INSTALLATION, OPERATION & MAINTENANCE

OWNERS MANUAL

Dimplex Thermal Solutions
Schreiber 400AC Chiller

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SCHREIBER ENGINEERING

The Finest Chiller Built in America.

400 AC | AIR COOLED

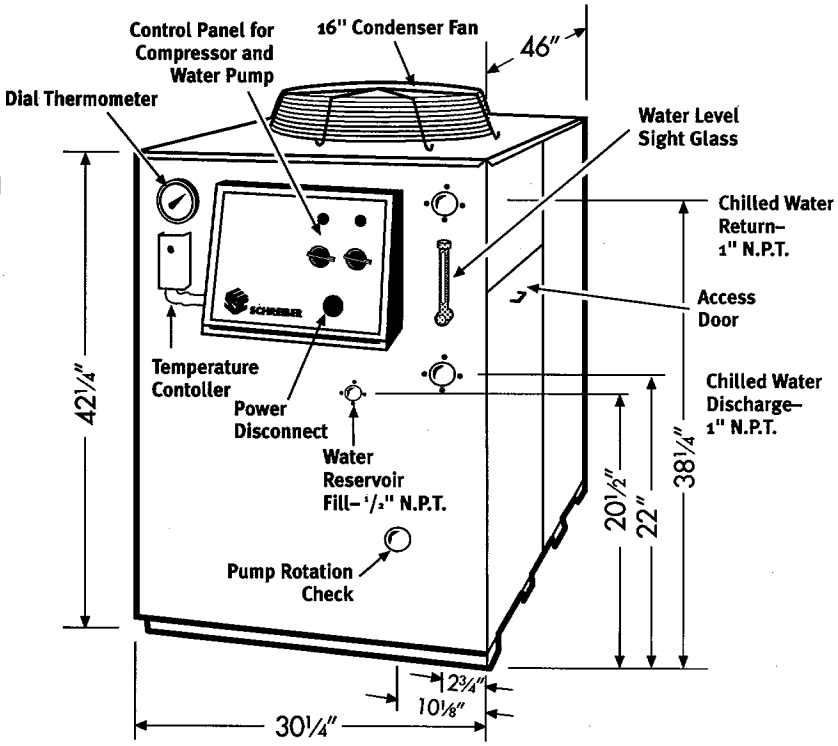
Water Chiller—*Specifications*

Quality matters

Trust the finest... for the long term.

Made in America.

- **Rated at the ARI Standard of 44° F chilled water at 95° F ambient**
- **ETL Tested and Approved**
- **Large Stainless Steel Pump**
- **Contaminate Free System with all Non-Ferrous Components**
- **Highly Durable Powder Coated Finish**
- **Energy Savings Design Which Does Not Use Hot Gas Bypass**



TrueTon Water Chiller

Cabinet Dimensions

Width 30-1/4" • Height 42-1/4" • Depth 46"

The 400 AC is rated to meet or exceed the "ARI"—American Refrigeration Institute's national standard of 44° F chilled water at 95° F ambient. The design and components of this chiller are built to deliver a long life of commercial duty application for process equipment. If you have any questions regarding load calculation, installation, service or parts, please call our Service Department: 562-926-3855

MODEL NUMBER	400 AC
CAPACITY	4 Ton
BTU PER HOUR	48,000
FLUID RESERVOIR CAPACITY	45 gallons
WEIGHT	800 lbs.
VOLTAGE	230/3 – 460/3
AMPERAGE	20.6 – 12.5
FLUID CIRCULATING PUMP	2 H.P.
FLUID PUMP/GPM	40 @ 44.8 p.s.i.

CAUTION: Do not overcharge this refrigeration system. The refrigeration sight glass is only an indicator of the charging system. The sight glass should never be filled when charging the system. The sight glass will always be fuzzy. Overcharging the system will damage the compressor.

SUPERIOR QUALITY SINCE 1958

THE SCHREIBER WARRANTY—
Schreiber Engineering warrants the product described herein against defective material or workmanship for one year from the date of purchase. • If any part is found to be defective within the warranty period, Schreiber Engineering, or its authorized service agent, will replace, or at Schreiber's options, repair the part free of charge for materials and labor. • This warranty does not cover damage caused by misuse, accident, abuse, incorrect installation or operation. In addition, it does not cover damage occurring during transit, or damage caused by or resulting from repair or modifications carried out by anyone other than Schreiber Engineering or its Authorized Service Agent.

12111 E. Park Street
Cerritos, CA 90703
tel 562-926-3855
fax 562-926-0969
www.schreibereng.com

WARNING

ELECTRICAL HAZARDS

1) TURN OFF MAIN POWER DISCONNECT SWITCH ON THIS MACHINE BEFORE ATTEMPTING TO SERVICE THIS EQUIPMENT.

2) THIS MACHINE IS PORTABLE. DISCONNECT ALL POWER SOURCES BEFORE REMOVING CONTROL COVERS.

3) USER IS RESPONSIBLE FOR LOSS OF (OR FAILURE TO USE AND MAINTAIN) ANTI-HAZARD PROTECTIVE COVERS FOR ELECTRICAL EQUIPMENT AS FURNISHED BY THE MANUFACTURER OF THIS MACHINE.

4) SHOULD YOU FIND IT NECESSARY TO MAKE ANY REPAIRS TO THE REFRIGERATION, BECAUSE REPAIR CAN BE HAZARDOUS, READ THE UNIT MANUAL UNDER REFRIGERATION, OR CALL THE MANUFACTURER AND SELLER. PLEASE NOTE THE DANGER OF OVER CHARGING THE REFRIGERATION SYSTEM.

Failure to read and observe above precautionary warnings are serious offenses under Public Law 91-596. All employees are hereby notified that the employer (and owner of this equipment) under OSHA must take immediate disciplinary action up to and including dismissal for failure to read and comply with this notice.

To Comply With OSHA, All Warning Signs Must Not Be Removed From This Water Chilling Equipment

WATER CHILLER STARTING CHECKLIST

PROPER VOLTAGE

Check the voltage on the chiller to see that it matches your power supply.

CRANK CASE HEATER

Power to the unit should be on for 3 hours prior to full usage to allow the crank case heater to heat the compressor. **PLEASE READ SECTION ON CRANK CASE HEATER ON PAGE 17.**

MOTOR ROTATION

Make sure the fan motors and water pumps are running in the correct rotation. If the water pumps run for more than a short period in the wrong direction, the seal might back off the shaft. To test if the water pumps are rotating in the correct direction, turn the pump switch on and off quickly. The compressor switch is used to test the fan motors rotation.

The compressors to this unit always run in the correct rotation.

SERVICE ACCESS PANEL

The service access panel must be in place when the unit is running. If it is not in place, the unit will cut off on the high-pressure limit switch, or be inefficient in its capacity. Also, it is dangerous to install panels while the unit is running.

PLEASE READ - IMPORTANT

TEMPERATURE CONTROL

The temperature control and the dial thermometer is reading the discharge water temperature in Fahrenheit. All controls read in Fahrenheit.

CONT. WATER CHILLER STARTING CHECKLIST

ELECTRIC – POWER

A good test to make sure power is off to the unit is to turn on the water pump switch. If power is on, the light on this pump will be on. We recommend you take caution in all judgments about the power being on. The best test to find if the power is on is to use a voltmeter. Please Note: A single-phase condition can cause a pilot light to be out and still have voltage to the unit.

TESTING STANDARDS

All components on the chiller meet UL's standards. The system is tested under 250 pounds of pressure. All motors have internal overload protection except where noted.

ANTIFREEZE

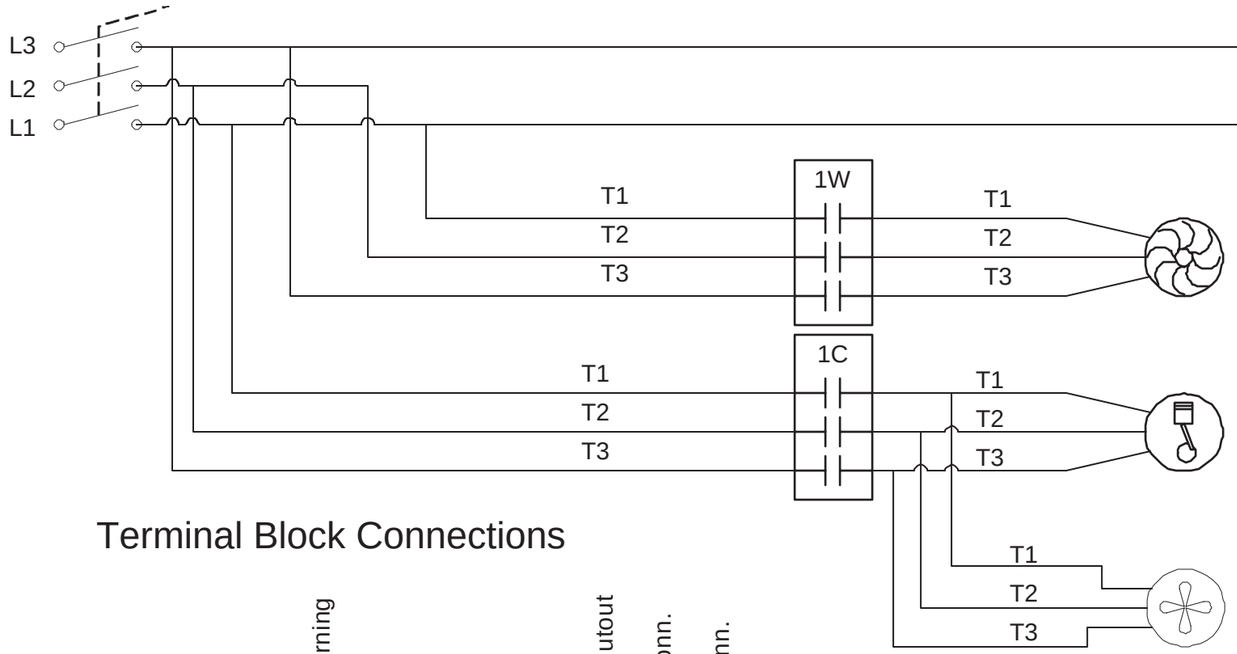
Keep the water tank filled at the proper level. Add antifreeze if you are going to operate the unit at 38^0 F or lower.

DEIONIZED WATER

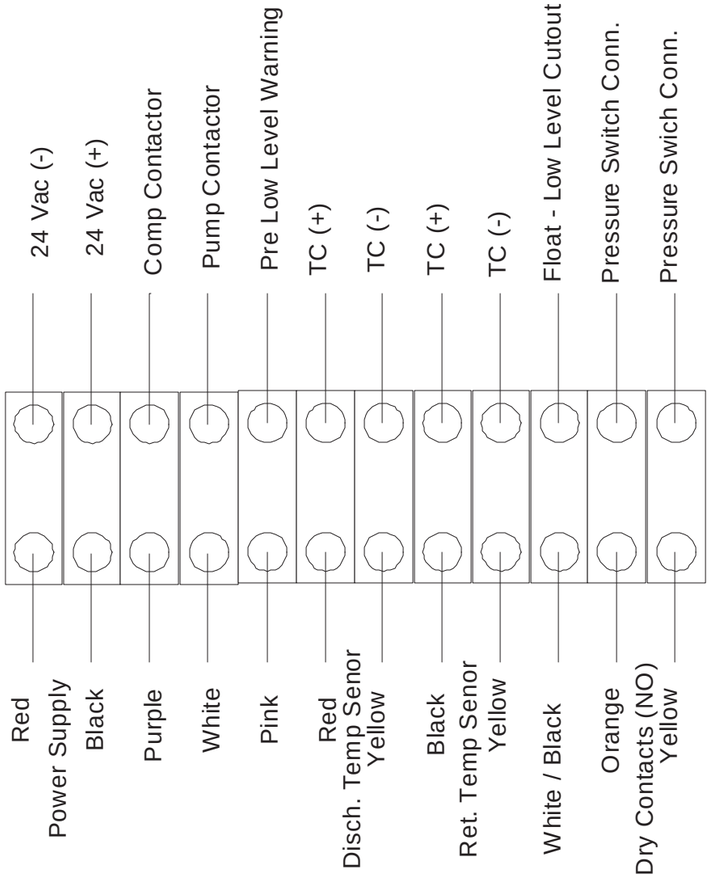
DO NOT USE DEIONIZED WATER IN THE TANK. Deionized water will cause damage to the copper evaporator.

TANK FILL

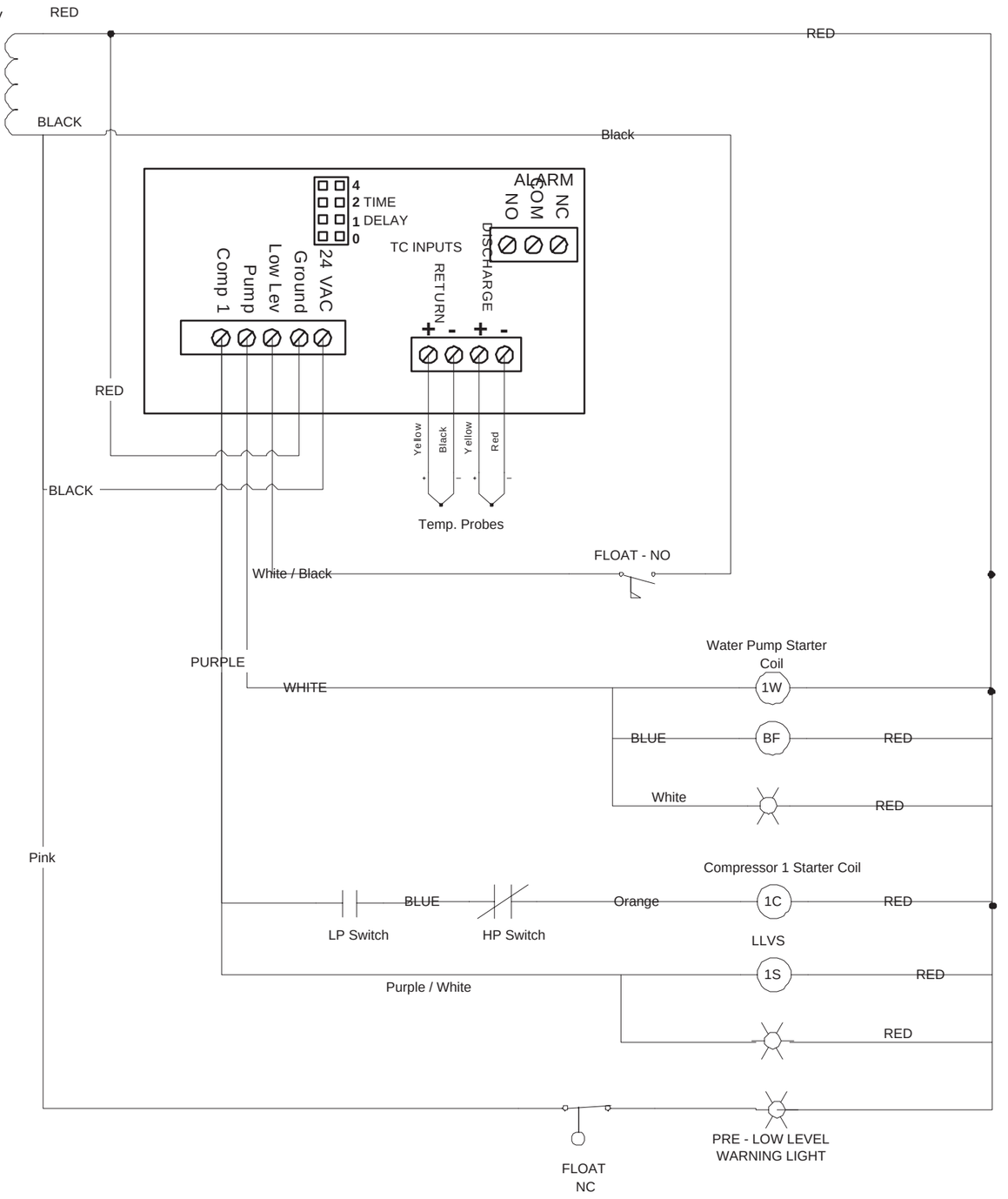
Use the 2” Top Fill located on top of the unit to fill the chiller.



