V9™ Series

Commercial Hydronic Heat Pressure Fired, Wet Base, Oil, Gas or Combination

BURNHAM COMMERCIAL
AMERICA'S BOILER COMPANY®

- **Heating Capacities**
- **347 to 1900 MBH Output**

V9 Series - Hot Water or Steam Boiler

Maximum Allowable Working Pressure (MAWP): 80 PSI-Water; 15 PSI-Steam

Your Commercial Heating Solution

Available in ten sizes with gross output ratings from 347 to 1900 MBH, the V9 Series fires gas, oil or combination gas/oil and is available equipped with either steam or water trim. The product meets the energy efficiency requirements of ASHRAE 90.1 with combustion efficiencies up to 86%.

Cast iron construction, ease of assembly, two venting options, and stringent testing methods make the V9 Series boiler by Burnham Commercial your heating solution.

Cast Iron Dependability

Cast iron has the unique ability to absorb and transfer heat quickly and efficiently while providing unmatched durability. That's why the cast iron design of the V9 is the best choice for long lasting, trouble-free operation in commercial and industrial applications.

- **Manufactured with Quality**
  Burnham Holdings owns and operates a state-of-the-art foundry, in Zanesville, OH, ensuring quality and availability for all V9 castings and all other Burnham Commercial castings.

- **Cast Iron Nipple Difference**
  While gaskets used by other manufacturers can break down from oils and contaminants, the V9's cast iron nipples remain unaffected, ensuring long life and eliminating costly repairs.

The V9 section assembly includes precision machined cast iron nipples that expand and contract along with the sections they join, providing integrity to the entire assembly. Additionally, cast iron nipples resist boiler flue gases and petroleum based chemicals, including corrosion inhibitors, pump lubricants and antifreeze.

Installation & Service Flexibility

The cast iron sectional design of the V9 boiler makes it easy to maneuver through doorways and into the boiler room. In addition to being shipped as loose sections, the boiler is available with factory-assembled sections or as a completely packaged and fire-tested unit. Packaged units, fastened to a steel skid, are easily maneuvered through standard 36" x 80" doorways.

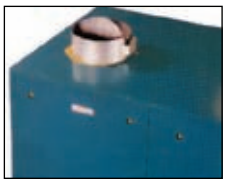
- **Hassle-free Section Assembly**
  V9 boiler sections have reinforced lugs that are used to assemble the sections with individual draw rods resulting in fast, strain-free assembly.

The sections can be assembled using two common tools—a 3/4" drive ratchet with a 1-1/16" deep socket and wrench.

The sections are surface ground to ensure smooth surface mating. An elastic sealant and fiberglass rope are used on all section joints for a completely sealed and pressure-tight assembly.

- **Extensive Testing Methods**
  Each boiler section is hydrostatically tested at two and one half times the rated working pressure at the foundry. Factory assembled sections are tested at one and one half times the rated working pressure.

- **Rear or Top Venting**
  As a forced draft boiler, the V9 provides optimum draft for controlled efficiency, eliminating the need for high chimneys or induced draft fans. A unique feature of the V9 boiler is it can be vented from the rear or the top. This enables easy chimney or sidewall venting for maximum installation flexibility.



Top outlet venting saves floor space and reduces installation time and materials. A plugged tapping is provided to take flue outlet pressure readings.

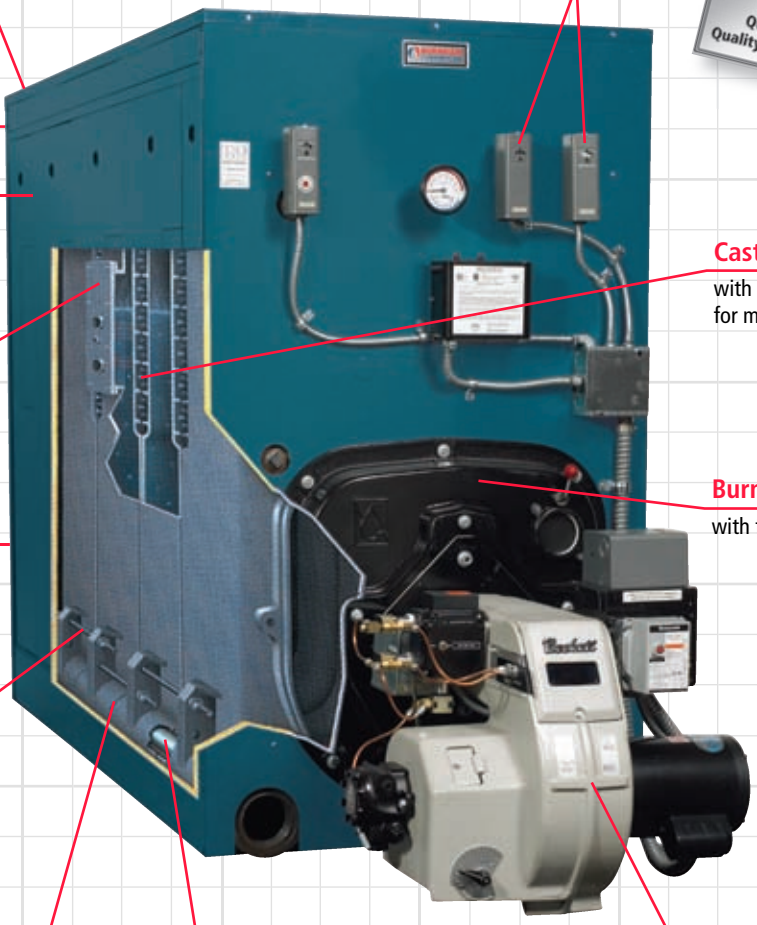
Superior Quality

The "Smart" Choice

Specifying a heating system, preparing boiler room layouts and creating sales submittals are all made easy with Burnham Commercial's SmartDesign CD. Engineering and sales tools are all in one place along with AutoCAD drawings that are at a 1" to 1" scale and can be copied and pasted into an existing boiler room layout. Consult your local Burnham Commercial sales representative or visit our new website www.burnhamcommercialcastiron.com for details.

Commitment to Quality

Burnham Commercial, "America's Boiler Company," has earned a reputation for quality and dependability. Built for a variety of applications, the V9 Series is right for your next job.



Top or Rear Outlet
with adjustable lock-type damper (not shown); includes plugged tapping for outlet pressure readings

Front Mounted Controls
for easy adjustment and maintenance

Removable Side Jacket Panels
Easy access to all cleanouts

Cast Iron Vertical Design
with pinned heating surface for maximum heat extraction

Optional Tankless Heater
Provides domestic hot water

Burner Mounting Plate
with flame observation port

Rear Observation Port
Includes plugged tapping for over-fire draft readings (not shown)

