150-1500 SMITH-MILLS BOILER

ERECTING DIRECTIONS

FOR THE

STEAMFITTER

NOTE LIST OF CHANGES ON COVER PAGE OF ERECTING DIRECTIONS.

IMPROVEMENTS ARE MADE FREQUENTLY, INCLUDING CHANGES IN ERECTING.

OPERATING DIRECTIONS

Series 15-20-25 Smith-Mills Boilers for Water

FOR AUTOMATIC FIRING—OIL-STOKER-GAS

[illegible]

The H. B. Smith Company, Incorporated

1965

CATALOG NO. 2216
SUPERSEDES NO. 2193

150-1500 SMITH-MILLS BOILER

FOR 100-1100 BOILER-BURNER UNITS
SEE SEPARATE BURNER INSTRUCTIONS PACKED IN CONTROL CARTON

HYDROSTATICALLY TESTED A. S. M. E. STANDARD
MAXIMUM ALLOWABLE WORKING PRESSURE STEAM 15 LBS. — WATER 40 LBS.

ERECTING DIRECTIONS

IMPROVEMENTS ARE MADE FREQUENTLY, INCLUDING CHANGES IN ERECTION. IT IS THEREFORE, IMPORTANT THAT YOU READ THESE ERECTING DIRECTIONS CAREFULLY.

I·B·R REG. U.S. PAT. OFF.

THE H. B. SMITH CO., INC.
WESTFIELD, MASS.
NO. 100-1100-150-1500
SMITH-MILLS BOILERS

NO. SECTS.	I·B·R NET RATINGS SQ. FT. STEAM	I·B·R NET RATINGS BTU/HR. WATER	I·B·R BURNER CAPACITY (LIGHT OIL) GAL./HR.	VALVE CAPACITY *LBS./HR.
4	405	96,800	1.30	129
5	485	116,300	1.55	166
6	570	136,500	1.80	206
7	650	156,000	2.05	242

MAX. W.P. STEAM 15 PSI ‖ *A.S.M.E. VALVE CAPACITY
WATER 40 PSI ‖ 1000 BTU = 1 LB. STEAM

MEMBER INSTITUTE BOILER AND RADIATOR MANUFACTURERS

THE H. B. SMITH COMPANY, INCORPORATED

BOSTON | WESTFIELD, MASS. | NEW YORK | PHILADELPHIA

GENERAL OFFICE AND PLANT — Westfield, Mass.

1967

CATALOGUE NO. 2269
SUPERSEDES NO. 2218A

BURNER AND CONTROL INSTRUCTIONS

FOR

1100S or W CARLIN UNIT

MODEL 400N-2R BURNER

THE H. B. SMITH COMPANY, INCORPORATED

BOSTON | WESTFIELD, MASS. | NEW YORK | PHILADELPHIA

GENERAL OFFICE AND PLANT — Westfield, Mass.

ERECTING DIRECTIONS
FOR THE
STEAMFITTER

NOTE LIST OF CHANGES ON COVER PAGE OF ERECTING DIRECTIONS.

IMPROVEMENTS ARE MADE FREQUENTLY, INCLUDING CHANGES IN ERECTING.

Installed by _____ Address _____

You Have One of the Finest Heating Boilers Obtainable. Why Not Give It the Treatment It Deserves? Please Follow These Directions.

OPERATING DIRECTIONS

Series 15-20-25 Smith-Mills Boilers for Water

FOR AUTOMATIC FIRING — OIL-STOKER-GAS

1. BURNER OR STOKER INSTALLATION.

The installation of a burner or stoker should be left to the judgment and experience of the dealer.
However, for an oil burner The H. B. Smith Co., Inc. recommends the following:

1. Set oil delivery at rate not higher than catalog oil rate.
2. Set automatic draft regulator so as to maintain .02 to .05 inches draft in combustion chamber to suit the size of boiler and the type of fuel used.
3. Adjust burner setting until combustion results indicate 10% CO_2 in flue gases.
4. Follow recommendations of the oil burner manufacturer as to the grade of oil to be used.

