# Haynes Pump

# 6600
# SERIES PUMP

## MAINTENANCE INSTRUCTIONS AND PARTS LIST

**MANUFACTURED BY:**

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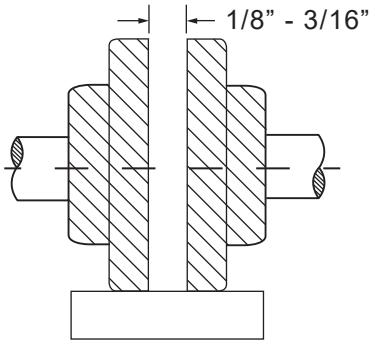
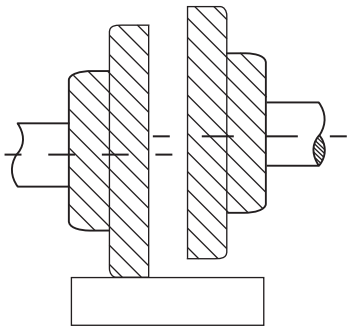
# INSTALLATION

The Haynes 6600 Series “top-Pull-Out” pumps are so designed that they may be installed as complete units, or, if necessary, as three component parts.

1. Units as shipped from the factory are completely assembled, carefully adjusted and lubricated. Generally the motor has been mounted and aligned at the factory before shipment. If customer elects to mount the motor in the field, he should install motor half of coupling on motor shaft, lay pump and chair bracket in a horizontal position, set motor on leveling screws and install holding cap screws, align motor half of coupling to pump half using jack screws and leveling screws, to obtain proper alignment per coupling manufacturer’s instructions or as shown below.



correct alignment


incorrect alignment

2. After obtaining alignment, if unit cannot be installed complete, the chair and motor may be removed from cover plates as a unit. Should the balance of the pumping unit continue to present an installation problem, the entire rotating element assembly can be removed. (See section of instructions regarding dismantling unit.) The cover plate, casing and discharge piping assembly can now be installed. Install rotating element assembly. Mount chair and motor. If unit was properly aligned, the parts will register back into alignment.

3. Normally, the pump units can be installed complete, lowering into place and making sure the cover plate is level and resting on its supports.

4. The weight of the discharge piping must be supported independently of the pump casing to eliminate strain on the pump. **DO NOT** draw pump casing to piping when connecting, as this will cause strain and excessive wear on the unit.

5. Rotate shaft by hand, checking for rubbing or high spots. If either is noted check for

   (a) Pipe strain
   (b) Coupling misalignment
   (c) Improper impeller adjustment

6. Connect power lines to motor in accordance with wiring diagram on the motor. Jog motor control to test for rotation. Rotation should be clockwise looking down on motor.

7. The pump should operate smoothly. If the pump vibrates, there is severe distortion of the pump as a result of excessive strain of the support plate, pipe strain, misalignment between pump and motor, improper impeller adjustment - or a combination of these.

## LUBRICATION

1. Pump bearings are properly lubricated at the factory before shipment. Periods of subsequent lubrication depend on local conditions, hours of operation, load, speed, temperature, etc. It is recommended that the ball bearings be periodically inspected and greased.
2. A polyurea base grease of medium consistency with corrosion resistant inhibiting properties must be used for the ball bearings.

**MOBIL POLYREX EM**, or equivalent, is recommended
As a guide, We would recommend the following frequency.

| Pump Service | Ambient Temp. | Lubrication Interval |
|---|---|---|
| 8 hrs Per day | High | 6-8 weeks |
| | Low | 12 weeks |
| 24 hrs Per day | High | 3-4 weeks |
| | Low | 6-8 weeks |

3. The motor is to lubricated per the motor manufacturer's recommendations.

## GENERAL REPAIRS

Haynes 6600 Series pumps are vertically designed centrifugal pumps, incorporating the removable rotating element features. The entire pump unit consists of three basic assemblies.

**Assembly "A"** consists of chair bracket when using horizontal foot mounted motors or motor support when using vertical flange mounted motors, motor and motor half of flexible coupling.

**Assembly "B"** consists of pump half of flexible coupling, shaft, power frame and bearings, column casing adapter, top plate adapter and impeller.

**Assembly "C"** consists of cover plate, casing support, pump casing and discharge piping thru cover plate.

# DISMANTLING

In the event it is necessary to service or replace any parts, proceed as follows:

1. Remove four (4) bolts located on chair plate and lift Assembly “A” as a unit from pump.
2. Remove four (4) allen head cap screws on top plate adapter and lift Assembly “B” out of casing.

