

BAHNSON CENTRIFUGAL HUMIDIFIERS



DnB Humidifier Mfg., Inc.
175 Dixie Club Road
Winston-Salem, NC 27107-9806
Phone 336-764-2076
Fax 336-764-4277

INSTRUCTIONS

The type H, HR, L, and LR humidifiers are furnished complete with a piping assembly for water connections when used as single units, or when installed as a system controlled by a master B control. The type HJ and LJ units are identical except they have a type J individual automatic humidity control, water connections are also supplied.

CONTENTS OF CRATE

Each Bahnson humidifier is shipped complete with all parts secured in a single crate. These parts are as follows, type H, HJ, L and LJ.

- 1 — The assembled humidifier
- 2 — Drip pan assembly
- 3 — Fan
- 4 — Hanger
- 5 — Hardware box
- 6 — Starter
- 7 — Heater if required
- 8 — Extra orifice screws are attached to the piping assembly. If the unit has a J-control assembly the adjusting key is located in the bag with the orifice screws.

Type HR and LR

- 1 — The assembled humidifier
- 2 — Reservoir assembly with pump
- 3 — Fan
- 4 — Hanger
- 5 — Hardware Box
- 6 — Starter
- 7 — Heater if required

UNPACKING (All Units)

- 1 — Place the shipping crate so the wooden runners are on the bottom.
- 2 — Remove the steel strapping
- 3 — Remove all packing material and loose parts before removing humidifier.
- 4 — When removing the humidifier DO NOT lift the unit by the plastic spout on the case. Excessive pressure or twisting can break the spout off the case.

LOCATION OF HUMIDIFIERS

Wherever possible always locate the humidifier or group of humidifiers so as to establish a free and continuous circulation of air around the room. In a small room the best location for one humidifier is near a corner about 4 or 5 feet from each wall. If two humidifiers are required the other may be similarly located in the corner diagonally opposite the first humidifier and facing in the opposite direction.

In a large room requiring several humidifiers, locate them so they assist each other in establishing a horizontal circulation of air around the room. DO NOT locate the humidifiers so that the air set up by one machine blows towards that of another machine unless they are separated by a minimum of 50 feet.

The humidifiers may be mounted on columns or suspended from the ceiling. Selection of the proper type of mounting depends on conditions in the area to be humidified and ease of installation etc. Occasionally it may be necessary to mount the humidifiers on a wall. While this should not be done unless it is necessary the machines will operate very satisfactorily. Other types of mounting such as floor stands may be used in special applications.

CENTRIFUGAL HUMIDIFIERS

All Bahnson centrifugal humidifiers may be mounted a minimum of 12" from the ceiling. When suspended from the ceiling the motor shaft should be parallel with and at least 5' from the wall. When wall mounted the motor shaft should form a 45 degree angle to the wall. If a J control is used the control side should be away from the wall.

The drip pans or reservoir assembly should be a minimum of 3'6" for a type H and 4' for a type L below any overhead obstructions so as to minimize the deposit of spray on these obstructions.

SETTING UP THE HUMIDIFIERS

1 — When column or wall hangers are used, fasten the hanger to the support with 3/8" x 3" lag screws if the support is of wood, or with 3/8" x 3/4" machine screws if the support is of metal. In the case of concrete columns it is advisable to use expansion bolts of the same size as when mounting in wood. When ceiling hangers are used the flanges should be securely fastened to the ceiling or to a beam. The flanges should be spaced on 18 1/2" centers in order to correspond with the length of the ceiling hanger. Two pieces of 1" pipe of suitable length are then screwed into the flanges and the ceiling hanger clamped to the pipes at the proper height above the floor.

2 — Set the humidifier in place on the hanger by inserting the king pin through the hole in the hanger. Use the 3/4" flat washer and 3/4" hex nut supplied and tighten.

3 — Slip the stem of the drip cup into the socket in the humidifier stand. The brass cap screw and steel washer are used to secure the assembly to the stand. If the humidifier has the recycling unit remove the lid from the reservoir and remove the water pump. After making sure the pump filter screen is attached run the 3/8" plastic tubing that is attached to the pump and the pumps electrical cord out the rear hole in the reservoir lid. Attach 3/8" plastic tubing to the hose barb on the piping assembly. Place lid



Type H Humidifier With Ceiling Hanger Mounting

back on reservoir and slide unit on the two bars on the hanging bracket. Slide 3/4" plastic drain tube through front hole in lid.

