

**- AIR HANDLING EQUIPMENT -**

SECTION 11

INSTALLATION, OPERATION AND  
MAINTENANCE INFORMATION  
FOR:  
AIR-COOLED  
FLUID COOLERS

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## GENERAL SAFETY INFORMATION

1. Installation and maintenance are to be performed by qualified personnel who are familiar with this type of equipment.
2. Make sure that all field wiring conforms to the requirements of the equipment and all applicable national and local codes.
3. Avoid contact with sharp edges and coil surfaces. They are a potential injury hazard.
4. Make sure all power sources are disconnected before any service work is done on units.

## INSPECTION

Check all items against the bill of lading to make sure all crates or cartons have been received. If there is any damage, report it immediately to the carrier and file a claim. Make sure the voltage on the unit nameplate agrees with the power supply available.

## UNIT ASSEMBLY

Unit models FCV/FCH-1-4-1-8 through FCV/FCH-2-12-4-10 can be assembled for either horizontal or vertical airflow. The mounting stand is shipped unassembled with each unit. Fasteners and assembly instructions are included. It is a simple procedure to assemble the stand to the unit for either vertical or horizontal airflow.

Vertical airflow unit models FCV/FCH-2-30-2-8 and larger are shipped (unless otherwise specified) with the legs in place and the unit in its normal operating position. No assembly is required. Legs must be installed in the field on all horizontal airflow models.

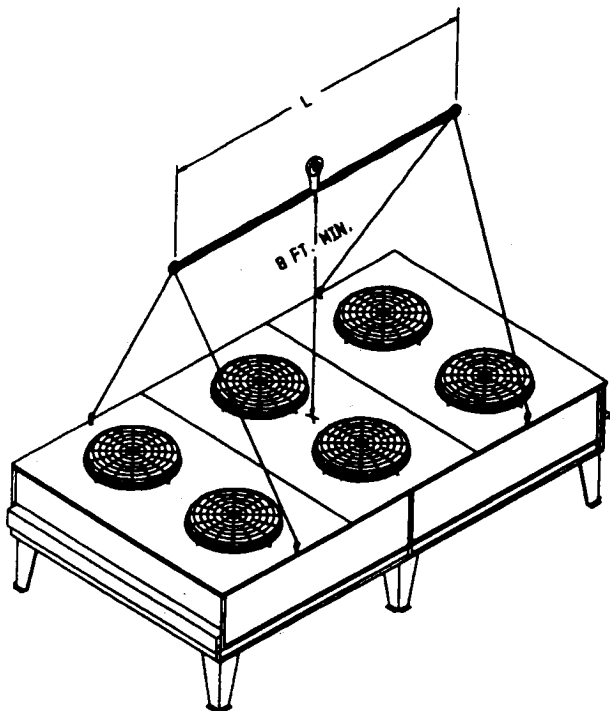


Figure 1

L = Length of spreader bar should be approximately equal to the distance between hoisting eyes.

## RIGGING

Leave the units in the carton or on the skid until they are as close as possible to the installation location. The method of rigging depends on the size of the unit. Models FCV/FCH-1-4-1-8 through FCV/FCH-2-12-4-10 may be lifted into position by grasping underneath the cabinet or by using the lifting holes in the mounting stand. Never lift any of the units by the headers or return bends.

The FCV/FCH-2-30-2-8 and larger units are provided with lifting eyes located on top of the unit. The actual method of rigging depends on the type of rigging equipment available, the size of the unit and where the unit is to be located. It is up to the judgement of the rigger to decide specifically how each unit will be handled. Figure 1 shows general requirements for rigging vertical airflow units.

## UNIT LOCATION

### General

FCV and FCH units are designed for outdoor applications. If the unit is mounted indoors, provisions must be made to insure that discharge air is not recirculated into the unit. If the unit is ducted, the duct must not add more than 0.1 inch W.G. to the static pressure imposed on the fans.

### Horizontal Airflow Units

Units should be installed with coil side facing the prevailing winds. If strong, variable winds are common, it is recommended that a wind deflector (by others) be used on the discharge side of the unit. Maintain at least 24 inches between the face of the coil and an obstruction such as another unit or a wall. If the unit discharges towards a wall, space the unit at least 60 inches from the wall. If several units are installed in the same area, make sure that discharge air from one does not become intake air for another.

### Vertical Airflow Units

Units should be located no closer than the width of the unit to an obstruction such as a wall or another unit. Keep the inlet air area around each unit clear to avoid restricting the airflow to the unit.

