

V9 Series

Cast Iron Commercial Water or Steam Boiler



- 447 to 2367 MBH Input
- Oil, Gas, or Oil/Gas Combination
- 30, 50, or 80 PSI
- Cast Iron Sectional Design
- Water or Steam
- Top or Rear Venting
- Exclusive Optional SBC Boiler Control Maximizes System Efficiency

BURNHAM[®]
Commercial Boilers

V9 Series

Cast Iron Commercial Water or Steam Boiler

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 commercial heating solution.

American-Made Cast Iron Construction BC25-HSi

Burnham Commercial's unique BC25-HSi cast iron has an extremely high silicon content, making it stronger and more flexible. It offers better thermal shock resistance and greater heat transfer capabilities than other cast iron products. BC25-HSi's properties allow Burnham Commercial to maintain the highest level of quality from start to finish, and provide a product that is optimized for hydronic heating applications.



- **Manufactured with Quality**

Cast iron sections are poured at Burnham Foundry, LLC in Zanesville Ohio. The foundry uses state-of-the-art technology and production techniques which ensures the availability of high quality boiler sections.

- **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.



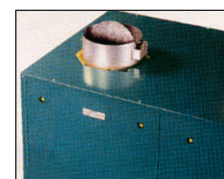
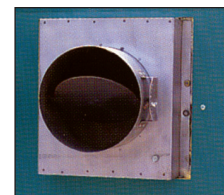
The sections can be assembled using two common tools a 3/4" drive ratchet with a 1-1/16" deep socket and wrench. The sections are surface ground to ensure smooth surface mating. An elastic sealant and fiberglass rope are used on all section joints for a completely sealed and pressure-tight assembly.

- **Extensive Testing Methods**

Each boiler section is hydrostatically tested at 2-1/2 times the rated working pressure at the foundry. Factory assembled sections are tested at 1.5 times the rated working pressure.

- **Rear or Top Venting**

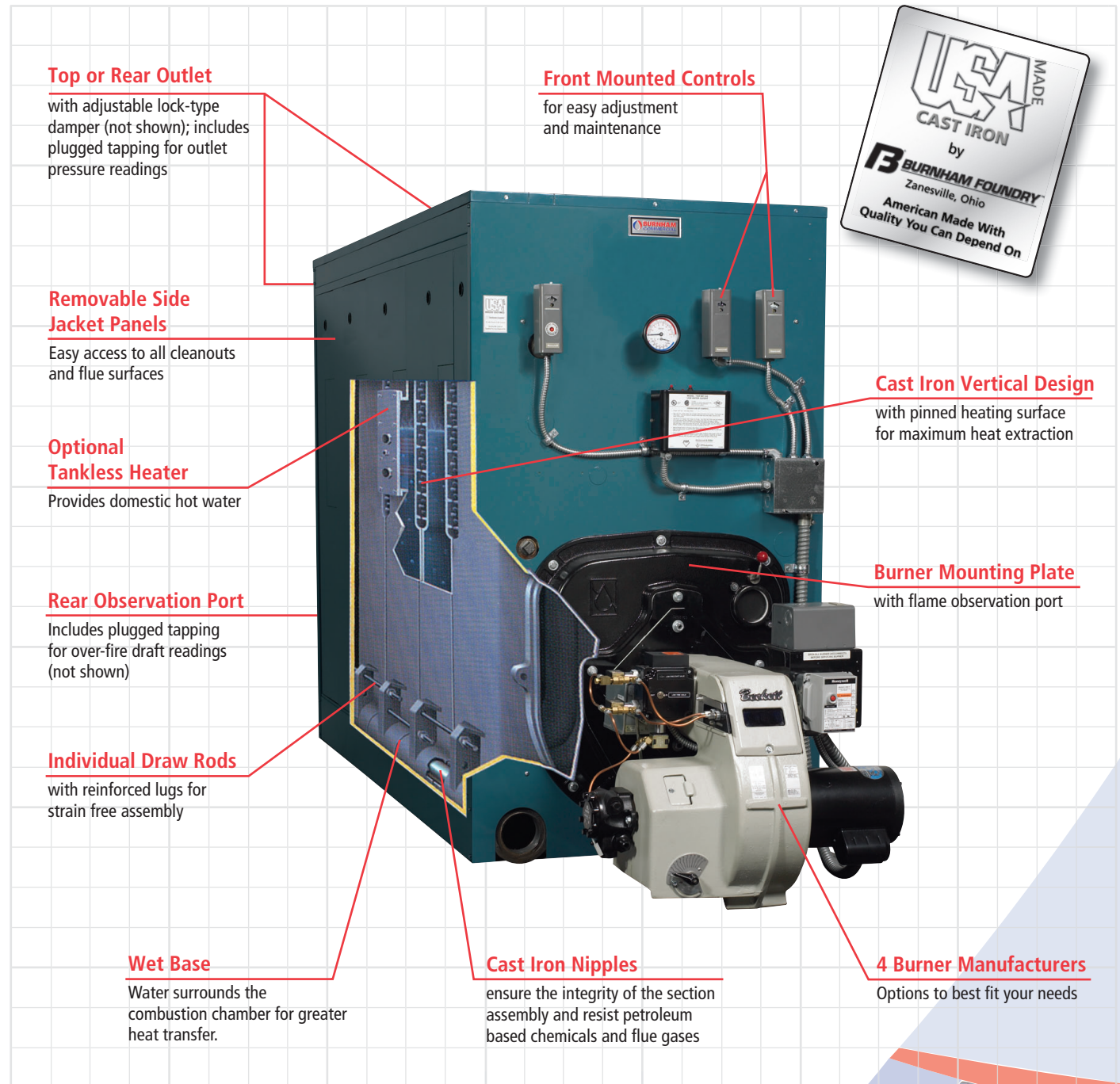
As a forced draft boiler, the V9 provides optimum draft for controlled efficiency, eliminating the need for high chimneys or induced draft fans. A unique feature of the V9 boiler is it can be vented from the rear or the top. This enables easy chimney or sidewall venting for maximum installation flexibility.



