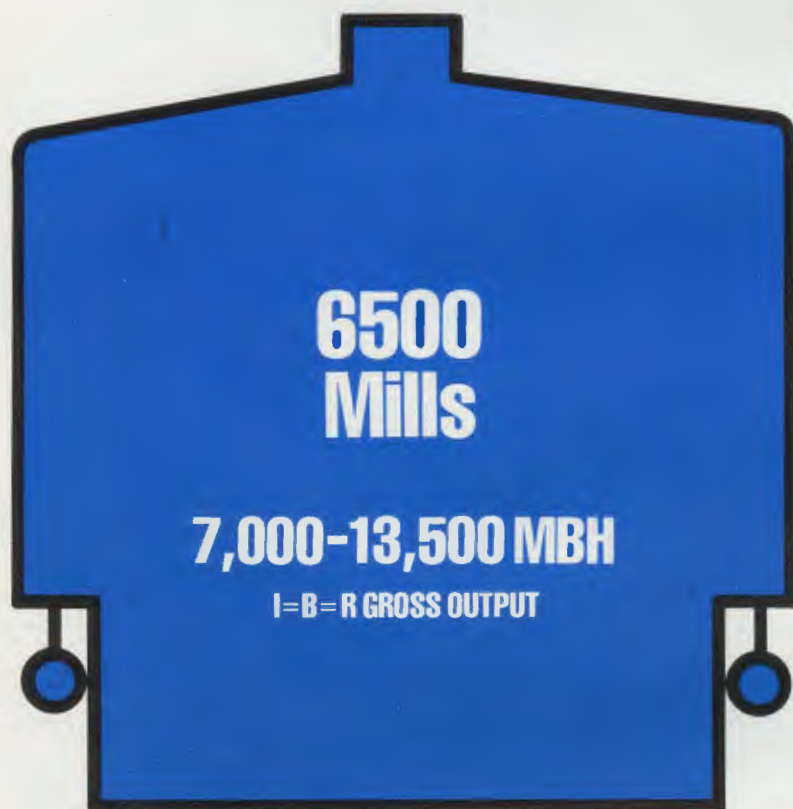
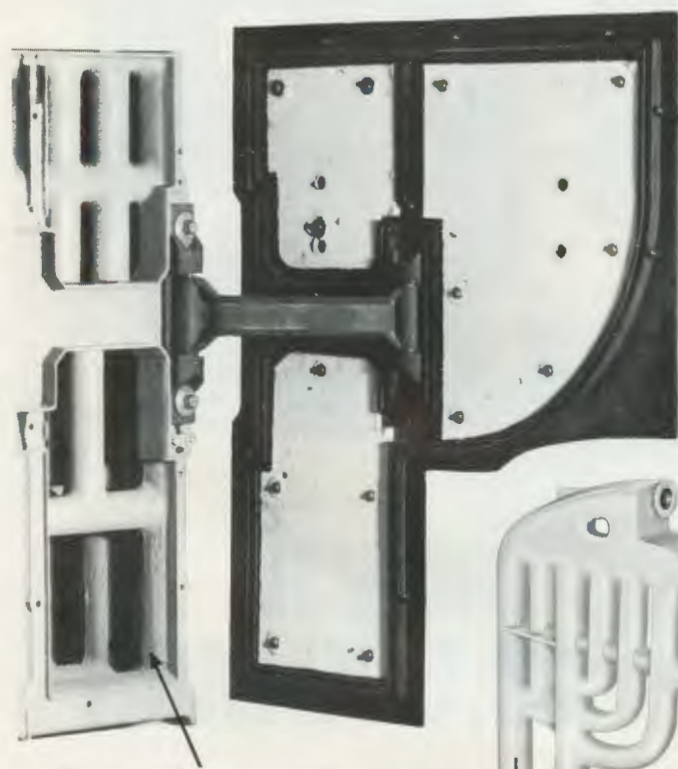
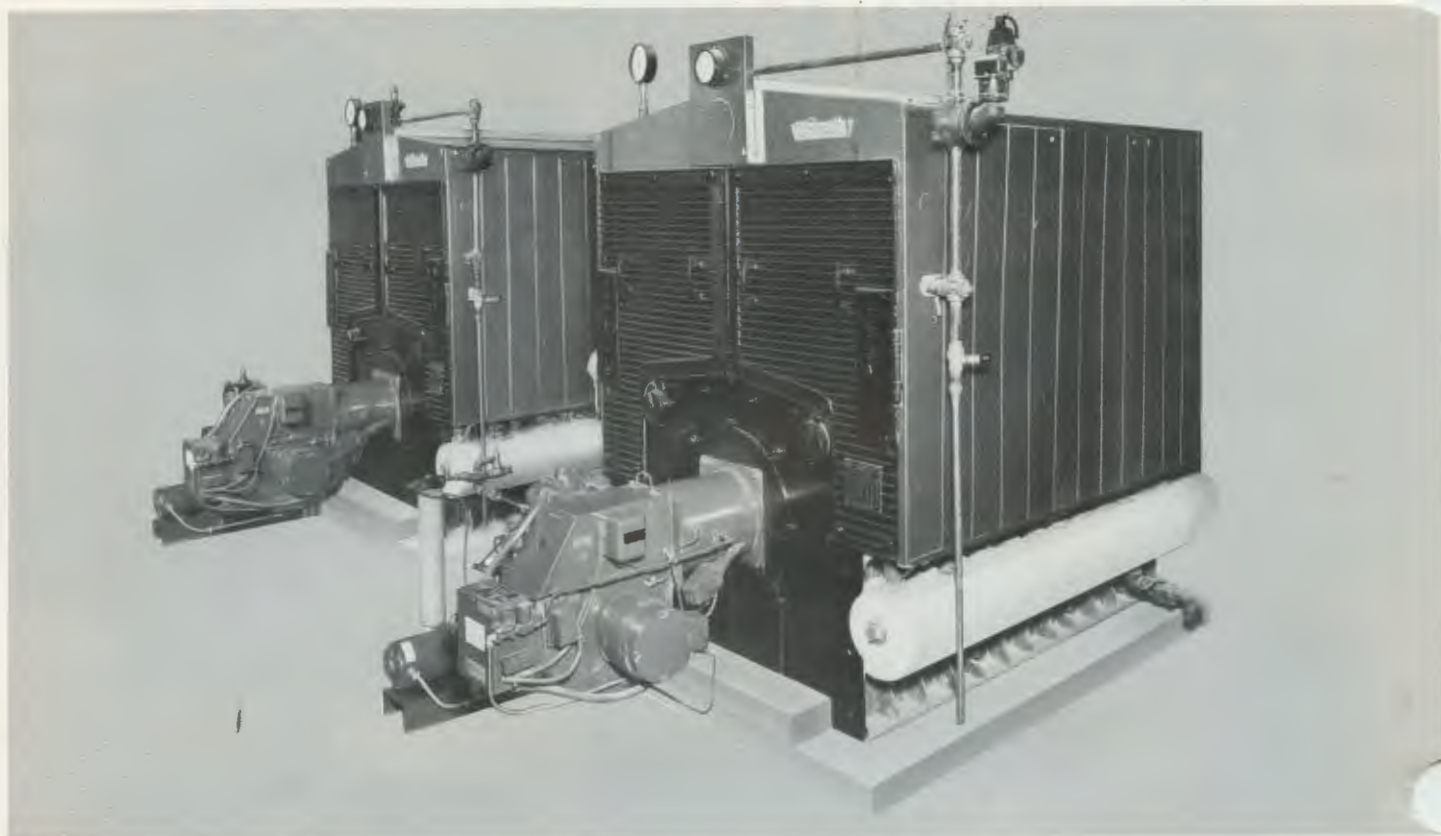


HB Smith



**presents the Mills family of
boilers... 1,200 to 13,500 MBH**

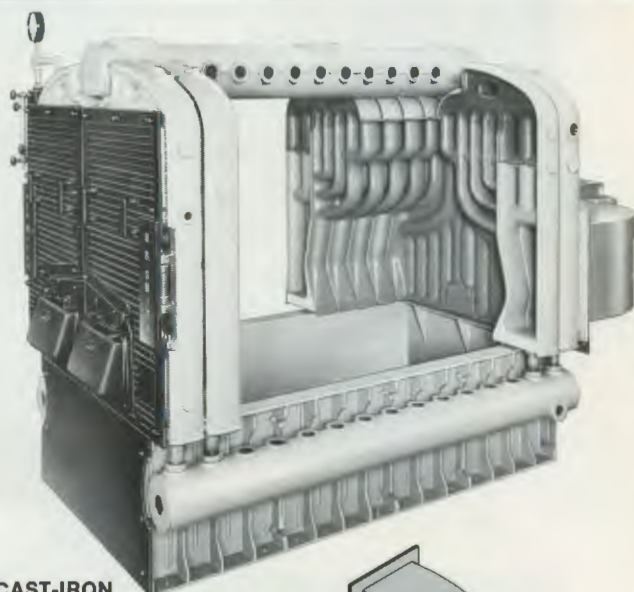
Mills cast-iron boilers for c



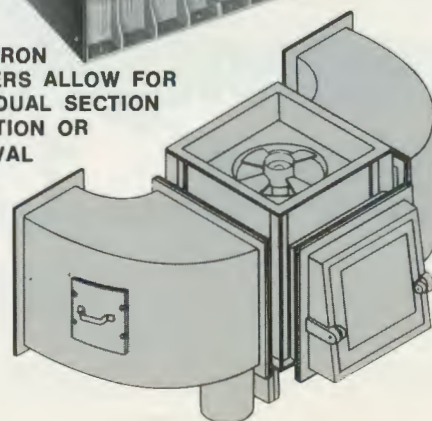
TIGHT FITTING FLUE DOORS
PRESERVE GOOD COMBUSTION
AND SWING OUT FREELY ON
CONCEALED HINGES FOR EASY
CLEANING



DOUBLE WATER
LEG FOR
"ONE WAY"
CIRCULATION



CAST-IRON
HEADERS ALLOW FOR
INDIVIDUAL SECTION
ISOLATION OR
REMOVAL



SMOKE
CAN BE
FURNISHED
OPTIONALLY
WITH INDUCED
DRAFT FAN

Commercial heating systems

Experience-proven in thousands of installations, the Mills family of cast-iron, sectional, water-tube boiler-burner units are designed to meet the requirements of modern commercial and institutional heating systems. The Mills family of boiler-burner units consists of three basic models (3500, 4500, and 6500) with gross output capabilities ranging from 1,200 MBH to 13,500 MBH. Within this range of sizes there are thirty-three output ratings providing the flexibility needed to meet specific job requirements. From the smallest to largest, all Mills boilers incorporate the same proven design features . . . features that assure top performance and long life.

Better by design

To help you understand the added value designed into this entire family of boilers, let's take a look at a typical Mills boiler, our Model 4500.

First, there's an enameled insulated steel jacket with removable panels which reduces standby heat losses. On the front of the boiler a pair of large insulated cast-iron flue doors, hinged on ball bearing extension arms, swing freely, assuring easy access to flue surfaces for cleaning. When closed the doors are securely fastened in place and sealed by a gasketed joint.

The smokehood is designed for use with or without induced draft fans. Should building design dictate a stub stack, either of two standard draft fans are offered as an integral part of the boiler smokehood.

The compact design of Mills boilers means minimum floor space requirements, particularly when compared to steel fire-tube boilers and modular systems.

Rugged cast-iron construction assures long life, a feature always associated with Mills boilers. Dependability you can rely on is built into every Mills designed boiler.

Top performance

Two legs are better than one, and that's just what you get in Mills boilers. The lower portion of a section in a Mills boiler consists of a double water leg which allows for the natural, unopposed flow of water by convection within each section. The inner portion of the leg is exposed to the radiant heat of the fire using the upward flow of water. The outer leg is cooler, thus the flow is downward. There are no opposing convection currents as in a single leg boiler. The result is better performance because the adverse effects of opposing convection are eliminated.

Operating continuity

The individual sections of a Mills boiler are not connected internally to each other as in a push-nipple boiler. Rather, each section is connected to external cast-iron headers which serve as the supply and return manifolds. Thus, in the rare instance when a section must be replaced, putting the boiler back in service is fast and easy. A section can be isolated by simply disconnecting it from the manifolds, thereby keeping the boiler operational. Section replacement can be scheduled for a convenient time after the critical heating season.

Easy installation, anywhere

Sectional construction of Mills boilers can mean significant reductions in installation time and expense.

Why? Because even with a 400 h-p Mills boiler every component will fit through a normal size door, window, stair well, or overhead grating. The cost of tearing down walls or making other structural changes is simply eliminated.

Fuel flexibility

With a Mills boiler you can forget about local fuel availability problems, because specifying a Mills boiler assures fuel flexibility.

Mills boilers are designed for firing with oil, gas, gas/oil, or coal. Coal fired units utilize commercially available mechanical stokers or hand fired grates and operate at reduced inputs.

Economy

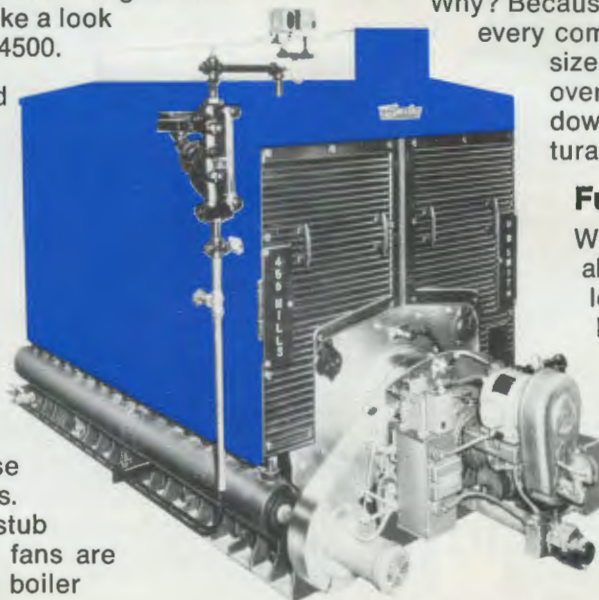
The Mills family of boilers is designed and rated for low overall operating cost. High efficiency is attained due to the unique Mills water-tube design which provides a high percentage of primary heating surface. When the boiler is not operating, standby loss is minimized because the down-draft flue design traps heat in the boiler, reducing flue heat loss.

Best buy

Mills boilers are hard to beat when it comes to overall performance, flexibility, and ease of installation. In addition, specifying an H. B. Smith Mills boiler assures top flight assistance during project planning, installation, and light-off.

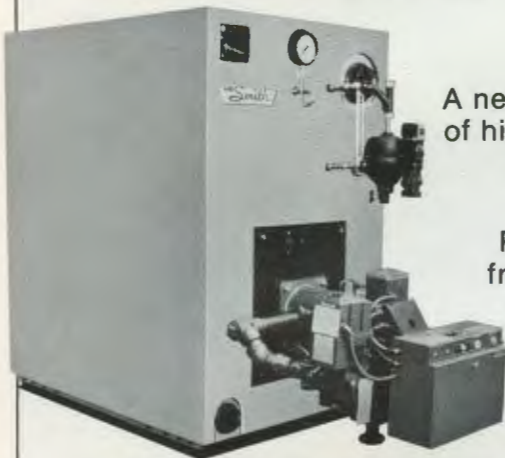
Experienced H. B. Smith sales engineers can be called on during the development of job specifications to make sure that the right boiler is selected. H. B. Smith's skilled, factory authorized service personnel are available to make sure that installation and start-up are smooth and trouble-free.

Thus, the best buy for a commercial or institutional heating system is an H. B. Smith Mills boiler . . . a boiler with an unmatched record.



