M450A
MILLS BOILER
INSTALLATION INSTRUCTIONS

STEAM OR WATER HEATING
FOR AUTOMATIC FIRING
WITH OIL OR GAS

DESIGNED AND TESTED ACCORDING TO A.S.M.E. BOILER AND PRESSURE VESSEL CODE, SECTION IV FOR MAXIMUM ALLOWABLE WORKING PRESSURE. STEAM - 15 PSIG, WATER - 80 PSIG

FOR BURNER INSTRUCTIONS
SEE SEPARATE INFORMATION FURNISHED
WITH THE BOILER

TO STEAMFITTER

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

THE SECTIONS IN THIS BOILER **MUST** BE ASSEMBLED IN THE PROPER ORDER. READ INSTRUCTIONS.

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

Smith CAST IRON BOILERS
WESTCAST, INC.
260 NORTH ELM STREET WESTFIELD, MA 01085
TEL. (413) 562-9631 FAX (413) 562-3799

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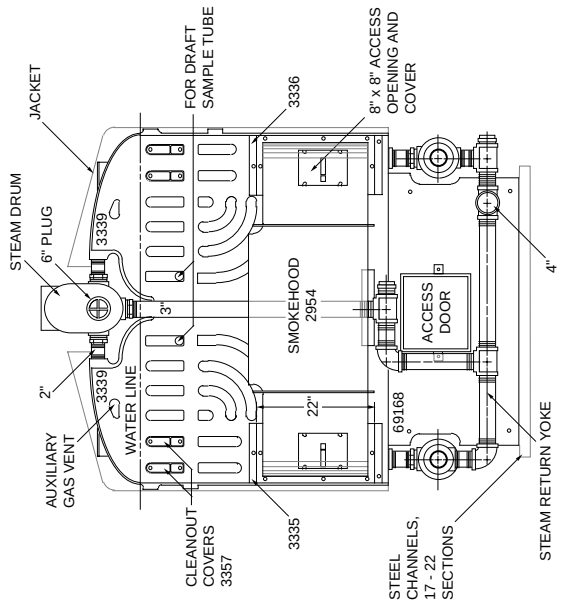
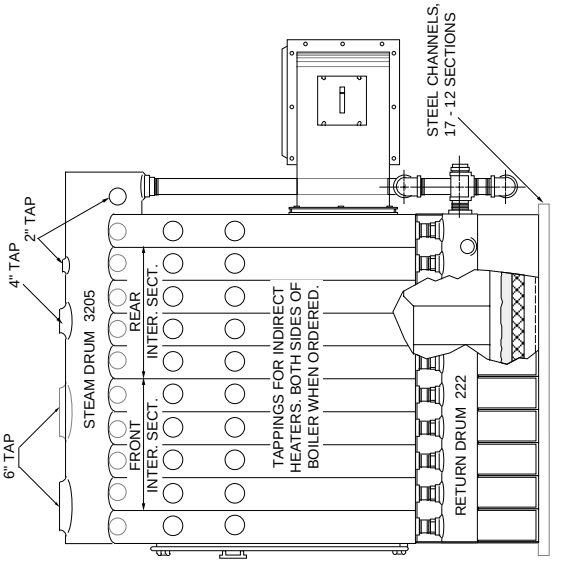
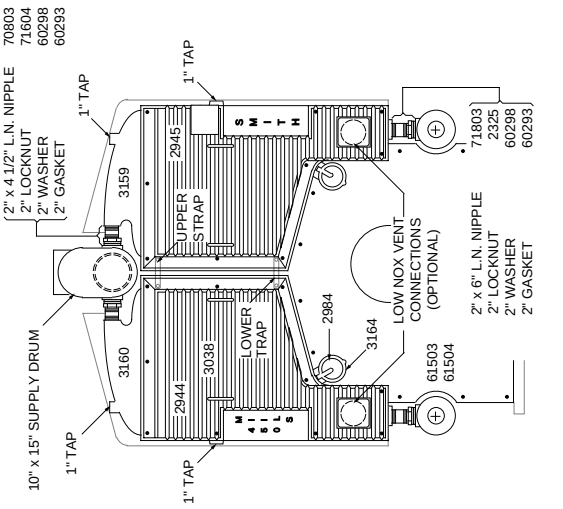


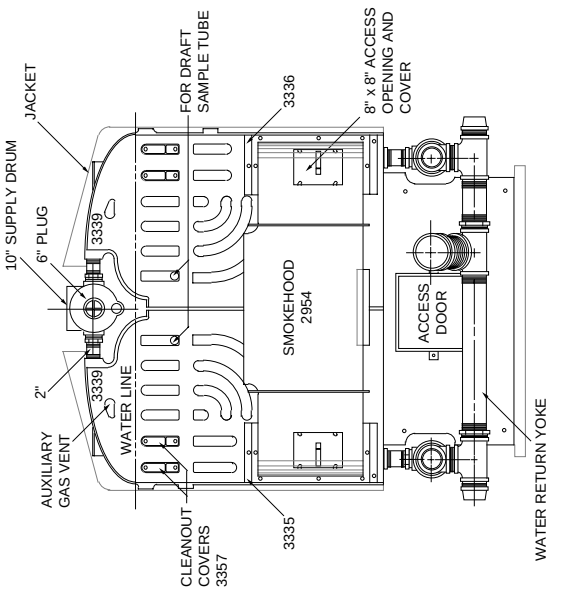
REAR VIEW - STEAM



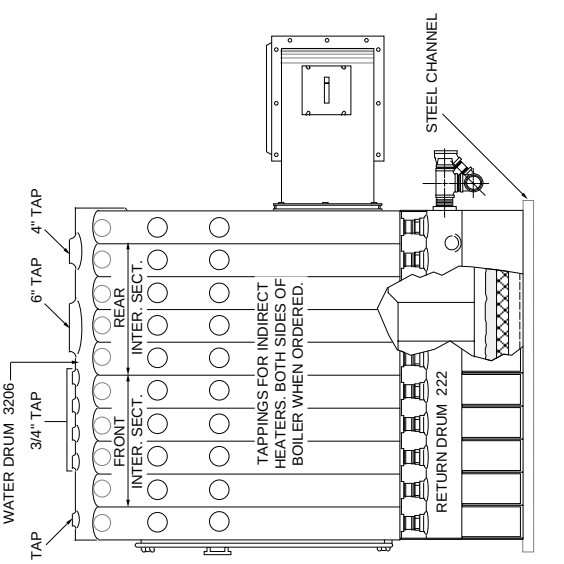
SIDE VIEW - STEAM



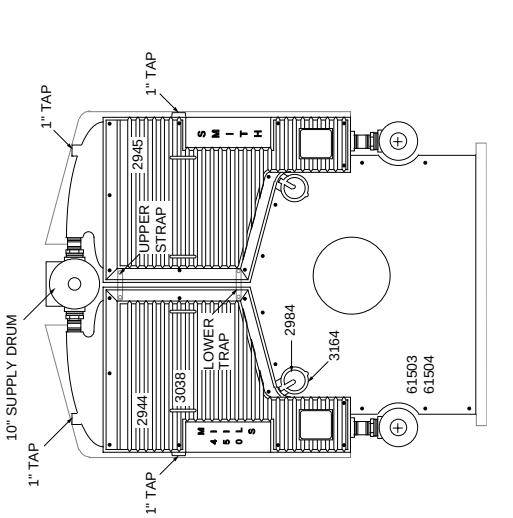
FRONT VIEW - STEAM



REAR VIEW - WATER



SIDE VIEW - WATER



FRONT VIEW - WATER

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COMPUTER NO. **DESCRIPTION**

FOUNDATION

69939 Erecting Bars (2)
2851 C.I. Sidewall - 3 Section (18" Long)
2852 C.I. Sidewall - 4 Section (24" Long)
69168 Foundation Back with Access Door
2984 Observation Cover
3164 Observation Cover Frame
61503 Front Plate 19 1/2" Hole
61504 Front Plate 12 1/2" Hole
Plate to Section Assembly Hardware
5/16" Brass Stud (4)
5/16" Washers (4)
5/16" Hex Nuts (4)
69309 3" Steel Sub-Base Channels (17-22 Section) I.C. Only (Optional)

FRONT

3159 Front Section (R.H.)
3160 Front Section (L.H.)
3240 Lower Strap - 1 1/2" x 4" (3/8)
3241 Upper Strap - 1 1/2" x 5 1/2" (3/8)
2945 Flue Door (R.H.)
2944 Flue Door (L.H.)
60451 Flue Door Lining (Top 3102)
60452 Flue Door Lining (Bottom 3103)
3038 Flue Door Handle
2929R Flue Door Hinge (R.H.)
2929L Flue Door Hinge (L.H.)
2932 Boiler Hinge
2880 Hinge Support
2881 Hinge Eccentric
2930 Hinge Arm
61624 Hinge Pin
61205 Ball Bearing
73009 **Flue Door Fastening Hardware**
7/16" x 1" Cap Screw
Palnut
1/2" Washer
Strap Hardware
7/16" x 1" Cap Screws
Hinge Hardware
5/8" x 2 1/4" Cap Screws (Eccent)
3/8" x 1" Jack Screw
1/2" x 1 1/2" Machine Screw

COMPUTER NO. **DESCRIPTION**

INTERMEDIATE

3653 Forward Intermediate Section
3654 Rear Intermediate Section

BACK

3339 Back Section (2 required)
3335 R.H. Smokehood Adapter
3336 L.H. Smokehood Adapter
75003 Cleanout Cover Assembly
3358 Back Strap - 1 1/2" x 12" (3/8")
72982 Cleanout Cover Installation

SMOKEHOOD

2952 Smokehood Elbow (2 required)
2954 Smokehood Center Section (Natural Draft)
2956 Smokehood Outlet Adapter 19" x 19" (10-12 Section)
3250 Smokehood Outlet Adapter 24" x 24" (16-22 Section)
73160 L.H. Elbow with Dampers
73298 R.H. Elbow with Dampers - Pref.
73159 R.H. Elbow with DAmpers - Clev.

LOCKNUTS & NIPPLES

70803 2" x 4 1/2" L/N Nipple
71051 2" x 6" L/N Nipple
71604 2" Locknut
60293 2" Gasket
60298 2" Steel Washer

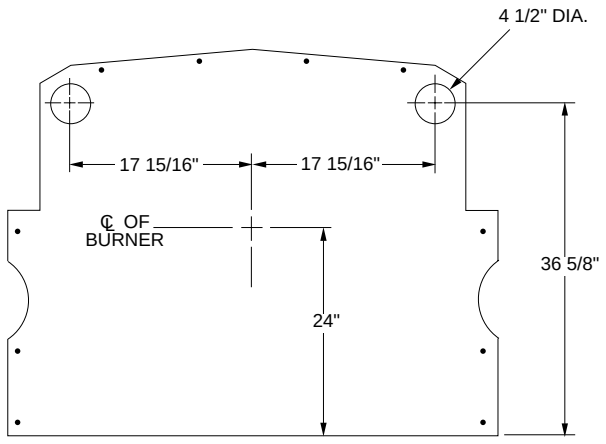
ACCESSORIES AND TRIM – Optional

60858 5" Dip Tube
60859 6" Dip Tube
73002 Draft Sample Tube

NOTE

See Table 4 for number and location of sections

Fig. No. 1 - Foundation Front Plate



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GENERAL INFORMATION

WARNING: This manual must be read and fully understood before installing, operating or servicing this boiler! Failure to follow these instructions could result in a fire or explosion causing extensive property damage, personal injury or death!

The M450A Series Mills Boiler can be either steam or water. Each section is constructed and hydrostatically tested for a maximum working pressure of 80 psi water or 15 psi steam in accordance with "A.S.M.E. Boiler and Pressure Vessel Code, Section IV".

This manual will assist in the assembly of the boiler. Please take the time to read this manual at least once prior to assembly. This will save time later.

CONFORMANCE TO CODES & REGULATIONS

IMPORTANT
The installation and operation of this boiler must meet all local, state and federal codes and requirements of the authorities having jurisdiction.

All completed boilers shall satisfactorily pass the hydrostatic tests as prescribed by A.S.M.E., Code Section IV.

1. Steam Boilers—The assembled boiler shall be subjected to a hydrostatic test of not less than 45 PSIG.

2. Water Boilers—The assembled boiler shall be subjected to a hydrostatic test of not less than 1-1/2 times the maximum allowable working pressure.

3. The required test shall not exceed the test pressure by more than 10 PSI.

BOILER LOCATION

The boiler should be installed on a level concrete floor or pad sufficient to support the weight of the boiler and accessory equipment.

Locate boiler close to chimney to minimize breeching length but allow adequate clearance for piping, service and maintenance.

NOTE: If tankless water heaters are to be used, sufficient clearance must be provided for coil replacement.

