

PFA-5

FORCED DRAFT BOILERS

 AMERICAN
STANDARD

PLAINTIFFS
EXHIBIT

AST-830

15416

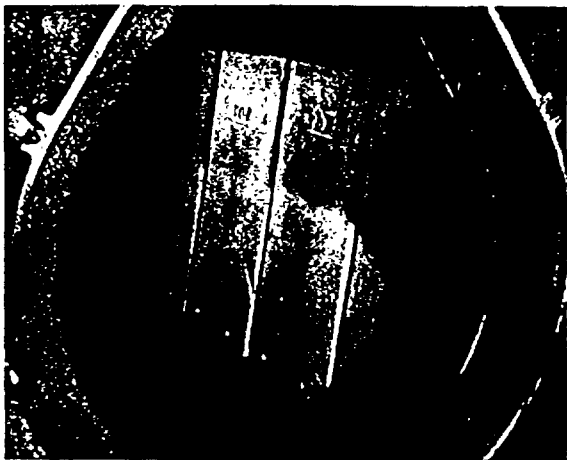
BOILER

More effective circulation in the PFA-5 produces the highest tankless heater ratings. Each heater can provide up to 8 GPM of continuous flow of hot water at 100° rise. Actually superior internal circulation of the PFA-5 permits utilizing the entire boiler output for hot water service.

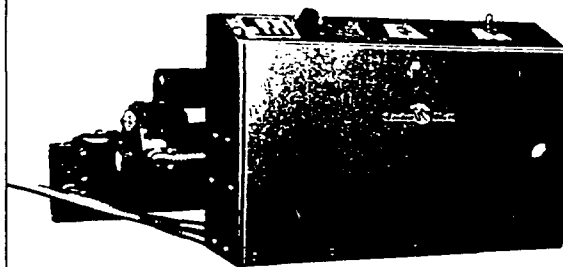
A refractory firewall serves as a built-in thermal pump to improve internal circulation. Because of the built-in firewall, heat transfer is greater on one side of the boiler. This modification produces an upward flow on the side where the heat transfer is greater, and a downward movement on the side where heat transfer is lower. The end result is a superior circulation enabling rapid release of dry steam.

BURNERS

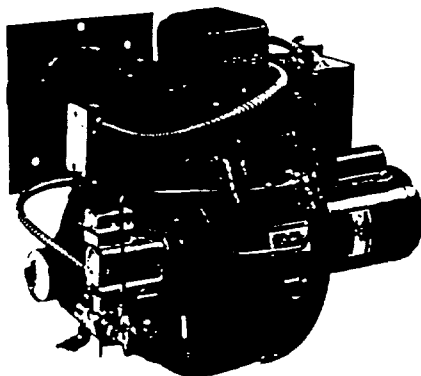
The versatility of the PFA-5 is also evident in the variety of firing methods available. Light oil burners, gas burners or combination gas/light oil burners can be provided to take advantage of any fuel economically available in any particular area. Basic unit design makes possible an operating efficiency of over 80% for all fuels, compared to that of about 75% for boilers of ordinary design.



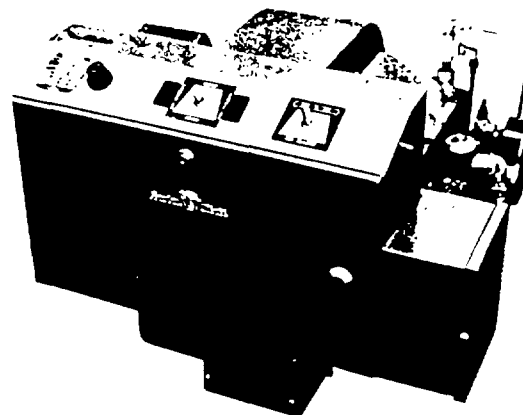
REFRACTORY FIREWALL



GAS BURNER



LIGHT OIL BURNER



GAS/LIGHT OIL BURNER

INSTALLATION

The versatile design of the PFA-5 boiler offers real economies in assembly time and handling... and can be ordered and shipped in the form best suited to meet any installation conditions.

