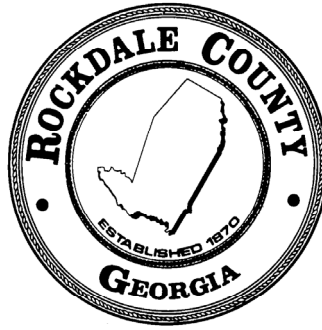


**BOARD OF COMMISSIONERS**

JANICE VAN NESS, CHAIR & CEO

Tuwanya C. Smith, Commissioner Post I

Dr. Doreen Williams, Commissioner Post II



**DEPARTMENT OF FINANCE**

SUE SANDERS, INTERIM CFO

TELEPHONE: 770-278-7555

FACSIMILE: 770- 278-8910

**Addendum No. 2**

**ITB No. 25-03**

**GEES MILL WTP OZONE GENERATOR REPLACEMENT**

**May 5, 2025**

**ITB #25-03** is hereby amended as follows:

**1. Below are questions received and corresponding answers:**

**A. Question:** The quotation in the specs for the ozone equipment is \$721,000 and the bid form allowance is \$865,000. Is it the intent for the owner to pay the contractor \$865,000 for supply and install or just the \$721,000 to supply materials?

**Answer:** The allowance value includes a contingency for potential equipment cost escalation if the PO is not issued to the manufacturer within the agreed upon time. The allowance will be paid for the actual invoiced amount from the manufacturer, without mark-up or additional payment to the Contractor. See Specification Section 01 21 00 – Allowance for additional information on what is and what is not included in the allowance. If the Contract is awarded within the equipment price hold time and the Contractor does not issue the PO to the manufacturer in time to lock in the price, the potential additional escalation costs will be the responsibility of the Contractor.

**B. Question:** Who is the chiller manufacturer? Can a model # be provided?

**Answer:** See attached Chiller Data information from the existing Ozone System Operation and Maintenance Manual.

**C. Question:** What would be the controls scope for contractor for SCADA system?

**Answer:** See Note 1 on Drawing E-5.

**D. Question:** Is there a controls contractor we need for integration? If so, who would the controls contractor be?

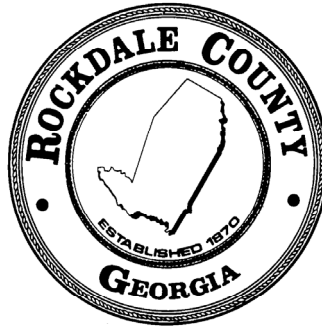
**Answer:** See General Conditions, Article 10. The Contractor may select the subcontractors they use. The Integrator will coordinate with the Owner's SCADA technicians for communicating with the existing system.

**BOARD OF COMMISSIONERS**

JANICE VAN NESS, CHAIR & CEO

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**DEPARTMENT OF FINANCE**

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**E. Question: Who is to provide the generator?**

**Answer: See Specification Section 00 11 00, paragraph 1.1 and Specification Section 01 22 00, paragraph 1.5.B.1.**

2. All other conditions remain in full force and effect.
3. If a bid has been submitted and anything in this Addendum causes the bidder to change the item offered or to increase or decrease the bid price, the new price and/or changes will be inserted below:  
  
\_\_\_\_\_  
\_\_\_\_\_
4. All bidders under this Invitation to Bid are kindly requested to acknowledge receipt of this Addendum on page 11 of the Bid Package.

***Tina Malone***

Tina Malone, CPPB CPPO

Procurement Manager

Department of Finance, Purchasing Division

**OZONE SYSTEM OPERATION & MAINTENANCE MANUAL**

**ITEM: CHILLER AND CIRCULATION PUMP**

MANUFACTURER: RITE-TEMP  
MODEL: RTS-2004, VERTICAL SYSTEM  
SERVICE: SUITABLE FOR OUTDOOR INSTALLATION  
TYPE: AIR TO WATER  
REQUIRED CAPACITY: 16.3 TON  
CAPACITY AVAILABLE: 20 TON  
FREON TYPE: R-22

EVAPORATOR

WATER:

OUTLET TEMP.: 50 °F  
FLOW: 52 GPM  
CONNECTION: 1-1/2" NPT

CONDENSER:

AIR COOLED

**PUMP**

LOCATION: INSIDE CABINET  
CAPACITY: 52 GPM  
SIZE: 2 HP  
HEAD: 80 ft H<sub>2</sub>O

SIZE: 74" X 74" X 72"  
WEIGHT: 1600 LBS.  
POWER: 460, 3, 60  
OPTIONS: REMOTE START CAPABILITY  
QUANTITY: 1 EACH GENERATOR, 2 TOTAL

# RITE-TEMP® WATER CHILLERS...

## 4 SYSTEMS TO MEET EVERY NEED.

### Remote System:

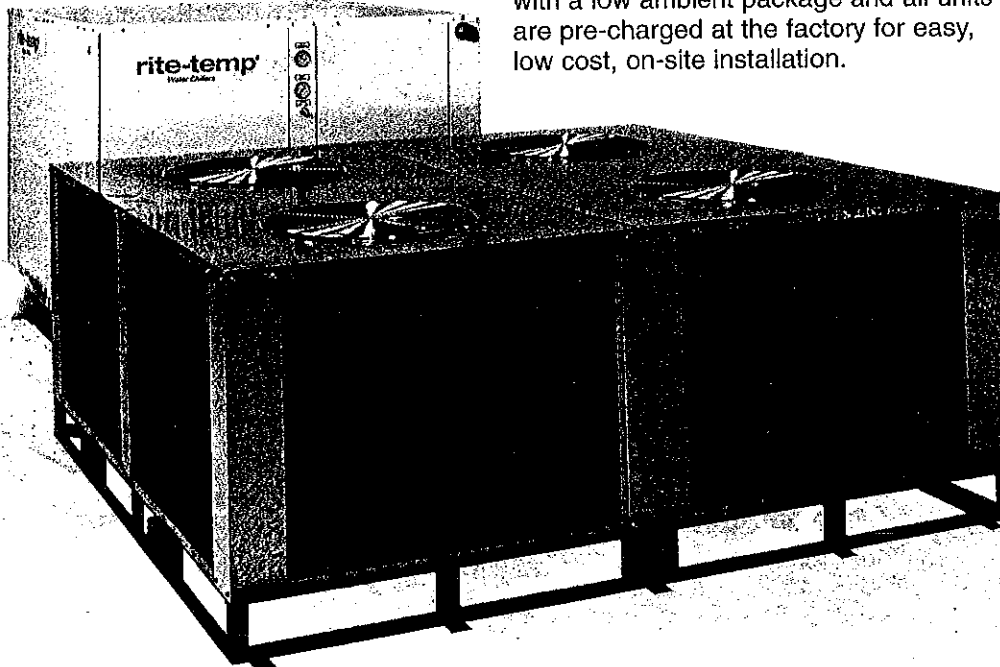
The utmost in design flexibility. The cooling system has been separated into two parts - the condensing and evaporating units. The condensing unit consists of the condenser coil and fan. The evaporating unit is made up of the evaporator tank and coil, compressor, water pump, electrical and control panels.

Separating the two units and placing the condensing unit outside allows the condensing unit to operate more

efficiently. A more abundant supply of fresh air results in extended unit life, lower operating costs and eliminates heat build-up indoors.

The evaporator unit may be installed anywhere indoors. Since it contains all of the cooling elements, maintenance can be performed inside. The system takes up less valuable space and the need for anti-freeze additives in the water tank are eliminated.

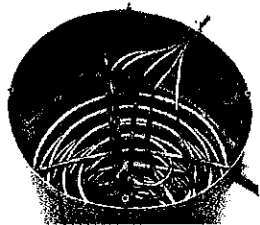
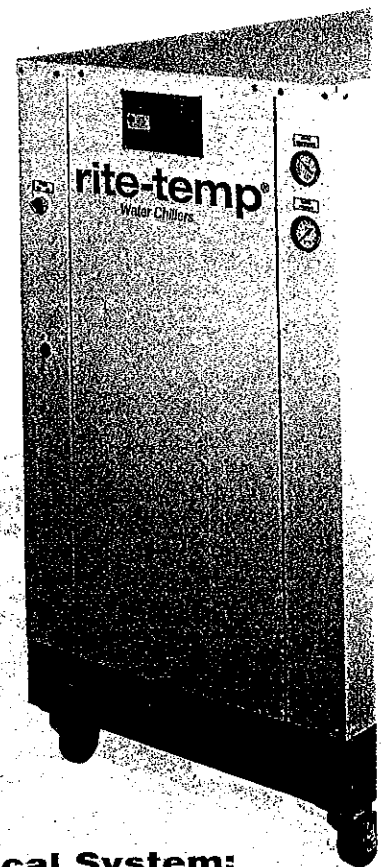
Each remote system is equipped with a low ambient package and all units are pre-charged at the factory for easy, low cost, on-site installation.



### Portable System:

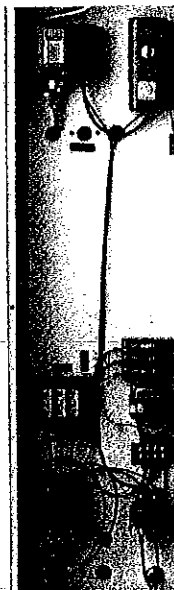
Engineered for tough duty, our portable water chilling system is designed and built to withstand the toughest application.

Completely self-contained, our fully automatic, closed-loop system offers three key features: reduction in water usage, easy maintenance and mobility.



### Coil-In-Tank Design:

Exclusive stainless steel coil-in-tank design can be found in every **rite-temp**® Chiller. This patented design eliminates freeze-up problems such as coil rupture - often associated with tube-in-tube heat exchangers. Head pressure on the **rite-temp**® refrigeration system is not affected by "pressure shock", due to the high temperature return water. The tough, 40-gallon, 16-gauge, 304 stainless steel construction ensures years of efficient, quality operation.

