/4" WaterPEX x 100' Coil, White	P022181-100W	81006293	25
1-1/4" WaterPEX x 300' Coil, White	P022181-300W	81004140	72

Note: If using non-barrier WaterPEX for heating or snow melting systems, use a heat exchanger to isolate ferrous components or use a suitable water or glycol treatment.

PEX Crimp Fittings

Copper CrimpRings — for securing PEX to brass crimp fittings.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/8" CrimpRing	100	PCCR2X-100	81001071	1
1/2" CrimpRing	100	PCCR3X-100	81001075	1
5/8" CrimpRing	100	PCCR6X-100	81004508	2
3/4" CrimpRing	100	PCCR4X-100	81001080	2
1" CrimpRing	100	PCCR5X-100	81001084	3
1-1/4" CrimpRing	10	PCCR7X-10	81011152	3
NEW 1-1/2" CrimpRing	10	PCCR9X-10	81011129	1

Copper CrimpRings are precision-formed, ductile copper connectors. When crimped, these connections form a simple, fast, and permanent seal between PEX and CrimpRing fittings. 1-1/2" CrimpRings require a Power Crimp Tool.

Stainless Steel CinchClamps™ — for fast, easy, one-tool connections.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/8" CinchClamps	10	PCCC2X-10	81004993	1
3/8" CinchClamps	100	PCCC2X-100	81004994	1
1/2" CinchClamps	10	PCCC3X-10	81004995	1
1/2" CinchClamps	100	PCCC3X-100	81004996	1
5/8" CinchClamps	10	PCCC6X-10	81005114	2
5/8" CinchClamps	100	PCCC6X-100	81005115	3
3/4" CinchClamps	10	PCCC4X-10	81004997	2
3/4" CinchClamps	100	PCCC4X-100	81004998	3
1" CinchClamps	10	PCCC5X-10	81005001	2
1" CinchClamps	100	PCCC5X-100	81005002	3

CinchClamps have been proven in millions of connections.

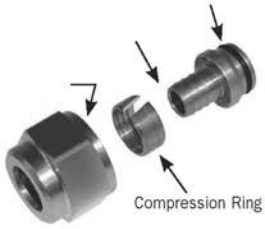
PEX SST20 Fittings

SST20 Crimp Swivel Fittings — for connecting PEX to Watts Radiant's Stainless Steel and Custom Tubular Compression manifolds.

DESCRIPTION		MODEL #	ORDER #	WT. (lbs)
3/8" Crimp x 3/4" SST20 Swivel BSP Fitting	10	PC690001-10	81005160	1
1/2" Crimp x 3/4" SST20 Swivel BSP Fitting	10	PC690002-10	81005162	1
5/8" Crimp x 3/4" SST20 Swivel BSP Fitting	10	PC690003-10	81005164	2
3/4" Crimp x 3/4" SST20 Swivel BSP Fitting	10	PC690004-10	81005395	2

Use these **SST20 Crimp Fittings** to connect PEX to our Stainless Steel or T20 Custom Tubular Manifolds. Order CrimpRings or CinchClamps separately.

Note: BSP Stands for British Standard Pipe (threads). These threads are not compatible with NPT (National Pipe Threads).



SST20 PEX Compression Fittings — for connecting PEX to Stainless Steel manifolds, and Custom Tubular T20 compression manifolds, or 3/4" male BSP x male sweat fittings.

DESCRIPTION		MODEL #	ORDER #	WT. (lbs)
3/8" PEX Compression x 3/4" SST20 Swivel	10	PX690001-10	81005166	1
1/2" PEX Compression x 3/4" SST20 Swivel	10	PX690002-10	81005168	1
5/8" PEX Compression x 3/4" SST20 Swivel	10	PX690003-10	81005170	2
3/4" PEX Compression x 3/4" SST20 Swivel	10	PX690004-10	81005172	2

PEX Crimp Fittings

Crimp x Male Sweat Adapters — for connecting PEX to sweat fittings or manifolds.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/8" Crimp x 1/2" Male Sweat Adapter	10	PC637X-10	81001027	1
1/2" Crimp x 1/2" Male Sweat Adapter	10	PC650X-10	81001030	1
5/8" Crimp x 1/2" Male Sweat Adapter	10	PC660X-10	81003685	1
5/8" Crimp x 3/4" Male Sweat Adapter	10	PC670X-10	81003427	1
3/4" Crimp x 3/4" Male Sweat Adapter	10	PC675X-10	81001034	2
1" Crimp x 1" Male Sweat Adapter	10	PC700X-10	81001037	2
1-1/4" Crimp x 1-1/4" Male Sweat Adapter	10	PC725X-10	81005381	3
NEW 1-1/2" Crimp x 1-1/2" Male Sweat	10	PC795X-10	81011130	4

Note: All 1-1/4" crimp fittings are equipped with O-rings. 1-1/2" CrimpRings require a Power Crimp Tool. 3/8" - 1" PEX fittings can be used with either Crimp or Cinch connector. 1-1/4" and larger can only be used with Crimp connectors.

Crimp x Female Sweat Adapters — for connecting PEX to sweat fittings or manifolds.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Crimp x 1/2" Female Sweat Adapter	10	PC750X-10	81001040	1
3/4" Crimp x 3/4" Female Sweat Adapter	10	PC775X-10	81001043	1
1" Crimp x 1" Female Sweat Adapter	10	PC780X-10	81003031	2
1-1/4" Crimp x 1-1/4" Female Sweat Adapter	10	PC785X-10	81009387	2
NEW 1-1/2" Crimp x 1-1/2" Female Sweat	10	PC790X-10	81011131	3

Note: All 1-1/4" crimp fittings are equipped with O-rings. 1-1/2" CrimpRings require a Power Crimp Tool.

Crimp x Male NPT Adapters — for connecting PEX to female fittings and valves.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/8" Crimp x 1/2" MPT Adapter	10	PCMC23X-10	81005382	2
1/2" Crimp x 1/2" MPT Adapter	10	PCMC33X-10	81005383	2
1/2" Crimp x 3/4" MPT Adapter	10	PCMC34X-10	81005384	2
5/8" Crimp x 3/4" MPT Adapter	10	PCMC64X-10	81005385	2
3/4" Crimp x 1/2" MPT Adapter	10	PCMC43X-10	81005386	2
3/4" Crimp x 3/4" MPT Adapter	10	PCMC44X-10	81005387	2
1" Crimp x 1" MPT Adapter	10	PCMC55X-10	81005388	3
1-1/4" Crimp x 1-1/4" MPT Adapter	10	PCMC78X-10	81005389	3
NEW 1-1/2" Crimp x 1-1/2" MPT Adapter	10	PCMC99X-10	81011132	4

Note: All 1-1/4" crimp fittings are equipped with O-rings. 1-1/2" CrimpRings require a Power Crimp Tool.

Crimp x Male NPT Elbows

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Crimp x 1/2" MPT Elbow	10	PCE33BTX-10	81005390	2
1/2" Crimp x 3/4" MPT Elbow	10	PCE34BTX-10	81005391	3
3/4" Crimp x 3/4" MPT Elbow	10	PCE44BTX-10	81005392	3

Crimp x Female Sweat Elbow

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Crimp x 3/4" Female Sweat Elbow	10	PCE34-10	81005393	3
5/8" Crimp x 3/4" Female Sweat Elbow	10	PCE64-10	81004786	3
3/4" Crimp x 3/4" Female Sweat Elbow	10	PCE44-10	81005394	3

Use these **Crimp x Sweat Elbow Fittings** to speed the connection of PEX supply lines to baseboard and hydro-air units.

PEX Crimp Fittings

Crimp x Male Sweat Elbow

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Crimp x 3/4" Male Sweat Elbow	10	PCE34M-10	81009374	3
3/4" Crimp x 3/4" Male Sweat Elbow	10	PCE44M-10	81009378	3

Use these **Crimp x Sweat Elbow Fittings** to speed the connection of PEX supply lines to baseboard and hydro-air units.

Crimp x Crimp Elbows (Equal Elbows)

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Crimp Elbow	10	PCE33X-10	81001104	1
3/4" Crimp Elbow	10	PCE44X-10	81001119	1
1" Crimp Elbow	10	PCE55X-10	81003049	2
1-1/4" Crimp Elbow	10	PCE77X-10	81009365	3

Crimp x Crimp Tees (Equal Tees)

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Crimp Tee	10	PCT333X-10	81001186	1
3/4" Crimp Tee	10	PCT444X-10	81001200	2
1" Crimp Tee	10	PCT555X-10	81003075	3
1-1/4" Crimp Tee	10	PCT777X-10	81009793	3

Crimp x Crimp Tees (Unequal Tees) — Run x Run x Branch (1x2x3)

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" x 1/2" x 3/4" Crimp Tee	10	PCT334X-10	81003069	1
3/4" x 3/4" x 1/2" Crimp Tee	10	PCT443X-10	81001197	2
1" x 1" x 3/4" Crimp Tee	10	PCT554X-10	81001208	3
1-1/4" x 1-1/4" x 1" Crimp Tee	10	PCT775X-10	81009794	3

Crimp x Crimp Brass Couplings — for making field repairs or extending PEX lines.


PEX x PEX


1-1/4" PEX x 1-1/4"

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/8" Crimp Coupling	10	PCC22X-10	81005374	1
1/2" Crimp Coupling	10	PCC33X-10	81005375	1
5/8" Crimp Coupling	10	PCC66X-10	81005376	1
3/4" Crimp Coupling	10	PCC44X-10	81005377	2
1" Crimp Coupling	10	PCC55X-10	81005378	2
1-1/4" Crimp Coupling	10	PCC77X-10	81005380	3
NEW 1-1/2" Crimp Coupling	10	PCC99X-10	81011154	5

Use **Crimp x Crimp Brass Couplings** to make field repairs and connections when necessary. Be sure to closely follow all guidelines when making field repairs or connections.All 1-1/4" crimp fittings are equipped with O-rings.

PEX Crimp Fittings

CinchClamp Repair Kits — for making PEX repairs in the field.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/8" CinchClamp Repair Kit	1 Kit	PCCCA2K	81005022	1
1/2" CinchClamp Repair Kit	1 Kit	PCCCA3K	81005023	1
5/8" CinchClamp Repair Kit	1 Kit	PCCCA6K	81005326	1
3/4" CinchClamp Repair Kit	1 Kit	PCCCA4K	81005024	1
1" CinchClamp Repair Kit	1 Kit	PCCCA5K	81005025	1

Each **CinchClamp Repair Kit** contains two double-ended barbs and four CinchClamps, enough for two splices. Each kit includes instructions to help insure that the repair is done properly.

CrimpRing Repair Kits — for making PEX repairs in the field.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/8" CrimpRing Repair Kit	1 Kit	PCCA2K	81001063	1
1/2" CrimpRing Repair Kit	1 Kit	PCCA3K	81001064	1
5/8" CrimpRing Repair Kit	1 Kit	PCCA6K	81003429	1
3/4" CrimpRing Repair Kit	1 Kit	PCCA4K	81001065	1
1" CrimpRing Repair Kit	1 Kit	PCCA5K	81001066	1
1-1/4" CrimpRing Repair Kit	1 Kit	PCCA7K	81004450	1
NEW 1-1/2" CrimpRing Repair Kit (2 couplings, 4	1 Kit	PCCA9K	81011155	1

Each **CrimpRing Repair Kit** contains two double-ended barbs and four CrimpRings, enough for two splices. Each kit includes instructions to help insure that the repair is done properly.

1/2" Crimp x 1/2" Male Sweat

1/2" Crimp x 1/2" Male Sweat MBV-BAL

Mini Ball and Balancing Valves — for circuit isolation and balancing on field-built manifolds.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Crimp x 1/2" Male Sweat Mini Ball Valve (0.44" bore)	1	P12123PX3	81000783	2
1/2" Crimp x 1/2" Male Sweat Mini Balancing Valve (0.44"	1	P12123PX3-BAL	81005416	4

Use **Mini Ball Valves** to isolate and/or regulate the flow of individual tubing circuits. For more exact flow balancing, use **Mini Balancing Valves**, where balancing is accomplished by rotating the threaded spindle below the brass safety cap. Each turn represents approximately 10% of full flow. Approximate Cv is 3.0 (These ball valves are not available in other sizes.)

PEX Compression

3/4" Male BSP x 1/2" Male Sweat

SST20 3/4" Male BSP x Male Sweat Fittings — for use with SST20 Crimp or Compression fittings.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/4" Male BSP x 1/2" Male Sweat Fitting	10	PX690500-10	81001507	1
3/4" Male BSP x 3/4" Male Sweat Fitting	10	PX690750-10	81001510	2

These fittings are manufactured for use with SST20 fittings (threaded female) and are offered in two sizes to fit 1/2" or 3/4" copper fittings. Male fittings are also available pre-installed on all styles of Watts Radiant manifolds.
Note: BSP threads are not compatible with NPT (National Pipe Threads).

PEX Compression Fittings

SST20 Compression Coupling Kits — for joining lengths of PEX.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
SST20 Comp. Coupling Kit for 3/8" PEX	1 Kit	PXCASST2K	81005174	1
SST20 Comp. Coupling Kit for 1/2" PEX	1 Kit	PXCASST3K	81005175	1
SST20 Comp. Coupling Kit for 5/8" PEX	1 Kit	PXCASST4K	81005176	1
SST20 Comp. Coupling Kit for 3/4" PEX	1 Kit	PXCASST5K	81005177	2

Compression Coupling Kits consist of two Compression Couplings and four female Compression fittings.
Note: BSP stands for British Standard Pipe (threads). These threads are not compatible with NPT (National Pipe Threads).
Note: Most building codes do not allow compression couplings in inaccessible locations. Do not bury compression fittings.

NEW

PEX Compression Fittings for Large Diameter PEX

Note: These fittings are not designed for use with R-flex insulated pipe.

PEX Compression Couplings for Large Diameters — for connecting PEX lines.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1-1/2" x 1-1/2" PEX Compression Coupling	1	PCMP99	81011477	4
2" x 2" PEX Compression Coupling	1	PCMP110	81011488	5

Brass fittings with EPDM gasket, locking split clamp, and insert stiffener.

PEX Compression x MPT for Large Diameters — for connecting PEX to fittings or valves.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1-1/2" PEX Compression x 1-1/2" MPT	1	PCMM99	81011478	3
2" PEX Compression x 2" MPT	1	PCMM110	81011490	3

Brass fittings with EPDM gasket, locking split clamp, and insert stiffener.

PEX Compression Elbows for Large Diameters — for making tight bends with large PEX.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1-1/2" PEX Compression Elbow	1	PCEC99	81011479	5
2" PEX Compression Elbow	1	PCEC110	81011489	10

Brass fittings with EPDM gasket, locking split clamp, and insert stiffener.

PEX Compression x MPT Elbows for Large Diameters

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1-1/2" PEX Compression x 1-1/2" MPT Elbow	1	PCEM99	81011480	3
2" PEX Compression x 2" MPT Elbow	1	PCEM110	81011491	4

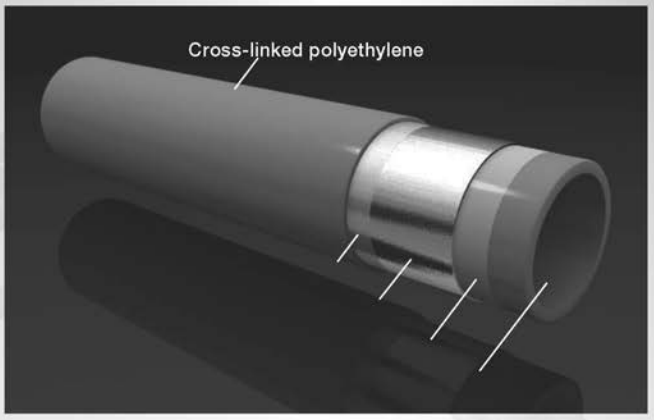
Brass fittings with EPDM gasket, locking split clamp, and insert stiffener.

RadiantPEX-AL™

RadiantPEX-AL Tubing **RadiantPEX-AL Fittings**

The RadiantPEX-AL Advantage.
RadiantPEX-AL is a proven, long lasting composite pipe engineered for radiant floor

- **RadiantPEX-AL installs faster than PEX because it holds its shape, even with one installer.**
- **RadiantPEX-AL has very little expansion/ contraction (about 1/8 that of PEX), so it's ideal for "dry" applications or high temperature distribution piping.**
- **RadiantPEX-AL retains its flexibility in cold**

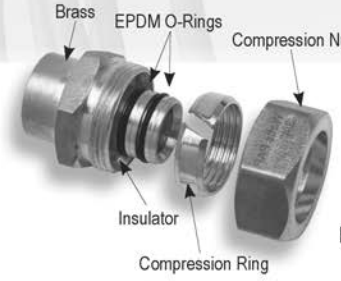


RadiantPEX-AL pipe is constructed with 5 layers, each providing

RadiantPEX-AL Is Built to Last.
RadiantPEX-AL pipe and fittings are

RadiantPEX-AL Press Fittings

Watts Radiant's line of Press fittings offers a clean, reliable method of connection for RadiantPEX-AL. The Stainless Steel sleeve creates a permanent, unyielding union on the outside, while the double O-rings form a dependable and redundant internal seal. A polyethylene insulator protects against corrosion between brass and aluminum pipe layers. Choose from a wide variety of fitting styles and sizes to suit your needs and use just one tool to make all your connections. Press fittings are listed by NSF to NSF-rfh and carry the UPC mark.



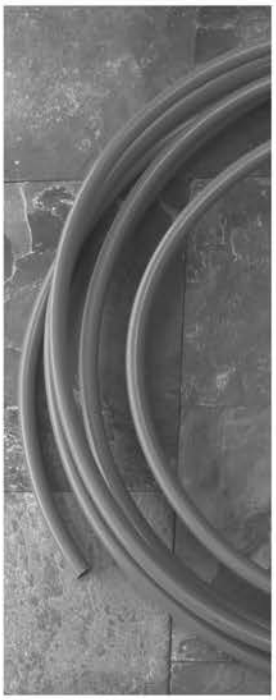
RadiantPEX-AL Compression Fittings

The RadiantPEX-AL compression fitting system from Watts Radiant is as simple as it looks. All you need is a box-end wrench to tighten the nut. Made of solid brass, these fittings are made for long, trouble-free service. Double O-rings and a brass compression ring ensure a leak-proof connection. A polyethylene insulator protects against corrosion between brass and aluminum

Codes, Listings, and Standards.
Tubing: RadiantPEX-AL is manufactured in accordance with American Standard Testing Methods (ASTM) F-1281-2005, is tested and listed by the National Sanitation Foundation (NSF-rfh), and carries the UPC certification mark, as approved by the International Association of Plumbing and Mechanical Officials (IAPMO).
Fittings: Press and Compression Fittings are tested and listed by NSF (NSF-rfh).

RadiantPEX-AL Guarantee.
All RadiantPEX-AL carries a 25-year warranty for residential and commercial heating and snow melting applications.

RadiantPEX-AL Tubing



RadiantPEX-AL can be shaped to fit any job-site condition. Use it for all floor heating and snow melting, as well as supply piping for other hydronic applications.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
NEW 3/8" x 200' (Coil), RadiantPEX-AL	1	RL06-200-OR	81011133	18
1/2" x 300' (Coil), RadiantPEX-AL	1	RL0508-300-OR	81010635	23
1/2" x 500' (Coil), RadiantPEX-AL	1	RL0508-500-OR	81010634	36
1/2" x 1000' (Coil), RadiantPEX-AL	1	RL0508-1000-OR	81010637	70
5/8" x 300' (Coil), RadiantPEX-AL	1	RL10-300-OR	81007605	35
5/8" x 1200' (Coil), RadiantPEX-AL	1	RL10-1200-OR	81007606	130
3/4" x 100' (Coil), RadiantPEX-AL	1	RL12-100-OR	81007607	18
3/4" x 300' (Coil), RadiantPEX-AL	1	RL12-300-OR	81007608	48
3/4" x 500' (Coil), RadiantPEX-AL	1	RL12-500-OR	81007609	73
1" x 100' (Coil), RadiantPEX-AL	1	RL16-100-OR	81007610	20
1" x 300' (Coil), RadiantPEX-AL	1	RL16-300-OR	81007611	54

RadiantPEX-AL Press Fittings

Press sleeves are included with all press fittings.

SST20 RadiantPEX-AL (3/4 FBSP) Press Fitting — for stainless steel and T-20 manifolds.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Press x Adapter, 3/4" SST20 BSP	10	RLP0501B08T20-10	81010719	1
5/8" Press x Adapter, 3/4" SST20 BSP	10	RLP01B10T20-10	81008030	1

Note: BSP threads are not compatible with NPT.

RadiantPEX-AL Adapter — Press x Male Sweat (Copper Fitting)

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Press x 1/2" Male Sweat, Adapter	10	RLP0510B0808-10	81010725	1
1/2" Press x 3/4" Male Sweat, Adapter	10	RLP0510B0812-10	81010721	1
5/8" Press x 1/2" Male Sweat, Adapter	10	RLP10B1008-10	81008036	2
5/8" Press x 3/4" Male Sweat, Adapter	10	RLP10B1012-10	81008038	2
3/4" Press x 3/4" Male Sweat, Adapter	10	RLP10B1212-10	81008040	3
1" Press x 1" Male Sweat, Adapter	5	RLP10B1616-5	81008042	3

O-rings and Insulators are shipped loose for all sweat fittings

RadiantPEX-AL Adapter — Press x Female Sweat (Copper Adapter)

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Press x 1/2" Female Sweat, Adapter	10	RLP0511B0808-10	81010727	1
5/8" Press x 3/4" Female Sweat, Adapter	10	RLP11B1012-10	81008046	2
3/4" Press x 3/4" Female Sweat, Adapter	10	RLP11B1212-10	81008048	2

O-rings and Insulators are shipped loose for all sweat fittings

RadiantPEX-AL Press Fittings

RadiantPEX-AL Adapter - Press x Male NPT

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Press x 3/4" MPT, Adapter	10	RLP0512B0812-10	81010723	2
5/8" Press x 3/4" MPT, Adapter	10	RLP12B1012-10	81008052	2
3/4" Press x 3/4" MPT, Adapter	10	RLP12B1212-10	81008054	3
1" Press x 1" MPT, Adapter	5	RLP12B1616-5	81008056	3

RadiantPEX-AL Press Elbow - Press x Male Sweat

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Press x 3/4" Male Sweat, Elbow	10	RLP0540B0812-10	81010704	2
5/8" Press x 3/4" Male Sweat, Elbow	10	RLP40B1012-10	81008518	3
3/4" Press x 3/4" Male Sweat, Elbow	10	RLP40B1212-10	81008520	3

O-rings and Insulators are shipped loose for all sweat fittings

RadiantPEX-AL Press Elbow - Press x Female Sweat

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Press x 3/4" Female Sweat, Elbow	10	RLP05410812-10	81010706	2
5/8" Press x 3/4" Female Sweat, Elbow	10	RLP411012-10	81008524	3
3/4" Press x 3/4" Female Sweat, Elbow	10	RLP411212-10-10	81008526	3

O-rings and Insulators are shipped loose for all sweat fittings

RadiantPEX-AL Press Elbows (Equal elbows)

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Press Elbow	10	RLP0519B0808-10	81010702	1
5/8" Press Elbow	10	RLP19B1010-10	81008068	1
3/4" Press Elbow	10	RLP19B1212-10	81008070	2
1" Press Elbow	5	RLP19B1616-5	81008072	2

RadiantPEX-AL Press Tees (Equal Tees)

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
NEW 1/2" Press Tee	10	RLP05188080808-10	81011309	3
3/4" Press Tee	10	RLP18B121212-10	81008074	3
1" Press Tee	5	RLP18B161616-5	81008076	3

RadiantPEX-AL Press Tees (Unequal Tees) (1x2x3)

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" x 1/2" x 3/4" Press Tee, Reducing	10	RLP0518B080812-10	81010643	2
3/4" x 3/4" x 1/2" Press Tee, Reducing	10	RLP0518B121208-10	81010641	2
1" x 1" x 5/8" Press Tee, Reducing	5	RLP18B161610-5	81008082	3
1" x 1" x 3/4" PressTee, Reducing,	5	RLP18B161612-5	81008084	3

RadiantPEX-AL Press Fittings

RadiantPEX-AL Press Couplings

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Press Coupling	10	RLP0515B0808-10	81010714	1
5/8" Press Coupling	10	RLP15B1010-10	81008060	1
3/4" Press Couplingg	10	RLP15B1212-10	81008062	2
1" Press Coupling	5	RLP15B1616-5	81008064	2

RadiantPEX-AL Extra Sleeves for Press Fittings

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Extra Press Sleeve	10	RLP0542S08-10	81010648	.5
5/8" Extra Press Sleeve	10	RLP42S10-10	81008559	.5
3/4" Extra Press Sleeve	10	RLP42S12-10	81008560	.5
1" Extra Press Sleeve	10	RLP42S16-10	81008561	.5

Extra Sleeves are only needed if they are damaged or lost in the field.

RadiantPEX-AL Extra Insulators for Press Fittings

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Extra Press Fitting Insulator	10	RLP0543IN08-10	81010699	.5
5/8" Extra Press Fitting Insulator	10	RLP43IN10-10	81008563	.5
3/4" Extra Press Fitting Insulator	10	RLP43IN12-10	81008564	.5
1" Extra Press Fitting Insulator	10	RLP43IN16-10	81008565	.5

Extra Insulators are only needed if they are damaged or lost in the field.

RadiantPEX-AL Extra O-ring for Press Fittings

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Extra Press Fitting O-Ring	10	RLP0544OR08-10	81010652	.5
5/8" Extra Press Fitting O-Ring	10	RLP44OR10-10	81008567	.5
3/4" Extra Press Fitting O-Ring	10	RLP44OR12-10	81008568	.5
1" Extra Press Fitting O-Ring	10	RLP44OR16-10	81008569	.5

Extra O-rings are only needed if they are damaged or lost in the field.

RadiantPEX-AL Compression Fittings

RadiantPEX-AL SST20 Compression Fitting — for stainless steel and T20 manifolds.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
NEW 3/8" Compression x 3/4" SST20 BSP,	10	RLC01B06T20-10	81011138	1
1/2" Compression x 3/4" SST20 BSP, Adapter	10	RLC0501B08T20-10	81010735	1
5/8" Compression x 3/4" SST20 BSP, Adapter	10	RLC01B10T20-10	81008088	2
3/4" Compression x 3/4" SST20 BSP, Adapter	10	RLC01B12T20-10	81007735	2

Compression nut and ring included with all compression fittings.

Note: BSP threads are not compatible with NPT.

RadiantPEX-AL Compression Fittings (continued)

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
NEW 3/8" Compression x 1/2" Male Sweat, Adapter	10	RLC10B0608-10	81011139	1
1/2" Compression x 1/2" Male Sweat, Adapter	10	RLC0510B0808-10	81010731	1
5/8" Compression x 1/2" Male Sweat, Adapter	10	RLC10B1008-10	81008092	1
5/8" Compression x 3/4" Male Sweat, Adapter	10	RLC10B1012-10	81008094	2
3/4" Compression x 3/4" Male Sweat, Adapter	10	RLC10B1212-10	81008096	2
1" Compression x 1" Male Sweat, Adapter	5	RLC10B1616-5	81008098	3

O-rings and Insulators are shipped loose on all sweat fittings.

RadiantPEX-AL Adapter — Compression x Female Sweat

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
NEW 3/8" Compression x 1/2" Female Sweat,	10	RLC11B0608-10	81011140	1
1/2" Compression x 1/2" Female Sweat, Adapter	10	RLC0511B0808-10	81010732	1
5/8" Compression x 3/4" Female Sweat, Adapter	10	RLC11B1012-10	81008102	2
3/4" Compression x 3/4" Female Sweat, Adapter	10	RLC11B1212-10	81008104	2
1" Compression x 1" Female Sweat, Adapter	5	RLC11B1616-5	81013675	2

O-rings and Insulators are shipped loose on all sweat fittings.

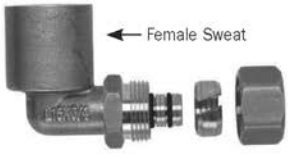
RadiantPEX-AL Adapter — Compression x Male NPT

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Compression x 3/4" MPT, Adapter	10	RLC0512B0812-10	81010729	2
5/8" Compression x 3/4" MPT, Adapter	10	RLC12B1012-10	81008108	2
3/4" Compression x 3/4" MPT, Adapter	10	RLC12B1212-10	81008110	3
1" Compression x 1" MPT, Adapter	5	RLC12B1616-5	81008112	3

RadiantPEX-AL Adapter — Compression x Female NPT

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1" Compression x 1" FPT, Adapter	5	RLC13B1616-5	81013676	2

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2"Compression x 3/4" Male Sweat, Elbow	10	RLC0540B0812-10	81010708	2
5/8"Compression x 3/4"Male Sweat, Elbow	10	RLC40B1012-10	81008530	3
3/4"Compression x 3/4"Male Sweat, Elbow	10	RLC40B1212-10	81008532	3



DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2"Compression x 3/4" Female Sweat, Elbow	10	RLC0541B0812-10	81010710	2
5/8"Compression x 3/4" Female Sweat, Elbow	10	RLC41B1012-10	81008536	3
3/4"Compression x 3/4" Female Sweat, Elbow	10	RLC41B1212-10	81008538	3

RadiantPEX-AL Compression Couplings (Equal)

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
NEW 3/8" Compression Coupling	10	RLC15B0606-10	81011141	1
1/2" Compression Coupling	10	RLC0515B0808-10	81010716	1
5/8" Compression Coupling	10	RLC15B1010-10	81008116	1
3/4" Compression Coupling	10	RLC15B1212-10	81008118	2
1" Compression Coupling	5	RLC15B1616-5	81008120	2

RadiantPEX-AL Compression Elbow (Equal)

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
5/8" Compression Elbow	10	RLC19B1010-10	81008122	1
3/4" Compression Elbow	10	RLC19B1212-10	81008124	2
1" Compression Elbow	5	RLC19B1616-5	81008127	2

RadiantPEX-AL Compression Tee (Equal)

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/4" Compression Tee	10	RLC18B121212-10	81008129	3
1" Compression Tee	5	RLC18B161616-5	81008131	3

RadiantPEX-AL Compression Reducing Tee — Run x Run x Branch - (1x2x3)

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/4" x 3/4" x 1/2" Compression Reducing Tee	10	RLC0518B121208-10	81010646	2
1" x 1" x 5/8" Compression Reducing Tee	10	RLC18B161610-10	81008135	3
1" x 1" x 3/4" Compression Reducing Tee	5	RLC18B161612-5	81008137	3

RadiantPEX-AL Extra Insulators for Compression Fittings

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
NEW 3/8" Extra Compression Fitting Insulator	10	RLC43IN06-10	81011165	.5
1/2" Extra Compression Fitting Insulator	10	RLC0543IN08-10	81010697	.5
5/8" Extra Compression Fitting Insulator	10	RLC43IN10-10	81009456	.5
3/4" Extra Compression Fitting Insulator	10	RLC43IN12-10	81009458	.5
1" Extra Compression Fitting Insulator	10	RLC43IN16-10	81009460	.5

Extra insulators are only needed if they are damaged or lost in the field.

RadiantPEX-AL Extra O-Rings for Compression Fittings

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
NEW 3/8" Extra Compression Fitting O-Rings	10	RLC44OR06-10	81011167	.5
1/2" Extra Compression Fitting O-Rings	10	RLC0544OR08-10	81010652	.5
5/8" Extra Compression Fitting O-Rings	10	RLC44OR10-10	81008567	.5
3/4" Extra Compression Fitting O-Rings	10	RLC44OR12-10	81008568	.5
1" Extra Compression Fitting O-Rings	10	RLC44OR16-10	81008569	.5

Extra O-rings are only needed if they are damaged or lost in the field.

Manifolds

Watts Radiant offers a wide variety of stainless steel and copper manifolds. Any of these styles can be fitted with Onix, PEX Crimp, PEX Compression, RadiantPEX-AL Press, or RadiantPEX-AL Compression fittings.

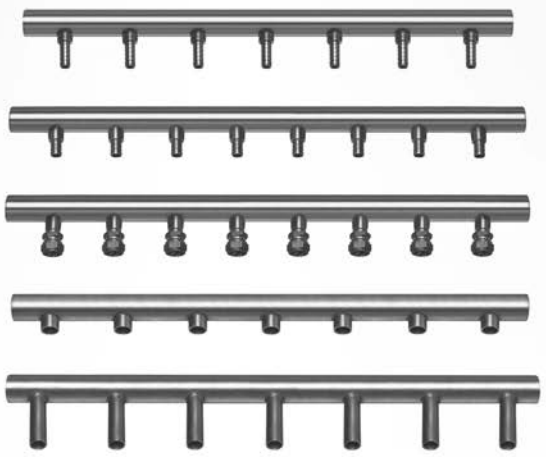
Stainless Steel manifolds are made of heavy-walled stainless steel. Matching fittings and accessories are made of solid brass and are heavily plated with nickel to match the appearance of the manifold trunk. Standard features included flow balancing valves, circuit isolation valves, and flow meters. Manifolds are sold in pre-mounted pairs in 1" and 1 1/2" sizes.

Watts Radiant **Custom Tubular manifolds** are manufactured to project specifications. All trunks are made of copper; all fittings and ball valves are brass. Every manifold is pressure tested before leaving the factory.

Custom Tubular are sold in pairs. Manifolds are available in 1"–6" ID trunk sizes.

Four configurations are possible:

- **Standard** — no mini ball valves
- **BVR** — mini ball valves on the return manifold
- **BVSR** — mini ball valves on supply and return manifolds
- NEW **BBSR** — balance ball valves on return, mini-ball valves on supply manifold



CustomCut manifolds are designed for flexibility for the installer. They come in 4 foot long copper sticks to be cut in the field. Sticks can be ordered with either 12 (4" spacing) or 16 (3" spacing) branches.

Sold Individually.

Five fitting styles are available for CustomCuts :

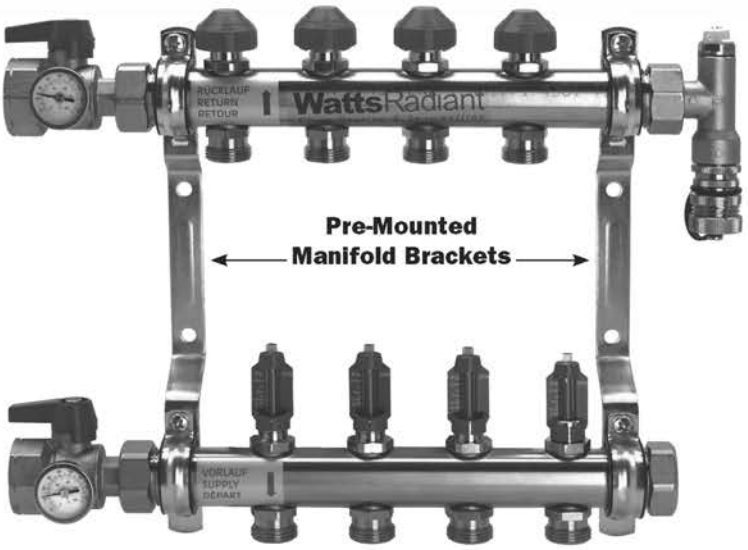
- **Onix**
- **PEX Crimp**
- **RadiantPEX-AL Press**
- **RadiantPEX-AL Compression**
- **T20** (for Onix, PEX, RadiantPEX-AL, and SST20 fittings)

Swedged manifolds are 1" copper manifolds closed at one end and swedged at the other. Cut off the end of a 3-branch and solder it to another 3-branch to make a 6-branch manifold.

Sold Individually.

Swedged manifolds are available as Onix, PEX Crimp, or RadiantPEX-AL compression or press.

Stainless Steel Manifolds



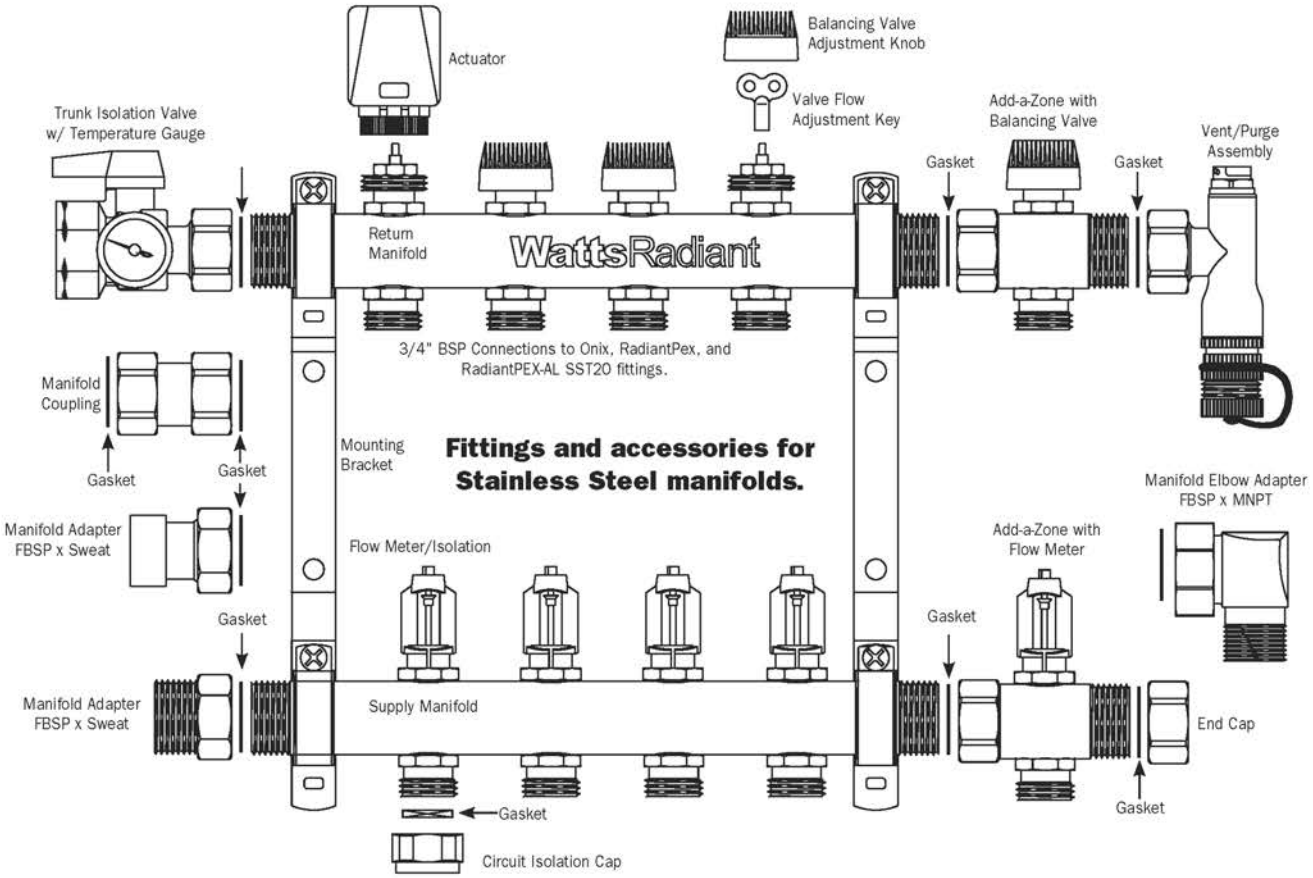
Specifications	1"	1-1/2"
Trunk Material	ANSI 304 Stainless Steel	
Nominal Trunk Size	1"	1-1/2"
Circuit Spacing	2-1/8"	
Thread/Connection Type	BSP (British Standard Pipe)	
Max. Trunk Flow Rate	12 gpm	22 gpm
Max. Circuit Flow Rate	2 gpm	4 gpm
Max. Operating Temperature	167°F	
Max. Operating Pressure	87 psi	

1" and 1-1/2" Stainless Steel Manifolds

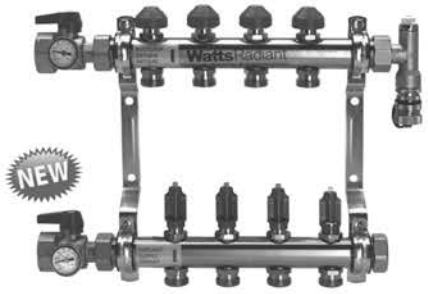
- Fast and Easy to Install
- Instant and Easy Circuit Balancing
- NEW vent/purge assembly allows even easier purging
- Professional Appearance
- NEW gaskets allow air or water pressure test.
- NEW flowmeter valves allow circuit isolation

Matching fittings and accessories are made of solid brass and heavily plated with nickel to match the appearance of the manifold trunk. Standard features include flow balancing valves and flow meters on each circuit. Manifolds are sold in pre-mounted pairs.

Only SST20 styles are compatible with Stainless Steel manifolds.



Stainless Steel Manifolds



No Kit

1" Flowmeter Manifolds, Stainless Steel with trunk isolation valve kit

1" Stainless Steel Manifold Kits	QTY	MODEL #	ORDER #	WT. (lbs)
NEW 1" Flowmeter Manifold, S.S., M-2 with Trunk iso.	1 Kit	D3803002SS-KIT	81013279	11
NEW 1" Flowmeter Manifold, S.S., M-3 with Trunk iso.	1 Kit	D3803003SS-KIT	81013280	12
NEW 1" Flowmeter Manifold, S.S., M-4 with Trunk iso.	1 Kit	D3803004SS-KIT	81013281	13
NEW 1" Flowmeter Manifold, S.S., M-5 with Trunk iso.	1 Kit	D3803005SS-KIT	81013282	14
NEW 1" Flowmeter Manifold, S.S., M-6 with Trunk iso.	1 Kit	D3803006SS-KIT	81013283	16
NEW 1" Flowmeter Manifold, S.S., M-7 with Trunk iso.	1 Kit	D3803007SS-KIT	81013284	16
NEW 1" Flowmeter Manifold, S.S., M-8 with Trunk iso.	1 Kit	D3803008SS-KIT	81013285	17
NEW 1" Flowmeter Manifold, S.S., M-9 with Trunk iso.	1 Kit	D3803009SS-KIT	81013286	18
NEW 1" Flowmeter Manifold, S.S., M-10 with Trunk iso.	1 Kit	D3803010SS-KIT	81013287	19
NEW 1" Flowmeter Manifold, S.S., M-11 with Trunk iso.	1 Kit	D3803011SS-KIT	81013288	20
NEW 1" Flowmeter Manifold, S.S., M-12 with Trunk iso.	1 Kit	D3803012SS-KIT	81013289	22

*with DK1000 Kit

Flowmeter Manifolds only (no DK1000 kit)

1" Stainless Steel Manifolds	QTY	MODEL #	ORDER #	WT. (lbs)
1" Flowmeter Manifold, Stainless Steel, M-2	1 Pair	D3803002SS	81001981	9
1" Flowmeter Manifold, Stainless Steel, M-3	1 Pair	D3803003SS	81001982	10
1" Flowmeter Manifold, Stainless Steel, M-4	1 Pair	D3803004SS	81001983	11
1" Flowmeter Manifold, Stainless Steel, M-5	1 Pair	D3803005SS	81003398	12
1" Flowmeter Manifold, Stainless Steel, M-6	1 Pair	D3803006SS	81001984	13
1" Flowmeter Manifold, Stainless Steel, M-7	1 Pair	D3803007SS	81003682	13
1" Flowmeter Manifold, Stainless Steel, M-8	1 Pair	D3803008SS	81001985	14
1" Flowmeter Manifold, Stainless Steel, M-9	1 Pair	D3803009SS	81003687	15
1" Flowmeter Manifold, Stainless Steel, M-10	1 Pair	D3803010SS	81001986	16
1" Flowmeter Manifold, Stainless Steel, M-11	1 Pair	D3803011SS	81003688	17
1" Flowmeter Manifold, Stainless Steel, M-12	1 Pair	D3803012SS	81001987	19

1-1/2" Stainless Steel Manifolds	QTY	MODEL #	ORDER #	WT. (lbs)
1-1/2" Flowmeter Manifold, Stainless Steel, M-4	1 Pair	D3807604SS	81005355	13
1-1/2" Flowmeter Manifold, Stainless Steel, M-5	1 Pair	D3807605SS	81005356	14
1-1/2" Flowmeter Manifold, Stainless Steel, M-6	1 Pair	D3807606SS	81005357	15
1-1/2" Flowmeter Manifold, Stainless Steel, M-8	1 Pair	D3807608SS	81005358	17
1-1/2" Flowmeter Manifold, Stainless Steel, M-10	1 Pair	D3807610SS	81005359	19
1-1/2" Flowmeter Manifold, Stainless Steel, M-12	1 Pair	D3807612SS	81005360	21

Stainless Steel Manifolds are sold in pairs, mounted to metal bracket as shown. Accessories such as Trunk Isolation Ball Valves, Vent/Purge Assemblies, and Actuators are purchased separately. For added convenience, several of these accessories can be purchased in kits (see next page).

Each circuit can be individually balanced by adjusting the valve located under the blue cap. Maximum flow rates are 12 gpm for 1" manifolds and 22 gpm for 1-1/2" manifolds. Individual circuit flow meters are 0–2 gpm for 1" and 0–4 gpm for 1-1/2" manifolds.

Manifolds and gauges are rated to 167°F at 87 psi pressure. Fittings are spaced at 2-1/8" on center. Order Onix, Crimp, or Compression fittings separately.

Note: Only SST20 styles are compatible with Stainless Steel manifolds.

Stainless Steel Manifold Accessories

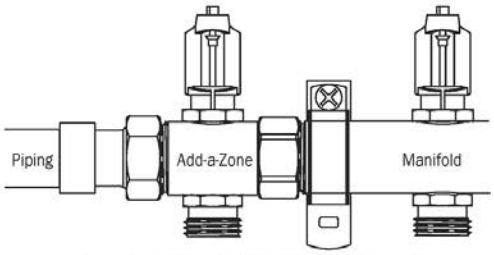
Add-a-Zone with Balancing Valve and Gasket

Stainless Steel Add-a-Zone — add a branch to your manifold

Stainless Steel Add-A-Zone set,	1	D3804000SS	81002934	3

Add-a-Zones make it easy to add additional capacity to a manifold already installed. Just thread them onto the end of a manifold. Set includes balance valve and flow meter sides of manifold.

Add-a-Zone with Flow Meter and Gasket



An Add-a-Zone attached to the end of a Stainless Steel supply manifold to increase capability.

Simplify manifold ordering and save money with these Manifold Accessories Kits!

Manifold kits come complete with one Vent-and-Purge Assembly, one Manifold End Cap, and a pair of Trunk Isolation Valves, BSP x NPT Manifold Adapters, or BSP x Sweat Manifold Adapters.