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

V9 Series - Hot Water or Steam Boiler

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



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.

SBC Boiler Control System

Exclusive Optional Feature for Burnham Commercial Boilers

SBC

Integrated Boiler Control System

The Burnham Commercial SBC is a complete boiler monitoring and automation system. Available as an option, this exclusive feature was developed by Burnham Commercial engineers and is designed specifically for use on Burnham Commercial boilers.

- Designed to maximize system efficiency and minimize energy usage
- Easily connected to building management systems
- Proven control platform
- Fail-safe design insures boiler operation

SBC Exclusives

Advanced Adaptability

- Easily integrated into existing or new building management systems
- Simplified connections available to most building management systems through Modbus or standard 0-10 volt signals
- Uses sophisticated PID control logic for complete boiler system control
- Performs control functions for both single and multiple boilers

Peer-To-Peer Network

- Includes lead-lag sequencer for up to eight (8) fully modulating boilers
- Capable of auto rotation, outdoor reset and peer-to-peer communication
- "Plug and play" communication by simply connecting a RJ11 telephone line between boilers
- Provides precise boiler coordination by sequencing boilers based on both remote system water temperature and boiler modulation rate.
- Boilers are modulated in "unison", all at the same firing rate to ensure even heat distribution

Fail-Safe System Operations

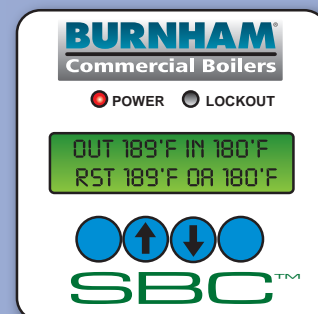
- Allows continued boiler operation in the event of selected sensor failure or building management system failure



The SBC Boiler Control System
Only available from
Burnham Commercial!

Boiler Monitoring & Diagnostic Displays

- Two-line by sixteen character LCD display
- Automatically presents boiler sequence, alarm, hold and lockout messages
- Diagnostic menu displays the last 10 alarm messages and the boiler return temperature alarm history



Modulation Rate and On/Off Modes

- Controls the boiler modulation and on/ off output based on the supply water temperature and an operator adjusted setpoint
- Can respond to remote system water, outside air temperatures, Domestic Hot Water Priority (DHWP) or Energy Management Systems (EMS)

Outdoor Air Temperature Reset

- Saves fuel by reducing the supply temperature of a heating boiler as the outside air temperature increases

Warm Weather Shutdown (WWSD)

- Prevents the boiler, boiler pump and/or the system pump from starting during warm weather

Domestic Hot Water Priority (DHWP)

