

## Installation Instructions A-150

1. Important Place furnace floor on a flat level surface. The end of floor without the angle is the stoker-hopper end.
2. Stand furnace on the floor, centering it so that the angles on the face of furnace are inside the angles that are welded to furnace floor. Keep black face plate of furnace even with edge of floor. (see diagram 1)
3. Install heat exchanger to furnace. Make sure that stack and cleanout outlets are in their lowest position. Tighten nuts securely in an alternate diametric pattern to compress the rope seal between the flanges. (see diagram 1)
4. There are two legs (angles) inside furnace. Fasten to heat exchanger, adjust bolts on bottom of legs until bolts rest snugly on floor. (see diagram 1)
5. Remove side panels from box marked sides. Using a screw driver or chisel, pry open edge in S bend on side panel. (see diagram 4)
6. Find packet of screws inside box marked Sides.
7. Slide S bend of jacket panel over angle on black face plate, keeping jacket side panel inside of floor angle. Do both sides. (see diagram 1 & 2)
8. Fasten rear bib of jacket with 1" screws provided to rear of furnace. (see diagram 5 & 3)
9. Place a light smear of furnace cement around fire door frame. Place fire door into furnace inspection opening. Drill a hole in top of door frame, and bottom of frame with 1/8" bit, and secure with drill screws provided in ash tub.
10. Slide lower center partition through blower door opening. Place against protruding angles from side panels. Drill holes with 1/8" bit and secure with 1/2" screws. (see diagram 9)
11. Mount blower motor onto blower unit (as per instructions packed with blower). Insert blower assembly into furnace, allowing 1/4" to 1/2" of blower unit to protrude beyond center partition.
12. Place jacket handle on blower door in pre-drilled hole. Slide washer onto handle stem. Slide through blower door. Tap lock washer until tight against inside blower door. Tighten handle latch onto handle stem with screw. Install blower door on furnace with handle on top of door. (see diagram 6)
13. Place side center partitions (packed inside furnace, painted silver) onto studs on inside front of heat exchanger. Slide partitions out until touching insulation. Tighten nuts. One partition for left side, 1 partition for right side of heat exchanger. (see diagram 8)

14. Open box marked top. Remove 2 jacket rings. Slide one over each stove pipe outlet and clean out opening. (see diagram 12 & 3)
15. Place top of jacket onto furnace with filter rack going over heat exchanger.
16. Drill several 1/8" holes along floor angle through sides and secure with 1" screws.
17. Drill several holes with 1/8" bit through furnace top and side panels and secure with 1" screws.
18. Reach inside stoker unit opening and place small hanging baffle above exhaust opening inside furnace. (see diagram 10)
19. Hang long baffle onto angles welded into upper portion of furnace. Place reinforcement angle toward heat exchanger. (see diagram 11)
20. Plenum chambers may now be installed.
21. Stoker units are shipped completely assembled. Lift stoker unit into opening, bottom of stoker has a 1/4" rod welded in place which must go inside stoker opening. Place a thick smear of furnace cement on flange of stoker and tilt into place, securing with 3/8 X 1 1/4 machine screws, washers, and nuts provided in ash tub.
22. Place hopper on stoker unit, and fasten to furnace with large metal washers and nuts. The hopper bottom should lap over stoker throat approximately 1". Since the same hopper is used with several different stokers, it may be necessary to trim the opening. Bend flange down to fit inside of throat of stoker. Be sure feed mechanism is free to operate.

Installing Stack Pipe. The Heat Exchanger has 2 – stack outlets. Either one may be used to connect stove pipe to chimney. The other opening must be capped, to be used for a clean out. If stack pipe must be reduced in size, **reduce stack size at thimble.** It is important to run full size stack from furnace to thimble in chimney. Install barometric draft control in first full section of stack closest to furnace. Follow instructions packed with draft control, making sure draft control bearings are level and face of control is perpendicular to floor.

