

19HE Series



Smith
CAST IRON BOILERS





19HE SERIES

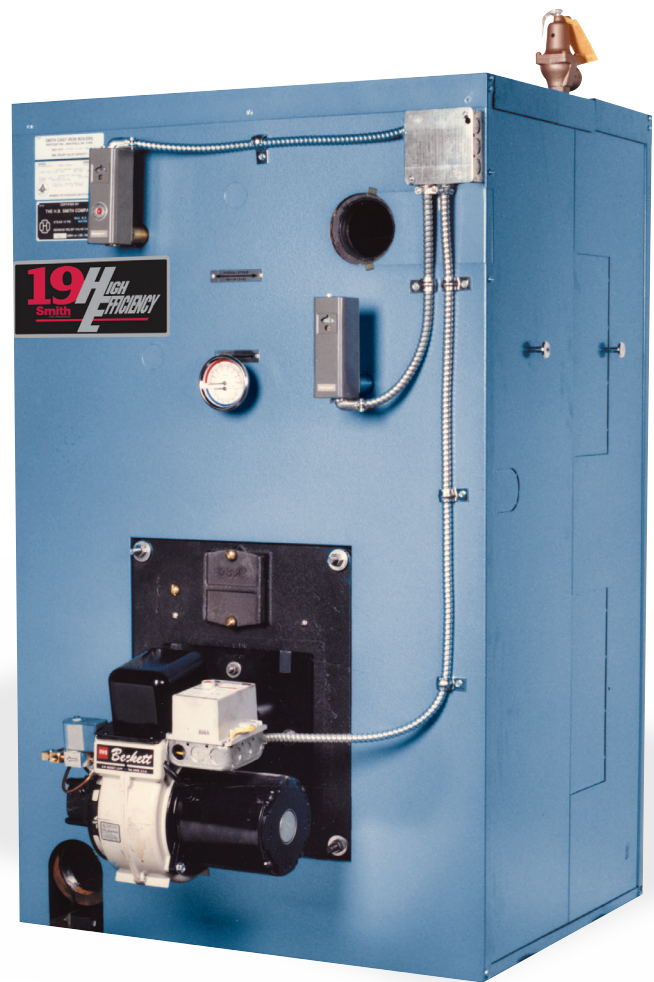
Smith 19HE Series cast iron, pressurized, wet-base boiler/burner units are ideal for light commercial water or steam heating systems utilizing No. 2 fuel oil, natural gas, or combination gas/oil. Ten different sizes are available, ranging from 308 MBH to 1750 MBH. Series 19HE boilers are available in three ways — knocked down, assembled sections, or completely packaged units. All sections are tested and approved for 80 psi working pressure as standard equipment.

Designed and Constructed for Easy Service and Long Life.

19HE Series boiler/burner units are designed and constructed for easy service. A front observation port allows technicians to visually check the flame and combustion area. Easy-to-remove, side-mounted cover plates make boiler clean-out quick and easy. Side-mounted tankless 9 GPM coils allow for easy visual inspection and service. Heavy-duty, hydrocarbon-resistant Viton port seal gaskets are exceptionally easy to install. The integral, cast-iron, fail-safe breeching damper may be easily adjusted and securely locked in position. Individual section draw rods simplify assembly while reducing stress.

Reliable, Fuel-Efficient Heat

Smith 19HE Series boiler/burner units are designed and constructed for high efficiency and superior performance. High-quality cast iron sections, cast-in heat extraction pins, completely insulated metal jacket, ceramic fiber rope section seals, obround-shaped upper ports, and carefully selected, high-efficiency burner add up to a boiler/burner unit that will provide reliable, fuel-efficient heat for years to come. Compare Smith 19HE Series units with other brands with similar capacities — you'll discover that Smith is your smartest choice.