- Continuous supply of hot water, even during warmer months

System Control Outputs

- Fully integrated automation of mixing valves, boiler pumps, system pumps, and standby system pumps
- Control parameters are field selectable through simple yes/no menu selections

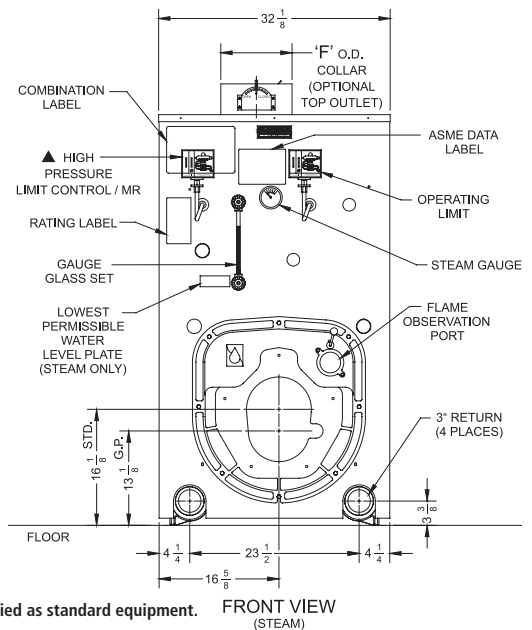
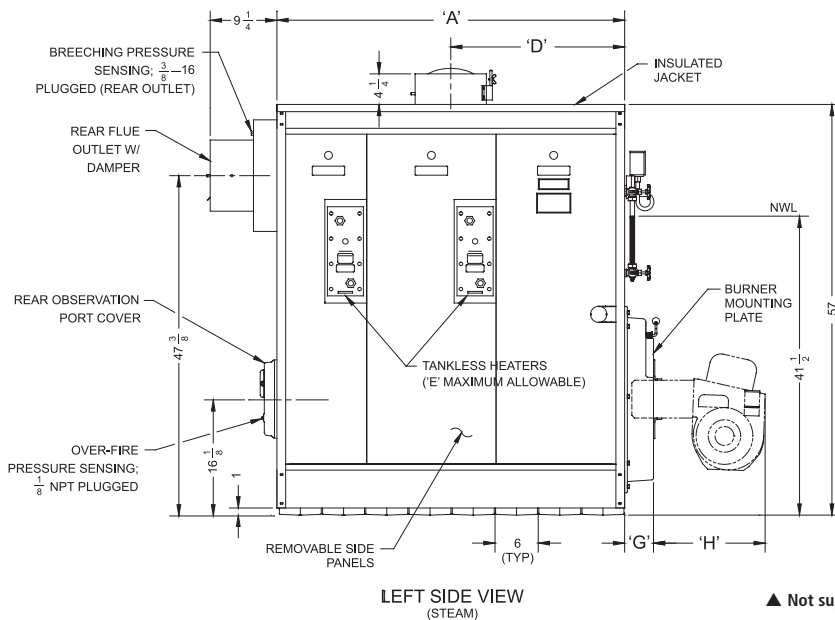
V9 Series Dimensions

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	POWERFLAME			WEBSTER
									'CF' 'G'/'H'	'CG' 'G'/'H'	'G'/'H'	'JR.' 'G'/'H'			'C' '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 / 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 / 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	8 / 20-1/8	8 / 30	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 / 20-1/8	4 / 30	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 / 23-5/8	4 / 30	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 / 23-5/8	4 / 35	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 / 23-5/8	4 / 35	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 / 35	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 / 35	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 / 35	3482	4197

