

# Series 8H

Cast Iron Gas Fired Commercial Water Boiler



- 252 to 550 MBH Input
- Over 83% Efficient
- 30 or 50 PSI
- Cast Iron Sectional Design
- Atmospheric Vent
- Modular/Multiple Boiler Configurations Available



# Series 8H

## High Performance & Long Term Reliability

Burnham Commercial's promise to deliver the best continues with the Series 8H. The features and efficiency of the 8H boiler make it ideal for single and multiple boiler applications. Offering space heating, or a combination of heating and domestic hot water, the Series 8H has a compact design which easily adapts to existing piping arrangements, boiler room requirements, and system heating needs.

### American-Made Cast Iron Construction BC25-HSi

Burnham Commercial's unique BC25-HSi cast iron formula 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**

All cast iron sections for Burnham Commercial boilers are manufactured at Burnham Foundry, LLC in Zanesville, Ohio, ensuring quality and availability of boiler sections.



- **Cast Iron Nipple Difference**

The gaskets that other manufacturers use to connect boiler sections can break down if they come in contact with oils, boiler flue gases, corrosion inhibitors, pump lubricants, and antifreeze. Burnham Commercial is committed to safety, reliability and durability. That's why the Series 8H uses cast iron nipples instead of gaskets in this critical area. The Series 8H's cast iron nipples remain unaffected by those elements, ensuring long life and eliminating costly repairs. These vital components are precision cut and will last the life of the boiler. They expand and contract with the sections they connect, ensuring the overall integrity of the section assembly.



### 83% Efficiency

With today's high energy costs, the need for efficiency has never been greater. The Series 8H has been designed to offer high efficiency without sacrificing long term reliability.

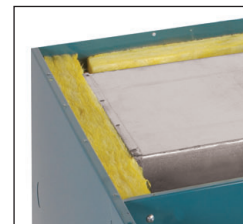
- **Heat Exchanger Design**

The cast iron heat exchanger on the Series 8H features a pinned heating surface. These multi-faceted pins allow the heat generated from the combustion process to be transferred to the cast iron from a number of angles, which contributes to the boiler's overall efficiency. A vertical flue design extracts heat while maintaining low draft losses.



- **Deluxe Insulated Jacket**

The jacket on the Series 8H is lined with three inches of insulation. This serves to reduce jacket and standby heat losses, further conserving energy. The jacket itself is powder coated, insuring a scratch resistant, long lasting finish.



### Two Packaging Options

Knocked-down 8H units are easy to handle and maneuver at the job site. Optional containerized skid (shown) can be stacked, providing warehousing and job site convenience. Packaged and wired units provide fast and easy installation. A reinforced shipping container protects against damage.