Individual Draw Rods
with reinforced lugs for strain free assembly

Wet Base
Side wall insulation creates improved thermal circulation

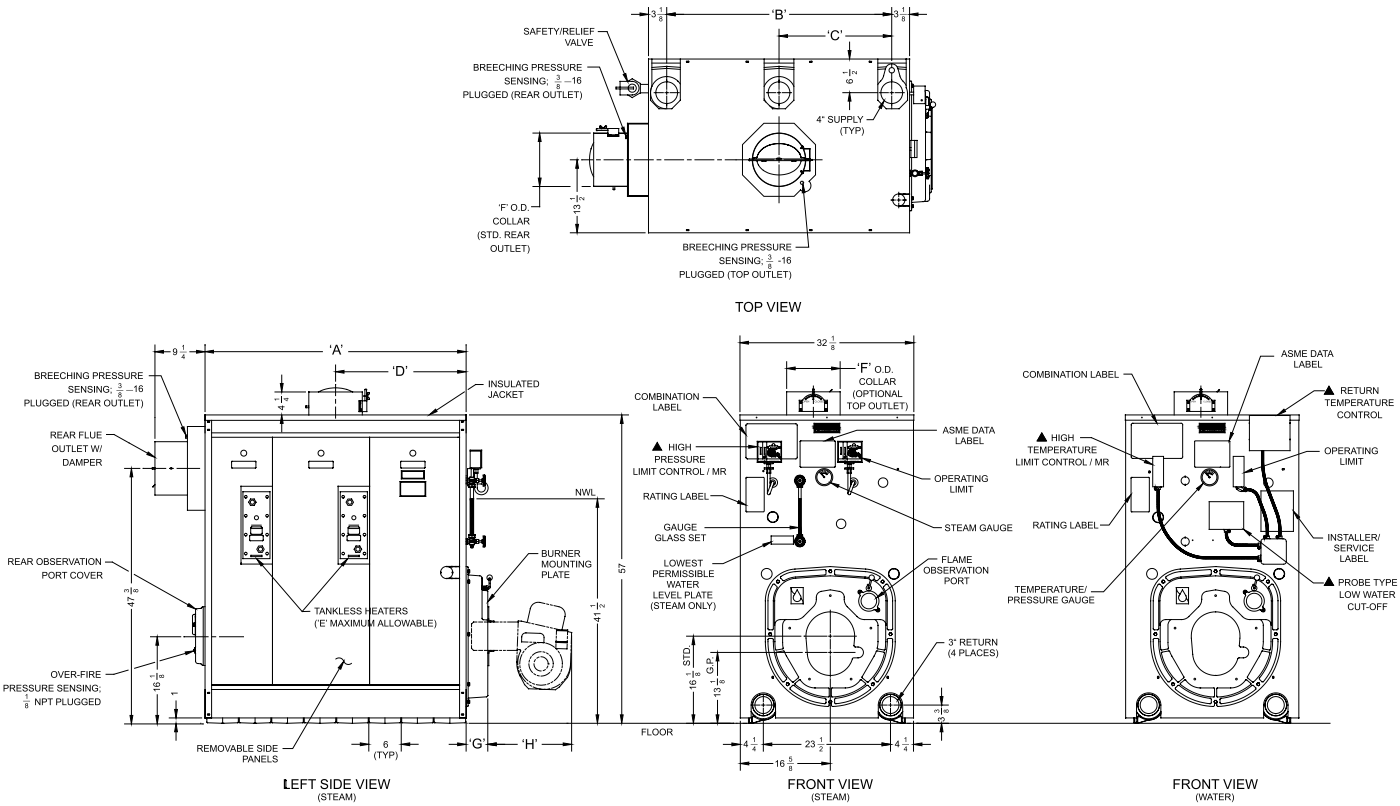
Cast Iron Nipples
ensure the integrity of the section assembly and resist petroleum based chemicals and flue gases

5 Burner Manufacturers
Options to best fit your needs

V9 SERIES DIMENSIONS (in inches)

BOILER MODEL	# OF SECTIONS	'A'	'B'	# OF STEAM RISERS	'C'	'D'	MAX. HEATERS 'E'	FLUE OUTLET DIA. 'F'	BURNER MOUNTING PLATE/ BURNER DIMENSION*						APPROX. ASSEMB. SECTION WEIGHT LBS.	APPROX. K.D. BLR/ SHIP WEIGHT LBS. **
									BECKETT		CARLIN	GORDON-PIATT	POWERFLAME	WEBSTER		
									'CF' 'G'/'H'	'CG' 'G'/'H'	'G'/'H'	'G'/'H'	'JR.' 'G'/'H'	'C' 'G'/'H'	'JB' 'G'/'H'	
V903A	3	18-1/4	12	1	—	9-1/8	1	7	8 / 9-3/4	8 / 20-7/8	8 / 23-1/4	8 / 15-1/4	8 / 20-1/8	—	—	908	1278
V904A	4	24-1/4	18	1	—	12-1/8	1	7	8 / 11-3/4	8 / 21-5/8	8 / 23-1/4	8 / 15-1/4	8 / 20-1/8	8 / 30	—	1194	1590
V905A	5	30-1/4	24	1	—	15-1/8	1	8	8 / 11-3/4	8 / 21-5/8	4 / 27-3/8	4 / 15-1/4	8 / 20-1/8	8 / 30	4 / 25	1480	1902
V906A	6	36-1/4	30	1	—	18-1/8	2	8	4 / 20-5/8	4 / 21-5/8	4 / 27-3/8	4 / 19-5/8	4 / 20-1/8	4 / 30	4 / 25	1766	2218
V907A	7	42-1/4	36	2	—	21-1/8	2	8	4 / 20-5/8	4 / 28-5/8	4 / 27-3/8	4 / 19-5/8	4 / 23-5/8	4 / 30	4 / 25	2052	2534
V908A	8	48-1/4	42	2	—	24-1/8	2	10	4 / 20-5/8	4 / 28-5/8	4 / 27-3/8	4 / 19-5/8	4 / 23-5/8	4 / 35	4 / 25	2338	2846
V909A	9	54-1/4	48	2	—	27-1/8	3	10	4 / 21-1/8	4 / 29-1/8	4 / 29-7/8	4 / 20-3/8	4 / 23-5/8	4 / 35	4 / 25	2624	3227
V910A	10	60-1/4	54	2	—	30-1/8	3	10	4 / 21-1/8	4 / 29-1/8	4 / 29-7/8	4 / 20-3/8	—	4 / 35	4 / 25	2910	3559
V911A	11	66-1/4	60	2	—	33-1/8	3	12	4 / 22-5/8	4 / 29-1/8	4 / 29-7/8	4 / 20-3/8	—	4 / 35	4 / 25	3196	3870
V912A	12	72-1/4	66	3	30	36-1/8	4	12	4 / 22-5/8	4 / 29-1/2	4 / 29-7/8	4 / 20-3/8	—	4 / 35	4 / 25	3482	4197

* Burner control panel configuration may change this dimension. On JR burner, add 10" for optional panel.
** Does not include burner mounting plate (shipped separately)
Add 55 lbs. for 4" standard burner mounting plate
Add 85 lbs. for 8" extended burner mounting plate



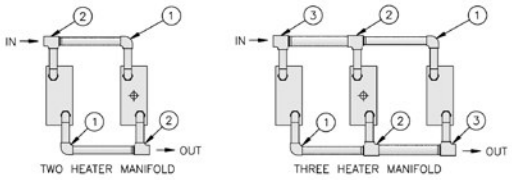
▲ Not supplied as standard equipment.

TANKLESS HEATER RATINGS* (Water and Steam)

BOILER MODEL	NUMBER OF V9-2 TANKLESS* HEATERS INSTALLED			
	1	2	3	4
V-903A	6.75	—	—	—
V-904A	7.5	—	—	—
V-905A	7.5	—	—	—
V-906A	7.5	15	—	—
V-907A	7.5	15	—	—
V-908A	7.5	15	—	—
V-909A	7.5	15	22.5	—
V-910A	7.5	15	22.5	—
V-911A	7.5	15	22.5	—
V-912A	7.5	15	22.5	30.0

*Ratings are given in gallons per minute continuous draw of water heated from 40°F to 140°F with 200°F boiler water.

