

GENERAL DESCRIPTION

The Sellers-Ygnis boiler is a unique design developed and perfected in Switzerland. It is a three pass, horizontal fire tube, water backed boiler. The first two passes take place in a large diameter closed end furnace. Combustion is produced by a burner, factory mounted at the open end of the furnace. Its flame travels full length to the rear. The closed rear water backed end forces the hot products of combustion to reverse direction. The second pass is made back through the furnace around the radiant flame. This re-exposure of the hot gases to the flame insures complete combustion. Finally, the hot gases are reversed again by the front door refractory where they enter the third pass convection tubes.

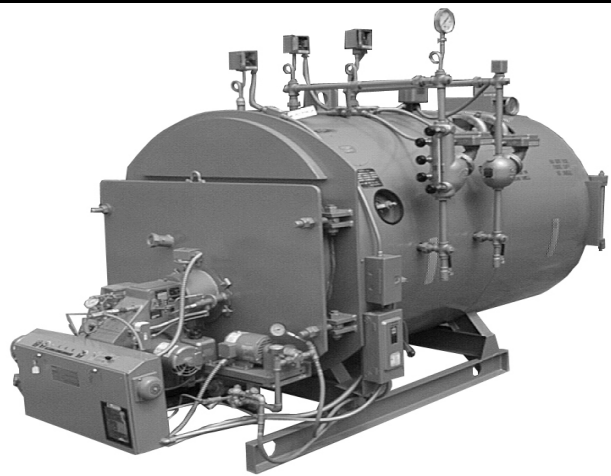
The Sellers-Ygnis Boiler shell design over-comes thermal shock problems common to other multi-pass boilers. Thermal stress is greatly reduced because of two unique features of the furnace.

1. The larger diameter, shorter furnace produces less thermal expansion than a furnace of an ordinary boiler.
2. The furnace end is supported by stays which are attached to the rear tube sheet.

The unique design offers several benefits:

Shear stress between the furnace and the rear tube sheet is greatly reduced.

Tube sheet fatigue failures are eliminated.



Unequal thermal expansion between the hot furnace and the cooler tubes is decreased.

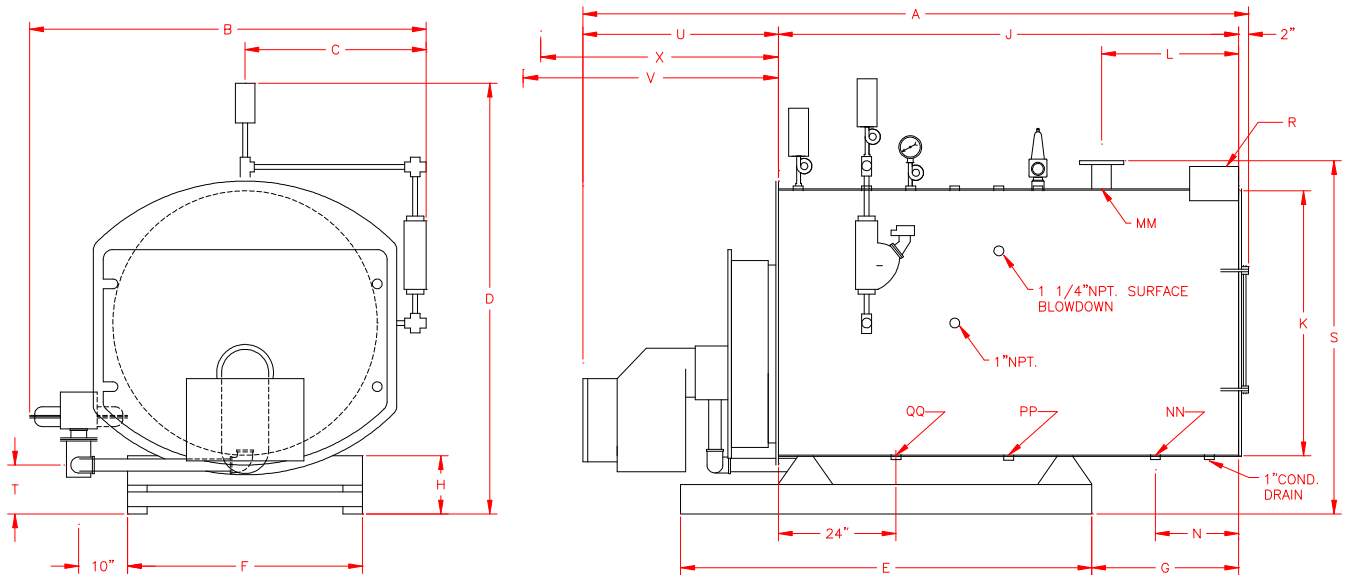
The key design features of the Sellers-Ygnis boiler are:

