

**Installation,  
Operation and  
Maintenance  
Instructions**

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# Model HSC

**Owner's Information**

Model Number: \_\_\_\_\_

Serial Number: \_\_\_\_\_

Dealer: \_\_\_\_\_

Dealer Telephone: \_\_\_\_\_

Purchase Date: \_\_\_\_\_

Installation Date: \_\_\_\_\_

**Instrucciones  
de instalación,  
operación y  
mantenimiento**

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# Modelo HSC

**Información para el propietario:**

Número de modelo: \_\_\_\_\_

Número de serie: \_\_\_\_\_

Distribuidor: \_\_\_\_\_

Teléfono del distribuidor: \_\_\_\_\_

Fecha de compra: \_\_\_\_\_

Fecha de instalación: \_\_\_\_\_

**Directives  
d'installation,  
d'utilisation et  
d'entretien**

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# Modèle HSC

**Informations pour le propriétaire**

Numéro de modèle : \_\_\_\_\_

Numéro de série : \_\_\_\_\_

Détaillant : \_\_\_\_\_

N° de tél. du détaillant : \_\_\_\_\_

Date d'achat : \_\_\_\_\_

Date d'installation : \_\_\_\_\_



## DESCRIPTION and SPECIFICATIONS:

The Model HSC is a multi-stage, end-suction, centrifugal pump for general liquid transfer service, booster applications, etc. Liquid-end construction is cast iron, stainless steel and engineered composites.

All units have NEMA 48 Frame single-phase, 115/230 V, 60 Hz motors with C-face mounting and NEMA 56J threaded shaft extensions.

### 1. Important

- 1.1. Inspect unit for damage. Report any damage to carrier/dealer immediately.
- 1.2. Electrical supply must be a separate branch circuit with fuses or circuit breakers, wire sizes, etc., in compliance with National and Local electrical codes. Install an all-leg disconnect switch near pump.

#### CAUTION

Always disconnect electrical power when handling pump or controls.

- 1.3. Motors must be wired for proper voltage. Motor wiring diagram is on motor nameplate. Wire size must limit maximum voltage drop to 10% of nameplate voltage at motor terminals, or motor life and pump performance will be lowered.
- 1.4. Always use horsepower-rated switches, contactor and starters.
- 1.5. Motor Protection
  - 1.5.1. Single-phase: Thermal protection for single-phase units is sometimes built in (check nameplate). If no built-in protection is provided, use a contactor with a proper overload. Fusing is permissible.
- 1.6. Maximum Operating Limits:
  - Liquid Temperature: 180°F (82°C)
  - Working Pressure: 125 PSI
  - Starts per Hour: 20, evenly distributed.
- 1.7. Regular inspection and maintenance will increase service life. Base schedule on operating time.

### 2. Installation

- 2.1. Locate pump as near liquid source as possible (below level of liquid for automatic operation).
- 2.2. Protect from freezing or flooding.
- 2.3. Allow adequate space for servicing and ventilation.
- 2.4. All piping must be supported independently of the pump, and must "line-up" naturally.

#### CAUTION

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

- 2.5. Avoid unnecessary fittings. Select sizes to keep friction losses to a minimum.
- 2.6. Units may be installed horizontally, inclined or vertically.

#### CAUTION

- Do not install with motor below pump. Any leakage or condensation will affect the motor.
- 2.7. Foundation must be flat and substantial to eliminate strain when tightening bolts. Use rubber mounts to minimize noise and vibration.
  - 2.8. Tighten casing hold-down bolts before connecting piping to pump.
  - 2.9. No field alignment of pump to motor is necessary as pumps are close-coupled.