Terminal Block Connections



Note: Water cooled units are not equipped with FAN motors



LLSV - Liquid Line Solenoid Valve

BF - Back Flow Kit Solenoid Valve

Models: 200 -500 AC /WC		PHILIPS 4 TON	Options:
Voltage 230-460	*Phase:* 3	*Marks:*	MEDICAL CHILLER WITH HEAD PRESSURE CONTROL VALVE
Type: Air Cooled/Water Cooled			Low Ambient
Notes: All motors have internal overload protection unless otherwise shown On all connections: L1 - Blue L2 - Black L3- Red			Electronic Controls
			Back Flow kits

Schreiber Engineering
12111 Park St. Cerritos, CA 90703
(562)-926-3855
(562)-926-0969 Fax

SPECIAL CONTROL FEATURES

1) Control LED's for stage 1 & 2 will indicate "GREEN" when the DIS-CHARGE temperature is above their set point without time delay.

2) Power LED's for compressor 1 & 2 will indicate "GREEN" when the contactor driver is ON after a call for cooling from the set point and after the time-delay has occurred.

3) Temperature alarm will have a relay with dry contacts (rated for 7A) that will energize if DISCHARGE temperature is above set point. The Alarm will have two modes of operation, manual and auto reset.

4) "Manual" mode WILL require an operator to reset. The alarm buzzer and relay will remain energized and the alarm silence button is pressed.

5) "Auto" mode will NOT require an operator to reset. The alarm buzzer and relay will remain energized while the alarm condition exists unless the alarm silence button is pressed.

6) The audio buzzer will have a disable (OFF-ON) selection jumper on the back side, disabling may be required when alarms are being monitored remotely.

7) The LOW COOLANT indicator will light "RED" when the float switch contacts open. This condition will turn off or inhibit the COMPRESSOR and PUMP drivers. Power indicators will turn OFF and control indications will function normally will resume when coolant is replenished.

8) The PUMP switch will double as a standby power switch disabling the alarm and turning the COMPRESSOR drivers OFF while continuing to display temperatures When the PUMP switch is returned to ON, the alarm will be disabled until the DISCHARGE temperature returns below set-point.

9) Optional - Relay terminal block and 3 pos switch for remote power applications These components can be assembled for an extra charge.

10) Fuse will be of the 5 x 20MM that can be replaced easily.

SETTING SOLID STATE CONTROL

This unit has a solid-state control that controls the temperature on the refrigeration system. After the unit is wired to the proper voltage the control temperature and high temperature alarm can be set.

1. On the front of this control is the temperature display, to set the temperature press and hold button #2 while turning the set point screw above button #2. The temperature display will indicate the set temperature as you turn the set point screw.

2. To set the high temperature alarm press and hold button #3 while turning the set point screw above button #3. The temperature display will indicate the set temperature for the high temperature alarm as you turn the set point screw.

We suggest you keep the differential, between the temperature and the alarm, at 5^0 F then set the alarm temperature at 60^o F. The alarm will sound at 60^o F.

3. Press button #4 to turn the alarm off if necessary. After the cause of the alarm has been found, be sure to turn the alarm back on.

4 Alarm Feature. – The high temperature alarm does not function when the compressor and water pump switch is in the “off” position., for example, during the night shut down. When the compressor and water pump switch is turned on in the morning, the alarm will not sound even if the water temperature is above the set point, however, the red fault light (number four on page 8) will remain on until a temperature below the set point is reached. The audible alarm will sound again unless the water temperature rises again above the set point.

CHECKING TEMPERATURE SET POINTS

To check temperature set points just press #2 for compressor and #3 for alarm set points.

CAUTION

Check low voltage, this is a 24 Volt system. Be sure you check the 24 Volt circuit at the main panel and remote panel.

REMOTE WIRING – SOLID STATE CONTROL

This unit is designed for remote control. We have supplied the wire to connect the main water chiller control panel to the remote panel. Make sure you connect the remote wire colors to match the terminal block. in the electrical enclosure. There is a diagram insert with colors to match the numbers on the terminal block.. The thermocouple wire is a special wire and cannot be spliced to other types of wiring. The main control panel has pilot

SCHREIBER ENGINEERING

The Finest Chiller Built in America.

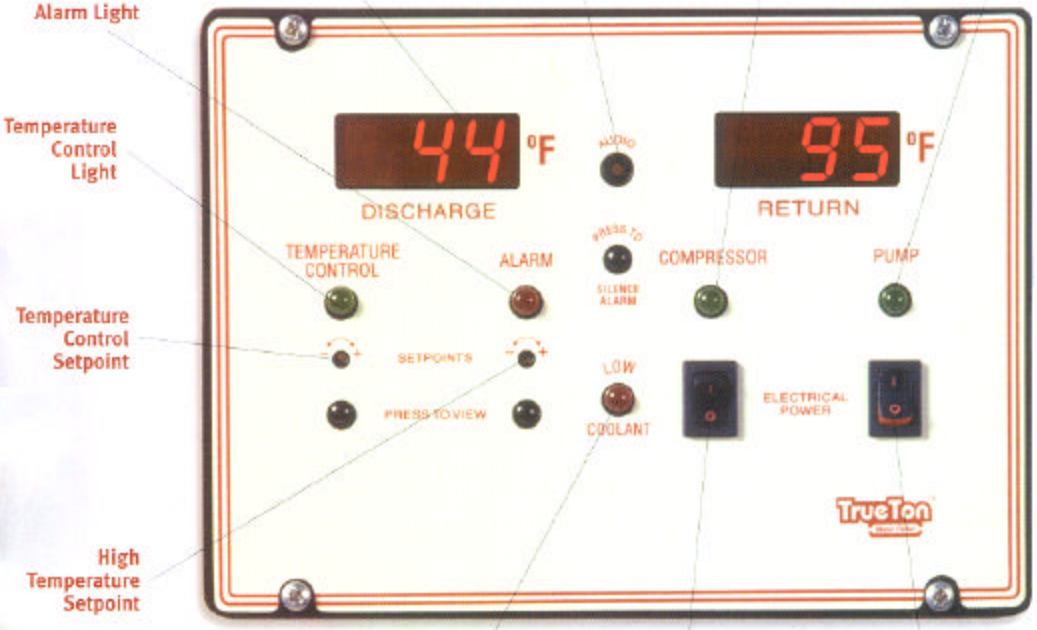
Quality matters

Trust the finest... for the long term.

Made in America.

CONTROL PANEL | **SINGLE STAGE**

Digital Technology
Solid State Controls



All Schreiber chillers are tested and approved by ETL Testing Laboratories, Inc.

Available as Remote Controls

The optional remote control unit allows you to place the chiller outdoors or at a hard to reach location and control it from inside a building.

44°

CRAFTSMANSHIP

DURABILITY

QUALITY

TrueTon

1211-E Rock Street, Compton, CA 90703 TEL 562-926-3855 FAX 562-926-0969

SUPERIOR QUALITY SINCE 1958

Thermocouple Measurement Principals

The basic idea to start with, is that when two dissimilar metals are physically joined together they form a voltage source. Some types of metals have higher voltages than others and they also have different mechanical properties. In the area of thermocouple wiring for temperature measurement, a few common standards emerged. These standard wire types were then lettered and color coded to differentiate them.

THERMOCOUPLE WIRE POLARITY/COLOR CHART		
TYPE	**POSITIVE(+)**	**NEGATIVE(-)**
K	YELLOW(chromel)	RED(alumel)
T	BLUE(copper)	RED(constantan)
J	WHITE(iron)	RED(constantan)

The operating principal behind thermocouple wire is the following. If you take a piece of thermocouple wire and short both ends to form junctions, current will flow through the positive wire from the hot junction to the cold junction. The amount of current is dependent on the temperature difference between the two junctions. A thermocouple thermometer uses this principal to operate. The hot junction is the probe and the cold junction is at the meter. The meter measures the cold junction (at the meter) then measures the hot junction (the probe), subtracts the two temperatures adds a scaling factor then finally displays the temperature of the hot junction. If a cold junction did not exist no current would flow in the wire, thus you couldn't detect temperature with it.

One common error made when wiring thermocouple probes is using extension wire, which does not match the type of probe. If the extension happens to have the same metal type in both the legs such as copper, the cold junction has now been effectively moved from the meter to where ever the splice was done. The problem is that the meter is compensating for the temperature of the cold junction at the meter not the splice, so whatever temperature difference exists between the two, will show up as an error. Even when wiring between two meters, thermocouple wire of the right type must be used because each meter has its own compensation and it expects to have a thermocouple at its input. If the extension happens to have dissimilar metals in both legs, such as using T wire to extend a K probe, you now have a cold junction of the wrong wire type, a junction at the each of the splices, and the hot junction. In this case the readings on the meter will be not only inaccurate but almost unpredictable.

CHILLED WATER DISTRIBUTION PIPING

The chilled water distribution piping is an important factor in the performance of the water chiller. Proper piping will add to the LIFE of your chiller. This chiller is designed to be a containment free system. The chilled water piping should be the same. NO BLACK IRON PIPE.

1. If you are installing this water chiller to some existing chiller water lines (Black or galvanized) there is a good chance there will be rust in this system. If you cannot flush this system clean then it should not be used. A rust contaminated system will cause damage to the copper evaporator heat exchanger.

2. Should this be a new system and you are installing chilled water piping. We suggest using PVC piping if allowed. It is a poor conductor of heat, so you do not loose as much BTU capacity in the movement of the chilled water and there is no rusting.

   Copper line will prevent any rusting but there is greater heat loss. You might want to insulate these lines.

3. Should the water chiller be installed next to your cooling load. We would suggest rubber hose. This would prevent any great heat loss. And there would also be no contamination.

4. If black pipe, galvanize, iron, and steel pipe are your piping of choice, you should be aware of the corrosiveness of these materials. Black Iron will damage the watering system.

5. Female connections to chiller are brass. If your connections to the chiller are anything other than, PVC, copper, or rubber hose you should consult with your local plumbing supplier about the use of dielectric pipe connections when dissimilar metals are used. If we can be of any assistance with this please call the manufacturer.

6. Keep in mind you should keep all chilled water lines full size. If your chiller has 1" NPT, then the chilled water lines should be no less.

INSTALLATION INSTRUCTIONS
Air or Water Cooled Chillers

1. When the chiller is received, check for any shipping damage. If any is found, a freight claim should be filed at once with the carrier.

2. This water chiller is designed with a contaminant free chilled water system, stainless steel reservoir, and all copper evaporator. Installed properly, it will give you years of trouble free service. Therefore, it is important that the chilled water piping system you are using to plumb this water chiller is also as contaminant free as possible. When you take this into consideration you will have a most efficient water cooling system

   Should you need assistance to clean up an old chilled water system or to keep a new system clean, we suggest you contact your local water treatment company.

3. Place the water chiller in an area that allows easy access to the service doors and control panel for routine maintenance and inspection. For the air-cooled unit, make sure it is in an area where there is good air circulation over the condenser inlet, **24" from any obstruction**. For the water-cooled unit, make sure it has a good water supply by keeping the piping to the condenser 1" in size. Restriction of air to the air-cooled condenser or water to the water-cooled unit will not only affect the efficiency of the unit, but will also cause damage to the refrigeration system. Note: Do not mix up the inlet and the outlet to the condenser on water-cooled units. Water-cooled takes 3 gpm, per ton.

4. Make sure the ceiling above the fan discharge is over 12 feet to avoid recirculation of the condenser air, because recirculating condensed air can cause the unit to cut off on the high-pressure switch. If the ceiling is lower than 12 feet, a straight duct out of the ceiling should be installed in order to prevent the air from recirculating over the condenser.

5. Make up two chilled water lines, a discharge and a return line. The fitting on the chiller for these lines is 1" pipe coupling. IT SHOULD BE NOTED THAT THERE IS A 1/4" COPPER BY-PASS LINE BETWEEN THE WATER PUMP AND THE WATER TANK. This by-pass allows just enough water to circulate through the water system in order to prevent damage to the water pump in case the chilled water discharge is shut off. This small amount of water will not affect the efficiency of the unit.

6. Fill the chilled water tank through the hose bib, which is located on the chilled water return line. Fill the tank until it reaches the level as marked on the water sight glass. The water level should be kept within 1" of the marked level. **Do not fill the water tank with deionized water.**

7. Check the voltage on the chiller to see that it matches your supply. When applying power to the water pump (by turning the manual switch on), make sure all the switches on the control panel are in the "off" position. It is necessary to check the rotation of the water pump. The motors on all pumps have an internal overload protection.

8. Power to the unit should be on for 3 hours prior to full usage to allow the crank case heater to heat the compressor. **PLEASE READ SECTION ON CRANK CASE HEATER ON PAGE 18.**

9. The water pump manual switch controls the operation of the water pump. After checking the rotation of the water pump. PLEASE NOTE when the water pump is turning the proper rotation. The water pump switch must be on in order to check rotation of fan motor. The refrigeration system will not run unless the water pump switch is in the on position. Set the temperature controller to the desired temperature. If the temperature is set below 36° F, antifreeze must be added to the water supply tank. Use non-automotive antifreeze which can be added through the overflow pipe. Never add more antifreeze than necessary, since it is a poor conductor of heat the cooling capacity of the chiller will be reduced.