1. Water backed design with no rear refractory.
2. Assurance of complete combustion due to double burning of the fuel.
3. Elimination of tube sheet failures due to thermal expansion stresses.
4. Saves valuable floor space.

RATINGS AND FUEL CONSUMPTION

BOILER HORSE POWER	OUTPUT 1000 BTU PER HOUR	POUNDS STEAM PER HOUR ¹	EDR STEAM GROSS	FUEL CONSUMPTION		APPROXIMATE SHIPPING WEIGHT ⁴
				GAS CFH ²	LIGHT OIL GPH ³	
20	670	690	2,790	837	6.0	3,550
30	1,004	1,035	4,185	1,255	9.0	3,750
40	1,339	1,380	5,580	1,674	12.0	4,000
50	1,674	1,725	6,975	2,092	15.0	5,000
60	2,009	2,070	8,370	2,511	17.9	5,400
80	2,678	2,760	11,160	3,348	23.9	7,000
100	3,348	3,450	13,950	4,185	29.9	7,800
125	4,185	4,312	17,438	5,231	37.4	9,900
150	5,022	5,175	20,925	6,277	44.8	11,300
175	5,859	6,038	24,414	7,323	52.7	13,700
200	6,696	6,900	27,900	8,370	59.8	14,800
250	8,370	8,625	34,875	10,462	74.7	18,200
300	10,044	10,350	41,850	12,555	89.7	19,000
350	11,718	12,075	48,825	14,647	104.6	21,700
400	13,392	13,800	55,800	16,739	119.6	26,100
500	16,739	17,250	69,750	20,924	149.5	31,200
600	20,087	20,700	83,700	25,109	179.4	36,000

1. From 212° F. feed water to steam at atmospheric pressure. 2. Natural gas at 1000 BTU per cubic foot. 3. Based on 140,000 BTU/gal. 4. Based on 150 PSI.



STEAM BOILER DIMENSIONS

HORSEPOWER		20	30	40	50	60	80	100	125
OVERALL DIMENSIONS:									
LENGTH	A	104	107	111	114	117	130	136	144
WIDTH	B	69	69	69	75	75	81	81	87
CENTERLINE TO RIGHT	C	31	31	31	34	34	37	37	40
HEIGHT	D	76	76	76	82	82	88	88	94
BASE:									
LENGTH	E	53	56	62	65	70	78	84	92
WIDTH	F	36	36	36	42	42	48	48	54
LOCATION	G	30	30	30	30	30	30	30	30
HEIGHT	H	12	12	12	12	12	12	12	12
SHELL:									
LENGTH	J	67	70	74	77	80	88	94	101
DIAMETER INSIDE	K	42	42	42	48	48	54	54	60
SHELL CONNECTIONS:									
STEAM OUTLET LOCATION	L	23	23	24	25	25	27	28	28
STEAM OUTLET — IPS — HIGH PRESSURE	MM	1.5	2	3	3	3	3	4F	4F
STEAM OUTLET — IPS — LOW PRESSURE	MM	4f	4f	6f	6f	6f	8f	8f	8f
FEED WATER INLET LOCATION	N	15	15	16	16	16	17	17	18
FEED WATER INLET — IPS	NN	1	1.25	1.5	1.5	1.5	1.5	1.5	1.5
MANUAL FILL LOCATION	P	—	—	—	—	—	—	—	25
MANUAL FILL — IPS	PP	—	—	—	—	—	—	—	1.5
BOTTOM BLOWDOWN — IPS	QQ	1	1	1.25	1.25	1.25	1.5	1.5	1.5
FLUE CONNECTION:									
OUTSIDE DIAMETER	R	8	8	10	10	10 x 10	10 x 15	10 x 18	10 x 20
HEIGHT	S	60	60	60	66	66	72	72	78
GAS TRAIN LOCATION (if specified)									
VERTICAL FROM FLOOR	T	9	9	9	9	9	10	10	10
INSTALLATION CLEARANCES:									
COMBUSTION ASSEMBLY EXTENSION	U	35	35	35	35	35	40	40	41
COMBUSTION ASSEMBLY SWING (NOTE 5)	V	54	54	54	60	61	67	67	73
REAR DOOR SWING	W	48	48	48	54	54	60	60	66
TUBE REMOVAL, FRONT (NOTE 3)	X	53	56	59	62	64	69	75	80
TUBE REMOVAL, REAR (NOTE 3)	Y	43	46	48	51	55	59	66	72
NORMAL WATER CAPACITY (US GALLONS)		192	191	188	286	273	397	380	527