Additional quality H. B. Smith **COMMERCIAL BOILERS**

28 SERIES

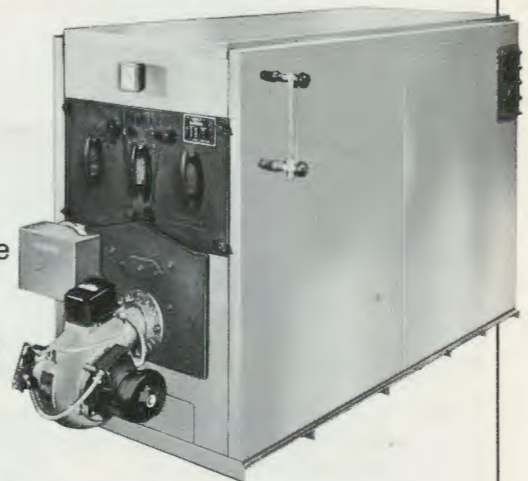


A new generation
of high-efficiency
pressure fired
boilers.

Rating Range
from 798-4620
I=B=R Gross
Output

Wet base, pressure fired boiler/burner unit for steam or water systems. Available with oil, gas or combination oil/gas burners. I=B=R rated. Optional tankless water heaters. Fifteen sizes in ratings to 4620 MBH gross output. Available knockdown for field assembly, sections factory assembled or fully packaged and wired.

2500L SERIES

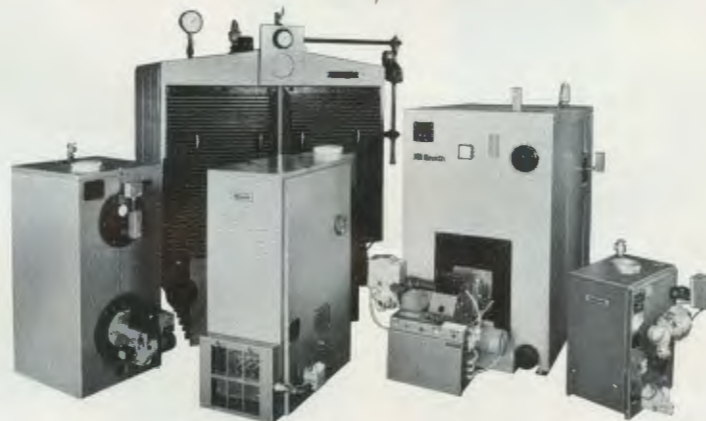


Only 53½"
high.

Rating Range
from 490 -
1258 MBH
I=B=R Gross
Output

Lo-Set boiler/burner unit for steam or water systems. Available with oil, gas or combination oil/gas burners. I=B=R rated. Tankless domestic water heater optional. Eight sizes in ratings to 1258 MBH gross output. Available knockdown for field assembly, sections factory assembled or fully packaged and wired.

H.B. Smith Offers A Full Line Of Cast-Iron Boilers To Meet Various Residential/Commercial Heating Applications.



HB Smith

CAST IRON BOILERS

Warming America since 1853

WESTFIELD, MASSACHUSETTS 01086

SEPTEMBER 1980

CATALOG NO. 2556B
SUPERSEDES NO. 2465

ERECTING DIRECTIONS

SERIES 350 MILLS WATER-TUBE BOILER

FOR AUTOMATIC FIRING

STEAM, VAPOR OR WATER HEATING

NOTE 1:

FOR BOILER BURNER UNITS, SEE SEPARATE INSTRUCTIONS FOR BURNER INSTALLATION.

HYDROSTATICALLY TESTED - A.S.M.E. STANDARD

MAXIMUM ALLOWABLE WORKING PRESSURE - STEAM 15 LBS., WATER 40 LBS.

CAUTION

WHEN DOMESTIC HOT WATER MANIFOLDS ARE USED
WITH THIS BOILER, BE SURE TO INSTALL JACKET SIDE
PANELS BEFORE ASSEMBLING MANIFOLDS ON THE BOILER.

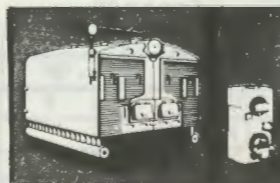
TO STEAMFITTER

NOTE: READ THESE INSTRUCTIONS CAREFULLY.
THEY WILL SAVE YOU TIME IN ASSEMBLING
BOILER PROPERLY.

IMPORTANT: BE SURE AND SEAL ALL JOINTS
TO PREVENT AIR LEAKAGE INTO COMBUSTION
CHAMBER.

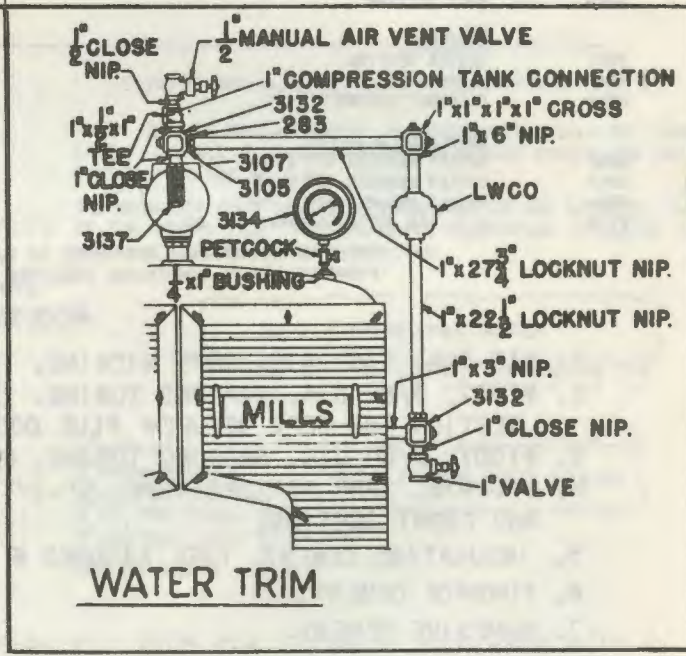
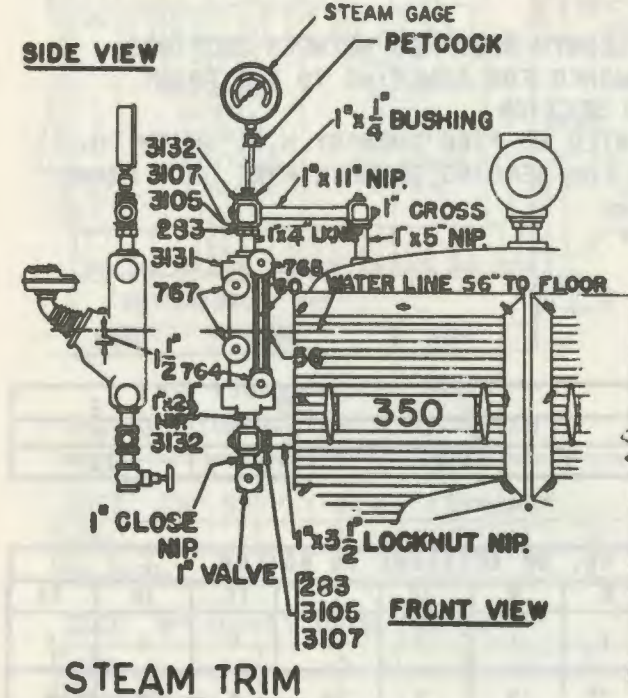
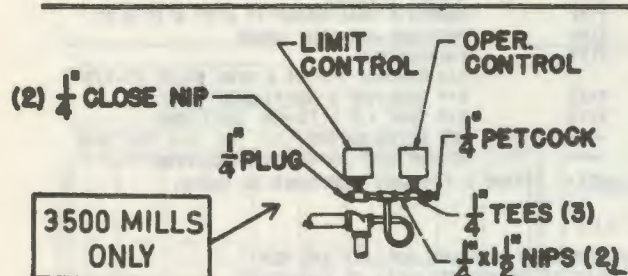
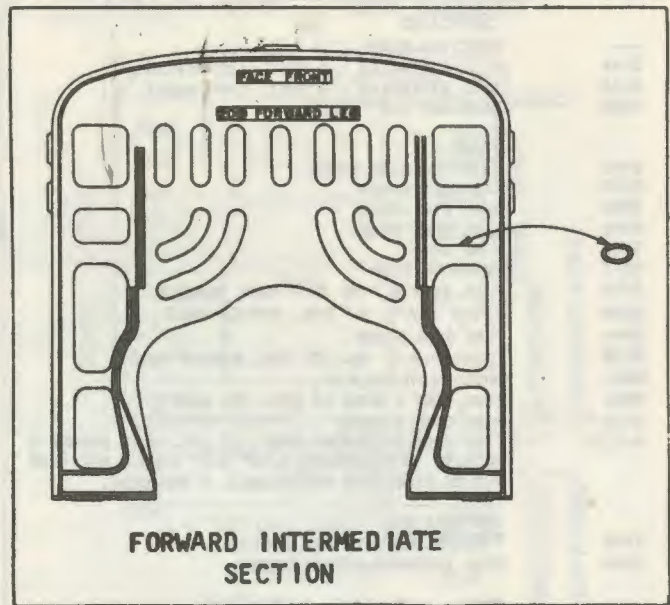
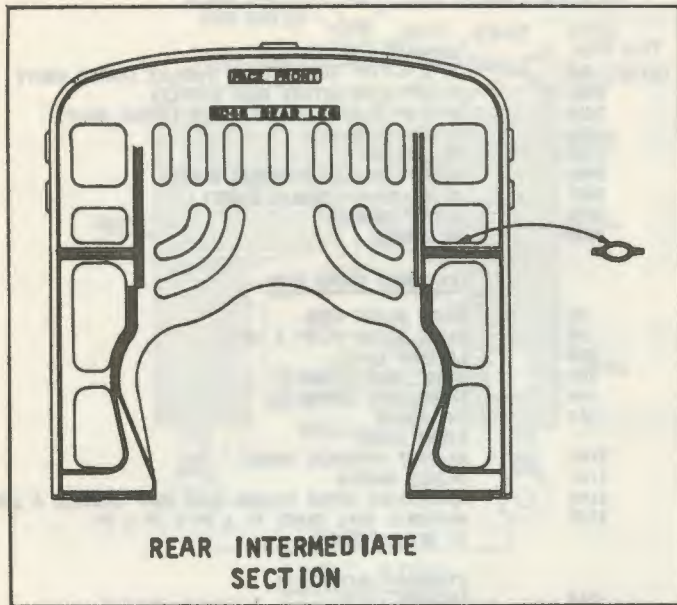
THE **HB Smith**
COMPANY, INC.

WESTFIELD, MASSACHUSETTS, 01085



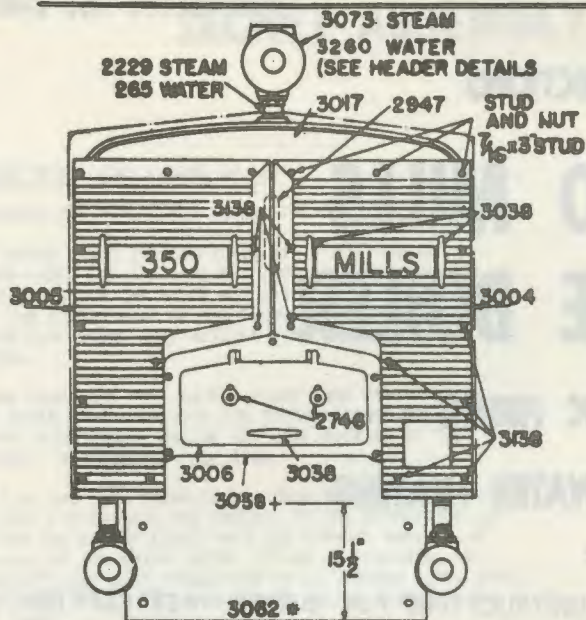
THESE INSTRUCTIONS TO BE LEFT WITH THE BOILER FOR REFERENCE PURPOSES.

SERIES 350 MILLS BOILER



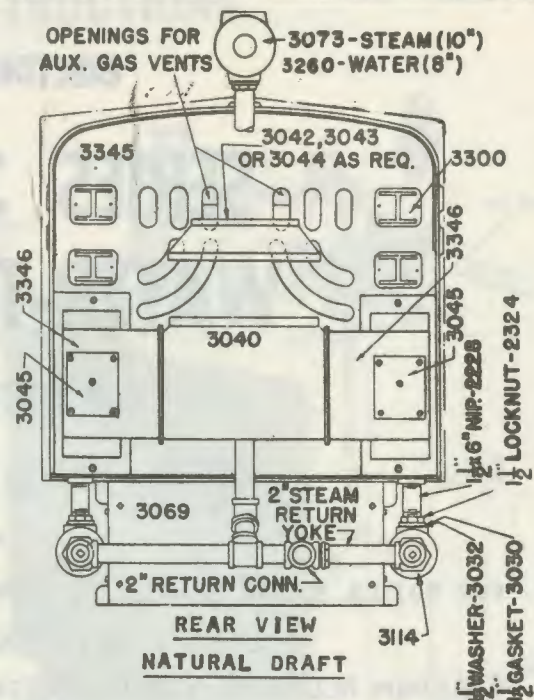
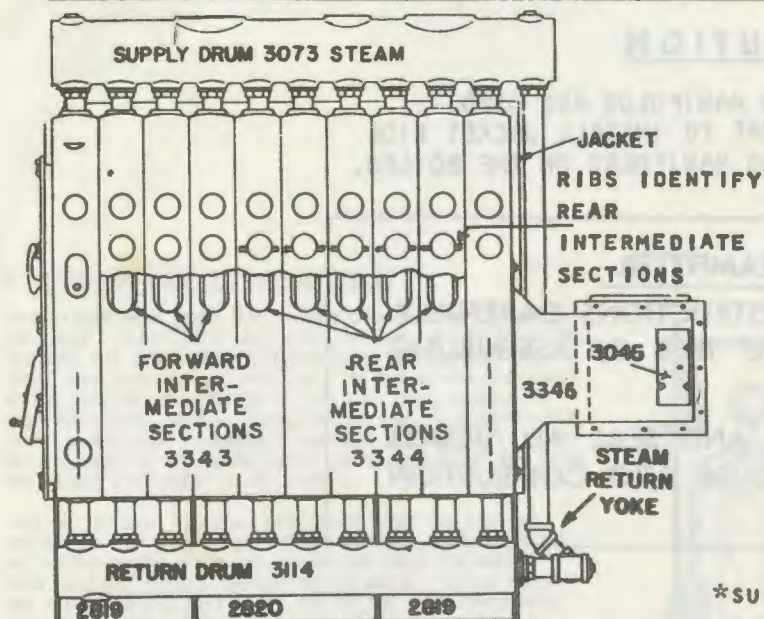
NOTE:
THIS INSTALLATION IS NOT COMPLETE WITHOUT THE RED INSTRUCTION TAG FOR PUTTING COLD BOILERS INTO SERVICE OR FOR CHANGING WATER LEVEL UNDER STEAM PRESSURE.

SERIES 350 MILLS BOILER



FRONT VIEW

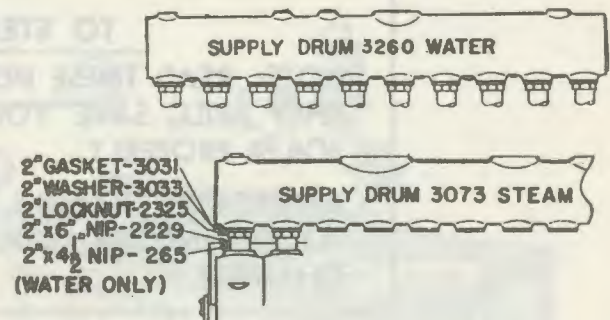
*SEE PLATE NUMBER CHANGES ACCORDING TO BURNER SIZE AND STYLE. SEE PARTS LIST ON PAGE 2 AND PAGE 7.