MULTIPLE HEATER MANIFOLD

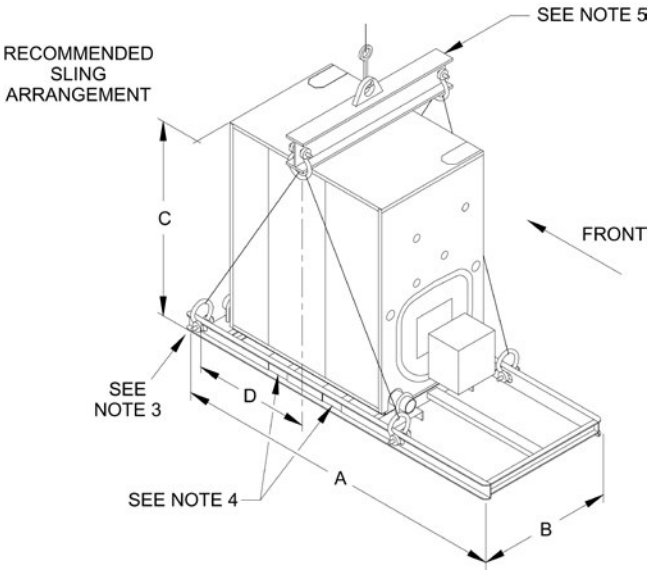


ITEMS	DESCRIPTION
1	1-1/4" Copper Elbow
2	1-1/2" x 1-1/4" x 1-1/4" Copper Tee
3	2" x 1-1/2" x 1-1/4" Copper Tee
4	2" x 2" x 1-1/4" Copper Tee
5	1-1/4" Copper x MIP Adapter

Notes:
1. It is important that water heaters be centrally located in boiler. Refer to proper section arrangement per figure 8 in I & O Manual.
2. Pressure drop across each V9-2 tankless heater = 5.25 PSI at 7.5 GPM flow rate.
3. Locate heater control in heater identified as ⊕

PACKAGED BOILER INFORMATION

In addition to being shipped as individual sections, the V9 boiler is available with factory-assembled sections or as a completely packaged unit. The packaged unit is fastened to a steel skid to facilitate lifting with a fork truck or crane. The skid can serve as the boiler foundation, replacing the need for a concrete pad. A factory fire-test is also available on all packaged units.



BOILER MODEL	NUMBER OF SECTIONS	LENGTH A	WIDTH B*	HEIGHT C**	APPROX. CENTER OF GRAVITY D***	APPROX. SHIPPING WEIGHT LBS.***
V-903A	3	63-5/8	34-1/2	61	17-1/2	1478
V-904A	4	69-5/8	34-1/2	61	20-1/2	1790
V-905A	5	75-5/8	34-1/2	61	23-1/2	2102
V-906A	6	81-5/8	34-1/2	61	27-1/2	2418
V-907A	7	87-5/8	34-1/2	61	30-1/2	2734
V-908A	8	93-5/8	34-1/2	61	33-1/2	3071
V-909A	9	105-5/8	34-1/2	61	37-1/2	3452
V-910A	10	111-5/8	34-1/2	61	40-1/2	3809
V-911A	11	117-5/8	34-1/2	61	43-1/2	4120
V-912A	12	123-5/8	34-1/2	61	46-1/2	4447

* Width can vary with gas train configuration.
If the V9 (packaged) boiler must pass through a 36" doorway, please specify.
** Add 6-1/2" to dimension C when equipped with optional top outlet.
*** Varies slightly with burner and gas train configuration and with or without RTC.

1. Do not tilt. Exercise caution when lifting to avoid damage.
2. This boiler can be lifted by fork truck of appropriate capacity. Do not truck from front.
3. When lifting from rear, forks must extend beyond center of gravity and second skid cross bar.
4. When lifting from side, forks must extend to opposite skid rail and straddle center of gravity.
5. Cable spreader is to prevent jacket damage. Spreader width should equal B (width of skid) + 12". Adjust cable lengths to lift at approximate center of gravity per chart.

BURNER MOUNTING PLATES AND ADAPTER PLATES

POWER FLAME ('C' SERIES) BURNER ADAPTER PLATE

BOILER MODEL	PART NO.	I.D. NO.	'A' DIA.	'B' DIA.	'C' REF.
V-904A THRU 907A	602292401	940	7-1/2	10-1/4	7-1/4
V-908A THRU 912A	602292411	941	9	12-1/32	8-1/2

POWER FLAME ('JR' SERIES) BURNER ADAPTER PLATE

V-903A THRU 906A	602292451	945	6-3/8	10-1/4	7-1/4
V-907A THRU 909A	602292461	946	8-3/8	11-25/32	8-1/4

GORDON-PIATT ('R' SERIES) BURNER ADAPTER PLATE

V-903A AND 904A	602292501	950	4-3/8	7	4-15/16
V-905A AND 906A	602292511	951	6-3/8	9	6-3/8
V-907A THRU 912A	602292521	952	8-3/8	10	7-1/16

Notes:
1. A mounting plate and adapter plate are needed for each unit.
2. The 8" extended plate is used on V903 & V904 for all burners, and V905 for Beckett and Power Flame burners. All others use the 4" standard burner mounting plate.

BECKETT ('CF' SERIES) BURNER ADAPTER PLATE

BOILER MODEL	PART NO.	I.D. NO.	'A' DIA.	'B' DIA.	'C' REF.
V-903A THRU 905A	602292201	920	4-3/4	10	7-1/16
V-906A THRU 908A	602292211	921	6-1/8	10	7-1/16
V-909A THRU 912A	602292221	922	6-3/4	10	7-1/16

BECKETT ('CG' SERIES) BURNER ADAPTER PLATE

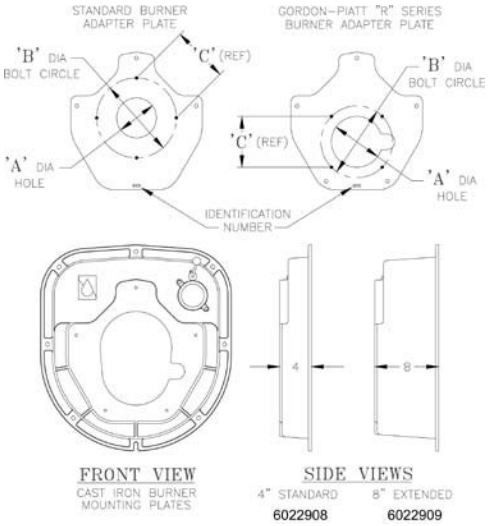
V-903A THRU 906A	602292201	920	4-3/4	10	7-1/16
V-907A AND 908A	602292211	921	6-1/8	10	7-1/16
V-909A THRU 911A	602292231	923	7-1/4	10	7-1/16
V-912A	602292241	924	8-1/8	10	7-1/16

CARLIN ('CRD' SERIES) BURNER ADAPTER PLATE

V-903A THRU 905A	602292301	930	4-1/2	10	7-1/16
V-906A THRU 912A	602292311	931	6-1/4	10	7-1/16

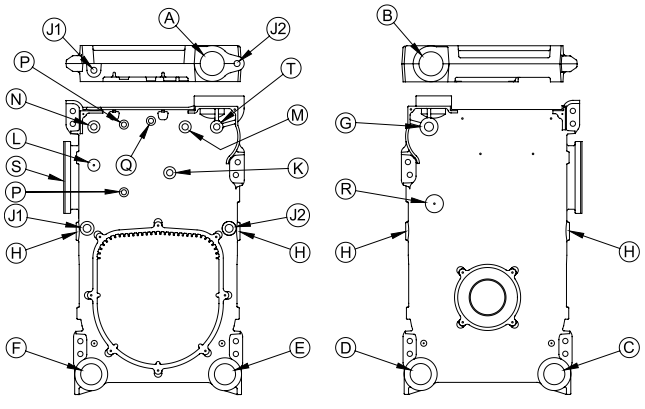
WEBSTER ('JB' SERIES) BURNER ADAPTER PLATE

