

AMERICAN-Standard

HEATING PLUMBING

SUNBEAM

OPERATION, CARE AND ATTENTION OF HAND FIRED FURNACES AND WINTER AIR CONDITIONERS

CARE OF FURNACE AND SYSTEM WHILE IN OPERATION

Keep warm air registers open. Never place rugs or other obstructions over them. Obstructed air registers may cause severe overheating and consequent damage.

Keep heating surfaces clean. Common table salt thrown on a bright fire with drafts open will sometimes help in keeping flues clean.

Be sure furnace room has a suitable opening for admitting air for combustion but keep basement windows closed to prevent chilling of ducts and pipes.

Keep air registers clean.

Attend fire regularly as directed below.

Keep the humidifier supplied with water, unless the device is automatic.

Keep door open in all rooms which have no return register unless no heat is desired in such a room in which case the door should be kept closed.

On winter air conditioners, or furnaces equipped with blowers and filters, oil bearings of blower and motor every 3 months with #10 motor oil and replace filters in January and July, or more frequently if required.

CARE OF FURNACE WHILE NOT IN OPERATION

Clean furnace thoroughly. Remove all ash and unburned fuel from grate and ash pit. Remove soot and dirt from surfaces.

Clean smokepipe and if necessary, clean chimney. Obstructed smokepipes and chimneys give poor draft resulting in poor fire and possibly smoking through the fire door.

Check grate and shaking mechanism for proper operation and replace broken or worn-out parts. Do this early in summer and do not wait till late in fall.

Oil door hinges and other moving parts.

Before starting furnace in fall, lift out register faces and remove dust from register and pan.

In cases where dirt may fall into furnace casing, particularly on pipeless furnaces, it is advisable to clean casing in fall before starting furnace. Remove lower section of casing by loosening casing lugs and sweep out bottom of casing.

FIRING INSTRUCTIONS

To start fire, open draft damper in ash pit door and choke damper in smokepipe but keep cold air check in smokepipe closed, place kindling over entire grate and light. Add fuel

in small quantities until fire is burning well. Then fill fuel to a level about half-way up to fire door and bank up in rear. When this fuel is thoroughly ignited and coked, the fire is ready for full charging. When firing hard coal, shake gently, bank up slightly in rear and fill in fuel up to about level of fire door. When firing soft coal, break up fire if required, bank steeply in rear leaving only a thin layer in front. Fire fresh fuel only in the front part and leave glowing coke in rear exposed.

After firing, open air slots in fire door slightly when using hard coal and more when using soft coal. The slots can be closed again when charge has thoroughly ignited or turned into coke. Best setting is found by experience. Caking soft coal should be broken up by stoking about 1 hr. or more after firing, the time depending on operating conditions.

In mild weather, keep about 2 to 3 inches of ash on grate. As more heat is required, reduce thickness of ash layer. Always fire up to level of fire door or more. Shallow fires give poor combustion. The choke damper in the smokehood can be used to check fire. Do not close choke damper fully immediately after firing, particularly not with soft coal.

Shake grates only as required; unnecessary shaking wastes fuel.

GENERAL RULES

Give fire regular attention especially in severe weather. Do not nag fire by too frequent feeding, poking or shaking. Keep fire pot full.

When shaking grates or adding fuel, open choke damper in smokepipe but close all air dampers. The draft will then concentrate on fire door and prevent escape of dust and coal gas. Keep ash pit door closed when opening fire door.

To check or increase the fire, adjust the dampers. Do not leave fire door or ash pit door open for this purpose. Do not close choke damper fully immediately after firing.

Remove ashes daily. Do not let them accumulate in ash pit. Otherwise burned out grates and corroded base may result.

If hard clinkers jam in grate, dislodge them with poker. Do not force shaking mechanism too hard and avoid breakage. Shake normally with small movement of the shaker handle only.

Fire should burn evenly over entire grate. When required, clean fire by burning it down to a thin layer and remove clinkers and slate with poker.

Do not use ashes on top of coal for banking. It may create clinkers.

