
MANUFACTURERS INDEX, SECTION 4

AMTROL EXPANSION TANKS	4-58 – 4-59
BELL & GOSSETT PUMPS	4-38 – 4-41
BURNHAM BOILERS	4-2 – 4-6
BURNHAM RADIATORS	4-32 – 4-33
DANFOSS RADIATOR VALVES	4-44
DOLE AIR VENTS	4-42
EFFIKAL DAMPERS	4-29
EMBASSY BASEBOARD	4-31
GORTON VENTS	4-43
HOFFMAN	4-46 – 4-48
HYDROLEVEL COMPANY	4-50
MCDONNELL & MILLER	4-51 – 4-57
PEERLESS	4-14 – 4-21
SPIROVENT	4-29
STERLCO CONDENSATE PUMPS	4-49
TEKMAR	4-30
TRIANGLE TUBE BOILERS	4-7 – 4-13
TURBONICS FAN COILS	4-34 – 4-36
UPONOR (WIRSBO)	4-22 – 4-28
WATTS VALVES	4-45

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SERIES X-2 GAS FIRED, CHIMNEY VENTED, CAST IRON WATER BOILER

Features

- 84% AFUE
- 70 – 280 MBH (7 sizes)
- All controls concealed inside boiler jacket
 - Integrated boiler control with diagnostics
 - FREE additional pump relay
 - Integral LWCO option requires no piping! (IDL-1200)

- Industry standard tapping locations, allows easy, direct replacement for thousands of existing boiler installations
- American-made cast iron heat exchanger
 - Accepts return water temps as low as 110°F
 - Designed to promote turbulent water flow within the section for efficient heat transfer

- A solid, reliable, full-featured boiler at a value price!
- Lifetime limited warranty
- Made in Lancaster, PA, USA

Standard Equipment

- Insulated steel jacket
- Integrated draft diverter, damper and connector included
- Heavy gauge 1" base insulation
- Intelligent Hydronic Control – Simple self-diagnostic control system with 3-digit readout for status settings and errors
- Step-opening redundant gas valve
- 110°F minimum return temperature rating
- Spark ignition with continuous retry
- User-friendly wiring with 120V J-box
- Circulator – choice of Taco or Grundfos
- Cast iron section assembly
- Resettable blocked vent switch
- Boiler drain valve
- Cast iron supply manifold with safety relief valve tapping

LWCO Options

"H" suffix models "Have" a pre-installed IDL-1200 integral LWCO (auto reset)

RATINGS & SPECIFICATIONS

Model	Input (MBH)	DOE Heating Capacity (MBH)	Net AHRI Rating, Water (MBH)	AFUE%	Vent Size (Inches)	Approx. Shipping Weight (Lbs.)
X-203	70	59	51	84.0	4	254
X-204	105	88	77	84.0	5	304
X-205	140	117	102	84.0	6	357
X-206	175	146	127	84.0	6	405
X-207	210	176	153	84.0	7	462
X-208	245	205	178	84.0	7	518
X-209	280	234	203	84.0	8	564

* Add suffix "N" for natural gas, or suffix "L" for LP gas models

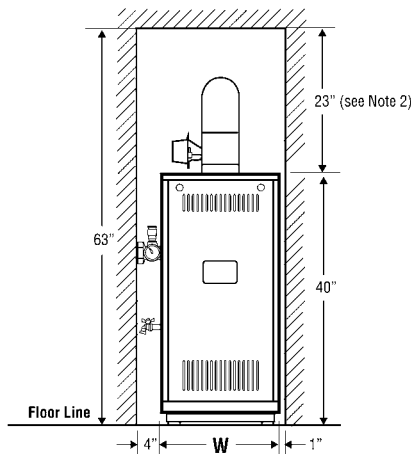
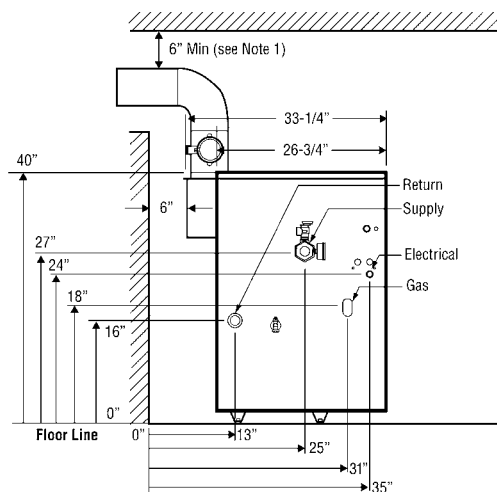
All models certified for use from sea level to 10,000 feet in elevation. Outputs are reduced by 4% per 1,000 feet above sea level for elevations above 2 0 ft. All X-2 boilers are shipped with 30 psi relief valves, MAWP is 50 psi.

DIMENSIONS & CONNECTIONS

Model	Dimensions (inches)			Connections (inches)				Water Content (gal.)
	Width "W"	Height	Depth (total)	Supply	Return	Gas Valve	Relief Valve	
X-203	14	40	33-1/4"	1-1/4"	1-1/4"	1/2"	3/4"	2
X-204	16	40	33-1/4"	1-1/4"	1-1/4"	1/2"	3/4"	3
X-205	19	40	33-1/4"	1-1/4"	1-1/4"	1/2"	3/4"	4
X-206	22	40	33-1/4"	1-1/4"	1-1/4"	1/2"	3/4"	5
X-207	25	40	33-1/4"	1-1/4"	1-1/4"	3/4"	3/4"	6
X-208	28	40	33-1/4"	1-1/4"	1-1/4"	3/4"	3/4"	7
X-209	31	40	33-1/4"	1-1/4"	1-1/4"	3/4"	3/4"	8

NOTES:

1. Minimal radial distance around vent pipe and breeching for single-wall metal pipe vent connector, otherwise follow vent connector manufacturer's recommended clearances.
2. Add height required to maintain 6" clearance from all breeching components.



- 94+% AFUE ENERGY STAR® Certified
- Natural or LP Gas
- 70 to 280 MBH in 7 Sizes
- Cast Iron Sectional Design
- PVG - Power Vented



DIRECT VENT GAS FIRED HOT WATER BOILER

Hassle Free Service & Installation

Long Lasting Performance

Designed and built with proven and readily available components. The PVG is designed for long lasting performance and ease of service.

Proven Controls

Proven Honeywell controls are used on a plug and play control panel for easy access and service.

Safe, Durable Vent System

The PVG uses a AL294C® stainless steel vent system. The durability and longevity of stainless steel ensures products of combustion are vented outside your home for the life of your boiler.

Venting Options

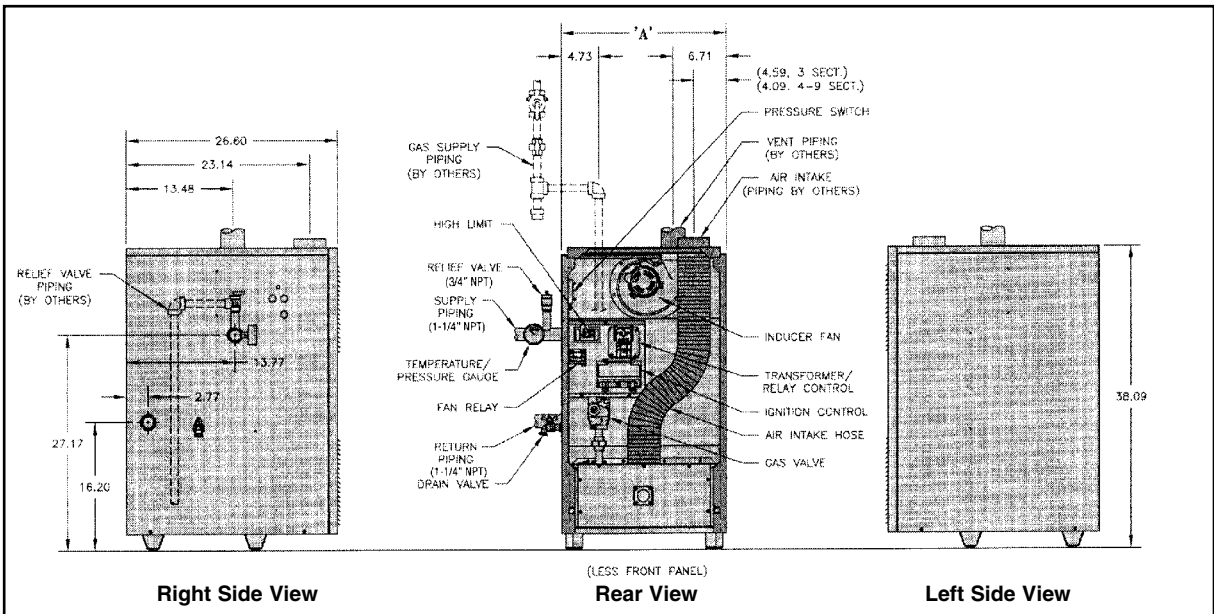
Sidewall and vertical venting options for maximum installation flexibility.

RATINGS

Model Number	Input	DOE Heating Capacity (MBH)	I=B=R Water Ratings	AFUE%
PVG3	70	60	52	85.5
PVG4	105	90	78	85.4
PVG5	140	120	104	85.3
PVG6	175	150	130	85.2
PVG7	210	179	156	85.0
PVG8	245	208	181	84.5
PVG9	280	238	207	84.0

SPECIFICATIONS

Model Number	Dimensions (inches)			Water Content (gal.)	Approx. Shipping Weight (lbs.)
	'A'	'B'	'C'		
PVG3	11.65	26.60	38.09	2.16	210
PVG4	14.72	26.60	38.09	3.00	254
PVG5	17.78	26.60	38.09	3.84	298
PVG6	20.84	26.60	38.09	4.68	342
PVG7	23.90	26.60	38.09	5.52	386
PVG8	26.97	26.60	38.09	6.36	430
PVG9	30.03	26.60	38.09	7.20	474



INDEPENDENCE SERIES GAS FIRED, CAST IRON STEAM BOILER



Independence

Chimney vented, equipped with fuel saving vent damper and low profile rear drafthood which accommodates low overhead areas and permits flexibility of installation with existing heating system piping.

Standard Features

- Up 82% AFUE
- 62 – 382 MBH (10 sizes)
- Natural or LP gas (chimney vented)
- Electronic ignition (sizes 3-9)
- American-made cast iron sections
- Stainless steel burners
- Step-opening gas valve provides smooth & quiet start-up
- Industrial-quality pressure limit control
- Boiler controls concealed inside boiler jacket

Standard Equipment

- Section assembly
- Insulated deluxe jacket
- Base-burner manifold assy.
- Flame roll-out switch (FRS)
- Gas control assembly
- Canopy
- Rear drafthood
- Blocked vent switch
- Vent damper
- Pressure limit
- 24V transformer
- Probe type LWCO
- Junction box
- Thermostat isolating relay
- Electronic ignition assembly
- 15 PSI safety valve
- Steam gauge
- Gauge glass
- 3/4" drain valve
- Wiring harness



RATINGS & SPECIFICATIONS

Model*	Input MBH (1)	DOE Heating Capacity	I=B=R Rating (2)		AFUE	Approx Shipping Weight (Lbs.)	Minimum Chimney Requirements (Round) Dia. (In.) x Ht. (Ft.) (4) (5)
			Steam MBH	Steam Sq. Ft.			
PIN4I	105	87	65	271	82.0	420	5x15
PIN5I	140	115	86	358	82.0	485	6x15
PIN6I	175	144	108	450	82.1	555	6x15 (5)
PIN7I	210	173	130	542	82.1	620	7x15

*LP available on IN3-IN9

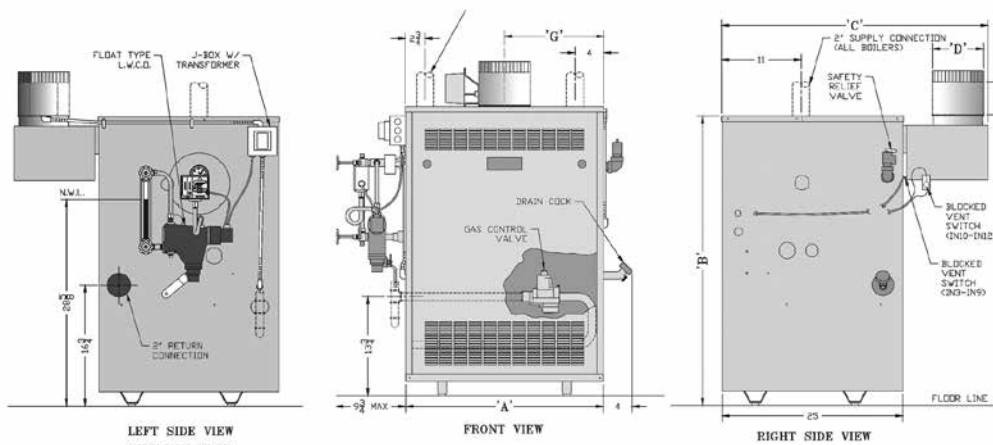
1. Ratings shown are for installations at sea level and elevations up to 2,000 ft. For higher elevations, reduce ratings 4% for each 1,000 ft. above sea level
2. Capacities, outputs, and ratings are based on steam combustion efficiency of 82.5%.
3. For Canadian builds only: reduce input and output by 3%
4. 15 ft. height is measured from top of drafthood to top of chimney.
5. IN6, IN8, & IN10 – Canada only: Increase chimney diameter by 1" Max Working Pressure: 15 PSI Steam

DIMENSIONS

Boiler Model	A	B	C	D	E	F	G
PIN4I	17-3/4	40	34-3/4	5	40-1/4	4-3/4	8-7/8
PIN5I	21	40	35-3/4	6	40-1/4	5-1/4	10-1/2
PIN6I	24-1/4	40	35-3/4	6*	40-1/4	5-1/4*	12-1/8*
PIN7I	27-1/2	40	36-3/4	7	40-1/4	7-1/2	13-3/4



1. Capacities and ratings are based on steam combustion efficiency of 83.0%. (84.1% for PIN3PV)
2. The approved venting system for the Independence PV is 3" AL29-4C® stainless steel. Do not substitute other materials.
3. Vent pipe length is listed in equivalent feet. Any elbows or tees used can have specific values which must be subtracted from the total length to determine maximum length of straight pipe. Consult Installation, Operating, and Service Instructions for details.



INDEPENDENCE™ GAS FIRED STEAM OR HOT WATER BOILER

- Cast Iron Knockdown
- Steam or Hot Water
- Capacities 51 to 317 MBH

The Burnham Independence gas fired steam or hot water boiler offers several benefits to the homeowner, including safety, comfort, dependability and quality cast iron construction.

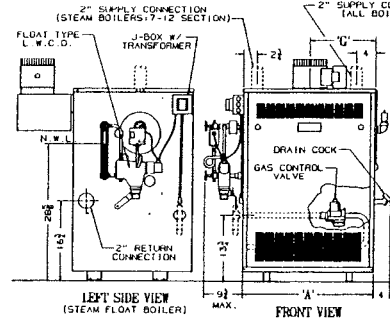
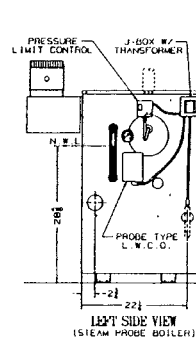
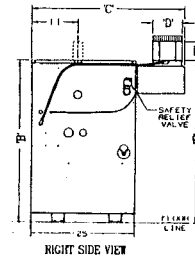
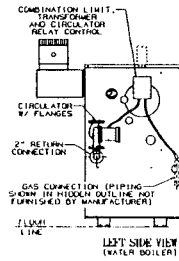
The Independence boiler is available in 10 heating capacities, from 51 to 317 MBH and can be used for natural gas or LP gas (IN3-IN9). Built-in gas safety systems provide homeowners residential security and confidence.

Standard Equipment: Deluxe insulated blue jacket, ASME safety relief valve, stainless steel burners, 100% shut-off redundant step opening combination gas valve, high limit (water only), flame-roll out switch, blocked vent switch (IN3-IN9), pressure control (steam only) vent damper (IN3-IN9). Packaged boiler IN3-IN9 semi-packaged IN10-IN12.

Optional Equipment: tankless heater and heater controls.* Circulator pump.

Order hot water and steam packages separately.
Steam trim Honeywell probe type or McDonnell Miller float type LWCO

*Not available on IN3



SPECIFICATIONS*

Model No.	CGA/AG Input MBH	DOE Heating Cap. MBH	1=B=R Rating			AFUE				DIMENSIONS IN INCHES								Approx. Shipping Weight Lbs.	Min. Recommended Chimney Size Round Dia. (In.) x Ht. (Ft.)
			Water MBH	Steam MBH	Steam Sq. Ft.	24V		EI											
						Water	Steam	Water	Steam										
										A	B	C	D	E	F	G			
IN3	62	51	44	38	158	N/A	N/A	83.1	81.9	14-1/2	40	33-3/4	4	40-1/4	4-3/4	7-1/4	350	4x15	
IN4	105	87	76	65	271	N/A	N/A	83.1	82.0	17-3/4		34-3/4	5		8-7/8	420	5x15		
IN5	140	115	100	86	358	N/A	N/A	83.1	82.0	21		35-3/4	6		10-1/2	485	6x15		
IN6	175	144	125	108	450	N/A	N/A	83.2	82.1	24-1/4		36-3/4	7	12-1/8	555	6x15			
IN7	210	173	150	130	542	N/A	N/A	83.2	82.1	27-1/2		7-1/2	13-3/4	620	7x15				
IN8	245	202	176	152	633	N/A	N/A	83.2	82.2	30-3/4			15-3/8	690	7x15				
IN9	280	231	201	174	725	N/A	N/A	83.2	82.2	34			17	760	8x15				
		AGA Gross Output MBH				Combustion Efficiency (%)													
						Water		Steam											
IN10	315	259.87	226	195	812	83.5		82.5		37-1/4	45	38-3/4	8	45-1/4	7-1/2	18-5/8	815	8x15	
IN11	349	287.92	250	216	900	83.5		82.5		40-1/2			20-1/4			885	9x15		
IN12	385	317.62	276	239	996	83.5		82.5		43-3/4			9			21-7/8	955	9x15	

* STEAM TRIM: 6011012 with PS802 LWCO
WATER TRIM: 60110030

SERIES 8HE HOT WATER GAS BOILER



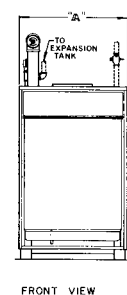
- Cast Iron, Knockdown
- Hot Water
- Capacities 340 to 505 MBH
- 83% Efficient

The Burnham Series 8HE gas boiler has a vertical flue design which provides for maximum heat transfer. Cast iron push nipples assure the integrity of the cast iron section assembly by expanding & contracting at the same rate and providing a water tight seal. The series 8HE boilers can be installed 1" apart making them ideally suited for modular applications.

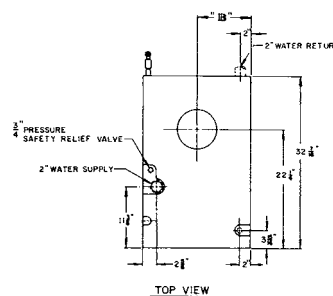
Standard Equipment: deluxe insulated bluejacket, ASME safety relief valve, pressure-temperature gauge, boiler drain cock, 100% shut-off gas controls with dual valves, high limit, base burner manifold assembly, blocked vent switch, flame roll-out switch, steel burners, junction box, transformer, draft hood, vent damper.

Optional Equipment: electric ignition, vent damper (807HE-810HE), electronic control panel systems, water manifolds, four stage immersion type operating controls, eight stage boiler sequencing control panel system with outdoor reset.

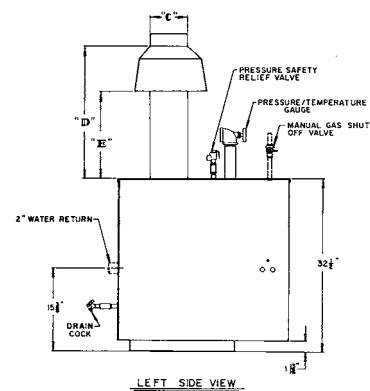
Note: Not for direct installation on combustible flooring. A heat shield is required and available for combustible floor installation and concrete installation which is over a material that is subject to melting (PVC, Pex radiant tubing etc.).



FRONT VIEW



TOP VIEW



LEFT SIDE VIEW

STANDARD EQUIPMENT

- | | | | |
|------------------------------|-----------------------|----------------------|----------------------------|
| • Cast Iron Section Assembly | • Safety Relief Valve | • 2" Supply & Return | • Metal Section Connectors |
| • Aluminized Steel Burners | • Draft Hood | • Spark Ignition | • Installed Insulation |
| • 1" Gas Connection | • Blocked Vent Switch | • 50VA Transformer | • 10 Year Limited Warranty |
| • L4080D High Limit Control | | • Junction Box | |

Boiler No.	Input (MBH)	Output (MBH)	I=B=R Net Rating MBH	DIMENSIONS**					Gas Connection (MPT)
				"A"	"B"	"C"	"D"	"E"	
K805HE	252	208	181	20"	10"	7"	24-3/4"	24-3/4"	3/4"
K806HE	315	253	220	23-3/4"	11-7/8"	8"	27-3/4"	18"	3/4"
K807HE	340	275	239	27-1/2"	13-3/4"	8"	27-3/4"	18"	3/4"
K808HE	410	328	285	31-1/4"	15-5/8"	9"	30-3/4"	20"	3/4"
K809HE	460	370	322	35"	17-1/2"	10"	33-1/2"	22"	1"
K810HE	505	406	353	38-3/4"	19-3/8"	10"	33-1/2"	22"	1"



High Efficiency Condensing Gas Boilers Instinct Solo Floor Standing

The Instinct Floor Standing Boiler comes loaded with features such as a Calefi air separator and an all stainless fire tube heat exchanger. Instinct boilers can be paired with our Smart indirect tanks to provide an abundance of hot water.

- Calefi 548 Air Separator
- Stainless Steel Heat Exchanger
- Boiler Circulating Pump
- Turndown ratio up to 8:1
- ASME Stamped Heat Exchanger
- WiFi Connectivity

- AFUE Efficiency Rating of 95%
- Natural Gas or Propane Compatible
- CCTRLMAX Control System
- 3 in 1 Universal Vent Adapter
- Indirect Water Heater Compatible
- 10 Year Limited Heat Exchanger Warranty
- 5 Year Parts Warranty*
- "S" Models Boiler only
- "C" Models Boiler/Water Heater Combination



PERFORMANCE SPECIFICATIONS

Boiler Model	Fuel	Input Modulation MBH	AFUE	DOE Heating Capacity MBH	Turndown Ratio	Net AHRI Rating MBH
INSFS110S	Natural or Propane	13.75 to 110	95%	102	8 : 1	89
INSFS155S	Natural or Propane	19.375 to 155	95%	142	8 : 1	124
INSFS199S	Natural or Propane	24.875 to 199	95%	184	8 : 1	159
INSFS155C	Natural or Propane	19.375 to 155	95%	142	8 : 1	124
INSFS199C	Natural or Propane	24.875 to 199	95%	184	8 : 1	159

CONNECTIONS / DIMENSIONS / DATA

Boiler Model	Supply/Return Connections	Gas Connection	Vent/Air Diameter	Dimensions W x H x D	Weight Lbs.
INSFS110S	1"	3/4"	3"	22"x41"x22"	145
INSFS155S	1"	3/4"	3"	22"x41"x22"	157
INSFS199S	1"	3/4"	3"	22"x41"x22"	169
INSFS155C	1"	3/4"	3"	22"x41"x22"	181
INSFS199C	1"	3/4"	3"	22"x41"x22"	191

STANDARD FEATURES

Heat Exchanger

- 439 Stainless Steel Heat Exchanger for corrosion resistance
- Self cleaning flueways reduce maintenance
- Compatible with Standard Glycol up to 50%
- 10 year limited warranty

Burner

- Stainless steel premix burner
- Direct spark ignition
- Variable speed blower assembly
- Negative pressure regulated gas valve
- Propane conversion kit included

Sensors

- Outdoor temperature
- Boiler supply temperature
- Boiler return temperature
- Flue temperature
- Boiler system pressure

Intake and Venting

- 2" & 3" Parallel venting (standard)
- Concentric venting (optional)
- PVC, CPVC, PP, SS material options

CCTRLMax Control System

- Digital display with 5 navigation buttons
- Advanced modulating temperature control
- EZ setup allows quick and easy boiler setup
- Domestic hot water priority with optional timeout
- Boiler low water protection
- Freeze protection
- High limit protection

Electrical Connections

- 120V/60Hz Power supply
- Primary pump
- Thermostat
- Outdoor sensor
- Indirect water heater aquastat
- Indirect water heater pump

Piping Connections

- EZ Install piping mounting bracket
- 1" NPT boiler supply and return (LH or RH Connection)
- 3/4" Condensate drain

* To receive 5yr warranty - Online Registration Required



High Efficiency Condensing Gas Boilers Instinct Solo Wall Mounted

The Instinct Floor Standing Boiler comes loaded with features such as a Calefi air separator and an all stainless fire tube heat exchanger. Instinct boilers can be paired with our Smart indirect tanks to provide an abundance of hot water.

- Calefi 548 Air Separator
- Stainless Steel Heat Exchanger
- Boiler Circulating Pump
- Turndown ratio up to 8:1
- ASME Stamped Heat Exchanger
- WiFi Connectivity

- AFUE Efficiency Rating of 95%
- Natural Gas or Propane Compatible
- CCTRLMAX Control System
- 3 in 1 Universal Vent Adapter
- Indirect Water Heater Compatible
- 10 Year Limited Heat Exchanger Warranty
- 5 Year Parts Warranty*
- "S" Models Boiler only
- "C" Models Boiler/Water Heater Combination



STANDARD FEATURES

Instinct Solo Features

- Light weight construction for wall mounting
- Approved for zero clearance to combustibles
- 2" PVC, CPVC, PP venting up to 28 equivalent feet
- 3"PVC, CPVC PP or AL29-4C up to 100 equivalent feet
- 10 year limited warranty on heat exchanger
- Up to 6 year warranty on parts, except ignitor
- Up to 3 year labor allowance

Approvals

- 95% AFUE efficiency
- ENERGY STAR qualified
- ANSI Z21.13 and CSA 4.9 Boiler Standards Compliance
- ASME Boiler Certification - ASME "H" stamp
- SCAQMD 2012 Low NOx Certification

Stainless Steel Fire Tube Heat Exchanger

- 439 Stainless Steel heat exchanger
- High water content provides stable temperature control
- Self cleaning flue ways reduce maintenance
- Suitable for use with propylene glycol up to 50%

CCTRLMax Control System

- Graphical display with 5 navigation buttons
- EZ setup allows quick and easy boiler setup
- Flexible configuration of 3 circulator
- Outdoor temperature reset
- Accepts two space heating call inputs with independent outdoor reset curves
- Domestic hot water priority with optional time out
- Integrated cascade control for up to 6 boilers

- 0-10 VDC Modulation input
- Modbus building management system (BMS)
- Adjustable warm weather shut down
- Adjustable boiler freeze protection
- Logging function records sensor readings for system optimization and troubleshooting
- Describes lockouts in plain English and suggests solutions while storing the last 8 errors

Standard Equipment

- Stainless steel premix burner
- Direct spark ignition with variable speed blower
- Full modulation with turndown ratio of 8:1
- Outdoor temperature sensor
- Automatic air vent
- ASME 30 PSI pressure relief valve
- Temperature and Pressure gauge
- Automatic low water cutoff feature with early warning
- High temperature manual reset limit safety control
- Terminal block for circulator output
- Low voltage terminal strip with removable jumpers for manual or automatic reset
- Swing out control for easy access and servicing
- Polypropylene condensate pan and internal flue pipe
- 3 in 1 Universal vent adapter directly accepts PVC, Polypropylene, Stainless steel connections with test ports

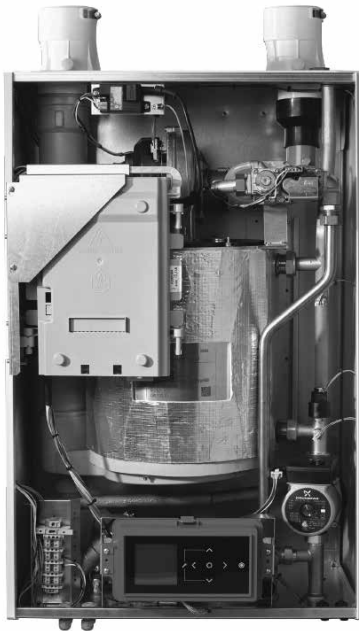




High Efficiency Condensing Gas Boilers Instinct Solo Wall Mounted

CTRLMAX Control System -EZ Setup allows for quick 60 second setup. Easy troubleshooting in plain text, no codes.

