



DH DOOR HEATERS

INSTALLATION, OPERATION AND MAINTENANCE MANUAL

ATTENTION: READ THIS MANUAL AND ALL LABELS ATTACHED TO THE UNIT CAREFULLY BEFORE ATTEMPTING TO INSTALL, OPERATE OR SERVICE THIS UNIT! CHECK UNIT DATA PLATE FOR STEAM OR HOT WATER REQUIREMENTS AND ELECTRICAL SPECIFICATIONS AND MAKE CERTAIN THAT THESE AGREE WITH JOB SPECIFICATIONS. RECORD THE UNIT MODEL AND SERIAL NO. IN THE SPACE PROVIDED. RETAIN FOR FUTURE REFERENCE.

WING Model No. _____

Serial No. _____

SAVE THIS MANUAL

WARNING: Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment.

INSTALLER'S RESPONSIBILITY

Installer Please Note: This equipment has been tested and inspected. It has been shipped free of defects from our factory. However, during shipment and installation, problems such as loose wires, leaks or loose fasteners may occur. **It is the installer's responsibility to inspect and correct any problems that may be found.**

ATTENTION: READ CAREFULLY BEFORE ATTEMPTING TO INSTALL, OPERATE OR SERVICE THIS EQUIPMENT. RETAIN THIS MANUAL FOR FUTURE REFERENCE.

POST AND MAINTAIN THESE INSTRUCTIONS IN LEGIBLE CONDITION

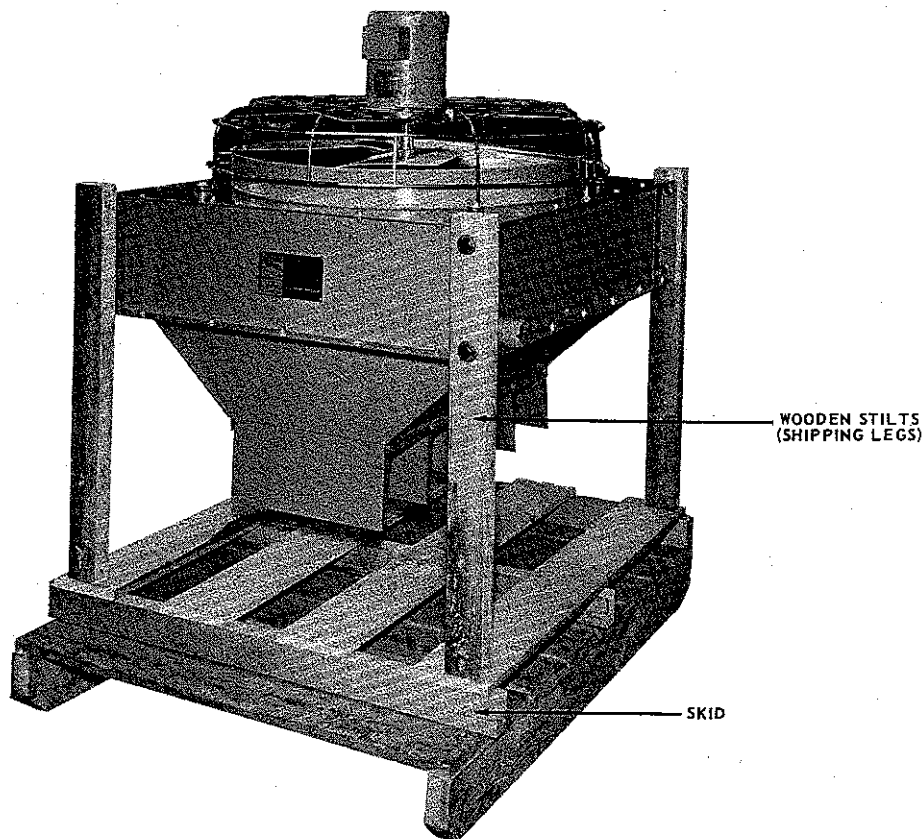
4830 TRANSPORT DRIVE, DALLAS, TEXAS 75247
TEL.: (214) 638-6010 FAX: (214) 905-0806
<http://www.ljwing.com>

I. RECEIVING YOUR WING DOOR HEATER

- A. Units have been factory crated for safe shipment. However, damage to the unit may occur in transit. Check unit carefully and if damage is obvious, report it at once to the transportation company.
- B. Accessories (thermostats, starters, door switches, etc.) may be contained separately.
- C. All claims for shortages or errors must be made within five (5) days of receipt of shipment.

II. UNCRATING YOUR WING DOOR HEATER

- A. Wing heaters are shipped on "stilts".
- B. Do not remove wooden stilts (shipping legs) or skid when uncrating.



III. INSPECTING YOUR WING DOOR HEATER

- A. Check unit nameplate to be sure that the capacity is correct, and that it is designed for use with available steam pressure or hot water temperature.
- B. Check motor nameplate for voltage, cycles and phase.

NOTE: If discrepancies exist, contact your local Wing representative.

IV. LIFTING DOOR HEATER INTO MOUNTING POSITION

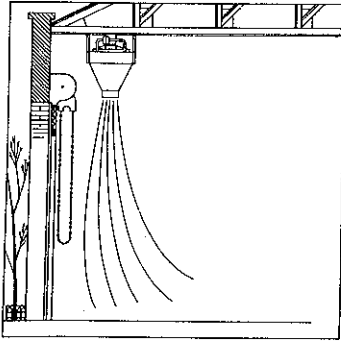


For low mounting heights, heater may be raised into position by use of a fork lift truck.