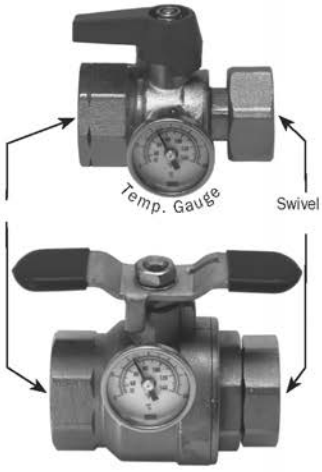
SS Manifold Accessories Kit with Trunk Isolation Ball Valves

SS Manifold Accessories Kit with BSP x NPT Manifold Adapters

SS Manifold Accessories Kit with BSP x Sweat Manifold Adapters

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs.)
1" SS Accessories Kit w/ 1" FNPT Isolation Ball Valves	1 Kit	DK1000	81003736	3
1" SS Accessories Kit w/ 1" MNPT Manifold Adapters	1 Kit	DK2000	81003939	3
1" SS Accessories Kit w/ 3/4" Sweat Manifold Adapters	1 Kit	DK7000	81005455	3
1" SS Accessories Kit w/ 1" Sweat Manifold Adapters	1 Kit	DK3000	81005369	3
1-1/2" SS Accessories Kit w/ 1-1/2" FNPT Isolation Ball Valves	1 Kit	DK4000	81005370	3
1-1/2" SS Accessories Kit w/ 1-1/2" MNPT Manifold Adapters	1 Kit	DK5000	81005371	3
1-1/2" SS Accessories Kit w/ 1-1/2" Sweat Manifold Adapters	1 Kit	DK6000	81005372	3

Stainless Steel Manifold Accessories



Transitional Trunk Isolation Ball Valves with Temperature Gauge — provides manifold isolation and transition to NPT threads.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1" SS Trunk Iso Valve, Red handle	1	D4201720-NR	81001995	2
1" SS Trunk Iso Valve, Blue handle	1	D4201720-NB	81001994	2
1-1/2" Trunk Iso Valve, Red handle	1	D3515930-NR	81005362	2
1-1/2" Trunk Iso Valve, Blue handle	1	D3515935-NB	81005363	2

These nickel-plated brass manifold ball valves include temperature gauges to measure supply and return temperatures for troubleshooting or system balancing. They also provide transition from MBSP manifold threads to FNPT threads.

Vent-and-Purge Assemblies — for purging air and water from the zones.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Vent-and-Purge Assembly, 1"	1	D4201715-N	81001993	1
Vent-and-Purge Assembly, 1-1/2"	1	D3515940-N	81005457	1

The **Vent-and-Purge Assembly** allows purging of the zone at the manifold location. The Vent-and-Purge Assembly consists of a 1" BSP sleeve nut for attaching to the end of the manifold, and a 3/8" manual air vent valve. Also includes a 1/2" hose fitting with a built-in ball valve to allow zone draining and filling. Nickel-plated brass.

Manifold End Caps — to cap flow at end of manifold trunk.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
SS Manifold End Cap, 1"	1	D063064-N	81001977	0.5
SS Manifold End Cap, 1-1/2"	1	D3515910-N	81005425	0.5

These **Manifold End Caps** are used to cap off the end of a Stainless Steel Manifold when a vent-and-purge
assembly is not used. Nickel-plated brass.

Stainless Steel Manifold Couplings — for connecting one manifold to another.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
SS Manifold Coupling, 1"	1	D402178-N	81001988	1
SS Manifold Coupling, 1-1/2"	1	D3290010-N	81005426	1

These **Manifold Couplings** are used to connect two manifold pairs. For example, an M-4 can be connected to an M-3 using the coupler to make an M-7. Nickel-plated brass for corrosion resistance. Sold individually.

Transitional Swivel BSP x Female Sweat Manifold Adapters — for connecting Stainless Steel Manifolds to copper pipe.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1" SS Manifold x 3/4" Female Sweat, Adapter	1	D0504	81005366	1
1" SS Manifold x 1" Female Sweat, Adapter	1	D0505	81005367	1
1-1/2" SS Manifold x 1-1/2" Female Sweat,	1	D0708	81005480	1

BSP x Sweat Manifold Adapters connect Stainless Steel Manifolds to or copper pipe. Nickel-plated brass for corrosion resistance. These are not needed if you are using the Transitional Trunk Valves. Sold individually.

NOTE: Only SST20 styles are compatible with Stainless Steel manifolds.

Stainless Steel Manifold Accessories

Transitional BSP x NPT Manifold Adapters – for connecting Stainless Steel manifolds to NPT fittings.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1" SS Manifold x 1" MNPT Adapter	1	D4201480	81001989	1
1-1/2" SS Manifold x 1-1/2" MNPT Adapter	1	D3515920	81005368	1

Use **BSP x NPT Manifold Adapters** to connect Stainless Steel Manifolds to standard pipe. This fitting features female BSP threads on the manifold side and male NPT threads on the pipe side. Nickel-plated brass for corrosion resistance. These are not needed if you are using the Transitional Trunk Isolation Valves.

Transitional BSP x PEX Crimp Fitting Adapter – for connecting PEX supply and return piping to Stainless Steel manifolds.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1" SS Manifold x ¾" Crimp Adapter	1	D5SSX4C-N	81009351	1
1" SS Manifold x 1" Crimp Adapter	1	D5SSX5C-N	81009352	1
1-1/2" SS Manifold x 1" Crimp Adapter	1	D8SSX5C-N	81009353	1
1-1/2" SS Manifold x 1-1/4" Crimp Adapter	1	D8SSX7C-N	81009354	1

Transitional BSP x PEX Crimp Fitting Elbow – for connecting PEX supply and return piping to Stainless Steel manifolds.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1" SS Manifold x ¾" Crimp Elbow	1	D5ESSX4C-N	81013300	1

Transitional BSP x RadPEX-AL Fitting Adapter – for connecting RadiantPEX-AL supply and return piping to Stainless Steel manifolds.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1" SS Manifold x ¾" RadPEX-AL Press Adapter	1	D5SSX4RP-N	81009355	1
1" SS Manifold x 1" RadPEX-AL Press Adapter	1	D5SSX5RP-N	81009356	1
1-1/2" SS Manifold x 1" RadPEX-AL Press Adapter	1	D8SSX5PR-N	81009357	1

Transitional BSP x Onix Fitting Adapters – for connecting Onix supply and return piping to Stainless Steel manifolds.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1" SS Manifold x ¾" Onix Adapter	1	D5SSX4O-N	81009358	1
1" SS Manifold x 1" Onix Adapter	1	D5SSX5O-N	81009359	1
1-1/2" SS Manifold x 1" Onix Adapter	1	D0711-N	81009360	1

Transitional BSP x BSP Manifold Elbows — easily install supply lines at 90° to manifold.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1" SS Manifold Elbow, Female BSP x Male BSP	1	D3517020-N	81005364	1
1-1/2" SS Manifold Elbow, Female BSP x Male BSP	1	D3515925-N	81005365	1

Use **Manifold Elbows** to connect directly to the manifold, then connect an ISO Ball Valve or other transitional fitting to the male BSP side of the Elbow. Adapter or a Trunk Isolation Ball Valve is used to transition to NPT threads.

Stainless Steel Manifold Accessories

Circuit Isolation Cap — for unused circuits in Stainless Steel manifolds.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
SS Circuit Isolation Cap	1	D4201700-S	81005479	1

Circuit Isolation Caps are used to "seal off" unused circuits on the manifolds. They can be used in conjunction with the built-in circuit isolation valves to convert an M-8 manifold into an M-7 manifold. Nickel-plated brass for corrosion resistance. Sold individually.

SST20 Circuit Sweat Adapter — for connecting 1/2" copper to stainless steel manifolds circuits.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Male Sweat x 3/4" SST20 Swivel Fitting	10	690101	81009452	1

Valve Actuator — for low wattage, individual radiant circuit control.

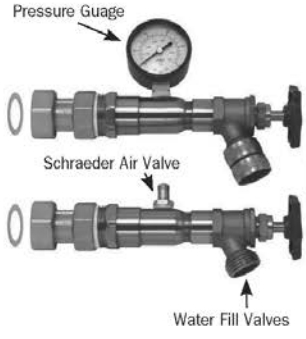
DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Valve Actuator	1	PZ656104	81001541	1

Great for multiple small radiant zones. The Valve Actuator provides on/off flow control to individual radiant circuits. Incorporates an indicator window that allows you to visually determine whether the valve is fully open or closed. Flow can be balanced prior to installing by turning the adjustment valve under the blue cap. Actuator is 24 VAC (2.5 W) with four wires to connect to the thermostat and close an end switch.

NEW

Stainless Steel Manifold Replacement Parts

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1" SS Manifold fiber replacement gasket	10	390095-10	81011084	1
1-1/2" SS Manifold fiber replacement gasket	10	390090-10	81011085	1
1" SS Manifold neoprene replacement gasket	10	390096-10	81011086	1
1-1/2" SS Manifold neoprene replacement gasket	10	390097-10	81011087	1
SS Manifold replacement blue cap	1	428337	81007329	1
1" SS Manifold replacement flowmeter/valve (0-2 gpm)	1	D3151122N	81011159	2
1-1/2" SS Manifold replacement flowmeter/valve (0-4	1	D3151190N	81011160	2
SS Manifold replacement temperature gauge	1	D6151005	81003402	1



Stainless Steel Manifold Pressure Test Kits — specially fitted for Stainless Steel Manifolds

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1" Manifold Pressure Test Kit	1 Kit	D665161	81001996	4
1-1/2" Manifold Pressure Test Kit	1 Kit	D665261	81005373	4

Manifold Pressure Test Kits are available for rental. Call for prices.

Stainless Steel Manifold Accessories

Manifold Boxes — for wall or ceiling-mounted manifold systems.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Manifold Box, 16" x 29" x 4-1/2"	1	PZ162904	81001525	7
Manifold Box, 24" x 29" x 4-1/2"	1	PZ242904	81003497	15
Manifold Box, 40" x 29" x 4-1/2"	1	PZ402904	81004517	22

Manifold Boxes protect manifolds with a locking door. Made of powder-coated carbon steel. All types of 1" – 1-1/2" Watts Radiant manifolds can be mounted in these boxes. Dimensions are width x height x depth. Depth can be expanded to 6", and box height off floor is adjustable.

- 16" box fits a SS M-3 with vent/purge and iso valve
- 24" box fits a SS M-7 with vent/purge and iso valve
- 40" box fits a SS M-12 with vent/purge and iso valve

See Zone HydroNex section for installed manifolds with pre-wired actuarors.

Onix Fittings

3/4" Female SST20

SST20 Onix Swivel Fittings — for Stainless Steel, and Custom Tubular T20 Manifolds.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/8" Onix x 3/4" BSP Swivel Fitting	10	689001-10	81000679	1
1/2" Onix x 3/4" BSP Swivel Fitting	10	689002-10	81000681	1
5/8" Onix x 3/4" BSP Swivel Fitting	10	689003-10	81000683	2
3/4" Onix x 3/4" BSP Swivel Fitting	10	689004-10	81000684	2

Use these female **Onix T20 Fittings** to connect Onix to our Stainless Steel, and Custom Tubular compression manifolds. Order Onix SelfTite or TorqueTite clamps separately.

Note: BSP threads are not compatible with NPT.

SelfTite™ Clamps — Pre-tensioned for easy field installation. The chrome-vanadium spring steel maintains a constant tension on the Onix under all operating conditions. SelfTites incorporate a zinc coating to guard against corrosion.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/8" SelfTite Clamp (19 mm)	10	663019-10	81000523	3
3/8" SelfTite Clamp (19 mm)	50	663019-50	81000524	8
1/2" SelfTite Clamp (22 mm)	10	663022-10	81000526	4
1/2" SelfTite Clamp (22 mm)	50	663022-50	81000527	10
5/8" SelfTite Clamp (25 mm)	10	663025-10	81000529	4
5/8" SelfTite Clamp (25 mm)	50	663025-50	81000530	10
3/4" SelfTite Clamp (29 mm)	10	663029-10	81000532	5
3/4" SelfTite Clamp (29 mm)	50	663029-50	81000533	11

Use SqueezeTite™ Pliers to install SelfTite clamps (see Fasteners and Tools section for ordering information).

TorqueTite™ Clamps — our best stainless steel screw clamps.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/8" TorqueTite Clamp (17–19 mm)	10	6641117-10	81002913	2
3/8" TorqueTite Clamp (17–19 mm)	50	6641117-50	81002914	6
1/2" TorqueTite Clamp (21–23 mm)	10	6641524-10	81002916	2
5/8" TorqueTite Clamp (25–27 mm)	10	6641928-10	81002919	2
3/4" TorqueTite Clamp (29–31 mm)	10	6642232-10	81002922	2

The Onix **TorqueTite** is a rugged, stainless steel clamp capable of withstanding large pressures and temperatures while being easy to install.

PEX Swivel Crimp Fittings

SST20 Crimp Swivel Fittings — for connecting PEX to Watts Radiant's Stainless Steel and Custom Tubular T20 Compression manifolds.

DESCRIPTION		MODEL #	ORDER #	WT. (lbs)
3/8" Crimp x 3/4" SST20 Swivel BSP Fitting	10	PC690001-10	81005160	1
1/2" Crimp x 3/4" SST20 Swivel BSP Fitting	10	PC690002-10	81005162	1
5/8" Crimp x 3/4" SST20 Swivel BSP Fitting	10	PC690003-10	81005164	2
3/4" Crimp x 3/4" SST20 Swivel BSP Fitting	10	PC690004-10	81005395	2

Use these **SST20 Crimp Fittings** to connect PEX to our Stainless Steel or T20 Custom Tubular Manifolds. Order CrimpRings or CinchClamps separately.

NOTE: BSP Stands for British Standard Pipe (threads). These threads are not compatible with NPT (National Pipe Threads).

PEX Crimp Fittings

Copper CrimpRings — for securing PEX to brass crimp fittings.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/8" CrimpRing	100	PCCR2X-100	81001071	1
1/2" CrimpRing	100	PCCR3X-100	81001075	1
5/8" CrimpRing	100	PCCR6X-100	81004508	2
3/4" CrimpRing	100	PCCR4X-100	81001080	2

Copper CrimpRings are precision-formed, ductile copper connectors. When crimped, these connections form a simple, fast, and permanent seal between PEX and CrimpRing fittings. **See RadiantPEX section for 1" and larger CrimpRings and fittings.**

Stainless Steel CinchClamps — for fast, easy, one-tool connections.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/8" CinchClamps	10	PCCC2X-10	81004993	1
3/8" CinchClamps	100	PCCC2X-100	81004994	1
1/2" CinchClamps	10	PCCC3X-10	81004995	1
1/2" CinchClamps	100	PCCC3X-100	81004996	1
5/8" CinchClamps	10	PCCC6X-10	81005114	2
5/8" CinchClamps	100	PCCC6X-100	81005115	3
3/4" CinchClamps	10	PCCC4X-10	81004997	2
3/4" CinchClamps	100	PCCC4X-100	81004998	3

CinchClamps have been proven in millions of connections. **See RadiantPEX section for 1" CinchClamps and fittings.**

SST20 PEX Compression Fittings — for connecting PEX to Stainless Steel mani-

DESCRIPTION		MODEL #	ORDER #	WT. (lbs)
3/8" PEX Compression x 3/4" SST20 Swivel	10	PX690001-10	81005166	1
1/2" PEX Compression x 3/4" SST20 Swivel	10	PX690002-10	81005168	1
5/8" PEX Compression x 3/4" SST20 Swivel	10	PX690003-10	81005170	2
3/4" PEX Compression x 3/4" SST20 Swivel	10	PX690004-10	81005172	2

RadiantPEX-AL Press Fittings

SST20 RadiantPEX-AL Press Fitting — for stainless steel and T20 manifolds.

DESCRIPTION	QTY	MODEL #	ORDER #	WT.
1/2" Press x Adapter, 3/4" SST20 BSP	10	RLP0501B08T20-10	81010719	1
5/8" Press x Adapter, 3/4" SST20 BSP	10	RLP01B10T20-10	81008030	2

Press sleeves are included with all press

Note: BSP threads are not compatible with NPT.

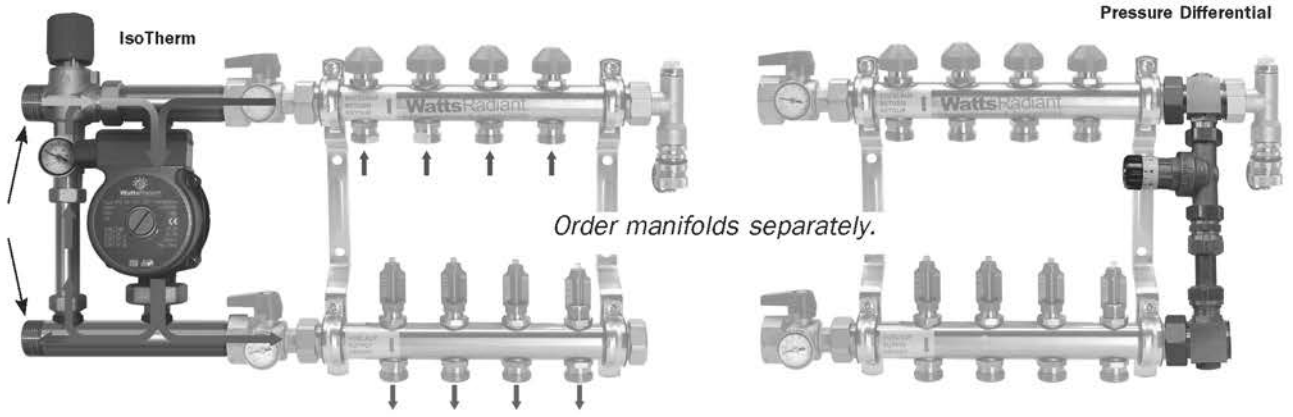
RadiantPEX-AL Compression Fittings

RadiantPEX-AL SST20 Compression Fitting — for stainless steel and T20 manifolds.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
NEW 3/8" Compression x Adapter, 3/4" SST20	10	RLC01B06T20-10	81011138	1
1/2" Compression x Adapter, 3/4" SST20	10	RLC0501B08T20-10	81010735	1
5/8" Compression x Adapter, 3/4" SST20	10	RLC01B10T20-10	81008088	2
3/4" Compression x Adapter, 3/4" SST20	10	RLC01B12T20-10	81007735	2

Compression nut and ring included with all compression fittings.

Hydronic Accessories



IsoTherm — a pre-piped, pre-wired pump and mix valve for 1" Stainless Steel Manifolds.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
IsoTherm	1	D3803995	81005361	15

Order isolation ball valves to help in purging air at start-up.

Order transitional fittings separately for transition to supply and return piping.

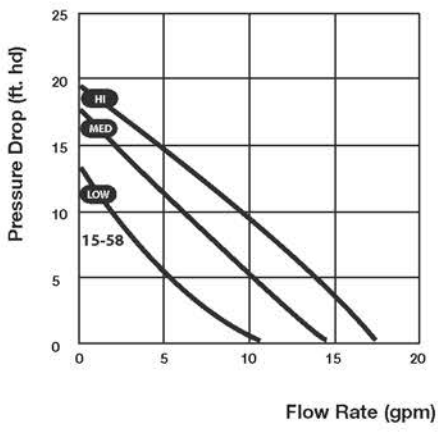
The **IsoTherm** is a compact, efficient pre-piped and pre-wired pump and mixing valve control designed to connect to Watts Radiant's 1" Stainless Steel Manifolds.

When combined with Watts Radiant's electrothermal actuators and actuator valve controls (not included), a complete trouble-free system is created, serving from 1 to 12 zones and delivering up to 50,000 BTU/h (maximum of 68,000 BTU/h with a minimum boiler temperature of 160°F).

The mixing valve has a standard temperature range of 113° to 140°F (45° to 60°C). The unit is factory set at 131°F (55°C). The valve is easily adjustable and locks in position with a "click-stop" device, preventing temperature drift.

A three-speed 1/25-HP pump comes pre-installed and pre-wired, taking the guesswork out of field installations. The Watts Radiant 1558 circulator will flow approximately 10 gpm at 10 ft. hd. This unit is ready — right out of the box!

Watts Radiant Circulator



Pressure Differential By-pass Valve — for 1" Stainless Steel Manifolds.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Pressure Differential By-pass Valve	1	D4402050	81005345	5

Order manifold End Cap and/or Vent-and-Purge Assembly separately.

The **Pressure Differential By-pass Valve** for 1" Stainless Steel manifolds eliminates possible water velocity noise and water hammer. With this valve, pumps cannot exceed the actuator close-off pressure. Pump life increases because of minimal pressure surging as actuators open and close. Correct and constant flow is always ensured regardless of the number of actuators open.

This Pressure Differential By-pass Valve installs directly on the 1" Stainless Steel manifolds. This valve adjusts from 0.7 psi (1.6 feet water) to 10.3 psi (23.8 feet water) using a graduated knob. Water by-pass capacity is 1.2 gpm to 9 gpm. The knob is set and locked with a set screw to prevent tampering.

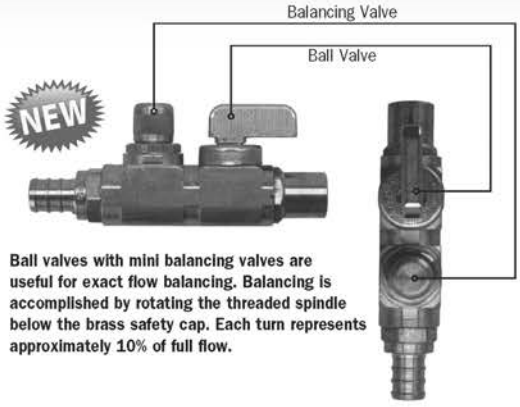
Custom Copper Tubular Manifold Pairs

Custom Copper Tubular manifolds allow you to specify exactly what you want in a factory tested and warranted product.

All Custom Tubular manifolds are supply and return pairs.

Use the model number diagram below to order custom manifolds. Several accessories can be installed on your Custom Tubular Manifolds, including:

- Brass O-ring Unions
- Full-port Brass Trunk Isolation Ball Valves
- Vent-and-Purge Assemblies



Ball valves with mini balancing valves are useful for exact flow balancing. Balancing is accomplished by rotating the threaded spindle below the brass safety cap. Each turn represents approximately 10% of full flow.

How to order Custom Tubular manifolds

XX15XXXXXXXX

Balancing Options:
Blank = no balancing
BVR = Mini-ball valves on return manifold
BVSR = Mini-ball valves on supply and return manifold
NEW BBSR = Mini-ball valves on supply manifold, balance ball valves on return

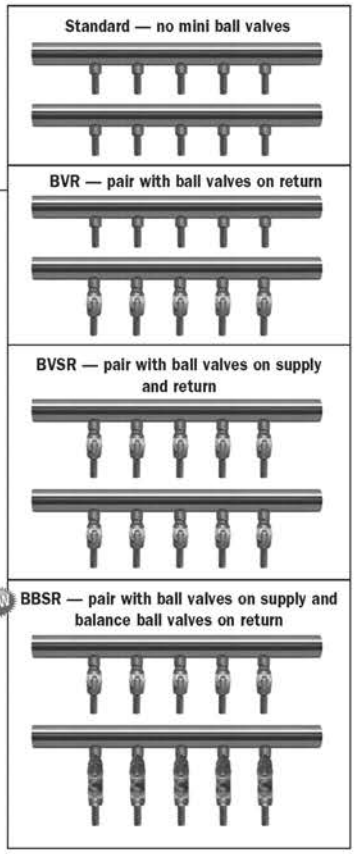
Number of Circuits:
01 = 1 circuit
02 = 2 circuits
03 = 3 circuits
etc...
Generally Watts Radiant recommends a maximum of 15 circuits per manifold for balancing reasons.

Barb Size:
2 = 3/8"
3 = 1/2"
4 = 5/8"
5 = 3/4"

Manifold Trunk Size:
4 = 1" Copper Trunk
5 = 1 1/4" Copper Trunk
6 = 1 1/2" Copper Trunk
7 = 2" Copper Trunk
*** call for larger trunk sizes**

15 = Designator for Custom Manifolds

Manifold Type:
Blank = Onix
PC = PEX Crimp
PX = T20 Universal *(order fittings separately)*
RLP = RadiantPEX-AL Press *(complete with Press sleeve)*
RLC = RadiantPEX-AL Compression *(complete with compression nut and ring)*



Watts Radiant makes large diameter tubular manifolds up to 6" ID. Other specialty items can be installed, such as zone valves, circuit setters, or full-port ball valves.

- PC156410BVR= 10 branch, 1-1/2" trunk, 5/8" PEX Crimp manifold with mini ball valves on return
- 154207BBSR= 7 branch, 1" trunk, 3/8" Onix manifold with mini ball valves on supply and balance valves on return

CustomCut™ Manifolds *COST EFFECTIVE*

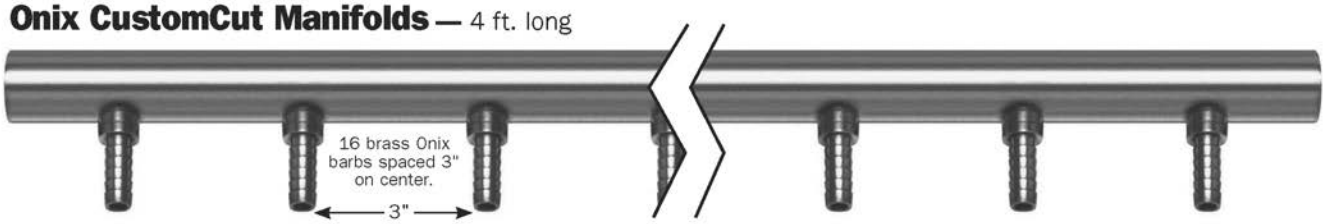
CustomCut Manifolds are designed for flexibility at the wholesale and the installation level. They come in 4-ft.-long copper "sticks" to be cut to length in the field — cut off five branches for a 5-branch manifold, seven branches for a 7-branch manifold, and so on. You can stock just a few types and have everything you need.

CustomCuts are made in various styles:

- with Brass fittings: Onix, PEX, RadiantPEX-AL Press, RadiantPEX-AL Compression, and T20 Compression.
- with 1/2" and 3/4" Copper Stubs, for attaching standard ball valves or Female copper sweat fittings in the field.
- with 1/2" Brass Base Branches, for attaching Watts Radiant 1/2" male sweat fittings or Mini Ball Valves in the field.

CustomCuts are made with branches spaced at 3" (16 circuits) or 4" (12 circuits) on center, depending on the type of manifold. They are available with and without Mini Ball Valves (MBVs). Larger diameter trunks can be ordered as well.

Onix CustomCut Manifolds — 4 ft. long



16-branch CustomCut Manifolds, 3/8" Onix Barbs

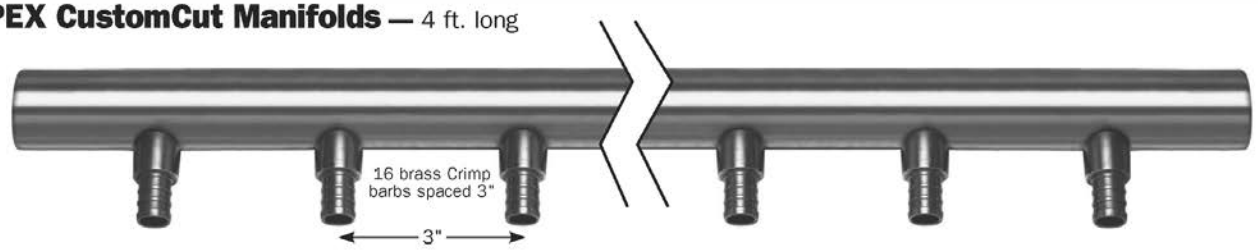
DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/8" Onix CustomCut, 16-branch, 1" Trunk (no MBVs)	1	204237	81001937	7
3/8" Onix CustomCut w/MBVs, 16-branch, 1" Trunk	1	204237BV	81001940	14

16-branch CustomCut Manifolds, 1/2" Onix Barbs

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Onix CustomCut, 16-branch, 1" Trunk (no MBVs)	1	204250	81001941	7
1/2" Onix CustomCut w/MBVs, 16-branch, 1" Trunk	1	204250BV	81001942	14

CustomCut Manifolds

PEX CustomCut Manifolds — 4 ft. long



16-branch CustomCut Manifolds, 3/8" PEX Crimp Barbs

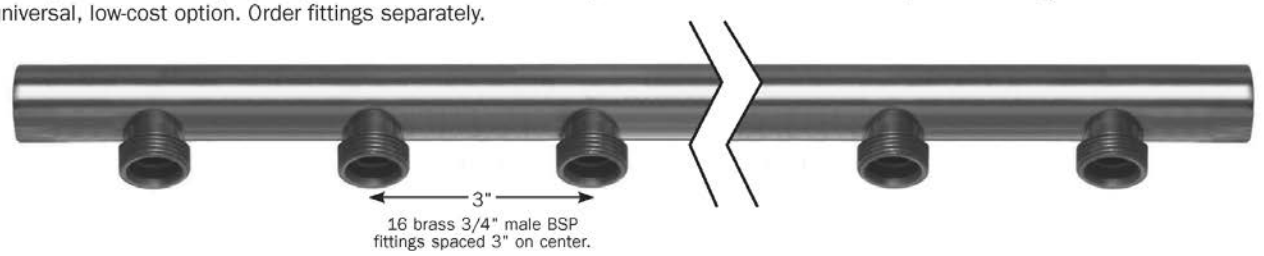
DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/8" Crimp CustomCut, 16-branch, 1" Trunk	1	PC204237	81001005	7
3/8" Crimp CustomCut w/MBVs, 16-branch, 1"	1	PC204237BV	81001006	14

16-branch CustomCut Manifolds, 1/2" PEX Crimp Barbs

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Crimp CustomCut, 16-branch, 1" Trunk	1	PC204250	81001007	7
1/2" Crimp CustomCut w/MBVs, 16-branch, 1"	1	PC204250BV	81001009	14

T20 CustomCut Manifolds — for SST20 Swivel fittings, 4 ft. long *UNIVERSAL*

T20 Manifolds are compatible with all SST20 (3/4" female BSP) fittings, including, SST20 Onix Swivel, SST20 Crimp Swivel, SST20 PEX Compression, SST20 RadiantPEX-AL Press, and SST20 RadiantPEX-AL Compression fittings. It's a universal, low-cost option. Order fittings separately.



16-branch CustomCut Manifolds, 3/4" Male BSP T20 fittings

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/4" BSP CustomCut, 16-branch, 1" Trunk	1	PX204275	81001481	7
3/4" BSP CustomCut w/MBVs, 16-branch, 1" Trunk	1	PX204275BV	81001483	14

CustomCut Manifolds

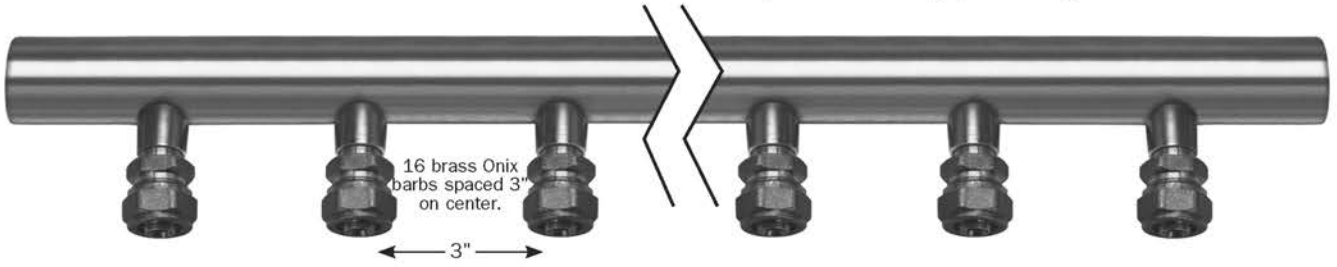
RadiantPEX-AL CustomCut Manifolds — Press Fittings, 4 ft. long

1/2" RadiantPEX-AL CustomCut Manifolds – Press Fittings

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Press, 16- branch, 1" Trunk (no MBVs)	1	RLPM05-M16-08X16	81010693	7
1/2" Press w/MBVs, 16- branch, 1" Trunk	1	RLPM05-M16BV-08X16	81010690	14

All press manifolds are sold complete with press fittings including sleeve.

RadiantPEX-AL CustomCut Manifolds — Compression Fittings, 4 ft. long



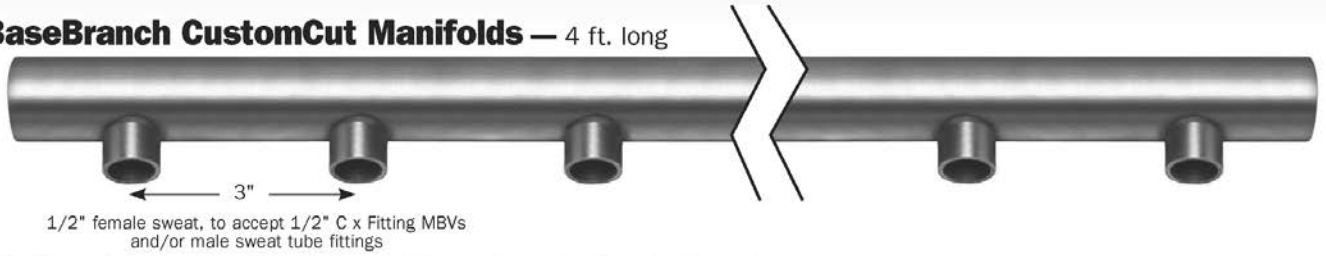
1/2" & 3/8" RadiantPEX-AL CustomCut Manifolds – Compression Fittings

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
NEW 3/8" Compression, 16- branch, 1" Trunk (no	1	RLCM-M16-06X16	81011142	6
NEW 3/8" Compression w/MBVs, 16- branch, 1"	1	RLCM-M16BV-06X16	81011143	12
1/2" Compression, 16- branch, 1" Trunk (no MBVs)	1	RLCM05-M16-08X16	81010694	7
1/2" Compression w/MBVs, 16- branch, 1" Trunk	1	RLCM05-M16BV-08X16	81010692	14

All compression manifolds are sold complete with compression fittings including nut and compression ring.

CustomCut Manifolds

BaseBranch CustomCut Manifolds — 4 ft. long



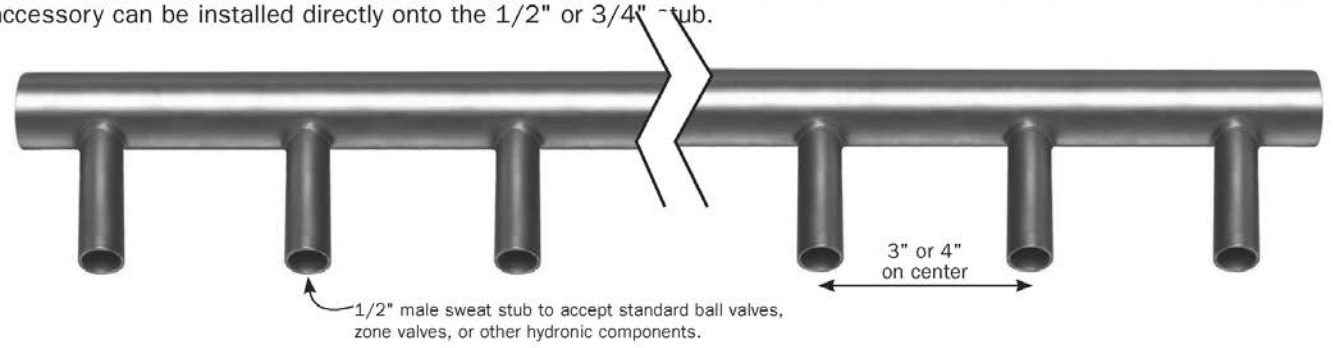
16 – Branch CustomCut Manifolds, 1/2" BaseBranch (Female Sweat)

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Brass BaseBranch, 16-branch x 1" Brass Trunk x 48" long	1	205250	81001947	7
1/2" Brass BaseBranch, 16-branch x 1-1/4" Copper Trunk x 48" long	1	205350	81002884	8

Sweat any 1/2" male sweat x barb adapters, whether Onix, Crimp, Press, or Compression. Many styles of tubing fittings fit these manifolds. For balancing, install Watts Radiant's Onix or PEX fitting ball valves.

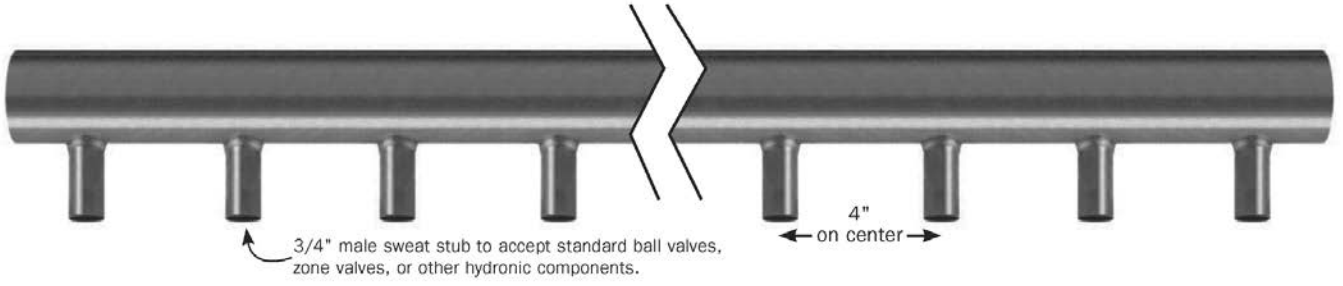
CopperStub CustomCut Manifolds

All stubs are brazed to the manifold trunk. CopperStub Manifolds are four feet long, with stubs spaced at 3" on center (16-branch) or 4" on center (12-branch). Ball valves, zone valves, female sweat fittings, or any other hydronic accessory can be installed directly onto the 1/2" or 3/4" stub.



1/2" CopperStub CustomCuts (Male Sweat)

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Stub, 16-branch x 1" Trunk x 48" long	1	205116	81001944	7
1/2" Stub, 12-branch x 1" Trunk x 48" long	1	205112	81001943	6
1/2" Stub, 16-branch x 1-1/4" Trunk x 48" long	1	205216	81001946	8
1/2" Stub, 12-branch x 1-1/4" Trunk x 48" long	1	205212	81001945	7



3/4" CopperStub CustomCuts with 3/4" Stubs (Male Sweat)

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/4" Stub, 12-branch x 1-1/4" Trunk x 48" long	1	205412	81001951	7
3/4" Stub, 12-branch x 1-1/2" Trunk x 48" long	1	205512	81001953	8
3/4" Stub, 12-branch x 2" Trunk x 48" long	1	205612	81001955	9

Swedged Manifolds *with closed ends*

Swedged Manifolds are easy to stock and easy to assemble. These 1" copper manifolds are closed at one end and swedged at the other. There is sufficient copper on the closed end to cut off and sweat to another manifold. Solder a 2-branch to a 3-branch to make a 5-branch, a 3-branch and 4-branch to make a 7-branch, etc. Four fitting styles are available: Onix, PEX Crimp, RadiantPEX-AL Press, and RadiantPEX-AL Compression. Swedged Manifolds are sold individually, with or without Mini Ball Valves (MBVs).

2-branch

3-branch with MBVs

4-branch

Manifold ends are swedged open to accept 1" pipe or another manifold.

Onix Swedged Manifolds, 3/8" Onix fittings	QTY	MODEL #	ORDER #	WT. (lbs)
3/8" Onix Swedged, 2-branch	1	206222	81001956	2
3/8" Onix Swedged, 3-branch	1	206223	81001960	2
3/8" Onix Swedged, 4-branch	1	206224	81001964	2
3/8" Onix Swedged, 2-branch with MBVs	1	206222BV	81001959	2
3/8" Onix Swedged, 3-branch with MBVs	1	206223BV	81001963	2
3/8" Onix Swedged, 4-branch with MBVs	1	206224BV	81001967	3

PEX Crimp Swedged Manifolds, 1/2" Crimp fittings	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Crimp Swedged, 2-branch	1	PC206232	81001018	2
1/2" Crimp Swedged, 3-branch	1	PC206233	81001020	2
1/2" Crimp Swedged, 4-branch	1	PC206234	81001022	2
1/2" Crimp Swedged, 2-branch with MBVs	1	PC206232BV	81001019	2
1/2" Crimp Swedged, 3-branch with MBVs	1	PC206233BV	81001021	2
1/2" Crimp Swedged, 4-branch with MBVs	1	PC206234BV	81001024	3

RadiantPEX-AL Press Swedged Manifolds, 1/2" Press fittings.	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Press Swedged, 2-branch	1	RLPM05-M2-08X16	81010681	2
1/2" Press Swedged, 3-branch	1	RLPM05-M3-08X16	81010671	2
1/2" Press Swedged, 4-branch	1	RLPM05-M4-08X16	81010659	2
1/2" Press Swedged, 2-branch w/MBVs	1	RLPM05-M2BV-08X16	81010682	3
1/2" Press Swedged, 3-branch w/MBVs	1	RLPM05-M3BV-08X16	81010672	3
1/2" Press Swedged, 4-branch w/MBVs	1	RLPM05-M4BV-08X16	81010660	3

RadiantPEX-AL press manifolds are sold complete with press fittings including sleeve.
These manifolds are only compatible with RadiantPEX-AL tubing.

RadiantPEX-AL Compression Swedged Manifolds, 3/8" Compression	QTY	MODEL #	ORDER #	WT. (lbs)
NEW 3/8" Compression Swedged, 2-branch	1	RLCM-M2-06X16	81011144	3
NEW 3/8" Compression Swedged, 3-branch	1	RLCM-M3-06X16	81011145	3
NEW 3/8" Compression Swedged, 4-branch	1	RLCM-M4-06X16	81011146	3
NEW 3/8" Compression Swedged, 2-branch with MBVs	1	RLCM-M2BV-06X16	81011147	3
NEW 3/8" Compression Swedged, 3-branch with MBVs	1	RLCM-M3BV-06X16	81011148	3
NEW 3/8" Compression Swedged, 4-branch with MBVs	1	RLCM-M4BV-06X16	81011149	3

RadiantPEX-AL Compression Swedged Manifolds, 1/2" Compression	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Compression Swedged, 2-branch	1	RLCM05-M2-08X16	81010684	2
1/2" Compression Swedged, 3-branch	1	RLCM05-M3-08X16	81010674	2
1/2" Compression Swedged, 4-branch	1	RLCM05-M4-08X16	81010662	2
1/2" Compression Swedged, 2-branch w/MBVs	1	RLCM05-M2BV-08X16	81010683	3
1/2" Compression Swedged, 3-branch w/MBVs	1	RLCM05-M3BV-08X16	81010673	3
1/2" Compression Swedged, 4-branch w/MBVs	1	RLCM05-M4BV-08X16	81010661	3

RadiantPEX-AL compression manifolds are sold complete with compression fittings including nut and compression
These manifolds are only compatible with RadiantPEX-AL tubing.

Tubular Manifold Accessories — Factory-installed

Vent-and-Purge Assemblies — factory-installed on Custom Tubular Manifolds.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1" Vent-and-Purge Assembly	1	160002	81000100	1
1-1/4" Vent-and-Purge Assembly	1	160003	81000101	1
1-1/2" Vent-and-Purge Assembly	1	160004	81000102	1
2" Vent-and-Purge Assembly	1	160005	81000103	1

Vent-and-Purge Assemblies allow water and air to be purged from the system at the manifold. The air vent is a "key-type" manual vent and the drain is threaded for a hose connection and comes complete with a shut-off ball valve and a cap. Available only for Custom Tubular Manifolds. Sold Individually.

Full-port Trunk Isolation Ball Valves — factory-installed on Custom Tubular Manifolds.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Trunk Isolation Ball Valve, 1"	1 pair	440101-03	81000344	1
Trunk Isolation Ball Valve, 1-1/4"	1 pair	440102-03	81003371	1
Trunk Isolation Ball Valve, 1-1/2"	1 pair	440103-03	81004854	2
Trunk Isolation Ball Valve, 2"	1 pair	440104-03	81003372	2

Trunk Isolation Ball Valves are installed to shut off the flow of water to the manifold. Sold in pairs.

Unions (for Custom Tubular Manifolds) — factory-installed on Custom Tubular Manifolds.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1" Installed Union	1 pair	464200	81000452	2
1-1/4" Installed Union	1 pair	464202	81000454	2
1-1/2" Installed Union	1 pair	464203	81000455	3
2" Installed Union	1 pair	464204	81000456	4

Unions allow manifolds to be easily pressure tested with our Pressure Test Kits. These all-brass unions feature heavy construction with EPDM o-rings to ensure leak-proof connections, even when hand-tightened. Sold in pairs.

Tubular Manifold Accessories — Field-installed

End Assemblies — for CustomCut and Swedged Manifolds.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1" End Assembly	1	000102	81003193	1
1-1/4" End Assembly	1	000103	81003194	1
1-1/2" End Assembly	1	000104	81003195	1
2" End Assembly	1	000105	81003196	1

End Assemblies are intended for use with CustomCuts and Swedged Manifolds. They allow you to purge water and air from the system at the manifold location. The air vent is a "key-type" manual vent and the drain is threaded for a hose connection and comes complete with a shut-off ball valve and a cap. Sold Individually.

Tubular Manifold Accessories

Copper Tubular Manifold Pressure Test Kits — pre-assembled to save time on the job site.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Manifold Pressure Test Kit 1"	1 kit	665161	81000550	3
Manifold Pressure Test Kit 1-1/4"	1 kit	665201	81000552	4
Manifold Pressure Test Kit 1-1/2"	1 kit	665241	81000553	5
Manifold Pressure Test Kit 2"	1 kit	665321	81000554	5

This two-part **Manifold Pressure Test Kit** enables you to test circuits and manifold connections with either air or water. They come standard with 1" brass unions to connect to Watts Radiant copper tubular manifolds or field-assembled manifolds. If you have manifolds without unions, please order loose Watts Radiant Unions to field connect with our Pressure Test Kits. Available for rental; call for prices.

Manifold Boxes — for wall or ceiling-mounted manifold systems.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Manifold Box, 16" x 29" x 4-1/2"	1	PZ162904	81001525	7
Manifold Box, 24" x 29" x 4-1/2"	1	PZ242904	81003497	15
Manifold Box, 40" x 29" x 4-1/2"	1	PZ402904	81004517	22

Manifold Boxes protect manifolds with a locking door. Made of powder-coated carbon steel. All types of 1" – 1-1/2" Watts Radiant manifolds can be mounted in these boxes. Dimensions are width x

- 16" box fits a custom tubular M-5 (Onix)/M-4 (PEX or PAP) with vent/purge
- 24" box fits a custom tubular M-11 (Onix)/M-8 (PEX or PAP) with vent/

See Zone HydroNex section for installed manifolds with pre-wired actuarors.