Stainless Fire Tube Heat Exchanger



Large plate heat exchanger provides industry leading performance. 5+ GPM hot water while fully condensing in DHW mode.

Large plate heat exchanger provides industry leading performance. 5+ GPM hot water while fully condensing in DHW mode.

PERFORMANCE SPECIFICATIONS

Boiler Model	Fuel	Input Modulation MBH	AFUE	DOE Heating Capacity MBH	Turndown Ratio	Net AHRI Rating MBH
INS110S	Natural or Propane	13.75 to 110	95%	102	8 : 1	89
INS155S	Natural or Propane	19.375 to 155	95%	142	8 : 1	123
INS199S	Natural or Propane	24.875 to 199	95%	184	8 : 1	159
INS155C	Natural or Propane	19.375 to 155	95%	142	8 : 1	123
INS199C	Natural or Propane	24.875 to 199	95%	184	8 : 1	159

CONNECTIONS / DIMENSIONS / DATA

Boiler Model	Supply/Return Connections	Gas Connection	Vent/Air Diameter	Dimensions W x H x D	Weight Lbs.
INS110S	1"	3/4"	3"	21-3/4"x26"x16-1/2"	75
INS155S	1"	3/4"	3"	21-3/4"x26"x16-1/2"	95
INS199S	1"	3/4"	3"	21-3/4"x26"x16-1/2"	105
INS155C	1"	3/4"	3"	21-3/4"x33"x16-1/2"	110
INS199C	1"	3/4"	3"	21-3/4"x33"x16-1/2"	130



High Efficiency Condensing Gas Boilers Prestige Solo Wall Mounted

- 439 Stainless Steel Fire Tube Heat Exchanger
- ASME Stamped Heat Exchanger
- 95% AFUE
- Turndown ratios up to 5.5:1
- Low Pressure Drop with Proven Performance
- 2" to 4" Venting

- Multiple Venting Termination Options
- Low NOx - 2012 SCAQMD Certified
- 7 Models from 80 to 399 MBH
- 5 Year Limited Parts Warranty
- 10 Year Limited Heat Exchanger Warranty
- 5 & 10 Year Extended Warranty Options

Featuring ACVMax Control with:

- 60 Second Set-up Based on Previous TriMax Platform
- Integrated Cascade Function for up to 6 Boilers
- Optional LonWorks® and BACnet BMS® Gateway
- Two Outdoor Reset Curves / Set Points
- Multiple Zone Control
- Multiple Circulator Control



60 Second Set-Up

- Choose from 6 standard heating applications to set up the boiler in 60 seconds or less.
- Finned Tube Baseboard
- High Mass Radiant
- Cast Iron Baseboard
- Radiators
- Low Mass Radiant
- Fancoil
- Preconfigured for indirect hot water applications

Integrated Cascade

- Joins up to 6 boilers: Master boiler automatically recognizes linked boilers: Meets simultaneous DHW & Space Heating calls: Full Parallel Modulation: Automatic Duty Cycling.

Multiple Zone Control

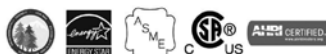
- Accepts 2 space heating calls with independent outdoor reset curves
- Simultaneously heat dual temperature heating systems with built-in mixing valve control
- Manage up to 2 space heating zones and 1 DHW zone without an external zone control panel

Multiple Circulator Control

- Presets allow quick configuration of 4 circulator outputs for the application
- Each circulator output is fully configurable for custom applications

Intelligent Troubleshooting

- Describes lockouts in plain english and suggests solutions: Stores last 8 errors. Records sensor readings for 24 hours.



Next Generation Fire Tube Heat Exchanger

High Water Content

- Provides stable temperature control
- Low sensitivity to water flow changes
- Reduces short cycling
- Adapts to large or small heating loads

Unique Geometry

- Designed for maximum reliability with low thermal stress
- Improved water flow for maximum heat transfer
- 439 Stainless Steel with titanium for corrosion resistance
- Polypropylene condensate pan and flue resists corrosion

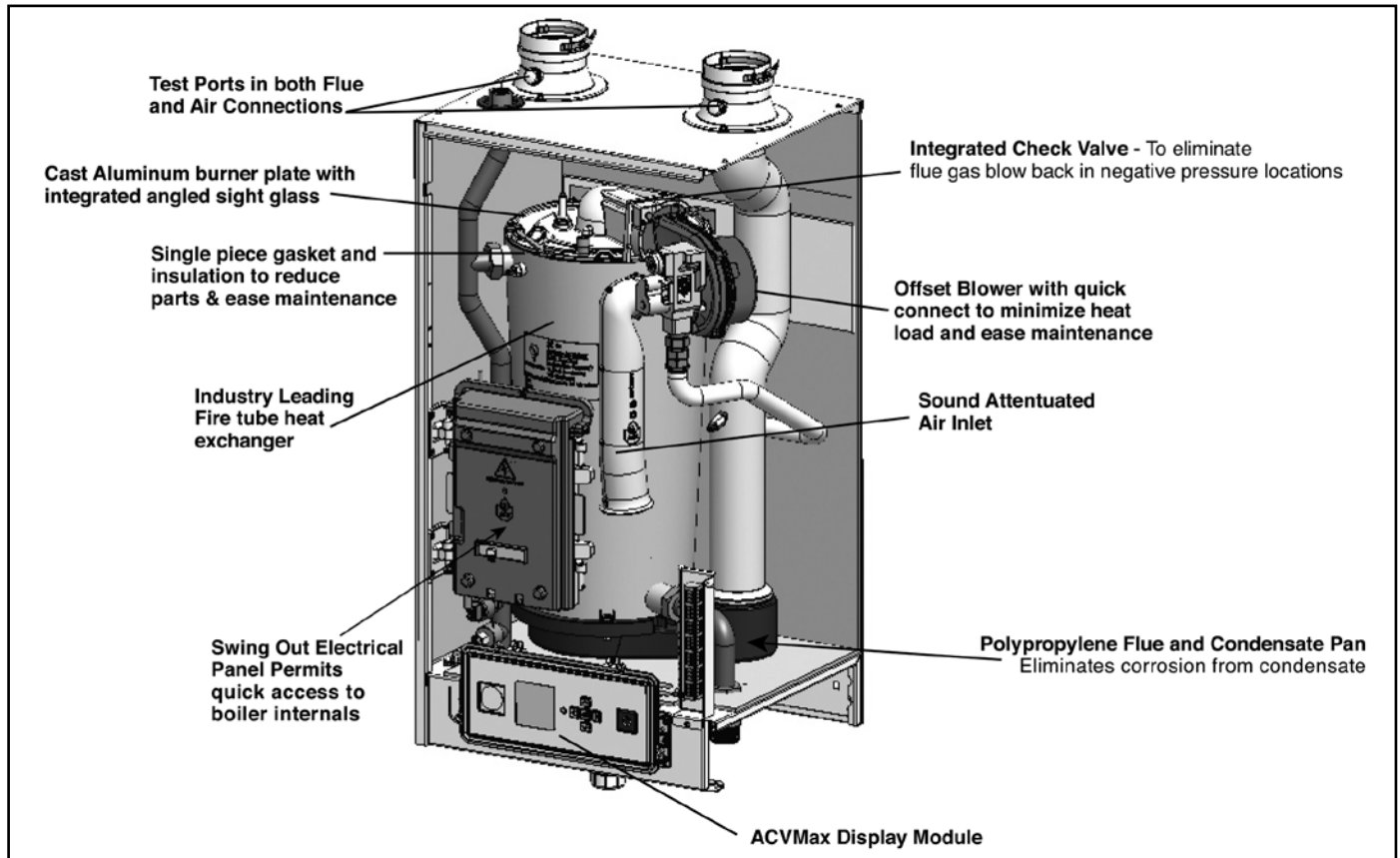
Reliable Low Maintenance Design

- Self cleaning design washes away combustion debris
- 12 year history of reliable performance
- High performance burner design
- Low pressure drop allows piping directly to the system
- ASME Stamped





High Efficiency Condensing Gas Boilers Prestige Solo Wall Mounted



PERFORMANCE SPECIFICATIONS

Boiler Model	Fuel	Input Modulation MBH	AFUE	DOE Heating Capacity MBH	Turndown Ratio	Net AHRI Rating MBH	Water Volume Gal.
PA80	Natural or Propane	16 to 80	95%	74	5.0 : 1	64	2.1
PA110	Natural or Propane	20 to 110	95%	102	5.5 : 1	89	2.1
PA155	Natural or Propane	27.8 to 153	95%	142	5.5 : 1	123	4
PA175	Natural or Propane	30.9 to 170	95%	157	5.5 : 1	137	5.3
PA250	Natural or Propane	43.6 to 240	95%	222	5.5 : 1	193	4.5
PA299	Natural or Propane	72.5 to 299	95%	278	4.1 : 1	242	7.4
PA399	Natural or Propane	72.5 to 399	95.1%*	379	5.5 : 1	330	7.4

*Thermal Efficiency

CONNECTIONS / DIMENSIONS / DATA

Boiler Model	Supply/Return Connections	Gas Connection	Vent/Air Diameter	Dimensions D x W x H	Weight Lbs.
PA80	1"	1/2"	3"	17-5/16" x 19-3/4" x 36-9/16"	103
PA110	1"	1/2"	3"	17-5/16" x 19-3/4" x 36-9/16"	103
PA155	1-1/4"	3/4"	3"	17-5/16" x 19-3/4" x 36-9/16"	118
PA175	1-1/4"	3/4"	3"	17-5/16" x 19-3/4" x 36-9/16"	128
PA250	1-1/4"	3/4"	3"	17-5/16" x 19-3/4" x 36-9/16"	140
PA299	1-1/2"	1"	4"	23-5/8" x 24-7/8" x 39-3/8"	210
PA399	1-1/2"	1"	4"	23-5/8" x 24-7/8" x 39-3/8"	216



Stainless Steel Indirect Fired Water Heaters

FEATURES

- Exclusive "Tank-in-Tank" Technology
- Abundant Domestic Hot Water at the Lowest Possible Cost
- A Limited Lifetime Warranty

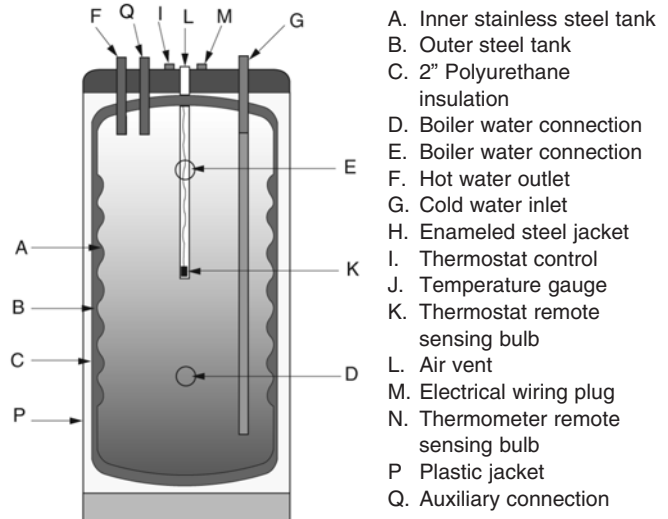
- 2" of Polyurethane Foam Insulation
- 8 Sizes to Choose From
- Self Cleaning/Self Descaling Heat Exchanger
- Lowest Pressure Drop in the Industry

PERFORMANCE

Model No.	Boiler Output Btu/hr	1st Hour Recovery (gal.)	Continuous Flow (gal.)	Peak/Flow Gal/10 min.
Smart 20	79,000	120	105	35
Smart 30	87,000	140	115	40
Smart 40	112,000	180	150	50
Smart 50	140,000	220	185	65
Smart 60	270,000	410	360	100
Smart 80	300,000	460	400	125
Smart 100	337,000	525	450	150
Smart 120	420,000	650	560	190

Conditions:

- 200° boiler water supply
- 90° temperature rise



SUPERIOR DESIGN "TANK-IN-TANK" TECHNOLOGY

Superior Heat Exchange Surface Area

The domestic storage tank is constructed of stainless steel and is surrounded by boiler water in the outer tank, resulting in a full "wrap around" heat exchanger.

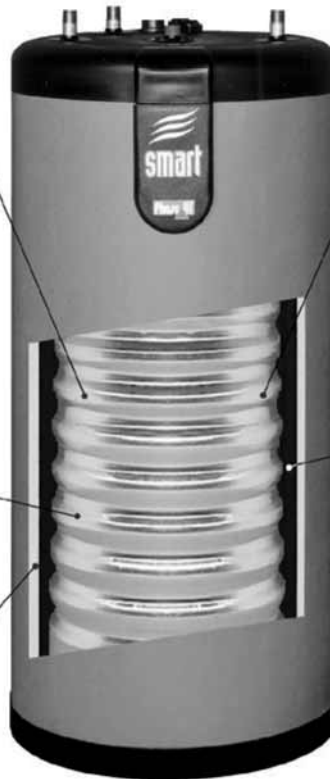
It's superior heat exchange surface (typically 1.5 to 2.5 times larger than a traditional coil) makes for a large volume of hot water in a short period of time. Thanks to this fast recovery, the storage capacity can be reduced, resulting in a reduced thermal loss.

Stainless Steel Tank Construction

The inner domestic storage tank is constructed of durable, corrosion resistant stainless steel.

Optimal Insulation

The Phase III®, Smart Series are insulated with 2" of either sprayed-on or injected polyurethane foam, resulting in a stand by heat loss of less than 1°/Hr.



Self Cleaning / Self-descaling

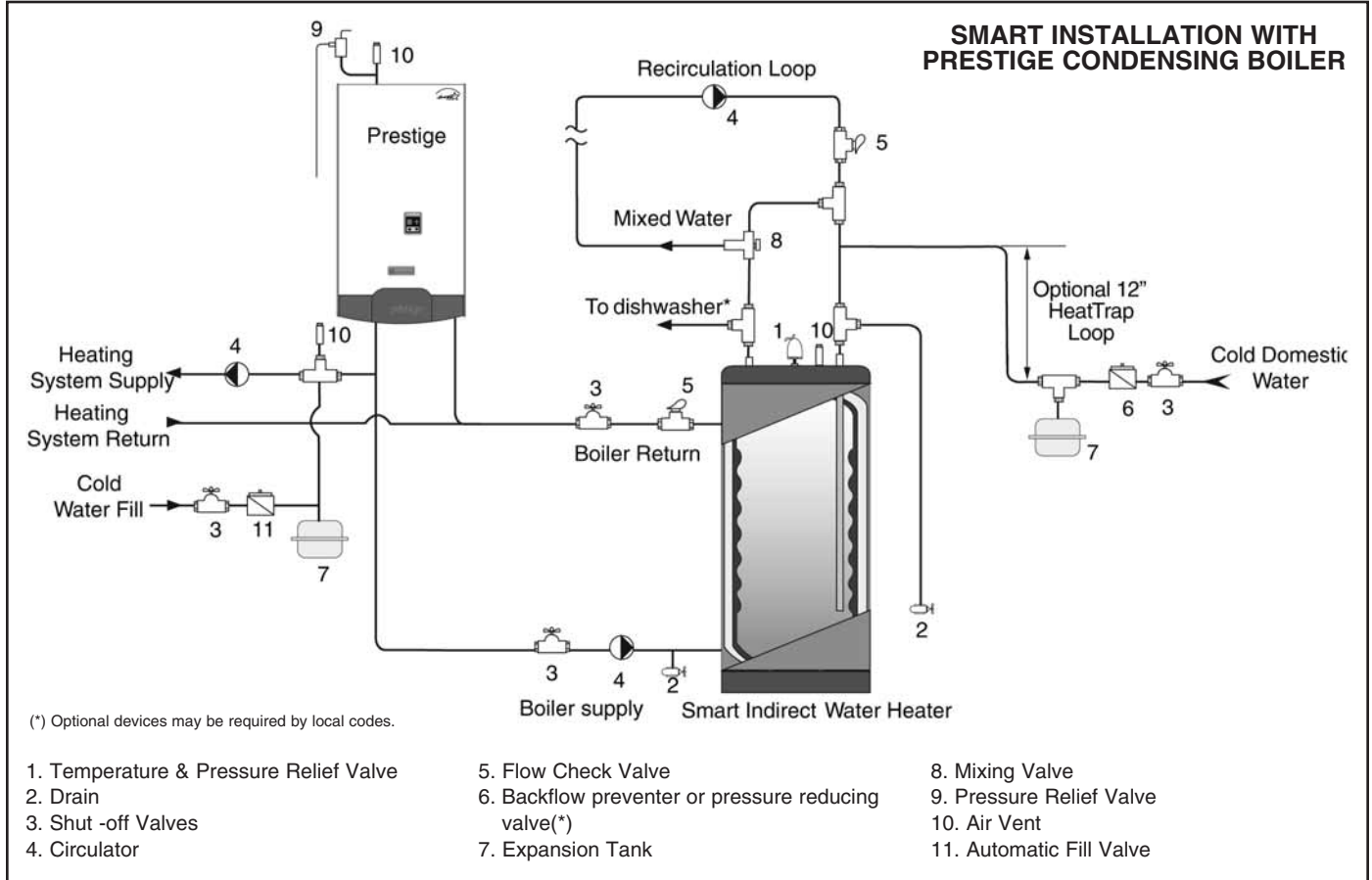
The inner, domestic tank is suspended within the outer tank so it is free to expand and contract as the pressure varies during hot water draws. Moreover, its corrugations amplify the movement and prevents the lime build up on the heat exchanger; thus maintaining its performance during the Phase III®'s life span.

Anti-Bacteria Growth / Maintenance Free

The "Tank-in-Tank" design allows us to store domestic water at higher temperatures preventing bacteria growth. Additionally constructed of high quality stainless steel, Phase III® does not require a protective anode.



Stainless Steel Indirect Fired Water Heaters



PRODUCT SPECIFICATIONS

Model No.	Dimension	Height	Boiler/Supply Return	Domestic Inlet/Outlet	3rd Domestic Connection*	Domestic Capacity (gal.)	Heating Water Capacity (gal.)	Heat Surface (sq. ft.)	Empty Weight (lbs)
Smart 20	22" dia.	32"	1"	3/4"	3/4"	22	5	11	100
Smart 30	22" dia.	38"	1"	3/4"	3/4"	28	5	13	115
Smart 40	22" dia.	46"	1"	3/4"	3/4"	36	6	16	135
Smart 50	22" dia.	57"	1-1/4"	3/4"	3/4"	46	8	20	165
Smart 60	22" dia.	66"	1-1/4"	3/4"	3/4"	56	8	24	190
Smart 80	26" dia.	61"	1-1/2"	1-1/2"	1-1/2"	70	14	28	271
Smart 100	26" dia.	78"	1-1/2"	1-1/2"	1-1/2"	95	25	36	362
Smart 120	32" dia.	72"	2"	1-1/2"	1-1/2"	119	43	42	479

(*) This fitting can be used as a return connection if circulated domestic water is required or can be used as a connection for the T&P Relief Valve.

SERIES MI RESIDENTIAL GAS BOILERS



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FEATURES

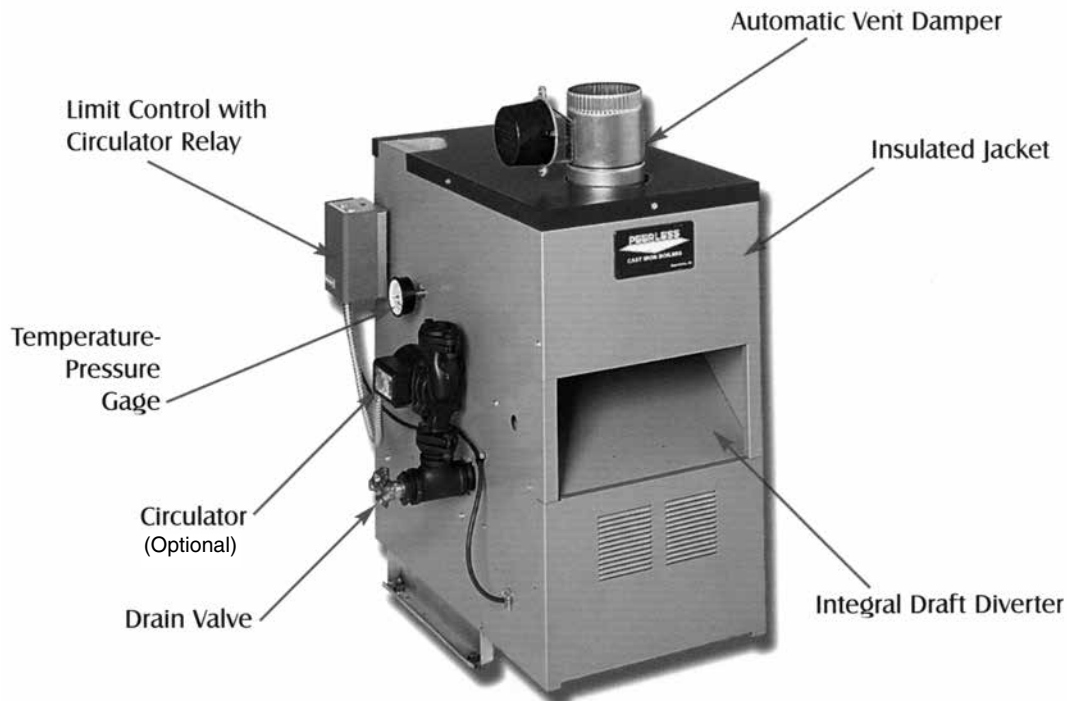
- Packaged Residential Hot Water Boilers
- Natural or LP Gas
- Natural Draft Venting
- Standing Pilot or Intermittent Ignition
- Low-Profile Design

STANDARD EQUIPMENT

- Cast Iron Sections – Factory Tested and Assembled with Steel Push Nipples
- Deluxe Insulated Enameled Steel Jacket
- 30 PSI Safety Relief Valve
- Standing Pilot or Honeywell SmartValve® Intermittent Ignition
- Limit Control with Circulator Relay
- Drain Valve
- Temperature-Pressure Gage
- Electrically Operated Automatic Vent Damper
- Flame Rollout Safety Shutoff Switch
- Vent Safety Shutoff Switch

SERIES MI OPTIONAL EQUIPMENT

- Bell & Gossett Circulator
- Non-Combustible Floor Pan



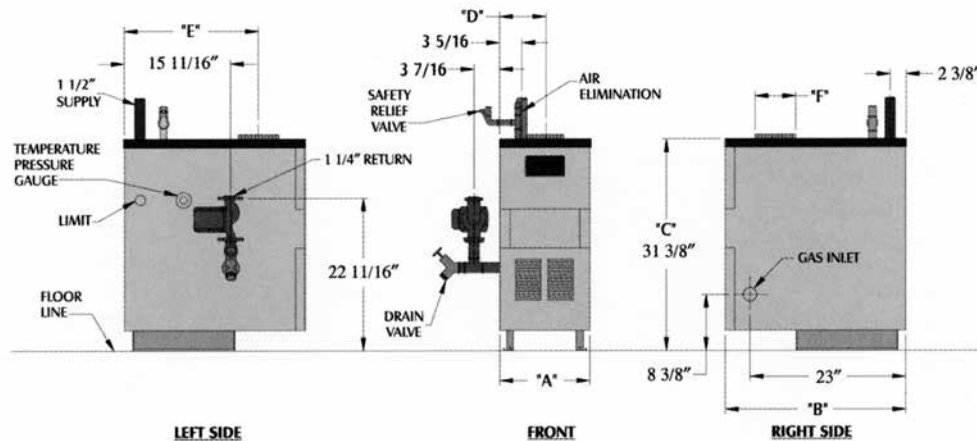


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SERIES MI RESIDENTIAL GAS BOILERS

Boiler Model Number	Input MBH	DOE Heating Capacity MBH ¹	Net I=B=R Ratings Water MBH ^{1,2}	Standing Pilot Seasonal Efficiency (AFUE) ³	Intermittent Ignition Seasonal Efficiency (AFUE) ³	Water Content (Gallons)
MI-03	70	58	50	80.2%	82.2%	4.72
MI-04	105	86	75	80.2%	82.1%	6.00
MI-05	140	115	100	80.2%	82.0%	7.28
MI-06	175	143	124	80.3%	82.0%	8.56
MI-07	195	160	139	80.5%	82.0%	9.84
MI-08	227.5	186	162	80.3%	82.0%	11.12
MI-09	260	211	183	80.1%	82.0%	12.40

1. Net I=B=R water ratings based on an allowance of 1.15.
2. Consult factory before selecting a boiler for installations having unusual piping and pickup requirements such as intermittent system operations, extensive piping systems etc.
3. Heating Capacity and AFUE ratings are based on U.S. Government tests. Before purchasing this appliance, read important information about it's estimated annual energy consumption or energy efficiency rating that is available from your retailer.



Boiler Dimensions

Boiler Model Number	Jacket			Left jacket to c/l of "D"	Rear Jacket to c/l of "E"	Vent "F"
	Width "A"	Depth "B"	Top to Floor "C"			
MIE-03	12-1/2"	26-5/8"	31-3/8"	6-1/4"	20-13/16"	5"
MIE-04	15-7/8"	26-5/8"	31-3/8"	7-11/16"	20-13/16"	5"
MIE-05	19-1/4"	26-5/8"	31-3/8"	9-5/8"	21-13/16"	6"
MIE-06	22-5/8"	26-5/8"	31-3/8"	11-5/16"	21-13/16"	6"
MIE-07	26"	26-5/8"	31-3/8"	13"	21-13/16"	7"
MIE-08	29-3/8"	29-5/8"	31-3/8"	14-11/16"	23-5/16"	8"
MIE-09	32-3/4"	29-5/8"	31-3/8"	16-3/8"	24-5/16"	8"

Crate Dimensions & Shipping Weights

Boiler Model Number	Width	Depth	Height	Approximate Shipping Weight (lbs)
MIE-03	28-1/2"	30-7/8"	40-1/4"	315
MIE-04	28-1/2"	30-7/8"	40-1/4"	375
MIE-05	35-1/2"	30-7/8"	40-1/4"	435
MIE-06	35-1/2"	30-7/8"	40-1/4"	505
MIE-07	42-1/4"	33-7/8"	40-1/4"	575
MIE-08	42-1/4"	33-7/8"	40-1/4"	630
MIE-09	45-1/2"	33-7/8"	40-1/4"	685

Series 63



PeerlessBoilers.com

- Residential Gas Packaged or Knockdown
- Natural Draft Venting
- Standing Pilot or Spark Ignition
- Steam or Hot Water Boilers
- Natural or LP Gas

The Series 63 boiler is a residential, gas-fired boiler for hot water or steam systems. Shipped as knockdown (factory assembled sections), the boiler comes in seven sizes ranging from three to six sections (steam boilers are also available as packaged units). The Series 63 boiler is available for either natural or LP gas and has AFUE ratings of up to 82%. A single vent draft hood allows for natural draft (chimney) venting. The significant water content of the Series 63 boiler makes it ideal for large volume hot water applications. Standard equipment on the Series 63 boiler includes steel push nipples that provide a permanent, watertight seal between sections. A float type, low water cutoff is standard on steam boilers only. All Series 63 boilers include standard standing pilot ignition (spark ignition is available as an option), Honeywell operating controls, vent damper and a slide-in, pre-assembled burner tray. A deluxe, insulated, enameled steel jacket completely encloses gas valves and burners, and reduces boiler heat loss. The low profile design of the Series 63 boiler works well for limited clearance installations.