Available in three basic forms, the PFA-5 boiler can be shipped as:

Knockdown—sections and related parts are shipped loose for easy handling through restricted building openings. Final assembly is completed at the job site.

Factory Assembled—sections including sealed canopy are assembled at the factory with jacket and burner shipped separately for semi-field assembly. The PFA-5 shipped in this manner requires crane unloading and handling at installation site. However, it is the

highly recommended form of shipment to eliminate risk of damage to jacket and burner.

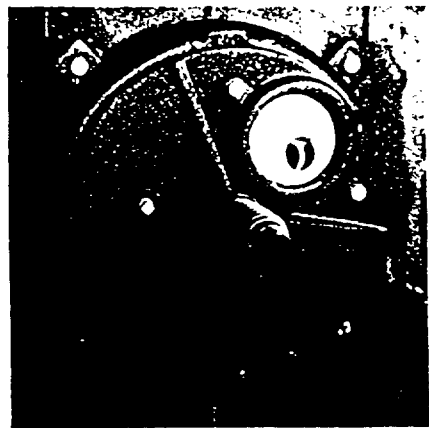
Package—a completely assembled package, including jacket and burner. Package shipment also requires crane unloading and handling at the job site. Extreme caution must be exercised with this method of shipping, due to possible damage to jacket and burner while in transit.

Gas-tight sealing, which is imperative for forced draft boilers, is achieved with the application of an elastic sealant. The sealant is applied into the grooves of each section with a caulking gun, to insure proper sealing of section joints and canopy connection. This method of sealing (patent pending) saves installation time compared to the ordinary asbestos-rope gasketing method.

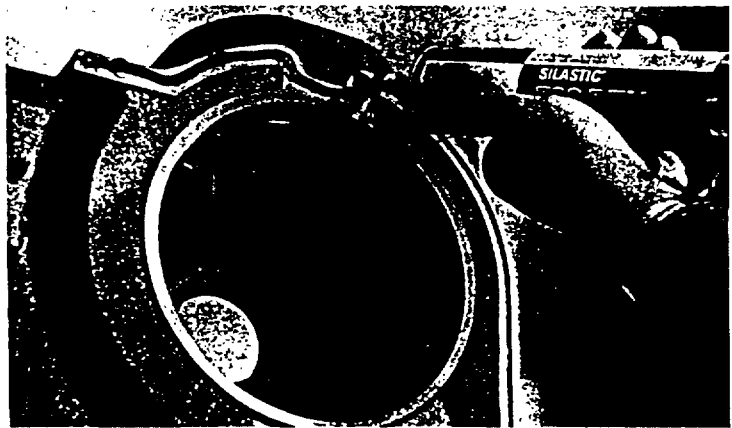
The superior airtight seal maintains its integrity over years of service, while ordinary methods with less resilient materials may often develop leaks.

Pressure relief door, located on the back section, contains a sight glass which allows viewing of burner flame characteristics. There is also a tapped 1/8" hole for measuring combustion pressure.

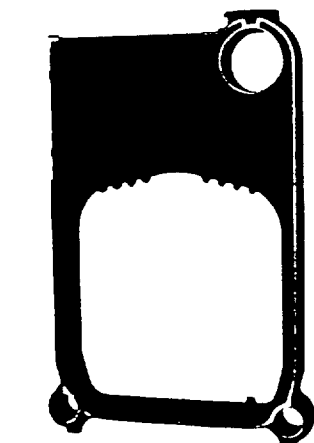
All controls and burners are front-mounted on the boiler, to facilitate installation, maintenance and adjustment. Front burner plate also incorporates a shutter-type sight glass.