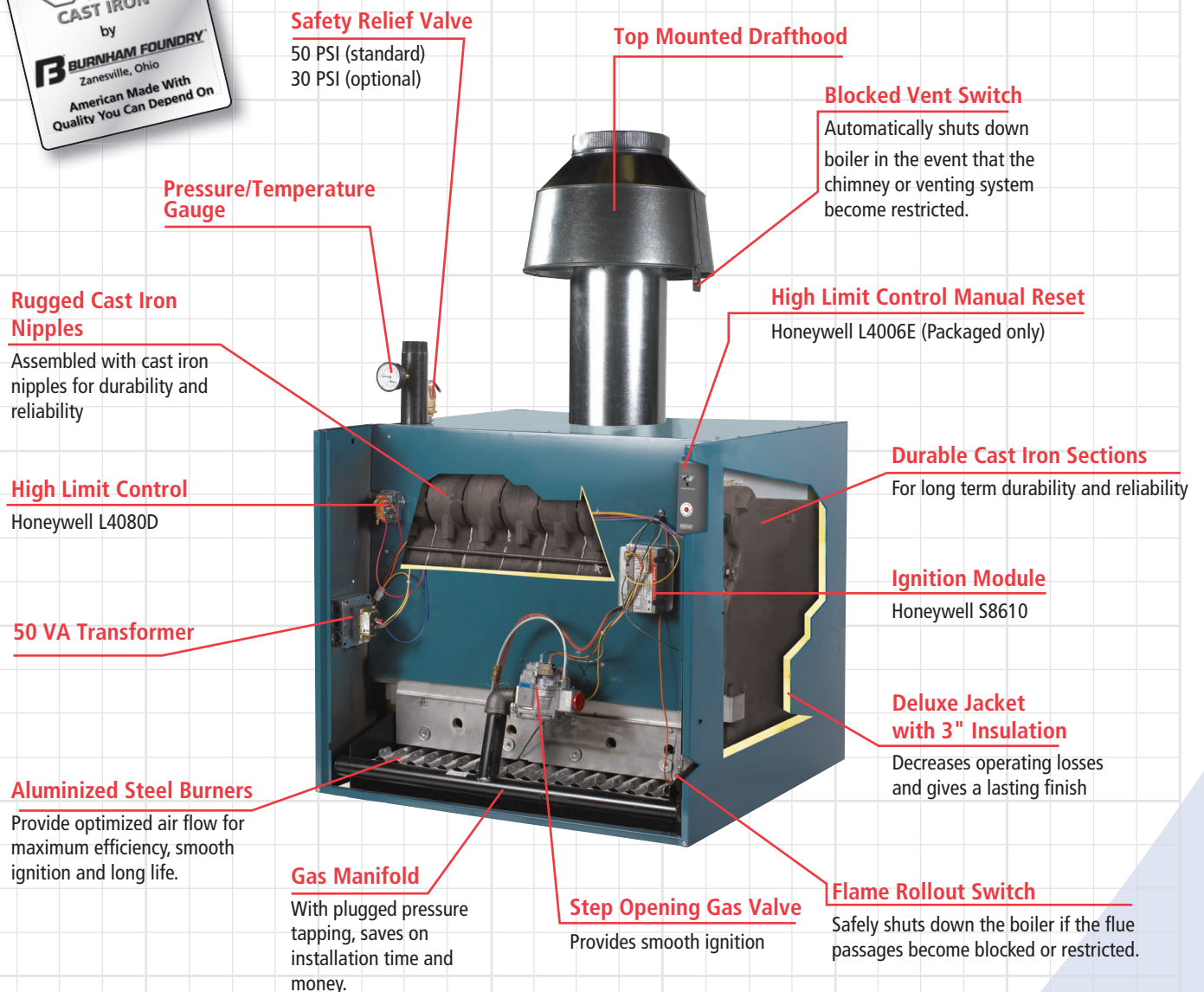
*Can be configured for modular or multiple boiler operation!*

*See page 14 for details*



# Series 8H - Hot Water Boiler

Maximum Allowable Working Pressure (MAWP): 50 PSI



## Commitment to Quality

Burnham Commercial, "America's Boiler Company," has earned a reputation for quality and dependability. For single or multiple boiler applications, the Series 8H is right for your next job.

# The Lower Cost, Higher Efficiency Alternative to Single Commercial Boilers

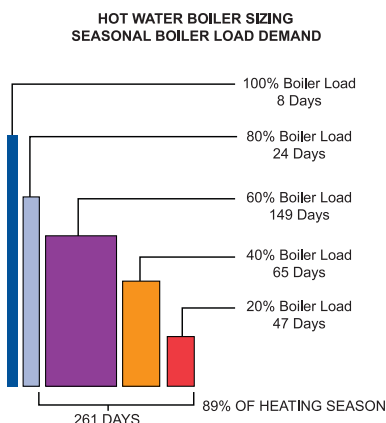
## Modular/Multiple Boiler Concept

Modular/multiple boiler systems put the efficiency, cost, and service advantages of compact gas boilers to work in heating applications where a single commercial boiler would not be sufficient. The systems connect any number of compact, self-contained gas boilers together and step-fire them to efficiently meet heating loads on demand.

### Firing to Load Demand Minimizes Standby Losses

Maximum fuel utilization is achieved during long periods of full firing at the design temperature for each boiler. In comparison, a single large boiler would cycle on and off, more frequently during partial loads, not reaching its rated efficiency.

During 90% of the average heating season less than 65% of the total heating capacity is required. Step-firing activates only those boilers needed to meet the load demand which reduces cycling and increases annual fuel efficiency.



## Features & Benefits

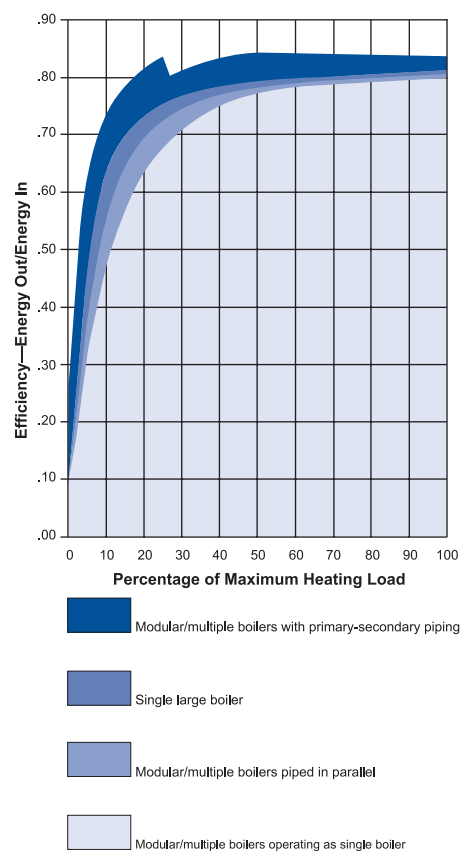
Choosing a modular or multiple boiler system can have many benefits.