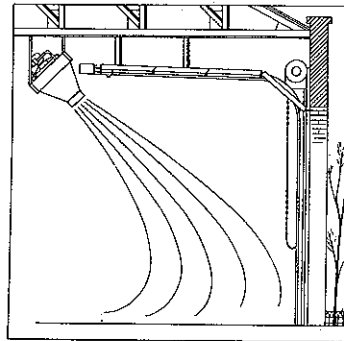
For high mounting heights, a double sling, block and tackle or crane should be used. To lift unit, cradle in slings beneath heater casing. **CAUTION: DO NOT LIFT HEATER BY MOTOR SUPPORT.**

V. INSTALLATION ARRANGEMENTS

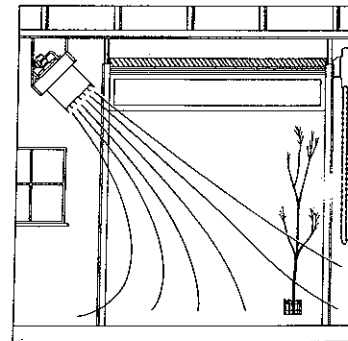
WING HIGH VELOCITY DOOR HEATERS



Vertical installation for use with rolling or sliding doors

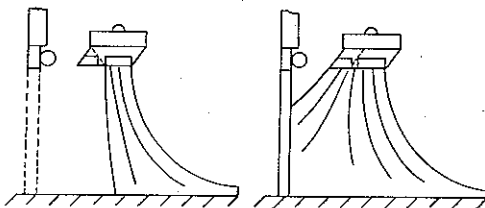


Angular installation for canopy or overhead doors



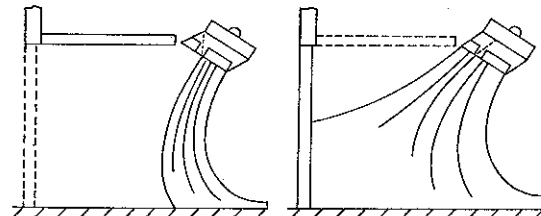
Angular installation for low ceilings or folding doors.

WING COMBINATION DOOR HEATERS WITH VARI-JET DISCHARGE



Door Open Door Closed

- Vertical



Door Open Door Closed

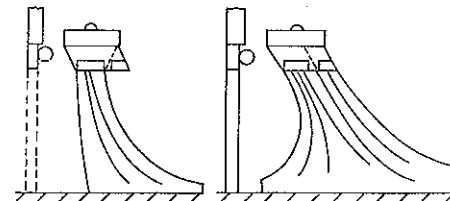
- Angular

MOUNTING ARRANGEMENT A Door and Perimeter Heating

The heater can be mounted vertically for rolling or sliding doors or in angular position for overhead doors. With the door closed, a perimeter heat flow pattern spreads for a long distance along the wall, preventing cold air from cascading down the wall and causing drafts across the floor area.

MOUNTING ARRANGEMENT B Door and Room Heating. VERTICAL MOUNTING ONLY.

The unit is mounted in a vertical position with the room discharge section away from the door. With the door closed, the heated air is discharged outward into the room to heat or supplement the heating of nearby areas.



Door Open Door Closed

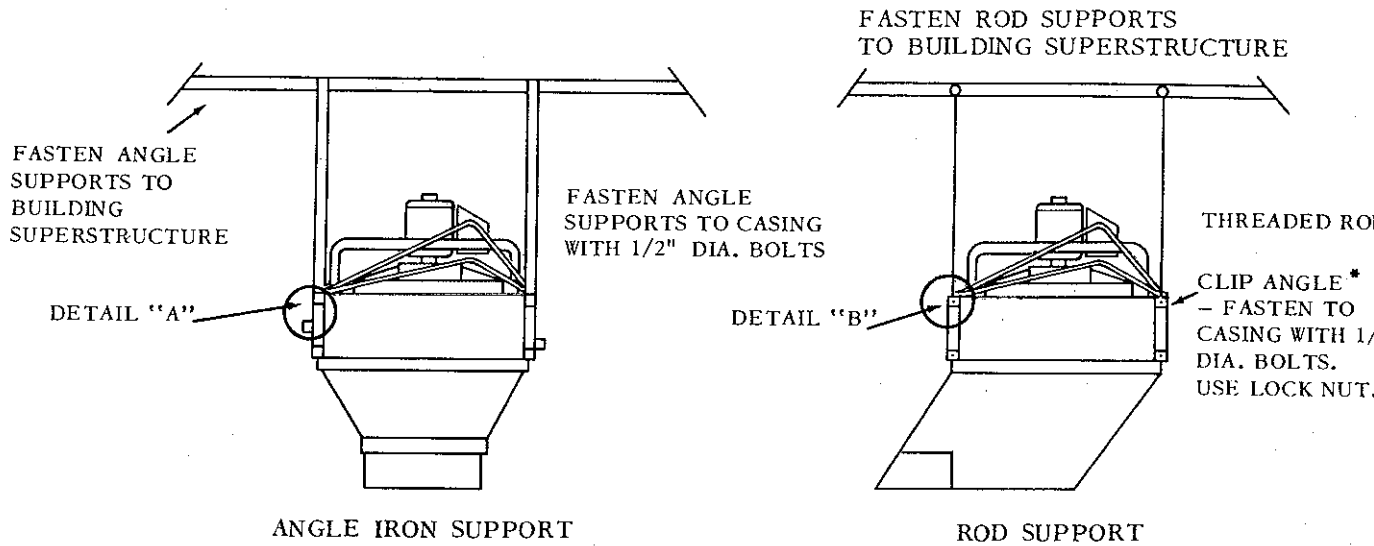
NOTES: APPLIES TO HIGH VELOCITY and VARI-JET