REAR VIEW
NATURAL DRAFTSIDE VIEW-NATURAL DRAFT
(10 SECTION BOILER ILLUSTRATED)

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.



*SUPPLY DRUM FOR STEAM IS PROVIDED WITH A BOTTOM TAPPING FOR EQUALIZING CONNECTION IN ADDITION TO TAPPINGS FOR SECTIONS.

3073 10" SUPPLY DRUM (STEAM)*

Suffix	B	C	D	E	F	G	H	I	J
No. Sects.	6	7	8	9	10	11	12	13	14

3260 8" SUPPLY DRUM (WATER)

Suffix	A	B	C	D	E	F	G	H	I
No. Sects.	6	7	8	9	10	11	12	13	14

3114 6" RETURN DRUM (WATER AND STEAM)

Suffix	C	D	E	F	G	H	I	J	K
No. Sects.	6	7	8	9	10	11	12	13	14

PAGE 3

CAT. NO.	DESCRIPTION
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CAT. NO.	DESCRIPTION
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NOTE: PIPING & FITTINGS FURNISHED AS SHOWN.

ACCESSORIES

- 542 FLUE BRUSH HANDLE

1805 FLUE BRUSH[illegible]

GENERAL

PREPARE A SMOOTH LEVEL FLOOR AREA OR SETTING TO RECEIVE THE BOILER FOUNDATION. ALLOW SUFFICIENT TIME FOR CEMENT IN FLOOR OR SETTING TO CURE BEFORE STARTING TO ERECT BOILER.

BOILER FOUNDATION

1. BOLT C.I. SIDEWALLS (2819 AND 2820) TOGETHER IN THE COMBINATIONS OF 18" AND 24" LENGTHS REQUIRED TO SUIT THE BOILER (18" LENGTHS EQUAL 3 BOILER SECTIONS AND 24" LENGTHS EQUAL 4 BOILER SECTIONS) USING 7/16" X 2" BOLTS WITH TWO WASHERS AND A NUT AT EACH BOLT HOLE SLOT IN THE SIDEWALL SECTION. USE SHIMS BETWEEN SIDEWALLS WHERE NECESSARY TO INSURE STRAIGHT SIDEWALL ASSEMBLY AND BE SURE THE SIDEWALLS ARE INSTALLED WITH THE "TOP" MARKING UP AND THE FLAT SIDE ON THE INSIDE OF THE FOUNDATION.

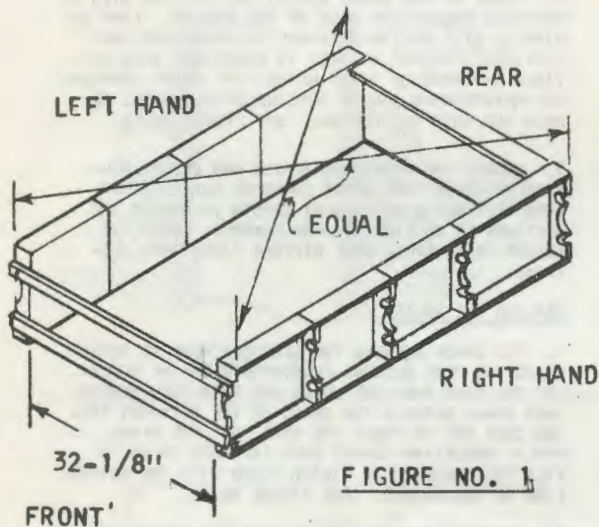


FIGURE NO. 1

2. BOLT STEEL BACK END (3069) AND ERECTING BARS TO SIDEWALLS USING 7/16" X 1-3/4" BOLTS WITH TWO WASHERS AND A NUT AT EACH BOLT HOLE. CHECK TO BE SURE FOUNDATION IS LEVEL. BE SURE SIDEWALLS ARE PARALLEL AND AT RIGHT ANGLES TO BACK END AND ERECTING BARS BY ADJUSTING THE DIAGONAL MEASUREMENTS OF THE FOUNDATION TO BE EXACTLY EQUAL USING A RIGID STICK OR BOARD AS A GAUGE. SEE FIGURE NO. 1.

3. CEMENT ALL JOINTS IN BOILER FOUNDATION AND BETWEEN FOUNDATION AND FLOOR WITH BLACK FURNACE CEMENT SO AS TO SEAL AGAINST AIR LEAKAGE INTO THE FOUNDATION OF THE BOILER.

SUPPLY DRUMS

1. SUPPLY DRUMS (3260) FOR WATER BOILERS HAVE THE SAME NUMBER OF NIPPLE TAPPINGS AS THERE ARE SECTIONS IN THE BOILER. SUPPLY DRUMS (3073) FOR STEAM ARE PROVIDED WITH ONE EXTRA TAPPING LOCATED AT THE REAR FOR USE AS A DRIP AND EQUALIZING CONNECTION TO THE RETURN DRUMS.

2. THE 2" X 6" TOP STEAM DRUM NIPPLES (2229) OR 2" X 4-1/2" TOP WATER DRUM NIPPLES (265) ARE SHIPPED WITH EXCLUSIVE HY-TEMP HYDRONIC GASKETS (3031) AND WASHER (3033) ASSEMBLED AT THE FACTORY. TAPERED THREADS ARE PROTECTED BY A PLASTIC CAP WHICH MUST BE REMOVED BEFORE INSTALLING.

3. CLEAN THE THREADS OF EACH NIPPLE TAPPING AND INSTALL THE NIPPLES IN THE DRUM SO THAT THE ENDS OF THE NIPPLES FOR THE FRONT AND BACK SECTIONS MEASURE 3-INCHES OUT FROM THE BOSS ON THE DRUM. USE WOOD GAGE PROVIDED FOR MEASURING. THE REMAINING NIPPLES BETWEEN THE NIPPLES FOR THE FRONT AND BACK SECTIONS SHOULD BE SCREWED INTO THE SUPPLY DRUM THE FULL LENGTH OF THE LOCKNUT THREADS. SEE FIGURE 2A & 2B.

NOTES

INSTALL TAPERED THREADS IN SECTION.
INSTALL RUNNING THREADS IN DRUM.

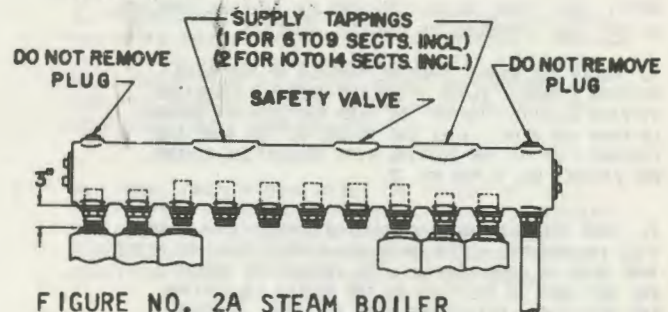


FIGURE NO. 2A STEAM BOILER

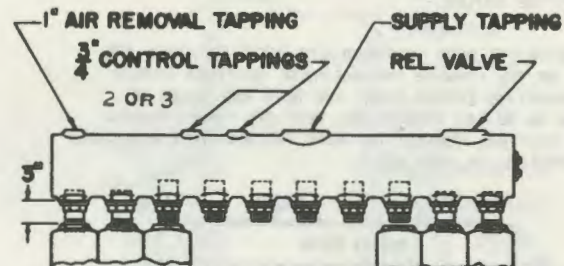


FIGURE NO. 2B WATER BOILER

RETURN DRUMS

1. THE 1-1/2" X 6" BOTTOM NIPPLES (2228) ARE SHIPPED WITH THE HY-TEMP HYDRONIC GASKETS (3030) AND WASHER (3032) ASSEMBLED AT THE FACTORY. TAPERED THREADS ARE PROTECTED BY A PLASTIC CAP WHICH MUST BE REMOVED BEFORE INSTALLING.

2. CLEAN THE THREADS OF EACH NIPPLE TAPPING AND INSTALL NIPPLES IN THE DRUM SO THAT THE DISTANCE FROM THE DRUM TO THE END OF THE NIPPLE IS 4-1/2" FOR THE FRONT AND BACK SECTIONS. OTHER NIPPLES SHOULD BE SCREWED INTO THE DRUM AS FAR AS POSSIBLE. SEE FIGURE NO. 3.

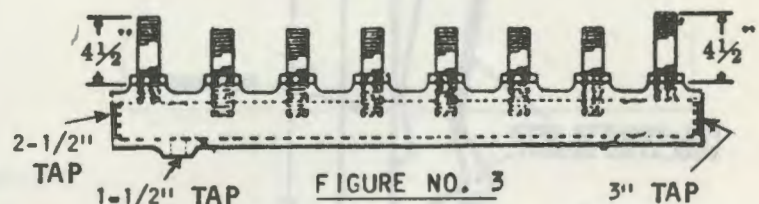


FIGURE NO. 3

INSULATING CEMENT

INSULATING CEMENT IS USED TO FILL THE POCKETS OF THE SECTIONS AND THE SPACES BETWEEN THE SECTIONS AND THE BOILER FOUNDATION. SEE FIGURE NO. 6 AND NO. 7. PREPARE A MODERATE AMOUNT OF INSULATING CEMENT FOLLOWING THE MANUFACTURER'S INSTRUCTIONS.

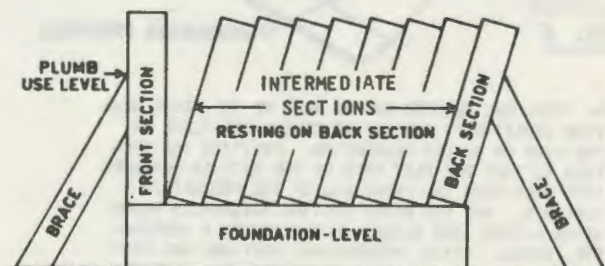


FIGURE NO. 4

SERIES 350 MILLS WATER TUBE BOILER

SECTIONS

(BE SURE FORWARD AND REAR INTERMEDIATE SECTIONS ARE PROPERLY LOCATED.) THE ASSEMBLY OF FRONT AND BACK SECTIONS CAN BE PERFORMED IN REVERSE ORDER IF DESIRED.

NOTE: USE PIPE JOINT COMPOUND ON TAPERED THREADS. DO NOT USE COMPOUND ON RUNNING THREADS.

1. CLEAN THE NIPPLE TAPPING THREADS OF THE BACK SECTION (3345). PLACE IT ON THE BOILER FOUNDATION TIPPING SLIGHTLY TOWARD THE REAR AND SUPPORT SECURELY FROM THE REAR. FILL THE POCKET AT THE BASE AND FIREPOT SIDE OF THE SECTION WITH INSULATING CEMENT. SEE FIGURES NO. 6 AND NO. 7.

2. TAKE THE REAR INTERMEDIATE SECTIONS (3344) AND FILL THE POCKETS AT THE BASE AND FIREPOT SIDE ON FRONT AND BACK OF EACH SECTION WITH INSULATING CEMENT. THE SECTIONS IN POSITION ON THE BOILER FOUNDATION AND REST THEM AGAINST THE REAR SECTION. BE SURE THE MARKING "FACE FRONT" ON EACH SECTION FACES THE FRONT OF THE BOILER.

3. AS WITH THE REAR INTERMEDIATE SECTIONS, FILL THE POCKETS OF THE FORWARD INTERMEDIATE SECTIONS (3343) WITH INSULATING CEMENT FRONT AND BACK AND PLACE IN POSITION ON BOILER FOUNDATION. REST THE FRONT INTERMEDIATE SECTIONS AGAINST THE REAR INTERMEDIATE SECTIONS. SEE FIGURES NO. 4 AND NO. 5.

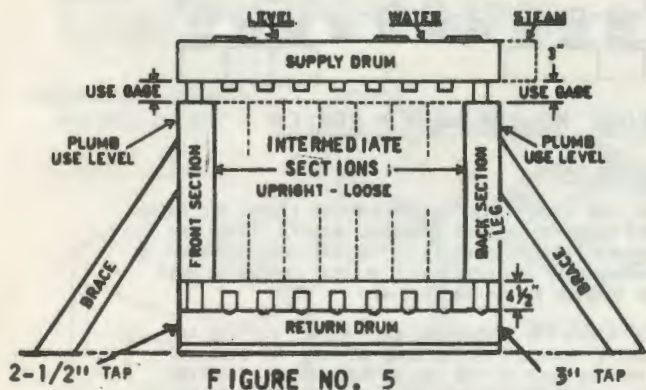


FIGURE NO. 5

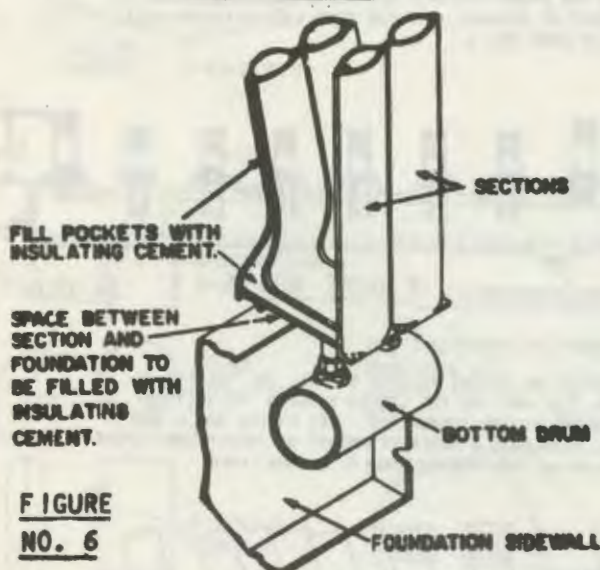


FIGURE NO. 6

4. FILL THE POCKETS ON THE BACK OF THE FRONT SECTION (3017) WITH INSULATING CEMENT AND PLACE IN POSITION ON BOILER FOUNDATION. POSITION THE SECTION SO THAT THE FLAT FACE OF THE SECTION MEASURES 1/4" BACK FROM THE FRONT END OF THE FOUNDATION SIDEWALL. SET THE FRONT SECTION ABSOLUTELY PLUMB USING A LEVEL AND SECURE IN PLACE WITH A SUBSTANTIAL BRACE. BRING INTERMEDIATE SECTIONS AND BACK SECTION FORWARD AND UPRIGHT. CENTER ALL SECTIONS ON THE FOUNDATION AND PLUMB UP THE BACK SECTION USING A LEVEL. BRACE IN PLACE.

CONNECTING DRUMS

1. PLACE SUPPLY DRUM (3260) FOR WATER OR (3073) FOR STEAM ABOVE THE BOILER. SUPPORT DRUM WITH CHAIN HOIST FROM PIPE FRAME, BUILDING STRUCTURE OR OTHER SUITABLE MEANS. LINE UP NIPPLES WITH THE TOP TAPPINGS OF FRONT AND BACK SECTIONS. ENGAGE NIPPLES IN FRONT AND BACK SECTIONS AND MAKE UP TIGHT USING PIPE JOINT COMPOUND. USE 3" WOOD SPACING GAGE TO MAINTAIN EXACT 3" SPACE BETWEEN BOSS ON DRUM AND BOSS ON SECTION. CHECK TO BE SURE FRONT SECTION REMAINS PLUMB AND TOP OF SUPPLY DRUM IS LEVEL. SEE FIGURE NO. 5.

NOTE: DO NOT TIGHTEN LOCKNUTS UNTIL ALL SUPPLY AND RETURN DRUM NIPPLES ARE MADE UP TIGHT IN THE SECTIONS. BEFORE STARTING TO SEAL NIPPLE GASKETS AND TIGHTEN LOCKNUTS, READ THE ENTIRE ARTICLE ON THE SUBJECT ON PAGE 7 AND FOLLOW INSTRUCTIONS IN EVERY DETAIL.

