

PROJECT: LA CROSSE COUNTY SOLAR HOT WATER PROJECTS-
LAKEVIEW HEALTH CENTER

LOCATION: WEST SALEM, WI

ITEM: PUMPS
SPECIFICATION:

DESCRIPTION:

| | |
|--------------------------|---|
| Solar Fluid Lift Pump | Taco 1400 Series - 1400-45 High Capacity Circulator |
| In-Line Circulating Pump | Grundfos Series UP - UPS 26-99FC/BFC Circulator |

INSTALLER: Hooper Corporation
2030 Pennsylvania Ave.
Madison, WI 53706

CONTACT: Mike Peterson
PHONE: (608) 249-0451 ext. 130
FAX: (608) 249-7360

WARRANTY & CERTIFICATE: One year parts and labor warranty
(Unless specified otherwise by manufacturer)



Submittal Data Information

101-104

1400 Series High Capacity Circulators

Effective: July 23, 2007

Supersedes: October 13, 2005

Job: _____ Engineer: _____ Contractor: _____ Rep: _____

| ITEM NO. | MODEL NO. | IMP. DIA. | G.P.M. | HEAD/FT. | H.P. | ELEC. CHAR. |
|----------|-----------|-----------|--------|----------|------|-------------|
|----------|-----------|-----------|--------|----------|------|-------------|

Materials of Construction

Casing: Cast Iron or Bronze
 Face Plate: Stainless Steel
 Motor Housing: Steel
 Impeller: 30% Glass-filled Noryl¹
 Impeller Insert: Brass
 Shaft: Nu-tride² coated Solid Alloy Steel or Stainless Steel
 Mechanical Seal: Carbon/Silicon-Carbide
 Motor Bearings: Stainless Steel
 Permanently lubricated
 O-Ring/Flange Gaskets: EPDM

Model Nomenclature

B - Bronze, Flanged
 Y - 230/60/1 Motor
 A - 220/50/1 Motor

Performance Data

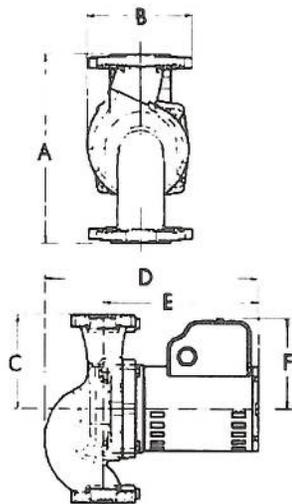
Flow Range: 0-147 GPM
 Head Range: 0-51 Feet
 Minimum Fluid Temp: 40°F (4°C)
 Maximum Fluid Temp: 225°F (107°C)
 Maximum Working Pressure: 150 psi



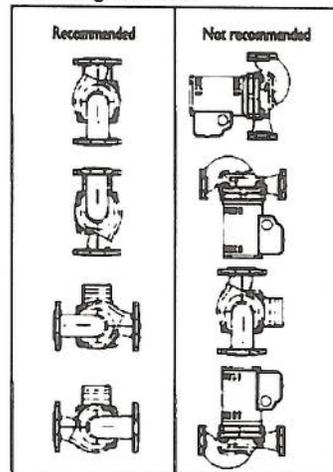
FOR INDOOR USE ONLY

Pump Dimensions & Weights

| Cast Iron Model | Bronze Model | A | | B | | C | | D | | E | | F | | Ship Wt. | |
|-----------------|--------------|-------|-----|--------|-----|---------|-----|--------|-----|-------|-----|----|-----|----------|------|
| | | in | mm | in | mm | in | mm | in | mm | in | mm | in | mm | lbs. | Kg |
| 1400-10 | 1400-10B | 6-3/8 | 162 | 4-1/2 | 114 | 3-3/16 | 82 | 8-3/16 | 208 | 6-3/8 | 162 | 4 | 102 | 12 | 5.4 |
| 1400-20 | 1400-20B | 6-3/8 | 162 | 4-1/2 | 114 | 3-3/16 | 82 | 8-5/8 | 220 | 6-7/8 | 175 | 4 | 102 | 12.5 | 5.7 |
| 1400-30 | 1400-30B | 8-1/2 | 216 | 4-3/4 | 121 | 4-1/4 | 100 | 9-3/4 | 248 | 7-1/8 | 181 | 4 | 102 | 15 | 6.8 |
| 1400-40 | 1400-40B | 8-1/2 | 216 | 4-3/4 | 121 | 4-1/4 | 100 | 9-3/4 | 248 | 7-1/8 | 181 | 4 | 102 | 15 | 6.8 |
| 1400-45 | 1400-45B | 6-3/8 | 162 | 4-5/8 | 115 | 3-21/32 | 82 | 10-1/4 | 260 | 8-1/2 | 216 | 4 | 102 | 15.5 | 7 |
| 1400-50 | 1400-50B | 6-3/8 | 162 | 4-5/8 | 119 | 3-3/16 | 82 | 10-1/4 | 260 | 8-1/2 | 216 | 4 | 102 | 16.5 | 7.5 |
| 1400-50/2 | 1400-50B/2 | 6-3/8 | 162 | 5-1/4 | 133 | 3-3/16 | 82 | 10-1/4 | 260 | 8-1/2 | 216 | 4 | 102 | 17 | 7.7 |
| 1400-60 | 1400-60B | 8-1/2 | 216 | 5-3/16 | 132 | 4-1/4 | 100 | 9-3/4 | 248 | 7-1/8 | 181 | 4 | 102 | 18.5 | 8.4 |
| 1400-65 | 1400-65B | 8-1/2 | 216 | 5-1/2 | 140 | 4-1/4 | 100 | 11-1/4 | 285 | 8-3/4 | 222 | 4 | 102 | 22.5 | 10.2 |
| 1400-70 | 1400-70B | 8-1/2 | 216 | 5-1/2 | 140 | 4-1/4 | 100 | 11-1/4 | 285 | 8-3/4 | 222 | 4 | 102 | 23.5 | 10.7 |
| 1400-70/3 | 1400-70B/3 | 8-1/2 | 216 | 6-5/8 | 160 | 4-1/4 | 100 | 12 | 305 | 8-3/4 | 222 | 4 | 102 | 29.5 | 13.4 |