- **Cost Savings**  
The basic cost of a modular/multiple system is less than that of a single large boiler of equal capacity in most applications.
- **Compact Design**  
Lighter weight boilers are suitable for installation on any floor from basement to penthouse. A floor shield is required when installed on a combustible floor.
  - Hand truck the boilers through standard doorways.
  - Install the boiler during any phase of construction.
- **Two Packaging Options**  
Packaged and pre-wired for quick and simple installation or knock down with sections assembled, for easy movement into the boiler room.
- Controls are simple to set-up, operate and service.
- Standby safety service one boiler while the others carry the load.
- Provision for expansion.

## Spec the Right Piping to Preserve Efficiency

Burnham Commercial recommends primary-secondary piping to maximize energy efficiency. Primary-secondary piping reduces off-cycle heat loss by delivering a positive balanced water flow only through each fired or cycling boiler. It also requires only a single header and less piping, which reduces installation cost and time.

Testing conducted by the National Bureau of Standards verifies that the efficiency of boilers piped primary/secondary surpasses that of boilers piped in parallel, and single large gas boilers—by up to 10%. Prefabricated water manifolds with flex-couplings are available from Burnham Commercial for either 2 or 3 module installations. Prefabricated manifolds can be used for primary-secondary or parallel piping arrangements.



# Enjoy the Peace of Mind That Comes with Modular and Multiple Boilers



## Modular or Multiple?

ASME Section IV differentiates between a modular and multiple boiler installation. According to ASME, a modular boiler system consists of individual modules with a maximum input of 400 MBH each. Each module is to be equipped with a pressure temperature gauge, temperature limit control, safety relief valve, and drain valve. The modules are to be manifolded together on site without any intervening stop valves. The modular boiler assembly is to be equipped with a common temperature limit control, low water cutoff, makeup water connection, provision for thermal expansion, and supply and return stop valves.

Multiple boiler installations require a stop valve in the supply and return pipe connection of each boiler. Each boiler needs to be equipped with a pressure temperature gauge, two temperature limit controls, safety relief valve, and drain valve. Boilers over 400 MBH must also include a low water cutoff. Sizes 805, 6, and 7 can be installed as modular or multiple boilers. Sizes 808, 9, and 10 are to be installed as multiple boilers. In both cases, minimum recommended side-to-side clearance is one inch or as required by local codes.

# Modular/Multiple Boiler Controls

## Available Controls

Burnham Commercial offers a selection of system control packages to let you design modular/multiple boiler installations based on heat use, fuel economy, and the desired level of automation. For more information on the controls shown or for more information on controls not shown here, contact Burnham Commercial.

Enjoy the peace of mind that comes with modular and multiple boilers. Multiple boilers can continue to heat the building even while one is being serviced, and you won't have to worry about lost efficiency due to short cycling during shoulder months.



Description	tekmar 261	tekmar 263	tekmar 264	tekmar 265	tekmar 268
Staging	Up to two on/off or one low-high-low boiler	Up to two on/off or one modulating boiler	Up to four on/off or one modulating boiler	Up to three modulating boilers	Up to nine on/off or four low-high-low boilers
Number of stages	2	2	4	3	9
Boiler differential	A/M	A/M	A/M	A/M	A/M
Minimum supply temp.	M	M	M	M	M
Outdoor reset	S	S	S	S	S
Boiler post purge	F	A/M	A/M	A/M	A/M
Equal run time rotation	S	S	S	S	S
PID staging	S	S	S	S	S
W.W.S.D.	S	S	S	S	S
D.H.W.P.		S	S	S	S
Pump exercising	S	S	S	S	S
Water temp setback	S	S	S	S	S
Zone temp. setback					
120/240V relay outputs	S	S	S	S	S
CSA/C US approved	S	S	S	S	S
Auto test	S	S	S	S	S
Error message	S	S	S	S	S
Modulation					
0-20 mA or 4-20 mA outputs		S		S	
Min/max modulation settings		S		S	
Parallel/sequential modulation				S	