2. PLACE RETURN DRUMS (3114) IN POSITION WITH 3" TAPPINGS TOWARD THE BACK OF THE BOILER. LINE UP NIPPLES WITH BOTTOM TAPPINGS IN FRONT AND BACK SECTIONS. ENGAGE NIPPLES IN FRONT AND BACK SECTIONS AND MAKE UP TIGHT USING PIPE JOINT COMPOUND AND MAINTAINING 4-1/2" SPACING BETWEEN BOSS ON DRUM AND BOSS ON SECTION. SEE FIGURE NO. 5.

3. ENGAGE THE REMAINING SUPPLY AND RETURN DRUM NIPPLES USING PIPE JOINT COMPOUND AND RUN THEM INTO SECTIONS A SUFFICIENT LENGTH TO PERMIT THE SECTIONS TO BE LINED UP AND SQUARED. WHEN THE BOILER IS SQUARED, MAKE NIPPLES TIGHT INTO SECTIONS.

SEALING THE BOILER

1. THE SPACE BETWEEN THE SECTIONS MUST BE SEALED USING THE ROPE WICKING FURNISHED WITH THE BOILER. LAY THE ROPE OVER THE JOINT AND THEN PACK GENTLY INTO SPACE BETWEEN THE BEADS ON THE SECTIONS TAKING CARE NOT TO FORCE THE ROPE PAST THE BEADS. APPLY INSULATING CEMENT OVER THE ROPE SO AS TO FILL THE SPACE UP TO FINISH FLUSH WITH THE OUTSIDE LINE OF THE BOILER. SEE FIGURE NO. 7.

2. TAKE PARTICULAR CARE TO SEAL THE JOINTS BETWEEN THE BOTTOM OF THE SECTIONS AND THE TOP OF THE FOUNDATION ON THE REAR AS WELL AS ON THE SIDES.

3. SEAL OPENINGS IN BACK SECTION WITH INSULATION AND INSULATING CEMENT. USE UP THE BALANCE OF INSULATING CEMENT TO FILL SPACE BETWEEN TUBES ON THE OUTSIDE OF THE BACK SECTION.

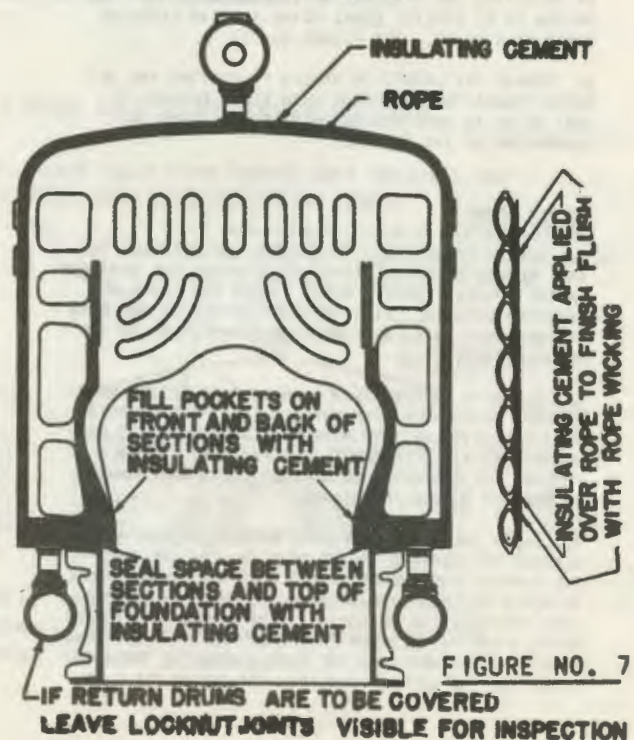


FIGURE NO. 7

SEALING GASKETS AND TIGHTENING LOCKNUTS

1. WHEN ALL SECTIONS ARE IN PLACE, GO OVER THE ENTIRE BOILER TO BE SURE NIPPLES ARE TIGHT INTO THE SECTIONS.

2. TIGHTENING LOCKNUTS - WHEN ALL NIPPLES HAVE BEEN MADE UP TIGHT INTO SECTIONS, SCREW EACH LOCKNUT TOWARD NIPPLE BOSS ON DRUM UNTIL IT IS HAND TIGHT AND THE GASKET IS TIGHT AGAINST THE BOSS. SEE FIGURE NO. 8.

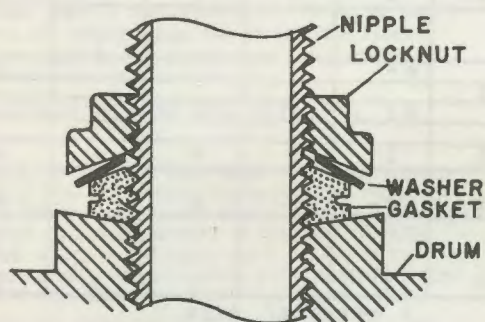


FIGURE NO. 8

3. THEN, USING A LOCKNUT WRENCH, TIGHTEN EACH LOCKNUT APPROXIMATELY 1-3/4 TURNS. WHEN DISTANCE FROM THE BOSS TO THE WASHER IS APPROXIMATELY 3/32" AND THE OUTSIDE DIAMETER OF THE GASKET IS ROUGHLY EVAN WITH THE OUTSIDE EDGE OF THE WASHER, THE SEAL HAS BEEN MADE. SEE FIGURE NO. 9.

4. FINAL INSPECTION-- AFTER THE BOILER HAS BEEN FILLED WITH WATER AND FIRED UP, INSPECT ALL NIPPLES FOR LEAKS. LEAKS CAN BE STOPPED AT ANY TIME BY TIGHTENING THE LOCKNUT APPROX. 1/8 TURN UNTIL THE CONDITION SHOWN IN FIGURE NO. 9 IS OBTAINED.

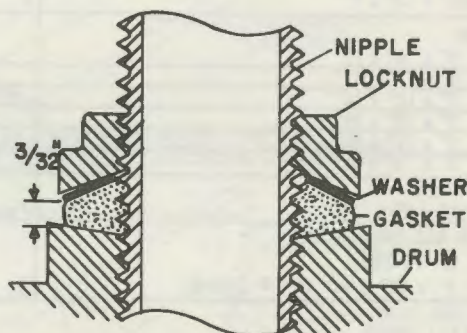
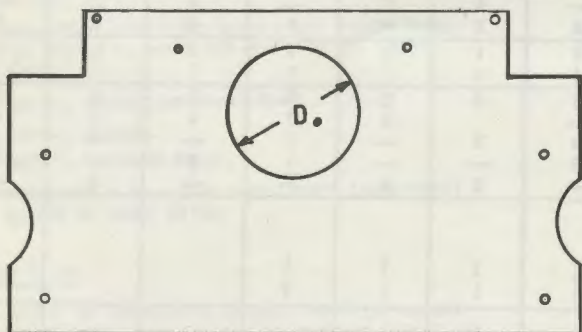
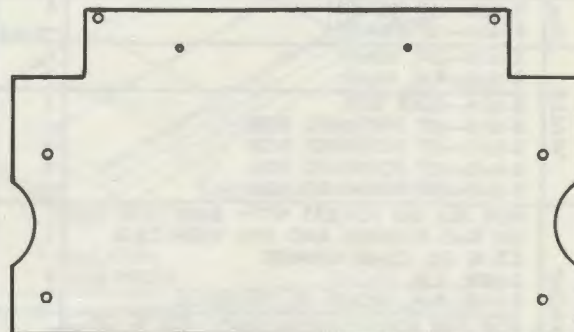


FIGURE NO. 9



3048 FRONT PLATE 9" D. BURNER HOLE

3059 FRONT PLATE 10 1/2" D. BURNER HOLE



3062 FRONT PLATE, PLAIN

SERIES 350 MILLS BOILER

350 MILLS — COMBUSTION CHAMBER INSTRUCTIONS

SCHEDULE OF INSULATION BLOCKS										
DESCRIPTION AND SIZE OF INSULATION BLOCKS			NO. OF BOILER SECTIONS							
			6	7	8	9	10	11	12	13
FLOOR	CROSS PIECES									
	2" x 6" x 30"			1		1	2			1
	2" x 12" x 30"				1	1				1
	LENGTHWISE PIECES									
	2" x 6" x 30"							1		
WALLS	2" x 12" x 30"							2		
	2" x 6" x 36"		1	1	1	1	1	1	2	2
	2" x 12" x 36"		2	2	2	2	2	2	4	4
	REAR									
	2" x 12" x 27 1/2"		2	2	2	2	2	2	2	2
FRONT	TOP REAR									
	1 1/2" x 4" x 27 1/2"		1	1	1	1	1	1	1	1
	REAR LOWER CORNER									
	1 1/2" x 2" x 7"		2	2	2	2	2	2	2	2
	SIDE									
FRONT	2" x 6" x 12"			2						2
	2" x 12" x 12"				2		4			2
	2" x 12" x 18"					2				
	2" x 12" x 24"						2			
	2" x 12" x 30"							2		
FRONT	2" x 12" x 36"		2	2	2	2	2	2	4	4
	CORNER									
	1 1/2" x 4" x 13 3/4"		2	2	2	2	2	2	2	2
	FOR ALL 350 BOILERS									
	B-1625									
FRONT	2" x 12" x 21" (9" ϕ OPNG)		2	2	2	2	2	2	2	2

* OPTIONAL SIZE

CATALOGUE NUMBER AND DESCRIPTION OF BRICK			NUMBER OF BRICK FURNISHED							
			NO. OF BOILER SECTIONS							
			6	7	8	9	10	11	12	13
FLOOR	B-1630—12" HEARTH		4	2	—	4	2	—	4	2
	B-1621—18" HEARTH		—	2	4	2	4	6	4	6
	B-1618—L.H. REAR		1	1	1	1	1	1	1	1
	B-1619—R.H. REAR		1	1	1	1	1	1	1	1
	B-1616—REAR SIDE		2	2	2	2	2	2	2	2
WALLS	B-1615—18" INTERMED. SIDE		—	—	—	—	2	2	4	4
	B-1617—12" INTERMED. SIDE		—	—	2	2	—	2	—	—
	B-1613—12" FORWARD SIDE		2	—	2	—	—	2	2	—
	B-1614—18" FORWARD SIDE		—	2	—	2	2	—	—	2
	FOR ALL 350 BOILERS WITH GUN TYPE OIL OR GAS BURNERS AND 3500 WITH C2-O C2-G OR C2-80 BURNERS									
FRONT	B-1609 L.H. FRONT		1	1	1	1	1	1		
	B-1610 R.H. FRONT (9" ϕ HOLE)		1	1	1	1	1	1		
	FOR 3500 BOILERS WITH C3-O, C3-G OR C3-80									
	B-1611 L.H. FRONT								1	1
	B-1612 R.H. FRONT (10 1/2" ϕ HOLE)								1	1

COMBUSTION CHAMBER ASSEMBLY INSTRUCTIONS

GENERAL

THE BOILER SECTIONS SHOULD BE COMPLETELY ERECTED WITH HEADER NIPPLES MADE UP TIGHT INTO THE SECTIONS AND WITH LOCKNUTS TIGHTENED BEFORE THE INSTALLATION OF THE COMBUSTION CHAMBER IS BEGUN. REMOVE ERECTING BARS AND WORK THRU THE FRONT OPENING. STUDY THE SCHEDULES OF INSULATING BLOCK AND REFRACTORY BRICK CAREFULLY. THE TILE, BLOCKS AND BRICKS MUST BE LOCATED PROPERLY IN ORDER TO FIT INTO THE BOILER. THE SCHEDULES AND THE DIAGRAMS MUST BE USED TO INSTALL THE MATERIAL ACCORDING TO INSTRUCTIONS.

BLOCK INSULATION AND REFRACTORY

1. REFER TO THE SCHEDULE OF INSULATING BLOCKS AND SELECT THE CROSSWISE FLOOR PIECES. PLACE THEM ON THE FLOOR AT THE REAR OF THE BOILER AGAINST THE BACK PLATE AND CENTER BETWEEN THE SIDE WALLS. INSTALL REAR WALL PIECES ON THE FLOOR PIECES AGAINST THE BACK PLATE AND CENTER BETWEEN FOUNDATION SIDE WALLS. INSTALL THE REAR WALL TOP PIECE. SEE DIAGRAM NO. 1, PAGE 8.

2. SELECT THE 1-1/2' x 2" x 7" REAR LOWER CORNER PIECES AND INSTALL IN THE REAR CORNERS OF THE FOUNDATION.

3. INSTALL THE REMAINING CROSSWISE AND LENGTHWISE FLOOR PIECES. MAKE JOINTS AS SNUG AS POSSIBLE.

4. BEFORE INSTALLING ANY MORE INSULATING BLOCKS, INSTALL REAR WALL R.H. AND L.H. BRICK AND CENTER THEM BETWEEN FOUNDATION SIDE WALLS AND AGAINST REAR WALL INSULATION (SEE DIAGRAM NO. 2). CENTER THE REFRACTORY FLOOR BETWEEN THE FOUNDATION SIDE WALLS WITH CARE AND SET TIGHT TO REAR WALL INSULATION (SEE SCHEDULE OF REFRACTORY BRICK FOR IDENTIFICATION).

5. SELECT THE APPROPRIATE INSULATING BLOCK REAR SIDE PIECES AND LENGTHWISE SIDE PIECES AND INSTALL AGAINST THE FOUNDATION SIDE WALLS FITTING EACH BLOCK UNDER THE CAST IRON BOILER SECTIONS AND FITTING TIGHT TO THE BACK PLATE. IF THE FLANGE OF THE BACK PLATE INTERFERES WITH THE FIT, CUT OUT THE TOP EDGE ABOUT THREE INCHES FROM THE END TO CLEAR THE FLANGE.

6. REFER TO DIAGRAM NO. 3. INSTALL REAR SIDE WALL BRICK FITTING THE BOTTOM EDGE AND THE REAR EDGE INTO THE APPROPRIATE RECESSES. INSTALL INTERMEDIATE SIDE WALL BRICK ACCORDING TO SCHEDULE. FIT THE GROOVED JOINTS FOR THE MINIMUM OPENING WITHOUT STRA

7. WHEN BOTH FORWARD SIDE WALL BRICKS HAVE BEEN INSTALLED, PROCEED WITH THE FRONT WALL. TWO FRONT WALL STYLES ARE FURNISHED. OIL, GAS, OR COMBINATION GAS-OIL FIRING WOULD USE FRONT BRICK WITH EITHER 9-INCH OR 10-1/2 DIA. BURNER HOLE WITH THE CENTER LINE 15-1/2 INCHES ABOVE THE BOILER ROOM FLOOR. REFER TO PAGE 8. FOR BURNER HOLE DIA. SCHEDULE

8. CONSTRUCT THE FRONT WALL AS FOLLOWS:

- A. TAKE UP R.H. AND L.H. FRONT BRICK AND INSTALL 3/8" x 4-1/2" BOLTS WITH WASHERS IN THE UPPER RECESSED HOLES IN THE BRICK, WITH THE THREADED ENDS EXTENDING OUTWARD IN POSITION TO MATCH THE HOLES IN THE FRONT PLATE. FILL IN THE HOLES OVER THE BOLT HEADS WITH INSULATING CEMENT FURNISHED.
- B. SET THE FRONT BRICK IN POSITION ON THE FLOOR INSULATION. FIT THE FRONT BRICK AGAINST THE FLOOR BRICK AND ENGAGE THE LEADING EDGE OF THE FRONT SIDE WALLS INTO THE RECESS OF THE FRONT BRICK.
- C. INSERT THE INSULATING BLOCK FRONT CORNER PIECES IN THE SPACES AT THE ENDS OF THE FRONT BRICKS.
- D. PLACE THE INSULATING BLOCK FRONT PIECES OVER THE FASTENING BOLTS AND PUSH AGAINST FRONT BRICKS.
- E. INSTALL FOUNDATION FRONT PLATE.
- F. INSTALL BURNER.
- G. INSTALL FIREDOR FRAME.
- H. PLACE 23" x 2" x 1/4" STEEL PLATE (FURNISHED) ON TOP OF FRONT BRICK.

