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AP OIL BOILER

by

AMERICAN-Standard

INSTALLATION-OPERATION AND MAINTENANCE MANUAL

FOR PACKAGED
OIL HEATING UNITS

2-28-66

ATTENTION INSTALLER!

THIS MANUAL IS TO BE LEFT WITH
BOILER FOR THE HOMEOWNER

AMERICAN-Standard

First in heating ... first in plumbing

BP-7903-AP

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To the homeowner:

The American-Standard boiler which has been installed for you is the heart of your hydronic heating system. Since the performance of your system depends upon the boiler, it has been designed to operate at maximum efficiency. Advanced design, precision engineering, and modern manufacturing techniques are combined in this product to provide you with comfort at a low operating cost and with a minimum of maintenance.

The boiler sections are cast in iron--a metal resistant to corrosion, especially in a closed system. If this boiler is part of a new installation, it is joined in a closed system--i.e., normally water is neither lost nor added--and should not be drained. The replacement of water adds oxygen to the system; corrosive action continues until that oxygen is consumed; but, certainly, the boiler should not be fired without an adequate supply of water. On the other hand, if the boiler is not used during the winter months, it must be drained to prevent damage caused by freezing.

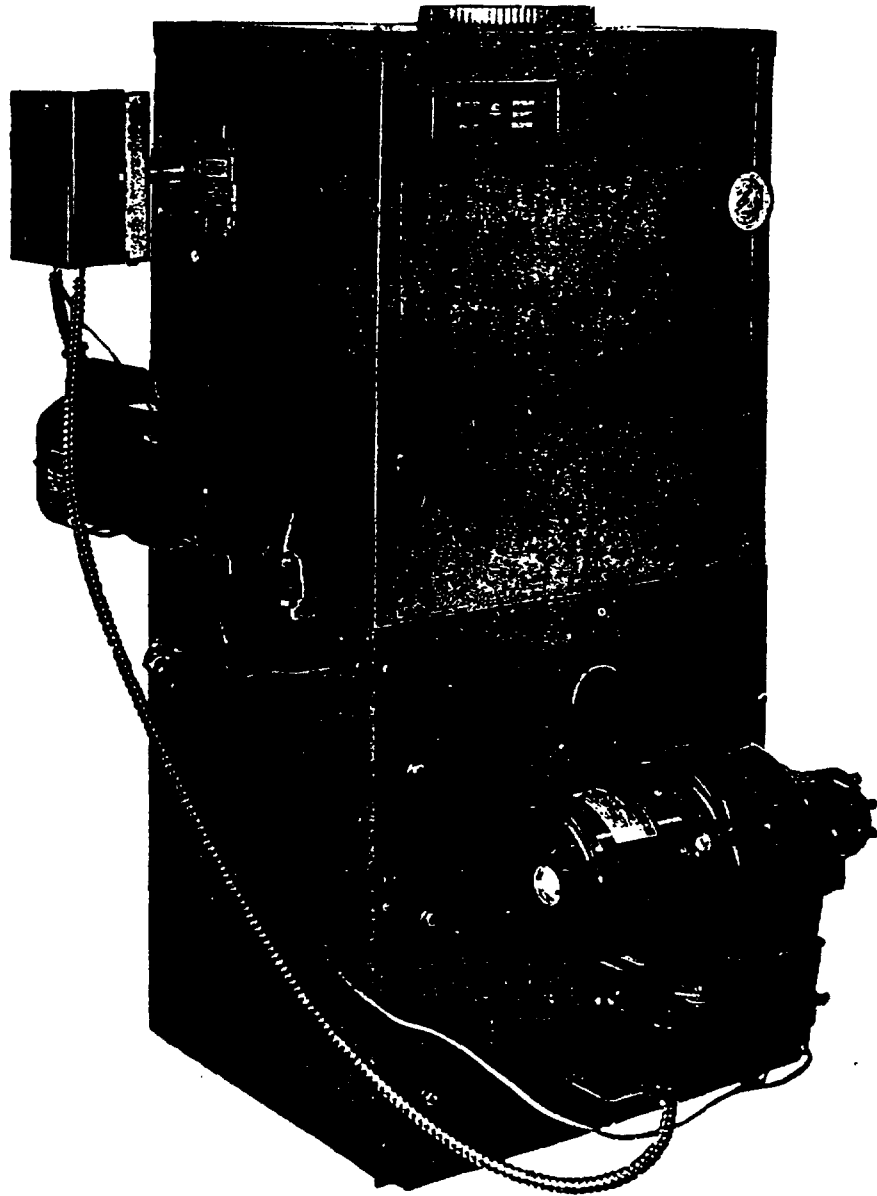
By following the suggestions contained in this manual, you can assume your boiler will function properly for many years. Should any problem arise, contact your nearest American-Standard contractor, whose name can be found in the "yellow pages" of your telephone directory.

