ARCOLINER BOILER

WIDE BACK TYPE

by

AMERICAN-Standard

INSTALLATION–OPERATION AND MAINTENANCE MANUAL

FOR

WET BASE OIL FIRED BOILERS

AMERICAN-Standard

First in heating ... first in plumbing

PLAINTIFF'S EXHIBIT
tabbies
ASI-531

Boilers are shipped assembled with sections arranged in the sequence indicated in list below.

CODE LETTERS

WF—Oil Front Section

WC—Oil Center Section

WCX—Oil Center Connection Section

TWB—Oil Back Section for Flanged Water Heater 587 or 596

BOILER WITH FLANGED WATER HEATER 587, 589 or 596

Boiler Number	Assemblage
S or W-O-153-T	WF-WCX-TWB
S or W-O-154-T	WF-WCX-WC-TWB
S or W-O-155-T	WF-WCX-WC-WCX-TWB
S or W-O-156-T	WF-WCX-WC-WC-WCX-TWB

FORCED HOT WATER INSTALLATIONS

It is recommended on W-O-155-T and W-O-156-T Boilers that the flow tapping nearest to the front be used for forced hot water installations.

When locating boiler, be sure to allow sufficient clearance to nearest wall for insertion and removal of water heater. When using No. 589 or No. 596 tankless heater or No. 587 tank type heater, allow at least 15" space at right hand side of boiler.

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—WATER BOILERS

The expansion tank should not be set in a cold or an exposed place. If the pipe leading to or from the tank freezes, serious damage may result. If valve of any description is installed in the piping leading to or from the expansion tank BE SURE THAT IT IS OPEN WHILE THE BOILER IS IN OPERATION.

USE THIS BOOK

FOR REFERENCE WHEN ERECTING BOILER, ORDERING PARTS AND FOR OPERATION

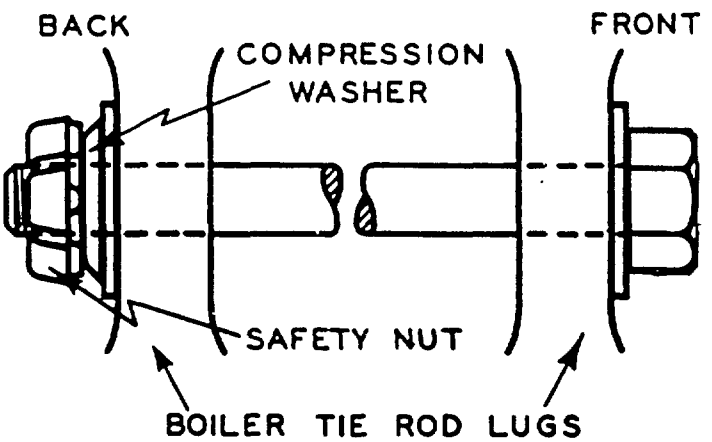
IMPORTANT NOTICE

The tie bolts of this boiler have regular steel washers and nuts. After the boiler is in final position, remove the steel nuts. Do not remove the washers.

Sheet steel compression washers and cast iron safety nuts are included in the bag of parts.

Place a compression washer on each tie rod with the open or cupped side against the regular washer. Apply lubricating oil to the threads and screw the safety nuts up against the cupped washers. Tighten with FINGERS ONLY, do not use wrench.

FAILURE TO OBSERVE THIS
MAY RESULT IN DAMAGE TO BOILER





No. 1

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

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.

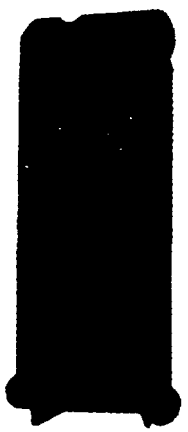
Connect supply and return piping. On forced water jobs where only one flow tapping is used, connect flow pipe to top tapping nearest to front.

2. Attach smokepipe collar to rear section.

Install crown sheet baffle on 3, 4 and 5 section boilers. To install baffle, insert it 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.

Putty outside of sections at joints with boiler putty.