KEY: A/M = Auto/Manual; S = Standard; F = Fixed; M = Manual



# Recommended Modular/Multiple Boiler Selection

Number of Boiler Sizes Required						Ratings - (MBH)		Net Output	Approx. Shipping Weight Lbs.
805H	806H	807H	808H	809H	810H	Input	Gross Output		
2 1	1 2 1	1 2 1	1 2 1	1 2 1	1 2	504 567 630 689 748 807 866 924 982 1041 1100	420 472 524 573 622 671 720 769 818 868 918	368 412 456 498 540 583 626 669 712 755 798	1220 1310 1400 1491 1582 1672 1762 1858 1954 2045 2136
		2 1	1 2 3 2 1	1 2 3 2 1	1 2 3	1181 1240 1299 1357 1415 1473 1532 1591 1650	982 1031 1080 1129 1178 1227 1277 1327 1377	853 896 939 982 1025 1068 1111 1154 1197	2463 2553 2643 2739 2835 2931 3022 3113 3204
			4 3 2 1	1 2 3 4 3 2 1	1 2 3 4	1732 1790 1848 1906 1964 2023 2082 2141 2200	1440 1489 1538 1587 1636 1686 1736 1786 1836	1252 1295 1338 1381 1424 1467 1510 1553 1596	3524 3620 3716 3812 3908 3999 4090 4181 4272
			3 2 1	2 3 4 5 4 3 2 1	1 2 3 4 5	2281 2339 2397 2455 2514 2573 2632 2691 2750	1898 1947 1996 2045 2095 2145 2195 2245 2295	1651 1694 1737 1780 1823 1866 1909 1952 1995	4597 4693 4789 4885 4976 5067 5158 5249 5340
			2 1	4 5 6 5 4 3 2 1	1 2 3 4 5 6	2830 2888 2946 3005 3064 3123 3182 3241 3300	2356 2405 2454 2504 2554 2604 2654 2704 2754	2050 2093 2136 2179 2222 2265 2308 2351 2394	5670 5766 5862 5953 6044 6135 6226 6317 6408
			1	6 7 6 5 4 3 2 1	1 2 3 4 5 6 7	3379 3437 3496 3555 3614 3673 3732 3791 3850	2814 2863 2913 2963 3013 3063 3113 3163 3213	2449 2492 2535 2578 2621 2664 2707 2750 2793	6743 6839 6930 7021 7112 7203 7294 7385 7476
				8 7 6 5 4 3 2 1	1 2 3 4 5 6 7 8	3928 3987 4046 4105 4164 4223 4282 4341 4400	3272 3322 3372 3422 3472 3522 3572 3622 3672	2848 2891 2934 2977 3020 3063 3106 3149 3192	7816 7907 7998 8089 8180 8271 8362 8453 8544

Not for direct Installation on combustible flooring. A heat shield is required and available for combustible floor installations.  
Not for installation on carpet, even with floor shield.

## Optional Equipment



### Water Manifolds

Factory fabricated manifolds are available as a convenience to the installer. The manifolds are lightweight and forgiving of minor piping misalignments common to multiple boiler installations. Available as two-module or three-module manifolds. For installations of four or more modules in a row, the manifolds can be joined together as required. Applicable to primary-secondary or parallel piping arrangements.



### Flex Couplings

Easy to install flex couplings are available to facilitate piping connections. They accommodate misalignments between pipes and permit up to a total of 8 angular misalignment at each connection while maintaining a leakproof seal. Flex couplings reduce installation time and reduce labor costs.

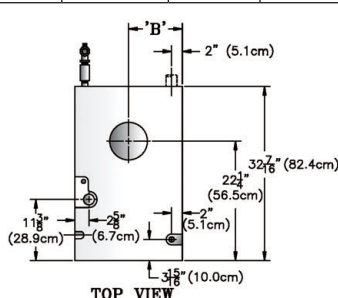
# Dimensions and Specifications

Boiler Model	'A'	'B'	'C'	'D'		'E'	
				USA	Canada	USA	Canada
805H	20	10	7	24-3/4	24-3/4	16-1/8	16-1/8
806H	23-3/4	11-7/8	8	27-3/4	25-3/4	18	16
807H	27-1/2	13-3/4	9	28-3/4	25-3/4	18	16
808H	31-1/4	15-5/8	9	30-3/4	26-5/8	20	16
809H	35	17-1/2	10	33-1/2	26-3/8	22	15
810H	38-3/4	19-3/8	10	33-1/2	26-3/8	22	15

