



# Instruction Sheet

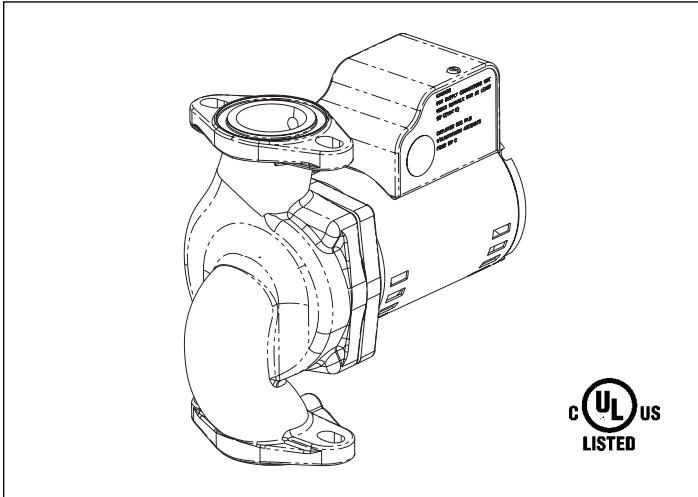
102-147

## 1400 Series Hi-Capacity Circulator

SUPERSEDES: New

EFFECTIVE: June 1, 2003

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 mechanical seal with a 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 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.

### 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.
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.



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

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:

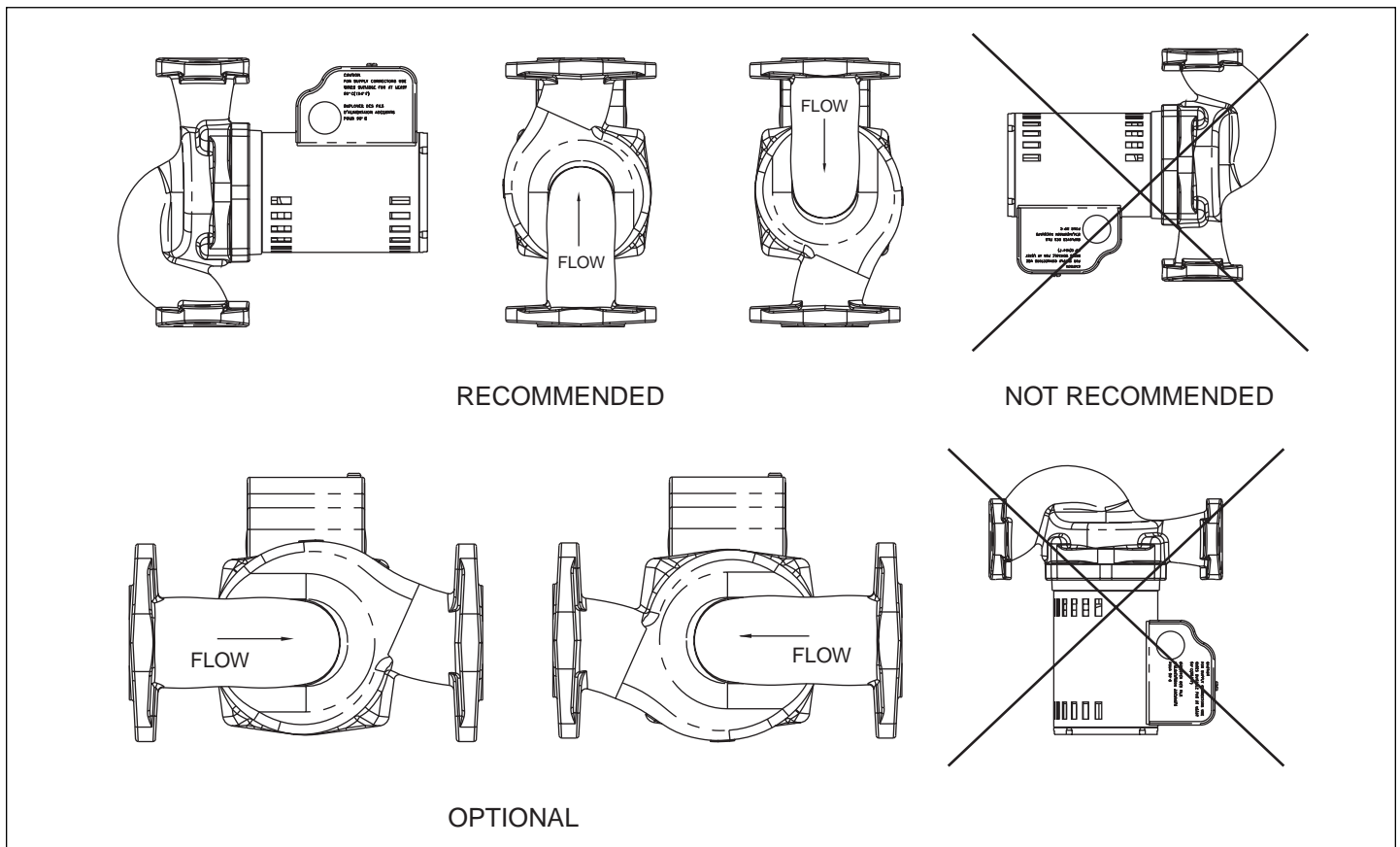
- Always install pump with the motor shaft in the horizontal position and the capacitor/condit box oriented on top of the motor housing, as shown in Fig. 1.
- Standard pump body mounting position is with the flow in the up-discharge direction (body position #3). The pump body may be field-rotated in 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/condit box screw and remove cover.
  3. Attach appropriate size connector to one of the two knock-out holes in the capacitor/condit 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/condit box cover.