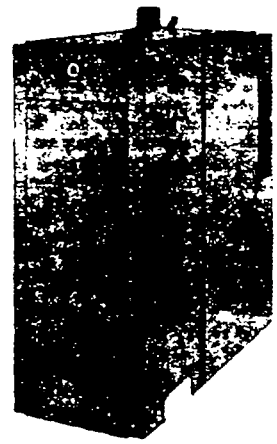


No. 2

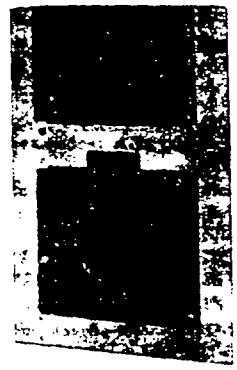
3. To install jacket, screw jacket studs in back section. Attach jacket side panels at front with ends of Center and Lower Front jacket pieces fastened under sides. Attach Upper Rear and then Lower Rear panel. Slide Upper Front panel into grooves at front of sides. Place right and then left hand top panels in position and insert screws. REMOVE KNOCKOUTS opposite tappings to be used before attaching panels.
See cut No. 3.



No. 3



No. 4



No. 5

Where extended jacket front is used (Cut No. 4), substitute the plate with two studs in place of the upper front panel, also substitute studs for the two upper screws holding the center front panel as shown in Cut No. 5. Assemble sides of jacket extension by attaching two spacer strips to studs inside, with flanged side of strips facing boiler.

Attach front extension adapter to bottom of upper front panel with two sheet metal screws. Attach upper front to sides by sliding it down into clips on front of extension side panels. Attach Door Sill at bottom. Place the extension against boiler with slots in the spacer strips engaging four studs; fasten with wing nuts. Assemble the top panel and access door. Door enters opening at top first, then drops to engage sill. See additional data on page 6.

4. On steam boilers, attach safety valve at left hand top of rear section and water column trim at left hand side of front section. Attach pressure or water temperature gauge to top of front section. Attach controls as directed on Page 5.

Fill steam boiler with water until it reaches a height of 4" in the gauge glass. On water boiler installations fill system up to ⅓ of height of expansion tank or on closed system until relief valve relieves. This must be at less than 30 lbs. Remove rim and glass from gauge and set movable pointer under automatic pointer. Replace rim and glass.

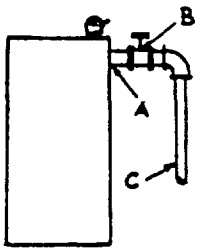
5. INSTALLATION OF BURNER AND COMBUSTION CHAMBER—Assemble steel liner plate and steel combustion chamber to the rear side of the burner plate using the flat head screws provided. Turn the burner plate and combustion chamber assembly 90° to enter the combustion chamber through the opening in the front section. Install the oil burner as per instructions accompanying same. Where HEAT-LIB-O-RATOR pre-cast combustion chambers are used, install as per instructions packed with chamber. Recommendations for hand built chambers are given on Page 6. Thoroughly seal the space between the burner air tube sleeve and the opening leading into the combustion chamber if hand built chamber is installed.

NOTE: Draft tube for reading draft in combustion chamber can be inserted through a slot in service door which is open when observation door is moved toward open position.

CLEANING BOILERS

The grease used to lubricate the cutting tools during erection of new piping systems serves as a carrier for sand and dirt, with the result that a scum of fine particles and grease accumulates on the surface of the water in all new boilers, while heavier particles may settle to the bottom of the boiler and form sludge. These impurities tend to cause foaming, preventing the generation of steam and causing an unsteady water line

This unavoidable accumulation of oil and grease should be removed by blowing-off the boiler as follows: If not already provided, install a surface blow connection of at least 1-1/4 inch nominal pipe size with outlet extended to within 18 inches of the floor or to sewer, inserting a valve in line close to boiler. Bring the water line to center of outlet, raise steam pressure, and while oil burner is operating open valve in blow-off line. When pressure recedes, close valve and repeat process adding water at intervals to maintain proper level. As a final operation bring the pressure in the boiler to about 10 lb., close blow-off, stop burner, and open drain valve. After boiler has cooled, partly fill and flush out several times before filling it to proper water level for normal service. The use of soda or any alkali, vinegar or any acid is not recommended for cleaning heating boilers because of the difficulty of complete removal and the possibility of subsequent injury after the cleaning process has been completed.