CHIMNEY AND BREECHING

The breeching connection between the boiler and chimney should be as straight and short as possible. It should be pitched slightly upwards (¼″ per foot) towards chimney and be the same diameter as the boiler outlet.

If extreme length, excessive number of turns or a reduction in area is necessary, consult your Smith representative for recommendations.

COMBUSTION AND VENTILATION AIR

WARNING: This boiler must be supplied with combustion air in accordance with Section 5.3, Air for Combustion & Ventilation, of the latest revision of the National Fuel Gas Code, ANSI Z223.1 and all applicable local building codes. Failure to provide adequate combustion air for this appliance can result in excessive levels of carbon monoxide which can result in severe personal injury or death!

Air supply for the boiler room must include both combustion air and ventilation air. Two permanent air openings shall have a minimum free area of 1 square foot for every 2000 MBH burned **plus** the required area for ventilation air.

The National Fuel Gas Code, A.N.S.I. Z223.1, Oil Burner Installation Standard ANSI/NFPA 31, or local codes must be adhered to for proper combustion and ventilation air requirements for oil and gas firing.

Forced air supplied to the boiler room must have the approval of local authorities and should provide a minimum of 30 CFM/GAL of oil and 0.25 CFM/MBH of gas burned.

FOUNDATION ASSEMBLY

NOTE: Some installers prefer to suspend the supply drum prior to assembling the foundation. We recommend you read both Foundation Assembly and Supply Drum Assembly first and decide which will be easier for your installation.

The boiler foundation consists of a backend with an access door (73152), two front connecting straps (69939) and multiple side wall pieces. Sidewalls are made up of combinations of 18″ (2851) and 24″ (2852) cast iron pieces depending on size of boiler. Bolt the foundation sidewalls together using $^{7}/_{16}$″ x 2″ bolts, washers and nuts per Table 2.

Table 2

Pieces Each	Number of Sections														
Side Wall	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
18″	–	3	2	1	–	3	2	1	–	3	2	1	–	3	2
24″	2	–	1	2	3	1	2	3	4	2	3	4	5	3	4

(1) bolt, (2) washers and (1) nut are required for each slot in the sidewall section. Shims should be used where necessary to insure the straightest possible sidewall assembly. Each sidewall section is stamped "top" for your convenience and should be positioned with the flat side facing the inside of the boiler. See Fig. No. 2.

Position sidewall assemblies in desired position insuring a smooth level assembly. Attach foundation backwall to sidewalls with (6) $^{7}/_{16}$″ x $1^{3}/_{4}$″ bolts, (12) washers and (6) $^{7}/_{16}$″ nuts. Also, bolt the (2) front connecting straps to the sidewalls using (4)

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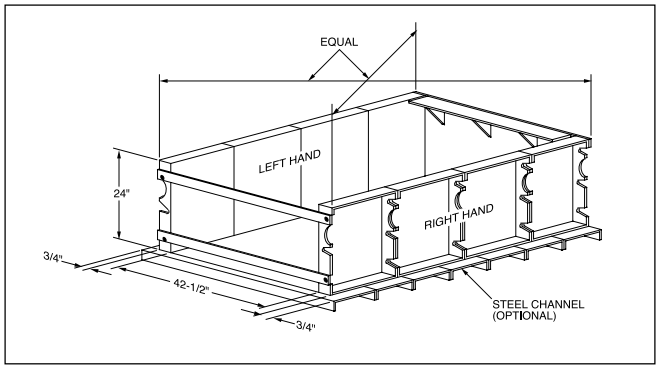
7/16″ x 1 3/4″ bolts, (8) washers and (4) 7/16″ nuts, square up and level complete foundation as illustrated in Fig. No. 2.

IMPORTANT
The correct and level installation of the boiler foundation is one of the most critical operations in assembling this boiler. If it is not straight and level, the sections will not assemble correctly.

Seal all joints in boiler foundation as well as between foundation and floor or base with black furnace cement, preventing excess air leakage into the combustion chamber.

Fig. No. 2 - Standard Foundation



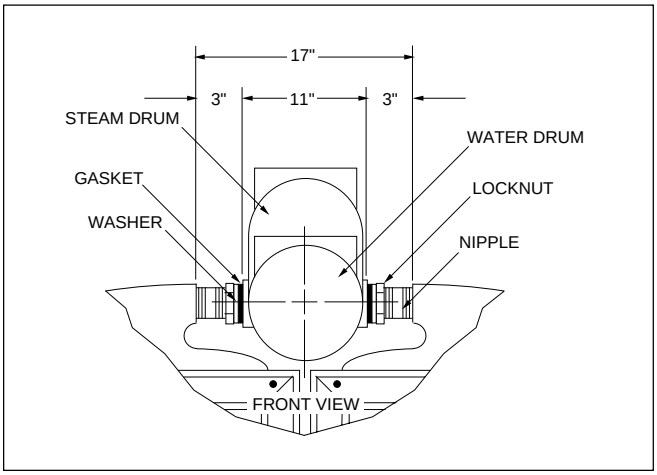
NOTE: If a Smith pre-fab combustion chamber is ordered, check burner center line to boiler room floor requirement. Burner configuration may require a concrete pad for additional elevation. Check with Smith for use of optional 3″ high 12″ wide steel channel used with Industrial Combustion Model D84 and D105.

SUPPLY DRUM ASSEMBLY

NOTE: If the supply drum has been stored on the job so as to have been subjected to weather exposure, care should be taken to remove any dirt, mud, sand, or other foreign materials from the interior of the castings and to thoroughly clean the threads of all the tappings.

2″ x 4½″ locknut nipples are supplied with Hy-Temp hydronic gaskets, steel washers and locknuts assembled at the factory. Tapered threads are protected by plastic caps which must be removed prior to nipple installation.

Fig No. 3



All nipple threads should be cleaned prior to installation. Install the running thread side of the locknut nipple into the supply drum. Nipple should be threaded into the drum until 3″ of the entire nipple is all that remains protruding. (A wood nipple gauge is supplied to assist you in achieving this 3″ dimension. See Fig. No. 3.

When the supply drum has been completely nippled, suspend it in position directly over the center of the foundation. This is usually accomplished with the use of two chain hoists anchored to either a pipe frame or ceiling construction.

With the drum in place, there should be a dimension of 59 1/2″ (water) or 64 1/2″ (steam) from the top of the foundation to the **top** of the supply drum.

FRONT AND BACK SECTION

NOTE: See Cleanout Cover on page 8.

NOTE: If sections have been stored on the job so as to have been subjected to weather exposure, care should be taken to remove any dirt, mud, sand or other foreign matter from the interior of the casing.

It makes no difference in assembly whether you install the front section first or the back section first, as long as you install them where they belong.

Clean the threads of both the supply and return tapping of the right hand front section. Lift the section up and position it on the front of the foundation. **Apply pipe dope to the tapered threads only. Do not apply pipe dope to the running threads or gasket failure will occur!** Thread the first supply drum nipple out of the drum and into the section. With nipple engaged in section, maintain a dimension of 3″ between drum and section. Use the wood nipple gauge provided to insure this 3″ dimension.

NOTE: Do not tighten locknuts at this time.

IMPORTANT
If this 3″ dimension is not maintained throughout the assembly of this boiler, it will not line up as you proceed and disassembly and re-alignment will be required.

Line up the bottom of the section on the foundation maintaining 2 3/4″ from the center of the section return drum tapping to the front of the foundation sidewall. See Fig. No. 4.

Repeat this same procedure for the left hand front section.

With both sections in place and centered on the foundation, install both the upper and lower front connecting straps with the (4) 7/16″ x 1″ hex head cap screws.

Recheck the alignment of the front sections of the foundation and brace same in place by some substantial means. See Fig. No. 4.

Assembly of the back sections is the same as that of front sections except there is only one lower back connecting strap.

With both back sections in place, check alignment insuring supply drum to be level and sections to be in center of foundation. It

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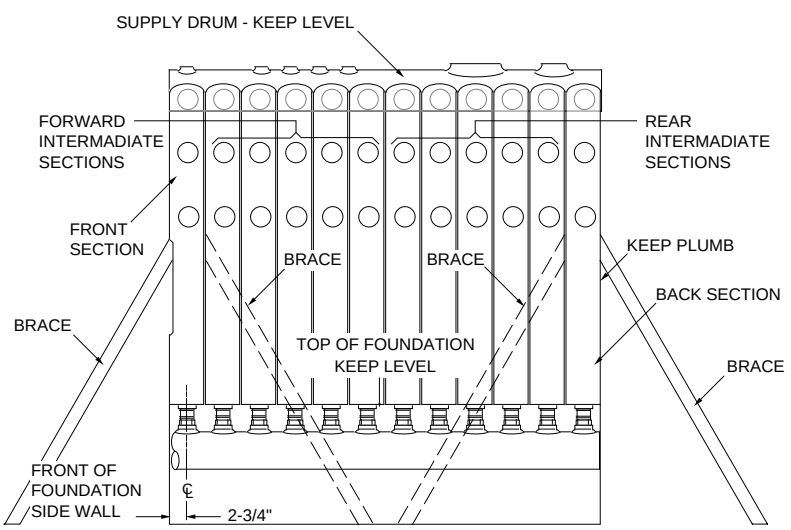
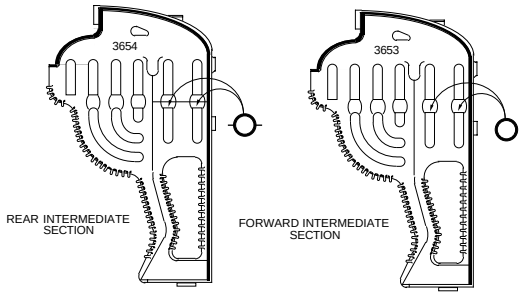
Fig. No. 4 - Section Installation





Types of intermediate sections (note baffle on cross tube of rear intermediate section.

IMPORTANT: The cleanout covers and the draft sample tube must be installed before the leg sections are placed in position.

may be necessary to place a wooden wedge between back section and foundation backwall to assist in leveling the drum. Brace these sections in place. See Fig. No. 4.

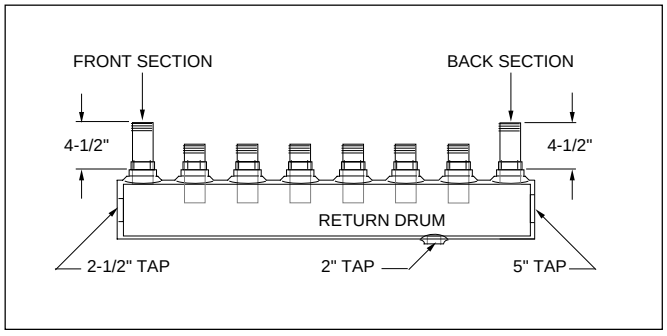
RETURN DRUM ASSEMBLY

NOTE: the same procedure used to insure that the supply drum and front and rear sections were clean of foreign material should be used to clean return drums.

The return drums (222) are 8″ round drums which are the same for both steam and water. Two drums are required for each boiler.

Install the running thread of the 2″ x 6″ locknut nipples into the return drum as far as possible by hand. Back the first and last nipple out of the drum until 4½″ of nipple is protruding from drum. See Fig. No. 5.

Fig. No. 5 - Return Drums



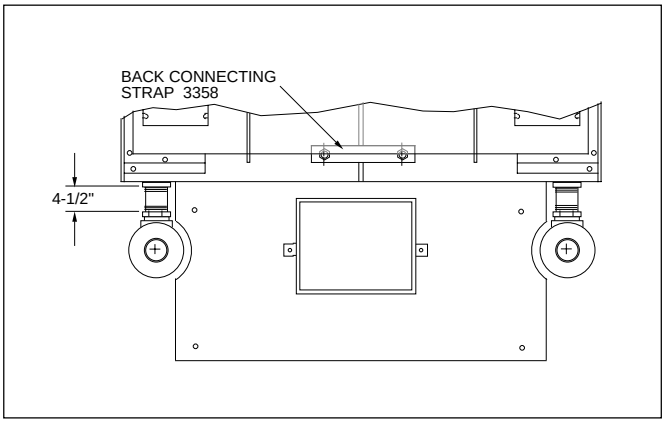
Place return drum along side of boiler insuring the 5″ tapping in the end of the drum is at the back of boiler.

Apply pipe dope to the **tapered** threads of the first and last nipple. **Do not apply pipe dope to the running threads or gasket failure will occur!** Lift drum and thread nipples into the front and rear section. Tighten nipple into section only maintaining 4½″ between bottom section and return drum boss. See Fig. No. 6.

Repeat the same procedure for second return drum installation.

When both return drums are securely connected to both the front and rear sections and the supply drum has also been connected to the front and rear sections, remove the braces holding up the sections.

