

# SELLERS

SPECIFICATION SHEET NO.

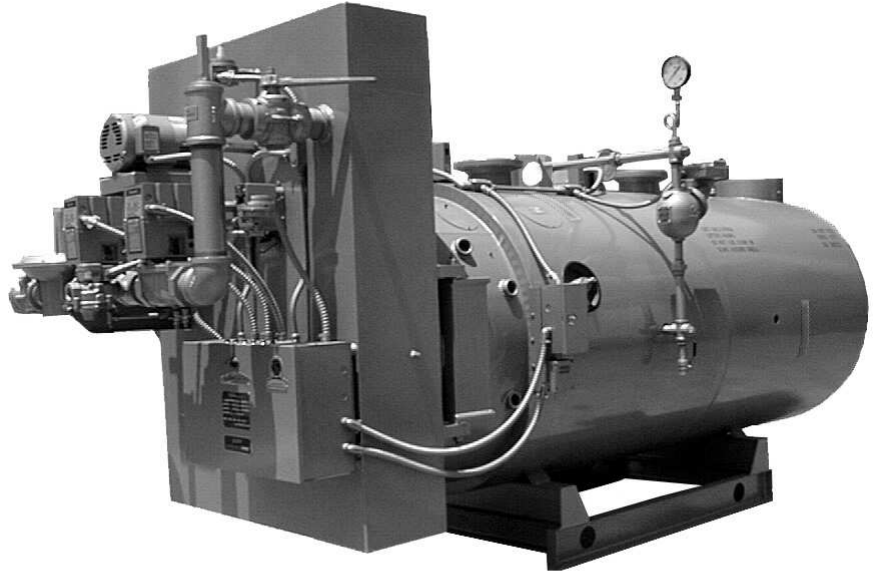
# 8001

April 1, 2003

## IMMERSION FIRED HOT WATER BOILER

### GENERAL DESCRIPTION

The Sellers immersion fired hot water boiler is a horizontal, single pass, firetube boiler designed to burn natural gas. The unique burner assembly delivers pre-mixed air and gas through multiple nozzles. The air-gas mixture is ignited as it exits each flame retaining nozzle at high velocity. The resulting flames are long and small in diameter. The flame from each of these nozzles is directed into a 2" O.D. tube that is completely immersed in liquid. There is a separate tube for each flame with the same amount of heat going into each tube. These small diameter flames burn in the first half of the tube lengths. Therefore, the "fire shines " on half of the heating surface in the single pass boiler – 50% of the total heating surface is radiant heating surface.



The high percentage of radiant heating surface, the low heat input into each tube, and the even distribution of heat

throughout the multiple tubes virtually eliminate thermal stress problems that are common in multiple pass boilers.

### XID ENHANCEMENT SYSTEM IMPROVED EFFICIENCY AND PERFORMANCE

- ◆ **Twenty Year Non Pro-rated Thermal Shock Warranty**
- ◆ **High Efficiency Performance (See Chart Below)**
- ◆ **Single Source Burner - Boiler Package**
- ◆ **Five Year Non Pro-rated Burner Warranty**
- ◆ **Lower Emissions. Less Than 50 PPM NOx Standard (30 PPM NOx Available)**
- ◆ **Lower Maintenance Costs**
- ◆ **Absolutely No Refractory**
- ◆ **U.L. Labeled Packaged Boiler**

### NET STACK TEMPERATURE AND EFFICIENCY RATING

BOILER HORSEPOWER	OPERATING TEMPERATURE			
	180° F	200° F	220° F	240° F
10 – 200	231° (84.9%)	251° (84.4%)	270° (84.0%)	289° (83.5%)
250 – 800	211° (85.4%)	230° (84.9%)	249° (84.5%)	267° (84.0%)

When unit is in proper adjustment. Stack temperature based on 70 degree ambient air temperature.  
Addition of 30 PPM NOx option will lower efficiencies slightly.

