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AMERICAN-Standard

HEATING  PLUMBING

INSTALLATION - OPERATION AND MAINTENANCE MANUAL

PACKING LIST

AMERICAN

ARCOLINER BOILER

(Wet Base-Water Boiler)

OIL FIRED

AMERICAN & **Standard**
RADIATOR & **Sanitary**

CORPORATION

PITTSBURGH 30, PA.

ARSS 4556

PLAINTIFF'S EXHIBIT

ASI-649

Boiler is shipped assembled with sections arranged in the sequence indicated below

CODE LETTERS

WF—Oil Front Section

WC—Oil Center Section

WCX—Oil Center Connecting Section

NWB—Oil Back Section for No. 601, 602 or 704 Water Heater

SECTION ARRANGEMENT

Boiler Number	Assemblage
W-O-351 or W-O-351-B	WF-WCX-NWB
W-O-451 or W-O-451-B	WF-WC-WCX-NWB
W-O-551 or W-O-551-B	WF-WCX-WC-WCX-NWB
W-O-651 or W-O-651-B	WF-WCX-WC-WC-WCX-NWB

NO. 601 AND 602 TANKLESS OR NO. 704 TANK TYPE

BILTIN WATER HEATERS

When locating boiler, be sure to allow sufficient clearance to nearest wall for insertion and removal of Water Heater in back section. Allow 18" or more free space for insertion and removal of heater.

IMPORTANT

If a water condition exists in the basement, or where it has been necessary to water-proof the basement floor, boiler should be mounted on a concrete or hollow tile base, preferably to a height of at least 3"

DRAIN TAPPING

Drain tapping is located on back section at lowest point practical for complete draining of boiler. Remove plug for complete draining or connect drain cock to this tapping. DO NOT PLACE DRAIN COCK IN RETURN PIPE LINE.

CAUTION

Expansion tank should not be set in cold or exposed place. If pipe leading to or from tank freezes, serious damage may result. Do not place any valve of any description in the piping leading to or from the expansion tank.

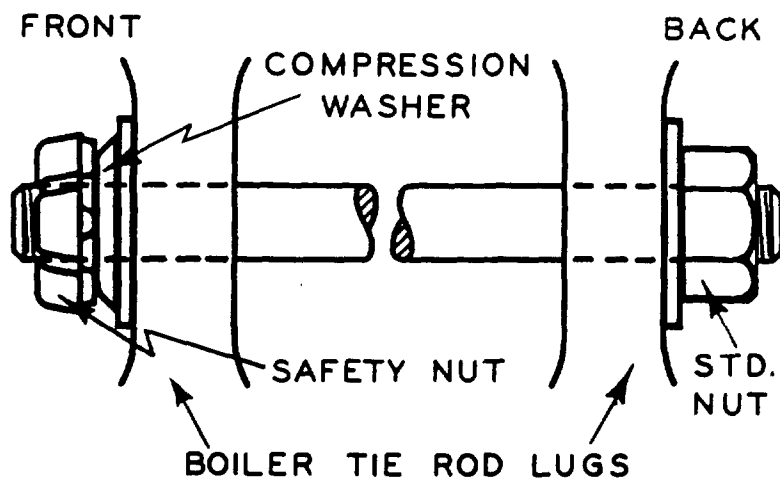
USE THIS BOOK

FOR REFERENCE WHEN ERECTING BOILER,
ORDERING PARTS AND FOR OPERATION

NOTICE MR. STEAMFITTER!

The tie rods of this boiler, as it is shipped, have regular steel washers and steel nuts on both ends—front and back. After setting boiler, the steel nuts on front end of rods should be removed, but not the washers. You will find special compression washers and safety nuts included in bag of parts. Slip the compression washers over the front end of rod, placing the open or cupped side against regular washer. Then attach the safety nuts in place of the steel nuts removed. Lubricate them liberally and tighten with FINGERS ONLY. Do not use wrench.