Mounting Positions



Electrical Data

| Model | Volts | Hz | Ph | Amps | RPM | HP |
|---------------|---|----|----|------|------|------|
| 1400-10 | 115 | 60 | 1 | 1.5 | 3450 | 1/10 |
| 1400-20 | 115 | 60 | 1 | 2.0 | 3450 | 1/6 |
| 1400-30 | 115 | 60 | 1 | 2.0 | 3450 | 1/6 |
| 1400-40 | 115 | 60 | 1 | 2.0 | 3450 | 1/6 |
| 1400-45 | 115 | 60 | 1 | 3.2 | 3450 | 1/3 |
| 1400-50 | 115 | 60 | 1 | 5.0 | 3450 | 1/2 |
| 1400-60 | 115 | 60 | 1 | 2.0 | 3450 | 1/6 |
| 1400-65 | 115 | 60 | 1 | 3.2 | 3450 | 1/3 |
| 1400-70 | 115 | 60 | 1 | 5.0 | 3450 | 1/2 |
| Motor Type | Open Drip Proof, Permanent Split Capacitor, Thermally Protected | | | | | |
| Motor Options | 230/60/1, 220/50/1 | | | | | |

1400 Series Companion Flange Sets

| Models | Connection | 3/4" | 1" | 1-1/4" | 1-1/2" | 2" | 2-1/2" | 3" |
|---------------|--------------|------------|------------|------------|------------|------------|----------|----------|
| 1400-10/10B | Iron NPT | 110-251F | 110-252F | 110-253F | 110-254F | — | — | — |
| 1400-20/20B | Bronze NPT | 110-251BF | 110-252BF | 110-253BF | 110-254BF | — | — | — |
| 1400-45/45B | Bronze SWT | 110-5238SF | 110-5248SF | 110-5258SF | 110-5268SF | — | — | — |
| 1400-50/50B | Shut-Off NPT | 243-1 | 244-1 | 245-1 | 246-1 | — | — | — |
| | Shut-Off SWT | 243-2 | 244-2 | 245-2 | 246-2 | — | — | — |
| 1400-50/50B/2 | Iron NPT | — | — | — | — | 194-2124F | — | — |
| | Bronze NPT | — | — | — | — | 194-2124BF | — | — |
| 1400-30/30B | Iron NPT | — | — | 194-1540F | 194-1542F | — | — | — |
| 1400-40/40B | Bronze NPT | — | — | 194-1540BF | 194-1542BF | — | — | — |
| | Shut-Off NPT | — | — | 247-1 | 248-1 | — | — | — |
| | Shut-Off SWT | — | — | 247-2 | 248-2 | — | — | — |
| 1400-60/60B | Iron NPT | — | — | — | — | 185-086C | — | — |
| 1400-65/65B | Bronze NPT | — | — | — | — | 185-086B | — | — |
| 1400-70/70B/3 | Iron NPT | — | — | — | — | — | 185-112C | 185-113C |
| | Bronze NPT | — | — | — | — | — | 185-112B | 185-113B |

1 Noryl is a registered trademark of General Electric Co
 2 Nu-Tride is a registered trademark of Kolene Corp.

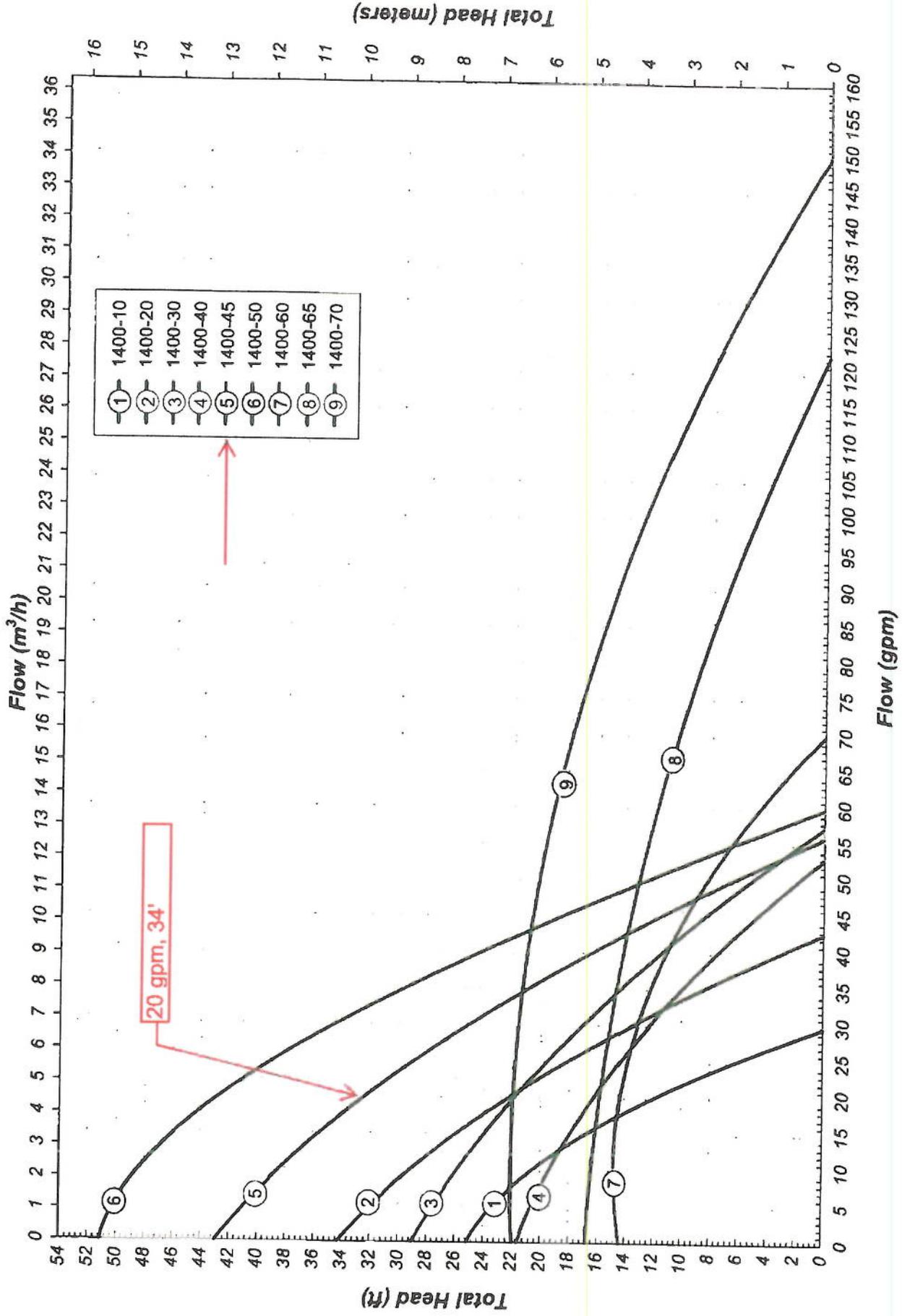
Do it Once. Do it Right.®

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Taco 1400 Series — High Capacity Circulators — 60Hz





