PLAINTIFF'S EXHIBIT

ASI-486

AMERICAN STANDARD

A-5 OIL BOILER

INSTRUCTION MANUAL

BOILER ONLY UNITS AND BOILER-BURNER UNITS

NOTICE TO INSTALLER AND OPERATOR
THIS BOOKLET MUST BE AFFIXED ON OR ADJACENT TO THE HEATING EQUIPMENT.

FORM NO. BP-32243

SERIES NO. 3B-J2

IMPORTANT!

See instructions on page 3 for proper setting of boiler. When boiler sections have been assembled, it is essential that boiler be tested before platework, jacket or piping is installed.

BEFORE FIRE IS STARTED IN BOILER - plug all boiler tappings and fill entirely with cold water. To protect and safeguard the accuracy of steam or water gauge supplied, DO NOT INSTALL GAUGE UNTIL AFTER TESTING OF BOILER OR SYSTEM.

Testing pressure should be at least 10 pounds but should not exceed 50 pounds.

EXAMINE BOILER CAREFULLY, INSIDE AND OUTSIDE, to insure against leaks through concealed breakage caused in shipping and handling.

After making certain that there are not leaks, remove plugs for boiler trim and other connections. This precaution is for your protection and will simplify handling of necessary replacements and adjustment claims.

DRAIN TAPPING - Back of boiler is provided with two drain tappings at lowest water space practicable, as per A.S.M.E. Heating Boiler Code. Either tapping can be used to drain boiler entirely.

DO NOT PLACE DRAIN COCK IN RETURN PIPING LINE.

CAUTION - 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.

LOCATION - Locate the boiler near the chimney or flue and as centralized with respect to the heat distribution system as practicable.

If water condition exists in the basement, or if it has been necessary to waterproof the basement floor, the boiler should be mounted on a concrete or hollow tile base, preferably to a height of at least three inches.

Sections must be assembled according to arrangement listed below to insure proper operation and that knockouts in the water heater door register with water heater connections.

CODE LETTERS

FX - Front Connecting

CT - Center with water heater opening

C - Center without water heater opening

BX - Back Connecting

BOILER NUMBERS		ARRANGEMENT OF SECTIONS FROM FRONT OF BOILER For Boilers With Water Heater										
STEAM	WATER	1	2	3	4	5	6	7	8	9	10	11
A-504-S	A-504-W	FX	CT	CT	BX							
A-505-S	A-505-W	FX	CT	CT	CT	BX						
A-506-S	A-506-W	FX	CT	CT	CT	C	BX					
A-507-S	A-507-W	FX	CT	CT	CT	C	C	BX				
A-508-S	A-508-W	FX	CT	CT	CT	C	C	C	BX			
A-509-S	A-509-W	FX	CT	CT	CT	CT	C	C	C	BX		
A-510-S	A-510-W	FX	CT	CT	CT	CT	C	C	C	C	BX	
A-511-S	A-511-W	FX	CT	CT	CT	CT	C	C	C	C	C	BX

BOILER NUMBERS		ARRANGEMENT OF SECTIONS FROM FRONT OF BOILER For Boilers Without Water Heater										
STEAM	WATER	1	2	3	4	5	6	7	8	9	10	11
A-504-S	A-504-W	FX	C	C	BX							
A-505-S	A-505-W	FX	C	C	C	BX						
A-506-S	A-506-W	FX	C	C	C	C	BX					
A-507-S	A-507-W	FX	C	C	C	C	C	BX				
A-508-S	A-508-W	FX	C	C	C	C	C	C	BX			
A-509-S	A-509-W	FX	C	C	C	C	C	C	C	BX		
A-510-S	A-510-W	FX	C	C	C	C	C	C	C	C	BX	
A-511-S	A-511-W	FX	C	C	C	C	C	C	C	C	C	BX

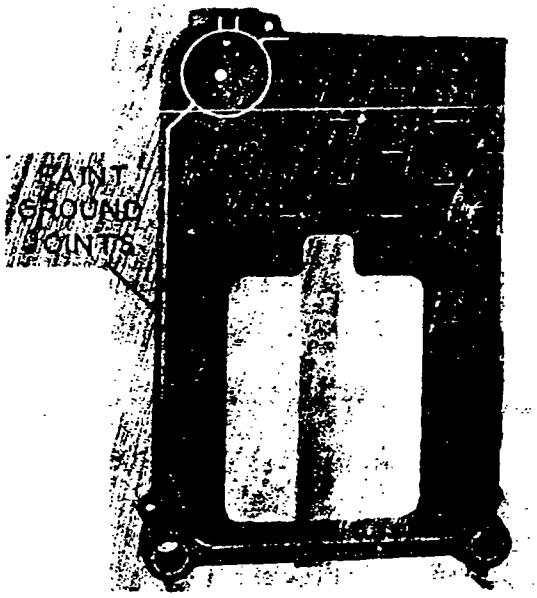


Fig. 1

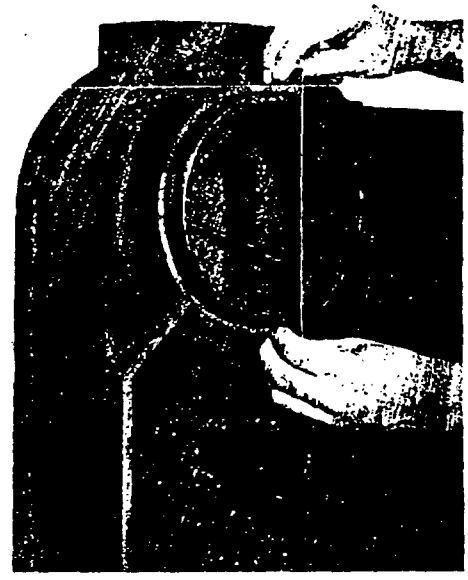


Fig. 2

IMPORTANT - In setting up the boiler it is necessary that adequate clearance and combustion space be provided for proper functioning of the oil burner to be installed.

The floor or raised base (if provided) must be level to insure that openings in the jacket will register properly with the corresponding tappings on the boiler.

Refer to dimensions of assembled boilers on page 12 to determine the setting of the boiler with regard to the chimney. This boiler is normally assembled from front to back, therefore, space for the boiler and working space for assembling the back section must be provided.