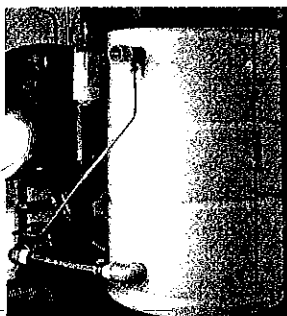


### Electrical System:

Wired 208/230 or 460 three phase as standard. Any electrical system can be engineered on request, including 50 Hz systems. 208/230 volt single phase is available.

The control panel can be wired for a 24 or 110-volt system, with only the highest standard U.L. approved electrical components.

As an optional feature, NEMA and JIC design panel enclosures are available.



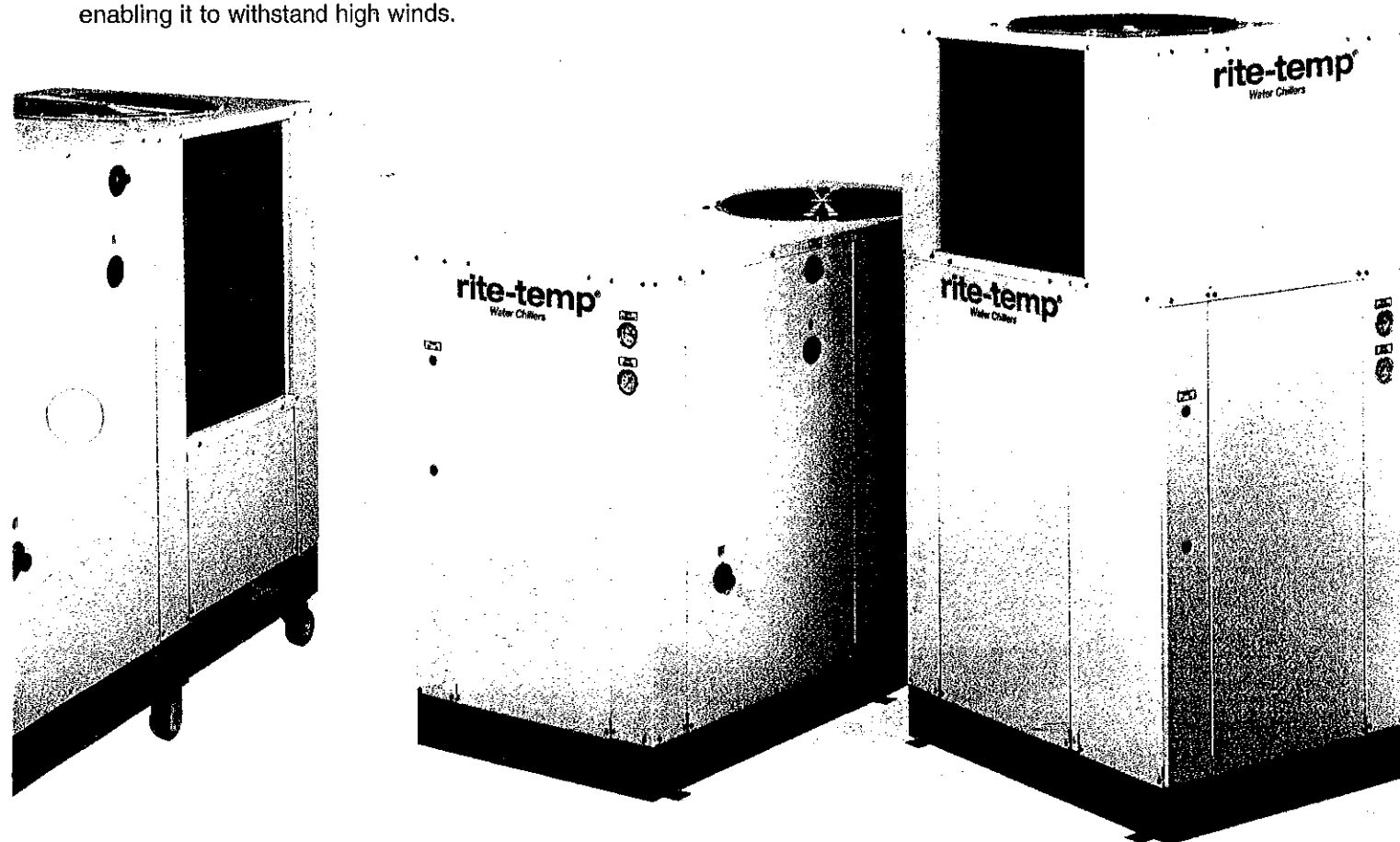
- Eliminates Water Usage and Sewer Quotas ■ Solid Warranty ■ ETL Laboratory Tested
- Multi-Compressor Designs for Energy Savings ■ Closed Stainless Evaporator Tank
- Flexibility in Design to Meet Many Applications ■ Experienced Technical Support

### Horizontal System:

Mirrors our standard vertical unit in features, except the condenser unit has been placed at floor level so that overall height is reduced. The horizontal system is an ideal solution for outside or rooftop installation for it has a lower profile enabling it to withstand high winds.

### Vertical System:

Completely self-contained, our fully automatic closed-loop system allows for a reduction in water usage, is easy to maintain and improves overall primary equipment efficiencies. Unlike open tank systems, our unique closed-tank design eliminates the problems of low or uncertain city water pressure, the possibility of contaminant's entering the system, evaporation and overflow.



### Cabinet Construction:

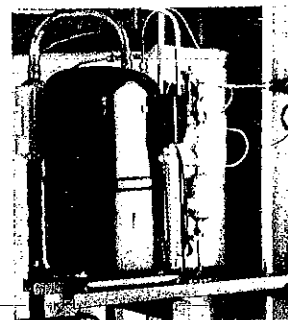
Each unit is constructed on a rugged, heavy-duty steel base frame. The cabinet and access panels are manufactured from 18- and 20-gauge, sturdy Phos Coat galvanized steel and are finished with a tough chemical and weather resistant polyester powder coat, ensuring years of dependable corrosion protection. We will custom finish to your color specifications on request.

### Water Circuit:

The water circuit in the **rite-temp**® Chiller features a heavy-duty, high head, one horsepower water pump with a precision molded LEXAN impeller-providing the highest performance and efficiency. Larger pump ratings as well as special application pumps, such as stainless steel, brass or bronze are available.

### Refrigeration System:

The finest in performance, capacity, and design. Our system is manufactured completely in our plant using the industry respected Copeland compressor. All condenser coils are formed and assembled in-house for better quality assurance and design flexibility. The control panel has been engineered for simplicity using only the finest U.L. approved components. All 8 ton and larger units are equipped with multi-compressor systems that will operate independently as the load requires, resulting in energy savings.



## The Company:

**rite-temp®** Manufacturing pioneered the development of refrigerated industrial water chillers in 1948. Since the first **rite-temp®** units were introduced, quality engineering and manufacturing has been a key element in each **rite-temp®** Chiller. Over the years our chillers have been subjected to the most critical on-the-job performance evaluations. The result has been proven reliability and a reputation for a solid quality machine.

**rite-temp** manufactures chillers for a wide range of industrial and commercial applications. Flexibility of design and product adaptability set us apart in the industry. Each unit is individually constructed to meet your exact specifications. Portable units are available in 2- to 5-ton capacities and 2- to 20-ton units in our vertical, horizontal or remote systems.

Our unique Closed-Tank design improves operating costs, eliminates downtime due to contaminants and puts an end to problems with low or uncertain water pressure, evaporation and overflow.

Each **rite-temp®** Chiller must undergo a series of tests and pass our rigid quality assurance standards before leaving our plant. A solid, one-year warranty on parts and components, with five years on the compressor. Straight forward and simple. We stand behind our products with years of experience and a technical staff always ready to assist you - our reputation depends on it.

# rite-temp®

## WATER CHILLERS

P.O. Box 1275  
Rogers, Arkansas 72757  
(800) 462-3120  
FAX (501) 986-0727  
ritetemp@ipa.net

## AIR COOLED AND WATER COOLED DESIGNS

### VERTICAL SYSTEM

| MOD NO.  | HP. | SIZE     | WEIGHT | ELEC.       | RL AMPS | B.T.U.  |
|----------|-----|----------|--------|-------------|---------|---------|
| RTS-201  | 2   | 28x35x66 | 330#   | 208/230 1ph | 22      | 24,000  |
| RTS-303  | 3   | 28x35x66 | 350#   | 208/230 3ph | 18      | 36,000  |
| RTS-304  | 3   | 28x35x66 | 350#   | 460 3ph     | 9       | 36,000  |
| RTS-403  | 4   | 28x35x72 | 400#   | 208/230 3ph | 23      | 48,000  |
| RTS-404  | 4   | 28x35x72 | 400#   | 460 3ph     | 12      | 48,000  |
| RTS-503  | 5   | 28x35x72 | 425#   | 208/230 3ph | 24      | 60,000  |
| RTS-504  | 5   | 28x35x72 | 425#   | 460 3ph     | 12      | 60,000  |
| RTS-803  | 8   | 30x56x72 | 570#   | 208/230 3ph | 43      | 96,000  |
| RTS-804  | 8   | 30x56x72 | 570#   | 460 3ph     | 22      | 96,000  |
| RTS-1003 | 10  | 30x56x72 | 625#   | 208/230 3ph | 52      | 120,000 |
| RTS-1004 | 10  | 30x56x72 | 625#   | 460 3ph     | 26      | 120,000 |
| RTS-1603 | 16  | 74x74x72 | 1500#  | 208/230 3ph | 82      | 192,000 |
| RTS-1604 | 16  | 74x74x72 | 1500#  | 460 3ph     | 41      | 192,000 |
| RTS-2003 | 20  | 74x74x72 | 1600#  | 208/230 3ph | 90      | 240,000 |
| RTS-2004 | 20  | 74x74x72 | 1600#  | 460 3ph     | 45      | 240,000 |