Instruction Sheet

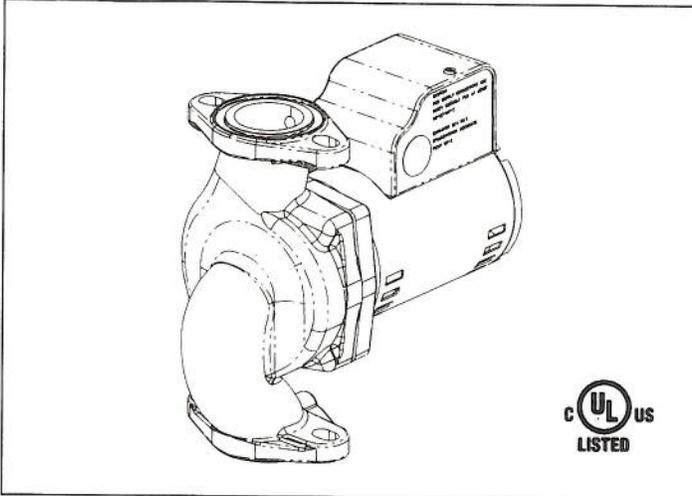
102-147

1400 Series Hi-Capacity Circulator

SUPERSEDES: August 15, 2005

EFFECTIVE: August 1, 2008

Plant ID# 001-1183



INSTALLER: Please leave these instructions for owner's use.

APPLICATION:

The Taco 1400 Series Hi-Capacity circulators are designed for use on a wide range of hydronic heating, cooling or domestic water re-circulating systems. Features include a quiet running, close-coupled, thermally protected motor assembly with permanent split-capacitor and permanently lubricated bearings. A stainless steel face plate and shaft, carbon/silicon-carbide mechanical seal, and non-ferrous impeller make the 1400 series an ideal choice for years of maintenance-free operation on open or closed systems.

Note: Always use Bronze or Stainless Steel body circulators on open, fresh water systems.



CAUTION: Taco "1400 Series" circulators are designed for indoor use only.

OPERATING SPECIFICATIONS:

- Maximum Working Pressure: 150 psi (1000 kPa)
- Maximum Operating Temperature: 225°F (107°C)
- Electrical Rating: 115V/60Hz/1Ph or 230V/60Hz/1Ph



CAUTION: Taco circulators are designed to operate with water and most glycol solutions. The addition of certain chemical additives may cause early failure and void warranty.

REMOVAL OF EXISTING PUMP FROM SYSTEM PIPING:

1. Disconnect and lock-out electrical supply to pump.
2. Close isolation valves on suction and discharge sides of pump. If valves are not installed, the system may need to be drained.



CAUTION: To prevent injury, allow system water to cool to 100°F before removing old pump or draining system. Leave drain valve open until service/replacement is complete.

3. Remove capacitor box cover and disconnect electrical supply lines to pump.
4. Loosen flange bolts and shift pump body slightly to relieve any remaining system pressure.
5. Remove flange nuts/bolts and pump from system.

1400 SERIES COMPANION FLANGE SETS

| Models | Connection | 3/4" | 1" | 1 1/4" | 1 1/2" | 2" | 2 1/2" | 3" |
|-----------------------------|----------------|------------|------------|------------|------------|------------|----------|----------|
| 1400-10/10B | Iron NPT | 110-251F | 110-252F | 110-253F | 110-254F | - | - | - |
| 1400-20/20B | Bronze NPT | 110-251BF | 110-252BF | 110-253BF | 110-254BF | - | - | - |
| 1400-45/45B | Bronze Sweat | 110-523BSF | 110-524BSF | 110-525BSF | 110-526BSF | - | - | - |
| 1400-50/50B | Shut-Off NPT | 243-1 | 244-1 | 245-1 | 246-1 | - | - | - |
| | Shut-Off Sweat | 243-2 | 244-2 | 245-2 | 246-2 | - | - | - |
| 1400-50/50B/2 2", 2 bolt | Iron NPT | - | - | - | - | 194-2124F | - | - |
| | Bronze NPT | - | - | - | - | 194-2124BF | - | - |
| 1400-30/30B | Iron NPT | - | - | 194-1540F | 194-1542F | - | - | - |
| | Bronze NPT | - | - | 194-1540BF | 194-1542BF | - | - | - |
| 1400-40/40B | Shut-Off NPT | - | - | 247-1 | 248-1 | - | - | - |
| | Shut-Off Sweat | - | - | 247-2 | 248-2 | - | - | - |
| 1400-60/60B | Iron NPT | - | - | - | - | 185-086C | - | - |
| 1400-65/65B | Bronze NPT | - | - | - | - | 185-086B | - | - |
| 1400-70/70B | | - | - | - | - | - | - | - |
| 1400-70/70B/3 3", 4 bolt | Iron NPT | - | - | - | - | - | 185-112C | 185-113C |
| | Bronze NPT | - | - | - | - | - | 185-112B | 185-113B |

INSTALLATION OF "1400 SERIES" CIRCULATOR:

A. Location:

- Install pump with sufficient room for future inspection, maintenance and service.

It is recommended that isolation valves be installed on the pump suction and discharge to simplify future service or replacement without draining the system.



CAUTION: This pump has a mechanical seal which may eventually wear and leak. Allow access for periodic inspection and leak detection. Provide adequate drainage to prevent property damage.