FUEL SIZE

The size best suited for this furnace is stove size. Larger sizes can be used particularly with soft coal. Nut size fuel will be found generally satisfactory.

HEATING CONTRACTOR
FOR SERVICE, CALL _____

AMERICAN & Standard
RADIATOR & Sanitary

CORPORATION
PITTSBURGH 30, PA.

ASSEMBLY INSTRUCTIONS
for
D-500 SERIES STEEL FURNACE

Coal Burning

The D-500 Series Gravity Steel Furnace should be assembled strictly in accordance with the following instructions.

LOCATION

The Furnace should be located on a LEVEL FOUNDATION

ASSEMBLY OF SHELL AND RADIATOR

NOTE: For item numbers in the following instructions refer to SK-1186 and SK-1187.

1. Fill cup of radiator connecting collar with J.M. No. 20 Cement. Item 1.
2. Attach radiator to shell by holding out at bottom and hooking on to shell connecting collar. Secure in place with one 5/16" x 1-3/4" bolt through lugs at bottom of connecting collars. Item Nos. 1, 2 and 3.
3. Attach Radiator Bracket to bottom rear center of shell, pressing tightly against bottom of radiator. Bolt adjusting lug to bracket, press against radiator and tighten bolts. Item Nos. 2, 3, 35 and 36 of SK-1187.
4. Place rear half of brick ring, Casting No. 178-R, inside shell at rear, resting on steel support lugs welded to inside of shell. The roller bearing support bracket of this casting should be centered at rear of shell. Item No. 4.
5. Place front half of brick ring, Casting No. 178-F, inside of shell at front, resting on steel support lugs welded to inside of shell. Item No. 5.

NOTE: The front casting has two roller bearing support brackets.

6. Fasten front and rear brick ring castings together with one 5/16" x 1-1/4" flat head bolts at each end and with a 5/16" flat washer under each bolt head.
7. Secure brick ring assembly to four support lugs with 5/16" flat head bolts, using a flat washer under the head of each bolt.

CAUTION: BE SURE ALL BOLTS ARE TIGHT.

8. Place three grate rollers in roller bearing brick ring assembly.

9. Place basket grate, Casting No. 151, in position with lug which is cast at rear of grate in brick ring assembly. A corresponding lug of brick ring to prevent basket grate from

NOTE: Roll grate back and forth to make sure it is in position on rollers.

10. Install shaker bar, Casting No. 154, in basket grate on rollers with trunnion of bar projecting through trunnion support at rear of basket grate.
11. Install side bar, Casting No. 153, in basket grate following the same procedure as in Operation No. 10.
12. Place two cast gears, Casting No. 155, on square hub of shaker and side bar.

CAUTION: BEFORE MESHING GEARS BE SURE THAT THE TOP SURFACES OF THE GRATE BARS ARE HORIZONTAL.

13. Insert gear retainer, Casting No. 156, on under side of grate retainer casting, and lock in place with pin.
14. Install row of long firebricks, Item 6, with lower ends resting on cast iron brick ring.
15. Install top row of short firebrick starting with two bricks which are recessed along top edge, to overlap connecting collar, Item No. 7.
16. ^{CP} Fill half round grooves on inside of lower front, Casting No. 9, with furnace cement and imbed asbestos rope in groove.
17. Smear furnace cement on inside bottom flange of lower front to seal at junction with steel shell.
18. Bolt lower front to flange of shell with ten 5/16" x 1" nicked round head bolts. Item No. 8.
19. Attach smoke curtain, Casting No. 82, to inside of upper front. This casting is supported by two hinge brackets, Castings No. 83, each of which must be bolted to inside of upper front with one 1/4" x 1" stove bolt. Item Nos. 9, 25, 26 and 27.

The bolt holes for the hinge brackets are located at the top left and right sides of the feed door opening.

20. Fill half round grooves on inside face of upper front, Casting No. 51, with furnace cement and imbed asbestos rope in groove. Item no. 9.
21. Attach sides of upper front, Casting No. 51, to shell with six 5/16" x 1" round head bolts and bolt lower flange of upper front casting to top of lower front casting with four 5/16" x 1" round head bolts.