FAILURE TO OBSERVE THIS
MAY RESULT IN DAMAGE TO BOILER



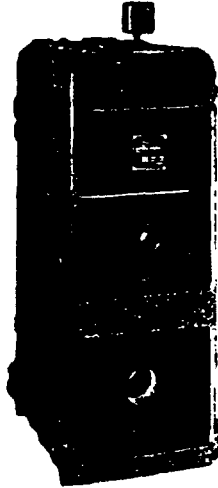


FIG. 1

2. Attach smokepipe collar to rear section.

Install crown sheet baffle on 3, 4 and 5 section boilers. (see Fig. 2). To install baffle, insert through fire door opening lengthwise, with narrow plain edge first, and keeping flanged side down. Turn baffle inside boiler so that cast lettering "To Front" will face front of boiler. Place the right side of baffle on top of side lug and push to rear until notch on left side lines up with lug on left side of boiler. Then lift the left side of baffle over the lug through the notch and push back so that rear edge rests in slot formed by break in fins on rear section. When installed, the baffle, with flanges down, is supported by lugs on sides of sections and by slot in rear.

Attach door hinges and catches but tighten bolts only moderately. Lock doors in position with hinge pins. Door should lift over catches easily and close tightly. Adjust doors by tapping hinge and catch lightly. After adjustment, tighten hinge and catch bolts. See next page for installation of Front Burner Panel.

Putty outside of sections at joints with boiler putty.

3. Remove Knockouts opposite tappings to be used before attaching panels. To install jacket, attach jacket side panels at front with ends of Center and Lower Front jacket tie pieces fastened under sides. Attach Upper Rear and then Lower Rear panel. Place right and then left hand top panels in position and insert screws. Slide Upper Front panel into grooves on front of side panels. Make certain that Upper Front panel locks in place with top panels.

If jacket extension is used assemble as per instructions accompanying same.

1. Locate boiler in desired position. Allow sufficient clearance for water heaters as directed on inside of front cover.

Install water heater in back section (tapping F, page 4). If water heater is not installed, install a 4" pipe plug.

Plug tappings, fill boiler with water and subject it to not less than 10 lbs. nor more than 30 lbs. pressure. Inspect boiler inside and outside for leakage to insure against breakage in handling and shipping.

To safeguard accuracy of gage supplied with boiler, DO NOT INSTALL GAGE UNTIL AFTER TEST OF BOILER. (Where built-in water heater is used attach heater before testing.) Make certain there are no leaks, drain boiler and remove plugs from tappings needed.

Connect supply and return piping.

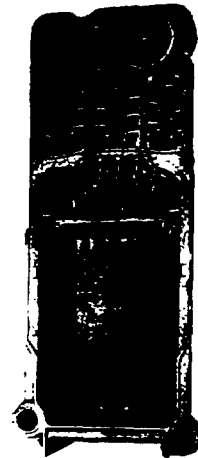


FIG. 2

NOTE: - INFORMATION ON THIS INSERT SUPERSEDES INSTRUCTIONS
SHOWN IN PARAGRAPH NO. 5

Nos. 351, 451 and 551 boilers are shipped with front burner panel, steel liner and stainless steel combustion chamber installed.

No. 651 boiler is shipped with front burner panel and steel cover plate installed.

Remove three bolts which hold the burner panel in place to install the oil burner. The stainless steel combustion chamber is furnished with an adapter plate suitable for the Model MF-A Arcoflame burner. This adapter plate is easily removed by unbending the retaining clips if an oil burner is installed which requires an opening larger than 4" in diameter.

Boiler burner units N-O-351-B, W-O-451-B and W-O-551-B are furnished with Model MF-A Arcoflame Oil Burners while the W-O-651-B is furnished with a Model CF-7 Arcoflame Oil Burner.

Install the Oil burner as per instructions accompanying same. Make sure that the end of the Air Tube projects no more than 1/4" into the combustion chamber. The burner should have a slight downward pitch into the combustion chamber.

Thoroughly seal the space between the burner air tube and the opening leading into the combustion chamber.

NOTE: Draft Tube for adjusting draft in combustion chamber can be inserted through a hole in service door.



FIG. 3

4. Install combination altitude gauge and thermometer to top of front section. Connect controls as directed on Page 4. Fill system to $\frac{1}{2}$ of height of expansion tank or on closed system until relief valve relieves. This must be at less than 30 lbs. If necessary, adjust valve setting. Remove rim and glass from gauge and set movable pointer under automatic pointer. Replace rim and glass.