### HORIZONTAL SYSTEM

| MOD NO.  | HP. | SIZE     | WEIGHT | ELEC.       | RL AMPS | B.T.U.  |
|----------|-----|----------|--------|-------------|---------|---------|
| RTH-201  | 2   | 30x60x47 | 330#   | 208/230 1ph | 22      | 24,000  |
| RTH-303  | 3   | 30x60x47 | 350#   | 208/230 3ph | 18      | 36,000  |
| RTH-304  | 3   | 30x60x47 | 350#   | 460 3ph     | 9       | 36,000  |
| RTH-403  | 4   | 30x60x47 | 400#   | 208/230 3ph | 23      | 48,000  |
| RTH-404  | 4   | 30x60x47 | 400#   | 460 3ph     | 12      | 48,000  |
| RTH-503  | 5   | 30x60x47 | 425#   | 208/230 3ph | 24      | 60,000  |
| RTH-504  | 5   | 30x60x47 | 425#   | 460 3ph     | 12      | 60,000  |
| RTH-803  | 8   | 54x78x47 | 570#   | 208/230 3ph | 43      | 96,000  |
| RTH-804  | 8   | 54x78x47 | 570#   | 460 3ph     | 22      | 96,000  |
| RTH-1003 | 10  | 54x78x47 | 625#   | 208/230 3ph | 52      | 120,000 |
| RTH-1004 | 10  | 54x78x47 | 625#   | 460 3ph     | 26      | 120,000 |

### REMOTE SYSTEM

| MODEL NO. | H.P. | COND. DIA. | COND. WT. | EVAP. DIA. | EVAP. WT. | ELEC.       | RL AMPS | B.T.U.  |
|-----------|------|------------|-----------|------------|-----------|-------------|---------|---------|
| RTR-201   | 2    | 28x35x26   | 107#      | 28x35x47   | 223#      | 208/230 1ph | 22      | 24,000  |
| RTR-303   | 3    | 28x35x26   | 107#      | 28x35x47   | 243#      | 208/230 3ph | 18      | 36,000  |
| RTR-304   | 3    | 28x35x26   | 107#      | 28x35x47   | 243#      | 460 3ph     | 9       | 36,000  |
| RTR-403   | 4    | 28x35x32   | 130#      | 28x35x47   | 270#      | 208/230 3ph | 23      | 48,000  |
| RTR-404   | 4    | 28x35x32   | 130#      | 28x35x47   | 270#      | 460 3ph     | 12      | 48,000  |
| RTR-503   | 5    | 28x35x32   | 130#      | 28x35x47   | 295#      | 208/230 3ph | 24      | 60,000  |
| RTR-504   | 5    | 28x35x32   | 130#      | 28x35x47   | 295#      | 460 3ph     | 12      | 60,000  |
| RTR-803   | 8    | 30x60x32   | 210#      | 30x42x47   | 360#      | 208/230 3ph | 43      | 96,000  |
| RTR-804   | 8    | 30x60x32   | 210#      | 30x42x47   | 360#      | 460 3ph     | 22      | 96,000  |
| RTR-1003  | 10   | 30x60x32   | 210#      | 30x42x47   | 415#      | 208/230 3ph | 52      | 120,000 |
| RTR-1004  | 10   | 30x60x32   | 210#      | 30x42x47   | 415#      | 460 3ph     | 26      | 120,000 |
| RTR-1603  | 16   | 74x74x32   | 550#      | 54x60x47   | 950#      | 208/230 3ph | 82      | 192,000 |
| RTR-1604  | 16   | 74x74x32   | 550#      | 54x60x47   | 950#      | 460 3ph     | 41      | 192,000 |
| RTR-2003  | 20   | 74x74x32   | 550#      | 54x60x47   | 1050#     | 208/230 3ph | 90      | 240,000 |
| RTR-2004  | 20   | 74x74x32   | 550#      | 54x60x47   | 1050#     | 460 3ph     | 45      | 240,000 |

### PORTABLE SYSTEM

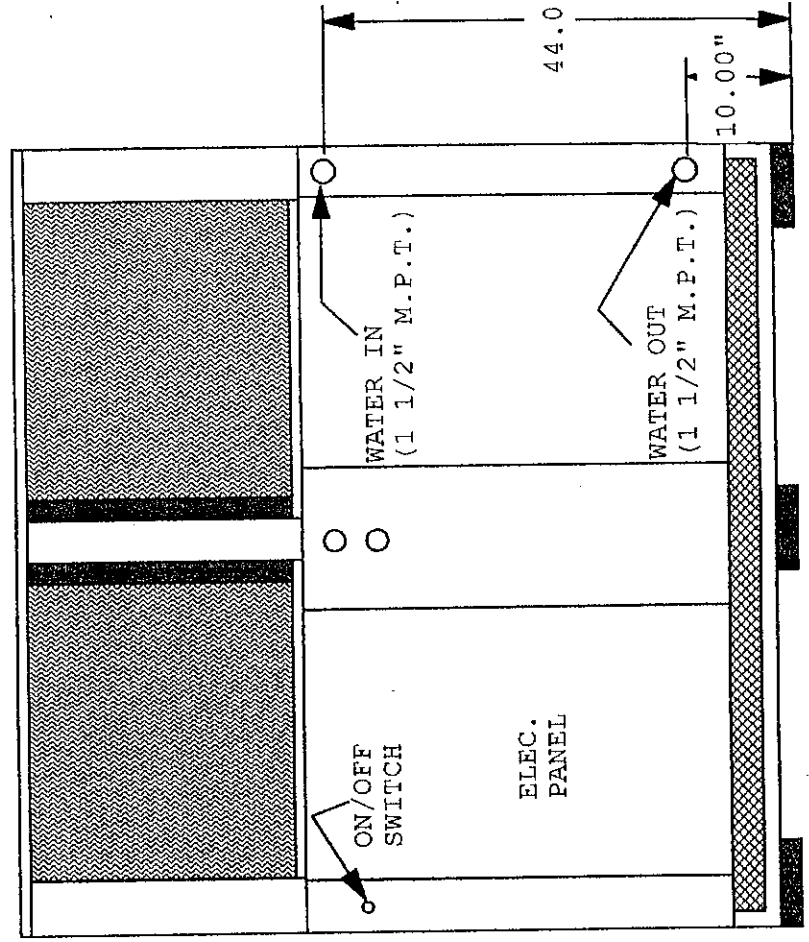
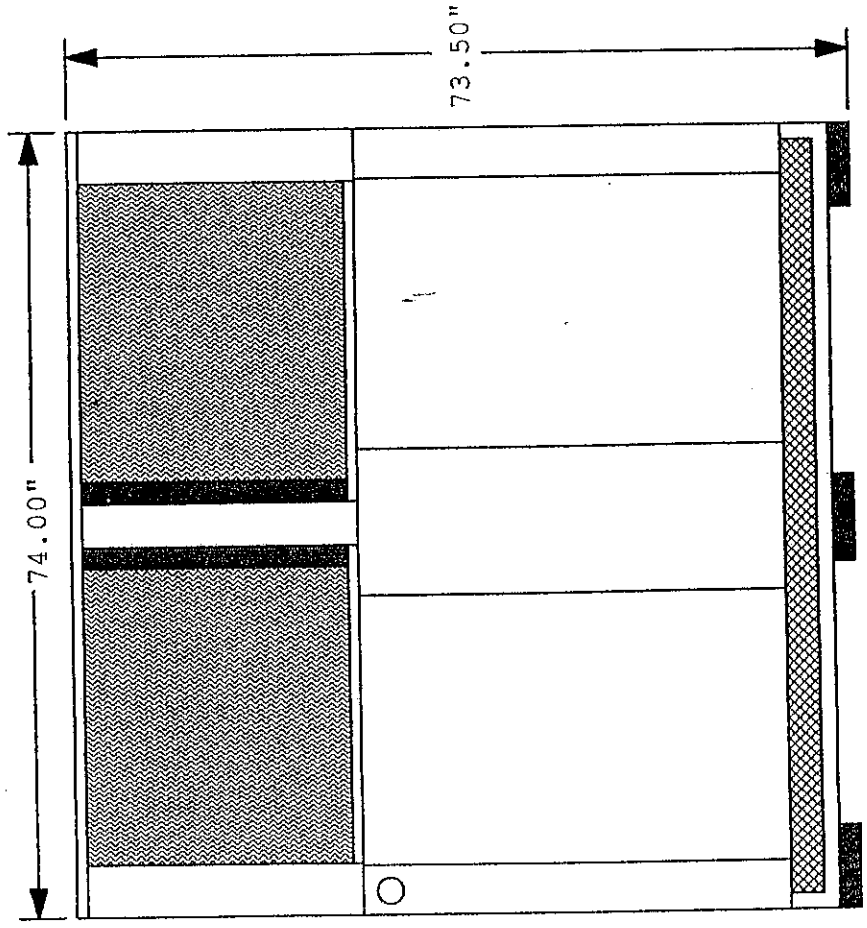
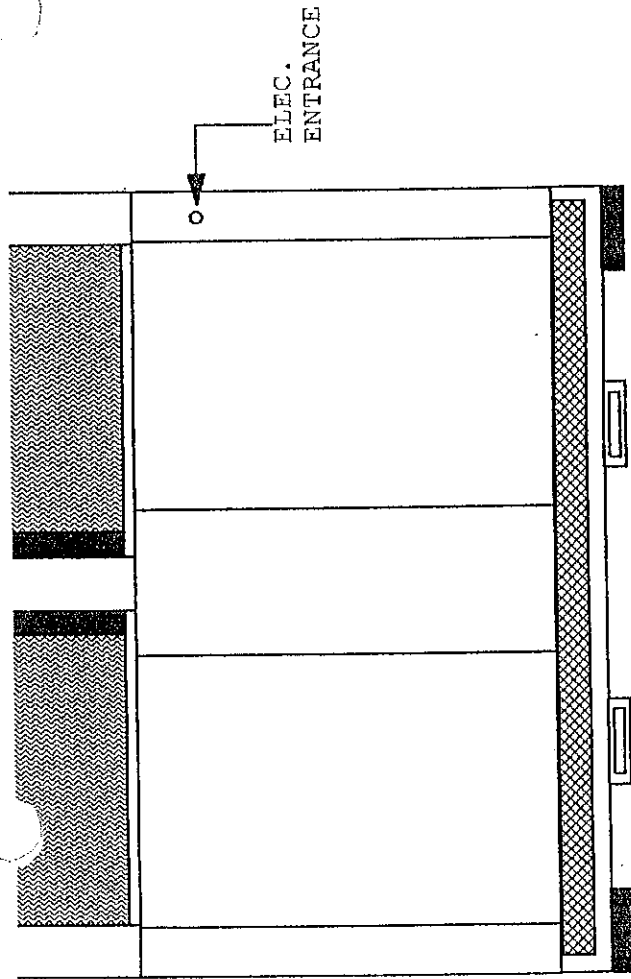
| MOD NO. | HP. | SIZE     | WEIGHT | ELEC.       | RL AMPS | B.T.U. |
|---------|-----|----------|--------|-------------|---------|--------|
| RTP-201 | 2   | 30x60x49 | 330#   | 208/230 3ph | 22      | 24,000 |
| RTP-303 | 3   | 30x60x49 | 350#   | 208/230 3ph | 18      | 36,000 |
| RTP-304 | 3   | 30x60x49 | 350#   | 460 3ph     | 9       | 36,000 |
| RTP-403 | 4   | 30x60x49 | 400#   | 208/230 3ph | 23      | 48,000 |
| RTP-404 | 4   | 30x60x49 | 400#   | 460 3ph     | 12      | 48,000 |
| RTP-503 | 5   | 30x60x49 | 425#   | 208/230 3ph | 24      | 60,000 |
| RTP-504 | 5   | 30x60x49 | 425#   | 460 3ph     | 12      | 60,000 |

