

Hermetic Absorption Liquid Chillers

GENERAL

Items Shipped Loose

1. Solution charge
2. Box of miscellaneous parts including:
 - a. Octyl alcohol
 - b. Inhibitor
 - c. Loctite weld sealant
 - d. Heat-conductive compound
 - e. Chilled water temperature sensor
 - f. Water box drain plugs
 - g. Weld rings
 - h. Installation packet including:
 - (1) Installation Instructions
 - (2) Start-Up Instructions
 - i. Purge Exhaust Assembly
 - j. Separable well (pneumatic controls)
 - k. Mounting bolts

Job Data — Information not delivered with the machine but necessary for installation:

1. Equipment layout drawings
2. Specification sheets
3. Controls and wiring prints
4. Job specifications
5. Piping layout prints

Tool List

1. Water level gage, 50-ft length flexible tubing with two glass inserts
2. Absolute Pressure Manometer, Meriam Model 11AA10WM 5-in. or equal, graduated 0.1-in. increments
3. If leak test is performed:
 - a. Electronic Leak Detector, G.E. Model H2 Leak Detector or equal
 - b. Refrigerant 12
 - c. Dry nitrogen or dry air pressure to 20 psig
 - d. Auxiliary evacuation device capable of evacuating to 0.2 microns mercury. For evacuation procedures, refer to Machine Evacuation in Start-Up Instructions.

Receiving Machine

The machine is at a deep vacuum when shipped. Do not open any valves until this vacuum has been noted. Refer to Shipping Vacuum Test.

Inspect for shipping damage while machine is still on the shipping conveyance. If machine is damaged or has been torn from its anchorage, have

transportation inspectors examine damage before removing machine from conveyance. Forward claim papers directly to transportation company. Carrier Air Conditioning Company will not be responsible for any damage incurred in transit.

Check all items received against shipping list. If any item is missing, notify Carrier Air Conditioning Company immediately.

Leave all parts in their original packages until installation to prevent damage or loss.

Shipping Vacuum Test — Connect manometer as indicated in Table 1.

Check and record the absolute pressure of each assembly. If vessel pressure is greater than 0.28 in. of mercury, the machine has acquired a leak in shipment or rigging and must be leak tested. Refer to Machine Leak Test.

Table 1 — Manometer Test Connections

UNIT 16JA	MANOMETER CONNECTION
010 Thru 036	At auxiliary evacuation valve (Fig. 2)
041 Thru 124	Generator-Condenser: At condenser purge suction line (Fig. 2)* Absorber-Evaporator: At auxiliary evacuation valve (Fig. 2).

*Remove valve after pressure reading has been recorded.

Prepare Two-Piece Units For Assembly — Break vacuum in both assemblies by opening auxiliary evacuation valve and condenser purge suction line shipping valve. Then remove all piping end plates. Remove weld elbow and shipping valve on condenser purge suction line. Refer to Fig. 1 and Fig. 2.

Do not leave machine open to atmosphere for prolonged period of time.

Be careful not to remove any stock from the pipe ends while flame cutting. Also, be careful not to get any slag inside the machine while welding.