1. Using teflon tape or high quality thread sealant, install Taco companion flanges on threaded pipe ends to ensure proper fit-up and leak protection.
2. Minimize pipe strain on pump by using pipe hangers on the suction and discharge lines.
3. Position vertical and horizontal piping so bolt-holes on pump and companion flanges match. Do not force the suction and discharge lines into position. This may create excess stress on the pump casing and flanges.

B. Mounting Position:

- Always install pump with the motor shaft in the horizontal position and the capacitor/conduit box oriented on top of the motor housing, as shown in Fig. 1.
- Standard pump body mounting position is with the flow in the up-discharge direction (body position #3). The pump body may be field-rotated in any direction to accommodate system piping and flow direction.

- Be sure to align the arrow on the casing with desired flow direction.

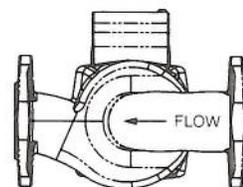
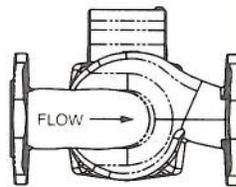
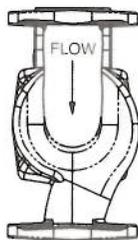
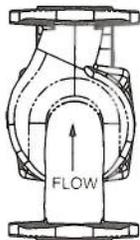


CAUTION: Do not support, suspend or brace pump motor or early failure may result. Support provided by casing is sufficient for structural integrity of pump

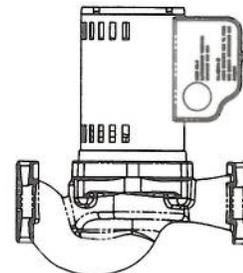
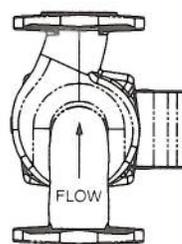
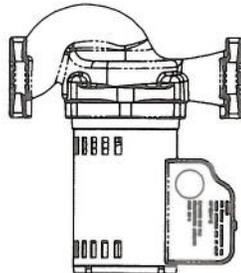
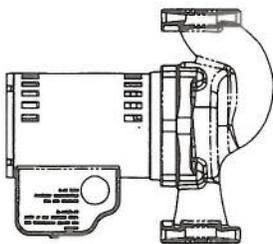
C. Electrical Wiring:

- All electrical wiring must be installed by a licensed electrician in accordance with local and national codes and regulations.
 - Electrical supply and grounding wires must be suitable for at least 90°C (194°F).
 - 1400 Series circulators are thermally protected and do not require external overload protection.
1. Be sure all electrical power to pump is disconnected and locked-out before proceeding with wiring.
 2. Loosen capacitor/conduit box screw and remove cover.
 3. Attach appropriate size connector to one of the two knock-out holes in the capacitor/conduit box.
 4. Using minimum 18 AWG wire, connect the hot and neutral leads from the electrical supply to the respective black and white leads in the capacitor box.
 5. Connect the ground wire to the green ground screw in the capacitor box.
 6. Replace capacitor/conduit box cover.
 7. Insert plastic plug provided in unused knock-out hole.

STANDARD POSITION



RECOMMENDED



NOT RECOMMENDED

Fig. 1 - Installation Positions

SYSTEM START-UP:



CAUTION: Do not start the pump until the system has been completely filled and vented. Running the pump dry may damage the mechanical seal and void warranty.

1. Prior to pump start-up, closed heating and cooling systems should be thoroughly cleaned, flushed and drained.
2. Open isolation valves and re-fill system with clean water. Check for any leaks.
3. Vent all air from system at an air vent located at the high point in the system.
4. Start circulator to check for proper operation.

PERIODIC INSPECTION, MAINTENANCE:

Taco 1400 Series Hi-Capacity circulators are designed to provide years of trouble-free service. However, periodic inspection and routine maintenance is recommended for all hydronic systems and mechanical equipment. If any evidence of leakage or damage is present, take preventive steps to repair or replace the circulator immediately.

REPLACING THE MECHANICAL SEAL: Refer to Fig. 2 on back page.

| CIRCULATOR MODEL | SEAL KIT NO.* |
|---|---------------|
| 1400-10, 1400-20, 1400-30, 1400-40, 1400-60, 1400-65, 1400-70 | 1400-001 RP |
| 1400-45, 1400-50 | 1400-002 RP |

* Includes new body gasket

1. Follow steps 1 thru 5 in section "Removal of existing pump from system piping".
2. Loosen the four body bolts that attach the motor housing to the casing. While supporting the motor, remove the four bolts and carefully remove the motor and impeller assembly from the casing.
3. To remove the impeller, first insert a screwdriver into the motor ventilation slots to make contact with one of the rotor cooling fins. While holding the rotor in place with the screwdriver, turn the impeller clockwise to loosen and remove from shaft.



CAUTION: Do not allow screwdriver to make contact with motor windings or insulation. Permanent damage to motor may result.

4. Remove the seal assembly from the impeller shaft.
5. Remove the face plate from the motor housing. To remove face plate, gently pry it away from the housing.
6. Remove the old seal seat and cup. Lubricate the new cup with soapy water and install new parts in the face plate recess. Replace the face plate to its original position. Carefully tap the face plate evenly into the recess in the motor housing.
7. Clean the impeller shaft before installing the new seal.
8. Lubricate the impeller shaft with soapy water. Do not install new seal on a dry impeller shaft or damage to seal may result.
9. Slide the new carbon seal and spring assembly onto the shaft until it contacts the silicon-carbide seal seat.
10. While holding the rotor in place as in Step 3, thread the impeller onto the shaft in a counter-clockwise direction until it stops. Check to make sure the pump will rotate. If the impeller will not spin freely, contact Taco Technical Support at 1-401-942-8000.



CAUTION: Do not allow screwdriver to make contact with motor windings or insulation. Permanent damage to motor may result.

11. Remove old body gasket, clean the recess in the pump casing and install the new body gasket provided.
12. Attach the pump casing to the motor housing and secure with the four body bolts. Be sure flow arrow is pointing in proper direction. Tighten the four bolts evenly in a criss-cross pattern to 70 in-lb of torque. There should be a small, even gap between the casing and the motor mounting bracket.
13. Re-install circulator into system using new flange gaskets. Refer to section "Installation of 1400 Series circulator" for complete mounting and wiring instructions.