10. With the temperature controller set, the compressor can be turned on by the manual switch. The refrigeration system is now running. It should be noted that there could be a two to three degree difference between the temperature control setting and the dial thermometer. Use the dial thermometer as a guide. Once set, the temperature controller will control the temperature of the water automatically.

SPECIAL INSTRUCTIONS

WATER PUMP

The water pump is controlled by the manual switch for off and on operations. The motor on this pump has a built-in overload protection, as do all the motors in our system.

ELECTRICAL CONTROLS - Control Circuit 24 Volts

The control circuit for the refrigeration system has several controls wired in series. First are the high and low-pressure switches that are mounted in the control panel. The high-pressure switch will shut off the refrigeration system in the event the pressure is too high. High pressure can be caused by the condenser becoming restricted, by foreign material on the outside surface of the condenser, or if the fan motor is not running. If the high-pressure limit switch should cut out, there is a manual reset switch, which is located at the control panel on the right side. In order to reset this switch, the disconnect switch and the switch must be turned off and the control panel door must be open. If and when the high-pressure switch is off, check the "Trouble Shooting" chart for diagnosis.

The low-pressure switch will cut out at any time the pressure in the refrigeration system is below 25 psi. Low psi can be caused by a freeze up in the water tank, a leak in the refrigeration system, if the system is low on Freon (R-22), or if there is any sort of restriction in the system. If the switch cuts out, it will automatically reset. **Never try to adjust the high and low-pressure switches or by-pass them, or serious damage to the system will result.** Adjustment should only be made after the internal pressure of the refrigeration system has been read.

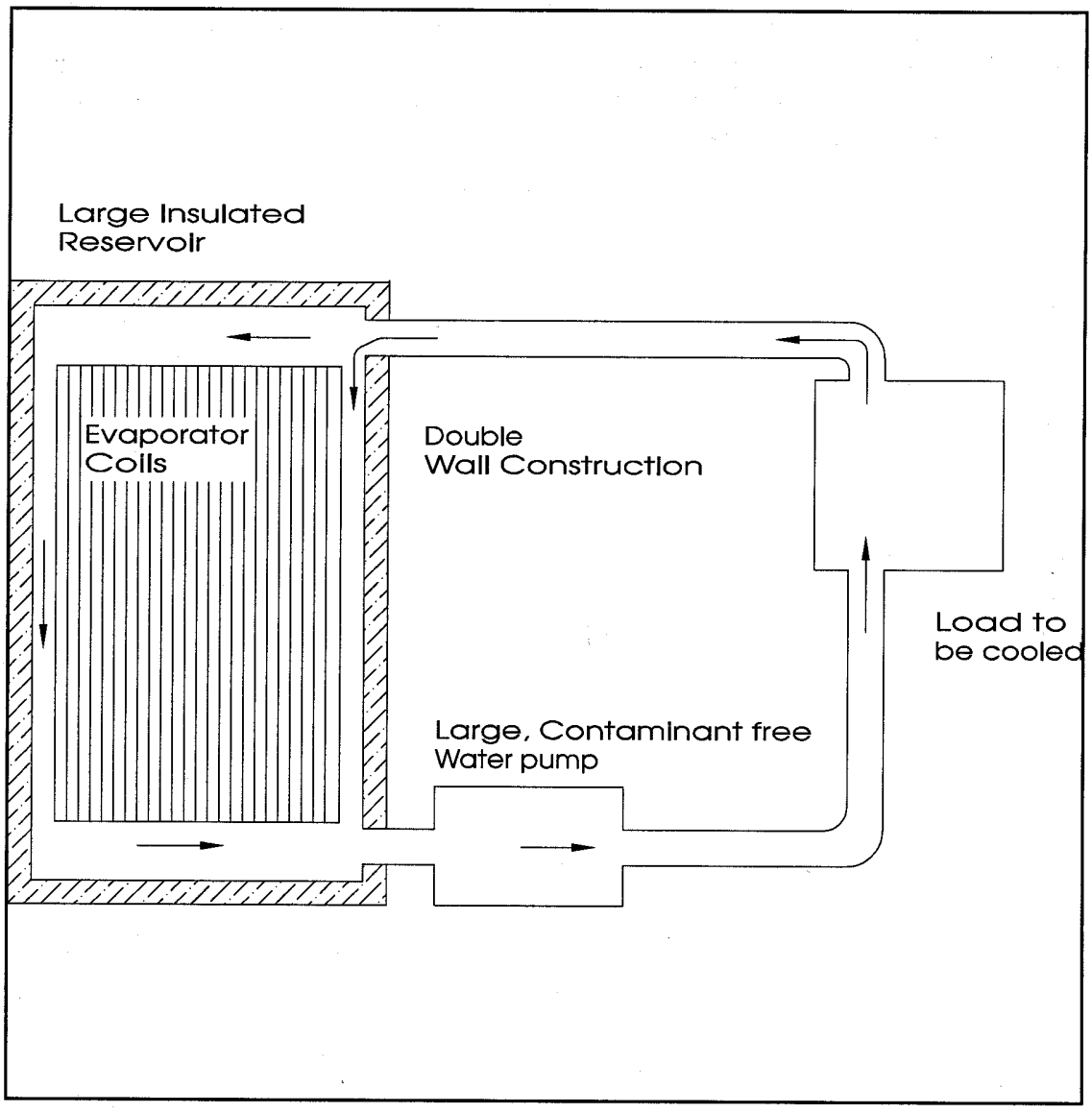
The second control of the circuit is the temperature controller. It controls the cycling of the refrigeration system. Once this control is set, it will control the cycling of the unit automatically. Do not set it below freezing unless the proper amount of antifreeze is put into the unit. Since antifreeze is a poor conductor of heat, never add more than necessary.

The third control on the circuit is the manual compressor switch. It is only used to turn the refrigeration system on or off.

The fourth part on the circuit is the overload protection on the compressor. It will open if the unit becomes low on refrigeration or if the improper voltage is used. This part of the circuit is an automatic reset.

CHILLED WATER CIRCUIT

The chilled water is pumped from the chiller's water tank to the discharge outlet of the chiller. Then from the discharge outlet, the water travels to the object to be cooled, through the heat exchanger, and returns through the chillers return line into the water tank. Be sure to keep all lines full size (1"). If the size of the lines are reduced, then the flow of water will be restricted, and thus resulting in improper chilling.



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Phone: 800-968-5665

REFRIGERATION SYSTEM:

The refrigeration system is a medium temperature system with a range from 35°F to 70°F. This is the most efficient range. If temperatures below or above this range are required, they should be discussed with our engineering department. The refrigeration system also includes a hermetically sealed refrigeration system and all parts, except the evaporator coil, are standard to the refrigeration industry. The evaporator coil is installed in a stainless steel tank and the tank on each unit has a large area. This large area allows better control of water temperature and causes the water flow not to be restricted, resulting in better water circulation. Any repairs to the refrigeration system should be done by a qualified refrigeration company. Schreiber Engineering will always have a service engineer available to answer any questions regarding chiller service.

This unit has a service valve on the suction and discharge line. The suction line has its valve on the suction line. The high pressure or discharge service line is on the receiver.

This unit is charged with R-22. **DO NOT OVERCHARGE** because this will cause damage to the compressor. The refrigeration sight glass is fuzzy until the unit reaches its proper temperature.

MAINTAINING THE CHILLER:

Very little maintenance is required on this unit. It might be necessary to clean out the heat exchanger located within the water tank, only depending on the condition of the water used in the chilled water circuit. It might also be necessary to blow out the condenser from time to time, depending on the environment of the installed unit. Finally, the water-cooled condenser needs to be flushed out once in a while. The frequency of this process depends on the condition of the condenser's water supply.

FAN MOTOR SPECIFICATIONS

Refer to your model number & voltage

Model #	H.P.	Voltage	Hz	R.P.M.	Overload	Frame	Mounting	Rotation	Blade	QTY.
50AC	1/4 Hp	115/208/230-1 Ph.	60	1725	Automatic	G48	Rigid O.D.P.	CW	14" x 16 Pitch	1
100AC	1/4 Hp	115/208/230-1 Ph.	60	1725	Automatic	G48	Rigid O.D.P.	CW	16" x 26 Pitch	1
100AC	1/4 Hp	460-3 Ph.	60	1140	Automatic	L48	Rigid O.D.P.	CW	16" x 26 Pitch	1
150AC	1/4 Hp	208/230/460-3 Ph.	60	1140	Automatic	L48	Rigid O.D.P.	CW	16" x 26 Pitch	1
200AC	1/2 Hp	208/230/460-3 Ph.	60	1140	Automatic	F56	Rigid O.D.P.	CW	18" x 24 Pitch	1
300AC	1/2 Hp	208/230/460-3 Ph.	60	1140	Automatic	F56	Rigid O.D.P.	CW	18" x 24 Pitch	1
400AC	1/2 Hp	208/230/460-3 Ph.	60	1140	Automatic	F56	Rigid O.D.P.	CW	18" x 24 Pitch	1
500AC	1/2 Hp	208/230/460-3 Ph.	60	1140	Automatic	F56	Rigid O.D.P.	CW	18" x 24 Pitch	1
600AC	1/2 Hp	208/230/460-3 Ph.	60	1140	Automatic	F56	Rigid O.D.P.	CW	18" x 24 Pitch	2
750AC	1/2 Hp	208/230/460-3 Ph.	60	1140	Automatic	F56	Rigid O.D.P.	CW	18" x 24 Pitch	2
800AC	1/2 Hp	208/230/460-3 Ph.	60	1140	Automatic	F56	Rigid O.D.P.	CW	18" x 24 Pitch	2
1001AC	1/2 Hp	208/230/460-3 Ph.	60	1140	Automatic	F56	Rigid O.D.P.	CW	18" x 24 Pitch	2
1000AC	1/2 Hp	208/230/460-3 Ph.	60	1140	Automatic	F56	Rigid O.D.P.	CW	18" x 24 Pitch	2
1250AC	1/2 Hp	208/230/460-3 Ph.	60	1140	Automatic	F56	Rigid O.D.P.	CW	18" x 24 Pitch	2
1500AC	1 Hp	208/230/460-3 Ph.	60	1725	Automatic	E56	Rigid O.D.P.	CW	24" x 16 Pitch	2
2000AC	1 Hp	208/230/460-3 Ph.	60	1725	Automatic	E56	Rigid O.D.P.	CW	24" x 16 Pitch	2
2500AC	1 Hp	230/460-3 Ph.	60	1725	Automatic	E56	Rigid O.D.P.	CW	24" x 16 Pitch	3
3000AC	1 Hp	460-3 Ph.	60	1725	Automatic	E56	Rigid O.D.P.	CW	24" x 16 Pitch	3

SAFETY:

Avoid personal injury or equipment damage by disconnecting electrical power before working on the motor(s).
Do not remove the door(s) while the unit is connected to electrical power.

MAINTENANCE:

1. There are no lubrication points; therefore, no lubrication is necessary
2. Make sure the blade runs in the correct direction.
3. Clean the outside of the motor as necessary.

A GOULDS PUMPS COMPANY

Installation, Operation and Maintenance Instructions. Model NPE/NPE-F

DESCRIPTION & SPECIFICATIONS:

The models NPE (close-coupled) and NPE-F (frame-mounted) are end suction, single stage centrifugal pumps for general liquid transfer service, booster applications, etc. Liquid-end construction is all AISI Type 304 stainless steel, stamped and welded. Impellers are fully enclosed, non-trimable to immediate diameters. Casings are fitted with a diffuser for efficiency and for negligible radial shaft loading.

Close-coupled units have NEMA 48J or 56J motors with C-face mounting and threaded shaft extension. Frame-mounted units can be coupled to motors through a spacer coupling, or belt driven.

1. Important

1.1. Inspect unit for damage. Report any damage to carrier/dealer immediately.

1.2. Electrical supply must be a separate branch circuit with fuses or circuit breakers, wire sizes, etc., per National and local electrical codes. Install an all-leg disconnect switch near pump.

CAUTION

Always disconnect electrical power when handling pump of controls.

1.3. Motors must be wired for proper voltage. Motor wiring diagram is on motor nameplate. Wire size must limit maximum voltage drop to 10% of nameplate voltage at motor terminals, or motor life and pump performance will be lowered.

1.4. Always use horsepower-rated switches, contactor and starters.

1.5. Motor Protection

1.5.1. Single-phase: Thermal protection for single-phase units is sometimes built in (check nameplate). If no built-in protection is provided, use a contactor with a proper overload. Fusing is permissible.

1.5.2. Three-phase: Provide three-leg protection with properly sized magnetic starter and thermal overloads.

1.6. Maximum Operating Limits:

Liquid Temperature: 212F (100C) with standard seal.
250F (120C) with optional high temp seal.
Pressure: 75 PSI.
Starts Per Hour: 20, evenly distributed.

1.7 Regular inspection and maintenance will increase service life. Base schedule on operating time. Refer to section 8.

2. Installation

2.1. General

2.1.1. Locate pump as near liquid source as possible (below level of liquid for automatic operation).

2.1.2. Protect from freezing or flooding.

2.1.3. Allow adequate space for servicing and ventilation.

2.1.4. All piping must be supported independently of the pump, and must "line-up" naturally.

CAUTION

Never draw piping into place by forcing the pump suction and discharge connections.

2.1.5. Avoid unnecessary fittings. Select sizes to keep friction losses to a minimum.

2.2. Close-Coupled Units:

2.2.1. Units may be installed horizontally, inclined or vertically.

CAUTION

Do not install with motor below pump. Any leakage or condensation will affect the motor.

2.2.2. Foundation must be flat and substantial to eliminate strain when tightening bolts. Use rubber mounts to minimize noise and vibration.

2.2.3. Tighten motor hold-down bolts before connecting piping to pump.

2.3. Frame-Mounted Units:

2.3.1. Bedplate must be grouted to a foundation with solid footing. Refer to Fig. 1.

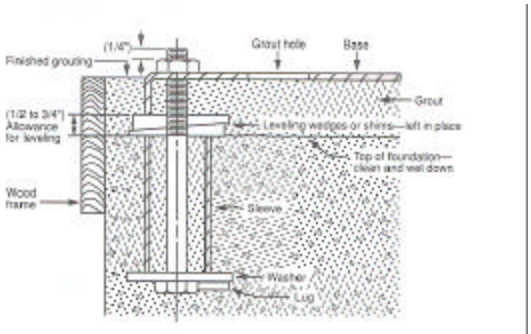

Figure 1 IM013R01

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2.3.2. Place unit in position on wedges located at four points (two below approximate center of driver and two below approximate center of pump). Adjust wedges to level unit. Level or plumb suction and discharge flanges.
2.3.3. Make sure bedplate is not distorted and final coupling alignment can be made within the limits of movement of motor and by shimming, if necessary.
2.3.4. Tighten foundation bolts finger tight and build dam around foundation. Pour grout under bedplate making sure the areas under pump and motor feet are solid. Allow grout to harden 48 hours before fully tightening foundation bolts.
2.3.5. Tighten pump and motor hold-down bolts before connecting the piping to pump.