4 — Remove the cap screw from the end of the motor and place fan on shaft. Extreme care should be used to make sure that the set screw aligns with the hole drilled in the motor shaft. After tightening the set screw replace the cap screw on end of motor shaft. (NOTE: Fan cap screw has left hand threads.)

WATER CONNECTIONS

It is essential to have an ample supply of clean water. The water pressure may range from 10 to 35 pounds. If the pressure is over 35 pounds a pressure reducing valve must be used.

When a pressure reducing valve is used it is advisable to utilize a water strainer to protect the valve. A pressure gauge should also be used to monitor the pressure. The reducing valve, strainer and gauge may be ordered as an option as shown in Catalog 21.

For the main water feed use a minimum of 3/8" pipe in the case of one or two humidifiers. 1/2" pipe for three or four humidifiers. 3/4" pipe for five to eight humidifiers and 1" pipe for nine to twenty humidifiers. Each individual humidifier should be connected to the main feed line by 3/8" pipe. If a drain line is being used a fall of at least one inch for every ten feet is required. The main drain line should never be smaller than standard 1" pipe. When over ten humidifiers drain into one line it should be 1 1/4" pipe. Care should be taken to see that the drain line has a continuous fall from the humidifier to the outlet otherwise pockets may form which will accumulate dirt and gradually stop up the line.

ELECTRICAL CONNECTIONS

Each motor is furnished complete with a motor starter with overload protection. When ceiling hangers are used the starter may be mounted on one of the mounting pipes. When column or wall hangers are used the starter may be mounted on the wall near the humidifier.

The motor should run in a (clockwise) direction when viewed from the back or fan end of the humidifier. Use fuses for 3 times the amperage given on the motor nameplate to handle the starting current.

STARTING THE HUMIDIFIER

When all electrical connections have been made and water feed and drain lines installed turn on the main power switch. The humidifiers may be turned on at the individual starters. If three phase motors are being used check each humidifier to make sure that the fan is rotating in the proper direction.

If new water lines have been run they should be properly cleaned out to prevent accumulation of foreign matter that would clog the orifice. It is advisable to remove the strainer located on the

pipng assembly or J-control and run water through the pipe to clean it out before operating the humidifier.

REGULATING THE FEED

The maximum water feed to the humidifier is determined by the water pressure and size of the orifice located in the single union (37407) Type H, L, HR, and LR. If a J-control is used the orifice is located in the control body (J-0001). The orifice installed at time of shipment should be suitable for normal use. Small adjustments for regulations of the feed can be made by adjusting the gate valve.

To remove or replace the orifice on type H, HR, L, LR humidifiers remove the single union (37407) and remove the orifice screw which has standard right threads. If a J-control is used remove check valve plus (H0057) and gasket (H0008) and replace orifice.

If after a period of operation is determined that the humidifiers are not evaporating sufficient water the water pressure may be increased slightly. This increases the feed to the machines. When a large number of humidifiers are installed in one room there will occasionally be a few of them that cannot be allowed to evaporate as much water as the other. This may be due to obstructions in front of the machines or to other causes peculiar to the room. In a case of this kind the orifice screws in the machines should be removed and a smaller one substituted. One or more extra orifice screws will be found attached to the piping assembly when the humidifier is uncrated.

Each orifice is stamped with a number which indicates the drill size of the hole, therefore the higher number indicates a smaller orifice. If it is necessary to increase the feed of any one machine a larger size orifice should be installed.

Due to the fact that humidifiers can evaporate more water per hour at higher temperatures it may be desirable to make seasonal adjustments of the water pressure. It is possible to vary the maximum evaporation of the entire installation without changing the orifice size in each unit.

ADJUSTING THE RELATIVE HUMIDITY WITH A CONTROL

To adjust relative humidity with the J-control humidistat follow the instructions given later in this catalog. When a master B control is used follow the instruction given in catalog section 7A.

CLEANING

The humidifier should be cleaned periodically. The frequency of cleaning will depend upon the conditions of the room the humidifier is located.