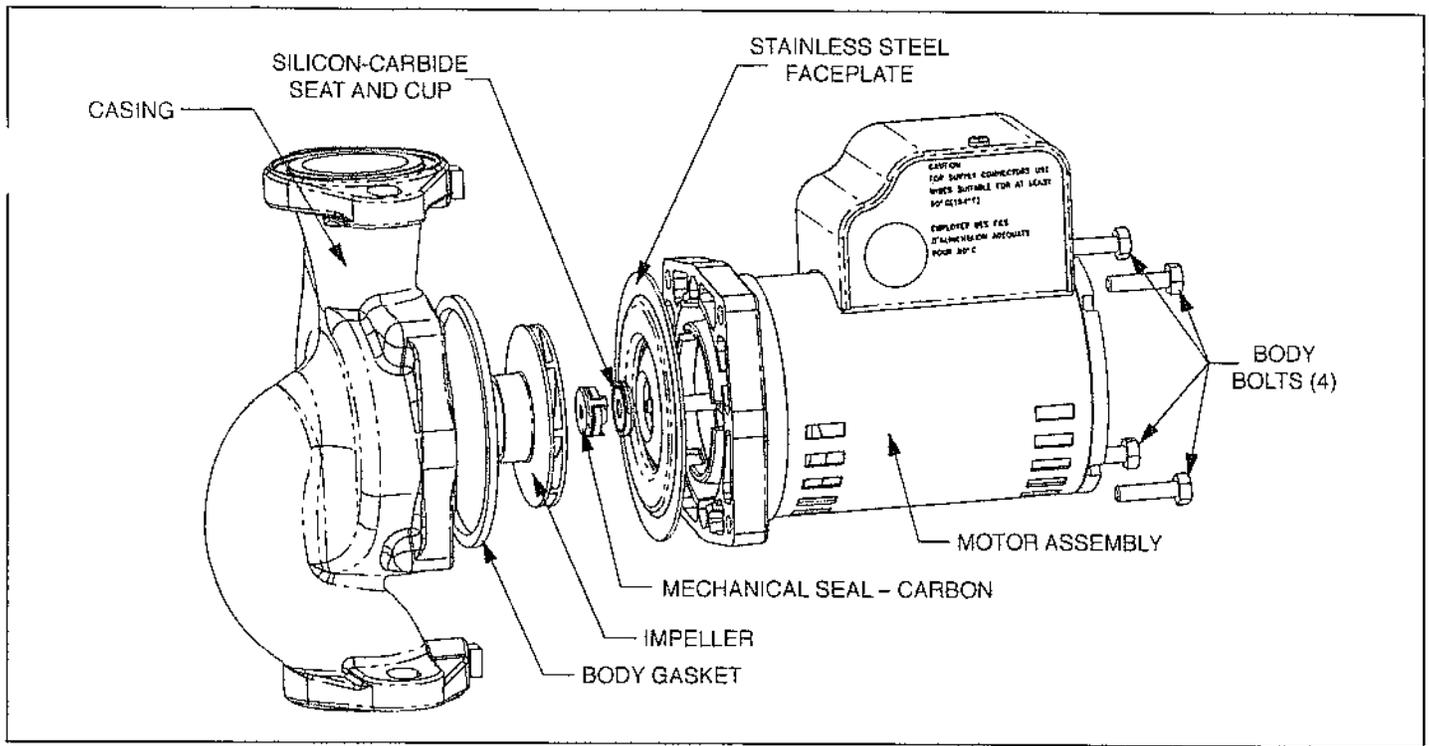


Fig. 2: Exploded View of Pump

LIMITED WARRANTY STATEMENT

Taco, Inc. will repair or replace without charge (at the company's option) any product or part which is proven defective under normal use within three (3) years from the date of start-up or three (3) years and six (6) months from date of shipment (whichever occurs first).

In order to obtain service under this warranty, it is the responsibility of the purchaser to promptly notify the local Taco stocking distributor or Taco in writing and promptly deliver the subject product or part, delivery prepaid, to the stocking distributor. For assistance on warranty returns, the purchaser may either contact the local Taco stocking distributor or Taco. If the subject product or part contains no defect as covered in this warranty, the purchaser will be billed for parts and labor charges in effect at time of factory examination and repair.

Any Taco product or part not installed or operated in conformity with Taco instructions or which

has been subject to misuse, misapplication, the addition of petroleum-based fluids or certain chemical additives to the systems, or other abuse, will not be covered by this warranty.

If in doubt as to whether a particular substance is suitable for use with a Taco product or part, or for any application restrictions, consult the applicable Taco instruction sheets or contact Taco at [401-942-8000].

Taco reserves the right to provide replacement products and parts which are substantially similar in design and functionally equivalent to the defective product or part. Taco reserves the right to make changes in details of design, construction, or arrangement of materials of its products without notification.

TACO OFFERS THIS WARRANTY IN LIEU OF ALL OTHER EXPRESS WARRANTIES. ANY WARRANTY IMPLIED BY LAW INCLUDING WARRANTIES OF MERCHANTABILITY OR FIT-

NESS IS IN EFFECT ONLY FOR THE DURATION OF THE EXPRESS WARRANTY SET FORTH IN THE FIRST PARAGRAPH ABOVE.

THE ABOVE WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR STATUTORY, OR ANY OTHER WARRANTY OBLIGATION ON THE PART OF TACO.

TACO WILL NOT BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF ITS PRODUCTS OR ANY INCIDENTAL COSTS OF REMOVING OR REPLACING DEFECTIVE PRODUCTS.

This warranty gives the purchaser specific rights, and the purchaser may have other rights which vary from state to state. Some states do not allow limitations on how long an implied warranty lasts or on the exclusion of incidental or consequential damages, so these limitations or exclusions may not apply to you.

SYSTEMS MADE EASY®

TACO, INC., 1160 Cranston Street, Cranston, RI 02920 Telephone: (401) 942-8000 FAX: (401) 942-2360.

TACO (Canada), Ltd., 6180 Ordan Drive, Mississauga, Ontario L5T 2B3. Telephone: 905/564-9422. FAX: 905/564-9436.