3. Suction Piping:

3.1. Low static suction lift and short, direct, suction piping is desired. For suction lift over 10 feet and liquid temperatures over 120 F, consult pump performance curve for Net Positive Suction Head Required.
3.2. Suction pipe must be as large as the suction connection of the pump. Smaller size will degrade performance.
3.3. If larger pipe is required, and eccentric pipe reducer (with straight side up) must be installed at the pump.
3.4. Installation with pump below source of supply:
3.4.1. Install full flow isolation valve in piping for inspection and maintenance.

CAUTION

Do not use suction isolation valve to throttle pump.

3.5. Installation with pump above source of supply:
3.5.1. Avoid air pockets. No part of piping should be higher than pump suction connection. Slope piping upward from liquid source.
3.5.2. All joints must be airtight.
3.5.3. Foot valve to be used only if necessary for priming, or to hold prime on intermittent service.
3.5.4. Suction strainer open area must be at least triple the pipe area.
3.6. Size of the inlet from liquid source and minimum submergence over inlet, must be sufficient to prevent air from entering pump through vortexing. See figs. 2-5.

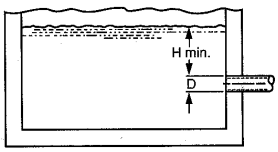


Figure 2

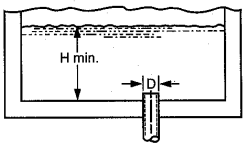


Figure 3

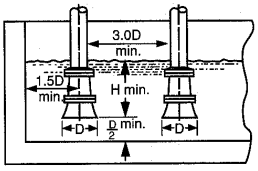


Figure 4

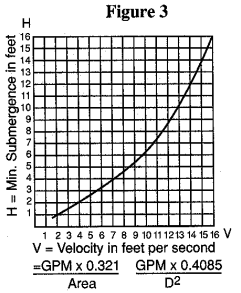


Figure 5

4. Discharge Piping:

4.1. Arrangement must include a check valve located between a gate valve and the pump. The gate valve is for regulation of capacity, or for inspection of the pump or check valve.
4.2. If an increaser is required, place between check valve and pump.
4.3. Use 3-4 wraps of Teflon tape to seal threaded connections.

5. Motor-To-Pump Shaft Alignment:

5.1. Close-coupled Units:
5.1.1. No field alignment necessary.
5.2. Frame-Mounted Units:
5.2.1. Even though the pump-motor unit may have a factory alignment, this could be disturbed in transit and must be checked prior to running.

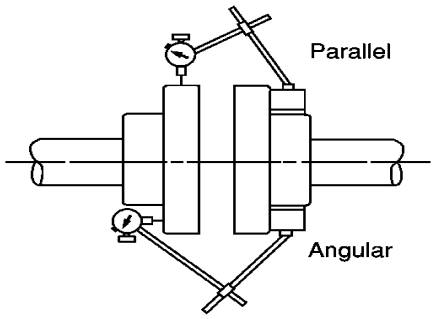


Figure 6

5.2.2 Tighten all hold-down bolts before checking the alignment.
5.2.3. If re-alignment is necessary, always move the motor. Shim is required.
5.2.4. Parallel misalignment – shafts with axis parallel but not concentric. Place a dial indicator on one hub and rotate this hub 360° while taking readings on the outside diameter of the other hub. Parallel alignment occurs when Total indicator reading is .005", or less.
5.2.5. Angular misalignment – shafts with axiz parallel but not concentric. Place dial indicator on one hub and rotate this hub 360° while taking readings on the face of the other hub. Angular alignment is achieved when Total Indicator Reading is .005", or less.
5.2.6. Final alignment is achieved when parallel and angular requirements are satisfied with motor hold-down bolts tight.

CAUTION

Always recheck both alignments after making any adjustment.

6. Rotation:

6.1. Correct rotation is right-hand (clockwise when viewed from the motor end). Switch power on and off quickly. Observe shaft rotation. To change rotation:

6.1.1. Single-phase motor: Non-reversible.
6.1.2. Three-phase motor: Interchange any two power supply leads.

7. Operation:

7.1. Before starting, pump must be primed (free of air and suction pipe full of liquid) and discharge valve partially open.

CAUTION

Pumped liquid provides lubrication. If pump is run dry, rotating parts will seize and mechanical seal will be damaged. Do not operate at or near zero flow. Energy imparted to the liquid is converted into heat. Liquid may flash to vapor. Rotating parts require liquid to prevent scoring or seizing.

7.2. Make complete check after unit is run under operating conditions and temperature has stabilized. Check fro expansion of piping. On frame-mounted units coupling alignment may have changed due to the temperature differential between pump and motor. Recheck alignment.

8. Maintenance:

8.1. Close-coupled Unit. Ball bearings are located in and are part of the motor. They are permanently lubricated. No greasing required.
8.2. Frame-Mounted Units:
8.2.1. Bearing frame should be re-greased every 2,000 hours or three month interval, whichever occurs first. Use a #2 sodium or lithium based grease. Fill until grease comes out of relief fittings, or lip seals, then wipe off excess.
8.2.2. Follow motor and coupling manufacturers' lubrication instructions.
8.2.3. Alignment must be rechecked after any maintenance work involving and disturbance of the unit.

9. Disassembly:

Complete disassembly of the product will be described. Proceed only as far as required to perform the maintenance work needed.
9.1. Turn off Power.
9.2. Drain system. Flush if necessary.
9.3. Close-Coupled Units: Remove motor hold-down bolts. Frame-Mounted Units: Remove coupling, spacer, coupling, spacer, coupling guard and frame hold-down bolts.
9.4. Disassembly of Liquid End:
9.4.1. Remove casing bolts (370).
9.4.2. Remove back pull-out assembly from casing (100).
9.4.3. Remove impeller locknut (304).

CAUTION

Do not insert screwdriver between impeller vanes to prevent rotation of close-coupled units. Remove cap at opposite end of motor. A screwdriver slot or a pair of flats will be exposed. Using them will prevent impeller damage.

9.4.4. Remove impeller (101) by turning counter-clockwise when looking at the front of the pump. Protect hand with rag or glove.

CAUTION

Failure to remove impeller in a counter-clockwise direction may damage threading on the impeller, shaft or both.

9.4.5. With two pry bars 180° apart and inserted between the seal housing (184) and the motor adapter (108), carefully separated the two parts. The mechanical seal rotary unit (383) should come off the shaft with the seal housing.
9.4.6. Push out the mechanical seal stationary seat from the motor side of the seal housing.
9.5. Disassembly of Bearing Frame:
9.5.1. Remove bearing cover (109).
9.5.2. Remove shaft assembly from frame (228).
9.5.3. Remove lip seals (138 & 139) from bearing frame and bearing cover if worn and are being replaced.
9.5.4. Use bearing puller or arbor press to remove all ball bearing. (112 & 168).

10. Reassembly:

10.1. All parts should be cleaned before assembly.
10.2. Refer to parts list to identify required replacement items. Specify pump index or catalog number when ordering parts.
10.3. Reassembly is the reverse of disassembly.
10.4. Observe the following when reassembling the bearing frame:
10.4.1. Replace lip seals if worn or damaged.
10.4.2. Replace ball bearings if loose, rough or noisy when rotated.
10.4.3. Check shaft for runout. Maximum permissible is .002" T.I.P.
10.5. Observe the following when reassembling the liquid-end:
10.5.1. All mechanical seal components must be in good condition or leakage may result. Replacement of complete seal assembly, whenever seal has been removed, is a good standard practice.
10.5.2. Inspect casing O-ring (513) and replace if damaged. This o-ring may be lubricated with petroleum jelly to ease assembly.
10.5.3. Inspect guidevane O-ring (349) and replace if worn.

CAUTION

Do not lubricate guidevane O-ring (349). Insure it is not pinched by the impeller on reassembly.

10.6. Check reassembled unit for binding. Correct as required.
10.7. Tighten casing bolts in a star pattern to prevent O-ring binding.

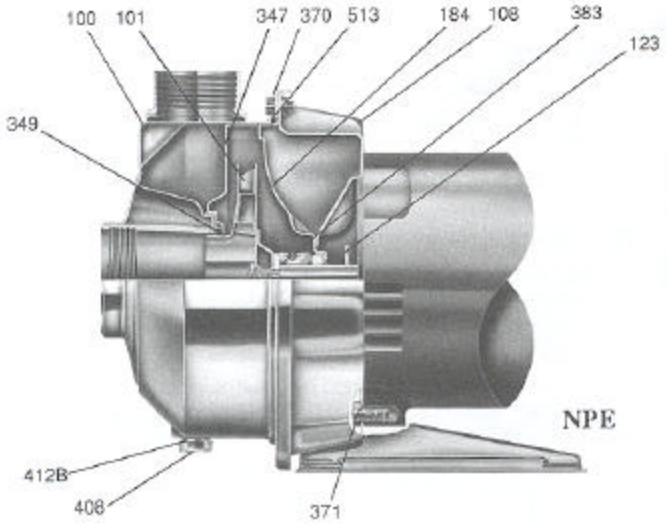
11. Trouble Shooting Chart:

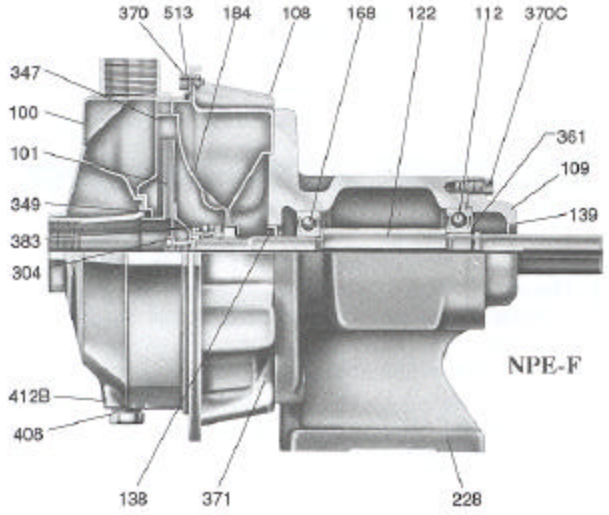
Motor Not Running:
(See causes 1 – 6)
Little or No Liquid Delivered:
(See causes 7 – 17)
Power Consumption Too High:
(See causes 4, 17 - 19, 22)
Excessive Noise and Vibration:
(See causes 4, 6, 9, 13, 15, 16, 18, 20 – 22)
Probable Cause:

1) Tripped thermal protector.
2) Open circuit breaker.
3) Blown fuse.
4) Rotating parts binding.
5) Motor wired improperly.
6) Defective motor.
7) Not primed.
8) Discharge plugged or valve closed.
9) Incorrect Rotation
10) Foot valve too small, suction not submerged, inlet screen plugged.
11) Low voltage.
12) Phase loss (3-phase only).
13) Air or gasses in liquid.
14) System head too high.
15) NPSHA too low:
    Suction lift too high or suction losses excessive.
    Check with vacuum gauge.
16) Impeller worn or plugged.
17) Incorrect impeller diameter.
18) Head too low causing excessive flow rate.
19) Viscosity or specific gravity too high.
20) Worn bearings.
21) Pump or piping loose.
22) Pump and motor misaligned.

Liquid End Components		
Item No.	**Description**	**Materials**
100	Casing	AISI 304 Stainless Steel
101	Impeller	
184	Seal Housing	
304	Impeller Locknut	
347	Guidevane	
349	O-ring, Guidevane	Buna-N
370	Socket Hd. Screws, Casing	AISI 304 S.S.
383	Mechanical Seal	**see chart
408	Drain & vent Plug, Casing	AISI 304 S.S.
412B	O-ring, Drain & Vent Pug	Buna-N
513	O-ring, Casing	Buna-N
Power End Components		
108	Adapter	AISI 304 S.S.
109	Bearing Cover	Cast Iron
112	Ball Bearing (Outboard)	Steel
122	Shaft	AISI 303 S.S.
138	Lip Seal (Inboard)	Buna/Steel
139	Lip Seal (Outboard)	Buna/Steel
168	Ball Bearing (Inboard)	Steel
228	Bearing Frame	Cast Iron
361	Snap Ring	Steel
370C	Hex. Hd. Cap Screw, Brg. Cvr.	Plated Steel
371	Hex. Hd. Cap Screw, Adapter	Plated Steel

**Mechanical Seals – Item 383						
Part No.	**Service**	**Rotary**	**Stationary**	**Elastomer**	**Metal Parts**	**Crane Type**
10K46	Standard	Carbon	Ceramic	Buna	18-8 S.S.	21
10K18	Option-High Temp.		Ni-Resist	EPR		
10K24	Option-Chemical Duty		Ceramic	Viton		
10K55	Option-High Temp.		Tungsten			
10K29	Option-Severe Duty	Silicon Carbon		Buna		





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WARNING

Overcharging a refrigeration or air conditioning system can be dangerous.

****

If a system refrigerant overcharge is sufficient to immerse the major parts of the motor and compressor in liquid refrigerant, a situation has been created which, when followed by unusual circumstances can lead to compressor housing seam separation or rupture.

The sequence of circumstances which can lead to compressor housing seam separation or rupture may occur in the following manner:

(a) The system overcharge immerses the compressor motor, piston, connecting rods, cylinder, etc., in liquid refrigerant, thereby effectively forming a hydraulic block preventing the compressor from starting. This condition is known as locked rotor.

(b) Electric current continues to flow through the compressor motor windings that become, in effect, electric resistance heaters. The heat produced begins to vaporize the excessive refrigerant liquid overcharge, causing a rapid increase in system pressure.

(c) If the system compressor protective devices fail for any reason prior to or during this locked rotor heating cycle, or cycles, liquid refrigerant may be vaporized sufficiently fast enough to raise the pressure within the system to extremes far in excess of the housing or weld seam design limits.

(d) In some instances where the amount of refrigerant overcharge is critical in proportion to the system internal volume, the pressure reached can cause a compressor housing seam separation or rupture, which can be hazardous.

The remedy to eliminate this exceedingly rare but potential hazard is to use correct refrigerant charging amounts and techniques.

Tecumseh Products Company urges that all individuals responsible for training, teaching, or advising installation mechanics and service personnel, must emphasize proper charging techniques and strict adherence to limiting refrigerant charge amounts to those specifically recommended by the manufacturer of the refrigeration, air conditioning, or heat pump system.

SERVICE BULLETIN

HERMETIC COMPRESSOR ELECTRICAL TERMINAL VENTING CAN BE DANGEROUS

****

When the insulating material, which supports a hermetic compressor electrical terminal, suddenly disintegrates due to physical abuse or as a result of an electrical short between the terminal and the compressor housing, the terminal may be expelled, venting the vaporous and liquid contents of the compressor housing and system.