AMERICAN-STANDARD

AP OIL BOILER

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The AP Packaged Boiler comes to you almost completely preassembled; consequently, the installer's major responsibility will be in locating, connecting accessory parts and performing the actual hookup.

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GENERAL INFORMATION

The APT Packaged Boiler comes pre-assembled, and has been tested and approved by I=B=R as an oil-fired unit only.

The APT Packaged Boiler comes with 4, 5, or 6 sections.

I=B=R Ratings

<u>Size</u>	<u>No. of Sections</u>	<u>I=B=R Gross Output Btuh</u>
APT-95	4	95,000
APT-130	5	130,000
APT-165	6	165,000

LOCATING BOILER FOR INSTALLATION

The boiler should be located on a level floor as near the chimney as possible. Be sure that sufficient space is allowed at the left side (at least a 20" clearance) to allow for removal of the water heater. Cleaning space should also be allowed at the front of the boiler.

If a water condition exists in the basement, or it has been necessary to waterproof the basement floor, the boiler should be mounted on a concrete or hollow tile base.

NOTE: THIS BOILER IS NOT RECOMMENDED FOR
INSTALLATION ON COMBUSTIBLE FLOORS.

UNPACKING APT PACKAGED BOILER

Locate the boiler near its final installation site before removing its crate. Unpacking should be accomplished as follows: (See Figs. 1 and 2)

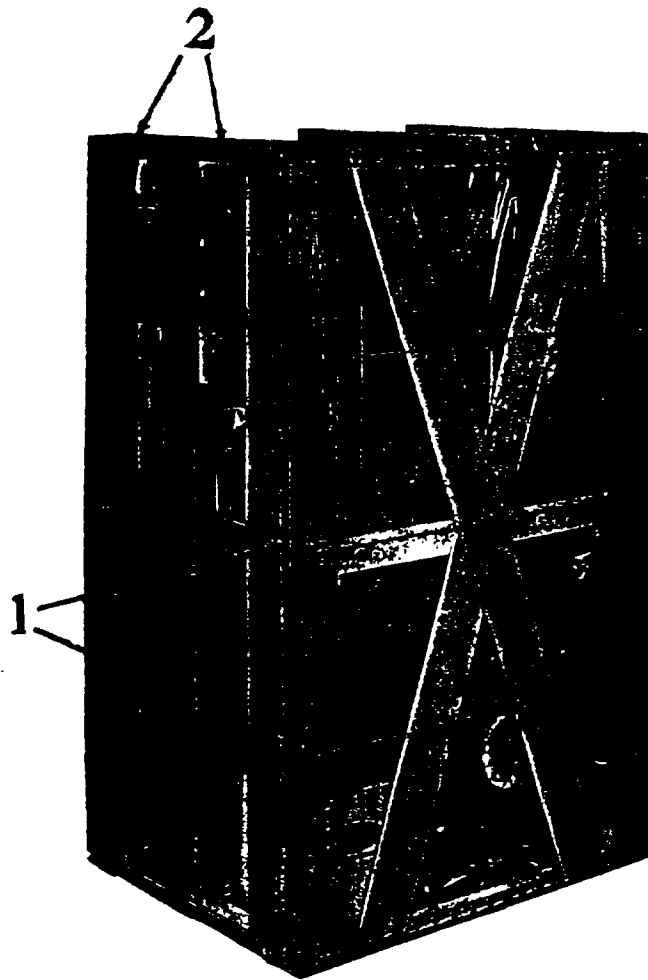
1. Unfasten all crating wire at the corner of the crate.
2. Remove nails fastening crate sides to top and bottom of crate.
3. Lift off crate top and unwrap crate side from crate base.
4. Remove the plastic bag.
5. Remove box containing draft stabilizer, relief valve, and miscellaneous parts.
6. Remove boiler from base per instructions on Fig. 2.

EXPANSION TANK LOCATION

Care should be taken in locating the expansion tank. It should not be set in a cold or exposed space. If the pipe to or from the tank were to freeze, serious damage could result.

AP OIL BOILER

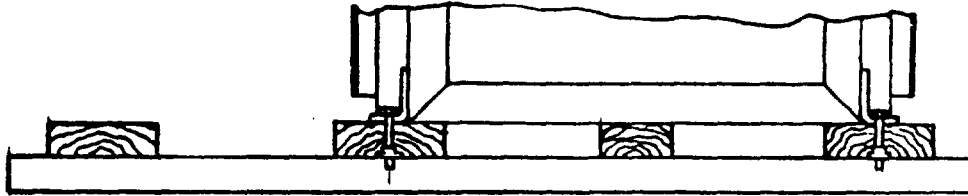
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1. Side Fasteners
2. Nails

