



PRECISION BOILERS



FTH, FLEXTUBE GAS/OIL FIRED HOT WATER BOILERS

GENERAL

HIGH EFFICIENCY BOILERS FOR HEATING
OR PROCESS APPLICATIONS

**Sizes Range From 25 BHP- 500 BHP
(1050 MBH- 21,000 MBH Input)**

- PRECISION **FTH Series** are "Flex-Tube" forced draft hot water boilers noted for their small footprint and high fuel-to-output efficiency, exceeding **82%-85%** for gas and **86%** for oil.
- PRECISION **FTH Series Boilers** utilize 1 1/2" OD tubes in a serpentine tube configuration designed to absorb thermal shock. The pressure vessel is warranted against thermal shock damage for a period of 25 years. This design accommodates up to 150°F temperature differences from the supply and return, offers virtually instantaneous hot water.
- PRECISION **FTH-1 thru 3 Series Boilers** utilize a unique 5-pass tube design with upper and lower headers located on the left or right side. The serpentine bends insure an even flow of gases through the heat transfer area of the boiler as well as equal water flow. The serpentine bends also create tangent water walls on all but one side of the combustion chamber. An upper plenum plate diverts the flue gases to the burner end to facilitate flue gas recirculation.
- PRECISION **FTH-4 thru 6 Series Boilers** the furnace is fully water cooled on all four sides.
- PRECISION **FTH Series** hot water boilers are designed with the return in the lower header and the supply in the upper header. This allows the water to circulate equally through the tubes with positive circulation.

FTH OPTIONAL EQUIPMENT

- Wide Choices of Burners
- Left Hand or Right Hand Tube Configuration
- Field Erectable
- Supply or Return Temperature Indicators
- Float-Type Low Water Cutoffs
- Stack Thermometer/Temperature Sensor
- Indoor-Outdoor Temperature Control
- Day-Night setback Controls
- Audible Alarm & Silencing Switch
- Lead-Lag Sequencing Systems
- Annunciators & Communication Interfaces
- Linkage-less Burner Control Systems
- Higher design pressures
- Oxygen Trim Control Package
- Low NOx Burner (<30ppm / < 10ppm)
- High Altitude Design (to 12,000 ft.)
- FM IRI, CSD-1. NFPA-8501, SCAQMD
- Main Electrical Disconnect Switch
- Flow Switch (with or without Time Delay)
- High Flue Temperature Cutoff/Alarm
- TEFC & High Efficiency Motors
- Many more options to meet specific requirements
- HTD - High Turn Down Burners

FTH STANDARD FEATURES

- Flex-Tube design with mechanical or welded tube attachments
- Electronic Combustion Control with Off-On, Low-High off, Low-High-Low, or Modulating Firing
- Inspection Opening in lower drum for easy access and cleaning
- Power Flame forced draft burners (AS Standard)
- Totally encased rear downcomer

FTH STANDARD BOILER TRIM

Hot Water Boilers

(Standard Design Pressure 150 psig)