\* SINGLE PHASE AVAILABLE IN ALL MODELS

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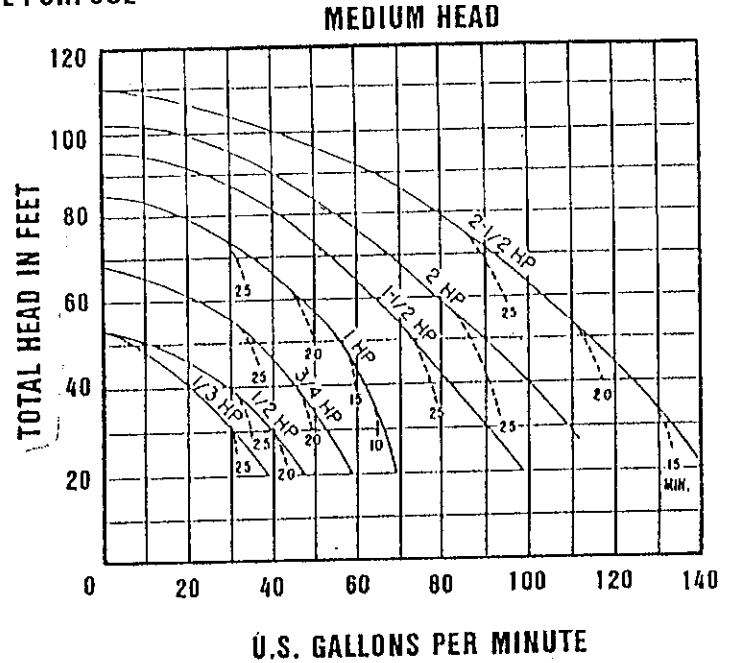
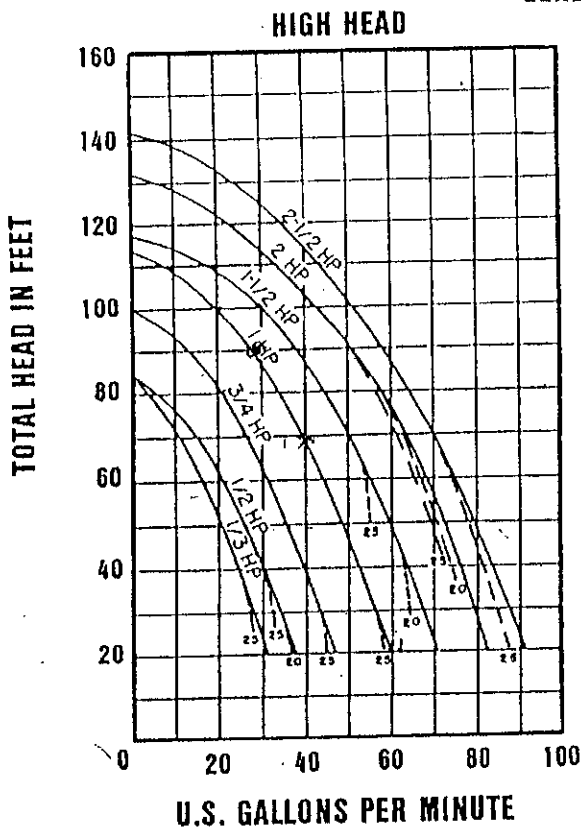
# RITE TEMP MFG.

MODELS: RTS  
1603, 1604, 2003, 2004



# PUMP PERFORMANCE

## GENERAL PURPOSE



### HIGH HEAD

| HP    | DISCHARGE PRESSURE |           | DYNAMIC SUCTION LIFT (Gallons Per Minute) |     |     |     |     |
|-------|--------------------|-----------|-------------------------------------------|-----|-----|-----|-----|
|       | PSI                | Foot HEAD | 5'                                        | 10' | 15' | 20' | 25' |
| 1     | 20                 | 46.2      | 47                                        | 45  | 43  | 40  | 38  |
|       | 30                 | 69.3      | 30                                        | 33  | 31  | 27  | 23  |
|       | 40                 | 92.4      | 21                                        | 18  | 10  | —   | —   |
| 1 1/2 | 20                 | 46.2      | 58                                        | 56  | 54  | 51  | 48  |
|       | 30                 | 69.3      | 47                                        | 44  | 41  | 38  | 34  |
|       | 40                 | 92.4      | 31                                        | 27  | 21  | 12  | —   |
| 2     | 20                 | 46.2      | 71                                        | 68  | 66  | 62  | 60  |
|       | 30                 | 69.3      | 61                                        | 57  | 55  | 51  | 47  |
|       | 40                 | 92.4      | 45                                        | 40  | 36  | 31  | 26  |
| 2 1/2 | 20                 | 46.2      | 78                                        | 76  | 73  | 71  | 68  |
|       | 30                 | 69.3      | 67                                        | 64  | 61  | 58  | 54  |
|       | 40                 | 92.4      | 52                                        | 48  | 44  | 40  | 36  |
| 3     | 20                 | 46.2      | 85                                        | 82  | 79  | 76  | 73  |
|       | 30                 | 69.3      | 74                                        | 70  | 67  | 63  | 59  |
|       | 40                 | 92.4      | 58                                        | 53  | 49  | 45  | 41  |

### MEDIUM HEAD

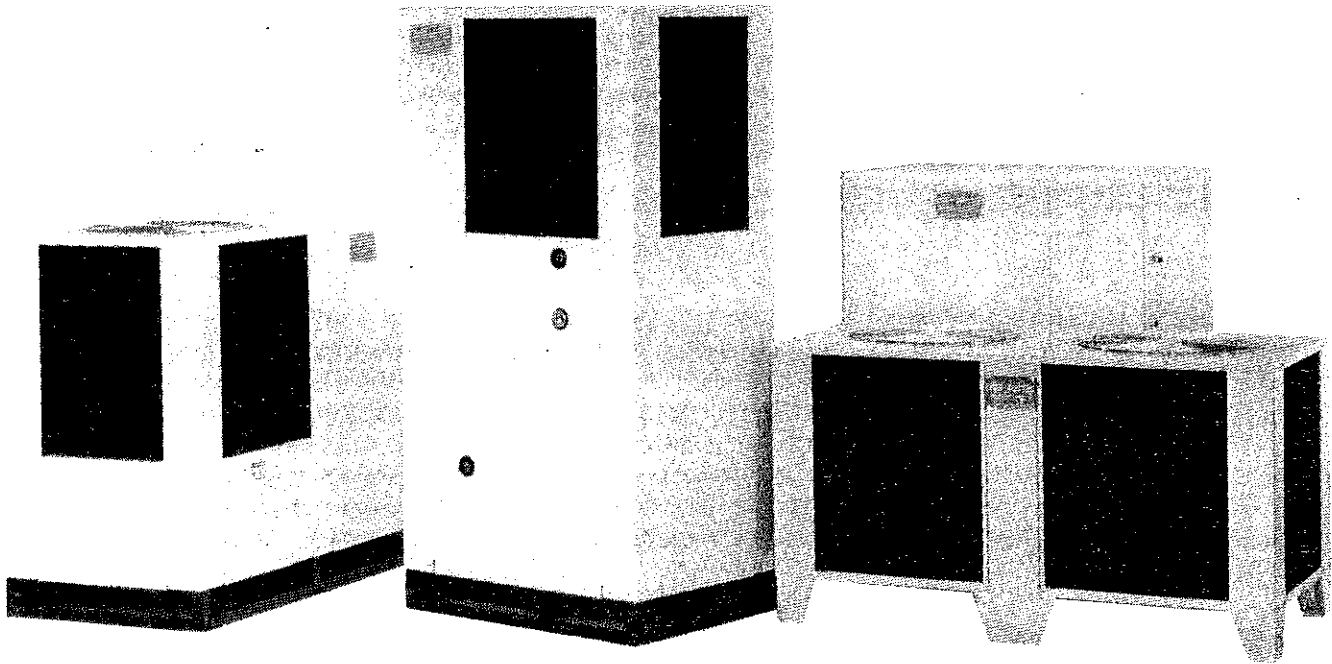
| HP    | DISCHARGE PRESSURE |           | DYNAMIC SUCTION LIFT (Gallons Per Minute) |     |     |     |     |
|-------|--------------------|-----------|-------------------------------------------|-----|-----|-----|-----|
|       | PSI                | Foot HEAD | 5'                                        | 10' | 15' | 20' | 25' |
| 1     | 20                 | 46.2      | 54                                        | 49  | 44  | 38  | 30  |
|       | 30                 | 69.3      | 27                                        | 18  | 15  | —   | —   |
|       | 40                 | 92.4      | —                                         | —   | —   | —   | —   |
| 1 1/2 | 20                 | 46.2      | 71                                        | 67  | 62  | 57  | 51  |
|       | 30                 | 69.3      | 40                                        | 41  | 34  | 23  | —   |
|       | 40                 | 92.4      | —                                         | —   | —   | —   | —   |
| 2     | 20                 | 46.2      | 88                                        | 84  | 78  | 73  | 68  |
|       | 30                 | 69.3      | 63                                        | 56  | 48  | 40  | 30  |
|       | 40                 | 92.4      | 25                                        | 10  | —   | —   | —   |
| 2 1/2 | 20                 | 46.2      | 111                                       | 106 | 101 | 95  | 87  |
|       | 30                 | 69.3      | 85                                        | 79  | 71  | 62  | 50  |
|       | 40                 | 92.4      | 48                                        | 33  | 15  | —   | —   |