FIG. 1

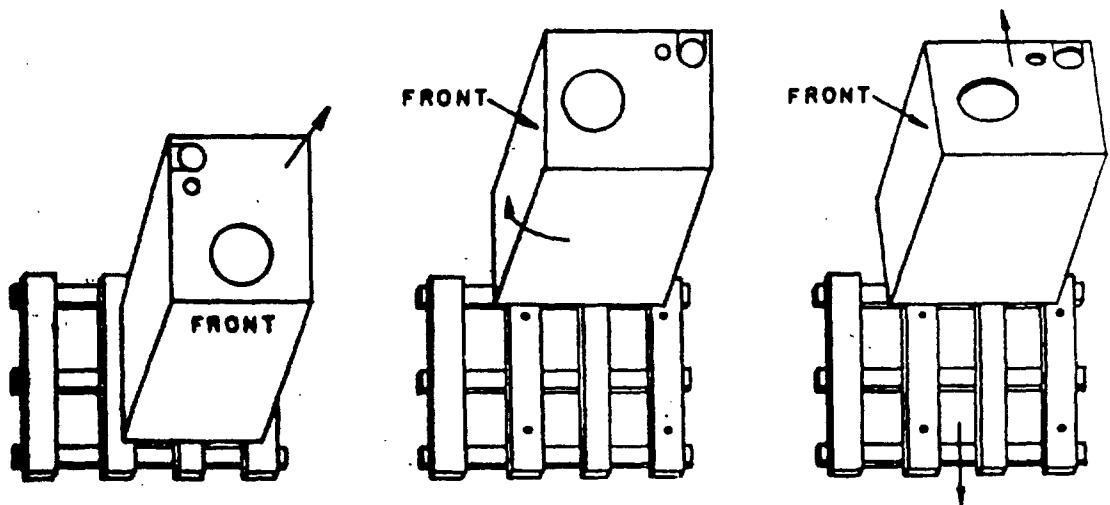
1. Remove four hex head bolts securing boiler to the crate base.



2. Tilt boiler to rear and to right.

3. Pivot boiler on right rear corner, rotate 90°, and lower to floor.

4. Tilt boiler so that crate base can be completely removed.



(The above procedure is quite simple and can be easily accomplished by one man).

5. After the boiler is removed from the crate base, it can be easily walked to its final location.

FIG. 2

CHECK-OFF PARTS LIST FOR APT PACKAGED BOILER

Although the APT Packaged Boiler comes to you assembled, it is necessary to check certain accessory items prior to final hook up.

Accessory Box

Draft Stabilizer
Relief Valve
3/4" x 4-1/2" Pipe Nipple
3/4" Tee
Oil Burner Nozzle
Circulator Flange
Gasket and Bolts
Thermostat