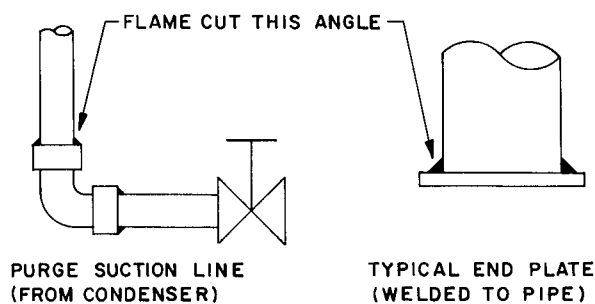


Fig. 1 — Weld Breaking Instructions

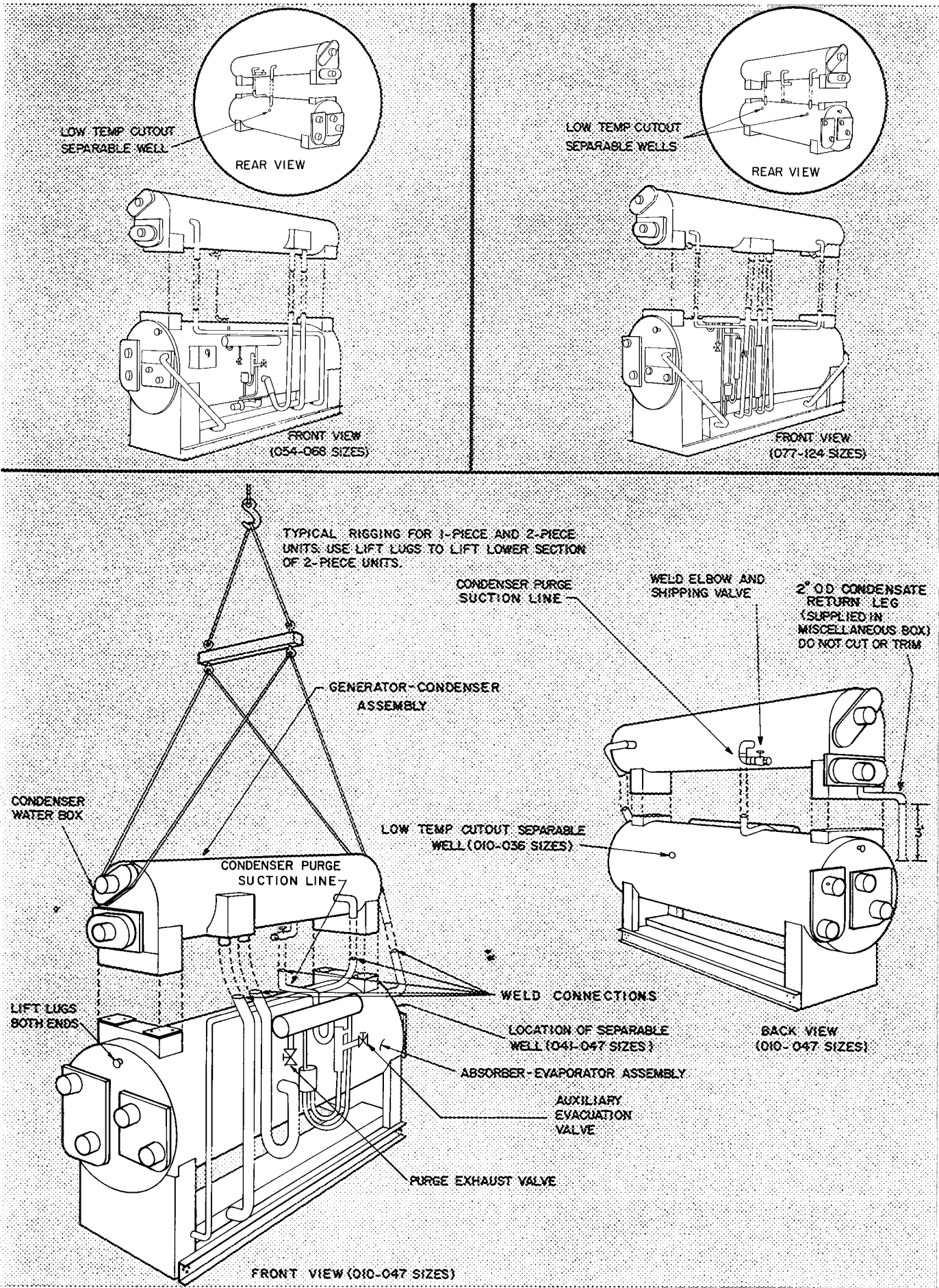


Fig. 2 – Piping Weld Connections and Typical Rigging

RIGGING

Refer to Table 2 to determine required capacity of rigging apparatus. Instructions for the use of rollers in positioning the assembly are stenciled on the shipping rails. If rollers are used, follow these instructions for spacing and number of rollers required.

Table 2 — Weights (lb)

UNIT 16JA	SHIPPING WEIGHT*		TOTAL OPER WEIGHT
	Absorber-Evaporator Section	Generator-Condenser Section	
010		8830	11070
012		9030	11330
014		9240	11620
018		13685	17040
021		14000	17450
024		14830	19090
028		15300	19910
032		19540	24925
036		20000	25530
041	19070	5340	31405
047	19600	5600	32445
054	22395	6760	38095
057	23000	7000	39240
061	26350	8755	45680
068	27000	9000	46890
077	33210	10700	57530
084	34000	11000	59055
097	39940	16570	72375
107	41000	17000	74785
115	46180	20690	84840
124	47000	21000	86380

*010 thru 036 sizes shipped in 1 piece. Larger sizes shipped in 2 pieces.