**rite-temp**  
MANUFACTURING, INC.

P. O. Box 1275 • Rogers, Arkansas 72757 • 501-636-5199

# **rite-temp**

*Water Chillers*



## **INSTALLATION & MAINTENANCE GUIDE**

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**rite-temp** P. O. Box 1275 • Rogers, Arkansas 72757 • 501-636-5199  
MANUFACTURING, INC.

---

## IMPORTANT - READ BEFORE INSTALLING

# INSTALLATION INSTRUCTIONS

### A. RECEIVING AND INSPECTION

1. Immediately upon receiving shipment, equipment should be inspected for evidence of any damage received in transit. If shipping damage has occurred, a claim should be made with the transportation company, and the local Rite-Temp representative should be advised of nature of damage.
2. Equipment should be inspected for compliance with original order acknowledgement (equipment model numbers, voltages, etc.).

### B. RIGGING

1. Equipment should be lifted in a near level condition to prevent undue stress on structural members.

### C. MOUNTING

1. Equipment should be mounted on a smooth, hard, level surface.
2. Mounting surface should be rigid, and provisions should be made to prevent noise transmission (structural) to surrounding areas.
3. Air cooled equipment should not be installed under low structural overhangs which can cause condenser air recirculation or restriction.
4. Adequate Area (approx. 1 unit width) must be provided around equipment for unrestricted air flow and service. Two units side by side should have a minimum of 1 1/2 unit width between them.
5. Care should be taken to prevent air from other sources from entering condenser if this air is at an elevated temperature.
6. Indoor design equipment must be installed in a protected enclosure.

### D. PIPING

1. All piping must be in accordance with applicable local and state codes.
2. Refrigerant piping (split systems) should be designed and installed in accordance with recommended practices as outlined in ARI or ASHRE piping guide. (Engineering Guide #1 for air conditioning systems.)
3. Water piping (Chillers) should be designed and installed to meet application requirements. Provisions must be made to prevent freezing if design ambient temperatures dictate.
4. Compressor shipping hold down bolts (spring mounted compressors) should be loosened until compressor swings free on its isolators before piping is made-up. Line isolators or loops must be used with spring mounted compressors.
5. When piping is completed, a thorough leak test should be performed before evacuation start-up. Do not exceed 150 psig test pressure on low side of system.

### E. WIRING

1. All local and state codes must be strictly adhered to and good electrical practices should be followed to achieve the best installation possible.

2. Power wiring to equipment must be adequately sized for minimum ampacity as shown on unit nameplate. A disconnect should be located adjacent to unit for both safety and servicing purposes.
3. Equipment wiring diagram should be examined and thoroughly understood before field wiring connections are made.
4. Power supply should be checked to be certain that supply voltage agrees with equipment nameplate. Serious damage to compressors and motors can occur if improper voltage is applied.
5. When wiring is completed, fan motors should be checked for proper rotation. All fan motors of multiple fan equipment have been factory wired to operate with same rotation. If rotation is found to be incorrect, reverse two or three leads on main incoming power.

### F. SYSTEM EVACUATION (Split System Only)

1. With refrigerant piping completed and leak tested, equipment is ready to evacuate. Do not use compressor to evacuate system. A quality vacuum pump capable of 350 micron vacuum is necessary for adequate and dependable system vacuum. Moisture in a refrigeration system can cause corrosion, expansion valve freeze-up and oil sludge.
2. Attach vacuum pump to both high and low side of system through compressor service valves and evacuate to 350 microns (all service valves, hand valves, and solenoids must be open during evacuation). It is suggested that vacuum pump be run for a period of time after vacuum has been reached.

### G. START-UP

1. This will involve checking and adjusting of all safety and operating controls (pressure and temperature controls have been set at the factory; however, it is still desirable to confirm that settings are correct and controls function properly). Do not attempt to function safety controls without some means of stopping compressor in event of extreme high or low pressure conditions that could damage the equipment. If controls fail to function at set point, determine cause and correct. Jumpering any safety control other than for testing purposes is dangerous to personnel and equipment, and nullifies equipment warranty.
2. The bottom opening is the pump outlet to your process. The middle opening is the return inlet water coming back to the reservoir tank. Fit a union and a tee in the return line. Bring the make-up water line to the tee. This is used to fill the chiller and system.
3. With the chiller switch OFF, turn on the MAIN POWER to the chiller. Even though the chiller switch is off, the main power will activate the compressor crankcase heater to warm up the oil and burn off any freon that has migrated into the crankcase (this feature is standard in ALL compressors).

# LINE SIZES

## LIQUID LINE SIZES

| Net Evaporator Capacity | R12 & R502 |     |       |       | R22 |     |       |       |
|-------------------------|------------|-----|-------|-------|-----|-----|-------|-------|
|                         | 25         | 50  | 100*  | 150   | 25  | 50  | 100   | 150   |
| 3,000                   | 1/4        | 1/4 | 1/4   | 3/8   | 1/4 | 1/4 | 1/4   | 1/4   |
| 4,500                   | 1/4        | 1/4 | 3/8   | 3/8   | 1/4 | 1/4 | 3/8   | 3/8   |
| 6,500                   | 1/4        | 3/8 | 3/8   | 3/8   | 1/4 | 1/4 | 3/8   | 3/8   |
| 8,500                   | 3/8        | 3/8 | 3/8   | 1/2   | 1/4 | 3/8 | 3/8   | 3/8   |
| 12,000                  | 3/8        | 3/8 | 1/2   | 1/2   | 3/8 | 3/8 | 3/8   | 1/2   |
| 18,000                  | 3/8        | 1/2 | 1/2   | 1/2   | 3/8 | 3/8 | 1/2   | 1/2   |
| 24,000                  | 1/2        | 1/2 | 1/2   | 5/8   | 3/8 | 1/2 | 1/2   | 1/2   |
| 30,000                  | 1/2        | 1/2 | 5/8   | 5/8   | 3/8 | 1/2 | 1/2   | 5/8   |
| 36,000                  | 1/2        | 5/8 | 5/8   | 5/8   | 1/2 | 1/2 | 5/8   | 5/8   |
| 42,000                  | 1/2        | 5/8 | 5/8   | 3/4   | 1/2 | 1/2 | 5/8   | 5/8   |
| 48,000                  | 1/2        | 5/8 | 3/4   | 3/4   | 1/2 | 5/8 | 5/8   | 3/4   |
| 54,000                  | 5/8        | 5/8 | 3/4   | 3/4   | 1/2 | 5/8 | 5/8   | 3/4   |
| 60,000                  | 5/8        | 5/8 | 3/4   | 3/4   | 1/2 | 5/8 | 3/4   | 3/4   |
| 72,000                  | 5/8        | 3/4 | 7/8   | 7/8   | 5/8 | 5/8 | 3/4   | 3/4   |
| 90,000                  | 3/4        | 3/4 | 7/8   | 7/8   | 5/8 | 3/4 | 7/8   | 7/8   |
| 120,000                 | 3/4        | 7/8 | 1 1/8 | 1 1/8 | 3/4 | 3/4 | 7/8   | 1 1/8 |
| 150,000                 | 7/8        | 7/8 | 1 1/8 | 1 1/8 | 3/4 | 7/8 | 1 1/8 | 1 1/8 |