Where a stoker is installed it is recommended that: 1. A baffle should be suspended over the retort.

2. The retort should be either centered in the combustion chamber or be installed slightly back of center.
3. Set the automatic draft regulator so that a high chimney draft will not pull the gases from the boiler too rapidly.

2. CARE OF SYSTEM.

CLOSED TANK SYSTEMS

If water heating system is of the closed tank type it should include a damper regulator, relief valve, pressure reducing valve and compression tank. Manufacturer's instructions as to care and operation of this equipment should be observed.

OPEN TANK SYSTEMS

If a water heating system has an open expansion tank in the attic or located above the radiators, the boiler should be equipped with an altitude gauge and thermometer. Make sure all air valves on radiators are closed and that the radiator valves are open. Let water into system until it stands half-way in the expansion tank. Set the red pointer of the altitude gauge under the black pointer. Open the air valves on radiators, one at a time, and close when water runs out. It will be necessary to let more water into the system before all the radiators will fill. When radiators are filled, refill expansion tank to the half-way level. Air will accumulate in radiators and should be released several times a season.

3. CLEANING.

The flues and fire surfaces of the boiler should be kept free from soot. The gases pass into the side flues near the top, through openings between the sections. For the best operation of the boiler, it is absolutely necessary that these openings be kept clean. At least once annually, it is advisable to drain only enough water from the system to remove any sediment which may have accumulated.

4. CHIMNEY.

A separate flue should be provided, the size and height to be determined by the size of the boiler. An automatic draft regulator is recommended and, when once properly adjusted should not be tampered with.

5. BOILER NOT IN USE IN SUMMER.

"Heating boilers are often seriously damaged during summer months due chiefly to corrosion resulting from the combination of sulfur in the soot with the moisture in the cellar air."

At the end of the heating season, the following precautions should be taken:

1. All heating surfaces and smoke pipe connections should be cleaned thoroughly. Leave all doors open.
2. "If there is much moisture in the boiler room, it is desirable to drain the boiler".
   All radiator valves should be opened before water is drawn off. As the water level gets below the radiators, open the air valves also.
3. When the boiler room is very dry (i.e. there never is any moisture on the boiler surfaces) it is permissible to leave the water in the system.
4. Main electrical switches should be opened and gas valves closed at the end of heating season.

CAUTION: Do not start fire while boiler is dry.

Quotations above are from the A.S.H.&V.E. Guide.

6. BOILER NOT IN USE IN WINTER.

Draw off all water from the low points in the system to prevent freezing.

All radiator valves should be opened before the water is drawn off.

As the water level gets below the radiators, open air valves also.

CAUTION: Do not start fire while boiler is dry.

GUARANTEE: This boiler is fully guaranteed against any and all defects in materials and workmanship. If you have any reason to believe that there is anything wrong with this boiler or its installation, contact the heating contractor who installed the boiler.

The H. B. Smith Company, Incorporated

Home Office and Works

WESTFIELD, MASSACHUSETTS

1965

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SUPERSEDES NO.2193

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WESTFIELD, MASS.

NO. 100-1100-150-1500
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REG. U. S. PAT. OFF.

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THE H. B. SMITH COMPANY, INCORPORATED