Visit our web site at: <http://www.taco-hvac.com>

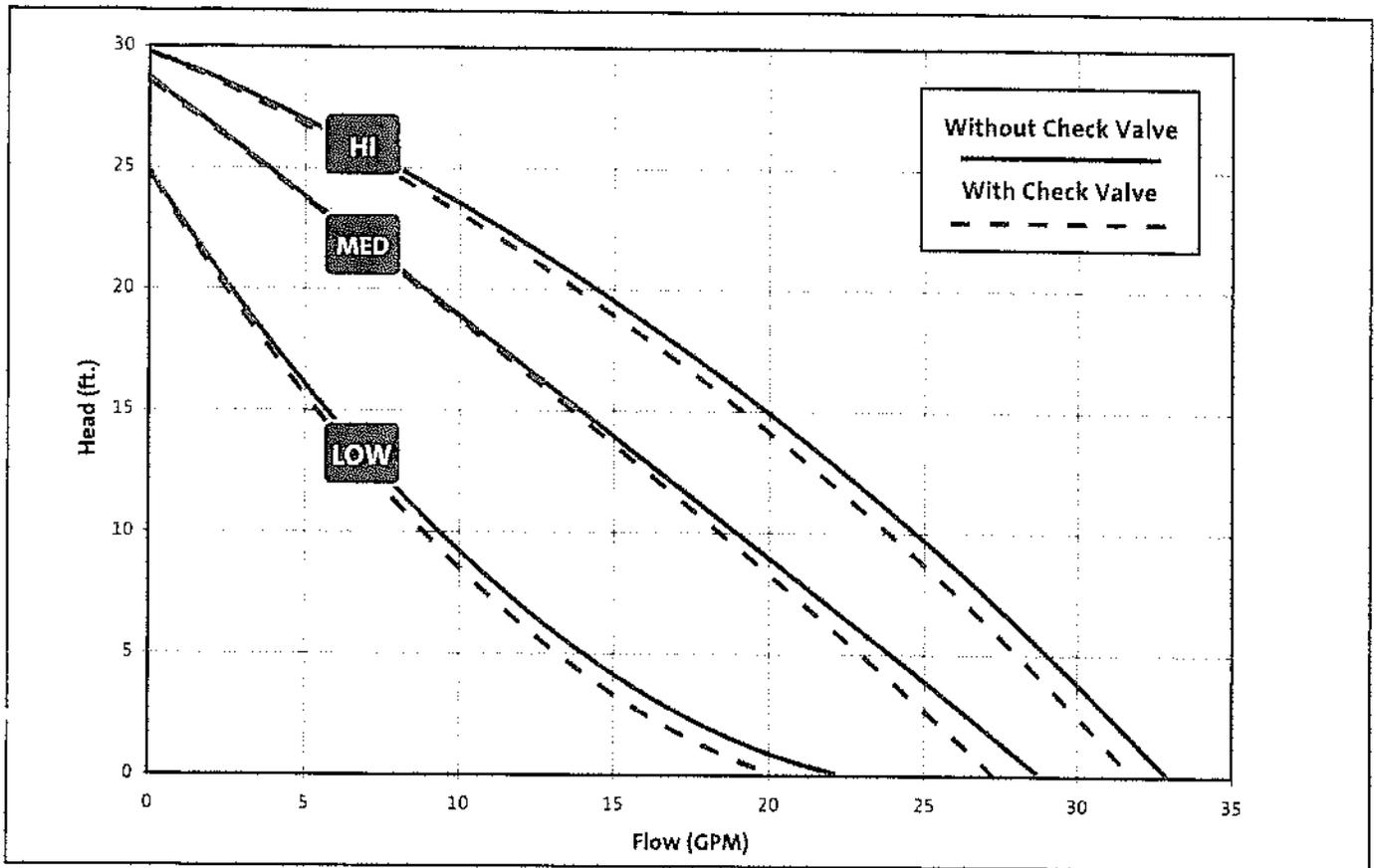
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DOMESTIC WATER
Circulation

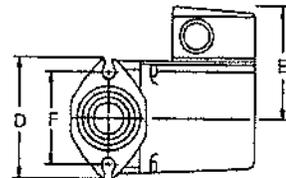
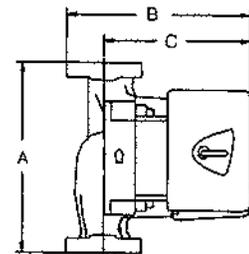
GENERAL DATA

GRUNDFOS SERIES UP

UPS 26-99FC/BFC SUPERBRUTE



Flow range: 0 - 34 U.S. GPM
 Head range: 0 - 30 FEET
 Motors: 2 Pole, Single Phase
 Maximum fluid temperature: 230°F (110°C)
 Min. fluid temperature: 36°F (2°C)
 Maximum working pressure: 145 PSI



| MODEL | VOLTS | AMPS | WATTS | HP | CAPACITOR |
|-------|--------|------|-------|-----|-----------|
| 115V | Spd. 3 | 1.8 | 197 | 1/6 | 20mF/180V |
| | Spd. 2 | 1.5 | 179 | 1/6 | 20mF/180V |
| | Spd. 1 | 1.3 | 150 | 1/6 | 20mF/180V |
| 230V | Spd. 3 | 0.9 | 196 | 1/6 | 5mF/400V |
| | Spd. 2 | 0.8 | 179 | 1/6 | 5mF/400V |
| | Spd. 1 | 0.7 | 150 | 1/6 | 5mF/400V |

| Model Type | A | B | C | D | E | F | Connection Type and Size | Approximate Shipping Wt. (lbs) |
|----------------|-------|---|-------|-------|--------|--------|--|--------------------------------|
| UPS26-99FC/BFC | 6 1/2 | 6 | 4 7/8 | 3 1/2 | 3 7/16 | 3 5/32 | GF 15/26 Flange - (2) 1/2" Dia. Bolt Holes | 10.3 |

Maintenance-Free Circulators

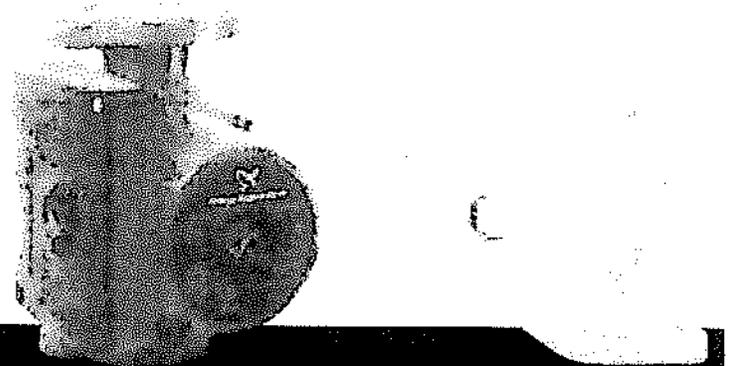
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Fax: 52-81-8144-4010

Grundfos Canada, Inc.
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Oakville, Ontario L6H 6C9
Telephone: (905) 829-9533
Fax: (905) 829-9512

L-UP-TL-053 Rev. 3/05 (U.S.A.)