Steam



Water



Series 63 Standard Equipment

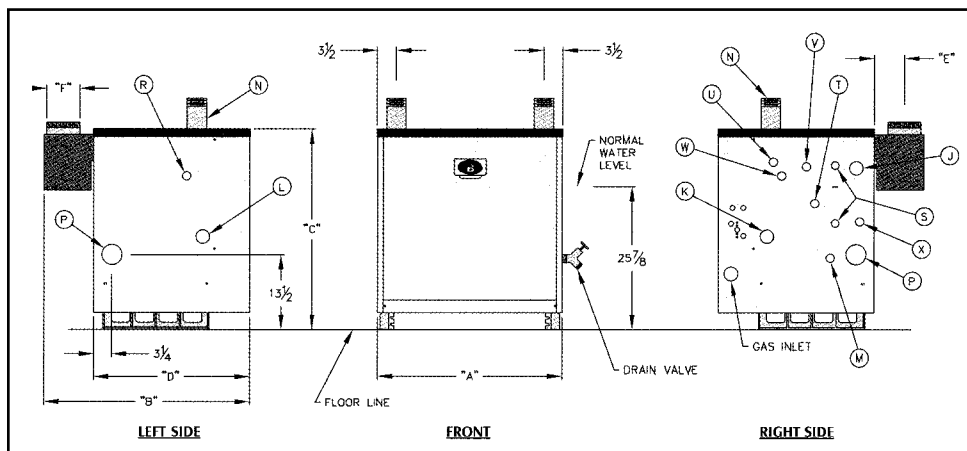
- Deluxe Insulated Enameled Steel jacket
- Cast Iron Sections - Factory Tested & Assembled (3-6) or Split-Assembled (7-12)
- Pre-assembled Wiring Harnesses
- Vent Damper (Series 63 Only)
- Blocked Vent Switch
- Flame Roll-out Switch
- Drain Valve

Steam

- 15 PSI Safety Valve
- Pressure Gage
- Gage G/ass
- Float Type Low Water Cut-off
- Pressure Control
- Tappings for Primary & Secondary Probe Low Water Cutoff
- Skim Tapping
- Manual Reset Limit Control (9-12)

Water

- 30 PSI Safety Relief Valve
- Limit Control
- Temperature-Pressure Gage
- Manual Reset Limit Control (9-12)
- Circulator Relay



Tapping Locations

Tap ID	Size N.P.T.	Steam	Water
J	1 1/4"	Skim Tapping	Skim Tapping
K	1"	Tank Supply/Limit	N/A
L	1"	Tank Return	N/A
M	3/4"	Boiler Drain	Boiler Drain
N	3"	Supply	Supply
P	2 1/2"	Return	Return
R	3/4"	Safety Valve	Relief Valve
S	1/2"	Gauge Glass	N/A
T	3/4"	Primary Probe Low Water Cut-Off	N/A
U	3/4"	Primary Limit	Primary Limit
V	3/4"	Secondary Limit	Pressure/ Temperature Gauge
W	3/4"	Pressure Gauge	Secondary Limit
x	3/4"	Secondary Probe Low Water Cut-Off	N/A

Boiler Dimensions

Boiler Model	Width "A"	Depth "B"	Top to Floor "C"	Jacket Depth "D"	Rear of Jacket to c/ of Flue "E"	Flue Size "F"
63-03	16 1/8"	371/4"	36 3/8"	28 1/8"	5 5/8"	6"
63-04L 63-04	20 3/8"				5 1/8"	7"
63-05L 63-05	24 5/8"	39 1/4"			6 5/8"	8"
63-06	28 7/8"				6 1/8"	9"

Series 63 Boiler Ratings

Boiler Model Number	Input MBH	DOE Heating Capacity MBH		Net I=B=R Ratings			Standing Pilot w/Damper Seasonal Efficiency (AFUE)		Spark Ignition w/Damper Seasonal Efficiency (AFUE)		Water Content (Gal.)	
		Water	Steam	Steam Sq. Ft.	Steam MBH	Water MBH	Water	Steam	Water	Steam	Water	Steam
63-03L	88.5	73	74	231	64	55	80.9%	80.6%	82.4%	83.0%	13.2	9.3
63-03	118.0	99	98	306	86	73	82.1%	81.2%	83.5%	82.6%	13.2	9.3
63-04L	147.5	123	123	384	107	92	81.4%	80.6%	82.7%	82.6%	15.6	10.8
63-04	177.0	148	147	459	129	110	82.1%	81.0%	83.4%	82.4%	15.6	10.8
63-05L	206.5	172	171	536	150	129	81.9%	80.7%	82.9%	82.3%	18.0	12.4
63-05	236.0	198	196	612	172	147	82.2%	80.9%	83.3%	82.2%	18.0	12.4
63-06	287.5	241	238	744	209	179	82.3%	80.7%	83.2%	82.0%	20.4	13.9



Series 64



PeerlessBoilers.com

- Semi-Commercial Gas Packaged or Knockdown
- Natural Draft Venting
- Standing Pilot or Spark Ignition
- Steam or Hot Water Boilers
- Natural or LP Gas

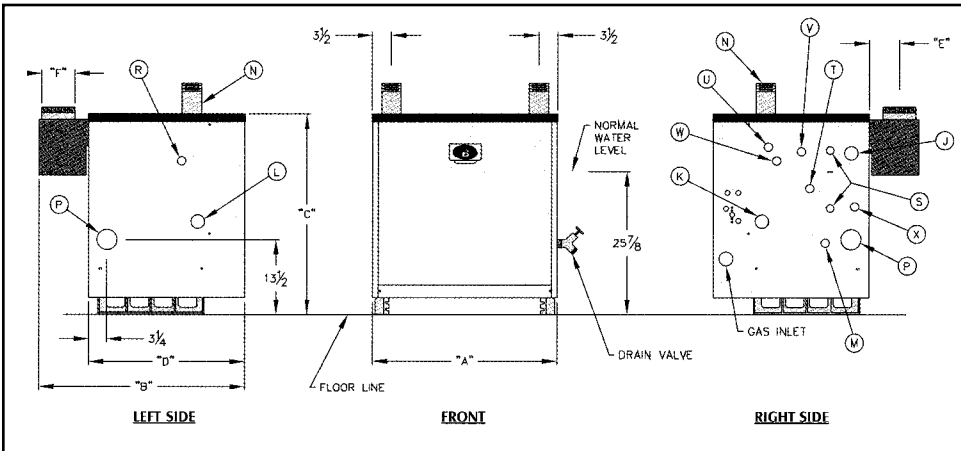
Water



Steam



The Series 64 boiler is a semi-commercial, atmospheric, gas-fired boiler for hot water or steam systems. Ranging from seven to 12 sections in six sizes, the Series 64 boiler has an 81% combustion efficiency and an input of 345 to 632.5 MBH. The Series 64 boiler is offered as either a packaged unit or knockdown with factory assembled split block sections for ease of handling. The boiler is available for either natural or LP gas with spark ignition (seven and eight section boilers are also available with standing pilot ignition). A single vent draft hood allows for natural draft (chimney) venting. The Series 64 boiler features a sizeable water content ideal for steam and large volume, hot water jobs. All boilers have steel push nipples that provide a permanent, watertight seal between sections, and a manual reset high limit control. Steam boilers offer a float type low water cut-off and skim tapping for thorough cleaning. Standard equipment on the Series 64 boiler include Honeywell operating controls and a deluxe, insulated, enameled steel jacket that completely encloses gas valves and burners, to reduce boiler heat loss. The low profile design of the boiler allows it to be used in limited clearance installations.



Series 64 Standard Equipment

- Deluxe Insulated Enameled Steel jacket
- Cast Iron Sections - Factory Tested & Assembled (3-6) or Split-Assembled (7-12)
- Pre-assembled Wiring Harnesses
- Vent Damper (Series 63 Only)
- Blocked Vent Switch
- Flame Roll-out Switch
- Drain Valve
- 30 PSI Safety Relief Valve
- Limit Control
- Temperature-Pressure Gage
- Manual Reset Limit Control (9-12)
- Circulator Relay

Tapping Locations

Tap ID	Size N.P.T.	Steam	Water
J	1 1/4"	Skim Tapping	Skim Tapping
K	1"	Tank Supply/Limit	N/A
L	1"	Tank Return	N/A
M	3/4"	Boiler Drain	Boiler Drain
N	3"	Supply	Supply
P	2 1/2"	Return	Return
R	3/4"	Safety Valve	Relief Valve
S	1/2"	Gauge Glass	N/A
T	3/4"	Primary Probe Low Water Cut-Off	N/A
U	3/4"	Primary Limit	Primary Limit
V	3/4"	Secondary Limit	Pressure/ Temperature Gauge
W	3/4"	Pressure Gauge	Secondary Limit
x	3/4"	Secondary Probe Low Water Cut-Off	N/A

Boiler Dimensions

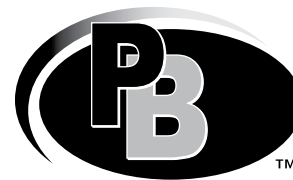
Boiler Model	Width "A"	Depth "B"	Top to Floor "C"	Jacket Depth "D"	Rear of Jacket to c/l of Flue "E"	Flue Size "F"				
64-07	33 1/8"	39 1/4"	36 3/8"	30 1/8"	6 1/8"	9"				
64-08	37 3/8"	43 1/8"			7 1/2"	10"				
64-09	41 5/8"				8 1/2"	12"				
64-10	45 7/8"	45 1/8"								
64-11	50 1/8"									
64-12	54 3/8"									

Series 64 Boiler Ratings

Boiler Model Number	Input MBH	DOE Heating Capacity MBH		Net I=B=R Ratings			Thermal Efficiency (AFUE)		Combustion Efficiency (AFUE)		Water Content (Gal.)	
		Water	Steam	Steam Sq. Ft.	Water MBH	Steam MBH	Water	Steam	Water	Steam	Water	Steam
64-07	345.0	286	279	873	249	210	81%	79.4%	83%	82.5%	22.8	15.5
64-08	399.0	331	323	1,010	288	242	81%	79.6%	83%	82.5%	25.2	17.0
64-09	460.0	382	373	1,165	332	280	81%	79.7%	83%	82.5%	27.6	18.6
64-10	517.5	430	419	1,310	374	314	81%	79.8%	83%	82.5%	30.0	20.1
64-11	575.0	477	466	1,456	415	349	81%	79.8%	83%	82.5%	32.4	21.7
64-12	632.5	525	512	1,601	457	384	81%	79.9%	83%	82.4%	34.8	23.2



SERIES 211A COMMERCIAL ATMOSPHERIC GAS BOILER



PeerlessBoilers.com

211A FEATURES

- **Knocked Down**
- **Natural Draft Venting**
- **630 9,450 MBH Input**
- **Steam or Hot Water Boilers**
- **Natural or LP Gas**
- **Combustion Efficiency** meets the 80% ASHRAE 90.1 minimum as required by the federal standards for commercial boilers.
- Optional **Mod-U-Pak** unique three stage firing system provides improved boiler response and fuel economy.
- Built-in horizontal to vertical draft hood and aluminized steel flue collector provide a low boiler profile to allow installation in areas with low head room.
- The unique **finned, tubular sections** are spaced evenly using spacing rings which allow the sections to maintain their as-cast skin, providing maximum corrosion resistance and longer life.
- The Peerless **Flow Port flexible seals** assure a **water-tight fit** while providing faster boiler assembly and allow the sections to expand and contract independently.
- The exclusive Peerless access design, from both ends, allows easy accessibility to the fluways for inspection and cleaning, without removing the entire jacket.
- **Optional tankless coils** can be used to assure adequate domestic hot water production.



INSULATED BASE including pre-assembled gas train and manifold with orifice adapters to simplify field assembly.

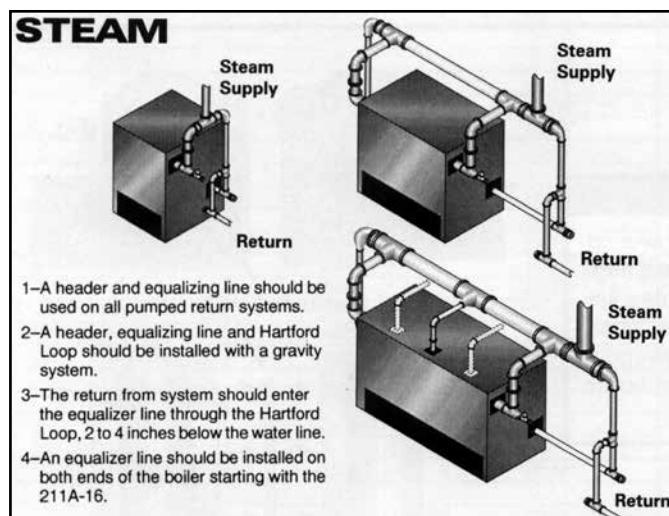
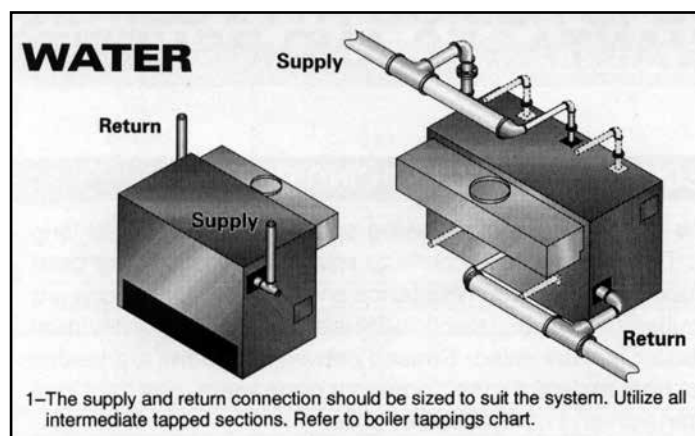
MULTIPLE FINNED WATER TUBE SECTIONS are a unique "closed H" design which provides strength without unnecessary weight. Thirteen staggered flue passages per boiler section force the hot gasses through, and around finned water tubes for greater heat absorption.

ACCESS DOORS AT BOTH ENDS provide easy access for inspection and cleaning.

ALUMINIZED STEEL FLUE COLLECTORS and horizontal-to-vertical draft diverters maintain a predetermined height of the flue outlet regardless of boiler size. while aluminized steel provides extra long life.

PRECISION GROUND SPACING RINGS permit even spacing of sections. but avoid long iron-to-iron contact to provide maximum corrosion protection.

FLOW PORT GASKET SEALING is achieved by machined surfaces which compress the gasket, assuring a water-tight seal and faster boiler assembly.





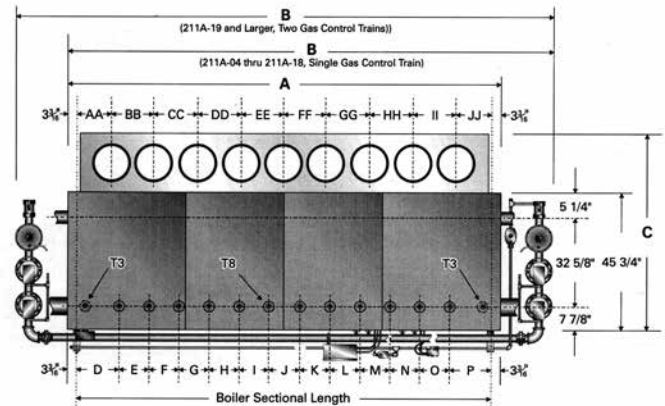
PeerlessBoilers.com

SERIES 211A COMMERCIAL ATMOSPHERIC GAS BOILER

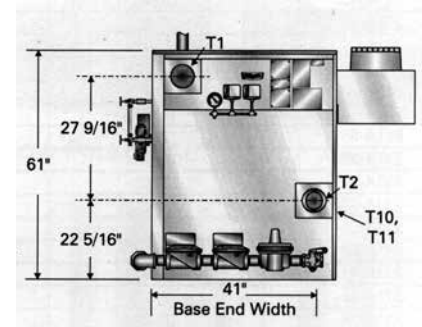
SERVICE AND COMBUSTIBLE CLEARANCES:

1. THE DESIGN OF THIS BOILER IS CERTIFIED FOR THE FOLLOWING CLEARANCES TO COMBUSTIBLE CONSTRUCTION
- A. 48" BETWEEN THE FRONT, SIDES, AND REAR OF THE JACKET.
 - B. 7'6" FLOOR TO CEILING.
 - C. 6" FROM STEAM AND HOT WATER PIPES.
 - D. 6" FROM VENT CONNECTOR.

Boiler Model No.	Length And Width Dimensions			Boiler Sectional Length
	A	B	C	
211A-04	28-1/2"	38-3/8"	63"	21-3/4"
211A-05	33-3/4"	44"	63"	27-3/8"
211A-06	39-3/8"	50-1/4"	65"	33"
211A-07	45"	55-7/8"	63"	38-5/8"
211A-08	50-5/8"	61-3/4"	63"	44-1/4"
211A-09	56-1/4"	67-5/8"	63"	49-7/8"
211A-10	61-7/8"	73-1/4"	65"	55-1/2"
211A-11	67-1/2"	80-3/4"	65"	61-1/8"
211A-12	73-1/8"	86-3/8"	63"	66-3/4"
211A-13	78-3/4"	91-1/2"	63"	72-3/8"
211A-14	84-3/8"	97-1/8"	65"	78"
211A-15	90"	102-3/4"	65"	83"



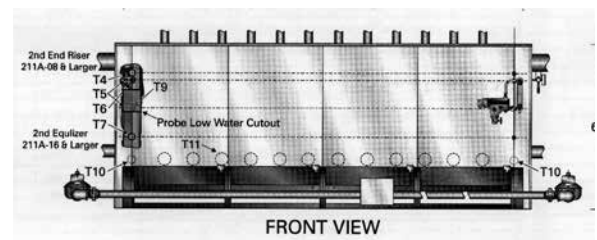
Boiler Model No.	Center Line Dimensions				Draft Hoods No. And Size	Flue Size To Stack	Size Chimney
	Draft Diverters						
	AA	BB	CC	JJ			
211A-04	10-7/8"			10-7/8"	1-12"	12"	12" x 20'
211A-05	13-3/4"			13-5/8"	1-12"	12"	12" x 20'
211A-06	16-1/2"			16-1/2"	1-14"	14"	14" x 20'
211A-07	10-7/8"	16-7/8"		10-7/8"	2-12"	14"	14" x 20'
211A-08	13-3/4"	19-5/8"		10-7/8"	2-12"	15"	15" x 20'
211A-09	13-3/4"	22-1/2"		13-5/8"	2-12"	16"	16" x 20'
211A-10	16-1/2"	25-3/8"		13-5/8"	2-14"	17"	17" x 20'
211A-11	16-1/2"	28-1/8"		16-1/2"	2-14"	18"	18" x 20'
211A-12	13-3/4"	22-1/2"	19-5/8"	10-7/8"	3-12"	18"	18" x 20'
211A-13	13-3/4"	22-1/2"	22-1/2"	13-5/8"	3-12"	19"	19" x 20'
211A-14	16-1/2"	25-3/8"	22-1/2"	13-5/8"	3-14"	20"	20" x 20'
211A-15	16-1/2"	25-3/8"	25-1/2"	16-1/2"	3-14"	21"	21" x 20'



NATURAL GAS RATINGS*

BOILER MODEL NO.	A.G.A. INPUT M.B.H.	A.G.A. OUTPUT M.B.H.	NET I.B.R. RATING			STEAM PIPING FACTOR
			STEAM SQR. FT.	STEAM M.B.H.	WATER M.B.H.	
211A-04	630	504	1575	378	438	1.333
211A-05	840	672	2100	504	584	1.333
211A-06	1050	840	2625	630	730	1.333
211A-07	1260	1008	3150	756	877	1.333
211A-08	1470	1176	3675	882	1023	1.333
211A-09	1680	1344	4229	1015	1169	1.324
211A-10	1890	1521	4808	1154	1315	1.310
211A-11	2100	1680	5392	1294	1461	1.298
211A-12	2310	1848	5971	1433	1607	1.290
211A-13	2520	2016	6521	1565	1753	1.288
211A-14	2730	2184	7067	1696	1899	1.288
211A-15	2940	2352	7608	1826	2045	1.288

*AVAILABILITY OF 5" W.C. GAS TRAIN ON SOME MODELS
LARGER SIZES AVAILABLE. PLEASE CALL FOR QUOTE.



TC Series Pressurized Wet Base Steam/Water Boiler



PeerlessBoilers.com

Designed to provide the highest efficiencies possible with forced draft firing, this line of Smith cast iron boilers is available in fifteen basic sizes, with gross output ratings from 900 to 4,629 MBH. Series 28A boilers may be used in either water or steam systems, and may be fired with light oil, gas or gas/light oil.

Series TC Boilers Include:

- Rugged cast-iron construction
- Integral flue gas collector
- Cast-in heat extraction pins for increased performance
- Wet-Base design for top performance
- Hi-Temp Hydronic port seals, rather than conventional push nipples for ease of installation
- Short, individual section draw rods to simplify assembly, reduce stress
- Front and rear observation ports
- Aluminized steel breeching damper which can be easily adjusted and locked in position
- Easy access side cleaning
- Obround shaped upper port for improved internal circulation and dry steam
- Wide variety of tankless heater options

That's the Peerless Series TC boiler... an efficient, rugged boiler designed specifically for apartments, schools, offices and other commercial and institutional buildings.

STANDARD EQUIPMENT

All Boilers

- Cast iron wet-base sections
- Insulated metal jacket
- Cast iron smokehood with integral damper
- Burner mounting plate with insulation block
- Front and rear flame observation ports
- Steel angle floor rails
- Ceramic fiber rope seal between sections
- Hi-Temp hydronic port seals
- Flue brush



Water Boilers

80 psi working pressure sections

ASME relief valve, 40 psi

Theraltimeter

Return yoke with flexible seals

Manual reset, Hi-Limit control (Boiler/Burner units only)

Operating control (Boiler/Burner units only)

Steam Boilers

ASME side outlet safety valve, 15 psi

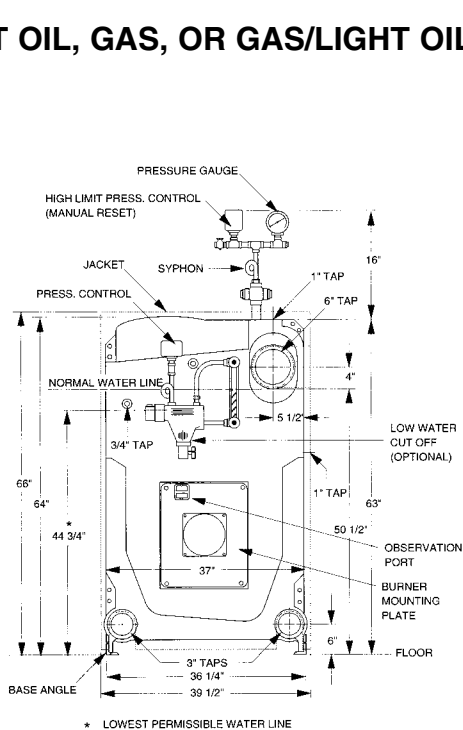
Steam gauge

Gauge glass with gauge cocks and guards

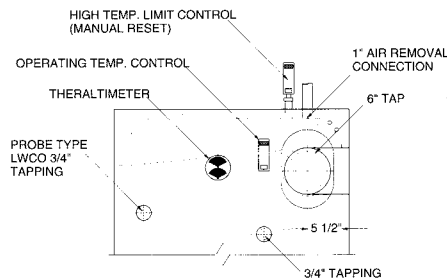
Manual reset, Hi-Limit control (Boiler/Burner units only)

Operating control (Boiler/Burner units only)

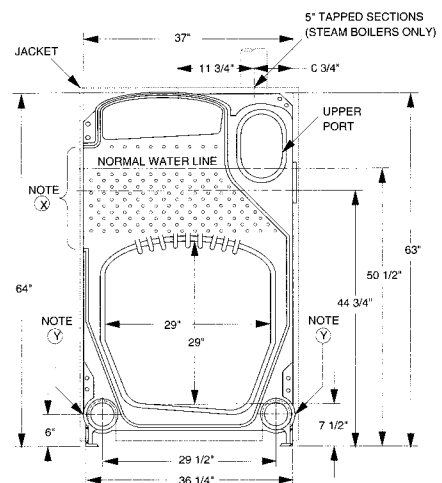
LIGHT OIL, GAS, OR GAS/LIGHT OIL



FRONT VIEW
(Steam Boiler)



FRONT VIEW
(Water Boiler)



INTERMEDIATE SECTION

Note X - Flue cleanout opening. Allow 36" clear work space for using flue brush

Note Y - 1-1/2" inspection tappings when ordered.



PeerlessBoilers.com

TC Series Pressurized Wet Base Steam/Water Boiler

Boiler Number (Note 1) Conn.	Boiler Horse-power	I=B=R Gross Output (MBH)	Net I=B=R Ratings (Note 2)						Water Contents (Gals.)		Water Working Weight (Lbs.)	Length Overall "A" Power Flame	Boiler Length "C"	Steam Uptake Locations (Note 9)			Dia. Vent Conn. "G"	Note (7) Height Vent "H"
			Steam		Water	I=B=R Burner Capacity Oil GPH Gas MBH		Steam	Water	"D"				"E"	"F"			
			Sq. Ft.	MBH	MBH	(Note 3)	(Note 4)											
†TC-3-4	27	900	2813	675	783	8.0	1154	103.8	123.4	4,215	71-5/8	33	12-1/2	___	___	10	57-5/8	
†TC-3-5	35	1166	3646	875	1014	10.4	1491	125.8	150.3	5,038	83-1/8	41	20-1/2	___	___	10	57-5/8	
†TC-3-6	43	1433	4538	1089	1246	12.6	1827	147.8	177.2	5,861	91-1/8	49	12-1/2	16	___	10	56-5/8	
†TC-3-7	51	1699	5458	1310	1477	15.0	2163	169.8	204.1	6,684	99-1/8	57	12-1/2	24	___	12	56-5/8	
†TC-3-8	59	1965	6358	1526	1709	17.4	2499	191.8	231.0	7,507	107-1/8	65	12-1/2	32	___	12	55-5/8	
†TC-3-9	67	2232	7221	1733	1941	19.6	2836	213.8	257.9	8,331	115-1/8	73	12-1/2	40	___	14	55-5/8	
†TC-3-10	75	2498	8079	1939	2172	22.0	3172	235.8	284.8	9,169	128	81	20-1/2	40	___	14	55-5/8	
†TC-3-11	83	2764	8942	2146	2403	24.5	3508	257.8	311.7	9,992	137-1/8	89	20-1/2	24	24	14	55-5/8	
†TC-3-12	91	3031	9804	2353	2636	26.5	3844	279.8	338.6	10,815	145-1/8	97	20-1/2	24	32	14	54-5/8	
†TC-3-13	98	3297	10667	2560	2867	29.0	4180	301.8	365.5	11,649	153-1/8	105	20-1/2	32	32	14	54-5/8	
†TC-3-14	106	3563	11525	2766	3098	31.5	4517	323.8	392.4	12,467	161-1/8	113	20-1/2	32	40	16	54-5/8	
†TC-3-15	114	3830	12392	2974	3330	33.5	4853	345.8	419.3	13,511	169-1/8	121	20-1/2	40	40	16	54-5/8	
†TC-3-16	122	4096	13250	3180	3562	36.0	5189	367.8	446.2	14,375	177-1/8	129	20-1/2	48	40	16	54-5/8	
†TC-3-17	130	4362	14113	3387	3793	38.5	5525	389.8	473.1	15,239	191-1/8	137	20-1/2	48	48	18	54-5/8	
†TC-3-18	138	4629	14975	3594	4025	40.5	5862	411.8	500.0	16,103	199-1/8	145	20-1/2	56	48	18	54-5/8	

(Note 1) Important Ordering information

(†) Add Prefix for type of fuel to be burned. "LO" for light oil, "G" for Gas or "GO" for gas/oil.

(³) Insert "S" for steam, "W" for water.

Example: LO-28A-S-6 is the model no. for a six section steam boiler firing light oil.

(Note 2) Net I=B=R Water Ratings are based on an allowance of 1.15. Net I=B=R Ratings for steam boilers are based on piping and pick-up factor as follows: 4 and 5 section = 1.333, 6 section = 1.305, 8 section and larger = 1.288.

(Note 3) Light oil having a heat content of 140,000 BTU/Gal.

(Note 4) Gas having a heat content of 1,000 BTU/Cu. Ft., 0.60 specific gravity

(Note 5) Burner operation: Low-fire start, high-fire run, two position air.

(Note 6) Burner operation: On-off, (4 sect.); Low-fire start, high-fire run, two position air (5-14 sect.).

* When 5th heater is required—relocate steam uptake and dimensions "E" = 32 in. and "F" = 16 in.

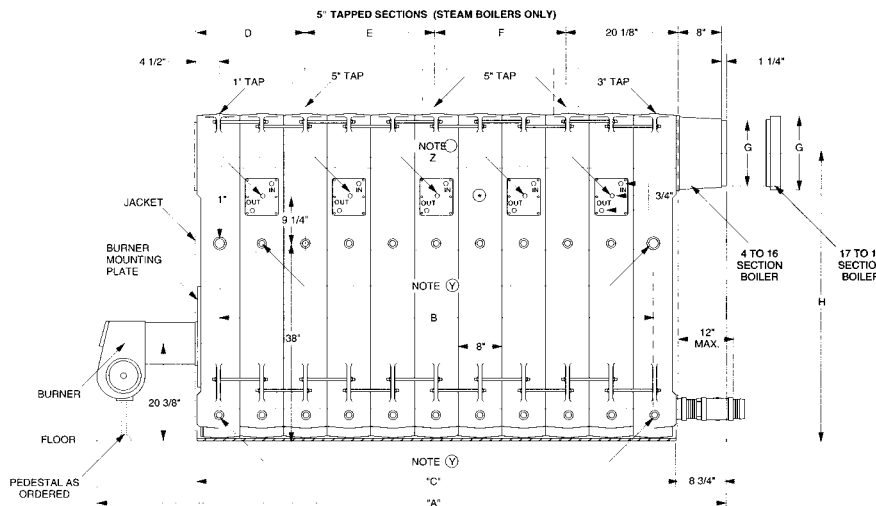
(Note 7) When unit is assembled or packaged, add 6" to heights for 4-14 sect., 8" to heights for 15-18 sect.