V-905A AND 912A	602292601	960	7-5/8	10-3/4	7-19/32



CONTROL TAPPINGS

TAPPING LOCATION	SIZE (IN.)	STEAM BOILER	WATER BOILER
A	4	Supply	Supply
B	4	Plug (903A thru 906A) Supply (907A thru 912A)	Plug
C	3	Blow-Off Valve	Return
D	3	Return	Plug (903A thru 911A) Return (912A)
E	3	Plug	Blow-Off / Drain Valve
F	3	Plug	Plug
G	1-1/2	Safety Valve / Skim	Relief Valve
H	1-1/2	Crown Inspection / Washout (special order only)	Crown Inspection / Washout (special order only)
J1	1	Float L.W.C.O	Float L.W.C.O
J2	1	Float L.W.C.O	Float L.W.C.O
K	3/4	Probe L.W.C.O	Probe L.W.C.O
L	3/4	Auxiliary Probe L.W.C.O (special order only)	Auxiliary Probe L.W.C.O (special order only)
M	3/4	Operating Pressure Limit	Operating Temperature Limit Control
N	3/4	High Pressure Limit Control/ Manual Reset	High Temperature Limit Control/ Manual Reset
P	1/2	Gauge Glass	Not Used —Plug
Q	1/2	Steam Gauge (Bush to 1/4")	Temperature / Pressure Gauge
R	1-1/2	Indirect Water Heater Supply (special order only)	———
S	3/4	Tankless Heater Control	Tankless Heater Control
T	3/4	Firing Rate Pressure Control	Firing Rate Temperature Control



System Design

Hydronic heating system designs include system piping, near boiler piping, water/steam circulation, controls and accessories. Our recommendations cover the near boiler piping. They are designed to facilitate the installation of the V9 into existing and new heating systems.

System Piping Factors

Many hot water heating systems involve the use of system zoning with zone valves or pumps and may include some form of mixing device. Use of these components can effect flow through the boiler and return water temperatures. These factors must be considered for proper system design.

Multiple zone heating systems, as shown in illustration 1, can produce varying flow rates and water temperatures through the boiler.

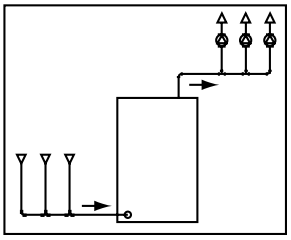


Illustration 1

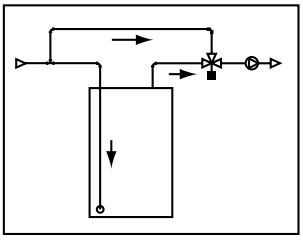


Illustration 2

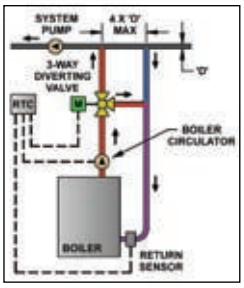
The piping arrangement shown in illustration 2 shows how tempering valves have typically been used to provide system blending: cool return water is mixed with hot supply water through a mixing valve. This tempers the water temperature to the system but can subject the boiler to varied flow and cool return water temperatures.

Recommended Near Boiler Piping

Burnham Commercial's near boiler piping recommendations are aimed at applying the V9 boiler to various system designs.

The three water boiler recommendations are each based on system operating characteristics. The minimum operating criteria are a maximum temperature difference of 40° F under all operating conditions and no less than 135° F return water temperature for prolonged periods of time.

- **Recommendation 1** - is used when the load is constant and not varied due to mixing or multiple zones.
- **Recommendation 2 -** is a primary-secondary piping method that maintains a constant flow through the boiler by using a secondary boiler circulator. This arrangement isolates the boiler from flow variations but does not safeguard against cold return water temperatures.
- **Recommendation 3** - is used when the return water temperature does go below 135°F for prolonged periods of time. This is also primary-secondary piping, but includes the addition of a 3-way valve, return water sensor and boiler-mounted RTC Return Temperature Control.



RTC Return Temperature Control

The concept of boiler protection has existed for many years. The Burnham Commercial RTC Return Temperature Control* simplifies the process and provides an economical and effective means of protecting the boiler from thermal shock and sustained condensing operation.

One RTC is required per boiler and can be incorporated into most hydronic hot water applications with minimal modifications to the system design and operation.

V11 pictured with RTC.

*Please see RTC specifications sheet for complete details and proper circulator sizing.

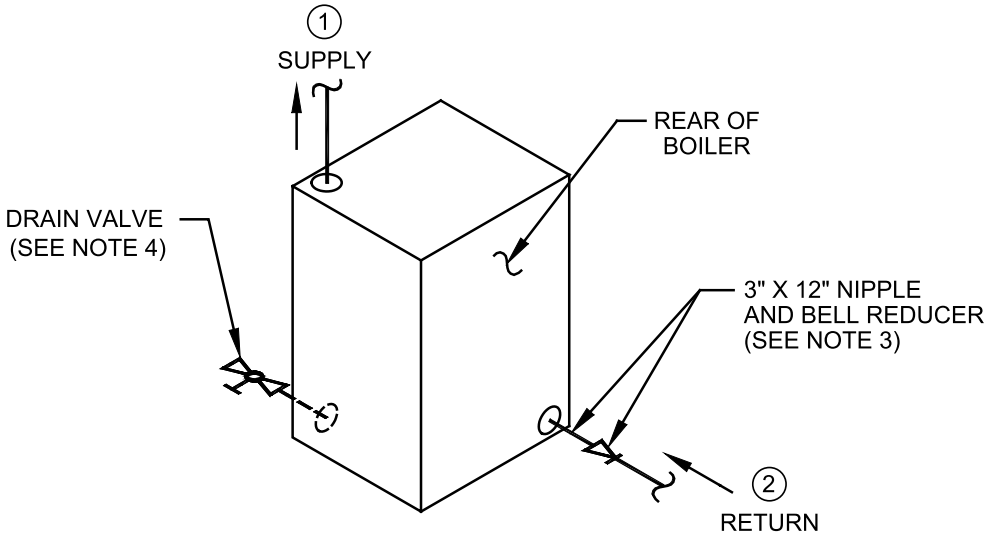
Outdoor Reset Option

The RTC outdoor reset option for single boiler applications provides additional energy savings by modulating system water temperature to closely match the building load requirements.

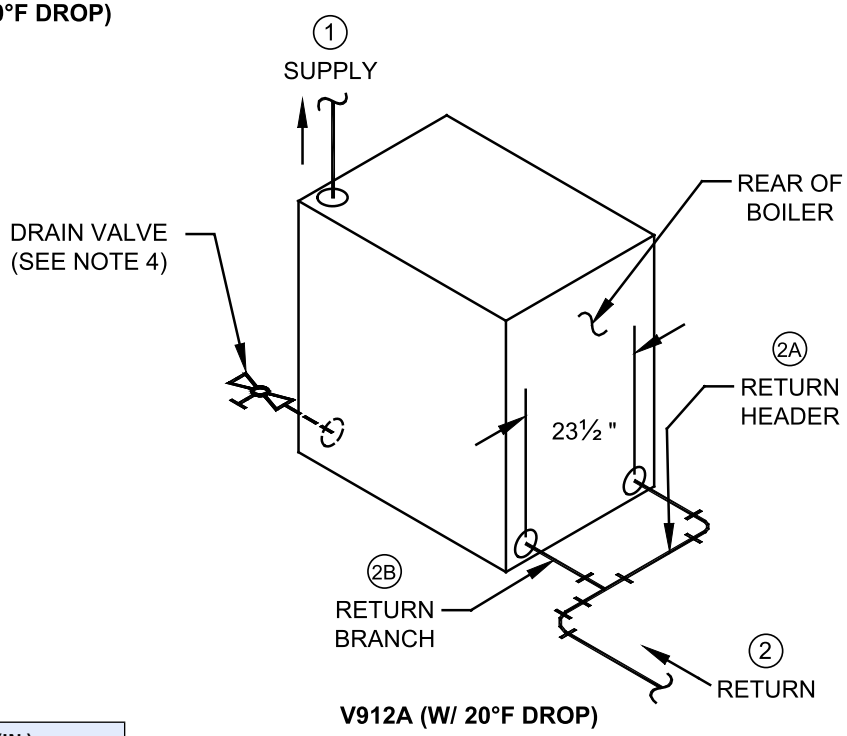
V9 Series Minimum Piping Recommendations — Water Boiler