Fig. No. 6



NOTE: Although you may remove the chain hoists supporting the supply drum at this time, it's recommended that you wait until several of the rear intermediate sections are in place before removing the drum support.

Recheck alignment to ensure a square, level assembly.

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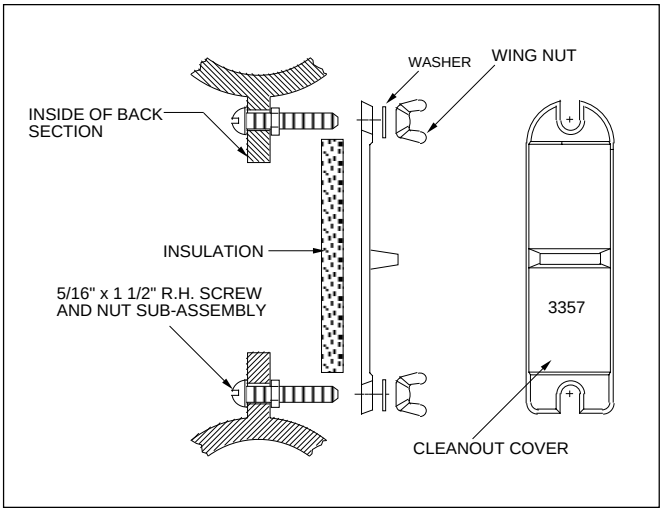
CLEANOUT COVER INSTALLATION

The four cleanout covers , insulation and hardware must be installed while the inside of the back section is accessible. See rear view of back section on page 2 and study Fig. No. 7 of the cleanout cover installation.

Install $^{5}/_{16}$″ x $1^{1}/_{2}$″ screw and nut assembly only and tighten securely.

Place insulation and cleanout cover against the back section and install washers and wing nuts.

Fig. No. 7

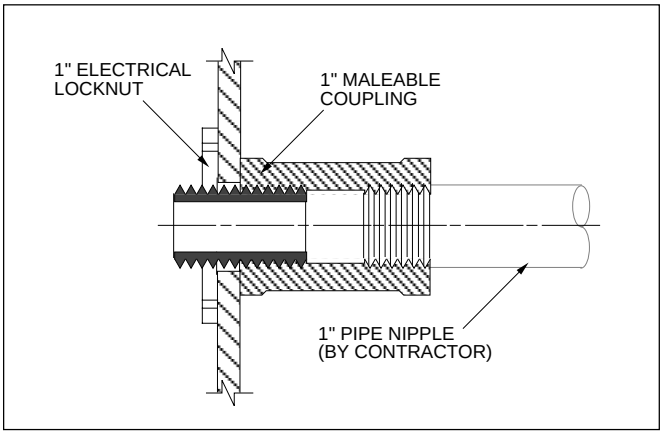


DRAFT SAMPLE TUBE

IMPORTANT
The draft sample tube must be installed in the back section prior to installing the rear intermediate sections.

A knock-out is provided in the webbing of the back section so that the draft sample tube (73002) may be installed in either the right or left hand section, depending upon control panel location. See Rear View on Page 2.

FIG. NO. 8
Draft Sample Tube Installation in Back Section



Punch out the knock-out with a ball peen hammer and install sample tube as illustrated in Fig. No. 8.

INTERMEDIATE SECTION ASSEMBLY

IMPORTANT
There are two different types of intermediate sections used in the assembly of this boiler. The correct location of these sections is critical to its operation. See Fig. No. 4.

Rear intermediate sections are plainly marked for position identification with a large cast-on name-plate reading **"rear intermediate."** There is also a cast-on baffle on the cross tube and orange paint spotted on the outside of the section near the supply boss. Rear intermediate sections may be identified by a raised spot on each side of both supply and return bosses as well as a short horizontal rib on each side of the lower boss on the side of the section. See Fig. No. 4.

If care is taken in stacking these two types of intermediate sections in separate rows, the chance of installing a section in the wrong location will be greatly reduced. See Table 3 for correct locations.

IMPORTANT
All sections must be clean of any foreign material prior to assembly. All threads must be cleaned and pipe dope applied to each nipple prior to assembly. **Tapered threads only.** Do not use pipe dope on running threads or gasket failure will occur.

Fill the pockets and the spaces between the back sections and the foundation with insulating cement. See Fig. No. 9 for location of spaces to be filled.

Take a rear intermediate section and apply insulating cement to the pockets. Place a sufficient quantity of insulating cement on the top of the foundation to insure a good air tight seal between section and foundation.

IMPORTANT
Proper sealing of boiler with insulating cement is important for efficient boiler operation. Leaks allow excess air to enter boiler, causing poor operation.

Lift the section into place next to back section. Engage the supply drum nipple into the section securely, maintaining a **3**″ dimension between drum and section. Use the wood nipple gauge supplied, **this dimension is crucial**!

NOTE: A small pinch bar is a convenient tool for positioning the sections to line up supply drum nipples to tappings. Do not tighten locknuts at this time.

Turn return drum nipple out of drum and into section securely. As long as the return drum is **level** and a dimension of $4^{1}/_{2}$″ was maintained when drum was put in position, there is no reason to measure each **return** nipple after assembly. Do not tighten locknut nipples at this time.

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Install and connect another rear intermediate section opposite the one just installed in exactly the same manner making sure to fill the pockets and seal the spaces with insulating cement.

Continue assembling the boiler in this manner. As each full section (right and left halves) is erected, it is recommended that the joints between sections in the area under the supply drum be sealed with cement while accessible from the inside. This area is somewhat restricted when all sections are in place. See Fig. No. 9.

The exterior surface of the joints between sections under the supply drum should be sealed using the rope insulation furnished with the boiler. Lay the rope over the joint and then pack gently into the space between the beads of the sections taking care not to force the rope past the beads. Apply insulating cement over the rope so as to fill the space flush with the outside line of the section. See Fig. No. 9. The exterior side joints between the sections can then be sealed after all sections are connected in place.

As the sections are erected, the longitudinal joint directly under the supply drum should be sealed by placing the narrow strips of insulation board over the joint and cover with a layer of insulating cement extending the full width of the strip. This cement should extend far enough to join with the cement between the sections. See Fig. No. 9.

Continue to install the remainder of the intermediate sections in the same manner already described except for the last three forward intermediate sections. These sections must be positioned with the beads properly spaced before the nipples are engaged into the sections.

LOCKNUT NIPPLES

IMPORTANT
Before commencing to seal hydronic gaskets and tighten locknuts, read this entire section on locknut nipples and then follow the instructions given in every detail.

With all sections in place, go over the entire boiler retightening all nipples into the **sections**.

Hand tighten all locknuts just tight enough to cause the hydronic gasket to become tight to the drum boss. See Fig. No. 10.

Once locknuts are hand tight, use a locknut wrench to tighten each locknut approximately $1\frac{3}{4}$ turns or until the distance from the boss to the washer is approximately $\frac{3}{32}$″. The outside diameter of the hydronic gasket should be roughly even with the outside diameter of the washer at this point which indicates a proper seal has been made. See Fig. No. 11.

Plug all open tappings and hydrostatically test for leaks by applying water pressure of no more than $1\frac{1}{2}$ times the specified maximum working pressure. See hydrostatic test information on Page 5.

Leaks around hydronic gasket can be stopped by tightening the locknut approximately $\frac{1}{8}$ of a turn at a time until the leak stops.

SEALING THE BOILER

After all sections are in place and connected to both the supply and return drums, go over the entire boiler and complete sealing the joints using the rope insulation and cement as shown in Fig. No. 9.

Particular care should be taken to seal the joints between the bottoms of the sections and the top of the foundation in the rear as well as on the sides.

The vertical joints between both the front two and the rear two half sections must be completely sealed. Rope insulation should be placed in the vertical opening between both halves, and covered with insulating cement.

Table 3 - Number and Location of Sections

Casting No.	Description	Number of Sections														
		8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
3159 R.H. 3160 L.H.	Front Section	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3653	Forward Intermediate Section	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10
3654	Rear Intermediate Section	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10
3339	Back Section	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

NOTE: Where one section is indicated in the table, two half sections are required since this is a split section boiler. If no distinction is made between right hand and left hand in the column listing "Casting No.," the sections are suitable for either right or left hand.

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Fig. No. 9 - Detail of Sealing Boiler Section Joints with Insulating Cement

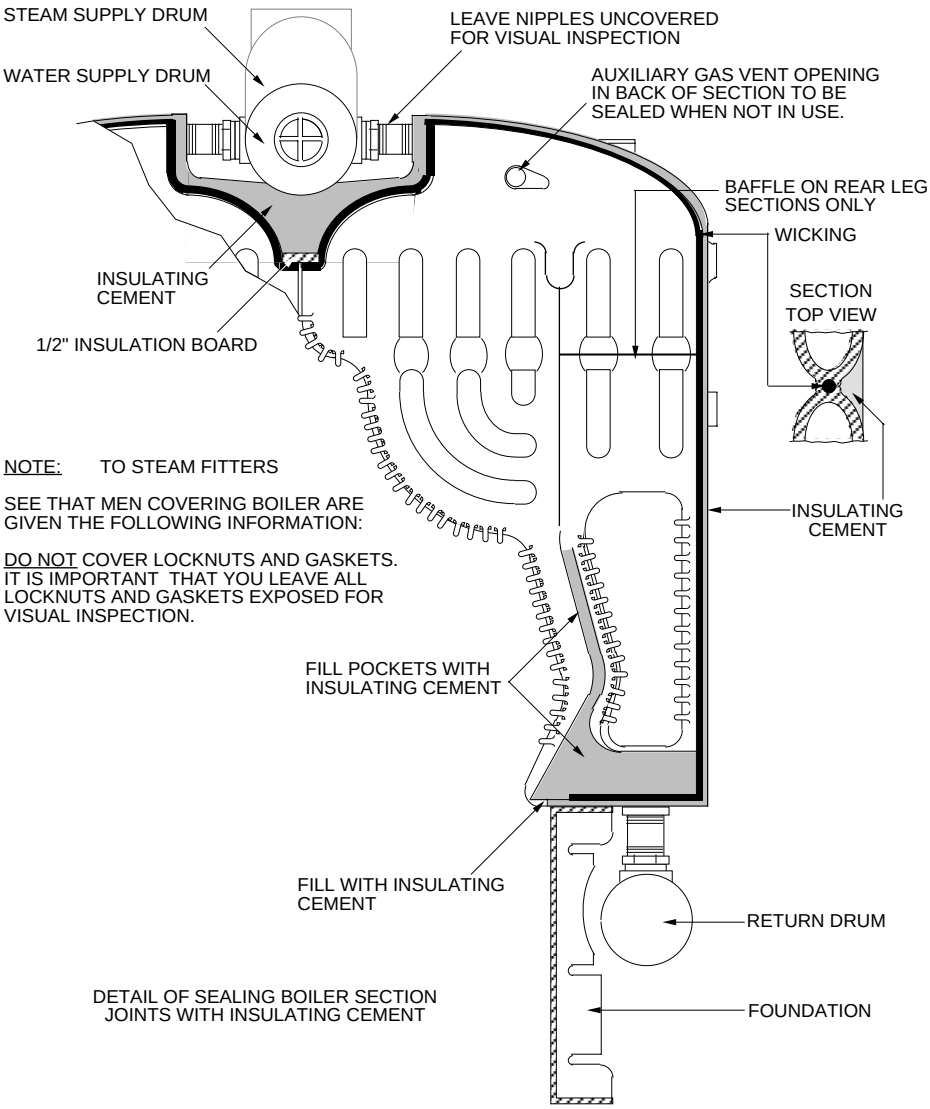


Fig. No. 10

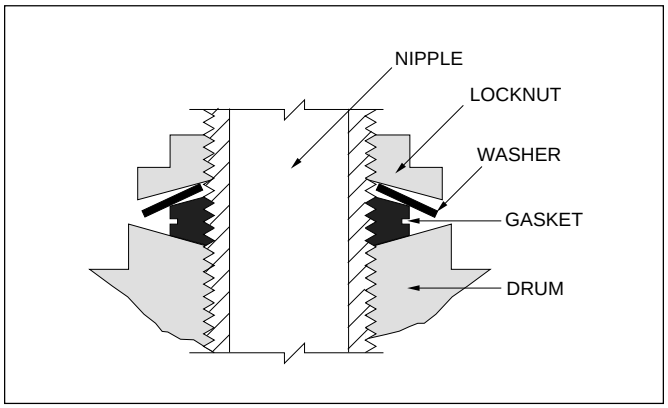
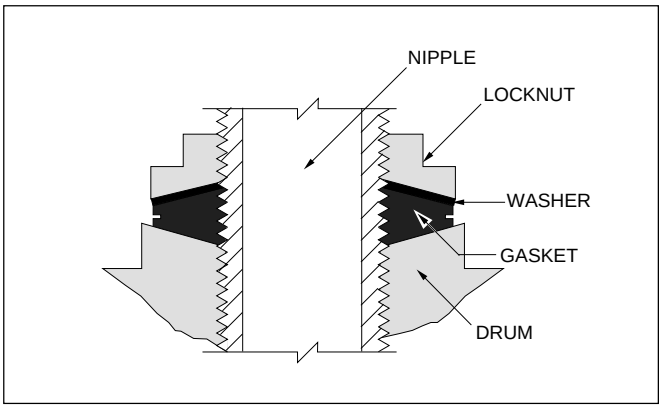