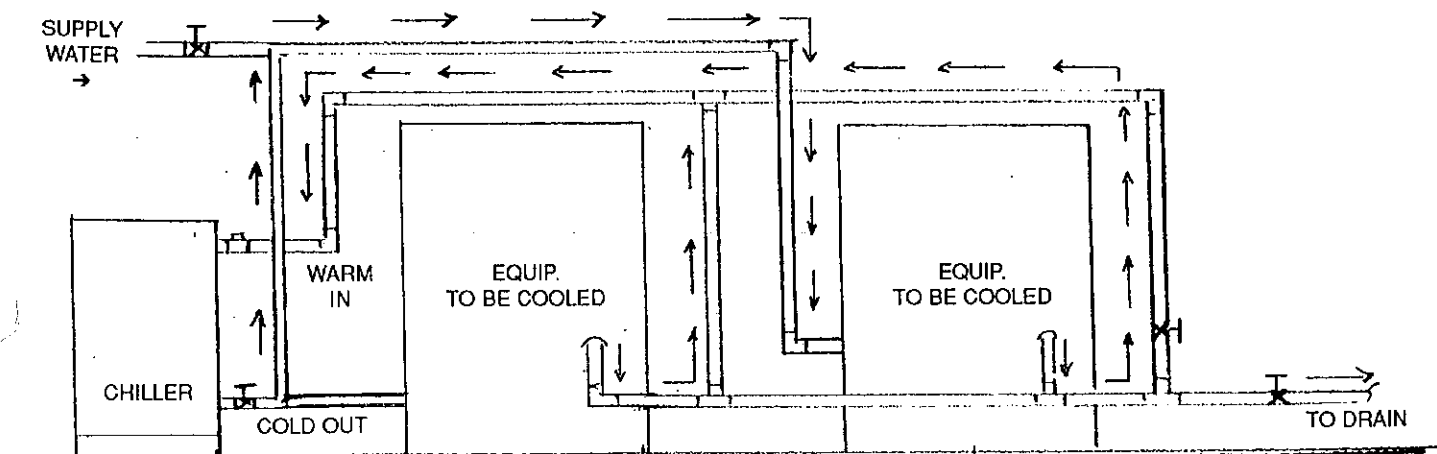
## DISCHARGE LINE SIZES

| Net Evaporator Capacity | R12   |       |       |       | R22 & R502 |       |       |       |
|-------------------------|-------|-------|-------|-------|------------|-------|-------|-------|
|                         | 25    | 50    | 100*  | 150   | 25         | 50    | 100   | 150   |
| 3,000                   | 3/8   | 3/8   | 1/2   | 1/2   | 3/8        | 3/8   | 3/8   | 3/8   |
| 4,500                   | 3/8   | 1/2   | 1/2   | 1/2   | 3/8        | 3/8   | 1/2   | 1/2   |
| 6,500                   | 1/2   | 1/2   | 5/8   | 5/8   | 3/8        | 1/2   | 1/2   | 1/2   |
| 8,500                   | 1/2   | 1/2   | 5/8   | 5/8   | 3/8        | 1/2   | 1/2   | 5/8   |
| 12,000                  | 1/2   | 5/8   | 3/4   | 3/4   | 1/2        | 1/2   | 5/8   | 5/8   |
| 18,000                  | 5/8   | 3/4   | 3/4   | 7/8   | 1/2        | 5/8   | 3/4   | 3/4   |
| 24,000                  | 5/8   | 3/4   | 7/8   | 1 1/8 | 5/8        | 5/8   | 3/4   | 7/8   |
| 30,000                  | 3/4   | 7/8   | 1 1/8 | 1 1/8 | 5/8        | 3/4   | 7/8   | 7/8   |
| 36,000                  | 3/4   | 7/8   | 1 1/8 | 1 1/8 | 5/8        | 3/4   | 7/8   | 7/8   |
| 42,000                  | 7/8   | 7/8   | 1 1/8 | 1 1/8 | 3/4        | 3/4   | 7/8   | 1 1/8 |
| 48,000                  | 7/8   | 1 1/8 | 1 1/8 | 1 3/8 | 3/4        | 7/8   | 1 1/8 | 1 1/8 |
| 54,000                  | 7/8   | 1 1/8 | 1 1/8 | 1 3/8 | 3/4        | 7/8   | 1 1/8 | 1 1/8 |
| 60,000                  | 7/8   | 1 1/8 | 1 3/8 | 1 3/8 | 3/4        | 7/8   | 1 1/8 | 1 1/8 |
| 72,000                  | 1 1/8 | 1 1/8 | 1 3/8 | 1 3/8 | 7/8        | 1 1/8 | 1 1/8 | 1 1/8 |
| 90,000                  | 1 1/8 | 1 3/8 | 1 3/8 | 1 5/8 | 7/8        | 1 1/8 | 1 1/8 | 1 3/8 |
| 120,000                 | 1 1/8 | 1 3/8 | 1 5/8 | 1 5/8 | 1 1/8      | 1 1/8 | 1 3/8 | 1 3/8 |
| 150,000                 | 1 3/8 | 1 3/8 | 1 5/8 | 2 1/8 | 1 1/8      | 1 3/8 | 1 3/8 | 1 5/8 |

## SUCTION LINE SIZES FOR R-22 & R-502

| Net Evaporator Capacity | Suction Temperature |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|-------------------------|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                         | 40°                 |       |       |       | 20°   |       |       |       | 0°    |       |       |       | -20°  |       |       |       |
|                         | 25                  | 50    | 100   | 150   | 25    | 50    | 100   | 150   | 25    | 50    | 100   | 150   | 25    | 50    | 100   | 150   |
| 3,000                   | 3/8                 | 3/8   | 3/8   | 1/2   | 3/8   | 3/8   | 1/2   | 1/2   | 1/2   | 1/2   | 5/8   | 5/8   | 1/2   | 5/8   | 5/8   | 3/4   |
| 6,000                   | 3/8                 | 1/2   | 1/2   | 5/8   | 1/2   | 1/2   | 5/8   | 5/8   | 5/8   | 5/8   | 3/4   | 7/8   | 5/8   | 3/4   | 7/8   | 1 1/8 |
| 9,000                   | 1/2                 | 1/2   | 5/8   | 5/8   | 1/2   | 5/8   | 5/8   | 3/4   | 3/4   | 3/4   | 7/8   | 7/8   | 3/4   | 7/8   | 1 1/8 | 1 3/8 |
| 12,000                  | 1/2                 | 5/8   | 3/4   | 3/4   | 5/8   | 5/8   | 3/4   | 3/4   | 3/4   | 7/8   | 7/8   | 1 1/8 | 7/8   | 7/8   | 1 1/8 | 1 3/8 |
| 18,000                  | 5/8                 | 3/4   | 3/4   | 7/8   | 3/4   | 3/4   | 7/8   | 7/8   | 7/8   | 7/8   | 1 1/8 | 1 1/8 | 7/8   | 1 1/8 | 1 3/8 | 1 5/8 |
| 24,000                  | 3/4                 | 3/4   | 7/8   | 7/8   | 3/4   | 7/8   | 1 1/8 | 1 1/8 | 7/8   | 1 1/8 | 1 1/8 | 1 3/8 | 1 1/8 | 1 1/8 | 1 3/8 | 1 5/8 |
| 30,000                  | 3/4                 | 7/8   | 7/8   | 1 1/8 | 7/8   | 7/8   | 1 1/8 | 1 1/8 | 1 1/8 | 1 1/8 | 1 3/8 | 1 3/8 | 1 1/8 | 1 1/8 | 1 3/8 | 1 5/8 |
| 36,000                  | 3/4                 | 7/8   | 1 1/8 | 1 1/8 | 7/8   | 1 1/8 | 1 1/8 | 1 1/8 | 1 1/8 | 1 1/8 | 1 3/8 | 1 5/8 | 1 1/8 | 1 3/8 | 1 5/8 | 2 1/8 |
| 42,000                  | 7/8                 | 7/8   | 1 1/8 | 1 1/8 | 7/8   | 1 1/8 | 1 1/8 | 1 1/8 | 1 1/8 | 1 3/8 | 1 3/8 | 1 5/8 | 1 3/8 | 1 3/8 | 1 5/8 | 2 1/8 |
| 48,000                  | 7/8                 | 1 1/8 | 1 1/8 | 1 1/8 | 1 1/8 | 1 1/8 | 1 3/8 | 1 3/8 | 1 3/8 | 1 3/8 | 1 5/8 | 1 5/8 | 1 3/8 | 1 5/8 | 2 1/8 | 2 1/8 |
| 54,000                  | 7/8                 | 1 1/8 | 1 1/8 | 1 3/8 | 1 1/8 | 1 1/8 | 1 3/8 | 1 3/8 | 1 3/8 | 1 3/8 | 1 5/8 | 1 5/8 | 1 5/8 | 2 1/8 | 2 1/8 | 2 5/8 |
| 60,000                  | 7/8                 | 1 1/8 | 1 1/8 | 1 3/8 | 1 1/8 | 1 1/8 | 1 3/8 | 1 3/8 | 1 3/8 | 1 3/8 | 1 5/8 | 2 1/8 | 1 5/8 | 2 1/8 | 2 1/8 | 2 5/8 |
| 72,000                  | 1 1/8               | 1 1/8 | 1 3/8 | 1 3/8 | 1 1/8 | 1 3/8 | 1 3/8 | 1 5/8 | 1 3/8 | 1 5/8 | 1 5/8 | 2 1/8 | 1 5/8 | 1 5/8 | 2 1/8 | 2 5/8 |
| 90,000                  | 1 1/8               | 1 1/8 | 1 3/8 | 1 5/8 | 1 1/8 | 1 3/8 | 1 5/8 | 1 5/8 | 1 5/8 | 1 5/8 | 2 1/8 | 2 1/8 | 1 5/8 | 2 1/8 | 2 5/8 | 3 1/8 |
| 120,000                 | 1 1/8               | 1 3/8 | 1 5/8 | 1 5/8 | 1 3/8 | 1 5/8 | 1 5/8 | 2 1/8 | 1 5/8 | 2 1/8 | 2 1/8 | 2 5/8 | 2 1/8 | 2 5/8 | 3 1/8 | 3 1/8 |
| 150,000                 | 1 3/8               | 1 3/8 | 1 5/8 | 2 1/8 | 1 3/8 | 1 5/8 | 2 1/8 | 2 1/8 | 1 5/8 | 2 1/8 | 2 1/8 | 2 5/8 | 2 1/8 | 2 5/8 | 3 1/8 | 3 1/8 |
| 180,000                 | 1 3/8               | 1 5/8 | 2 1/8 | 2 1/8 | 1 5/8 | 2 1/8 | 2 1/8 | 2 1/8 | 2 1/8 | 2 1/8 | 2 5/8 | 2 5/8 | 2 1/8 | 2 5/8 | 3 1/8 | 3 5/8 |
| 210,000                 | 1 3/8               | 1 5/8 | 2 1/8 | 2 1/8 | 1 5/8 | 2 1/8 | 2 1/8 | 2 5/8 | 2 1/8 | 2 1/8 | 2 5/8 | 2 5/8 | 2 5/8 | 3 1/8 | 3 5/8 | 3 5/8 |
| 240,000                 | 1 5/8               | 1 5/8 | 2 1/8 | 2 1/8 | 1 5/8 | 2 1/8 | 2 1/8 | 2 5/8 | 2 1/8 | 2 5/8 | 2 5/8 | 3 1/8 | 2 5/8 | 2 5/8 | 3 5/8 | 4 1/8 |
| 300,000                 | 1 5/8               | 2 1/8 | 2 1/8 | 2 5/8 | 2 1/8 | 2 1/8 | 2 5/8 | 2 5/8 | 2 1/8 | 2 5/8 | 3 1/8 | 3 1/8 | 2 5/8 | 3 1/8 | 3 5/8 | 5 1/8 |