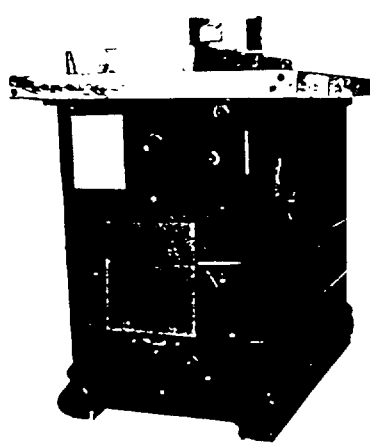
PRESSURE RELIEF DOOR



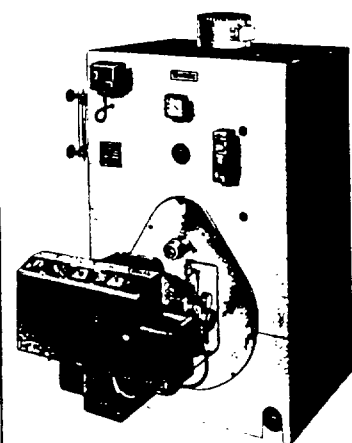
SEALANT APPLICATION



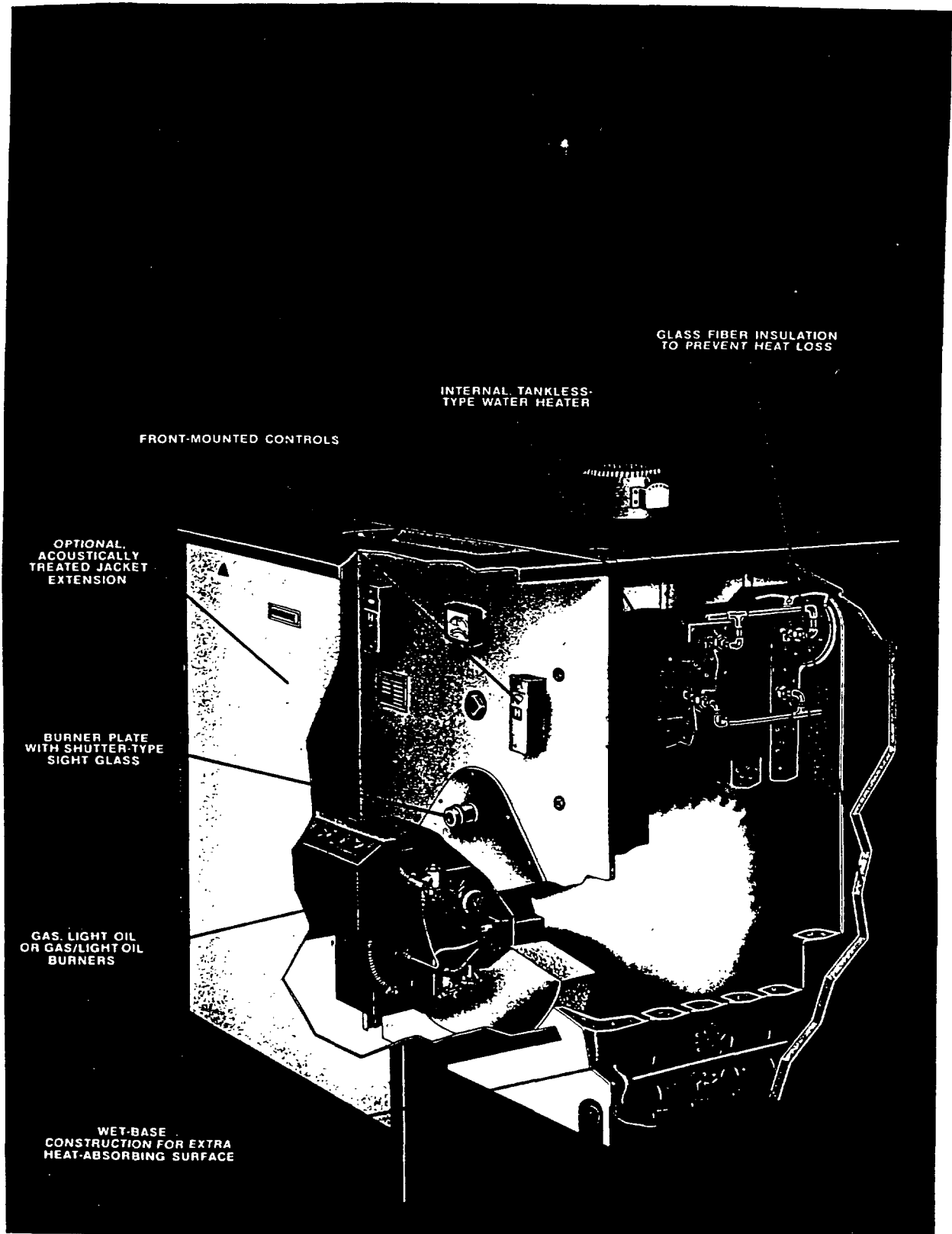
KNOCKDOWN



FACTORY ASSEMBLED



PACKAGE



FIELD ASSEMBLY

START-UP

Assembly of boiler sections is easily accomplished with the aid of a hydraulic draw-up tool. This easy-to-use tool allows assembly to be completed in one-third the normal installation time. Ten tons of hydraulic pressure assure that sections are drawn up, iron to iron, eliminating any chance of cocked nipples, which generally cause the majority of installation problems.

Professional start-up of boilers provides on-site fire-testing under actual operating conditions. Other boilers are simply fire-tested at the factory, under simulated conditions.

One-year service is included in the trade price of gas and gas/light oil burner units. This service is optional for oil-fired units.