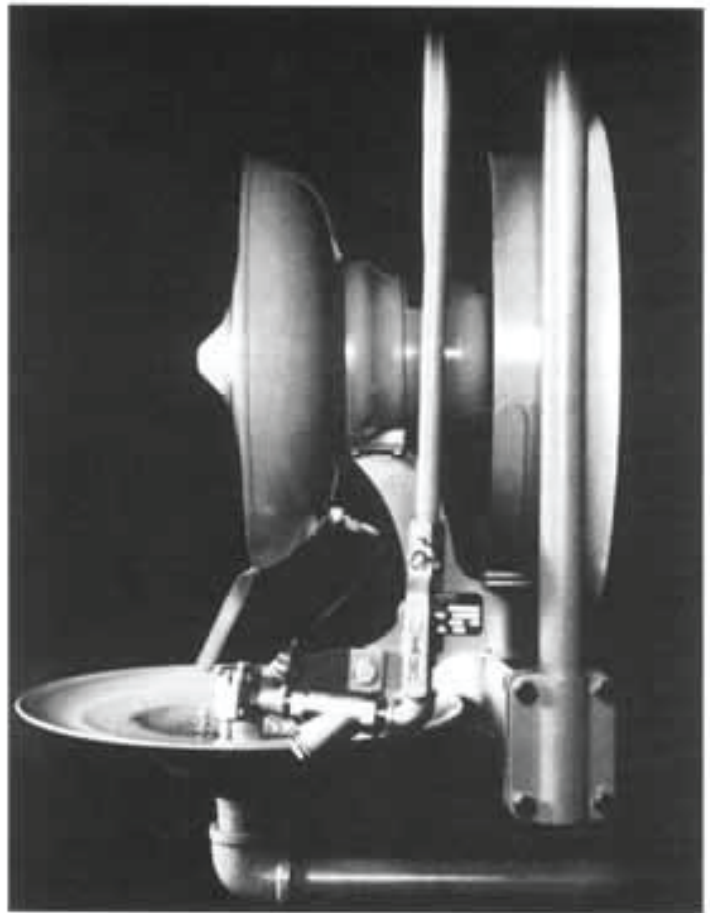
A certain amount of dirt from the air will deposit on the surfaces of the humidifier and the face of the disc. This dirt should be removed periodically especially from the disc where it may cause a balance problem. The grid teeth and all wet surfaces should be kept clean to insure proper atomization of the water. The perforated screen on the J-control should be kept free of lint and dirt so the circulation of air around the actuating element will not be impaired. If the holes in the screen become clogged the control will not function properly. Other maintenance instructions for the control are covered in the control literature. After an extended period of operation a deposit of dirt will accumulate on the back of the disc. This should be cleaned off at least once a year.

To remove the disc for cleaning turn off power to humidifier (make certain that no one can turn the power on while work is being performed) remove the brass front head part #37403. The front head has right hand threads. The fan may be held steady to aid in the removal. The disc will then slip off. A strainer is provided with both units. It should be cleaned periodically to insure a free flow of water to the unit.

Whenever the amount of spray produced by the unit decreases appreciably there is probably clogging somewhere in the water line. The strainers and orifice should be checked.

Whenever the spray becomes coarse it is logical to suspect that the wet surfaces are not clean enough to allow the water to break into a fine mist.

WARNING: Cleaning or touching disc while unit is in operation can cause unbalances of disc and failure resulting in serious injury.



Type L Humidifier With Ceiling Hanger Mounting

LUBRICATION: Bahnson Type H and L motors are equipped with sealed pre-lubricated ball bearings. No periodic lubrication of these bearings is required.

The Bahnson J-Control humidistat is an ultra-sensitive and extremely accurate humidity control. This self contained unit is mounted directly to the Bahnson Type H and L Humidifiers. Electrical or pneumatic connections are not required as the hygroscopic element directly operates a water control valve in the humidistat. When the relative humidity level exceeds the control setting, the water supply is turned on.

The Bahnson J-Control has been designed for use from the most adverse, to the mildness in conditions. Laboratory tests and the wide use in industrial conditions for over 60 years has

shown that its dependability equals no others. The actuating element is a thin continuous strip of hygroscopic material designed so its whole surface is freely exposed to the airflow in the controlled area. Its operating differential is plus or minus 1° and replacement of the actuating element assembly is seldom required unless damaged.

Regulation of the water supply

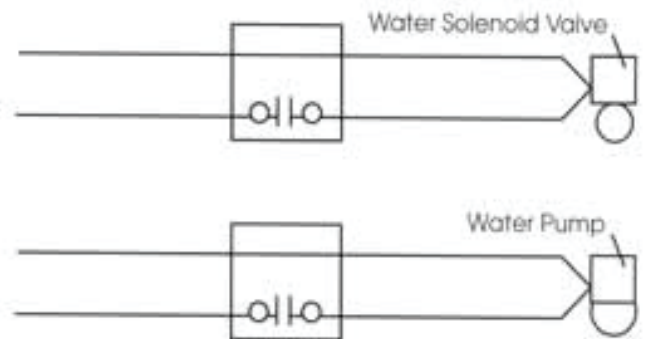
The maximum water flow is determined by orifice size, and water pressure. An orifice is installed at the factory that is suitable for the majority of installation applications. To increase or decrease the water flow the pressure reducing valve should be adjusted first. If this does not produce the desired results you may need to install a larger or smaller water orifice. Note that the water pressure should never exceed 35 PSI.