Assemble Blower. As per instructions packed with blower. Mount blower motor into position on blower. Align both pulley wheels. Install blower belt. IMPORTANT Blower Belt Must Be Somewhat Loose. Making belt too tight will cause excessive and rapid wear on sleeve bearings in both blower and motor.

Slide blower into blower cavity(see page 1) Push blower forward until it enters hole in center partition. NOTE.. Blower is freestanding and does not get bolted to furnace. Vibration is reduced when blower sits on rubber pads. (furnished) After making electrical connections, turn blower on. Be sure blower is running proper direction. To change blower direction, follow instructions on blower motor or install motor on opposite side of blower.

Install Fan Limit Control... Into Hot Air Plenum (stoker end). Timer and relay may be mounted directly to furnace jacket. (see page 4)

Wire Furnace... Following wiring diagram and any applicable UL and local codes.

For Maximum efficiency and proper performance of furnace, a draft gauge is necessary.

Starting Fire. Put coal in hopper, pull coal down to cover entire grate. Crush several charcoal briquets into smaller pieces, crumble newspaper and dig it through the coal, so it touches the grate. Lay charcoal on top of newspaper, turn on switch, when charcoal turns red, place a few handfuls of coal on top of charcoal. If fire moves toward bottom of grate before fire is established, coal feed can be slowed down by turning red nut CCW or by flipping feed bolt to a sideward position. (part #22 on unit specification sheet)

After Starting Fire... Allow stove and chimney to warm up. Insert draft gauge through pre-drilled hole in upper portion of green fire door. Shut stoker unit off with switch. Adjust barometric damper until draft gauge reads -.02

Turn stoker unit on – Open combustion air intake shutter (located on bottom of scroll between stoker motor and gear box.) until draft gauge reads -.01 to -.02 . Shut stoker unit off, recheck draft readings, then restart stoker.

Setting Timer... Yellow clock wheel makes one revolution every 30 minutes. Each clip sticking out of yellow wheel will cause stoker to run approximately 15 seconds when clip touches switch. Timer settings will vary depending upon chimney drafts. Normal timing cycle is about one minute on, 14 minutes off. (4 clips side by side) Four clips at 0 and 4 clips at 15. If timing cycle needs to be increased, add 1 or 2 clips to both groups of clips. Or if in case of chimney having poor draft, clips may be placed in 3 groups at numbers 0 - 10 - 20.

Coal Feed (Red Nut) To Increase Coal feed and fire size, turn red nut CW  
To Reduce Coal feed and fire size, turn red nut CCW

After a fire has been established and all fresh coal that was laying on grate has burned, its time to set coal feed. When stoker unit is running steady (approximately ½ hour) fire bed should extend downward to lower portion of the grate with approximately 2” of ash on bottom of grate. When thermostat is satisfied, stoker unit will shut off.

When stoker only runs during timing cycle, the fire bed will gradually shrink to approximately 3” to 4” or red coals. After proper length of fire bed is obtained, coal feed is set.

Cleaning and Servicing... It is most important to clean and lubricate furnace when shutting it down at the end of heating season. Corrosion of heating equipment is greatly reduced by not allowing soot to remain in furnace during summer months.

Remove and clean stack pipe, clean base of chimney. Examine chimney for blockage with a mirror. Brush off barometric damper. Clean tubes and area around tubes in heat exchanger, including entrance into chamber of furnace.