If the hermetic compressor terminal PROTECTIVE COVER is not properly in place with its weatherproofing gasket (if required) and bale strap fastening device secured, there is a remote possibility if a terminal vents, that the vaporous and liquid discharge can be ignited, spouting flames several feet, causing potentially severe or fatal injury to anyone in its path.

The discharge from a venting terminal can be ignited external to the compressor if the terminal PROTECTIVE COVER is not properly in place and if the discharge impinges on a sufficient heat source such as, but not limited to, an open flame, electric heater, or an electrical spark.

Ignition of the discharge can also occur at the venting terminal or inside the motor-compressor enclosure, if there is sufficient contaminant air present in the system and an electrical arc occurs as the terminal vents.

Ignition cannot occur at the venting terminal without the presence of contaminant air, and cannot occur externally from the venting terminal without the presence of an external ignition source.

It is, therefore, essential that any air in a refrigeration, air conditioning, or heat pump system be completely removed when the system is manufactured - when the system is installed - and whenever the system is field processed as a result of field service. Field service includes, but is not limited to, leak repairs or compressor replacement.

Eliminating air within the system prevents ignition at, or in, the hermetic compressor if a terminal should vent, thereby reducing the hazard potential.

To reduce the possibility of external ignition, all open flame, electrical power, and other heat sources should be extinguished or turned off prior to servicing a system.

Before using a soldering or welding torch to remove or repair tubing, make sure all the system refrigerant charge has safely been released.

A venting terminal presents no danger to servicing personnel or anyone else in the vicinity if the compressor terminal PROTECTIVE COVER is properly in place as shown on Tecumseh Products Company drawings and diagrams using the parts as shown on Tecumseh Products Company bills of material.

Hermetic compressors can be properly serviced without unnecessarily removing the terminal PROTECTIVE COVER by adhering to the following service procedures:

1. If the branch circuit, short circuit, and ground fault protective device, i.e., fuse or circuit breaker, is open, this is a strong indication that an electrical problem exists and must be found and corrected.

   The circuit protective device rating must first be checked as required by the National Electrical Code, and its maximum rating should coincide with that marked on the equipment nameplate and/or on the unit wiring diagram and/or instructions. This breaker or fuse rating should be as low as practical. A rule of thumb is 175% times the motor-compressor RLA (FLA on older units) as shown on the unit nameplate.

   It is acceptable to first replace the fuse or reset the circuit breaker ONE TIME to determine if it was just a nuisance opening. WARNING! The terminal PROTECTIVE COVER must be securely in place.

2. If the fuse or circuit breaker again opens, DO NOT continue to replace or reset, as the equipment obviously has an electrical problem. CAUTION! Continual resetting may cause the terminal to vent.

3. DISCONNECT all power to the unit, making sure all power legs are open.

4. Without removing the terminal PROTECTIVE COVER, disconnect the three leads going to the compressor terminals at the nearest point to the compressor, and identify them as Common (C), Start (S), and Run (R). Identification can generally be made through the unit-wiring diagram. DO NOT disconnect at the compressor terminals at this time.

5. With a Megger, Hi-Potential Ground Tester, or other suitable instruments which puts out a voltage between 300 and 1500 volts, check for a ground separately between each of the three C, S, & R leads and ground (such as an unpainted tube on the compressor). Do not use a low voltage output instrument such as a volt-ohmmeter or other such continuity instruments, as these will not detect a low level fault (ground).

6. If a ground is indicated, then carefully remove the compressor terminal ROTECTIVE COVER and inspect for loose leads or insulation breaks in the lead wires.

7. If #6 indicates no visible problem, carefully remove the leads at the compressor terminals. CAUTION: Damage can occur to the glass embedded terminals at this point if the leads are not properly removed, which can result in the terminal venting and hot oil discharging. No ignition, however, can occur if all power is disconnected and no external ignition source is present.

8. Repeat #5 testing, carefully checking for ground, directly between each compressor terminal (C, S, & R) and ground.

9. If once again a ground is indicated, proceed to properly replace the compressor, as it has failed and cannot be repaired.

10. It is important to note that a volt-ohmmeter may be used only to check the resistance and/or continuity of the motor windings. This may be done as follows:

    (a) For internal overload protected motor-compressor, the overload is located between the common terminal of the compressor and the common motor lead inside the compressor. If the resistance reading between Common and Start or Common and Run is open (infinity) and the resistance reading between Start and Run indicates winding Resistance Values in the Tecumseh Hermetic Compressor Service Data Book, then the internal protector is open and time must be allowed for it to reset. Any Common and Start, Common and Run, and Start and Run resistance reading must be within the values shown in Tecumseh Hermetic Compressor Service Data Book.Three phase internal overloads open all three phases. Therefore, allow time for reset.

    (b) For external overload protected motor-compressors, the continuity of the overload may be checked. The resistance of all winding may also be checked, i.e., C-S, C-R, and S-R.

    (c) Any lack of continuity (other than test indicating an open internal protector) or improper resistance, indicates a faulty or damaged motor and the compressor must be properly replaced, as it has failed and cannot be repaired.

If the above indicates no problem with the compressor, then carefully reconnect the leads to the proper compressor terminals (C, S, & R); correctly replace the terminal PROTECTIVE COVER, gasket (if required), and the bale strap.

Then proceed to conduct similar ground and continuity test from the three lead connection points which you previously disconnected, forward toward the incoming power connections, to find the electrical problem. DO NOT reset the ground fault protective device until you have located and corrected the problem. Refer to the Unit Wiring Diagram and Service Manual for the proper procedure and wiring checkout.

The text of step-by-step procedures uses language and symbols which refer to the electrical supply as single phase. Three-phase equipment should be given equally cautious consideration when service is necessary.

Again, we want to stress that it is essential that WHENEVER ELECTRIC POWER is applied to the motor-compressor, the terminal PROTECTIVE COVER must be properly in place.

Servicing refrigeration and air conditioning systems can be dangerous, and extreme caution in all respects should be exercised by the personnel servicing such equipment. The precautions discussed in this bulletin deal only with those dangers associated with VENTING TERMINALS.

CRANK CASE HEATERS

This unit has a CRANK CASE HEATER on the compressor. It is important to the life of this compressor that you follow the instructions. This low wattage heater protects the compressor when it is idle by producing just enough heat to keep the Freon from accumulating in the compressor. Under certain specific conditions this heater will prevent the compressor from slugging causing damage to its internal parts.

These Heaters are wired at our factory in such away that allows the heater to be on any time the disconnect switch on the chiller is on. When you want to turn the water pump or refrigeration compressor off, you must only use the manual switches on the electrical enclosure as marked. When you use the disconnect to turn the unit off you kill the power to the crank case heaters. ONLY use the disconnect to turn off power if you are going to work on the electrical system.

AN IMPORTANT FACTOR - READ

SPECIAL INSTRUCTIONS FOR CRANK CASE HEATER

When the unit is first received, the power to the chiller should be on for 3 hours. That means you must at this time have the unit disconnect on. The manual water pump and refrigeration switches should be off. This will allow the refrigeration compressor to warm up, driving out the freon (R22) that had migrated to the compressor.

This start up time is necessary if you have all the power off for 12 hours or more. Then you must allow this same warm up time. It is okay to turn the unit off by the manual switch only and not the main power. Then you do not need to be concern about a warm up time.

The crank case heater is HIGH VOLTAGE. But it is only very low wattage. Caution should be taken when working on the crank case heater to make sure the POWER is off.

Any question call for more details Schreiber Engineering Corporation 562-926-3855.

MAINTENANCE INFORMATION

1. There are no lubrication points on the chiller. All motors have permanent lubrication in the bearings.

2. The water that is used in the chilled water circuit has no special requirements, except that deionized water cannot be used. The water should be clean and some type of water conditioner can be used. Nothing should be used in the chilled water circuit that could damage the all copper Heat Exchanger. THIS INCLUDES THE USE OF DEIONIZED WATER.

3. The air-cooled condenser should be cleaned on a regular basis, depending on the environment the chiller is installed in.

4. The water level should be maintained as close to the level as marked on the water sight glass. You cannot damage the refrigeration system by the water being at a low level, it will only affect the efficiency of the unit.

5. Caution: The compressor receivers and water pump could be hot enough to injure one touching these components.

6. The dial thermometer is reading the temperature of the discharge-chilled water.

7. Please note: This is a hermetically sealed compressor. There are no necessary maintenance requirements. Please read the service bulletins before making any repairs.

NOTICE ON EXPANSION VALVE

This is a standard Alco Expansion Valve, Model #TLCE (size) HW. These valves come from the factory pre-set. For the proper super heat, do not try to adjust the super heat on this valve unless you call the factory service department. This Alco valve is one of the most reliable parts. If this valve needs to be changed out, do it without losing the R-22 charge. To do this, turn the receiver off at the liquid line to the expansion valve. Then pump the system down until there are two or three pounds of gauge pressure. Remove the power element and install the replacement power element, open the receivers liquid line valve. TEST FOR LEAKS and restart the unit. Remember; call the factory before you do any work on the expansion valve.

TROUBLE SHOOTING - PART I

SYMPTOM	DIAGNOSIS	REMEDY
Compressor won't run	Check Power supply Electrical circuit Check Line load voltage Temperature control Compressor overload Low pressure switch High pressure switch Manual switch Compressor All control circuit	 Correct circuit breaker Repair or replace bad circuit Correct voltage condition Repair or replace Replace Repair or replace Repair or replace Replace Replace Repair
Compressor runs No refrigeration	Refrigerant leak Stuck expansion valve	Repair leak and recharge Replace expansion valve
High pressure trips	Condenser motor Air over condenser restricted Service panel not in place	Repair or replace motor Clean condenser Install service panel
Low pressure switch Cutting out	Defective expansion Refrigerant leak	Replace expansion valve Repair leak
Temperature too high	Dial thermometer Temperature controller Water pump off	Re-adjust or replace Replace Check controls circuit
Temperature too cold	Temperature controller Dial thermometer Water pump	Repair or replace Out of adjustment Not circulating water

TROUBLE SHOOTING - PART II

REFRIGERATION SYSTEM INTERNAL PRESSURE USING REFRIGERANT R-22

* High Pressure Switch: Manual Reset - Cut out at 425 P.S.I.

* Low Pressure Switch: Automatic Reset - Cut out at 25 P.S.I.

WORKING REFRIGERANT PRESSURES R-22

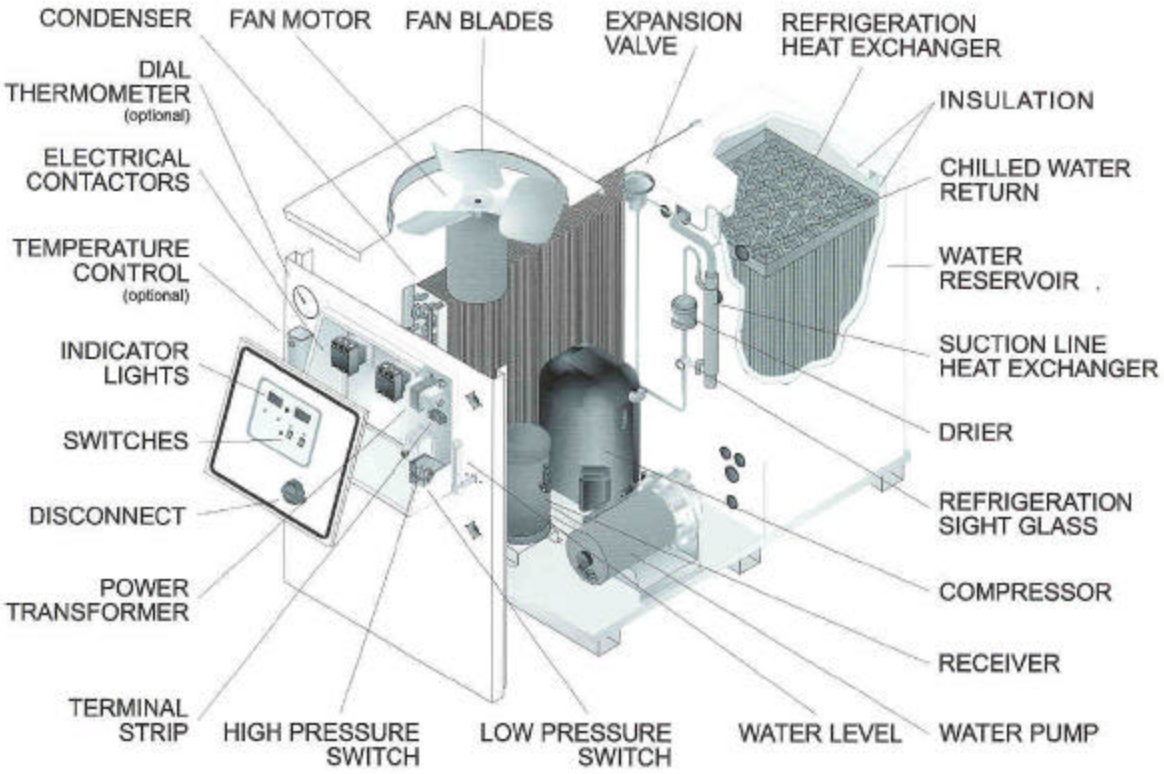
* High Pressure: 185 to 325 P.S.I.

* Low Pressure: 45 to 70 P.S.I.

*****NOTE*****

These pressures are under normal ambient temperatures and chilled water temperatures.

CHILLER PARTS IDENTIFICATION



PARTS LIST

400AC/WC - 460/3 or 230/3

MRI UNITS ONLY

If this unit has special feature(s) installed, see appendix for part number(s).