Oil Burner Box

DH-5R Oil Burner

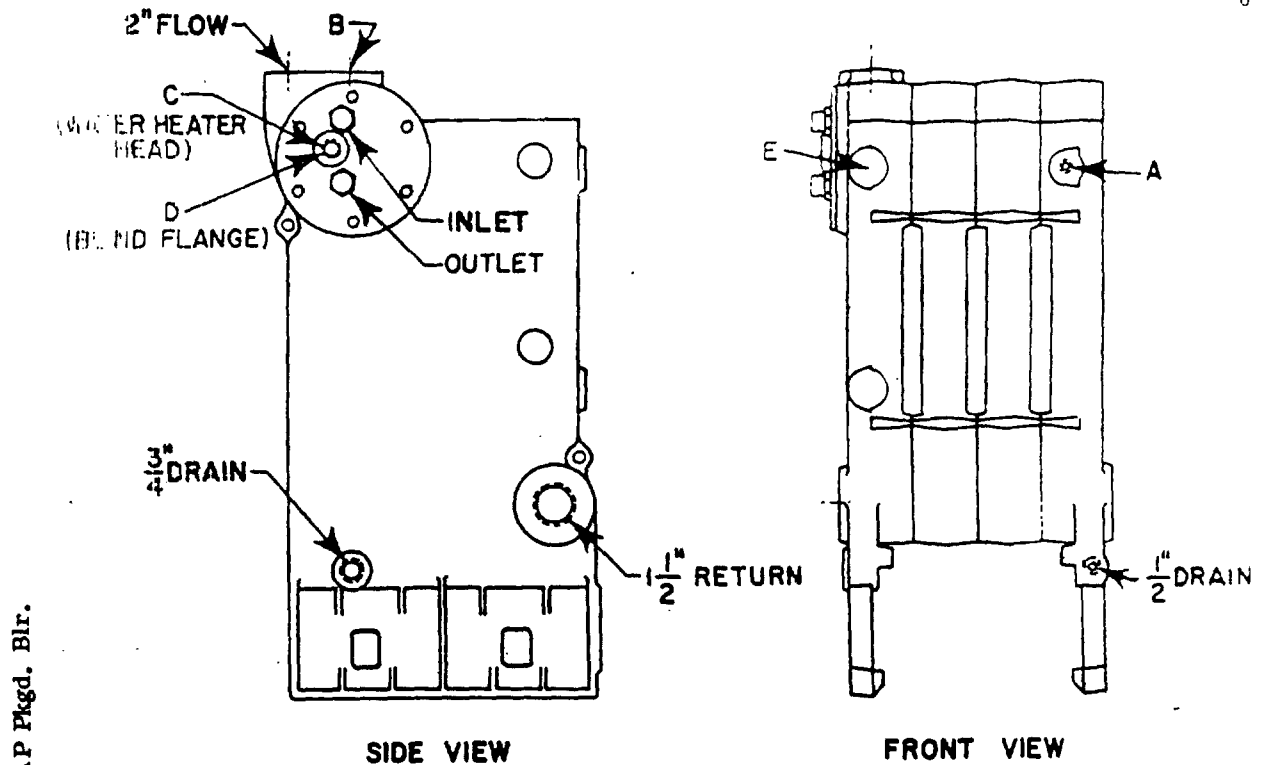
ELIMINAIRE FEATURE

This APT Boiler makes use of a special end section with a 2" supply tapping, incorporating the "Eliminaire" feature (See Figs. 3 and 4).

The "Eliminaire" is a unique, built-in air separator which prevents air from being transmitted to the system and directs the air to the compression tank or vent. This eliminates the need for external air separators such as dip-tubes or inlined accessories. The "Eliminaire" also assures positive air separation, thereby insuring proper system performance.

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SECTION ASSEMBLY SHOWING TAPPINGS
FOR FORCED CIRCULATION

CONTROL APPLICATION		
LOCATION ON BOILER	SIZE OF TAPPING	CONTROLS
A	1/4"	TEMPERATURE AND ALTITUDE GAGE
B	3/4"	PRESSURE RELIEF VALVE AND EXPANSION TANK
C	3/4"	COMBINATION CONTROL, OPERATING, HIGH LIMIT, CIRCULATOR RELAY & PRIMARY CONTROL
D	3/4"	LIMIT CONTROL OR COMBINATION LIMIT AND REVERSE ACTING CONTROL (FOR INSTALLATIONS WITHOUT TANKLESS WATER HEATER)
E	3/4"	OPTIONAL AUXILIARY LIMIT CONTROL SPECIAL ORDER ONLY

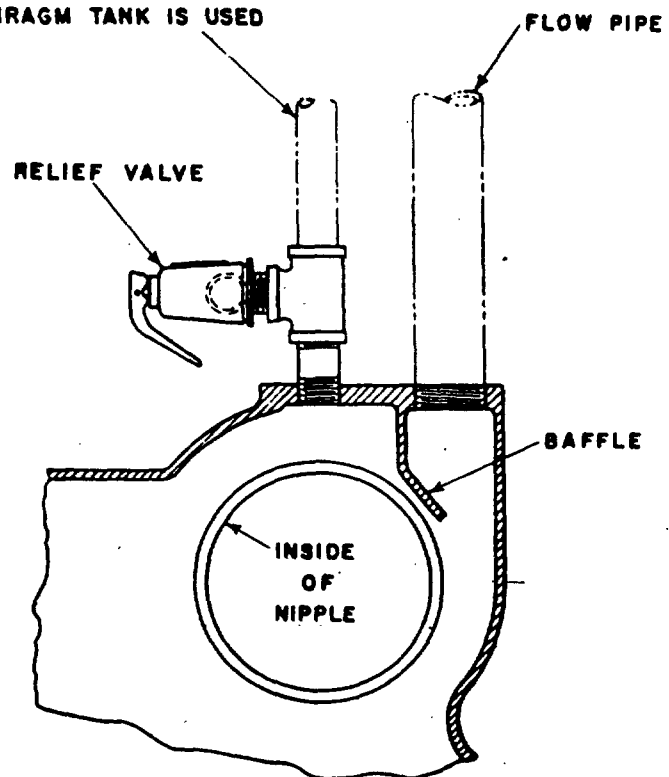
FIG. 3

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TO CONVENTIONAL EXPANSION
TANK OR AIR VENT IF
DIAPHRAGM TANK IS USED