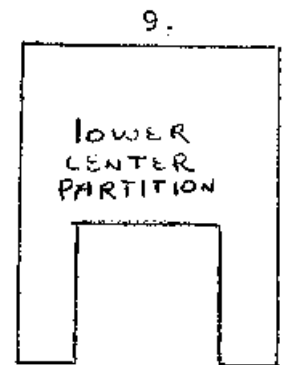
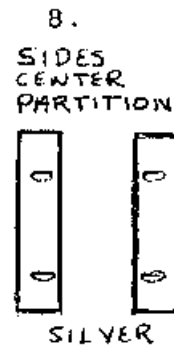
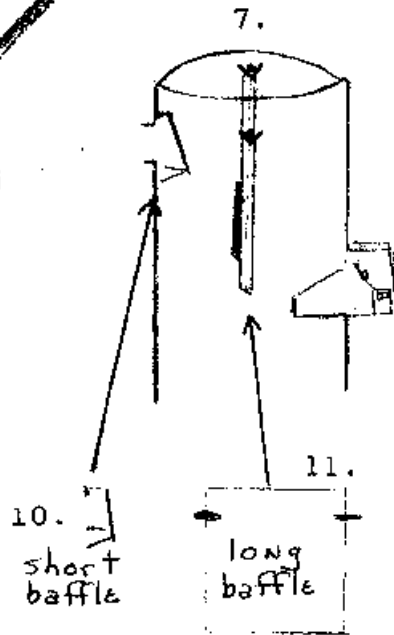
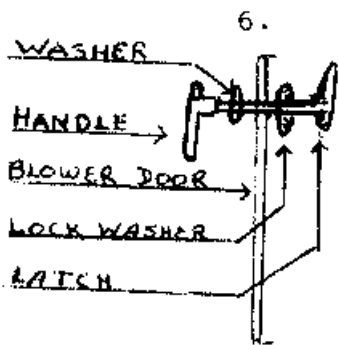
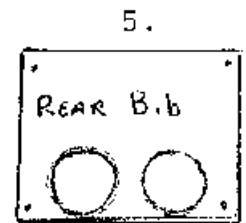
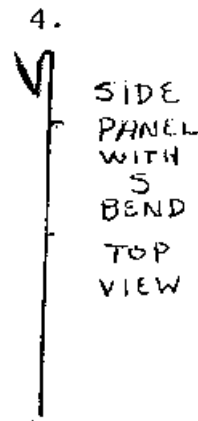
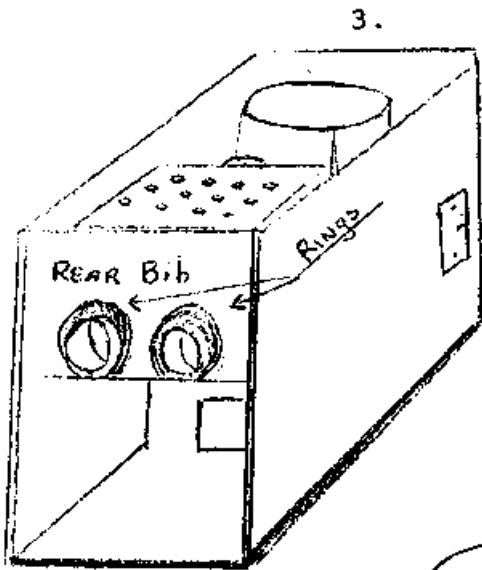
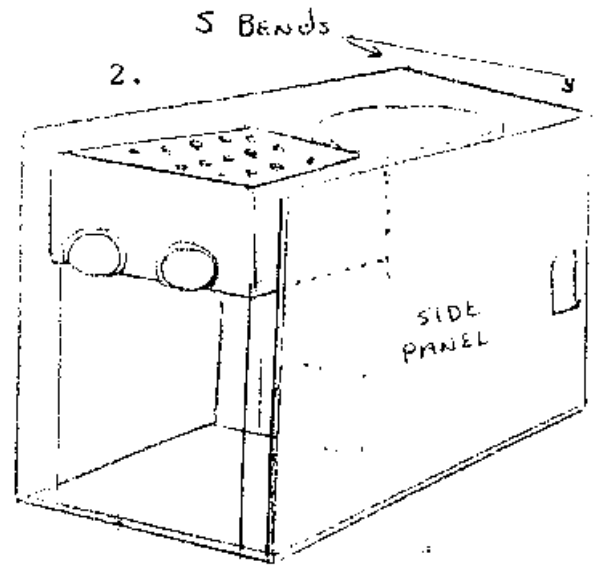
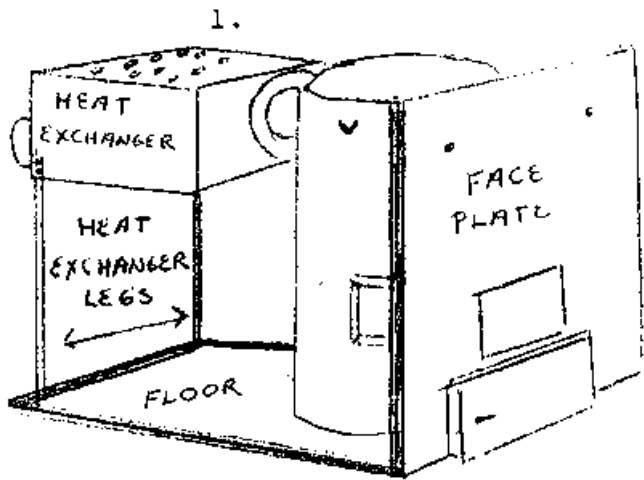
Remove clean out plate (see unit specifications) from stoker unit by removing 2 screws and vacuuming out fly ash from under grate annually.