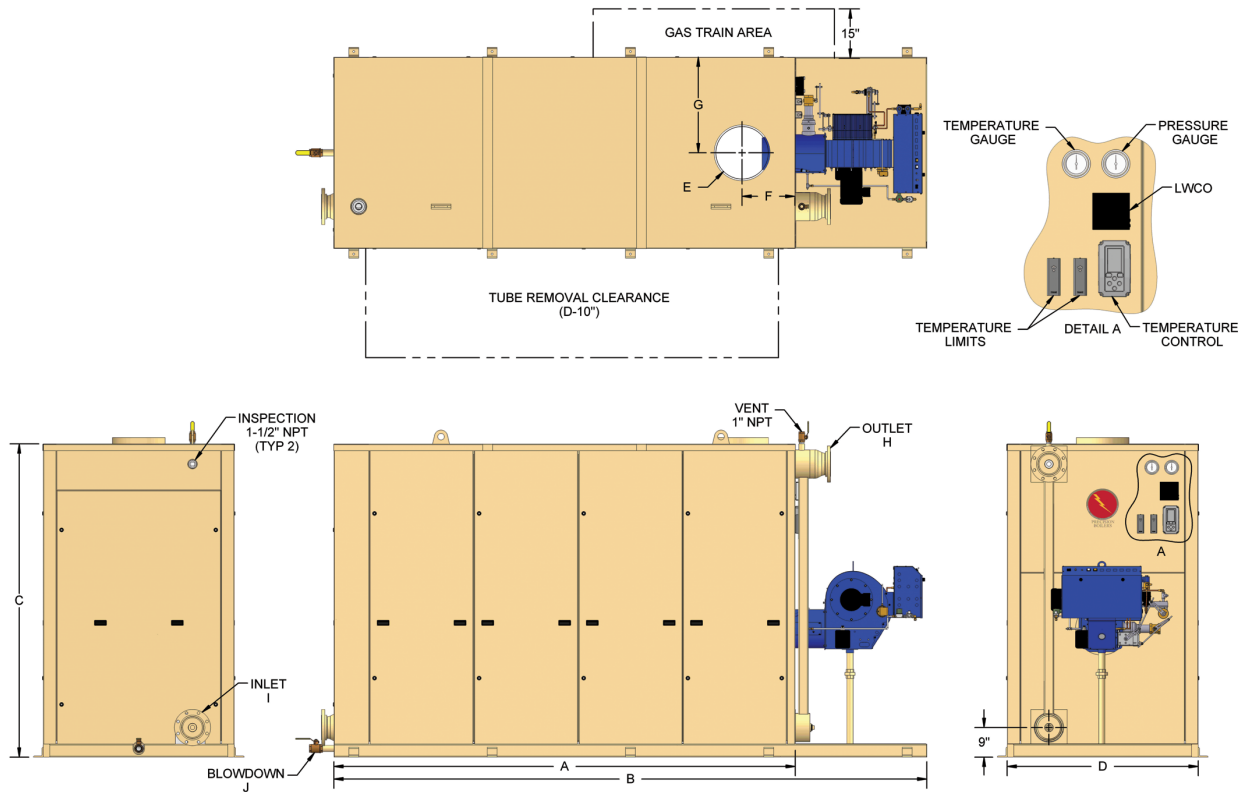
- Operating Temperature Control
- High Temperature Safeties
- Pressure & Temperature Gauges
- Probe-Type Low Water Cutoff
- ASME Safety Relief Valve
- Drain & Vent Valves



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STANDARD TRIM PRESSURES: 30, 50, 75, 100, 125 & 150 PSI



FTH 1, 2 & 3 SERIES PHYSICAL DATA

BOILER MODEL #		FTH-1-25	FTH-1-50	FTH-2-75	FTH-2-100	FTH-3-125	FTH-3-150	FTH-3-175	FTH-3-200	
BOILER NOMINAL HP		25	50	75	100	125	150	175	175	
INPUT	MBH	1,050	2,100	3,150	4,200	5,250	6,300	7,350	8,400	
OUTPUT	MBH	860	1,720	2,580	3,440	4,310	5,170	6,030	6,890	
SHIPPING WT (approx)	LBS	2,800	3,800	4,900	6,000	7,000	8,000	9,000	10,000	
OPERATING WT (approx)	LBS	3,130	4,420	5,580	6,900	8,100	9,300	10,450	11,600	
WATER CONTENT	GAL	40	68	81	108	131	155	176	193	
A	BOILER CASING LENGTH	IN.	65	90	90	115	115	140	165.5	190.5
B	OVERALL LENGTH	IN.	95	122	126	151	154	180	206	232
C	CASING HEIGHT	IN.	83	83	89	89	95	95	95	95
D	BOILER CASING WIDTH	IN.	41	41	53	53	58	58	58	58
E	FLUE GAS OUTLET DIAMETER	IN.	8	10	12	14	16	16	18	18
F/G	FLUE GAS OUTLET LOCATION	IN.	14/16	14/16	17/26.5	17/26.5	19/29	19/29	19/29	19/29
H	OUTLET	NPT	3	3	4F	6F	6F	6F	6F	6F
I	INLET	NPT	3	3	4F	6F	6F	6F	6F	6F
J	BLOWDOWN	NPT	1	1	1 1/2	1 1/2	1 1/2	1 1/2	2	2