BOSTON
150 Causeway St.
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331 Madison Ave.
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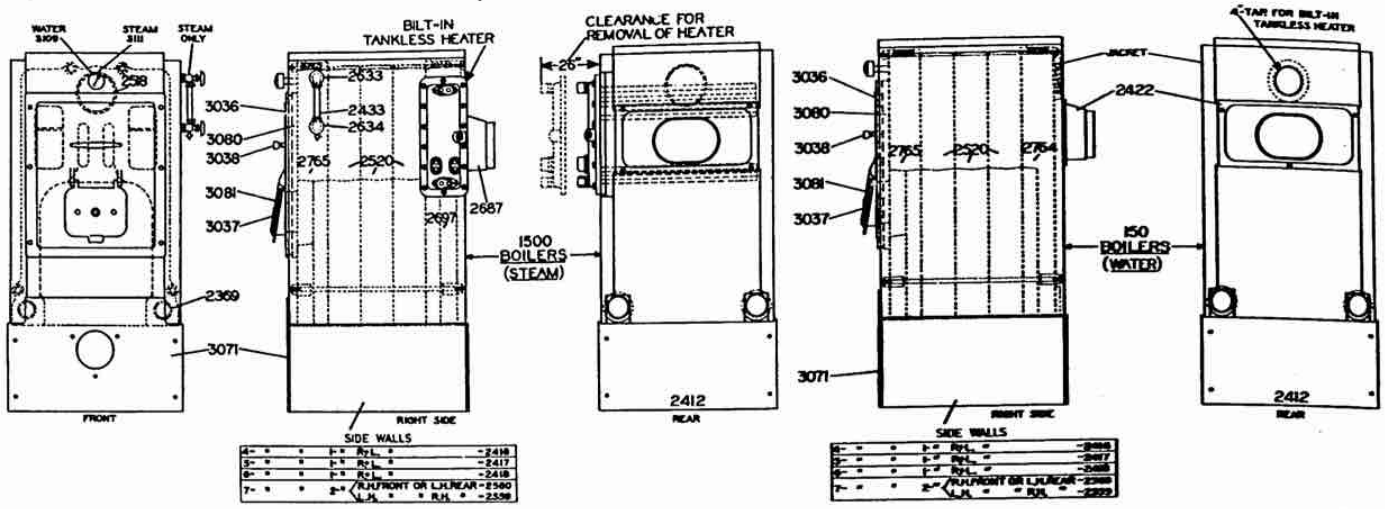
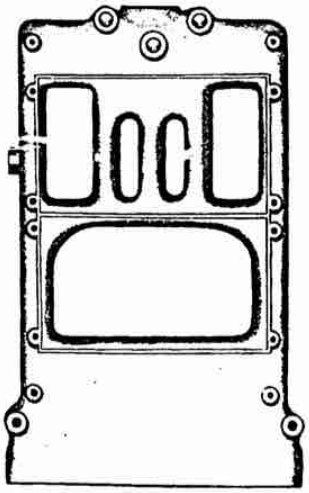
PHILADELPHIA
1612 Market St.
Phone 215-563-9828

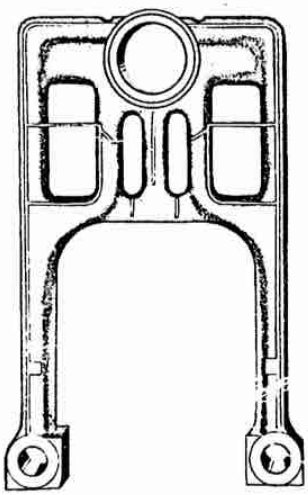
GENERAL OFFICE AND PLANT — Westfield, Mass.