Cut shows suggested piping arrangement for blowing off steam boiler.

A. 1-1/2" Blow-off tapping
B Blow-off valve
C. Pipe to drain

CAUTION

If a built-in Low Water Cutout is used, it is recommended that this control be removed during the blow off operation.

ATTENTION TO BOILER WHILE IN OPERATION

Keep water in steam boiler at proper level (4" visible in gauge glass). If boiler is operated during summer time, it is recommended that the water line during this period be carried about 1" higher.

Keep water systems filled to ⅓ 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.

ON STEAM BOILERS—At the start of each heating season and once or twice during the season try Safety Valve to be sure that it is in working condition. To do this fasten wire or cord to valve lever and pull lever standing safe distance away from valve.

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.

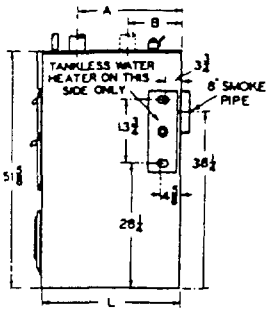
With steam boilers, at end of season, add sufficient water to fill boiler to top of water column and leave it that way until fall, when water should be drained again to proper level. If at this time boiler water is dirty, drain water, flush out boiler, and refill with clean water to prescribed water level.

On water boilers keep systems 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.

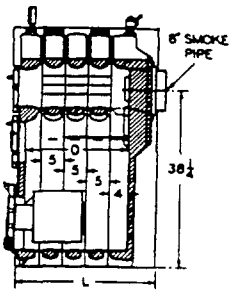
IF BOILER IS NOT USED DURING WINTER TIME IT MUST BE FULLY DRAINED (SEE INSIDE OF FRONT COVER).

BOILER WITH WIDE BACK

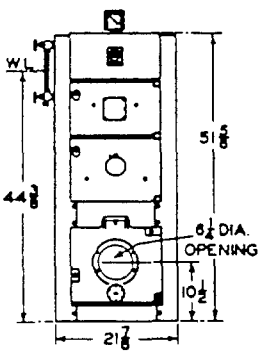
Used With Flanged Type Water Heater



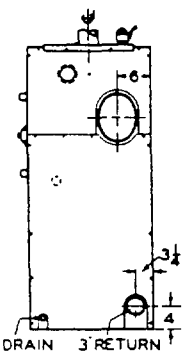
Side View



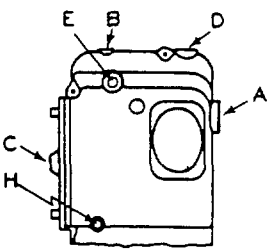
SECTION THRU OIL FIRED BOILER



FRONT VIEW OIL FIRED BOILER



Rear View



Control Tappings on Back

Boiler Assemblage Number	Number and Size of Tappings		Boiler Dimensions (Steam and Water)			
	Flow	Return	A	B	D	L
O-153-T	1-3"	1-3"	13	—	12⅜	20⅜
O-154-T	1-3"	1-3"	18	—	17⅜	25⅜
O-155-T	2-3"	1-3"	23	13	22⅜	30⅜
O-156-T	2-3"	1-3"	28	13	27⅜	35⅜

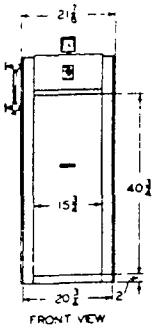
Boiler Dimensions

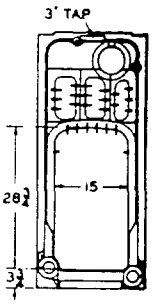
Tappings		Steam or Vapor Boilers	Water Boilers
Location	Size, Ins.		
A	2½	Internal Low Water Cutout	Water Limit Control
B	½	Pressure Control	Not Used
C	¾	Water Temperature Control	Water Temperature Control
D	1¼	Safety Valve	Relief Valve
E	1½	Blow-Off	Not Used
H	¾	Not Used	Reverse Acting Temperature Control

Application of Controls

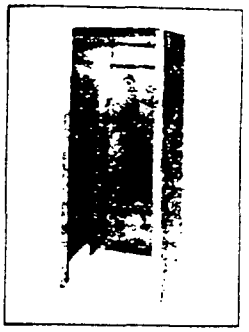
Note: See Page 6 for Extended Jacket and Further Dimensions.