1. Units should be installed so that the plane of the discharge vanes are perpendicular to the plane of the door. If necessary, the entire discharge may be rotated 90°. (Sizes 40, 43 & 44 rotate only that portion below transition.)
2. For Angular Mounting: If steam unit, the inlet header connection must be above the outlet. If hot water unit, the inlet header connection must be below the outlet.

VI. SUGGESTED METHODS OF SUPPORTING HEATER

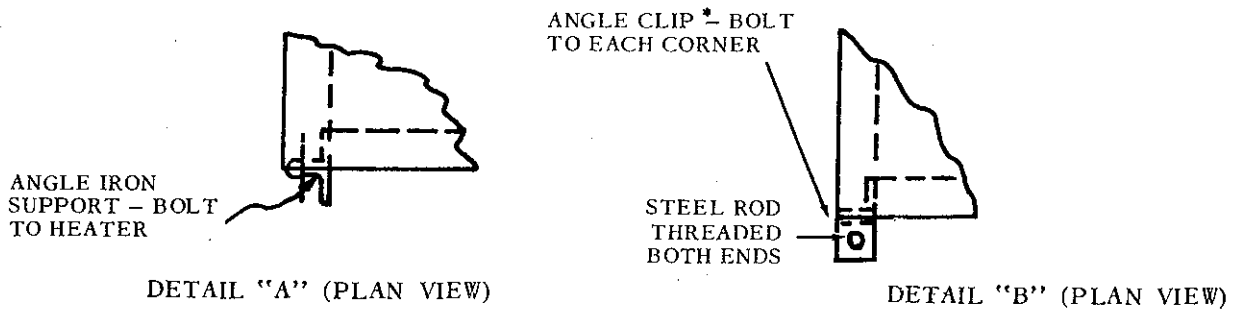
(VERTICAL MOUNTING)

APPLIES TO BOTH HIGH VELOCITY & VARI-JET DISCHARGES



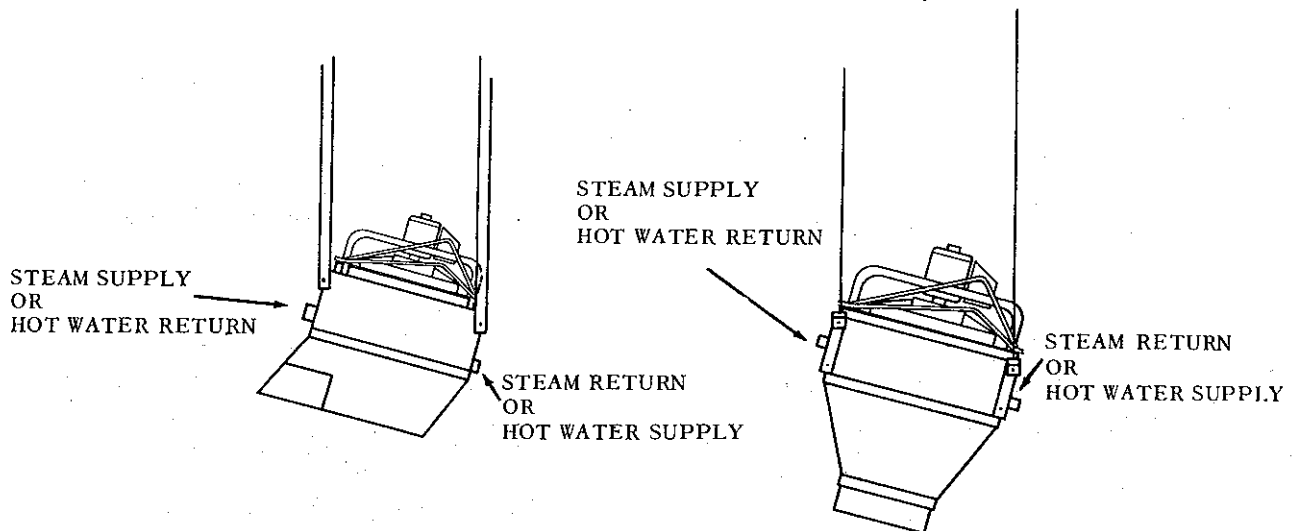
1-1/2" x 1-1/2" x 1/8" ANGLES - UP TO SIZE 26
2" x 2" x 3/16" ANGLES - SIZE 28 THRU 44

1/2" DIA. RODS - UP TO SIZE 26
5/8" DIA. RODS - SIZE 28 THRU 44



(ANGULAR MOUNTING)