(Note 8) Add 2-3/4" to sect. 14 thru 18 for smoke hood adaptor.

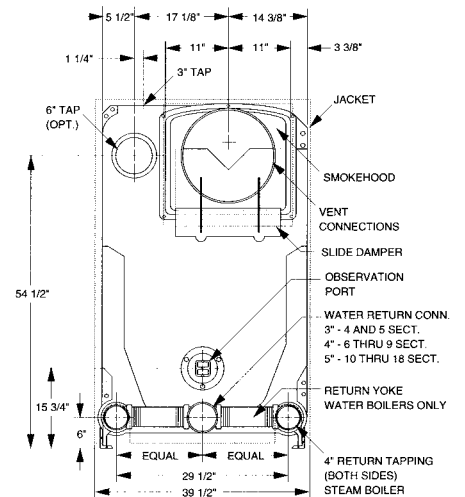
†† Based on 0.10 ins. W.C. pressure at boiler outlet. If vent sizing results in a back pressure greater than 0.10 ins. W.C., consult Smith

(Note 9) These measurements are approximate.

The Smith representative should be consulted before selecting boilers for installation having unusual piping and pick-up requirements, such as intermittent system operation, extensive piping systems, etc. The boiler ratings have been determined under previous governing forced draft units.



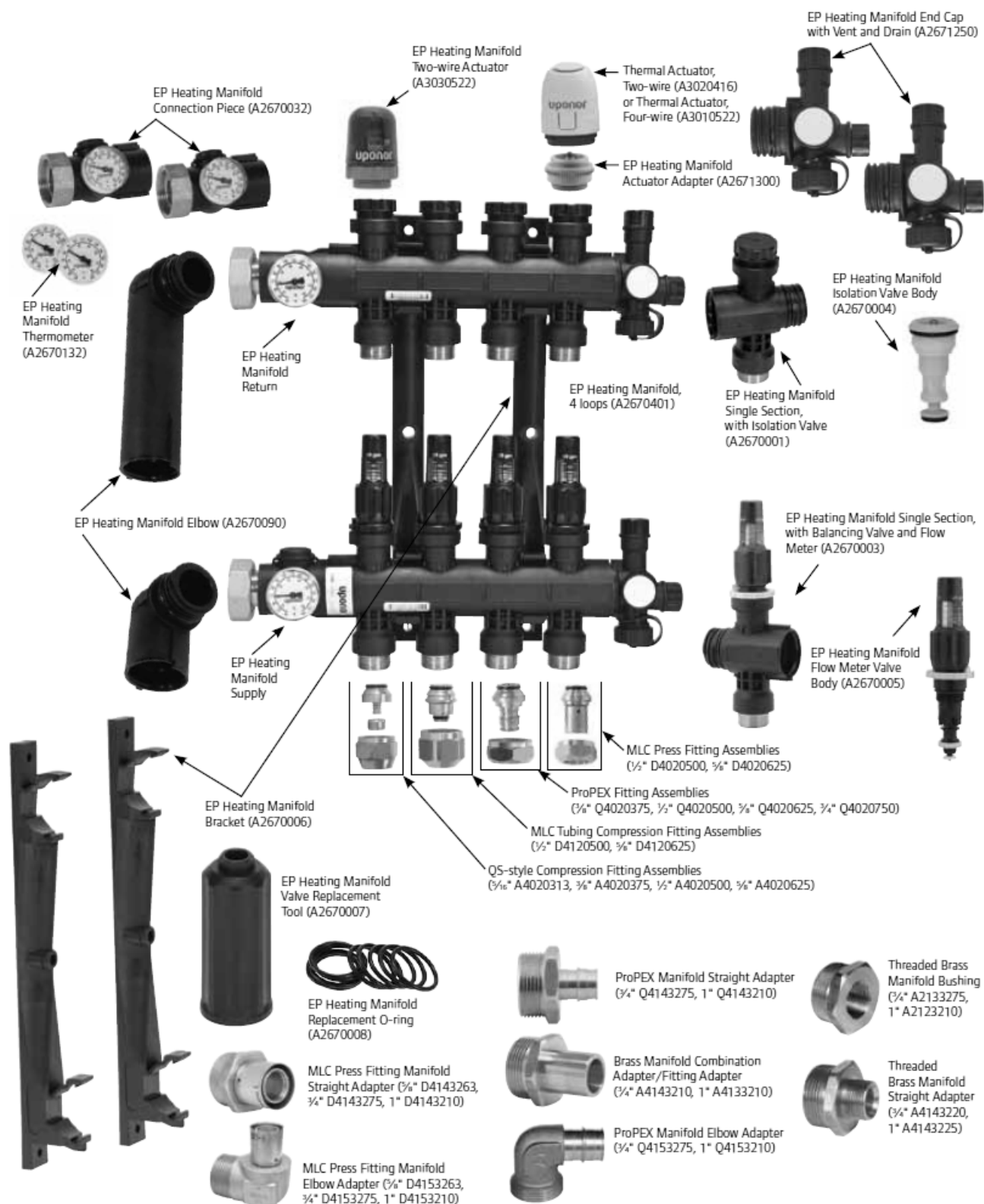
SIDE VIEW



REAR VIEW

Note Z - Tankless heater sections when ordered. Allow 36" clear space for heater withdrawal.

In Floor Radiant Heating System

Engineered Polymer (EP) Heating Manifold Exploded View

In Floor Radiant Heating System

hePEX Barrier Tube



WIRSBO-hePEX (cross-linked polyethylene) is heat transfer tubing with an EVOH oxygen diffusion barrier. Wirsbo-hePEX tubing is rated and listed by the Hydrostatic Design Stress Board of PPI at: 73.4°F at 160 psi, 180°F at 100 psi and 200°F at 80° psi.

Description	Part No.
5/16" nom. hePex 250 ft. coil	A1180313*
5/16" nom. hePex 1000 ft. coil	A1220313*
3/8" nom. hePEX 400 ft. coil	A1210375
3/8" nom. hePEX 1000 ft. coil	A1220375
1/2" nom. hePEX 300 ft. coil	A1250500
1/2" nom. hePEX 1000 ft. coil	A1220500
5/8" nom. hePEX 300 ft. coil	A1250625
5/8" nom. hePEX 1000 ft. coil	A1220625
3/4" nom. hePEX 300 ft. coil	A1250750
1" nom. hePEX 300' ft. coil	A1251000

*For use with Wirsbo Quik Track only.

Assembled EP Heating Manifolds

The EP Heating Manifold Assemblies feature isolation valves and balancing valves with flow meters, and come fully assembled, ready for installation. The manifolds are available in 2-through 8-loop configurations with a maximum flow of 15.4 gpm.



Description	Part No.
2 loop, Supply & Return	A2670201
3 loop, Supply & Return	A2670301
4 loop, Supply & Return	A2670401
5 loop, Supply & Return	A2670501
6 loop, Supply & Return	A2670601
7 loop, Supply & Return	A2670701
8 loop, Supply & Return	A2670801

Manifold Extension Kit

The EP Heating Manifold Single Section with Isolation Valve is a single loop add-on used on the return side for EP Heating Manifold Assemblies.



Description	Part No.
Single section w/ isolation valve	A2670001

The EP Heating Manifold Single Section with Balancing Valve and Flow Meter is a single loop add-on used on the supply side for EP Heating Manifold Assemblies.



Description	Part No.
Single section w/ balancing valve & flow meter	A2670003



Quik Trak®

Quik Pac™, Wirsbo's pre-assembled Quik Trak panels, consist of six panels fastened together with strapping tape.

Note: For use with 5/16" hePEX tubing only.

Description	Part No.
Quik Trak 7" x 48" x 6" panels	A5060761



Quik Trak Return Panels

Quik Return Panels are designed with a "U" groove to complete to complete tubing turns.

Description	Part No.
Quik Trak 7" x 48" panels	A5060702

Quick Drive Sealant



Quik Trak Sealant is 100% silicone and provides good thermal transfer. Use to adhere 5/16" Wirsbo hePEX plus tubing in the Quik Trak groove.

Description	Part No.
Quick Drive Sealant	E6050010



Quik Trak Fitting Assembly

Quik Return Panels are designed with a "U" groove to complete to complete tubing turns.

Description	Part No.
Fitting Assembly	A4020313



Joist Trak™ Heat-Transfer Panel

Joist Trak heat transfer panels enable fast, effective installation of 3/8" and 1/2" hePEX tube in virtually any application for floors, walls, and ceilings. The rigid channel construction makes it easy for hePEX tube to be "snapped" into place tightly and securely.

Description	Part No.
3/8" Joist Trak 4" x 48"	A5080375
1/2" Joist Trak 4" x 48"	A5080500

In Floor Radiant Heating System

ProPEX® Ring



ProPEX Rings slide over end of tubing to make a ProPEX fitting connection.

Note: ProPEX expander tool required.

Description	Part No.
ProPEX Ring 3/8"	Q4690302
ProPEX Ring 1/2"	Q4690512
ProPEX Ring 5/8"	Q4690625
ProPEX Ring 3/4"	Q4690756

ProPEX Fitting Assembly



ProPEX Rings slide over end of tubing to make a ProPEX fitting connection.

Note: ProPEX expander tool required.

Description	Part No.
3/8" ProPEX Fitting	Q4020375
1/2" ProPEX Fitting	Q4020500
5/8" ProPEX Fitting	Q4020625
3/4" ProPEX Fitting	Q4020750

ProPEX Brass Coupling



ProPEX couplings make PEX to PEX connections.

Note: ProPEX expander tool required.

Description	Part No.
1/2" ProPEX coupling	Q4775050
5/8" ProPEX coupling	Q4776363
3/4" ProPEX coupling	Q4777575

ProPEX PEX to Male NPT



ProPEX couplings make PEX to NPT connections.

Note: ProPEX expander tool required.

Description	Part No.
1/2" ProPEX x 1/2" NPT	Q4525050
5/8" ProPEX x 3/4" NPT	Q4526375
3/4" ProPEX x 3/4" NPT	Q4527575

ProPEX Copper Adapter



ProPEX couplings make PEX to NPT connections.

Note: ProPEX expander tool required.

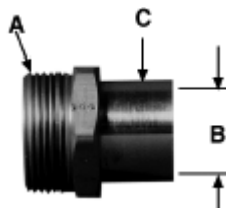
Description	Part No.
1/2" ProPEX x 1/2" CU	Q4515050
5/8" ProPEX x 3/4" CU	Q4516375



ProPEX Expander Tool

The ProPEX expander tool is required when installing the ProPEX tube. Comes with the sturdy expansion case.

Description	Part No.
ProPEX Hand Expander Tool with 1/2", 3/4", 1" heads	Q6295075
ProPEX Hand Expander Tool w/o heads	Q6275075
1/2" Head	Q6310500
5/8" Head	Q6310625
3/4" Head	Q6310750
1" Head	Q6311000



Manifold Adapter Copper

Adapter for 1-1/4" brass manifolds. Use R32 adapter to transition 1-1/4" manifold union nut to 1" copper pipe or 1-1/4" copper fittings and valves.

Description	Part No.
R32 x 3/4" CU adapter / 1" fitting adapter	A4143210
R32 x 1" CU adapter / 1-1/4" fitting adapter	A4133210

Control No.	A	B	C
A4143210	R32	3/4"	1-1/8"
A4133210	R32	1"	1-1/4"



Manifold Bushing

Control No.	A	B
A2123210	R32	1" NPT

Manifold Bushing for 1-1/4" brass manifolds. Use to transition 1-1/4" manifold union nut to 1" NPT female thread.

Description	Part No.
Bushing	A2123210



End Cap with Vent

End Cap with vent for 1-1/4" brass manifolds. Complete with drain valve and manual air vent. Required gasket included.

Description	Part No.
End cap with vent	A2803250

In Floor Radiant Heating System

QS Fitting Assemblies



Compression Fitting Assembly with O-ring. Connects 5/8" PEX tubing products to Wirsbo manifold* (brass) outlets, R20 and R25 components (5/8" currently only available as old style R20, less O-ring). Sold as a three piece component. Compression rings also sold separately.

Description	Part No.
5/16" QS20 Fitting Assembly	A4020313
3/8" QS20 Fitting Assembly	A4020375
1/2" QS20 Fitting Assembly	A4020500
5/8" QS20 Fitting Assembly	A4020625
3/4" QS25 Fitting Assembly	A4020750

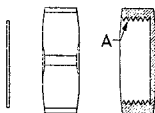
Basic End Cap



Basic end cap for 1-1/4" brass manifolds. Required gasket included.

Description	Part No.
R32 end cap	A2080032

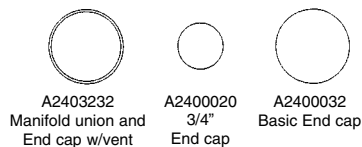
Manifold End Cap



Closes off unused R20 manifold loop connections. Required gasket included.

Description	Part No.
Loop end cap, optional, 10/pkg	A2080020

Manifold Gaskets



Gasket for 1-1/4" manifold and manifold parts, spare part.

Description	Part No.
Manifold/End cap w/vent gasket, spare part, 10/pkg	A2403232
Basic end cap gasket, spare part, 10/pkg	A2400032
3/4" end cap gasket, spare part, 10/pkg	A2400020

Repair Coupling



Use 5/16" Repair Coupling to connect 5/16" Wirsbo hePEX plus together. Note: One-piece Repair Coupling comes as an assembly. No other fittings are necessary.

Description	Part No.
Repair Coupling	A4010313

QS Coupling Nipple



QS20 Coupling Nipple (brass). Use coupling nipple and the appropriate fitting assembly to connect PEX to PEX (3/8", 1/2", 5/8" and 3/4").

Description	Part No.
Coupling Nipple, R20 X R20, 10/pkg	A4322020
Coupling Nipple, R25 X R25, 10/pkg	A4322525

QS Conversion Nipple



QS20 Conversion Nipple (brass). Use conversion nipple and the appropriate fitting to connect 5/8" PEX tubing to 1/2", 3/4" and 1" NPT.

Description	Part No.
Conversion Nipple, R20 x 1/2" NPT, 10/pkg	A4322050
Conversion Nipple, R20 x 3/4" NPT, 10/pkg	A4322075
Conversion Nipple, R20 x 3/4" NPT, 10/pkg	A4322075
Conversion Nipple, R25 x 3/4" NPT, 10/pkg	A4322575
Conversion Nipple, R25 x 1" NPT, 10/pkg	A4322510

QS Adapters



Adapter. Use R20 or R25 adapter and appropriate QS20 fitting assembly to transition REX tubing to 3/4" copper pipe.

Description	Control No.
Adapter R20 x 1/2" CU, 10/pkg	A4332050
Adapter R20 x 3/4" CU, 10/pkg	A4332075
Adapter R25 x 3/4" CU, 10/pkg	A4332575

QS Fitting Adapters



QS20 Fitting Adapter. Use R20 adapter and appropriate QS20 fitting assembly to transition PEX tubing to 1/2" and 3/4" copper fittings.

Description	Part No.
Fitting Adapter R20 x 1/2" CU, 10/pkg	A4342050
Fitting Adapter R20 x 3/4" CU, 10/pkg	A4342075

QS Compression Rings



QS Compression Ring (brass). Replacement part. The QS20 compression ring is designed and tested for use with Wirsbo-hePEX and Wirsbo-PEX. Do Not substitute similar compression rings.

Description	Part No.
1/2" Compression Ring, spare part, 10/pkg	A4160050
5/8" Compression Ring, spare part, 10/pkg	A4160625

In Floor Radiant Heating System

Metal Bend Supports

Metal Bend Support (zinc plated).
Provides rigid 90° bend for nominal PEX tubing.



Description	Part No.
3/8" Metal Bend supports	A5110325
5/8" Metal Bend supports	A5110625
3/4" Metal Bend supports	A5110750

Plastic Bend Supports

PVC bend support provides rigid 90° bend for nominal PEX tubing runs exiting a concrete slab.



Description	Part No.
1/2" PVC Bend Support	A5500500
5/8" PVC Bend Support	A5500625
3/4" PVC Bend Support	A5500750

Drop Ear Bend Supports

Drop ear bend supports provide a rigid 90° bend and the ability to secure Wirsbo tubing where it exits a stud wall or wood subfloor.



Description	Part No.
1/2" Metal Bend Supports	F5120500
1/2" Plastic Bend Supports	F5200500

PEX Clip

Plastic PEX clips are used to secure tubing products to the underside of wood flooring for joist application installations. Design of clip prevents direct contact with wood subfloor. Wood screw suitable as fastening hardware (not included).



Description	Part No.
PEX Clip (1/2" & 5/8"), 100/pkg.	F7051258

PEX Tubing Cutter

PEX Tubing Cutter (3/8" to 1" tube size capacity). Cutter has a reversible double blade.



Description	Part No.
Tube cutter	E6081125

Fixing Wire Twister

Description	Part No.
Fixing wire twister	E6090005



PEX Rail

Plastic rail used to secure 1/2" and 5/8" PEX tubing products to concrete floors and wooden subfloors. Suitable fastening hardware not included. 6'6" L x 1" H. 2" between channels.

Description	Part No.
5/8" Pex Rail	A5700625

Tube Fastener



U Shaped Tube Fastener. Galvanized staple used to manually secure PEX tubing products to wood subflooring.

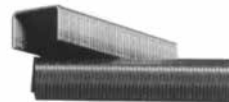
Description	Part No.
U shaped tube fasteners, 250/pkg	A7040250



Foam Staple

Tubing staples for manual stapler (#E6025075). Plastic staple used to secure 1/2" and 5/8" PEX to rigid insulation.

Description	Part No.
Foam Staple, 1-1/2", 300/pkg	A7015050
Foam Staple, 2-1/2", 300/pkg	A7015075

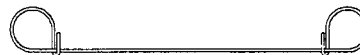


Staples

Tubing Staples. Use 1-1/4" staples in staple down installations to secure 1/2" and 5/8" PEX to wood subfloors.

Use the Pneumatic Stapler (#E6021620) with 2-1/2" staples to secure PEX tubing in joist and rigid foam insulation applications.

Description	Part No.
1-1/4", 10,000/pkg	A7011250
2-1/2", 4500/pkg	A7012500



Fixing Wire

Fixing Wire. 6" galvanized steel tie used to secure PEX tubing products to wire mesh or rebar. **Use with fixing wire twister or auto fixing wire twister (ratchet style).**

Description	Part No.
Fixing wire, 1000/pkg	A7031000

Ratchet Style
Fixing Wire Twister

Use Ratchet-style Fixing Wire Twister with Fixing Wire (A7031000).



Description	Part No.
Fixing Wire Twister	E6090005
Auto Fixing Wire twister	E6091700

In Floor Radiant Heating System

SetPoint Controller Thermostat

SetPoint 521 programmable thermostats are designed to sense air, floor or both temperatures with the ability to select one or the other as the primary sensing point. The thermostats also include multistage functionality along with programmable schedules.



Description	Part No.
SetPoint 502	A3040521

Radiant Thermostat

The touchscreen thermostat can control room temperature through operative temperature sensing, an optional floor sensor or a combination of both. The floor sensor can be used to maintain warm floors throughout the heating season as well as provide temperature limit protection. The thermostat is designed to operate using two wires.



Description	Part No.
2 Wire Thermostat	A3100101
Slab Sensor, 10k	A9010599

4 Wire Thermal Actuator

Four-wire thermal actuators mount directly onto TruFLOW Classic, TruFLOW Jr. valved, stainless-steel and EP heating manifolds. The actuators provide individual loop flow control on multi-zoned manifolds and feature an end switch for activation of a relay (pump), heat plant or other auxiliary devices. All adapter rings to mount to Uponor manifolds are included in the package.



Description	Part No.
4 Wire Actuator	A3023522
EP Adaptor	A2671300

Service Wrench

Lightweight, compact design. Use the 1-3/16" wrench to tighten 3/4" female NPT compression nut to 1-1/4" manifold. Use the 1-7/8" wrench to tighten manifold union nuts.



Description	Part No.
1-7/8" Service wrench	E6111875
1-3/16" Service wrench	E6111188

4 Zone Control Module



The Zone Control Module provides connection to the power supply transformer; interconnections between the individual thermostats and their respective MVAs; thermal actuators or zone valves; and the connection between the end switches and the pump or boiler relay.

Description	Part No.
Zone Control Module	A3030004

Powered Zone Controller



Four- and Six-zone Controllers include transformers for low-voltage operations and relays to operate line-voltage controls. Fully fuse-protected, they also include an isolated end switch and built-in DHW priority switch. The indicator lights show full functionality of the products wired to the Powered Zone Controllers.

Description	Part No.
Powered 4 Zone Control	A3080404
Powered 6 Zone Control	A3080606

Pneumatic Stapler Kit



Pneumatic Stapler Kit fires 5/8" through 1 1/4" staples with a 1-inch crown. Kit includes stapler, walking stick and conventional nose piece for attaching 1/2" and 5/8" Uponor PEX to subfloors.

Description	Part No.
Pneumatic Stapler	E6021638

Manual Foam Stapler



Use Manual Foam Stapler with Plastic Foam Staples (A7015050, A7015075) to attach 3/8", 1/2" and 5/8" Uponor PEX to rigid insulation.

Description	Part No.
Foam Stapler	E6025075

Pressure Test Kit



Brass Manifold Pressure Test Kit contains R32 x 3/4" manifold bushing, R32 solid brass plug, 3/4" brass nipple and pressure gauge assembly (100 psi). Schraeder valve is included. Note: This fitting is not compatible with the TruFLOW Sr.

Description	Part No.
Pressure Test Kit	E6122000

In Floor Radiant Heating System

Multi-Layer Composite Tubing (MultiCor)



Uponor's MLC tubing is a multi-layered composite tubing consisting of an interior aluminum tubing lined with inner and outer layers of PEX. Layers are bonded to the aluminum by a special adhesive. MLC tubing offers 100% oxygen diffusion, protects against corrosion and can be embedded in concrete and installed in walls, floors and ceilings. The flexibility of MLC tubing results in easy roll-outs. The stay-in-place rigid feature of the tubing works great for hydronic baseboard, radiator, unit heaters, air handlers or manifold connections.

Description	Part No.
1/2" MLC Tubing 1000'	D1220500
5/8" MLC Tubing 300'	D1250625
3/4" MLC Tubing 500'	D1240750
1" MLC Tubing 300'	D1141000

MLC Press Fitting Manifold Adapter



MLC Press Fitting Manifold Adapter transitions R32 manifold connection to 5/8", 3/4" and 1" MLC tubing. Note: The Mini-Press Battery Tool or MLC Press Fitting Manual Tool is required. This fitting is not compatible with the TruFLOW Sr.

Description	Part No.
Manifold Adapter 3/4" x R32 Angle	D4153275
Manifold Adapter 3/4" x R32 Straight	D4143275
Manifold Adapter 1" x R32 Angle	D4153210
Manifold Adapter 1" x R32 Angle	D4153210

MLC Press Fitting Brass Sweat Adapter



MLC Press Fitting Brass Sweat Adapter transitions MLC tubing to copper pipe. Fittings come disassembled for sweating. Note: The Mini-Press Battery Tool or MLC Press Fitting Manual Tool is required.

Description	Part No.
Sweat Adapter 3/4" x 3/4"	D4517575
Sweat Adapter 1" x 1"	D4511010

MLC Press Fitting Brass MPT Adapter



MLC Press Fitting Brass Male NPT Threaded Adapter connects MLC tubing to male NPT threads. Note: The Mini-Press Battery Tool or MLC Press Fitting Manual Tool is required.

Description	Part No.
MPT Adapter 3/4" x 3/4"	D4527575
MPT Adapter 1" x 1"	D4521010

MLC Press Fitting Adapter



MLC Press Fitting Brass Coupling connects two pieces of MLC tubing. Note: The Mini-Press Battery Tool or MLC Press Fitting Manual Tool is required.

Description	Part No.
Fitting Adapter 3/4"	D45417575
Fitting Adapter 1"	D45411010



MLC Press Fitting Brass Elbow

Press Fitting Elbow makes 90-degree connections for MLC tubing.

Description	Part No.
Fitting Elbow 3/4"	D4710750
Fitting Elbow 1"	D4711000

MLC Chamfering Tool



The MLC Tubing T-handle Chamfering Tool bevels the ends of MLC tubing in preparation for making a fitting connection. The T-handle is removable to use the tool with a drill for multiple chamfering.

Description	Part No.
Chamfering Tool 3/4"	D6100750
Chamfering Tool 1"	D6101000



Multi-Press Battery Tool

The MLC Battery Tool is an electro-hydraulic tool that makes easy connection to MultiCor tubing. Eliminates the need for air compressors and generators.

Description	Part No.
Battery Tool	D6251500



Mini-Press Battery Tool

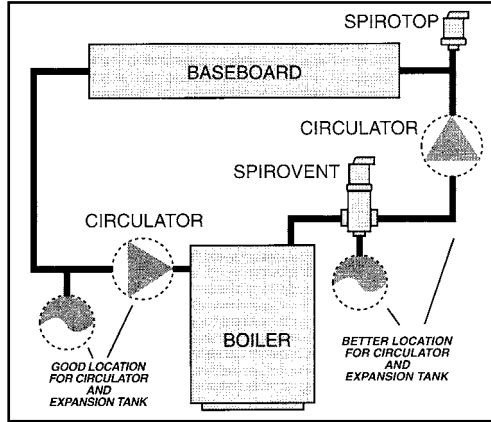
The Mini-Press Battery Tool Kit provides an electro-hydraulic tool that makes fast, easy connections from 1/2" through 1" MLC.

Description	Part No.
Battery Tool	D6261632

SPIROVENT®

A Complete Product Line

Spirovent Junior: Use the "Junior" for residential and light commercial jobs. It comes in 3/4", 1", 1/4", and 1-1/2" female-threaded sizes and is made of solid brass for long life. All models except for the 3/4" model are tapped 1/2" at the bottom to accommodate a bladder-type compression tank.



Applications:

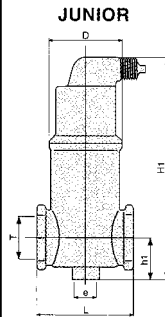
If you want to avoid air-related callbacks, use a Spirovent on every new hot- and/or chilled-water system. You'll be amazed at the ease with which the system starts up.

You can also solve any air-related problems in an existing system with a Spirovent. It's a simple retrofit. Just locate the Spirovent in the common piping at the boiler. This is the point where the water is hottest. The sketches show you the best locations for the Spirovent.

SPIROVENT		JUNIOR (Brass)			
T/Pipe Size		3/4"	1"	1-1/4"	1-1/2"
O.D.	Inch				
Thread	NPT	3/4*	1*	1-1/4*	1-1/2*
D	Inch	2.6	2.6	2.6	2.6
DF	Inch				
H1	Inch	6.0	7.0	7.8	9.1
H2	Inch				
h1	Inch	0.8	1.4	1.5	1.6
h2	Inch				
L	Inch	3.4	3.5	3.5	3.5
LF	Inch				
Plug e (JUNIOR/SENIOR)			1/2"	1/2"	1/2"
Valve e (DIRT/DRAIN)					
Volume (JR/SR)	Gal.	0.05	0.06	0.07	0.09
Volume (DT/DN)	Gal.				
Weight† (JR/SR)	Lbs.	3.1	3.4	3.8	4.4
Weight† (DIRT)	Lbs.				
Weight† (DRAIN)	Lbs.				
Cv Rating		14	22	40	55
Maximum Flow	GPM	6	10	15	30

Part #	Size
VTP050TM	1/2"
VJR750FT	3/4"
VJR100TM	1"

Part #	Size
VJR125TM	1-1/4"
VJR150TM	1-1/2"
VJR200MT	2"

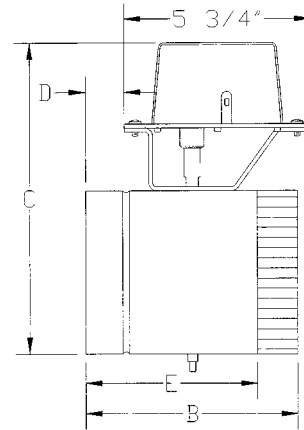


Maximum pressure 150 psi.
Maximum temperature 270°F

EFFIKAL PRODUCTS

RVGP-KS SERIES VENT DAMPER

Standard 5 Year Warranty



OPERATIONAL FEATURES

Ambient temperature change
to 32°F - 135°F.
Available in diameters 4" thru 12".