ASSEMBLY OF SECTIONS

1. Place the front section in its approximate final location with regard to the chimney and support it with a suitable prop. It is recommended that a 2-1/2" plug be installed hand-tight in the front to hold the upper end of the prop. See Fig. 1.

2. Clean nipples and nipple openings with kerosene or gasoline and apply good lubricating oil. DO NOT USE PAINT, RED LEAD or CEMENT.

3. Drive nipples squarely into section using block of wood and hammer, or preferably an aluminum headed hammer, if available.

4. Special nipple setting gauge is provided for the larger nipples. Gauge nipple in both directions to insure that it is driven to the proper depth into the nipple opening. Cutout in gauge must rest on nipple, with legs of gauge touching finished face of section, when nipple is properly driven. See Fig. 2

   Use rule or suitable gauge for smaller nipples, to insure that they are properly driven and project equally all around. Nipples must project 1/16" more than half their length outside of the finished face of the section.

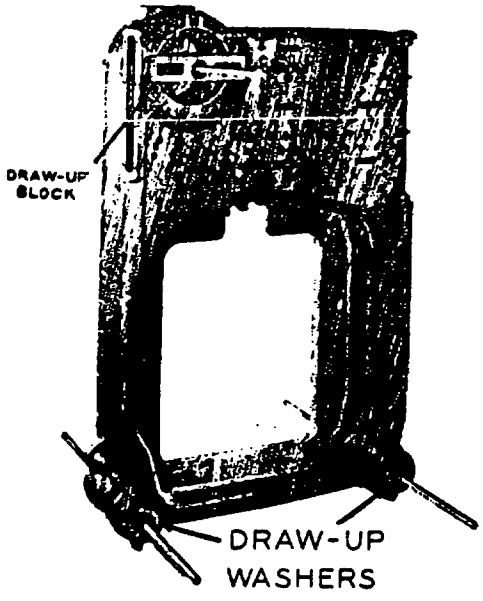


Fig. 3

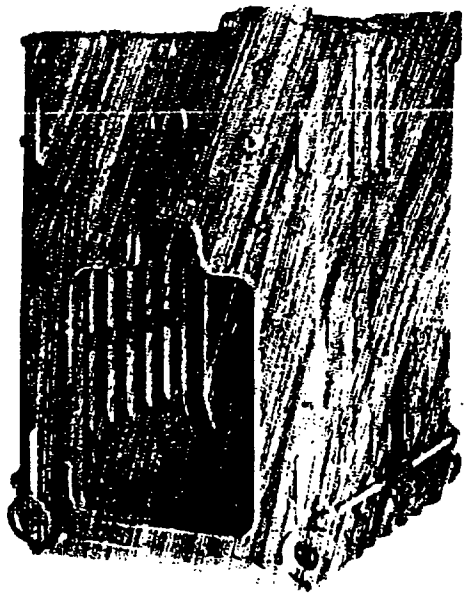


Fig. 4

5. Fror arrangement of sections (See tables on preceding page) select next section according to code letters on section. IMPORTANT - Nipples must be driven as directed to insure tight joints. Most nipple leaks are caused by tilted or cocked nipples.

   Paint ground joints of each section before adding the next section. Clean nipple openings and place the section on nipples of the front section. To facilitate assembly, it is advisable to enter the upper nipple first in its port, then enter the lower nipples in their respective ports.

6. Run the nuts up full length of the thread on one end each of the three tie rods. Place regular steel washers and flanged draw-up washers on two rods and insert them in the lower tappings from the front. Insert the remaining rod with regular steel washer in the tapping opposite the upper nipple. Place the 10" draw-up block, steel washer and nut on this rod. Draw the nut up fairly tight and adjust the draw-up block in horizontal position central with the nipple opening.

   Place flanged washers and regular steel washers on the lower rods and run nuts up hand tight. See Fig. 3, for application of draw-up blocks.

7. Drive section in place with heavy block of wood, striking blows as squarely as possible over nipples. Draw-up evenly on all nuts starting with lower tie rods. Tighten nuts alternately until sections make contact at ground joints.

   APPLY OIL OR GREASE FREELY TO TIE ROD THREADS WHILE ASSEMBLING SECTIONS TO PREVENT STRIPPING OF THREADS ON ROD. Continue assembling sections in their respective order. NEVER ASSEMBLE MORE THAN ONE SECTION AT A TIME.

8. Place the back section in position and run the tie rods through the lugs on front and back sections. CAUTION SHOULD BE USED IN DRAWING-UP THE BACK SECTION, adjust the nuts on the front ends of the rods so that they are no more than flush in order that as much thread as possible is available at the back to begin the drawing-up operation

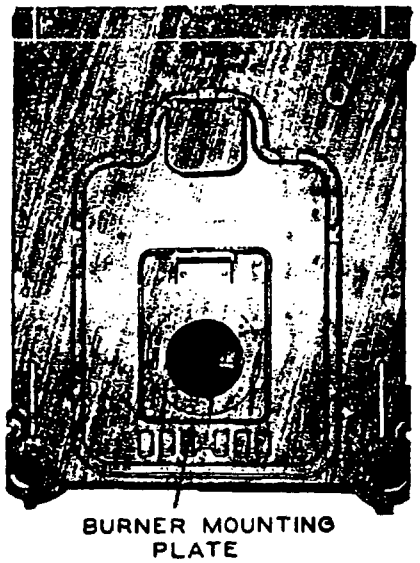


Fig. 5



Fig. 6

8. Cont. Draw-up evenly on all nuts as previously directed but only after driving the section up with heavy block of wood to relieve the tension on the tie rod threads several times during the drawing-up operation.

9. After the back has been drawn-up to make contact at ground joint, back-off tie rod nuts one half turn. Rods should project equally at each end to insure proper fit of the jacket. See Fig. 4 for boiler section assemblage to be equipped with biltin water heaters.

Attach flow and return piping lines and insert plugs and bushings in sections as required. Install fittings provided to elevate the safety valve or pressure relief valve so that the discharge will be above the jacket. In case of steam boilers insert two 1/2" extension pieces in tappings on left side of front section to take gauge glass fittings. If boiler is to be provided with try cocks, also insert two 3/8" extension pieces.

IMPORTANT - See instructions for testing boiler on Page 1.

10. Place canopy on boiler and attach to forked lug at top of front and back sections with 5/16" round head machine screws. Seal between outside of canopy and sections with boiler putty. Also putty outside of sections at joints with boiler putty.