Overall length is approximate and is dependent on length of actual burner used. "F" Indicates Flanged Connection

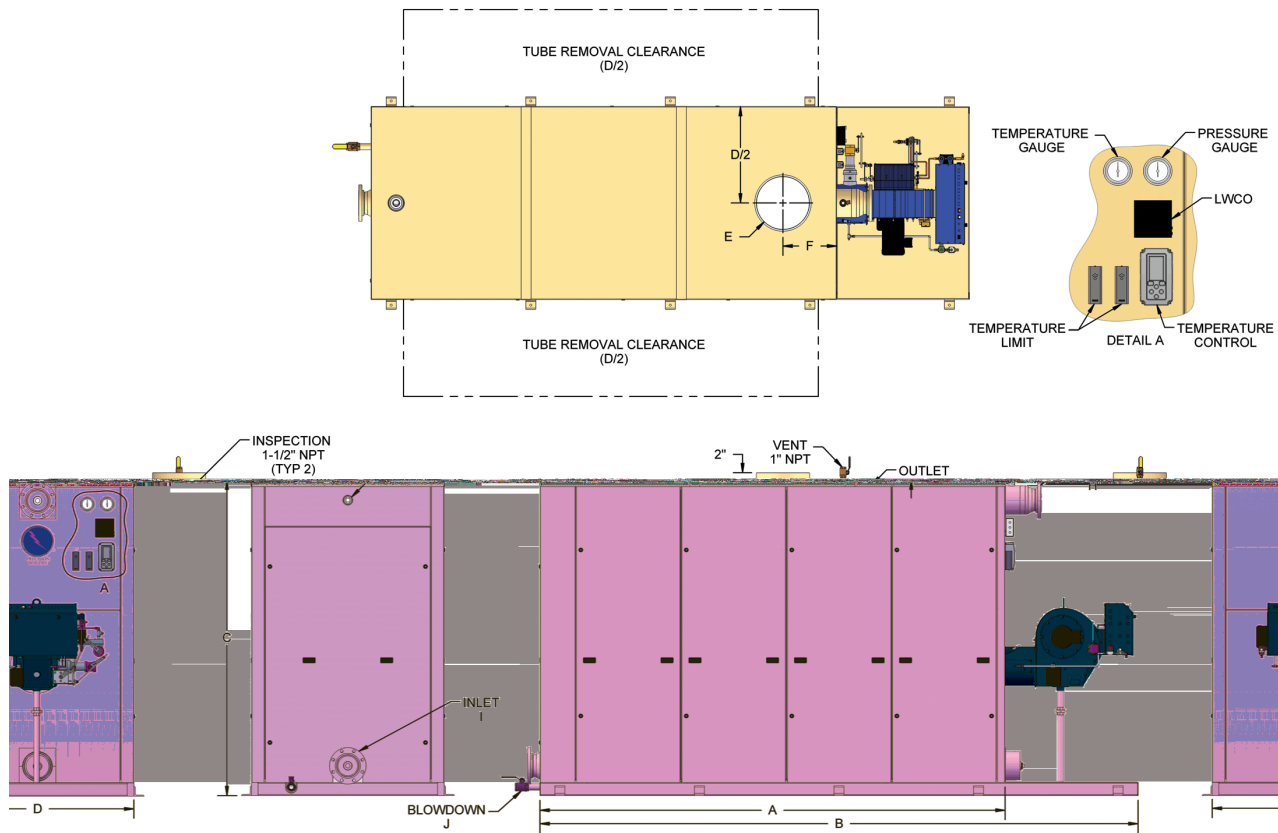
#Suffix Model Number by desired max operating pressure and burner designation (eg, FTH-1-50-150-PF-P = 50 BHP / 150 design / Power Flame burner / Propane)