COMPATIBILITY

Works with all 24 VAC
Ignition Systems.

EASE OF INSTALLATION

Keyed Wiring Connector can only be
installed one way.

SAFETY FEATURES

Dual Interlocking Switches allow burner to fire only if damper is in
open position. Service switch eliminates midnight service calls.

ACCESSORIES

Wiring Harnesses are available to fit most applications.

ELECTRICAL

MINIMUM WIRING REQUIREMENTS

24VAC. 18 gauge 105C

THERMOSTAT HEAT ANTICIPATION

O.I.A plus current draw for control circuit

POWER PLAN REQUIREMENT

3W at 24 VAC when opening or closing

TIMING

Opens in 15 seconds

Closes in 15 seconds

CHARACTERISTICS

Power open

Power close

RVGP-KS (pipe size) BKF DIMENSIONS				
DIM. A PIPE SIZE	DIM. E LENGTH	DIM. C HEIGHT	DIM. D	DIM. E
4"	6-1/16"	8-7/8"	15/16"	4-13/16"
5"	6-1/16"	9-7/8"	15/16"	4-13/16"
6"	6-1/2"	10-7/8"	1-3/16"	5-1/4"
7"	7-1/16"	11-7/8"	1-7/16"	5-13/16"
8"	8-1/16"	12-7/8"	1-15/16"	6-13/16"
9"	10-1/8"	13-7/8"	3"	8-7/8"
10"	12-1/8"	14-7/8"	4"	10-7/8"
12"	12-1/8"	16-7/8"	4"	10-7/8"

152 Two Stage Setpoint Control

The Two Stage Setpoint Control 152 is a microprocessor-based control that operates as either a two stage setpoint control or as two independent setpoint controls. As a two stage setpoint control, the 152 can provide two stage heating, two stage cooling or a combined heating / cooling interlock function. When operating as two independent setpoint controls, the 152 can control any combination of heating or cooling device.

Features

- 2 Stage operation or heat & cool control
- Control of up to 2 different setpoints (with additional sensor)
- Digital display
- Pulse Width Modulation



256 Single Stage Boiler Control

The Boiler Control 256 is designed to operate a single boiler using Outdoor Temperature Reset. It can be used in applications ranging from a single zone of baseboard to multiple zones of fan coils and baseboard. This control regulates a single heating water temperature through Outdoor Temperature Reset. The 256 replaces the 219, 230, 250, 253 boiler controllers

Features

- Outdoor Temperature Reset
- Test sequence
- Automatic Boiler Differential
- Quick setup for easy installation and programming
- Warm Weather Shut Down
- Setback input for night setback
- Advanced settings to fine-tune building requirements



257 Two Stage DHW Boiler Control

The DHW Control 257 is designed to operate multiple boilers for volume water heating. It can be used in hotels, apartments, and laundromats to control multiple boilers and provide quick recovery for domestic hot water. This control regulates a single hot water temperature through DHW control. It is capable of controlling up to 2 on/off boilers using a sensor to maintain a tank setpoint temperature.

Features

- 2 Stage control
- Equal Runtime Rotation
- Cumulative boiler run time hours
- Proportional or PID staging



216 Two Stage Boiler & Set Point Controller

The Boiler Control 261 is designed to stage two on/off boilers using Outdoor Temperature Reset. It can be used in applications ranging from a single zone of baseboard, multiple baseboard and fan coil zones, to dedicated setpoint heating in commercial buildings. This control regulates a single heating water temperature through Outdoor Temperature Reset and/or setpoint target control. It is capable of controlling (stage and rotate) up to 2 on/off boilers, or a single 2 stage boiler, as well as the system pump..

Features

- 2 Stage control
- Equal Runtime Rotation
- Cumulative boiler run time hours
- Proportional or PID staging



274 Four Stage Boiler / DHW Set Point Controller

The Boiler Control 274 is designed to stage multiple boilers using Outdoor Temperature Reset. It can be used in applications ranging from a single zone of baseboard, multiple baseboard and fan coil zones, to dedicated domestic hot water heating in commercial buildings. This control regulates a single heating water temperature through Outdoor Temperature Reset and/or setpoint/DHW target control. It is capable of controlling (stage and rotate) up to 4 on/off boilers as well as the system pump..

Features

- Advanced settings to fine-tune building requirements
- Control 4 On-Off boilers
- Powered system pump output
- Test sequence to ensure proper component operation
- Automatic Boiler Differential
- Equal Run Time Rotation
- Warm Weather Shut Down
- Exercising
- Outdoor Temperature Reset





PANEL-TRACK®

KPT- D® HYDRONIC BASEBOARD PANEL-TRACK

Panel-Track baseboard heating is superior in every way! From modern design to maximum heating output. From the patented heating element to the rugged support brackets. From the fingertip controlled pivot damper to the newly designed, contoured accessory line. Panel-Track is attractive, economical and easy to install Which means no costly callbacks. Ideal for residential and light commercial applications.

EMBASSY'S PATENTED PANEL-TRACK HEATING ELEMENT

Continuous rails of tough polypropylene line the entire length of the heating element, enclosing all four corners and preventing injury. This eliminates all metal to metal contact and guarantees the ultimate in quiet, trouble-free performance.

AVERAGE WATER TEMPERATURE – 65° Entering air

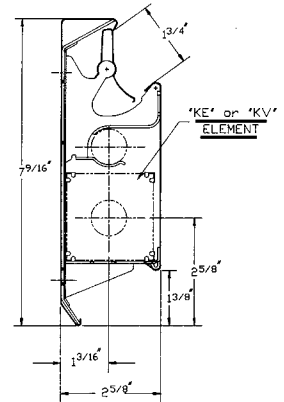
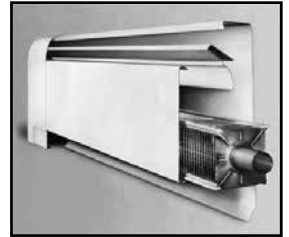
GPM	lb/hr.	170°	180°	190°	200°	210°	220°	230°	240°
4	2000	510	580	640	710	770	850	910	970
1	500	480	550	610	670	730	800	860	920

FIN TUBE BASEBOARD RADIATION

PART #	DESCRIPTION
KRP-*	Baseboard/Ft. (Complete)
KE-*	Element/Ft.
KCA-*	Cover/Ft.
KHCL	6" Hinged end cap, left
KHCR	6" Hinged end cap, right
KVEL	9" Valve enclosure left
KVER	9" Valve enclosure right
KEX7	7" Extension set
KCCL	3" End cap, left
KCCR	3" End cap, right

PART #	DESCRIPTION
KDJ	2" Damper joiner
KWJ-3	3" Wall joiner
KWJ-5	5" Wall Joiner
KIC	90° Inside corner
KIC-45	45°/135° Inside corner
KRB	U-bends
KOC	90° Outside corner
KOC-45	45°/135° Outside corner
KSP	Splicer set

*Lengths available: 2, 3, 4, 5, 6, 7, 8, 10



SYSTEM6™

RESIDENTIAL/LIGHT COMMERCIAL BASEBOARD

System 6 is a heavy-duty baseboard the provides contractors a choice of six different interchangeable high output heating elements in one low profile enclosure. With more flexibility than any competitor, System6's low profile makes it ideal where space is at a premium.

System 6's 18 gauge steel front panel makes it ideal for high traffic areas while baked on white enamel finish blends with any decor.

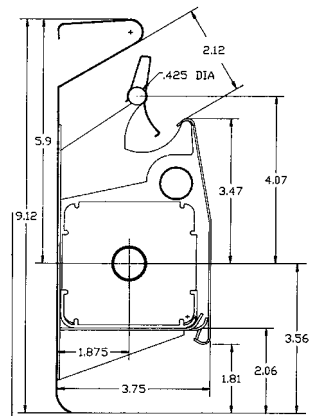
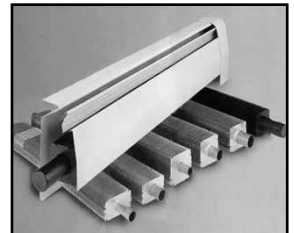
Hot Water Ratings in SEN Enclosure

Model	Flow Rate	170°	180°	190°	200°	210°	220°	230°	240°
SCE-632	4 GPM	710	800	890	970	1070	1150	1250	1330
SCE-632	1 GPM	670	760	840	920	1010	1090	1180	1260
SCE-633	4 GPM	770	870	970	1070	1160	1270	1360	1460
SCE-633	1 GPM	730	820	920	1010	1100	1200	1290	1380
SCE-642	4 GPM	680	760	850	930	1030	1110	1190	1280
SCE-642	1 GPM	640	720	800	880	970	1050	1130	1210
SCE-643	4 GPM	740	840	930	1040	1130	1230	1320	1420
SCE-643	1 GPM	700	790	880	980	1070	1160	1250	1340
SCE-653	4 GPM	710	800	900	990	1090	1180	1290	1380
SCE-653	1 GPM	670	760	850	940	1030	1120	1220	1310
SCE-655*	4 GPM	610	690	770	850	930	1010	1090	1170
SCE-655*	1 GPM	580	650	730	800	880	960	1030	1110

*1-1/4 steel pipe.

Stock Models

PART #	DESCRIPTION
SCP632-*	Baseboard/Ft. (Complete)
SCE632-*	3/4" Element/Ft.
SCE643-*	1" Element/Ft.
SEN-*	Cover only
SCCL	3" End cap, left
SCCR	3" End cap, right
SVEL	9" Valve enclosure left
SVER	9" Valve enclosure right



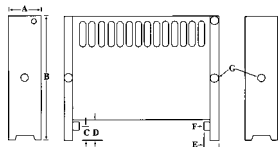
PART #	DESCRIPTION
SHB	Hanger Brackets
SWJ-5	5" Wall Joiner
SIC-90	90° Inside corner
SIC-135	45°/135° Inside corner
SRB	U-bends
SOC-90	90° Outside corner
SOC-135	45°/135° Outside corner
SSP	Splicer set

*Lengths available: 2, 3, 4, 5, 6, 7, 8, 10

CAST-IRON RADIATION

RADIANT DIMENSIONS

A	B	C	D	E	F	G
5"	20"	2-3/4"	4-1/2"	1-7/8"	1-1/4"	1/8"

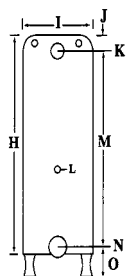


All Air Vent Tappings 1/8"
All Bottom Tappings 1-1/4"
Recess should be 1/2" longer and
1/4" higher than radiator

Maximum working pressure: 15 lb.
steam, 30 lb. water.

GRILLES AVAILABLE

SLENDERIZED



Tappings – Top 1",
Bottom 1-1/4"
All Air Vent
Tappings 1/8"
Maximum working
pressure: 15 lb.
steam, 30 lb. water.

PART #	LENGTH	SQR. FT. PER SECTION 2.25
R20-4	9"	9.0
R20-6	13-1/2"	13.5
R20-8	18"	18.0
R20-10	22-1/2"	22.5
R20-12	27"	27.0
R20-14	31-1/2"	31.5
R20-16	36"	36.0
R20-18	40-1/2"	40.5
R20-20	45"	45.0
R20-22	49-1/2"	49.5

PART #	LENGTH	SQR. FT. PER SECTION 2.25
R20-24	54"	54.0
R20-26	58-1/2"	58.5
R20-28	63"	63.0
R20-30	67-1/2"	67.5
R20-32	72"	72.0
R20-34	76-1/2"	76.5
R20-36	81"	81.0
R20-38	85-1/2"	85.0
R20-40	90"	90.0
R20-42	94-1/2"	94.5



Radiant
Grille sold separately.
Order part # G20 + size.

PART #*	LENGTH	EDR* 6-TUBE 25" HIGH
25-6-4	7"	12
25-6-6	10-1/2"	18
25-6-8	14"	24
25-6-10	17-1/2"	30
25-6-12	21"	36
25-6-14	24-1/2"	42
25-6-16	28"	48
25-6-18	31-1/2"	54
25-6-20	35"	60
25-6-22	38-1/2"	66
25-6-24	42"	72
25-6-26	45-1/2"	78

PART #	LENGTH	EDR* 6-TUBE 25" HIGH
25-6-28	49"	84
25-6-30	52-1/2"	90
25-6-32	56"	96
25-6-34	59-1/2"	102
25-6-36	63"	108
25-6-38	66-1/2"	114
25-6-40	70"	120
25-6-42	73-1/2"	126
25-6-44	77"	132
25-6-46	80-1/2"	138
25-6-48	84"	144



Slenderized

Rough in dimensions

Size	H	I	J	K	L	M	N	O
25-6	24"	7"	1"	1"	1/8"	21-1/2"	1-1/4"	2-1/2"
19-4	17-1/2"	4-1/2"	1"	1"	1/8"	15-1/4"	1-1/4"	2-1/2"

Heat Emmision Chart (Based on room temp. of 70°F)

Avg. water temp. in Radiators °F.	150	160	170	180	190	200	210	215
Heat emission BTU/hr. per Sq. Ft.	110	130	150	170	190	210	230	240

*HEATING SURFACE BASED UPON THE STANDARD HEAT EMISSION OF 240 BTU
PER SQUARE FOOT/HOUR.

BASERAY

Basera y Cast Iron Baseboard

RATING DATA PRICE PER LINEAL FOOT

FLOW RATE	STEAM RATING		WATER RATINGS						
			BTUH Per Lineal Foot At Average Water Temperatures Indicated						
Lbs lHr	Sq Ft.	BTU/Hr At 215°F	170°F	180°F	190°F	200°F	210°F	220°F	230°F
2000	3.40	820	550	620	690	750	810	880	940
500	3.40	820	520	590	650	710	770	830	890



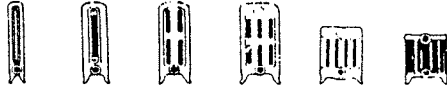
ACCESSORIES

PART #	DESCRIPTION
9A-AFP	ADJ. FILLER STRIPS
9A-9010	INSIDE CORNER 10-5/8"
9A-904	INSIDE CORNER 4-5/8"
9A-90S	CONNECTOR 4-5/8"
9A-90XL	CONNECTOR 10-5/8"
9A-AF	ALUMINUM FOIL TAPE
9A-AT	ASSEMBLY TOOL
9A-BCS	BOTTOM CENTER SUPPORT

PART #	DESCRIPTION
9A-LAEC	END CAP LEFT
9A-LHV	VALVE ENCLOSURE LEFT
9A-PN	PUSH NIPPLE 3/4"
9A-RAEC	END CAP RIGHT
9A-RHV	VALVE ENCLOSURE RIGHT
9A-SP	SPLICE PLATE 4"
9A-TBN	TIE BOLT W/NUT
9A-TCS	TOP CENTER SUPPORT

RADIATION DATA **SQUARE FEET OF RADIATION PER SECTION**

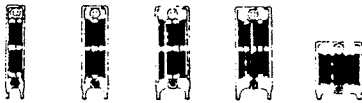
OLD STYLE COLUMN RADIATORS						
NO. OF TUBES OR COLUMNS						
	1	2	3	4	5	6
Width	4-1/2"	7-3/8"	9"	11-1/2"	12-1/2"	12-1/2"



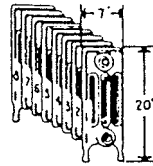
Height In.						
45	3-1/2	5	6	10	---	---
38	3	4	5	8	10	---
32	2-1/2	3-1/3	4-1/2	6-1/2	8-1/2	---
26	2	2-2/3	3-3/4	5	7	7
23	1-2/3	2-1/3	3-1/4	4-1/2	---	---
22	1-2/3	2-1/4	3	4	6	6
20	1-1/2	2	2-3/4	3-1/2	5	5
18	1-1/3	1-3/4	2-1/4	3	5	4-1/3
17	---	---	---	---	---	4
16	---	---	---	---	4	3-3/4
15	---	1-1/2	---	---	---	---
14	---	---	---	---	4	3
13	---	---	---	---	3	3

TUBE TYPE RADIATORS
NO. OF TUBES

	3	4	5	6	7
Width	5"	7"	8-3/4"	9-3/4"	12-1/2"



Height In.					
38	3-1/2	4-1/4	5	6	---
36	3-1/2	4-1/4	5	6	7
32	3	3-1/2	4-3/4	5	6
26	2-1/3	2-3/4	3 1/2	4	5
23	2	2-1/2	3	3-1/2	4-1/2
22	---	---	---	---	4-1/2
20	1-3/4	2-1/4	2-2/3	3	3-2/3
16	---	---	---	---	3-1/2
17	---	---	---	---	3
16	---	---	---	---	3
14	---	---	---	---	2-1/2

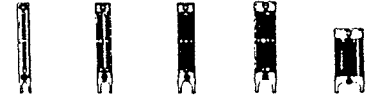


EXAMPLE:

Figure 7 is a tube type radiator, 20" high by 7" wide. There are 4 tubes per section and 8 sections. Table F shows this size tube type radiator has 21/4 square feet of radiation per section. 21/4 times 8 (the number of sections) equals 18 square feet of direct radiation. 18 times 240 (BTU/hr.) equals 4320 BTU/hr. for this radiator.

THIN TUBE RADIATORS
NO. OF TUBES

	2	3	4	5	6
Width	3-1/2"	4"	4-3/4"	6"	7-7/8"



Height In.					
38	2-1/2	2-2/3	---	---	---
32	2	2-1/3	---	---	3-2/3
26	---	---	2-1/3	3	3
25	1-1/2	1-2/3	2	---	3
23	---	---	---	2	---
22	1-1/3	1-1/3	1-4/5	---	---
20	---	---	1-4/5	---	2-1/3
19	1	1-1/4	1-2/3	---	2-1/3
17	---	---	---	2	---

WALL TYPE RADIATORS

Size	Sq. Ft. Per Radiator
13-1/2" x 17" x 3"	5
13-1/2" x 21" x 3"	6
13-1/2" x 22" x 3"	7
13-1/2" x 29" x 3"	9



SECTIONAL WALL TYPE RADIATORS

Height	37"	26-1/2"	21-1/2"	15"	13-7/8"
Sq. Ft.	2-1/2	1-4/5	1-1/2	1	3/4
Radiation Per Section					

NOTE: 240 BTU/H only applies to steam.

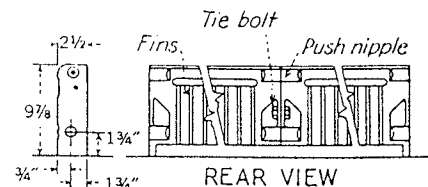
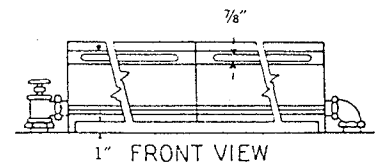
To Figure hot water BTU's multiply by 150 to get BTU/H rating at 170° water.

BASE-RAY SUB-ASSEMBLY CHART

ASSEMBLY LENGTH	L. H.	CENTER	R. H.	ASSEMBLY LENGTH	L. H.	CENTER	R. H.
6-1/2 FT.	5-1/2 FT.	---	1 FT.	15-1/2 FT.	5-1/2 FT.	6 FT.	4 FT.
7 FT.	6 FT.	---	1 FT.	16 FT.	6 FT.	6 FT.	4 FT.
7-1/2 FT.	5-1/2 FT.	---	2 FT.	16-1/2 FT.	5-1/2 FT.	6 FT.	5 FT.
8 FT.	6 FT.	---	2 FT.	17 FT.	6 FT.	6 FT.	5 FT.
8-1/2 FT.	5-1/2 FT.	---	3 FT.	17-1/2 FT.	5-1/2 FT.	6 FT.	6 FT.
9 FT.	6 FT.	---	3 FT.	18 FT.	6 FT.	6 FT.	6 FT.
9-1/2 FT.	5-1/2 FT.	---	4 FT.	18-1/2 FT.	5-1/2 FT.	2-6 FT.	1 FT.
10 FT.	6 FT.	---	4 FT.	19 FT.	6 FT.	2-6 FT.	1 FT.
10-1/2 FT.	5-1/2 FT.	---	5 FT.	19-1/2 FT.	5-1/2 FT.	2-6 FT.	2 FT.
11 FT.	6 FT.	---	5 FT.	20 FT.	6 FT.	2-6 FT.	2 FT.
11-1/2 FT.	5-1/2 FT.	---	6 FT.	20-1/2 FT.	5-1/2 FT.	2-6 FT.	3 FT.
12 FT.	6 FT.	---	6 FT.	21 FT.	6 FT.	2-6 FT.	3 FT.
12-1/2 FT.	5-1/2 FT.	6 FT.	1 FT.	21-1/2 FT.	5-1/2 FT.	2-6 FT.	4 FT.
13 FT.	6 FT.	6 FT.	1 FT.	22 FT.	6 FT.	2-6 FT.	4 FT.
13-1/2 FT.	5-1/2 FT.	6 FT.	2 FT.	22-1/2 FT.	5-1/2 FT.	2-6 FT.	5 FT.
14 FT.	6 FT.	6 FT.	2 FT.	23 FT.	6 FT.	2-6 FT.	5 FT.
14-1/2 FT.	5-1/2 FT.	6 FT.	3 FT.	24 FT.	5-1/2 FT.	2-6 FT.	6 FT.
15 FT.	6 FT.	6 FT.	3 FT.	24-1/2 FT.	6 FT.	2-6 FT.	6 FT.

BASE-RAY TAPPINGS —Tapped 3/4" top and bottom of end sections.

AIR VENT TAPPINGS — Air Vent Tappings are located on the face of 18" and 24" left end sections and on 18" and 24" Panels. A 3/4" vented plug is furnished with each Base-Ray Assembly. Only one air vent need be used.



TURBONICS INC.

TOESTERS 4/5 Thru 16/19 UNDERCOUNTER HYDRONIC FAN COIL UNITS

TOESTER FEATURES

1. **"PURR-FECT" AIR WHEEL** - Ultra-low profile air handler that draws air from a 360 degree radius. Over eight years in development this wheel is truly an industry first.
2. **SHADED 4 POLE 2 SPEED MOTOR** - This rugged encased motor runs at 850 and 650 RPM. Because the "PURR-FECT" Air Wheel is balanced optimally on the large shaft, motor life is double that of a tangential blower motor.
3. **REVERSE ACTING THERMOSTAT** - Built in thermostat senses the temperature of the water and determines when the unit should run. No secondary controls are needed.
4. **UP TO 19,000 BTUH FROM UNDER THE COUNTER** - TOESTER'S come in a variety of sizes ranging from 4,000 to 19,000 BTUH's, the **TOESTER 16/19** has a greater heating capacity than any other undercounter fan coil on the market.
5. ALL PARTS MANUFACTURED AND ASSEMBLED IN THE USA.

ALL RATINGS BASED ON 65° ENTERING AIR

Model TOESTER 4/5 BTU Output Per Hour

BTUH @ 2 GPM	Inlet Water Temperature						
Fan Control	100°	120°	140°	160°	180°	200°	220°
High	2000	3000	3900	4800	5700	6500	7300
Low	1400	2200	3100	4000	4800	5600	6400

1 GPM multiply by .95
4 GPM multiply by 1.05

Pressure Drop: .33' @ 1 GPM
1.0' @ 2 GPM
3.0' @ 4 GPM

Model TOESTER 6/8 BTU Output Per Hour

BTUH @ 2 GPM	Inlet Water Temperature						
Fan Control	100°	120°	140°	160°	180°	200°	220°
High	2350	3800	5150	6600	7700	9100	10,600
Low	1850	2900	4050	5200	6100	7200	8200

1 GPM multiply by .95
4 GPM multiply by 1.05

Pressure Drop: .5' @ 1 GPM
1.5' @ 2 GPM
4.0' @ 4 GPM

Model TOESTER 10/12 BTU Output Per Hour

BTUH @ 2 GPM	Inlet Water Temperature						
Fan Control	100°	120°	140°	160°	180°	200°	220°
High	2700	4100	6200	8100	10,000	12,000	14,500
Low	2200	3200	4800	6500	7800	9500	11,500

1 GPM multiply by .95
4 GPM multiply by 1.05

Pressure Drop: .6' @ 1 GPM
1.8' @ 2 GPM
4.5' @ 4 GPM

Model TOESTER 11/13 BTU Output Per Hour

BTUH @ 2 GPM	Inlet Water Temperature						
Fan Control	100°	120°	140°	160°	180°	200°	220°
High	3500	5800	8200	10,900	13,200	16,200	19,100
Low	2500	4000	6200	8800	10,900	13,800	16,700

1 GPM multiply by .95
4 GPM multiply by 1.05

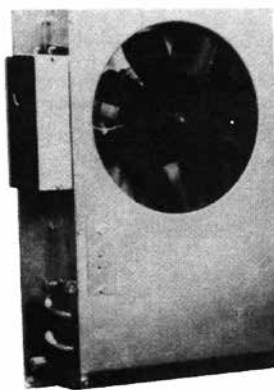
Pressure Drop: .6' @ 1 GPM
1.8' @ 2 GPM
4.5' @ 4 GPM

Model TOESTER 16/19 BTU Output Per Hour

BTUH @ 2 GPM	Inlet Water Temperature						
Fan Control	100°	120°	140°	160°	180°	200°	220°
High	4340	6900	9900	13,250	16,200	19,100	21,800
Low	3050	4900	7500	10,600	14,000	16,900	19,300

1 GPM multiply by .95
4 GPM multiply by 1.05

Pressure Drop: .33' @ 1 GPM
1.0' @ 2 GPM
3.0' @ 4 GPM

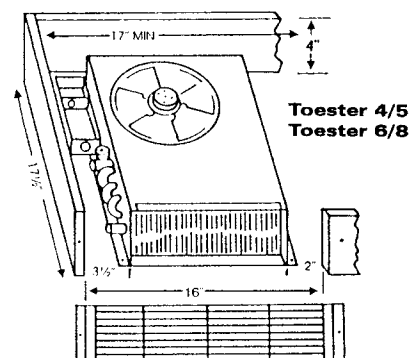


Toester 4/5
Toester 6/8

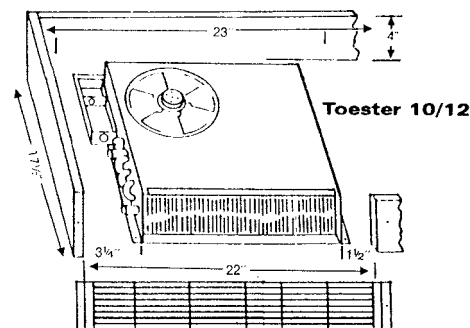


Listed For U.S. &
Canada

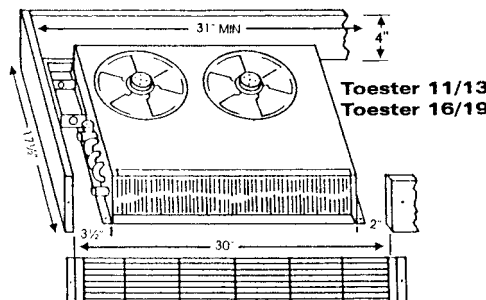
ROUGH IN DIMENSIONS & OUTPUTS



Toester 4/5
Toester 6/8



Toester 10/12



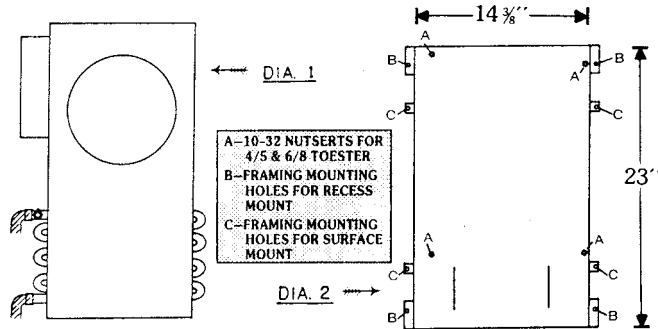
Toester 11/13
Toester 16/19

For best results, Turbonics recommends
that you use monoflow tees off the
main line.