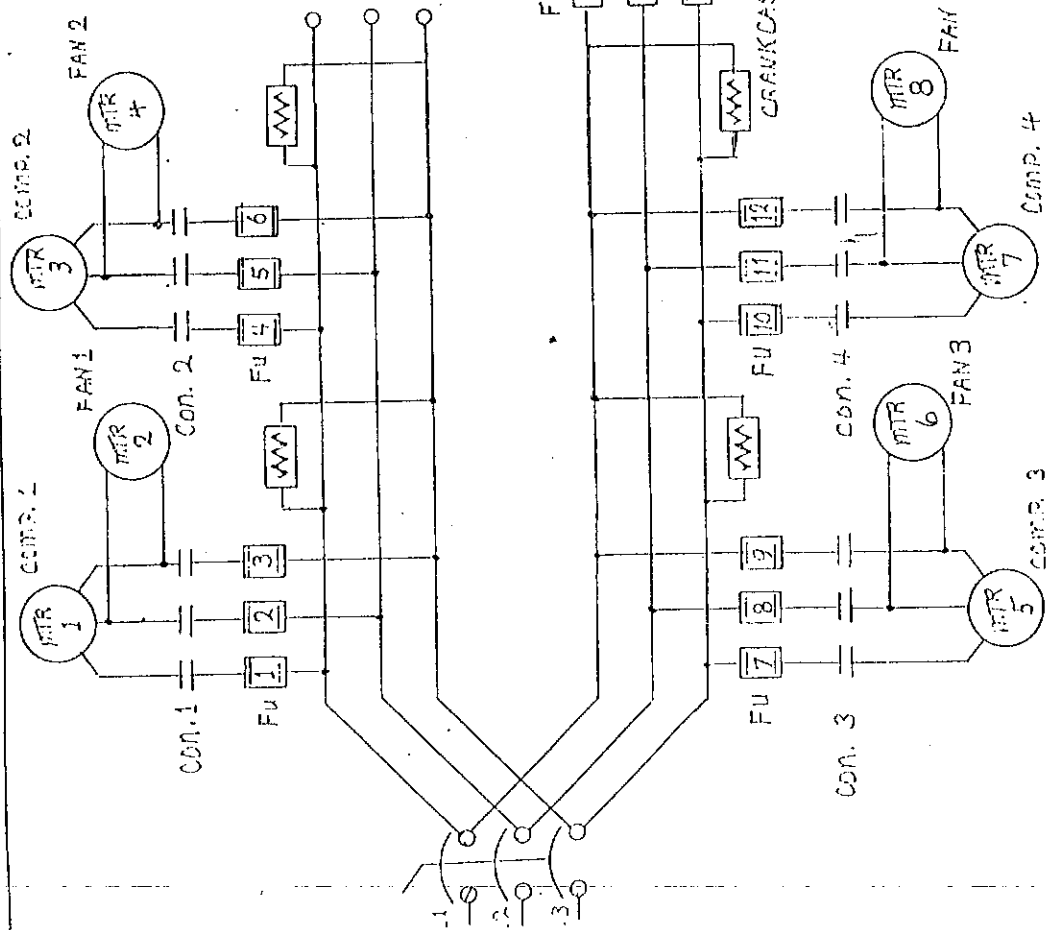
## BASIC MULTIPLE HOOK-UP CHILLER WATER



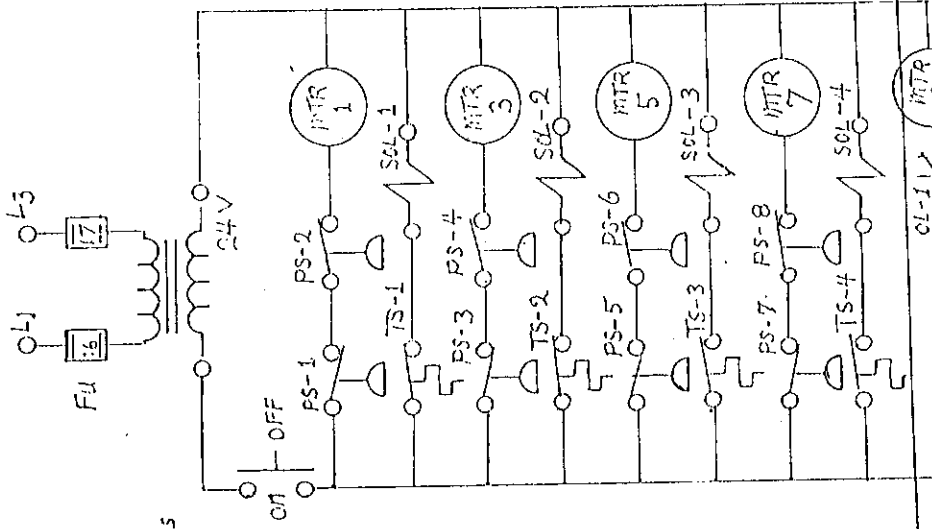
# TROUBLE SHOOTING CHART

| PROBLEM                                          | POSSIBLE CAUSES                                                                                                                                                                                                                                                                                                                                                                       | POSSIBLE CORRECTIVE STEPS                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Low Suction Pressure<br>(continued)              | f) Condensing temperature too low<br>g) Compressor will not unload<br>h) Insufficient water flow                                                                                                                                                                                                                                                                                      | f) Check means for regulating condensing temperature<br>g) See Corrective Steps for failure of compressor to unload<br>h) Adjust gpm.                                                                                                                                                                                                                                                                           |
| Compressor will not unload or load up            | a) Defective capacity control<br>b) Unloader mechanism defective<br>c) Faulty thermostat stage or broken capillary tube<br>d) Stages not set for application                                                                                                                                                                                                                          | a) Replace<br>b) Replace<br>c) Replace<br>d) Reset thermostat setting to fit application                                                                                                                                                                                                                                                                                                                        |
| Compressor Loading-Unloading Intervals too short | a) Erratic water thermostat<br>b) Insufficient water flow                                                                                                                                                                                                                                                                                                                             | a) Replace<br>b) Adjust gpm.                                                                                                                                                                                                                                                                                                                                                                                    |
| Little or no oil pressure                        | a) Clogged suction oil strainer<br>b) Excessive liquid in crankcase<br>c) Oil pressure gauge defective<br>d) Low-oil pressure safety switch defective<br>e) Worn oil pump<br>f) Oil pump reversing gear stuck in wrong position<br>g) Worn bearings<br>h) Low oil level<br>i) Loose fitting on oil lines<br>j) Pump housing gasket leaks<br>k) Flooding of refrigerant into crankcase | a) Clean<br>b) Check crankcase heater. Reset expansion valve for higher superheat. Check liquid line solenoid valve operation<br>c) Repair or replace. Keep valve closed except when taking readings<br>d) Replace<br>e) Replace<br>f) Reverse direction of compressor rotation<br>g) Replace compressor<br>h) Add oil<br>i) Check and tighten system<br>j) Replace gasket<br>k) Adjust thermal expansion valve |
| Compressor loses oil                             | a) Lack of refrigerant<br>*b) Velocity in risers too low<br>*c) Oil trapped in line<br>d) Excessive compression ring blow-by                                                                                                                                                                                                                                                          | a) Check for leaks and repair. Add refrigerant<br>b) Check riser sizes<br>c) Check pitch of lines and refrigerant velocities<br>d) Replace compressor                                                                                                                                                                                                                                                           |
| Motor overload relays or circuit breakers open   | a) Low voltage during high load conditions<br>b) Defective or grounded wiring in motor or power circuits<br>c) Loose power wiring<br>d) High condensing temperature<br>e) Power line fault causing unbalanced voltage<br>f) High ambient temperature around the overload relay<br>g) Failure of second starter to pull in on part-winding start system                                | a) Check supply voltage for excessive line drop<br>b) Replace compressor motor<br>c) Check all connections and tighten<br>d) See Corrective Steps for high discharge pressure<br>e) Check supply voltage. Notify power company. Do not start until fault is corrected<br>f) Provide ventilation to reduce heat<br>g) Repair or replace starter or time delay mechanism                                          |
| Compressor thermal protector switch open         | a) Operating beyond design conditions<br>b) Discharge valve partially shut<br>c) Blown valve plate gasket                                                                                                                                                                                                                                                                             | a) Add facilities so that conditions are within allowable limits<br>b) Open valve<br>c) Replace gasket                                                                                                                                                                                                                                                                                                          |
| Freeze protection opens                          | a) Thermostat set too low<br>b) Low water flow<br>c) Low suction pressure                                                                                                                                                                                                                                                                                                             | a) Reset to 40 F or above<br>b) Adjust gpm.<br>c) See "Low Suction Pressure"                                                                                                                                                                                                                                                                                                                                    |