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FTH, FLEXTUBE GAS/OIL FIRED HOT WATER BOILERS

STANDARD TRIM PRESSURES: 30, 50, 75, 100, 125 & 150 PSI



FTH 4, 5 & 6 SERIES PHYSICAL DATA

BOILER MODEL #		FTH-4-50	FTH-4-100	FTH-5-150	FTH-5-200	FTH-5-250	FTH-5-300	FTH-6-350	FTH-6-400	FTH-6-450	FTH-6-500	
NOMINAL HP		50	100	150	200	250	300	350	400	450	500	
INPUT	MBH	2,100	4,200	6,300	8,400	10,500	12,600	14,700	16,800	18,900	21,000	
OUTPUT	MBH	1,720	3,440	5,170	6,890	8,610	10,330	12,050	13,780	15,500	17,220	
SHIPPING WT (approx)	LBS	4,200	6,200	8,700	10,700	12,200	13,700	16,000	17,500	19,000	20,500	
OPERATING WT (approx)	LBS	4,750	7,160	10,190	12,580	14,420	16,270	19,080	20,950	22,830	24,710	
WATER CONTENT	GAL	66	116	180	180	268	310	371	416	462	507	
A	CASING LENGTH	IN.	65	90	119	144	169.5	194.5	194.5	219.5	245	270
B	OVERALL LENGTH	IN.	97	126	159	186	210	235	237	262	294	319
C	CASING HEIGHT	IN.	78	78	90	90	90	107	107	107	107	
D	CASING WIDTH	IN.	56	56	68	68	68	79	79	79	79	
E	FLUE DIAMETER	IN.	10	14	16	18	20	20	24	24	24	
F	FLUE LOCATION	IN.	17	17	21	21	21	21	29	29	29	
H	OUTLET	NPT	4F	6F	8F	8F	8F	8F	10F	10F	10F	10F
I	INLET	NPT	4F	6F	8F	8F	8F	8F	10F	10F	10F	10F
J	BLOWDOWN	NPT	1 1/2	1 1/2	2	2	2	2	2	2	2	2

Overall length is approximate and is dependent on length of actual burner used. "F" Indicates Flanged Connection

#Suffix Model Number by desired max operating pressure and burner designation (eg, FTH-1-50-150-PF-P = 50 BHP / 150 design / Power Flame burner / Propane)



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BURNER OPTIONS

As with all forced-draft boilers, the burner is the heart of the unit. PRECISION has chosen as its standard, the "Power Flame" burner for the majority of applications, and the "Beckett" burner as the economical choice for the low end oil burner, with other burners available as options. The Power Flame burner is one of the industry's leading burners and is well suited for this application. The FTH Series large combustion chamber and optimally sized heat release area have been carefully matched to the burner size to assure 82 - 85% efficiency on gas, 86% on oil. The proven Honeywell combustion control system is provided as standard for gas burners, and/or oil burners, with other systems available as options.

CONTROL OPTIONS

Off-On control is standard and is quite sufficient for boilers up to 30 BHP. However, boilers rated 35-50 BHP will have better operation with low-high-low burner controls, and boilers greater than 60 BHP are best suited with a 3:1 turndown modulating control system. Higher Turndown is optional. Precision now offers a low NOx option to meet sub-30ppm NOx regulations. This option uses the Power Flame induced flue gas recirculation system in a fully UL Listed package. Also available are configurations for sub-10ppm NOx applications.

BURNER DATA

MODEL NO SUFFIX*	MAX INPUT MBTU	MAX BHP	MAX OUTPUT MBTU**	CONNECTION SIZES (IN.)		BLOWER HP	MIN GAS PRESS (IN. WC)	BURNER STICK-OUT	SHIP WT (APPROX) LBS
				GAS	FLUE				
-PFJ700#	400	9.5	330	3/4	6	1/4	5.0	20"	50
-PFJ15A-10	630	15	520	1	6	1/4	4.0	22"	130
-PFJ30A-10	1,050	25	860	1	8	1/3	7.3	22"	140
-PFJ30A-12	1,260	30	1030	1-1/4	10	1/3	7.4	22"	145
-PFJ50A-15	2,100	50	1720	1-1/2	10	1/3	9.0	26"	205
-PFC2G-20B	3,020	72	2480	2	12	1	4.8	35"	280
-PFC3G-20	3,530	84	2890	2	12	1-1/2	5.9	40"	360
-PFC3G-25	4,620	110	3790	2-1/2	14	1-1/2	7.0	40"	365
-PFC3G-25B	5,040	120	4130	2-1/2	14	3	5.3	40"	380
-PFC4G-25	5,250	125	4310	2-1/2	16	3	8.0	44"	425
-PFC4G-30	7,350	175	6030	3	16/18	5	12.1	44"	455
-PFC5G-30	8,400	200	6890	3	18	7-1/2	19.9	44"	455