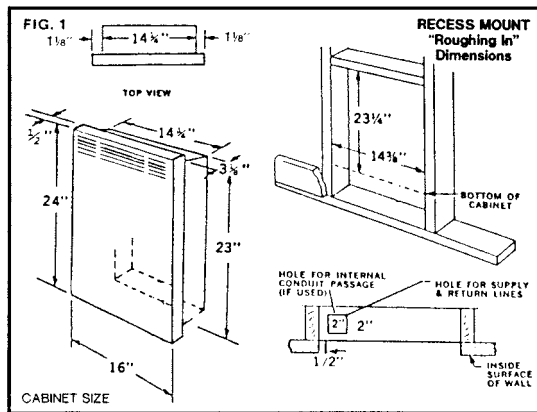
TURBONICS INC.

TOESTER 4/5-6/8* CABINETS HEATERS

MODEL T45-WM-AR (Recess Flush Mount)



For best results, Turbonics recommends that you use monoflow tees off the main line.



INSTALLATION INSTRUCTIONS

- STEP 1-** Solder elbows onto Toester inlet & outlet **before** placing unit in cabinet. (See Diagram 1). Make sure elbows are fully seated or the Toester **will not fit into the cabinet**.
- STEP 2-** Place unit in cabinet & center over appropriate nuts (See Diagram 2). Use 4 - 10 x 32 x 3/8" semsscrews provided to lock the Toester into the Toester cabinet.
- STEP 3- Recess Flush Mount** - Cut hole in wall between studs, 14-1/4" wide by 23-1/4" high. Place cabinet, with Toester in place, into hole. Secure cabinet to studs with 4 wood screws provided (See Diagram 2).
- STEP 4- Surface Mount** - Locate studs & mark for installation. Center cabinet with Toester in place & secure to studs with 4 screws provided (See Diagram 2).
- STEP 5-** Wire in switch (if used) or direct wire unit per Toester instructions on either high or low speeds. If using optional 2-speed switch use wiring instructions provided with the switch. Wire in accordance with all local & national codes & regulations.
- STEP 6-** Complete piping. c and bleed unit for five (5) minutes with systems pump operating.
- STEP 7-** Install front cover with 4 - 10 x 32 x 5/8" cover bolts provided.

STANDARD LIMITED PRODUCT WARRANTY - ONE YEAR

TOESTER 4/5

IMPROVED OUTPUTS

RATING DATA			BTUH @ 2 GPM	INLET WATER TEMPERATURE						
AMPS	RPM	LPM		FAN CONTROL	100°	120°	140°	160°	180°	200°
.6	1350	75	HIGH	2200	3100	4000	4900	5800	6500	7400
.18	900	55	LOW	1700	2400	3300	4100	5000	5700	6600

Rating based on 65° entering air.

1 GPM multiply by .95
4 GPM multiply by 1.05

Pressure Drop: .5' @ 1 GPM
1.5' @ 2 GPM
6.0' @ 4 GPM

TOESTER 6/8

RATING DATA			BTUH @ 2 GPM	INLET WATER TEMPERATURE						
AMPS	RPM	LPM		FAN CONTROL	100°	120°	140°	160°	180°	200°
.6	1350	90	HIGH	2850	4300	5750	7200	8600	10,000	11,700
.18	900	65	LOW	2450	3400	4650	5800	7000	8100	9300

Rating based on 65° entering air.

1 GPM multiply by .95
4 GPM multiply by 1.05

Pressure Drop: .33' @ 1 GPM
1.0' @ 2 GPM
4.0' @ 4 GPM

*Non-stock Item.

WALL MOUNTED HYDRONIC FAN COILS

TOESTER 11/13 WALL MOUNT*

I. INSTALLATION - GENERAL

A. The Toester 11/13 WM unit heater is a forced air hot water space heater suitable for connection to hot water supply at any pressure up to 125 P.S.I. Maximum water temperature should not exceed 200°F. The amount and temperature of water flowing through the unit determine heating output.

B. Building codes and plumbing regulations may vary. Check local codes and regulations before determining proper application and installation.

II. PIPING

A. The piping to the unit will usually be either 1/2 or 3/4 I.D. type L copper. Valves in supply and return lines are recommended.

B. Where the heater is located more than a few feet above the boiler or hot water main, some gravity, thermal circulation will occur even when the unit pump is not running. Lowering the supply water temperature when possible, either manually or with an automatic outside temperature control will minimize this condition. Restricting the heater circuit by partially closing one of the valves - within the limits needed for the heater output - will also reduce this circulation.

C. As with any system employing circulated water, the pipes passing through unheated spaces should be insulated. With the unit presumably operating only in periods when space heating is needed, the heat given off from the water pipes which pass through heated areas would not be a loss. Insulation on the pipes reduces heat loss in piping maximum water temperature available at the unit and maximum unit output.

III. PIPING - HOT WATER BOILER

A. The unit supply line should be taken from the boiler side beyond of any flo-control valve. On a gravity hot water system the unit supply and return can be connected to the existing piping nearest the unit location.

IV. PIPING - WATER HEATER

A. Where the unit is connected to a water heater and a separate pump is installed, several alternate piping arrangements may be used. The normal method is for water to be taken from the top of the tank by connecting to the pipe supplying the domestic water. The return water from the unit is brought back to the tank preferably at a point about half way between the top and bottom of the tank. (Normal location of water supply drop pipe in tank will provide for this). This location of the return line in the hot water tank is one of the most important points in the piping of the unit.

B. The return line from the unit must not be attached to any drain tapping at the bottom of the tank, since sediment will be stirred up with this connection.

C. The supply line for the unit can be taken from the existing hot water supply line at a point most convenient or closest to the unit. The return line from the unit, however, must go back to the water heater.

V. SETTING UP THE UNIT

A. A bleed valve opened with a screw driver is provided on the unit at the left side above the water coil. A short piece of 1/8" I.D. rubber tubing may be slipped on the bleed valve, emptying into a small container while bleeding the air. The lines should be purged with water pressure on the system, but with the unit motor shut off.

B. The valve on the return is first closed, the valve on the supply line opened. The bleed valve should be opened until water flows out steadily. Then, with the valve in the supply line closed and the valve in the return line opened, air is removed in the same manner from the return line.

C. The time required for air removal will be 5 to 10 minutes for each leg of piping.

NOTE: The bleed valve is designed to vent the unit. If the unit is not located at the high point of a system, or if fresh water is continually introduced to the system, an additional automatic air vent may be required.

DO NOT attempt to bleed air with both lines open or with the unit running.



MODEL T13-WM-AR

(Recess flush mount shown)

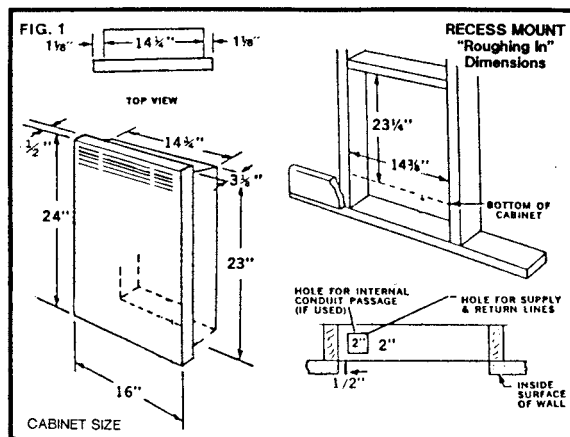
STANDARD LIMITED PRODUCT WARRANTY - FIVE YEAR

For best results, Turbonics recommends that you use monoflow tees off the main line.

VI. MOUNTING THE UNIT

A. Brackets are provided on the surface mount units. The brackets are on 15" centers and should be lined up with studs.

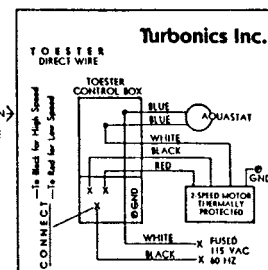
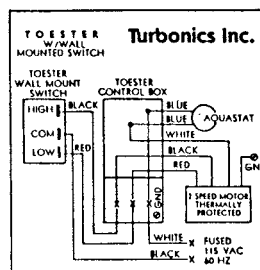
B. Recess mount dimensions Fig. #1.



VII. WIRING THE UNIT

A. A field wiring box is provided in the lower right hand corner of the unit. Connect wires at this point only.

B. The unit is manufactured with a built-in aqua-stat that DOES NOT allow the unit to run until the water temp is 120°, the unit turns off when water temp drops below 105°.



RATING DATA			BTUH @ 2 GPM		INLET WATER TEMPERATURE					
AMPS	RPM	CFM	FAN CONTROL	100°	120°	140°	160°	180°	200°	220°
1.2	1350	110	HIGH	3500	5800	8200	10,900	13,200	16,200	19,100
.36	900	80	LOW	2500	4000	6200	8800	10,900	13,800	16,700

Rating based on 65° entering air.

1 GPM multiply by .95
4 GPM multiply by 1.05

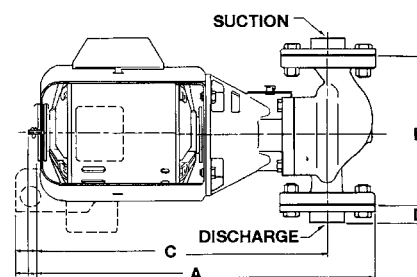
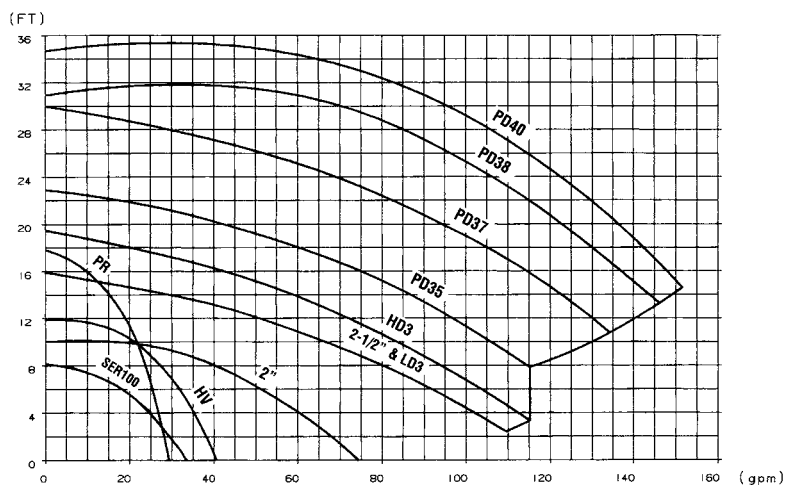
Pressure Drop: .5' @ 1 GPM
1.5' @ 2 GPM
6.0' @ 4 GPM

*Non-stock Item.

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BELL & GOSSETT Oil Lubricated Circulators



Dimensions & Weights

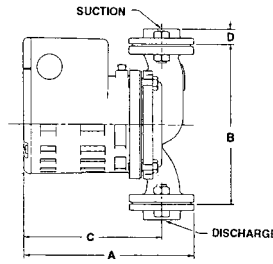
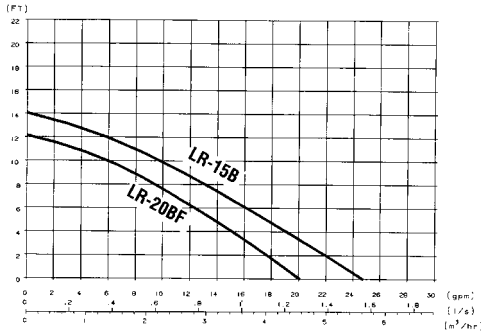
Model No.	Cast Iron Model No.	Bronze Model No.	Flange Size Inches (NPT)	Motor Characteristics @ 60 Hz			Dimensions In Inches			
				HP	Ø	Voltage	A	B	C	D
Series 100	100L	B100L	3/4 1 & 1-1/4 1-1/2	1/12	1	115 - with built-in overload protection	14-7/8	6-3/8	12-3/4	9/16 3/4 15/16
Series PR	PR	102208	3/4 1 & 1-1/4 1-1/2	1/6			15-1/4	8-1/2	12-3/4	9/16 3/4 15/16
Series HV	HV	BHV	1 1-1/4 & 1-1/2	1/6			15-3/8	8-1/2	13	5/8 3/4
2"	2X	B2	2	1/6			16-5/8	8-1/2	14	13/16
2-1/2"	2-1/2	B2-1/2	2-1/2	1/4			17-1/4	10	14	1-1/16
LD3	LD3	102224	3	1/4			17-1/4	10	14	1-1/16
HD3	HD3	HDB3	3	1/3		115/230	17-1/2	10	14-1/4	1-1/16
PD-35S	PD35S	PDB35SBI	3	1/2	3	115/230	20-1/4	12	16-7/8	1-1/16
PD-35T	PD35T	105096	3	1/2		208-230/460	20-1/4	12	16-7/8	1-1/16
PD-37S	PD37S	105100	3	3/4	1	115/230	20-1/4	12	16-7/8	1-1/16
PD-37T	PD37T	PDB37T	3	3/4	3	206-230/460	20-1/4	12	16-7/8	1-1/16
PD-38S	PD38S	105123	3	1	1	115/230	24	14-1/2	19-1/2	1-1/4
PD-38T	PD38T	105135	3	1	3	208-230/460	24-1/4	14-1/2	19-3/4	1-1/4
PD-40S	PD40S	105153	3	1-1/2	1	115/230	24-5/8	14-1/2	20-1/8	1-1/4
PD-40T	PD40T	105139	3	1-1/2	3	208-230/460	25-1/8	14-1/2	20-5/8	1-1/4

Dimensions are approximate and subject to changes

BELL & GOSSETT



Oil Lubricated Circulators / LR

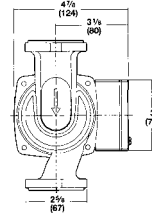
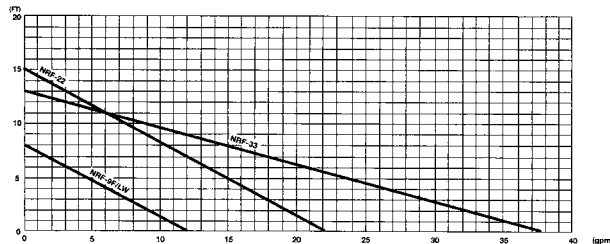


Dimensions & Weights

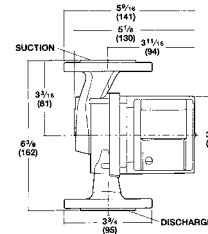
Model No.	Construction	Flange Size Inches (NPT)	Motor Characteristics* @ 60 Hz			Dimensions in Inches			
			HP	Ø	Voltage	A	B	C	D
LR-20BF	Cast Iron	3/4 1 & 1-1/4 1-1/2	1/20	1	115 - With Built-in Thermal Overload Protection	6-15/16	6-3/8	5-5/8	9/16 3/4 15/16
LR-15B	Bronze	3/4 1 & 1-1/4 1-1/2	1/12			7-15/16		6-5/8	9/16 3/4 15/16

230/60/1 motors available upon request. Dimensions are approximate and subject to change. Contact factory for certified dimensions.

Cast Iron & Bronze Wet Rotor / NRF



NRF-9F/LW or NRF-22



Cast Iron Circulators

Model No.	Flange Sizes Inches - NPT	Standard 60 Cycle Motor Characteristics**				
		Watts	Ø	Voltage	F.L. AMPS	RPM
NBF12* NRF-22 NBF-22*	3/4, 1, 1-1/4, 1-1/2	92	1	115	.80	2940
NRF-9F/LW	3/4, 1, 1-1/4, 1-1/2	41	1	115	.40	2950

*Bronze

**230/60/1 motors available upon request. Impedance protected.



Flanges for Cast Iron Circulators

Models Where Used	Size (NPT)	Part No.
Series 100, PR, NRF-22, NRF-9F/LW, NRF-33, PL-30, PL-36, PL-55	3/4"	101001
	1"	101002
	1-1/4"	101003
	1-1/2"	101004
Series HV, PL45, PL-50	1"	101005
	1-1/4"	101006
	1-1/2"	101007

Flanges for Bronze Circulators

Models Where Used	Size (NPT)	Part No.
Series 100B, PRAB, NBF-22, NBF-12F/LW, NBF-33, PL-30B, PL-36B	3/4"	101011
	1"	101012
	1-1/4"	101013
	1-1/2"	101014
Series HVB, PL-45B, PL-50B	1"	101015
	1-1/4"	101016
	1-1/2"	101017



BELL & GOSSETT

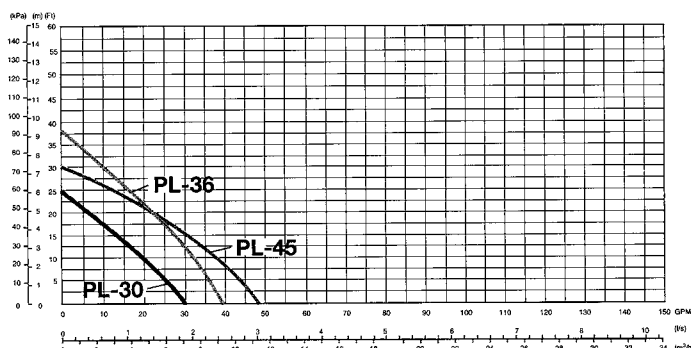
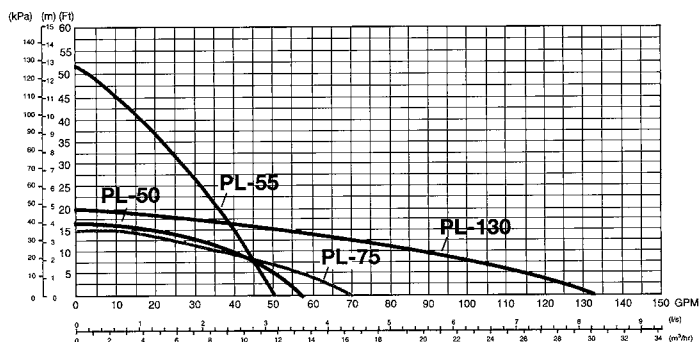
SERIES PL™

A superior alternative to large wet rotor pumps.

Dimensions & Weights

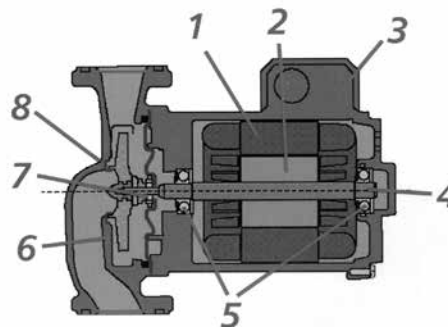
Cast Iron Model No.	Bronze Model No.	Flange Size Inches - NPT	Motor Characteristics*				Dimensions in inches @ 60 Hz (Open Drip-Proof)					Approx. Shipg. Wt. lbs.
			HP	Ø	Voltage	RPM	A	B	C	D	E	
PL-30	PL-30B	3/4 1 & 1-1/4 1-1/2	1/12	1	115	2650	8-5/8	6-3/8	7-1/8	4-3/16	4-3/8	11.6
PL-36	PL-36B	3/4 1 & 1-1/4 1-1/2	1/6			3300	8-5/8	6-3/8	7-1/8	4-3/16	4-3/8	13.1
PL-45	PL-45B	1 1-1/4 & 1-1/2	1/6			3300	9-1/8	8-1/2	7-1/4	4-5/8	4-3/8	14.5
PL-50	PL-50B	1 1-1/4 & 1-1/2	1/6			3300	9-1/8	8-1/2	7-1/4	4-5/8	4-3/8	14.5
PL-55	N/A	3/4 1 & 1-1/4 1-1/2	2/5			3250	9-9/16	6-3/8	7-15/16	4-3/16	4-3/4	13.1

* 230/60/1 motors available upon request. Models PL-75 and PL-130 has a four bolt hole flange connection, all others have two bolt hole flange connectors. Dimensions are approximate and subject to changes. Contact factory for certified dimensions.



- 1 B&G's powerful, dry-motor design delivers exceptional performance... 25% more efficient than competition.
- 2 Precision-machined and balanced alloy steel rotor for superior performance.
- 3 Quick-connect wire nut leads and dual knock-outs make for fast, sure hook-ups.
- 4 Solid "Stiff-Shaft" design is constructed of high-strength alloy steel impervious to cracking caused by thermal stresses.
- 5 XL-11™ Precision-Crafted Bearing System... is permanently oil lubricated... completely maintenance free... precisely positioned for long-life and isolated for quiet operation.

- 6 Advanced close-coupled design increases pump life and efficiency, assures dependable seasonal start-ups and can easily handle difficult water conditions.
- 7 Tough, durable seal system features a carbon/silicon carbide seal on a stainless steel shaft sleeve for long life and rugged operation.
- 8 Double sided I-Seal™ design for optimum efficiency.



BELL & GOSSETT

Relief and Reducing Valves



Reducing Valves

- Reducing Valves fill the system to a preset pressure for optimum performance.
- Convenient cleanable strainer is designed to prevent dirt and sediment from entering system.
- Brass body construction.
- Fast fill feature reduces start-up time and labor.



Low Pressure Reducing Valves With Fast Fill Feature

PART #	SIZE	PSI	DESCRIPTION
BG FB38	1/2"	12	BRASS
BG FB38TU	1/2"	12	W/TAIL UNION

LOW PRESSURE REDUCING VALVES

PART #	SIZE	PSI	DESCRIPTION
BG B7-12	3/4"	12	BRASS

HIGH PRESSURE REDUCING VALVES

PART #	SIZE	PSI	DESCRIPTION
BG 7VALVE	3/4"	45	BRASS

Dual Unit Valves

Reducing Valve Set @ 12 lb.

Relief Valve Set @ 30 lb.



PART #	SIZE	DESCRIPTION
BG 8	1/2"	IRON

With Fast Fill

PART #	SIZE	DESCRIPTION
BG F8	1/2"	IRON
BG F8TU	1/2"	W/TAIL UNION

Isolation Valves

The Check-Trol flange is a combination isolation valve, flow control valve, and companion flange for circulators. The full port ball valve allows the circulator to be removed from the system without draining the system. The internal spring check prevents gravity circulation.



PART #	SIZE	DESCRIPTION
101231LF	3/4"	NPT x Flange
101232LF	1"	NPT x Flange
101233LF	1-1/4"	NPT x Flange
101236LF	3/4"	NPT x Sweat
101237LF	1"	NPT x Sweat
101238LF	1-1/4"	NPT x Sweat

Flo-Control Valves



Straight Angle Pattern

3/4" - 1" - 1-1/4" - 1-1/2" - 2"*

*Flanged one end on horizontal run



Bronze Straight Pattern 3/4"

PART #	PATTERN/CAST
BG SA3/4	STRAIGHT ANGLE/IRON
BG SB3/4	STRAIGHT BRONZED, SWEAT
BG SA1	STRAIGHT ANGLE/IRON
BG SA1-1/4	STRAIGHT ANGLE/IRON
BG SA1-1/2	STRAIGHT ANGLE/IRON
BG SA2	STRAIGHT ANGLE/IRON

Monoflow Fittings



PART #	SIZE
BG 108119	3/4 x 1/2
BG 108120	1 x 1/2
BG 108121	1 x 3/4
BG 108122	1-1/4 x 1/2
BG 108123	1-1/4 x 3/4
BG 108124	1-1/2 x 3/4
BG 108125	1-1/2 x 1

Automatic Air Vents

No. 7 AUTOMATIC AIR VENT — An improved valve for automatically removing air from the piping of any type of hot water heating system.

75 P.S.I.G. Working Pressure — Maximum
240°F Operating Temperature



PART #	SIZE
BG 7VENT	1/8" FPT
BG 67	1/8" MPT

Dole®

AIR VENTS

For Hydronic Heating Systems Automatic Hygroscopic Valves


No. 20 JR Disc Type Air Valve

For radiators and convectors. Provision for manual or automatic venting. 1/8" connection. Max. pressure 30 psi. Packed 6 per box. Net shipping weight 1.2 oz. each.


No. 20 SR Disc Type Air Valve

For radiators or convectors. Provision for manual shut-off, manual and automatic venting 1/8" connection. Max. pressure 30 psi. Packed 6 per box. Net shipping weight 1.6 oz. each.

Manual Vents


No. 9 Coin Valve

1/8" NPT connection. Packed 24 per box. Net shipping weight 0.6 oz. each.


No. 9BX Special Coin Valve

For baseboard radiators. 1/8" NPT connection. Packed 24 per box. Net shipping weight 0.5 oz. each.


No. 27-202-02 Key Vent

1/8" NPT connection. Packed 24 per box with 4 keys. Net shipping weight 0.6 oz. each.


No. H-2404-00 Key

No. 14 Key Air Valve Assembly

Vent outlet is on inside of enclosure. Tubing 20" long x 3/16" O.D. 1/8" NPT connection. Packed 12 per box with two keys. 144 per master shipping carton. Net shipping weight, 4.0 oz. each.


No. 14A Coin Air Valve Assembly

Vent outlet is outside of enclosure. Tubing 20" long x 3/16" O.D. 1/8" NPT connection. Packed 12 per box. 144 per master shipping carton. Net shipping weight, 4.3 oz. each.



STEAM VENTS

FOR RADIATORS

Use **No. 4 Gorton Vapor Equalizing Valve** on radiators in room in which thermostat is located and on radiators that affect the operation of the thermostat.

NO. 4

PART #	DESCRIPTION
4X	1/8" ANGLE



1/8" Side Connection

Use **No. 5 Gorton Vapor Equalizing Valve** (venting capacity equal to 4 ordinary type air valves) on radiators near the boiler and in warm rooms; for example, on first floor radiators.

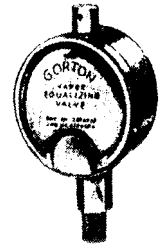
NO. 5

PART #	DESCRIPTION
5X	1/8" ANGLE

Use **No. 6 Gorton Vapor Equalizing Valve** (venting capacity equal to 8 ordinary type air valves) on radiators farther from the boiler and in cold rooms; for example, on second-floor radiators.

NO. 6

PART #	DESCRIPTION
6X	1/8" ANGLE



1/8" or 1/4" Vertical Connection

Use **"C" Gorton Vapor Equalizing Valve** (venting capacity equal to 15 ordinary type air valves) on radiators farthest from the boiler and in coldest rooms; for example, on third-floor radiators and above.

NO. C

PART #	DESCRIPTION
C	1/8" ANGLE
C-Verticle	1/8" STRAIGHT

Use **"D" Gorton Vapor Equalizing Valve** (venting capacity equal to 27 ordinary type air valves) in cases where a large amount of air must be vented; for example, on radiators having particularly long branches and on very large radiators. (Not to be used on hand-fired systems unless radiator supply valves are left "on" all the time).

NO. D

PART #	DESCRIPTION
D	1/8" ANGLE
D-Verticle	1/8" STRAIGHT

Use "1965" vent when you're looking for a cost effective vent that delivers the venting capacity of five or six ordinary vents. It will equal msot adjustable type air vents on the market today.

NO. 1965

PART #	DESCRIPTION
1965ANGLE	1/8" ANGLE
1965SS1/8	1/8" STRAIGHT
1965SS1/4	1/4" STRAIGHT



FOR MAINS

Install 1 or more **No. 1 Gorton Air Eliminators** with 3/8" or 3/4" x 1/2" vertical connection at the end of the short main or the main running to the warm side of the building.

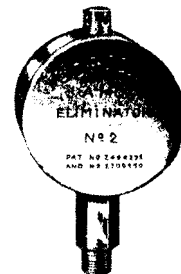
NO. 1

PART #	DESCRIPTION
1X	3/4" x 1/2" STRAIGHT

Install 2 or 3 **No. 1** or 1 or more **No. 2 Gorton Air Eliminators** with 1/2" vertical connection at the end of the long main or the main running to the cold side of the building, depending upon the size of the building. The venting capacity of 1 No. 2 Gorton Air Eliminator is equal to that of 4 No. 1 Gorton Air Eliminators.

NO. 2

PART #	DESCRIPTION
2XXX	1/2" STRAIGHT



Over-all height 6-3/8"
1/2" Vertical Connection












3/8" or 3/4" by 1/2"
Vertical Connection



THERMOSTATIC RADIATOR VALVES

RA 2000

QUICK SELECTION CHART

Valves* For use on hot water (max 250°F) and 2-pipe LPS (max.15 psig)			Operators					
			Cap tube lengths					
Configuration	Connection FPT x MPT	C _v	---	---	6-1/2"	6' + 6'	6'	16'
								
	1/2" NPT	1.6	013G8250	013G8240	013G8252	013G8564	013G8562	013G8565
	3/4" NPT	2.7	013G8015					
	1" NPT	2.8	013G8020					
	1-1/4" NPT	2.8	013G8025					
	1/2" NPT	1.6	013G8032					
	3/4" NPT	2.7	013G8014					
	1" NPT	2.8	013G8019					
	1-1/4" NPT	2.8	013G8024					
	1/2" NPT	1.6	013G8031					
	3/4" NPT	2.7	013G8013					
	1" NPT	2.8	013G8018					
	1-1/4" NPT	2.8	013G8023					
			013G8030					

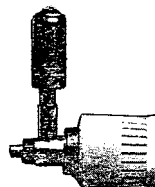
*1/2" & 3/4" straight solder unions also available

1 PIPE LPS SYSTEM

A one pipe steam heating system equipped with DANFOSS thermostatic radiator valve type 013G0140 with an 013L8011 vent.