Adjustment of the J-Control Humidistat

An adjusting key is supplied from the factory to prevent changes in the control settings by unauthorized personnel. Each click of the adjusting nut assembly represents a change of 1° in relative humidity.

(1) Open valve No. 27139. Insert adjusting key No. H0030 in hole at top of cap No. J0020. Turning in a clockwise direction will allow water to flow to the humidifier. When a mist is produced your initial setting for the current room conditions are set. All humidifiers in the area should be adjusted as they are operating.

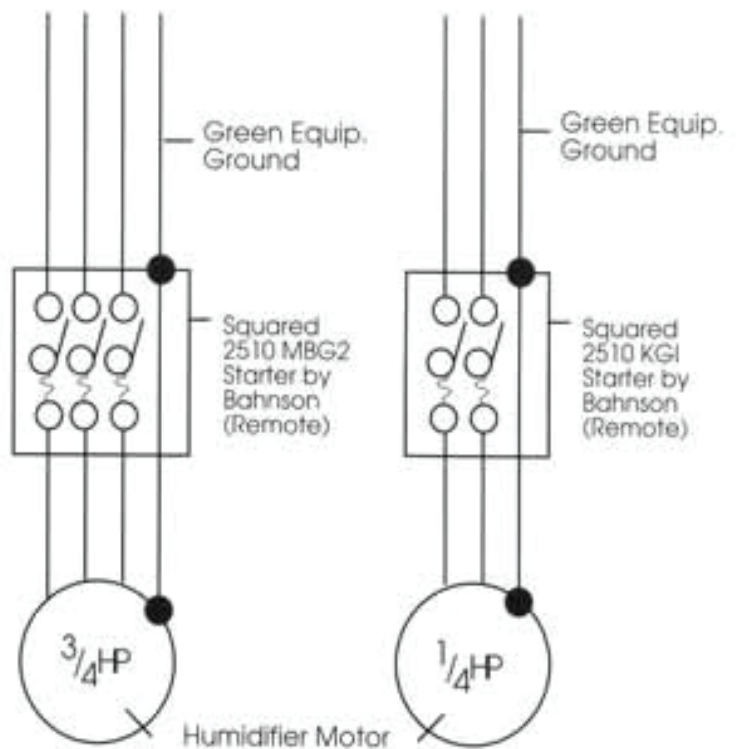
(2) Allow the humidifiers to cycle off and check your relative humidity with a sling psychrometer. If the desired humidity level has not been reached, turn the adjusting key clockwise to restart the mist. Continue to allow the humidifiers to cycle off and take humidity readings. Several cycles of the unit may be required before your control is adjusted to your required level.