This Power Flame burner uses the S8680J Combustion Control

MODEL NO SUFFIX*	MAX INPUT MBTU	MAX BHP	MAX OUTPUT MBTU**	CONNECTION SIZES (IN.)		BLOWER HP	#2 OIL GPH	BURNER STICK-OUT	SHIP WT (APPROX) LBS
				OIL***	FLUE				
-BSMG	420	10	340	3/8	6	1/4	3.0	12"	50
-BCF800	840	20	690	3/8	6/8	1/3	6.0	12"	55
-PFC1O	1,260	30	1030	3/8	8/10	1/2	9.0	30"	210
-PFC2OA	2,100	50	1720	3/8	10	3/4	15.0	35"	230
-PFC2OB	3,020	72	2480	3/8	12	1-1/2	21.6	35"	240
-PFC3O	4,620	110	3790	1/2	14	2	33.1	40"	265
-PFC3OB	5,040	120	4130	1/2	14	3	35.7	40"	270
-PFC4OA	5,250	125	4310	1/2	16	5	37.5	44"	330
-PFC4OB	7,350	175	6030	5/8	16/18	5	52.5	44"	390
-PFC5O	8,400	200	6890	5/8	18	7-1/2	60	44"	425

MODEL NO SUFFIX*	MAX INPUT RANGE	MAX BHP	MAX OUTPUT MBTU**	CONNECTION SIZES (IN.)		BLOWER HP	MIN GAS PRESS (IN. WC)	BURNER STICK-OUT	SHIP WT (APPROX) LBS
				GAS	FLUE				
-PFC1GO-10	840	20	690	1	6/8	1/3	5.6	30"	240
-PFC1GO-12	1,260	30	1030	1-1/4	8/10	1/2	5.3	30"	240
-PFC2GO-15	2,100	50	1720	1-1/4	10	3/4	5.2	35"	260
-PFC2GO-20A	2,520	60	2070	2	12	1	4.8	35"	290
-PFC2GO-20B	3,020	72	2480	2	12	1	4.8	35"	290
-PFC3GO-20	3,530	84	2890	2	12	2	5.9	40"	370
-PFC3GO-25	4,620	110	3790	2-1/2	14	2	7.0	40"	380
-PFC3GO-25B	5,040	120	4130	2-1/2	14	3	5.3	40"	390
-PFC4GO-25	5,250	125	4310	2-1/2	16	5	8.0	44"	440
-PFC4GO-30	7,350	175	6030	3	16/18	5	12.1	44"	510
-PFC5GO-30	8,400	200	6890	3	18	7-1/2	19.9	44"	520

* Prefix of model number indicates burner supplier (PF=Power Flame, B=Beckett); Suffix model number with N=Natural Gas, P=Propane; L=#2 Fuel Oil; C=Combination (N+L)
 ** Max output is based on 82% efficiency. *** Minimum recommended tubing size based on 100' of length and 10" max suction at burner pump



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SPECIFICATIONS

1. General

Furnish and install as shown on the plans one (1) Precision model FTH-forced-draft, (natural gas)(propane)(oil)(gas/oil)-fired, flextube water. Boiler rated at ___boiler horsepower. Boiler shall be Designed for a maximum allowable working pressure of ___psi and shall operate at ___psi. Boiler shall be completely factory assembled and tested, with controls and trim as specified below. Complete package shall be UL Listed, shall carry the Underwriters Laboratories Listing Mark, and shall also be fully ASME compliant. Boiler shall be designed for ___V___Ph. and-HZ electrical supply with single point power connection.

2. Pressure Vessel Assembly

Assembly shall be constructed and stamped in accordance with ASME Section IV for hot water and shall be registered with the National Board. Drums and tubes shall be fabricated from carbon steel. Tubes shall be 1 1/2" for units up to 500 BHP. Vessel shall be stress relieved >160 psi or 250°F Hot Water) and equipped with inspection openings as required by the applicable ASME Code.