### 3. Suction Piping

- 3.1. Low static suction lift and short, direct suction piping is desired. Consult pump performance curve for *Net Positive Suction Head Required (NPSHR)*, especially for lifts above 15'.
  - 3.2. Suction pipe must be at least as large as the suction connection of the pump. Smaller size will degrade performance.
  - 3.3. If larger pipe is required, an eccentric pipe reducer (with straight side up) must be installed at the pump.
  - 3.4. **Installation with pump below source of supply:**
    - 3.4.1. Install full flow isolation valve in piping for inspection and maintenance.
- #### CAUTION
- Do not use suction isolation valve to throttle pump.
- 3.5. Installation with pump above source of supply:
    - 3.5.1. Avoid air pockets. No part of piping should be higher than pump suction connection. Slope piping upward from liquid source.
    - 3.5.2. All joints must be airtight.
    - 3.5.3. Foot valve to be used only if necessary for priming, or to hold prime on intermittent service.
    - 3.5.4. Suction strainer open area must be at least triple the pipe area.
  - 3.6. Size of inlet from liquid source, and minimum submergence over inlet, must be sufficient to prevent air entering pump through vortexing. See Figures 1 through 4.
  - 3.7. Use 3 to 4 wraps of Teflon tape to seal threaded connections.

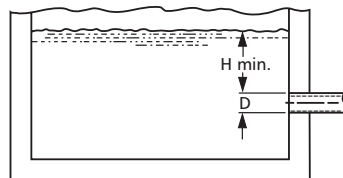


Figure 1

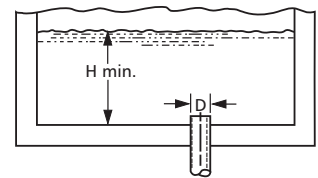


Figure 2

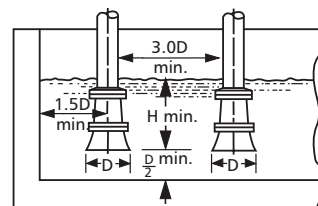


Figure 3

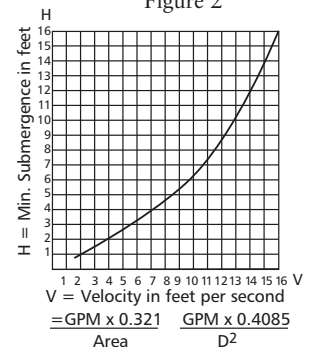


Figure 4

### 4. Discharge Piping

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

### 5. Rotation

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

- 5.1.1. Single-phase motor: Non-reversible
- 5.1.2. Three-phase motor: Not offered.

## 6. Operation

- 6.1. Before starting, pump must be primed (free of air and suction pipe full of liquid) and discharge valve partially open. Plugs are provided in the casing and valve so pump/suction piping can be filled and/or vented/drain in any pump orientation.
- 6.2. Make complete check after unit is run under operating conditions and temperature has stabilized. Check for expansion of piping.

## 7. Maintenance

- 7.1. Ball bearings are located in and are part of the motor. They are permanently lubricated. No greasing required.

### CAUTION

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

## 8. Disassembly

Complete disassembly of the unit will be described. Proceed only as far as required to perform the maintenance work required.

- 8.1. Turn off power.
- 8.2. Drain system and flush if necessary.
- 8.3. Disassembly of Liquid-End:
  - 8.3.1. Remove casing bolts.
  - 8.3.2. Remove motor and remaining Liquid-End assembly from casing (still connected to piping) and position vertically for easier disassembly.
  - 8.3.3. Remove impeller bolt and washer.

### CAUTION

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

- 8.3.4. Remove impeller by pulling axially.
- 8.3.5. Remove separator plate.
- 8.3.6. Remove shaft sleeve.
- 8.3.7. Remove intermediate stage.
- 8.3.8. Repeat steps 8.3.4 through 8.3.7 for three stage pumps.
- 8.3.9. Remove last impeller.
- 8.3.10. Remove last separator plate.
- 8.3.11. Remove seal retainer.
- 8.3.12. Remove shaft extension using a screwdriver in the slot or flats in the back of the motor to prevent rotation and a wrench to turn extension.
- 8.3.13. Pry off the rotating element of the mechanical seal from the motor shaft by using two (2) regular screw drivers 180° apart and using the motor adapter inner boss as a fulcrum point and then prying seal up.
- 8.3.14. Remove the motor adapter bolts, washers and o-rings.
- 8.3.15. Remove the motor adapter.
- 8.3.16. Remove the stationary element of the mechanical seal by pushing it out from the motor side with a blunt instrument.