ELIMINAIRE AND
PIPING FOR FLOW PIPE
AND RELIEF VALVE

FIG. 4

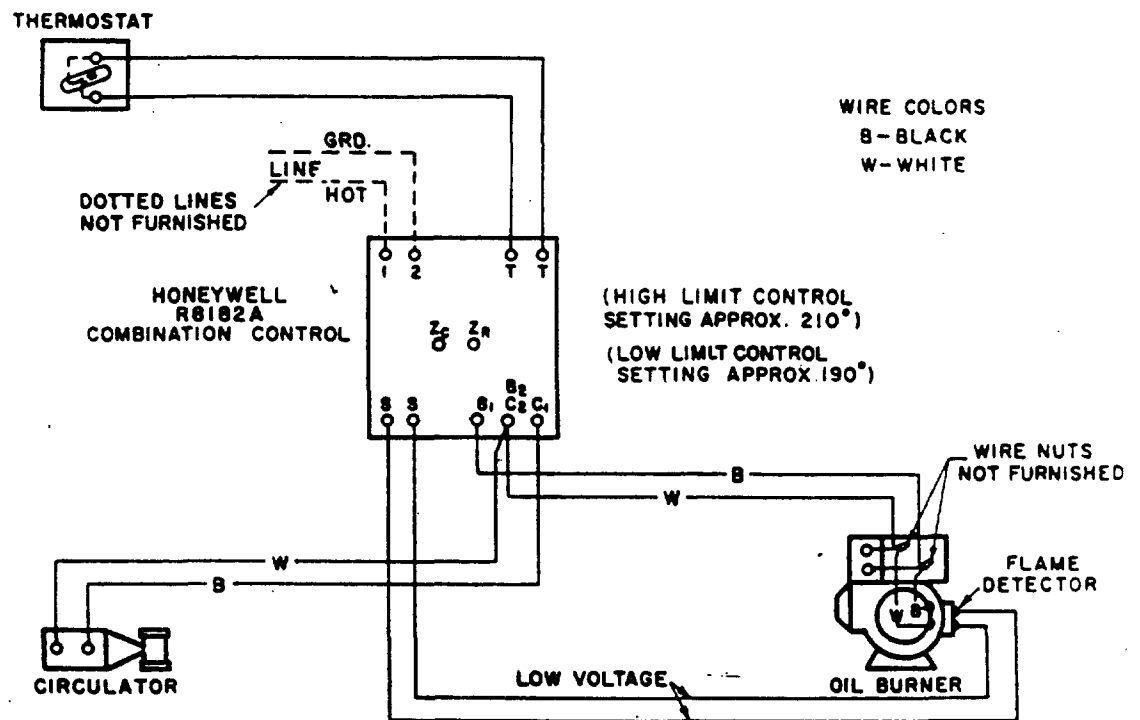
INSTALLING THE APT BOILER

After moving the APT Packaged Boiler to the desired location, final installation procedures should be accomplished as outlined below.

1. Hook up piping.
2. Install relief valve and fittings in top of left-hand end section (See Fig. 4).
3. The upper flange of the circulator should be installed on the return piping, then bolted to the circulator flange. Be sure the flange gasket is not damaged, and that the flange bolts are drawn up equally.
4. Install the flue pipe and draft stabilizer using instructions provided with stabilizer. The flue pipe should not extend beyond the inside wall of the chimney flue. Horizontal runs of flue pipe should be kept at a minimum with approximately $1/4$ " pitch per foot maintained.
5. Install nozzle in oil burner.
6. Install oil burner by hanging on burner plate mounting bracket and guiding gun into combustion chamber.
7. Run electric service line from switch (not furnished by AR&SS) to the control mounted on built-in water heater.
8. Install room thermostat.
9. Make all electric connections according to wiring diagrams (See Fig. 5).
10. The boiler is now ready to be filled. THE FILLING PROCEDURE IS AN IMPROVED METHOD, AND SHOULD BE FOLLOWED AS INDICATED ON FIG. 6.
11. Adjust oil flame per instructions in Oil Burner Manual shipped in oil burner box. UNDER NO CONDITIONS SHOULD SMOKE EXCEED NO. 1 ON THE BACHARACH SCALE. CO_2 percentage will normally be between 10% and 11% with 0.02 iwc over fire draft.
12. Boiler is now ready for service.

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PACKAGED OIL BOILER WITH WATER HEATER
WIRING DIAGRAM FOR CONSTANT IGNITION

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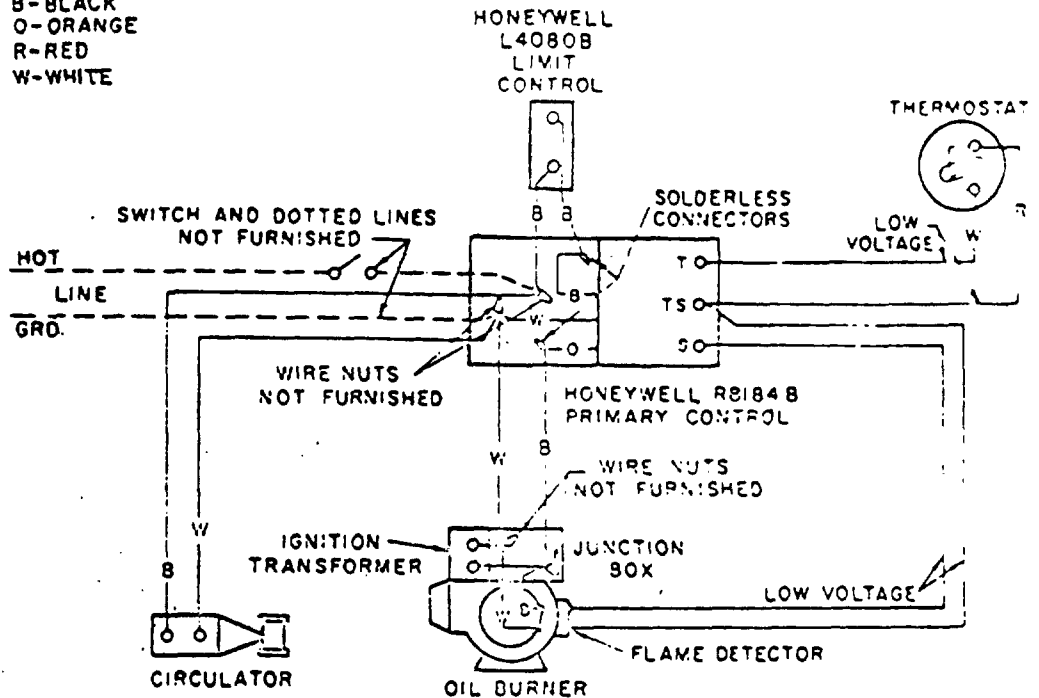
FIG. 5