5. INSTALLATION OF BURNER & COMBUSTION CHAMBER. The front Burner Panel is shipped with a steel cover plate bolted in place. In case of 3, 4 or 5 section boilers, remove the bolts holding the cover plate and discard the plate. To install the Stainless Steel Combustion Chamber, proceed as follows:

- a. Place washer under head of each bolt and insert bolts through the smaller holes in the Burner Panel.
- b. Assemble the steel liner plate (furnished with the Combustion Chamber) on the bolts against the rear side of the burner panel. **NOTE:** — If a Model C Arcoflame Oil Burner is to be used the $4\frac{1}{2}$ " Dia. hole should be enlarged in the liner plate. The adapter plate should be removed from the Combustion Chamber before assembly.

- c. Place the Combustion Chamber on the bolts and draw up with nuts and washers. A refractory No. 6 Heat Lib-O-Rator Combustion Chamber is furnished for use on 6 section boilers. Install the chamber in accordance with the instructions which accompany the Chamber for installation in a Wet Base Boiler. A hole of suitable size must be provided in the steel cover plate which is retained in case of 6 section boilers.

The front Burner Panel is assembled to the Boiler with the Combustion Chamber in place. Use three $\frac{1}{8}$ " bolts which are provided placing the bolt heads in the pockets on the section and applying the nuts outside.

Boiler Burner units W-O-351-B, W-O-451-B and W-O-551-B are furnished with Model M Arcoflame Oil Burners while the W-O-651-B is furnished with a Model C Arcoflame Oil Burner.

Install the Oil Burner as per instructions accompanying same. Make sure that the end of the Air Tube projects no more than $\frac{1}{4}$ " into the Combustion Chamber. The Burner should have a slight downward pitch into the Combustion Chamber.

Thoroughly seal the space between the burner Air Tube and the opening leading into the Combustion Chamber.

NOTE: Draft Tube for adjusting draft in Combustion Chamber can be inserted through a hole in service door.

ATTENTION TO BOILER WHILE IN OPERATION

Keep system filled to $\frac{1}{2}$ of expansion tank (as indicated when moving pointer of altitude gauge is even with stationary pointer). **ON A CLOSED HOT WATER SYSTEM THE PRESSURE MUST NOT EXCEED 30 LBS. IF IT DOES IT MUST BE RELIEVED IMMEDIATELY AND THE CAUSE OF THE FAILURE OF THE RELIEF VALVE INVESTIGATED AND CORRECTED, OTHERWISE PRESSURE MAY BUILD UP AND CAUSE DAMAGE TO THE HEATING SYSTEM.**

Clean boiler surfaces at regular intervals.

Do not draw water from boiler while in use. When adding water while boiler is in operation do not open supply valve fully but add water slowly.

ATTENTION TO BOILER WHILE NOT IN OPERATION

At end of heating season clean boiler thoroughly and spray flue surfaces with light lubricating or crankcase oil using gun with extended stem so as to reach all corners.

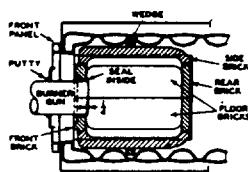
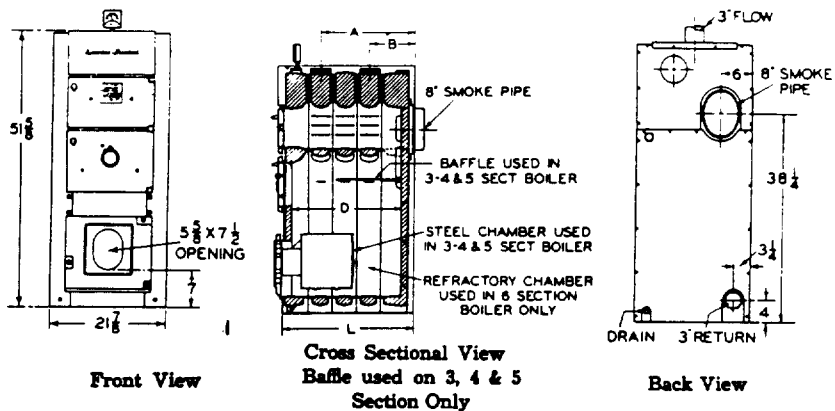
Leave boiler doors and dampers open to permit air circulation thru boiler. Clean and remove smokepipe where feasible and oil door hinges.