**SELLERS ENGINEERING CO., MANUFACTURING STEAM AND HOT WATER BOILERS SINCE 1931.**



# HOT WATER BOILER RATINGS, CAPACITIES, WEIGHTS

SEA LEVEL TO 3000 FEET ALTITUDE

BOILER HORSE POWER	HOURLY GAS INPUT (1000BTU)	GROSS HOURLY OUTPUT (1)	WATER CAPACITY (U.S. GAL)	WATER CAPACITY (POUNDS)	SHIPPING WEIGHT (POUNDS)	
					100 PSI	150 PSI
10	418	335	156	1,299	2,370	2,420
15	628	502	153	1,273	2,440	2,470
20	837	670	150	1,255	2,490	2,530
30	1,255	1,004	145	1,208	2,590	2,590
40	1,674	1,339	139	1,161	2,680	2,680
50	2,092	1,674	224	1,872	3,260	3,260
60	2,511	2,009	219	1,826	3,360	3,360
70	2,929	2,343	213	1,779	3,450	3,450
80	3,348	2,678	319	2,659	4,250	4,330
100	4,184	3,348	307	2,565	4,470	4,470
125	5,231	4,184	424	3,539	5,590	5,860
150	6,277	5,021	411	3,427	5,820	6,090
175	7,323	5,858	397	3,314	6,050	6,320
200	8,369	6,695	534	4,456	7,450	7,580
250	10,461	8,369	654	5,460	9,520	9,520
300	12,553	10,043	839	7,000	11,520	12,110
350	14,645	11,716	806	6,728	12,060	12,490
400	16,738	13,390	1,015	8,471	12,840	13,780
500	20,922	16,738	1,218	10,162	15,080	15,600
600	25,107	20,085	1,446	12,067	17,390	18,520
700	29,291	23,433	1,698	14,168	19,920	21,310
800	33,475	26,780	1,981	16,535	23,330	24,190

## GAS REQUIREMENTS

Main and pilot gas pressure regulators are supplied with each boiler. Refer to the chart below for gas pressure requirements. Pressures shown are with the unit running. For pressure above 10 PSI, install a second regulator to reduce the pressure to the standard range

## ELECTRICAL REQUIREMENTS

A single incoming power connection is required to the junction box provided at the hinge of all boilers. Boilers are pre-wired (105° C color coded wire) to numbered terminal strips. Panels include a control transformer to provide 5 Amp., 120 Volt service. Boilers are wired for jobsite supply power characteristics.

Boiler Horsepower	Pressure required at gas train inlet		
	Min. (3)	Std Range	Max.
10-20	7"	8" to 1 PSI	10 PSI
30-80	8"	12" to 1 PSI	10 PSI
100-150	10"	16" to 1 PSI	10 PSI
175-200	14"	20" to 1 PSI	10 PSI
250	14"	2 to 10 PSI	10 PSI
300-350	14"	1.5 TO 10 PSI	10 PSI
400-800	1 PSI	2 TO 10 PSI	10 PSI