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WIRE COLORS

B-BLACK
O-ORANGE
R-RED
W-WHITE

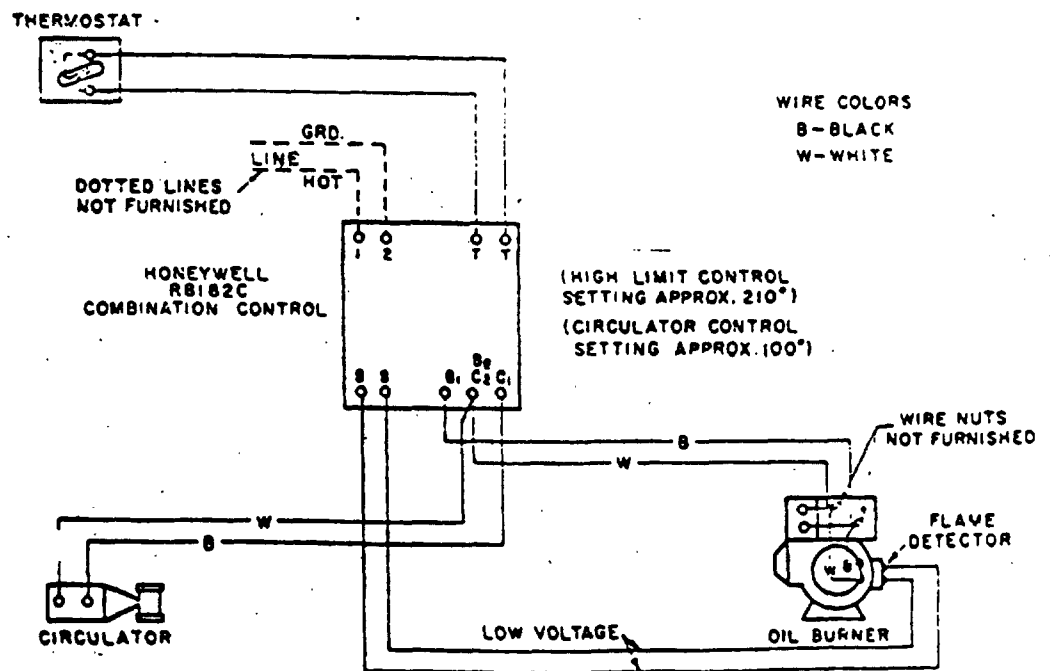
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PACKAGED OIL BOILER LESS WATER HEATER WIRING DIAGRAM
CONSTANT IGNITION - CONTINUOUS CIRCULATION

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PACKAGED OIL BOILER LESS WATER HEATER WIRING DIAGRAM WITH
REVERSE ACTING CIRCULATOR CONTROL AND CONSTANT IGNITION

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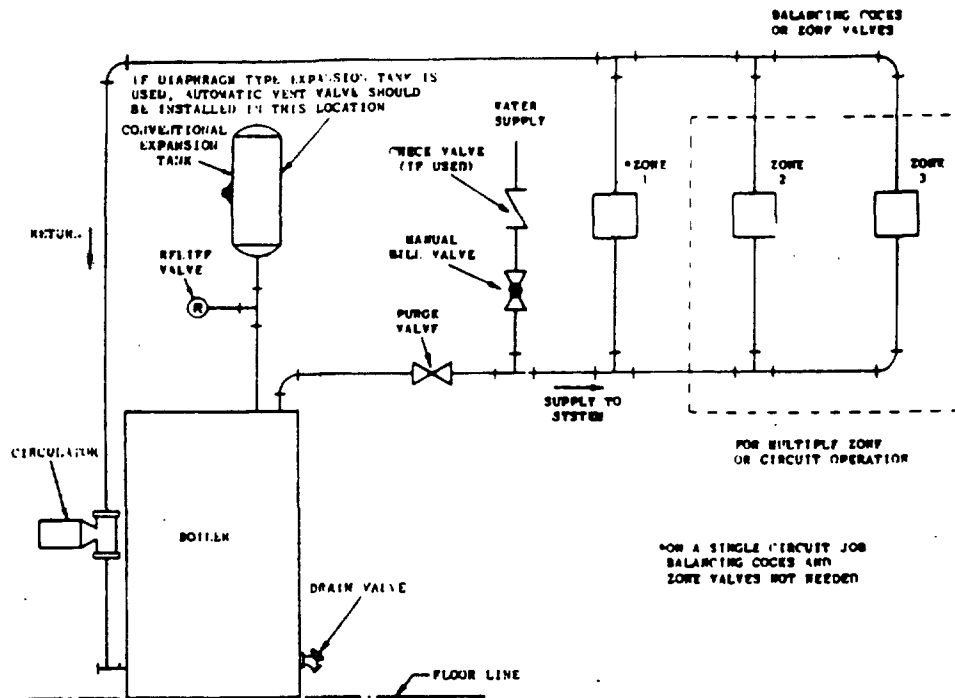