(Under ordinary circumstances, Assembly “C” should not have to be removed. If pump thrust bearing has failed, be sure to inspect condition of pump casing suction head. If flange is worn only approximately 1/8” deep or less, it is not necessary to remove Assembly “C”.)

3. If it is found necessary to remove Assembly “C”, remove four (4) anchor bolts holding down cover plate, dismantle discharge piping at flange located above cover plate and lift out.

# REASSEMBLE

1. Install Assembly “C” if it has been found necessary to replace casing and connect discharge piping to system.
2. Assembly “B” with impeller raised tight against casing adapter. Replace four (4) allen head cap screws, drawing Assembly”B” solid to casing support flange in Assembly “C”. Adjust impeller downward until it rubs against suction head. Adjust upward until impeller rotates smoothly and locks into place.
3. Install Assembly “A” and, if motor has been removed from chair bracket or motor support, alignment should be automatically re-established. But always re-check after Assembly “A” has been removed.

Unit is ready to be put back into operation.

# REPAIR TO SPECIFIC ASSEMBLIES

### Assembly “A”

Normally, no repairs should be required for this assembly unless motor has burnt out or motor half of coupling has been destroyed. If motor should have to be replaced and unit has a chair bracket, loosen all adjustable leveling screws. Remove motor and replace, tightening all cap screws and adjusting screws. If motor half of coupling has to be replaced, simply pull and replace.

If motor has been replace, final alignment will have to be made after Assembly “A” has been installed to Assembly “B”.

Coupling buffer or sleeve should be left out until alignment has been re-established. Then slide coupling flanges apart and install buffer or sleeve and secure coupling flanges in place.

## Assembly “B”

1. Remove impeller from shaft.
   **Sizes 2 x 1-1/2 x 10 thru 6 x 6 x 10** are taper mounted and, after removal of shaft nut and cotter pin, can be pulled by using three (3) 1/2-12 x 3” long set screws thru three (3) tapped holes in impeller shroud. **Sizes 6 x 4 x 12 and 8 x 6 x 12** are straight bore mounted and have to be removed with the use of a wheel puller. Care should be taken not to put too much strain on cast iron impellers as they may break. If excessively tight, use penetrating oil to ease removal.

### Model 6651, 6652 and 6653 units

Remove three (3) locking screws in bearing cap and jack shaft and bearings out of bearing frame as a unit.
To remove top thrust bearing #15, unscrew the two (2) clamping screws #8 and three (3) locking bolts #9, lift off bearing cap #7, and slide down bearing housing #14 from bearing. Remove lock nut #12 by bending up metal locking tabs on bearing lock washer #13 and turn nut #12 counter-clockwise. Lift off bearing lock washer #13 and press bearing off of shaft.

2. Remove bearing housing.
   Radial bearing #21 can be removed by taking bearing lock nut #19 and pressing bearing off of shaft.
   Model 6654 and larger units.
   Remove four (4) cap screws holding power frame to column casing adapter. Unscrew the three (3) locking bolts #9, remove bearing cap #7 by unscrewing the two (2) clamping bolts #8, remove bearing lock nut #12 by bending up metal locking tabs on bearing lock washer #13 and turn nut #12 counter-clockwise. Lift off bearing lock washer #13. Pull shaft #16 and bearing housing #14 until it is free of power frame #17. Using a bearing puller, remove ball bearing #15 and housing #14 as a unit. Remove #16, lower bearing #21 and grease seal #23 through bottom of power frame #17. Remove bearing retainer #20 and press
3. radial bearing off of shaft.
4. When installing new bearings, grease seals #11 and #22 should also be replaced. To reassemble shaft, ball bearings and seals

### Model 6651, 6652 and 6653 units

Install radial bearing #21 on shaft #16, replace bearing retainer #19 and tighten securely.
Replace bearing housing #14, press thrust bearing #15 onto shaft, install lock washer #13 and bearing nut #12, being sure to bend locking tab of washer into slot of nut. Slide bearing housing #14 over bearing., Install bearing cap #7 and tighten two (2) bearing clamping bolts #8.
Slide shaft assembly into power frame #17. Install three (3) locking bolts #9 and three (3) adjusting screws #10.