Fig. No. 11



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FLUE DOOR ASSEMBLY

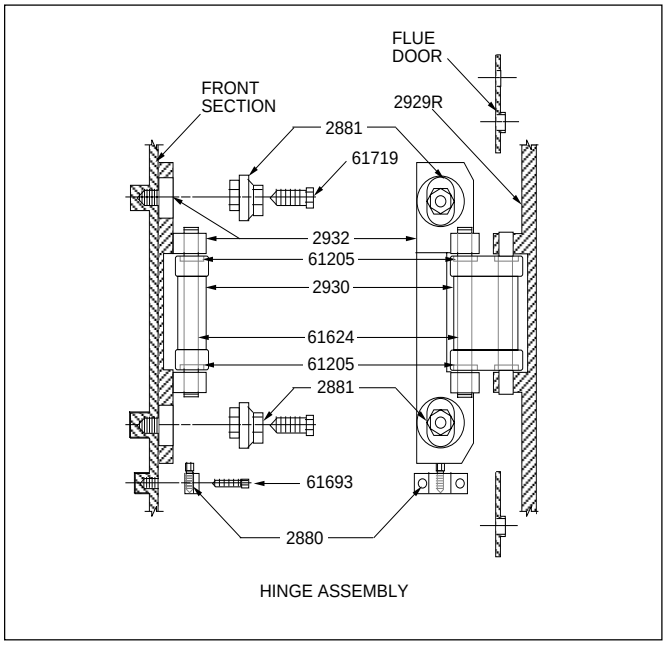
There is both a right hand and left hand flue door hinge assembly required for this boiler. The right hand hinge is marked “Smith” and the left hand is marked “450 Mills”. Both of these markings are cast on the hinges.

Both hinges should be assembled to the front sections as complete assemblies. See Fig. No. 12 for hinge assembly break down.

Bolt the two hinge supports (2880) in place on the front sections using the 3/8″ x 1″ hex head cap screws. Secure the correct hinge assemblies to the front sections using the 5/8″ x 2 1/4″ hex head cap screws.

NOTE: The boiler hinges should be plumb and approximately parallel to the outside edges of the sections.

Fig. No. 12 - Hinge Assembly



HINGE ASSEMBLY

Before placing the flue door on the front section, pre-assemble all 7/16″ x 2 1/4″ special bolts and pal nuts to each flue door as illustrated in Fig. No. 13.

Swing the hinge assemblies to the open position. Lift flue door into position against front section and hold in place by loosely screwing (2) or (3) bolts into the section.

Close boiler hinge against flue door and assemble to door with (2) 1/2″ x 1 1/2″ hex head screws through the (2) center bolts holes.

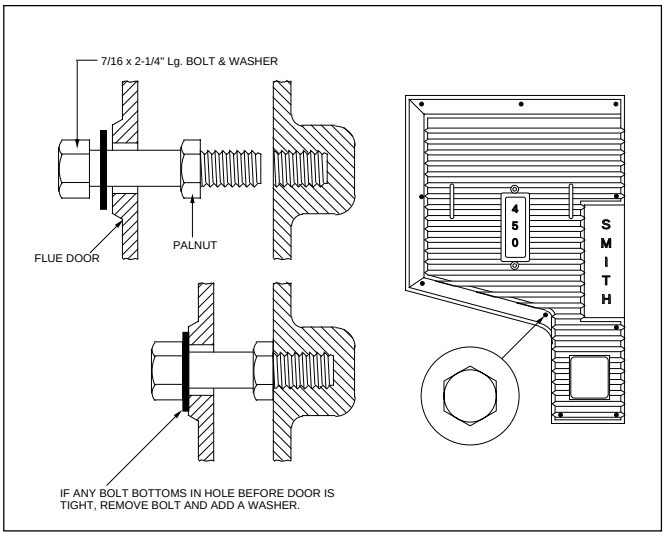
Loosen the bolts used to hold door to section and open door. Fasten third flat head screw to boiler hinge and flue door assembly. Tighten all bolts.

Adjust the flue doors so that, when closed, the gasket on the door should seat squarely on the compression bead of the front section. Horizontal adjustment is accomplished by loosening the 5/8″ cap screw slightly and turning the eccentrics. Vertical adjustment is accomplished by using the jack screw in the boiler hinge support. See Fig. No. 12.

When adjustment of flue door is satisfactory, tighten all nuts, bolts and screws. Fasten flue door in the closed position against the section tightening all bolts.

Repeat the same procedure for mounting the second flue door.

Fig. No. 13



COMBUSTION CHAMBER

(Pre-fab Optional)

The combustion chamber should be installed at this time. A separate catalog covers the installation of the combustion chamber and should be referred to at this time.

RETURN YOKES

A. WATER RETURN YOKE (See Fig. No. 14) (Optional)

IMPORTANT

Be sure to apply pipe dope to the tapered threads of the locknut nipple only. All standard nipples require pipe dope. Follow instructions already given when assembling the return yoke. Do not apply pipe dope to the running threads or gasket failure will occur!

Assemble 5″ x 4″ hex bushing, 4″ x 3″ pipe nipple and 4″ standard tee. Screw the 5″ bushing into the return drum securely. Align assembly with the branch of the 4″ tee facing downward. Repeat same procedure for opposite return drum.

After threading a 4″ x 3″ pipe nipple into the branch of a 4″ standard tee, screw this sub-assembly into the branch of the 4″ tee already assembled to the left hand return drum. Align tee to run parallel with back of boiler.

M450A BOILER
INSTALLATION INSTRUCTIONS

Repeat the same procedure for the right hand return drum except using a 4″ locknut tee in place of standard tee. Align running threads of tee toward center of boiler and parallel with back of boiler.

Screw running thread of 4″ x 36″ locknut nipple into locknut tee of right hand return drum as far as possible, without applying pressure to the hydronic gasket.

Assemble the 4″ x 7″ locknut nipple into the running thread of the 4″ x 4″ x 6″ locknut tee until only 5″ of the locknut nipple is showing. Make this sub-assembly tight to the left hand return drum tee.

Back the 4″ x 36″ locknut nipple out of the 4″ tee and into the 4″ x 4″ x 6″ locknut tee until tight. Slight alignment adjustments of the left hand or right hand return drum tees may be required to insure parallel alignment with the back of the boiler.

Attach both 6″ x 6″ nipple and 6″ 45° elbow to the 4″ x 4″ x 6″ locknut tee. The 4″ x 36″ locknut nipple may be rotated until the face of the 6″ 45° elbow is plumb.

Tighten all locknut joints as per instructions under section “Locknut Nipples”.

Screw 4″ close nipples and 4″ pipe caps into the right hand and left hand return drum tees.

IMPORTANT
If the vertical pipes of the return yoke are not plumb or the horizontal pipes level, the assembly is incorrect and should be corrected.

B. STEAM RETURN YOKE (See Fig. No. 15) (Standard)

IMPORTANT
Be sure to apply pipe dope to the **tapered** threads of locknut nipples only. All standard nipples require nipple compound. Follow instructions already given for the correct procedure for sealing hydronic gaskets. Do not apply pipe dope to the running threads or gasket failure will occur!

Assemble the 5″ x 3″ hex bushing to the 3 1/2″ pipe nipple and 3″ standard tee. Add a 3″ close nipple and pipe cap to the 3″ tee. Screw a 3″ x 4 1/2″ pipe nipple with a 3″ 90° elbow into the branch of the 3″ tee. With all joints tight, screw entire sub-assembly (A) into 5″ tapping of the right hand return drum until tight. Make sure that the branch of the tee is straight up and down and the 90° elbow faces the center of the boiler.

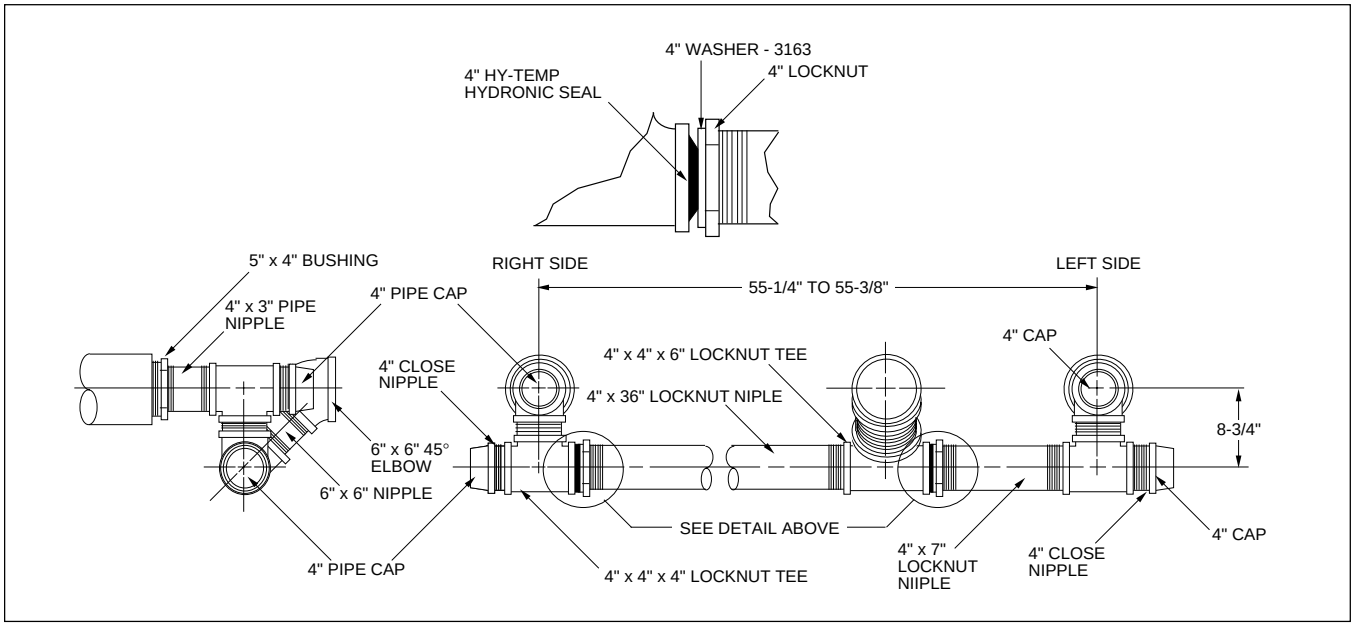
Repeat the same procedure for sub-assembly (E) except in place of 3″ 90° elbow, use a 3″ standard tee with 3″ close nipple and pipe cap. Again, with all joints tight, make sure that the branches of both tees are straight up and down, while the run of the bottom tee is parallel with the back of the boiler. The pipe cap must be on the left side of the boiler.

Make-up sub-assembly (B) using a 3″ locknut tee and the 3″ x 12 1/2″ pipe nipple. Screw this assembly into the 90° elbow in the right hand return drum and tighten. Ensure that the branch of the locknut tee faces up.

Screw the running threads of the 3″ x 26 1/2″ locknut nipple (C) all the way into the tee just assembled, but not far enough to compress gasket.

After assembling the 3″ x 3″ x 4″ tee securely to a 3″ close nipple, thread this sub-assembly (D) into the tee of the left hand return drum. Tighten while ensuring the face of the 4″ branch is both plum and facing away from the boiler.

Fig. No. 14 - Water Boiler Return Yoke Installation



M450A BOILER
INSTALLATION INSTRUCTIONS

Back the 3″ x 26½″ locknut nipple out of the locknut tee and into the 3″ x 3″ x 4″ tee. Check alignment to ensure assembly is as parallel with back of boiler as possible.

Sub assembly (F) should consist of the 3″ x 14″ pipe nipple with a 3″ 90° elbow on one end. Screw the other end into the branch of the 3″ locknut tee already assembled.

Screw the running threads of the 3″ x 47″ locknut nipple (H) all the way into the bottom tapping of the supply drum but do not compress the hydronic gasket.

Assemble the running threads of the 3″ x 7″ locknut nipple into the 3″ locknut tee not yet used. Add 3″ close nipple and pipe cap to opposite side of tee. Thread this sub-assembly (G) into the 90° elbow securely.