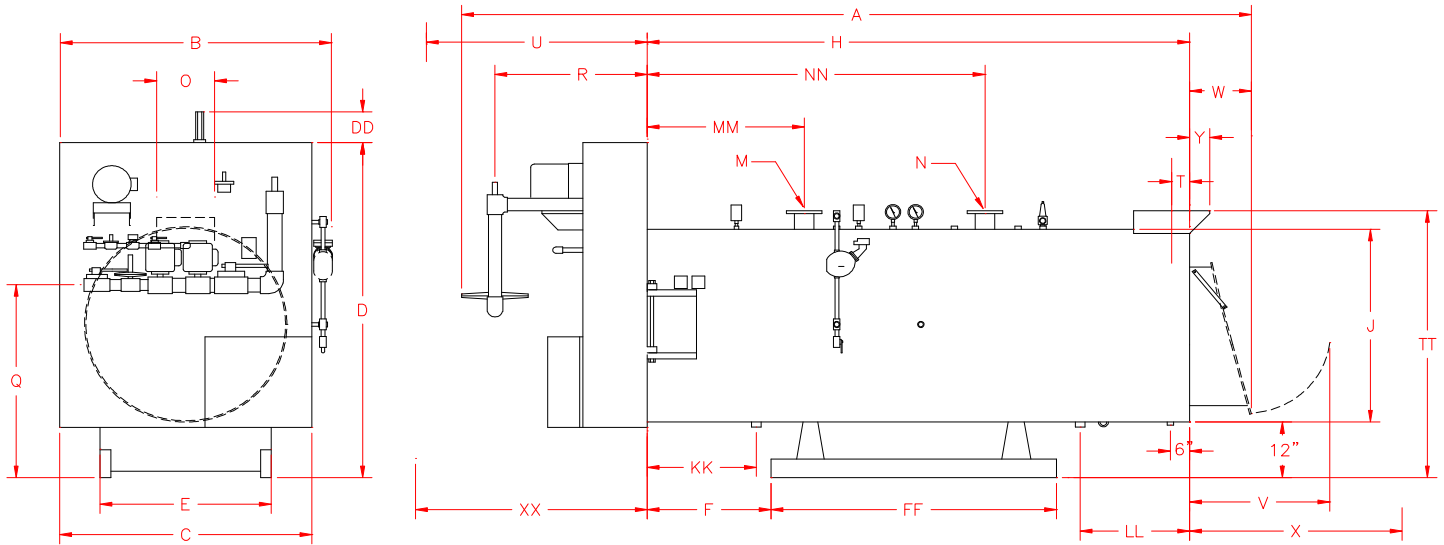
## STACK REQUIREMENTS

Design stack to provide .02" to .04" water column draft at flue outlet. Smooth transitions and bends are required. Maximum stack weight on boiler should be 1000 pounds on 10 to 80 HP and 2000 pounds for 100 to 800 HP units.

## AIR REQUIREMENTS

Provide 1/2 square foot of free air inlet area per 1,000,000 BTU input to the burner. Cross ventilation is preferred in lieu of a single opening.

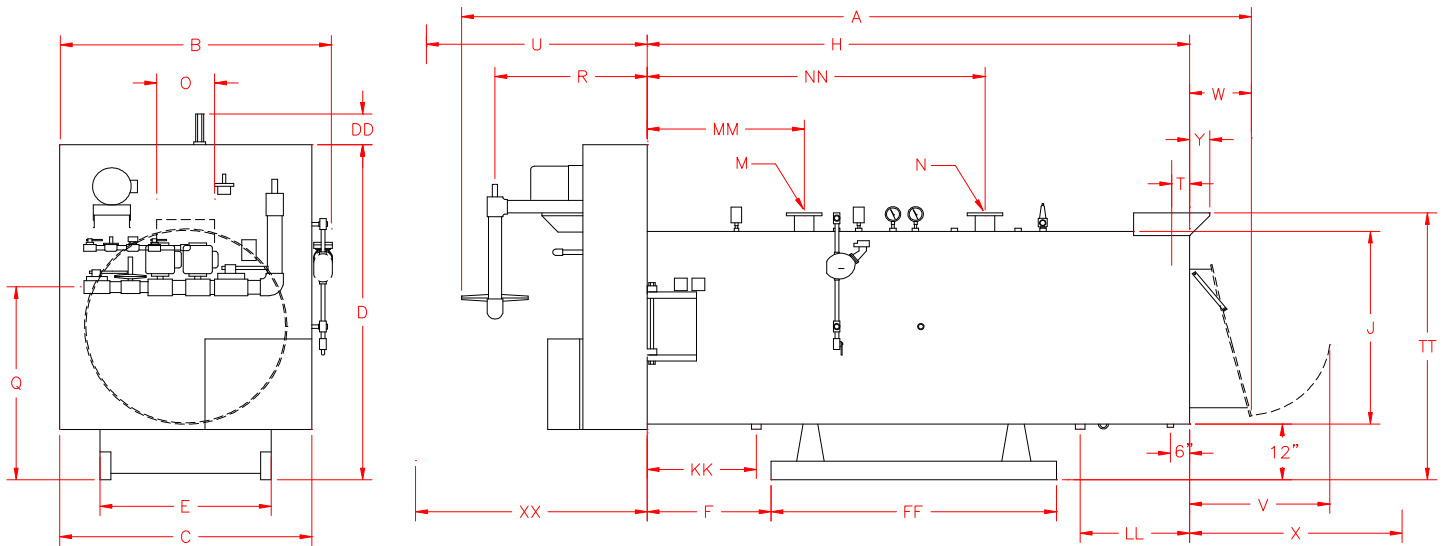
(3) Special gas trains required at additional cost. For low NOx application with low gas pressure, consult the factory.