Universal Manifold Mounting Brackets — for holding 1" to 2" Tubular Manifolds to wood frames.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Mtg. Brackets for 1"–1-1/4" Tubular Manifolds	1 Pr.	666162	81000558	1
Mtg. Brackets for 1-1/2"–2" Tubular Manifolds	1 Pr.	666163	81000559	1

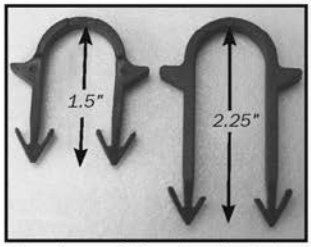
Manifold Mounting Brackets are made of a flexible, high-temperature polymer that allows you to secure the manifold to a stud, joist, or other wood framing member.

NEW

Foamboard Stapler — for installing radiant tubing in slab-on-grade or slab-over-slab applicati

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Foamboard Stapler	1	P667425	81010025	5
Foamboard Staples, 1.5"	300	P667300-300	81000822	3
Foamboard Staples, 1.5"	1200	P667300-1200	81000821	10
Foamboard Staples, 2.25"	300	P667350-300	81000825	3
Foamboard Staples, 2.25"	1200	P667350-1200	81000824	11

The **Foamboard Stapler** is designed to staple 3/8" or 1/2" Onix, 3/8" to 3/4" PEX, and 3/8" to 5/8" RadiantPEX-AL to a wide variety of foam insulation boards. The stapler has been redesigned to reduce misfires and limit jams. The stapler comes fully assembled and uses both sizes of plastic staples. Use the shorter staples for 1" insulation boards, and the longer staples for 2" (or thicker) insulation boards. The Foamboard Stapler holds



Two sizes of Foamboard staples.


RadiantPEX held fast by Foamboard staples.

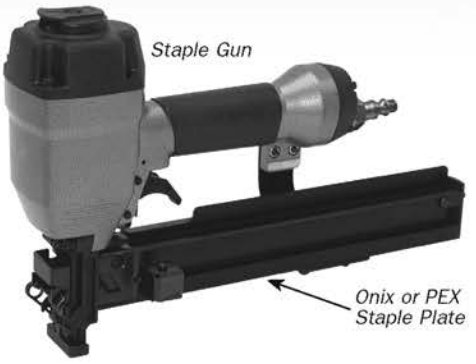
Fasteners and Tools

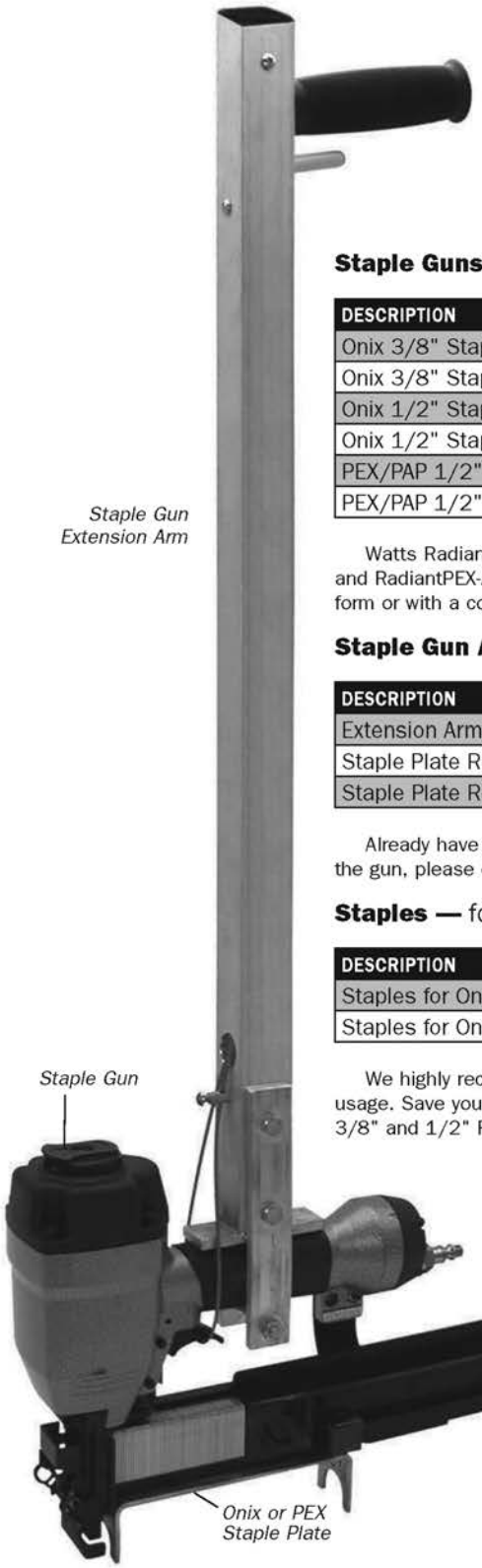
Cable Ties — for tying all sizes of radiant tubing to rewire or rebar.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Cable Ties	100	667161-100	81000579	1
Cable Ties	1,000	667161-1000	81000580	4

Cable Ties are the old standby of the radiant slab installation business. Use Cable Ties wherever you want to attach Onix, PEX, or PAP to rewire or rebar. These high-strength nylon ties will not fail or pull apart like other ties.

Fasteners and Tools





Staple Guns

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Onix 3/8" Staple Gun	1	668510	81000588	9
Onix 3/8" Staple Gun w/ Extension Arm	1	668500	81000584	12
Onix 1/2" Staple Gun	1	668509	81000587	9
Onix 1/2" Staple Gun w/ Extension Arm	1	668505	81000585	12
PEX/PAP 1/2" Staple Gun	1	P668510	81000834	9
PEX/PAP 1/2" Staple Gun w/ Extension Arm	1	P668505	81000831	12

Watts Radiant **Staple Guns** are professional tools that do an excellent job stapling Onix, RadiantPEX+, and RadiantPEX-AL(PAP) in both Staple-Up and thinslab projects. You can get them in the traditional hand-held form or with a convenient adjustable length **Extension Arm**.

Staple Gun Accessories

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Extension Arm Kit	1	668515	81000592	4
Staple Plate Replacement (Onix)	1	668520	81005498	1
Staple Plate Replacement (PEX/PAP)	1	P668520	81005497	1

Already have one of our staple guns? Order an **Extension Arm Kit**. Also, if you damage the plate on the gun, please order from the replacement numbers above.

Staples — for Onix and PEX/PAP staple guns.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Staples for Onix and PEX/PAP	1,660	668018-1660	81004290	4
Staples for Onix and PEX/PAP	10,000	668018-10000	81000583	30

We highly recommend Watts Radiant staples, as they offer straight shooting and trouble-free usage. Save yourself trouble and use the best. These staples only work with 3/8" and 1/2" Onix, 3/8" and 1/2" RadiantPEX, or 3/8" and 1/2" RadiantPEX-AL(PAP) tubing.

Fasteners and Tools

Mid-run Bend Supports — for bending RadiantPEX or RadiantPEX-AL without kinking.

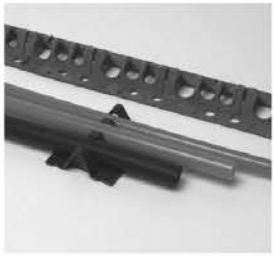
DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
1/2" Mid-run Bend Supports	10	PSBM33X-10	81005399	4
3/4" Mid-run Bend Supports	10	PSBM55X-10	81005400	5

Mid-run Bend Supports help PEX make 90° turns in walls and joist cavities. These can also be used as Terminal Bend Supports. 1/2" mid-run supports can snap into stubout brackets.

Terminal Bend Supports — for transitioning and protecting radiant tubing at ends.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/8", 1/2" Terminal Bend Supports	10	PSB23X-10	81005401	4
3/4" Terminal Bend Supports	10	PSB45X-10	81005402	5

Terminal Bend Supports are plastic elbows that are used near the completion of PEX circuits to help the tubing make smooth transitions out of the slab and up to the manifolds.



Triple-track Railway™ — for securing smaller sizes of radiant tubing.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Railway, 4 ft. length	10	P100500-10	81000780	10
Railway, 4 ft. length	50	P100500-50	81000781	40

The **Triple-Track Railways** securely hold several sizes of radiant tubing where rewire or rebar are not used. Use triple-tracks for: 3/8" Onix; 3/8", 1/2", and 5/8" RadiantPEX; and 3/8", 1/2" and 5/8" RadiantPEX-AL Applications include concrete slabs, thinslabs, sand beds, and subgrade gravel layers. Triple-Track Railways are sold in 4' lengths. Triple-Track Railways allow almost any spacing you may need — 6", 9", 12", 15", or 18". Figure one railway approximately every 2 feet.

Single-track Railway™ — for securing 5/8" Onix.

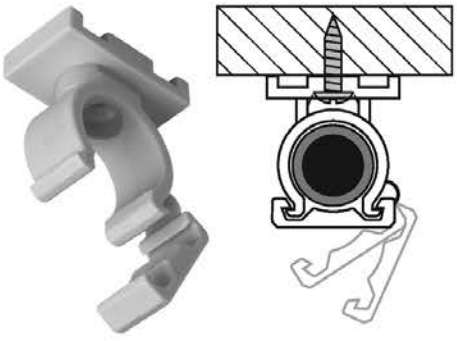
DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Railway, Single-track, 5/8" Onix, 13'	1	P300500	81009368	10

The **Single-Track Railway** securely holds Onix and PEX where rewire or rebar are not used. Applications include concrete slabs, thinslabs, sand beds, and subgrade gravel layers. The Single-Track Railway is sold in 13' lengths. With break points every 2", you have many tube spacing choices. This Railway makes pipe installation a "snap"! Allows tube spacing at 6", 8", 10", 12", 14", 16", or 18" on center. Figure one railway approximately every 2 feet.

NailTites™ — for securing Onix or PEX to subfloors using a hammer.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
NailTites (3/8" Onix; 3/8" or 1/2" PEX/PAP)	100	691060-100	81000690	1

NailTites are used to hold Onix and PEX wherever a staplegun cannot get into a tight area. These NailTites are strong and easy to use. They work for 3/8" Onix, 3/8" and 1/2" PEX, or 3/8" and 1/2" RadiantPEX-AL.



UnderFloor LockDown™ — for 3/8" and 1/2" RadiantPEX and RadiantPEX-AL underfloor applications.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
LockDown Fastener	100	P667100-100	81000818	1
LockDown Fastener	1000	P667100-1000	81000819	9

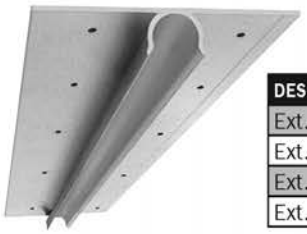
Our **LockDown** fastener is designed specifically for underfloor PEX applications. Its loose hold allows PEX to move during expansion and contraction of the tubing. The LockDown won't pop open like other similar clips you may have seen or tried. Use LockDowns for attaching 3/8" or 1/2" PEX; do not use it for 5/8" PEX as it will fit too tightly. Order five LockDowns for 10' of PEX. Follow all Installation Guidelines carefully.

Fasteners and Tools

FlexPlate™ — flexible, graphite plates install 40% faster than aluminum plates, with 50% higher thermal conductivity! Better utilize high efficiency, low temperature heat sources such as condensing boilers, geothermal, or solar.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
FlexPlate , 1/2" x 4'	20	FPLT04500-20	81012401	13

These heat transfer plates are made using a patented, highly conductive graphite material. Used in underfloor, wall, ceiling, or above floor applications, FlexPlates require lower water temperatures and produce more uniform floor temperatures than extruded aluminum plates. FlexPlates are lightweight, flexible, cut easily with scissors or a utility knife, easy to staple, and don't have any sharp edges that require grinding. For 1/2" RadiantPEX+ or RadiantPEX-AL. Measures 6" wide x 4' long.



Extruded Aluminum PEX Plates — plates for RadiantPEX+ or RadiantPEX-AL underfloor and sandwich applications.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Ext. Alum. PEX Plate, 3/8" x 4'	20	P700350-20	81005039	24
Ext. Alum. PEX Plate, 3/8" x 8'	10	P700300-10	81005011	24
Ext. Alum. PEX Plate, 1/2" x 4'	20	P700250-20	81005038	26
Ext. Alum. PEX Plate, 1/2" x 8'	10	P700200-10	81005012	26

These plates are an extruded aluminum plate with pre-drilled holes measuring 3-1/2" wide by 4 and 8 ft. long. Tubing snaps into channel, making installation fast and easy. No silicone glue is required. The channel's tight grip eliminates annoying ticks and clicks as the PEX expands and contracts.

Stamped Aluminum PEX Plates — for underfloor and sandwich applications.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Stamped Alum. Plates for 1/2" PEX or PAP	100	P700524-100	81000843	22

These plates are a stamped aluminum plate measuring 5" x 24". You'll need about four plates per 10' of tubing. Follow our Installation Guidelines very carefully when using these plates.

Basic Tubing Cutter — spring-loaded, scissor-style cutter.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Basic Tubing Cutter	1	PTC300	81005413	1

All-metal construction makes this basic tubing cutter superior to the plastic kinds. Cuts up to 1" PEX or PAP.

Professional Tubing Cutter — ratchet-style cutter.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Professional Tubing Cutter	1	PTC200	81001393	1

This **Professional Tubing Cutter** cuts tubing to length. This cutter is made of all-metal, heavy-duty construction and is designed for the rigors of daily jobsite use. Cuts up to 1-1/2" PEX, or 1" PAP.

SqueezeTite™ Pliers — for installing SelfTite clamps on Onix.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
SqueezeTite Pliers	1	669100	81000600	1

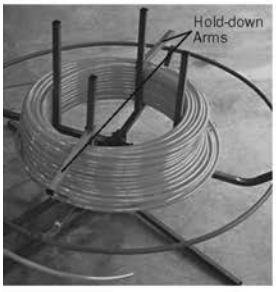
This **SqueezeTite** Pliers are locking caliper pliers that allow worry-free handling of all sizes of our SelfTite clamps. This uniquely designed tool prevents the SelfTite clamp from accidentally sliding free, as could happen with a standard pair of pliers or channel locks. With SqueezeTite Pliers, SelfTite clamps can be locked in the open position, freeing both hands to secure the Onix to the barb.

Fasteners and Tools

Onix Unwinder — for unwinding Onix tubing.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Onix Unwinder	1	669231	81000602	18

Watts Radiant's **Onix Unwinder** allows Onix coils to be quickly and easily unwound for faster hose lay-out on the jobsite. The center post allows the Onix coil to move around without sliding off the Unwinder. Heavy-duty ball-bearing construction means years of use and easy turning.



PEX Unwinder — for unwinding RadiantPEX and RadiantPEX-AL.

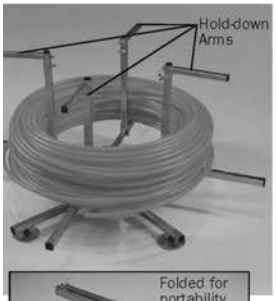
DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
PEX Unwinder, Standard	1	P669231	81000838	35

Our **PEX Unwinder** handles coils up to 1" PEX. The coil sits on the tripod and is held in place as it unwinds with four guide-bars. The PEX feeds through a guide-ring on top of the unwinder. The PEX Unwinder comes complete with two hold-down arms.

Replacement PEX Unwinder Hold-down Arms

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Replacement Hold-down Arms	1 pair	P669232	81002953	4

These **Replacement Hold-down Arms** keep the coil of PEX in place as it is unwound for use. Sold as a pair.



NEW **Compact PEX Unwinder —** for unwinding RadiantPEX and RadiantPEX-AL.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Compact PEX Unwinder, Professional w/ carrying	1	COMPEXUNW1	81013751	30

This sturdy, compact and lightweight unwinder comes complete with its own carrying bag. It comes fully assembled and can be secured to the ground or floor for smooth unwinding. Measures 10" x 36" x 6" when folded, and handles coils up to 1".

RadiantPEX Tools

Ratcheting PEX CinchTool — squeeze CinchClamps with one hand (for PEX on

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Ratcheting CinchTool	1	PCCCT6	81009461	4

Use this heavy-duty Ratcheting CinchTool to cinch all sizes of stainless steel CinchClamps. This is the best tool for 3/4" and 1" CinchClamps. Cinches can be done with one hand (you may need two hands for 1" clamps). Just squeeze the tool until the indicator window shows the connection is complete. Then release the quick-release knob. It's that simple. The tool comes complete with holster and adjustment tools. Meets ASTM-F2098 specifications.

PEX CinchTool™ — One simple tool installs all sizes of CinchClamps™ (for PEX

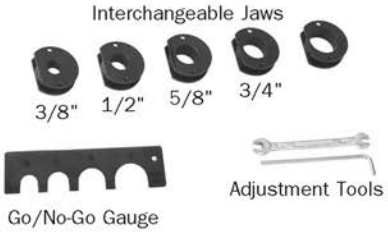
DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
CinchTool	1	PCCCT-2	81009709	3

PEX connections take only seconds with the **CinchTool**. Great for those hard-to-reach spaces. Ratchet design releases only when the CinchClamp tab is properly pinched, thus ensuring a leak-proof connection. Meets ASTM F-2098 specifications.

CrimpAll™ Tool Kit — for use with PEX tubing and copper Crimp Rings (for PEX

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
15" CrimpAll Tool Kit, 3/8", 1/2", 5/8",	1	PCCRT2346	81003038	6
19" CrimpAll Tool Kit, 1", 1-1/4"	1	PCCRT57	81009111	7

Interchangeable crimping jaws make the CrimpAll Tool Kit a great value. One tool kit allows crimping of multiple sizes of RadiantPEX+. The 15" CrimpAll Kit has four crimping jaws: 3/8", 1/2", 5/8", and 3/4". The larger 19" CrimpAll Kit gives more leverage for crimping 1" and 1-1/4" PEX and fittings. A tough plastic case helps keep all the crimping tools in one place. The kit includes the CrimpAll tool, interchangeable jaws, a Go/No-Go crimp gauge, and adjustment tools. **Note:** the jaws for the 15" tool are not interchangeable with the 19" tool. Also, the CrimpAll can only be used for fastening crimp rings over crimp fittings and PEX tubing. Do not use it for press fittings or RadiantPEX-AL tubing as the connection will leak.



Replacement CrimpAll™ Parts

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
15" CrimpAll Tool, Extra 3/8" Jaws	1	PCJ22	81003719	1
15" CrimpAll Tool, Extra 1/2" Jaws	1	PCJ33	81003720	1
15" CrimpAll Tool, Extra 5/8" Jaws	1	PCJ66	81003722	1
15" CrimpAll Tool, Extra 3/4" Jaws	1	PCJ44	81003721	1
19" CrimpAll Tool, Extra 1" Jaws	1	PCJ55	81003953	1
Go/No-Go Gauge	1	PCGA234P	81001123	1
Adjustment Tools	1	PCCRT1001	81003717	1

Replace or enhance your arsenal of crimping tools with these CrimpAll components. The 3/8", 1/2", 5/8", and 3/4" jaws fit only the 15" tool; 1" jaw fits only the 19" tool. Use these jaws only for crimping RadiantPEX or WaterPEX. Do not use for RadiantPEX-AL.

Fasteners and Tools

CrimpMaster™ Tool — for use with PEX tubing and copper Crimp Rings.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/8" CrimpMaster Tool	1	PCMT22	81001152	3
1/2" CrimpMaster Tool	1	PCMT33	81001153	3
3/4" CrimpMaster Tool	1	PCMT55	81001154	3

The CrimpMaster is a smaller, more compact crimping tool. The tool arms only need to open 6", making it easy to get into tight spaces. Buy one tool for each size of PEX fittings.

Electric Corded Crimp and Press Power Tool Kit

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Corded Power Tool	1	PCRT2345C	81003781	30

This industrial tool uses forged steel jaws to crimp RadiantPEX or press RadiantPEX-AL tubing and fittings. Jaws change out in seconds on the jobsite. Kit includes corded crimp tool and steel storage case. **Crimping or Pressing Jaws sold separately.**

This corded power tool kit can be rented. Call Watts Radiant or your local distributor for rental information.

Corded crimping tool with crimp jaw inserted.

Battery-Powered Crimp and Press Power Tool Kit — battery-powered version of the corded model above.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Battery Power Tool Kit, Cordless	1	PCRT2345	81001164	40

This industrial tool uses forged steel jaws to crimp RadiantPEX or Press RadiantPEX-AL fittings. Jaws change out in seconds on the jobsite. Kit includes cordless tool, one battery, and a steel storage case.

Crimp and Press Jaws are sold separately. This cordless crimp power tool kit is available on a rental basis. Call Watts Radiant or your local distributor for rental information.

Cordless crimping tool with crimp jaw inserted.

RadiantPEX Crimping Power Tool Jaws – for crimping RadiantPEX with crimp fittings and copper crimp rings.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Power Tool Crimp Jaws, 3/8" PEX	1	PCRT2	81003898	4
Power Tool Crimp Jaws, 1/2" PEX	1	PCRT3	81003899	4
Power Tool Crimp Jaws, 3/4" PEX	1	PCRT4	81003900	4
Power Tool Crimp Jaws, 1" PEX	1	PCRT5	81003901	4
Power Tool Crimp Jaws, 1-1/4" PEX	1	PCRT6	81003660	4
NEW Power Tool Crimp Jaws, 1-1/2" PEX	1	PCRT7	81009948	4

Power Tool RadiantPEX Crimp Jaws are used for crimping PEX tubing and fittings with copper crimp rings. Do not use them for pressing RadiantPEX-AL tubing and fittings with stainless steel press sleeves. Jaws are available for 3/8" through 1-1/2" sizes of PEX and fittings. These jaws fit our REMS Akku-Press and PowerPress-E power tools, as well as Ridgid 320-E and CT400 power tools. They do not fit the Ridgid 100-B or 210-B power tool.

Fasteners and Tools

Extra Power Tool Battery – for Cordless Crimp and Press Tool.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Battery, Extra for Power Tool	1	PCRTB2345	81001165	4

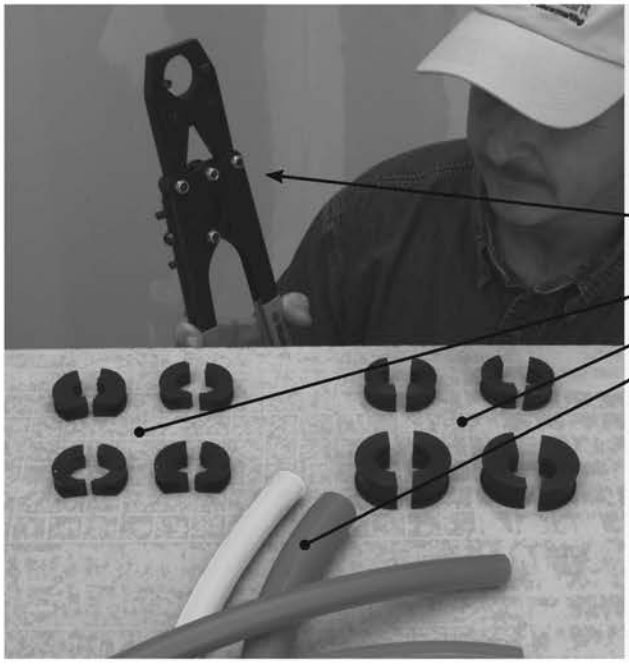
CrimpRing Go/No-Go Gauge

3/8"–3/4" Gauge

1" Gauge

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
3/8"–3/4" PEX Go/No-Go Gauge	1	PCGA234P	81001123	1
1" PEX Go/No-Go Gauge	1	PCGA5P	81001124	1

The CrimpRing **Go/No-Go Gauge** is used to check for a proper crimp connection.



How to Save Money

a. Buy one Watts CrimpAll or PressAll Tool.
b. Buy a set of Jaw Kits for the CrimpAll and PressAll Tools.
c. Fasten all sizes of Watts RadiantPEX+ or RadiantPEX-AL.
d. Keep the change.

Either the CrimpAll or PressAll Tool

RadiantPEX CrimpAll Jaws

RadiantPEX-AL PressAll Jaws

Various sizes and types of RadiantPEX+, or RadiantPEX-AL

RadiantPEX-AL Tools & Accessories

RadiantPEX-AL Press Power Tool Jaws – for pressing RadiantPEX-AL tubing and fittings with stainless steel sleeves.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Power Tool Press Jaws, 1/2" RadiantPEX-AL	1	RLPT2	81009369	4
Power Tool Press Jaws, 5/8" RadiantPEX-AL	1	RLPT3	81009370	4
Power Tool Press Jaws, 3/4" RadiantPEX-AL	1	RLPT4	81009371	4
Power Tool Press Jaws, 1" RadiantPEX-AL	1	RLPT5	81009372	4

Power Tool RadiantPEX-AL Press Jaws are used for pressing RadiantPEX-AL composite tubing and fittings. Do not use them for crimping PEX tubing and fittings with copper crimp rings. Press jaws are available for 1/2" through 1" sizes of RadiantPEX-AL tubing and fittings. These jaws fit our REMS Akku-Press and PowerPress-E power tools, as well as Ridgid 320-E and CT400 power tools. They do not fit the Ridgid 100-B or 210-B power tool.

RadiantPEX-AL Tools & Accessories

PressAll Tool Kits include press tool, jaws, and adjustment tools all packaged in a sturdy blue plastic case.

RadiantPEX-AL Manual PressAll Tool Kit — for pressing stainless steel sleeves over RadiantPEX-AL tubing and fittings.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
15" Manual PressAll Tool Kit w/ 1/2", 5/8", 3/4" jaws	1	RLPA-0612-K1	81008140	6
19" Manual PressAll Tool Kit w/ 1/2", 5/8", 3/4", 1" jaws	1	RLPA-1624-K2	81008142	8

RadiantPEX-AL manual PressAll Tool Extra Jaws — for PressAll Tool Kit.

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
15" PressAll Tool, Extra Jaws, 1/2"	1	RLPAJ15-08	81008143	1
15" PressAll Tool, Extra Jaws, 5/8"	1	RLPAJ15-10	81008144	1
15" PressAll Tool, Extra Jaws, 3/4"	1	RLPAJ15-12	81008145	1
15" PressAll Tool Extra Jaws Kit - 1/2", 5/8", 3/4"	1	RLPAJ15-K1	81008426	3
19" PressAll Tool, Extra Jaws, 1/2"	1	RLPAJ19-08	81008024	1
19" PressAll Tool, Extra Jaws, 5/8"	1	RLPAJ19-10	81008023	1
19" PressAll Tool, Extra Jaws, 3/4"	1	RLPAJ19-12	81008022	1
19" PressAll Tool, Extra Jaws, 1"	1	RLPAJ19-16	81008021	1
19" PressAll Tool Extra Jaws Kit - 1/2", 5/8", 3/4", 1"	1	RLPAJ19-K1	81008427	3

RadiantPEX-AL Pipe Reamers (Plastic reamer and T-reamer)

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
NEW 3-sided Reamer, 3/8", 1/2", 3/4"	1	RLR05-060812	81010841	1
NEW 3-sided Reamer, 5/8", 3/4", 1"	1	RLR-101216	81011431	1
T-Handle Reamer, 3/4"	1	RLTR-12	81008430	1
T-Handle Reamer, 1"	1	RLTR-16	81008431	1

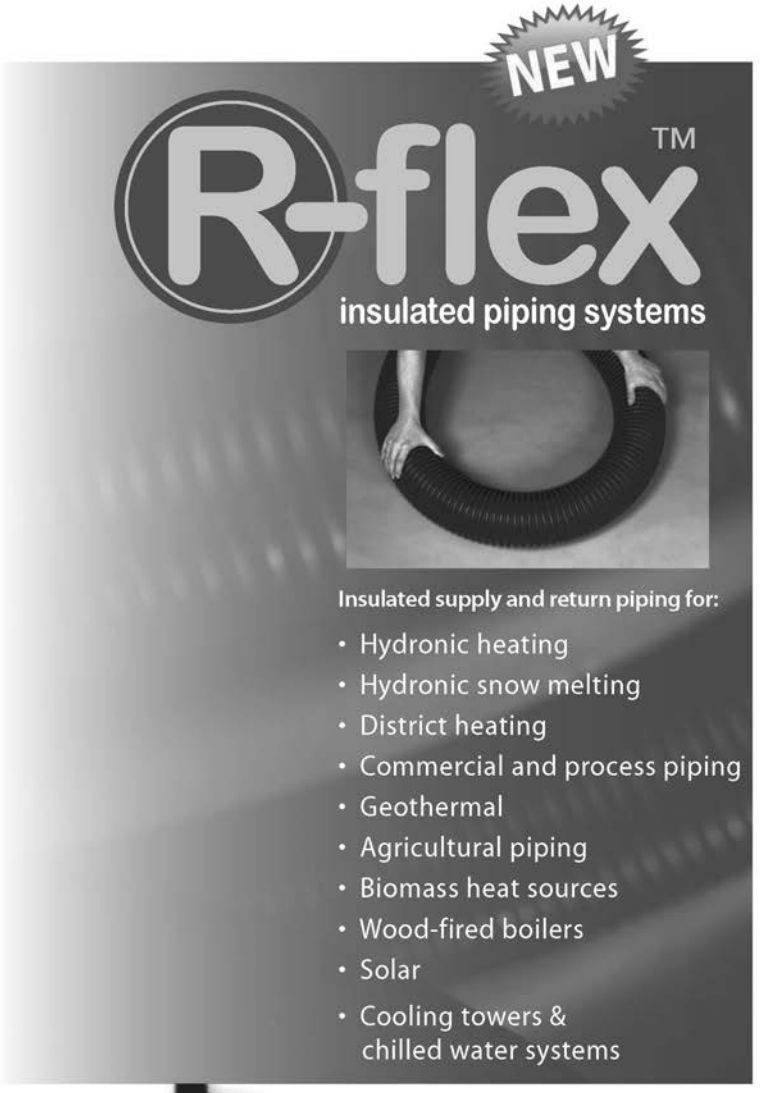
RadiantPEX-AL Internal Spring Benders

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Internal Spring Bender, 3/8"	1	RLIB-06	81011150	1
Internal Spring Bender, 1/2"	1	RLIB-08	81008482	1
Internal Spring Bender, 5/8"	1	RLIB-10	81008483	2
Internal Spring Bender, 3/4"	1	RLIB-12	81008484	2
Internal Spring Bender, 1"	1	RLIB-16	81008485	3

RadiantPEX-AL Universal Bending Tool

DESCRIPTION	QTY	MODEL #	ORDER #	WT. (lbs)
Universal PAP Bending Tool	1	RLUB-0616	81008486	10

Note: This tool bends all sizes of RadiantPEX-AL.



A solid proven system.

R-flex is a pre-insulated, flexible, energy-saving PEX piping system with a durable, waterproof outer cover. It consists of a long-lasting PEX carrier pipe or pipes surrounded by thick insulation layers, all contained in a unique double-wall outer casing for maximum protection. The flexibility and light weight of R-flex makes it far easier to install than rigid piping systems.

Superior protection.

Surrounding the inner PEX carrier pipe are several layers of cross-linked polyethylene foam with a closed cellular structure. This unique design provides R-flex with a low water vapor absorption, enhanced R-value insulation, and an excellent resistance to extreme temperatures.

Most importantly, R-flex is able to maintain these insulation properties over time. Other insulation types, such as polyurethane (PUR) foam, can crush when the pipe is bent, causing them to lose their insulative properties.

Barrier PEX offers several advantages.

- high resistance to corrosion and pressure at high temperatures
- exceptionally high abrasion resistance
- superb chemical resistance
- proven product with excellent longevity at high temperatures

Flexible, fast, and easy.

R-flex derives a unique benefit from the use of the polyethylene foam insulation and the double-wall outer shell; increased flexibility. This feature provides an advantage when running R-flex between buildings, around trench corners, or through wall penetrations.

The art of simplicity.

Traditional carrier pipes, such as copper or black iron, require installers to cut and install transition fittings to work around an obstacle. With R-flex, installers no longer have to cut pipe and add connecting points. R-flex bends around the obstacle.

Design it with RadiantWorks Professional®

RadiantWorks Professional allows designers to properly determine the amount of R-flex required for a project and an estimated amount of transitional heat loss.

Design it once. Design it right. Design with RadiantWorks Professional!

R-flex Single & Dual Coils

R-flex is a flexible pre-insulated PEX with a corrugated, double-wall HDPE cover suitable for direct burial. R-flex is manufactured in accordance with DIN 16892/16893, with a DIN 4726 oxygen barrier.

R-flex ratings: 200 Deg F at 80 psi; 180 Deg F at 100 psi; 73 Deg F at 160 psi

See page 94 for more sizing information.

To calculate the total length of R-flex needed, add 5% to the straight-line distance measured. This accounts for laying R-flex in a serpentine pattern. Also be sure to account for the length of all bends. See the R-flex Design and Installation Manual for more details.

R-flex Single 328' Coils – Pre-insulated single oxygen barrier PEX with corrugated, double-wall HDPE cover.

DESCRIPTION	QTY.	MODEL#	ORDER#	WT.LBS.
40mm (~ 1.5") x 160mm OD Jacket, R-flex Single	1	RFS-40X160-328	81012929	517
50mm (~ 2") x 160mm OD Jacket, R-flex Single	1	RFS-50X160-328	81012886	552
63mm (~ 2.5") x 160mm OD Jacket, R-flex Single	1	RFS-63X160-328	81012887	618
75mm (~ 3") x 200mm OD Jacket , R-flex Single	1	RFS-75X200-328	81012889	922
90mm (~ 3.5") x 200mm OD Jacket, R-flex Single	1	RFS-90X200-328	81012890	1048
110mm (~ 4") x 200mm OD Jacket, R-flex Single	1	RFS-110X200-328	81012891	1250

R-flex Single – Custom lengths

DESCRIPTION	QTY.	MODEL#	ORDER#	WT.LBS.
40mm (~ 1.5") x 160mm OD Jacket, R-flex Single		RFS-40X160-1	81012951	1.56/ft.
50mm (~ 2") x 160mm OD Jacket, R-flex Single		RFS-50X160-1	81012952	1.67/ft.
63mm (~ 2.5") x 160mm OD Jacket, R-flex Single		RFS-63X160-1	81012953	1.87/ft.
75mm (~ 3") x 200mm OD Jacket , R-flex Single		RFS-75X200-1	81012954	2.8/ft.
90mm (~ 3.5") x 200mm OD Jacket, R-flex Single		RFS-90X200-1	81012955	3.18/ft.
110mm (~ 4") x 200mm OD Jacket, R-flex Single		RFS-110X200-1	81012956	3.79/ft.

Note: A cut charge will be incurred with custom cut

R-flex Dual 328' Coils — Pre-insulated dual oxygen barrier PEX with corrugated, double-wall HDPE cover.

DESCRIPTION	QTY.	MODEL#	ORDER#	WT.LBS.
1" x 125mm OD Jacket, R-flex Dual	1	RFD-1X125-328	81012879	363
32mm (~ 1.25") x 125mm OD Jacket, R-flex Dual	1	RFD-32X125-328	81012880	407
40mm (~ 1.5") x 160mm OD Jacket, R-flex Dual	1	RFD-40X160-328	81012882	585
50mm (~ 2") x 200mm OD Jacket, R-flex Dual	1	RFD-50X200-328	81012884	894
63mm (~ 2.5") x 200mm OD Jacket, R-flex Dual	1	RFD-63X200-328	81012885	1028

R-flex Dual — Custom lengths

DESCRIPTION	QTY.	MODEL#	ORDER#	WT.LBS.
1" x 125mm OD Jacket, R-flex Dual		RFD-1X125-1	81012957	1.09/ft.
32mm (~ 1.25") x 125mm OD Jacket, R-flex Dual		RFD-32X125-1	81012958	1.23/ft.
40mm (~ 1.5") x 160mm OD Jacket, R-flex Dual		RFD-40X160-1	81012959	1.77/ft.
50mm (~ 2") x 200mm OD Jacket, R-flex Dual		RFD-50X200-1	81012960	2.71/ft.
63mm (~ 2.5") x 200mm OD Jacket, R-flex Dual		RFD-63X200-1	81012961	3.12/ft.

Note: A cut charge will be incurred with custom cut lengths.

R-flex Dust Caps & Shrink Caps

Single Pipe Dust Caps – Non-waterproof - for interior terminations.

DESCRIPTION	QTY.	MODEL NO.	ORDER NO.	WT.LBS.
40mmx1, 160mm OD, R-flex Single Pipe Dust Cap	1	RFDC-40X1X160	81012967	0.5
50mmx1, 160mm OD, R-flex Single Pipe Dust Cap	1	RFDC-50X1X160	81012934	0.5
63mmx1, 160mm OD, R-flex Single Pipe Dust Cap	1	RFDC-63X1X160	81012935	0.5
75mmx1, 200mm OD, R-flex Single Pipe Dust Cap	1	RFDC-75X1X200	81012936	0.5
90mmx1, 200mm OD, R-flex Single Pipe Dust Cap	1	RFDC-90X1X200	81012937	0.5
110mmx1, 200mm OD, R-flex Single Pipe Dust Cap	1	RFDC-110X1X200	81012938	0.5

Dual Pipe Dust Caps – Non-waterproof - for interior terminations.

DESCRIPTION	QTY.	MODEL NO.	ORDER NO.	WT.LBS.
1" x 2, 125mm OD, R-flex Dual Pipe Dust Cap	1	RFDC-1X2X125	81012939	0.5
32mm x 2, 125mm OD, R-flex Dual Pipe Dust Cap	1	RFDC-32X2X125	81012940	0.5
40mm x 2, 160mm OD, R-flex Dual Pipe Dust Cap	1	RFDC-40X2X160	81012941	0.5
50mm x 2, 200mm OD, R-flex Dual Pipe Dust Cap	1	RFDC-50X2X200	81012942	0.5
63mm x 2, 200mm OD, R-flex Dual Pipe Dust Cap	1	RFDC-63X2X200	81012943	0.5

Single Pipe Shrink Caps – Waterproof - required for all direct burial connections in protective casings or inspection chamber.

DESCRIPTION	QTY.	MODEL NO.	ORDER NO.	WT.LBS.
40-50mm x 1, 160mm OD, R-flex Single Pipe Shrink Cap	1	RFSC-40-50X1X160	81012664	0.5
63mm x 1, 160mm OD, R-flex Single Pipe Shrink Cap	1	RFSC-63X1X160	81012540	0.5
75-110mm x 1, 200mm OD, R-flex Single Pipe Shrink Cap	1	RFSC-75-110X1X200	81012541	0.5

Dual Pipe Shrink Caps – Waterproof - required for all direct burial connections in protective casings or inspection chamber.

DESCRIPTION	QTY.	MODEL NO.	ORDER NO.	WT.LBS.
1" x 2 x 125mm OD, R-flex Dual Pipe Shrink Cap	1	RFSC-1X2X125	81012542	0.5
32mm x 2 x 125mm OD, R-flex Dual Pipe Shrink Cap	1	RFSC-32X2X125	81012543	0.5
40mm x 2 x 160mm OD, R-flex Dual Pipe Shrink Cap	1	RFSC-40X2X160	81012544	0.5
50mm x 2 x 200mm OD, R-flex Dual Pipe Shrink Cap	1	RFSC-50X2X200	81012545	0.5
63mm x 2 x 200mm OD, R-flex Dual Pipe Shrink Cap	1	RFSC-63X2X200	81012546	0.5

Debris Plugs for R-flex PEX – Use these to cap R-flex and keep jobsite debris out of the PEX tubing.

DESCRIPTION	QTY.	MODEL NO.	ORDER NO.	WT.LBS.
1", R-flex Pex Plug	1	RFPP-1"	81013021	0.5
32mm, R-flex Pex Plug	1	RFPP-32mm	81013022	0.5
40mm, R-flex Pex Plug	1	RFPP-40mm	81013023	0.5
50mm, R-flex Pex Plug	1	RFPP-50mm	81013024	0.5
63mm, R-flex Pex Plug	1	RFPP-63mm	81013025	0.5
75mm, R-flex Pex Plug	1	RFPP-75mm	81013026	0.5
90mm, R-flex Pex Plug	1	RFPP-90mm	81013027	0.5
110mm, R-flex Pex Plug	1	RFPP-110mm	81013028	0.5

R-flex Connections

Compression Adapters – PEX x MNPT, brass – for connecting R-flex to metal fittings. Included steel plate and bolt make it easy to slide collar over PEX.

DESCRIPTION	QTY.	MODEL NO.	ORDER NO.	WT.LBS.
1" x 1" MNPT, R-flex, Adapter, Comp	1	RFA-1X100MPT	81012552	1.0
32mm x 1" MNPT, R-flex, Adapter, Comp	1	RFA-32X100MPT	81012553	1.0
40mm x 1-1/4" MNPT, R-flex, Adapter, Comp	1	RFA-40X125MPT	81012554	1.5
50mm x 1-1/2" MNPT, R-flex, Adapter, Comp	1	RFA-50X150MPT	81012665	2.5
63mm x 2" MNPT, R-flex, Adapter, Comp	1	RFA-63X200MPT	81012556	3.5
75mm x 2-1/2" MNPT, R-flex, Adapter, Comp	1	RFA-75X250MPT	81012589	4.0
90mm x 3" MNPT, R-flex, Adapter, Comp	1	RFA-90X300MPT	81012558	7.5
110mm x 4" MNPT, R-flex, Adapter, Comp	1	RFA-110X400MPT	81012590	10.0

Compression Couplings – PEX x PEX, brass – for joining R-flex coils together.

DESCRIPTION	QTY.	MODELNO.	ORDERNO.	WT.LBS.
1", R-flex, Coupling, Comp	1	RFC-1X100	81012837	2.0
32mm, R-flex, Coupling, Comp	1	RFC-32X32	81012838	2.5
40mm, R-flex, Coupling, Comp	1	RFC-40X40	81012839	3.5
50mm, R-flex, Coupling, Comp	1	RFC-50X50	81012840	5.0
63mm, R-flex, Coupling, Comp	1	RFC-63X63	81012841	8.0
75mm, R-flex, Coupling, Comp	1	RFC-75X75	81012842	10.5
90mm, R-flex, Coupling, Comp	1	RFC-90X90	81012843	17.0
110mm, R-flex, Coupling, Comp	1	RFC-110X110	81012844	24.0

Compression Elbows – PEX x PEX, brass

DESCRIPTION	QTY.	MODELNO.	ORDERNO.	WT.LBS.
1", R-flex, Elbow, Comp	1	RFE-1X100	81012845	2.0
32mm, R-flex, Elbow, Comp	1	RFE-32X32	81012846	2.5
40mm, R-flex, Elbow, Comp	1	RFE-40X40	81012847	4.0
50mm, R-flex, Elbow, Comp	1	RFE-50X50	81012848	5.5
63mm, R-flex, Elbow, Comp	1	RFE-63X63	81012849	8.5
75mm, R-flex, Elbow, Comp	1	RFE-75X75	81012850	11.0
90mm, R-flex, Elbow, Comp	1	RFE-90X90	81012851	18.5
110mm, R-flex, Elbow, Comp	1	RFE-110X110	81012852	27.0

Compression Tees, Equal – PEX x PEX x PEX, brass

DESCRIPTION	QTY.	MODEL NO.	ORDER NO.	WT.LBS.
1", R-flex, Tee, Comp	1	RFT-1X1X1	81012853	3.0
32mm, R-flex, Tee, Comp	1	RFT-32X32X32	81012854	3.0
40mm, R-flex, Tee, Comp	1	RFT-40X40X40	81012855	5.5
50mm, R-flex, Tee, Comp	1	RFT-50X50X50	81012856	7.5
63mm, R-flex, Tee, Comp	1	RFT-63X63X63	81012857	12.0
75mm, R-flex, Tee, Comp	1	RFT-75X75X75	81012858	16.0
90mm, R-flex, Tee, Comp	1	RFT-90X90X90	81012859	26.0
110mm, R-flex, Tee, Comp	1	RFT-110X110X110	81012860	37.0

Compression Tees, Unequal – (1)Run x (2)Run x (3)Branch = PEX x PEX x PEX, brass

SEE NEXT PAGE FOR IMAGE

DESCRIPTION (1 - 2 - 3)	QTY.	MODEL NO.	ORDER NO.	WT.LBS.
40 x 40 x 32, R-flex, Tee, Comp	1	RFT-40X40X32	81012861	5.0
40 x 32 x 40, R-flex, Tee, Comp	1	RFT-40X32X40	81012862	5.0
40 x 32 x 32, R-flex, Tee, Comp	1	RFT-40X32X32	81012863	5.0
50 x 50 x 40, R-flex, Tee, Comp	1	RFT-50X50X40	81012864	6.5

R-flex Connections

Compression Tees, Unequal (continued) – (1)Run x (2)Run x (3)Branch = PEX x PEX x PEX, brass

DESCRIPTION (1 - 2 - 3)	QTY.	MODEL NO.	ORDER NO.	WT.LBS.
50 x 40 x 50, R-flex, Tee, Comp	1	RFT-50X40X50	81012865	6.5
50 x 40 x 40, R-flex, Tee, Comp	1	RFT-50X40X40	81012866	6.5
63 x 63 x 50, R-flex, Tee, Comp	1	RFT-63X63X50	81012867	11.0
63 x 50 x 63, R-flex, Tee, Comp	1	RFT-63X50X63	81012868	11.0
63 x 50 x 50, R-flex, Tee, Comp	1	RFT-63X50X50	81012869	11.0
75 x 75 x 63, R-flex, Tee, Comp	1	RFT-75X75X63	81012870	16.0
75 x 63 x 75, R-flex, Tee, Comp	1	RFT-75X63X75	81012871	16.0
75 x 63 x 63, R-flex, Tee, Comp	1	RFT-75X63X63	81012872	16.0
90 x 90 x 75, R-flex, Tee, Comp	1	RFT-90X90X75	81012873	23.0
90 x 75 x 90, R-flex, Tee, Comp	1	RFT-90X75X90	81012874	23.0
90 x 75 x 75, R-flex, Tee, Comp	1	RFT-90X75X75	81012875	23.0
110 x 110 x 90, R-flex, Tee, Comp	1	RFT-110X110X90	81012876	35.0
110 x 90 x 110, R-flex, Tee, Comp	1	RFT-110X90X110	81012877	35.0
110 x 90 x 90, R-flex, Tee, Comp	1	RFT-110X90X90	81012878	35.0

Threaded Brass Coupling (without R-flex Adapters)

DESCRIPTION	QTY.	MODEL NO.	ORDER NO.	WT.LBS.
1", Coupling, Brass, FPT	1	RC-100FPTX100FPT	81012902	1.0
1-1/4", Coupling, Brass, FPT	1	RC-125FPTX125FPT	81012903	1.0
1-1/2", Coupling, Brass, FPT	1	RC-150FPTX150FPT	81012904	1.0
2", Coupling, Brass, FPT	1	RC-200FPTX200FPT	81012905	1.5
2-1/2", Coupling, Brass, FPT	1	RC-250PTFX250FPT	81012906	3.0
3", Coupling, Brass, FPT	1	RC-300FPTX300FPT	81012907	4.0
4", Coupling, Brass, FPT	1	RC-400FPTX400FPT	81012908	5.5

Threaded Brass Elbows (without R-flex Adapters)

DESCRIPTION	QTY.	MODEL NO.	ORDER NO.	WT.LBS.
1", Elbow, Brass, FPT	1	RE-100PTFX100FPT	81012909	1.0
1-1/4", Elbow, Brass, FPT	1	RE-125FPTX125FPT	81012910	1.0
1-1/2", Elbow, Brass, FPT	1	RE-150FPTX150FPT	81012911	1.5
2", Elbow, Brass, FPT	1	RE-200FPT200FPT	81012912	2.0
2-1/2", Elbow, Brass, FPT	1	RE-250FPTX250FPT	81012913	3.5
3", Elbow, Brass, FPT	1	RE-300FPTX300FPT	81012914	5.5
4", Elbow, Brass, FPT	1	RE-400FPTX400FPT	81012915	9.0

Threaded Brass Tees (without R-flex Adapters)

DESCRIPTION	QTY.	MODEL NO.	ORDER NO.	WT.LBS.
1", Tee, Brass, FPT	1	RT-100FPTX100FPTX100FPT	81012916	1.0
1-1/4", Tee, Brass, FPT	1	RT-125FPTX125FPTX125FPT	81012917	1.5
1-1/2", Tee, Brass, FPT	1	RT-150FPTX150FPTX150FPT	81012918	2.0
2", Tee, Brass, FPT	1	RT-200FPTX200FPTX200FPT	81012919	3.0
2-1/2", Tee, Brass, FPT	1	RT-250FPTX250FPTX250FPT	81012920	5.0
3", Tee, Brass, FPT	1	RT-300FPTX300FPTX300FPT	81012921	7.5
4", Tee, Brass, FPT	1	RT-400FPTX400FPTX400FPT	81012922	10.5

R-flex Bushings & Casings

Threaded Brass Bushings (without R-flex Adapters) – Use with Threaded Brass Tees to connect different R-flex run sizes.