Keep system filled with water, in other words, leave water alone. It is advisable in fall to drain a little water to remove sludge but not more than necessary.

IF BOILER IS NOT USED DURING WINTER TIME IT MUST BE FULLY DRAINED (SEE INSIDE OF FRONT COVER)

DIMENSIONS AND DATA

Used Without Water Heater or With Water Heater No. 601, 602 or No. 704

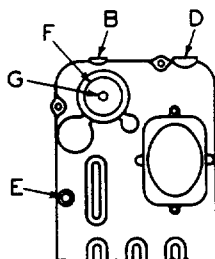


Top View of Refractory Combustion Chamber

Boiler Assembly Number	Number & Size of Tappings		Boiler Dimensions				
	Flow	Return	A	B	D	L	M
W-O-351	1-3"	1-3"	—	9 1/4	12 3/4	16 3/4	37 1/4
W-O-451	1-3"	1-3"	—	9 1/4	17 3/4	21 3/4	42 3/4
W-O-551	2-3"	1-3"	19 1/4	9 1/4	22 3/4	26 3/4	47 3/4
W-O-651	2-3"	1-3"	24 1/4	9 1/4	27 3/4	31 3/4	52 3/4

Note: Dimension "M" is overall length with jacket extension.

General Dimensions.



CONTROL TAPPINGS ON BACK OF BOILER

LOCATION	SIZE TAPPINGS	CONTROL USED
B	3/4	WATER LIMIT CONTROL
D	1 1/4	RELIEF VALVE
E	3/4	WATER REVERSE ACTING LOW LIMIT CONTROL, TANKLESS HEATER INSTALLATIONS OPERATING TEMP CONTROL TANK HEATER INSTALLATIONS
F	4	WATER HEATER
G	3/4	OPERATING TEMP CONTROL, IN NO. 601 HEATER ONLY

COMPLETE BOILER CONSISTS OF:

SECTION ASSEMBLAGE WATER HEATER (BOILER-BURNER UNIT ONLY)
 PLATEWORK CARTON FLUE BRUSH HANDLE
 STEEL COMBUSTION CHAMBER (3, 4 & 5 SECTION BOILERS)
 REFRACTORY COMBUSTION CHAMBER (6 SECTION BOILER ONLY)
 JACKET

No. W-O-351-B, and W-O-451-B includes Arcoflame Model M oil burner and No. 601 Biltin Tankless Heater. No. 704 Tank Type Heater is available as optional equipment.

No. W-O-551-B includes Arcoflame Model M oil burner and No. 601 Biltin Tankless Heater. No. 602 Tankless or No. 704 Tank Type Heater is available as optional equipment.

No. W-O-651-B includes Arcoflame Model C oil burner and No. 601 Biltin Tankless Heater. No. 602 Tankless or No. 704 Tank Type Heater is available as optional equipment.

GIVE BOILER SIZE AND SERIES NUMBER WHEN ORDERING
 REPAIR PARTS

CONTENTS OF PLATEWORK CARTON

1	Cleanout Door Assembly	1	Comb. Altitude Gauge and Thermometer (AW-34-45)
1	Service Door Assembly	1	1 lb. Can Boiler Putty
1	Crown Sheet Baffle (3, 4 & 5 Sec. Boilers)	1	Flue Brush (48-B-2513-B)
1	Front Burner Panel with Cover Plate	1	Installation Manual
1	Smoke Collar		
1	Bag Sundry Parts		

NOTE: All parts for this boiler have been carefully inspected and packed. In case of shortage, make sure that all parts have been removed from shipping container and examine packing material thoroughly. If part cannot be found, report shortage to your dealer, giving boiler size, series number, date, inspector's number and packer's number. (See Parts List on Page 5 and Packer's Check Ticket below.)

PACKER'S CHECK TICKET

BOILER SIZE.....

SERIES No. (see series Plate on Boiler)...

DATE.....

INSPECTED BY.....

PACKED BY.....

GIVE BOILER SIZE AND SERIES NUMBER WHEN
ORDERING REPAIR PARTS

AMERICAN *Standard*
RADIATOR & Sanitary

CORPORATION

PITTSBURGH 30, PA.

ARSS 4556

REV. (4-51)