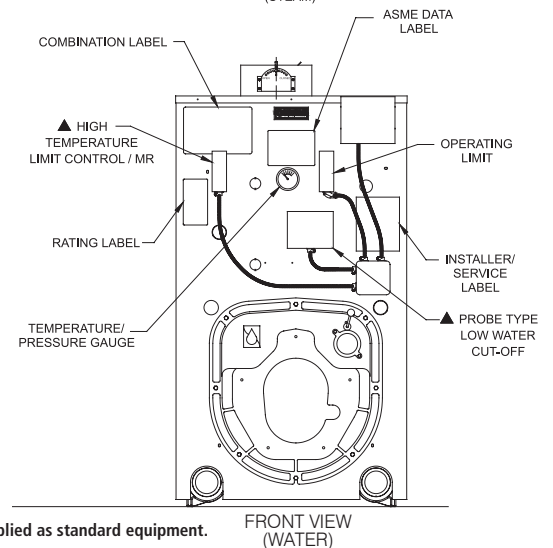
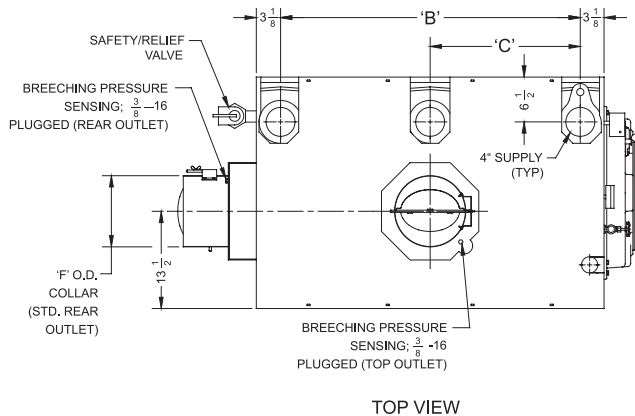
All dimensions in inches

* Burner control panel configuration may change this dimension. On JR burner, add 10" for optional panel.

** Does not include burner mounting plate (shipped seperately). Add 55 lbs. for 4" standard burner mounting plate. Add 85 lbs. for 8" extended burner mounting plate



▲ Not supplied as standard equipment.



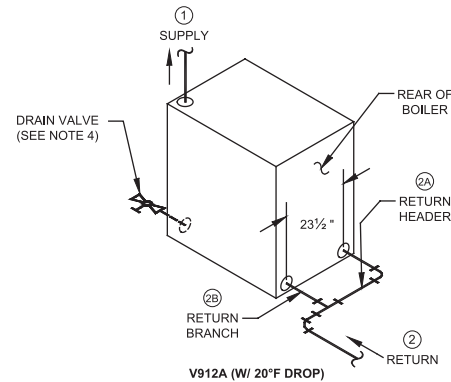
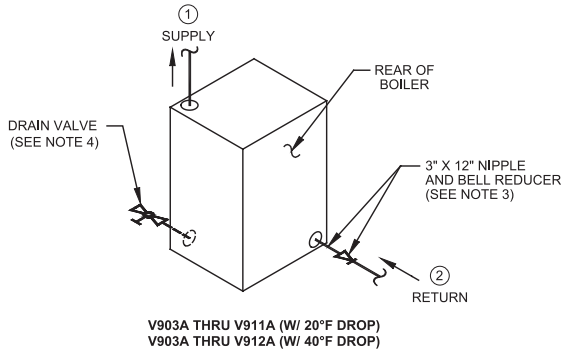
▲ Not supplied as standard equipment.

V9 Series Piping Recommendations

Water and Steam

WATER BOILER PIPING

To be used when system return water is not less than 135° F for prolonged periods of time and system flow does not impact flow through the boiler

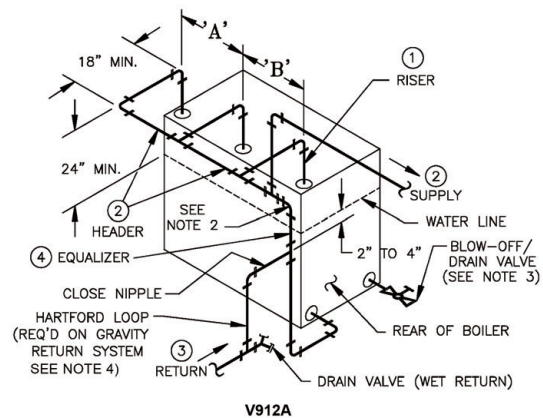
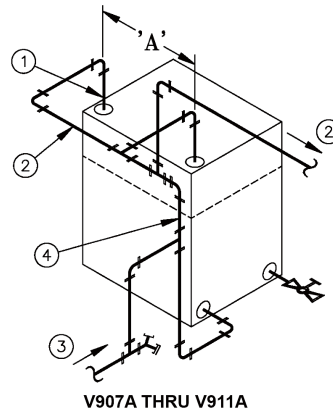
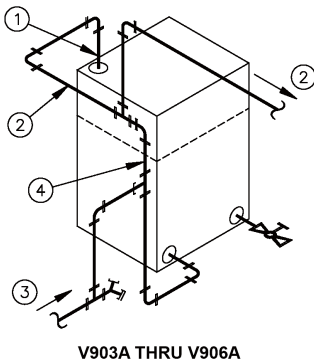