22. Place upper front extension, Casting No. 208, in position on front of shell and bolt to top flange of shell through upper front casting with six 5/16" x 1-1/2" nicked round head bolts. Item No. 10.
23. Install feed section plate, Casting No. 43-1/2. Feed section plate will rest on top of lower firebricks and flange at bottom of feed door. Secure to upper front casting with two 1/4" x 1" flat head bolts. Item Nos. 9 and 11.
24. Bolt right brick clamp, Casting No. 176-R, to feed section plate with one 3/8" x 1-1/2" square head bolt and a 3/8" washer under nut. Pass bolt up through ash pit door opening. Item Nos. 11 and 12.
25. Bolt left brick clamp, Casting No. 176-L, to feed section plate, following same procedure as in Operation 24.
26. Install shaker bar connecting rod, Casting No. 161. The flange end of the shaker bar should project through a rectangular opening provided in the lower cast front, in line with the shaker handle connecting link attached to the lower front at the bottom. Attach other end of shaker bar connecting rod to cast pin projecting from under side of basket grate. Secure with cotter pin and 7/8" flat washer. Item No. 13.
27. Attach shaker handle to connecting link at the bottom and to connecting rod at the top with two 3/8" pin rivets and cotter pins. Item No. 14.
28. Attach ash pit door assembly to lower front. Item No. 15.
29. Attach feed section door assembly to upper front. Item No. 16.
30. Locate water vapor pan with cover assembled, in opening provided in upper front extension. Item No. 17.

ASSEMBLY OF CASING

1. Locate angle iron base around heating element and bolt to lower front casting with one 3/16" x 3/4" bolt at each side. Item No. 18.
2. Attach lower casing extension to cast front with five 3/16" x 3/4" bolts. Item Nos. 8 and 28.
3. Place lower inner lining in position over flue pipe. Item No. 21.
4. Place lower casing over flue pipe and attach to opposite side of cast front with five 3/16" x 3/4" bolts. Form casing around angle base and fasten loosely to lower casing extension with two 3/16" x 2-1/2" draw bolts. Item Nos. 8 and 10.
5. Place center casing ring in position with inside lower casing and ends attached to one 3/16" x 3/4" bolt on each side. Item No. 19.
6. Tighten draw bolts of lower casing. Item No. 20.

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7. Hook lower inner lining to clips welded on inside of center casing ring. Item No. 21.
8. Attach upper casing extension to upper cast front and upper front extension on side to which lower extension was bolted with four $3/16$ " x $3/4$ " bolts. Item Nos. 9, 10 and 31.
9. Attach upper casing to opposite side of upper cast front and upper front extension with four $3/16$ " x $3/4$ " bolts. Form casing around center casing ring and fasten loosely to upper casing extension with two $3/16$ " x 2- $1/2$ " draw bolts. Item Nos. 9, 10 and 22.
10. Place upper inner lining in position on inside of upper casing. Bottom of lining should rest in spring clips welded on inside of center casing ring. Item Nos. 22 and 23.

NOTE: When upper inner lining is in position top of lining should be the same height as top of outer casing. If lining is too high bend clips (attached to center casing ring) down in order to make top of lining flush with top of outer casing.