Maintenance-Free Circulators

Shipment Inspection

Examine the components carefully to make sure no damage has occurred to the pump during shipment. Care should be taken to ensure the pump is NOT dropped or mishandled; dropping will damage the pump.

Pre-Installation Checklist

Before beginning installation procedures, the following checks should be made. They are all important for proper installation of the circulator pump.

1. Uses: Model UPS15, and UP15, 25, 26, 43 and 50 series pumps are generally designed to circulate water from 32 deg F to 230 deg F up to a maximum pressure of 150 psi. Some models have temperature limitations which are shown in Table 2A below. If required, a 50% by volume solution of ethylene or propylene glycol and water can be used, however, a decrease in pump performance may result due to an increase in the viscosity of the solution. Check with manufacturer for information regarding suitability of pumping other fluids.

Closed Systems: Model UPS15, and UP15, 25, 26, 43 and 50 series pumps with cast iron pump housings are designed to pump water compatible with their cast iron construction. They are recommended for use in closed hydronic systems. (i.e. airless, non-potable water).

Open Systems: Model UPS15, and UP15, 25, 26, 43 and 50 series pumps with stainless steel or bronze pump housings are designed to pump water compatible with their construction and can be used in both open and closed systems.

2. Maximum Water Temperature: The maximum allowable water temperature is determined by the ambient or surrounding air temperature as shown in Table 2A.

| Ambient (°F) | 104 | 120 | 140 | 160 | 175 |
|--------------------|-----|-----|-----|-----|-----|
| Water All UP* (°F) | 230 | 220 | 210 | 190 | 175 |
| *Exceptions below: | | | | | |
| UP15-100F (°F) | 205 | 195 | 185 | 175 | - |
| UP26-120U (°F) | 205 | 195 | 185 | 175 | - |
| UP26-116 (°F) | 150 | 140 | - | - | - |

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3. Inlet Pressure Requirements

The amount of pressure required at the inlet of the pump is a function of the temperature of the water as shown in Table 2B.

| Water (°F) | 190 | 165 | 140 |
|-------------------------------|-----|-----|-----|
| Required Inlet Pressure (ft.) | 5 | 4.5 | 3 |
| (psi) | 2.2 | 1.9 | 1.3 |

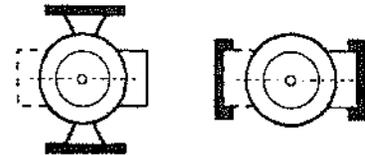
In a pressurized system, the required inlet pressure is the minimum allowable system pressure.

In a system open to the atmosphere, the required inlet pressure is the minimum distance the pump must be located below the lowest possible water level of the water source (tank, pool, etc.).

Installation

Position of terminal box: Proper installation of the pump will have the terminal box located to one side of the pump or the other, with the conduit entry down. See Figure 3A.

Figure 3A



Recommended Terminal Box Orientation

If the terminal box position needs to be changed, it is best to do so before installation. However, if the pump is already installed, ensure that the electrical supply is turned off and close the isolation valves before removing the Allen screws.

To change terminal box position:

1. Remove the four (4) Allen screws (4 or 5mm wrench) while supporting the stator (motor).
2. Carefully separate the stator from the pump chamber and rotate it to the correct terminal box orientation.
3. Replace the Allen screws and tighten diagonally and evenly (7 ft.-lb. torque).
4. Check that the impeller turns freely. If the impeller does not turn easily, repeat the disassembly/reassembly process.

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Pump Mounting: For Indoor Use

Arrows on the side or bottom of the pump chamber indicate direction of flow through the pump. GRUNDFOS circulators can be installed in both vertical and horizontal lines. The pump must be installed with the motor shaft positioned horizontally. Under no circumstances should the pump be installed with the shaft vertical or where the shaft falls below the horizontal plane. See Figure 3B.



It is recommended that isolation valves be installed on each side of the pump. If possible, do not install elbows, branch tees, and similar fittings just before or after the pump. Provide support to the pump or adjacent plumbing to reduce thermal and mechanical stress on the pump.

Installation Requirements

1. Thoroughly clean and flush the system prior to pump installation.
2. Do not install the pump at the lowest point of the system where dirt and sediment naturally collect.
3. Install an air vent at the high point(s) of the system to remove accumulated air.
4. Ensure that water does not enter the terminal box during the installation process.
5. (Open System) Install the pump in the supply line; the suction side of the pump should be flooded with water. Ensure that the static head requirement from Table 2B is achieved.
6. (Closed System) Install a safety relief valve to protect against temperature and pressure build-up.
7. If there are excessive suspended particles in the water, it is recommended that a strainer and/or filter be installed and cleaned regularly.
8. DO NOT START THE PUMP UNTIL THE SYSTEM HAS BEEN FILLED.

CHECK VALVE REMOVAL:

1. Use needle nose pliers to remove check valve from pump housing.
2. Check to make sure no part of the valve remains in the pump housing.
3. Apply enclosed round "Check Valve Removed" label over the Check mark symbol located on the name plate of the pump.