DESCRIPTION	QTY.	MODEL NO.	ORDER NO.	WT.LBS.
1-1/4"MPT x 1" FPT, Bushing, Brass	1	RB-125MPTX100FPT	81012923	0.5
1-1/2"MPT x 1-1/4" FPT, Bushing, Brass	1	RB-150MPTX125FPT	81012924	0.5
1-1/2"MPT x 1" FPT, Bushing, Brass	1	RB-150MPTX100FPT	81012962	0.5
2"MPT x 1-1/2" FPT, Bushing, Brass	1	RB-200MPTX150FPT	81012925	1.0
2"MPT x 1" FPT, Bushing, Brass	1	RB-200MPTX100FPT	81012963	1.0
2-1/2"MPT x 2" FPT, Bushing, Brass	1	RB-250MPTX200FPT	81012926	1.0
2-1/2"MPT x 1-1/2" FPT, Bushing, Brass	1	RB-250MPTX150FPT	81012964	1.5
3"MPT x 2-1/2" FPT, Bushing, Brass	1	RB-300MPTX250FPT	81012927	2.0
3"MPT x 2" FPT, Bushing, Brass	1	RB-300MPTX200FPT	81012965	2.0
4"MPT x 3" FPT, Bushing, Brass	1	RB-400MPTX300FPT	81012928	3.5
4"MPT x 2-1/2" FPT, Bushing, Brass	1	RB-400MPTX250FPT	81012966	3.0

Protective Sleeve Casing for R-flex – For waterproof sealing and insulating of straight connections. Includes 2 HDPE halves, insulation, sealer kit, and bolts. Must add shrink caps to seal ends of R-flex.

DESCRIPTION	QTY.	MODEL NO.	ORDER NO.	WT.LBS.
125-200mm pipes, R-flex Casing, Straight Sleeve	1	RFCS-125200	81012549	13.0

Protective Y Casing for R-flex – For waterproof sealing and insulating of dual to single connections. Includes 2 HDPE halves, insulation, sealer kit, and bolts. Must add shrink caps to seal ends of R-flex.

DESCRIPTION	QTY.	MODEL NO.	ORDER NO.	WT.LBS.
125-200mm pipes, R-flex Casing, Y	1	RFCY-125200	81012547	19.0

Protective Elbow Casing for R-flex – For waterproof sealing and insulating of elbow connections. Includes 2 HDPE halves, insulation, sealer kit, and bolts. Must add shrink caps to seal ends of R-flex.

DESCRIPTION	QTY.	MODEL NO.	ORDER NO.	WT.LBS.
125-200mm pipes, R-flex Casing, Elbow	1	RFCE-125200	81012548	21.0

Protective Tee Casing for R-flex – For waterproof sealing and insulating of tee connections. Includes 2 HDPE halves, insulation, sealer kit, and bolts. Must add shrink caps to seal ends of R-flex.

DESCRIPTION	QTY.	MODEL NO.	ORDER NO.	WT.LBS.
125-200mm pipes, R-flex Casing, Tee	1	RFCT-125200	81012550	26.0

R-flex Accessories

Protective Inspection Chamber for R-flex – Allows access to connections and/or valves. Includes HDPE chamber with 6 connection points, inspection lid, sealer kit and screws. Must add shrink caps to seal ends of R-flex, and jacket repair sleeves for sealing the R-flex to the chamber.

DESCRIPTION	QTY.	MODEL NO.	ORDER NO.	WT.LBS.
125-200mm pipes, R-flex Inspect Chamber	1	RFIC-125200	81012551	75.0

R-flex Jacket Repair Tape – To repair accidental damage to R-flex outer cover. Wrap the tape over damaged area and heat with heat gun.

DESCRIPTION	QTY.	MODEL NO.	ORDER NO.	WT.LBS.
3/4" x 33', R-flex Heat Shrink Repair Tape	1	RFRT-075X33	81012591	7.0

R-flex Jacket Repair Sleeve – To repair accidental damage to R-flex outer cover. Slide the sleeve over damaged area and heat with heat gun.

DESCRIPTION	QTY.	MODEL NO.	ORDER NO.	WT.LBS.
125mm, R-flex Shrink Repair Sleeve	1	RFRS-125	81012592	1.0
160mm, R-flex Shrink Repair Sleeve	1	RFRS-160	81012593	1.0
200mm, R-flex Shrink Repair Sleeve	1	RFRS-200	81012594	1.0

R-flex Caution Tape – Place in backfill along entire length of R-flex.

DESCRIPTION	QTY.	MODEL NO.	ORDER NO.	WT.LBS.
100 ft., R-flex Caution Tape	1	RFCT	81012947	1.0

R-flex Link Belt – Used when boring a hole in an existing wall. Seals wall penetrations between R-flex outer cover and wall.

125mm outer casing, R-flex Link Belt	1	RFLB-125	81012948	1.5
160mm outer casing, R-flex Link Belt	1	RFLB-160	81012949	5.0
200mm outer casing, R-flex Link Belt	1	RFLB-200	81012950	6.0

R-flex Wall Sleeve & Link Belt Kit – Used when wall is to be poured in place. Seals wall penetrations between R-flex outer cover and wall.

DESCRIPTION	QTY.	MODEL NO.	ORDER NO.	WT.LBS.
125mm outer casing, R-flex Wall Sleeve and Belt Kit	1	RFLBKit-125	81012931	12.0
160mm outer casing, R-flex Wall Sleeve and Belt Kit	1	RFLBKit-160	81012932	10.0
200mm outer casing, R-flex Wall Sleeve and Belt Kit	1	RFLBKit-200	81012933	13.0

Determining size and amount of R-flex to order

R-flex U.S. equivalents

	Metric	25 mm	32 mm	40 mm	50 mm	63 mm	75 mm	90 mm	110 mm
	US Equivalent	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	3-1/2"	4"
Single	160 mm			81012929	81012886	81012887			
	200 mm						81012889	81012890	81012891
Dual	125 mm	81012879	81012880						
	160 mm			81012882					
	200 mm				81012884	81012885			
Approx. Max. Flow, gpm		12	17	25	40	70	90	140	200

Important: Add approximately 5% to the straight line distance to allow for a serpentine pattern of R-Flex.

R-flex Specifications Chart

Specifications (conforms to DIN 16892, SDR-11)

Order #	Description	PEX ID	PEX OD	Jacket OD	Bend Radius	Coil Length	Coil Diameter	Coil Height	Coil Weight	Fluid Cap. /100m (328ft)	Insulation Thickness	Casing R-Value
81012929	160/40 R-flex	32.6 mm *(1.28")*	40 mm *(1.57")*	160 mm *(6.30")*	350 mm *(13.8")*	100 m** *(328 ft)*	2300 mm *(90.6")*	850 mm *(33.50")*	232 kg *(512 lbs)*	83.00 L *(21.93 gal)*	47.5 mm *(1.88")*	6.79
81012886	160/50 R-flex	40.8 mm *(1.61")*	50.0 mm *(1.97")*		450 mm *(17.80")*				248 kg *(547 lbs)*	131.31 L *(34.69 gal)*	42.5 mm *(1.68")*	6.07
81012887	160/63 R-flex	51.6 mm *(2.03")*	63.0 mm *(2.48")*		550 mm *(21.7")*				278 kg *(613 lbs)*	208.76 L *(55.15 gal)*	37.0 mm *(1.46")*	5.27
81012889	200/75 R-flex	61.4 mm *(2.42")*	75.0 mm *(2.95")*	200 mm *(7.90")*	800 mm *(31.5")*			1400 mm *(55.20")*	416 kg *(917 lbs)*	296.67 L *(78.37 gal)*	52.0 mm *(2.05")*	7.4
81012890	200/90 R-flex	73.6 mm *(2.90")*	90.0 mm *(3.54")*		1100 mm *(43.4")*				473 kg *(1,043 lbs)*	426.02 L *(112.55 gal)*	44.0 mm *(1.74")*	6.28
81012891	200/110 R-flex	90.0 mm *(3.55")*	110.0 mm *(4.33")*		1200 mm *(47.3")*				564 kg *(1,244 lbs)*	638.41 L *(168.65 gal)*	34.0 mm *(1.33")*	4.84
81012879	125/2x1 R-flex*	0.863" *(21.92 mm)*	1.125" *(28.58 mm)*	4.90" *(125 mm)*	11.80" *(300 mm)*	100 m** *(328 ft)*	82.70" *(2100 m*	27.60" *(700 mm)*	358 lbs *(162 kg)*	19.94 gal *(75.46 L)*	1.11" *(28.0 mm)*	4.01
81012880	125/2x32 R-flex	26.2 mm *(1.03")*	32.0 mm *(1.26")*	125 mm *(4.90")*	300 mm *(11.80")*		2100 mm *(82.70")*	700 mm *(27.60")*	182 kg *(402 lbs)*	107.48 L *(28.40 gal)*	22.3 mm *(0.88")*	3.18
81012882	160/2x40 R-flex	32.6 mm *(1.28")*	40.0 mm *(1.57")*	160 mm *(6.30")*	600 mm *(23.70")*		2300 mm *(90.60")*	850 mm *(33.50")*	263 kg *(580 lbs)*	166.00 L *(43.86 gal)*	34.0 mm *(1.34")*	4.84
81012884	200/2x50 R-flex	40.8 mm *(1.61")*	50.0 mm *(1.97")*	200 mm *(7.90")*	800 mm *(31.50")*			1400 mm *(55.20")*	403 kg *(889 lbs)*	262.62 L *(69.38 gal)*	46.0 mm *(1.81")*	6.57
81012885	200/2x63 R-flex	51.6 mm *(2.03")*	63.0 mm *(2.48")*		1200 mm *(47.30")*				464 kg *(1,023 lbs)*	417.52 L *(110.30 gal)*	33.0 mm *(1.30")*	4.69

* Pex pipe is certified to ASTM F876, SDR-9 dimensions.

** Custom lengths are available upon request. Contact distributor for details.

THERMALBOARD™

DESCRIPTION

ThermalBoard™ is a patent-pending radiant heating system employing a thermally coated composite wood product, factory grooved to accommodate 3/8" nominal PEX tubing. The PEX tubing is tightly secured in the **ThermalBoard™** groove resulting in excellent thermal transfer. Heat is transferred quickly and efficiently to the finished floor goods and the conditioned interior space.

APPLICATION

ThermalBoard™ is primarily intended for attachment to new or existing plywood sub floors or walls in residential or commercial new construction or retrofit radiant floor applications. **ThermalBoard™** may also be used over existing concrete slabs.

INSTALLATION

ThermalBoard™ is applied just before finished flooring goods. It is screwed to the subfloor in a pattern determined by the designer or installer. PEX radiant tubing (3/8" nominal) is snapped into place flush with the surface of the **ThermalBoard™** Hardwood flooring can be applied directly. Refer to **ThermalBoard™** installation manual.

www.thermalboard.info

SUPERIOR PERFORMANCE

ThermalBoard™ provides fast reaction time due to *Warm Coat ™* aluminum thermal coating. Twice the responsiveness of gypsum based concrete.

LIGHT WEIGHT

At 2.5lb./sq/ft/, **ThermalBoard™** is a minimum of five times lighter than concrete or gypsum based concrete, thus avoiding joist up-sizing and seismic weight concerns.

A QUALITY FLAT SURFACE

ThermalBoard™ provides a surface as flat as your sub floor for secure, quality attachment of finished floor goods. Truly flat floors are often difficult and/or expensive to achieve with poured concrete products.

EASY INSTALLATION

ThermalBoard™ installs quickly and avoids the costly scheduling problems of separate sub contractors and project delays for concrete curing.

ECONOMICAL

ThermalBoard™ avoids the significant extra costs of double plating, up sized joists, glue down tack strips and hardwood nailing strips...and it performs better!

IDEAL FOR FINISHED FLOORS

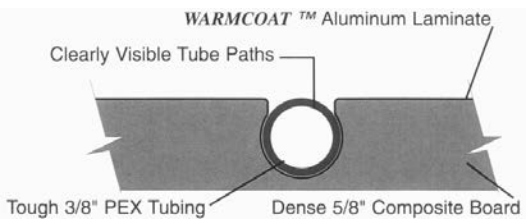
Tile, carpet, linoleum or hardwood can be attached easily to **ThermalBoard™** with tubing easily avoided.

RIGHT PROFILE/RIGHT TUBING

The low profile (5/8") reduces transition and height problems while accommodating the most popular and economical radiant tubing size (3/8" nominal).

CAD LAYOUT SERVICE

CAD layout is available at reasonable cost.

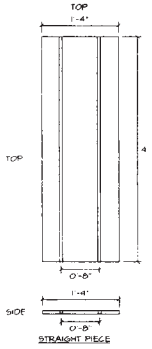


THERMALBOARD™

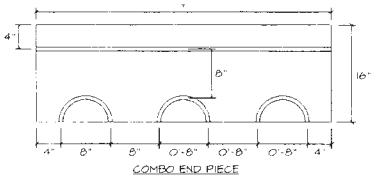
MODELS

TB 1648S

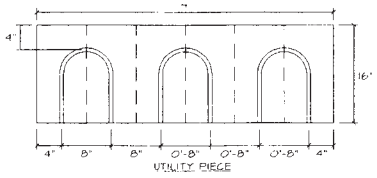
8" O.C.



TB 1648CE



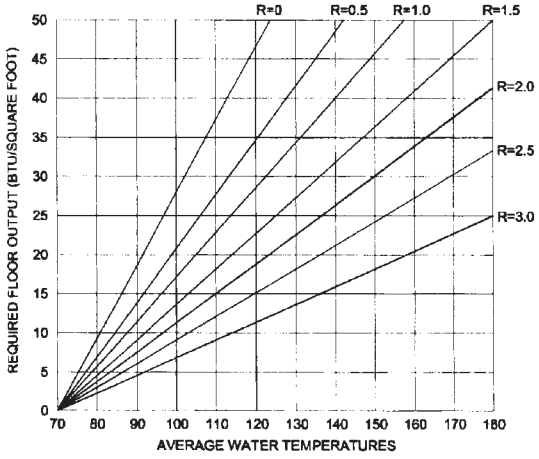
TB 1648U

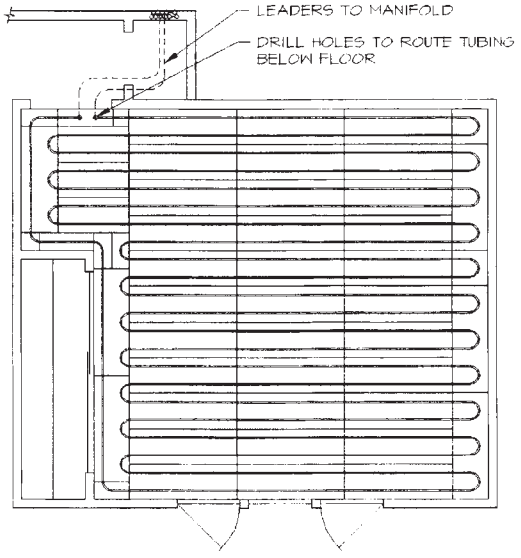


SPECIFICATIONS

DIMENSIONS	TB 1648S: 16" X 48" TB 1648CE: 16" X 48" TB 1648U: 16" X 48"
PROFILE:	5/8" Thick
TUBE SPACING:	8" OC Acceptable Radiant Tubing: 3/8" ID PEX to ASTM F-876 F-877
WEIGHT	2.5lb./sq./ft.
COMPOSITION BOARD	Standard: MDF. Consult for options.
COATING	***Warm Coat ™***: Aluminum Laminate.

STEADY STATE PERFORMANCE



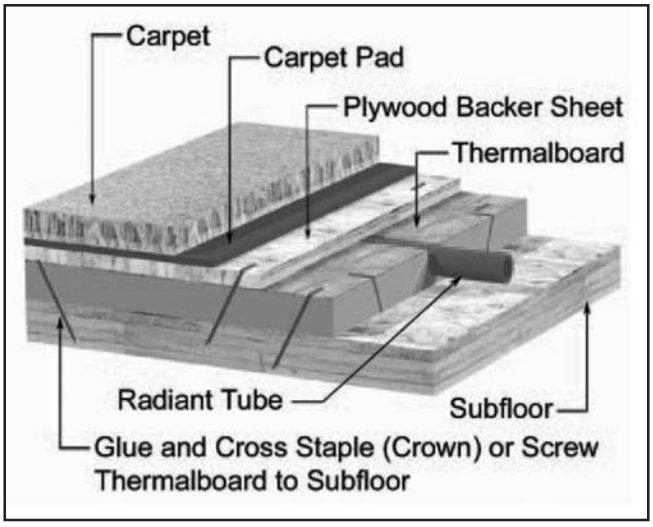


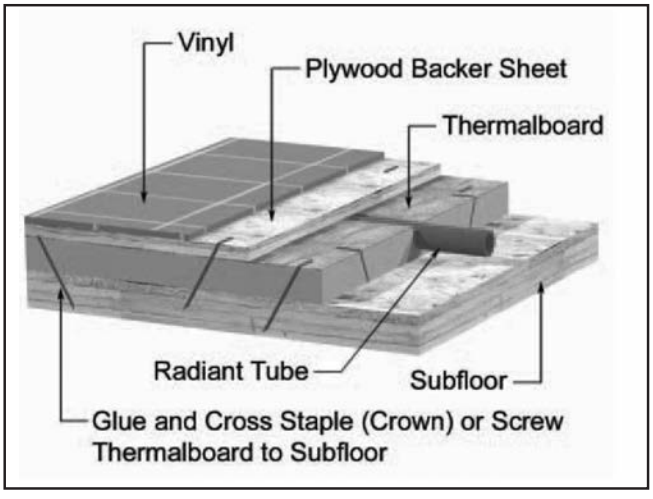
PLAN LAYOUT SERVICE

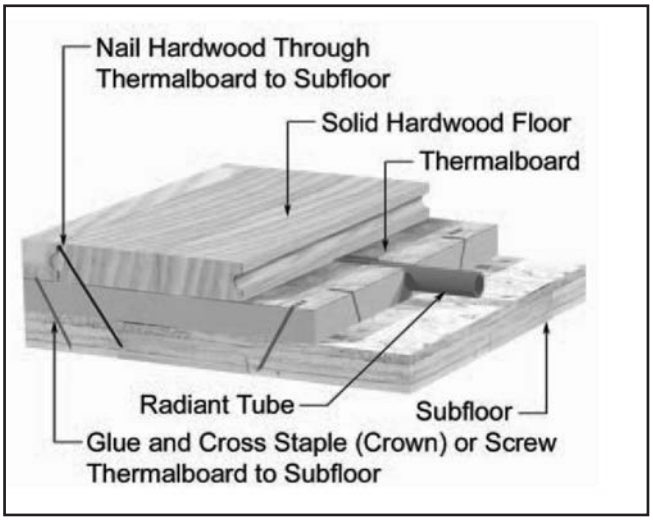
As with any radiant heating system installation, the first step is to obtain a quality design and layout. This can be particularly important for first-time installers. For a system design package including a detailed Thermalboard layout showing board placement and tubing circuits, Thermalboard™ has arranged with the National Radiant Design Center (NRDC) to provide clear and precise plans at a minimal charge. Please contact your Thermalboard™ wholesaler or representative for information on this service.

www.thermalboard.info

THERMALBOARD™







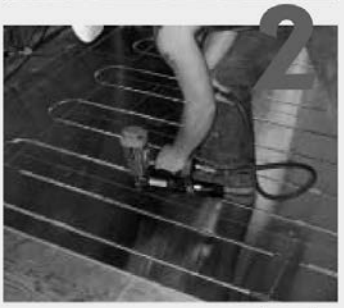
QUICK INSTALLATION:

In three easy steps, Thermalboard™ can be efficiently installed by specialty Thermalboard™ radiant installers or by a trained general contractor.

Thermalboard™ is cut to size, glued, then either screwed or pneumatically stapled to a standard subfloor in a pattern to accomodate the PEX tubing layout needed for that particular space -- to fulfill the room's heating requirements.

The three easily understood board shapes are usually assembled with very little cutting to form the groove layout for the 3/8" PEX tubing. When cutting is required, you can use conventional circular saws, radial arm saws or table saws.

Finished flooring goods may then be easily installed over Thermalboard™, with reference to our installation manual. Dowload other tips and considerations from our website. Third party layout documentation and submittal services are available.



www.thermalboard.info

CREATHERM™

Radiant Floor Panels

BASF
The Chemical Company

Fast. Easy. Saves Labor. Just Walk It In.

BENEFITS OF RADIANT FLOOR PANELS

Creatherm™ radiant floor panels, manufactured out of BASF Styropor® EPS, offer contractors an innovative foam installation process that saves time and money. Creatherm™ radiant floor panels are easily installed. Interlocking panels help reduce labor costs and improve installation efficiencies by allowing for precise tube layout that eliminates the need to tie, clip, staple, or screw the PEX [cross-linked polyethylene] tubing to the substrate.

Styropor®, an expandable polystyrene (EPS) was invented by BASF in 1952, and today, is a classic among the raw materials employed for cost-effective construction, as well as efficient and reliable packaging. The most important properties of Styropor® EPS include: excellent thermal insulation capacity, high compressive strength, outstanding impact absorption and low weight. Foam is an eco-friendly building material and is incredibly strong, quiet, resistant to insects and mold, and virtually allergen free. These panels offer a great solution for slab-on-grade, snow melt, retro-fit and root zone heating. The finished floor panel size is 2' x 4' and features a staggered snap-tight grid for optimal tubing spacing. On-center points exist every 3 inches.

Ask about customizing our panels to achieve exclusivity in your market. Creatherm™ is manufactured according to the proprietary process protected by U.S. Design Patents No. D541396 and No. D587358 and is a registered trademark licensed to the Creatherm Company.

Proud member of:

RADIANT PANEL Member RPA 100000 est. 1994 ASSOCIATION

info@creatherm.com

CREATHERM.COM

T45 offering our THIN "R" value

thin:::panel thickness 1.8"

S45 offering our STANDARD "R" value

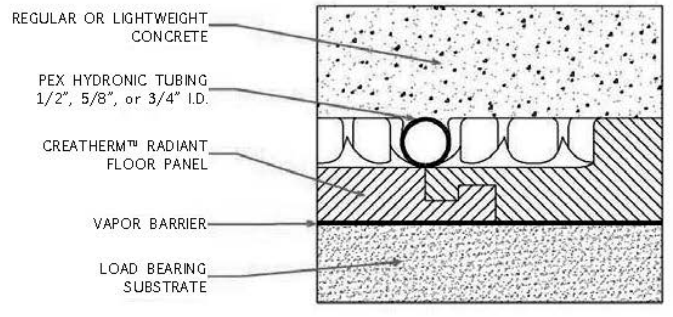
standard:::nominal height 2.8"

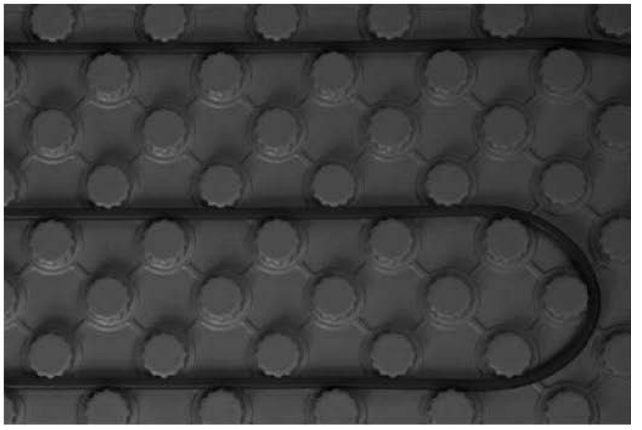
U45 offering our ULTIMATE "R" value

ultimate:::panel thickness 3.3"

TEST DATA	ASTM TEST	UNITS	T45	S45	U45
Thermal Resistance R-Value	C-177 or C-518	F.ft2.h/Btu	5	9	11
Density	C-303	lb/ft3	2.0 PCF (32gpl)	2.0 PCF (32gpl)	2.0 PCF (32gpl)
Compressive Resistance	D-1621	PSI	>36	>36	>36
at 10% Deformation					
Water Vapor Permeability	E-96	Perm-Inches, Max.	0.67	0.36	0.58
Water Absorption	C-272	% by Volume Max.	4	4	4
Dimensional Stability	D-2126	% Max.	2	2	2
Mold Resistance	C-1338	5 Strains	No Growth	No Growth	No Growth
PRODUCTION					
Overall Board Size		Inches	25" x 49"	25" x 49"	25" x 49"
Usable Size		Inches	24" x 48"	24" x 48"	24" x 48"
Recommended PEX		Inches	1/2", 5/8", 3/4"	1/2", 5/8", 3/4"	1/2", 5/8", 3/4"
Overall Thickness					
Including Pipe Grid		Inches	1.8"	2.8"	3.3"
Nominal (EPS) Thickness					
of Insulation		Inches	1"	2"	2.5"
Screed Volume in					
Tube Grid		Cubic Inches	875	875	875
Cover Stock			Polystyrene	Polystyrene	Polystyrene
SHIPPING					
Parts Per Bundle			18	10	8
Sq. Ft. Per Bundle			144	80	64
Parts Per Truckload			3,456	1,920	1,536

**Data contained herein is meant for reference and estimating purposes only. Refer to appropriate ASTM standards or call for more detailed information. CREATHERM™ Radiant Floor Panels can be customized to your specifications. Inquire for custom quotes.





BARRIER / XT / X5

UNDERSLAB INSULATION AND VAPOR RETARDER

PRODUCT DESCRIPTION

The Barrier product family is a high-performance EPS foam underslab insulator and vapor retarder, designed to insulate and retard moisture migration through concrete. The core of the product is made of flexible, recycled extruded expanded polystyrene that provides the excellent insulation characteristics. This unique core has vapor retarding film laminated to both sides as well as a patented self-taping edge and overlapping flange to make the entire installation seam-free.

High-performance insulation values, cost-saving installation, and unequaled flexibility makes **The Barrier / BarrierXT & BarrierX5** the most effective underslab insulators and vapor retarders in today's market!

New Product

BarrierX5 with a 1.25" thick core in flexible 4'x60' rolls.

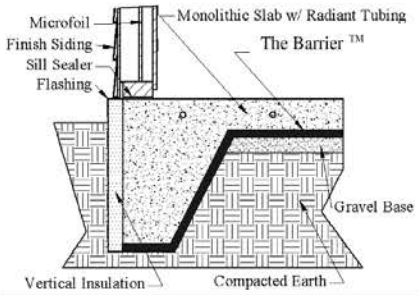
PRODUCT USE

Like a foam cup protects your hand from the hot beverage it holds, **The Barrier** product family protects concrete from heat loss and moisture, especially when used in a radiant heat floor application. **The Barrier** under concrete insulation is a thermal block which insulates the concrete from the cold and dampness of the ground. The entire product line-up is strong, durable, and will not collapse under the weight of the concrete. Installation is far easier because you can walk on all of them without breaking —plus, the patented seam taping system makes installation fast and efficient.

The Barrier underslab insulation and vapor retarder protects your flooring and other moisture sensitive furnishings in your building's interior from moisture migration while also providing dual use as an effective insulator.

FEATURES / BENEFITS

- Durable / Flexible / Walkable
- 100% Waterproof and Vapor-proof
- Expanded polystyrene for real insulating value
- Fast / Easy Installation -4'x60' rolls for significant labor savings
- Seamless –Patented self taping edges reduces thermal bridging



APPLICATIONS

- Underslab Insulation
- Hydronically Heated Slabs
- Electrically Heated Slabs
- Snowmelt / Icemelt
- Underslab Vapor Retarder
- Crawl Spaces
- Foundation Wall Vapor Retarder
- Radon Retarder
- Back fill protection

SIZE

The Barrier 3/8" x 4' x 60' rolls.

BarrierXT 3/4" x 4' x 60' rolls.

New

BarrierX5 1.25" x 4' x 60' rolls.

Specify **HD** for 10 mil film top film.

Note: Film width is 50.5" for a 2.5" overlapping waterproof seal.

BARRIER / XT / X5

UNDERSLAB INSULATION AND VAPOR RETARDER

PROPERTIES	TEST METHOD	THE BARRIER	BARRIERXT	BARRIERX5
Insulation R-Value ASTM C-518	As part of Assembly (6" Gravel, Insulation) (50°F)	6.7	8.2	10.3
	As part of Assembly (3.6" Slab, Insulation, 1" sand, 3" gravel) (50°F)	3.8	5.2	7.3
	Material Only (50°F/75°)	1.8 / 1.7	3.2 / 3.0	5.3 / 5.0
Thickness, Nominal		0.375"	0.750"	1.25"
Weight Per Unit (lbs.)		23	32	40
Size / Coverage (sqft)		4'x60' / 240sqft	4'x60' / 240sqft	4'x60' / 240sqft
Compressive Resistance	ASTM D 1621	13-15 psi @ 10%	13-15 psi @ 10%	13-15 psi @ 10%
Use Temperature		180 °F Max	180 °F Max	180 °F Max
Permeance	ASTM E 96 Sec. B	Zero	Zero	Zero
Water Permeability	ICBO Sec. 4.6.1	Zero	Zero	Zero

UNROLL AND USE SELF SEALING TAPED EDGE

LAY DOWN TUBING / SEAL AROUND OPENINGS

POUR AND FINISH CONCRETE

THE BARRIER PLACEMENT

Just follow these simple steps and find out why installers rate this material first in today's market.

1. Base material should be as level as possible, with all debris removed. Level and tamp or roll granular base.
2. Unwind **The Barrier** roll with tape edge up and white side up, then lay flat on base material, with longest dimension parallel with the direction of the pour.
3. Cut to length required —or roll up the footer form if desired to insulate the slab completely from heat and cold migration (recommended by NOFP).
4. Lay next roll down. Peel away white tape backer-compress overlap tab firmly on taped edge. **It is important to make sure rolls are butted tightly together to create a gapless seam when you compress together the double-faced adhesive tab.
5. Four foot sides, damaged film, and any cutouts should be seamed or repaired with appropriate seaming tape.

(These are general installation instructions. Instructions on architectural or structural drawings should be reviewed and followed as well.)

Note: To the best of our knowledge, these are typical property values and are intended as guides only, not as specification limits. NOFP, Inc. makes no warranties as to the fitness for a specific use or merchantability of products referred to, no guarantee of satisfactory results from reliance upon contained information or recommendations and disclaims all liability for resulting loss or damage.

Read this before you buy: The chart shows the R-value of this insulation. R means resistance to heat flow. The higher the R-Value the greater the insulating power.

HeatWeave Mats

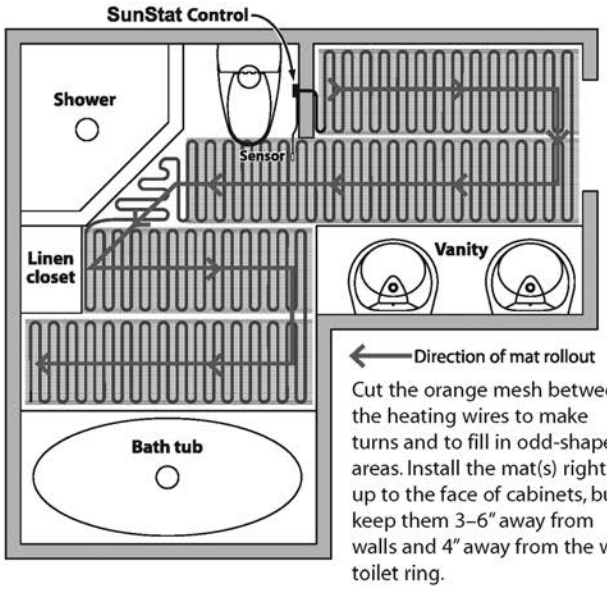
Roll out mat and secure to the floor.

Trowel thin-set and lay tile.

HeatWeave is the safest and easiest-to-install heating mat in the industry. It is Listed by UL® for the U.S. and Canada, and tested by Tile Council of North America for all residential and moderate commercial applications. All mats have the "S-pattern" wire construction and produce 12 watts/sq. ft. HeatWeave offers the largest selection of mats in the industry with over 40 sizes manufactured in three widths (1, 2, and 3 ft. wide) in lengths covering up to 160 sq. ft. — with one mat! Just a few benefits of HeatWeave mats are:

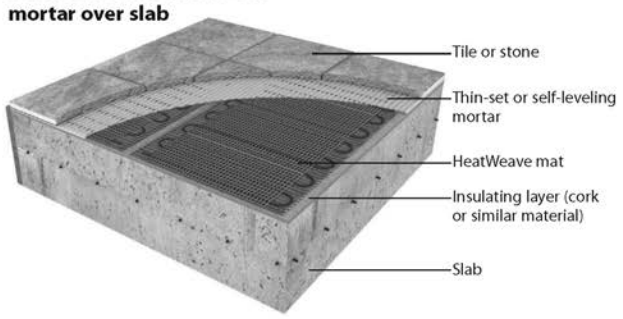
1. **The industry's first thin, open-weave construction** allows thin-set or self-leveling mortar to flow through the mat and easily bond with the underlying material. This one-step application adds only 1/8" thickness over a normal tile installation.
2. **The industry's first single power lead construction** makes mats easy to install and simpler to connect to the control.
3. **The industry's highest-quality heating wire** using ETFE high-temperature insulation, XLPE (PEX) jacket, and oxygen-free copper heating elements for corrosion resistance, temperature resistance, abrasion resistance, and longevity.
4. **The industry's first twisted, twin-wire construction** creates ultra-low EMF.
5. **120-VAC and 240-VAC models** available for small residential to large commercial applications.
6. **The industry's only shielded and fully grounded** 10-ft. power lead provides safety and jobsite durability. Power leads are color-coded for 120 VAC or 240 VAC.

HeatWeave mat bathroom layout One mat: 2 ft. x 25 ft.

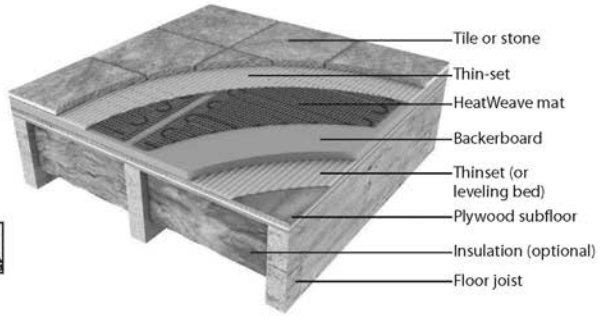


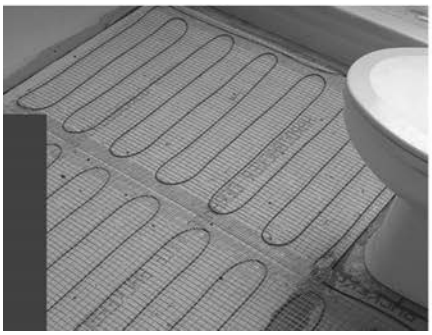
Cut the orange mesh between the heating wires to make turns and to fill in odd-shaped areas. Install the mat(s) right up to the face of cabinets, but keep them 3–6" away from walls and 4" away from the wax toilet ring.

HeatWeave mat in thin-set mortar over slab



HeatWeave mat in thin-set on backerboard on frame floor





Tested by TCNA

It's easy to design a HeatWeave system.

For fast and easy sizing, go to **www.wattsradiant.com**.

Evaluate how many square feet of floor are to be heated. Do not put under cabinets or appliances. Leave the mat at least 4" away from the toilet wax ring and 4"–6" away from walls. Do install up to the toe-kick in front of kitchen or bath cabinets, and in front of a toilet and/or shower and tub, so toes will stay warm.

Select one mat, or a combination of mats, to fill the area. Remember, multiple mats of the same voltage can be wired together to fill larger areas.

How much HeatWeave should I order?

1. **Calculate total wall-to-wall area of the room.** Subtract the square footage of all built-ins (tub, toilet, cabinets, etc.).
   (Total area – built-ins) = (____ – ____) = ____ sq. ft.
2. **Multiply this area by 0.90.** Round down to the nearest 5 sq. ft. This is the heated area.
   _____ x 0.90 = _____ sq. ft. of heated area.
3. **Select the appropriate mat(s)** based on the square footage of heated area, from the tables below, or choose one of our HeatWeave Mat Kits on page 4.

3-ft.-wide mats 120 VAC

Coverage (Sq.Ft.)	Mat Size (W x L)	Order Number	Model Number	Amp Draw	REET Value	Ship wt. (lb.)
15	3′ x 5′	**81008802**	12000536HW	1.5	0.13	4
20	3′ x 6′-8″	**81008803**	12000636HW	2.0	0.13	4
25	3′ x 8′-4″	**81008804**	12000836HW	2.5	0.10	5
30	3′ x 10′	**81008805**	12001036HW	3.0	0.06	5
45	3′ x 15′	**81008806**	12001536HW	4.5	0.11	7
60	3′ x 20′	**81008807**	12002036HW	6.0	0.13	9

3-ft.-wide mats 240 VAC

Coverage (Sq.Ft.)	Mat Size (W x L)	Order Number	Model Number	Amp Draw	REET Value	Ship wt. (lb.)
30	3′ x 10′	**81008808**	24001036HW	1.5	0.13	5
40	3′ x 13′-4″	**81008809**	24001336HW	2.0	0.13	6
50	3′ x 16′-8″	**81008810**	24001636HW	2.5	0.10	7
60	3′ x 20′	**81008811**	24002036HW	3.0	0.06	9
90	3′ x 30′	**81008812**	24003036HW	4.5	0.11	15
120	3′ x 40′	**81008813**	24004036HW	6.0	0.13	19

2-ft.-wide mats 120 VAC

Coverage (Sq.Ft.)	Mat Size (W x L)	Order Number	Model Number	Amp Draw	REET Value	Ship wt. (lb.)
10	2′ x 5′	**81008778**	12000524HW	1.0	0.11	3
15	2′ x 7′-6″	**81008779**	12000724HW	1.5	0.13	4
20	2′ x 10′	**81008780**	12001024HW	2.0	0.13	4
25	2′ x 12′-6″	**81008781**	12001224HW	2.5	0.10	5
30	2′ x 15′	**81008782**	12001524HW	3.0	0.06	5
35	2′ x 17′-6″	**81008783**	12001724HW	3.5	0.13	6
40	2′ x 20′	**81008784**	12002024HW	4.0	0.10	6
45	2′ x 22′-6″	**81008785**	12002224HW	4.5	0.11	7
50	2′ x 25′	**81008786**	12002524HW	5.0	0.14	7
60	2′ x 30′	**81008787**	12003024HW	6.0	0.13	9
70	2′ x 35′	**81008788**	12003524HW	7.0	0.13	11
80	2′ x 40′	**81008789**	12004024HW	8.0	0.19	13

2-ft.-wide mats 240 VAC

Coverage (Sq.Ft.)	Mat Size (W x L)	Order Number	Model Number	Amp Draw	REET Value	Ship wt. (lb.)
20	2′ x 10′	**81008790**	24001024HW	1.0	0.11	4
30	2′ x 15′	**81008791**	24001524HW	1.5	0.13	5
40	2′ x 20′	**81008792**	24002024HW	2.0	0.13	6
50	2′ x 25′	**81008793**	24002524HW	2.5	0.10	7
60	2′ x 30′	**81008794**	24003024HW	3.0	0.06	9
70	2′ x 35′	**81008795**	24003524HW	3.5	0.13	11
80	2′ x 40′	**81008796**	24004024HW	4.0	0.10	13
90	2′ x 45′	**81008797**	24004524HW	4.5	0.11	15
100	2′ x 50′	**81008798**	24005024HW	5.0	0.14	17
120	2′ x 60′	**81008799**	24006024HW	6.0	0.13	19
140	2′ x 70′	**81008800**	24007024HW	7.0	0.13	21
160	2′ x 80′	**81008801**	24008024HW	8.0	0.19	23

1-ft.-wide mats 120 VAC

Coverage (Sq.Ft.)	Mat Size (W x L)	Order Number	Model Number	Amp Draw	REET Value	Ship wt. (lb.)
10	1′ x 10′	**81008771**	12001012HW	1.0	0.11	3
15	1′ x 15′	**81008772**	12001512HW	1.5	0.13	4
20	1′ x 20′	**81008773**	12002012HW	2.0	0.13	4
25	1′ x 25′	**81008774**	12002512HW	2.5	0.10	5

Discontinued products include 1′ x 30′,120-VAC mats

* The REET values listed above are 200% below daily exposure levels of the average U.S. citizen as reported by the National Institute of Environmental Health Sciences (NIEHS). Values are average electromagnetic field in milligauss. For more information about EMF and REET testing, please visit www.wattsradiant.com.

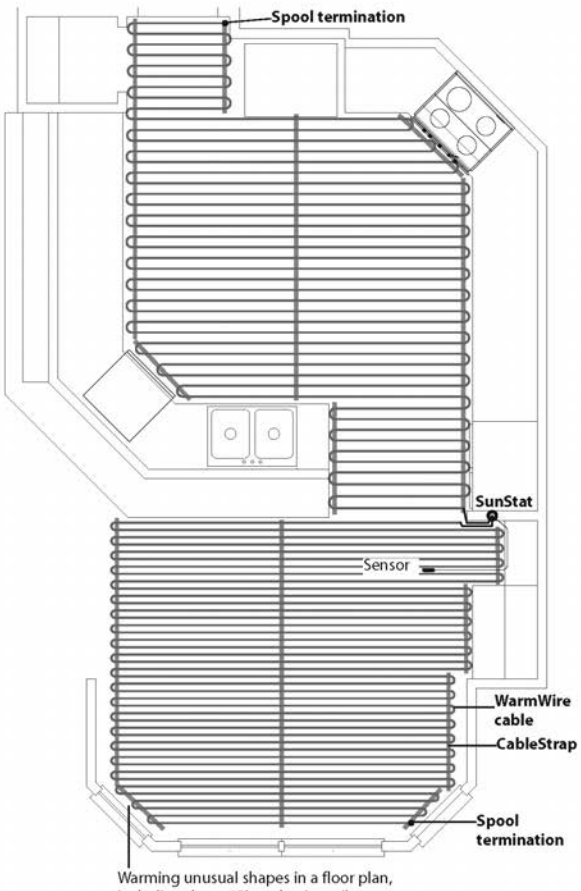
WarmWire Cable

WarmWire® is a simple, economical way to warm floors and provide years of lasting comfort. It will warm all kinds of floor coverings: ceramic & porcelain tile, stone, wood, laminates, vinyl, or carpet.

Lay out and attach the CableStraps. Fasten the WarmWire to the CableStraps as you weave it back and forth across the floor. Put down a layer of thin-set mortar and set your tile or stone. Install a layer of self-leveling cement over the cables for hardwood, laminate, vinyl, or carpeted floors. Our installation manual and DVD shows all the details.

Kitchen/Breakfast Layout

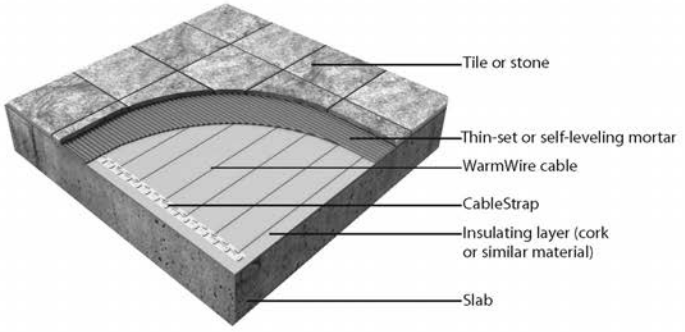
Due to differences in heat loss between the kitchen and breakfast areas, two different spacings were used: 3" on center in the kitchen, and 2" on center in the breakfast area due to the higher heat loss.



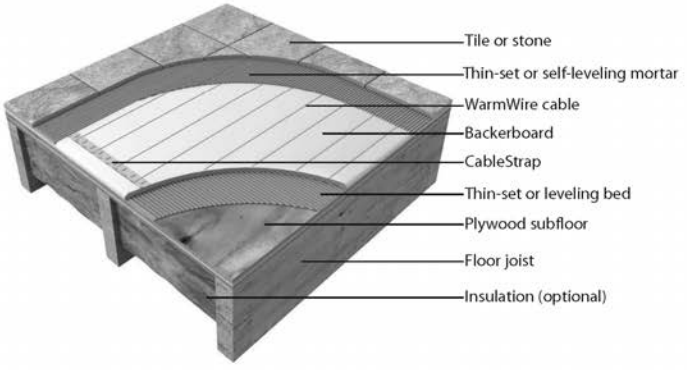
Warming unusual shapes in a floor plan, including these 45° angles, is easily accomplished with WarmWire.