Part Number	Description	460/3	230/3	Qty.
Refrigeration				
R117	Compressor – 220/3 – 4 HP		✓	1
R118	Compressor – 440/3 – 4 HP	✓		1
R124	Condenser – Air Cooled	✓	✓	1
R124-W	Condenser – Water Cooled	✓	✓	1
R132	Receiver 5 Ton	✓	✓	1
R140-4	Expansion Valve – 4 HW	✓	✓	1
R141-1	Expansion Valve Flange	✓	✓	1
R146-1	Refrigeration Sight Glass	✓	✓	1
R153	Refrigeration Drier – 3/8”	✓	✓	1
R168	Evaporator – SAC-5	✓	✓	1
R180	Suction Line Heat Exchanger	✓	✓	1
R184	High Pressure Switch – OP/410 – CL/MR	✓	✓	1
R185	Low Pressure Switch – OP/15 – CL/30	✓	✓	1
Electrical				
E101	Disconnect 80 Amp	✓	✓	1
E101-H-CE2	Disconnect Handle Only	✓	✓	1
E101-S	Disconnect Shaft Only	✓	✓	1
E103	Contactors – 30 Amps	✓	✓	2
E104	4 Point Terminal Block	✓	✓	3
E112	Transformer – 220/3		✓	1
E113	Transformer – 440/3	✓		1
E115	Grounding Screw	✓	✓	1
E122	Off / On Switch	✓	✓	2
E124-3	Pilot Light Bulb – 24v	✓	✓	2
E126	Pilot Light Assembly	✓	✓	2
E128A-BK	Solid State Control Board Half thru 4 Ton	✓	✓	1
E128P-D	Discharge Probe & Wire	✓	✓	14 ft
E128P-R	Return Probe & Wire	✓	✓	14 ft
E129	Low Ambient Controls	✓	✓	1
E130	Thermostat – High Temperature	✓	✓	1
E136-30	Water Pressure Gauge – 2.5” Liquid Filled	✓	✓	1
E145	Fan Motor – ½ HP	✓	✓	1
E148	Fan Blade – 18”	✓	✓	1
E153-20	Fan Guard for 18” Blade	✓	✓	1
Plumbing				
P124-S	2 HP Stainless Steel Water Pump	✓	✓	1
P145-2S	Seal & “O” Ring Kit for Water Pump	✓	✓	1
P149-WSGA	Water Sight Glass Assembly	✓	✓	1
P151-WSG	Water Sight Glass Only	✓	✓	1
P151-1.0	Solenoid Valve – Black Flow Kit	✓	✓	1
P153	Float Switch – ⅛” NPT	✓	✓	1
P160-1.0	Check Valve	✓	✓	1
P160-2	Stainless Steel Tank – 5 Ton	✓	✓	1

Schreiber Limited Warranty

Schreiber warrants the product described herein against defective material or workmanship for one year from the date of purchase.

If any part is found to be defective within the warranty period, Schreiber, or its authorized service agent, will replace, or at Schreiber's options, repair the part free of charge for materials and labor.

This warranty does not cover damage caused by misuse, accident, abuse, incorrect installation or operation. In addition, it does not cover damage occurring during transit, or damage caused by or resulting from repair or modifications carried out by anyone other than Schreiber or its Authorized Service Agent.

(562) 926-3855

APPENDIX

SPECIAL FEATURE

SPECIAL FEATURES

Manual Bypass
This unit has an adjustable water by-pass. It can be adjusted in the field. This feature cuts down the amount of flow of water coming out of the water pump.
Kit Number: K08.12
:

Discharge Pressure Gauge
There is a water pressure gauge on the water discharge line of the water pump, reading the water pressure.
Kit Number: k08.19

Pump Upgrade
The standard water pump in this unit has been upgraded to a 2 HP stainless steel pump.
Part Number: P124-S:

Low Level Warning and Cut-Out
The low level float is mounted in the chiller water reservoir. It is a single float and installed normally closed (opens at low water.) On models with **electronic control panels**, the chiller ceases operation when a low water situation occurs, a warning light on the control panel will illuminate. On models with **standard controls**, a low level condition illuminates the "low level warning" lamp only. There is no cut-out . Water must be added immediately or the unit can be severely damaged. For both control styles, **normal operation will resume when the tank is filled.**
Kit Number: K08.23

Top Fill

A 2 " top fill port has been added to the top of this unit instead of automatic water level control. This should allow the customer to pour water or other treatment products directly into the chiller.
No Kit Number

Pump Operation Auxiliary Contact
A pressure switch is mounted on case of the pump. This switch will be closed when the pump is operating. In the event of a pump failure, the switch will open
(The switch is also open when the power is off to the pump.)
Kit Number: K08.34

High Temperature Auxiliary Contact
High Temperature auxiliary contact opens when the temperature exceeds the high temperature ser point on the control panel.
Kit Number: K08.33

Installation & Maintenance Instructions

ASCO Red-Hat II®

OPEN–FRAME, GENERAL PURPOSE, WATERTIGHT/EXPLOSIONPROOF SOLENOIDS

SERIES 8016G

Form No.V6583R7

—SERVICE NOTICE—

ASCO® solenoid valves with design change letter "G" in the catalog number (example: 8210G 1) have an epoxy encapsulated ASCO® Red Hat II® solenoid. This solenoid replaces some of the solenoids with metal enclosures and open–frame constructions. Follow these installation and maintenance instructions if your valve or operator uses this solenoid.

DESCRIPTION

Catalog numbers 8016G1 and 8016G2 are epoxy encapsulated pull–type solenoids. The green solenoid with lead wires and 1/2″ conduit connection is designed to meet Enclosure Type 1–General Purpose, Type 2–Dripproof, Types 3 and 3S–Raintight, and Types 4 and 4X–Watertight. The black solenoid on catalog numbers prefixed "EF" is designed to meet Enclosure Types 3 and 3S–Raintight, Types 4 and 4X–Watertight, Types 6 and 6P–Submersible, Type 7 (A, B, C, & D) Explosionproof Class I, Division 1, Groups A, B, C, & D and Type 9 (E, F, & G)–Dust–Ignitionproof Class II, Division 1, Groups E, F, & G. The Class II, Groups F & G Dust Locations designation is not applicable for solenoids or solenoid valves used for steam service or when a class "H" solenoid is used. See *Temperature Limitations* section for solenoid identification and nameplate/retainer for service. When installed just as a solenoid and not attached to an ASCO valve, the core has a 0.250–28 UNF–2B tapped hole, 0.38 minimum full thread.

Series 8016G solenoids are available in:

- **Open–Frame Construction**
  The green solenoid may be supplied with 1/4″ spade, screw, or DIN terminals (Refer to Figure 4).
- **Panel Mounted Construction**
  These solenoids are specifically designed to be panel mounted by the customer through a panel having a .062 to .093 maximum wall thickness. (Refer to Figure 3 and section on *Installation of Panel Mounted Solenoid*).

Optional Features For Type 1 – General Purpose Construction Only

- **Junction Box**
  This junction box construction meets Enclosure Types 2,3,3S,4, and 4X. Only solenoids with 1/4″ spade or screw terminals may have a junction box. The junction box provides a 1/2″ conduit connection, grounding and spade or screw terminal connections within the junction box (See Figure 5).
- **DIN Plug Connector Kit No. K236034**
  Use this kit only for solenoids with DIN terminals. The DIN plug connector kit provides a two pole with grounding contact DIN Type 43650 construction (See Figure 6).

OPERATION

When the solenoid is energized, the core is drawn into the solenoid base sub–assembly. **IMPORTANT: When the solenoid is de–energized, the initial return force for the core, whether developed by spring, pressure, or weight, must exert a minimum force to overcome residual magnetism created by the solenoid. Minimum return force for AC construction is 11 ounces, and 4 ounces for DC construction.**

INSTALLATION

Check nameplate for correct catalog number, service, and wattage. Check front of solenoid for voltage and frequency.

⚠ WARNING: Electrical hazard from the accessibility of live parts. To prevent the possibility of death, serious injury or property damage, install the open – frame solenoid in an enclosure.

For Black Enclosure Types 7 and 9 Only

⚠ CAUTION: To prevent fire or explosion, do not install solenoid and/or valve where ignition temperature of hazardous atmosphere is less than 165° C. On valves used for steam service or when a class "H" solenoid is used, do not install in hazardous atmosphere where ignition temperature is less than 180°C. See nameplate/retainer for service.

NOTE: These solenoids have an internal non–resetable thermal fuse to limit solenoid temperature in the event that extraordinary conditions occur which could cause excessive temperatures. These conditions include high input voltage, a jammed core, excessive ambient temperature or a shorted solenoid, etc. This unique feature is a standard feature only in solenoids with black explosionproof/dust–ignitionproof enclosures (Types 7 & 9).

⚠ CAUTION: To protect the solenoid valve or operator, install a strainer or filter, suitable for the service involved in the inlet side as close to the valve or operator as possible. Clean periodically depending on service conditions. See ASCO Series 8600, 8601, and 8602 for strainers.

Temperature Limitations

For maximum valve ambient temperatures, refer to chart. The temperature limitations listed, only indicate maximum application temperatures for field wiring rated at 90°C. Check catalog number prefix and watt rating on nameplate to determine maximum ambient temperature. See valve installation and maintenance instructions for maximum fluid temperature.
NOTE: For steam service, refer to *Wiring* section, *Junction Box* for temperature rating of supply wires.

Temperature Limitations For Series 8016G Solenoids for use on Valves Rated at 6.1, 8.1, 9.1, 10.6, or 11.1 Watts

Watt Rating	Catalog Number Coil Prefix	Class of Insulation	Maximum † Ambient Temp.
6.1, 8.1, 9.1, & 11.1	None, FB, KF, KP, SF, SP, SC, & SD	F	125°F (51.7°C)
6.1, 8.1, 9.1, & 11.1	HB, HT, KB, KH, SS, ST, SU, & ST	H	140°F (60°C)
10.6	None, KF, SF, & SC	F	104°F (40°C)
10.6	HT, KH, SU, & ST	H	104°F (40°C)

†Minimum ambient temperature –40°F (–40° C).

Positioning

This solenoid is designed to perform properly when mounted in any position. However, for optimum life and performance, the solenoid should be mounted vertically and upright to reduce the possibility of foreign matter accumulating in the solenoid base sub–assembly area.

Wiring

Wiring must comply with local codes and the National Electrical Code. All solenoids supplied with lead wires are provided with a grounding wire which is green or green with yellow stripes and a 1/2″ conduit connection. To facilitate wiring, the solenoid may be rotated 360°. For the watertight and explosionproof solenoid, electrical fittings must be approved for use in the approved hazardous locations.

Additional Wiring Instructions For Optional Features:

- **Open–Frame solenoid with 1/4″ spade terminals**

For solenoids supplied with screw terminal connections use #12–18 AWG stranded copper wire rated at 90°C or greater. Torque terminal block screws to

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10 ± 2 in–lbs [1,0 ± 1,2 Nm]. A tapped hole is provided in the solenoid for grounding, use a #10–32 machine screw. Torque grounding screw to 15 –20 in–lbs [1,7 – 2,3 Nm]. On solenoids with screw terminals, the socket head screw holding the terminal block to the solenoid is the grounding screw. Torque the screw to 15 – 20 in–lbs [1,7 – 2,3 Nm]. with a 5/32″ hex key wrench.

- **Junction Box**

The junction box is used with spade or screw terminal solenoids only and is provided with a grounding screw and a 1/2″ conduit connection. Connect #12–18 AWG standard copper wire only to the screw terminals. Within the junction box use field wire that is rated 90°C or greater for connections. For steam service use 105°C rated wire up to 50 psi or use 125°C rated wire above 50 psi. After electrical hookup, replace cover gasket, cover, and screws. Tighten screws evenly in a crisscross manner.

- **DIN Plug Connector Kit No.K236–034**

1. The open–frame solenoid is provided with DIN terminals to accommodate the DIN plug connector kit.
2. Remove center screw from plug connector. Using a small screwdriver, pry terminal block from connector cover.
3. Use #12–18 AWG stranded copper wire rated at 90°C or greater for connections. Strip wire leads back approximately 1/4″for installation in socket terminals. The use of wire–end sleeves is also recommended for these socket terminals. Maximum length of wire–end sleeves to be approximately 1/4″. Tinning of the ends of the lead wires is not recommended.
4. Thread wire through gland nut, gland gasket, washer, and connector cover.

NOTE: Connector cover may be rotated in 90° increments from position shown for alternate positioning of cable entry.

5. Check DIN connector terminal block for electrical markings. Then make electrical hookup to terminal block according to markings on it. Snap terminal block into connector cover and install center screw.
6. Position connector gasket on solenoid and install plug connector. Torque center screw to 5 ± 1 in–lbs [0,6 ± 1,1 Nm].

NOTE: Alternating current (AC) and direct current (DC) solenoids are built differently. To convert from one to the other, it may be necessary to change the complete solenoid including the core and solenoid base sub–assembly, not just the solenoid. Consult ASCO.

Installation of Solenoid

Solenoids may be assembled as a complete unit. Tightening is accomplished by means of a hex flange at the base of the solenoid. The 3/4″ bonnet construction (Figure 1) must be disassembled for installation and installed with a special wrench adapter.

Installation of Panel Mounted Solenoid (See Figure 3)

Disassemble solenoid following instruction under *Solenoid Replacement* then proceed.

3/4″ Valve Bonnet Construction

1. Install retainer (convex side to solenoid) in 1.312 diameter mounting hole in customer panel.
2. Then position spring washer over plugnut/core tube sub–assembly.
3. Install plugnut/core tube sub–assembly through retainer in customer panel. Then replace solenoid, nameplate/retainer and red cap.

15/16″ Valve Bonnet Construction

1. Install solenoid base sub–assembly through 0.69 diameter mounting hole in customer panel.
2. Position spring washer on opposite side of panel over solenoid base sub–assembly then replace.

Solenoid Temperature

Standard solenoids are designed for continuous duty service. When the solenoid is energized for a long period, the solenoid becomes hot and can be touched by hand only for an instant. This is a safe operating temperature.

MAINTENANCE

⚠ WARNING: To prevent the possibility of death, serious injury or property damage, turn off electrical power, depressurize solenoid operator and/or valve, and vent fluid to a safe area before servicing.

Cleaning

All solenoid operators and valves should be cleaned periodically. The time between cleaning will vary depending on medium and service conditions. In general, if the voltage to the solenoid is correct, sluggish valve operation, excessive noise or leakage will indicate that cleaning is required. Clean strainer or filter when cleaning the valve.

Preventive Maintenance

- Keep the medium flowing through the solenoid operator or valve as free from dirt and foreign material as possible.
- While in service, the solenoid operator or valve should be operated at least once a month to insure proper opening and closing.
- Depending on the medium and service conditions, periodic inspection of internal valve parts for damage or excessive wear is recommended. Thoroughly clean all parts. Replace any worn or damaged parts.

Causes of Improper Operation

- **Faulty Control Circuit:** Check the electrical system by energizing the solenoid. A metallic *click* signifies that the solenoid is operating. Absence of the *click* indicates loss of power supply. Check for loose or blown fuses, open–circuited or grounded solenoid, broken lead wires or splice connections.
- **Burned–Out Solenoid:** Check for open–circuited solenoid. Replace if necessary. Check supply voltage; it must be the same as specified on nameplate/retainer and marked on the solenoid. Check ambient temperature and check that the core is not jammed.
- **Low Voltage:** Check voltage across the solenoid leads. Voltage must be at least 85% of rated voltage.

Solenoid Replacement

1. On solenoids with lead wires disconnect conduit, coil leads, and grounding wire.

NOTE: Any optional parts attached to the old solenoid must be reinstalled on the new solenoid.

2. Disassemble solenoids with optional features as follows:

- **Spade or Screw Terminals**
  Remove terminal connections, grounding screw, grounding wire, and terminal block (screw terminal type only).