FIG. 6

The following procedure should be used to fill a series loop Hydram system (See Fig. 6).

1. Close all zone valves except the one for the zone to be filled with water and purged of air.
2. Open the drain valve on the boiler.
3. Open the fill valve.
4. Close the valve.
5. Open the relief valve.
6. Open the valve to the second zone to be purged; then close the first. Repeat this step until all zones have been purged of air and filled with water; but always have one zone open. (Zones are purged and filled when water can be felt in the pipe at the end of the zone).
7. Close the drain valve.
8. When water appears, release the lever on the relief valve, allowing it to close.
9. Continue filling the system until the pressure gauge reads 12 psi without heat or 25 psi at 200°F; close the fill valve.
10. Open the purge valve.

Following the completion of the installation, a thorough check should be made of the entire hydronic system to locate possible leaks.

NOTE: For a single loop Hydram system no additional vents, cocks, valves or other accessories are required except: When tankless heater is used and Hydram is above the boiler outlet, install a flow-check valve to prevent gravity circulation.

CAUTION: If a valve of any type is installed in the piping leading to or from the expansion tank, BE SURE THAT IT IS ALWAYS OPEN WHILE THE BOILER IS IN OPERATION.

CARE OF BOILER WHILE IN OPERATION

Keep open type system filled to $\frac{1}{3}$ of expansion tank. In 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.

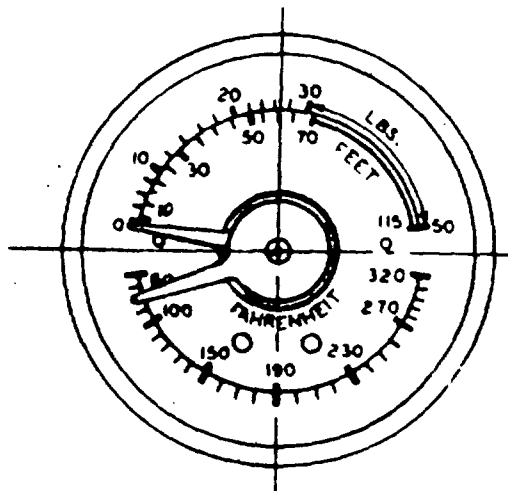


FIG. 7

The homeowner should periodically check the readings on the gauge, located on the front of the boiler (See Fig: 7). The lower scale indicates the water temperature. That temperature should never be allowed to exceed 250°F. The boiler is designed to operate with a normal maximum water temperature of 230°F; but, during mild weather, the system operates with water temperatures considerably below the maximum.

The upper scale indicates the pressure within the system and should not exceed 30 lbs. In a closed system, the boiler and piping are entirely filled with water except for a cushion of air in the upper portion of the expansion tank. When the water is heated, it expands, compressing the air in the expansion tank. If, for any reason, this air were completely displaced from the tank, there would no longer be a cushion; an increase in water temperature would cause a corresponding increase in volume; pressure would force the relief valve open to discharge the excess volume. To correct such a condition, the expansion tank must be drained enough to permit the tank to fill with air.

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.

CARE OF BOILER WHILE NOT IN OPERATION

At end of heating season, clean boiler thoroughly.

Lubricate circulator in accordance with lubrication instructions on decal.

Clean and remove flue pipe where feasible.

Keep system filled with water; in other words, DO NOT DRAIN BOILER.

IF BOILER IS NOT USED DURING WINTER, IT MUST BE FULLY DRAINED TO PREVENT DAMAGE CAUSED BY FREEZING.

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CONSTRUCTION DETAILS

Three different cored section castings are used to make up the APT Packaged Boiler (See Fig. 8).

1. Left-hand end section with 2" supply tapping, and "Eliminaire."
2. Right-hand end section.
3. Center section.

PLATE WORK

Burner Plate and Door

These are integral components and made of sheet steel with block insulation.