This valve type is designed for low pressure steam systems, max 15 psig connected to a boiler with time cycling mode of control. Changing temperature around the operator sensor effects a modulating action of air venting through the radiator, convactor etc. When the operator calls for heat the steam enters the radiator and pushes the air through the valve and out the vent. When setting temp. is reached valve will close and venting stops.

PART #
013G0140



RA 2000 VALVE FOR 1-PIPE LPS

NOTE: If the boiler is cycled by a space t-stat in a room no valve should be installed. Otherwise improper boiler control may result. Don't use valves if vacuum operation exists.



HYDRONIC ACCESSORIES

NO. 740 SERIES

A.S.M.E. Water Pressure Relief ValveE.

Iron body relief valve with expanded outlets for hot water space heating boilers.

FEMALE INLET AND OUTLET.

MODEL #	INLET	OUTLET	HEIGHT	STEAM DISCHARGE CAPACITIES			
				30 LBS	45 LBS	50 LBS	75 LBS
WV 740-3/4	3/4"	1"	5-7/8"	925,000	1,245,000	1,352,000	1,886,000
WV 740-1	1"	1-1/4"	7-1/4"	1,300,000	1,750,000	1,899,000	2,649,000
WV 740-1-1/4	1-1/4"	1-1/2"	8-3/4"	2,105,000	2,830,000	3,075,000	4,285,000
WV 740-1-1/2	1-1/2"	2"	9-1/4"	2,900,000	3,903,000	4,237,000	5,909,000
WV 740-2	2"	2-1/2"	11-5/8"	5,250,000	7,067,000	7,672,000	10,700,000



009 REDUCED PRESSURE ZONE (RPZ) BACKFLOW PREVENTERS

DESIGNED TO PROTECT POTABLE WATER SUPPLIES IN ACCORDANCE WITH NATIONAL PLUMBING CODES AND WATER UTILITY AUTHORITY REQUIREMENTS.

PART #	SIZE
009QTS-1/2	1/2"
009QTS-3/4	3/4"
009QTS-1	1"



SERIES 909AG AIR GAP

FOR USE ON HORIZONTAL INSTALLATIONS OF SERIES 009 BACKFLOW PREVENTERS.

PART #	SIZE
909AG-A	1/2" & 3/4"
909AG-C	1"



NO. 9D BACKFLOW PREVENTER

BACKFLOW PREVENTER CONTINUOUS PRESSURE TYPE WITH INTERMEDIATE ATMOSPHERIC VENT. FEMALE UNION INLET AND OUTLET CONNECTIONS.

PART #	SIZE
9D-1/2	1/2"
9D-3/4	3/4"



NO. 27 STRAINER

"V" TYPE WATER STRAINER. #40 SCREEN MESH.

PART #	SIZE
27-40	1/8"



NO. 1450F

IRON BODY DUAL CONTROL

COMBINES CONSTRUCTION FEATURES OF NO. 1156F AND RUGGED IRON BODY DIAPHRAGM RELIEF VALVE. SET 30 LBS.

PART #	SIZE	HEIGHT
WV 1450F	1/2"	5-3/8"



NO. N170, N170L SERIES

TEMPERING VALVES FOR LARGE COMMERCIAL AND INSTITUTIONAL INSTALLATIONS.

TEMPERATURE RANGE:

100°-130°

130°-160°

MODEL #	SIZE	MODEL #	SIZE
N170L-3/4	3/4"	N170-3/4	3/4"
N170L-1	1"	N170-1	1"
N170L-1-1/4	1-1/4"	N170-1-1/4	1-1/4"
N170L-1-1/2	1-1/2"	N170-1-1/2	1-1/2"
N170L-2	2"	N170-2	2"



NO. 36A

VACUUM RELIEF VALVES

AUTOMATICALLY VENTS SYSTEM IF VACUUM OCCURS.

PART #	SIZE	HEIGHT
N36A-1/2	1/2"	2"
N36A-3/4	3/4"	2"





Float & Thermostatic Steam Traps

Series H, Series C

Float & Thermostatic Traps are used with a variety of steam equipment to readily release condensate and air but close to prevent steam loss. Hoffman Float & Thermostatic Traps function in “zero” to full capacity conditions and are well suited for intermittent service applications.

The Series 55 Float & Thermostatic Traps are available in sizes 3/4” through 2” and pressures up to 175 psi.

The Series 59 High Capacity Float & Thermostatic Traps are available in sizes 3/4” through 2-1/2” with pressures up to 175 psi and capacities to 55,600 gph.



PART #	SIZE
404200	3/4"
404210	1"
404200	1-1/4"

PART #	SIZE
401626	1-1/2"
401629	2"

“Y” STRAINERS*

Strainers are designed for steam, oil or water lines. Strainers should be installed ahead of temperature regulating and/or pressure reducing valves and steam traps to protect their moving parts, especially on new installations.

Model KEC

Cast iron body; maximum working pressure 250 psi for steam service, 400 psi for water service. Available in sizes 1/2” through 3”.

*1/2” - 1-1/4” bronze water strainers available. Call for details.



PART #	SIZE
KEC-Y-3/4	3/4"
KEC-Y-1	1"
KEC-Y-1-1/4	1-1/4"
KEC-Y-1-1/2	1-1/2"
KEC-Y-2	2"

VENTING VALVES for Water Applications

No. 79 Water Main Vent

Designed for use on hot or cold water mains and process applications. Tapped at top for 1/8” NPT. Safety drain connection for discharging moisture entrained in the vented air. Built-in Check Valve. 1/2” NPT female and 3/4” NPT male straight shank. Maximum operating pressure 75 psi. Will withstand hydrostatic pressures of 200 psi.



#401488

No. 790 Water Valve.

Especially designed for removing air from convectors, baseboard and wall radiation. Safety drain connection at the top for discharging moisture entrained in the vented air. Fitting and ferrule for 3/16” OD tubing. Telescopic Siphon Tube. 1/8” NPT straight shank. Maximum operating pressure 30 psi.



#401479

No. 74 Quick Vent

Designed for steam unit heaters. Max. pressure 35 lbs. 3/4” male x 1/2” female connection. Non-adjustable port.



#401428

VENTING VALVES for Steam Applications

Model 41

Air Valve (non-vacuum)
 • Single non-adjustable port
 • For small steam systems
 • Telescopic siphon tube with angle cut assures drainage
 • 1/8” (4mm) NPT straight shank
 • Maximum operating pressure 6 psig
 • Maximum pressure 10 psig



#401455

Model 71A

Air Valve (non-vacuum)
 • Float-type vent
 • Single non-adjustable port
 • Telescopic siphon tube with angle cut assures drainage
 • 1/8” (4mm) NPT straight shank
 • Maximum operating pressure 11 psig
 • Maximum pressure 15 psig



#401470

Hoffman Vacuum Breakers

Model 62 Part No.401446

For use on closed vessels and piping systems to control induced vacuum within safe limits

- Adjustable from 1/4” to 20” (8-508mm) Hg vacuum
- 3/4” (20mm) NPT straight shank
- Maximum operating temperature 3660F (186°C)
- Maximum operating pressure 150 psig (10.3 bar)



Thermostatic Steam Traps



Low Pressure

No. 17-C Angle Steam Trap.
1/2" NPT pipe connections.



PART #	DESCRIPTION
HN 401536	ANGLE
HN 401545	SWIVEL
HN 600084	THERMOSTAT



No. 8-C Angle Steam Trap.
3/4" NPT pipe connections.



No. 8-C Straightway Steam Trap.
3/4" NPT pipe connections. For radiator or convector locations which will not permit the use of an angle trap.



No. 17-C Swivel Steam Trap.
1/2" NPT pipe connections. Can be as right hand, left hand, or straightway trap where radiator or convector locations will not permit the use of an angle trap.

PART #	DESCRIPTION
HN 402003	ANGLE
HN 402004	STRAIGHTWAY
HN 600205	THERMOSTAT

VENTING VALVES for Steam Applications

Radiator Steam Vents

No.1-A Air Valve.
A float-type vent with adjustable port for true proportional venting. Port settings from (#1) slow to (#6) fast venting. 1/8" NPT angle connection. Operating pressure up to 1-1/2 psi. Maximum pressure 10 psi.

#401422



No. 40 Air Valve.
A float-type vent with a single non-adjustable port. For use on ordinary one-pipe system not requiring proportional venting. 1/8" NPT angle connection. Operating pressure up to 6 psi. Maximum pressure 10 psi.

#401440



No. 4 Quick Valve.
Thermostatic air vent for steam systems and process equipment. Operates on temperature changes only; does not close against water. Quick vent must be installed on a nipple 6" to 10" above horizontal return, which must be at least 18" above the boiler water line. 1/2" NPT female and 3/4" NPT male straight shank. Maximum operating pressure 25 psi.

#401416



Main Steam Vents

No. 4-A Air Valve.
A float-type vent with single non-adjustable port for use as a main vent on residential and other small one-pipe or two-pipe systems. 1/2" NPT female and 3/4" NPT male straight shank. Operating pressure up to 2 psi.

#401413



No. 75, 75-H Air Valves.
Float-type vents, each with single non-adjustable port for relieving air from the mains of medium and large systems. 1/2" NPT female and 3/4" NPT male straight shank. Operating pressure up to 3 psi (75) and up to 10 psi (75-H). Maximum pressure 15 psi.

75 - #401434
75H - #401437



No. 76 Vacuum Valves.
Float-type vents, each with single non-adjustable port for relieving air from the mains of medium and large size one-pipe vacuum systems. 1/2" NPT female and 3/4" NPT male straight shank. Operating pressure up to 3 psi. Maximum pressure 15 psi.

#401431



IF WE DON'T HAVE IT, WE'LL GET IT FOR YOU.



CONDENSATE PUMPS

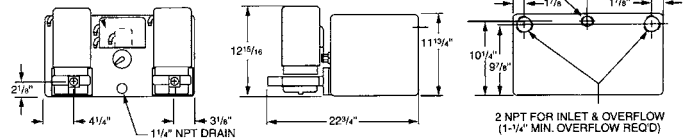
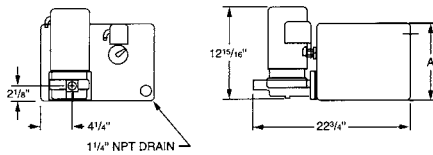


WATCHMAN® SERIES WC™ CAST IRON RECEIVER

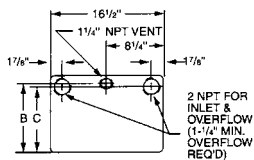
- For 6,000, 8,000 and 12,000 sq. ft. EDR systems
- Available with pumps in simplex or duplex design
- Low height NPT inlet for easy return line piping
- Separate NPT connections provide a secondary for safe operation (continued below)

Dimensions WC-12

Dimensions WC-6/8



EDR	Style	Rec.Cap	A	B	C
6,000	Single	6	8-9/16	7-1/16	6-11/16
8,000	Single	9	10-7/8	9-3/8	9



PART #	MODEL #	# OF EDR	DISCH. PUMPS	PUMP PRESS.	PUMP CAP/GPM	REC. CAP.	HP
HN 160029	WC-6-20-B	6000	1	22	9	6	1/3
HN 160030	WC-8-20-B	8000	1	21	12	9	1/3
HN 160031	WC-12-20-B	12000	1	20	18	14	1/3
HN 160032	WC-12-20-BMA	12000	2	20	18	14	1/3

WCS Duplex shown

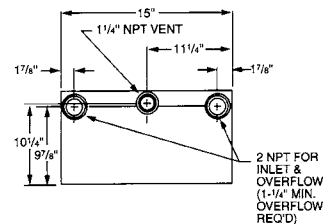
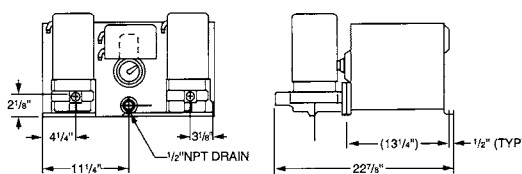
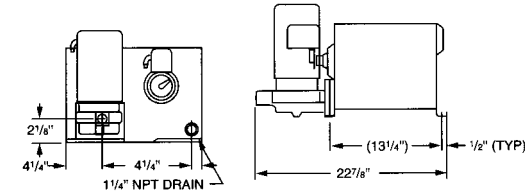
WATCHMAN® SERIES WCS™ STEEL RECEIVER

- NPT drain connection
- Double pole float switch - simplex models
- Mechanical alternator - duplex models
- Easy to install
- Easy to service with vertical pull out pumps
- 100% factory tested as a complete unit
- Series WC includes cast iron receiver with 20 year warranty against corrosion

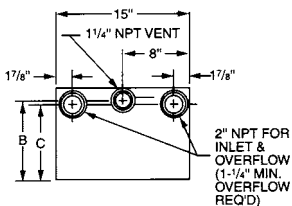


Dimensions WCS-12

Dimensions WCS-6/8



EDR	Style	Rec. Cap	A	B	C
6,000	Single	6	8-9/16	7-1/16	6-11/16
8,000	Single	9	10-7/8	9-3/8	9



PART #	MODEL #	# OF EDR	DISCH. PUMPS	PUMP PRESS.	REC. CAP.	CAP.	HP
HN 160010	WCS-6-20-B	6000	1	22	9	6	1/3
HN 160011	WCS-8-20-B	8000	1	21	12	9	1/3
HN 160012	WCS-12-20-B	12000	1	20	15	14	1/3
HN 160013	WCS-12-20-BMA	12000	2	20	15	14	1/3



CONDENSATE PUMPS

4100 SERIES HEAVY GAUGE STEEL RECEIVERS

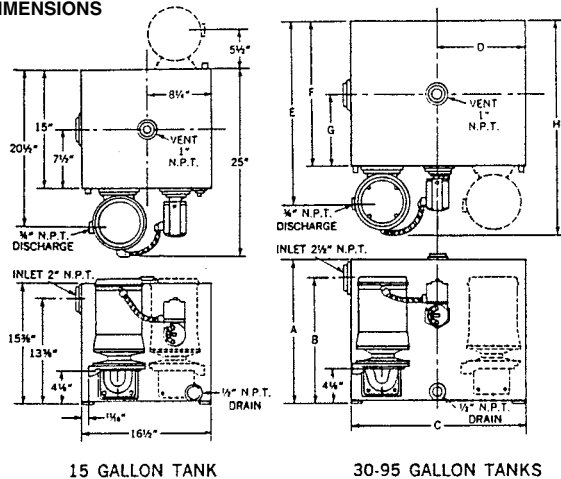
The 4100-G Series Condensate Pumps come with standard features such as, Heavy Duty 3/16" steel receivers, Simplex or Duplex construction, Bronze fitted centrifugal pumps, Energy Efficient 3450 RPM Motors, Automatic venting, Heavy Duty float switch and the SterlSeal™ Ceramic pump seal.

Optional Features:

- Mechanical and electrical alternators available on duplex models
- Gauge glass
- Thermometer
- Discharge pressure gauges
- Special motor construction, explosion proof available.



DIMENSIONS



DIMENSIONS/ENGINEERING DATA

Rec. Size Gal.	A	B	C	D	E	F	G	H
30	18-3/8	16-1/8	22	11	23-1/2	18	9	28
45	26-3/8	24-1/8	22	11	23-1/2	18	9	28

MODEL #	DISCH. PRESS.	# OF PUMPS	PUMP CAP./GPM	MOTOR HP	REC/ GAL	SQR. FT. EDR
SL 4128G	20	1	12	1/3	15	8,000
SL 41215G	20	1	22.5	1/2	30	15,000
SL 41215GD*	20	2	22.5	1/2	30	15,000
SL 41230B	20	1	45	1	45	30,000
SL 41230BD*	20	2	45	1	45	30,000

*Denotes duplex motors.

BOILER FEED UNITS

Optional Features:

- Isolation valves
- Hot-dipped galvanized receivers
- Electric alternator for duplex units
- Solenoid operated make-up water valve with reverse acting float switch, and much more
- NEMA 1 or 12-control panel includes; circuit breaker or fuse disconnect switch with cover interlock, magnetic motor starter with three overloads, control transformer, pilot light and H-O-A switch. All completely assembled and wired to the terminal.



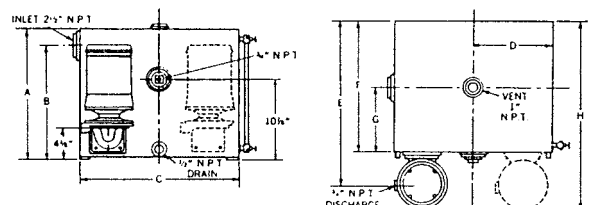
DIMENSIONS/INCHES

REC/ GAL	A	B	C	D	E	F	G	H
60	28-3/8	26-1/3	28	14	23-1/2	18	9	28
95	28-3/8	26-1/8	28	14	33-1/2	28	14	38

ENGINEERING DATA

MODEL #	BOILER HP	DISCH. PRESS.	# OF PUMPS	PUMP CAP. /GPM	MOTOR HP	REC/ GAL
SL 4128GF	60	20	1	12	1/3	60
SL 4128GDF*	60	20	2	12	1/3	60
SL 41215GF	100	20	1	20	1/2	95
SL 41215GDF*	100	20	2	20	1/2	95

*Includes mechanical alternator.
Denotes duplex motors.



HYDROLEVEL COMPANY

Low Water Cut-Offs — Probe Type

For Steam Boilers Series 450P/550P Low Water Cut-Offs



- For residential and commercial applications
- Electronic operation
- Delay on Make (DOM) feature
- Delay on Break (DOB) feature
- LED low water indicator light Test switch and LED indicator light
- Optional manual reset switch available
- Optional remote sensor available - Model PS-801 -RX2
- Meets ANSI specification Z21 .13a - Model PS-802
- No lock out with loss of power (if probe is in water)
- No blow down required
- No moving parts
- Maximum ambient temperature 120°F (49°C)
- Voltage across probe to ground 14 VAC
- Probe sensitivity 3,000 ohms at 120 or 24 VAC supply
- Power consumption 3 VA
- Maximum water temperature 250°F (121°C)
- Maximum steam pressure 15 psi (1 kg/cm²)

Ordering Information

Model Number	Part Number	Description
450P	153876	120V w/ext. barrel
550P	153603	w/ manual reset

Water Feeders — Electric Uni-Match® Electric Water Feeders Series VXT



- For low pressure steam boilers (1,000,000 BTU/hr. max.)
- Three position slide switch allows the timing cycle to be matched to that of the major low water cut-off manufacturers
- Field adaptable feed rate - 1, 2, or 4 gpm (3.8, 7.6, or 15.1 lpm)
- Field selectable delay compensates for slow condensate return rates and prevents flooding
- Electronic operation provides consistent, accurate cycle to-cycle repeatability
- Universal design simplifies selection and reduces stock
- Can be used with mechanical or electronic low water cut-off controls
- Manual feed button
- Includes 3/8" x 1/2" (9.5 x 12.7mm) sweat adapters for quick installation with 1/2" (13mm) copper tubing
- Easy to clean strainer
- Maximum water pressure 150 psi (10.5 kg/cm²)
- Maximum boiler pressure 15 psi (1 kg/cm²)
- Maximum water temperature 175°F (79°C)
- Maximum ambient temperature 100°F (38°C)
- Maximum power consumption (during water feed only)
 - 15 watts at 24 VAC
 - 20 watts at 120 VAC

Ordering Information

Model Number	Part Number	Description
VXT24	45-026	Electric Water Feeder, 24V
VXT120	45-122	Electric Water Feeder, 120V



Boiler Water Feeders and Feeder Cut-Off Combinations

McDONNELL & MILLER Boiler Water Feeders and Feeder Cut-off Combinations are used to provide automatic operation, and to safeguard steam and hot water boilers against the hazards of a low water condition.

A feeder cut-off combination mechanically adds water as needed to maintain the required minimum water level and electrically stops the firing device in case of an emergency. McDONNELL & MILLER Feeder Cut-off Combinations include time-proven features such as—

- Packless Construction
- Cool Feed Valve

- Straight Thrust Valve Action
- Stainless Steel Valve and Seat

NOTE: All McDONNELL & MILLER products must be installed by qualified personnel in accordance with all applicable codes.

NOTE: Maintenance and periodic testing procedures packaged with each product must be followed.

HOW TO SELECT

FOR STEAM BOILERS

Steam Heating Boilers are classified as boilers in closed heating systems where all condensate is returned to boiler. Best recommendation for all automatically fired boilers is a feeder cut-off combination. It adds water as needed to maintain a safe operating level, and stands by to interrupt circuit to burner if water level drops into emergency zone.

Steam Process Boilers are classified as boilers in systems where not all the condensate is returned, and some make-up water is needed. A separate feeder and separate cut-off are recommended, so operating levels can be set for the wider differential required in such service.

How to Select. Selection of the correct feeder cut-off combination, or feeder, depends upon:

1. Maximum boiler pressure.
2. Differential between water supply pressure and the pressure setting of the steam pop safety valve.
3. Boiler size. (See chart below.)

Helpful Conversion Formulas Based on Sq. Ft. of Steam

$$\text{Boiler Horsepower} = \frac{\text{Sq. Ft. of Steam}}{138}$$

$$\text{Lbs. of Water Per Hour} = \frac{\text{Sq. Ft. of Steam}}{4}$$

$$\text{Gallons per Minute} = \frac{\text{Sq. Ft. of Steam}}{2000}$$

$$\text{Btu. per Hour} = \text{Sq. Ft. of Steam} \times 250$$

Boiler Size-Mfr. Gross Rating Sq. Ft. of EDR							McDONNELL & MILLER Products to Use			
Differential Pressure* 10 psi	Differential Pressure* 20 psi	Differential Pressure* 30 psi	Differential Pressure* 40 psi	Differential Pressure* 50 psi	Differential Pressure* 60 psi	Differential Pressure* 70 psi	Maximum Boiler Pressure	Heating Boilers		Process Boilers
								Automatic Fired Jobs	Hand Fired Jobs	Boiler Water Feeder Low Water Cut-off
		All Boilers up to 5000 sq. ft.					25 psi	No. 47-2	No. 47	
		Alt Boilers up to 5000 sq. ft.					30 psi	No. 247-2	No. 247	No. 247 No. 63
8,600	12,000	15,000	17,600	20,000	21,800	23,400	35 psi	No. 51-2	No. 51	No. 51 No. 63
10,500	17,500	22,400	26,500	30,000	32,600	35,000	35 psi	No. 51-S-2	No. 51-S	No. 51-S No. 63
8,600	11,600	14,600	17,000	18,800	20,600	22,100	75 psi	No. 53-2	No. 53	No. 53 No. 150

*Differential pressure should be based on water supply pressure at boiler, minus pressure setting of steam pop safety valve.

FOR HOT WATER SPACE HEATING BOILERS

Best recommendation for all automatically-fired boilers is a feeder cut-off combination. It adds water if needed to match the discharge capacity of the relief valve, and stands by to interrupt circuit to burner if water level drops into emergency zone.

How to Select. Selection of the correct feeder cut-off combination, or feeder, depends upon:

1. Maximum boiler pressure.
2. Differential between water supply pressure and the pressure setting of the safety relief valve.
3. Boiler size.

Boiler Size Btu/hr. Output Capacity					McDONNELL & MILLER Products to Use		
Differential Pressure* 10 psi	Differential Pressure* 20 psi	Differential Pressure* 30 psi	Differential Pressure* 40 psi	Differential Pressure* 50 psi	Maximum Boiler Pressure	Automatically Fired Jobs	Hand Fired Jobs
1,000,000	1,400,000	1,800,000	2,100,000	2,350,000	30 psi	No. 247-2	No. 247
2,000,000	3,000,000	3,750,000	4,400,000	5,000,000	35 psi	No. 51-2	No. 51
2,800,000	4,300,000	5,600,000	6,700,000	7,500,000	35 psi	No. 51-S-2	No. 51-S
2,100,000	2,800,000	3,300,000	4,200,000	4,750,000	75 psi	No. 53-2	No. 53

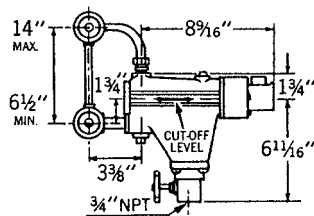
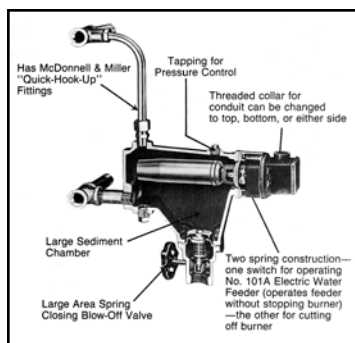
For larger size boilers, the McDONNELL & MILLER No.93 and a motorized valve of adequate size may be used instead of a feeder cut-off combination.

*Differential pressure should be based on water supply pressure at boiler, minus pressure setting of safety relief valve.



Low Water Cut-offs for Low Pressure Steam Boilers

No. 67 Series



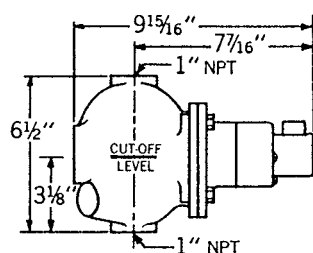
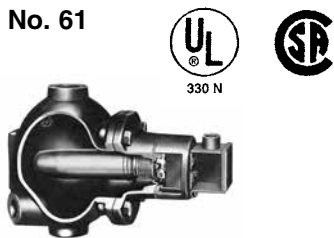
This is the most widely used control of its kind. It interrupts electrical service to the burner when the water level falls below the prescribed cut-off level.

The time-saving "Quick Hook-up" fittings permit installation in the boiler gauge glass tapplings, a feature which positions the control properly and provides correct reproduction of the boiler water level in the float chamber and gauge glass. Other features include deep sediment chamber, large area self-closing blow-off valve, adjustable conduit outlet, and 1/4" NPT pressure control tapping.

The twin switch construction provides an extra switch which closes on small drop in water level without stopping burner, and which can be used to operate low water alarm or to control the McDonnell No. 101A

For boilers of any size.
Maximum steam pressure, 20 psi.

No. 61



For installation on boilers where "Quick Hook-up" fittings cannot be used. Installed with 1" steam and water equalizing lines, and requires a separate blow-off valve.

For boilers of any size.
Maximum steam pressure, 20 psi.

AMPERE RATING

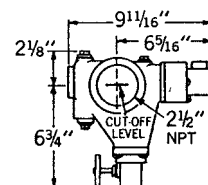
	120 VAC	240 VAC
Motor Duty		
Full Load	7.4	3.7
Locked Rotor	44.4	22.2

Pilot Duty: 120-240 VAC. 125 VA

NO. 61 REPLACEMENT PARTS

61HD	HEAD MECHANISM
11X	SWITCH
11MV	SWITCH MILLIVOLT
CO-12	HEAD GASKET
67-12	SYPHON GASKET
SA67-2	FLOAT & BELLOWS

No. 767

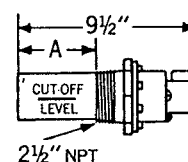


Self-contained cut-off for side, close nipple, connection to 2-1/2" NPT boiler tapping. Has extra deep sediment chamber, integral self-closing blow-off valve, and 1/4" NPT pressure control tapping.

For boilers of any size.
Maximum steam pressure, 20 psi.

"Built-in" Low Water Cut-offs

69 Series



For installation in 2-1/2" NPT tapplings provided by some boiler manufacturers. Selection of the particular model depends upon the insertion length into the boiler. Order the "Built-in" that provides maximum insertion length within the boiler.

Product Number	69	169	269	369	469*
Insertion Length (Dimension "A")	4-1/8"	3-1/8"	2-1/4"	1-3/4"	1-3/16"

*No.569 same as 469 but includes 1/4" pressure control tapping.