All sizes exceed the Ashrae 90.1 efficiency requirements



STANDARD EQUIPMENT

All Boilers

- Cast Iron Wet-Base Sections Tested for 80psi.
- 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
- Hi-Temp Hydronic Port Seals
- Flue Brush
- Target Wall (3-6 Sections)

Water Boiler/Burner Units

- ASME Relief Valve, 40 psi
- Theraltimeter
- Manual Reset, Hi-Limit Control
- Lo-Limit Operating Control

Steam Boiler/Burner Units

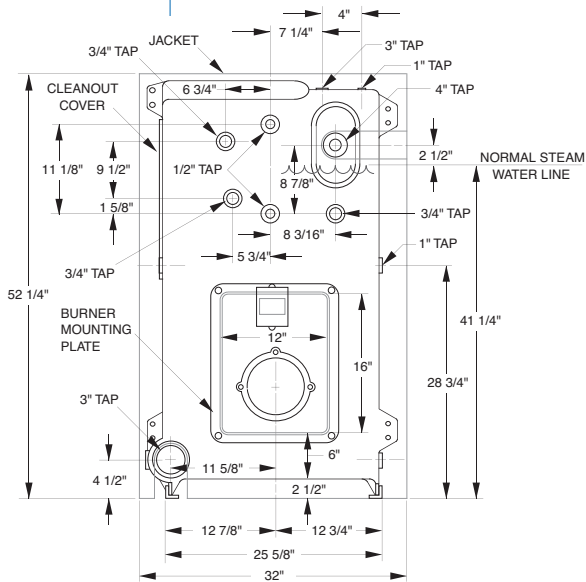
- ASME Side Outlet Safety Valve, 15 psi
- Steam Gauge (0-30 psig)
- Gauge Glass with Gauge Cocks and Guards
- Manual Reset, Hi-Limit Control
- Lo-Limit Operating Control

OPTIONAL EQUIPMENT

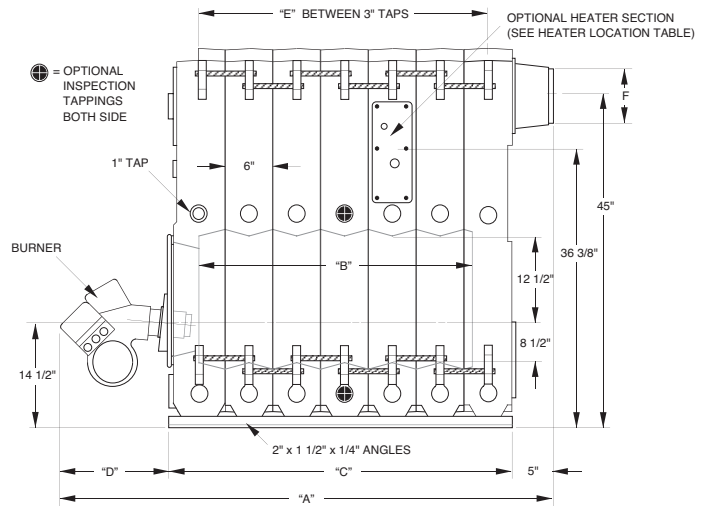
All Boilers

- Heater Cover Plates
- Sections Assembled
- Packaged
- Burner Start-Up and One-Year Service
- Low Water Cutoffs
- Feeder and Pump Controllers
- Inspection Taps and Brass Plugs (Up to Three Per Section)
- Water Boilers—80 psi Pressure Relief Valve
- Tankless Water Heaters

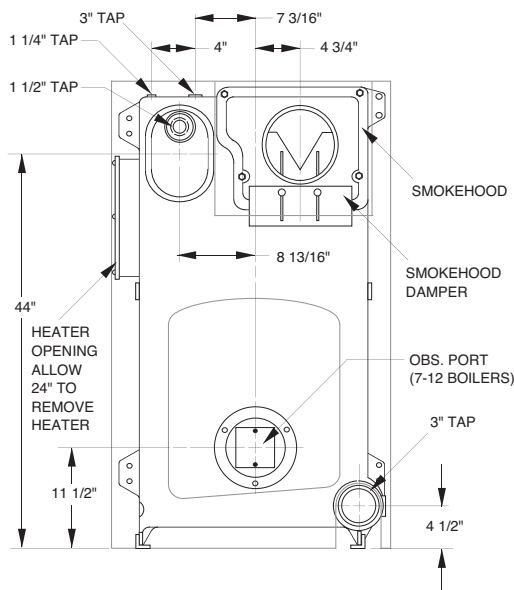
PRESSURIZED WET-BASE BOILER BURNER UNITS