Back the locknut nipple out of the supply drum and into the branch of the locknut tee. By rotating the 3″ locknut tee on the running threads and slightly turning the 90° elbow, this assembly should end up completely plumb.

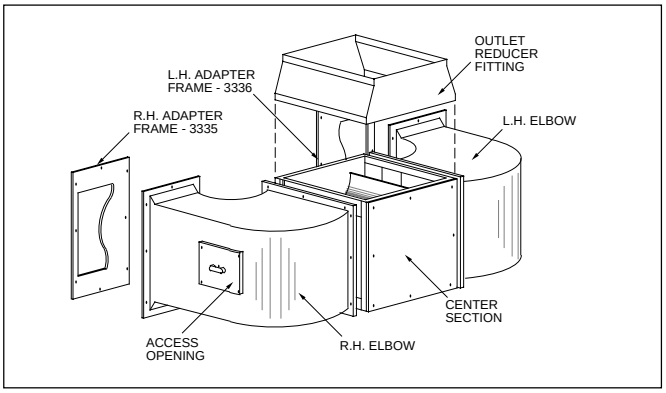
IMPORTANT
With all joints tight, except gasketed joints, the vertical pipes should be plumb and horizontal pipes level. If this is not true, correct at this time.

Tighten all locknut joints as per instructions under section “Locknut Nipples.”

SMOKEHOODS (NATURAL DRAFT)

See Fig. No. 16 for exploded view of complete natural draft smokehood assembly.

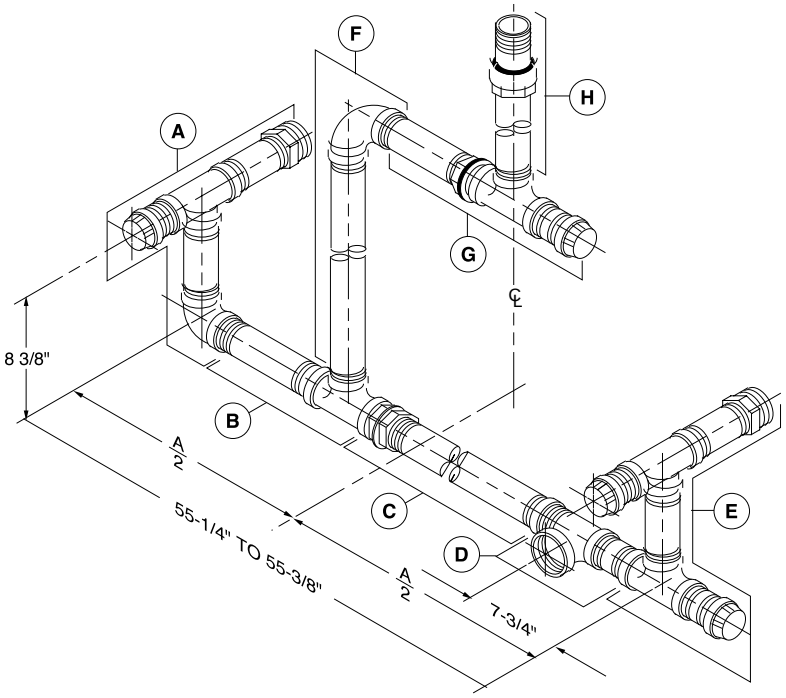
Fig. No. 16
Exploded View of Smokehood Assembly



A piece of insulating rope ¼″ thick and 56″ long must be affixed to both the right hand (3335) and the left hand (3336) smokehood adapters prior to installation.

NOTE: A small amount of furnace cement placed randomly in the groove will hold the rope in place long enough to mount adapter.

Fig. No. 15



COMPONENTS

A
3” Pipe Cap
3” Close Nipple
3” Tee
3” x 3½” Pipe Nipple
5” x 3” Hex Bushing
3” x 4½” Pipe Nipple
3" 90° Elbow

B
3” x 12½” Pipe Nipple
3” Lock Nut Tee

C
3” Hy-temp Hydronic Seal
3” Lock Nut Washer
3” Lock Nut
3” x 26½” Pipe Nipple

D
3” x 3" x 4" Tee
3” Close Nipple

E
3” Pipe Cap (2)
3” Close Nipple (2)
3” Tee (2)
3” x 3½” Pipe Nipple
5” x 3” Hex Bushing
3" x 4½" Pipe Nipple

F
3” x 14” Pipe Nipple
3” 90 Elbow

G
3” x 7” Lock Nut Nipple
3” Lock Nut
3” Lock Nut Washer
3” Hy-temp Hydronic Seal
3” Tee
3” Close Nipple
3” Pipe Cap

H
3” x 47” Lock Nut Nipple
3” Lock Nut
3” Lock Nut Washer
3” Hy-temp Hydronic Seal

M450A BOILER
INSTALLATION INSTRUCTIONS

Line up the appropriate frame with the opening in the back section and secure in place using (3) 7/16″ x 2 1/2″ machine bolts with a single washer. Repeat same procedure for second adapter frame and seal both to back section using black furnace cement.

Loosely attach (3) 5/16″ x 1″ square head machine bolts, nuts and washers to the inside three holes of the smokehood elbow. Engage these (3) bolts with the slots on the inside portion of the smokehood adapter. Swing elbow up against adapter and secure in place with 5/16″ x 1″ bolts, nuts and washers. **Do not tighten nuts at this time.**

Repeat the same procedure for the opposite elbow, remembering not to tighten the nuts as yet.

The center section of the smokehood (2954) can be positioned either with the outlet facing up or to the rear away form the boiler.

Align elbows to adapter frames and tighten all nuts. Seal all joints with black furnace cement.

An outlet adapter is required and supplied for certain size boilers. With adapter in place over center section, drill 9/32″ diameter holes in the center section to match the holes in the adapter. Fasten with 1/4″ x 3/4″ bolts, nuts and washers.

SMOKEHOODS (INDUCED DRAFT, WING)

IMPORTANT

There are two ways this smokehood arrangement is supplied. That is with either shutter dampers or a carbondale damper. Installation procedure is the same. For shutter damper information, see "Shutter Dampers Installation" section of this booklet.

A piece of insulating rope 1/4″ thick and 56″ long must be affixed to both the right hand (3335) and the left hand (3336) smokehood adapters prior to installation.

NOTE: A small amount of furnace cement placed randomly in the groove will hold the rope in place long enough to mount adapter.

Line up the appropriate frame with the opening in the back section and secure in place using (3) 7/16″ x 2 1/2″ machine bolts with a single washer. Repeat same procedure for second adapter frame and seal both to back section using black furnace cement.

Loosely attach (3) 5/16″ x 1″ square head machine bolts, nuts and washers to the inside three holes of the smokehood elbow. Engage these (3) bolts with the slots on the inside portion of the smokehood adapter. Swing elbow up against adapter and secure in place with 5/16″ x 1″ bolts, nuts and washer. **Do not tighten nuts at this time.**

Repeat the same procedure for the opposite elbow.

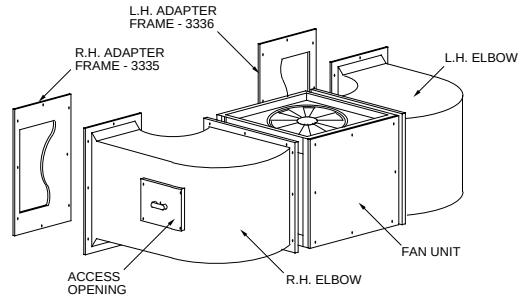
Unpack the induced draft fan and assemble the side panels as required. Carbondale dampers take the place of the rear panel and should not be installed at this time.

IMPORTANT

Installation can be accomplished easily with two men and the use of braces under the unit ensuring correct alignment. One man should be positioned between the fan and back section.

Secure the fan unit to the smokehood elbows using 1/4″ x 3/4″ bolts, nuts and washers. Make sure the rear panel (flanged section) faces away from boiler and that the elbow openings line up with the fan openings. See Fig. No. 17 for assembly less shutter dampers or carbondale damper.

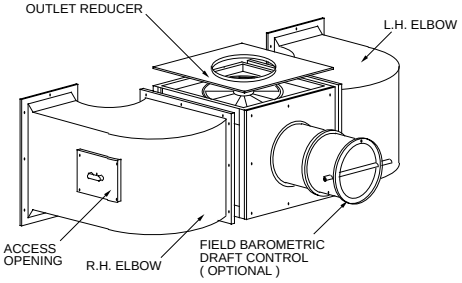
Fig. No. 17
Exploded View of Smokehood Assembly of Wing Fan



For Field Barometric Pressure:
Tighten the fan unit to both elbows. Align elbows to the adapter frames and tighten all nuts. Seal all joints with black furnace cement.

Mount adapter and field barometric to the rear section of the fan unit. See Fig. No. 18.

Fig. No. 18
Barometric Draft Control on Wing Fan



M450A BOILER
INSTALLATION INSTRUCTIONS

For Shutter Damper Installations:
Add both the damper operator motor bracket and the main damper spindle support bearings to fan unit and then tighten unit to both elbows. See Fig. No. 19.

Align elbows to the adapter frames and tighten all nuts. Seal all joints with black furnace cement.

Slide main damper spindle between the two support bearings with the flat side facing the left hand elbow and insure free rotation of same. Slip both the pilot plate and the crank arm onto the ends of the main damper spindle, but do not tighten. See Fig. No. 20.

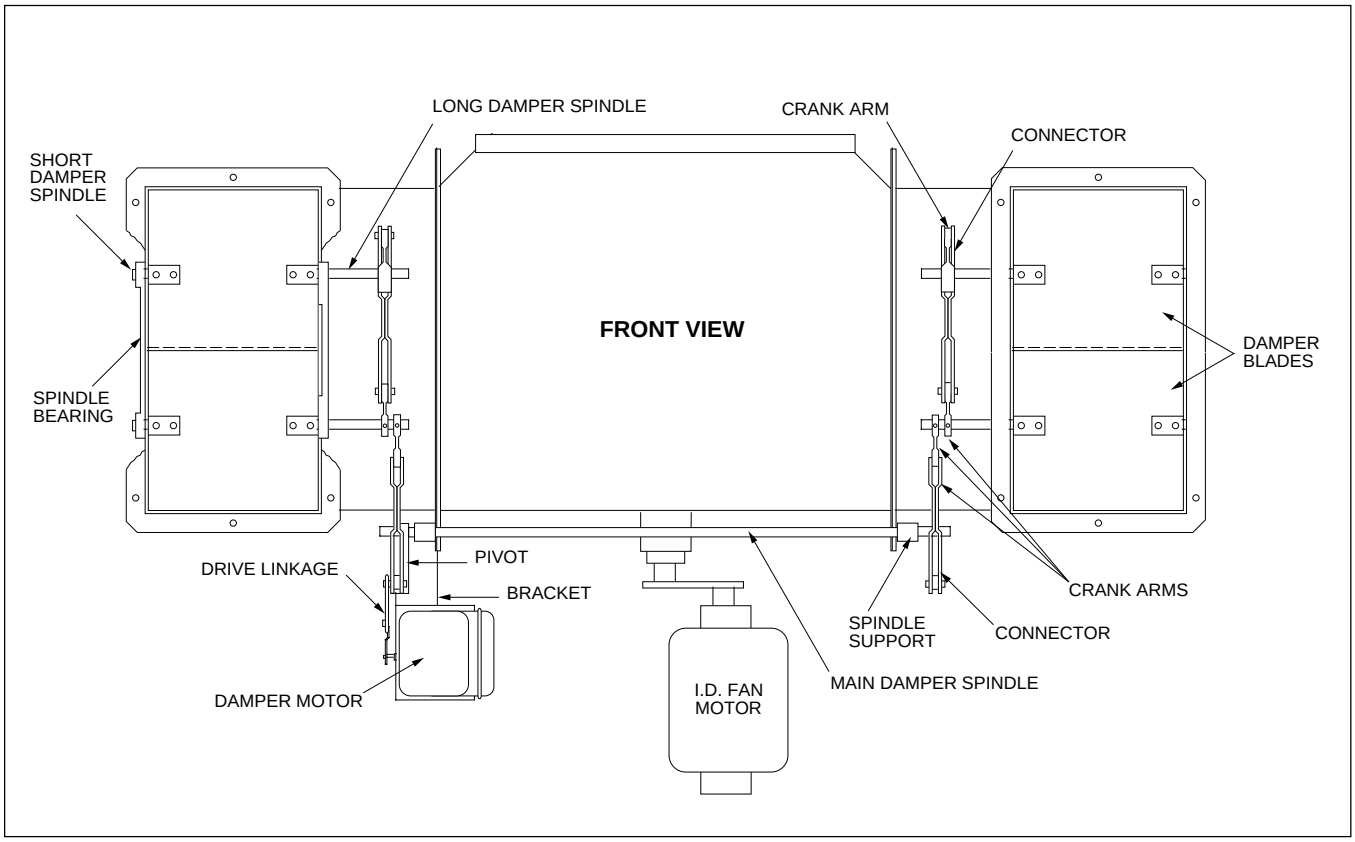
Place the dampers in the left hand elbow in the closed position (linkage down), then tighten pivot plate set screw against flat of spindle.