HYDRAULIC ASSEMBLY



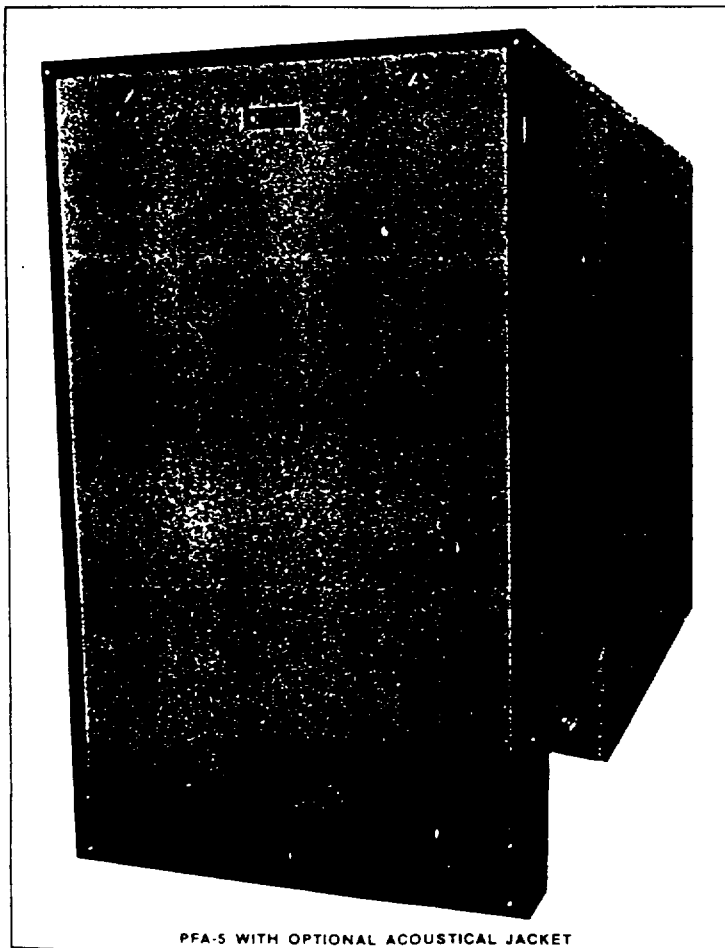
FIELD START-UP

OPTIONAL EQUIPMENT

Acoustically treated jacket extensions, with removable front panel for access to burners and controls, are optional.

Optional equipment is available to meet special requirements including:

Factory Mutual
Factory Insurance Association
Hi-Lo Fire Control
Modulated Fire Control
and various other controls to meet local requirements.



PFA-5 WITH OPTIONAL ACOUSTICAL JACKET

ADVANTAGES

PFA-5 advantages over steel boilers

Less space required for comparable heating—almost 50% less in comparison to even the most compact steel packaged boilers.

No thermal shock problems to worry about.

No tubes to replace or reroll for leaks ... and elimination of space requirement for tube removal.

Cast iron is a corrosion-resistant material which can be molded into the most efficient heat transfer forms.