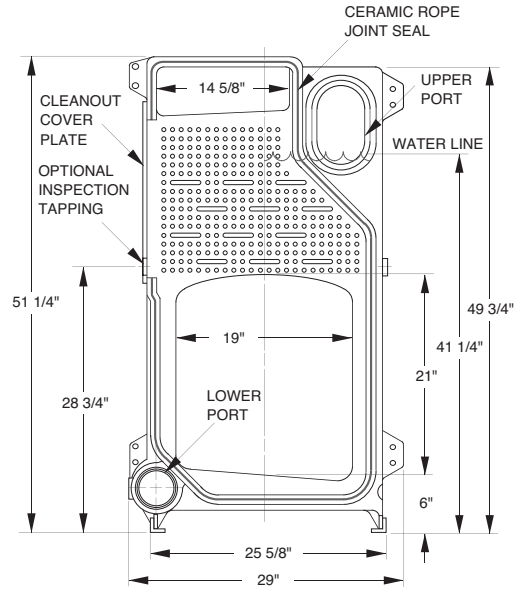
FRONT VIEW



SIDE VIEW



REAR VIEW



INTERMEDIATE SECTION

Dimensions (Inches)

Boiler Model Number	Overall Length "A"				"B"	"C"	Burner Length "D"				"E" Distance Between Supply Tappings	"F" Flue Pipe Diameter
	Carlin	PF/J	PF/C	Beckett Oil			Carlin	PF/J	PF/C	Beckett Oil		
19HE-3	39	44	-	31	9	18	16	21	30	13	12	7
19HE-4	45	50	59	37	15	24	16	21	30	13	18	7
19HE-5	51	56	65	43	21	30	16	21	30	13	24	8
19HE-6	61	62	71	49	27	36	20	21	30	13	30	8
19HE-7	67	68	82	64	33	42	20	21	35	22	36	9
19HE-8	73	74	88	71	39	48	20	21	35	23	42	10
19HE-9	79	80	94	77	45	54	20	21	35	23	48	10
19HE-10	87	86	100	83	51	60	22	21	35	23	54	10
19HE-11	93	-	106	89	57	66	22	-	35	23	60	10+
19HE-12	99	-	112	99	63	72	22	-	35	27	66	10+

Boiler Model Number	Draft Loss (in WC)	Overfire Pressure (in WC)
19HE-3	0.18	0.28
19HE-4	0.18	0.28
19HE-5	0.20	0.30
19HE-6	0.23	0.33
19HE-7	0.26	0.36
19HE-8	0.29	0.39
19HE-9	0.32	0.42
19HE-10	0.35	0.45
19HE-11	0.38	0.48
19HE-12	0.41	0.51

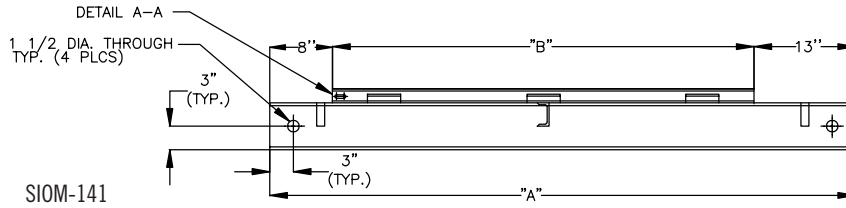
The manufacturer should be consulted before selecting a boiler for installations having unusual piping and pickup requirements, such as intermittent system operation, extensive piping, etc.

For forced hot water heating systems where the boiler and all the piping are within the area to be heated, the boiler may be selected on the basis of its Gross Output.

+ 11 and 12 section requires 12" diameter vent pipe. Transition collar provided by Smith.
NOTE: Dimensions are approximate. Should not be used to "rough-in" equipment.

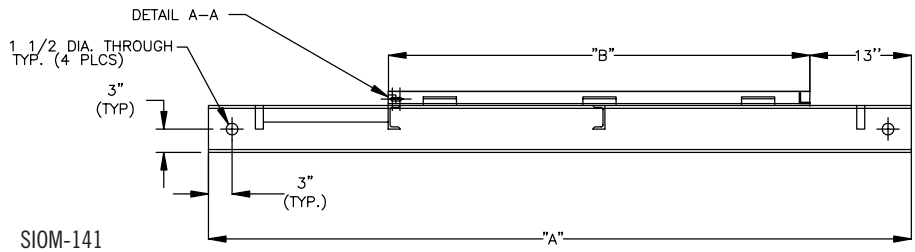
Assembled Block or Packaged Boiler without Burner

No. of Sections	Channel Length Dim. "A"	Angle Length Dim. "B"
3	39	18
4	45	24
5	51	30
6	57	36
7	63	42
8	69	48
9	75	54
10	81	60
11	87	66
12	93	72