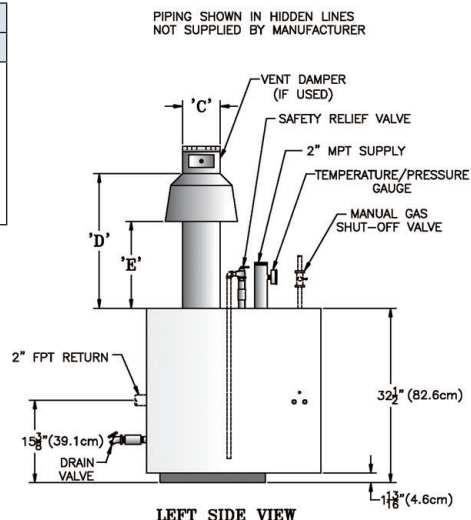
All dimensions are in inches



FRONT VIEW



TOP VIEW



LEFT SIDE VIEW

## SERIES 8H RATINGS\* Natural and LP Gas



BOILER MODEL (1)	RATINGS		I=B=R NET RATING WATER (MBH) (2)	EFFICIENCY	MINIMUM NATURAL GAS PRESSURE (Inches)		MINIMUM RECOMMENDED CHIMNEY SIZE ROUND DIA. (In.) X HT. (Ft.) (3)	WATER CONTENT (Gal.)	APPROX. SHIPPING WEIGHT (Lbs.)
	INPUT (MBH)	GROSS OUTPUT (MBH)			24V	EI			
805H	252	210 (4)	183	83.2 (4)	N/A	4.5	7 X 15	11.9	600
806H	315	262	228	83.1	4.5	4.5	8 X 15	13.9	690
807H	374	311	270	83.2	5.0	4.5	9 X 15	15.9	781
808H	433	360	313	83.3	N/A	4.5	9 X 15	17.9	871
809H	491	409	356	83.4	N/A	5.0	10 X 15	19.9	962
810H	550	459	399	83.4	N/A	5.0	10 X 15	21.9	1052

\*Ratings shown are for installations at sea level and elevations up to 2,000 feet. For elevations above 2,000 feet, ratings should be reduced at the rate of four percent (4%) for each 1,000 feet above sea level.

- When ordering, use prefix P for packaged and K for knocked-down. Use suffix NSP for natural gas, standing pilot; NEI for natural gas, electronic ignition; PSP for LP gas, standing pilot; PEI for LP gas, electronic ignition.
- Net I=B=R ratings shown are based on normal I=B=R piping and pickup allowance of 1.15. Consult the Burnham Commercial for installations having unusual piping and pickup requirements such as intermittent system of operation, extensive piping systems, etc.
- 15 foot height is measured from top of drafthood to top of chimney.
- The 805 is a DOE heating capacity and AFUE efficiency. Furnished with electronic ignition and vent damper.

Maximum allowable working pressure: 50 PSI Water only.; 50 PSI Safety Relief Valve - Standard; 30 PSI Safety Relief Valve - Optional

## Standard Equipment

Cast Iron Section Assembly	Aluminized Steel Burners	Blocked Vent Switch (BVS) - All Sizes	Electronic Ignition on 805H, 808H-810H for Natural or LP Gas
Deluxe Jacket with 3 inch Insulation	1" Gas Connection	Flame Roll-Out Switch (FRS) - All Sizes	24V Standing Pilot on 806H, 807H for Natural or LP Gas
100% Shut-off Gas Controls	2 Supply and Return Connections	L4080D High Limit Control	Pressure Temperature Gauge
Boiler Drain Valve	50 PSI Safety Relief Valve	750P-MT-120 Probe LWCO - 808H-810H only	
50VA Transformer and Junction Box	Stainless Steel Flue Baffles	High Limit Control with Manual Reset - L4006E (in addition to L4080)	
		- Packaged Boilers Only	

Packaged units are shipped packaged and wired in a reinforced cardboard container, for added protection. Drafthood, trim carton, low water cut-off and damper; when supplied, are shipped in separate cartons. Knocked-down units are shipped in a stackable container with sections assembled and mounted on the base with manifold and burners installed. Controls, trim, drafthood, and jacket are shipped together in the same container as the boiler.

## Optional Equipment

30 PSI Safety Relief Valve	Electronic Control Sets to meet CSD-1
Electronic Ignition on 806H and 807H (standard on 805H, 808H thru 810H)	Vent Damper — 806H thru 810H (standard on 805H), available on standing pilot and electronic ignition models only
Intermittent Circulation (24V)	- not available with Electronic Control Sets
	Combustible Floor Shield

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.). NOT FOR INSTALLATIONS ON CARPET, EVEN WITH A COMBUSTIBLE FLOOR SHIELD.