NOTE: Canopy insulation is packed inside of the canopy. Remove and apply insulation (foil side out) to the canopy. Fold in at corners for maximum coverage. It is recommended that a strand of light wire be used for holding the insulation snug at sides and corners.

Install cleanout cover assembly. See that upper lock clips are loose and at bottom of slots. Force the bottom clips down behind the lower projections in the section cleanout openings, then secure the cover by raising and tightening the upper lock clip wing nuts. Seal cleanout cover all around with boiler putty.

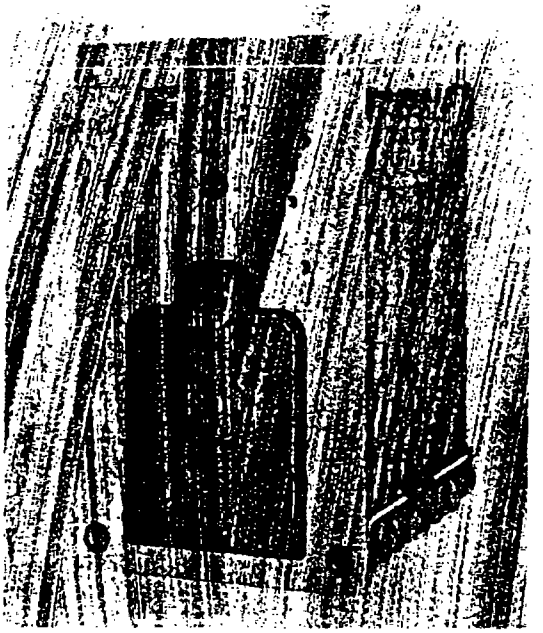


Fig. 7



Fig. 8

COMBUSTION CHAMBERS - Combustion chamber may be either the molded type or hand built from fire brick. Refer to Fig. 20 for dimensions of molded chamber. Installation should be in accordance with instructions furnished with the chamber.

Refer to Fig. 21 for recommendations for hand built chamber installation. In either case the combustion chamber must be assembled completely before attaching the front burner plate assembly.

FRONT BURNER PLATE - The front burner plate is factory assembled except for the burner mounting plate which is to be assembled by the installer with four 3/8" hexagon head cap screws provided. Attach the complete burner plate assembly to the front section with seven 5/16"-18 hexagon head cap screws provided. The burner mounting plate for the four (4) section boiler only requires a burner hanger bracket which is to be attached with the two 1/4"-20 screws provided.

Fig. 5 - shows position of the mounting plate with hanger bracket attached. When the boiler has five (5) or more sections THE POSITION OF THE BURNER MOUNTING PLATE IS REVERSED so that the center of the gun opening is approximately 16-3/4" above the floor.

WATER HEATERS - Sections with water heater openings must be assembled next to the front section. Insert heaters (with gaskets) in sections. IMPORTANT - See that heaters are inserted in correct position for Steam or for Water as required according to lettering cast on the heater mounting plate. Attach heaters with cap screws provided. Leave screws slightly loose until the copper fitting assemblies are applied.

Fig. 6 - Shows complete section assemblage with water heaters in place.

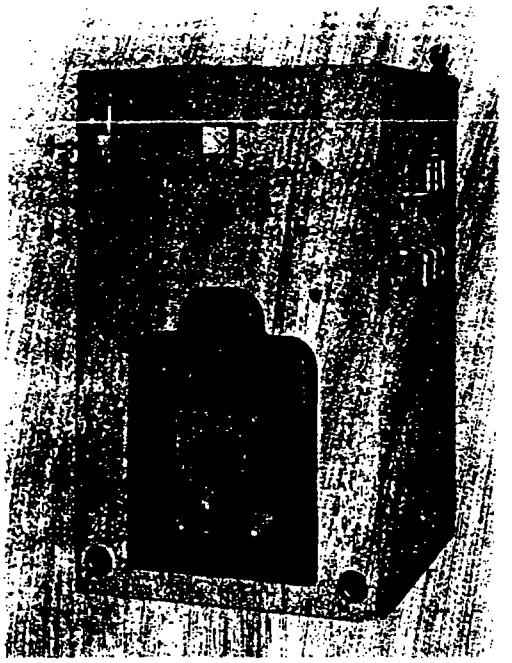


Fig. 9

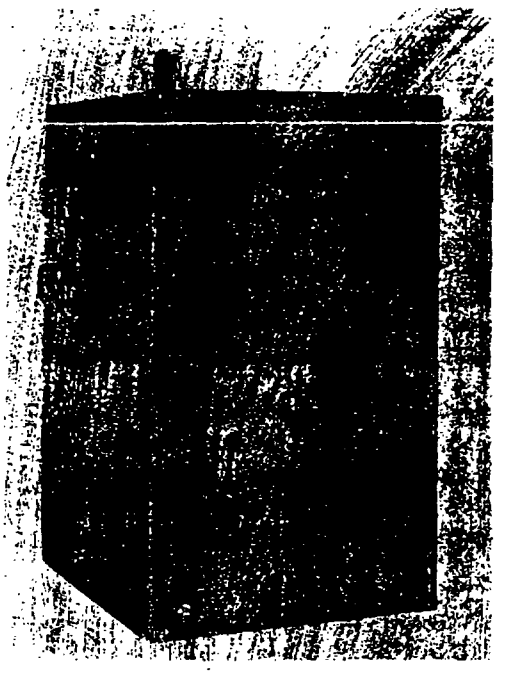


Fig. 10

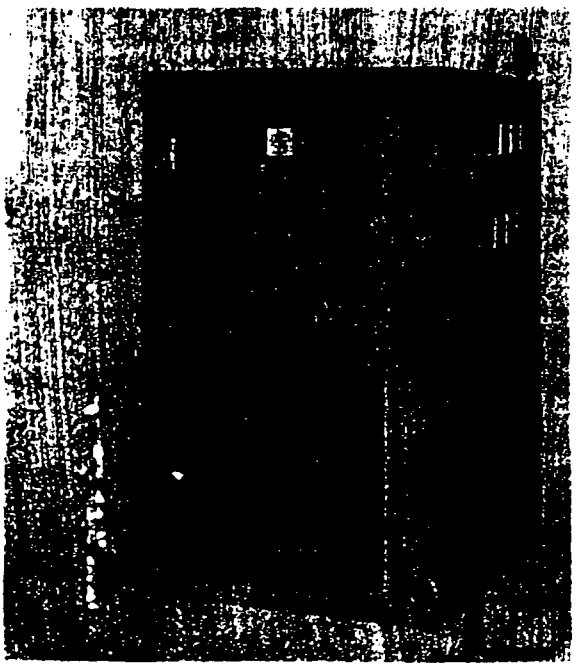


Fig. 11

ASSEMBLY OF JACKET - Place the bottom strip for the front panel in place below the return tappings.