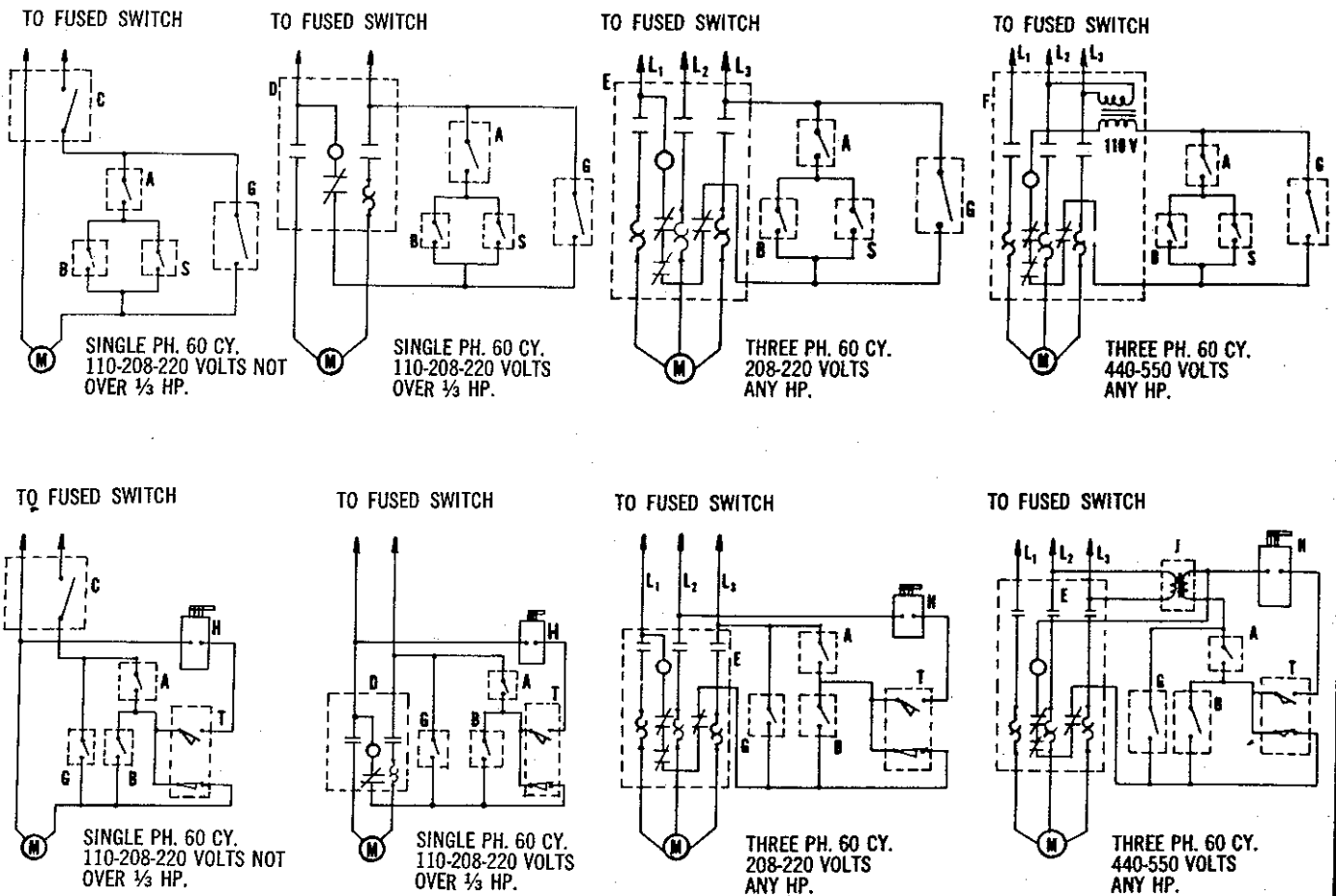
APPLIES TO BOTH HIGH-VELOCITY AND VARI-JET DISCHARGES



NOTE: SEE DETAILS ABOVE (VERTICAL MOUNTING)

*MOUNTING HARDWARE NOT SUPPLIED BY WING

VII. WIRING DETAILS STANDARD HIGH VELOCITY DISCHARGE



VARI-JET OPERATION

When the door opens the vari-jet damper spring returns into position causing hi-velocity air to be directed over the open door. When door is closed, vari-jet damper is positioned to allow normal space heating.

LEGEND: HIGH VELOCITY & VARI-JET

- | | | |
|---|---|---|
| A. Pressuretrol-Use with low pressure steam. AQUASTAT-Use with hot water. | E. Magnetic Starter, 3 Phase. | J. Transformer |
| B. Thermostat. | F. Magnetic Starter with control transformer. | M. Fan Motor |
| C. Manual Switch with thermal overload. | G. Winter-Summer Switch | S. Door Switch |
| D. Magnetic Starter, 1 Phase. | H. Damper Motor on discharge | T. Door Switch S.P.D.T. shown in door open position |

NOTE 1

If the thermostats employed have sufficient current-carrying capacity, the starter shown here for single phase may be omitted and the diagram at the left (for heater not over 1/2 hp.) may be followed.