## 9. Reassembly

- 9.1. All parts should be cleaned before assembly.
- 9.2. Refer to parts list to identify required replacement items. Specify pump index or catalog number when ordering parts.
- 9.3. Reassembly is the reverse of disassembly.
- 9.4. Observe the following when reassembling the liquid-end:
  - 9.4.1. All mechanical seal components must be in good condition or leakage may result. Replacement of complete seal assembly, whenever seal has been removed, is good standard practice. It is permissible to use a light lubricant, such as glycerin, to facilitate assembly. Do not contaminate the mechanical seal faces with lubricant.
  - 9.4.2. Inspect the o-rings and replace if damaged. The o-rings may be lubricated with petroleum jelly to ease assembly.
  - 9.4.3. Inspect impellers for wear, degradation or blockage. Clean or replace as necessary.
  - 9.4.4. Inspect iron parts for excessive corrosion or degradation. Replace as necessary.
  - 9.4.5. Inspect stainless steel components for excessive wear or degradation and replace as necessary.
  - 9.4.6. Wear rings contained in the interstage(s) and casing would need to be pressed or pried out and pressed in should they need replacement.
- 9.5. Check reassembled unit for binding and correct as necessary.
- 9.6. Be sure to tighten casing bolts in a criss-cross manner to prevent o-ring binding and cracking of the casing ears. Secure to 35 ft-lbs.