FRONT PLATE

1. AFTER THE COMBUSTION CHAMBER INSTALLATION HAS BEEN COMPLETED, TAKE THE CAN OF ADHESIVE CEMENT AND APPLY THE CEMENT GENEROUSLY INSIDE THE GROOVE OF THE DOUBLE BEAD ON THE FACE OF THE FRONT SECTION WHERE THE FRONT PLATE AND FIRE DOOR FRAME FIT AGAINST THE BOILER. FIT THE 1/4-INCH DIAMETER BRAIDED ROPE INTO THE GROOVE TAKING CARE TO AVOID KINKS OR KNOTS IN THE ROPE.

2. TROWEL A THIN, SMOOTH LAYER OF BLACK FURNACE CEMENT ON THE FRONT ENDS OF THE FOUNDATION SIDEWALLS.

3. TAKE THE STEEL FRONT PLATE WITH THE BURNER OPENING CUT IN AND BOLT TO THE FOUNDATION SIDEWALLS USING THE BOLTS FROM THE ERECTING BARS. TAKE CARE NOT TO DISTURB THE ROPE SEAL.

4. DRAW THE FRONT PLATE TIGHT TO THE FOUNDATION SIDEWALLS. MAKE SURE THE TWO TOP BOLT HOLES LINE UP WITH THE SCREW SEATS IN THE FRONT SECTION.

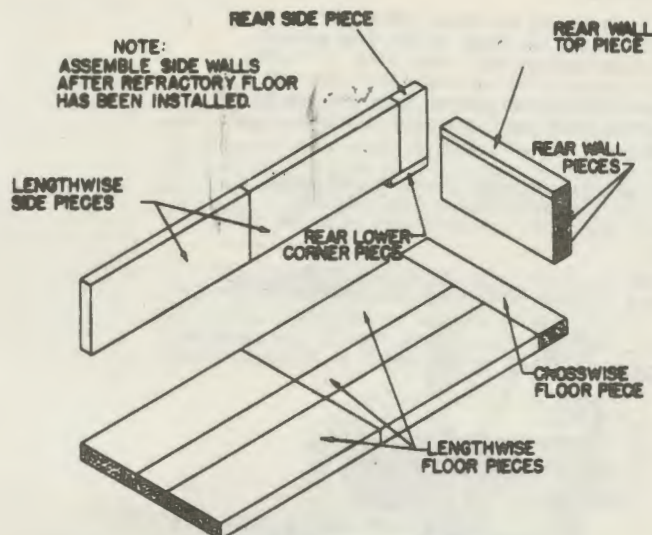


DIAGRAM NO. 1-INSULATION BLOCK LOCATION. 13 SECTION SHOWN-SEE INSULATION SCHEDULE FOR OTHER SIZES.

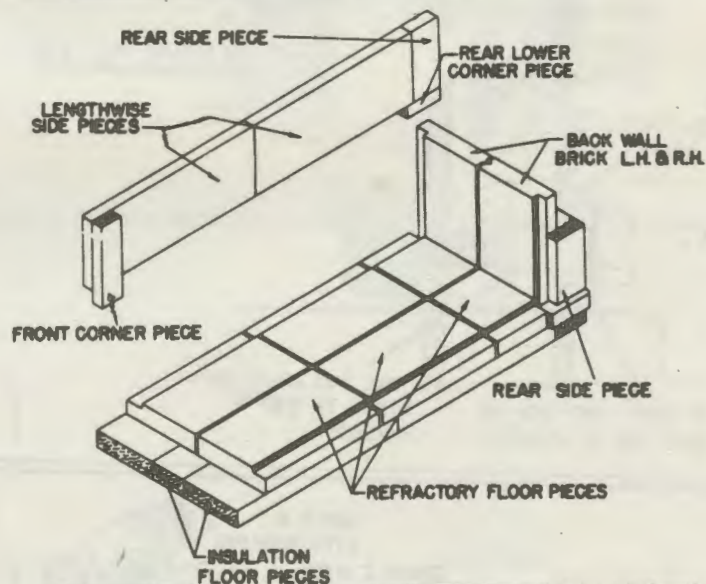


DIAGRAM NO. 2-FLOOR REFRACTORY BRICK, REAR BRICK AND SIDE WALL INSULATION. 13 SECTION SHOWN.

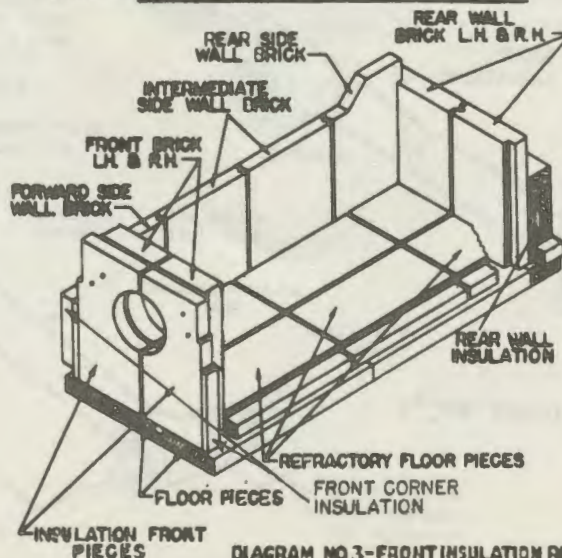


DIAGRAM NO. 3-FRONT INSULATION BLOCKS AND REFRACTORY SIDE WALL, REAR WALL, AND FRONT WALL IN PLACE.

SERIES 350 MILLS BOILER

FIRE DOOR AND FRAME

1. THE FIRE DOOR (3006) AND FRAME (3007) ARE SHIPPED ASSEMBLED. PLACE THE FRAME IN POSITION AGAINST THE FRONT SECTION AND ASSEMBLE THREE 7/16" x 1" HEX HEAD MACHINE SCREWS IN THE TOP SCREW SEATS AND TWO 7/16" x 1-1/4" HEX HEAD MACHINE BOLTS AT THE TOP OF THE FRONT PLATE. TAKE CARE TO AVOID DISTURBING THE ROPE SEAL.

2. SEAL THE JOINT BETWEEN THE FRAME AND THE FRONT PLATE WITH BLACK FURNACE CEMENT. THEN DRAW THE FRAME TIGHT TO THE FRONT SECTION TAKING UP ON THE BOLTS EVENLY.

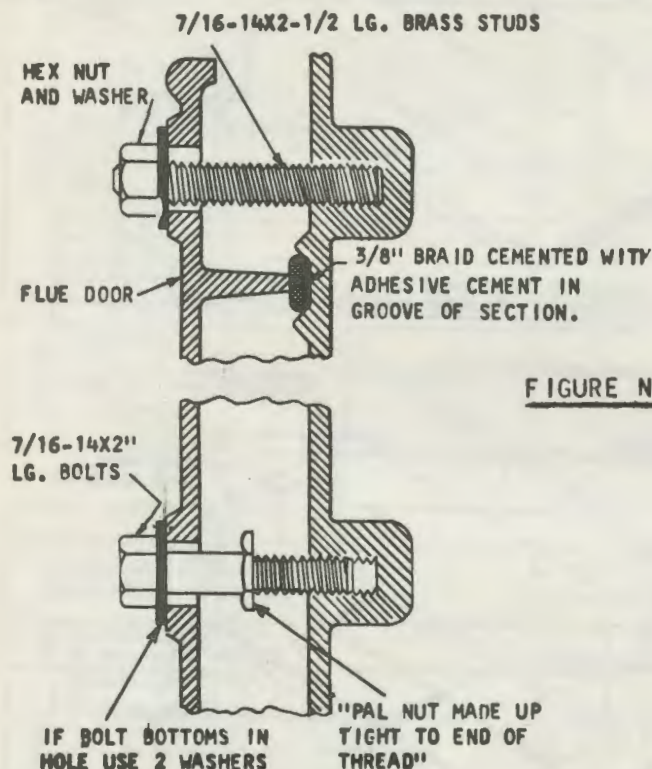


FIGURE NO. 10

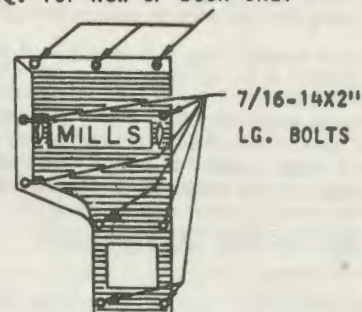
FLUE DOORS

1. INSTALL SIX (6) 7/16" x 2-7/8" BRASS STUDS IN THE TOP ROW OF SCREW SEATS OF THE FRONT SECTION. PLACE THE FRONT SECTION WITH THE THREE TOP HOLES OF EACH DOOR OVER THE THREE STUDS PROVIDED FOR THE DOOR.

2. ENGAGE THE FLUE DOOR FASTENING BOLTS (PACKED IN DOOR CRATE) IN THE CORRESPONDING SCREW SEATS. TIGHTEN FASTENING NUTS EVENLY TO DRAW THE DOORS TO THE FRONT SECTION.

3. INSTALL HEX NUTS ON THE STUDS AND TIGHTEN.

3 REQ. TOP ROW OF DOOR ONLY



- (1) RUN BRASS STUDS (3 PER DOOR) ALL THE WAY INTO THE TOP ROW OF TAPPED HOLES IN THE FRONT SECTION.
- (2) HANG THE DOOR ON THESE THREE STUDS AND APPLY WASHERS AND NUTS HAND TIGHT.
- (3) INSERT A BOLT (WITH WASHER) THROUGH A LOWER DOOR HOLE, BUT BEFORE RUNNING IT INTO TAPPING, ASSEMBLE "PAL NUT".
- (4) THEN RUN BOLT INTO HOLE HAND TIGHT. REPEAT WITH ALL BOLTS, WASHERS, AND PAL NUTS.
- (5) GRADUALLY TIGHTEN DOOR DOWN BY TURNING EACH NUT OR BOLT ABOUT 1/2 TURN AT A TIME AND MOVING ON TO THE NEXT.
- (6) IF ANY BOLT BOTTOMS IN HOLE BEFORE DOOR IS TIGHT IN HOLE REMOVE THE BOLT AND ADD A WASHER.

WARNING:

DO NOT APPLY TOO MUCH TORQUE TO BOLTS. THE DOOR CAN BE BROKEN BY OVER-TIGHTENING.

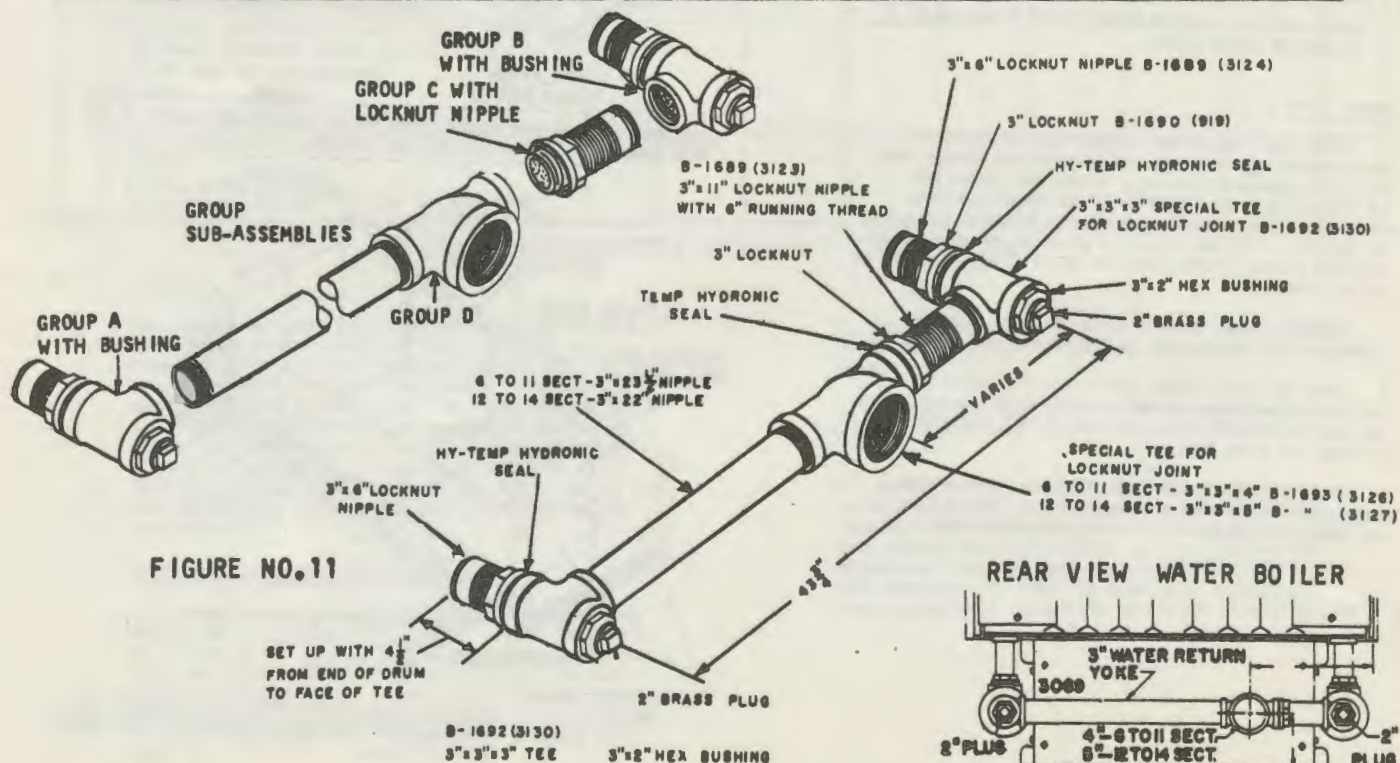


FIGURE NO. 11

REAR VIEW WATER BOILER

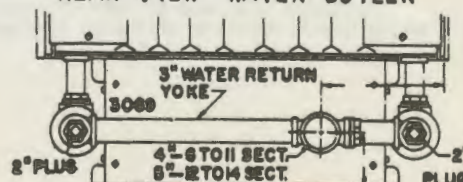


FIGURE NO. 12

RETURN YOKE (WATER) FIGURE NO. 11 AND NO. 12

1. RUN THE 3" x 6" LOCKNUT NIPPLES INTO THE SPECIAL TEES UNTIL THE ENDS OF THE NIPPLES MEASURE 4-1/2" OUT FROM THE FACE OF THE TEE. GROUP A AND B.
2. ENGAGE THE 3" x 6" LOCKNUT NIPPLES INTO THE RETURN DRUM TAPPINGS MAINTAINING THE 4-1/2" DISTANCE FROM THE FACE OF THE TEE TO THE END OF THE DRUM.
3. RUN THE 3" x 11" LOCKNUT NIPPLE INTO THE SPECIAL TEE UNTIL IT CLEARS THE CORNER TEE. GROUP C.

4. LINE THE CROSS PIECE ASSEMBLY UP AND ENGAGE THE THREAD INTO THE CORNER TEE. GROUP D.
5. USE PIPE JOINT COMPOUND ON TAPERED THREAD JOINTS.
6. CHECK THE YOKE TO BE SURE THE PIPE IS SQUARE AND LEVEL, THEN MAKE TAPERED THREAD JOINTS TIGHT.
7. TIGHTEN LOCKNUTS IN THE MANNER DESCRIBED FOR SEALING GASKETS AND TIGHTENING LOCKNUTS , PAGE 7, FIGURE NO. 8 AND 9.