\* Remote condenser models



Note: Compressor Fan Motors are Thermo. Protected



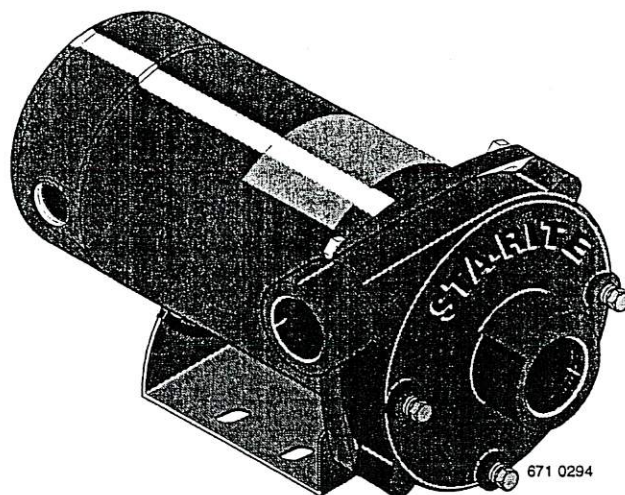
|                        |              |       |
|------------------------|--------------|-------|
| SCALE:                 | APPROVED BY: | DATE: |
|                        |              |       |
| Models RTS-1600 / 2000 |              |       |
| DRAWING NO.            |              |       |

# STA-RITE®

## OWNER'S MANUAL

INSTALLATION AND OPERATING INSTRUCTIONS  
REPAIR PARTS LIST

### 60 CYCLE "J" and "JB" SERIES CENTRIFUGAL PUMP



#### MODELS

| HP    | MEDIUM HEAD MODELS |            |         |         | HIGH HEAD MODELS |            |           |           |
|-------|--------------------|------------|---------|---------|------------------|------------|-----------|-----------|
| 1/3   | JBMB-56S           | —          | JMB-56L | —       | JBHB-61S         | —          | JHB-61HL  | —         |
| 1/2   | JBMC-56S           | JBMC3-56S  | JMC-56L | JMC3-56 | JBHC-61S         | JBHC3-61S  | JHC-61HL  | JHC3-61H  |
| 3/4   | JBMD-57S           | JBMD3-57S  | JMD-57L | JMD3-57 | JBHD-62S         | JBHD3-62S  | JHD-62HL  | JHD3-62H  |
| 1     | JBME-58S           | JBME3-58S  | JME-58L | JME3-58 | JBHE-63S         | JBHE3-63S  | JHE-63HL  | JHE3-63H  |
| 1-1/2 | JBMF-40S           | JBMF3-40S  | JMF-40L | JMF3-40 | JBHF-51S         | JBHF3-51S  | JHF-51HL  | JHF3-51H  |
| 2     | JBMG-41S           | JBMG3-41S  | JMG-41L | JMG3-41 | JBHG-52S         | JBHG3-52S  | JHG-52HL  | JHG3-52H  |
| 2-1/2 | JBMMG-59S          | JBMMG3-59S | —       | —       | JBHHG-53S        | JBHHG3-53S | JHHG-53HL | JHHG3-53H |

STA-RITE INDUSTRIES, INC., DELAVAN, WISCONSIN 53115

## PIPING - GENERAL

Support both suction and discharge piping independently at a point near the pump to avoid putting a strain on the pump housing. Start all piping **AT THE PUMP**.

Increase pipe diameter at both the suction and discharge by one (1) standard pipe size (minimum) to obtain desired performance and flow rate. Refer to Table I when sizing pipe for your pumping system.

**NOTE:** Do not use pipe with **smaller** diameter on the suction side of pump.

**TABLE I**

| Pipe Tapping Size On Pump |           | Recommended Pipe Size |           |
|---------------------------|-----------|-----------------------|-----------|
| Suction                   | Discharge | Suction               | Discharge |
| 1-1/4                     | 1         | 1-1/2                 | 1-1/4     |
| 1-1/2                     | 1-1/4     | 2                     | 1-1/2     |
| 2                         | 1-1/2     | 3                     | 2         |

## SUCTION PIPE

Increase pipe size from pump tapping as shown in Table I.

Figure 1 (Page 2) depicts a recommended run of pipe and fittings for the suction side of a centrifugal pump. Please refer to this illustration when choosing pipe and fittings for your suction connection.

**IMPORTANT:** All connections must be air tight!

Figure 2 (Page 2) depicts conditions that are **NOT DESIRABLE** on the suction side of a centrifugal pump and may cause problems in flow rate and priming. Please look this illustration over carefully before choosing pipe and fittings for your suction connection.

## DISCHARGE PIPING

Increase pipe size from pump tapping as show in Table I.

Figure 1 (Page 2) depicts a recommended run of pipe and fittings for the discharge. Install tee with priming plug as close to pump as possible. Figure 2 (Page 2) notes conditions that should be avoided. Please read over carefully before making discharge connection.

## PRIMING THE PUMP

A pump is primed when all air in the suction line and pump volute has been evacuated and replaced with water.

**To Prime:**

1. Close valve in discharge line.
2. Remove priming plug from tee and fill pump and suction line with water until water is flowing back out of tee.
3. Replace priming plug.
4. Start pump and slowly open valve until desired water flow is achieved.

**NOTE:** If water is not being pumped, turn off pump, close valve, and repeat steps 1 thru 4.

If pump volute is rotated as shown in Figure 1 (Page 2), loosen vent plug when priming to evacuate air trapped inside volute and tighten when volute is completely filled with water.

**⚠ WARNING** Risk of explosion and scalding. Never run pump against closed discharge. To do so can boil water inside pump, causing hazardous pressure buildup and possible explosion.

**⚠ CAUTION** Risk of flooding. Do not run the pump dry. This will damage mechanical seal and void warranty. It may cause burns to person handling pump.

**⚠ CAUTION** Motor normally operates at high temperature and will be too hot to touch. It is protected from heat damage during operation by an automatic internal cutoff switch. Before handling pump or motor, stop motor and allow it to cool for 20 minutes.

**TABLE II - RECOMMENDED FUSING AND WIRING DATA - 60 CYCLE MOTORS**

|                             |                      |                                   |                 | DIAMETER IN FEET FROM MOTOR TO METER |                    |                    |                    |                    |
|-----------------------------|----------------------|-----------------------------------|-----------------|--------------------------------------|--------------------|--------------------|--------------------|--------------------|
| MOTOR<br>HP                 | MAX. LOAD<br>AMPERES | BRANCH<br>FUSE*<br>RATING<br>AMPS | 0'<br>TO<br>50' | 51'<br>TO<br>100'                    | 101'<br>TO<br>200' | 201'<br>TO<br>300' | 301'<br>TO<br>400' | 401'<br>TO<br>500' |
|                             |                      |                                   | WIRE SIZE       |                                      |                    |                    |                    |                    |
| SINGLE PHASE - 115/230 VOLT |                      |                                   |                 |                                      |                    |                    |                    |                    |
| 1/3                         | 9.4/4.7              | 15/15                             | 14/14           | 14/14                                | 10/14              | 10/14              | 6/14               | 6/12               |
| 1/2                         | 9.4/4.7              | 15/15                             | 14/14           | 14/14                                | 10/14              | 10/14              | 6/14               | 6/12               |
| 3/4                         | 12.2/6.1             | 20/15                             | 12/14           | 12/14                                | 10/14              | 8/14               | 6/12               | 6/12               |
| 1                           | 14.8/7.4             | 20/15                             | 12/14           | 12/14                                | 8/14               | 6/14               | 6/12               | 4/10               |
| 1-1/2                       | 19.2/9.6             | 25/15                             | 10/14           | 10/14                                | 8/14               | 6/12               | 4/10               | 4/10               |
| SINGLE PHASE - 230 VOLT     |                      |                                   |                 |                                      |                    |                    |                    |                    |
| 2                           | 12.0                 | 15                                | 14              | 14                                   | 14                 | 12                 | 10                 | 10                 |
| 2-1/2                       | 12.0                 | 15                                | 14              | 14                                   | 14                 | 12                 | 10                 | 10                 |
| THREE PHASE - 230/460 VOLT  |                      |                                   |                 |                                      |                    |                    |                    |                    |
| 1/2                         | 2.3/1.15             | 15/15                             | 14/14           | 14/14                                | 14/14              | 14/14              | 14/14              | 14/14              |
| 3/4                         | 3.1/1.55             | 15/15                             | 14/14           | 14/14                                | 14/14              | 14/14              | 14/14              | 14/14              |
| 1                           | 3.6/1.8              | 15/15                             | 14/14           | 14/14                                | 14/14              | 14/14              | 14/14              | 14/14              |
| 1-1/2                       | 4.7/2.35             | 15/15                             | 14/14           | 14/14                                | 14/14              | 14/14              | 14/14              | 14/14              |
| 2                           | 6.8/3.4              | 15/15                             | 14/14           | 14/14                                | 14/14              | 14/14              | 12/14              | 12/14              |
| 2-1/2                       | 8.5/4.25             | 15/15                             | 14/14           | 14/14                                | 14/14              | 14/14              | 12/14              | 10/14              |

\*A Fusetron is recommended instead of a fuse in any motor circuit.