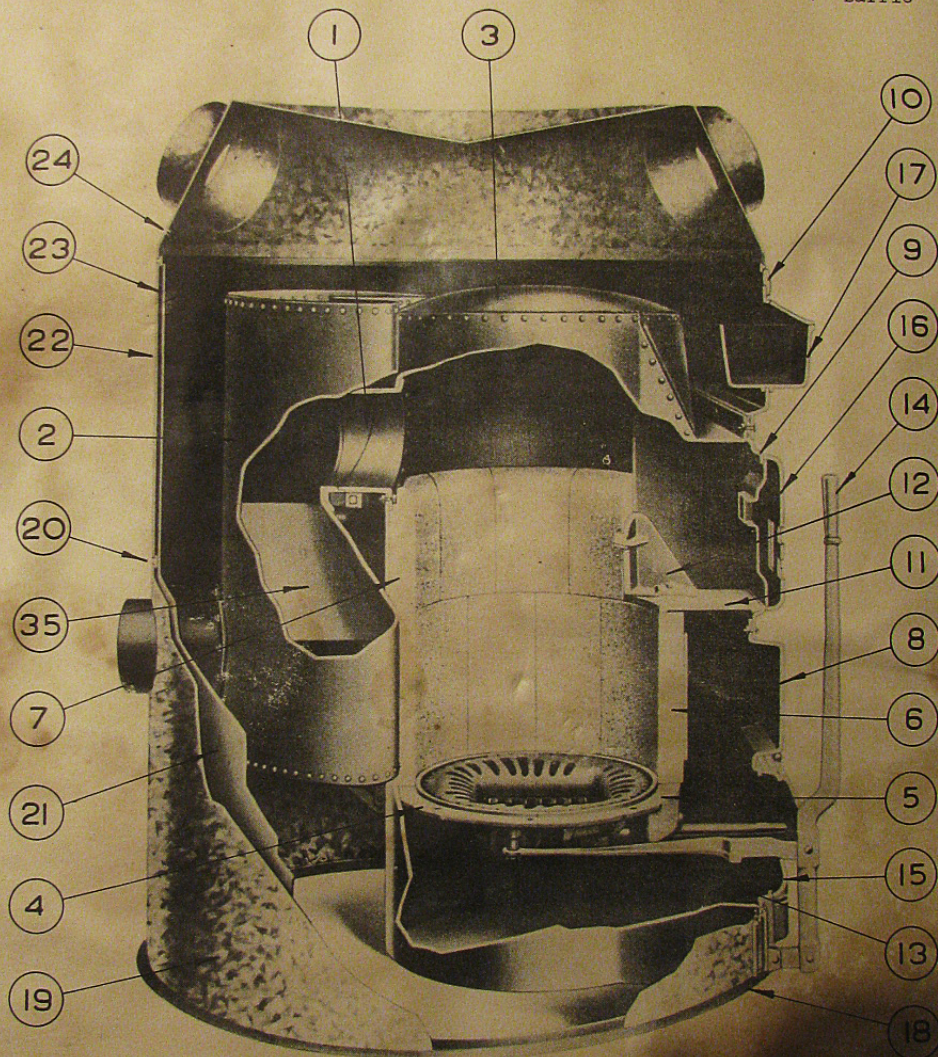
11. Slip spacing clips over top of upper casing and inside lining. Item Nos. 22, 23, and 32.
12. Place galvanized pitched top with casing ring attached in position inside of upper casing. Lower flange of casing ring holds spacing clips for upper inside lining in position. Item Nos. 22 and 24.
13. Tighten draw bolts of upper casing.
14. Place finishing collar around radiator flue collar and fasten neatly with $3/16$ " x 1- $1/2$ " draw bolt. Item No. 33.

PART NAME

1. J.M. #20 Cement
2. Radiator
3. Shell
4. Rear half of Brick Ring
5. Front half of Brick Ring
6. Lower Fire Brick
7. Upper Fire Brick
8. Lower Front Casting

9. Upper Front Casting
10. Upper Front Extension
11. Feed Section Plate
12. Right Brick Clamp
13. Connecting Rod
14. Upright Shaker Handle
15. Ash Pit Door
16. Feed Door

17. Vapor Pan
18. Angle Base
19. Lower Casing
20. Center Casing Ring
21. Lower Inner Lining
22. Upper Casing
23. Upper Inner Lining
24. Pitched Top
35. "Y" Baffle