NOS. 67 & 767 REPLACEMENT PARTS

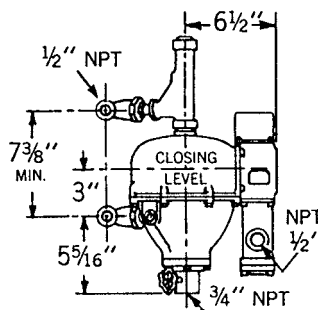
6667	COMPLETE MECHANISM
11X	SWITCH
11MV	SWITCH MILLIVOLT
14B	BLOW OFF VALVE
16	BLOW OFF VALVE, ALT.
37-39	BLOW OFF VLV. GSKT.
67-12	FLOAT GASKET
SA67-2	FLOAT & BELLOWS

NO. 69 REPLACEMENT PARTS

6667	REPL.. HEAD
11X	SWITCH
11MV	SWITCH, MILLI
SA67-2	FLOAT & BELLOWS

Boiler Water Feeders and Feeder Cut-Off Combinations

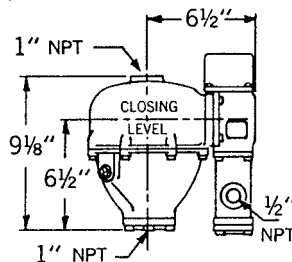
No. 47-2 and No. 47



Most widely used feeder cut-off combination for the closed steam heating system boiler up to 5000 sq. ft. capacity. Has time-saving Quick Hook-up Fittings for installation in gauge glass tapplings, and Self-Closing Blow-off Valve. No.47 is boiler feeder only, without cut-off switch.

Maximum boiler pressure, 25 psi.
Maximum water supply pressure, 150 psi.

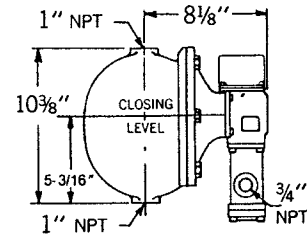
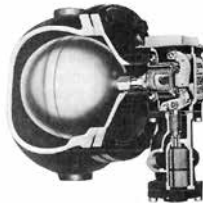
No. 247-2 and No. 247



For steam heating and process boilers up to 5000 sq. ft. and small hot water boilers. Similar to No. 47-2 but without Quick Hook-up Fittings or Self-Closing Blow-off Valve. No. 247 is boiler feeder only, without cut-off switch.

Maximum boiler pressure, 30 psi.
Maximum water supply pressure, 150 psi.

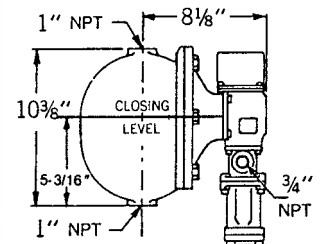
No. 51-2 and No. 51



Has larger feeding capacity than the No. 47-2, for steam boilers above 5000 sq. ft. capacity, and for hot water boilers. No.51 is a boiler feeder only, without cut-off switch.

Maximum boiler pressure, 35 psi.
Maximum water supply pressure, 150 psi.

No. 51-S



Largest feeding capacity of all McDonnell Feeder Cut-off Combinations, for low pressure service. Used on steam and hot water boilers. No. 51-S is boiler feeder only, without cut-off switch.

Maximum boiler pressure, 35 psi.
Maximum water supply pressure, 100 psi.

SERIES 47/51 REPLACEMENT PARTS

MODEL #	DESCRIPTION	SERIES
2	SWITCH ASSY.	47/51
211	SWITCH WI MAN. RESET	47/51
CO-106	CAM	47/51
14B	BLOW OFF VLV. ASSY.	47
37-26	BODY GASKET	47
37-39	BLOW OFF VLV. GSKT.	47
59-18	PACKING WASHER	47
59-27	LEAD PACKING RING	47
A259	QUICK HOOKUP FITTINGS	47
SA37-30	FLOAT	47
SA47-4	BELLOWS ASSY.	47
SA47-101-102	VALVE W/ STRAINER ASSY.	47
SA51-101-102	VALVE W/ STRAINER ASSY.	51
SA101-38	STRAINER BSKT. ASSY.	47/51
51-2HD	HEAD MECH. W/ SWITCH	51
51HD	HEAD MECH. W/ SWITCH	51
SA51-4	SYPHON ASSY.	51
F-26	HEAD GASKET	51/518
37-27	VALVE GASKET ASSY.	51

*Call for Additional Parts

No. 2 and No. 2M Cut-off and Alarm Switch (Model 2)

Used to add electrical low water cut-off to mechanical water feeder. Supplied as a part of the feeder cut-off combinations above (Nos. 47-2, 247-2, 51-2, 51-S-2 and 53-2) or can be purchased separately and added to boiler feeders. Has high voltage terminals for low water cut-off and for low water alarm. Order No. 2 for automatic reset, No. 2M for manual reset.

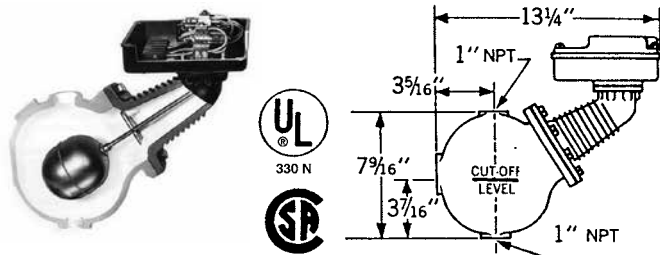


ELECTRICAL RATINGS (Underwriters Listed)		
AMPERE RATING		
Motor Duty	120 VAC	240 VAC
Full Load	10.2	5.1
Locked Rotor	61.2	30.6
Pilot Duty: 120-240 VAC. 60 Hertz 125 VA pr 115 VDC, 0.5 Amps		



Pump Controllers and Low Water Cut-offs

No. 150 and 150-M



The most widely used control of its kind. Packless construction utilizes Monel bellows. Has mercury tube type switches. Can also be used as a cut-off and alarm on many higher pressure hot water space heating boilers. Available with manual reset on cut-off switch; order No. 150-M.

For boilers of any size.
Maximum boiler pressure, 150 psi.

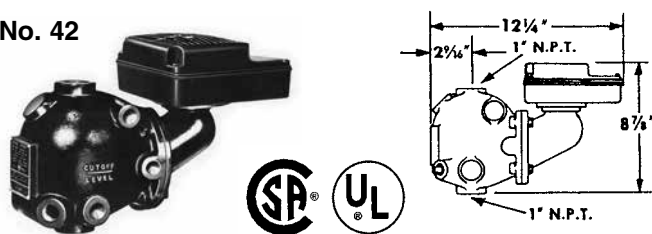
MODEL #	DESCRIPTION
150	LOW WATER CUT OFF
150M	W/ MAN. RESET

*150-MD
(Max. Differential)
ALSO AVAILABLE

REPLACEMENT PARTS

PART #	DESCRIPTION	SERIES
150-HD	HEAD MECHANISM	150
150-HD-MD	HEAD MECHANISM	150M
SA150-11	FLOAT & ROD	BOTH
150-14	HEAD GASKET	BOTH
SA150-124	3 WIRE CUT OFF AND ALARM	BOTH
SA150-125	2 WIRE PUMP SWITCH	BOTH

No. 42



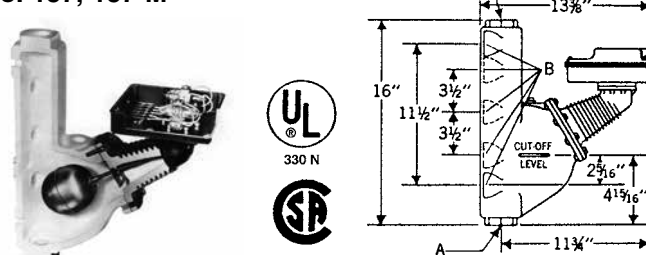
This is a float operated controller, with two mercury switches operating at different levels, to control the boiler feed pump according to the boiler water level itself, and cut off electrical current to the burner in event of any emergency low water condition. Switches are single pole, single throw mercury type. Construction is completely packless. Installed with 1" NPT equalized pipes. Electrical ratings same as for No. 150.

For boilers of any size.
Maximum boiler pressure, 50 psi.

REPLACEMENT PARTS

PART #	DESCRIPTION	SERIES
42HD	HEAD ASSEMBLY	BOTH
SA150-125	2 WIRE BURNER SWITCH	BOTH
CO-12	GASKET	BOTH

No. 157, 157-M



No. 157 is basically the same as the No. 150, but has integral water column type of float chamber that simplifies installation and includes all necessary tappings for gauge glass and tricocks.

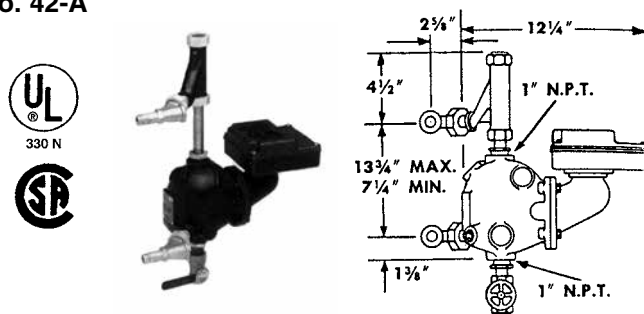
MODEL #	DESCRIPTION
157	LOW WATER CUT OFF
157M	W/ MAN. RESET

*157-MD
(Max. Differential)
ALSO AVAILABLE

REPLACEMENT PARTS

PART #	DESCRIPTION	SERIES
150HD	HEAD MECHANISM	157
150MHD	HEAD MECHANISM	157M
SA150-11	FLOAT & ROD	BOTH
150-14	HEAD GASKET	BOTH
SA150-124	3 WIRE CUT OFF AND ALARM	BOTH
SA150-125	2 WIRE PUMP SWITCH	BOTH

No. 42-A



Same construction and operation as No. 42 at left, but fitted with "Quick Hook-up" fittings for installation right in gauge glass tappings. Electrical ratings same as No. 150.

For boilers of any size.
Maximum boiler pressure, 50 psi.

ELECTRICAL RATINGS (Underwriters Listed)

For 150 Series, 157 Series, and 42 Series
Ampere Rating for Pump and Cut-off Circuits

Motor Duty	120 VAC	240 VAC	120VDC	240VDC
Full Load	7.4	3.7	2.4	1.2
Locked Rotor	44.4	22.2	24.0	12.0

Pilot Duty Service: 345VA, 120 and 240 VAC



Low Water Cut-offs for Hot Water Boilers

No. 63



This is the control that pioneered the use of low-water cut-offs on hot water boilers. Heavy duty construction throughout. Uses the No. 2 Switch shown on page 3. Installed with 1" NPT equalizing pipes.

The No. 63 offers two operating advantages not available in other McDonnell float-operated low pressure cut-offs:

1. A test opening is provided directly below the switch housing, so that a screwdriver may be inserted to manipulate the float to a lower position. This provides a check on the switch operation.
2. The No. 63 is available with a "manual reset" type switch. If desired, specify No. 63M.

The No. 63 can also be used on steam boilers.

ELECTRICAL RATINGS

(Underwriters Listed)

AMPERE RATING 115 VDC, 0.5 Amps

Motor Duty	120 VAC	240 VAC
Full Load	10.2	5.1
Locked Rotor	61.2	30.6

Pilot Duty: 120-240 VAC. 60 Hertz 125 VA

For boilers of any size.
Maximum boiler pressure, 50 psi.

NO. 63 LOW WATER CUT-OFF

PART #	DESCRIPTION
63	LOW WATER CUT OFF

REPLACEMENT PARTS

2	SWITCH W/ COVER
2M	SWITCH W/ MAN.RESET
63HD	REPL. HEAD ASSY.
CO-12	HEAD GASKET

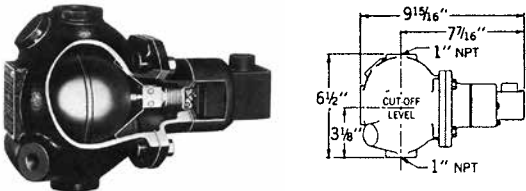
NO. 64 LOW WATER CUT-OFF

PART #	DESCRIPTION
64	LOW WATER CUT OFF

REPLACEMENT PARTS

64HD	HEAD ASSY.
11	SWITCH
11MV	SWITCH MILLIVOLT
CO-12	HEAD GASKET
67-12	SYPHON GASKET

No. 64



These controls are compact in size and built for the pressures encountered in hot water service. They utilize the McDonnell No. 11 Switch, which provides an extra switch, operating at a different level, for low water alarm. Both controls can be used for steam service, and differ only in method of Installation. No. 64 requires 1" NPT equalizing pipes; No. 64-A has "Quick Hook-Up" fittings to permit installation right in the gauge glass tapings of low and medium pressure steam boilers.

Electrical ratings are shown below.

ELECTRICAL RATINGS

(Underwriters Listed)

AMPERE RATING

Motor Duty	120 VAC	240 VAC
Full Load	7.4	3.7
Locked Rotor	44.4	22.2

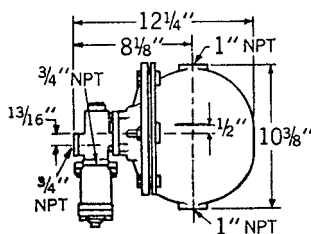
Pilot Duty: 120-240 VAC, 125 VA

For boilers of any size.
Maximum boiler pressure, 50 psi.



Make-up Water Feeders

No. 25A



A dependable float-operated feeder used to add make-up water to condensate receiving tanks. It is mounted to the tank with 1" NPT top and bottom equalizing lines and feeds water through a separate pipe, permitting anti-syphon air gap. Has large capacity, with composition valve disc and Monel seat.

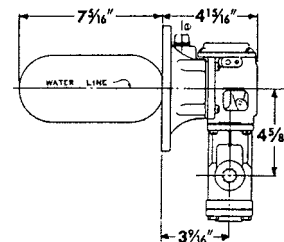
Maximum body pressure, 35 psi.

Maximum water supply pressure, 100 psi.

NO. 25A REPLACEMENT PARTS

MODEL #	DESCRIPTION
25AHD	HEAD
SA25-A-6	VALVE ASSEMBLY

No. 847



These make-up water feeders mount directly on the receiver, need no equalizing connections. They feed water through a separate line, permitting anti-syphon air gap in discharge into receiver. Operating mechanisms and capacities same as standard No. 47, 51 and 51-S feeders. Features include completely packless construction; isolated cool feed valve; straight-thrust valve action; and large built-in strainer. Mounting flanges have six 7/16" bolt holes, on 5-3/4" diameter circle.

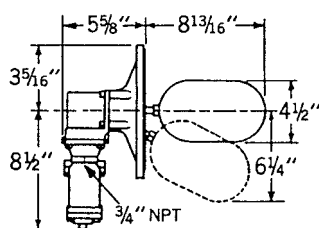
Product Number	No. 847
Maximum Receiver Pressure	25 psi
Maximum Supply Pressure	150 psi
Feed Water Tappings, NPT	1/2"



NO. 847 REPLACEMENT PARTS

MODEL #	DESCRIPTION
847-26	HEAD GASKET
37-27	VALVE BRKT GSKT.
37-29	STRAINER GASKET
SA47-101-102	STRAINER BASKET ASSY

No. 21



For supplying make-up water to condensate receivers. Flange mounts on side of receiver with six bolts—saves space and simplifies piping. Make-up water is fed through an integral strainer, through valve, and directly into tank. Flange bolt circles: No. 21—5-3/4"

Maximum receiver pressure, 35 psi.

Maximum water supply pressure, 150 psi.

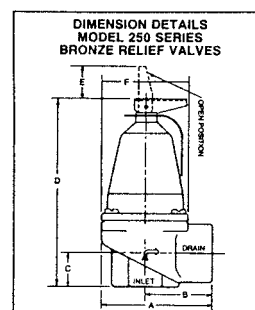
NO. 21 REPLACEMENT PARTS

MODEL #	DESCRIPTION
51-14	VALVE SEAT
847-26	GASKET

Pressure Relief Valves

250 Series Bronze Relief Valves

• 3/4" Inlet and Discharge Models



CONSTRUCTION (WETTED PARTS)

Body and Seat: Bronze

Seat Retainer: Bronze Diaphragm and Seat Disc: EPT Rubber.

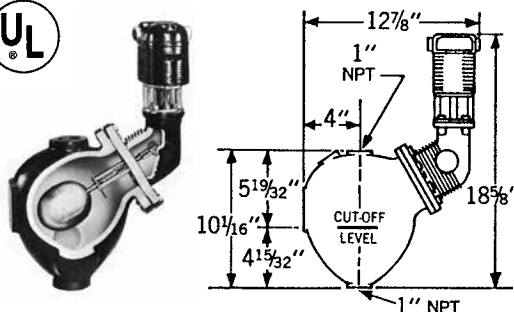
Maximum working Pressure: 125 psi, 30 psi setting.

Maximum working Temperature: 250° F.

DIMENSIONS

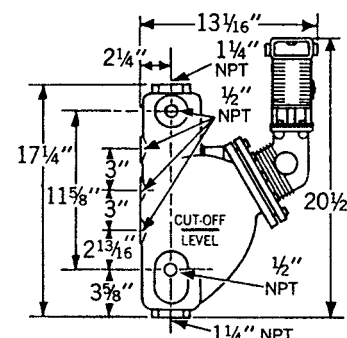
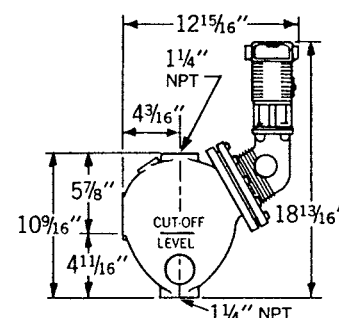
Model (All in Series)	Dimensions Inches							Approx. Shipping weight (LBS)
	Inlet & Outlet	A	B	C	D	E	F	
250	3/4	2-9/16	1-1/2	3/4	4-9/16	1-1/32	2-3/32	1.2

Pump Controllers and Low Water Cut-offs

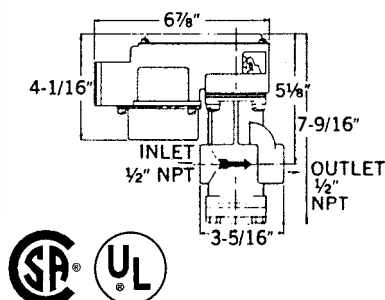
No. 93


Utilizes the principle of repulsion magnetic operation for positive opening and closing. Permits wider adjustment of operating levels between pump switch and cut-off switch. No.93 is for boilers with separate water columns.

For boilers of any size.
Maximum boiler pressure, 150 psi.

No. 94 and 194


Water Feeders, Mechanical

Electric Water Feeders
No. 101A


The No. 101A Electric Water Feeder has the same packless construction, straight-thrust valve action and built-in strainer perfected in other McDonnell Feeders. It closes tight against supply pressures up to 150 psi.

For Oil Boilers —The standard No. 101A Electric Water Feeder is furnished with 120VAC coil.

For Gas Boilers —The No. 101A is also available with low voltage coil and companion transformer for use on gas fired boilers having 24 volt control circuits. Order No. 101A-24 V (includes transformer).

Maximum boiler size, 5000 sq. ft. steam.
Maximum water pressure, 750 psi.
Maximum boiler pressure, 25 psi.

Magnetic switching controls for high pressure boilers, up to 250 psi. Permit wide adjustment of operating levels. No. 94 is for boilers with separate water columns. No. 194 has water column type body with integral tappings for gauge glass and tricocks. For manual reset of cut-off switch order No. 94-M and No. 194-M.

For boilers of any size.
Maximum boiler pressure, 250 psi.

REPLACEMENT PARTS NOS. 93, 94, 194

PART #	DESCRIPTION	SERIES
51	SWITCH ASSEMBLY	ALL
92-68	HEAD GASKET	94/194
150-14	HEAD GASKET	93

ELECTRIC WATER FEEDER/PARTS

MODEL #	DESCRIPTION
101A-120V	FEEDER-120 volt
101A-24V	FEEDER-24 volt
346650	COIL 120v
347010	COIL 24v
SA101-38	STRAINER
SA101-102	VALVE/STRAINER



EXTROL TANKS

MODEL NO.	TANK VOLUME (Gallons)	ACCEPT VOLUME (Gallons)	DIAMETER (Inches)	LENGTH (Inches)	SHIPPING WT. (Lbs.)
15	2	.9	8	12-5/8	5
30X	4.4	2.4	11	15-1/2	9
60X	7.6	2.4	11	23	14
90X	14	11.3	15-3/8	21	23

Larger Closed Heating Systems

MODEL NO.	TANK VOLUME (Gallons)	ACCEPTANCE VOLUME (Gallons)	"A" DIM. (Height) (Inches)	"B" DIM. (Dia.) (Inches)	SYSTEM CONN. (NPT)	SHIPPING WEIGHT (Lbs.)
SX-30V	14	11.5	23-13/16	15	1"	24
SX-40V	20	11.5	31-9/16	15	1"	32
SX-60V	32	11.5	46-7/16	15	1"	42
SX-90V	44	34	36	22	1-1/4"	69
SX110-V	62	34	46-3/4	22	1-1/4"	92

SPECIFICATIONS-ALL MODELS

- Maximum Working Pressure 100 PSI
- Maximum Operating Temperature 240°F
- Standard Charge Pressure 12 PSIG (unless otherwise specified)



FILL-TROL® Tank

A specially adapted EXTROL with an automatic pressure reducing valve.

MODEL NO.	TANK VOLUME (Gallons)	ACCEPT VOLUME (Gallons)	DIAMETER (Inches)	LENGTH (Inches)	SHIPPING WT. (Lbs.)
109	2	.9	8	14-3/4	6
110	4.4	2.4	11	17-3/8	10
111	7.6	2.4	11	24-5/8	15
112	14	11.3	15	23	24

- Standard EXTROL cannot be used with FILL-TROL.

Compression Tanks



PART #	DIMENSION
G818008	9" x 32"
G818015	12" x 30"
G818018	12" x 36"
G818024	12" x 48"
G818030	12" x 60"
G818040	14" x 60"
G818182	20" x 60"
G818220	24" x 60"



Dimensions & Weights

Model No.	Tank Dia. Inches	Connection (NPT)		Approx. Shpg. Wt. (Lbs)
		Tank	Boiler	
ATF-9	9	1/2" M	3/4" M	2-1/4
ATF-12	12 - 14			2-1/2
ATF-16	16 - 18			2-3/4
ATF-20	20 - 22			
ATF-24	24			
ATFL	>100 gal	1" F	1" F	14



EXPANSION TANKS

EXTROL SIZING TABLE
FILL PRESSURE 12 PSI RELIEF PRESSURE 30 PSI
AVERAGE SYSTEM TEMPERATURE 200°F.

BOILER NET OUTPUT IN 1000's OF BTU HR.	TYPE OF RADIATION			
	FINNED TUBE BASEBOARD OR RADIANT PANEL	CONVECTORS OR UNIT HEATERS	RADIATORS CAST IRON	BASEBOARD CAST IRON
25	15	15	15	15
50	15	15	30	30
75	30	30	30	60
100	30	30	60	60
125	30	60	60	90
150	30	60	90	90
175	60	60	SX-30	SX-30
200	60	60	SX-30	SX-30
250	60	90	Sx-30	SX-40
300	90	SX-30	SX-30	SX-40
350	SX-30	SX-30	SX-40	SX-60
400	SX-30	SX-40	SX-40	SX-60

EXTROL CAPACITY AT VARIOUS
SYSTEM OPERATING TEMPERATURES
RELIEF PRESSURE 30 PSI FILL TEMPERATURE 40-70°F
AND FILL PRESSURE 12 PSI

AVERAGE SYSTEM TEMP. °F	SYSTEM CONTENT IN GALLONS			
	EXTROL MODEL 15	EXTROL MODEL 30	EXTROL MODEL 60	EXTROL MODEL 90
100	140	308	417	980
110	104	230	311	731
120	80	177	240	564
130	65	143	193	454
140	53	118	160	376
150	45	99	134	315
160	38	84	114	269
170	33	73	99	233
180	29	64	87	204
190	25	56	76	180
200	22	50	68	160
210	20	45	61	144
220	18	40	55	130
230	16	37	50	118
240	15	34	46	108

MAXIMUM WORKING PRESSURE 100 PSI — OPERATING TEMP. 40°-240°

#15 EXTROL = 109 FILL-TROL

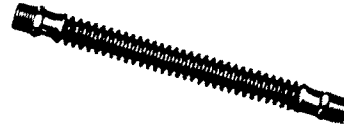
#60 EXTROL = 111 FILL-TROL

#30 EXTROL = 110 FILL.TROL

#90 EXTROL = 112 FILL-TROL



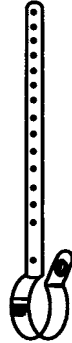
ACCESSORIES



Flexible Connector

Natick Strap Hanger

Model No.	Pipe Size	Hanger Length
603-1/2 x 6	1/2"	6"
603-3/4 x 6	3/4"	6"
603-1 x 6	1"	6"
603-1-1/4 x 6	1-1/4"	6"



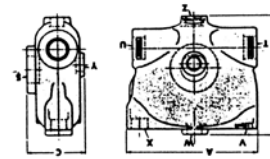
PART	SIZE	PRESSURE	DESCRIPTION
335-1	1/2"	55 PSI	7" COPPER
335-2	3/4"	40 PSI	THREADED
347-1	1/2"	55 PSI	7" COPPER
347-2	3/4"	40 PSI	SWEAT

Air Vents

Model	Type	Maximum Pressure	Maximum Temperature	Size
700-C	Float	45 psi	240°F	1/8" MPS (NPTM)
701-C	Float	100 psi	240°F	1/4" MPS (NPTM)
702	Float	45 psi	240°F	1/4" MPS (NPTM)
703	Float	100 psi	240°F	1/4" MPS (NPTM)
706	Float	150 psi	240°F	3/4" MPS (NPTM)

Inso-line Strap Hanger

Model No.	Pipe Size	Hanger Length
602-1/2 x 6	1/2"	6"
602-3/4 x 6	3/4"	6"
602-1 x 6	1"	6"
602-1-1/4 x 6	1-1/4"	6"



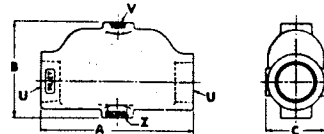
Angle Types

Model No.	Size	Dimensions			Typical Tappings - NPT							
		A	B	C	S	T	U	V	W	X	Y	Z
438-2	1"	7-3/8"	6-5/8"	3-1/4"	1-1/4"	1"	1"	1/8"	3/4"	3/4"	1/2"	1/2"
439-1	1-1/4"	7-3/8"	6-5/8"	3-1/4"	1-1/2"	1-1/4"	1-1/4"	1/8"	3/4"	3/4"	1/2"	1/2"

Other tapping combinations available.

Air Purgers

Model No.	Size	Dimensions			Tappings - NPT		
		A	B	C	U	V	Z
443X	1"	6"	4"	2-1/2"	1"	1/8"	1/2"
444-1	1-1/4"	6"	4"	2-1/2"	1-1/4"	1/8"	1/2"
445X	1-1/2"	8"	5"	3-1/2"	1-1/2"	1/8"	1/2"
446	2"	8"	5"	3-1/2"	2"	1/2"	1/2"
447	2-1/2"	10"	6"	5"	2-1/2"	3/4"	1/2"
448	3"	10"	6"	5"	3"	3/4"	1/2"



SQUEEZE AND SNAP GAUGE GLASS CUTTER

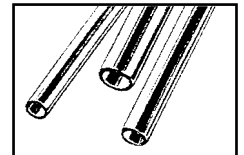
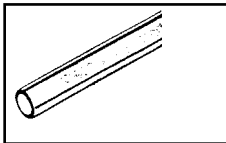
CUTS UP TO 3/4" GAUGE GLASS

PART # T100-370

Washers 5/8": 40593

Washers 3/4": D-1606-00

Nuts 1/2": C-1408-06



STANDARD GAUGE GLASS

PART #	LENGTH	MAXIMUM RECOMMENDED WORKING PRESSURE, PSI	
		TEMP. TO 150°F NO CORROSION	STEAM BOILER SERV. UP TO 425°F
5812	12"	200 PSI	100 PSI
5818	18"	190	100
5824	24"	175	100
5836	36"	165	100
3412	12"	200 PSI	100 PSI
3418	18"	190	100
3424	24"	185	100
3436	36"	165	100

RED-LINED GAUGE GLASS

PART #	LENGTH	MAXIMUM RECOMMENDED WORKING PRESSURE, PSI	
		TEMP. TO 150°F NO CORROSION	STEAM BOILER SERV. UP TO 425°F
5812RL	12"	335 PSI	295 PSI
5818RL	18"	305	280
5824RL	24"	265	270
5836RL	36"	205	260
3412RL	12"	330 PSI	280 PSI
3418RL	18"	300	265
3424RL	24"	260	255
3436RL	36"	240	245