All dimensions are in inches except as noted.

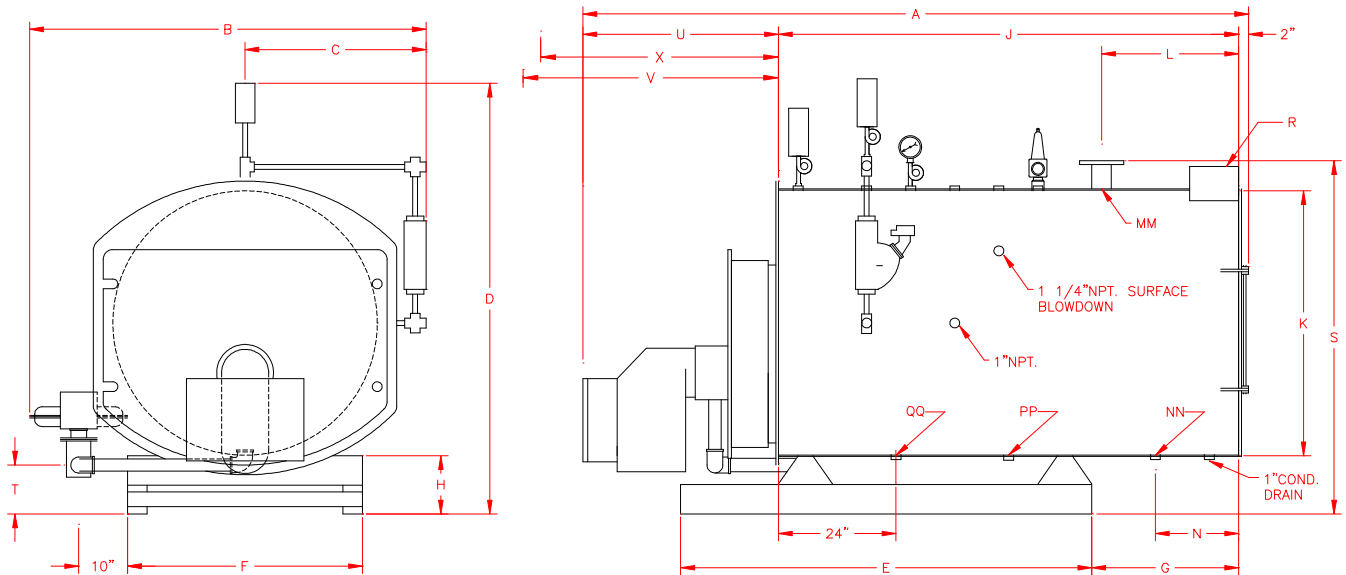
Notes: 1. Dimensions are sufficiently accurate for layout purposes.