Oil stoker motor and blower motors with SAE 20 non detergent motor oil. Oil gear box with #90 Gear Oil - Oil level should be not less than  $\frac{1}{2}$  full, and no more than  $\frac{3}{4}$  full.

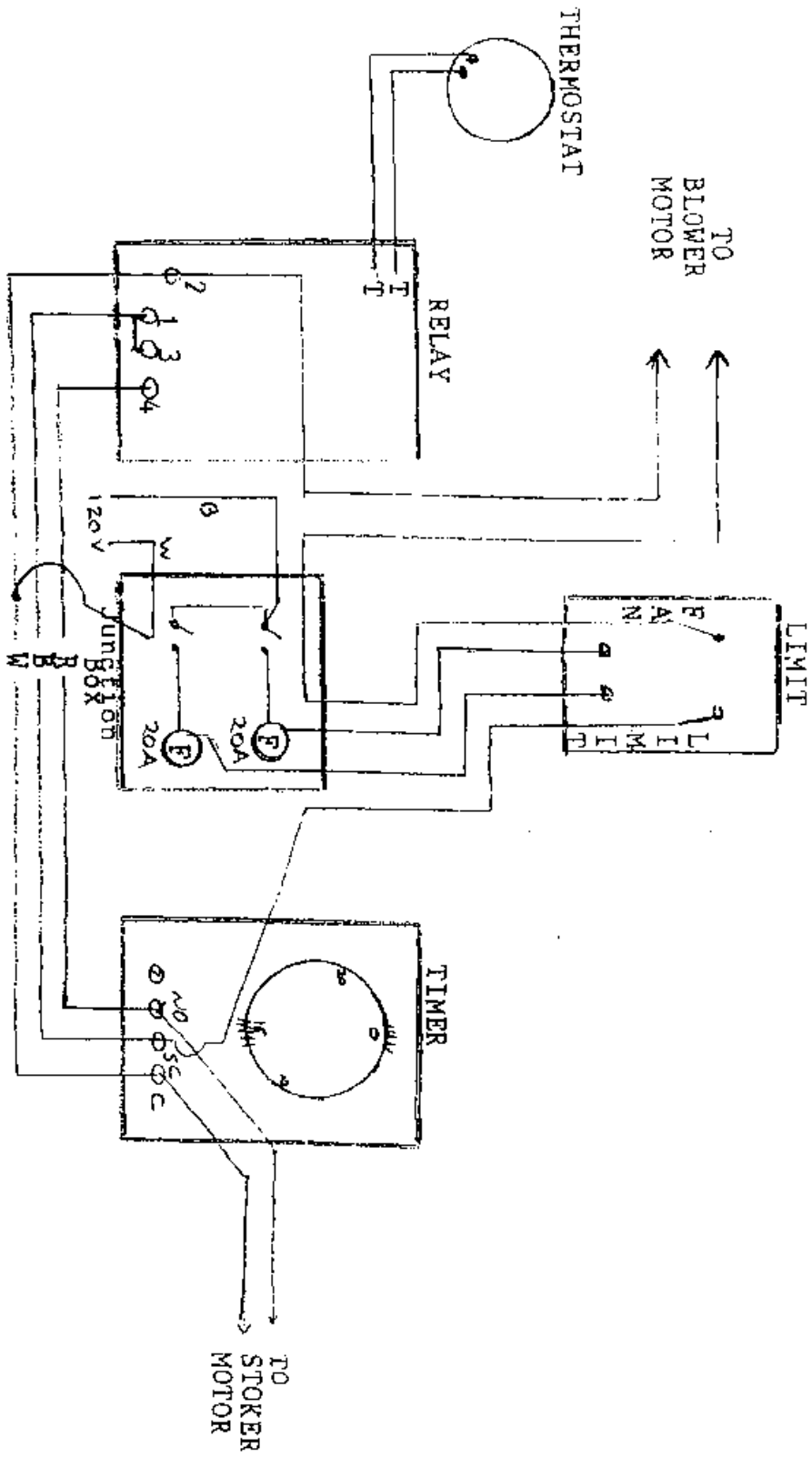
Remove all coal from hopper, - remove hopper – place a few drops of oil on all moving parts, joints, and bearings to prevent freeze up.