Components are easier to replace.
50 psi working pressure is standard.

PFA-5 advantages over other cast iron boilers

Ease of assembly on job site.

Lower in height.

Lower pressure drops incurred

Rapid steam release.

Efficient section design produces dry steam—eliminates operational problems caused by wet steam.

Easier to clean.

Vertical flue design.

Exclusive thermal pump (patent pending) provides better circulation and heating.

Lighter weight for ease of handling.

Sets up in fraction of time normally required for other boiler models.

PFA-5 ratings

boiler numbers	boiler H.P.	gross I=B=R output (Bluh)	piping and pickup factor		net I=B=R rating		sq. ft. steam	I=B=R burner capacity		gas pressure required* (inches water column)	heating surface (ft. ²)	net firebox volume (ft. ³)	pressure in firebox (inches water column)	water content full (lbs.)	I=B=R vent diameter (inches)
			steam	water	steam	water		light oil (gph)	gas (mbh)						
PFA-504	18.5	620,000	1.333	1.15	465.1	539.1	1938	5.45	763	5.2	66	8.5	.244	581	10
PFA-505	23.4	786,000	1.333	1.15	589.6	683.5	2457	6.90	966	6.4	85	11.1	.244	700	10
PFA-506	28.4	950,000	1.333	1.15	712.7	826.1	2969	8.35	1169	6.6	104	13.7	.245	818	10
PFA-507	33.3	1,116,000	1.333	1.15	837.2	970.4	3488	9.80	1372	6.7	123	16.3	.245	937	10
PFA-508	38.2	1,282,000	1.330	1.15	963.9	1114.8	4016	11.20	1568	6.4	142	18.9	.246	1056	10
PFA-509	43.2	1,446,000	1.315	1.15	1099.6	1257.4	4582	12.65	1771	6.5	161	21.5	.246	1174	14
PFA-510	48.2	1,612,000	1.302	1.15	1238.1	1401.7	5159	14.00	1960	6.0	179	24.1	.247	1293	14
PFA-511	53.1	1,776,000	1.292	1.15	1374.6	1544.3	5728	15.55	2177	5.6	198	26.8	.247	1412	14
PFA-512	58.1	1,944,000	1.288	1.15	1509.3	1690.4	6289	16.95	2373	6.6	217	29.4	.248	1530	14
PFA-513	63.0	2,108,000	1.288	1.15	1636.6	1833.0	6819	18.40	2576	6.3	236	32.0	.248	1649	14
PFA-514	67.9	2,272,000	1.288	1.15	1764.0	1975.7	7350	19.85	2779	6.1	255	34.6	.249	1768	14
PFA-515	72.9	2,440,000	1.288	1.15	1894.4	2121.7	7893	21.25	2975	5.7	274	37.2	.249	1886	14
PFA-516	77.8	2,604,000	1.288	1.15	2021.7	2264.3	8424	22.70	3178	6.1	293	39.8	.250	2005	18
PFA-517	82.7	2,768,000	1.288	1.15	2149.1	2407.0	8954	24.15	3381	5.5	312	42.4	.250	2123	18
PFA-518	87.7	2,936,000	1.288	1.15	2279.5	2553.0	9498	25.60	3584	6.2	330	45.0	.251	2242	18
PFA-519	92.6	3,100,000	1.288	1.15	2406.8	2695.7	10028	27.00	3780	6.2	349	47.6	.251	2361	18
PFA-520	97.4	3,260,000	1.288	1.15	2531.1	2834.8	10546	28.45	3983	6.8	368	50.2	.252	2479	18
PFA-521	102.5	3,430,000	1.288	1.15	2663.0	2982.6	11096	29.90	4186	7.5	387	52.8	.252	2598	18

■ Suffix "S" indicates steam boiler; "W" indicates water boiler

● Suffix "G" indicates gas-fired; "O" indicates oil-fired; "GO" indicates combination gas-oil fired

● Minimum gas pressure required at std. gas train inlet for maximum burner input based on 1000 Btu/cu. ft. @ 60 specific gravity gas

▼ With positive pressure of 0.10 inches water column in boiler flue outlet