With left hand damper closed, close right hand dampers and tighten crank arm to main damper spindle. Work assembly to insure complete and free travel.

IMPORTANT
If any restriction to movement is observed, corrective action must be taken to ensure free operation. Linkage alignment is normally the cause of friction.

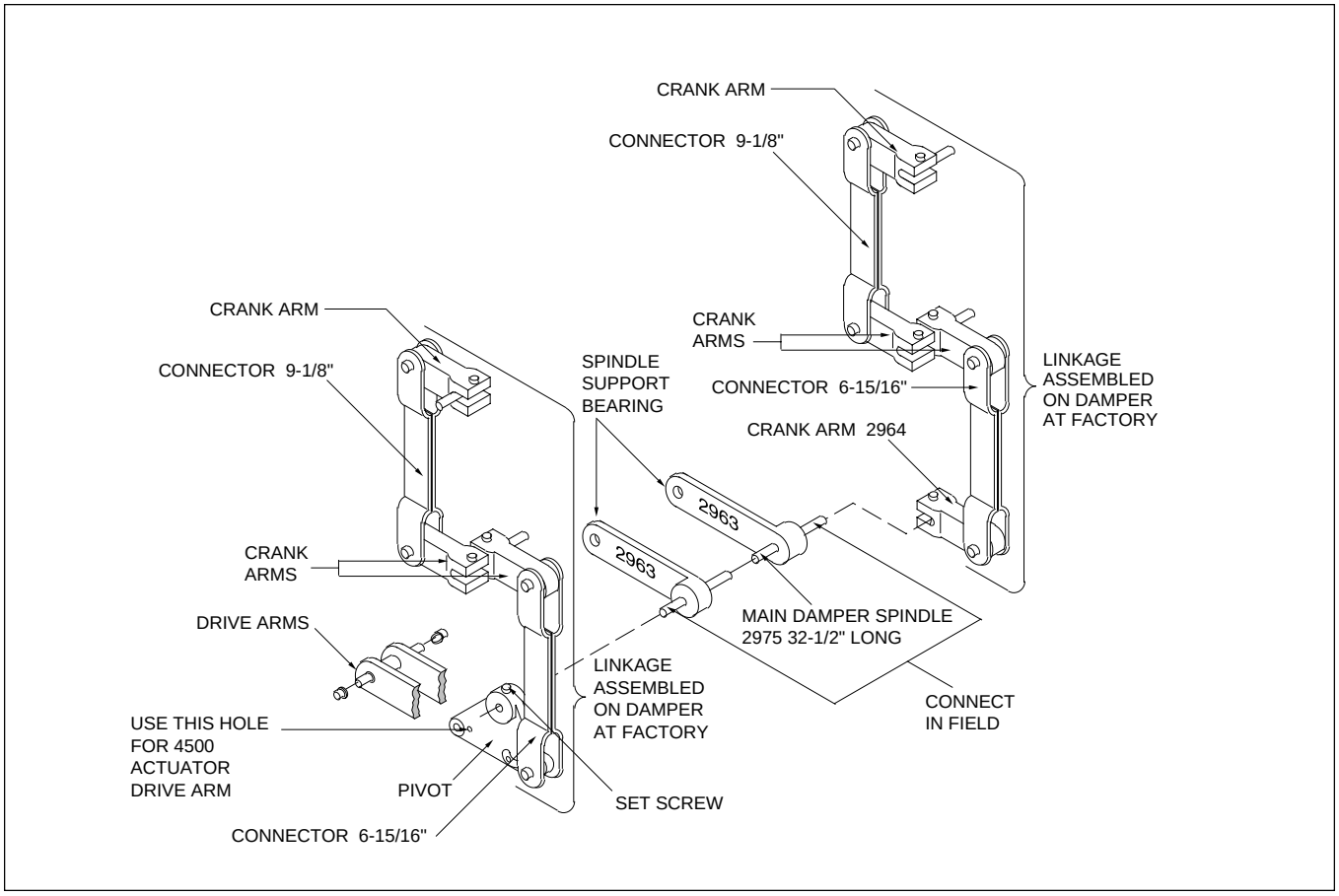
Connect the drive linkage between the damper motor and the pivot plate, see Fig. No. 19. With the damper blades closed, the drive linkage should be in the same position as illustrated. It may be necessary to power the control and reposition the bracket on the damper motor to achieve this.

Fig. No. 19
Smokehood and Shutter Damper with Linkage Installation with Wing Fan or Natural Draft



M450A BOILER
INSTALLATION INSTRUCTIONS

Fig. No. 20 - Shutter Damper Linkage



SMOKEHOOD (INDUCED DRAFT, AUBURN)

IMPORTANT
There are two ways this smokehood and fan arrangement is supplied. Either with a single blade discharge damper or with two barometric dampers.

A piece of insulating rope 1/4″ thick and 56″ long must be affixed to both the right hand (3335) and the left hand (3336) smokehood adapters prior to installation.

NOTE: A small amount of furnace cement placed randomly in the groove will hold the rope in place long enough to mount adapter.

Line up the appropriate frame with the opening in the back section and secure in place using (3) 7/16″ x 2 1/2″ machine bolts with a single washer.

Repeat same procedure for second adapter frame and seal both to back section using black furnace cement.

Remove cleanout cover plates from the smoke hood (69029). Loosely attach the 5/16″ x 1″ square head machine bolts, nuts and washers to the smokehood flanges. Place smokehood up against adapter frames and engage bolts with the slots in the frames.

Assemble the bolts to the top and bottom of the smokehood through the cleanout cover opening. Add the nuts and washers to the outside of the flange. Tighten the remaining bolts, nuts and washers around both flanges.

NOTE: For units less barometric dampers, replace cleanout covers.

Support the fan housing and motor unit in position against the smokehood matching the holes in the thimble with 1/2″ studs. Tighten fan in place. See Fig. No. 21.

Additional support is required for this unit and can be accomplished with a stand leg.

Cut a piece of 2″ pipe (not furnished) of sufficient length to ensure that when threaded into the coupling portion of the stand leg plate, the support of the fan will rest on the leg. See Fig. No. 22.

For Single Blade Discharge Damper Installations:
Turn the actuator (DM-1) upside down and fasten the mounting bracket to it using (3) 1/4″ x 5/8″ square head bolts. Ensure that when the actuator is mounted to the fan, the red position indicator is facing away from boiler.

Fig. No. 23 illustrates the actuator and its hardware and should be used in conjunction with printed manufacturers literature supplied with the actuator itself.

M450A BOILER
INSTALLATION INSTRUCTIONS

Fig. No. 21
Auburn Induced Draft Fan

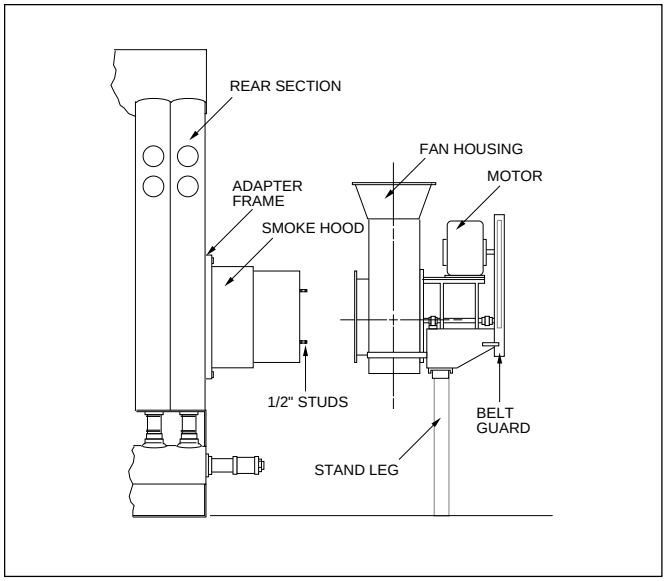


Fig. No. 22
Auburn Fan Stand Leg Installation

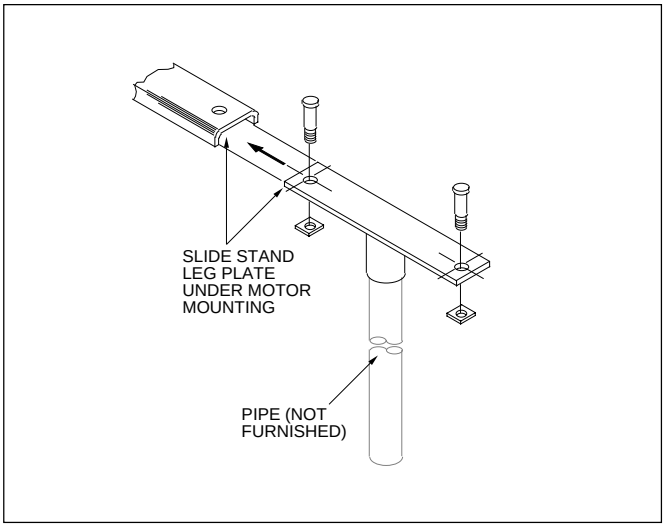
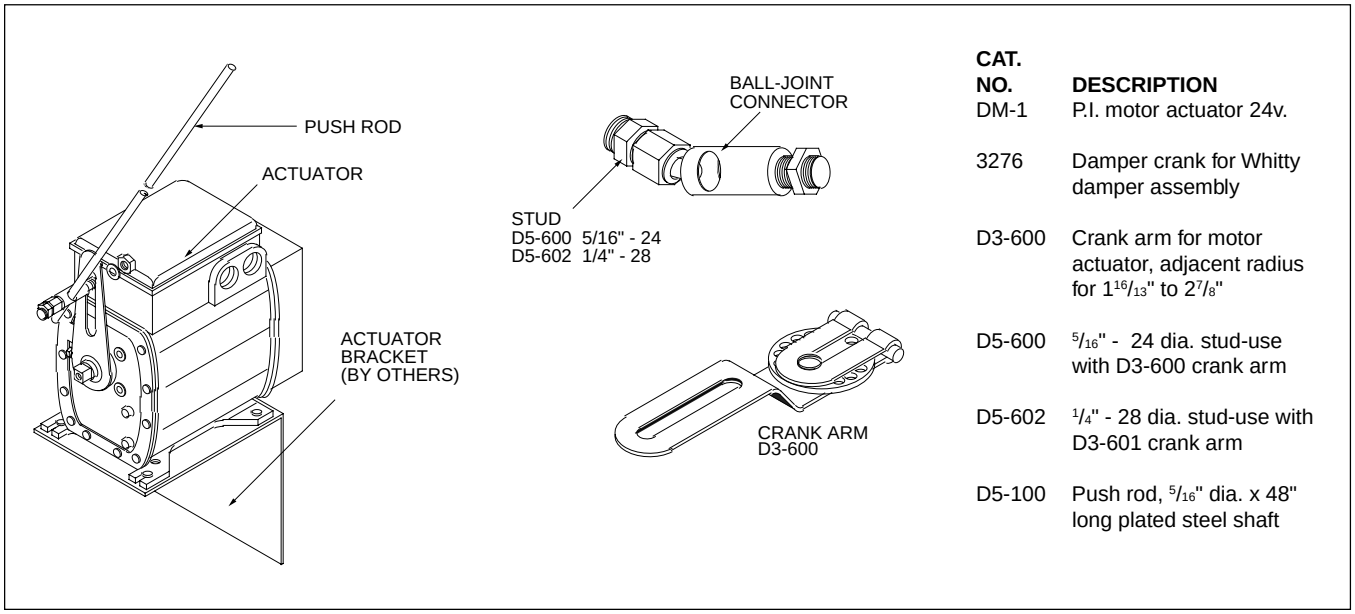


Fig. No. 23 - Induced Draft Fan Discharge Damper Actuator Parts



CAT. NO.	DESCRIPTION
DM-1	P.I. motor actuator 24v.
3276	Damper crank for Whitty damper assembly
D3-600	Crank arm for motor actuator, adjacent radius for $1^{16}/_{13}$" to $2^{7}/_{8}$"
D5-600	$^{5}/_{16}$" - 24 dia. stud-use with D3-600 crank arm
D5-602	$^{1}/_{4}$" - 28 dia. stud-use with D3-601 crank arm
D5-100	Push rod, $^{5}/_{16}$" dia. x 48" long plated steel shaft

M450A BOILER
INSTALLATION INSTRUCTIONS

Although there is a wide variety of fan discharge positions available, we are only going to illustrate (4). See Fig. No. 24

NOTE: For various discharge positions, different crank arm and linkage settings are required.