3. Combustion Chamber

Combustion chamber shall be tangent water wall on all sides. Combustion chamber rear wall shall be of high temperature refractory, not less than 3" thick.

4. Burner

Provide forced-draft burner to burn (natural gas)(oil)(gas/oil)(propane) with (off-on)(low-high-low)(full modulation) firing rate control. Burner shall be equipped to fire at a maximum input of _____ Btu/hr at an elevation of _____ ft. Blower motor shall be 3450 rpm designs with motor starter (units over 3/4 hp). Burner controls shall conform to UL795 (CSD-1) (FM) (IRI) requirements. For electrical supplies other than 120V, the burner shall be equipped with a control circuit transformer.

5. Boiler Controls.

Boiler shall be provided with the applicable trim and controls as required by ASME:

As a minimum, the following shall be provided:

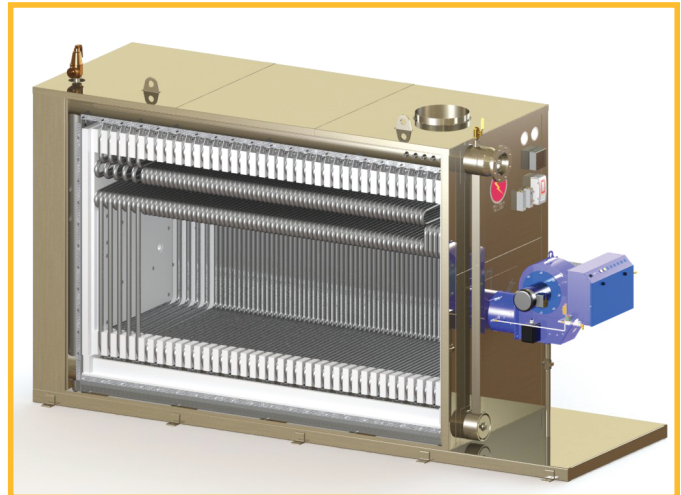
Hot Water: temperature gauge, pressure gauge (with cock), properly sized safety relief valve(s), drain valve, low water cutoff of (probe)(float) type, temperature limit cutout, operating temperature control.

6. Packaging

The boiler shall be completely factory assembled and mounted on a structural steel support frame. Lifting lugs are to be an integral part of the support frame to facilitate lifting and rigging. All specified components will be factory mounted, piped, and wired. Boiler shall be insulated with durable ceramic fiber, and fiberglass insulating materials such that the outside surface temperature will not exceed 130°F during continuous operation at maximum firing rate. The boiler is to be housed in a rectangular outer casing of steel and coated with a durable painted finish.

7. Quality Control

Complete packaged boiler shall be manufactured by Precision Boilers in strict accordance with ASME Boiler and Pressure Vessel Code in an ISO quality system.





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**FTH, FLEXTUBE GAS/OIL
FIRED HOT WATER BOILERS**

CONTACT US FOR THESE QUALITY PRODUCTS

- Electric Hot Water and Steam Boilers
10KW - 5000KW to 3000 PSI;
Carbon Steel & Stainless Steel
- Electrode High Voltage Boilers
- Electric Storage Water Heaters
125 - 5500 Gallons
- Thermal Storage Systems
Space Heating & Domestic
or Process Water; Electric,
Gas or Steam Fired
- Pressure Vessels
Water Storage Tanks
Flash Tanks
Blowdown Tanks
- Tanks with Tube Bundle(s)
- Unfired Hot Water and Steam
Generators
- Semi-Instantaneous
Water Heaters
- Gas or Oil-Fired Vertical
Firetube Boilers and Water
Heaters
- Boiler Feedwater Systems
- Steam Superheaters-Electric
- Circulation Heaters-Electric
- Chemical Bypass Feeders
- Deaerators
Spray
Tray
Packed Column
- Surge Tanks
- Fuel Oil Pump Sets

NOTE: In pursuing our policy of continuous development of products,
PRECISION reserves the right to vary any detail in this bulletin without notice.

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