MODEL	SUPPLY PIPING SIZE (IN.) (1)		RETURN PIPING SIZE (IN.)			
			RETURN (2)		RETURN HEADER (2A)	RETURN BRANCH (QTY.) SIZE (2B)
	20F D ROP	40F D ROP	20F DROP	40F DROP	20F D ROP	20F DROP
V903A	2	1-1/2	2	1-1/2		
V904A	2	1-1/2	2	1-1/2		
V905A	2	1-1/2	2	1-1/2		
V906A	2-1/2	1-1/2	2-1/2	1-1/2		
V907A	2-1/2	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:

- All piping is schedule 40.
- 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.
- 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.
- Drain valve — ball valve preferable, gate valve acceptable alternative (supplied by others).
- Minimum valve size per ASME code is 3/4" NPT
- For multiple water boiler piping, consult factory.

STEAM BOILER PIPING



MODEL	PIPING SIZE (IN INCHES)				RISER SPACING (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	(3) 4	6	3	3	30	36

NOTES:

- All piping is schedule 40.
- To prevent condensate from being trapped in header, do not reduce equalizer elbow at header connection.
- 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.
- For pumped return systems, see V9A installation manual.
- For multiple steam boiler piping, consult factory.

V9 Series Burners

OIL BURNERS

BOILER MODEL	BECKETT		CARLIN		POWER FLAME		WEBSTER	
	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	C1-OS	1/3	JB10-02	1/4
V906A	CF1400	1/2	702CRD	1/2	C1-OS	1/2	JB10-03	1/3
V907A	CF1400	1/2	702CRD	1/2	C1-OS	1/2	JB10-03	1/3
V908A	CF1400	1/2	702CRD	1/2	C2-OAS	3/4	JB10-03	1/3
V909A	CF2300A	3/4	801CRD	3/4	C2-OAS	3/4	JB10-05	1/2
V910A	CF2300A	3/4	801CRD	3/4	C2-OAS	3/4	JB10-05	1/2
V911A	CF2500A	2	801CRD	3/4	C2-OB	1-1/2	JB10-07	3/4
V912A	CF2500A	2	801CRD-B	1-1/2	C2-OB	1-1/2	JB10-07	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.

Power Flame – C1-OS is 120/60/1. C2-OAS and C2-OB are 240/60/1.

Webster – JB10-02, JB10-03, and JB10-05 are 120/60/1. JB10-07 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			POWER FLAME* C SERIES		POWER FLAME JR SERIES			WEBSTER	
	BURNER MODEL	H.P.	MIN. GAS PRESSURE INCHES	BURNER MODEL	H.P.	BURNER MODEL	H.P.	MIN. GAS PRESSURE INCHES	BURNER MODEL	MIN. GAS PRESSURE INCHES
V903A	CG10-15	1/3	3.3			JR15A-10	1/4	4.0		
V904A	CG10-45	1/3	3.7	C1-G-10	1/3	JR30A-10	1/3	4.2	JB1G-02	5.0
V905A	CG10-55	1/3	4.7	C1-G-10	1/3	JR30A-12	1/3	5.9	JB1G-02	8.0
V906A	CG10-65	1/3	5.5	C1-G-12	1/2	JR30A-12	1/3	4.3	JB1G-02	5.0
V907A	CG15-35	1/2	5.4	C1-G-12	1/2	JR50A-15	1/3	5.4	JB1G-02	6.0
V908A	CG15-45	1/2	6.2	C2-G-15	1/2	JR50A-15	1/3	4.4	JB1G-03	8.0
V909A	CG25-25	3/4	4.7	C2-G-20A	3/4	JR50A-15	1/3	5.0	JB1G-05	6.0
V910A	CG25-35	3/4	5.0	C2-G-20A	3/4				JB1G-05	6.0
V911A	CG25-45	3/4	4.9	C2-G-20B	1				JB1G-07	7.0
V912A	CG50-25	2	3.9	C2-G-20B	1				JB1G-07	9.0

Standard Motor Voltage:

Beckett – V903 through V911 120/60/1, V912 240/60/1

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

Standard Burner Motor:

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.

V9 Series Ratings & Equipment Listing



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

- 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.
- 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.
- 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.
- 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 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, L4006B (low fire hold aquastat).

STEAM TRIM: 15 PSI safety valve, L404FA 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.

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.

TANKLESS HEATER RATINGS* (Water and Steam)

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

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

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.