150-1500 SMITH-MILLS

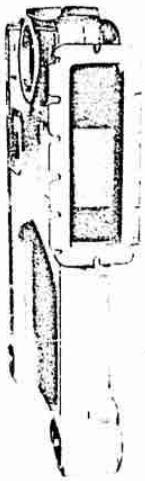




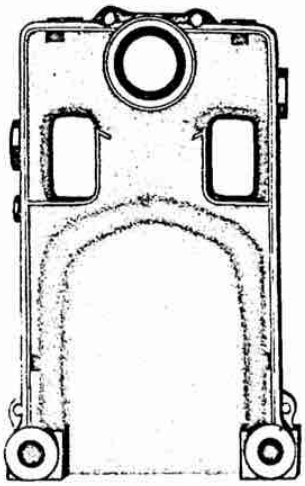
FRONT SECTION
2765-Steam or Water



LEG SECTION
2520-Steam or Water



REAR SECTION
2697-Steam



REAR SECTION
2764-Water

PARTS LIST

CAT. NO.	DESCRIPTION
FOUNDATION	
2412	FOUNDATION BACK
2416	FOUNDATION SIDEWALL - 4 SECT. (R OR L HAND)
2417	FOUNDATION SIDEWALL - 5 SECT. (R OR L HAND)
2418	FOUNDATION SIDEWALL - 6 SECT. (R OR L HAND)
2559	FOUNDATION SIDEWALL - 7 SECT. (LH FRONT OR RH REAR)
2560	FOUNDATION SIDEWALL - 7 SECT. (RH FRONT OR LH REAR)
3071	FOUNDATION FRONT

CAT. NO.	DESCRIPTION
FRONT	
2765	FRONT SECTION
3036	FLUE & FIRE DOOR COVER PLATE
3037	FIRE DOOR
3038	FLUE DOOR HANDLE
3080	COVER PLATE LINING
3081	FIRE DOOR LINING
INTERMEDIATE	
2369	BOTTOM NIPPLE (2")
2518	TOP NIPPLE (5")
2520	LEG SECTION
----	TIE RODS - 5/8" DIAM. 4 SECT. - 22" LONG 5 SECT. - 26-1/2" LONG 6 SECT. - 31" LONG 7 SECT. - 36" LONG

CAT. NO.	DESCRIPTION
BACK	
2422	SMOKEHOOD (WATER BOILER)
2686	HEATER OPENING COVER
2687	SMOKEHOOD (STEAM BOILER)
2697	BACK SECTION (STEAM)
2764	BACK SECTION (WATER)
STEAM TRIM	
2433	GAUGE GLASS 5/8" X 5-1/8"
2633	UPPER GAUGE COCK 1/2"
2634	LOWER GAUGE COCK 1/2"
----	GAUGE GLASS GUARD ROD
3111	STEAM GAUGE (BACK CONNECTED)
----	STEAM SAFETY VALVE 1"
WATER TRIM	
3109	THERALT. GAUGE (BACK CONNECTED)
----	WATER RELIEF VALVE 1"

150-1500 SMITH-MILLS
ERECTING AND INSTALLATION DIRECTIONS

CAST IRON FOUNDATION

1. PREPARE A SMOOTH LEVEL FLOOR AREA TO RECEIVE THE BOILER FOUNDATION. ALLOW SUFFICIENT TIME FOR CEMENT TO CURE BEFORE STARTING TO ERECT THE BOILER.
2. ASSEMBLE THE FOUNDATION PIECES BEING SURE THE SIDEWALLS ARE PARALLEL AND THAT THE FRONT AND BACK ARE AT RIGHT ANGLES TO THE SIDEWALLS. SHIM ENTIRE FOUNDATION AS NEEDED TO MAKE IT LEVEL.
3. USE BLACK FURNACE CEMENT (FURNISHED) TO SEAL ALL JOINTS BETWEEN FOUNDATION PIECES.

ASSEMBLING THE BOILER

1. CLEAN NIPPLE HOLES IN ALL SECTIONS.
2. CLEAN ALL PUSH NIPPLES AND APPLY NIPPLE LUBRICANT (FURNISHED).
3. CUT THE ASBESTOS ROPE (FURNISHED) INTO LENGTHS TO FIT INTO THE JOINTS BETWEEN SECTIONS FROM THE TOP NIPPLE BOSS ACROSS HALF OF THE TOP AND DOWN ONE SIDE TO THE BOTTOM NIPPLE BOSS. TWO PIECES OF ROPE ARE REQUIRED FOR EACH JOINT.
4. PLACE FRONT SECTION IN POSITION AGAINST STOP ON FOUNDATION FRONT. BRACE THIS SECTION.
5. ENTER PUSH NIPPLES FIRMLY INTO FRONT SECTION BY HAND. MAKE SURE NIPPLES ARE NOT TILTED, BUT DO NOT DRIVE INTO NIPPLE HOLES.
6. SET LEG SECTION IN POSITION NEXT TO FRONT SECTION. THE SIDES OF LEG SECTIONS MARKED "FRONT" SHOULD FACE BOILER FRONT. ENTER THE NIPPLES INTO NIPPLE HOLES. PUSH THE LEG SECTION FORWARD KEEPING IT PARALLEL WITH THE FRONT SECTION. CONTINUE WITH LEG SECTIONS UNTIL ALL ARE IN PLACE. SEE NOTE BELOW BEFORE INSTALLING BACK SECTION.