One-Piece Units — Lift with cable slings placed under condenser water boxes, as shown in Fig. 2.

Two-Piece Units

ABSORBER-EVAPORATOR ASSEMBLY — Lift with cable slings placed around lift lugs at each end of assembly.

GENERATOR-CONDENSER ASSEMBLY — Lift with cable slings placed under condenser water boxes as shown in Fig. 2. Align the generator-condenser assembly into place on top of the absorber-evaporator assembly. Bolt leg assemblies and make weld connections as shown in Fig. 2. These connections *must* be vacuum tight.

ASSEMBLED UNIT — If rigging is required after assembly, use absorber-evaporator lift lugs. *Do not, under any circumstances, use slings under the condenser water boxes to lift assembled machine.*

POSITIONING AND LEVELING THE MACHINE

Isolation pads are not necessary for most machine installations. However, for special applications, isolation assemblies may be installed as shown in Fig. 3.

The 16JA machine must be level within 1/4 in. per 20 ft, both lengthwise and diagonally. To level machine, proceed as follows:

1. Fill 50-ft length of clear flexible tubing completely with water.
2. Use water gage and leveling reference points stamped on absorber-evaporator shell to level machine. Leveling marks on the evaporator shell are covered by small removable 1-in. squares of insulation.
3. Level machine with shims until requirements are met. If isolation assembly is used, shim under the soleplates.

It is not necessary to level the generator-condenser assembly, as both assemblies are designed to be level when absorber-evaporator assembly has been leveled.

FIELD PIPING

Refer to Job Data for piping details. A typical piping installation is shown in Fig. 3.

Piping Connections — Connections to water box covers must allow for removal of these covers for maintenance. Use pipe hangers on connecting pipes. Weight or stress on water box nozzles is not allowable.

Install air vents at all high points in the piping to eliminate water hammer.

Water flow must agree with arrows on water box nozzles.

Steam Piping — Locate the steam control valve(s) a minimum of 3 ft from generator nozzle(s).

Install pressure gage between steam control valve and machine.

Locate steam trap(s) as close to the floor as possible to prevent condensate from backing up into the generator.

Hot Water Piping — Install thermometer wells in entering and leaving hot water lines. Rupture disc may be piped to outside of building to satisfy local codes. If this is done, provide a pipe plug opening in pipe near rupture disc to allow leak testing of rupture disc. Properly support the pipe.

Thermometers — Provide 5 thermometer openings and thermometers (not supplied by Carrier) as follows:

Area	Suggested Range
Ent chilled water	0 to 100 F
Lvg chilled water	0 to 100 F
Ent absorber water	30 to 120 F
Ent condenser water	30 to 120 F
Lvg condenser water	30 to 180 F

Test Connections — Install test connections as shown in Fig. 3.

UNIT 16JA	010,012 014	018,021	024,028	032,036	041,047	054,057	061,068	077,084	097,107	115,124
DIMENSIONS A	16-9	16-7 $\frac{1}{4}$	16-8 $\frac{1}{4}$	16-9 $\frac{1}{4}$	16-10 $\frac{1}{4}$	16-10 $\frac{3}{4}$	21-8	31-8 $\frac{1}{4}$	31-8 $\frac{1}{4}$	31-8 $\frac{1}{4}$
DIMENSIONS B	3-5 $\frac{1}{2}$	4-3 $\frac{3}{4}$	4-11 $\frac{3}{4}$	6-4	6-10	6-4	7-4	6-2 $\frac{3}{4}$	7-2 $\frac{3}{4}$	7-9 $\frac{1}{4}$
DIMENSIONS C	7-3 $\frac{1}{2}$	7-10	8-9 $\frac{1}{4}$	10-1 $\frac{1}{4}$	11-5 $\frac{1}{4}$	11-10	13-2 $\frac{1}{4}$	11-4	12-10 $\frac{1}{4}$	13-9 $\frac{1}{4}$

NOTE: Allow space for tube removal when locating machine. Sizes 010-047 require 14'-4-5/8". Sizes 054-068 require 20'. Sizes 077-124 require 30'-4-3/4".