Packaged Boiler with Burner

No. of Sections	Channel Length Dim. "A"			Angle Length Dim. "B"
	Carlin/Beckett	Powerflame J-Series	Powerflame C-Series	
3	49	59		18
4	55	65	74	24
5	61	71	80	30
6	67	77	86	36
7	78	83	92	42
8	84	89	98	48
9	90	95	104	54
10	99	101	110	60
11	105	107	116	66
12	111	113	122	72



I B R Ratings, Burner Capacities

Designed and tested to the A.S.M.E. boiler and pressure vessel code, section IV for maximum allowable working pressure, steam 15 psig, water 80 psig.

Boiler Model Number	Boiler Horsepower	Heating Surface (Sq. Ft.)	Furnace Volume (Cu. Ft.)	I=B=R Gross Output (MBH)	Net I=B=R Rating (1)			I=B=R Burner Capacity		Water Content (Gals.)		Water Working Weight (Lbs.)		Thermal Efficiency %	
					Steam		Water	Oil(GPH)(2)	Gas(MBH)(3)	Steam	Water	Steam	Water	Oil	Gas
					(Sq. Ft.)	MBH	MBH								
†19HE*-3	9.2	23.9	2.12	308	963	231	268	2.6	375	33	38	1673	1716	84.6	82.1
†19HE*-4	12.5	35.8	3.50	421	1316	316	366	3.6	520	41	49	2057	2122	84.1	81.5
†19HE*-5	17.5	47.7	4.88	587	1835	441	510	5.0	722	49	59	2442	2528	83.9	81.3
†19HE*-6	22.8	59.7	6.27	762	2382	572	663	6.5	938	56	70	2825	2933	83.7	81.2
†19HE*-7	27.6	71.6	7.65	924	2888	694	803	7.9	1140	64	80	3209	3339	83.5	81.1
†19HE*-8	32.5	83.5	9.04	1087	3398	815	945	9.3	1342	72	91	3593	3745	83.5	81.0
†19HE*-9	37.7	95.4	10.42	1262	3947	947	1097	10.8	1559	80	102	3978	4150	83.5	83.5
†19HE*-10	42.5	107.4	11.81	1424	4506	1081	1238	12.2	1761	88	112	4361	4555	83.4	83.4
†19HE*-11	47.4	119.3	13.20	1587	5071	1217	1380	13.6	1963	96	123	4745	4960	83.4	83.4
†19HE*-12	52.3	131.2	14.58	1750	5635	1352	1522	15.0	2165	104	133	5129	5366	83.4	83.4

† No insert for oil. Insert prefix "G" for gas or "GO" for combination gas/oil.

* Insert "S" for steam, "W" for water. Example: GO19HE-S-10 is a 10-section 19HE Series Boiler for steam using combination gas/oil burner.

- (1) The net I=B=R Steam Ratings shown are based on a piping and pickup allowance of 1.333. The I=B=R Water Ratings shown are based on an allowance of 1.15.
- (2) Based on light oil having a heat content of 140,000 BTU per gallon.
- (3) Gas having a heat content of 1,000 BTU/cu. ft. at 0.6 specific gravity.
- (4) Includes 0.10" W.C. pressure on upstream side of exit damper.

Side-Mounted Tankless Heater Capacities

No. of Sections	I=B=R Gross Output (MBH)	Cont. Draw (GPM)		
		One Heater	Two Heaters	Three Heaters
3	308	8.5	N/A	N/A
4	421	8.5	N/A	N/A
5	587	9.0	10.6	N/A
6	762	9.0	12.9	N/A
7	924	9.0	15.3	N/A
8	1087	9.0	17.6	N/A
9	1262	9.0	18.0	19.9
10	1424	9.0	18.0	22.2
11	1587	9.0	18.0	24.6
12	1750	9.0	18.0	26.9

Heater ratings based on 100° F. temperature rise, 200° F. boiler water, 9 GPM at 9.5 psi Ø P. For 180° boiler water ratings, consult factory.