## HOT WATER BOILER DIMENSIONS

HORSEPOWER		C-10-W	C-15-W	C-20-W	C-30-W	C-40-W	C-50-W	C-60-W	C-70-W	C-80-W	C-100-W	S-125-W
<b>OVERALL DIMENSIONS:</b>												
LENGTH	A	141	141	141	141	143	143	145	150	151	159	160
WIDTH	B	36	36	36	36	36	42	42	42	48	48	54
BURNER WIDTH	C	30	30	30	32	32	35	35	35	41	41	47
BURNER HEIGHT	D	56	56	56	56	59	65	65	65	70	70	75
SECONDARY AIR CAP HEIGHT	DD	6	6	6	6	6	6	6	6	6	6	
<b>BASE:</b>												
WIDTH	E	24	24	24	24	24	24	24	24	30	30	36
LOCATION	F	20	20	20	20	20	20	20	20	20	26	26
LENGTH	FF	60	60	60	60	60	60	60	60	60	60	60
<b>SHELL:</b>												
LENGTH	H	108	108	108	108	108	108	108	108	108	114	114
DIAMETER INSIDE	J	24	24	24	24	24	30	30	30	36	36	42
<b>SHELL CONNECTIONS:</b>												
DRAIN SIZE	K	1	1	1	1	1.25	1.25	1.25	1.25	1.5	1.5	1.5
DRAIN LOCATION	KK	16	16	16	16	16	16	16	16	16	22	22
MANUAL FILL SIZE	L	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
MANUAL FILL LOCATION	LL	23	23	23	23	23	23	23	23	23	23	23
HOT WATER OUTLET SIZE (NOTE 3)	M	2	2	2.5	3	3	4f	4f	4f	4f	4f	6f
HOT WATER OUTLET LOCATION	MM	26	26	26	26	26	26	26	26	26	33	33
HOT WATER RETURN SIZE (NOTE 3)	N	2	2	2.5	3	3	4f	4f	4f	4f	4f	6f
HOT WATER RETURN LOCATION	NN	64	64	64	64	64	64	64	64	64	71	71
<b>GAS CONNECTIONS:</b>												
MAIN BURNER VALVE IPS (NOTE 5)	QQ	1.25	1.25	1.5	1.5	1.5	1.5	2	2	2	2.5	2.5
VERTICAL LOCATION (NOTE 11)	Q	33	33	33	33	33	36	36	36	39	39	42
HORIZONTAL LOCATION (NOTE 4)	R	20	20	20	20	20	20	22	26	26	28	28
PILOT BURNER VALVE IPS	S	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
<b>FLUE CONNECTIONS:</b>												
FLUE SIZE (NOTES 6 & 10)	O	6	6	8	8	10	10	10	12	12	14	14
FLUE LOCATION	T	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	4.75	4.75
FLUE HEIGHT	TT	43	43	43	43	43	49	49	49	55	55	61
<b>INSTALLATION CLEARANCES:</b>												
COMBUSTION ASSEMBLY SWING	U	35	35	35	36	36	38	40	41	46	48	53
RELIEF DOOR SWING (NOTE 7)	V	18	18	18	18	18	21.5	21.5	21.5	25.5	25.5	29.5
TUBE REMOVAL, FRONT (NOTE 8)	XX	73	73	73	73	73	73	73	73	73	66	66
TUBE REMOVAL, REAR (NOTE 8)	X	71	71	71	71	71	71	71	71	71	72	72
RELIEF DOOR ASSEMBLY	VV	10	10	10	10	10	11	11	11	12	12	13
FLUE OUTLET PROJECTION	Y										2.25	2.25
<b>BLOWER HORSEPOWER:</b>		1	1.5	1.5	2	2	3	5	5	5	7.5	7.5