Recommendation 1 — Use when:

- system return water is not less than 135° F for prolonged periods of time
- system flow does not impact flow through the boiler



V903A THRU V911A (W/ 20°F DROP)
V903A THRU V912A (W/ 40°F DROP)



V912A (W/ 20°F DROP)

Pipe Sizing and Notes

MODEL	SUPPLY PIPING SIZE (IN.) (1)		RETURN PIPING SIZE (IN.)			
			RETURN (2)		RETURN HEADER (2A)	RETURN BRANCH (QTY.) SIZE (2B)
	20°F DROP	40°F DROP	20°F DROP	40°F DROP	20°F DROP	20°F DROP
V903A	2	1-1/2	2	1-1/2	—	—
V904A	2	1-1/2	2	1-1/2	—	—
V905A	2	1-1/2	2	1-1/2	—	—
V906A	2-1/2	1-1/2	2-1/2	1-1/2	—	—
V907A	2-1/2	2	2-1/2	2	—	—
V908A	2-1/2	2	2-1/2	2	—	—
V909A	3	2	3	2	—	—
V910A	3	2-1/2	3	2-1/2	—	—
V911A	3	2-1/2	3	2-1/2	—	—
V912A	4	2-1/2	4	2-1/2	3	(2) 3

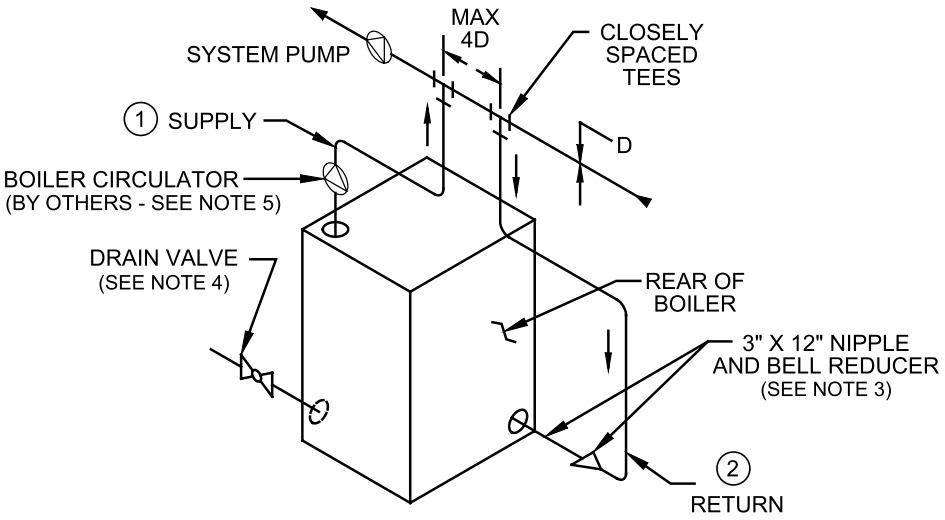
NOTES:

1. All piping is schedule 40.
2. Pipe sizes listed are based on a 20°F or 40°F differential (temperature drop). Select one to match application. Consult factory if boilers are used in low temperature applications or blending/mixing devices.
3. When specified return piping size is less than 3", install 3" X 12" nipple and appropriate size bell reducer directly into boiler return tapping as shown.
4. Drain valve — ball valve preferable, gate valve acceptable alternative (supplied by others).
   - Minimum valve size per ASME code is 3/4" NPT
5. For multiple water boiler piping, consult factory.

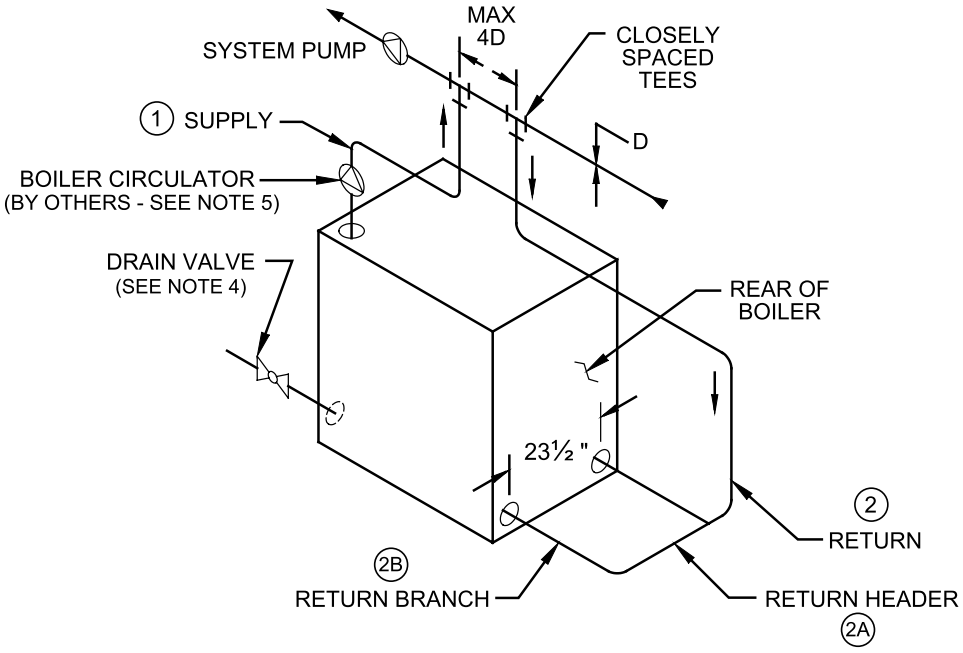
V9 Series Minimum Piping Recommendations — Water Boiler

Recommendation 2 — Use when:

- system return water is not less than 135° F for prolonged periods of time
- system flow does impact flow through the boiler(ie. zoning, mixing)



V903A THRU V911A (W/ 20° F DROP)
V903A THRU V912A (W/ 40° F DROP)



V912A (W/ 20° F DROP)

Pipe Sizing and Notes

MODEL	SUPPLY PIPING SIZE (IN.) (1)		RETURN PIPING SIZE (IN.)			
			RETURN (2)		RETURN HEADER (2A)	RETURN BRANCH (QTY.) SIZE (2B)
	20°F DROP	40°F DROP	20°F DROP	40°F DROP	20°F DROP	20°F DROP
V903A	2	1-1/2	2	1-1/2	—	—
V904A	2	1-1/2	2	1-1/2	—	—
V905A	2	1-1/2	2	1-1/2	—	—
V906A	2-1/2	1-1/2	2-1/2	1-1/2	—	—
V907A	2-1/2	2	2-1/2	2	—	—
V908A	2-1/2	2	2-1/2	2	—	—
V909A	3	2	3	2	—	—
V910A	3	2-1/2	3	2-1/2	—	—
V911A	3	2-1/2	3	2-1/2	—	—
V912A	4	2-1/2	4	2-1/2	3	(2) 3