WarmWire is now UL listed for installation in shower floors and benches! See manual for details.

WarmWire in thin-set mortar over slab



WarmWire in thin-set on backer board on frame floor



WarmWire is easily sized for any project.

For fast and easy sizing, go to **www.wattsradiant.com**.

- Evaluate how many square feet of floor are to be heated. Do not put under cabinets or appliances. Generally, about 85–90% of the open areas should be heated. Leave the wire at least 4" away from the toilet wax ring and 4"–6" away from your walls. To keep toes warm, install right up to the toe-kick in front of kitchen or bath cabinets, and in front of a toilet, shower, or tub.
- Choose a "spacing factor" of 2", 2.5", or 3" on center. Below are guidelines for application and spacing recommendations.
- **2" on center = 15 Watts/sq. ft.** Use on concrete basement slabs, sunrooms, and in other high heat loss areas.
- **2.5" on center = 12 Watts/sq. ft.** Use in bathrooms, kitchens, dining/living areas, etc.
- **3" on center = 10 Watts/sq. ft.** Use in hallways, entries, low heat loss areas, etc.

2.5" on center is the most commonly used spacing. This spacing equals the heat output of HeatWeave mats.

WarmWire Spools 120VAC

Total Sq. ft. 2" on center (15 W/sq. ft.)	Total Sq. ft. 2-1/2" on center (12 W/sq. ft.)	Total Sq. ft. 3" on center (10 W/sq. ft.)	Order Number	Model Number	Wire Length (ft.)	Amp Draw	REET Value*	Ship Weight (lb.)
8	**10**	12	**81008854**	120010WDHW	47	1.0	0.16	2
12	**15**	18	**81008855**	120015WDHW	71	1.5	0.14	2.5
16	**20**	24	**81008856**	120020WDHW	94	2.0	0.16	3.0
20	**25**	30	**81008857**	120025WDHW	118	2.5	0.14	3.0
24	**30**	36	**81008858**	120030WDHW	141	3.0	0.16	3.5
28	**35**	42	**81008859**	120035WDHW	165	3.5	0.14	3.5
32	**40**	48	**81008860**	120040WDHW	188	4.0	0.14	4.0
36	**45**	54	**81008861**	120045WDHW	212	4.5	0.15	4.5
40	**50**	60	**81008862**	120050WDHW	235	5.0	0.16	5.0
48	**60**	72	**81008863**	120060WDHW	282	6.0	0.13	6.0
56	**70**	84	**81008864**	120070WDHW	329	7.0	0.14	7.0
64	**80**	96	**81008865**	120080WDHW	376	8.0	0.11	8.5
72	**90**	108	**81008866**	120090WDHW	423	9.0	0.14	9.5
80	**100**	120	**81008867**	120100WDHW	470	10.0	0.19	11

Preferred installation spacing

WarmWire Spools 240VAC

Total Sq. ft. 2" on center (15 W/sq. ft.)	Total Sq. ft. 2-1/2" on center (12 W/sq. ft.)	Total Sq. ft. 3" on center (10 W/sq. ft.)	Order Number	Model Number	Wire Length (ft.)	Amp Draw	REET Value*	Ship Weight (lb.)
16	**20**	24	**81008868**	240020WDHW	94	1.0	0.16	3.0
24	**30**	36	**81008869**	240030WDHW	142	1.5	0.14	3.0
32	**40**	48	**81008870**	240040WDHW	188	2.0	0.16	4.0
40	**50**	60	**81008871**	240050WDHW	236	2.5	0.14	5.0
48	**60**	72	**81008872**	240060WDHW	282	3.0	0.16	6.0
56	**70**	84	**81008873**	240070WDHW	330	3.5	0.14	7.0
64	**80**	96	**81008874**	240080WDHW	376	4.0	0.14	8.5
72	**90**	108	**81008875**	240090WDHW	424	4.5	0.15	9.5
80	**100**	120	**81008876**	240100WDHW	470	5.0	0.16	11.0
96	**120**	144	**81008877**	240120WDHW	564	6.0	0.13	13.0
112	**140**	168	**81008878**	240140WDHW	658	7.0	0.14	15.0
128	**160**	192	**81008879**	240160WDHW	752	8.0	0.11	17.0
144	**180**	216	**81008880**	240180WDHW	846	9.0	0.14	19.0
160	**200**	240	**81008881**	240200WDHW	940	10.0	0.19	21.0

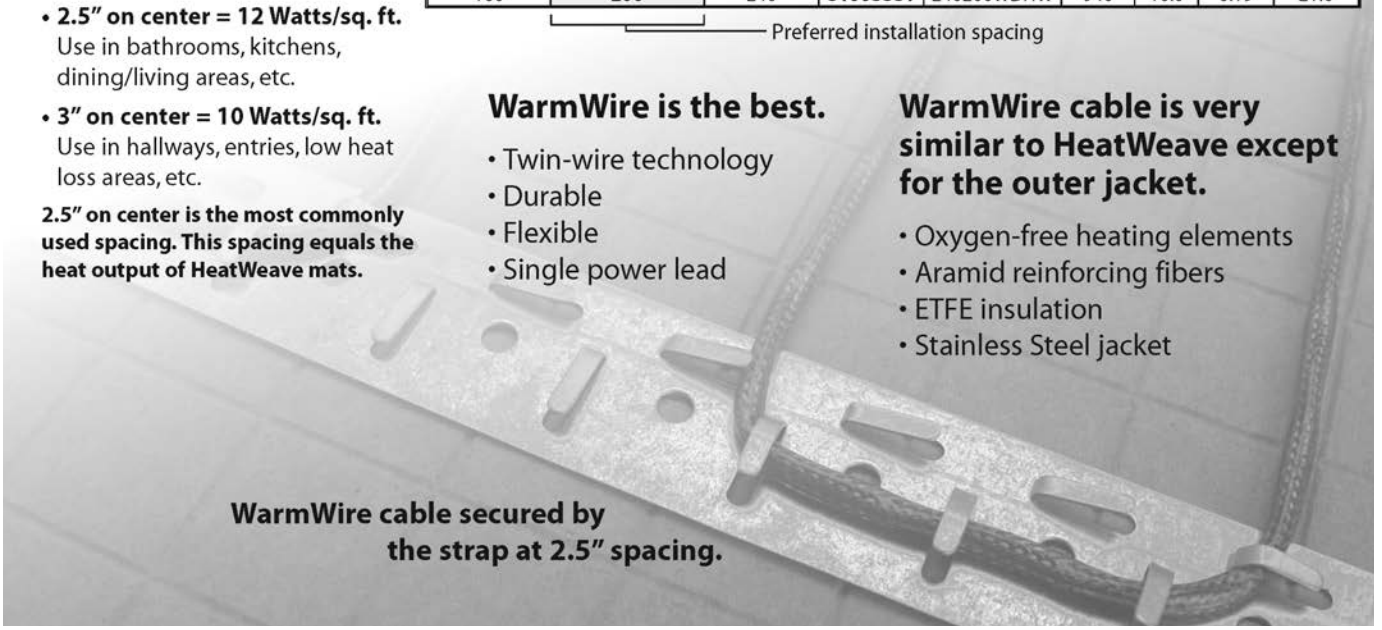
Preferred installation spacing

WarmWire is the best.

- Twin-wire technology
- Durable
- Flexible
- Single power lead

WarmWire cable is very similar to HeatWeave except for the outer jacket.

- Oxygen-free heating elements
- Aramid reinforcing fibers
- ETFE insulation
- Stainless Steel jacket



WarmWire cable secured by the strap at 2.5" spacing.

Controls

Programmable

SunStat Pro™ - Programmable Control

The new SunStat Pro is, by far, the most sophisticated electric floor warming control available. It incorporates an amazing variety of function and elegance into one thermostat:

- Dual Voltage: 120 and 240 VAC
- Built-in 15-amp Relay
- Built-in GFCI (5 milliamp trip)
- "Masterstat" capability
- Connects directly to SunStat Relay
- SmartStart Technology
- 5/1/1 Day Programming
- Four Preset Program Schedules
- One User Program Schedule
- Floor, air, or air & floor temperature modes
- "Regulator" operation without sensor attached
- Display in degree F or degree C
- Temperature Range: 40°F - 99°F (4° - 37°C)
- 15' floor sensor included
- Large Back-lit Display
- Keyboard Lockout
- Manual On/Off Switch
- Home automation remote control
- System usage monitoring

Extra SunStat sensor wire

Description	Qty.	Order No.	Model No.	Ship wt. (lb.)
Programmable SunStat	1	**81009180**	500670HB	2
Extra SunStat Sensor (optional)	1	**81010277**	500110HW	1

Non-Programmable

SunStat - Non-programmable Control

The most obvious change in our new non-programmable control is that it is now digital. However, behind the digital face of our new SunStat are nearly all of the same features as our new programmable model:

- Dual Voltage: 120 and 240 VAC
- Built-in 15-amp Relay
- Built-in GFCI (5 milliamp trip)
- "Masterstat" capability
- Connects directly to SunStat Relay
- Floor, air, or air & floor temperature modes
- "Regulator" operation without sensor attached
- Display in degree F or degree C
- Temperature Range: 40°F - 99°F (4° - 37°C)
- 15' floor sensor included
- Large Back-lit Display
- Keyboard Lockout
- Manual On/Off Switch
- Home automation remote control
- System usage monitoring

Extra SunStat sensor wire

Description	Qty.	Order No.	Model No.	Ship wt. (lb.)
Non-programmable SunStat	1	**81009184**	500675BB	2
Extra SunStat Sensor (optional)	1	**81010277**	500110HW	1

Relay

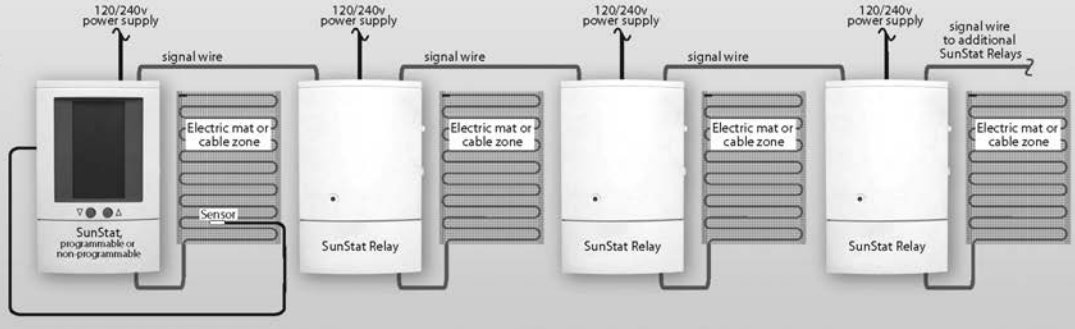
SunStat Relay

If a mat or cable system requires more than 15 amps, we recommend installing SunStat Relays. Relays connect directly to SunStat thermostats for simple, elegant control of larger systems. SunStat Relays don't require a special "master thermostat", as before. Relays are dual voltage (120 VAC or 240 VAC), have a 15-amp capacity, an on/off switch, a GFCI and test light.

It's possible to control over 1500 sq.ft. of electric floor warming using 120 VAC and over 3,000 sq.ft. using 240 VAC floor warming mats or cables. First, find the amp draw for each HeatWeave, UnderFloor or WarmWire product in this catalog or in manuals. Then determine how many can connect to each relay. Up to ten 15-amp Relays can connect to one SunStat. Ten Relays, plus the internal relay in the SunStat, provide a total capacity of 165 amps! Each Relay should be connected to individual 20-amp breakers, as shown below.

Description	Qty.	Order No.	Model No.	Ship wt. (lb.)
SunStat Relay	1	**81010398**	500680HB	2

It is possible to drive up to 10 SunStat Relays with one SunStat thermostat



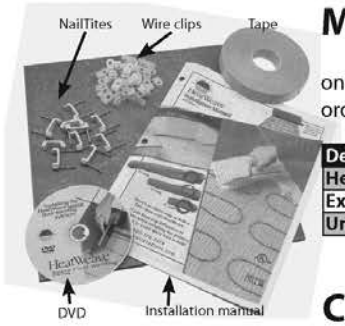
Accessories

LoudMouth Monitor

Watts Radiant is the inventor of this handy device. It's a must for every job. The LoudMouth monitors HeatWeave, WarmWire, or UnderFloor heating elements during the entire installation process and sounds an alarm if the heating elements are cut or damaged, allowing for easy repair before the heating elements are covered with finished flooring or insulation. The LoudMouth gives you the assurance of a quality installation. Features include 9-volt battery power, on/off switch, green light to indicate operation, red light to indicate damage to heating elements, test button to verify proper operation, and a very loud alarm.

Description	Qty.	Order No.	Model No.	Ship wt. (lb.)
LoudMouth Monitor	1	**81008886**	423250HW	2

Mat Installation Kit



Everything you need to make the installation easier. Includes manual, English and Spanish installation DVDs; one 1-in. x 36-yd. roll of double-sided tape to secure mat to the substrate (enough to do up to 150 sq. ft. of mat-order extra roll(s) if needed); 5 NailTites to secure the power leads; and 20 wire clips.

Description	Qty.	Order No.	Model No.	Ship wt. (lb.)
HeatWeave Installation Kit	1	**81008887**	600410HW	3.5
Extra double-sided tape	1	**81008889**	423275HW	0.6/roll
UnderFloor Installation Kit	1	**81008888**	600416HW	2

CableStrap™

Cable strap is used to hold WarmWire in place at the desired spacing. All three spacings are possible with this one strap. Anchor the strap at 3–4-ft. intervals across the floor. Cut using ordinary tin snips. Order one 25-ft.-long coil per 40–50 sq. ft. of heated floor area.

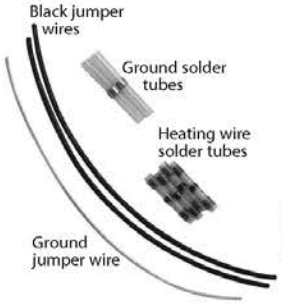
Description	Qty.	Order No.	Model No.	Ship wt. (lb.)
CableStrap	1	**81008890**	321301HW	3

CableTrowel™

Most instances of damage to the heating wire occur when a metal trowel is banged onto the floor to remove excess mortar. A metal trowel can cut like a knife and either damage or totally sever the wire. The CableTrowel simply cannot damage the wire. With rounded notches that are 3/8" wide by 1/2" deep, it is perfect for applying thin-set mortar over WarmWire or SunTouch Mats.

Description	Qty.	Order No.	Model No.	Ship wt. (lb.)
CableTrowel, 3/8"wide x 1/2"deep notches	1	**81008891**	300400HW	1

Heating Wire Repair Kit



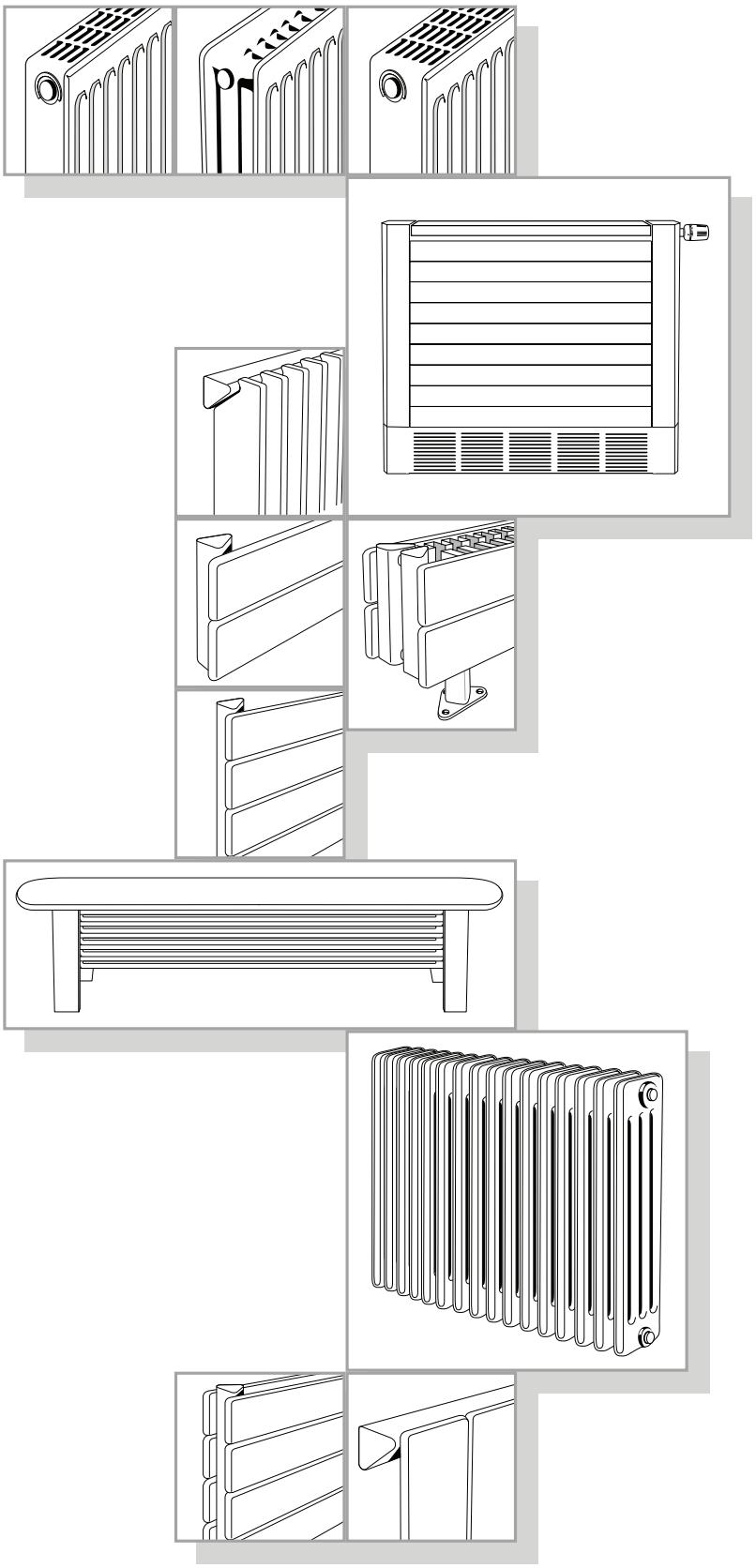
This simple and safe kit repairs heating elements that have been damaged during installation. It is suitable for all HeatWeave floor-warming products. Kit includes materials to make one repair: 2 black jumper wires, 1 ground jumper wire, 2 ground solder tubes, and 4 heating wire solder tubes. Detailed written instructions are included. Please call before making any type of repair.

Description	Qty.	Order No.	Model No.	Ship wt. (lb.)
Heating Wire Repair Kit, 1 repair	1	**81008892**	200299HW	1

Extra Power Lead

HeatWeave mats, WarmWire cables, and UnderFloor mats come standard with a 10-ft. power lead, but can be ordered with extra-long power leads up to a maximum of 50 ft. in length. When you place your order, let us know how long the leads need to be in order to reach the electrical box or control. We'll attach a custom power lead to fit your application. For 120 VAC and 240 VAC.

Description	Qty.	Order No.	Model No.	Ship wt. (lb.)
Extra power lead, 120 VAC	per foot		**Consult Factory to Order**	0.25 lb./ft.
Extra power lead, 240 VAC	per foot		**Consult Factory to Order**	0.25 lb./ft.



Radiator Range Technical Specification

Select

LST

Decor

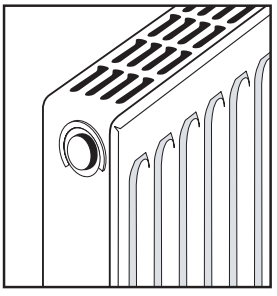
Column

Bench

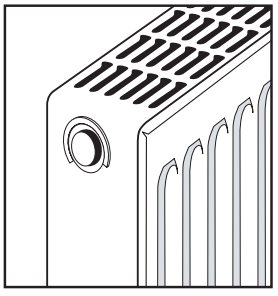
MYSON
HEATING PRODUCTS
Comfort, Style & Innovation

Select Panel Radiators

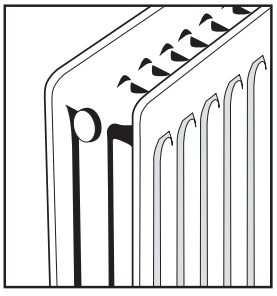
The One Range Solution



Type 11G
Single convector with factory fitted top grill and end panels. Available in outputs from 1,243 Btu/hr to 7,217 Btu/hr.



Type21G
Single convector with factory fitted top grill and end panels. Available in outputs from 1,857 Btu/hr to 10,138 Btu/hr.



Type22G
Standard double convector radiator with factory fitted top grill and end panels. Available in outputs from 2,388 Btu/hr to 13,036 Btu/hr.

General Specifications

APPROVAL AND CERTIFICATION

All Myson Select Radiators are manufactured and tested to BS EN 442.

Every radiator carries the BS Kitemark, which certifies independent approval of heat output and verifies production under a quality system to BS EN ISO 9002.

OPERATING PRESSURES

Every radiator is pressure tested at 101.5 psi and is suitable for working pressures up to 78 psi.

PAINT FINISH

Every radiator undergoes a multistage pre-treatment process followed by an epoxy polyester primer coat. An epoxy polyester powder coat in white (RAL 9003) is applied to all front and rear surfaces allowing the Myson Select to be fitted without further painting.

APPLICATION

Myson Select Radiators are for use on two pipe pumped indirect domestic and commercial central heating installations, with a maximum working temperature of 212°F. The system should be designed with particular care taken to avoid air entry or water discharge.

We do not recommend the use of single feed indirect cylinders, as the possibility of aeration due to water interchange may lead to corrosion.

The installation work must be carried out in accordance with recognized good practice, and precautions taken to avoid contamination which could lead to corrosion. If a corrosion inhibitor or other water treatment is to be used, the manufacturer's instructions must be strictly followed.

CONNECTIONS

All Myson Select Radiators are fitted with four ½ inch connections.

An air vent and plug are packed with every radiator.

PACKAGING

Each radiator is individually wrapped in strong polyethylene reinforced with corner protection pieces.

The pack is clearly marked with the type and size, and mounting brackets are included within the pack.

MOUNTING BRACKETS

All radiators are supplied with concealed wall mounting brackets to accommodate different wall construction details. The brackets include plastic inserts to minimize noise caused by the expansion and contraction of the radiator.

HEAT OUTPUT

Careful design of an optimum profile for the convector plate, and welding directly onto the water channels have combined to give high heat output per surface area of radiator.

The heat outputs shown in the tables are based on a mean water to air temperature difference of 108F. When the difference is not 108F, the output should be multiplied by the appropriate factor from the table

Factor	Fahrenhei t
0.605	72°F
0.700	81°F
0.798	90°F
0.898	99°F
1.000	108°F
1.104	117°F
1.211	126°F

SELECT

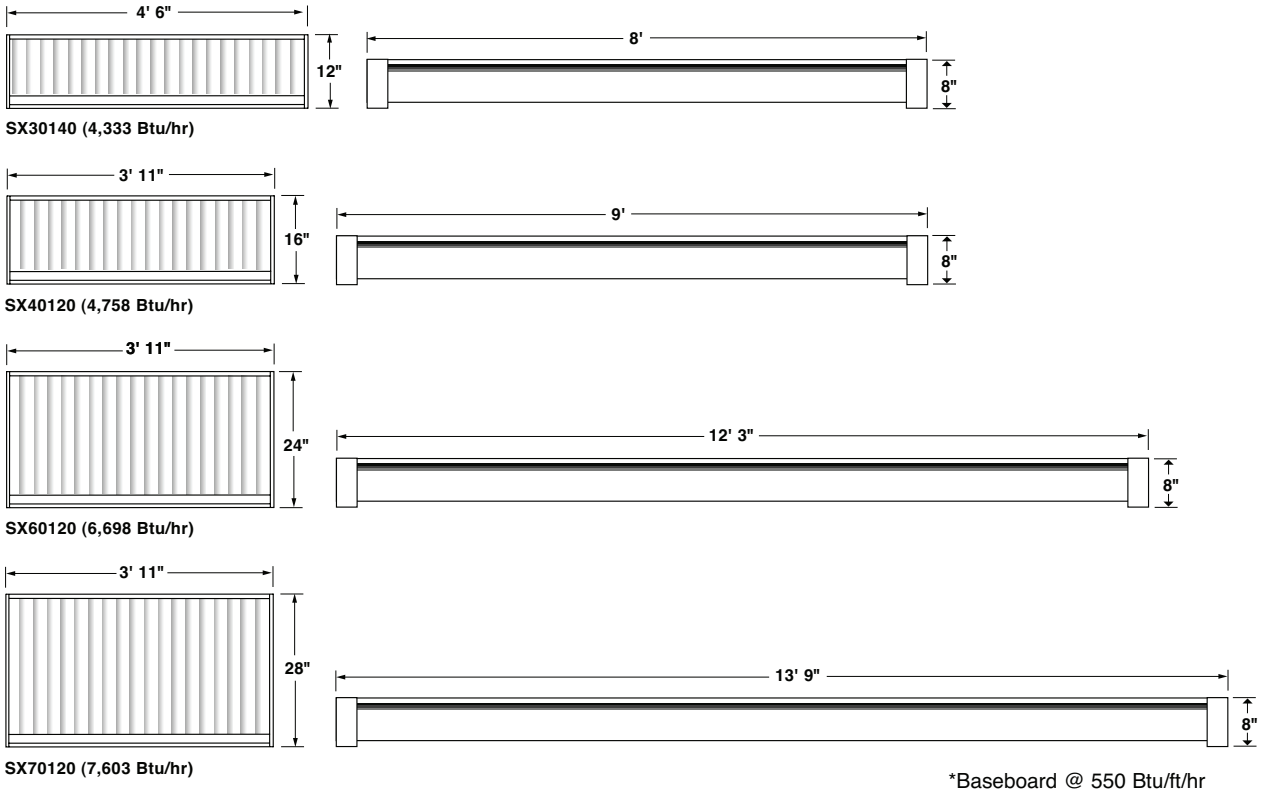
Myson Select Panel Radiator vs Baseboard
The Choice is Yours

Select Panel Radiators

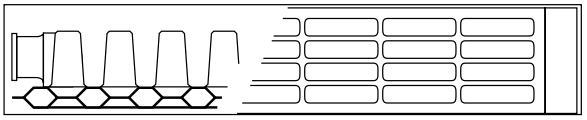
- Mounts on the wall, off the floor, making the cleaning of floors and carpeting simple
- Range of sizes: Select offers a full line which provides from 1,241 Btu/hr to over 13,000 Btu/hr depending on the length and height of the radiator
- Efficient: Deliver two to four times the heat output of hydronic baseboard per running foot
- Quick, responsive, quiet and uniform heating
- Advanced welding techniques allow the convector plates to be welded directly to the water channel, providing quiet, gentle and responsive heating
- Up-to-date fashionable high gloss finish
- Tested to over 100 psi hydrostatic pressure
- Compact: Fits snugly to the wall, requiring only 3" 5 3/16" of depth
- Backed by Myson's 5 Year Warranty, including leaks, external corrosion, flaking or peeling of the epoxy/ polyester enamel powder coat finish
- Everything's in one pack– no on-site assembly

Baseboard*

- Over time, baseboards become a dirt trap that cannot be cleaned
- Consumes long lengths of wall space while providing much less heat than Select
- Two to four times less Btu per running foot
- Rapid temperature fluctuations
- Typically has that annoying "ticking" noise due to the fins touching each other as they are heating up



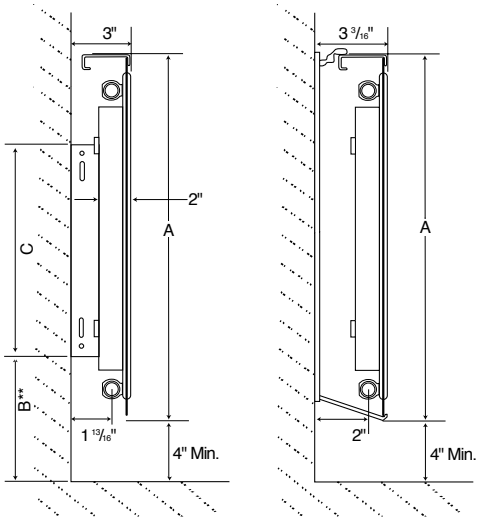
*Baseboard @ 550 Btu/ft/hr



Select Type 11G Single Convector

Nominal Height (in)	Actual Height (in)	Actual Length (in)	Output (Btu/hr)	Order Code	Weight (lbs)	Water Content (gals)
12	11 13/16	23 5/8	1243	SS 30 60G	11.4	0.26
		39 3/8	2071	SS 30 100G	18.5	0.43
		55 1/8	2900	SS 30 140G	26.1	0.60
		70 7/8	3728	SS 30 180G	33.7	0.77
16	15 3/4	19 11/16	1360	SS 40 50G	12.7	0.27
		23 5/8	1632	SS 40 60G	15.2	0.32
		27 9/16	1904	SS 40 70G	17.7	0.38
		31 1/2	2175	SS 40 80G	19.6	0.42
		35 7/16	2447	SS 40 90G	22.2	0.47
		39 3/8	2719	SS 40 100G	24.7	0.52
		47 1/4	3263	SS 40 120G	29.8	0.63
		63	4351	SS 40 160G	39.9	0.84
24	23 5/8	15 3/4	1576	SS 60 40G	15.1	0.32
		19 11/16	1970	SS 60 50G	18.8	0.42
		23 5/8	2365	SS 60 60G	22.6	0.50
		27 9/16	2759	SS 60 70G	26.4	0.59
		31 1/2	3153	SS 60 80G	29.2	0.65
		35 7/16	3547	SS 60 90G	33.0	0.74
		39 3/8	3941	SS 60 100G	36.7	0.82
		43 5/16	4335	SS 60 110G	40.5	0.90
		47 1/4	4729	SS 60 120G	44.3	1.00
		51 3/16	5123	SS 60 130G	48.0	1.07
		55 1/8	5517	SS 60 140G	51.8	1.15
		63	6305	SS 60 160G	59.3	1.32
28	27 9/16	15 3/4	1804	SS 70 40G	20.1	0.33
		19 11/16	2255	SS 70 50G	25.2	0.50
		23 5/8	2706	SS 70 60G	30.2	0.60
		27 9/16	3157	SS 70 70G	35.2	0.70
		31 1/2	3609	SS 70 80G	39.0	0.78
		35 7/16	4060	SS 70 90G	44.1	0.88
		39 3/8	4511	SS 70 100G	49.1	0.98
		47 1/4	5413	SS 70 120G	59.1	1.18
		55 1/8	6315	SS 70 140G	69.2	1.38
		63	7217	SS 70 160G	79.3	1.58

Select Mounting Panel for Bracket Installation

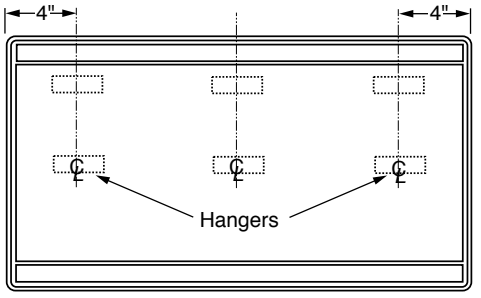


For Solid or Concrete Walls | **Conventional Wall**

(dimensions noted below)

Nominal Height	A	B**	C
12"	11 13/16"	6 1/4"	6 1/4"
16"	15 3/4"	8 3/16"	6 1/4"
24"	23 5/8"	9"	12 3/8"
28"	27 9/16"	10 15/16"	12 3/8"

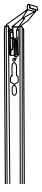
**Includes a minimum clearance of 4" from floor to bottom of Select Radiator



Select Radiators are supplied with two different sets of wall brackets to accommodate different wall construction details. The brackets include plastic inserts to minimize noise caused by the expansion and contraction of the radiator.

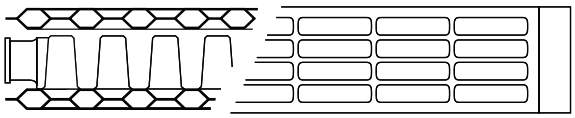
Note: The stamping on the bracket indicates which slot to use. The plastic inserts should be fitted into the bracket slots. Most Select Radiators require 2 brackets, positioned 4" from each side. Longer units have a third bracket in the center.

Wall bracket & plastic insert for use with **solid or concrete walls.** *(supplied)*



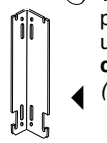
Wall bracket for use with **conventional wall framing.** *(supplied)*

SELECT



Select Type 21G Double Panel Single Convector

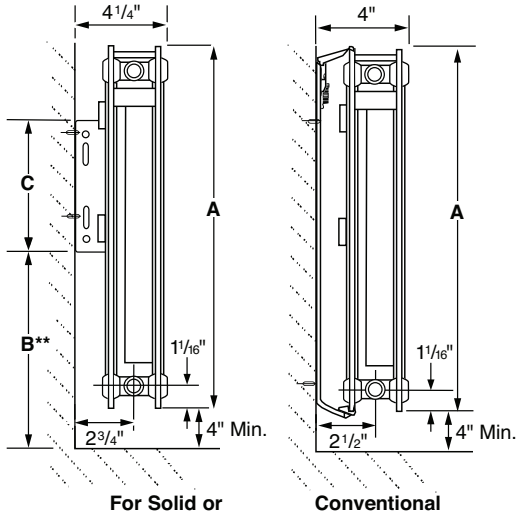
Nominal Height (in)	Actual Height (in)	Actual Length (in)	Output (Btu/hr)	Order Code	Weight (lbs)	Water Content (gals)
		23 5/8	1857	SX 30 60G	19.4	0.56
12	11 13/16	39 3/8	3095	SX 30 100G	31.6	0.90
		55 1/8	4333	SX 30 140G	44.6	1.27
		70 7/8	5570	SX 30 180G	57.6	1.64
		19 11/16	1982	SX 40 50G	21.2	0.56
		23 5/8	2379	SX 40 60G	25.5	0.68
		27 9/16	2775	SX 40 70G	29.7	0.79
16	15 3/4	31 1/2	3172	SX 40 80G	32.9	0.87
		35 7/16	3568	SX 40 90G	37.1	0.98
		39 3/8	3965	SX 40 100G	41.4	1.10
		47 1/4	4758	SX 40 120G	49.9	1.32
		63	6344	SX 40 160G	66.8	1.77
		15 3/4	2233	SX 60 40G	25.5	0.68
		19 11/16	2791	SX 60 50G	31.8	0.84
		23 5/8	3349	SX 60 60G	38.2	1.01
		27 9/16	3907	SX 60 70G	44.6	1.18
		31 1/2	4466	SX 60 80G	49.3	1.31
24	23 5/8	35 7/16	5024	SX 60 90G	55.7	1.47
		39 3/8	5582	SX 60 100G	62.1	1.64
		43 5/16	6140	SX 60 110G	68.4	1.81
		47 1/4	6698	SX 60 120G	74.8	1.98
		51 3/16	7257	SX 60 130G	81.1	2.15
		55 1/8	7815	SX 60 140G	87.5	2.31
		63	8931	SX 60 160G	100.2	2.65
		15 3/4	2534	SX 70 40G	33.3	0.82
		19 11/16	3168	SX 70 50G	41.6	1.02
		23 5/8	3802	SX 70 60G	50.0	1.23
		27 9/16	4435	SX 70 70G	58.3	1.43
28	27 3/8	31 1/2	5069	SX 70 80G	64.5	1.59
		35 7/16	5702	SX 70 90G	72.8	1.79
		39 3/8	6336	SX 70 100G	81.2	1.99
		47 1/4	7603	SX 70 120G	97.8	2.40
		55 1/8	8871	SX 70 140G	114.4	2.81
		63	10138	SX 70 160G	131.1	3.22



Wall bracket & plastic insert for use with **solid or concrete walls.** *(supplied)*

Wall bracket for use with **conventional wall framing.** *(supplied)*

Select Side Profile with Brackets



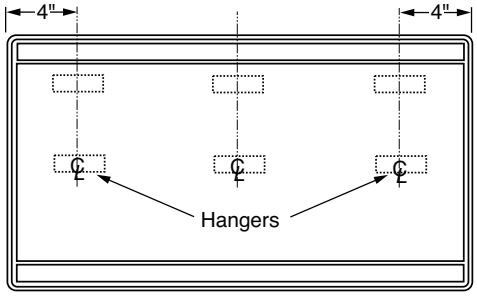
For Solid or Concrete Walls | **Conventional Wall Framing**

(dimensions noted below)

Nominal Height	A	B**	C
12"	11 13/16"	6 1/4"	6 1/4"
16"	15 3/4"	8 3/16"	6 1/4"
24"	23 5/8"	9"	12 3/8"
28"	27 9/16"	10 15/16"	12 3/8"

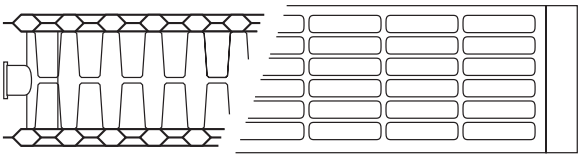
** Includes a minimum clearance of 4" from floor to bottom of Select Radiator

Select Mounting Panel for Bracket Installation



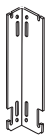
Select Radiators are supplied with two different sets of wall brackets to accommodate different wall construction details. The brackets include plastic inserts to minimize noise caused by the expansion and contraction of the radiator

Note: The stamping on the bracket indicates which slot to use. The plastic inserts should be fitted into the bracket slots. Most Select Radiators require 2 brackets, positioned 4" from each side. Longer units have a third bracket in the center.

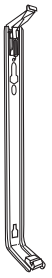


Select Type 22G Double Convector

Nominal Height (in)	Actual Height (in)	Actual Length (in)	Output (Btu/hr)	Order Code	Weight (lbs)	Water Content (gals)
12	11 13/16	23 5/8	2430	SD 30 60G	21.6	0.56
		39 3/8	4050	SD 30 100G	35.1	0.90
		55 1/8	5670	SD 30 140G	49.5	1.27
		70 7/8	7290	SD 30 180G	63.9	1.64
12	15 3/4	19 11/16	2603	SD 40 50G	24.2	0.56
		23 5/8	3124	SD 40 60G	29.1	0.68
		27 9/16	3645	SD 40 70G	33.9	0.79
		31 1/2	4165	SD 40 80G	37.6	0.87
		35 7/16	4686	SD 40 90G	42.4	0.98
		39 3/8	5207	SD 40 100G	47.2	1.10
		47 1/4	6248	SD 40 120G	56.9	1.32
		63	8331	SD 40 160G	76.3	1.77
24	23 5/8	15 3/4	2900	SD 60 40G	29.2	0.68
		19 11/16	3625	SD 60 50G	36.4	0.84
		23 5/8	4350	SD 60 60G	43.7	1.01
		27 9/16	5075	SD 60 70G	51.0	1.18
		31 1/2	5800	SD 60 80G	56.5	1.31
		35 7/16	6525	SD 60 90G	63.7	1.47
		39 3/8	7251	SD 60 100G	71.0	1.64
		43 5/16	7976	SD 60 110G	78.3	1.81
		47 1/4	8701	SD 60 120G	85.6	1.98
		51 3/16	9426	SD 60 130G	92.9	2.15
		55 1/8	10151	SD 60 140G	100.1	2.31
		63	11601	SD 60 160G	114.7	2.65
28	27 9/16	15 3/4	3258	SD 70 40G	39.2	0.82
		19 11/16	4072	SD 70 50G	49.0	1.02
		23 5/8	4887	SD 70 60G	58.8	1.23
		27 9/16	5701	SD 70 70G	68.6	1.43
		31 1/2	6516	SD 70 80G	76.0	1.59
		35 7/16	7330	SD 70 90G	85.8	1.79
		39 3/8	8144	SD 70 100G	95.6	2.00
		47 1/4	9773	SD 70 120G	115.2	2.40
		55 1/8	11402	SD 70 140G	134.8	2.81
		63	13031	SD 70 160G	154.4	3.22

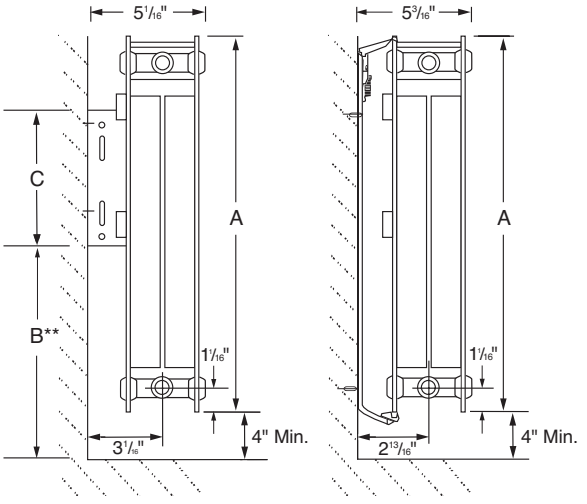


Wall bracket & plastic insert for use with **solid or concrete walls.** *(supplied)*



Wall bracket for use with **conventional wall framing.** *(supplied)*

Select Side Profile with Brackets



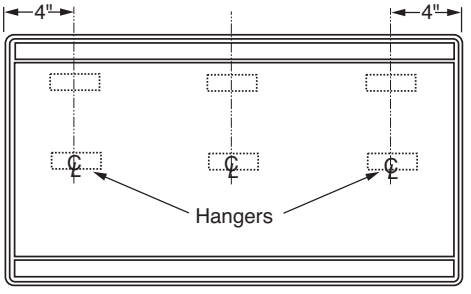
For Solid or Concrete Walls | **Conventional Wall Framing**

(dimensions noted below)

Nominal Height	A	B**	C
12"	11 13/16"	6 1/4"	6 1/4"
16"	15 3/4"	8 3/16"	6 1/4"
24"	23 5/8"	9"	12 3/8"
28"	27 9/16"	10 15/16"	12 3/8"

** Includes a minimum clearance of 4" from floor to bottom of Select Radiator

Select Mounting Panel for Bracket Installation



Select Radiators are supplied with two different sets of wall brackets to accommodate different wall construction details. The brackets include plastic inserts to minimize noise caused by the expansion and contraction of the radiator.

Note: The stamping on the bracket indicates which slot to use. The plastic inserts should be fitted into the bracket slots. Most Select Radiators require 2 brackets, positioned 4" from each side. Longer units have a third bracket in the center.

Monclac MCK

For Type 11 radiators without hangers, with top covers, for mounting through the top cover

Our well-tested System MONCLAC provides both the installer and the end-user with many advantages.

This bracket grips onto the top cover and the bottom edge of the radiator. A special accessory can be put onto the bracket to prevent unintentional lift-off, see product information.

TIME-SA VING

We have made several studies which show that MONCLAC saves time during installation. Normally you only have to use one screw for each bracket, which makes the installation simple and quick.

Because of the unique construction with a spring at the top of the bracket, it is quite possible to mount even very long radiators all by yourself.

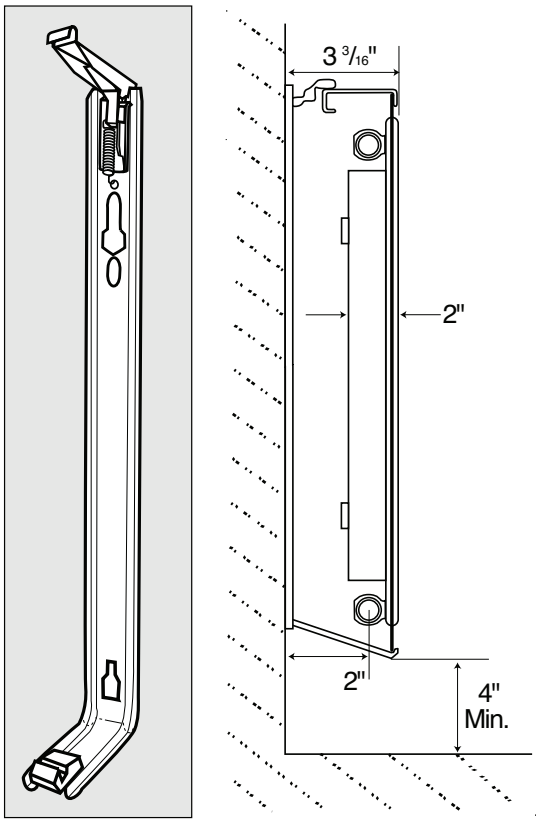
SAFETY

The MONCLAC brackets are tested by independent test institutes and by ourselves to fulfill the safety requirements our customers demand.

Our flexible production allows us to produce the bracket to fit exactly to the radiator in question.

STABILITY

No adjustments are necessary after installation of the MONCLAC brackets, which is a great advantage for the installer and the end-user. The spring mechanism makes the bracket follow the movements of the radiator when the temperature changes. This guarantees no irritating sounds from the radiator, and the lifetime of the bracket increases.



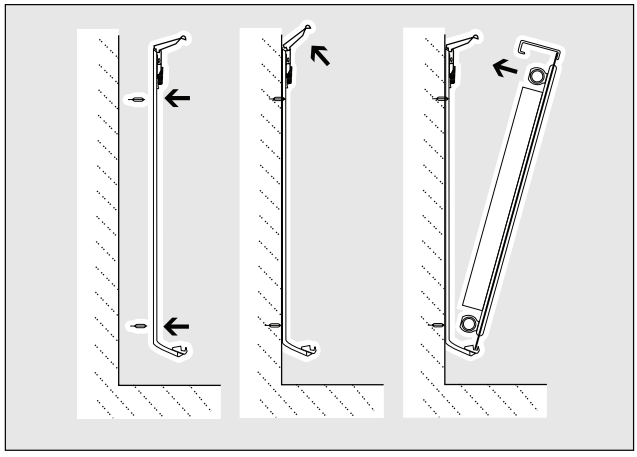
Product Facts

PERFORMANCE

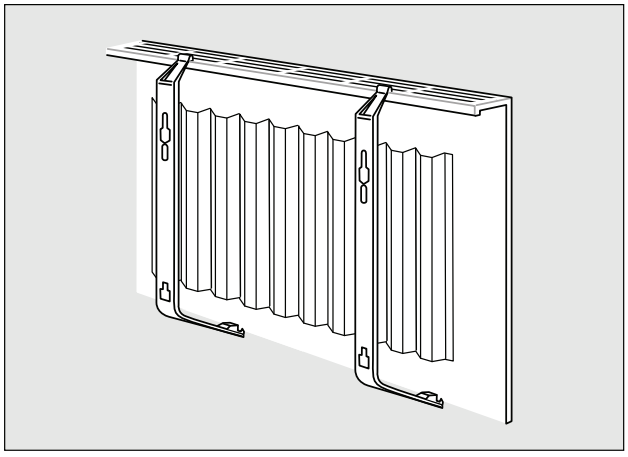
The bracket can be produced to fit most radiator brands and radiator heights. It grips through the top cover in the upper part and on the edge of the bottom of the radiator.