## UNIT INSTALLATION

1. Make sure all units are installed level to insure proper fluid distribution through the coil as well as a flooded suction for the pump. When units are installed on a roof, they must be mounted on support beams that span load walls. Ground mounted units should be installed on concrete pads.
2. Water piping must comply with local codes. Correct pipe sizing will help reduce pumping power and operating costs. If in doubt, consult factory for the fluid cooler fluid pressure drop at the specific conditions on your job.
3. Provide sufficient valves and unions to permit easy access to parts subject to wear and possible repair or replacement. After fluid piping is completed, all joints should be

leak tested. Where city water makeup is required, follow local plumbing codes and make certain that disconnecting provisions are provided.

4. If the fluid cooler is supplied without starters, select starters and wire in accordance with nameplate data on the fan and pump motors. The installation must conform to local codes.

## UNIT START UP

Before starting the refrigeration system, check the following items.

1. Make sure the fluid cooler is wired in accordance with applicable codes and local ordinances.
2. Make sure all electrical connections are tight.
3. Make sure the piping to the fluid cooler is in accordance with proper piping practices and conforms to local codes.
4. Make sure all motors are mounted securely and all fan setscrews are tight.
5. Make sure all fans rotate freely.
6. Make sure the unit is located so that it has free access for proper air flow, see the Unit Location section of this bulletin.
7. After start-up, make sure all fans are rotating in the proper direction. Fans should draw air through the coil on standard units.

## GLYCOL SLUDGE PREVENTION

Glycol systems may be subject to sludge formation in coils, due to one or more of the following causes:

1. Reaction of the corrosion inhibitor with **galvanized piping** (Zinc).
2. Reaction of the glycol with chromate type water additives.
3. Reaction of the glycol with pipe dope, cutting oils, solder flux, and other system dirt.

Glycol manufacturers offer a specifically inhibited glycol (formulated for snow melting systems) which does not react with Zinc. This glycol is also suitable for heat transfer systems. Glycol manufacturers also provide inhibitor check services on a regular basis.

Consequently, good glycol system design requires the following precautions:

1. No galvanized piping is to be used.
2. System piping must be thoroughly cleaned and flushed with a heated trisodium phosphate solution before filling with the water/glycol solution.
3. Do not use a chromate inhibitor treatment.
4. The glycol manufacturer should provide inhibitor check service and supply additional inhibitor as required.

## MAINTENANCE

Maintenance of the fluid cooler is extremely important for extended life and peak performance. The following is a recommended maintenance schedule. Site conditions will dictate the frequency of maintenance plan. The equipment warranty does not cover corrosion, misuse, or misapplication of the condenser.

1. Shut all power off the fluid cooler and refrigeration system at the closest disconnect switch and use a lock to prevent others from turning power back on to the unit.
2. Remove fan guards.
3. Remove all large debris (leaves, paper, cardboard, plastic film, etc.) from the top as well beneath the unit. Keep the area clean around the cooler by removing loose debris around the fluid cooler.
4. Inspect the unit for damaged fins caused by the debris. Comb out any bent fins with fin comb. Inspect the unit for signs of corrosion. Note the area and amount of corrosion in your maintenance reports.
5. Should the heat transfer surface require cleaning use the following procedure. Use a cleaning solution that is compatible with the finned material and any protective coating that may have been applied to the heat transfer surface. Follow the cleaning instructions exactly as described by the manufacturer of the cleaning agent. It is extremely important that a proper rinse be applied to the core once the cleaning process is completed. Use a hose with a spray wand and rinse from the top of the unit only. Do not rinse from the underside as this will not properly flush the cleaning agent from the core. Any residue of cleaner left for any extended period will begin to corrode the heat transfer surface. It is recommended to use a detergent type cleaner like Cal-Clean as a cleaning solution.
6. Inspect all fan and motor fasteners for tightness before installing the fan guards. All motors have permanently sealed bearings which do not require any maintenance.
7. Turn power back on to the system.

Special consideration should be taken for units that are installed up to 30 miles from a sea coast or body of salt water. These units should be inspected at least every 3 months for corrosion and salt accumulation. The heat transfer surface should be rinsed thoroughly every 3 to 6 months. Once a year the heat transfer surface should be cleaned with an approved cleaning solution.

## Replacement Parts - Listing by Product Model Number

FLUID COOLER MODEL	FAN DATA		FAN GUARD PART NO.	MOTOR DATA		
	PART NO.	DIAMETER		VOLTAGE	HP	PART NO.
FCV/FCH-1-4-1-8 THRU FCV/FCH-1-4-2-8	65000	18"	66000	208-230/460/1	1/2 PSC	60000
FCV/FCH-1-6-2-10 THRU FCV/FCH-2-12-4-10	65100	22"	66100	208-230/460/3	1/2	62000
FCV/FCH-2-30-2-8 THRU FCV/FCH-2-30-3-10	65200	26"	66200	208-230/460/1	1 PSC	61000
				208-230/460/3	1	63000
FCV/FCH-2-30-2-14 THRU FCV/FCH-12-180-4-14	65300	30"	66300	208-230/460/3	1 1/2	64000

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