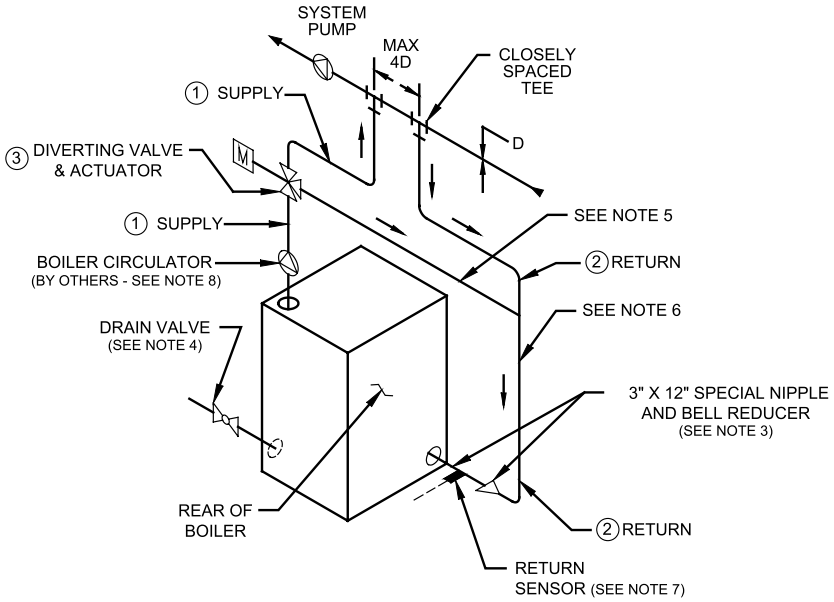
NOTES:

1. All piping is schedule 40.
2. Pipe sizes listed are based on a 20°F or 40°F differential (temperature drop). Select one to match application. Consult factory if boilers are used in low temperature applications or blending/mixing devices.
3. When specified return piping size is less than 3", install 3" X 12" nipple and appropriate size bell reducer directly into boiler return tapping as shown.
4. Drain valve — ball valve preferable, gate valve acceptable alternative (supplied by others).
   - Minimum valve size per ASME code is 3/4" NPT
5. Proper boiler circulator sizing is listed in RTC literature.
6. For multiple water boiler piping, consult factory.

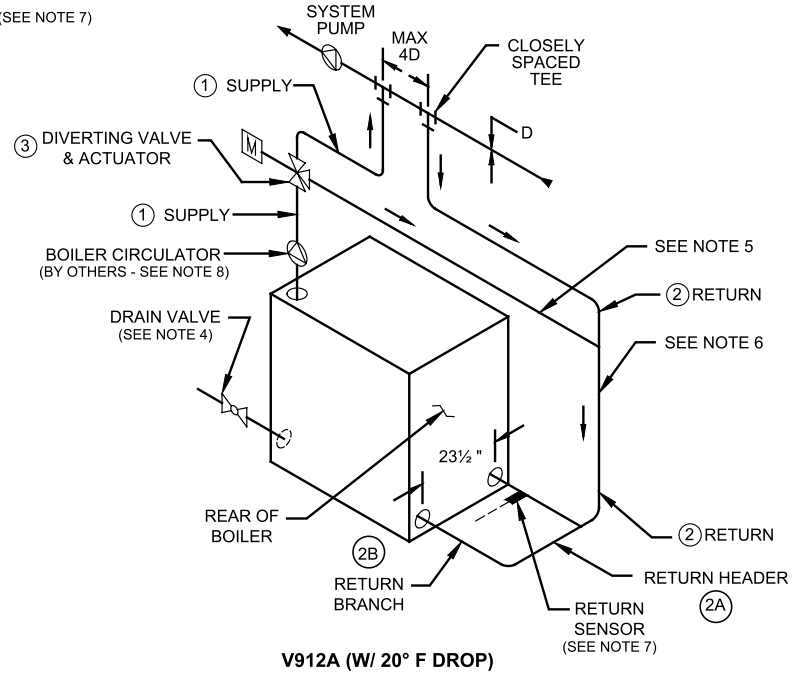
V9 Series Minimum Piping Recommendations — Water Boiler

Recommendation 3 — Use when:

- system return water is less than 135° F for prolonged periods of time
- system flow does impact flow through the boiler(ie. zoning, mixing)
- requires addition of RTC Return Temperature Control and accessories



V903A THRU V911A (W/ 20° F DROP)
V903A THRU V912A (W/ 40° F DROP)



V912A (W/ 20° F DROP)

Pipe Sizing and Notes

MODEL	SUPPLY PIPING SIZE (IN.) (1)		RETURN PIPING SIZE (IN.)			
			RETURN (2)		RETURN HEADER (2A)	RETURN BRANCH (QTY.) SIZE (2B)
	20°F DROP	40°F DROP	20°F DROP	40°F DROP	20°F DROP	20°F DROP
V903A	2	1-1/2	2	1-1/2	—	—
V904A	2	1-1/2	2	1-1/2	—	—
V905A	2	1-1/2	2	1-1/2	—	—
V906A	2-1/2	1-1/2	2-1/2	1-1/2	—	—
V907A	2-1/2	2	2-1/2	2	—	—
V908A	2-1/2	2	2-1/2	2	—	—
V909A	3	2	3	2	—	—
V910A	3	2-1/2	3	2-1/2	—	—
V911A	3	2-1/2	3	2-1/2	—	—
V912A	4	2-1/2	4	2-1/2	3	(2) 3

NOTES:

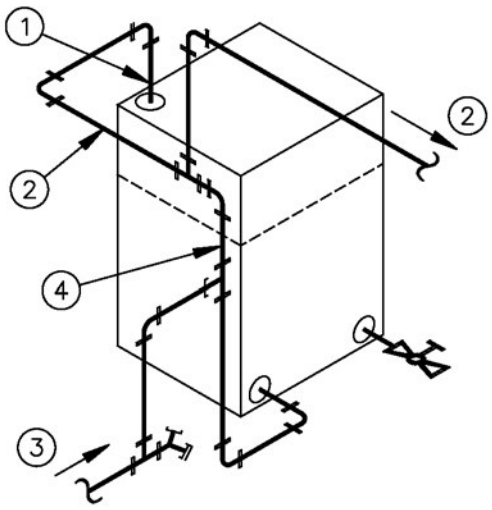
1. All piping is schedule 40.
2. Pipe sizes listed are based on a 20°F or 40°F differential (temperature drop). Select one to match application.
3. When specified return piping size is less than 3", install 3" X 12" nipple and appropriate size bell reducer directly into boiler return tapping as shown.
4. Drain valve — ball valve preferable, gate valve acceptable alternative (supplied by others).
   - Minimum valve size per ASME code is 3/4" NPT
5. Maximum linear feet of pipe from 3-way bypass port to sensor location = 11 feet. Bypass line shall be the same diameter as return ②
6. Minimum linear feet of pipe from point of mixing (where bypass meets return line) to sensor location = 4 feet.
7. Install special 3" x 12" nipple with 1/4" NPT side tapping closest to boiler. Where applicable, use bell reducer to adapt to recommended return pipe size.
8. Proper boiler circulator sizing is listed in RTC literature.

V9 Series Piping Recommendations — Steam Boiler

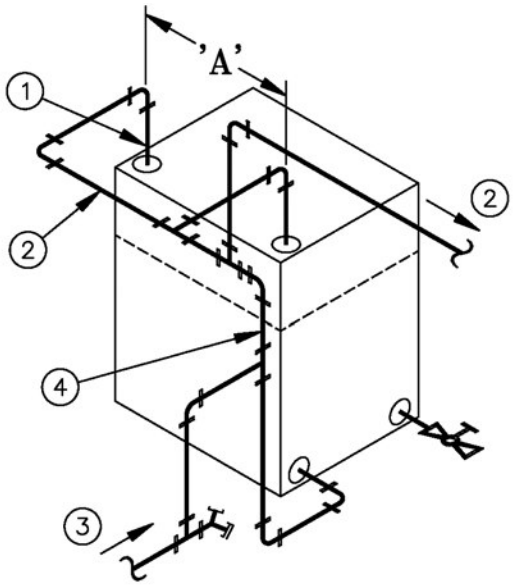
MODEL	PIPING SIZE (IN INCHES)				RISER SPACING (IN INCHES)	
	RISER (Qty.) SIZE (1)	HEADER & SUPPLY (2)	RETURN (3)	EQUALIZER (4)	'A'	'B'
V903A	(1) 3	3	1-1/2	2	—	—
V904A	(1) 4	4	2	2	—	—
V905A	(1) 4	4	2	2	—	—
V906A	(1) 4	4	2-1/2	2-1/2	—	—
V907A	(2) 4	6	2-1/2	2-1/2	36	—
V908A	(2) 4	6	2-1/2	2-1/2	42	—
V909A	(2) 4	6	2-1/2	2-1/2	48	—
V910A	(2) 4	6	3	3	54	—
V911A	(2) 4	6	3	3	60	—
V912A	(2) 4	6	3	3	30	36