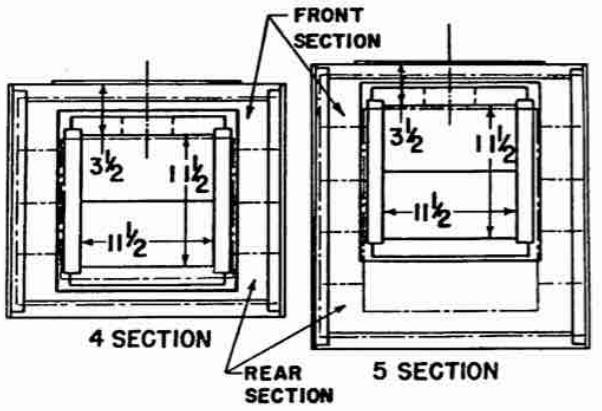
NOTE: FOR BOILER-BURNER UNITS IT IS RECOMMENDED THAT BURNER AND COMBUSTION CHAMBER BE INSTALLED BEFORE BACK SECTION IS ASSEMBLED. THE OPENING AT THE REAR PROVIDES EASY ACCESS TO THE BOILER FURNACE SPACE AND FACILITATES INSTALLATION OF BURNER AND CHAMBER. WHERE THE BURNER AND/OR CHAMBER ARE FURNISHED BY OTHERS, THE H. B. SMITH CO. RECOMMENDS THE SAME PROCEDURE, OTHERWISE, THE COMBUSTION CHAMBER MUST BE INSTALLED THROUGH THE OPENING IN THE FRONT SECTION.

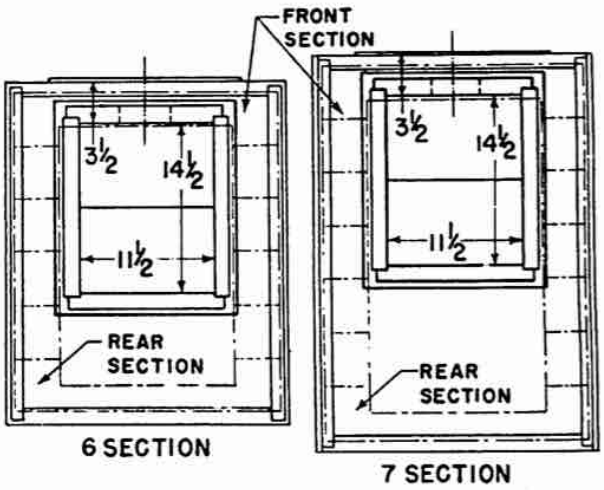
BURNER

INSTALL THE BURNER.