Heater Section Location

Boiler Model Number	Max. No. of Heaters	Location by Boiler Section (Heaters Install from Right Side)
19HE-3	1	F - H - B
19HE-4	1	F - P - H - B
19HE-5	2	F - H - P - H - B
19HE-6	2	F - P - H - P - H - B
19HE-7	3	F - H - P - H - P - H - B
19HE-8	3	F - P - H - P - H - P - H - B
19HE-9	3	F - P - H - P - H - P - H - P - B
19HE-10	3	F - P - P - H - P - H - P - H - P - B
19HE-11	3	F - P - P - P - H - P - H - P - H - P - B
19HE-12	3	F - P - P - P - P - H - P - H - P - H - P - B

F = Front, P = Intermediate Plain, H = Intermediate Heater, B = Back



Burners

Carlin Light Oil Burner

- High performance, forced draft, UL listed, flame retention oil burner:
 - On-off firing, (3 thru 5 sections), with cadmium cell primary control, oil valve, delay timer. Low-High-Low firing (6 thru 12 sections)
 - Single stage fuel unit (3 thru 5 sections)
 - Two stage fuel unit (6 thru 12 sections)

Beckett Light Oil Burner

- High performance, forced draft, UL listed, flame retention oil burner:
 - On-off firing, (3 thru 5 sections) with cadmium cell primary control, oil valve. Low-High-Low off firing (6 thru 12 sections)
 - Single stage fuel unit (11 and 12 sections)
 - Two stage fuel unit (3 thru 10 sections)

Power Flame Gas Burner

- High performance, forced draft, UL listed, power gas burner for natural gas firing:
 - On-off firing, (3 thru 6 sections), fixed air shutter combustion control, 115 volt diaphragm gas shut-off valve, 115 volt solenoid auxiliary gas valve, spark ignited intermittent gas pilot (gas train not assembled), pilot gas train with solenoid valve, pressure regulator and manual shut-off cock, pilot tubing and fittings. Low-High-Low firing. (7 thru 12 sections)
 - 115 volt motorized gas valve

Power Flame Gas/Oil Burner

- Both fuels — Spark ignited gas pilot, intermittent UV flame detection, prepurge.
 - On-off firing (4 thru 6 sections), with fixed air shutter, two stage fuel pump for oil, oil valve, slow opening diaphragm gas valve for gas, auxiliary solenoid gas valve. Gas train not assembled. Low-High-Low firing (7 thru 12 sections)
 - Pilot gas train with solenoid valve, pressure regulator and manual shut-off cock, pilot tubing and fittings
 - 115 volt motorized gas valve

19HE SERIES

OPTIONAL BURNER EQUIPMENT

Beckett & Carlin Oil Burners

- Electronic Controls
- Carlin Two Stage Fuel Unit (4 Thru 6 Sections)
- Burner Mounted, Factory Wired Control Panel

Power Flame Gas and Oil Burners

- Two Stage Firing with Fuel-Air Control
- Lo-Hi-Lo Firing
- Modulating Firing
- FM, MASS Approval
- Other Motor Current Characteristics
- Increased Gas Train Sizes for Low Pressure Drops
- Flame Safeguard Options
- N.Y.C.— D.E.P. (Formerly B.A.R.) Approval

Burner Models

No. of Boiler Sections	Carlin Oil	HP	Beckett Oil	HP	Powerflame					
					Oil	HP	Gas	HP	Gas/Oil	HP
3	201CRD	1/4	CF500	1/3	—	—	JR15A	1/4	—	—
4	301CRD	1/4	CF500	1/3	CR1-0	1/3	JR15A	1/4	CR1-GO	1/3
5	301CRD	1/4	CF800	1/3	CR1-0	1/3	JR30A	1/3	CR1-GO	1/3
6	702CRD	1/2	CF1400	1/2	CR1-0	1/2	JR30A	1/3	CR1-GO	1/2
7	702CRD	1/2	CF1400	1/2	CR2-0	3/4	JR30A	1/3	CR2-GO	3/4
8	702CRD	1/2	N/A	N/A	CR2-0	3/4	JR50A	1/3	CR2-GO	3/4
9	702CRD	1/2	CF2300	3/4	CR2-0	3/4	JR50A	1/3	CR2-GO	3/4
10	801CRD	3/4	CF2300	3/4	CR2-0	3/4	JR50A	1/2	CR2-GO	3/4
11	801CRD	3/4	CF2500	2	CR2-0	1	CR2G	1	CR2-GO	1
12	801CRD	3/4	CF2500	2	CR2-0	1 1/2	CR2G	1-1/2	CR2-GO	1-1/2



MEA #416-99-M



In the interest of product improvement, we reserve the right to make changes without notice.



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G19HE-5