**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, 1400-70	1400-001 RP
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.



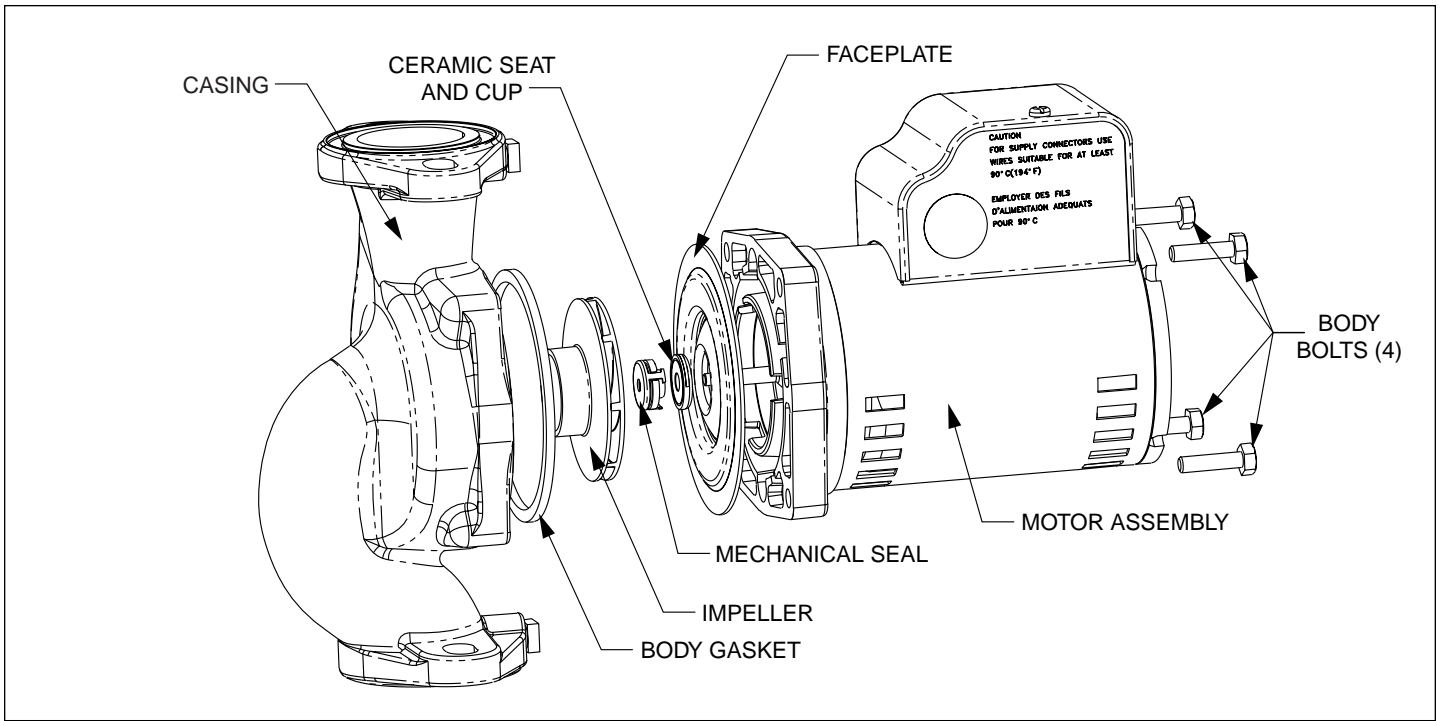
**CAUTION: Do not allow screwdriver to make contact with motor windings or insulation. Permanent damage to motor may result.**

4. Remove the seal assembly from the 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 ceramic 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

LIMITED WARRANTY – Taco, Inc. will repair or replace without charge (at the Company's option) any Taco product or part which is proven defective under normal use within three years of the date of shipment from Taco, Inc.

In order to obtain service under this warranty, it is the responsibility of the purchaser to promptly notify the company in writing and promptly deliver the item in question, delivery prepaid, to the factory. The address for notification and delivery is Taco, Inc., 1160 Cranston Street, Cranston, Rhode Island 02920. If the product or part in question 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 system, or other abuse will not be covered by this warranty.

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