GRIP MEASURE IN THE BRACKET TOP

The grip measure in the bracket top depends on the design of the top covers. The bracket top is produced in many different versions.

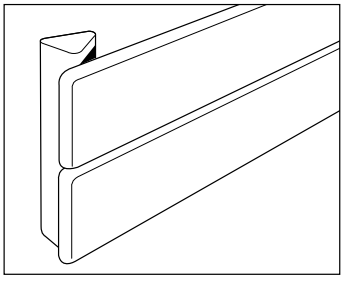


Easy to mount



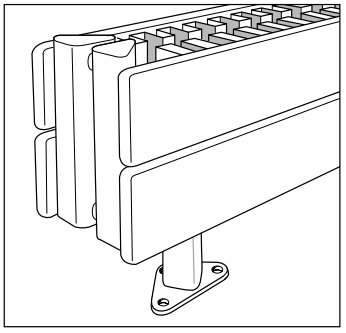
Decor Radiators

Baseboard



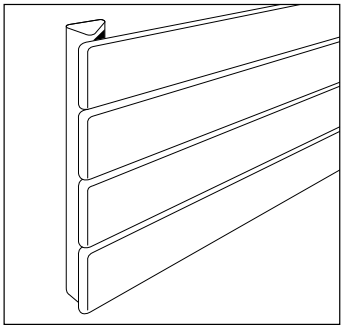
H11 (with fins)
Available in outputs from 1,561 to 10,282 Btu/hr; 2, 3 and 4 tubes high.

Pedestal

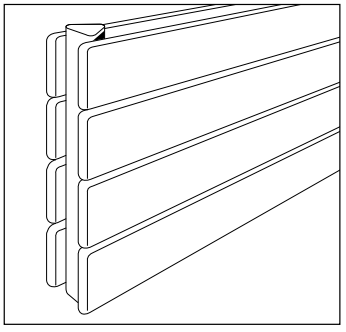


H28 (High Output, with fins)
Available in outputs from 5,035 to 19,552 Btu/hr; 2 and 4 tubes high.

Radiator

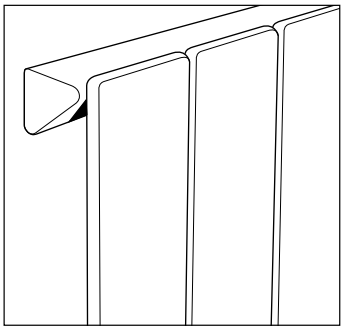


H11 (with fins)
Available in outputs from 3,565 to 16,156 Btu/hr; 6, 8 and 10 tubes high.



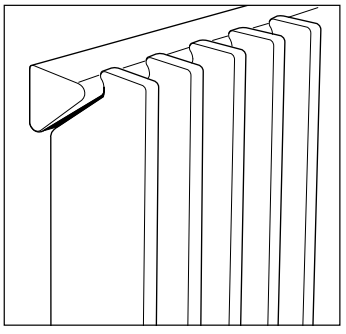
H22 (with fins)
Available in outputs from 6,253 to 28,391 Btu/hr; 6, 8 and 10 tubes high.

Vertical Decor



Vertical V10
Available in outputs from 6,648 to 11,079 Btu/hr; 6, 8 and 10 tubes.

Column Decor



Column TS4
Available in outputs from 7,110 to 18,663 Btu/hr; 8, 11, 13, 16, 18 and 21 tubes with 1⅝" between tubes.

With five distinctive Decor styles to choose from—Baseboard, Pedestal, Radiator, Vertical Decor and Column Decor—there is a model to enhance the look of any interior. Myson Decor Radiators have the style, quality of construction and finish to be used with confidence in the most prestigious settings.

General Specifications

APPROVAL AND CERTIFICA TION

All Myson Decor Radiators are manufactured and tested to EN 442.

PAINT FINISH

Every radiator undergoes a multi-stage pre-treatment process followed by an epoxy polyester primer coating. A baked epoxy polyester powder coat in white (RAL 9010) is applied to all front and rear surfaces allowing the Myson Decor Radiator to be fitted without further painting.

APPLICATION

Myson Decor Radiators are for use with hot water applications only. Their applications are for use with two pipe pumped indirect domestic and central heating installations. The system should be designed with particular care taken to avoid air entry or water discharge.

We do not recommend the use of single feed indirect cylinders, as the possibility of aeration due to water interchange may lead to corrosion.

The installation work must be carried out in accordance with recognized good practice, and precautions taken to avoid contamination which could lead to corrosion. If a corrosion inhibitor or other water treatment is to be used, the manufacturer's instructions must be strictly followed.

TUBE DIMENSIONS

Headers: Triangular 2" x 1⅝" x 1⅝"
Header thickness: 1/16"
Heating tubes: 2¾" x 7/16"
Heating tube thickness: 3/64"

WATER CONNECTIONS

Stock Range:

Type	Connections
H	4 x ½" including plug and vent.
V	2 x ½" BOE including plug and vent.
T	2 x ½" BOE including plug and vent.

PRESSURE

All Decor Radiators are pressure tested to 87 psi during manufacture.
Maximum working pressure: 66 psi.

Dimensions

The chosen radiator must always have one of its two dimensions less than or equal to 47¼".

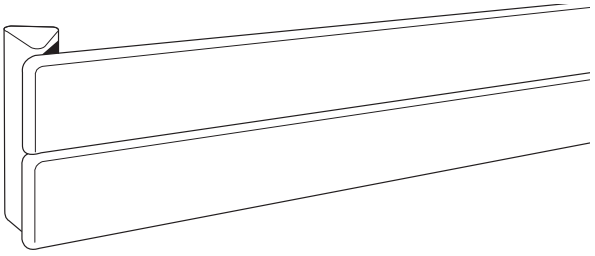
HEAT OUTPUTS

The tabulated figures are quoted at an average water temperature (AWT) of 215F , and an entering air temperature (EAT) of 65F. Correction factors for other temperature differences are on page 26.

MOUNTING BRACKETS

All Decor Radiators are supplied with the appropriate standard brackets. Mounting feet for floor mounting and support for ceiling mounting are supplied separately to order.

DECOR



H11 Baseboard (with fins)

2Tube 6 Inch

Length (ft)	Length (in) (Actual)	Output (Btu/hr)	Product Code	Weight (lbs)	Water Content (gals)
2	23 5/8	1561	2H11060	7.0	0.24
3	35 7/16	2341	2H11090	10.5	0.36
4	47 1/4	3121	2H11120	14.0	0.48
5	59 1/16	3902	2H11150	17.5	0.60
6	70 7/8	4683	2H11180	21.0	0.72
7	82 5/8	5463	2H11210	24.5	0.84
8	94 1/2	6243	2H11240	28.0	0.96

3Tube 9 Inch

2	23 5/8	1919	3H11060	10.6	0.36
3	35 7/16	2878	3H11090	15.9	0.54
4	47 1/4	3838	3H11120	21.2	0.72
5	59 1/16	4797	3H11150	26.5	0.90
6	70 7/8	5756	3H11180	31.8	1.08
7	82 5/8	6716	3H11210	37.1	1.26
8	94 1/2	7675	3H11240	42.4	1.44

4Tube 12 Inch

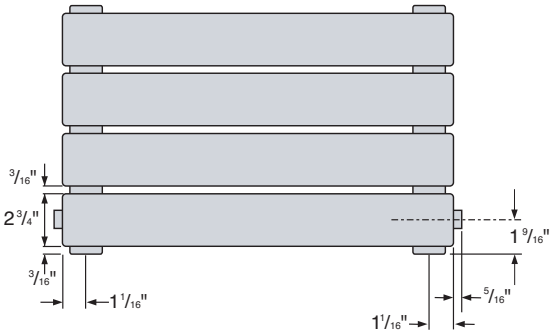
2	23 5/8	2570	4H11060	14.2	0.48
3	35 7/16	3855	4H11090	21.3	0.72
4	47 1/4	5141	4H11120	28.4	0.96
5	59 1/16	6426	4H11150	35.5	1.20
6	70 7/8	7711	4H11180	42.6	1.44
7	82 5/8	8996	4H11210	49.7	1.68
8	94 1/2	10282	4H11240	56.8	1.92

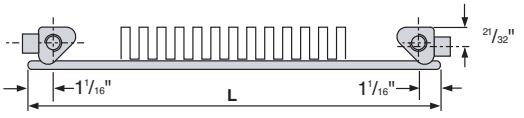
***For information on other sizes, contact Myson, Inc.**

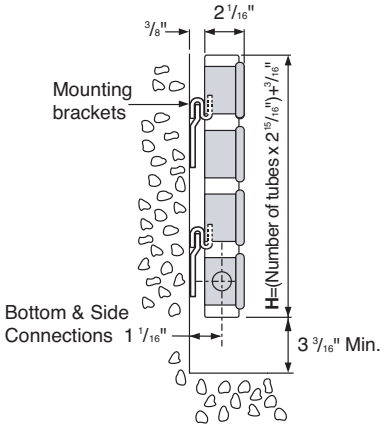
For conversion from 215ºF Average Water Temperature (AWT) and 65ºF Entering Air Temperature (EAT) to other AWTs, the following factors apply:

Average water temperature (ºF)	Temperature Difference (ºF)	Factor
190	125	0.80
180	115	0.72
170	105	0.64
160	95	0.56
150	85	0.49
140	75	0.42

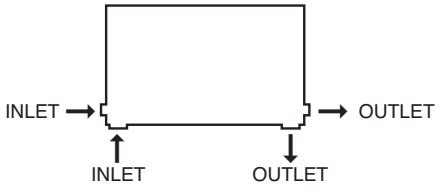
Note: Heat outputs for various AWTs include 15% Heat Effect for placement along outside walls.
Use the 215ºF Output Rating with the Correction Factor for more specific design considerations.
For other EATs, see page 26.





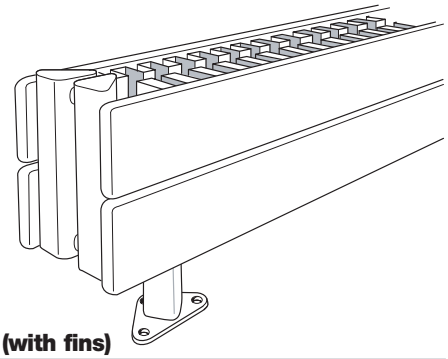


Connections: Bottom or Side



Pressure Drops

Number of Tubes	2	3	4
Ft Hd (W.G.) @1 GPM	0.16	0.11	1.2



H28 Pedestal (with fins)

2Tube 6 Inch

Actual Length(in)	Output (Btu/hr)	Product Code	Weight (lbs)	Water Content (gals)
39 3/8	5035	2H28100	23.1	0.78
55 1/8	7050	2H28140	32.6	1.10
70 7/8	9064	2H28180	42.0	1.42
86 5/8	11079	2H28220	51.5	1.74

4Tube 12 Inch

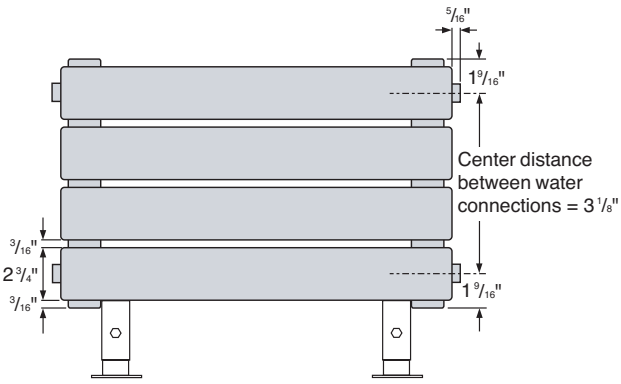
39 3/8	8887	4H28100	45.8	1.56
55 1/8	12442	4H28140	64.6	2.20
70 7/8	15998	4H28180	83.4	2.84
86 5/8	19552	4H28220	102.2	3.50

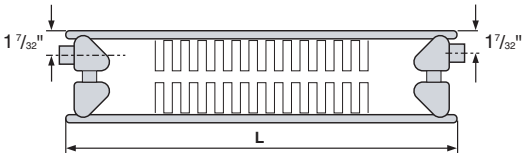
*For information on other sizes, contact Myson, Inc.

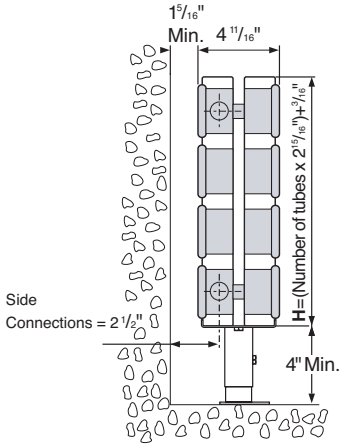
For conversion from 215ºF Average Water Temperature (AWT) and 65ºF Entering Air Temperature (EAT) to other AWTs, the following factors apply:

Average water temperature (ºF)	Temperature Difference (ºF)	Factor
190	125	0.80
180	115	0.72
170	105	0.64
160	95	0.56
150	85	0.49
140	75	0.42

Note: Heat outputs for various AWTs include 15% Heat Effect for placement along outside walls.
Use the 215ºF Output Rating with the Correction Factor for more specific design considerations.





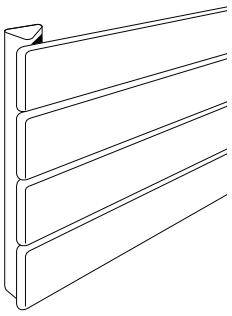


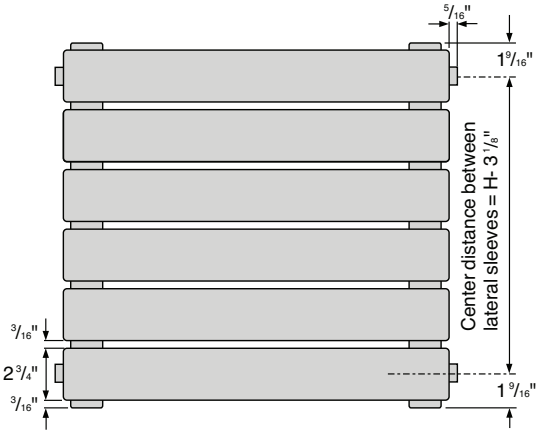
Connections

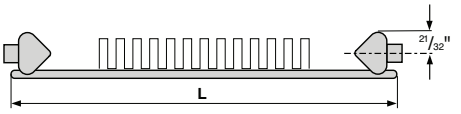
Pressure Drops

Number of Tubes	2	4
Ft Hd (W.G.) @1 GPM	0.24	0.11

DECOR







H11 Radiator (withfins)

6Tube 18 Inch

Actual Length (in)	Output (Btu/hr)	Product Code	Weight (lbs)	Water Content (gals)
23 5/8	3565	6H11060	21.2	0.72
31 1/2	4754	6H11080	28.2	0.96
39 3/8	5942	6H11100	34.4	1.17
55 1/8	8319	6H11140	48.5	1.65
70 7/8	10696	6H11180	62.6	2.13

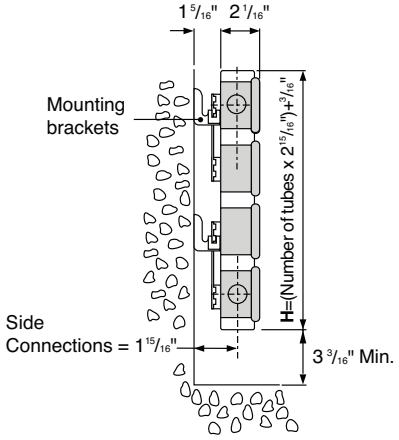
8Tube 24 Inch

23 5/8	4490	8H11060	28.2	0.96
31 1/2	5986	8H11080	37.6	1.30
39 3/8	7483	8H11100	45.8	1.60
55 1/8	10475	8H11140	64.6	2.20
70 7/8	13469	8H11180	83.4	2.84

10Tube 30 Inch

23 5/8	5385	10H11060	35.4	1.20
31 1/2	7181	10H11080	47.2	1.60
39 3/8	8976	10H11100	57.5	1.95
55 1/8	12566	10H11140	81.1	2.75
70 7/8	16156	10H11180	104.7	3.55

***For information on other sizes, contact Myson, Inc.**



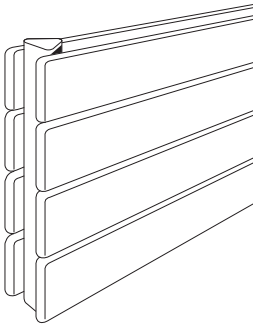
For conversion from 215ºF Average Water Temperature (AWT) and 65ºF Entering Air Temperature (EAT) to other AWTs, the following factors apply:

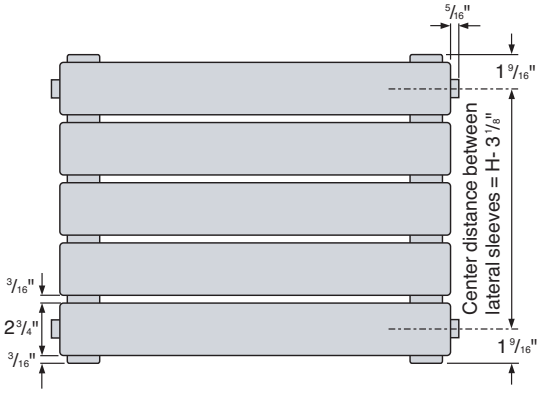
Average water temperature (ºF)	Temperature Difference (ºF)	Factor
190	125	0.80
180	115	0.72
170	105	0.64
160	95	0.56
150	85	0.49
140	75	0.42

Connections

Pressure Drops

Number of Tubes	6	8	10
Ft Hd (W.G.) @1 GPM	0.45	0.30	0.21

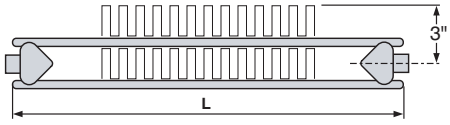




H22 Radiator (with fins)

6Tube 18 Inch

Actual Length (in)	Output (Btu/hr)	Product Code	Weight (lbs)	Water Content (gals)
23 5/8	6253	6H22060	40.6	1.30
31 1/2	8338	6H22080	54.1	1.73
39 3/8	10422	6H22100	66.0	2.10
55 1/8	14591	6H22140	93.1	2.97
70 7/8	18760	6H22180	120.1	3.83



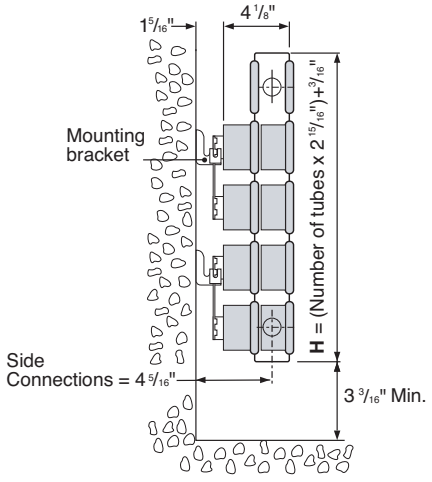
8Tube 24 Inch

23 5/8	7707	8H22060	54.2	1.70
31 1/2	10276	8H22080	72.3	2.24
39 3/8	12844	8H22100	88.1	2.73
55 1/8	17983	8H22140	124.2	3.90
70 7/8	23121	8H22180	160.4	5.00

10 Tube 30 Inch

23 5/8	9463	10H22060	67.6	2.10
31 1/2	12618	10H22080	90.1	2.82
39 3/8	15772	10H22100	110.0	3.43
55 1/8	22081	10H22140	155.0	4.84
70 7/8	28391	10H22180	200.0	6.30

***For information on other sizes, contact Myson, Inc.**



For conversion from 215°F Average Water Temperature (AWT) and 65°F Entering Air Temperature (EAT) to other AWTs, the following factors apply:

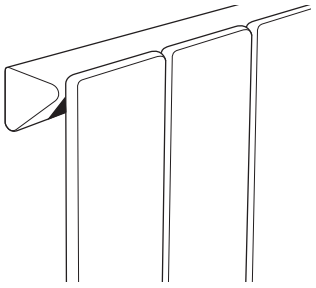
Average water temperature (°F)	Temperature Difference (°F)	Factor
190	125	0.80
180	115	0.72
170	105	0.64
160	95	0.56
150	85	0.49
140	75	0.42

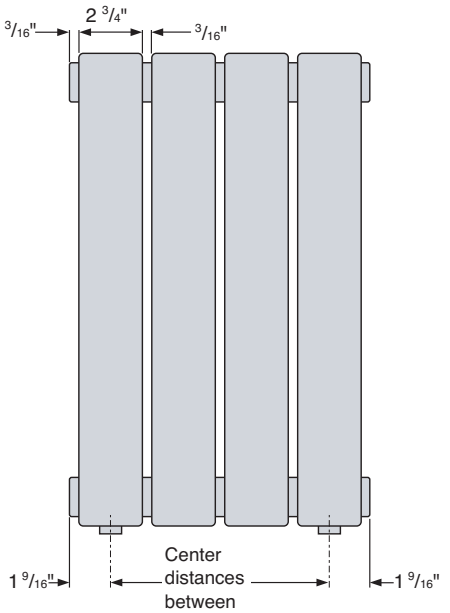
Connections

Pressure Drops

Number of Tubes	6	8	10
Ft Hd (W.G.) @ 1 GPM	0.16	0.13	0.10

VERTICAL DECOR RADIATORS



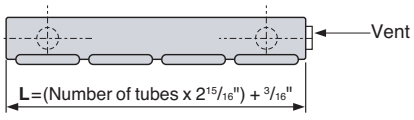


V10 79" Nominal Height

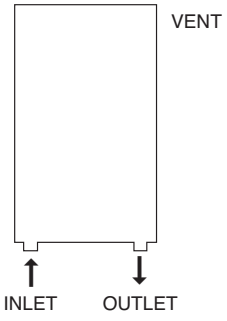
No. of Tubes	Width (In)	Output (Btu/hr)	Product Code	Weight (lbs)	Water Content (gals)
6	18	6648	6V10200	42.7	2.04
8	24	8864	8V10200	57.0	2.72
10	30	11079	10V10200	71.2	3.40

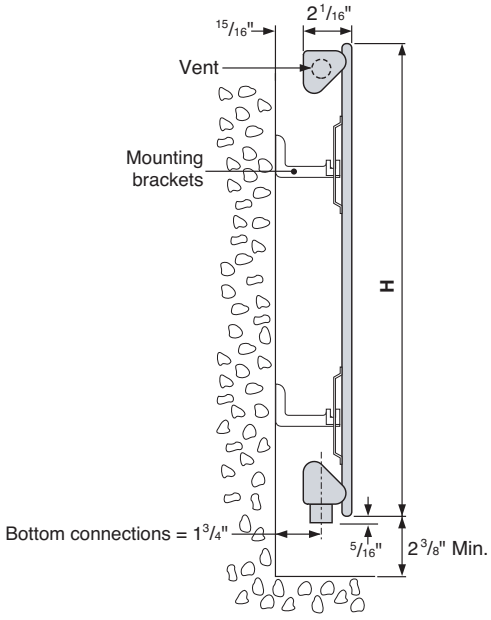
For conversion from 215°F Average Water Temperature (AWT) 65°F Entering Air Temperature (EAT) to other AWTs, the following factors apply:

Average water temperature (°F)	Temperature Difference (°F)	Factor
190	125	0.80
180	115	0.72
170	105	0.64
160	95	0.56
150	85	0.49
140	75	0.42



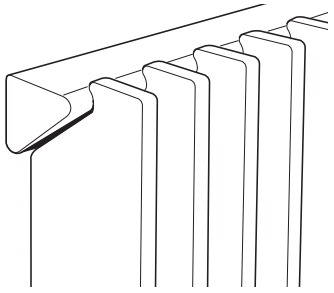
Connections

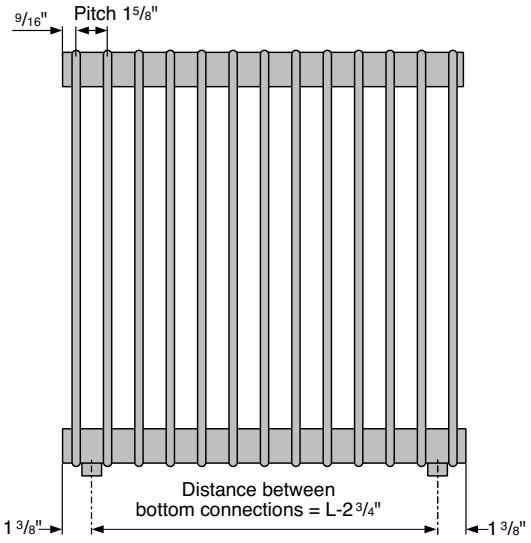




Pressure Drops

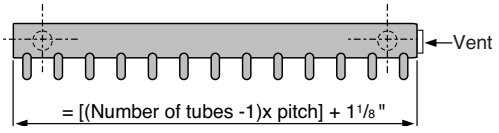
Number of Tubes	6	8	10
Ft Hd (W.G.) @ 1 GPM	0.18	0.16	0.16





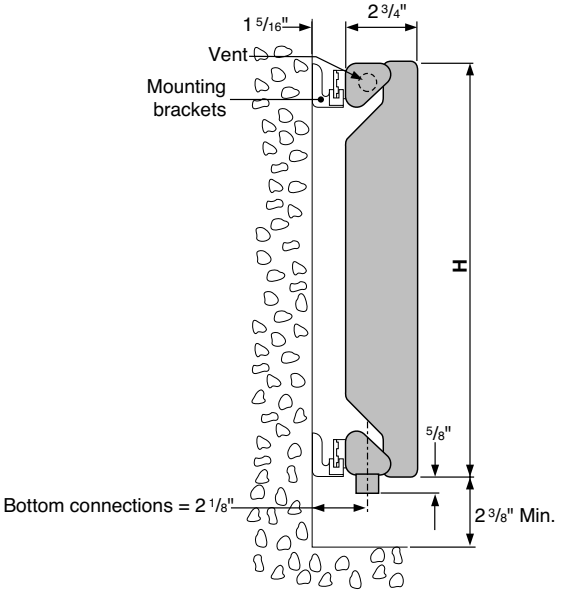
TS4 79" Nominal Height

No. of Tubes	Width (In)	Output (Btu/hr)	Product Code	Weight (lbs)	Water Content (gals)
8	12	7110	8TS4200	53.8	2.6
11	17	9776	11TS4200	73.9	3.5
13	20	11554	13TS4200	87.4	4.2
16	25	14220	16TS4200	107.5	5.1
18	28	15998	18TS4200	121.0	5.8
21	33	18663	21TS4200	141.1	6.7

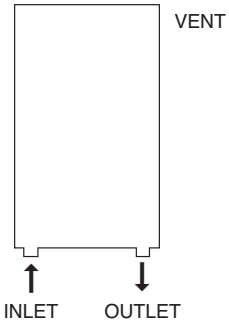


For conversion from 215ºF Average Water Temperature (AWT) 65ºF Entering Air Temperature (EAT) to other AWTs, the following factors apply:

Average water temperature (ºF)	Temperature Difference (ºF)	Factor
190	125	0.80
180	115	0.72
170	105	0.64
160	95	0.56
150	85	0.49
140	75	0.42



Connections



Pressure Drops

Number of Tubes	8	11	13	16	18	21
Ft Hd (W.G.) @1 GPM	0.034	0.032	0.032	0.032	0.032	0.032

Correction Factors—Decor

Entering Air Temperature (EAT) ˚F

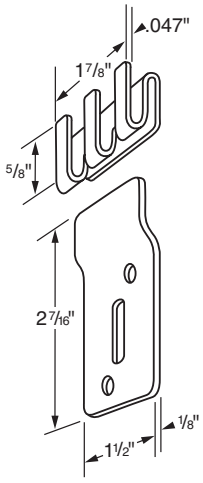
Average Water Temperature (AWT) ˚F	45	50	55	60	65	70	75	80	85	90	95
240	1.39	1.34	1.30	1.26	1.21	1.17	1.13	1.08	1.04	1.00	0.96
235	1.34	1.30	1.26	1.21	1.17	1.13	1.08	1.04	1.00	0.96	0.92
230	1.30	1.26	1.21	1.17	1.13	1.08	1.04	1.00	0.96	0.92	0.88
225	1.26	1.21	1.17	1.13	1.08	1.04	1.00	0.96	0.92	0.88	0.84
220	1.21	1.17	1.13	1.08	1.04	1.00	0.96	0.92	0.88	0.84	0.80
215	1.17	1.13	1.08	1.04	**1.00**	0.96	0.92	0.88	0.84	0.80	0.76
210	1.13	1.08	1.04	1.00	0.96	0.92	0.88	0.84	0.80	0.76	0.72
205	1.08	1.04	1.00	0.96	0.92	0.88	0.84	0.80	0.76	0.72	0.68
200	1.04	1.00	0.96	0.92	0.88	0.84	0.80	0.76	0.72	0.68	0.64
195	1.00	0.96	0.92	0.88	0.84	0.80	0.76	0.72	0.68	0.64	0.60
190	0.96	0.92	0.88	0.84	0.80	0.76	0.72	0.68	0.64	0.60	0.56
185	0.92	0.88	0.84	0.80	0.76	0.72	0.68	0.64	0.60	0.56	0.53
180	0.88	0.84	0.80	0.76	0.72	0.68	0.64	0.60	0.56	0.53	0.49
175	0.84	0.80	0.76	0.72	0.68	0.64	0.60	0.56	0.53	0.49	0.46
170	0.80	0.76	0.72	0.68	0.64	0.60	0.56	0.53	0.49	0.46	0.42
165	0.76	0.72	0.68	0.64	0.60	0.56	0.53	0.49	0.46	0.42	0.38
160	0.72	0.68	0.64	0.60	0.56	0.53	0.49	0.46	0.42	0.38	0.35
155	0.68	0.64	0.60	0.56	0.53	0.49	0.46	0.42	0.38	0.35	0.32
150	0.64	0.60	0.56	0.53	0.49	0.46	0.42	0.38	0.35	0.32	0.28
145	0.60	0.56	0.53	0.49	0.46	0.42	0.38	0.35	0.32	0.28	0.25
140	0.56	0.53	0.49	0.46	0.42	0.38	0.35	0.32	0.28	0.25	0.22
135	0.53	0.49	0.46	0.42	0.38	0.35	0.32	0.28	0.25	0.22	0.19
130	0.49	0.46	0.42	0.38	0.35	0.32	0.28	0.25	0.22	0.19	0.16
125	0.46	0.42	0.38	0.35	0.32	0.28	0.25	0.22	0.19	0.16	0.13
120	0.42	0.38	0.35	0.32	0.28	0.25	0.22	0.19	0.16	0.13	0.11
115	0.38	0.35	0.32	0.28	0.25	0.22	0.19	0.16	0.13	0.11	0.08
110	0.35	0.32	0.28	0.25	0.22	0.19	0.16	0.13	0.11	0.08	0.06
105	0.32	0.28	0.25	0.22	0.19	0.16	0.13	0.11	0.08	0.06	0.03
100	0.28	0.25	0.22	0.19	0.16	0.13	0.11	0.08	0.06	0.03	0.01

Heat output for Decor Radiators is determined for an Average Water Temperature (AWT) of 215˚F and an Entering Air Temperature (EAT) of 65˚F. Use this table to determine the correction multiplier for other conditions.

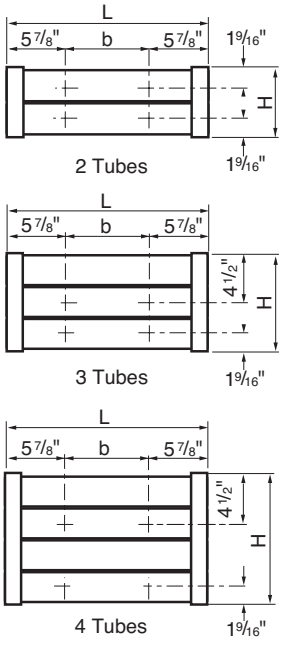
Type	Standard Bracket Location	Mounting Details

H11 Baseboard

Flexible Along All Fins

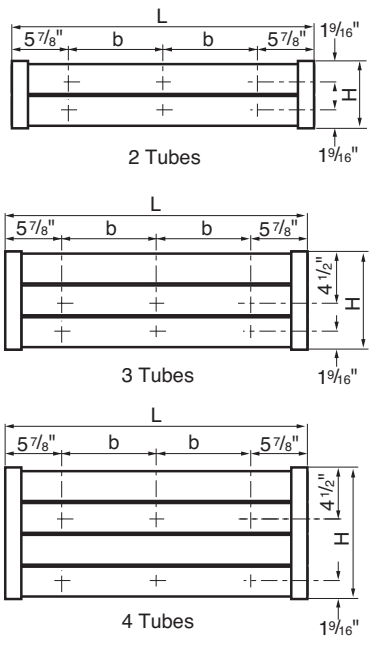


24" to 48"



b=L–11¾"

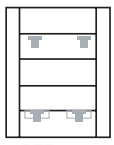
51" to 96"



$$b=\frac{L-11\frac{3}{4}"}{2}$$

H11 Radiator

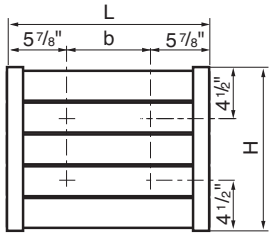
H22 Radiator



REF .001
Wall mounted.

Standard mounting system for all models.

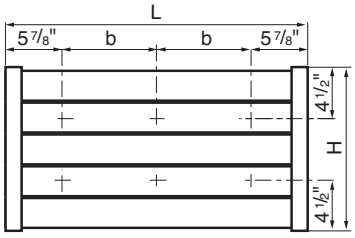
24" to 48"



6, 8, 10 Tubes

b=L–11¾"

51" to 96"



6, 8, 10 Tubes

$$b=\frac{L-11\frac{3}{4}"}{2}$$

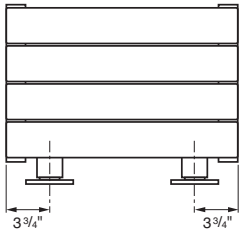
H=Number of tubes X $2\frac{15}{16}"$ + $\frac{3}{16}"$

Note: Single tube models H11, H22 and H28 must be mounted on feet.

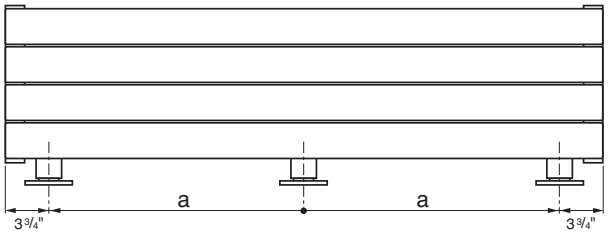
H28 Pedestal

REF .003
Mounting with adjustable feet $3\frac{1}{2}"$ to $4\frac{3}{4}"$

Type H L=39"



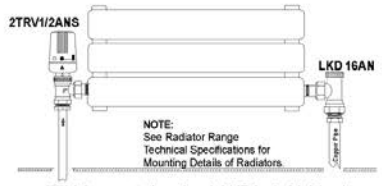
Type H L= 55" to 87"



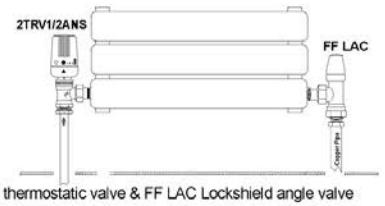
$$a=\frac{L-7\frac{1}{2}"}{2}$$

MYSON

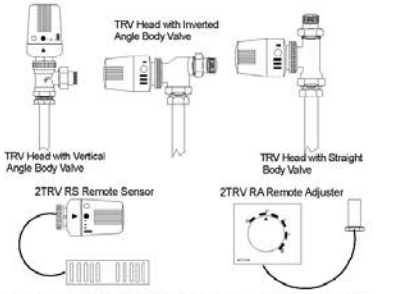
Decor H11 ,2,3,4 tube Radiator Connection Options



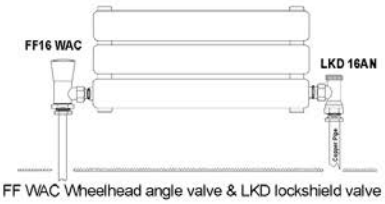
TRV thermostatic valve & LKD lockshield valve



TRV thermostatic valve & FF LAC Lockshield angle valve

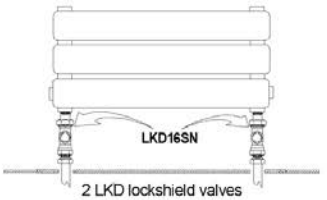


For best accuracy 2TRV2 head should be in a horizontal position away from heat source. Remote Sensor or Adjuster heads are available

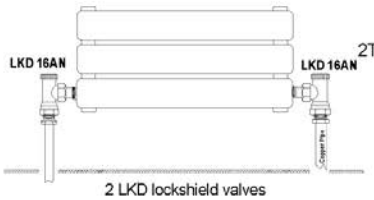


FF WAC Wheelhead angle valve & LKD lockshield valve

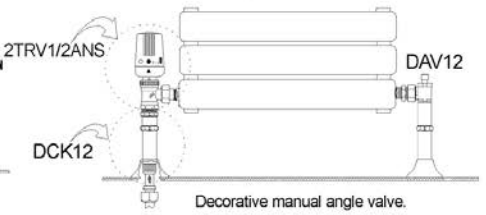
FF WAC Wheelhead angle & FFLAC lockshield angle valve.



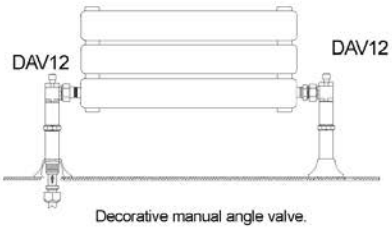
2 LKD lockshield valves



2 LKD lockshield valves



Decorative manual angle valve.

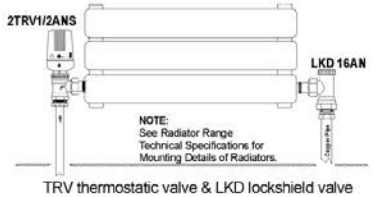


Decorative manual angle valve.

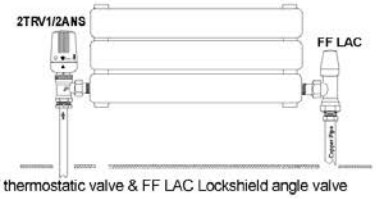
(FF LAC)... Valve is set full open and white knob will not turn. Angle only.
(FF WAC)... Valve white knob can turn to open or close the valve. Angle only.
(LKD)..... Manual valve, has chrome cap that can be removed exposing an adjustment screw to open or close the valve. Angle or straight.
(TRV)..... Valve is a non electric thermostatic valve that modulates water flow in response to changes in room temperature and closes when set temperature is achieved NOTE: This valve will not turn on or shut off your heating system. Horizontal angle, vertical angle or straight pattern.
(DCK12).....Pipe extension with compression fitting and escutcheon for use with the 2TRV1/2ANS valve.
(DAV12) ..... Manual valve, Adjust flow with allen wrench. Valve comes with chrome pipe extension with compression fitting and escutcheon .

MYSON

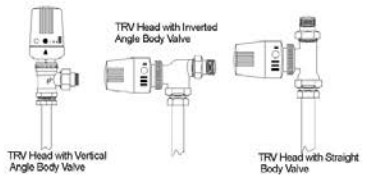
Decor H11,6,8,10 Tube Radiator Connection Options



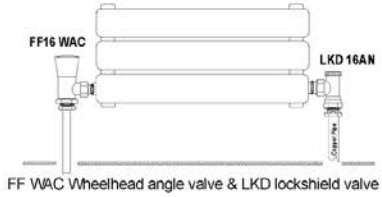
TRV thermostatic valve & LKD lockshield valve



TRV thermostatic valve & FF LAC Lockshield angle valve

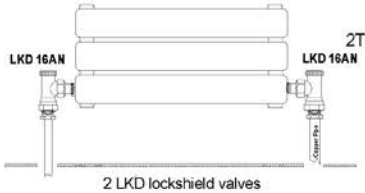


For best accuracy 2TRV2 head should be in a horizontal position away from heat source. Remote Sensor or Adjuster heads are available

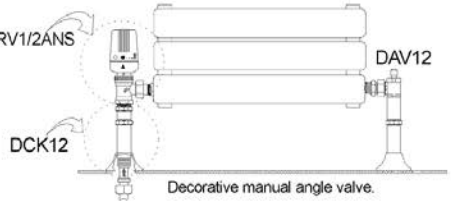


FF WAC Wheelhead angle valve & LKD lockshield valve

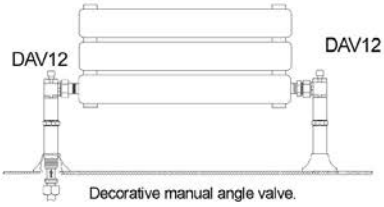
FF WAC Wheelhead angle & FFLAC lockshield angle valve.



2 LKD lockshield valves



Decorative manual angle valve.



Decorative manual angle valve.

(FF LAC)... Valve is set full open and white knob will not turn. Angle only.
(FF WAC)... Manual valve, white knob can turn to open or close the valve. Angle only.
(LKD)..... Valve has chrome cap that can be removed exposing an adjustment screw to open or close the valve. Angle or straight.
(TRV)..... Valve is a non electric thermostatic valve that modulates water flow in response to changes in room temperature and closes when set temperature is achieved NOTE: This valve will not turn on or shut off your heating system. Horizontal angle, vertical angle or straight pattern.
(DCK12).....Pipe extension with compression fitting and escutcheon for use with the 2TRV1/2ANS valve.
(DAV12) ..... Manual valve, Adjust flow with allen wrench. Valve comes with chrome pipe extension with compression fitting and escutcheon .

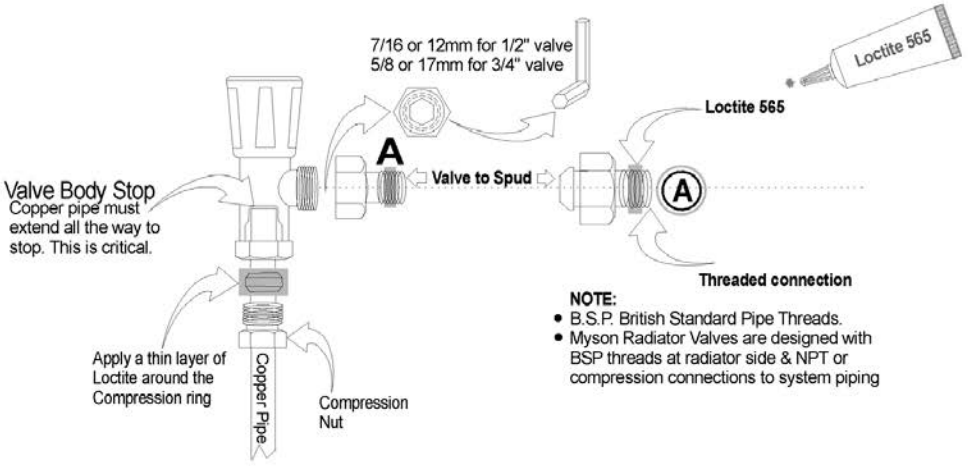
MYSON

Loctite 565

Myson products are designed to be installed by professional trades people.
Myson instructions are meant to be thorough; however it is assumed that the installer has the appropriate technical knowledge related to building codes, standard trade practices, and proper use of the tools of the trade. Should a homeowner without such knowledge or skill take it upon him/herself to attempt the installation, Myson will not be responsible for any damages, injuries or unsatisfactory performance of the Myson product used.

NOTE: MYSON products have **BSP** male and female threads. BSP threads are a straight running thread **NOT tapered like NPT**.
Myson Radiator Valves are designed with BSP threads at radiator side & NPT or compression connections to system piping

1. Clean all threaded surfaces (both external & internal) .
2. Location (**A**) Apply a 360 degree bead of Loctite 565 to the leading thread of the male fitting, ***leaving the first thread free***. Force the sealant into the threads to thoroughly fill the voids..
3. Using accepted trade practices assemble and wrench tighten fittings until proper alignment is obtained.
4. Properly installed fittings will seal to moderate liquid pressures in 30 minutes. For maximum pressure resistance allow the Loctite to cure for a minimum of 24 hours.