Install the number and series plate on the front jacket panel with #6 x 1/4" sheet metal screws provided. Install panel by sliding it down behind the flanges of the front burner plate. Attach the bottom jacket strip to the front panel with two jacket screws.

Fig. 7 - shows the front panel assembled to the boiler.

If the boiler has more than seven sections the jacket side panels will consist of two pieces which should be assembled before application. Omit the top screw when assembling the two piece side panel as this screw is inserted when the top panel is assembled.

Side panels should be installed following the front panel. In case of steam boilers remove knockouts from the left side panel for gauge glass fittings and for try-cocks when provided.

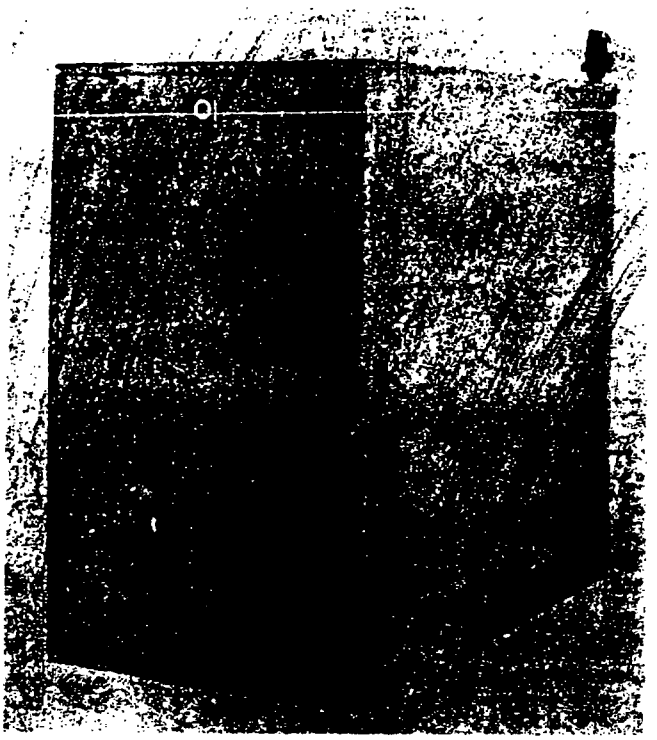


Fig. 12

Unless otherwise noted the jacket is assembled with #10 x 1/2" sheet metal screws throughout. DO NOT DRAW SCREWS UP TIGHT UNTIL JACKET IS FULLY ASSEMBLED.

Assemble the back panel next, then follow with the top panel. After the jacket is completely assembled, all jacket screws should be drawn-up uniformly tight, except in case of boiler provided with jacket extension.

See Fig. 8 - for completely assembled jacket (front view) for boiler with water heaters. The door for the water heater opening in the right hand side panel and the cleanout door in the left hand side panel should be attached with sheet metal screws.

BOILER WITH WATER HEATER - Before drawing up water heater cap screws, it is recommended that the connector fitting assemblies be inserted temporarily without the compression sleeves. Slight adjustment of the water heaters may be necessary to register the connections. Draw-up evenly on the cap screws to insure tight joints between sections, gaskets and heaters then remove the connector fitting assembly. Remove the necessary knockouts from the water heater door and install same in the side panel.

Place the compression nuts and sleeves from the water heaters on the fitting assemblies and install the assemblies on the heaters. Run the compression nuts up a few turns by hand before using wrench in order to avoid possible damage to the threads.

STEAM BOILERS - Install the water column trim in the extension fittings previously installed before the jacket was applied. Install the pressure and vacuum gage and controls as shown in Fig. 13. Install the safety valve and drain valve.

Fig. 9 shows front view of steam boiler assembled completely with water heaters, also Arcoflame oil burner mounting plate as it is to be assembled on boilers for five sections and larger.

Fig. 10 - shows rear view of steam boiler assembled completely with water heaters.

WATER BOILERS - Install the combination altitude gage and thermometer and immersion limit control. Also install the pressure relief valve and drain valve.

Fig. 11 - shows front view of water boiler assembled completely when water heaters are required.

MAXIMUM NUMBER OF WATER HEATERS TO BE USED
WITH EACH BOILER WHEN CONNECTED IN PARALLEL

Boiler Number	Capacity Rating Gals. Per Minute	Maximum Number of Heaters in Parallel
A-504	7 Gal.	Two
A-505	10 "	Three
A-506	10 "	"
A-507	10 "	"
A-508	13 "	Four
A-509	13 "	"
A-510	16 "	Five
A-511	16 "	"

NOTE: - Additional heaters can be installed where the heaters are serving different systems and it is not likely that the heaters will all be in use at the same time.

BOILER WITH JACKET EXTENSION - Following are assembly operations for attaching jacket front extension to boiler after the regular (Flush Type) jacket is complete.

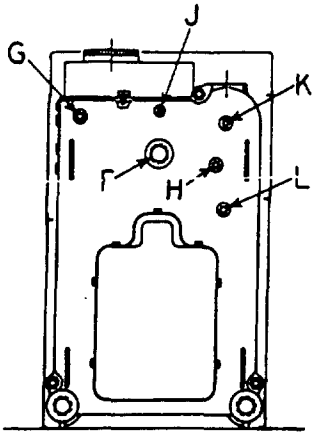
If not previously left loose all jacket screws attaching side and top panels to the front panel must be loosened.

Assemble the two extension side panels with the 8" x 20" opening at the bottom and the notched edge inserted between the side and front panels. Tighten screws to hold panels in place.

Assemble the bottom front tie panel to the two side panels with #10 x 1" sheet metal screws provided.

Assemble the top extension panel with the rear edge inserted between the top and front panels of the regular jacket. It must also extend down over the side panels. Insert three jacket screws on each side and one screw at each upper front corner. Draw all screws up tight.