### Replace Air Filters

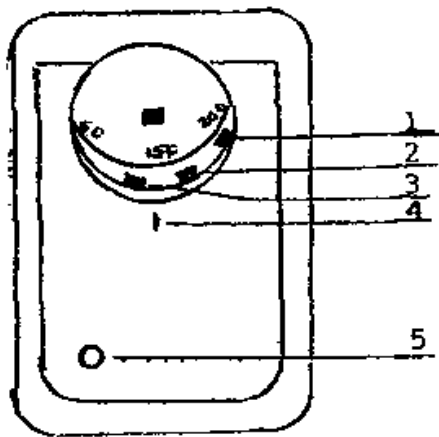
Using a chisel or brick – scrape grates smooth. Then rub grates and inside of side rails with sand paper to remove impurities that melted and fastened themselves to grate.



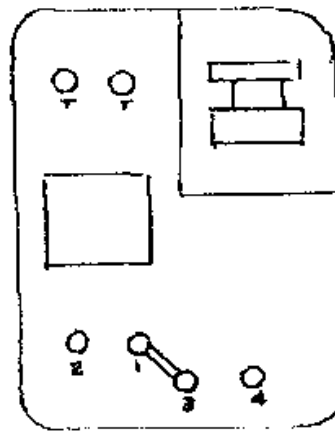
FURNACE FAN



Feed power to both switches



FAN LIMIT SWITCH



RA 89 RELAY

### FAN LIMIT SWITCH

1. High limit pointer – shuts stoker unit off if internal air temperature Reaches 200 degrees. (Should not be changed)
2. Center pointer – Turns convection blower on when internal air Temperature rises to this setting. ( Adjustable)
3. Low limit pointer – Turns convection blower off when internal air Temperature falls to this setting (Adjustable)
4. Records current internal temperature with corresponding number On silver dial directly above.
5. White button - pull out for automatic operation of convection blower. Push in for constant running of convection blower.