Myson, Inc., 948 Hercules Drive, Suite 4 Colchester, VT 05446 • 1-800-698-9690 • www.mysoninc.com

CastTube SLENDERIZED

DURABLE CAST IRON RADIATORS DIMENSIONS • RATINGS

Ratings SQ. FT./EDR

	SIZE		FOUR TUBE		SIX TUBE
	NO. OF SECTIONS	LENGTH 1¾" PER SECTION	19" HEIGHT 1.6 SQ. FT. PER SECTION	25" HEIGHT 2.0 SQ. FT. PER SECTION	25" HEIGHT 3.0 SQ. FT. PER SECTION
STOCK	4	7.0"	6.4	8	12
	6	10.5"	9.6	12	18
	8	14.0"	12.8	16	24
	10	17.5"	16.0	20	30
	12	21.0"	19.2	24	36
	14	24.5"	22.4	28	42
	16	28.0"	25.6	32	48
	18	31.5"	28.8	36	54
	20	35.5"	32.0	40	60
	22	38.5"	35.2	44	66
	24	42.0"	38.4	48	72
	26	45.5"	41.6	52	78
	28	49.0"	44.8	56	84
	30	52.5"	48.0	60	90
	32	56.0"	51.2	64	96
SPECIAL ORDER	34	59.5"	54.4	68	102
	36	63.0"	57.6	72	108
	38	66.5"	60.8	76	114
	40	70.0"	64.0	80	120
	42	73.0"	67.2	84	126
	44	77.0"	70.4	88	132

NOTE: HEAT EMISSION— BASED ON 240 BTU (STEAM) PER SQUARE FOOT PER HOUR
MAXIMUM WORKING PRESSURE: 15 LBS. STEAM, 30 LBS. WATER

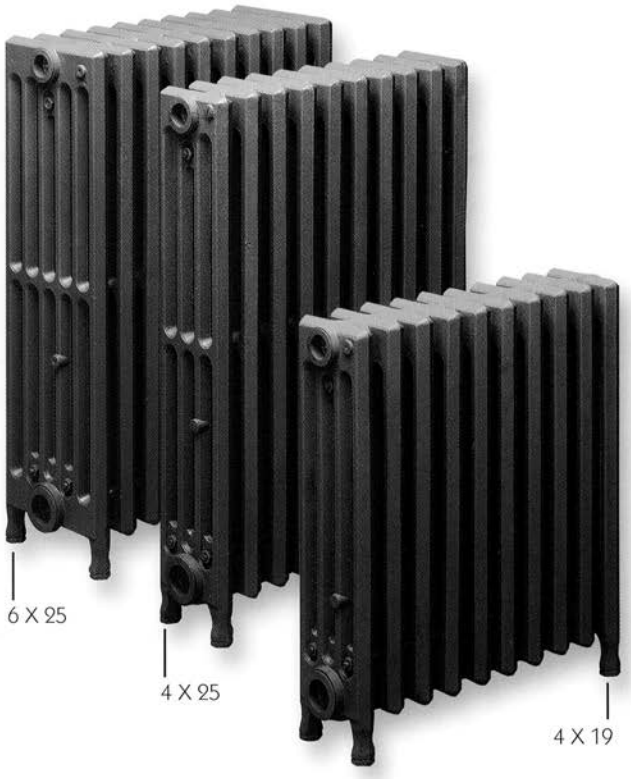
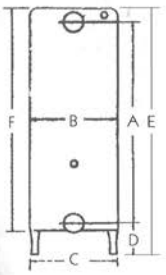


TABLE OF HEAT EMISSIONS FOR VARIOUS AVERAGE HOT WATER TEMPERATURES

AV. WATER TEMP. IN RADIATOR	220°	215°	210°	200°	190°	180°	170°	160°	150°
HEAT EMISSION BTU PER SQ. FT.	250	240	230	210	190	170	150	130	110

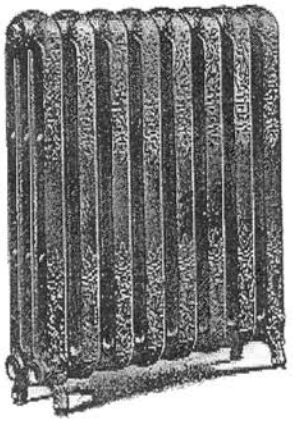
Dimensions



SIZE	A	B&C	D	E	*F
4x19	15 7/16"	4½"	2 1/16"	19"	17 3/16"
4x25	21 7/16"	4½"	2 1/16"	25"	23 3/16"
6x25	21 7/16"	6⅞"	2 1/16"	25"	23 3/16"

* LEGLESS— OVERALL HEIGHT. TAPPING— TOP-1" BOTTOM- 1 1/4"

ADD 1/2" TO LENGTH FOR EACH BUSHING.
END SECTION REGULARLY SUPPLIED WITH 1" TOP TAPPING AND 1 1/4" BOTTOM TAPPINGS.
NOTE: CAST TUBE RADIATORS ARE SOLD IN EVEN * NUMBER OF SECTIONS UP TO A MAXIMUM OF 44 SECTIONS. FOR ASSEMBLIES FROM 26 TO 44 SECTIONS, ONE EXTENDED CENTER LEG SECTION IS FURNISHED
ODD SIZES AVAILABLE UPON REQUEST



OLD FASHIONED CAST IRON RADIATORS

Free Standing - Leg Type

We have a source on the east coast who completely restores pre- 1935 decorative cost-iron radiators including sandblasting, nipple replacement and pressure testing to 75 PSI. If you are interested, let us know the approximate BTU requirements and space limitations for your project. We will get a listing of current available radiators and photos.

(170 BTU/Hr/Sq.Ft. at 160oF)
Sq. Ft. / Section

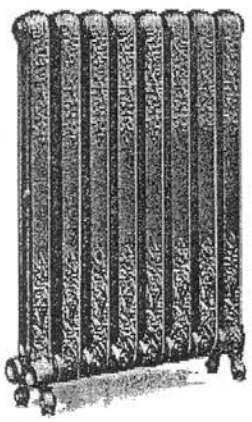
Height	2 Column	3 Column	4 Column
20"	2 sq. ft.	3 sq. ft.	4 sq. ft.
22"		3 sq. ft.	4 sq. ft.
23"	2.33 sq. ft.		4.66 sq. ft.
26"	2.66 sq. ft.	3.75 sq. ft.	5.33 sq. ft.
32"	3.33 sq. ft.	4.5 sq. ft.	6.66 sq. ft.
*38"	4 sq. ft.	6 sq. ft.	8 sq. ft.
Depth	7 1/2"	9"	11"

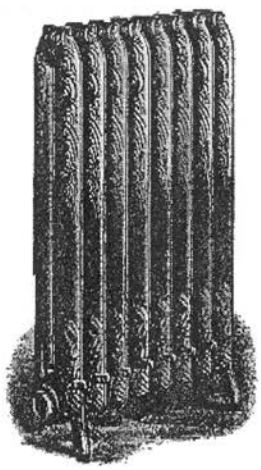
***Note: 38" high radiators are the most common.**

Note: These are unpainted. The customer must select and execute painting.

Note: Estimated freight to Berkeley (64tlsq. ft.): $60 net/ l 00#

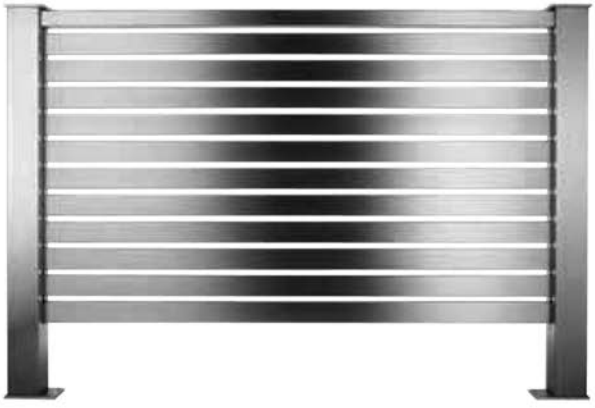
Note: When ordering, please indicate desired piping locations & sizes





MYSON

Eske ESK4



Nene NEN2

Wensum WEN2

DECORATIVE STAINLESS STEEL HYDRONIC

Model	BTU/hr ▲85°F	Overall Height (in)	Overall Width (in)	Width C/C Vertical Tubes	Center to Center Conn. (in)*	Variable Projection (in)	Approx. Shipping Weight (lbs)
ESKE							
ESK1	1271	31-1/2	19-5/8	17-5/8	17-5/8	3-1/8 - 3-15/16	16
ESK2	1460	31-1/2	23-5/8	21-5/8	21-5/8	3-1/8 - 3-15/16	20
ESK3	1958	47-1/4	19-5/8	17-5/8	17-5/8	3-1/8 - 3-15/16	27
ESK4	2263	47-1/4	23-5/8	21-5/8	21-5/8	3-1/8 - 3-15/16	29
ESK5	2423	59	19-5/8	17-5/8	17-5/8	3-1/8 - 3-15/16	31
ESK6	2790	59	23-5/8	21-5/8	21-5/8	3-1/8 - 3-15/16	36
NENE							
NEN1	2225	22-7/8	41-3/4	39	34-1/4**	6-3/8 - 7	42
NEN2	2903	28-3/4	41-3/4	39	34-1/4**	6-3/8 - 7	48
WENSUM							
WEN1	1073	31-1/8	19-5/8	15	15	4-1/4 - 4-3/4	25
WEN2	1340	37	19-5/8	15	15	4-1/4 - 4-3/4	30

*All products rough in with 1/2" copper
**Connections are on the back of the product

MYSON

MYSON

Fulda GAV4

Fatala MAE2

Interlude INT2

Jarua CAV2

CONTEMPORARY HYDRONIC

Model	BTU/hr ▲85° F	Overall Height (in)	Overall Width (in)	Width C/C Vertical Tubes (in)	Center to Center Conn. (in)	Overall or Projection (in)	Tube Diameter (in)	Approx. Shipping Weight (lbs)
FULDA - STEEL CONSTRUCTION - CLOSED LOOP SYSTEMS ONLY								
GAV1	1376	29-13/16	19-11/16	15-3/4	15-3/4	5-3/4 - 6-1/4	1-1/4" Vertical	40
GAV2	1610	29-13/16	23-5/8	19-1/2	19-1/2	6-1/8 - 6-9/16	Tubes	46
GAV3	2113	48-1/16	19-11/16	15-3/4	15-3/4	5-3/4 - 6-1/4	1" Horizontal	52
GAV4	2468	48-1/16	23-5/8	19-1/2	19-1/2	6-1/8 - 6-9/16	Tubes	58
FATALA - STEEL CONSTRUCTION - CLOSED LOOP SYSTEMS ONLY								
MAE1	1512	31-5/16	19-11/16	2	2	3-13/16 - 4-5/16	1-1/4" Vertical	42
MAE2	2208	47-1/16	19-11/16	2	2	3-13/16 - 4-5/16	Tubes	48
MAE3	3070	69-1/8	19-11/16	2	2	3-13/16 - 4-5/16	1" Hor. Tubes	54
INTERLUDE - STEEL CONSTRUCTION - CLOSED LOOP SYSTEMS ONLY								
INT1	1024	20-7/8	19-11/16	17-5/8	17-5/8	4 - 4-5/8	Flat	40
INT2	1692	35-5/8	19-11/16	17-5/8	17-5/8	4 - 4-5/8	Panel	48
INT3	2506	65-3/16	19-11/16	17-5/8	17-5/8	4 - 4-5/8	Style	54
JARUA - STEEL CONSTRUCTION - CLOSED LOOP SYSTEMS ONLY								
CAV1	2528	44-1/2	25-9/16	2	2	4-3/4 - 5-1/8	Curved Flat	40
CAV2	3294	56-5/16	25-9/16	2	2	4-3/4 - 5-1/8	Panel Style	60

MYSON

Avonmore COS85

Sokoto DRPW4

Tahoe ALTO1

Champlain ADA1

Navajo LIB1

CONTEMPORARY HYDRONIC

Model	BTU/hr ▲85° F	Overall Height (in)	Overall Width (in)	Width C/C Vertical Tubes (in)	Center to Center Conn. (in)	Overall or Projection (in)	Tube Style	Approx. Shipping Weight (lbs)
AVONMORE - STEEL CONSTRUCTION - CLOSED LOOP SYSTEMS ONLY								
COS85	1302	33-15/16	19-11/16	17-15/16	17-15/16	3-1/4 - 4-1/4	1-1/2" Vertical	39
COS86	1525	33-15/16	23-5/8	21-7/8	21-7/8	3-1/4 - 4-1/4	"D" Tubes	45
COS125	1804	48-1/8	19-11/16	17-15/16	17-15/16	3-1/4 - 4-1/4	1" Horizontal	59
COS126	2120	48-1/8	23-5/8	21-7/8	21-7/8	3-1/4 - 4-1/4	Tubes	68
SOKOTO - STEEL CONSTRUCTION - CLOSED LOOP SYSTEMS ONLY								
DRPW4	1320	36-3/4	25	23-3/8	17-3/8	7-1/2		40
TAHOE - STEEL CONSTRUCTION - CLOSED LOOP SYSTEMS ONLY								
ALTO1	676	47-1/4	15	12-1/2	12-1/2	3-3/8	Square Style	35
ALTO2	1013	70-7/8	15	12-1/2	12-1/2	3-3/8	Square Style	50
CHAMPLAIN - STEEL CONSTRUCTION - CLOSED LOOP SYSTEMS ONLY								
ADA1	1320	37-5/16	27-7/8	25-3/8	19-1/2	8	Square Style	50
NAVAJO - STEEL CONSTRUCTION - CLOSED LOOP SYSTEMS ONLY								
LIB1	818	25-3/8	25-3/8	22-3/4	22-3/4	5-3/8	Square Style	30

*Rough in = 1/2" copper compression

HEATING EDGE

HIGH EFFICIENCY
PERIMETER HEATING EQUIPMENT

Model HE 2

HAWKSTONE INDUSTRIES

High efficiency equipment requires a high efficiency heating element...

Geothermal heat pumps, solar thermal collectors and condensing boilers are all great ways to save energy and reduce fossil fuel usage. All three achieve their highest efficiencies when delivering low temperature water. The challenge faced when it comes to heating effectively with traditional baseboard is that supply water tempuratures need to be at least 140°F in order to deliver enough BTUH's to sufficiently heat a space at design temperature. Not so with the Heating Edge HE2 high capacity hybrid element. Because the HE2 has the unique two-pipe design, it is able to deliver comparable BTUH's using 90°F water, all in an attractive package.

Heating Edge is perfect for use with the following low temperature heat generators:

GEOTHERMAL

SOLAR THERMAL

CONDENSING BOILERS

Heating Edge™ Features and Benefits

▲ **Unique Coil Block System**
Convection and radiant combined
- Cover contact to Coil Block provides larger Radiant Surface combined with Conductive Chimneys created by Folded Fins

■ **New Enhanced Fin Design**
more surface area; folded in front and back
- Turbulated fin surface
- Deeper collars for maximum mechanical bond
- Extra hold off fold to prevent nesting
- Slightly different shape to maximize turbulated air flow

◆ **Two Pipe Design**
high capacity outputs; variable piping options
- The only two pipe reverse return product available
- Allows for a variety of piping methods and capacity enhancements *(please refer to back cover for performance table)*

● **Three Piece Design**
- Eliminates all carriers, brackets, cradles, damper, damper vents and miscellaneous hardware resulting in quiet comfort

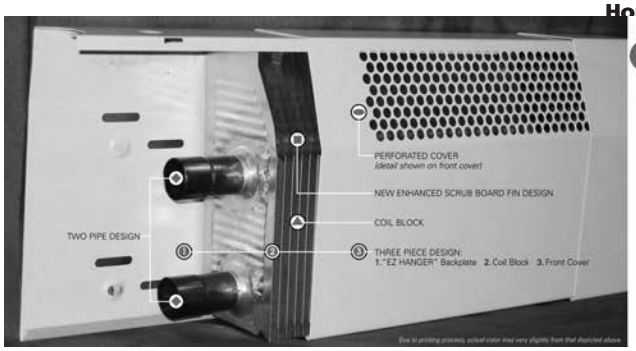
⬬ **Perforated Cover Design**
- Perforated holes of less than 1/4" prevent foreign objects from entering Coil Block
- Crayons, pencils and pens will not slip through
- Ideal for children's rooms

Easy to Clean
- Simply cleaned with the pass of a vacuum cleaner
- The healthier alternative

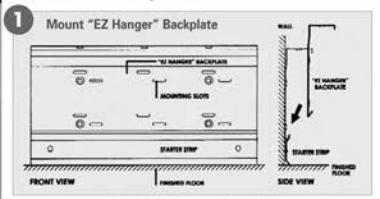
Rust Resistant
- Coil Block constructed of Aluminum and Copper
- Cover and "EZ Hanger" Backplate constructed of 20 gauge steel with a 2-part rust resistant paint with all edges and openings finished and coated
- Withstands the rigors of most bathroom applications

Rugged Exterior
Contact with Coil Block provides added support and rigidity to ensure cover to be dent resistant making the Heating Edge ideal for:

Offices	Dormitories	Restaurants	Children's Rooms
Hospitals	Schools	Nursing Homes	Lobbies
Apartments	Assisted Living Facilities		



Installs in a "Snap" 1-2-3



Mount "EZ Hanger" Backplate – fasten to wall through mounting slots provided (6 per foot). *When installing on top of finish floor, utilize starter strip to maintain the minimum 1¾" air gap.*

"Snap" in Coil Block – engage back notch onto lower lip of the "EZ Hanger" Backplate and pivot the Coil Block towards the wall until it "Snaps" into place.

"Snap" on Cover – after piping connections are completed, place lower lip of cover into front notch in the Coil Block and pivot towards the wall until it "Snaps" over the "EZ Hanger" Backplate.

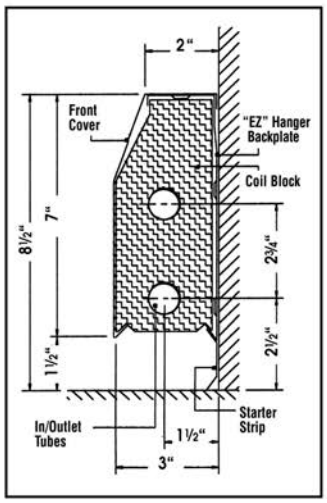
SPECIFICATIONS

Heating Edge™ Hot Water Performance Ratings	GPM	PD in ft of H_20	Entering Water Temperature (BTU/hr/ft@EWT in °F) 90°F	100°F	110°F	120°F	130°F	140°F	150°F	160°F	170°F	180°F	190°F	200°F	210°F
TWO SUPPLIES PARALLEL	1	.0044	313	364	462	612	665	737	811	884	960	1041	1106	1193	1297
	4	.0481	390	450	535	701	762	832	915	998	1084	1175	1248	1346	1463
TOP SUPPLY BOTTOM RETURN	1	.0088	289	338	417	589	640	692	753	814	877	913	932	1001	1089
	4	.0962	380	411	514	670	728	781	849	919	992	1031	1051	1129	1223
BOTTOM SUPPLY TOP RETURN	1	.0088	172	201	265	419	455	516	572	628	685	765	835	903	983
	4	.0962	228	326	355	485	527	586	649	712	777	863	947	1017	1108
BOTTOM SUPPLY NO RETURN	1	.0044	176	211	277	434	472	530	586	642	715	775	840	907	988
	4	.0481	226	286	347	500	544	600	663	724	792	875	948	1025	1062
TOP SUPPLY NO RETURN	1	.0044	115	145	193	308	335	392	445	497	547	648	751	818	896
	4	.0481	141	180	228	358	389	446	506	567	620	733	847	924	1012

Performance Notes: • All ratings include a 15% heating effect factor • Materials of construction include all aluminum "patented" fins at 47.3 per LF, mechanically bonded to two 3/4" (075) type L copper tubes ("Coil Block") covered by a 20 gauge perforated, painted cover all mounted to a backplate. Please see dimensional drawing for fin shape and dimensions • EAT=65°F • Pressure drop in feet of H2O per LF.

All Hawkstone Industries products are performance tested in a BSRIA certified laboratory.
The BSRIA is the leading independent UK laboratory for product testing, certification and performance verification.

Dimensions



Product

HE2 Has a perforated cover making it childproof and aesthetically pleasing
Available lengths: 2' 3' 4' 5' 6' 7' 8'

HE-TK The trim kit includes the cover, the back plate and starter strip.
Available lengths: 2' 3' 4' 5' 6' 7' 8'

Accessories

IC90W
90° Inside Corner

OC90W
90° Outside Corner

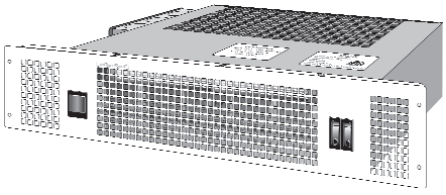
SW
Splicer
2", 3", 4", 6"

IC135W
135° Inside Corner

OC135W
135° Outside Corner

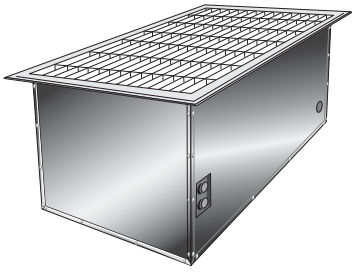
EC12W
12" End Cap
left or right

EC6W
6" End Cap
left or right



Fan Convector Technical Specification

December 2010 — Rev C



Whispa III

Whispa III RCU

Whispa E50

Hi-Line RC

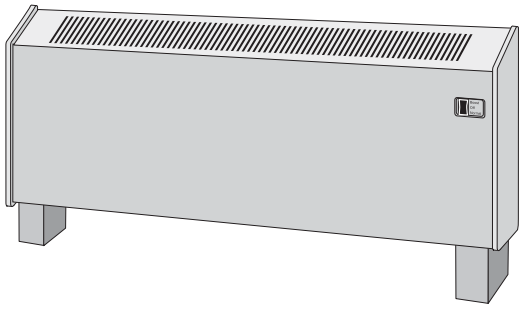
Hi-Line HC RC

Lo-Line RC

Lo-Line HC RC

Slim-Line RC

CSU



MYSON

WHISPA™ III

A New Generation in Kickspace Heaters

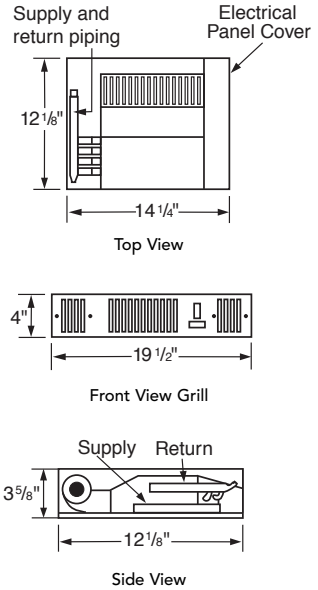
Whispa III 5000, 7000 & 9000 Fan Convectors • Btu/hr Heat Output - entering air @ 65°F

Model	Flow Rate (gpm)	Fan Speed	Air Delivery (cfm)	Entering water temperature (°F) 110	120	130	140	150	160	170	180	190	200
WH III 5000	1	Boost	53	1795	2214	2637	3063	3491	3922	4355	4790	5226	5664
		Normal	41	1539	1844	2144	2440	2732	3020	3306	3589	3869	4147
	3	Boost	53	2040	2516	2997	3480	3967	4457	4949	5443	5939	6437
		Normal	41	1749	2096	2437	2773	3104	3432	3756	4078	4397	4713
WH III 7000	1	Boost	81	2427	3009	3598	4194	4796	5403	6014	6630	7249	7872
		Normal	62	1473	1939	2439	2968	3524	4105	4709	5335	5981	6648
	3	Boost	81	2758	3419	4089	4766	5450	6140	6834	7534	8238	8946
		Normal	62	1673	2204	2771	3373	4004	4665	5351	6062	6797	7554
WH III 9000	1	Boost	124	3308	4073	4844	5619	6398	7181	7967	8755	9546	10340
		Normal	82	2874	3446	4009	4563	5110	5652	6187	6718	7245	7767
	3	Boost	124	3759	4629	5504	6385	7271	8160	9053	9949	10848	11750
		Normal	82	3266	3916	4556	5185	5807	6422	7031	7634	8233	8827

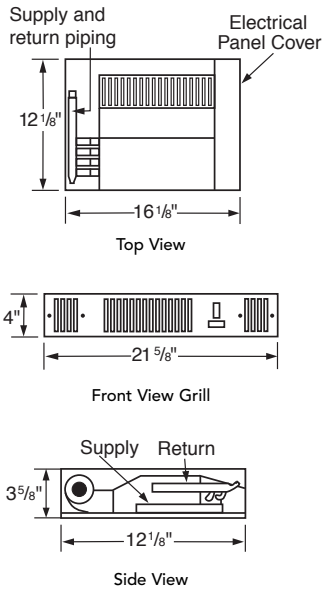
Whispa III 5000, 7000 & 9000 Heat Comparison @180°F Water Temp.

Model	Flow Rate (gpm)	Fan Speed	Baseboard (525 Btu/ft)	C.I. Radiators (225 Btu/sq ft)	Dimensions H	W	D	Weight Unit (lbs)	Weight Packed (lbs)	Flow Rate (gpm)	Friction Loss (head) FT WG
WH III 5000	3.0	Boost/Normal	10.4 / 7.8	24.2 / 18.1	3-15/16"	19-1/2"	12-13/16"	9	11	1.0/3.0	0.75/4.9
WH III 7000	3.0	Boost/Normal	14.4 / 11.5	35.5 / 26.9	3-15/16"	21-5/8"	12-13/16"	10	13	1.0/3.0	0.85/5.9
WH III 9000	3.0	Boost/Normal	19.0 / 14.5	24.2 / 18.1	3-15/16"	23-3/4"	12-13/16"	12	15	1.0/3.0	1.0/6.89

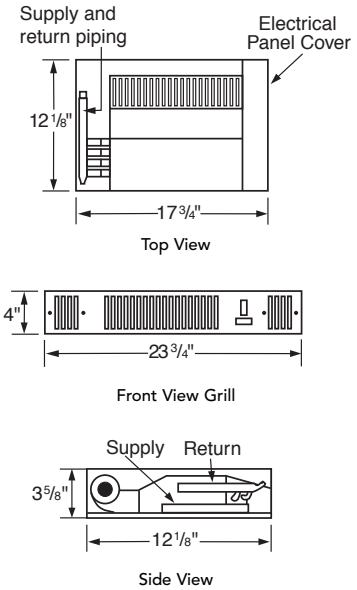
WH III 5000 Kickspace Heater



WH III 7000 Kickspace Heater



WH III 9000 Kickspace Heater



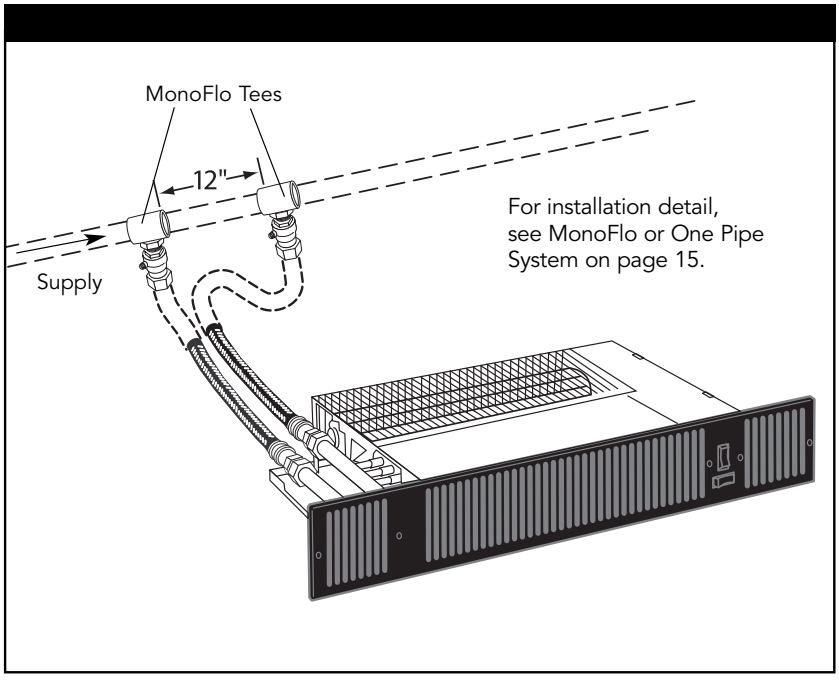
WHISPA III KICKSPACE FAN CONVECTOR SPECIFICATIONS — Engineered to be efficient.

Controls... Units have a two-speed Boost/Off/Normal fan switch. All models have low-limit thermostats which close at 109°F and reopen at 91°F.

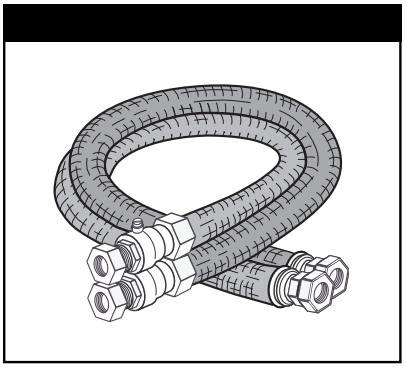
Construction... The chassis is manufactured from zinc-coated painted steel. The grill is hardened aluminum with a baked epoxy polyester finish for strength and durability. Standard grill in black. Optional white, brown or brushed stainless. Fan assemblies have ball bearings for longer life and quieter service.

Warranty... MYSON offers a full ten year warranty on the heat exchanger and a full three year warranty on the fan motor.

ISO 9002



Simple and easy installation



EZ-Hose™ Kit

Flexible Hose Connectors

MYSON's EZ-Hose kit is specifically designed for installation with MYSON Fan Convectors. It allows the unit to be easily removed from the cabinet for quick connection and easy-access maintenance. These flexible hoses can save time and money, and they quickly solve those difficult access problems.

EZ-Hose Kit... save time and money. MYSON's hose kit is so easy to use. The flexible hoses allow you to install the MYSON Fan Convectors from outside the cabinet. There's no need to remove the cabinet or cut ugly access doors in the bottom of the cabinet.

EZ-Hose Kit... easy access installation. MYSON's two-hose system installs in minutes. Two MonoFlo tees (not included in kit) are installed in the heating loop. The hoses are then used to connect the convector to the heating loop.

EZ-Hose Kit... maintenance is hassle-free. If you should need to service the MYSON Fan Convector, the EZ-Hose has an ample 30 inches of flexible hose so you can slide the unit completely out for maintenance. The Ball Valve with the slotted shut-off, enables you to disconnect the unit while maintaining the pressure of the system and you do not have to drain the system.

Features:

- **Flexible** — Designed with installation in mind, these 30" hoses with a ½" female compression fitting on one end and a ball valve with screwdriver slot on the other end, provide enough length to allow installation outside of the cabinet.
- **Tested** — Maximum operating temperature of 250°F and working pressure of 100psi.
- **Easy Installation** — Installs in a fraction of the time required for conventional pipe installation... that saves time and money.
- **Backed with confidence** — MYSON guarantees 100% satisfaction.
- **Compatibility** — May be used with both water- and antifreeze-protected heating systems.

WHISPA™ III

Recessed Wall Heaters

Whispa III 5000 WM

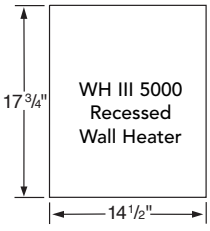
Whispa III 9000 WM

Whispa III 5000 WM & 9000 WM Recessed Wall Fan Convectors • Btu/hr Heat Output - entering air @ 65°F

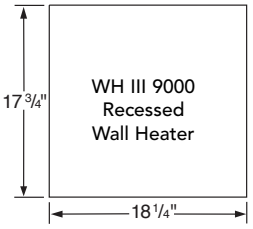
Model	Flow Rate (gpm)	Fan Speed	Air Delivery (cfm)	Entering water temperature (°F) (Btu/hr) 110	120	130	140	150	160	170	180	190	200
WH III 5000 WM	1	Boost	81	1795	2214	2637	3063	3491	3922	4355	4790	5226	5664
		Normal	62	1539	1844	2144	2440	2732	3020	3306	3589	3869	4147
	3	Boost	81	2040	2516	2997	3480	3967	4457	4949	5443	5939	6437
		Normal	62	1749	2096	2437	2773	3104	3432	3756	4078	4397	4713
WH III 9000 WM	1	Boost	124	3308	4073	4844	5619	6398	7181	7967	8755	9546	10340
		Normal	82	2674	3446	4009	4563	5110	5652	6187	6718	7245	7767
	3	Boost	124	3759	4629	5504	6385	7271	8160	9053	9949	10848	11750
		Normal	82	3266	3916	4556	5185	5807	6422	7031	7634	8233	8827

Whispa III 5000 WM & 9000 WM Heat Comparison @ 180°F Water Temperature

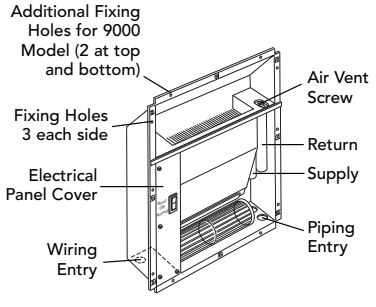
Model	Flow Rate (gpm)	Fan Speed	Baseboard (525 Btu/ft)	C.I. Radiators (225 Btu/sq ft)	Dimensions H	W	D	Weight Unit (lbs)	Weight Packed (lbs)	Flow Rate (gpm)	Friction Loss (head) FT WG
WH III 5000 WM	3.0	Boost/Normal	10.4 / 7.8	24.2 / 18.1	19-1/8"	16-1/2"	3-5/8"	15	18	1.0 / 3.0	0.75 / 4.9
WH III 9000 WM	3.0	Boost/Normal	19.0 / 14.5	44.2 / 33.9	19-1/8"	19-1/2"	3-5/8"	17	21	1.0 / 3.0	1.1 / 6.9



Wall Opening

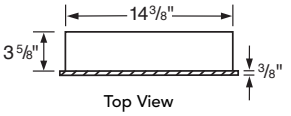


Wall Opening



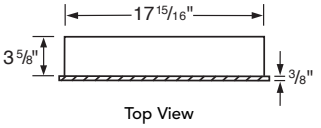
Front View Without Cover

WH III 5000
Recessed Wall Heater

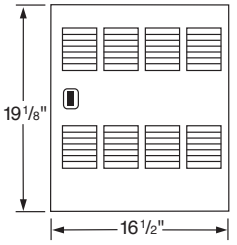


Top View

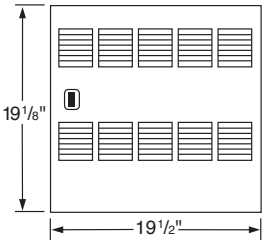
WH III 9000
Recessed Wall Heater



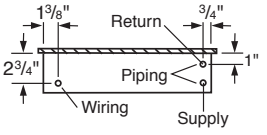
Top View



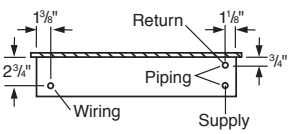
Front View Grill



Front View Grill



Bottom View



Bottom View

WHISPA III RECESSED WALL FAN CONVECTOR SPECIFICATIONS — Engineered to be efficient.

Controls... Units have a two-speed Boost/Off/Normal fan switch. All models have low-limit thermostats which close at 109° and reopen at 91°.

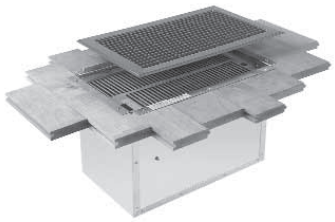
Construction... The chassis is manufactured from zinc-coated painted steel. The grill is hardened aluminum with a white, baked epoxy polyester finish for strength and durability. Fan assemblies have ball bearings for longer life and quieter service.

Warranty... MYSON offers a full ten year warranty on the heat exchanger and a full three year warranty on the fan motor.

ISO 9002

WHISPA™ III

A Recessed Floor Fan Convector



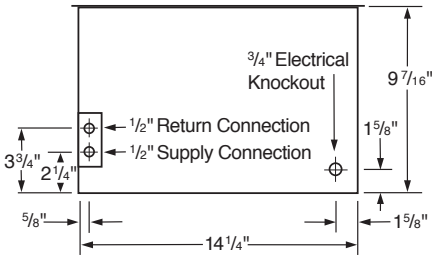
Whispa III 5000 FM Recessed Floor Fan Convector • Btu/hr Heat Output — entering air @ 65°F

Model	Flow Rate (gpm)	Fan Speed	Air Delivery (cfm)	Entering water temperature (°F) (Btu/hr) 110	120	130	140	150	160	170	180	190	200
WH III 5000 FM	1	Boost	81	1795	2214	2637	3063	3491	3922	4355	4790	5226	5664
		Normal	62	1539	1844	2144	2440	2732	3020	3306	3589	3869	4147
	3	Boost	81	2040	2516	2997	3480	3967	4457	4949	5443	5939	6437
		Normal	62	1749	2096	2437	2773	3104	3432	3756	4078	4397	4713

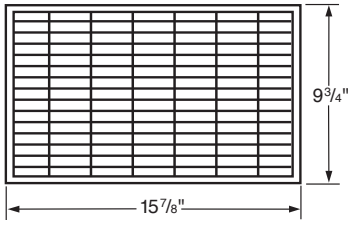
Whispa III 5000 FM Heat Comparison @ 180°F Water Temperature

Model	Flow Rate (gpm)	Fan Speed	Baseboard (525 Btu/ft)	C.I. Radiators (225 Btu/sq ft)	Dimensions H	W	D	Weight Unit (lbs)	Weight Packed (lbs)	Flow Rate (gpm)	Friction Loss (head) FT WG
WH III 5000 FM	3.0	Boost/Normal	10.4 / 7.8	24.2 / 18.1	9-7/16"	15-7/8"	9-3/4"	12	15	3.0	.75 / 4.9

WH III 5000
Recessed Floor Heater

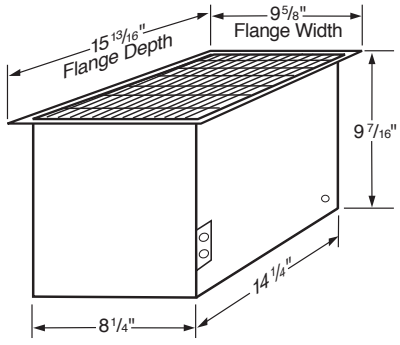


Connections



Grill

NOTE:
All connections accessible from the top of the unit.



Dimensional View

WHISPA III 5000 RECESSED FLOOR FAN CONVECTOR SPECIFICATIONS — Engineered to be efficient.

Controls... Units have a two-speed Boost/Off/Normal fan switch. All models have low-limit thermostats which close at 109°F and reopen at 91°F.

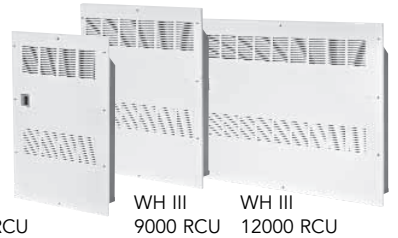
Construction... The chassis is manufactured from zinc-coated painted steel. The grill is hardened aluminum with a baked epoxy polyester finish for strength and durability. Standard grill in tan. Fan assemblies have ball bearings for longer life and quieter service.

Warranty... MYSON offers a full ten year warranty on the heat exchanger and a full three year warranty on the fan motor.

ISO 9002

WHISPA™ III RCU

Commercial Wall Fan Convectors



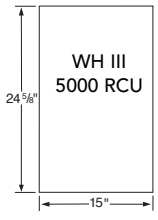
WH III 5000 RCU | WH III 9000 RCU | WH III 12000 RCU

Whispa III RCU Fan Convector • Btu/hr Heat Output - entering air @ 65°F

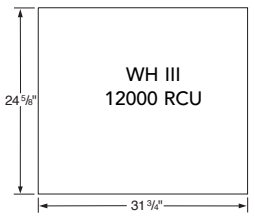
Model	Flow Rate (gpm)	Fan Speed	Air Delivery (cfm)	Entering water temperature (°F) 110	120	130	140	150	160	170	180	190	200
WH III 5000 RCU	1	Boost	53	1795	2214	2637	3063	3491	3922	4355	4790	5226	5664
		Normal	41	1539	1844	2144	2440	2732	3020	3306	3589	3869	4147
	3	Boost	53	2040	2516	2997	3480	3967	4457	4949	5443	5939	6437
		Normal	41	1749	2096	2437	2773	3104	3432	3756	4078	4397	4713
WH III 9000 RCU	1	Boost	124	3308	4073	4844	5619	6398	7181	7967	8755	9546	10340
		Normal	82	2674	3446	4009	4563	5110	5652	6187	6718	7245	7767
	3	Boost	124	3759	4629	5504	6385	7271	8160	9053	9949	10848	11750
		Normal	82	3266	3916	4556	5185	5807	6422	7031	7634	8233	8827
WH III 12000 RCU	1	Boost	196	3645	4785	5740	6709	7690	8682	9682	10692	11709	12734
		Normal	122	2657	3284	3918	4558	5202	5851	6504	7160	7819	8482
	3	Boost	196	4369	5437	6524	7623	8739	9866	11003	12149	13307	14472
		Normal	122	3019	3733	4454	5180	5911	6649	7389	8136	8887	9640

Whispa III 5000, 7000 & 9000 RCU Heat Comparison @180°F Water Temp.

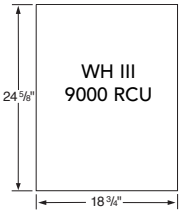
Model	Flow Rate (gpm)	Fan Speed	Baseboard (525 Btu/ft)	C.I. Radiators (225 Btu/sq ft)	Dimensions H	W	D	Weight Unit (lbs)	Weight Packed (lbs)	Friction Loss (head) FT WG
WH III 5000 RCU	3.0	Boost/Normal	10.4 / 7.8	24.2 / 18.1	26"	17"	3-9/16"	21	25	Contact Factory 800.698.9690
WH III 9000 RCU	3.0	Boost/Normal	19.0 / 14.5	44.2 / 33.9	26"	20-3/4"	3-9/16"	24	29	
WH III 12000 RCU	3.0	Boost/Normal	23.1 / 15.5	54.0 / 36.2	26"	33-3/4"	3-9/16"	33	38	



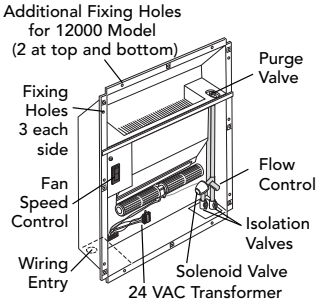
Wall Opening



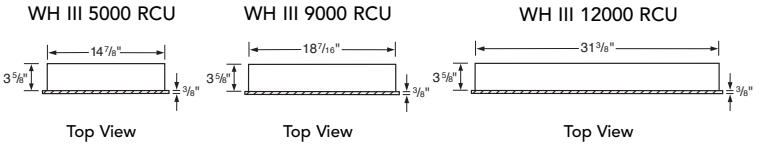
Wall Opening



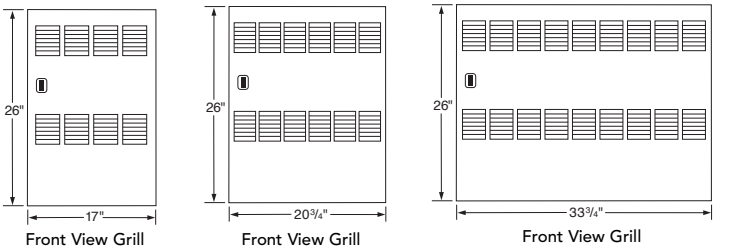
Wall Opening



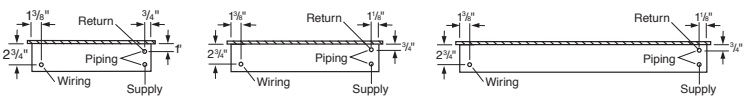
Front View Without Cover



Top View | Top View | Top View



Front View Grill | Front View Grill | Front View Grill



Bottom View | Bottom View | Bottom View

WHISPA III RCU COMMERCIAL WALL FAN CONVECTOR SPECIFICATIONS — Engineered to be efficient.

Controls... Units have a two-speed Boost/Off/Normal fan switch. All models have low-limit thermostats which close at 109°F and reopen at 91°F. Designed to be independently controlled with 24V thermostat (by others). Unit includes: flow control, solenoid valve, 24V transformer, purge valve and two isolation valves.

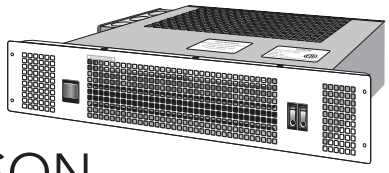
Construction... The chassis is manufactured from zinc-coated painted steel. The grill is hardened aluminum for strength and durability. Fan assemblies have ball bearings for longer life and quieter service.

Warranty... MYSON offers a full ten year warranty on the heat exchanger and a full three year warranty on the fan motor.

ISO 9002

WHISPA™ E50

Electric Kickspace Heater from MYSON



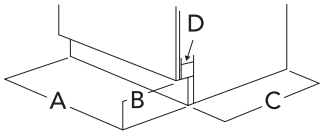
Whispa E50 Electric Kickspace Fan Convector

Model	Settings	v/Hz	Watts	BTUs/hr	Amps	Baseboard (525 Btu/ft)	C.I. Radiators (225 Btu/sq ft)	Weight Unit (lbs)	Weight Packed (lbs)	Dimensions H	W	D
WH E50	High	110V/60Hz	1600	5460	13.0	10.4	24.3	8.1	10	4"	19-11/16"	8-7/8"
	Low	110V/60Hz	800	2731	6.5	5.2	12.1					

NOTE: For proper sizing, use the rating at Medium or Low speeds.

INSTALLATION DIMENSIONS

A	Width	20"
B	Height	4" (min.)
C	Depth of Cabinet	16"
D	Base Shelf Overhang	1"



Be sure to provide sufficient space around the unit to allow for adequate air circulation.

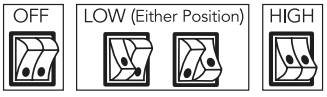
CONTROLS

Power/Fan Settings:

OFF  ON 

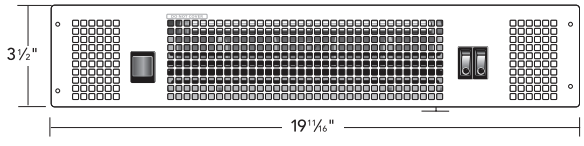
Indicated by red light.

Heater Settings:

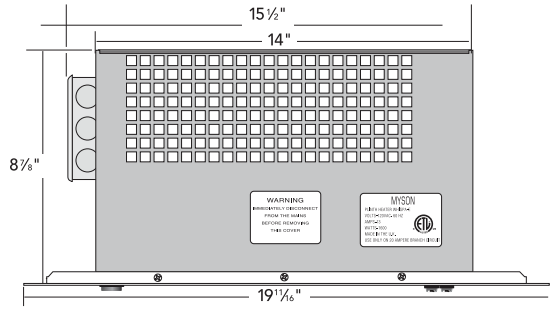


WHISPA E KICKSPACE HEATER DIMENSIONS

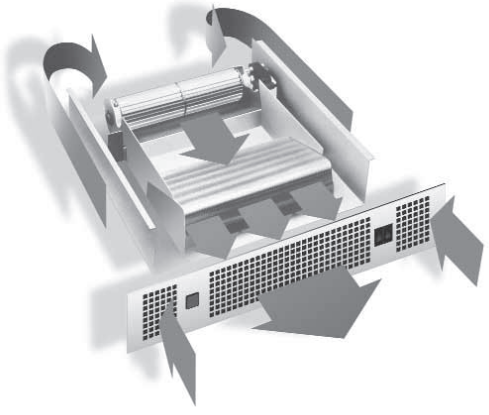
WH E50 Electric Fan Convector



Front View



Top View



ETL LISTED c us

ISO 9002

WHISPA E50 ELECTRIC KICKSPACE HEATER SPECIFICATIONS — Engineered to be efficient.

Fan Unit... A highly efficient 110 cfm tangential fan extends the full width of the heating element, giving extremely quiet, trouble-free operation. All units have aluminum fans, sealed motor bearings, and permanently lubricated bearings.

Controls... Units have a lighted fan switch to indicate power "ON." Heat is controlled using a dual rocker switch — both switches "OFF" for fan only, either switch "ON" for 800 Watts (Low), and both switches "ON" for 1600 Watts (High). Each unit has a high temperature limit switch to shut off power in the event of excessive temperature resulting from restricted airflow.

Construction... The chassis is manufactured from zinc-coated painted steel. The grill is hardened aluminum for strength and durability.

Electrical connections... Wiring connections are supplied through the rear of each unit. Motor is 110V, 60Hz and is ETL listed. Dual heating elements draw a total of 15 amps on the high setting.