Install the front door panel by engaging the bottom flange first. Fig. 12 - shows boiler complete with jacket extension.

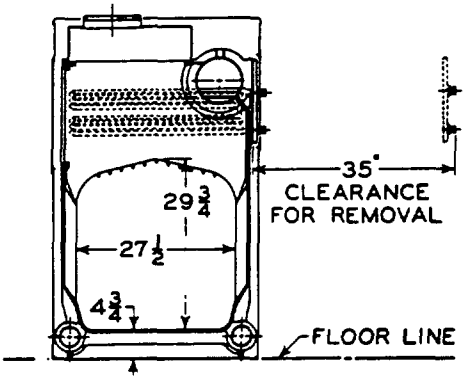


FRONT VIEW-SHOWING CONTROL TAPPINGS

CONTROL APPLICATIONS			
LOCATION	SIZE OF TAPPINGS	STEAM	WATER
F	2½	LOW WATER CUT-OFF	NOT USED
G	¾	PRESSURE LIMIT CONTROL	TEMPERATURE LIMIT CONTROL
H	¾	OPERATING CONT. TANKLESS HEATER	NOT USED
J	¼	PRESSURE GAGE	COMB. ALTITUDE GAUGE AND THERMOMETER
K	¾	NOT USED	OPERATING CONT. TANKLESS HEATER
L	¾	NOT USED	REVERSE ACTING CONTROL

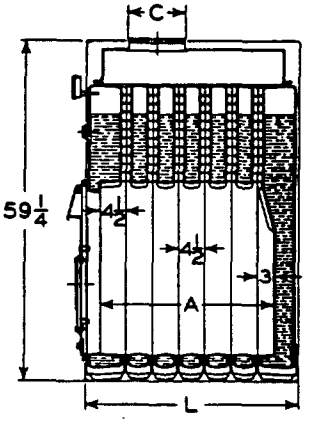
NOTE:- 2" BLOW-OFF ON BACK OF BACK SECTION
2" SAFETY OR RELIEF VALVE ON TOP OF BACK SECTION

Fig. 13



CENTER SECTION SHOWING TANKLESS WATER HEATER (STEAM BOILER SHOWN)

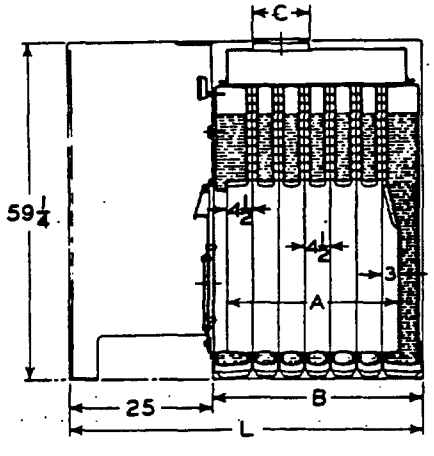
Fig. 14



SECTION THRU BOILER WITH FLUSH JACKET

NUMBER OF SECTIONS	DIMENSIONS		
	L	A	C
4	22⅞	16½	9
5	27⅜	21	9
6	31⅞	25½	10
7	36⅜	30	10
8	40⅞	34½	10
9	45⅜	39	12
10	49⅞	43½	12
11	54⅜	48	12

Fig. 15



SECTION THRU BOILER WITH EXTENDED JACKET

NUMBER OF SECTIONS	DIMENSIONS			
	L	A	B	C
4	47⅞	16½	22⅞	9
5	52⅜	21	27⅜	9
6	56⅞	25½	31⅞	10
7	61⅜	30	36⅜	10
8	65⅞	34½	40⅞	10
9	70⅜	39	45⅜	12
10	74⅞	43½	49⅞	12
11	79⅜	48	54⅜	12

Fig. 16

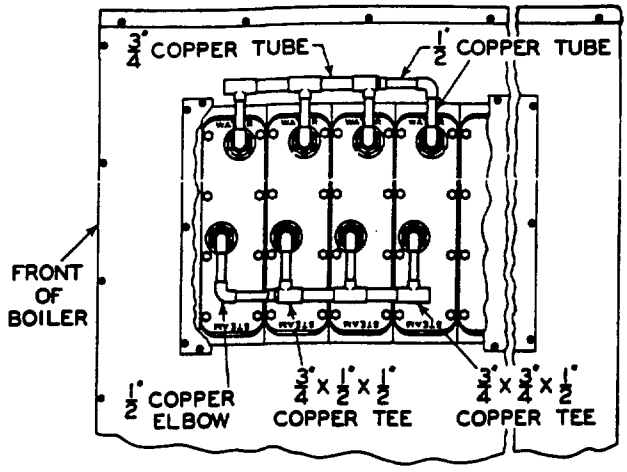


FIG 17 PARTIAL SIDE VIEW SHOWING WATER HEATERS FOR 9, 10 & 11 SECTION WATER BOILERS

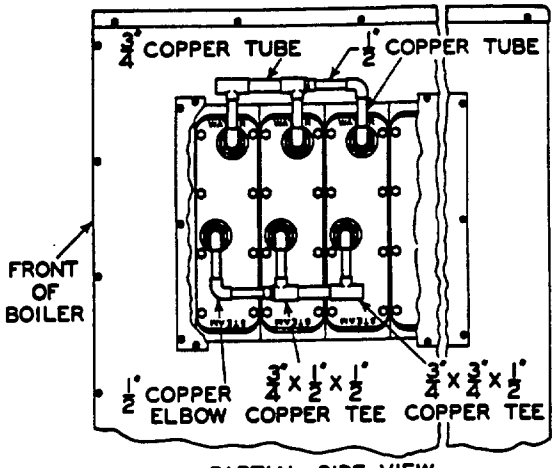


FIG 18 PARTIAL SIDE VIEW SHOWING WATER HEATERS FOR 5, 6, 7 & 8 SECTION WATER BOILERS

NOTE:-
IT IS IMPORTANT THAT WATER HEATERS BE ASSEMBLED IN BOILER STARTING WITH THE SECOND SECTION FROM FRONT OF BOILER.