2. Lifting eyes and manholes are not shown on drawing,

3. Full 90° rear door swing not required if tube removal to the rear is not required.

4. Openings are threaded unless indicated: f = 150 PSI ASA Flange. F = 300 PSI ASA Flange

5. For 90° combustion assembly opening, provide (C + U) - 3 from centerline to wall.



STEAM BOILER DIMENSIONS

HORSEPOWER		150	175	200	250	300	350	400	500	600
OVERALL DIMENSIONS:										
LENGTH	A	158	169	170	186	199	199	207	221	230
WIDTH	B	87	92	92	96	96	102	108	114	120
CENTERLINE TO RIGHT	C	40	43	43	46	46	49	52	55	58
HEIGHT	D	98	104	104	110	110	116	123	129	135
BASE:										
LENGTH	E	96	108	108	120	134	134	146	154	162
WIDTH	F	54	57	57	60	60	66	72	78	84
LOCATION	G	33	33	33	36	36	36	36	36	36
HEIGHT	H	16	16	16	16	16	16	16	16	16
SHELL:										
LENGTH	J	108	117	120	136	149	149	157	165	174
DIAMETER INSIDE	K	60	66	66	72	72	78	84	90	96
SHELL CONNECTIONS:										
STEAM OUTLET LOCATION	L	32	31	32	36	36	36	36	36	36
STEAM OUTLET — IPS — HIGH PRESSURE	MM	4F	4F	6F	6F	6F	8F	8F	8F	8F
STEAM OUTLET — IPS — LOW PRESSURE	MM	8f	10f	10f	10f	12f	12f	12f	12f	12f
FEED WATER INLET LOCATION	N	18	20	18	22	22	22	22	22	22
FEED WATER INLET — IPS	NN	2	2	2	2.5	2.5	2.5	2.5	2.5	2.5
MANUAL FILL LOCATION	P	32	28	32	32	32	32	33	31	34
MANUAL FILL — IPS	PP	2	2	2	2.5	2.5	2.5	2.5	2.5	2.5
BOTTOM BLOWDOWN — IPS	QQ	1.5	2	2	2	2	2	2	2	2
FLUE CONNECTION:										
OUTSIDE DIAMETER	R	10 x 22	10 x 22	10 x 28	14 x 26	14 x 30	14 x 36	14 x 40	14 x 50	14 x 60
HEIGHT	S	82	88	88	94	94	100	106	112	118
GAS TRAIN LOCATION (if specified)										
VERTICAL FROM FLOOR	T	12	12	12	12	12	12	12	12	12
INSTALLATION CLEARANCES:										
COMBUSTION ASSEMBLY EXTENSION	U	48	48	48	48	48	48	48	54	54
COMBUSTION ASSEMBLY SWING (NOTE 5)	V	73	78	78	82	82	88	94	100	106
REAR DOOR SWING	W	66	72	72	78	78	84	90	96	102
TUBE REMOVAL, FRONT (NOTE 3)	X	86	98	98	109	122	122	128	136	143
TUBE REMOVAL, REAR (NOTE 3)	Y	82	88	88	94	94	100	106	112	118
NORMAL WATER CAPACITY (US GALLONS)		511	672	672	927	926	1098	1418	1631	1873

All dimensions are in inches except as noted.

Notes: 1. Dimensions are sufficiently accurate for layout purposes.

2. Lifting eyes and manholes are not shown on drawing,

3. Full 90° rear door swing not required if tube removal to the rear is not required.

4. Openings are threaded unless indicated: f = 150 PSI ASA Flange. F = 300 PSI ASA Flange

5. For 90° combustion assembly opening, provide (C + U) - 3 from centerline to wall.

Sample Installations:

- *Ball Aerospace Systems*
- *Bryan Memorial Hospital*
- *Emma Willard School*
- *Flagstaff Medical Center*
- *Freemont County Justice Center*
- *Garrett Turbine Engine*
- *Hughes Aircraft*
- *Louden Hospital Center*
- *Maple Heights BOE*
- *McConnell AFB – B1B SupFac*
- *O K Tool*
- *Praxair*
- *Russell Research Center*
- *Shriners Hospital*
- *Soil & Water Conservation District*
- *Stillwater HS*
- *Sunland Training Center*
- *Troy Water District*

Advantages vs. Fire tube Boilers

- No hard cast refractory = less weight and lower maintenance costs
- 3-year non-prorated warranty on pressure vessel (labor & materials)
- Large diameter, short furnace reduces thermal stress
- Unique furnace design assures complete combustion
- Smaller footprint
- No proprietary parts
- Factory fire test included in base price

Advantages vs Cast Iron Boilers

- No hard cast refractory = less weight and lower maintenance costs
- 3-year non-prorated warranty on pressure vessel (labor & materials)
- No field erection required – factory PRE-ASSEMBLED is standard
- Smaller footprint
- Induced draft fans NOT required
- Factory fire test included in base price

Advantages vs. Copperfin Boilers

- Ample thermal storage with rapid response to load changes
- Inexpensive to Maintain
- No proprietary parts
- Heavy duty industrial control systems
- No potential for flame rollout

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