Assemble one ball joint connector to the damper blade crank shaft and one to D3-600 crank arm. Connect crank arm to DM-1 actuator and adjust position to agree with Fig. No. 24.

Connect push rod (D5-100) between the actuator crank arm and the damper crank arm. Tighten the $^{5}/_{16}$″ set screws (D5-600) to lock push rod in position as illustrated.

For Barometric Damper Installations:
Two different adapters are required for this boiler, one type for 10-13 section boilers, and another for 14-22 section boilers. See Fig. No. 25.

Adapters mount to the same studs in the smokehood that the cleanout covers did. A single nut and washer should be used for each stud.

IMPORTANT
The opening for the barometric dampers must face away from the fan.

Mount the barometric damper to the adapter using the hardware and literature supplied by the manufacturer.

Fig. No. 25

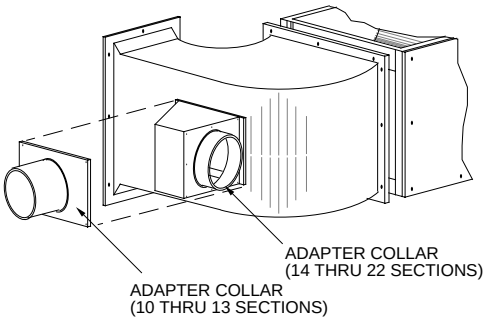
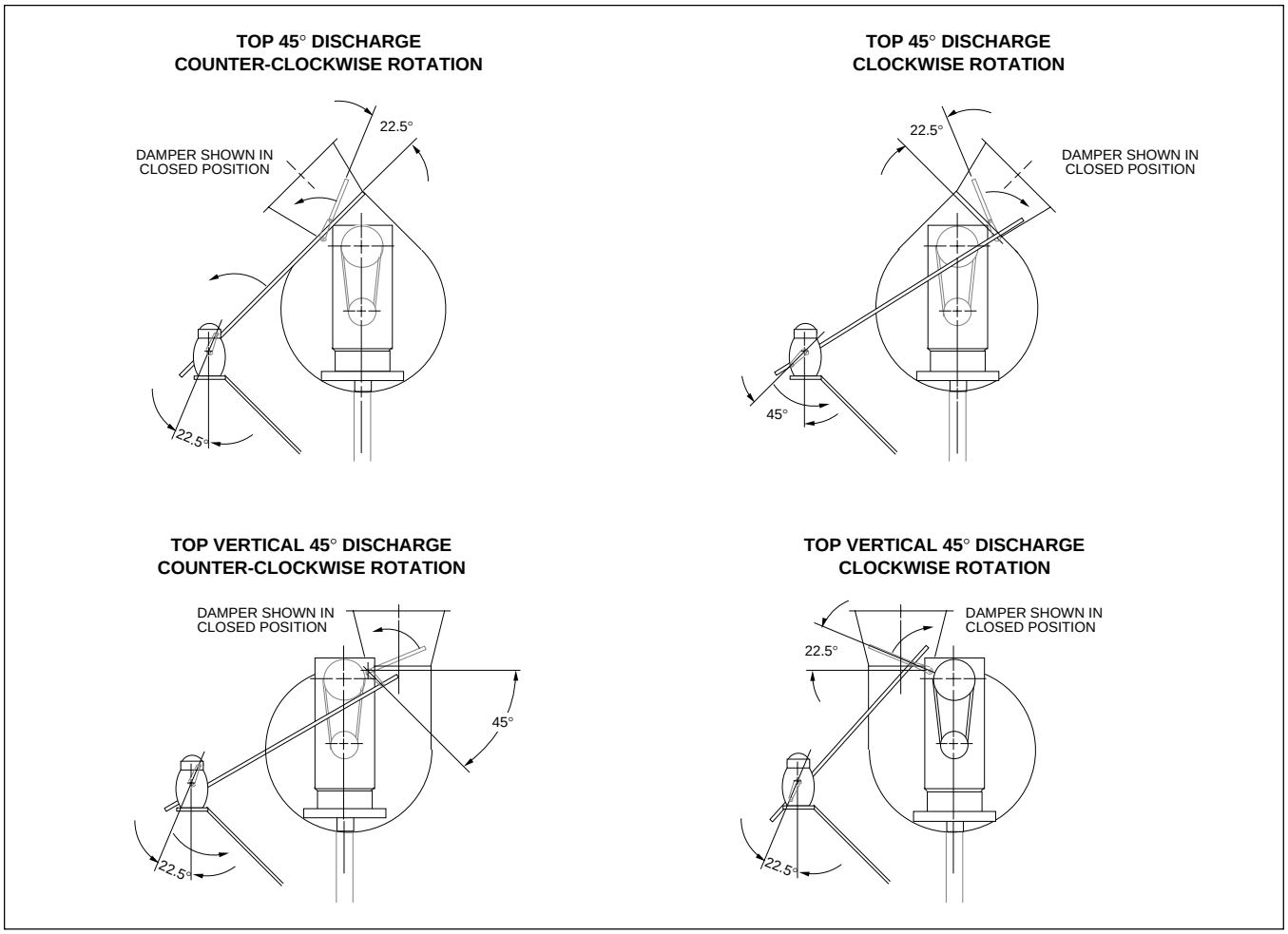


Fig. No. 24
Auburn Induced Draft Fan Actuator Installation as Viewed from Back of Boiler



M450A BOILER
INSTALLATION INSTRUCTIONS

Fig. No. 26

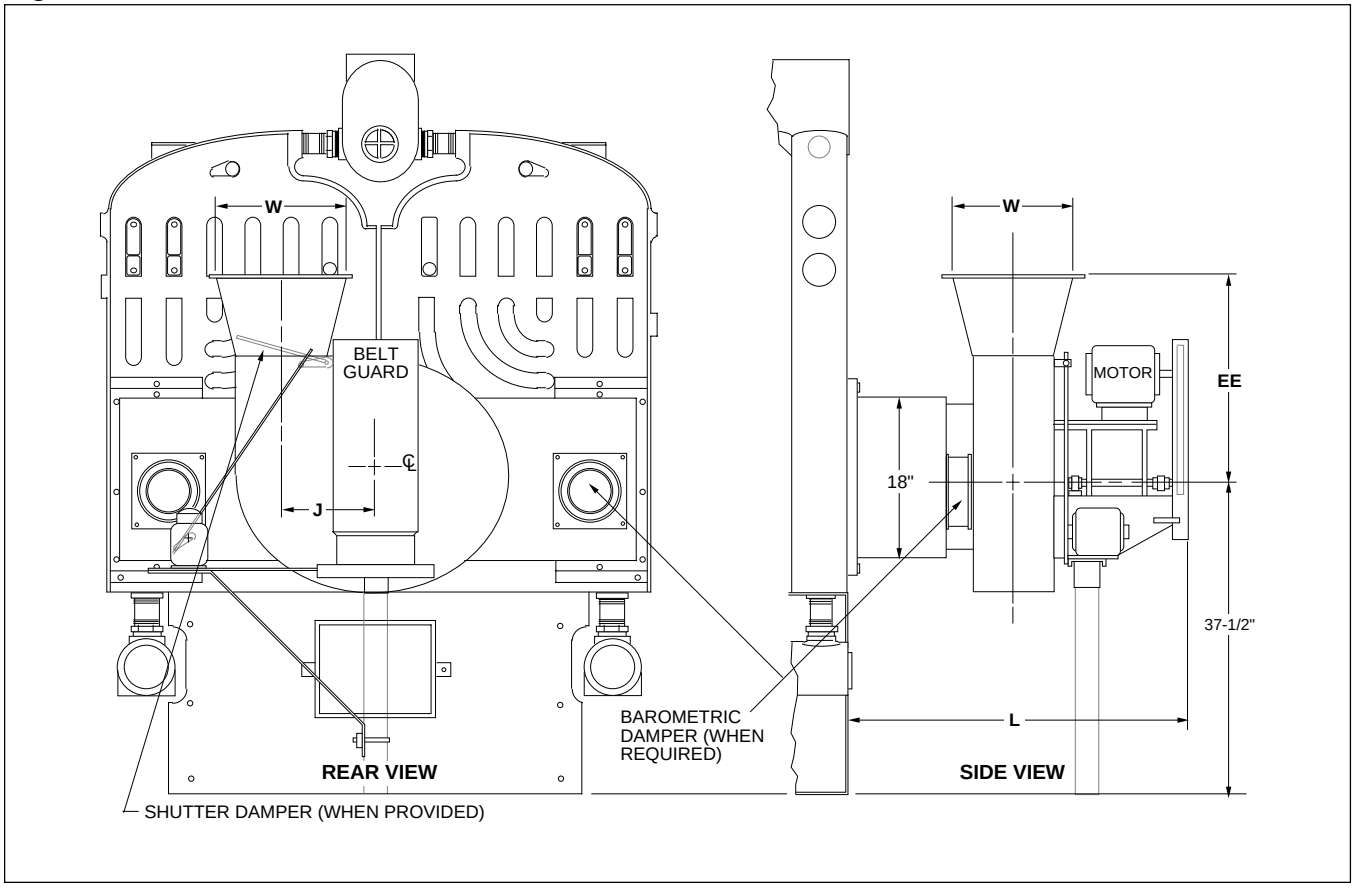


Fig. No. 26 illustrates a complete Auburn Fan installation. Although both barometrics and single dampers are illustrated together, normal application is either one or the other.

Table 4 - M450A Auburn Fan Dimensions

BOILER NO.	J	L	W	EE
M450A 10-16	$11^{3}/_{8}$	42	16	21
M450A 17-22	$13^{1}/_{4}$	$46^{1}/_{4}$	18	25

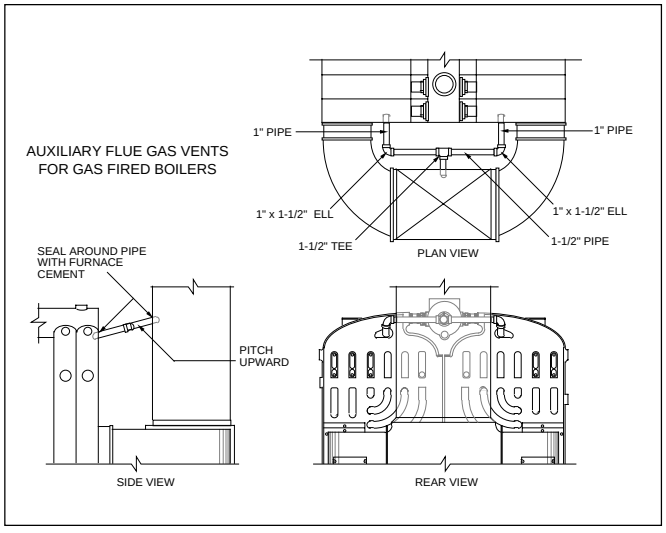
Auxiliary Flue Gas Vent

IMPORTANT
Code requires the use of auxiliary gas vents on all gas fired boilers where the design of the boiler allows any possible accumulation of unburned fuel gas. See Fig. No. 27.

The back section is designed for the use of auxiliary gas vents. A thin membrane must be knocked out with a ball pean hammer. See Fig. No. 26 for correct location of knockouts.

Piping (not furnished) should be installed in a similar manner as that illustrated in Fig. No. 27.

Fig. No. 27
Auxiliary Flue Gas Vent for Gas Fired Boilers

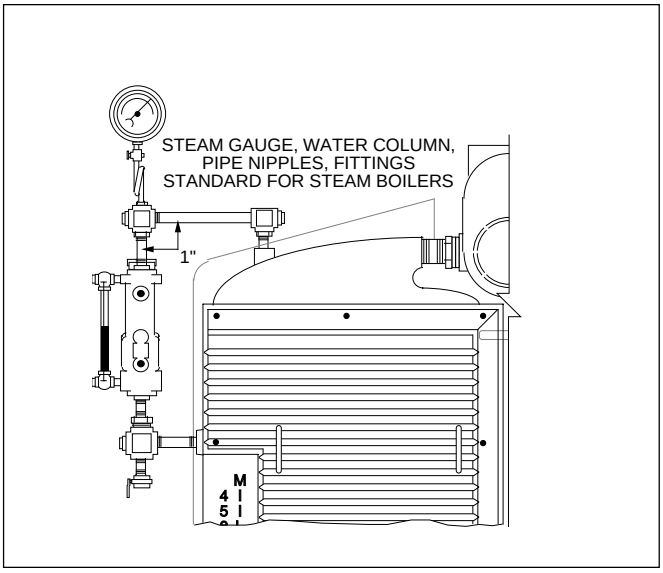


M450A BOILER
INSTALLATION INSTRUCTIONS

STEAM TRIM

Standard trim for steam boilers consist of : a steam gauge, 15 psig A.M.S.E. side outlet safety valve, cast iron water column, gage glass and pre-fab pipping

Fig No. 28



WARNING: Safety valve discharge piping must be piped to avoid exposure of persons to hot liquid or vapor. See Fig. No. 14. Never install any type of valve between the boiler and the safety valve. Failure to comply with this warning can result in an explosion causing severe personal injury or death!