GROUP
SUB-ASSEMBLIES
FIGURE NO.13

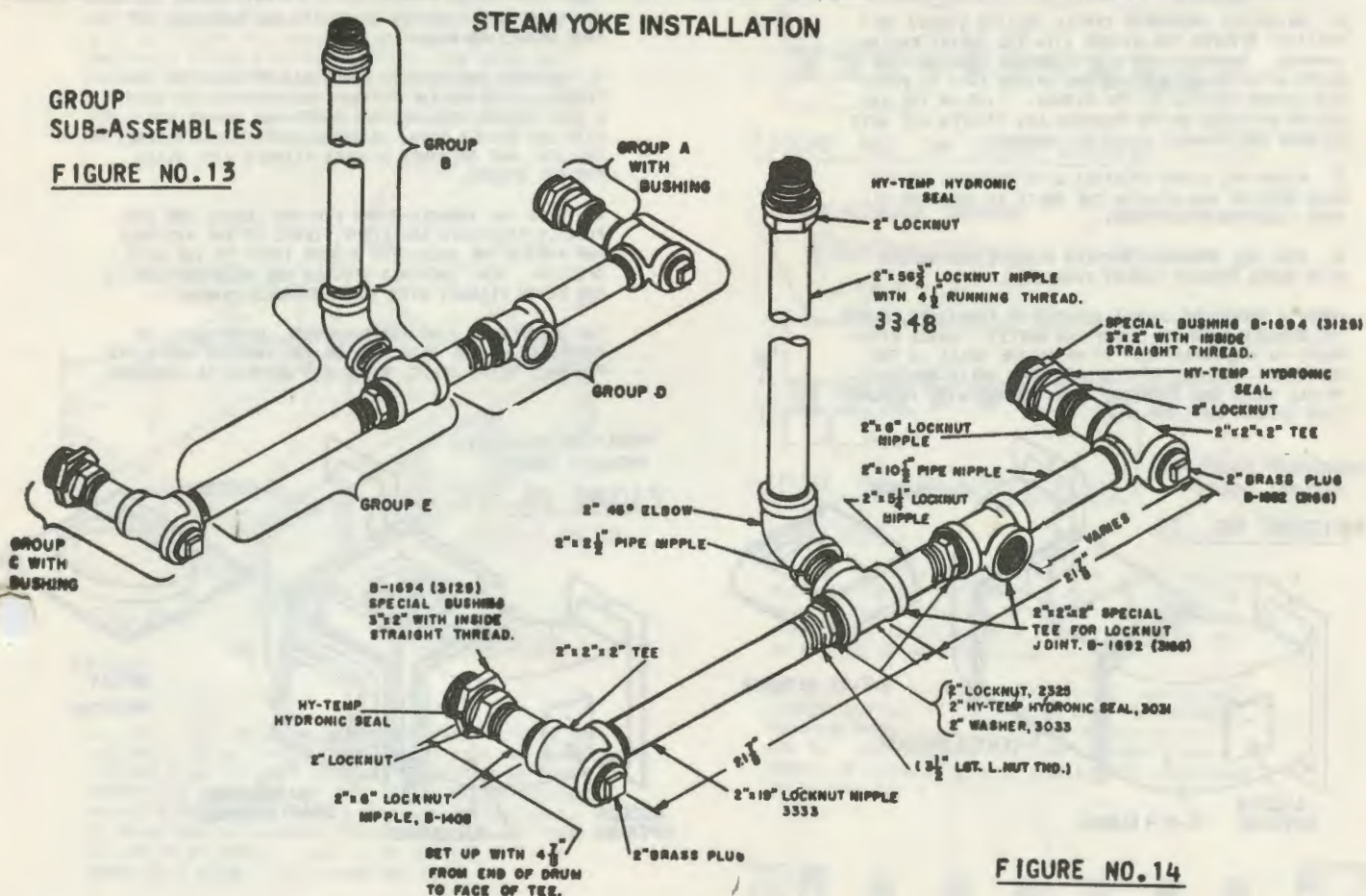


FIGURE NO. 14

RETURN YOKE (STEAM)

1. THE RETURN YOKE FOR STEAM BOILERS IS 2" PIPE THROUGHOUT. IT IS PARTIALLY ASSEMBLED AT THE FACTORY FOR LEFT HAND LOCATION OF THE RETURN CONNECTION. FOR RIGHT HAND LOCATION OF THE RETURN CONNECTION, FIELD ADJUSTMENT OF THE FACTORY ASSEMBLED PIPING IS REQUIRED.
2. TAPERED THREADS SHOULD HAVE PIPE JOINT COMPOUND APPLIED BEFORE BEING MADE UP. DO NOT USE COMPOUND ON STRAIGHT THREADS.
3. INSTALL 3" x 2" SPECIAL HEX BUSHINGS IN THE REAR TAPPINGS OF THE RETURN DRUMS.
4. RUN THE STRAIGHT THREAD OF LEFT HAND 2" x 6" LOCKNUT NIPPLE INTO THE BUSHING UNTIL THE END OF NIPPLE MEASURES 4-7/8" OUT FROM THE FACE OF RETURN DRUM. (GROUP A)
5. RUN THE STRAIGHT THREAD OF THE 2" x 56-3/4" LOCKNUT NIPPLE INTO THE BOTTOM REAR TAPPING OF THE SUPPLY DRUM AS FAR AS POSSIBLE. (GROUP B)
6. ENGAGE TAPERED THREAD END OF 2" x 6" LOCKNUT NIPPLE IN LEFT HAND CORNER TEE ASSEMBLY MAINTAINING 4-7/8" SPACING FROM THE END OF DRUM TO FACE OF CORNER TEE. MAKE NIPPLE TIGHT INTO TEE OF GROUP

7. INSTALL THE RIGHT HAND CORNER ASSEMBLY INTO THE HEX BUSHING OF THE RETURN DRUM MAINTAINING 4-7/8" SPACING FROM END OF DRUM TO FACE OF TEE. (GROUP C)
8. ADJUST THE 2" x 5-1/4" LOCKNUT NIPPLE UNTIL THE CENTER OF THE 2" 45° ELBOW IS IN THE CENTER OF THE BOILER, DIRECTLY IN LINE WITH THE 2" x 56-3/4" VERTICAL LOCKNUT NIPPLE COMING FROM THE BOTTOM REAR TAPPING OF THE SUPPLY DRUM.

ENGAGE TAPERED THREAD OF THE 2" x 5-1/4" HORIZONTAL LOCKNUT NIPPLE INTO THE CENTER TEE ASSEMBLY (GROUP E) AND MAKE UP TIGHT. DO NOT MAKE 2" x 56-3/4" VERTICAL LOCKNUT NIPPLE INTO TEE ASSEMBLY AT THIS TIME BUT, WITHOUT CHANGING LOCATION OF CENTER TEE ON HORIZONTAL NIPPLE, SCREW 2" x 19" LOCKNUT NIPPLE OUT OF CENTER TEE ASSEMBLY. CHECK ALIGNMENT WITH RIGHT HAND CORNER TEE. ADJUST CORNER TEE AND LOCKNUT NIPPLE ASSEMBLY (GROUP C) IN OR OUT OF 3" x 2" SPECIAL BUSHING UNTIL 2" x 19" LOCKNUT NIPPLE LINES UP, THEN MAKE UP TIGHT. CHECK TO SEE THAT FACE OF 2" 45° ELBOW OF CENTER TEE ASSEMBLY IS LEVEL AND SUPPORT IT IN THE LEVEL POSITION WHILE THE 2" x 56-3/8" VERTICAL LOCKNUT NIPPLE IS BROUGHT OUT OF THE SUPPLY DRUM. ENGAGE TAPERED THREAD INTO THE 45° ELBOW OF CENTER TEE ASSEMBLY AND MAKE UP TIGHT. THEN GO OVER ALL LOCKNUT JOINTS OF YOKE ASSEMBLY AND TIGHTEN, FOLLOWING INSTRUCTIONS GIVEN FOR GASKET JOINTS ON PAGE 7.

SERIES 350 MILLS BOILER

SMOKEHOOD FOR NATURAL DRAFT, FIGURE NO.15

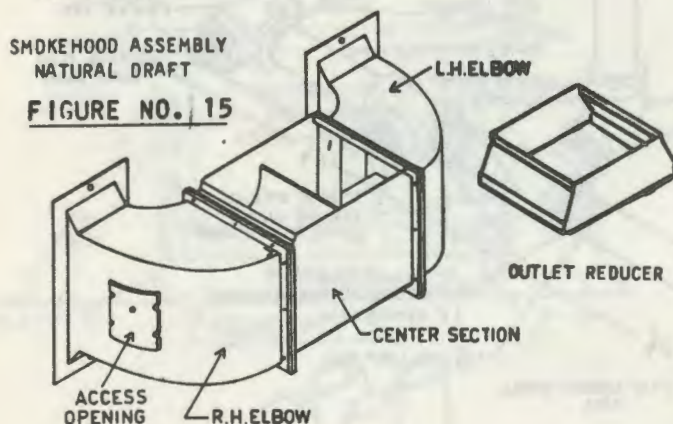
1. USE TWO (2) 7/16" x 3/4" LENGTH MACHINE BOLTS AND WASHERS TO ASSEMBLE EACH ELBOW. ONE AT A TIME PLACE THE ELBOWS IN POSITION AGAINST THE BACK SECTION. ASSEMBLE THE BOLTS IN THE SCREW SEATS OF THE BACK SECTION. TIGHTEN BOLTS SLIGHTLY SO THE ELBOWS HANG LOOSELY IN POSITION.

2. RAISE THE SMOKEHOOD CENTER SECTION (3040) INTO POSITION BETWEEN THE ELBOWS WITH THE OUTLET FACING UPWARDS. INSTALL 1/4" x 3/4" SQUARE HEAD MACHINE BOLTS WITH SQUARE NUT AND ONE WASHER EACH TO FASTEN CENTER SECTION TO THE ELBOWS. LINE UP THE INTERIOR OPENINGS OF THE FLANGES AND TIGHTEN ALL NUTS TO DRAW THE FLANGES TIGHT ALL AROUND.

3. ALIGN THE ELBOW OPENINGS WITH OPENINGS IN THE BACK SECTION AND TIGHTEN THE BOLTS TO DRAW THE ELBOWS TIGHT TO THE BOILER.

4. SEAL ALL OPENINGS BETWEEN FLANGES AND BOILER WITH BLACK FURNACE CEMENT FURNISHED.

WHERE A SMOKEHOOD OUTLET REDUCER IS FURNISHED, PLACE THE REDUCER OVER THE SMOKEHOOD OUTLET. DRILL 9/32" HOLES IN THE OUTLET LIP TO MATCH THE HOLES IN THE REDUCER. ASSEMBLE 1/4" SQUARE HEAD BOLTS AND NUTS IN ALL HOLES AND TIGHTEN. SEAL JOINTS WITH INSULATING CEMENT.



SMOKEHOOD FOR INDUCED DRAFT, FIGURE NO.16

1. USE TWO (2) 7/16" x 3/4" LENGTH MACHINE BOLTS AND WASHERS TO ASSEMBLE EACH ELBOW. ONE AT A TIME PLACE THE ELBOWS IN POSITION AGAINST THE BACK SECTION. ASSEMBLE THE BOLTS IN THE SCREW SEATS OF THE BACK SECTION. TIGHTEN BOLTS SLIGHTLY SO THE ELBOWS HANG LOOSELY IN POSITION.

2. UNPACK THE INDUCED DRAFT FAN AND ASSEMBLE THE SIDE PANELS AS REQUIRED.

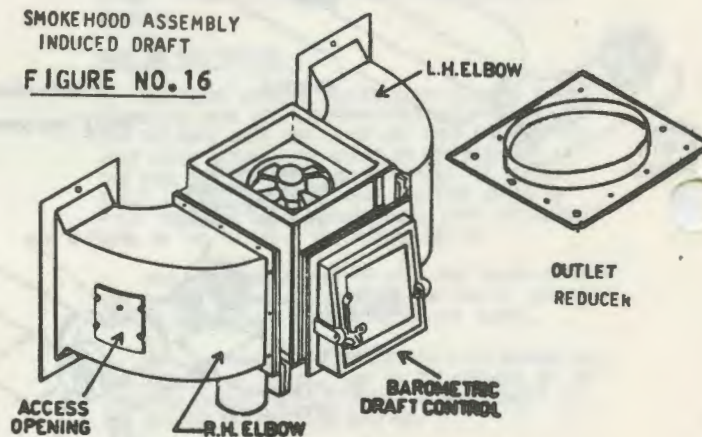
3. SUPPORT THE INDUCED DRAFT FAN BETWEEN THE TWO ELBOWS. LINE UP THE FLANGES AND INSTALL THE 1/4" x 3/4" SQUARE HEAD MACHINE BOLTS AND SQUARE NUT WITH ONE WASHER EACH. TIGHTEN NUTS ON FAN FLANGES AND SEAL ANY OPENINGS BETWEEN FLANGES WITH BLACK FURNACE CEMENT.

4. WHEN THE INDUCED DRAFT FAN AND ELBOWS ARE COMPLETELY ASSEMBLED AND TIGHT, LEVEL UP THE ASSEMBLY AND FASTEN THE SMOKEHOOD ELBOWS TIGHT TO THE BACK SECTION. SEAL OPENINGS BETWEEN THE BACK SECTION AND ELBOW FLANGES WITH BLACK FURNACE CEMENT.

THE BAROMETRIC TYPE DRAFT CONTROL, WHEN USED, IS INSTALLED ON THE BACK SIDE OF THE INDUCED DRAFT FAN ASSEMBLY USING BOLTS, NUTS, AND WASHERS AS REQUIRED.

SMOKEHOOD ASSEMBLY INDUCED DRAFT

FIGURE NO.16



350-3500 MILLS BACK SECTION AUXILIARY GAS VENT INSTRUCTIONS.

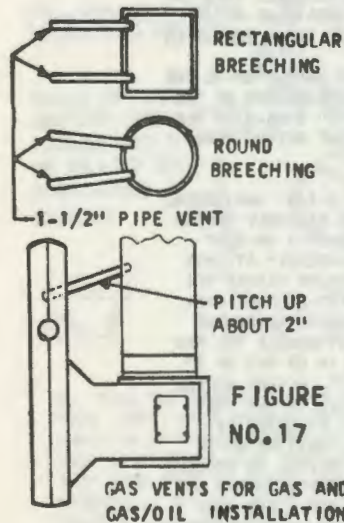
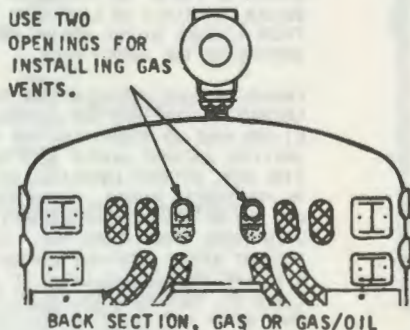


FIGURE NO.18

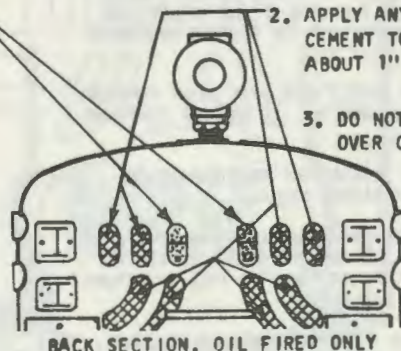


1. PLACE INSULATION COVERS OVER OPENINGS AND SEAL OVER WITH INSULATING CEMENT.

2. APPLY ANY REMAINING CEMENT TO INDENTATIONS ABOUT 1" THICK.

3. DO NOT CEMENT OVER CLEANOUTS.

FIGURE NO.19



PLACE PIPES IN POSITION TEMPORARILY AND CEMENT INTO OPENING IN SECTION. THEN REMOVE PIPE FOR JACKET ASSEMBLY. AFTER JACKET IS ASSEMBLED, REPLACE THE PIPES AND RESEAL PIPES THROUGH KNOCKOUT OPENINGS.