COMBUSTION CHAMBER ASSEMBLY (PRECAST)

1. LAY THE TWO RECTANGULAR FLOOR PIECE INSIDE THE FOUNDATION WITH THE FRONT EDGE CLOSE TO THE BOTTOM FLANGE OF THE FOUNDATION FRONT PLATE AND WITH THE JOINT BETWEEN FLOOR PIECES RUNNING CROSSWISE OF THE BOILER. CENTER THE FLOOR PIECES BETWEEN THE SIDEWALLS.
2. PLACE THE CHAMBER FRONT PIECE OVER THE BURNER AIR TUBE SO THAT THE INSIDE SURFACE OF THE FRONT PIECE MEASURES ABOUT 1/4" FROM THE FRONT END OF THE BURNER AIR TUBE. ADJUST THE FRONT PIECE FOR UNIFORM CLEARANCE ALL AROUND THE BURNER AIR TUBE. FILL THE SPACE BETWEEN FRONT PIECE AND FOUNDATION WITH ROCK WOOL FILL.
3. PLACE THE COMBUSTION CHAMBER SIDE PIECES IN POSITION WITH THE FORWARD EDGE FITTED INTO THE RECESS ON THE FRONT PIECE. FILL THE SPACE BETWEEN SIDE PIECES AND FOUNDATION WITH ROCK WOOL FILL.
4. PLACE THE REAR PIECE IN POSITION FITTING THE RECESSES OVER THE SIDE PIECES. SQUARE THE CHAMBER IN THE FOUNDATION AND THEN SECURE WITH WIRE AROUND THE CHAMBER ABOVE AND BELOW THE BURNER AIR TUBE.
5. SEAL JOINTS OF CHAMBER WITH REFRACTORY CEMENT (FURNISHED).
6. PLACE THE REMAINING ROCK WOOL FILL AROUND THE CHAMBER UP TO THE BOTTOM OF THE SECTIONS ON THE SIDES AND FRONT AND TO THE TOP OF THE CHAMBER AT THE REAR. DO NOT TAMP, JUST PUSH IN PLACE GENTLY.
7. IF DESIRED, PLACE ASBESTOS MILL BOARD OVER THE ROCK WOOL FILL AT THE BACK OF THE CHAMBER.





COMBUSTION CHAMBERS

BACK SECTION

PLACE THE BACK SECTION IN POSITION WITH NIPPLES ENTERED INTO THE NIPPLE HOLES OF THE LAST LEG SECTION.

DRAWING UP THE BOILER SECTIONS

1. INSERT THE DRAW BOLTS THROUGH BOLT LUGS AND ATTACH THE WASHERS AND NUTS. SEE NOTE BELOW.

NOTE: IN ORDER TO ASSEMBLE THIS BOILER CORRECTLY AND QUICKLY, BE SURE THE SECTIONS ARE DRAWN UP EVENLY.

CAUTION: THE TOP NIPPLES WILL PROBABLY PULL EASIER THAN THE BOTTOM NIPPLES. DO NOT LET THIS RESULT IN UNEVEN ASSEMBLY. MEASURE THE DISTANCE BETWEEN SECTIONS CONSTANTLY TO INSURE EVEN ASSEMBLY UNTIL SECTIONS AT NIPPLE BOSSES ARE DRAWN UP IRON TO IRON (REAL TIGHT).

2. AFTER ALL DRAW BOLTS ARE REAL TIGHT, BE SURE TO LOOSEN ONE NUT ON EACH BOLT AND THEN RE-TIGHTEN NUT TO APPLY A SLIGHT TENSION ON EACH DRAW BOLT.
3. SQUARE UP BOILER ON FOUNDATION MOVING IT AGAINST STOPS ON FOUNDATION FRONT PLATE.

150-1500 SMITH-MILLS
ERECTING AND INSTALLATION DIRECTIONS

IMPORTANT !!

AN IMPROPERLY SEALED BOILER WILL NOT FUNCTION PROPERLY. BE SURE TO FOLLOW ALL SEALING INSTRUCTIONS CAREFULLY.