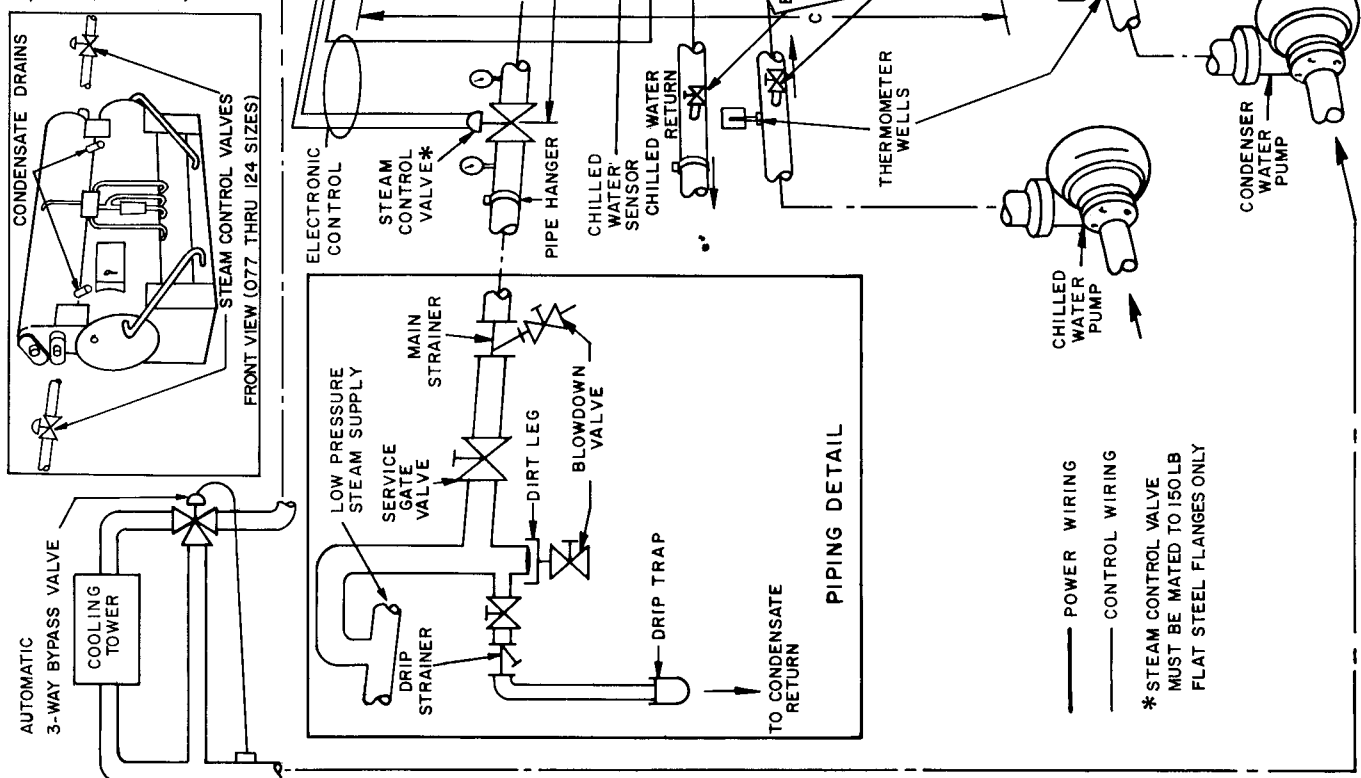


Fig. 3 - Typical Steam Installation

Purge Exhaust Assembly — Install as shown in Fig. 4.

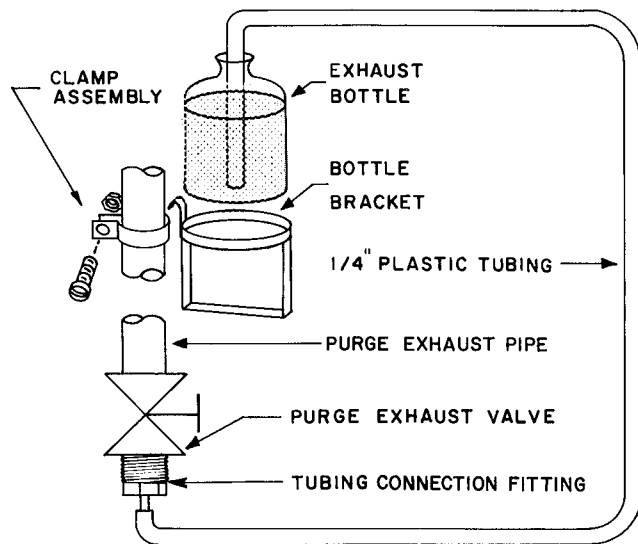


Fig. 4 — Purge Exhaust Assembly

Machine Leak Test — All field-welded joints must be leak tested prior to starting the machine. Leak test as follows:

1. Close all pump service valves, auxiliary evacuation valve, and purge exhaust valve.
2. Pressurize the machine to 8 psig with R-12. Charge R-12 thru auxiliary evacuation valve.
3. Increase the machine pressure to 20 psig with dry air or dry nitrogen. Do not exceed 20 psig, since rupture disc is designed to rupture above this pressure.
4. Using General Electric H2 leak detector or equivalent, leak test all field weld joints.
5. After leak testing is completed and leaks have been corrected, release the machine pressure.
6. Connect an auxiliary evacuation device to the auxiliary evacuation valve and reduce machine pressure to 2 in. of mercury absolute. Check with the 5-in. Meriam Manometer and record both the manometer reading and the ambient temperature for use at start-up.

Recommended Areas For Insulation:

1. Steam or hot water condensate lines
2. Chilled water entering and leaving lines
3. Chilled water boxes (install drain plugs before insulating)
4. Evaporator piping

Generator shell may be insulated if heat is objectionable in machine area. Factory-supplied insulation is not flammable, but can be damaged if exposed to welding sparks or an open flame. Protect insulation with an asbestos or canvas cover when welding or soldering.

CONTROL PANEL AND WIRING

Refer to control wiring diagram located inside

control panel door, and other job data for installation instructions.

Power Supply — Be sure that the available power supply matches the requirements for the machine.

Safety Interlocks — Refer to control panel label wiring diagram.

Motor Overload Heaters and Fuses — Heaters and fuses are located in a cloth bag inside the control panel. A heater and fuse sizing table is located on the wiring diagram located inside the control panel door. Check the motor nameplate for full load ampere rating. Do not install heaters until safety controls have been checked out at initial start-up.

CONTROLS

The chilled water control system will be either electronic or pneumatic.

Electronic or Pneumatic Chilled Water Sensor — Install either electronic or pneumatic chilled water sensor in the leaving chilled water nozzle as follows:

ELECTRONIC CHILLED WATER SENSOR — Refer to Fig. 5.

1. Install separable well in 1/2-in. coupling.
2. Insert chilled water sensor in separable well.
3. Uncoil shielded wire (in bottom of machine control panel) and run it to chilled water sensor. Before removing control box cover and connecting wiring, trim off shielding at control box. *Do not ground shielding to control box.* Refer to control panel wiring diagram for electrical connections.

PNEUMATIC CHILLED WATER SENSOR — Refer to Fig. 5.

1. Insert chilled water sensor in separable well.
2. Slide bracket into groove on head of separable well and tighten mounting screws.
3. Install tubing as shown in Fig. 6, Pneumatic Control Detail.

Control Valve Wiring — Install shielded cable wiring to the control valve(s) as shown on the wiring diagram inside the control panel door.

Pneumatic Tubing — Install pneumatic tubing from control panel to control valve(s) as shown in Fig. 6.

Low Temperature Cutout Control — Control is mounted inside the control panel (bottom center). Uncoil the capillary tubing and run it thru one of the panel knockouts. Fasten tubing under the clips provided along the absorber shell, and run tubing to separable well located in the evaporator shell, adjacent to the vapor condensate line as shown in Fig. 2.

Insert sensing element in separable well. Heat conductive compound will be applied to sensing element after control has been calibrated at initial start-up.