NOTES:

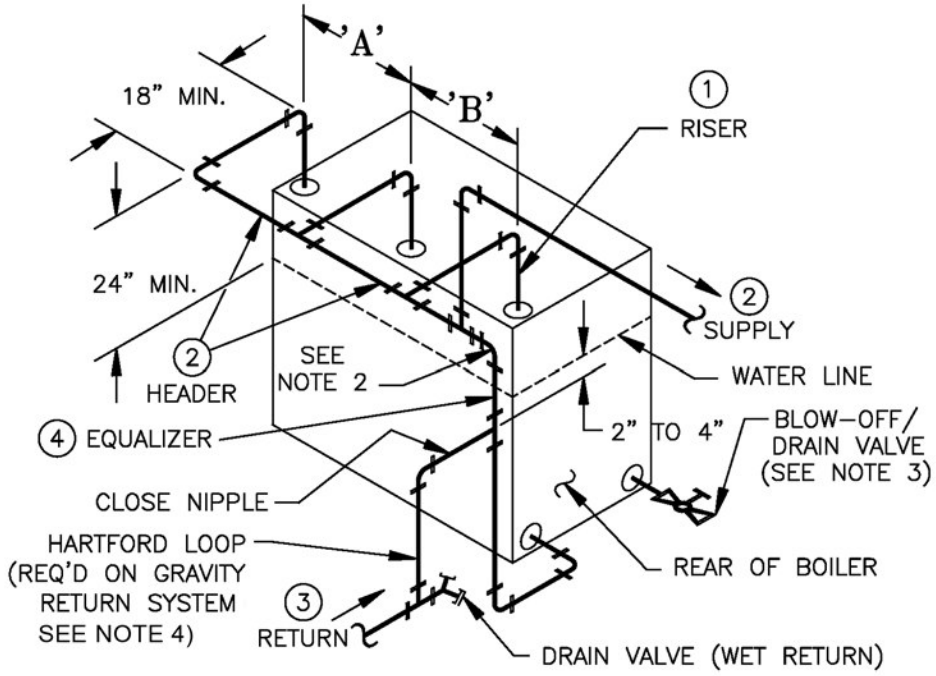
1. All piping is schedule 40.
2. To prevent condensate from being trapped in header, do not reduce equalizer elbow at header connection.
3. Drain/blowoff valve — ball valve preferable, gate valve acceptable alternative (supplied by others).
   - Minimum valve size per ASME code is 3/4" NPT 903A/905A; 1" NPT 906A/910A; 1-1/4" NPT 911A/912A.
   - Increasing the valve size will improve the blowdown operation.
   - In all cases, piping connection blowoff valve to boiler should be full size to the point of discharge.
4. For pumped return systems, see V9A installation manual.
5. For multiple steam boiler piping, consult factory.



V903A THRU V906A



V907A THRU V911A



V912A

V9 Series Burner Schedule

OIL BURNERS

BOILER MODEL	BECKETT		CARLIN		GORDON-PIATT		POWER FLAME		WEBSTER	
	BURNER MODEL	H.P.	BURNER MODEL	H.P.	BURNER MODEL	H.P.	BURNER MODEL	H.P.	BURNER MODEL	H.P.
V903A	CF500	1/3	301CRD	1/4	—	—	—	—	—	—
V904A	CF800	1/3	301CRD	1/4	—	—	C1-OS	1/3	—	—
V905A	CF800	1/3	301CRD	1/4	R6.3-O	1/2	C1-OS	1/3	JB1O-02	1/4
V906A	CF1400	1/2	702CRD	1/2	R6.3-O	1/2	C1-OS	1/2	JB1O-03	1/3
V907A	CF1400	1/2	702CRD	1/2	R8-O	1/2	C1-OS	1/2	JB1O-03	1/3
V908A	CF1400	1/2	702CRD	1/2	R8.1-O	3/4	C2-OAS	3/4	JB1O-03	1/3
V909A	CF2300A	3/4	801CRD	3/4	R8.2-O	1	C2-OAS	3/4	JB1O-05	1/2
V910A	CF2300A	3/4	801CRD	3/4	R8.3-O	1-1/2	C2-OAS	3/4	JB1O-05	1/2
V911A	CF2500A	2	801CRD	3/4	R8.4-O	2	C2-OB	1-1/2	JB1O-07	3/4
V912A	CF2500A	2	801CRD-B	1-1/2	R8.4-O	2	C2-OB	1-1/2	JB1O-07	3/4

Standard Burner Motor Voltage:
Beckett – CF500, CF800, CF1400, and CF2300A are 120/60/1. CF2500A is 240/60/1.
Carlin – 301CRD and 702CRD are 120/60/1. 801CRD is 240/60/1.
Gordon-Piatt – R6.3-O, R8-O, R8.1-O and R8.2-O are 120/60/1. R8.3-O and R8.4-O are 240/60/3.
Power Flame – C1-OS is 120/60/1. C2-OAS and C2-OB are 240/60/1.
Webster – JB1O-02, JB1O-03, and JB1O-05 are 120/60/1. JB1O-07 is 240/60/1.

Optional Motor Voltage:
Most models have 208-240 or 480 volts/3phase available at additional cost as an option. Consult your Burnham Commercial sales representative.

GAS BURNERS*

BOILER MODEL	BECKETT			GORDON-PIATT			POWER FLAME C SERIES		POWER FLAME JR SERIES			WEBSTER		
	BURNER MODEL	H.P.	MIN. GAS PRESSURE INCHES	BURNER MODEL	H.P.	MIN. GAS PRESSURE INCHES	BURNER MODEL	H.P.	BURNER MODEL	H.P.	MIN. GAS PRESSURE INCHES	BURNER MODEL	H.P.	MIN. GAS PRESSURE INCHES
V903A	CG10-1S	1/3	3.3	S4.2-G	1/3	7.2	—	—	JR15A-10	1/4	4.0	—	—	—
V904A	CG10-4S	1/3	3.7	S4.1-G	1/3	5.2	C1-G-10	1/3	JR30A-10	1/3	4.2	—	—	—
V905A	CG10-5S	1/3	4.7	R6.3-G	1/2	6.4	C1-G-10	1/3	JR30A-12	1/3	5.9	JB1G-02	1/4	3.1
V906A	CG10-6S	1/3	5.5	R6.3-G	1/2	7.4	C1-G-12	1/2	JR30A-12	1/3	4.3	JB1G-03	1/3	3.8
V907A	CG15-3S	1/2	5.4	R8-G	1/2	6.1	C1-G-12	1/2	JR50A-15	1/3	5.4	JB1G-03	1/3	5.4
V908A	CG15-4S	1/2	6.2	R8.1-G	3/4	7.3	C2-G-15	1/2	JR50A-15	1/3	4.4	JB1G-03	1/3	7.0
V909A	CG25-2S	3/4	4.7	R8.2-G	1	5.8	C2-G-20A	3/4	JR50A-15	1/3	5.0	JB1G-05	1/2	7.0
V910A	CG25-3S	3/4	5.0	R8.3-G	1-1/2	5.8	C2-G-20A	3/4	—	—	—	JB1G-05	1/2	4.5
V911A	CG25-4S	3/4	4.9	R8.4-G	2	7.1	C2-G-20B	1	—	—	—	JB1G-07	3/4	5.6
V912A	CG50-2S	2	3.9	R8.4-G	2	6.4	C2-G-20B	1	—	—	—	JB1G-07	3/4	6.8

Standard Motor Voltage:
Beckett – All burners are 120/60/1.
Gordon-Piatt – S4.2-G, S4.1-G, R6.3-G, R8-G, R8.1-G, R8.2-G, and R8.3-G are 120/60/1. R8.4-G IS 240/60/3.
Power Flame C Series – C1-G-10, C1-G-12, C2-G-15 are 120/60/1. C2-G-20A and C2-G-20B are 240/60/1.
Power Flame JR Series – All burners are 120/60/1.
Webster –JB1G-02, JB1G-03 and JB1G-05 are 120/60/1. JB1G-07 is 240/60/1.