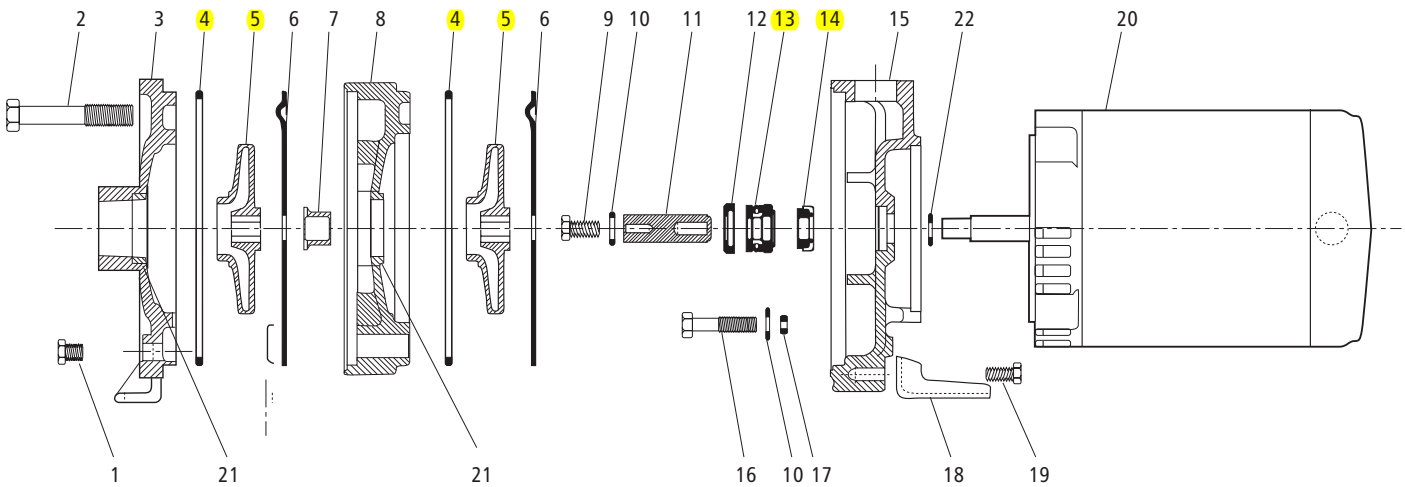
## 10. Trouble Shooting Chart

- MOTOR NOT RUNNING (See causes 1 through 6)  
 LITTLE OR NO LIQUID DELIVERED (See causes 7 through 16)  
 POWER CONSUMPTION TOO HIGH (See causes 4, 16, 17, 18, 21)  
 EXCESSIVE NOISE AND VIBRATION (See causes 4, 6, 9, 12, 14, 15, 17, 19, 20, 21)  
 PROBABLE CAUSE:
- 1. Tripped thermal protector
  - 2. Open circuit breaker
  - 3. Blown fuse
  - 4. Rotating parts binding
  - 5. Motor wired improperly
  - 6. Defective motor
  - 7. Not primed
  - 8. Discharge plugged or valve closed
  - 9. Incorrect rotation
  - 10. Foot valve too small, suction not submerged, inlet screen plugged.
  - 11. Low voltage
  - 12. Air or gasses in liquid
  - 13. System head too high
  - 14. NPSHA too low: Suction lift too high or suction losses excessive. Check with vacuum gauge.
  - 15. Impeller worn or plugged
  - 16. Incorrect impeller diameter
  - 17. Head too low, causing excessive flow rate
  - 18. Viscosity or specific gravity too high
  - 19. Worn bearings
  - 20. Pump or piping loose
  - 21. Pump and motor misaligned

Item	Part Name	Quantity
1	Pipe Plug 1/4" NPT	3
2	Bolt – casing to adapter, 2 stage	4
2	Bolt – casing to adapter, 3 stage	4
3	Casing	1
4	O-Ring – casing and intermediate stage	1 per stage
5	Impeller – 3/4, 1 and 1 1/2 HP Impeller – 2 HP	2 3
6	Coverplate	(1 per impeller)
7	Sleeve	(1 – 2 stage) (2 – 3 stage)
8	Intermediate Stage	(1 – 2 stage) (2 – 3 stage)
9	Impeller Bolt	1
9, 10, 11, 12	Shaft Extension Assembly	1

Item	Part Name	Quantity
10	Washer – impeller (1) and adapter (4)	5
12	Seal Retainer	1
13, 14	Shaft Seal Assembly	1
15	Motor Adapter	1
16	Bolt – adapter to motor	4
17	O-Ring – motor adapter bolts	4
18	Foot	1
19	Bolt – foot to adapter	1
21	Wear Ring	1 per impeller
22	Deflector	1

Motor Codes			
Item	HP	Model	Order No.
20	3/4	HSC07	J05853
	1	HSC10	J06853
	1 1/2	HSC15	J07858
	2	HSC20	J08854



### GOULDS PUMPS LIMITED WARRANTY

This warranty applies to all water systems pumps manufactured by Goulds Pumps.

Any part or parts found to be defective within the warranty period shall be replaced at no charge to the dealer during the warranty period. The warranty period shall exist for a period of twelve (12) months from date of installation or eighteen (18) months from date of manufacture, whichever period is shorter.

A dealer who believes that a warranty claim exists must contact the authorized Goulds Pumps distributor from whom the pump was purchased and furnish complete details regarding the claim. The distributor is authorized to adjust any warranty claims utilizing the Goulds Pumps Customer Service Department.

**The warranty excludes:**

- (a) Labor, transportation and related costs incurred by the dealer;
- (b) Reinstallation costs of repaired equipment;
- (c) Reinstallation costs of replacement equipment;
- (d) Consequential damages of any kind; and,
- (e) Reimbursement for loss caused by interruption of service.

**For purposes of this warranty, the following terms have these definitions:**

- (1) "Distributor" means any individual, partnership, corporation, association, or other legal relationship that stands between Goulds Pumps and the dealer in purchases, consignments or contracts for sale of the subject pumps.
- (2) "Dealer" means any individual, partnership, corporation, association, or other legal relationship which engages in the business of selling or leasing pumps to customers.
- (3) "Customer" means any entity who buys or leases the subject pumps from a dealer. The "customer" may mean an individual, partnership, corporation, limited liability company, association or other legal entity which may engage in any type of business.

**THIS WARRANTY EXTENDS TO THE DEALER ONLY.**

Goulds Pumps