### HONEYWELL RA89 RELAY

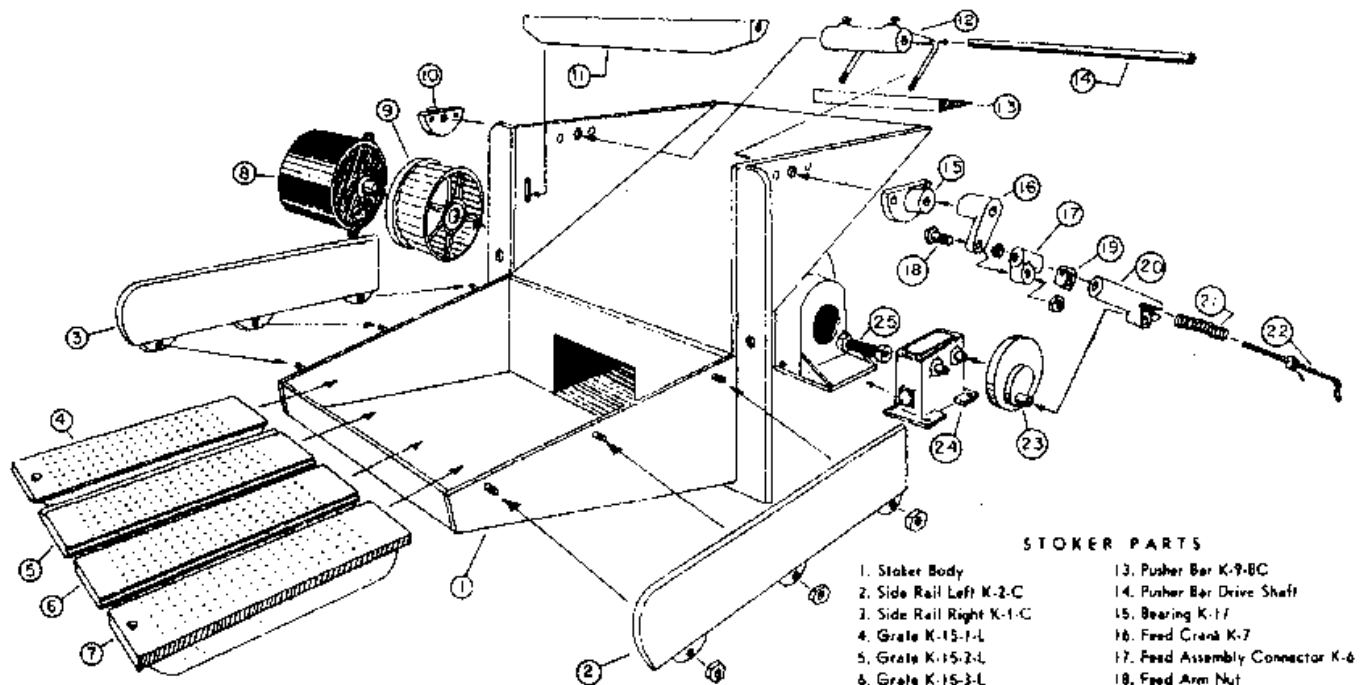
Terminals marked 1 & 2 are power supplied to relay. Terminal #4 is Power from relay to stoker unit.



# KEYSTOKER UNIT

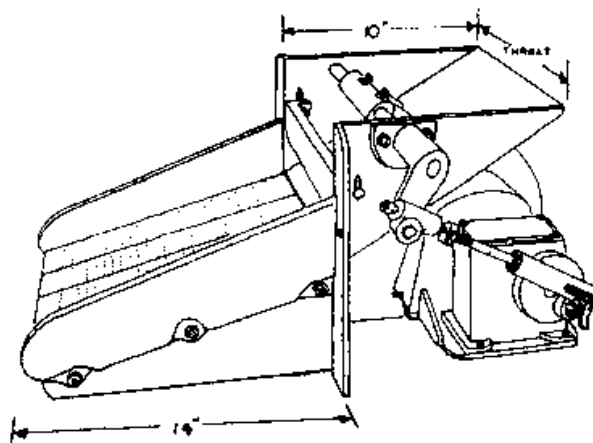
## Ratings and Specifications

Stoker Size	No. of Grates	Couplings	14" Grate Width	Flange Width	Overall Width	Throat	Motor H. P.	Gross B. T. U. Thousand	Coal Lb./Hr.	Unit Wt. Lbs.
A	3	5"	9"	13"	20½"	9"	1/6	169	20	110
B	4	6"	12"	16"	21½"	12"	1/6	270	30	126
C	5	6"	15"	19"	21½"	15"	1/6	338	40	132
D	6	8"	18"	22"	26"	18"	1/6	405	48	148
E	7	7½"	21"	25"	27"	20¼"	1/4	500	60	164
F	8	7½"	24"	28"	29"	23¼"	1/4	585	70	180
G	9	7½"	27"	30⅞"	30⅞"	26⅞"	1/4	NT	85	196