NOTE: For screw terminals, the socket head screw holding the terminal block serves as a grounding screw.

- **Junction Box**
  Remove conduit and socket head screw (use 5/32″ hex key wrench) from center of junction box. Disconnect junction box from solenoid.
- **DIN Plug Connector**
  Remove center screw from DIN plug connector. Disconnect DIN plug connector from adapter. Remove socket head screw (use 5/32″ hex key wrench), DIN terminal adapter, and gasket from solenoid.

3. Snap off red cap from top of solenoid base sub–assembly.
4. Push down on solenoid. Then using a suitable screwdriver, insert blade in slot provided between solenoid and nameplate/retainer. Pry up slightly and push to remove. Then remove solenoid from solenoid base sub–assembly.
5. Reassemble using exploded views for parts identification and placement

Disassembly and Reassembly of Solenoids

1. Remove solenoid, see *Solenoid Replacement*.
2. Remove finger washer or spring washer from solenoid base sub–assembly.
3. Unscrew solenoid base sub–assembly.

NOTE: Some solenoid constructions have a plugnut/core tube sub–assembly, bonnet gasket and bonnet in place of the solenoid base sub–assembly. To remove bonnet use special wrench adapter supplied in ASCO Rebuild Kit. For wrench adapter only, order ASCO Wrench Kit No.K218948.

4. The core is now accessible for cleaning or replacement.
5. If the solenoid is part of a valve, refer to basic valve installation and maintenance instructions for further disassembly.
6. Reassemble using exploded views for identification and placement of parts.

ORDERING INFORMATION FOR ASCO SOLENOIDS

When Ordering Solenoids for ASCO Solenoid Operators or Valves, order the number stamped on the solenoid. Also specify voltage and frequency.

Torque Chart

Part Name	Torque Value in Inch–Pounds	Torque Value in Newton–Meters
solenoid base sub–assembly	175 ± 25	19,8± 2,8
valve bonnet (3/4″ bonnet construction)	90 ± 10	10,2 ± 1,1
bonnet screw (3/8″ or 1/2″ NPT pipe size)	25	2,8
bonnet screw (3/4″ NPT pipe size)	40	4,5

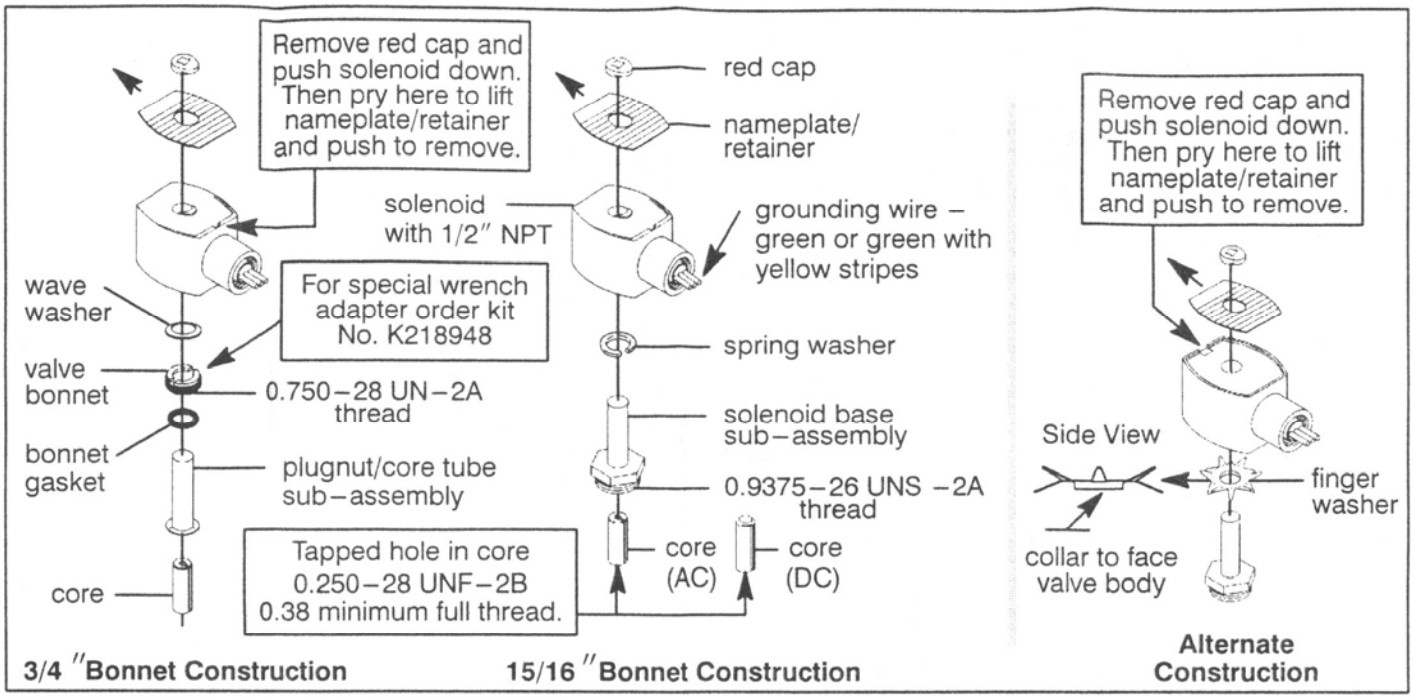

Figure 1. Series 8016G solenoids

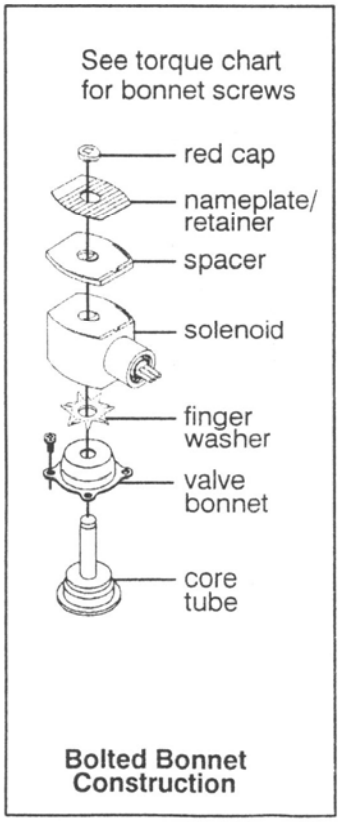

Figure 2. Series 8016G solenoid

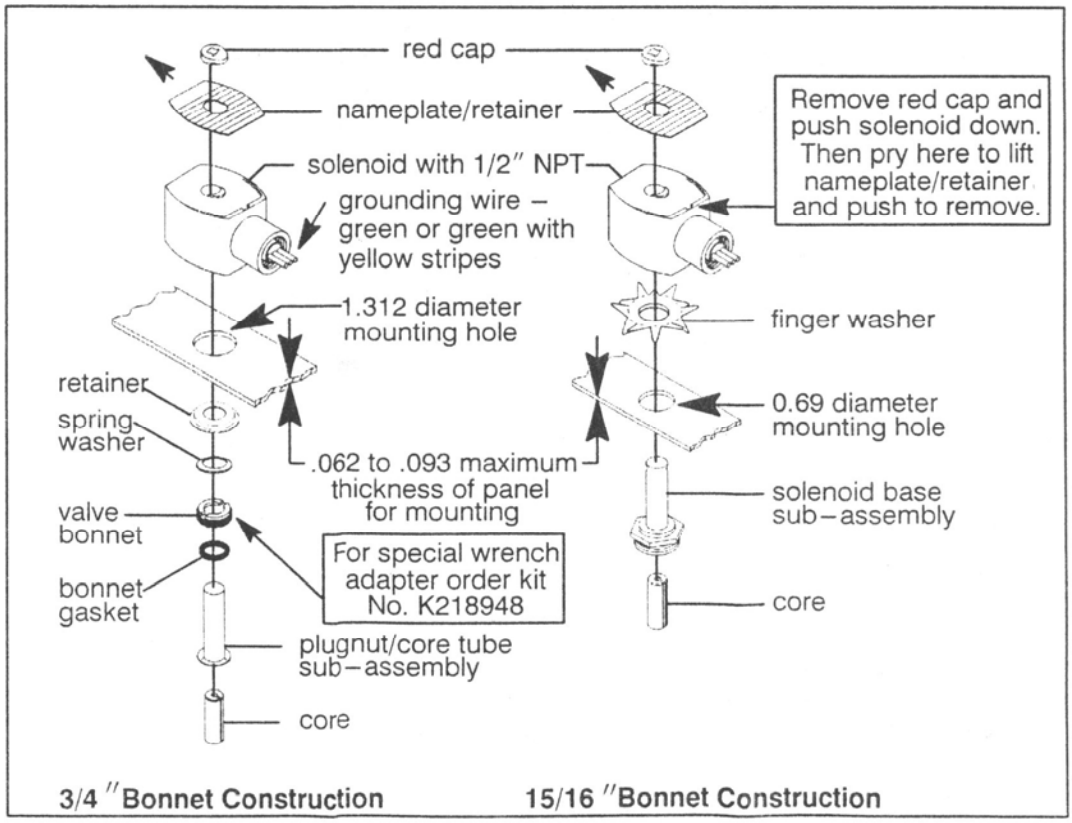

Figure 3. Series 8016G panel mounted solenoids

Torque Chart

Part Name	Torque Value in Inch–Pounds	Torque Value in Newton–Meters
terminal block screws	10 ± 2	1,1 ± 0,2
socket head screw	15 – 20	1,7 – 2,3
center screw	5 ± 1	0,6 ± 0,1

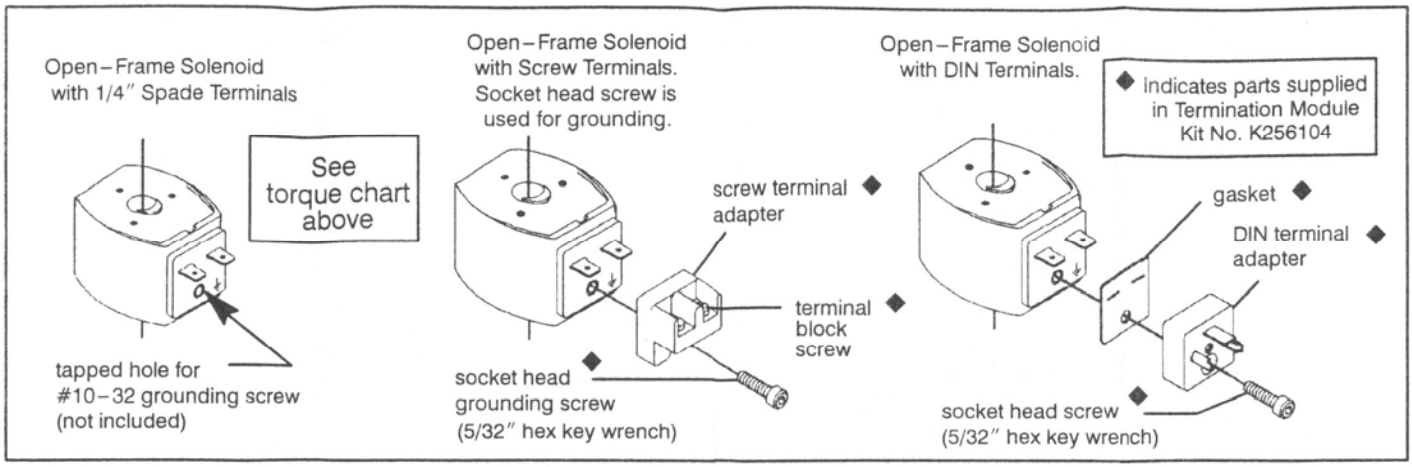

Figure 4. Open–frame solenoids

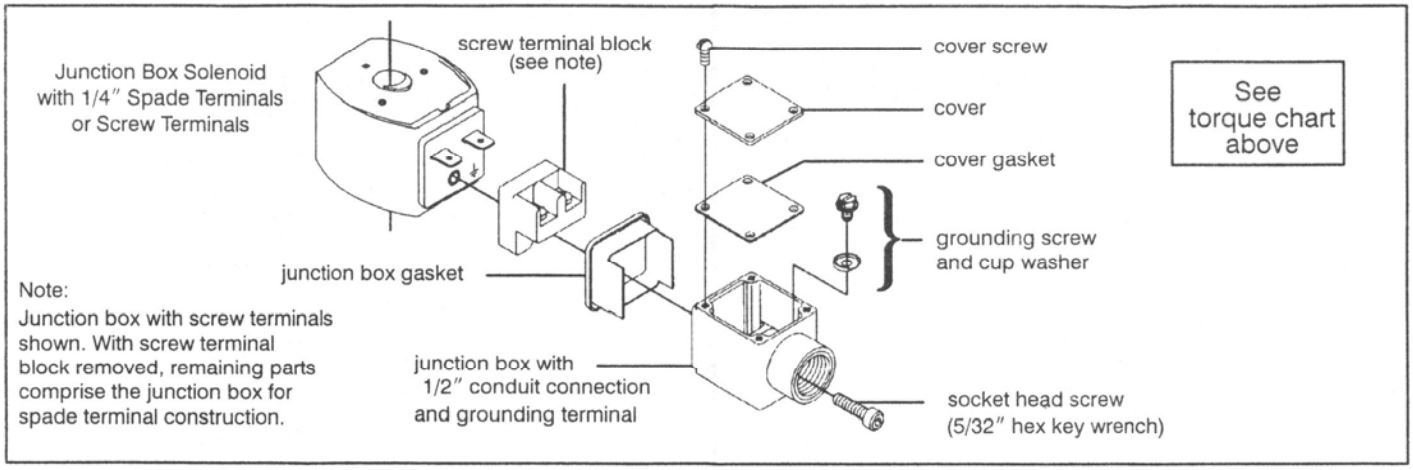

Figure 5. Junction box (optional feature)