NOTE 2

PRESSURETROL - In many cases additional automatic control is provided to stop operation of the fan motor when steam supply fails. A pressuretrol placed in the return line and wired in series with the thermostat, serves this purpose.

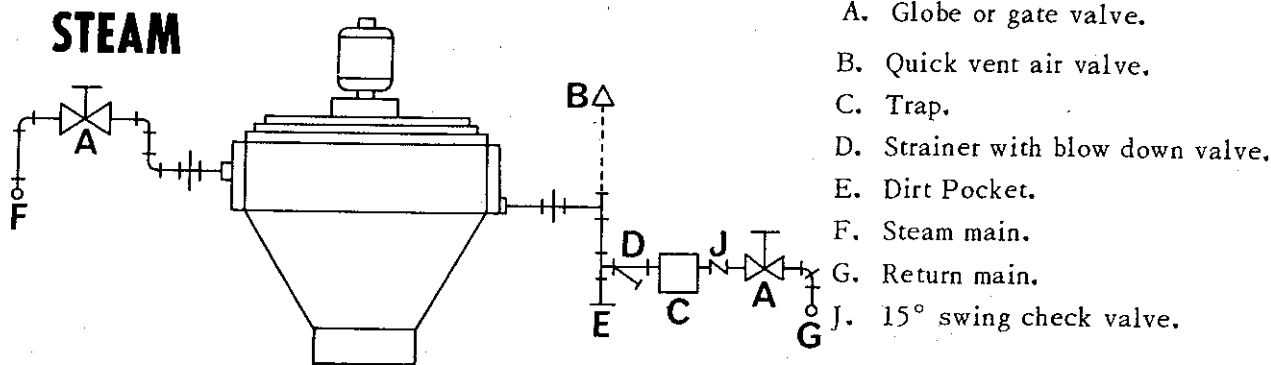
NOTE 3

Pressuretrol, Aquastat, Thermostat, Manual Switch, Starter, Summer-Winter Switch and Door Switch Furnished only if ordered.

NOTE 4

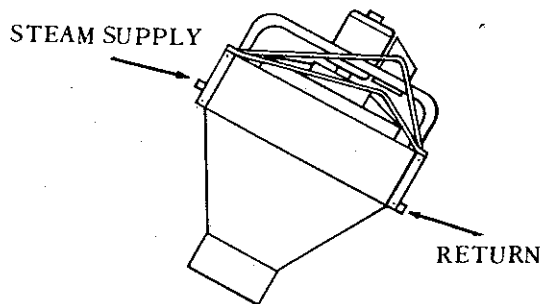
MANUAL CONTROL - When thermostat control is not wanted, the wiring for manual control is the same as shown, but the thermostats and automatic starters are omitted. Manual thermal overload switches are used instead of the automatic starters.

VIII. PIPING DETAILS

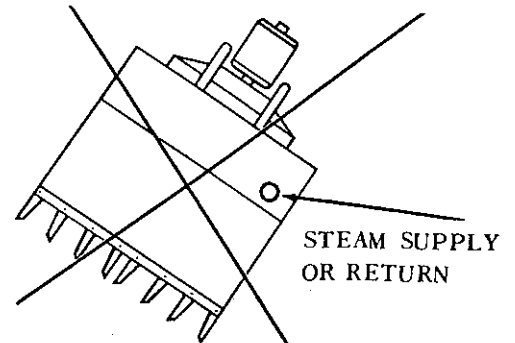


INSTRUCTIONS

1. Do not pitch casing away from headers in installation. Tubes have been pitched during factory assembly to allow for drainage. For vertical mounting arrangements set casing with a spirit level. For angular mounting arrangements, mount unit so that only the plane of the headers is angled with the steam inlet on the high side and the return on the low side.