HEATERS ARE TO BE INSTALLED WITH THE WORD 'WATER' TO TOP ON WATER BOILERS AND 'STEAM' TO TOP ON STEAM BOILERS

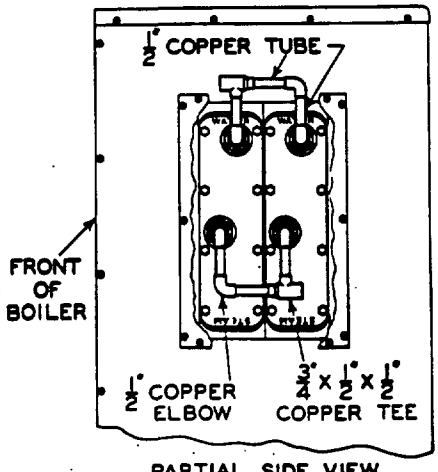
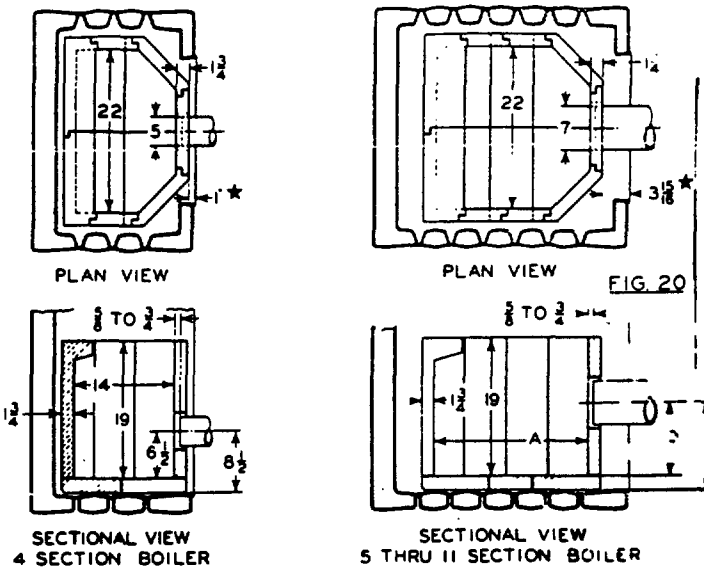


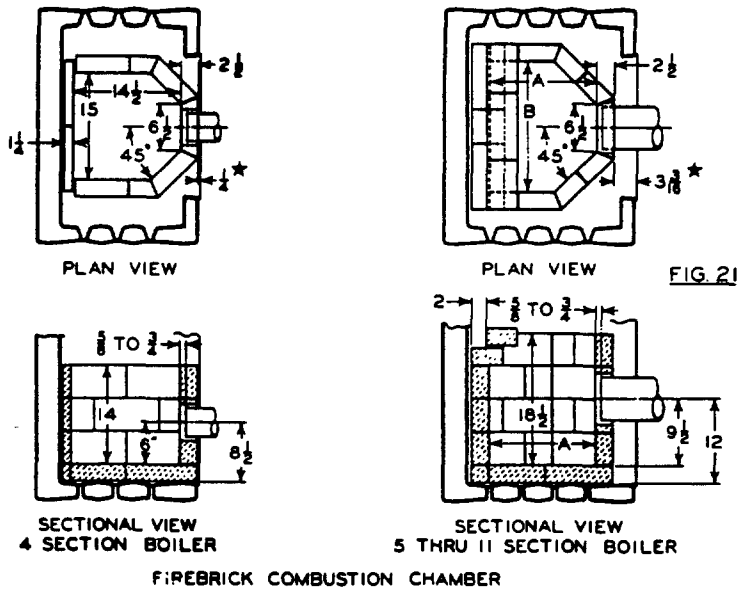
FIG 19 PARTIAL SIDE VIEW SHOWING WATER HEATERS FOR 4 SECTION WATER BOILERS



MOLDED COMBUSTION CHAMBER

FIG. 20

CHAMBER NUMBER	NO OF SECTIONS	A
14-A	4	14
15-A	5	15½
15-AA	6	20
16-A	7	21½
16-A	8	21½
17-A	9	27½
17-A	10	27½
17-A	11	27½



FIREBRICK COMBUSTION CHAMBER

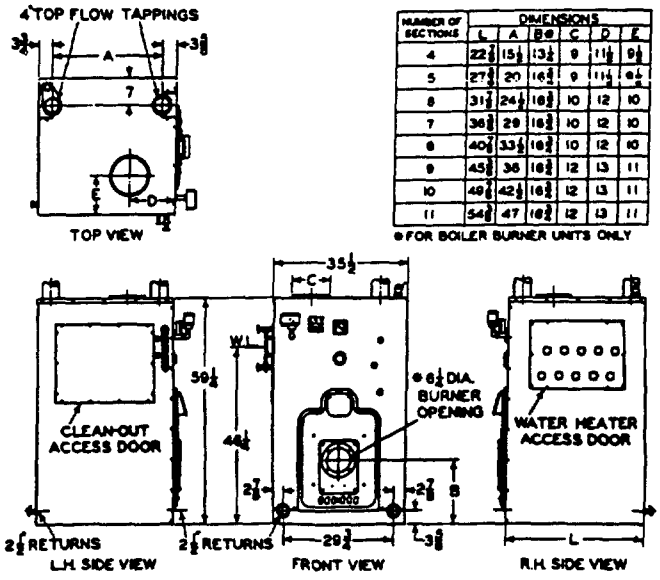
FIG. 21

NO. OF SECTIONS	A	B
5	14½	18
6	18	18
7	20	22
8	22	22
9	24	22
10	24	22½
11	26	22½

The combustion chamber must be installed in proper relation to the ground surface around the fire box opening before the front burner plate is attached to the section. This will insure that the burner air tube will be recessed 5/8" to 3/4" into the front combustion chamber. Lay the bottom brick first. Locate the front to the dimension indicated by a star in Figures 20 or 21 depending on the size and type of chamber being installed.

For the molded refractory combustion chamber, a steel band is provided which should be placed around the chamber, preferably above the burner tube opening in the front brick. This band in addition to the bonding cement, which is provided for sealing the joints between the brick, will hold the upright members firmly together.