D-500 SERIES STEEL FURNACE

SK-1186

ITEM NO. PART NAME

(1) J.M. 20 CEMENT

(2) RADIATOR

(3) SHELL

(6) LOWER FIRE BRICK

(7) UPPER FIRE BRICK

(8) LOWER FRONT CASTING

(9) UPPER FRONT CASTING

(10) UPPER FRONT EXTENSION

(14) UPRIGHT SHAKER HANDLE

(15) ASH PIT DOOR

(16) FEED DOOR

(17) VAPOR PAN

(18) ANGLE BASE

(19) LOWER CASING

(20) CENTER CASING RING

(21) LOWER INNER LINING

(22) UPPER CASING

(23) UPPER INNER LINING

(24) PITCHED TOP

(25) 1/4 X 1 BOLTS

(26) SMOKE CURTAIN BRACKET

(27) SMOKE CURTAIN

(28) DRAW BOLT LUG

(29) UPPER CASING EXTENSION

(30) SPACING CLIPS

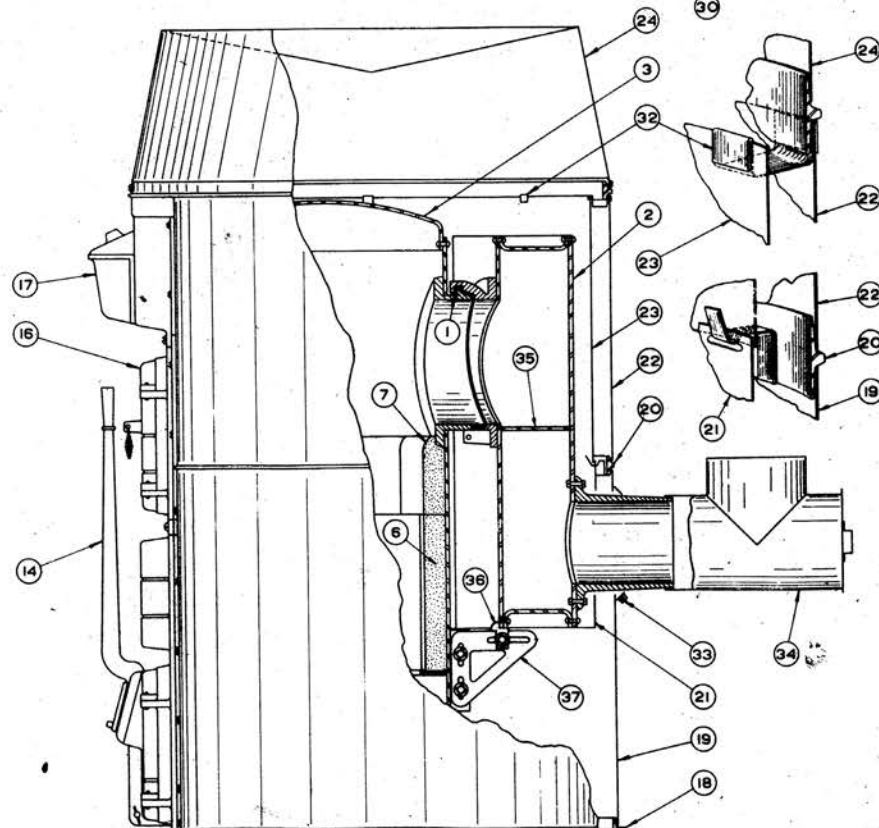
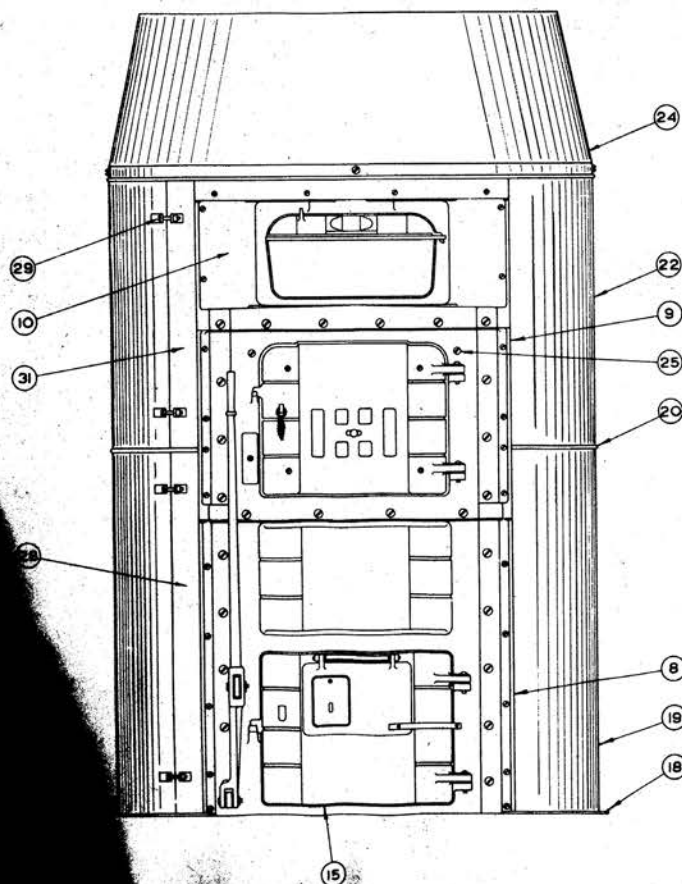
(31) FINISHING COLLAR