SERIES 350 MILLS BOILER

PAGE 13

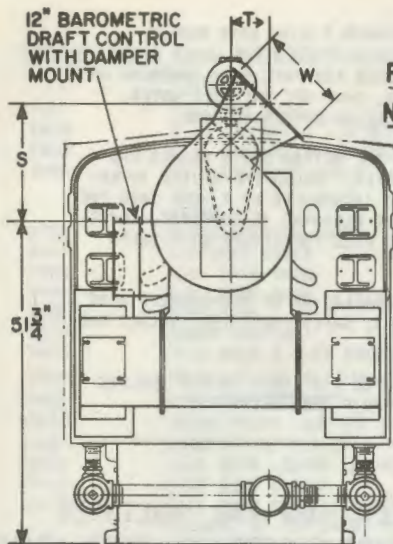


FIGURE NO. 20

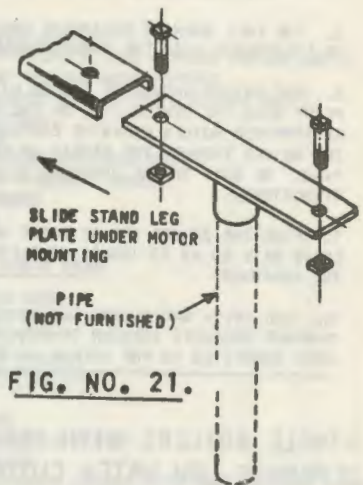
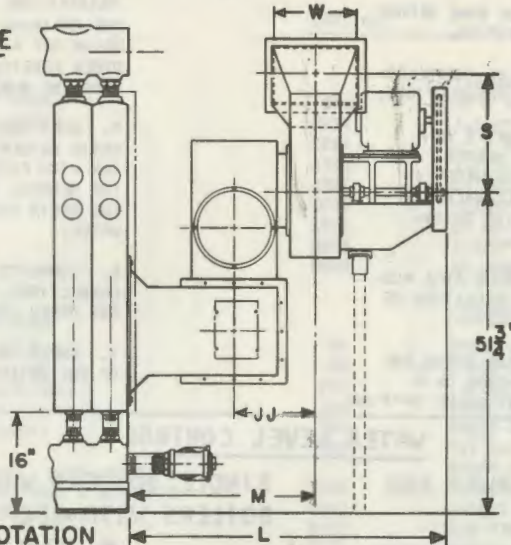


FIG. NO. 21.

TOP 45° DISCHARGE CLOCKWISE ROTATION

WHITTY FAN DIMENSIONS

FAN	J	L	M	S	T	W	EE	JJ
9P	8-1/2	47	30-1/2	17-1/4	5-1/4	12	16	13-3/4
10P	9-1/2	50-3/4	31	19	5-3/4	14	17-1/2	14-1/4

350 WHITTY FAN SIZES

BOILER SIZES	WHITTY FAN NO.	MOTOR H.P.
6-7-8	9P25	1/4
9-10	9P33	1/3
11-12	9P50	1/2
13-14	10P50	1/2

3500 WHITTY FAN SIZES

BOILER SIZES	WHITTY FAN NO.	MOTOR H.P.
6-7	9P25	1/4
8-9	9P33	1/3
10-11	9P50	1/2
12	10P50	1/2
13-14	10P75	3/4

WHITTY FAN INSTALLATION

1. USE TWO (2) 7/16" x 3/4" LENGTH MACHINE BOLTS AND WASHERS TO ASSEMBLE EACH ELBOW. ONE AT A TIME, PLACE THE ELBOWS IN POSITION AGAINST THE BACK SECTION. ASSEMBLE THE BOLTS IN THE SCREW SEATS OF THE BACK SECTION. TIGHTEN BOLTS SLIGHTLY SO THE ELBOWS HANG LOOSELY IN POSITION.

2. RAISE THE SMOKEHOOD CENTER SECTION (3040) INTO POSITION BETWEEN THE ELBOWS WITH THE OUTLET FACING UPWARDS. INSTALL 1/4" x 3/4" SQUARE HEAD MACHINE BOLTS WITH SQUARE NUT AND ONE WASHER EACH TO FASTEN CENTER SECTION TO THE ELBOWS. TIGHTEN UP THE INTERIOR OPENINGS OF THE FLANGES AND TIGHTEN ALL NUTS TO DRAW THE FLANGES TIGHT ALL AROUND.

3. ALIGN THE ELBOW OPENINGS WITH OPENINGS IN THE BACK SECTION AND TIGHTEN THE BOLTS TO DRAW THE ELBOWS TIGHT TO THE BOILER.

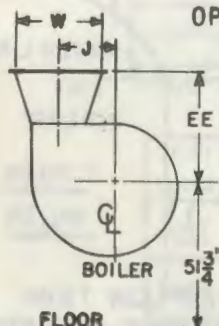
4. SEAL ALL OPENINGS BETWEEN FLANGES AND BOILER WITH BLACK FURNACE CEMENT FURNISHED.

5. PLACE THE SMOKEHOOD OUTLET IN POSITION OVER THE SMOKEHOOD CENTER SECTION, DRILL HOLES AND ASSEMBLE USING SELF TAPPING SCREWS.

6. SUPPORT THE FAN HOUSING AND MOTOR UNIT IN POSITION AS SHOWN IN FIGURE NO. 15 WITH THE FLEXIBLE CONNECTOR FITTING BETWEEN THE SMOKEHOOD OUTLET AND FAN HOUSING USING HARDWARE FURNISHED, THEN TIGHTEN HARDWARE.

7. PREPARE THE 2" PIPE STAND LEG (NOT FURNISHED) AND ASSEMBLE TO THE COUPLING PRIOR TO SLIDING THE PLATE UNDER THE MOTOR BASE SUPPORTS. FIGURE NO. 20. SLIDE STAND LEG PLATE IN POSITION, ASSEMBLE BOLTS AND NUTS, THEN TIGHTEN. ADJUST PIPE TO SUPPORT WEIGHT OF UNITS.

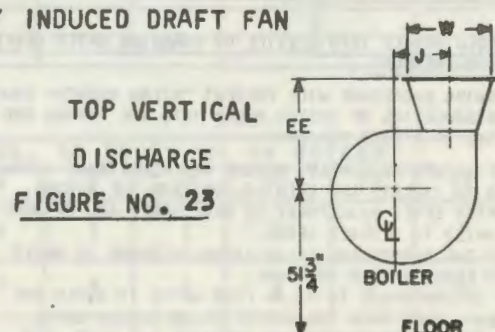
OPTIONAL DISCHARGE POSITIONS-WHITTY INDUCED DRAFT FAN



TOP VERTICAL DISCHARGE

FIGURE NO. 22

CLOCKWISE ROTATION
(THIS VIEW AS SEEN FROM BACK OF BOILER)



TOP VERTICAL DISCHARGE

FIGURE NO. 23

COUNTERCLOCKWISE ROTATION
(THIS VIEW AS SEEN FROM BACK OF BOILER)

SERIES 350 MILLS BOILER

FIRING AND CLEANING THE BOILER

NOTE: CLEANING OF THE BOILER SHOULD BE DONE BEFORE INSTALLATION OF THE CONNECTED PIPING.

1. THE FUEL BURNING EQUIPMENT SHOULD BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
2. THE BOILER SHOULD BE FILLED WITH WATER TO A POINT NEAR THE CENTER LINE OF THE TOP HEADER. ADD AN APPROVED BOILER CLEANING COMPOUND TO WATER IN THE BOILER THROUGH THE SAFETY OR RELIEF VALVE TAPPING. BE SURE TO USE COMPOUND ACCORDING TO INSTRUCTIONS.
3. FIRE THE BOILER FOR AT LEAST ONE HOUR AT A MODERATE RATE SO AS TO INSURE COMPLETE CIRCULATION OF THE COMPOUND.
4. ADD FRESH WATER FROM THE BOTTOM AND DRAIN THE SURFACE PRODUCTS THROUGH TEMPORARY PIPING OR A HOSE CONNECTED TO THE SAFETY OR RELIEF VALVE TAPPING,

4 (CONTINUED)

MAINTAINING THE MODERATE FIRING RATE DURING THE DRAINING OFF PROCESS. WHEN THE WATER BEING DRAWN OFF APPEARS CLEAN AND FREE FROM COMPOUND OR OTHER FOREIGN MATTER, SHUT OFF THE FEED WATER, STOP THE BURNER AND ALLOW BOILER TO COOL.

5. WHEN COOL, OPEN THE BOTTOM DRAIN VALVES AND DRAIN BOILER COMPLETELY. FLUSH THE BOILER INTERIOR WITH CLEAN WATER INTRODUCED BY A HOSE INTO THE TOP HEADER. WHEN THE FLUSHING IS COMPLETE, CLOSE THE DRAIN VALVES AND FILL THE BOILER WITH CLEAN WATER.

6. COMPLETE THE INSTALLATION OF PERMANENT PIPING CONNECTIONS, CONTROLS, SAFETY OR RELIEF VALVES AND ANY OTHER COMPONENTS.

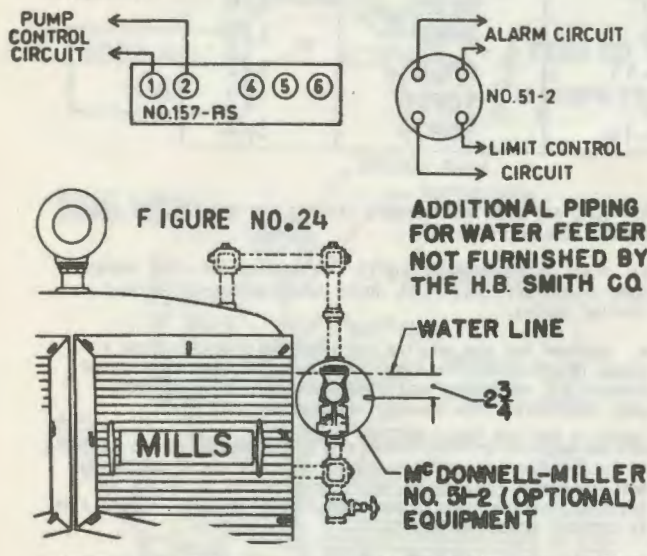
7. CHECK CAREFULLY FOR AIR LEAKS IN THE SEALING OF THE BOILER AND REPAIR WHEN NECESSARY.

WATER LEVEL CONTROL

SINGLE BOILERS WITH FEED PUMP AND SEPARATE LOW WATER CUTOFF.

NO. 157-RS PUMP CONTROLLER WITH NO. 51-2 COMBINATION AUTOMATIC WATER FEEDER AND LOW WATER CUT-OFF. (INSTALL NO. 157-RS WITH CUT-OFF MARK 1-1/2" BELOW BOILER WATER LINE AND NO. 51-2 WITH CLOSING MARK 2-3/4" BELOW BOILER WATER LINE).

ON INITIAL 3/4" DROP IN BOILER WATER LEVEL CONNECTION FROM 1 TO 2 OF THE 157-RS CONTROLLER MAKES. LOW WATER CUT-OFF AND ALARM SWITCH OF THE #157-RS ARE NOT EMPLOYED IN THIS APPLICATION. ON FURTHER DROP OF 2" THE AUTOMATIC FEEDER VALVE COMMENCES TO OPEN. ON FURTHER DROP OF 1-1/4" THE #51-2 FEEDER VALVE WILL BE FULLY OPEN AND THE LOW WATER CUTOFF SWITCH WILL OPEN AS THE ALARM SWITCH CLOSES. SEE FIGURE 24.



PUTTING COLD BOILER INTO SERVICE OR CHANGING WATER LEVEL UNDER STEAM PRESSURE

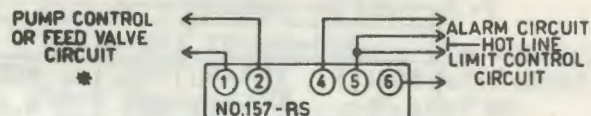
THE FOLLOWING PROCEDURE WILL PREVENT "STEAM HAMMER" CAUSED BY THE INTRODUCTION OF SYSTEM STEAM INTO THE PIPING AND STEAM SPACE OF A COLD BOILER:

1. CLOSE VALVES ON SUPPLY, RETURN AND EQUALIZING PIPING SO AS TO ISOLATE THE COLD BOILER FROM THE SYSTEM.
2. IF WATER LEVEL ADJUSTMENT IS NECESSARY, ADD OR DRAW OFF WATER TO DESIRED LEVEL.
3. START THE BURNER AND ALLOW STEAM PRESSURE TO BUILD UP TO EQUAL SYSTEM PRESSURE.
4. OPEN RETURN VALVE TO ALLOW FEED WATER TO ENTER THE BOILER. THEN OPEN THE SUPPLY VALVE SLOWLY UNTIL BOILER PRESSURE AND SYSTEM PRESSURE ARE EQUAL AND THE VALVE FULLY OPEN. THEN OPEN EQUALIZING VALVE, IF ONE HAS BEEN SUPPLIED.
5. THE BOILER IS NOW "ON LINE" AND SHOULD BE ALLOWED TO OPERATE ON AUTOMATIC CONTROL.

SINGLE BOILERS WITH FEED PUMP AND MULTIPLE BOILERS WITH SELF CLOSING ELECTRICAL FEED VALVES.

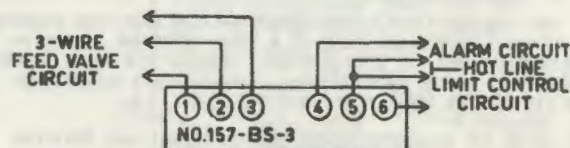
NO. 157-RS PUMP CONTROLLER AND LOW WATER CUTOFF. (INSTALLED WITH CUT-OFF LEVEL 1-1/2" BELOW BOILER WATER LINE).

ON A 3/4-INCH DROP IN BOILER WATER LEVEL THE CONNECTION FROM 1 TO 2 MAKES. ON FURTHER DROP OF 3/4" THE CONNECTION FROM 5 TO 6 BREAKS AND THE CONNECTION FROM 4 TO 5 MAKES.

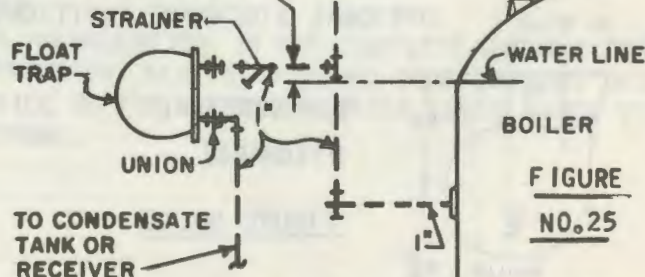


* WHEN USING THE #157-RS TO OPERATE A FEED VALVE, AN END SWITCH MUST BE PROVIDED TO START AND STOP THE PUMP. FOR NON SELF-CLOSING FEED VALVE APPLICATIONS, USE THE #157-RS-3.

MULTIPLE BOILERS WITH ELECTRICALLY OPERATED FEED VALVES.



SET OVERFLOW LEVEL 2" OR 3" ABOVE BOILER WATER LINE.



SUGGESTED PIPING FOR OVERFLOW TRAP TO PREVENT FLOODING OF IDLE BOILERS IN MULTIPLE BOILER INSTALLATIONS WITH INDIVIDUAL WATER LEVEL CONTROL AND NO EQUALIZING CONNECTIONS.

SERIES 350 MILLS BOILER JACKET ASSEMBLY INSTRUCTIONS

PAGE 15

1. GENERAL

THESE INSTRUCTIONS ARE WRITTEN TO INSURE A QUICK, EASY AND PERFECTLY FITTED JACKET ASSEMBLY. THE PROCEDURES HAVE BEEN TESTED AND HAVE PROVED TO BE MOST EFFECTIVE IN OBTAINING THE DESIRED RESULTS.