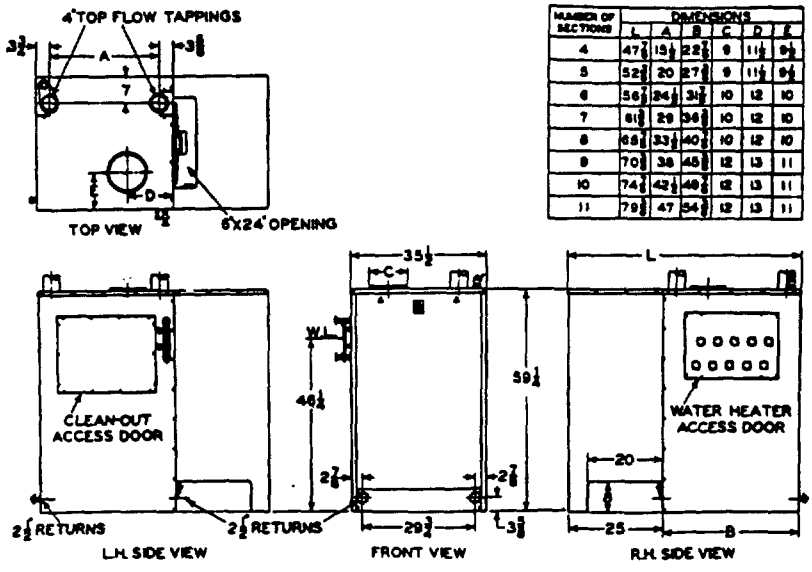
NOTE TO INSTALLER: Do not use back fill of any type around the combustion chamber.



NUMBER OF SECTIONS	DIMENSIONS L	A	B*	C	D	E
4	22⅞	15½	13½	9	11½	9½
5	27⅜	20	16⅜	9	11½	9½
6	31⅞	24½	18⅜	10	12	10
7	36⅜	29	18⅜	10	12	10
8	40⅞	33½	18⅜	10	12	10
9	45⅜	38	18⅜	12	13	11
10	49⅞	42½	18⅜	12	13	11
11	54⅜	47	18⅜	12	13	11

*FOR BOILER BURNER UNITS ONLY

Fig. 22 - Dimensions For Boiler With Flush Jacket



NUMBER OF SECTIONS	DIMENSIONS L	A	B	C	D	E
4	47⅞	15½	22⅜	9	11½	9½
5	52⅜	20	27⅜	9	11½	9½
6	56⅞	24½	31⅜	10	12	10
7	61⅜	29	36⅜	10	12	10
8	65⅞	33½	40⅜	10	12	10
9	70⅜	38	45⅜	12	13	11
10	74⅞	42½	49⅜	12	13	11
11	79⅜	47	54⅜	12	13	11

Fig. 23 - Dimensions For Boiler With Extended Jacket

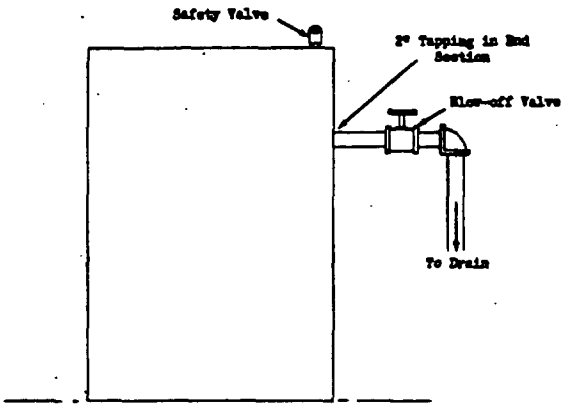
CAUTION

Before starting burner see that boiler is properly filled. Following filling, the piping elsewhere in the system should be checked for leaks. After boiler is in operation make-up water should be added slowly. Steam boilers should be filled until water is visible approximately 3-3/4 inches in gauge glass.

Fill the entire system on water boiler installations.

CLEANING BOILERS - The grease used to lubricate the cutting tools during erection of new piping systems serves as a carrier for 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 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 pounds, 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. Illustration shows suggested piping arrangement for blowing-off steam boilers.

ATTENTION TO BOILER WHILE IN OPERATION

Keep water in steam boiler at proper level (Approximately 3-3/4 inches high in gauge glass)

Keep water systems filled to 1/3 of expansion tank (as indicated by moving hand being even with stationary hand on altitude gauge). ON A CLOSED HOT WATER SYSTEM THE PRESSURE MUST NOT EXCEED 50 LBS. IF IT DOES, IT MUST BE RELIEVED IMMEDIATELY AND THE CAUSE OF FAILURE INVESTIGATED AND CORRECTED, OTHERWISE PRESSURE MAY BUILD UP AND CAUSE DAMAGE TO 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.

On steam boilers - at the start of each heating season and once or twice during the season try SAFETY VALVE to be sure it is in working condition. To do this fasten wire or cord to lever of valve and pull lever - standing safe distance away from valve.

ATTENTION TO BOILER WHILE NOT IN OPERATION

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

Leave observation door and secondary air shutter open to permit air circulation through boiler. Clean and remove smokepipe where feasible.

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 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 Page 1)

COMBINATION ALTITUDE GAUGE AND THERMOMETER FOR WATER BOILERS

IMPORTANT - To avoid damage to gauge or possible impairment of its accuracy. DO NOT INSTALL UNTIL BOILER OR SYSTEM HAS BEEN WATER TESTED FOR TIGHTNESS.

Combination Gauge is used with water boilers and is connected into tapping at front of boiler. Gauge serves to indicate the following:

1. Temperature of Water at the boiler.
2. Height of water level in feet above the gauge for OPEN SYSTEMS where expansion tank is used.
3. Water pressure in pounds per square inch for CLOSED SYSTEMS where pressure is controlled by means of automatic relief or regulating valve WITH or WITHOUT use of air tight pressure or cushion tank.

IN CASE OF OPEN SYSTEM, where expansion tank is used it will be necessary to fill the system with water up to 1/3 of the expansion tank as directed under OPERATION and CARE.

The rim and glass in gauge should then be removed after loosening two screws or other means of holding rim in place.

It will be found that the automatic pointer on the ALTITUDE SCALE, which indicates HEIGHT IN FEET and PRESSURE IN POUNDS has moved up and indicates height of water level, above the boiler in the expansion tank.

The adjustable pointer (generally finished in color) should then be moved by hand UNTIL DIRECTLY UNDER AUTOMATIC POINTER.

Any loss of water within the system will be indicated by the AUTOMATIC POINTER receding to a smaller figure on the Altitude Scale at which time the water supply should be opened until the Automatic Pointer is again directly over the adjustable pointer.

After setting adjustable pointer, replace rim and glass and tighten screws.

