



# Installation Instructions



## Water Cooled Condensing Units 2-30 Tons

Split system Application

# **INSTALLATION INSTRUCTIONS** **WATER COOLED CONDENSING UNITS** **2 - 30 TONS**

## **Installation / Startup Information**

### **WARNING**

Installation or repairs made by unqualified persons can result in hazards to you and others. Installation **MUST** conform to local building codes. With the National Electric code NFPA 70/ANSI C1-1999 or current edition and Canadian Electrical code Part 1 CSA C.22.1. Installation codes of other countries may apply.

The Information contained in this manual is intended for use by a qualified service technician familiar with safety procedures and equipped with the proper tools and test instruments.

Failure to carefully read and follow all instructions in this manual

These instructions are to be used as a guide **ONLY** and in no way supersede local codes, ordinances, or industry regulations.

Installation must comply with all mechanical and electrical code requirements.

Confirm proper electrical service.

Provide drainage for condensate.

Maintain minimum clearance for proper airflow in and out of unit.

### **INSPECTION OF EQUIPMENT**

Upon receipt of the unit, inspect for visible or concealed damage. Report any damage to the freight carrier, and file a concealed damage claim, immediately, if necessary.

### **CAUTION**

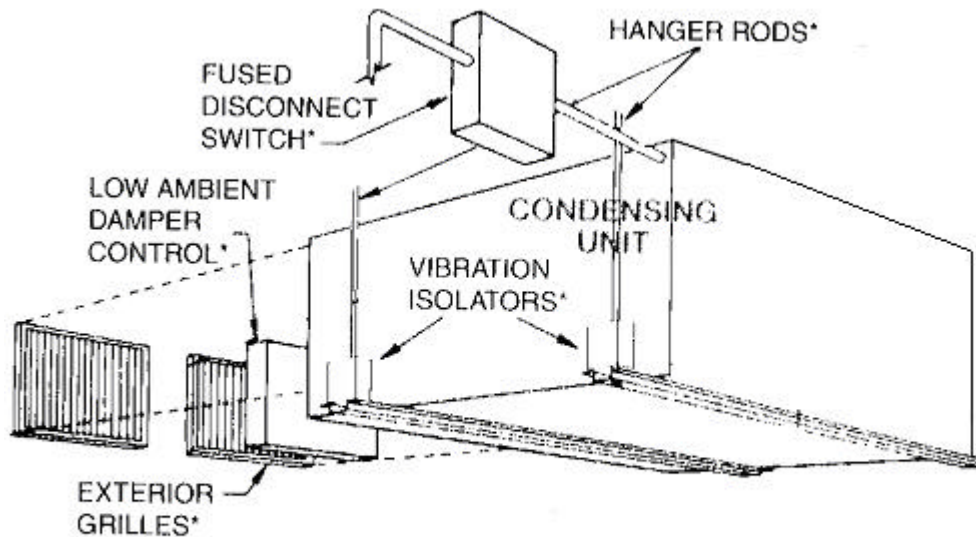
Improper installation, adjustment, alteration, service or maintenance can void the warranty.

The weight of the condensing unit requires caution and proper handling

### **SELECTION OF INSTALLATION SITE**

Before unit is installed, a thorough inspection should be made of the structure. Location should be as close to the evaporator section as possible to minimize refrigerant piping runs. Careful consideration must be given to location of wiring, condensate disposal, ductwork, and accessibility to the unit for maintenance and servicing. It is recommended that a minimum of 24" clearance space be allowed on each side of the unit to accommodate maintenance and servicing. Attention must also be given to the floor, ceiling, or wall load limitations.

## UNIT MOUNTING



*\*Field installed and supplied by others*

## INTERCONNECTING TUBING

1. Run the interconnection tubing required.  
**IMPORTANT:** On the multiple compressor units, be careful not to intermix lines of System 1, 2, & System 3.  
**CAUTION:** When brazing tubing to the quick-connects stubs, be sure to use a wet rag on the quick-connect to prevent overheating of the valve.  
**NOTE:** The interconnection tubing STB45 kits contain sufficient material to insert an access valve in each and of both the liquid and suction lines.
2. Insulate the interconnection lines completely with ½ " thick neoprene tubing insulation.
3. Add R-22 charge to the system to compensate for the additional interconnecting tubing, as follows:
  - a) For 3/8" liquid line add .6 ounces per foot
  - b) For ½" liquid line add 1.2 ounces per foot
  - c) For 5/8" liquid line add 1.8 ounces per foot
4. **NOTE:** Installations may be made with up to 100 feet equivalent lengths by installing the recommended tube sizes and adding the necessary refrigerant, R-22. A maximum length of 100 feet of interconnection tubing is permitted if the following additional steps are taken:
5.
  - a) Install a suction line accumulator close to the condensing units. (**Note: use 2 for 8-Ton Unit**)

For 2, 3, 6 and 12Ton Units use:	For 4, 5, 8, 10, and 15Ton Unit's use:
Refrigerant Research 3670	3738
AC&R S7046	S7057
Virginia Chemical VA54-7SRD	VA57-7SRD
  - b) Add three ounces of refrigerant oil for each 10 feet of tubing over 50 feet.  
Oil specifications are:

Texaco Capella WF-32	Viscosity 150
Suniso 3GS	Viscosity 155

Recommended line sizes are as follows:

TONAGE/COMPRESSOR		SUCTION LINE				LIQUID LINE	
		Evaporator lower than Condenser Unit maximum lift 40 feet		Evaporator higher than or on same level as Condenser Unit			
		Up to 50 feet	Over 50 feet	Up to 50 feet	Over 50 feet	Up to 50 feet	Over 50 feet
2 ton		3/4	3/4	3/4	7/8	3/8	3/8
3 ton		3/4	7/8	7/8	1 1/8	3/8	3/8
4 ton		7/8	7/8	1 1/8	1 1/8	3/8	1/2
5 ton		7/8	1 1/8	1 1/8	1 3/8	1/2	5/8
6 ton	(2) 3T Comp.	(2) 3/4	(2) 7/8	(2) 7/8	(2) 1 1/8	(2) 3/8	(2) 3/8
8 ton	(2) 4T Comp.	(2) 7/8	(2) 7/8	(2) 1 1/8	(2) 1 1/8	(2) 3/8	(2) 1/2
10 ton	(2) 5T Comp.	(2) 7/8	(2) 1 1/8	(2) 1 1/8	(2) 1 3/8	(2) 1/2	(2) 5/8
12 ton	(3) 4T Comp.	(3) 7/8	(3) 7/8	(3) 1 1/8	(3) 1 1/8	(3) 3/8	(3) 1/2
15 ton	(3) 5T Comp.	(3) 7/8	(3) 1 1/8	(3) 1 1/8	(3) 1 3/8	(3) 1/2	(3) 5/8
30 ton	(2)15T Comp.	(2) 2 1/8	(2) 2 1/8	(2) 2 1/8	(2) 2 1/8	(2) 5/8	(2) 3/4

**PLEASE NOTE: THIS TABLE REPRESENTS ONLY A RECOMMENDATION! DEPENDING ON THE FIELD REQUIREMENTS AND CIRCUMSTANCES, THE INSTALLING CONTRACTOR IS RESPONSIBLE FOR SIZING THE PIPING.**

### **ELECTRICAL WIRING**

Units are completely internally wired at the factory for normal supply voltages. Check unit specification plates for required voltages wire and fuse sizing. The factory wiring terminates in the electrical box in the condensing section. The control box is located behind the outer access panels and is supplied with an individual control box cover.

Power wiring to the condensing unit must come through fused disconnects. Minimum circuit ampacity and maximum fuse size for the condensing unit is shown on the condensing unit specification plate, which is to be used to determine electrical requirements as per the National Electric Code.

For low voltage wiring: 18 gauge wire may be used for up to 50 feet lengths  
16 gauge wire for up to 100 feet lengths

### **WATER LINES**

Water/Glycol systems inlet and outlet piping connection are MPT and extend outside cabinet to facilitate fast connection to supply and return piping. Standard factory installed water regulation valve is 2-way and rated for 150 psig. Larger tubing may be required depending on length of run of the tubing and accessories used such as balancing valves, strainers, etc... Shut off valves should be provided for future disconnecting if necessary. A strainer is required and must be cleaned regularly.

### **FILTERS**

Both the water supply and the refrigerant **MUST** be filtered to insure proper operation of the condensing unit. Dirt and metal chips must be kept out of the refrigerant and water supply system, since they will accumulate at the strainers and clog them, reducing system performance or causing system failure.

### **BLOWERS**

Skil-aire air cooled units are provided with adjustable belt drive blower packages for both the evaporator and condenser sections. Check that the blower wheel is tight on the shaft and does not make contact with the housing. Check for restrictions or foreign material in the air circuit.

## **BELTS**

Drive belts should be examined monthly for wear and for correct tension. A too tight belt can cause bearing wear; a too loose belt will cause slippage. If the two legs of the belt pressed in, midway between the pulley and the sheave, a properly tensioned belt will result in 1 inch to 1 ½ inches of movement. Belt tension can be adjusted by means of the adjusting bolt attached to the motor bracket. Larger units may have motors mounted to a support on the bottom pan, which requires loosening of four nuts to move the motor and change belt position.

## **REFRIGERATION SYSTEMS**

All Skil-air systems contain a liquid line sight glass. If bubbles appear in the sight glass, the system is either undercharged with refrigerant, or there may be a restriction in the liquid line up stream of the sight glass. The sight glass contains a moisture indicator, which changes color when moisture is present in the system. **If sight glass appearance is abnormal, servicing is required.**

## **CONDENSER COILS**

Check semi-monthly the condition of the condenser coils. A dirty condenser coil will cause high condensing pressures, resulting in higher power consumption and possibly system shut down by the high-pressure safety control.

## **OPTIONS**

### **GLYCOL FLUID COOLER & PUMP PACKAGE**

The system may be purchased with a glycol cooler and pump package option. Refer to the attached Typical Piping Schematic for general guidelines. 24 volt control wiring must be run between the evaporator control panel and the pump package. Separate power connections must be run for the pump package and the air conditioner. The fluid cooler is typically run from the same power supply as the pump package.

Because of the various optional components available for these systems, please call the Customer Assistance line at the factory with questions specific to a system (800-625-7545). All air conditioners have a serial number on the electrical spec plate. Please refer to this number when calling the Customer Assistance Line.