WIRING DIAGRAM FOR HUMIDITY CONTROL

3 Phase Power Supply

Single Phase Power Supply

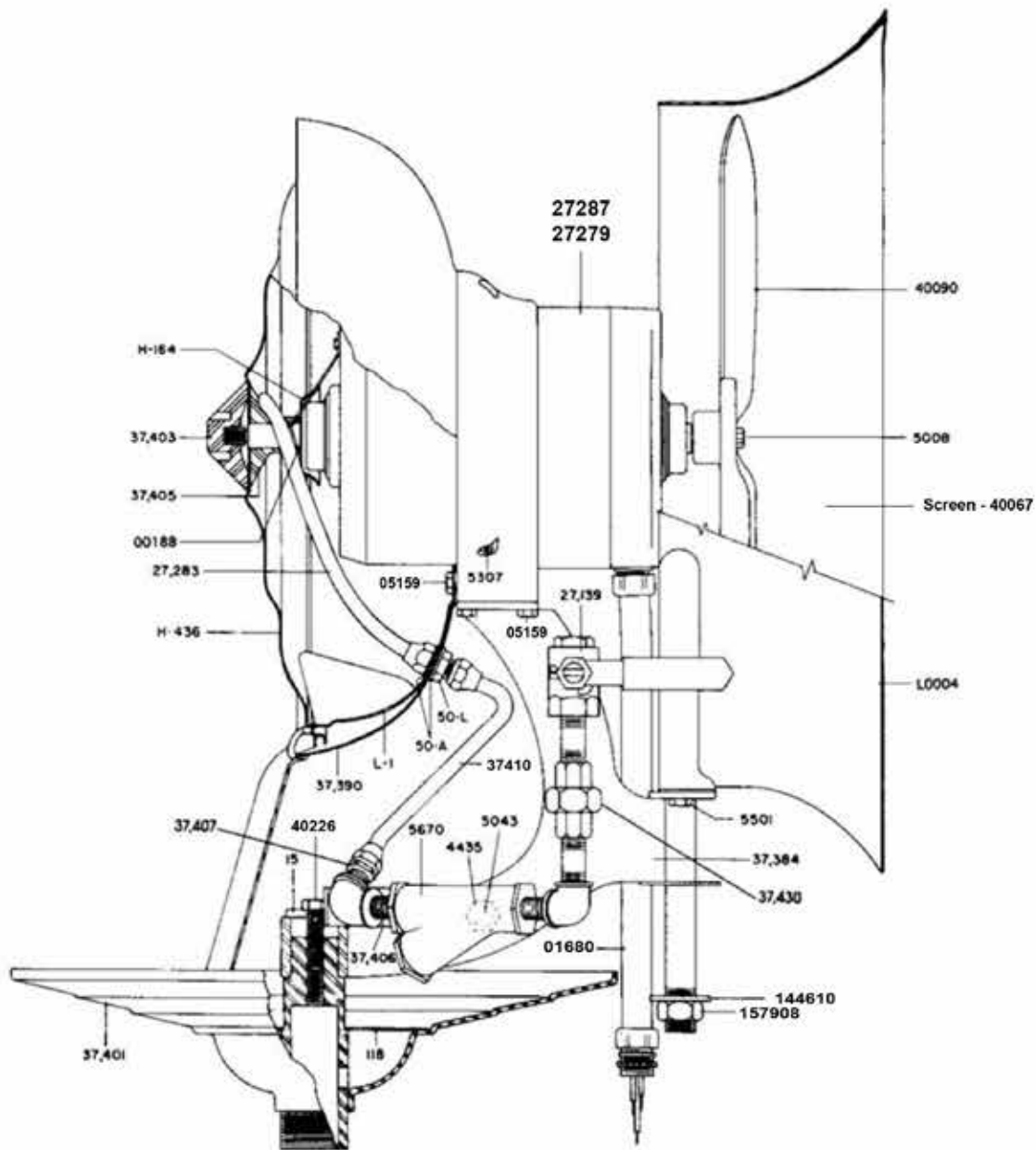


Type L Humidifier

Type H Humidifier

WIRING DIAGRAM

NOTE: USE #14 TYPE THWN WIRE IN 1/2" CONDUIT.