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Electrical

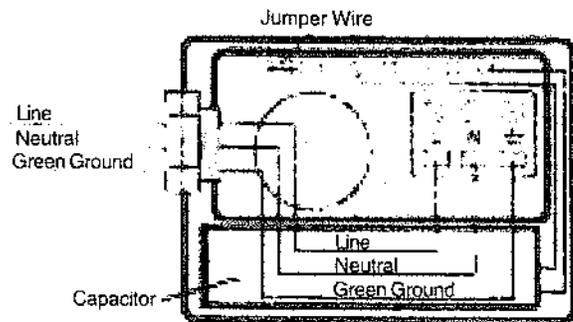
All electrical work should be performed by a qualified electrician in accordance with the latest edition of the National Electrical Code, local codes and regulations.

Warning: The safe operation of this pump requires that it be grounded in accordance with the National Electrical Code and local governing codes or regulations. The ground wires should be copper conductor of at least the size of the circuit conductor supplying power to the pump. Minimum ground wire size is 14 AWG. Connect the ground wire to the grounding point in the terminal box and then to an acceptable ground. Do not ground to a gas supply line.

The proper operating voltage and other electrical information can be found on the nameplate attached to the top of the motor. Depending on pump model, the motor has either built-in, automatic resetting thermal protection or is impedance protected and in either case does not require additional external protection. The temperature of the windings will never exceed allowable limits, even if the rotor is locked.

Wire sizes should be based on the ampacity (current carrying properties of a conductor) as required by the latest edition of the National Electrical Code or local regulations. Both the power and grounding wires must be suitable for at least 194°F (90°C).

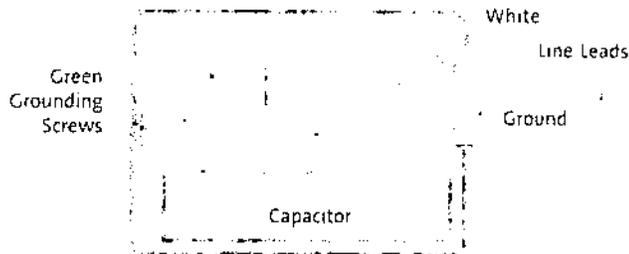
For all 115V and 230V models: Connect the white/white electrical leads from the circulator to the incoming power leads with wire nuts or other approved connectors. Attach incoming grounding wire to either of the green grounding screws.



Wiring diagram for 115V and 230V multi-speed pumps.

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Wire the hot lead to terminal "L," neutral wire to terminal "N," and ground to the grounding terminal. For 230 volt pumps, the two hot leads should be to "L" and "N" and the ground to the grounding terminal.



Wiring diagram for all 115V and 230V single speed pumps.

Start-Up

Do not use the pump to vent the system. Do not start the pump before filling the system. Never operate the pump dry.

Operation

GRUNDFOS domestic circulating pumps, installed properly and sized for correct performance, will operate quietly and efficiently and provide years of service.

Under no circumstances should the pump be operated without water circulation or without the minimum required inlet pressure for prolonged periods of time. This could result in motor and pump damage.

UPS model pumps are multispeed, and the speed can be changed by a speed selector switch located on the front of the terminal box. UP models are single speed.

Failure to Operate

When UPS 15-42 and UPS 26 pumps are first started, the shaft may rotate slowly until water has fully penetrated the bearings. If the pump does not run, the shaft can be rotated manually. To accomplish this, switch off the electrical supply, and close the isolation valves on each side of the pump. Remove the indicator plug in the middle of the nameplate. Insert a small flat blade screwdriver into the end of the shaft, and gently turn until the shaft moves freely. Replace and tighten the plug. Open the isolation valves and wait 2 to 3 minutes for the system pressure to equalize before starting the pump.

NOTE: After a long shut down multi-speed pumps should be started on speed 3 and then adjusted to the regular setting. The UPS 15-42 has automatic function to assist in restart.

***IMPORTANT NOTE*:** For your convenience, the cap plug has not been installed. This pump is supplied with two wiring ports. To ensure safe operation of your installation, the enclosed cap plug **MUST** be inserted into the unused port.

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Limited Warranty

UPS15-58 and UP15-42F circulator pumps manufactured by GRUNDFOS PUMPS CORPORATION (GRUNDFOS) are warranted to the original user only to be free of defects in material and workmanship for a period of 36 months from date of manufacture. GRUNDFOS' liability under this warranty shall be limited to repairing or replacing at GRUNDFOS' option, without charge, F.O.B. GRUNDFOS' factory or authorized service station, any UPS15-58 or UP15-42F circulator pump. GRUNDFOS will not be liable for any costs of removal, installation, transportation, or any other charges which may arise in connection with a warranty claim.

All other UP and UPS small circulators manufactured by GRUNDFOS PUMPS CORPORATION (GRUNDFOS) are warranted to the original user only to be free of defects in material and workmanship for a period of 24 months from date of installation, but not more than 30 months from date of manufacture. GRUNDFOS' liability under this warranty shall be limited to repairing or replacing at GRUNDFOS' option, without charge, F.O.B. GRUNDFOS' factory or authorized service station, any product of GRUNDFOS manufacture. GRUNDFOS will not be liable for any costs of removal, installation, transportation, or any other charges which may arise in connection with a warranty claim. Products which are sold but not manufactured by GRUNDFOS are subject to the warranty provided by the manufacturer of said products and not by GRUNDFOS' warranty.

GRUNDFOS will not be liable for damage or wear to products caused by abnormal operating conditions, accident, abuse, misuse, unauthorized alteration or repair, or if the product was not installed in accordance with GRUNDFOS' printed installation and operation instructions.

To obtain service under this warranty, the defective product must be returned to the distributor or dealer of GRUNDFOS products from which it was purchased together with proof of purchase and installation date, failure date, and supporting installation data. Unless otherwise provided, the distributor or dealer will contact the GRUNDFOS factory or authorized service station for instructions. Any defective product to be returned to the factory or service station must be sent freight prepaid; documentation supporting the warranty claim and/or a Return Authorization must be included if so instructed.

GRUNDFOS WILL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, LOSSES, OR EXPENSES ARISING FROM INSTALLATION, USE, OR ANY OTHER CAUSES. THERE ARE NO EXPRESS OR IMPLIED WARRANTIES, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WHICH EXTEND BEYOND THOSE WARRANTIES DESCRIBED OR REFERRED TO ABOVE.

Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages and some jurisdictions do not allow limitations on how long implied warranties may last. Therefore, the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from jurisdiction to jurisdiction.