Optional Burner Motor Voltage:
Most models have 208-240 or 480 volts/3phase available at additional cost as an option. Consult your Burnham Commercial sales representative.
*For gas connection size on Gordon-Piatt, Webster and Power Flame C burners and minimum gas pressure for C burner see gas/oil burner chart.

GAS/OIL BURNERS

BOILER MODEL	GORDON-PIATT**			POWER FLAME - C SERIES				WEBSTER**		
	BURNER MODEL	H.P.	INLET GAS CONNECTION INCHES	BURNER MODEL	H.P.	INLET GAS CONNECTION INCHES	MIN. GAS PRESSURE INCHES	BURNER MODEL	H.P.	INLET GAS CONNECTION INCHES
V903A	S4.2-GO	1/3	3/4	—	—	—	—	—	—	—
V904A	S4.1-GO	1/3	1	C1-GO-10	1/3	1	4.4	—	—	—
V905A	R6.3-GO	1/2	1	C1-GO-10	1/3	1	4.4	JB1C-02	1/4	1-1/4
V906A	R6.3-GO	1/2	1-1/4	C1-GO-12	1/2	1	4.8	JB1C-03	1/3	1-1/4
V907A	R8-GO	1/2	1-1/4	C1-GO-12	1/2	1	5.2	JB1C-03	1/3	1-1/2
V908A	R8.1-GO	3/4	1-1/4	C2-GO-15	3/4	1	6.4	JB1C-05	1/2	1-1/2
V909A	R8.2-GO	1	1-1/2	C2-GO-20A	1	1-1/4	4.9	JB1C-05	1/2	1-1/2
V910A	R8.3-GO	1-1/2	1-1/2	C2-GO-20A	1	1-1/4	5.2	JB1C-05	1/2	1-1/2
V911A	R8.4-GO	2	1-1/2	C2-GO-20B	1-1/2	1-1/4	5.4	JB1C-07	3/4	2
V912A	R8.4-GO	2	2	C2-GO-20B	1-1/2	1-1/2	5.0	JB1C-10	1	2

Standard Burner Motor:
Gordon-Piatt – S4.2-GO, S4.1-GO, R6.3-GO, R8-GO, R8.1-GO and R8.2-GO are 120/60/1. R8.3-GO and R8.4-GO are 240/60/3.
Power Flame – C1-GO-10 and C1-GO-12 are 120/60/1. C2-GO-15, C2-GO-20A and C2-GO-20B are 240/60/1.
Webster – JB1C-02, JB1C-03, and JB1C-05 are 120/60/1. JB1C-07 and JB1C-10 are 240/60/1.

Optional Burner Motor Voltage:
Most models have 208-240 or 480 volts/3phase available at additional cost as an option. Consult your Burnham Commercial sales representative.
**For minimum gas pressure requirements, see gas burner chart.

Specifications

V9 RATINGS

BOILER MODEL (1)	BOILER H.P.	GROSS OUTPUT MBH (2)	NET I=B=R RATINGS (2) (3)			BURNER INPUT		NET FIREBOX VOLUME (CU. FT)	PRESSURE IN FIREBOX (IN. WTR. COLUMN)	I=B=R VENT DIA. (IN.)
			STEAM		WATER MBH	OIL (GPH) (4)	GAS (MBH)			
			MBH	SQ. FT.						
V-903A	10.3	347	260	1083	302	3.1	447	3.2	.33	7
V-904A	14.4	483	362	1508	420	4.2	606	4.8	.38	7
V-905A	19.3	646	485	2021	562	5.6	808	6.4	.31	8
V-906A	24.1	808	606	2525	703	7.0	1010	7.9	.38	8
V-907A	28.6	959	719	2996	834	8.3	1198	9.5	.36	8
V-908A	33.2	1110	833	3471	965	9.6	1386	11.0	.35	10
V-909A	40.1	1342	1014	4225	1167	11.6	1674	12.6	.35	10
V-910A	45.6	1528	1168	4867	1329	13.2	1905	14.2	.40	10
V-911A	51.2	1714	1323	5513	1490	14.8	2136	15.7	.45	12
V-912A	56.8	1900	1474	6142	1652	16.4	2367	17.3	.49	12

1. Suffix "S" indicates steam boiler, "W" indicates water boiler. Suffix "G" indicates gas-fired, "O" indicates oil fired and "GO" indicates combination gas/oil fired.
2. Boiler ratings are based on 12.5% CO2 on oil; 9.7% CO2 on gas, and .10 in. water column pressure at boiler flue outlet.
3. I=B=R net ratings shown are based on piping and pick up allowances which vary from 1.333 to 1.289 for steam and 1.15 for water. Consult manufacturer for installations having unusual piping and pick up requirements, such as intermittent system operation, extensive piping systems, etc.
4. The I=B=R burner capacity in GPH is based on oil having a heat value of 140,000 BTU per gallon.

Ratings shown above apply to altitudes up to 1000 feet on oil and 2000 feet on gas. For altitudes above those indicated, the ratings should be reduced at the rate of 4% for each 1000 feet above above sea level.

NOTE:
Maximum allowable working pressure (MAWP):

Steam:	15 PSI
Water – USA:	80 PSI (standard relief valve provided is 50 PSI) (30 PSI and 80 PSI relief valve optional)
Water – Canada:	45 PSI (standard relief valve provided is 45 PSI) (30 PSI relief valve optional)

STANDARD EQUIPMENT

ALL BOILERS: Sections unassembled, flush insulated jacket, burner mounting plate, burner adapter plate, **rear flue outlet damper** (top outlet optional), flue canopy, rear observation port cover, target wall (V-903A), and miscellaneous plugs, bushing and fittings

STEAM TRIM: 15 PSI safety valve, L404A pressuretrol, gauge glass assembly, steam gauge

WATER TRIM: 50 PSI safety relief valve, L4006A high limit, pressure/temperature gauge

OIL BOILERS: Flange mounted flame retention oil burner furnished with 2 stage fuel unit, primary control and dual oil valves

GAS BOILERS: Flange mounted gas burner with standard controls meeting the latest UL requirements, dual gas valves, gas-electric ignition with proven gas pilot, flame rod on JR burner, ultra violet flame detector on others, electronic programming controls and components are factory wired in a burner mounted control panel (available on S4 burner as remote mounted panel only).

GAS/OIL BURNERS: Flange mounted combination gas/oil burner with standard controls meeting latest UL requirements, manually operated fuel transfer switch for dual fuel changeover, dual gas valves and oil valves, electric ignition with proven gas pilot on both fuels (direct spark ignition of oil is optional), ultra-violet flame detector, electronic programming controls and components are factory wired in a burner mounted control panel (available on S4 burner as remote mounted panel only).

OPTIONAL EQUIPMENT

Assembled sections; completely packaged (includes manual reset high limit and manual reset low water cutoff); packaged and fire-tested; **top outlet flue damper**; tankless heaters; side inspection tappings with brass plugs; 30 PSI and 80 PSI safety relief valves (water); combustion and hydronic controls to meet special applications including F.M., I.R.I., and ASME CSD-1.

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