See Notes on Last Page.



## HOT WATER BOILER DIMENSIONS

HORSEPOWER		S-150-W	S-175-W	S-200-W	S-250-W	S-300-W	S-350-W	S-400-W	S-500-W	S-600-W	S-700-W	S-800-W
<b>OVERALL DIMENSIONS:</b>												
LENGTH	A	166	166	167	193	196	210	213	214	218	220	228
WIDTH	B	57	57	61	64	67	72	76	83	89	95	101
BURNER WIDTH	C	53	53	56	62	62	72	74	82	88	94	100
BURNER HEIGHT	D	73	73	82	80	87	97	102	107	112	120	125
SECONDARY AIR CAP HEIGHT	DD											
<b>BASE:</b>												
WIDTH	E	36	36	42	42	48	48	54	57	63	66	72
LOCATION	F	26	26	26	3	3	3	3	3	3	3	3
LENGTH	FF	60	60	60	104	104	104	104	104	104	104	104
<b>SHELL:</b>												
LENGTH	H	114	114	114	140	140	140	140	140	140	140	140
DIAMETER INSIDE	J	42	42	48	48	54	54	60	66	72	78	84
<b>SHELL CONNECTIONS:</b>												
DRAIN SIZE	K	1.5	1.5	2	2	2	2	2	2	2	2	2
DRAIN LOCATION	KK	22	22	22	34	34	34	34	34	34	34	34
MANUAL FILL SIZE	L	2	2	2	2	2	2	2	2	2	2	2
MANUAL FILL LOCATION	LL	23	23	23	28	28	28	28	28	28	28	28
HOT WATER OUTLET SIZE (NOTE 3)	M	6f	6f	6f	8f	8f	8f	8f	10f	10f	10f	12f
HOT WATER OUTLET LOCATION	MM	33	33	33	36	36	36	36	36	36	36	36
HOT WATER RETURN SIZE (NOTE 3)	N	6f	6f	6f	8f	8f	8f	8f	10f	10f	10f	12f
HOT WATER RETURN LOCATION	NN	71	71	71	88	88	88	88	88	88	88	88
<b>GAS CONNECTIONS:</b>												
MAIN BURNER VALVE IPS (NOTE 5)	QQ	3	3	3	2.5	2.5	2.5	3	3	3	3	3
VERTICAL LOCATION (NOTE 11)	Q	38	38	41	44	48	48	48	48	48	48	48
HORIZONTAL LOCATION (NOTE 4)	R	32	32	32	34	34	48	50	50	50	50	56
PILOT BURNER VALVE IPS	S	0.75	0.75	0.75	0.75	1	1	1	1	1.25	1.25	1.25
<b>FLUE CONNECTIONS:</b>												
FLUE SIZE (NOTES 6 & 10)	O	16	18	18	20	22	24	26	28	32	34	36
FLUE LOCATION	T	3.75	2.75	2.75	5.75	4.5	3.5	2.5	1.5	-0.5	-1.5	-2.5
FLUE HEIGHT	TT	61	61	67	67	73	73	79	85	97	103	109
<b>INSTALLATION CLEARANCES:</b>												
COMBUSTION ASSEMBLY SWING	U	58	58	62	65	68	80	84	90	95	100	108
RELIEF DOOR SWING (NOTE 7)	V	29.5	29.5	35.5	35.5	40	40	43	46	50	48	50
TUBE REMOVAL, FRONT (NOTE 8)	XX	66	66	66	88	88	88	88	88	88	88	88
TUBE REMOVAL, REAR (NOTE 8)	X	72	72	72	90	90	90	90	90	90	90	90
RELIEF DOOR ASSEMBLY	VV	13	13	14	14	15	15	16	17	18	17	18
FLUE OUTLET PROJECTION	Y	4.25	6.25	6.25	4.25	8.5	10.5	12.5	14.5	18.5	20.5	22.5
<b>BLOWER HORSEPOWER:</b>		7.5	7.5	10	15	15	15	15	20	20	25	25