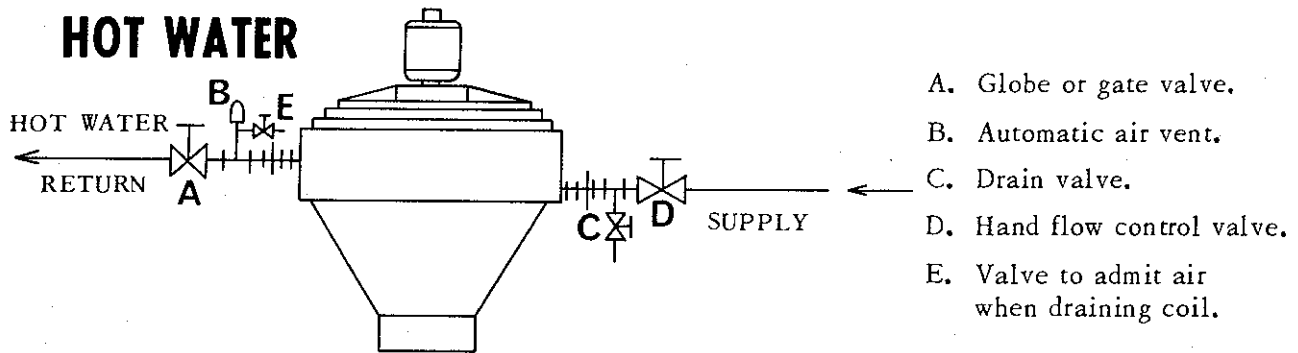


CORRECT



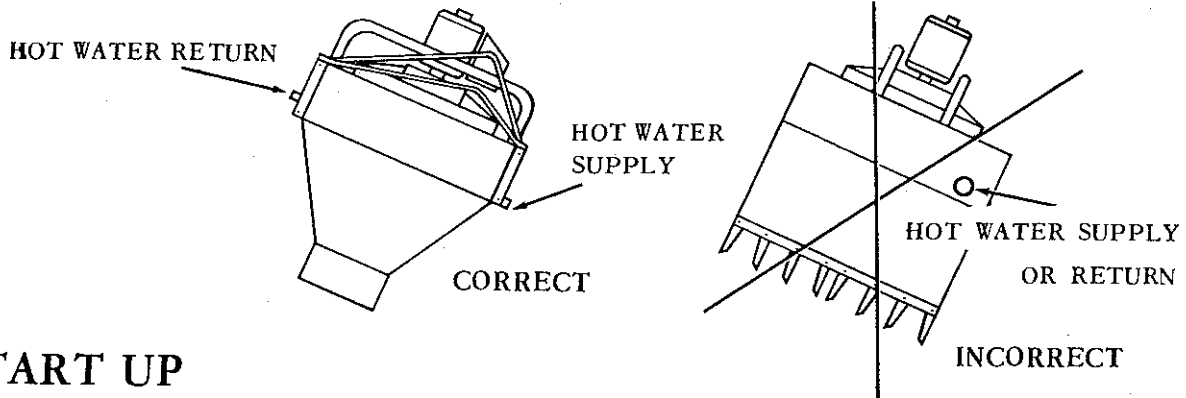
INCORRECT

2. Quick vent air valve (B) must be used with all low pressure closed return systems unless an air eliminator in the boiler room is employed. Should be omitted with open return or vacuum return systems.
3. Trap - (C) - must be used with all dry return systems. (Omitted with individual wet returns.) The trap must be one that will pass both condensate and air at steam temperature. When selecting trap, specify "for unit heater use" and state condensate in pounds per hour and operating steam pressure.
4. Dirt pocket (E) must be same pipe size as header.
5. When high pressure is available, the return main (G) may be located at a higher level than the return outlet of the heater. A check valve between trap and return main, just before riser, must be installed to prevent back flow of condensate.
6. Use long branches of double elbows as shown, between mains and heaters, to absorb expansion of mains.



INSTRUCTIONS

- Do not pitch casing away from headers in installation. Tubes have been pitched during factory assembly to allow for drainage during shut-down. For vertical mounting arrangements set casing with a spirit level. For angular mounting arrangements, mount unit so that only the plane of the headers is angled with the hot water inlet on the low side and the return on the high side.



IX. START UP

INSTRUCTIONS

Initial start up of your Wing Door Heater is an important part of the installation. Observe the following carefully:

- Purge all steam and/or hot water lines of foreign matter. Dirt lodged in the heating element or trap can greatly affect the heater's performance.
- Preheat heating element prior to turning on the fan. Open the blow down valve to allow free flow of steam and condensate until the entire heating element is hot. **DO NOT ENERGIZE THE FAN UNTIL THE ENTIRE COIL IS HOT.**
- Steam or hot water should be in the heating coil at least 10 minutes before the fan unit is energized.
- Door heaters are equipped with discharge vanes fastened by bolts with shake-proof lock nuts and washers. Adjust vanes as follows:
 - Standard High Velocity Discharge — set vanes to give full door width coverage under operating conditions. Secure all vanes firmly when finally positioned.
 - Vari-Jet Discharge — with door open and damper in the door heating position, set vanes exposed to the heater air stream to give full door width coverage under operating conditions. With door closed and damper in the space or perimeter heating position, set remaining vanes to give desired coverage. Secure all vanes firmly when finally positioned.
- Check Fan Rotation. Proper fan rotation will drive air from ceiling towards the floor.

X. MAINTENANCE

1. GENERAL – ANNUALLY

- a. The finned tube heater section should be cleaned as required. This is done by blowing compressed air through the section.
- b. The fan should be cleaned to avoid unbalance which would damage the motor bearings.
- c. All nuts and bolts should be checked and tightened if needed.

2. FAN MOTORS

- a. Motors should be thoroughly cleaned and maintained in accord with specific motor manufacturer's recommendations. Motor maintenance instructions are included with all shipments.

XI. EMERGENCY REPAIRS

Wing Door Heaters are equipped with return bend type finned tubes. Optional construction allows these finned tubes to be secured to the inlet and return distributing headers by means of a mechanical joint consisting of a nut and flare. This construction permits placement of individual tubes in the event they are damaged due to freezing, corrosive condensate, mechanical mishap, etc.