(32) GALVANIZED TEE

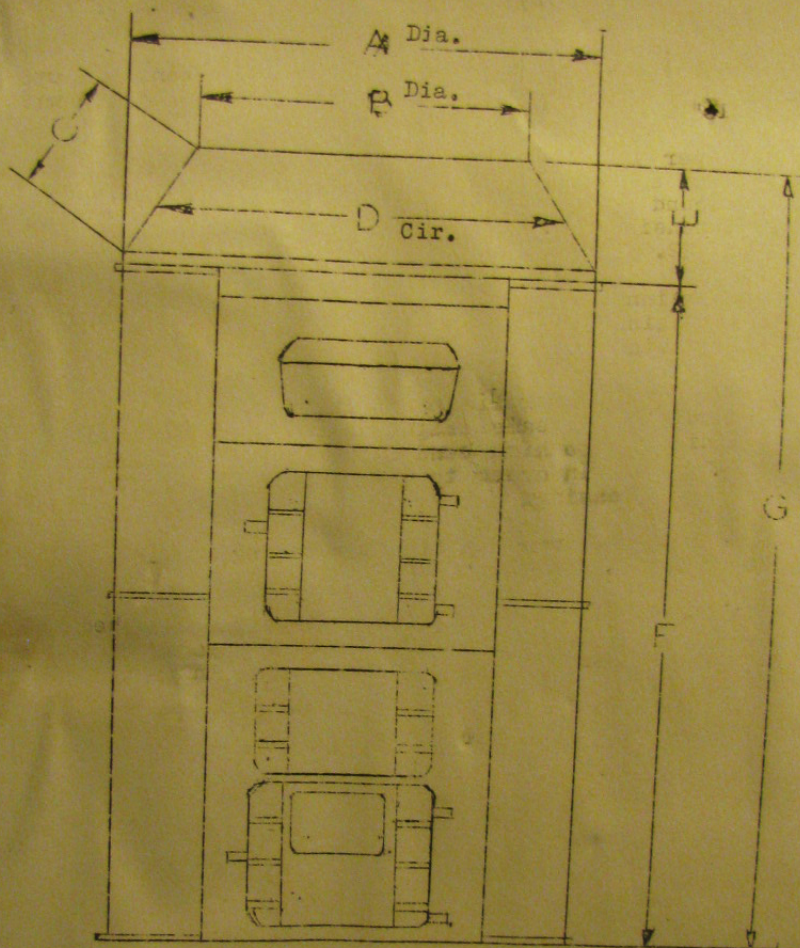
(33) "V" BAFFLE

(34) RADIATOR ADJUSTING LUG

(35) RADIATOR BRACKET



D-500 SERIES
FURNACE ASSEMBLY



D-500 SERIES GRAVITY

UNIT	A	B	C	D	E	F	G
D-520	42	33	14-3/8	118	13-1/2	52-3/4	66-1/4
D-522	44	35-3/8	14-3/8	125	13-1/2	52-3/4	66-1/4
D-524	47	38-3/8	14-3/8	135	13-1/2	52-3/4	66-1/4
D-527	50	41	14-3/8	144	13-1/2	52-3/4	66-1/4