See Notes on Last Page.

## NOTES

1. Dimensions are accurate for layout but are subject to change. Certified prints are available upon request.
2. Lifting lugs and insulation are not shown on drawing. The manhole, when furnished, is not shown.
3. Openings are threaded unless indicated:  
f = Class 150 ASA flange. F = Class 300 ASA flange.  
Threaded couplings project 2" or less.
4. Provide "R + 12" clearance from the right side of burner box to the right side wall to open hinged burner.
5. Gas train may change with gas type and pressure.
6. Outside diameter and dimensions are shown. (see note 10)
7. Provide "J + 7" clearance from the rear end of the shell to swing the hinged back plate on 300 HP and larger boilers.
8. Tubes may be removed from the front or rear.
9. Dip tube (2" min.) provided on hot water outlet.
10. Flue outlet dimension on 300 HP and larger boilers are inside diameter with angle iron flanged connection.
11. Horizontal gas train dimension will vary based on required gas train components and addition of Low NOx option. Gas train may extend beyond burner manifold dimension C.

## STANDARD EQUIPMENT FURNISHED

**Pressure Vessel:** 100 or 150 PSI, ASME stamped with "H" cloverleaf.

**Manholes:** Standard on 500 HP or larger boilers.

**Handholes:** Five (5) furnished, 3-1/2" x 4-1/2".

**Lifting lugs:** One or more provided on each boiler.

**Energy X-tractors:** High temperature stainless steel to provide high efficiency. Installed in each tube.

**Insulation:** 2" fiberglass with double painted steel jacket with precast hardtop walkway.

**Relief Door:** Gravity operated for rear access and safety.

**Burner Assembly:** Hinged to shell including:

- ◆ Blower assembly with drip proof motor.
- ◆ Air gas mixer.
- ◆ Individual burner nozzles.
- ◆ Air proving switch.
- ◆ Ignition transformer, spark and flame rods.
- ◆ Gas control trains with dual main shutoff cocks, pilot and main gas pressure regulators, gas volume adjustment and other components as follows:

**Operating Temperature Control:** Controls temperature.

**High Limit Temperature Control:** Manual reset limit control.

**UL Labeled:** Packaged boiler.

**Low Water Cutoffs:** MM150-M float type with manual reset.

**Pressure Gauge:** 4-1/2" dial type mounted on pigtail.

**Temperature Gauge:** 5" dial type.

**Base:** Heavy duty structural steel skid.

**Relief Valve(s):** ASME rated for full boiler nozzle output at design pressure rating.

**Flame observation ports:** Two or more provided in combustion chamber to view burners.

**Control Panel:** With motor starter, control transformer with primary and secondary fuses, flame safeguard control (Honeywell RM7840), six (6) indicating lights.

Optional flame safeguard controls available are Honeywell RM7800 and Fireye E110.

	10-40HP	50HP	60-100HP	125HP	150-250HP	300-800HP
Solenoid gas valve	2	-	-	-	-	-
Motorized gas valve	-	1	1	2	2	2
Proof of closure switch	-	1	1	1	1	1
Pilot solenoid valves	1	1	1	2	2	2
Gas pressure switches	-	-	2	2	2	2
Vent valve	-	-	-	-	-	1