WATER TRIM

Standard trim for water boilers consist of a 40 psi A.S.M.E. relief valve.

WARNING: Relief valve discharge piping must be piped to avoid exposure of persons to hot liquid or vapor. See Fig. No. 14. Never install any type of valve between the boiler and the relief valve. Failure to comply with this warning can result in an explosion causing severe personal injury or death!

CLEANING BOILER WATERWAYS

A. Steam Boilers:

Assembly of boiler must be complete before cleaning. The burner must be installed and made operational with operating, limit and safety controls functional. Combustion should be adjusted to prevent sooting of boiler flues. Final burner adjustment should be made after cleaning. System condensate return piping should not be connected prior to cleaning and all unused boiler tappings must be plugged.

Boiler solution should be mixed as follows:
(1) Lb. caustic soda
(1) Lb. trisodium phosphate] 50 gallons of water

Refer to Table 5 for boiler water content and Fig. No. 29 for a suggested blow down piping arrangement.

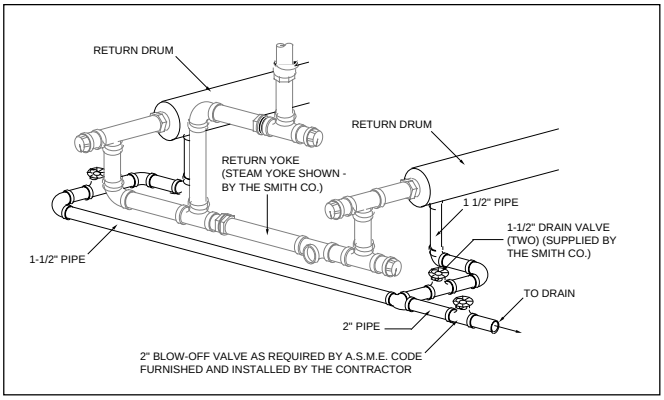
Mix chemicals to form a concentrated solution.

Remove plug from tapping on highest point on the boiler.

If no other opening is available, the safety valve may be removed, in which case the valve must be handled with extreme care to avoid damaging it.

CAUTION
Avoid clothing, skin or eye contact with boilout chemicals. If contact occurs, flush with large quantities of water.

Fig. No. 29



Replace the plug or safety valve and fire boiler intermittently for at least (5) hours. Maintain (0-2) psig steam pressure during boilout. Blow down boiler intermittently through lower drain valve to remove sediment. Maintain water level at normal water line ($69^1/_2$″ from floor).

WARNING: Monitor the boiler pressure constantly during the boilout. Do not allow pressure to exceed 15 PSIG. Direct the safety valve discharge away from all personnel during the boilout. Failure to comply with this warning can result in property damage, severe personal injury or death!

Stop firing burner and allow boiler to cool below 120°F and drain. Flush the boiler interior with clean water introduced by a hose into the top header, when the flushing is complete, close drain valves and fill boiler with clean water.

If boiler is not clean, repeat cleaning procedure or clean boiler using a skimmer tapping as follows:

Connect temporary piping to the 2″ rear tapping on the left hand side of the supply drum.

CAUTION
Be sure water is discharged to an open drain or other location that insures no danger to personnel. Do not install a valve in this piping.

M450A BOILER
INSTALLATION INSTRUCTIONS

Table 5 - Boiler Water Content

# of Sections	Steam (gal.)	Water (gal.)
8	125	201
9	138	214
10	151	227
11	164	248
12	177	268
13	190	288
14	203	308
15	216	328
16	229	349
17	242	370
18	255	390
19	268	410
20	281	431
21	294	451
22	301	471

Fill the boiler until water reaches the top of the gage glass. Add chemicals at the same rate as previously described.

Start the burner and operate sufficiently to boil the water without producing steam pressure for about (5) hours. Add water to boiler at a rate which allows a steady trickle of water to flow from the skimmer piping. Continue this slow boiling and trickle of overflow for several hours or until discharge water is clear.

Stop firing the burner and allow to cool to 120° and drain boiler. Wash the water side of boiler thoroughly using a high pressure water stream.

Remove temporary piping and fill boiler with clean water to normal water level. Replace safety valve and connect permanent piping.

B. Water Boilers
Normally, cleaning of water boilers is unnecessary unless boiler or system contamination is known to be unusually heavy.

If cleaning is necessary it should be performed as outlined under "Steam Boilers" with the following changes:

1) Include system water when determining amount of boilout solution.

2) Operate circulator during boilout.

3) Maintain system temperature between 160° and 200°F.

4) If portions of heating system are non-drainable, refill system with water and operate circulator to flush those sections. Drain and refill system with clean water.

WARNING: Monitor the boiler pressure constantly during the boilout. Do not allow pressure to exceed 40 PSIG for water boilers, 80 PSIG for high pressure test boilers. Direct the safety valve discharge away from all personnel during the boilout. Failure to comply with this warning can result in property damage, severe personal injury or death!

JACKET INSTALLATION

The complete flush jacket should be installed now that the boiler assembly and piping are completed. This is covered in a separate booklet, "Jacket Installation".

MAINTENANCE SCHEDULE

The following instructions are offered for best performance of the boiler and burner:

A. Keep boiler fireside surfaces clean. Cleaning should be done at least once annually. Flue temperatures above 600°F indicate cleaning may be necessary.

B. An unstable waterline or system steam hammer indicates contaminated boiler water. Blow down boiler to remove contamination. Excessive blow down should be avoided since this can reintroduce contamination to the boiler. Contaminated boiler water eventually leads to scaling, pluggage and possible section damage.

C. Refer to Table 6 for recommended equipment check list.

SAFETY

CAUTION
Steam Boilers: Do not place cold boilers in service on a hot steam line or severe damage may occur to boiler and piping. Keep cold boiler valved off line, fire until boiler reaches line pressure before bringing on line. Steam entering a cold boiler causes steam hammer. For boilers not valved off, the system should have an overflow installed to prevent idle boiler from flooding. If this is not done, cold boiler must be heated to near steaming conditions (212°F) and then drop water level to normal.

CAUTION
Water Boilers: Avoid thermal shock of water boilers. Establish water circulation through the boiler before starting burner. Where hot standby is required, special piping and operation procedures are required. Consult your Smith representative.

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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.

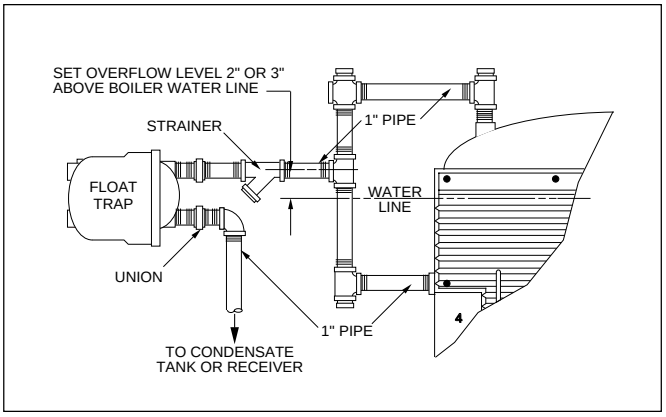
2) If water level adjustment is necessary, add or draw of water to desired level.

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.

Fig. No. 30



Suggested piping for overflow trap to prevent flooding of idle boilers in multiple boiler installations with individual water level control and no equalizing connections.

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Table 6 - Periodic Testing Recommended Check List (See Manufacturer's Instructions)

Item	Frequency	Accomplish By	Remarks
Gauges, Monitors & Indicators	Daily	Operator	Make visual inspection and record readings in log.
Instrument & Equipment Settings	Daily	Operator	Make visual check against factory recommended specifications.
Firing Rate Control	Weekly Semi-annual	Operator Service Technician	Visual inspection. Verify factory settings – check with combustion test instruments.
Igniter	Weekly	Operator	Make visual inspection, check flame signal strength if meter fitted (see Com. saf. Con.)
Fuel Valves			
Pilot Valves			Open limit switch - make audible and visual check - check valve position indicators - check fuel meters
Main Gas Valves	Monthly	Operator	Perform leakage tests - refer to manufacturer's instructions.
Main Oil Valves	Annual	Service Technician	
Combustion Safety Controls			
Flame Failure	Weekly	Operator	Close manual fuel supply for (1) pilot (2) Main fuel cock and/or valve(s) - check safety shutdown timing - log.
Flame Signal Strength	Weekly	Operator	If flame signal meter installed read and log - for both pilot and main flames, notify service organization if readings are very high, very low, or fluctuating - Refer to manufacturer's instructions.
Pilot Turn Down Tests	As required/Annual	Service Technician	Required after any adjustments to flame scanner mount or pilot burner - verify annually.
Refractory Hold In	As required/Annual	Service Technician	See Pilot Turn Down Test
Low Water Fuel Cutoff and Alarm	Daily/Weekly	Operator	Refer to manufacturer's instructions.
High Limit Safety Control	Annual	Service Technician	Refer to manufacturer's instructions.
Operating Control	Annual	Service Technician	Refer to manufacturer's instructions.
Low Draft, Fan & Air Pressure Interlocks	Monthly	Operator	Refer to manufacturer's instructions.
Atomizing Air/Steam Interlock	Monthly	Service Technician	Refer to manufacturer's instructions.
High & Low Gas Pressure Interlocks	Monthly	Operator	Refer to manufacturer's instructions.
High & Low Oil Pressure Interlocks	Monthly	Operator	Refer to manufacturer's instructions.
High & Low Oil Temperature Interlocks	Monthly	Operator	Refer to manufacturer's instructions.
Fuel Valve Interlock Switch	Annual	Service Technician	Refer to manufacturer's instructions.
Purge Switch	Annual	Service Technician	Refer to manufacturer's instructions.
Burner Position Interlock	Annual	Service Technician	Refer to manufacturer's instructions.
Low Fire Start Interlock	Annual	Service Technician	Refer to manufacturer's instructions.
Automatic Change Over Control (Dual Fuel)	At least Annual	Service Technician	Refer to manufacturer's instructions.
Safety Valves	As required	Operator	In accordance with procedure in Section VI A.S.M.E. Boiler Code Recommended Rules for Care and Operation of Heating Boilers.
Inspect Burner Components	Semi-annual	Service Technician	Refer to manufacturer's instructions.

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WARNING

Any appliance that burns natural gas, propane gas, fuel oil, wood or coal is capable of producing carbon monoxide (CO).

Carbon monoxide (CO) is a gas which is odorless, colorless and tasteless but is very toxic.

If your Smith boiler is not working properly, or is not vented properly, dangerous levels of CO may accumulate. CO is lighter than air and thus may travel throughout the building. **Brief exposure to high concentrations of CO, or prolonged exposure to lesser amounts of CO, may result in carbon monoxide poisoning.**

Exposure can be fatal and exposure to high concentrations may result in the sudden onset of symptoms including unconsciousness.

Symptoms of CO poisoning include:

dizziness	vision problems	shortness of breath
headaches	loss of muscle control	unclear thinking
nausea	weakness	unconsciousness

The symptoms of CO poisoning are often confused with those of influenza, and the highest incidence of poisoning occurs at the onset of cold weather or during flu season. A victim may not experience any symptoms, only one symptom or a few symptoms. Suspect the presence of carbon monoxide if symptoms tend to disappear when you leave your home.

The following signs may indicate the presence of carbon monoxide:

- Hot gases from appliance, venting system, pipes, or chimney escaping into the living space.
- Flames coming out around the appliance.
- Yellow colored flames in the appliance.
- Stale or smelly air.
- The presence of soot or carbon in or around the appliance.
- Very high unexplained humidity inside the building.

If any of the symptoms CO poisoning occur, or if any of the signs of carbon monoxide are present, **vacate the premises immediately and contact a qualfied heating service company, the gas company or the fire department.**

To reduce the risk of CO poisoning, have your heating system “tuned up” by a licensed heating contractor or the gas company - preferably before each heating season. Also have the service company check your chimney or vent pipes for blockage. Your home should also be adequately ventilated, particularly if you have insulated your home.

Only qualified, licensed service contractors should perform work on your Smith Boiler.

WARNING

Install, operate and maintain unit in accordance with manufacturer’s instructions to avoid exposure to fuel substances or substances from incomplete combustion which can cause death or serious illness. The State of California has determined that these substances may cause cancer, birth defects, or other reproductive harm. Also, install and service this product to avoid exposure to airborne particles of glasswool fibers and/or ceramic fibers known to the State of California to cause cancer through inhalation.