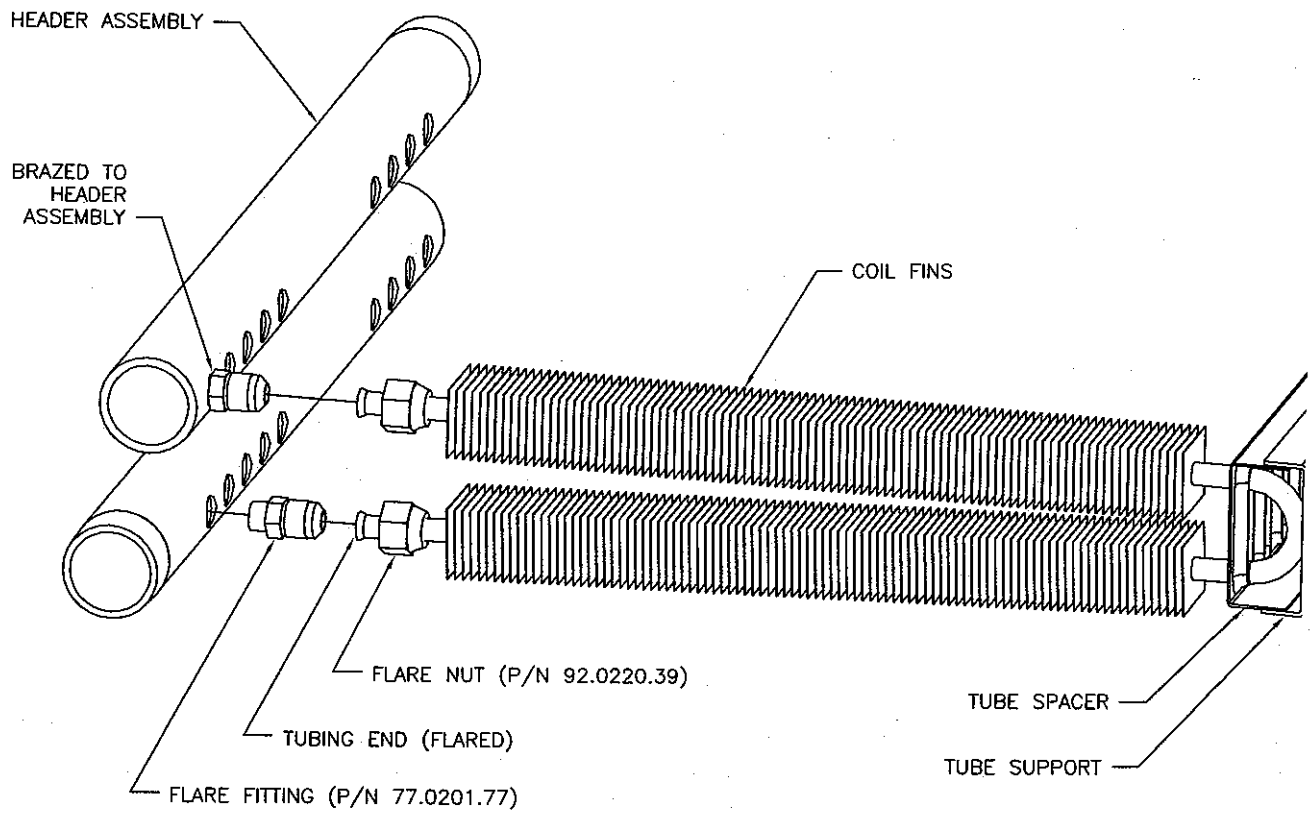
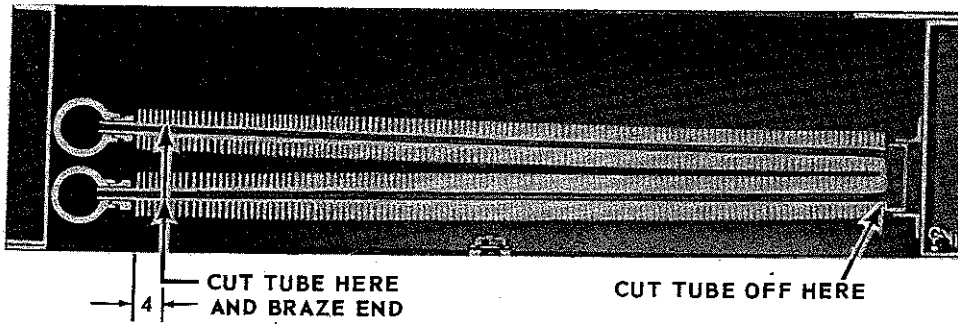
The following procedure should be followed when repairing a Wing heating element:

1. Shut off electric power supply to heater at disconnect switch. Remove fuse to avoid the possibility of anyone energizing the fan unit.
2. Shut off steam or hot water supply and return valves.
3. Open valves C and E, to drain heating element, on hot water applications only.
4. In most cases, emergency repairs can be made with the unit installed, by reaching through the fan unit or discharge. If this is not possible, the heaters must be lowered to the floor and disassembled.