L HUMIDIFIER PARTS LIST

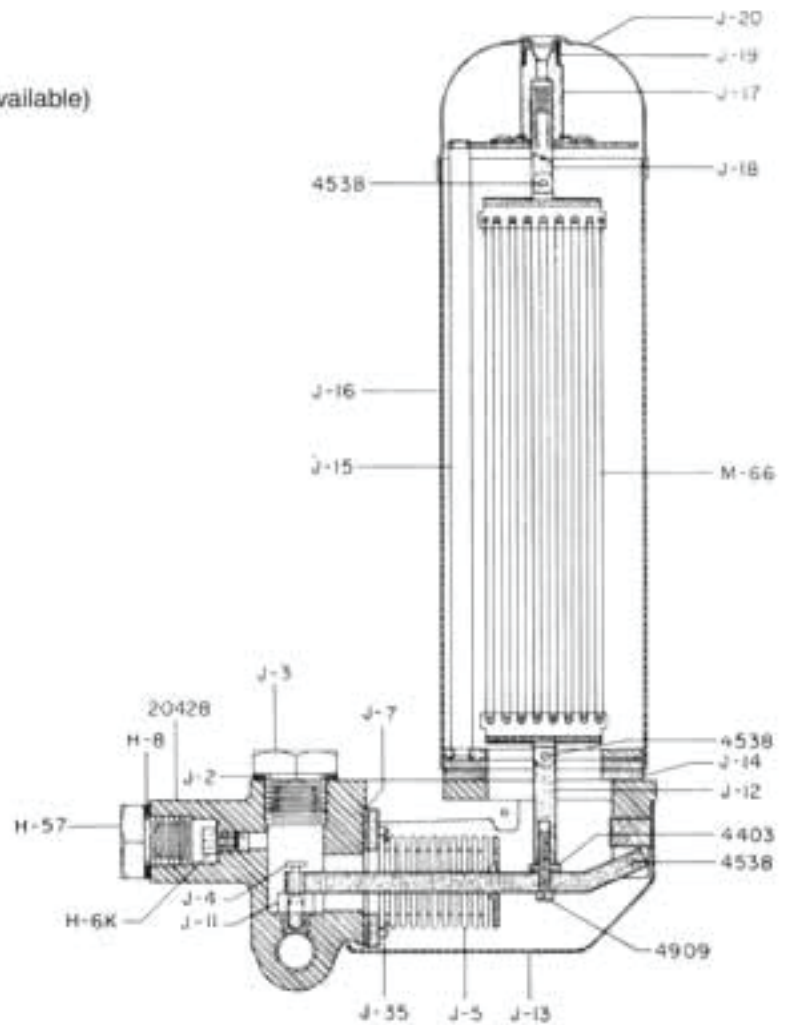
Part No.	Name	Part No.	Name
H-164	Sling Off Washer		Motor
H-436	Disc	5307	Set Screw
L-1	Grid Ring	5501	Cap Screw
L0004	Fan Guard	*5670	Strainer
40090	Fan	144610	Flat Washer
15	Drip Cup Washer	27139	Valve
50-A	Double Union Washer	27287	Motor Assembly Specify Voltage
50-L	Double Union Locknut	27283	Inner Feed Pipe Assembly
118	Drip Pan Strainer	37384	Stand
01680	Flexible Conduit	37390	Case
188	Motor Shim Washer	37401	Drip Pan
4435	Hex Nut	37403	Front Head
4441	Hex Nut	37405	Back Head
05159	Cap Screw	*37406	Bracket
5008	Cap Screw	*37407	Single Union
5043	Cap Screw	37410	Outer Feed Pipe
40226	Cap Screw	37409	Orifice Housing Piping Assembly
		40067	Screen

* component parts in orifice housing piping assembly 37409

J CONTROL PARTS LIST

PART NO. NAME

H-6K	Orifice Screw, (Standard— Other sizes available)
H-8	Orifice Plug Gasket
H-57	Check Valve Plug
6595	Valve Plug Gasket
J-3	Valve Plug
J-4	Valve
J-5	Bellows Assembly
J-7	Bellows Ring Gasket
J-11	Valve Seat
J-12	Link
J-13	Cover
J-14	Insulating Washer
J-15	Strut Assembly
J-16	Screen
J-17	Adjusting Nut Assembly
J-18	Adjusting Screw
J-19	Compression Spring
J-20	Cap
J-35	Bellows Screw
M-66	Actuating Element Assembly
4403	Nut, Hex. Br. 6-32
4538	Pin, Cotter Br. 3/32 x 7/8
4909	Screw, Mach. Fil. Slot Hd. Br. 6-32 x 3/4
20,428	Control Body Assembly



RELATED PARTS NOT SHOWN

PART NO. NAME

H-30	Short Adjusting Key
J-23	Outer Feed Pipe
J-28	Bracket
J-32	Union Nut
J-33	Union Spud, Plain
J-34	Union Spud, Threaded
52	Single Union
4428	Nut, Hex. Pl. 5/16-18 ASH
4435	Nut, Hex. Pl. 1/2-20 ASH
4869	Screw, Mach. Rd. Slot Hd. Br. 6-32 x 1/4
4874	Screw, Mach. Rd. Slot Hd. Br. 8-32 x 1/4
4890	Screw, Mach. Rd. Slot Hd. Br. 10-32 x 5/8
5012	Screw Cap Hex. Hd. Pl. 5/16-18 x 1
5043	Screw Cap Hex. Hd. Pl. 1/2 - 20 x 1
5670	Strainer, Y Bronze SCR 3/8
22,853	Fitting E11 90-D Br. SC 3/8
22,855	Fitting Nipple Br. SC 3/8 x 1-1/2
27,139	Valve, Ball 3/8 Bronze

CONNECTS PARTS

To 20,428
 20,428 to H-33
 J-33 to J-34
 J-32 to 27,139
 J-32 to 27,139
 J-32 to 5670
 Into 20,428
 20,428 to J-28
 J-28 to H-33
 J-13 to 20,428
 J-20 to J-15
 J-15 to 20,428
 20,428 to J-28
 J-28 to H-33
 J-34 to 22,853
 To 22,855
 To 5670 & To 20,428
 Onto J-33

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