CANOPY

An aluminized sheet-steel canopy is provided. Smokepipe sizes are as follows:

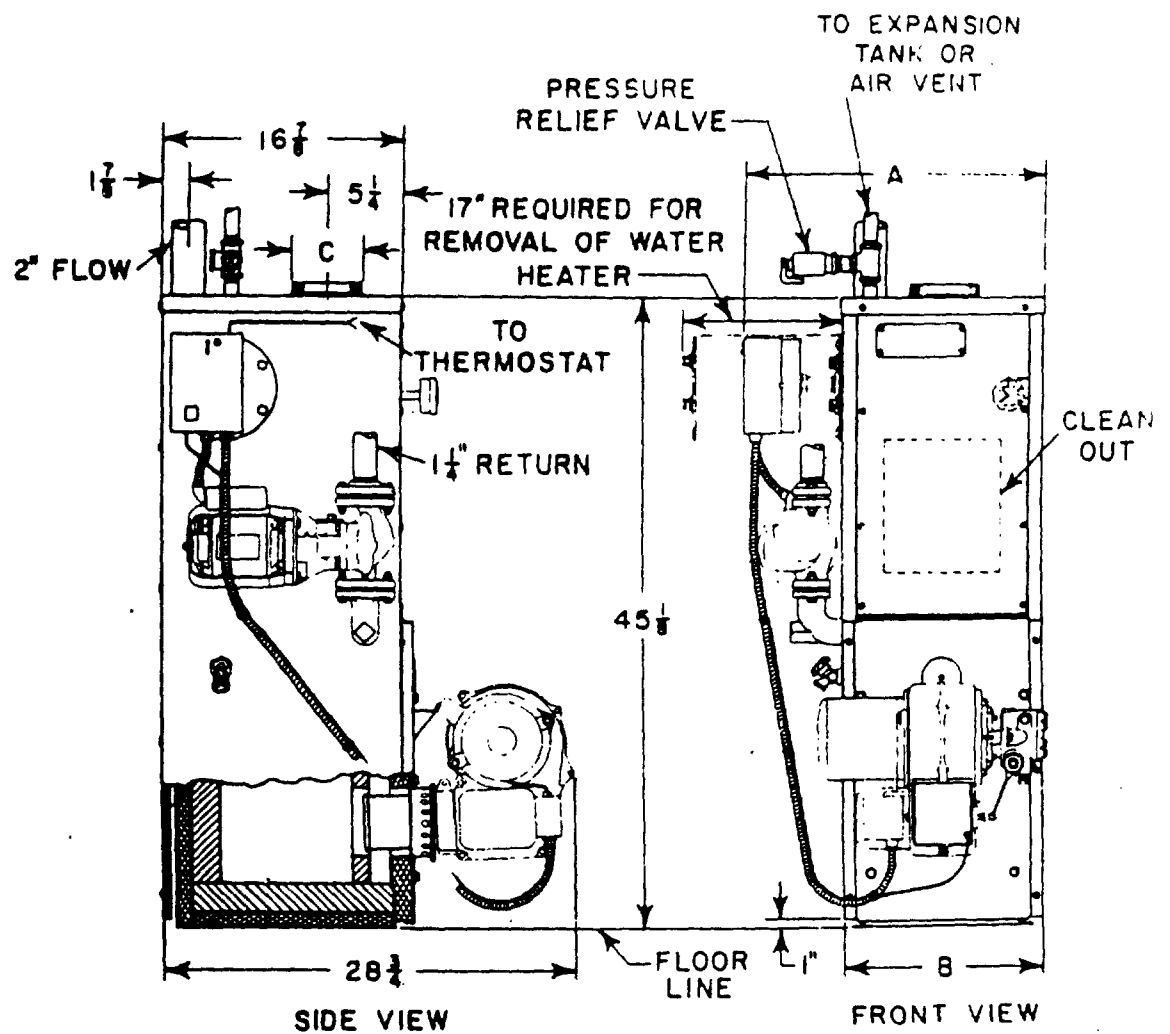
<u>No. of Sections</u>	<u>Smokepipe Size</u>
4	6"
5	6"
6	7"

INSULATION

The jacket is insulated with 1/2" Fiberglass, with 1" Fiberglass on the top panel.

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BOILER NUMBER	A	B	C FLUE PIPE DIA.
APT-95	21 1/2	14 1/4	6
APT-130	24 3/4	17 1/2	6
APT-165	28	20 1/4	7

FIG. 8

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COMBUSTION CHAMBER

The APT Boiler has a refractory combustion chamber.

OIL BURNER

The Model DH-5R oil burner is used with the APT Boiler.

CONTROLS

The APT Boiler makes use of a light-sensing primary control. Otherwise, controls for the APT Packaged Boiler are conventional.

JACKET

Jacket design for the APT Packaged Boiler is conventional as with other AR&SS boilers.

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