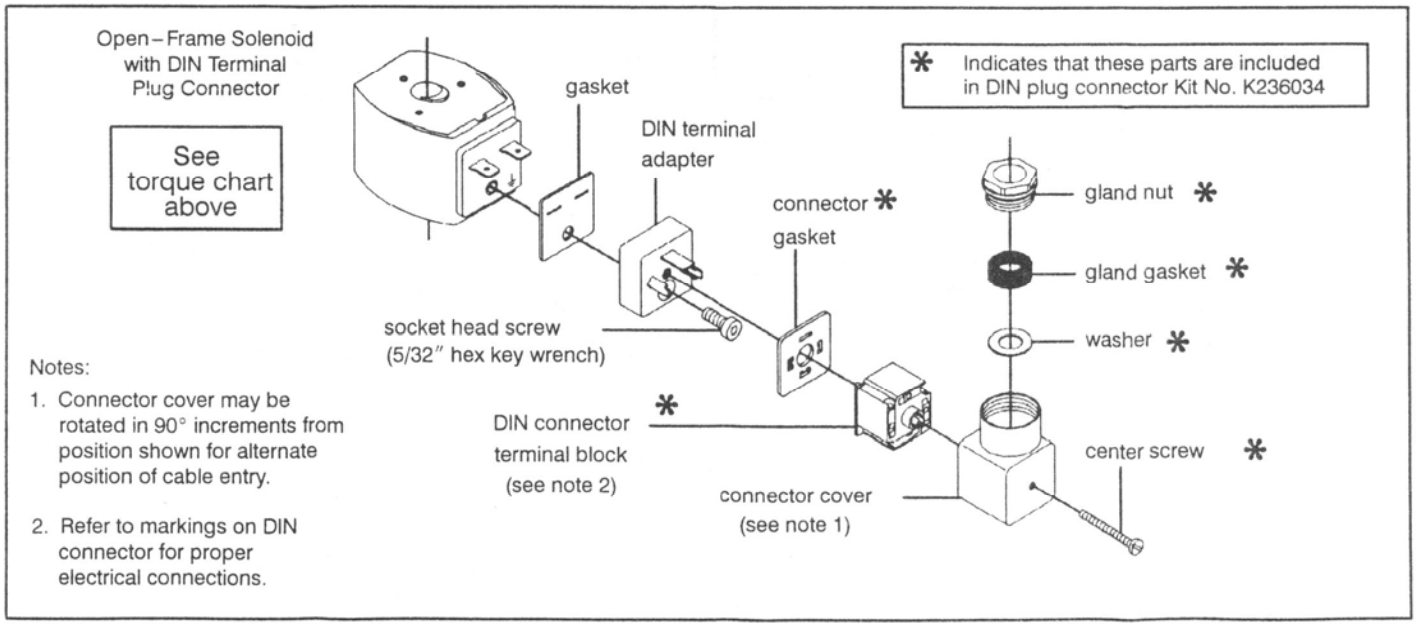

Figure 6. DIN plug connector kit No. K236034 (optional feature)

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GB CE

GENERAL INSTALLATION AND MAINTENANCE INSTRUCTIONS

Note: These General Installation and Maintenance Instructions must be read in conjunction with the Instruction Sheet for the specific product.

INSTALLATION

ASCO/JOUCOMATIC components are intended to be used only within the technical characteristics as specified on the nameplate. Changes to the equipment are only allowed after consulting the manufacturer or its representative. Before installation depressurize the piping system and clean internally.
The equipment may be mounted in any position if not otherwise indicated on the product by means of an arrow.
The flow direction and pipe connection of valves are indicated on the body.

The pipe connections have to be in accordance with the size indicated on the nameplate and fitted accordingly.
Caution:

- Reducing the connections may cause improper operation or malfunctioning.
- For the protection of the equipment install a strainer or filter suitable for the service involved in the inlet side as close to the product as possible.
- If tape, paste, spray or a similar lubricant is used when tightening, avoid particles entering the system.
- Use proper tools and locate wrenches as close as possible to the connection point.
- To avoid damage to the equipment, DO NOT OVERTIGHTEN pipe connections.
- Do not use valve or solenoid as a lever.
- The pipe connections should not apply any force, torque or strain to the product.

ELECTRICAL CONNECTION

In case of electrical connections, they are only to be made by trained personnel and have to be in accordance with the local regulations and standards.
Caution:

- Turn off electrical power supply and de-energize the electrical circuit and voltage carrying parts before starting work.
- All electrical screw terminals must be properly tightened according to the standards before putting into service.
- Dependent upon the voltage electrical components must be provided with an earth connection and satisfy local regulations and standards

The equipment can have one of the following electrical terminals:

- Spade plug connections according to ISO-4400 or 3 x DIN-46244 (when correctly installed this connection provides IP-65 protection).
- Embedded screw terminals in metal enclosure with "Pg" cable gland.
- Spade terminals (AMP type).
- Flying leads or cables.

PUTTING INTO SERVICE

Before pressurizing the system, first carry-out an electrical test. In case of solenoid valves, energize the coil a few times and notice a metal click signifying the solenoid operation.

SERVICE

Most of the solenoid valves are equipped with coils for continuous duty service. To prevent the possibility of personal or property damage do not touch the solenoid which can become hot under normal operation conditions.

SOUND EMISSION

The emission of sound depends on the application, medium and nature of the equipment used. The exact determination of the sound level can only be carried out by the user having the valve installed in his system.

MAINTENANCE

Maintenance of ASCO/JOUCOMATIC products is dependent on service conditions. Periodic cleaning is recommended, the timing of which will depend on the media and service conditions. During servicing, components should be examined for excessive wear. A complete set of internal parts is available as a spare parts or rebuild kit. If a problem occurs during installation/maintenance or in case of doubt please contact ASCO/JOUCOMATIC or authorised representatives.

A separate Declaration of Incorporation relating to EEC-Directive 89/392/EEC Annex II B is available on request. Please provide product identification number and serial numbers of products concerned.
The product complies with the essential requirements of the EMC Directive 89/336/EEC and amendments and the Low Voltage directives 73/23/EEC and 93/68/EEC. A separate Declaration of Conformity is available on request. Please provide product identification number and serial numbers of the products concerned.

FR CE

INSTRUCTIONS GÉNÉRALES D'INSTALLATION ET D'ENTRETIEN

Nota : Ces instructions générales d'installation et d'entretien complètent la notice spécifique du produit.

MONTAGE

Les composants ASCO/JOUCOMATIC sont conçus pour les domaines de fonctionnement indiqués sur la plaque signalétique ou la documentation. Aucune modification ne peut être réalisée sur le matériel sans l'accord préalable du fabricant ou de son représentant. Avant de procéder au montage, dépressuriser les canalisations et effectuer un nettoyage interne.
A moins qu'une flèche ou la notice n'indique un sens de montage spécifique de la tête magnétique, le produit peut être monté dans n'importe quelle position.
Le sens de circulation du fluide est indiqué par repères sur le corps et dans la documentation.

La dimension des tuyauteries doit correspondre au raccordement indiqué sur le corps, l'étiquette ou la notice.
Attention :

- Une restriction des tuyauteries peut entraîner des dysfonctionnements.
- Afin de protéger le matériel, installer une crépine ou un filtre adéquat en amont, aussi près que possible du produit.
- En cas d'utilisation de ruban, pâte, aérosol ou autre lubrifiant lors du serrage, veiller à ce qu'aucun corps étranger ne pénètre dans le circuit.
- Utiliser un outillage approprié et placer les clés aussi près que possible du point de raccordement.
- Afin d'éviter toute détérioration, NE PAS TROP SERRER les raccords des tuyauteries.
- Ne pas se servir de la vanne ou de la tête magnétique comme d'un levier.
- Les tubes de raccordement ne devront exercer aucun effort, couple ou contrainte sur le produit.

RACCORDEMENT ÉLECTRIQUE

Le raccordement électrique doit être réalisé par un personnel qualifié et selon les normes et règlements locaux.
Attention :

- Avant toute intervention, couper l'alimentation électrique pour mettre hors tension les composants.
- Toutes les bornes à vis doivent être serrées correctement avant la mise en service.
- Selon la tension, les composants électriques doivent être mis à la terre conformément aux normes et règlements locaux.

Selon les cas, le raccordement électrique s'effectue par :

- Connecteur débrochable ISO4400 ou 3 x DIN46244 avec degré de protection IP65 lorsque le raccordement est correctement effectué.
- Bornes à vis solidaires du bobinage, sous boîtier métallique avec presse-étoupe "Pg - -".
- Cosses (type AMP).
- Fils ou câbles solidaires de la bobine.

MISE EN SERVICE

Avant de mettre le circuit sous pression, effectuer un essai électrique. Dans le cas d'une électrovanne, mettre la bobine sous tension plusieurs fois et écouter le "clic" métallique qui signale le fonctionnement de la tête magnétique.

FONCTIONNEMENT

La plupart des électrovannes comportent des bobinages prévus pour mise sous tension permanente. Pour éviter toute brûlure, ne pas toucher la tête magnétique qui, en fontionnement normal et en permanence sous tension, peut atteindre une température élevée.

BRUIT DE FONCTIONNEMENT

Le bruit de fonctionnement varie selon l'utilisation, le fluide et le type de matériel employé. L'utilisateur ne pourra déterminer avec précision le niveau sonore émis qu'après avoir monté le composant sur l'installation.

ENTRETIEN

L'entretien nécessaire aux produits ASCO/JOUCOMATIC varie avec leurs conditions d'utilisation. Il est souhaitable de procéder à un nettoyage périodique dont l'intervalle varie suivant la nature du fluide, les conditions de fonctionnement et le milieu ambiant. Lors de l'intervention, les composants doivent être examinés pour détecter toute usure excessive. Un ensemble de pièces internes est proposé en pièces de rechange pour procéder à la réfection. En cas de problème lors du montage/entretien ou en cas de doute, veuillez contacter ASCO/JOUCOMATIC ou ses représentants officiels.

Conformément à la directive CEE 89/392/CEE Annexe II B, une Déclaration d'incorporation peut être fournie sur demande. Veuillez nous indiquer le numéro d'accusé de réception (AR) et les références ou codes des produits concernés.
Ce produit est conforme aux prescriptions les plus importantes de la directive CEM 89/336/CEE et amendements et aux directives basse tension 73/23/CEE et 94/68/CEE. Une déclaration de conformité peut être fournie sur simple demande. Veuillez nous indiquer le numéro d'accusé de réception (AR) ainsi que les numéros de série des produits concernés.

DE CE

ALLGEMEINE BETRIEBSANLEITUNG

ACHTUNG: Diese Allgemeine Betriebsanleitung gilt in Zusammenhang mit der jeweiligen Betriebsanleitung für die speziellen Produkte.

EINBAU

Die ASCO/JOUCOMATIC-Komponenten dürfen nur innerhalb der auf den Typenschildern angegebenen Daten eingesetzt werden. Veränderungen an den Produkten sind nur nach Rücksprache mit ASCO/JOUCOMATIC zulässig.
Vor dem Einbau der Ventile muß das Rohrleitungssystem drucklos geschaltet und innen gereinigt werden.
Die Einbaulage der Produkte ist generell beliebig. **Ausnahme:** Die mit einem Pfeil gekennzeichneten Produkte müssen entsprechend der Pfeilrichtung montiert werden.
Die Durchflußrichtung und der Eingang von Ventilen sind gekennzeichnet.

Die Rohranschlüsse sollten entsprechend den Größenangaben auf den Typenschildern mit handelsüblichen Verschraubungen durchgeführt werden. **Dabei ist folgendes zu beachten:**

- Eine Reduzierung der Anschlüsse kann zu Leistungs- und Funktionsminderungen führen.
- Zum Schutz der Ventile sollten Schmutzfänger oder Filter so dicht wie möglich in den Ventileingang integriert werden.
- Bei Abdichtung am Gewinde ist darauf zu achten, daß kein Dichtungsmaterial in die Rohrleitung oder das Ventil gelangt.
- Zur Montage darf nur geeignetes Werkzeug verwendet werden.
- Konische Verschraubungen sind sorgfältig anzuziehen. Es ist darauf zu achten, daß beim Anziehen das Gehäuse nicht beschädigt wird.
- Spule und Führungsrohr von Ventilen dürfen nicht als Gegenhalter benutzt werden.
- Die Rohrleitungsanschlüsse sollen fluchten und dürfen keine Spannungen auf das Ventil übertragen.

ELEKTRISCHER ANSCHLUß

Der elektrische Anschluß ist von Fachpersonal entsprechend den geltenden VDE- und CEE-Richtlinien auszuführen. **Es ist besonders auf folgendes zu achten:**

- Vor Beginn der Arbeiten ist sicherzustellen, daß alle elektrischen Leitungen und Netzteile spannungslos geschaltet sind.
- Alle Anschlußklemmen sind nach Beendigung der Arbeiten vorschriftsmäßig entsprechend den geltenden Regeln anzuziehen.
- Je nach Spannungsbereich muß das Ventil nach den geltenden Regeln einen Schutzleiteranschluß erhalten.

Der Magnetantrieb kann je nach Bauart folgende Anschlüsse haben:

- Anschluß für Gerätesteckdose nach DIN 43650 Form A/ISO 4400 oder 3x DIN 46244 (durch ordnungsgemäße Montage der Gerätesteckdose wird Schutzklasse IP 65 erreicht).
- Anschlüsse innerhalb eines Blechgehäuses mittels Schraubklemmen. Kabeleinführung ins Gehäuse mit PG-Verschraubung.
- Offene Spulen mit Flachsteckern (AMP-Fahnen) oder mit eingegossenen Kabelenden.

INBETRIEBNAHME

Vor Druckbeaufschlagung des Produktes sollte eine elektrische Funktionsprüfung erfolgen:
Bei Ventilen Spannung an der Magnetspule mehrmals ein- und ausschalten. **Es muß ein Klicken zu hören sein.**

BETRIEB

Die meisten Ventile sind mit Spulen für Dauerbetrieb ausgerüstet. Zur Vermeidung von Personen- und Sachschäden sollte jede Berührung mit dem Ventil vermieden werden, da die Magnetspule bei längerem Betrieb sehr heiß werden kann.

GERÄUSCHEMISSION

Diese hängt sehr stark vom Anwendungsfall, den Betriebsdaten und dem Medium, mit denen das Produkt beaufschlagt wird, ab. Eine Aussage über die Geräuschemission des Produktes muß deshalb von demjenigen getroffen werden, der das Produkt innerhalb einer Maschine in Betrieb nimmt.

WARTUNG

Die Wartung hängt von den Einsatzbedigungen ab. In entsprechenden Zeitabständen muß das Produkt geöffnet und gereinigt werden. Für die Überholung der ASCO/JOUCOMATIC-Produkte können Ersatzteilsätze geliefert werden. Treten Schwierigkeiten bei Einbau, Betrieb oder Wartung auf, sowie bei Unklarheiten, ist mit ASCO/JOUCOMATIC Rücksprache zu halten.

(ASCO/JOUCOMATIC Produkte sind entsprechend der EG-Richtlinie 89/392/EWG gefertigt.

Eine separate Herstellererklärung im Sinne der Richtlinie 89/392/EWG Anhang IIB ist auf Anfrage erhältlich. Geben Sie bitte für die Produkte die Nummer der Auftragsbestätigung und die Seriennummer an.

Dieses Produkt entspricht den grundlegenden Bestimmungen der EMV-Richtlinie 89/336/EWG, cinschi. Nachtrage, sowie den Niederspannungsrichtlinien 73/23/EWG u. 93/68/EWG. Bitte geben Sie die Auftragsbestätigungsnummer und die Serienummern der betreffenden Produkte an.

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