BOILER WITH JACKET EXTENSION

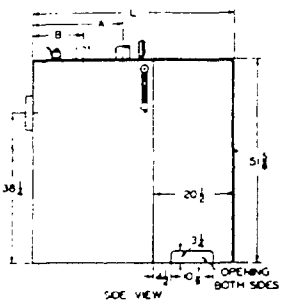




Center Section



Removable Jacket Extension—Rear View Showing Cross Ties

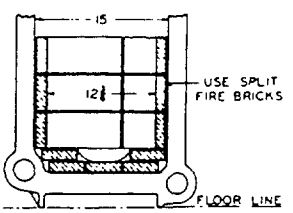


Side View

CAUTION: Jacket extension is built for easy removal and to facilitate servicing of burner and boiler. Do not attach wiring or piping to extension. Oil pipes and wires can be run through arches at bottom of extension. Wiring can also be run through grille in top panel as this panel can be detached when removing extension.

Boiler Assemblages Number	Number and Size of Tappings		Boiler Dimensions (Steam and Water)		
	Flow	Return	A	B	L
O-153-T	1-3"	1-3"	13	——	40⅞
O-154-T	1-3"	1-3"	18	——	45⅞
O-155-T	2-3"	1-3"	23	13	50⅞
O-156-T	2-3"	1-3"	28	13	55⅞

Boiler Dimensions



Hand Built Combustion Chamber

STEAM AND WATER BOILERS

COMPLETE BOILER CONSISTS OF:

SECTION ASSEMBLAGE	CROWN SHEET BAFFLE Narrow for 3 & 4 Section, Wide for 5 Section Assem.
PLATEWORK BOX	
TRIM BOX (Steam or Water)	JACKET

WHEN OIL HEATING UNIT IS SPECIFIED, FOLLOWING ADDITIONAL PARTS ARE SUPPLIED:

1 Oil Burner Box (with Pressure Ring Assembly)
1 Stack Control Box
1 Arcoflame Control Set (with Nozzle)
1 Draft Stabilizer Box
1 Steel Combustion Chamber Box (with Front Plate Liner)

Following are furnished on Special Order:
Water Heater Refractory—Steel Combustion Chamber

GIVE BOILER SIZE AND SERIES NUMBER WHEN ORDERING REPAIR PARTS

BOILER SHIPPING UNITS CONSIST OF FOLLOWING PARTS

PLATEWORK BOX

1	Cleanout Door Assembly
1	Service Door Assembly
1	Front Plate Assembly
1	Smoke Collar
1	Bag Sundry Parts
1	Installation Manual

STEAM TRIM BOX

1	P & V Steam Gauge (S-3½-10)
2	½"x¼" Bushings (gauge & control)
1	Set Water Column Trim (722-8½)
1	Safety Valve and Bushing
2	¾" Pipe Plugs
1	Lb. Putty

WATER TRIM BOX

1	Comb. Altitude Gauge and Thermometer (AW-3½-45)
2	½" Csk. Pipe Plugs
1	½" Pipe Plug
2	¾" Pipe Plugs
1	¾" Csk. Pipe Plug
1	1¼" Csk. Pipe Plug (When reqd. for S. V. Tee.)
1	Lb. Putty
1	2½" x ¾" Rad. Bushing
1	Relief Valve (unless otherwise specified)

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 7 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



Plumbing and Heating Division
AMERICAN RADIATOR & STANDARD SANITARY CORPORATION
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ARSS 4343 REV. (12-59)

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