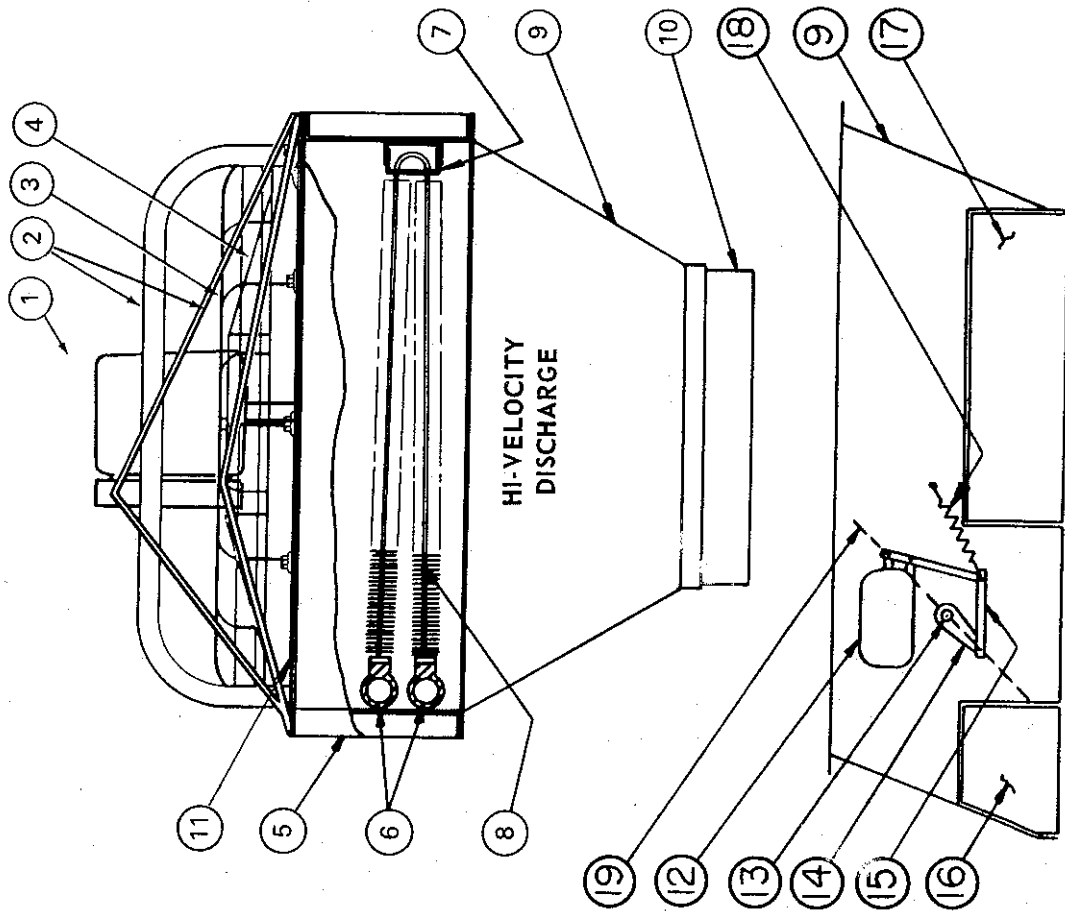
In the event that you do not have spare tubes, nuts and flares in stock, an emergency procedure can be followed which will allow putting the unit into operation until replacement tubes can be obtained.

Brazing procedure

If the damaged portion of the tube is 4" or more away from the mechanical joint, cut the tube off 4" from the mechanical joint at both headers. Remove the fins, crimp the end and braze end to form leak-proof temporary repair. To remove the remaining portion of damaged tube, cut it off at the return bend and gently lift out from between the other tubes. Avoid damaging fins on adjacent tubes.



**WING DOOR HEATER
WITH HI-VELOCITY DISCHARGE
(VARI-JET DISCHARGE OPTIONAL)**



NOTES:

1. SOME MODELS ARE FURNISHED WITH THE MOTOR MOUNTED DIRECTLY ON FAN GUARD IN WHICH CASE PIPE ARM SUPPORTS ARE NOT FURNISHED.
- *2. PARTS MARKED WITH ASTERISK APPLY TO HEATERS WITH VARI-JET DISCHARGE ONLY.
3. SOME UNITS ARE EQUIPPED WITH CENTER HEADERS IN WHICH CASE THERE IS AN EQUAL NUMBER OF TUBES.
4. ALWAYS SPECIFY SIZE AND SERIAL NUMBER OF HEATER WHICH IS FOUND ON WING NAMEPLATE LOCATED ON HEATER CASING. SERIAL NUMBER APPEARING ON MOTOR NAMEPLATE IS OF NO ASSISTANCE.
5. SPRING FURNISHED ON SIZES 40, 43 AND 44 ONLY.
6. THE FOLLOWING COMPLETE SUB-ASSEMBLIES ARE AVAILABLE:
 - A. FAN UNIT ASSEMBLY - MOTOR, FAN WHEEL AND MOTOR SUPPORT.
 - B. ELEMENT - CASING ASSEMBLY.
 - C. COMPLETE HEATER SECTION - ELEMENT AND CASING.
 - D. DISCHARGE ASSEMBLY.

PART NO.	DESCRIPTION
1	FAN MOTOR
2	PIPE ARM SUPPORT (See Note 1)
3	FAN GUARD (Optional)
4	FAN WHEEL
5	HEATER CASING
6	STEAM & RETURN HEADER
7	TUBE SPACER (See Note 3)
8	FINNED TUBE WITH OPTIONAL NUT & FLARE (See Note 3)
9	DISCHARGE CASING
10	DIFFUSER VANE
11	FAN PLATE
12*	DAMPER MOTOR
13*	DAMPER ROD
14*	CRANK
15*	CONNECTING BAR
16*	SHORT DIFFUSER VANE
17*	LONG DIFFUSER VANE
18*	SPRING (See Note 5)
19*	DISCHARGE DAMPER

VARI-JET DISCHARGE

PLAN VIEW

(VIEWING FROM AIR INLET SIDE)



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