Hi-Line™ RC

Fan Convector from MYSON

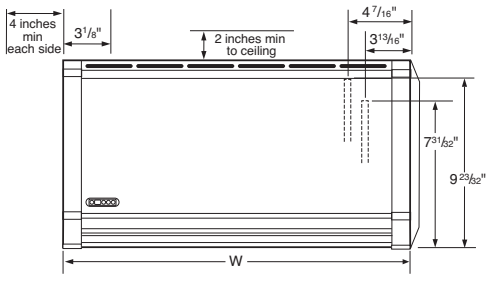
Hi-Line RC Fan Convectors • Btu/hr Heat Output - entering air @ 65°F

Model	Flow Rate (3 gpm)	Fan Speed	Air Delivery (cfm)	Entering water temperature (°F) 110	120	130	140	150	160	170	180	190	200
Hi Line 20-14 RC		Boost	221	6847	8454	10076	11711	13358	15014	16679	18352	20033	21720
	1	Medium	190	6116	7556	9011	10477	11955	13441	14936	16439	17948	19465
		Normal	146	5152	6367	7593	8831	10077	11332	12593	13862	15136	16417
		Boost	254	7870	9717	11582	13461	15354	17257	19171	21094	23026	24965
	3	Medium	218	7030	8685	10357	12043	13741	15449	17168	18895	20630	22373
		Normal	168	5922	7318	8728	10150	11583	13025	14475	15933	17398	18870
Hi Line 15-10 RC		Boost	171	5237	6470	7717	8973	10240	11514	12796	14084	15378	16678
	1	Medium	141	4035	4987	5949	6919	7896	8879	9869	10864	11863	12866
		Normal	106	3591	4440	5297	6161	7032	7909	8791	9679	10571	11466
		Boost	196	6019	7437	8870	10314	11770	13234	14708	16188	17676	19170
	3	Medium	162	4638	5732	6838	7953	9076	10206	11344	12487	13636	14789
		Normal	122	4128	5103	6088	7082	8083	9091	10105	11125	12150	13179
Hi Line 10-6 RC		Boost	112	3677	4545	5423	6308	7199	8097	9000	9908	10820	11736
	1	Medium	88	2896	3581	4272	4969	5672	6381	7092	7808	8528	9251
		Normal	73	2402	2969	3543	4121	4704	5291	5882	6475	7072	7672
		Boost	129	4226	5224	6233	7250	8275	9307	10345	11388	12437	13490
	3	Medium	101	3329	4116	4910	5712	6520	7334	8152	8975	9802	10633
		Normal	84	2761	3413	4072	4737	5407	6082	6761	7443	8129	8818
Hi Line 7-4 RC		Boost	68	2533	3132	3737	4347	4962	5581	6204	6830	7459	8092
	1	Medium	54	1942	2401	2866	3335	3807	4282	4761	5242	5725	621
		Normal	42	1409	1743	2081	2421	2765	3110	3458	3808	4159	4513
		Boost	78	2912	3600	4295	4996	5703	6415	7131	7851	8574	9301
	3	Medium	62	2232	2760	3294	3833	4376	4922	5472	6025	6581	7140
		Normal	48	1620	2004	2392	2783	3178	3575	3975	4377	4781	5187

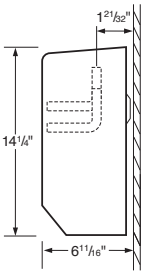
Hi-Line RC Heat Comparison @ 180°F Water Temperature

Model	Flow Rate (gpm)	Fan Speed	Baseboard (525 Btu/ft)	C.I.Radiators (225 Btu/sq ft)	Dimensions H	W	D	Weight Unit (lbs)	Weight Packed (lbs)	Flow Rate (gpm)	Friction Loss (head) FT WG
20-14	3.0	Boost/Med/Norm	40.2 / 36.0 / 30.3	93.8 / 84 / 70.8	14-1/4"	46-3/32"	5"	30	33	1.0 / 3.0	0.58 / 2.68
15-10	3.0	Boost/Med/Norm	30.8 / 23.8 / 21.2	71.9 / 55.5 / 49.4	14-1/4"	34-15/16"	5"	24	28	1.0 / 3.0	0.45 / 2.08
10-6	3.0	Boost/Med/Norm	21.7 / 17.1 / 14.2	50.6 / 39.9 / 33.1	14-1/4"	26-7/8"	5"	18	24	1.0 / 3.0	0.27 / 1.57
7-4	3.0	Boost/Med/Norm	15.0 / 11.5 / 8.3	34.9 / 26.8 / 19.5	14-1/4"	21-13/16"	5"	15	18	1.0 / 3.0	0.22 / 1.36

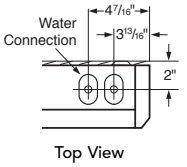
Hi-Line RC Fan Convector



Front View



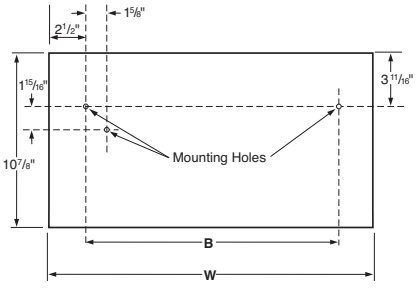
Side View



Top View

NOTE: Piping and wiring openings are accessible from either top or back.

NOTE: For surface mounting application only.



Mounting Holes

HI-LINE RC FAN CONVECTOR SPECIFICATIONS — Engineered to be efficient.

Controls... The supplied infrared remote control system can be operated in automatic or manual mode. In automatic mode, the desired room temperature is programmed into the unit and fan speed is automatically adjusted until temperature is achieved. In manual mode, 3 fan speeds can be selected. The low temperature Aquastat is adjustable for 110°F or 90°F ON. The remote control adjusts fan speed or temperature settings.

Construction... The chassis is manufactured from zinc-coated painted steel. Fan assemblies have ball bearings for longer life and quieter service.

Warranty... MYSON offers a full ten year warranty on the heat exchanger and a full three year warranty on the fan motor.

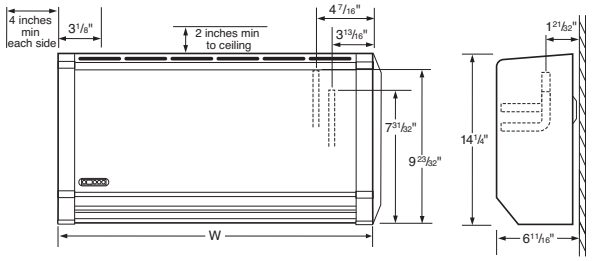
Hi-Line™ HC RC

Heating and Cooling in One Convector

Hi-Line HC RC Fan Convectors • Btu/hr Heat Output - entering air @ 65°F

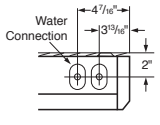
Model	Flow Rate (3 gpm)	Fan Speed	Air Delivery (cfm)	Entering water temperature (°F) 110	120	130	140	150	160	170	180	190	200
Hi Line HC 20-14 RC		Boost	221	6847	8454	10076	11711	13358	15014	16679	18352	20033	21720
	1	Medium	190	6116	7556	9011	10477	11955	13441	14936	16439	17948	19465
		Normal	146	5152	6367	7593	8831	10077	11332	12593	13862	15136	16417
		Boost	254	7870	9717	11582	13461	15354	17257	19171	21094	23026	24965
	3	Medium	218	7030	8685	10357	12043	13741	15449	17168	18895	20630	22373
		Normal	168	5922	7318	8728	10150	11583	13025	14475	15933	17398	18870
Hi Line HC 15-10 RC		Boost	171	5237	6470	7717	8973	10240	11514	12796	14084	15378	16678
	1	Medium	141	4035	4987	5949	6919	7896	8879	9869	10864	11863	12866
		Normal	106	3591	4440	5297	6161	7032	7909	8791	9679	10571	11466
		Boost	196	6019	7437	8870	10314	11770	13234	14708	16188	17676	19170
	3	Medium	162	4638	5732	6838	7953	9076	10206	11344	12487	13636	14789
		Normal	122	4128	5103	6088	7082	8083	9091	10105	11125	12150	13179
Hi Line HC 10-6 RC		Boost	112	3677	4545	5423	6308	7199	8097	9000	9908	10820	11736
	1	Medium	88	2896	3581	4272	4969	5672	6381	7092	7808	8528	9251
		Normal	73	2402	2969	3543	4121	4704	5291	5882	6475	7072	7672
		Boost	129	4226	5224	6233	7250	8275	9307	10345	11388	12437	13490
	3	Medium	101	3329	4116	4910	5712	6520	7334	8152	8975	9802	10633
		Normal	84	2761	3413	4072	4737	5407	6082	6761	7443	8129	8818
Hi Line HC 7-4 RC		Boost	68	2533	3132	3737	4347	4962	5581	6204	6830	7459	8092
	1	Medium	54	1942	2401	2866	3335	3807	4282	4761	5242	5725	621
		Normal	42	1409	1743	2081	2421	2765	3110	3458	3808	4159	4513
		Boost	78	2912	3600	4295	4996	5703	6415	7131	7851	8574	9301
	3	Medium	62	2232	2760	3294	3833	4376	4922	5472	6025	6581	7140
		Normal	48	1620	2004	2392	2783	3178	3575	3975	4377	4781	5187

Hi-Line HC RC Fan Convector



Front View

Side View



Top View

NOTE: Piping and wiring openings are accessible from either top or back.

NOTE: For surface mounting application only.

DIMENSIONS	
MODEL	W
HC 20-14 RC	46-3/32"
HC 15-10 RC	34-15/16"
HC 10-6 RC	26-7/8"
HC 7-4 RC	21-13/16"

Model	Flow Rate (gpm)	Friction Loss (head) FT WG
HC 20-14 RC	1.0 / 3.0	0.58 / 2.68
HC 15-10 RC	1.0 / 3.0	0.45 / 2.08
HC 10-6 RC	1.0 / 3.0	0.27 / 1.57
HC 7-4 RC	1.0 / 3.0	0.22 / 1.36

COOLING MODE: Entering Water/Air Temp. Diff. °F

Model	Flow Rate	Fan Speed	Latent* — BTU/hr 25°F	35°F	45°F	Sensible — BTU/hr 25°F	35°F	45°F
HC 20-14 RC	3 gpm	Boost	5320	8750	12689	4528	6325	6998
		Medium	5018	8261	11988	4123	5707	6550
		Normal	4172	6867	9964	3437	4613	5292
HC 15-10 RC	3 gpm	Boost	4241	6978	10124	3633	5123	5767
		Medium	3182	5238	7600	2707	3781	4183
		Normal	2943	4842	7023	2530	3582	4061
HC 10-6 RC	3 gpm	Boost	2592	4266	6189	2121	3096	4091
		Medium	2145	3529	5119	1813	2517	2741
		Normal	1920	3158	4579	1627	2268	2487
HC 7-4 RC	3 gpm	Boost	1906	3137	4550	1526	2227	1941
		Medium	1572	2589	3758	1347	1898	2138
		Normal	1057	1740	2525	912	1294	1477

*These figures are at 50% relative humidity.

NOTE: Piping and wiring openings are accessible from either top or back.

HI-LINE HC RC FAN CONVECTOR SPECIFICATIONS — Engineered to be efficient.

Controls... The supplied infrared remote control system can be operated in automatic or manual mode. In automatic mode, the desired room temperature is programmed into the unit and fan speed is automatically adjusted until temperature is achieved. In manual mode, 3 fan speeds can be selected. The low temperature Aquastat is adjustable for 110°F or 90°F ON. The remote control adjusts fan speed or temperature settings.

Construction... The chassis is manufactured from zinc-coated painted steel. Fan assemblies have ball bearings for longer life and quieter service.

Warranty... MYSON offers a full ten year warranty on the heat exchanger and a full three year warranty on the fan motor.

Lo-Line™ RC

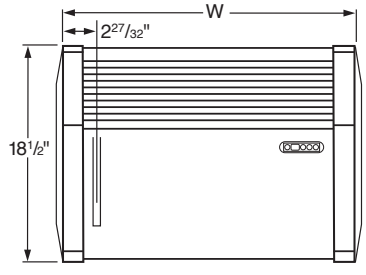
Fan Convector from MYSON

Lo-Line RC Heater Fan Convectors • Btu/hr Heat Output - entering air @ 65°F

Model	Flow Rate (gpm)	Fan Speed	Air Delivery (cfm)	Entering water temperature (°F) 110	120	130	140	150	160	170	180	190	200
Lo-Line 19-15 RC		Boost	197	7040	8531	10011	11481	12942	14397	15844	17286	18723	20154
	1	Medium	162	6359	7705	9040	10367	11686	12998	14304	15605	16901	18193
		Normal	142	5611	6798	7975	9145	10308	11465	12617	13764	14906	16045
		Boost	197	7997	9691	11372	13042	14702	16354	17999	19637	21269	22895
	3	Medium	162	7224	8753	10270	11777	13275	14766	16250	17728	19200	20667
		Normal	142	6374	7722	9060	10389	11710	13024	14333	15636	16933	18227
Lo-Line 14-10 RC		Boost	169	5402	6545	7679	8805	9924	11038	12146	13250	14350	15445
	1	Medium	118	4619	5595	6564	7526	8482	9434	10381	11324	12263	13199
		Normal	94	3799	4601	5397	6188	6974	7755	8533	9308	10080	10848
		Boost	169	6137	7435	8723	10002	11274	12539	13798	15052	16301	17546
	3	Medium	118	5247	6356	7457	8550	9636	10717	11793	12864	13931	14994
		Normal	94	4316	5227	6132	7030	7922	8810	9694	10574	11450	12324
Lo-Line 9-6 RC		Boost	103	3592	4350	5103	5850	6592	7331	8066	8798	9526	10253
	1	Medium	76	2882	3490	4093	4691	5286	5878	6467	7053	7637	8219
		Normal	66	2222	2692	3157	3619	4078	4535	4989	5442	5893	6342
		Boost	103	4081	4942	5797	6645	7489	8328	9163	9994	10822	11647
	3	Medium	76	3274	3964	4649	5329	6005	6678	7347	8013	8676	9337
		Normal	66	2525	3058	3586	4111	4633	5151	5668	6182	6694	7204
Lo-Line 6-4 RC		Boost	72	2349	2844	3336	3824	4309	4791	5271	5749	6225	6700
	1	Medium	51	1720	2083	2443	2800	3155	3508	3860	4210	4558	4905
		Normal	38	1518	1837	2154	2468	2781	3092	3401	3709	4015	4321
		Boost	72	2668	3231	3790	4344	4895	5443	5988	6531	7072	7611
	3	Medium	51	1954	2366	2775	3181	3584	3985	4385	4782	5178	5572
		Normal	38	1724	2087	2447	2804	3159	3512	3863	4213	4561	4908

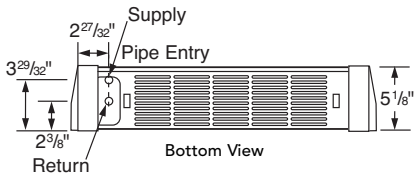
Lo-Line RC Heater Fan Convector Comparison @ 180°F Water Temperature

Lo-Line Model	Fan Speed	Baseboard (525 Btu/ft)	C.I. Radiators (225 Btu/sq ft)	Dimensions H	W	D	Weight Unit (lbs)	Weight Packed (lbs)	Friction Loss (head) FT WG 1 gpm	3 gpm
19-15 RC	Boost/Med/Low	37.4/33.8/29.8	87.3/78.8/69.5	18-1/2"	45-7/8"	5-1/2"	48	52	1.4	13.1
14-10 RC	Boost/Med/Low	28.7/24.5/20.1	66.9/57.2/47.0	18-1/2"	35-7/8"	5-1/2"	39	43	1.0	9.4
9-6 RC	Boost/Med/Low	19/15.3/11.8	44.4/35.6/27.5	18-1/2"	25"	5-1/2"	21	25	0.8	6.4
6-4 RC	Boost/Med/Low	12.4/9.1/8.0	29/21.3/18.7	18-1/2"	20-1/4"	5-1/2"	16	20	0.6	6.7



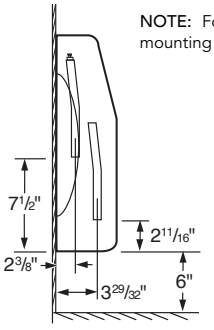
Front View

Lo-Line RC Fan Convector



Bottom View

NOTE: For surface mounting application only.



Side View

LO-LINE RC FAN CONVECTOR SPECIFICATIONS - Engineered to be efficient.

Controls... The supplied infrared remote control system can be operated in automatic or manual mode. In automatic mode, the desired room temperature is programmed into the unit and fan speed is automatically adjusted until temperature is achieved. In manual mode, 3 fan speeds can be selected. The low temperature Aquastat is adjustable for 110°F or 90°F ON. The remote control adjusts fan speed or temperature settings.

Construction... The chassis is manufactured from zinc-coated painted steel. Fan assemblies have ball bearings for longer life and quieter service.

Warranty... MYSON offers a full ten year warranty on the heat exchanger and a full three year warranty on the fan motor.

ETL LISTED c us

ISO 9002

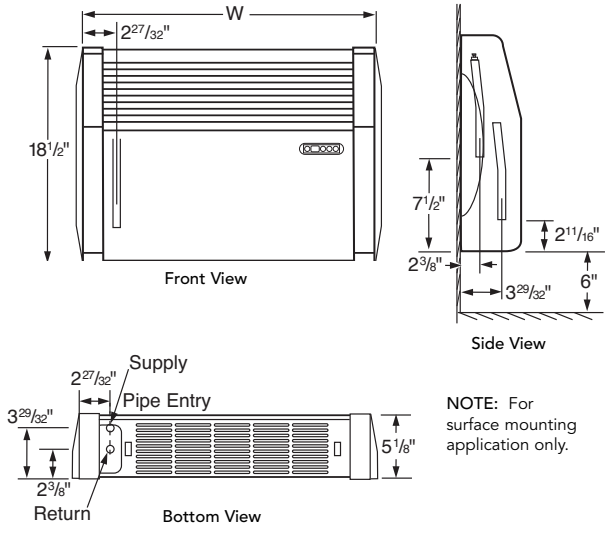
Lo-Line™ HC RC

Heating and Cooling in One Convector

Lo-Line RC Heater Fan Convectors • Btu/hr Heat Output - entering air @ 65°F

Model	Flow Rate (gpm)	Fan Speed	Air Delivery (cfm)	Entering water temperature (°F) 110	120	130	140	150	160	170	180	190	200
Lo-Line HC 19-15 RC		Boost	197	7040	8531	10011	11481	12942	14397	15844	17286	18723	20154
	1	Medium	162	6359	7705	9040	10367	11686	12998	14304	15605	16901	18193
		Normal	142	5611	6798	7975	9145	10308	11465	12617	13764	14906	16045
		Boost	197	7997	9691	11372	13042	14702	16354	17999	19637	21269	22895
	3	Medium	162	7224	8753	10270	11777	13275	14766	16250	17728	19200	20667
		Normal	142	6374	7722	9060	10389	11710	13024	14333	15636	16933	18227
Lo-Line HC 14-10 RC		Boost	169	5402	6545	7679	8805	9924	11038	12146	13250	14350	15445
	1	Medium	118	4619	5595	6564	7526	8482	9434	10381	11324	12263	13199
		Normal	94	3799	4601	5397	6188	6974	7755	8533	9308	10080	10848
		Boost	169	6137	7435	8723	10002	11274	12539	13798	15052	16301	17546
	3	Medium	118	5247	6356	7457	8550	9636	10717	11793	12864	13931	14994
		Normal	94	4316	5227	6132	7030	7922	8810	9694	10574	11450	12324
Lo-Line HC 9-6 RC		Boost	103	3592	4350	5103	5850	6592	7331	8066	8798	9526	10253
	1	Medium	76	2882	3490	4093	4691	5286	5878	6467	7053	7637	8219
		Normal	66	2222	2692	3157	3619	4078	4535	4989	5442	5893	6342
		Boost	103	4081	4942	5797	6645	7489	8328	9163	9994	10822	11647
	3	Medium	76	3274	3964	4649	5329	6005	6678	7347	8013	8676	9337
		Normal	66	2525	3058	3586	4111	4633	5151	5668	6182	6694	7204
Lo-Line HC 6-4 RC		Boost	72	2349	2844	3336	3824	4309	4791	5271	5749	6225	6700
	1	Medium	51	1720	2083	2443	2800	3155	3508	3860	4210	4558	4905
		Normal	38	1518	1837	2154	2468	2781	3092	3401	3709	4015	4321
		Boost	72	2668	3231	3790	4344	4895	5443	5988	6531	7072	7611
	3	Medium	51	1954	2366	2775	3181	3584	3985	4385	4782	5178	5572
		Normal	38	1724	2087	2447	2804	3159	3512	3863	4213	4561	4908

Lo-Line HC RC Fan Convector



NOTE: For surface mounting application only.

DIMENSIONS

MODEL	W
HC 19-15	45-7/8"
HC 14-10	35-7/8"
HC 9-6	25"
HC 6-4	20-1/4"

Model	Flow Rate (gpm)	Friction Loss (head) FT WG
HC 19-15	1.0 / 3.0	1.4 / 13/1
HC 14-10	1.0 / 3.0	1.0 / 9.4
HC 9-6	1.0 / 3.0	0.8 / 6.4
HC 6-4	1.0 / 3.0	0.6 / 6.7

COOLING MODE: Entering Water/Air Temp. Diff. °F

Model	Flow Rate	Fan Speed	Latent* — BTU/hr 25°F	35°F	45°F	Sensible — BTU/hr 25°F	35°F	45°F
HC 19-15 RC	3 gpm	Boost	5128	8203	11650	4366	5929	6425
		Medium	4896	7832	11124	4024	5442	6077
		Normal	4482	7169	10181	3693	4816	5407
HC 14-10 RC	3 gpm	Boost	4108	6570	9330	3519	4823	5315
		Medium	3451	5522	7843	2937	3986	4317
		Normal	2934	4691	6660	2523	3469	3851
HC 9-6 RC	3 gpm	Boost	2376	3799	5394	1943	2757	3564
		Medium	2007	3208	4555	1696	2288	2439
		Normal	1669	2669	3790	1414	1916	2059
HC 6-4 RC	3	Boost	1659	2653	3769	1328	1884	2435
		Medium	1308	2093	2973	1121	1535	1691
		Normal	1074	1718	2440	927	1277	1427

*These figures are at 50% relative humidity.

LO-LINE HC RC FAN CONVECTOR SPECIFICATIONS - Engineered to be efficient.

Controls... The supplied infrared remote control system can be operated in automatic or manual mode. In automatic mode, the desired room temperature is programmed into the unit and fan speed is automatically adjusted until temperature is achieved. In manual mode, 3 fan speeds can be selected. The low temperature Aquastat is adjustable for 110°F or 90°F ON. The remote control adjusts fan speed or temperature settings.

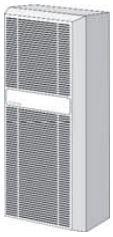
Construction... The chassis is manufactured from zinc-coated painted steel. Fan assemblies have ball bearings for longer life and quieter service.

Warranty... MYSON offers a full ten year warranty on the heat exchanger and a full three year warranty on the fan motor.

ISO 9002

Slim-Line™ RC

Fan Convector from MYSON



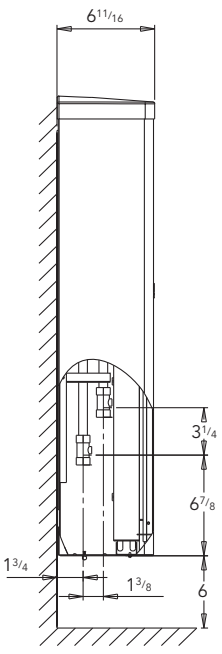
Slim-Line RC Fan Convector • Btu/hr Heat Output - entering air @ 65°F

Model	Flow Rate (gpm)	Fan Speed	Air Delivery (cfm)	Entering water temperature (°F) 110	120	130	140	150	160	170	180	190	200
Slim-Line RC	1	Boost	186	5029	5663	6657	7661	8664	9668	10572	11678	12680	13864
		Medium	127	4385	4881	5887	6745	7651	8559	9567	10374	11281	12186
		Normal	96	3743	4207	5018	5829	6639	7450	8261	9072	9883	10694
	3	Boost	186	6597	7404	8719	10034	11349	12663	13987	15293	16608	17923
		Medium	127	5743	6457	7646	8831	10023	11411	12399	13588	14776	16280
		Normal	96	4902	5510	6572	7634	8696	9758	10820	11882	12944	1400RC

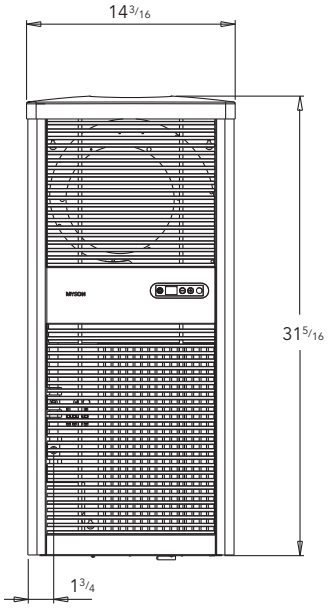
Slim-Line RC Heat Comparison @ 180°F Water Temperature

Model	Flow Rate (gpm)	Fan Speed	Baseboard (525 Btu/ft)	C.I. Radiators (225 Btu/sq ft)	Dimensions H	W	D	Weight Unit (lbs)	Weight Packed (lbs)	Flow Rate (gpm)	Friction Loss (head) FT WG
Slim-Line RC	3.0	Boost	29.2	68.0	31-7/8"	15-9/16"	6-11/16"	37	40	1.0	1.84
		Medium	25.9	60.4							
		Normal	22.6	52.8							
	1.0	Boost	22.2	51.9						3.0	11.04
		Medium	19.7	46.1							
		Normal	17.2	40.3							

Slim-Line RC Fan Convector

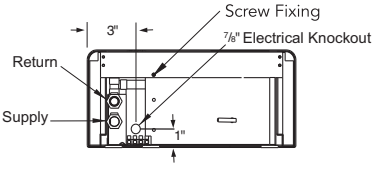


Side View



Front View

NOTE: For surface mounting application only.



SLIM-LINE RC FAN CONVECTOR SPECIFICATIONS – Engineered to be efficient.

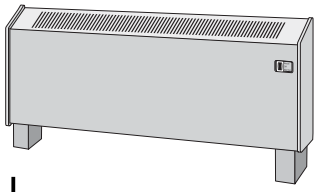
Controls... The supplied infrared remote control system can be operated in automatic or manual mode. In automatic mode, the desired room temperature is programmed into the unit and fan speed is automatically adjusted until temperature is achieved. In manual mode, 3 fan speeds can be selected. The low temperature Aquastat is adjustable for 110°F or 90°F ON. The remote control adjusts fan speed or temperature settings.

Construction... The chassis is manufactured from zinc-coated painted steel.Fan assemblies have ball bearings for longer life and quieter service.

Warranty... MYSON offers a full ten year warranty on the heat exchanger and a full three year warranty on the fan motor.

CSU™

Economical Fan Convector from MYSON



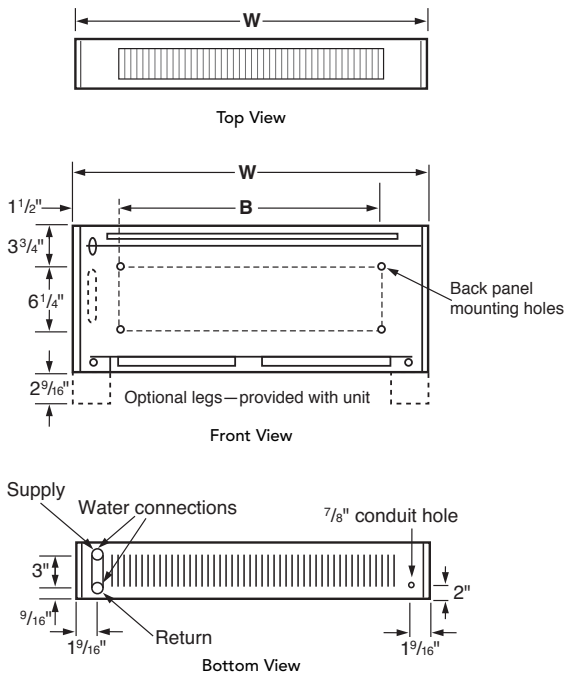
CSU Fan Convectors • Btu/hr Heat Output - entering air @ 65°F

Model	Flow Rate (gpm1)	Fan Speed	Air Delivery (cfm)	Entering water temperature (°F) 120	130	140	150	160	170	180	190	200	210
CSU-10M	3.0	Boost	99	2437	3226	4173	5195	6040	6852	7763	8659	9500	10341
		Normal	62	1190	1954	2529	3165	3823	4481	5319	5973	6609	7245
CSU-15M	3.0	Boost	91	1928	3886	4994	6102	7203	8715	10331	11947	14000	15053
		Normal	66	1524	2484	3452	4418	5385	6352	7317	8282	9240	10198
CSU-23M	3.0	Boost	129	4400	6481	8573	10665	12750	14838	16947	19027	21000	23235
		Normal	92	2018	3461	4687	5751	6983	8260	9518	10813	12262	13771

CSU Heat Comparison @ 180°F Water Temperature

Model	Flow Rate (gpm)	Fan Speed	Baseboard (525 Btu/ft)	C.I. Radiators (225 Btu/sq ft)	Dimensions H	W	D	Weight Unit (lbs)	Weight Packed (lbs)	Flow Rate (gpm)	Friction Loss (head) FT WG
CSU-10M	3.0	Boost/Normal	14.7 / 10.1	34.5 / 23.6	13-1/4"	21-3/8"	4-28/32"	17	20	3.0	13.1
CSU-15M	3.0	Boost/Normal	19.6 / 13.9	45.0 / 32.5	13-1/4"	28-7/8"	4-28/32"	22	25	3.0	9.4
CSU-23M	3.0	Boost/Normal	32.2 / 18.1	75.0 / 42.3	13-1/4"	41-3/8"	4-28/32"	28	31	3.0	6.4

CSU Fan Convector



NOTE: For surface or floor mounting application only.

DIMENSIONS		
MODEL #	W	B
CSU-10M	21-3/8"	17-1/4"
CSU-15M	28-7/8"	24-7/8"
CSU-23M	41-3/8"	37-1/2"

CSU FAN CONVECTOR SPECIFICATIONS — Engineered to be efficient.

Controls... Units have a two speed Boost/Normal fan switch and built-in thermostat. All models have low-limit thermostats which close at 109°F and open at 91°F. Optional low temperature thermostat is available.

Construction... The chassis is manufactured from zinc coated steel with a baked epoxy polyester. Fan assemblies have ball bearings for longer life and quieter service.

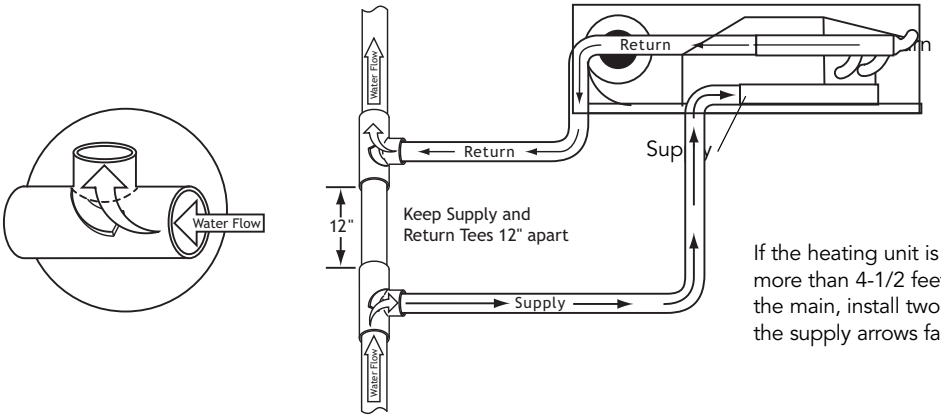
Warranty... MYSON offers a full ten year warranty on the heat exchanger and a full three year warranty on the fan motor.

ISO 9002

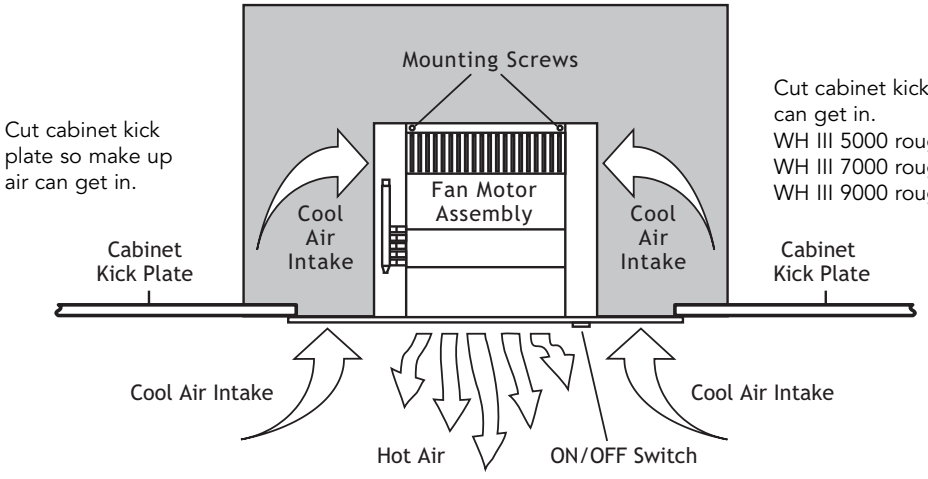
Kickspace Fan Convector Installation

1. A kickspace heater must have a free flow of air through the unit. We have designed our grills to allow for sufficient airflow. The opening in the kickspace must allow unrestricted airflow. (See drawing below.) Looking at the grill, you should not be able to see any part of the kickboard. **Failure to do so will cause the motor to overheat and void the warranty.**

2. The kickspace heater needs to be sized appropriately for the job. For proper sizing, use the ratings at normal speed. If the unit needs to be in the boost or high setting to heat the room adequately, then the kickspace heater is too small. Running the unit in boost or high for extended periods of time will shorten the motor fan assembly life.



If the heating unit is below the main or more than 4-1/2 feet horizontally from the main, install two MonoFlo tees with the supply arrows facing each other.



Cut cabinet kick plate so make up air can get in.
WH III 5000 rough opening is 18-3/8"
WH III 7000 rough opening is 20-1/2"
WH III 9000 rough opening is 22-5/8"

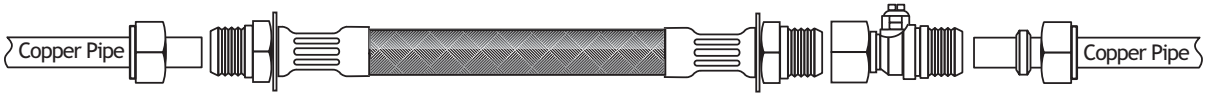
MYSON EZ-Hose Kit

The MYSON EZ-Hose Kit is designed specifically for use with the WH II 5000 and WH II 9000 Kickspace Heaters. While it may be used for other hydronic products, MYSON will not be responsible for compatibility.

Components:

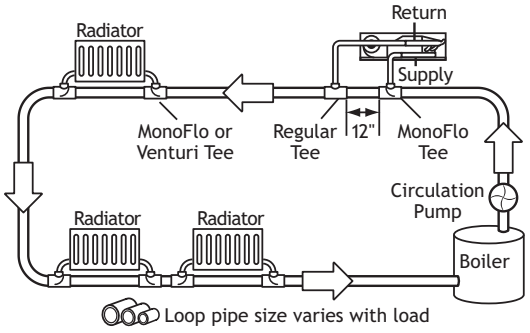
2 - 30" braided stainless steel hoses, 1/2" compression x 1/2" MPT
2 - Screwdriver slot ball valves, 1/2" compression x 1/2" FPT

Assemble the male end of the hose to the female end of the ball valve using the recommended Loctite #565 thread sealant. Connect the compression end of the hoses to the stub-outs on the kickspace unit. Make sure that the return side hose is connected to the top stub-out so that air will be forced through the heat exchanger to where it can be removed at the air vent. Connect the compression ends of the ball valves to the appropriate supply and return pipes from the heating system.



Radiator and Fan Convector Installation
Optional Piping Arrangements

The following drawings are general examples. Consult a certified heating professional for your specific application. MYSON recommends TRV valves on all layouts except series loop system for maximum comfort and control of radiators. This does not apply to Fan Convectors.

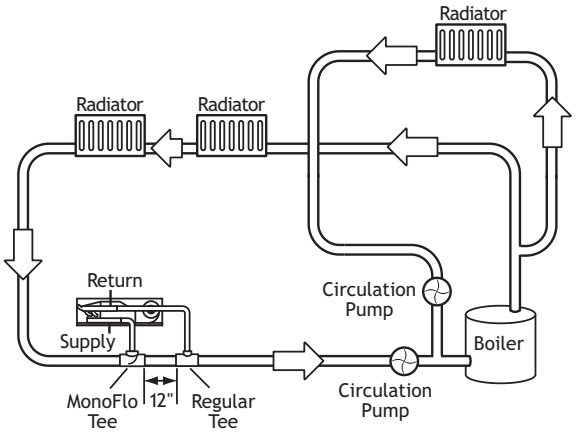


MonoFlo or One Pipe System Acceptable for all MYSON heating applications, balancing valves required.

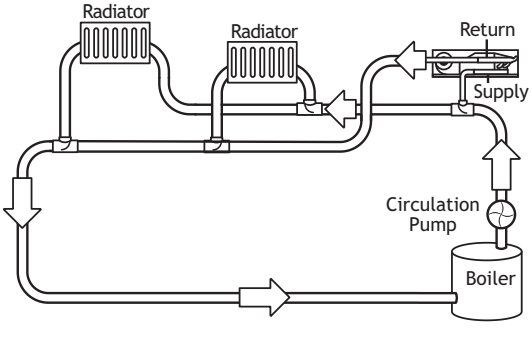
General information on the use of MonoFlo tees:

- Scoop type is installed on the supply
- Venturi type is installed on the return
- If heating unit is below the main or more than 4½ feet horizontally from the main, install two MonoFlo tees with the supply arrows facing each other

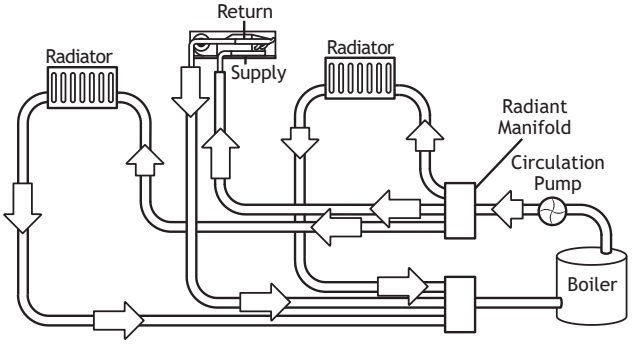
Fan Convectors and Cast Iron Radiators have different heating characteristics. Therefore, it is recommended that the Fan Convector be on a separately controlled heating zone.



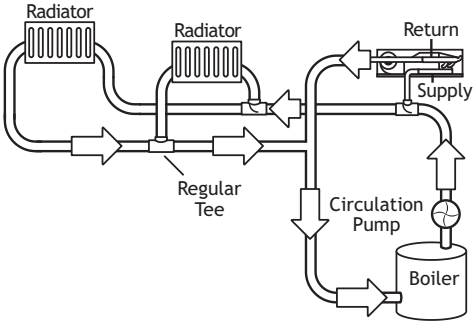
Series Loop System Not compatible with fan convectors. Limited to 15K btuh on panel radiators.
A single Fan Convector may be added using MonoFlo tees as shown.



Two Pipe Reverse Return System Acceptable for all MYSON heating applications, balancing valves required when a Fan Convector is used with radiators.

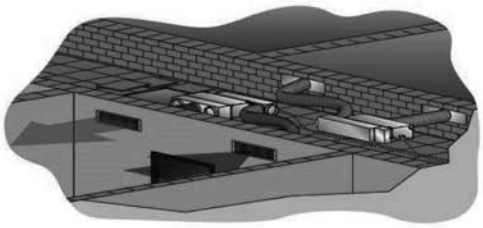


Home Run System



Two Pipe Direct Return System Acceptable for all MYSON heating applications, balancing valves required.

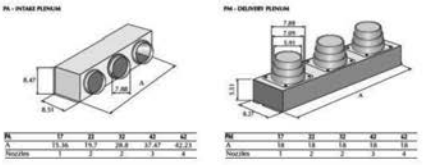
AERMEC *Air Handlers*



These are super quiet 3 speed Italian hot water/chilled water air handlers suitable for low supply water temperature residential and commercial applications.

These low profile hot water /chilled water air handlers are very versatile for use within attics, soffits or in-wall VentilCassaforma convectors provided separately. They may be employed vertically or horizontally. Intake and Discharge plenums may be ordered separately or field fabricated. Thermostats (110V) come with each air handler to control heating/cooling mode, fan speeds and temperature.

- **Cooling and Heating Zoning**
- **Short duct runs eliminate boxing**
- **Small and Extremely Quiet**
- **Easily fit above closets, in knee walls and attic space.**



SIZES: We have selected the FCX USP models for the California market in 5 stock models. Other models are available with 10 week lead times. The heating ratings are provided for both 122°F and 140°F Supply Water Temperatures. Cooling rating reflect 45°F Supply Water Temperatures. Consult detailed data for additional information.

Model Number	122° htg	140° htg	158° htg	45° cooling
FCX22	7,172 BTU	9,392 BTU	11,612 BTU	5,123 BTU
FCX32	10,792 BTU	13,891 BTU	16,991 BTU	8,196 BTU
FCX42	14,480 BTU	19,875 BTU	25,272 BTU	11,612 BTU
FCX50	17,691 BTU	23,565 BTU	29,439 BTU	14,310 BTU
FCX62	24,214 BTU	34,169 BTU	44,124 BTU	16,598 BTU

Weakest sound heard (0 dB)
Whisper Quiet Library (30 dB)
Telephone Dial Tone (60-70 dB)

FCX USP Fan Coils (25.5 dB)

Residential • Hotels and Motels • Apartments • Condominiums

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Water Facts

Water Content of Burnham Boilers

Model			
P203	3.2 Gal	P210	8.5 Gal
P204	4.0 Gal	K805	11.9 Gal
P205	4.7 Gal	K806	13.9 Gal
P206	5.5 Gal	K807	15.9 Gal
P207	6.2 Gal	K808	17.9 Gal
P208	7.0 Gal	K809	19.9 Gal
P209	7.7 Gal	K810	21.9 Gal

Water Content of PEX Tubing

Size	Gallons / Ft. of Tube	Size	Gallons / Ft. of Tube
3/8"	0.0049	5/8"	0.01387
1/2"	0.0092	7/8"	0.0263

Equivalent Measures

Watt	=	3.4129 BTU / Hr
Watt	=	.001341 HP
Oz	=	28.349 Grams
Pound	=	.4536 Kilograms
Quart	=	.9463 Liters
PSI	=	70.31 Grams / Cm^2
Mm	=	.03937 In

Water Facts

1 PSI	=	2.31 feet of head
One gallon of fresh water	=	8.333 lbs.
One cubic foot of water	=	7.48 gallons
One cubic foot of water	=	62.428 lbs. (at 39.2˚F maximum density)
One cubic foot of water	=	59.83 I bS. (at 212˚F - boiling point)
One U.S. gallon	=	231 cubic inches

A water column one foot high exerts a pressure of .4333 pounds per square inch.

Doubling the diameter of a pipe increases its capacity four times.

The capacity of a cylinder in gallons is equal to the length in inches multiplied by the square of the diameter in inches x .0034.

	above 7.0	alkaline
pH	7.0	neutral
	below 7.0	acid

1 Grain per gallon = 17.1 parts per million.
Water expands 4.34% heated from 40˚ F to 212˚ F.

Water Facts

BTU Content

BTU's = 8.33 × T × gallons

BTU's = 500 × gpm × T

	BTU's
Electricity	
I KW	3,412
Gas	
I lb. of Butane	21,300
1 Gal. of Butane	102,600
1 Cu. Ft. of Butane	3,260
1 Cu. Ft. Manufactured	530
1 Cu. Ft. of Mixed	850
1 Cu. Ft. of Natural	1,075
1 lb. of Propane	21,600
1 Gal. of Propane	91,000
1 Cu. Ft. of Propane	2,570

	BTU's
Coal	
1 lb	10,000-15,000
1 Ton	25 Million (approx.)
Oil	
I Gal. #1 Fuel	136,000
1 Gal. #2 Fuel	138,500
1 Gal. #3 Fuel	141,000
1 Gal. #5 Fuel	148,500
1 Gal. #6 Fuel	152,000

1 lb. of Gas = 28" Water Column

1 lb. of Gas = 16 oz

Gas Pressure

1" W.C. = 0.0736" H.G.

1" W.C. = 248 Pa

1 oz./in.^{2} = 1.73" W.C.

I PSIG = 27.72" W.C.

1 mbar = 0.4016" W.C.

Electricity

$$\text{Amps (3 phase)} = \frac{\text{KW} \times 1000}{\text{Volts} \times 1.732}$$

$$\text{Amps (1 phase)} = \frac{\text{KW} \times 1000}{\text{Volts}}$$

$$\text{GPH} = \frac{\text{KW} \times 3412}{8.33 \times \text{Temp. Rise}}$$

1 KW hour will evaporate 3.5 lbs. of water from and at 212°F

1 KW hour = 3412 BTU

1 BPH = 34.5 lbs. of steam at 212°

1 BPH = 33,475 BTU

1 BPH = 9.8 KW

Pipe Capacity: MBTU/ Hr (MBH)

Pipe Size	Gallons Per Foot of Tube		Heat Capacity	Friction Head Feet	Velocity Flow of Water		
	Type K	Type L	MBH	Per 100'	G.P.M. at 20 Deg T.D.	Inches per Sec.	Ft. Per Min.
1/4"	0.004	0.004	-	-	-	-	-
3/8"	0.006	0.006	-	-	-	-	-
1/2"	0.011	0.012	17	4.2'	1.7	23	115
3/4"	0.023	0.025	39	4.2'	3.9	27	135
1	0.04	0.045	71	4.2'	7.1	34	170
1-1/4"	0.063	0.065	160	4.2'	16	40	200
1-1/2"	0.089	0.092	240	4.2'	24	*45	225
2"	0.175	0.161	450	4.2'	45	*54	270
2-1/2"	0.242	0.247	750	4.2'	75	*67	310
3"	0.345	0.354	1400	4.2'	140	*72	360
4"	0.607	0.623	2900	4.2'	290	*80	400

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