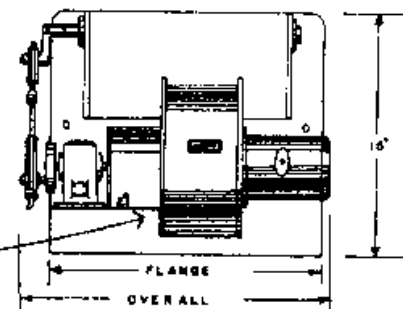


### STOKER PARTS

1. Stoker Body
2. Side Rail Left K-2-C
3. Side Rail Right K-1-C
4. Grate K-15-1-L
5. Grate K-15-2-L
6. Grate K-15-3-L
7. Grate K-15-4-L
8. Motor
9. Blower Rotor
10. Bearing X-19
11. Throat Strap K-18
12. Pusher Bar Drive Yoke K-8-BC
13. Pusher Bar K-9-BC
14. Pusher Bar Drive Shaft
15. Bearing K-17
16. Feed Crank K-7
17. Feed Assembly Connector K-6
18. Feed Arm Nut
19. Feed Arm Adjusting Nut K-3
20. Feed Latch K-12
21. Feed Spring
22. Feed Bolt
23. Drive Wheel K-5
24. Gear Box K-14
25. Coupling



clean  
out plate



## SAFETY

THE BURNING OF ALL FOSSIL FUELS GENERATES CARBON MONOXIDE GASES. CARBON MONOXIDE GASES ARE TOXIC, CAN CAUSE SICKNESS, CAN BE FATAL.

To prevent toxic carbon monoxide gases from entering the home, certain precautions must be taken.

Ash tub must be emptied on a regular basis to prevent ashes from overflowing into ash pit area. Excessive ash accumulation may impede air flow to chimney, preventing gases to be drawn up chimney.

Fire door and ash door must be closed at all times during normal operation.

It is necessary to keep some coal in hopper while stove is in operation.

In most applications it is sufficient to clean stove and stove pipe twice during the heating season. However, under extreme weather conditions, or high demand on stove running periods, the stove and stove pipe may need more frequent cleaning. Clean as often as necessary.

CAUTION ASH PAN IS HOT - ALWAYS USE GLOVES TO REMOVE ASH PAN

Before removing ash pan, turn switch off, or pull power cord plug from 110V outlet. Open ash door. Use a good pair of gloves, to remove ash pan. Place ash pan on non-combustible surface. Slide an empty ash pan into stove. Close ash door. Turn switch on or plug power cord back into 110V outlet.

### ON DIRECT VENT MODELS

After removing ash pan, using long brush supplied with stove. Reach brush straight back into 6" exhaust pipe and with a circular motion, sweep brush around inside of pipe. Sweep excess toward bottom of stove and remove or vacuum dust out of stove. This procedure may only be required once or twice a month during heating season. Place empty ash pan into stove and turn switch on or plug power cord into 110V outlet.

Fan blade and fan blade chamber may have to be cleaned several times during the heating season. ( See cleaning instructions)

The 4" exhaust pipe going through outside wall of home should also be cleaned when fan chamber is being cleaned.

If 4" exhaust pipe is not going straight out through outside wall and 4" pipe is in a vertical position to access an area above outside grade, the 4" elbow is a likely location for dust to accumulate and restrict exhaust air flow to outside of home. A 4" tee may also be used in place of a 4" elbow. This will allow the bottom of tee to be used as a collection point (out of the flow of exhaust gases) providing an easier access for cleaning and less chance for restriction or blockage.

IT IS ESSENTIAL that every 4" pipe joint or connection be sealed with a high temperature silicone or equivalent. All adjustable joints on elbows must also be sealed with silicone. FAILURE TO SEAL ALL JOINTS could allow carbon monoxide to leak in to home.