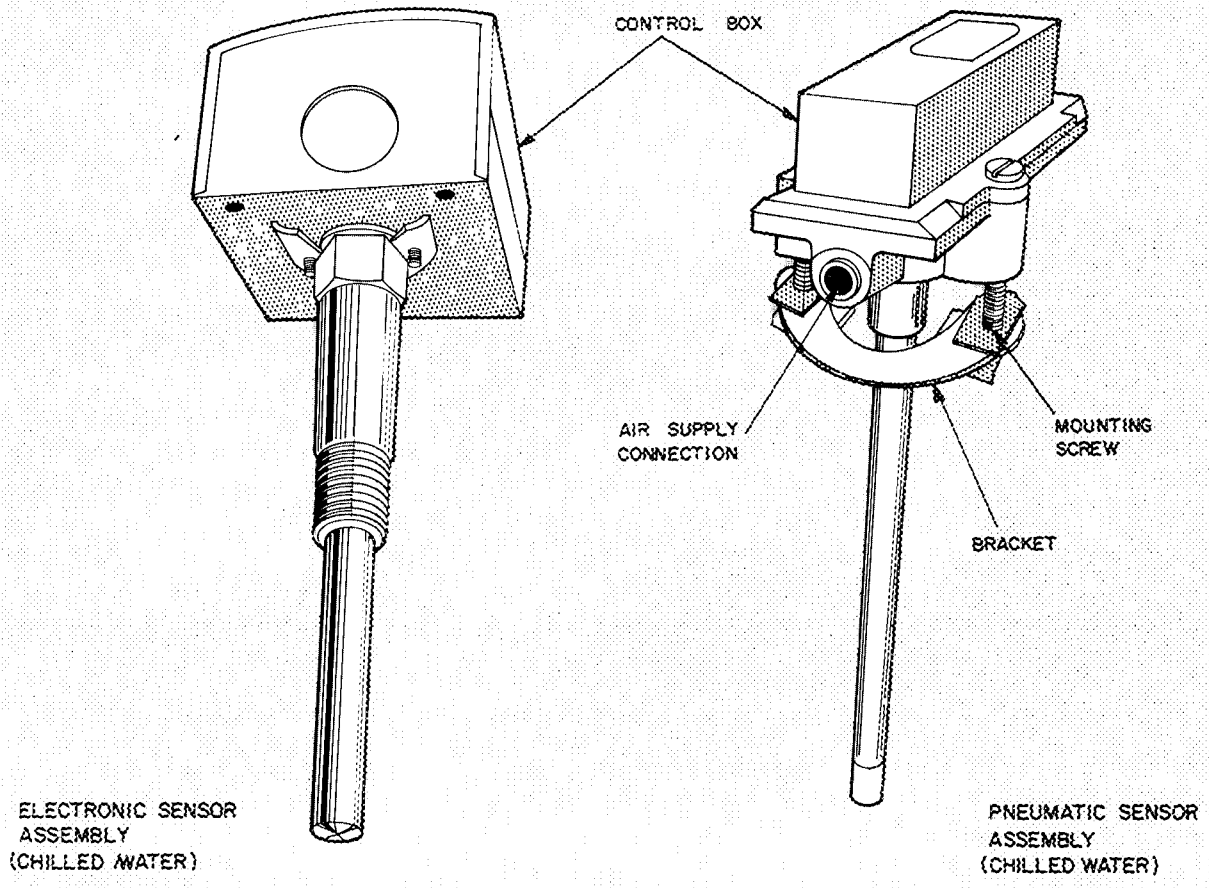


Fig. 5 – Electronic and Pneumatic Chilled Water Sensor Assemblies

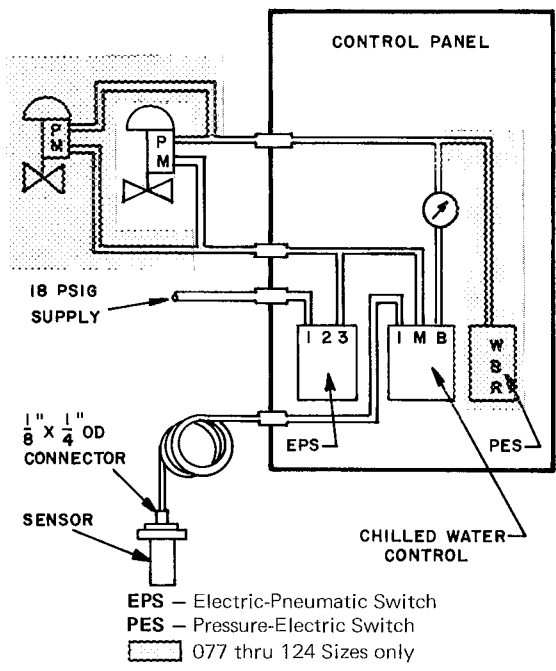


Fig. 6 – Pneumatic Control Detail

SOLUTION CHARGE

Refer to Initial Start-Up Instructions for charging machine with lithium bromide solution.

Do not, under any circumstances, charge the solution into the machine until the unit is ready for operation.

Do not start any pump motors until the machine has been charged with solution and refrigerant water (refer to Initial Start-Up Instructions) or serious damage can result.

Manufacturer reserves the right to change any product specifications without notice.

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