In case of Closed System, it is necessary to know that EXCESSIVE PRESSURE is not permitted to build up.

ON A CLOSED HOT WATER SYSTEM PRESSURE MUST NOT EXCEED 50 LBS. IF IT DOES, IT MUST BE RELIEVED IMMEDIATELY EITHER THROUGH RELIEF VALVE, DRAIN COCK OR OTHER SUITABLE CONNECTION, AND CAUSE OF FAILURE OF RELIEF VALVE INVESTIGATED AND CORRECTED, OTHERWISE PRESSURE MAY BUILD UP AND DAMAGE HEATING SYSTEM.

GENERAL MAINTENANCE OF HEATING SYSTEM

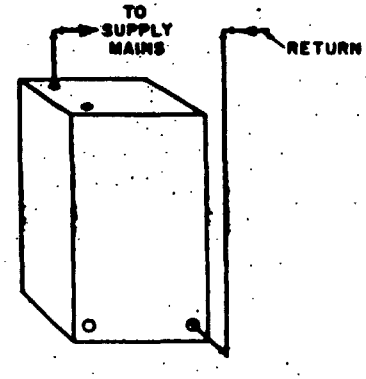
1. Keep radiators and convectors clean.
2. Keep system in good repair. It is advisable to have it inspected by your heating contractor at least once a year.
3. If a hot water radiator is hot at the bottom but not at the top, it indicates that air has accumulates inside and should be vented. To vent radiator: Hold small cup under air vent (located near top of radiator), open vent until water escapes and then close.
4. Fill steam boilers only as directed on Page 13.
5. Fill Hot water systems as follows;

   Open all radiator valves, but keep vents at top of radiator closed. Fill open systems until hands on altitude gauge are even. If it is a closed system the water filling will stop automatically when proper pressure is reached. (Pressure should not exceed 50 pounds). Then, beginning with ground floor, vent each radiator as directed above. It may be necessary to add water during this operation to expel air from higher radiators.
6. If much water is added to system, it is advisable to heat system to a high temperature and vent again. This will make less venting necessary during the winter.
7. Where an expansion tank is used, make sure that neither the tank nor its drain pipe is exposed to freezing temperatures. Never place valves in piping leading to or from expansion tank.

GIVE BOILER SIZE and SERIES NUMBER WHEN
ORDERING REPAIR PARTS

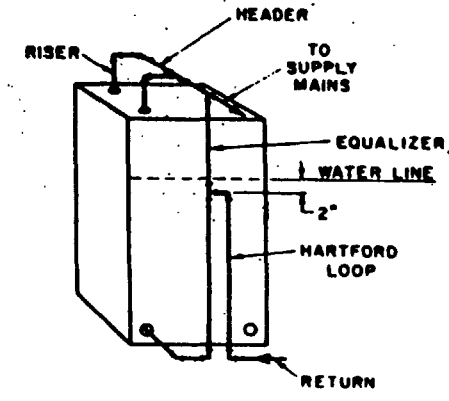
MINIMUM PIPING RECOMMENDATIONS

HOT WATER



BOILER NUMBER	GRAVITY		FORCED	
	SUPPLY	RETURN	SUPPLY	RETURN
A-504	2½"	2½"	1½"	1½"
A-505	2½"	2½"	2"	2"
A-506	(2)-2"	(2)-2"	2"	2"
A-507	(2)-2"	(2)-2"	2"	2"
A-508	(2)-2½"	(2)-2½"	2½"	2½"
A-509	(2)-2½"	(2)-2½"	2½"	2½"
A-510	(2)-2½"	(2)-2½"	2½"	2½"
A-511	(2)-2½"	(2)-2½"	2½"	2½"

STEAM



BOILER NUMBER	RISER	HEADER	EQUALIZER	RETURN
A-504	3"	–	2½"	1¼"
A-505	3"	–	2½"	1¼"
A-506	4"	–	2½"	1¼"
A-507	4"	–	2½"	1½"
A-508	(2)-3"	4"	2½"	1½"
A-509	(2)-4"	4"	2½"	1½"
A-510	(2)-4"	4"	2½"	2"
A-511	(2)-4"	5"	2½"	2"

CONSUMER PROTECTION - WARRANTY

American-Standard products normally reach owners or consumer-users through an industry channel of distributors and plumbing and heating contractors. Experience has shown that claims of defects in our products generally relate to abuse or to other damage which occur after our sale and are not our responsibility. Since determining proper responsibility requires local inspection, our warranty (set forth below) extends only to our direct buyers; distributors are best equipped to obtain the facts underlying claims, to place responsibility where it belongs and to recommend/handle repair or replacement.

American-Standard warrants only to its distributors and other direct Buyers that it will furnish by freight a replacement for, or at its option repair, any product of its manufacture or part or portion thereof, proved to its satisfaction to be defective in material or workmanship under normal use and service within one year after installation.

THERE IS NO OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING NO IMPLIED WARRANTY OF MERCHANTABILITY OR IMPLIED WARRANTY FOR FITNESS FOR A PARTICULAR PURPOSE AND AMERICAN-STANDARD WILL NOT BE RESPONSIBLE FOR ANY DAMAGES WHATSOEVER, NOR FOR LABOR OR TRANSPORTATION EXPENSES RELATING TO SUCH REPLACEMENT OR SUCH REPAIR, NOR WILL IT BE HELD RESPONSIBLE FOR WARRANTY ADJUSTMENTS COSTING MORE THAN THE PRICE OF THE PRODUCT TO ITS DISTRIBUTORS AND OTHER DIRECT BUYERS.

Goods of other manufacturers sold by American-Standard are not warranted unless accompanied by an express written warranty, but the Seller will endeavor to secure for its direct Buyers the benefits of warranties extended by such other manufacturers for such goods.

American-Standard is proud of its record for product quality and for fairness in handling warranty matters; and, if an ultimate user of our products should feel our warranty system described above does not work fairly in his case, he should write the Office of the President, Director of Consumer Affairs, U. S. Plumbing/Heating, American-Standard, 40 West 40th Street, New York, N. Y. 10018.

DEALER'S NAME: _____

ADDRESS: _____

TELEPHONE NO.: _____

DATE OF INSTALLATION: _____

AMERICAN STANDARD

PLUMBING & HEATING DIVISION

NEW BRUNSWICK, NEW JERSEY 08903

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