SEALING JOINTS

1. USING THE PIECES OF ASBESTOS ROPE CUT TO LENGTH, PUSH THEM FIRMLY INTO THE JOINTS BETWEEN THE SECTIONS.
2. COAT THE JOINTS OVER THE ASBESTOS ROPE GENEROUSLY WITH BLACK FURNACE CEMENT APPLIED SO AS TO COVER THE ROPE AND OBTAIN A GOOD BOND TO EACH SECTION.
3. IT IS ESSENTIAL THAT ALL LEAKAGE OF AIR INTO COMBUSTION AREA BE COMPLETELY SEALED OFF ESPECIALLY WHERE THE SECTIONS REST ON THE FOUNDATION AND BETWEEN THE BASE AND THE FLOOR.

BEFORE INSTALLATION OF JACKET

1. PLUG ALL TAPPINGS NOT TO BE USED.
2. PLACE WATER HEATER OR COVER PLATE IN BACK SECTION. DO NOT, IF A STEAM BOILER, CONNECT PIPE TO HEATER UNTIL JACKET IS INSTALLED. NOTE: IF INTERNAL WATER HEATER IS USED WITH WATER BOILER, DO NOT INSTALL HEATER UNTIL AFTER JACKET IS INSTALLED.

JACKET AND INSULATION INSTALLATION

1. CUT OUT INSULATION AND REMOVE KNOCK-OUTS WHERE NECESSARY.
2. PLACE RIGHT AND LEFT HAND SIDE PANELS IN POSITION.
3. INSTALL THE TOP PANEL, LOCKING THE SIDE PANELS.
4. PLACE THE REAR PANEL PIECES IN POSITION, ENTERING ALL SCREWS BEFORE TIGHTENING.
5. RAISE THE FRONT ROOF PANEL AND INSERT THE 4-7/8" X 19-1/16" FRONT UPPER PANEL BEHIND THE FRONT EDGE OF THE ROOF PANEL. ENGAGE THE SLOTS IN EACH END OF THE FRONT UPPER PANEL WITH THE CORNERS OF THE SIDE PANELS. SLIDE PANEL DOWN UNTIL HOLE FOR GAUGE IS IN LINE WITH TAPPING IN FRONT SECTION.
6. PLACE 5-3/4" X 19-1/16" FRONT LOWER PANEL IN POSITION AND SECURE TO SIDE PANELS USING SHEET METAL SCREWS IN THE HOLES PROVIDED.

ASSEMBLING FLUE AND FIRE COVER PLATE ON BOILER FRONT

1. THREAD THE SIX (6) 5/16" X 1-7/8" BRASS STUDS INTO THE SCREW SOCKETS PROVIDED AROUND THE FLUE AND FIRE OPENING OF THE FRONT SECTION USING THE TWO UPPERMOST OF THE FOUR MIDDLE SCREW SEATS AND THE TOP AND BOTTOM PAIRS OF SEATS.
2. PLACE THE FLUE AND FIRE COVER PLATE ASSEMBLY ON THE STUDS AND MAKE UP 5/16" HEX NUTS HAND TIGHT.
3. IN ORDER TO INSURE A GOOD SEAL BETWEEN THE COVER PLATE AND THE FRONT SECTION, TIGHTEN ALL NUTS A FEW TURNS AT A TIME TO DRAW THE PLATE UP EVENLY.

SMOKEHOOD

INSTALL SMOKEHOOD USING ROUND HEAD SCREWS AND SEAL THE JOINT AT THE BOILER WITH BLACK FURNACE CEMENT.

FINAL STEP

INSTALL STEAM OR WATER TRIM AS REQUIRED.

EXTRACT FROM A.S.M.E. BOILER CONSTRUCTION CODE

"WHEN FEED OR MAKE-UP WATER IS INTRODUCED FROM A PRESSURE LINE, IT SHALL BE CONNECTED TO THE PIPING SYSTEM AND NOT DIRECTLY TO THE BOILER"

THE DRAW-OFF COCK SHOULD BE CONNECTED TO THE OPPOSITE SIDE OF THE BOILER FROM THE FEED WATER CONNECTION TO ASSIST IN REMOVING SEDIMENT FROM THE BOILER.

THE H. B. SMITH COMPANY, INCORPORATED

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