THE JACKET COMPONENTS ARE DESIGNED TO PERMIT INSTALLATION ON A FULLY ERECTED BOILER WITH COMPLETE PIPING CONNECTIONS AND ACCESSORIES EXCEPT MANIFOLDS IN PLACE. CONTROLS SHOULD BE MOUNTED WITH SEPARABLE WELLS TO PERMIT THE JACKET TO BE INSTALLED WITHOUT DRAINING THE BOILER. HEATER MANIFOLDS SHOULD NOT BE INSTALLED UNTIL JACKET SIDE PANELS ARE IN PLACE.

THIS FEATURE ALLOWS HYDROSTATIC TESTING, OPERATION FOR CLEANING THE PIPING SYSTEM OR FOR TEMPORARY HEAT WITHOUT USING THE JACKET. THEN, WHEN THE WORK OF OTHER TRADES IN THE BOILER ROOM HAS BEEN COMPLETED, THE JACKET CAN BE INSTALLED WITHOUT EXPOSURE TO DIRT AND DAMAGE.

BEFORE COMMENCING TO ASSEMBLE THE JACKET, ALL HY-TEMP HYDRONIC SEALS SHOULD BE CHECKED AND MADE TIGHT. THE SEALING OF EXTERIOR JOINTS BETWEEN SECTIONS AND AT THE TOP OF THE FOUNDATION SHOULD BE CHECKED AND POINTED UP.

2. JACKET PACKAGING

JACKET COMPONENTS ARE SHIPPED IN MARKED PACKAGES AS FOLLOWS:

PACKAGE NO. 350J-1- -- TAG
(THE BLANK SPACE WILL CONTAIN THE APPROPRIATE NUMBER OF BOILER SECTIONS.)

NOTE: THIS PACKAGE CAN BE USED ONLY WITH THE BOILER HAVING THE PROPER NUMBER OF SECTIONS.

2 - SUPPORT ANGLES
3 OR 4 - TOP STRAPS
2 - TOP CORNERS
2 - TIE BARS
6 OR 8 - NIPPLE CLAMPS
BAG OF NUTS, BOLTS AND SCREWS
ASSEMBLY INSTRUCTIONS

A
B
C
D
F

PACKAGE NO. 350J-2
TYPICAL FOR ALL BOILER SIZES.
2 - TOP FRONT PANELS
1 - R.H. FRONT CORNER PANEL
1 - L.H. FRONT CORNER PANEL
1 - FRONT PANEL
1 - BACK TIE ANGLE
1 - BACK PANEL
1 - BACK PANEL LEG R.H.
1 - BACK PANEL LEG L.H.
1 - BACK LOWER PANEL
2 - CLEANOUT COVERS
1 - FRONT DOOR STRIP

TAG
J
K
K
L
L
N
O
P
P
Q
R
G

PACKAGES NO. 350J-3, 350J-4 AND 350J-5 (3 AND 4 SECTIONS)

(SUPPLIED IN VARIOUS COMBINATIONS TO SUIT THE BOILER LENGTH.)

1 - SET 2 SIDE AND 2 TOP PANELS (18")
1 - SET 2 SIDE AND 2 TOP PANELS (24")
1 - SET 2 SIDE AND 2 TOP PANELS (12")

S
T
U

3. ASSEMBLY OF TOP FRAME (SEE FIG. 1)

(OPEN PACKAGE NO. 350J-1- -- AND REMOVE THE CONTENTS)

PLACE TIE BARS (D) ON TOP OF THE BOILER ON BOTH SIDES OF THE TOP DRUM WITH THE FLANGE FACED UP ON THE INSIDE EDGE. INSERT THE TOP STRAPS (B) UNDER THE TIE BARS SO THAT THE HOLES IN BOTH PIECES MATCH. FASTEN PIECES TOGETHER USING SHEET METAL SCREWS.

POSITION TOP CORNERS (C) OVER THE OUTBOARD ENDS OF THE TOP STRAPS AND FASTEN PIECES TOGETHER WITH SHEET METAL SCREWS.

THIS ASSEMBLY CONSTITUTES THE TOP FRAME AND SHOULD BE ADJUSTED TO REST FIRMLY ON THE BOILER WITH ALL SUPPORTING LEGS BEARING ON THE CAST IRON SECTIONS.

4. ASSEMBLY OF BOTTOM FRAMES (SEE FIG. NO. 2 AND 3)

INSTALL NIPPLE CLAMPS (F) ON BOTTOM DRUM NIPPLES OF FRONT AND BACK SECTIONS WITH THE CLAMP TIGHT AGAINST THE BOSS OF THE SECTION AND THE CLAMP LEG ENGAGED IN THE NIPPLE THREAD.

PLACE SUPPORT ANGLES (A) ON THE CLAMPS AND ASSEMBLE BOLTS TO WELD NUTS ON NIPPLE CLAMPS.

INSTALL ADDITIONAL NIPPLE CLAMPS ON BOTTOM DRUM NIPPLES CORRESPONDING TO THE BOLT HOLES IN THE SUPPORT ANGLES. ASSEMBLE BOLTS THROUGH SUPPORT ANGLES TO WELD NUTS OF NIPPLE CLAMPS.

INSTALL BACK TIE ANGLE (N) TO JOIN THE SUPPORT ANGLES. PLACE THE TIE ANGLE UNDER THE SUPPORT ANGLES AND FASTEN WITH BOLTS INTO WELD NUTS.

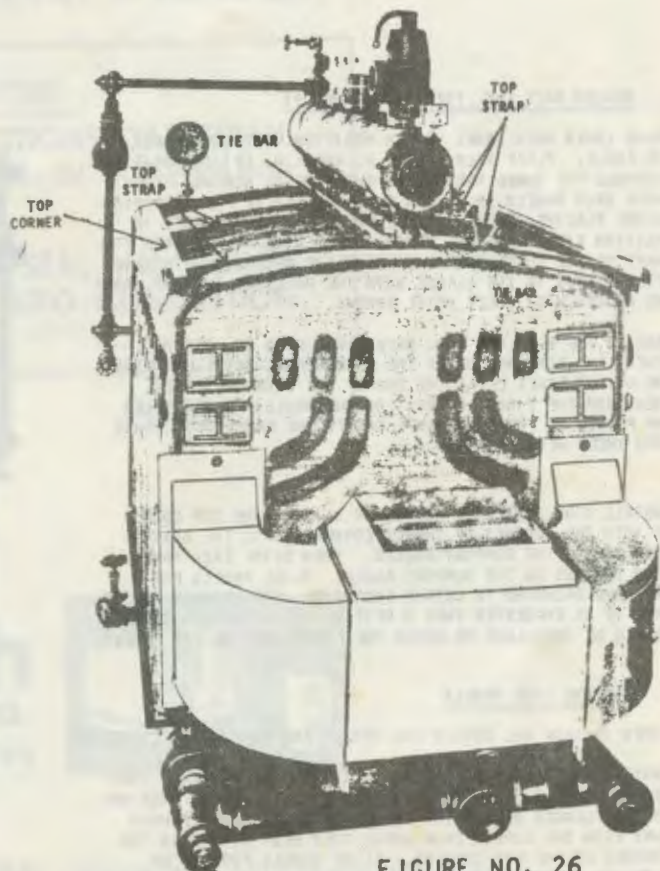


FIGURE NO. 26

SERIES 350 MILLS BOILER JACKET ASSEMBLY INSTRUCTIONS

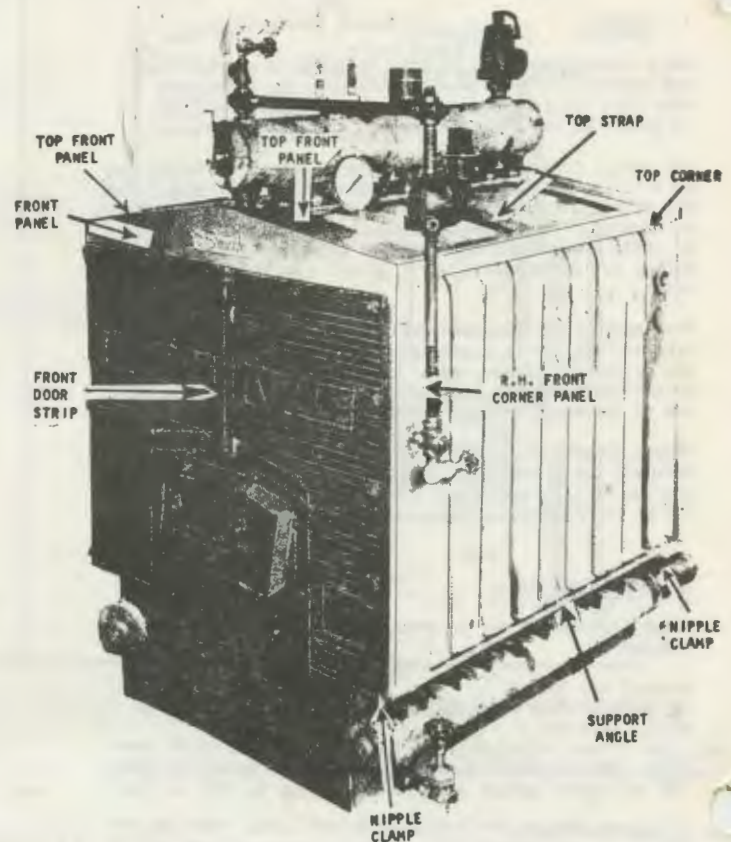
5. BOILER FRONT (SEE FIGURE NO. 2)

(OPEN PACKAGE NO. 350J-2 AND REMOVE THE CONTENTS.)

TAKE THE FRONT PANEL (L) AND PLACE IT IN POSITION WITH THE FLANGE UNDER THE TIE BARS AND OVER THE FLANGE OF THE TOP CORNERS. ALIGN THE HOLES AND FASTEN WITH SHEET METAL SCREWS. THE BOTTOM EDGE OF THE FRONT PANEL SHOULD BE BEHIND THE FLUE DOORS WITH NOTCHES POSITIONED OVER FLUE DOOR STUDS.

REMOVE ONE FLUE DOOR AND INSTALL FRONT DOOR STRIP (G) BEHIND THE OTHER FLUE DOOR WITH THE BOTTOM FLANGE RESTING ON THE FIRE DOOR FRAME AND THE TOP EDGE OUTSIDE OF THE FRONT PANEL. REPLACE THE FLUE DOOR.

INSTALL R.H. AND L.H. FRONT CORNER PANELS (K₁ AND K₂) WITH THE TOP ENDS FITTED INTO THE GROOVES OF THE RESPECTIVE TOP CORNERS AND THE BOTTOM EDGES INTO THE SUPPORT ANGLES. IF WATER COLUMN OR LOW WATER CUTOFF PIPING IS REQUIRED, REMOVE KNOCKOUTS AND SLIT INSULATION TO FIT AROUND PIPE. OPEN END OF NOTCHES SHOULD FACE BOTH WAYS. SLIDE PANELS TIGHT TO FRONT PANEL.



6. BOILER BACK END (SEE FIGURE NO. 3)

PLACE LOWER BACK PANEL (O) IN POSITION RESTING ON BACK TIE ANGLE. PLACE BACK LEGS R.H. AND L.H. (P) IN POSITION. ASSEMBLE THE THREE PARTS WITH SHEET METAL SCREWS. THE UPPER BACK PANELS, R.H. AND L.H. (Q) CAN BE PRE-ASSEMBLED BEFORE PLACING IN POSITION OR THE L.H. PANEL PLACED IN POSITION FIRST. REMOVE KNOCK-OUT OPENING IF REQUIRED FOR DRAFT SAMPLE TUBE ASSEMBLY. COMPLETE ASSEMBLY WITH SHEET METAL SCREWS IN THE FLANGE WITH THE HOLES IN THE TOP FRAME AND FASTEN WITH SHEET METAL SCREWS.

TAKE UP THE R.H. AND L.H. BACK PANEL LEGS (P_R AND P_L), INSERT THE TOP ENDS UNDER THE BACK PANEL, SLIDE UP UNTIL THE BOTTOM EDGES CLEAR THE TOP OF THE BACK TIE ANGLE, THEN DROP THE PIECES TO REST ON THE ANGLE. ALIGN HOLES AND FASTEN TO THE BACK PANEL AND TO THE BACK LOWER PANEL WITH SHEET METAL SCREWS.

INSTALL SIDE PANELS (S AND T) BY SLIDING THE TOP EDGES UP INTO THE GROOVES OF THE TOP CORNERS UNTIL THE BOTTOM EDGE CLEARS THE SUPPORT ANGLES. THEN SLIDE EACH PANEL DOWN TO REST ON THE SUPPORT ANGLE. SLIDE PANELS FORWARD AND BACKWARD TO OBTAIN SNUG FIT. FOR UNIFORM APPEARANCE IT IS SUGGESTED THAT 3 SECTION AND 4 SECTION SIDE PANELS BE INSTALLED TO MATCH THE CORRESPONDING TOP PANELS.

7. TOP AND SIDE PANELS

(OPEN PACKAGE NO. 350J-3 AND 350J-4 AND REMOVE THE CONTENTS)

INSTALL TOP PANELS (S AND T) BY SLIDING THE NOTCHES ENDS AROUND THE TOP DRUM NIPPLES, THEN DROP THE OTHER ENDS ON TO THE FLANGES OF THE TOP CORNERS AND SLIDE THE PANELS AWAY FROM THE SUPPLY DRUM UNTIL THEY REST FIRMLY IN THE GROOVES OF THE TOP CORNERS. SLIDE PANELS FORWARD OR BACKWARD TO OBTAIN A SNUG FIT.

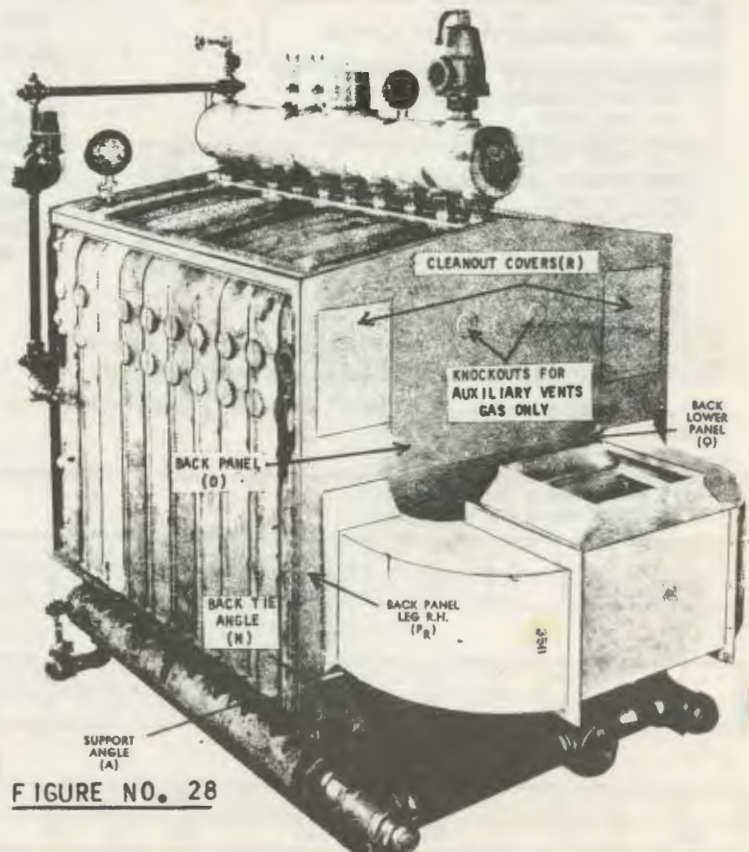


FIGURE NO. 28

DWG. B-2101