## Model 6654 and Larger Units

Install radial bearing #21 on shaft #16, replace bearing retainer #20 and tighten securely. Install shaft and bearing into power frame #17 from the bottom, sliding bearing and shaft into bearing frame as fas as it will go.
Slide bearing housing #14 into shaft #16, install thrust bearing #15, tapping until bearing is seated on shaft shoulder, replace lock washer #13 and lock #14. Tighten securely and lock tab of lock washer into lock nut.
Slide shaft assembly into proper position in bearing frame.
Install Bearing cap #7.

5. Assembly column casing adapter #27 and column pipe adapter #26 to power frame #17.
6. Installing impeller.
   **Units using taper bored impellers**
   Seat impeller key #42 in shaft key-way and place impeller #36 on the shaft over impeller key. Place a wooden block over impeller vanes and tap on wood to seat impeller on shaft taper.
   Replace impeller washer #39 and the castellated nut #40. Tighten nut securely. Re-tap impeller, using wood block, to make sure impeller is seated properly. Retighten impeller nut is necessary.
   **DO NOT USE IMPELLER NUT TO DRAW IMPELLER ONTO SHAFT.**
   Replace cotter pin #41.
   **Units using straighten bored impeller.**
   Install impeller key, slide impeller on shaft, put on impeller washer, and tighten impeller screw.

## Assembly “C”

1. Install casing support to cover plate
2. Install casing to casing support, checking alignment by feel between the casing bore and the casing support bore. Tighten all cap screws securely.
3. Install discharge elbows and nipple. If piping should not line up with hole in cover plate, loosen cap screws on casing support, tap flange and rotate until lined up. Re-tighten casing support to cover plate.

## Impeller Adjustment

With Assembly “B” installed in Assembly “C” in vertical position.

1. Replace pump half coupling #5 and shaft key.
2. Adjust locking screws #9 downward until impeller drags on casing.
3. Loosen locking screws #9 and adjust screws #10 until shaft and impeller turn freely. If shaft binds or impeller rubs, check for pipe strain and, if required, raise impeller an additional 1/4 turn.
   (the correct clearance between impeller and suction face is .020” to .030”)

**NOTE: When ordering parts, specify Model and Serial number of the pump for which the parts are required. E.g. Model 6653 Serial No. 2000-01**

## Locating Trouble

### No water delivered

a - Wrong direction of rotation
b - Impeller or piping plugged
c - Discharge head too high
d - Water level too low

### Not enough water delivered

a - Discharge head higher than expected
b - Impeller or piping partially plugged
c - Improper impeller adjustment
d - Water level too low
e - Mechanical defect

### Not enough pressure

a - Air in water
b - Mechanical defect
c - Impeller diameter too small
d - Wrong direction of rotation
e - Impeller not properly adjusted
f - Discharge head line friction lower than expected

### Pump takes too much power

a - Speed to high for required head and capacity
b - Head lower than rating, pumping too much water
c - Liquid either viscous or heavier than water, or both
d - Mechanical defects, such as bent shaft or impeller binding in casing.
e - Strain on pump caused by piping misalignment
f - Impeller not properly adjusted

# How to adjust your pump impeller

**Note: There are (3) different sets of screws on the bearing cap. See picture below.**

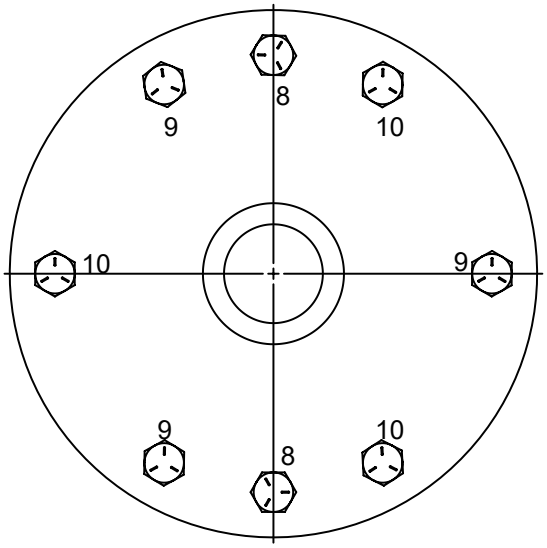
#8 = Bearing Cap - Clamping Screws (2)
#9 = Bearing Housing Locking Screws (3)
#10 = Bearing Housing Adjusting Screw (3)

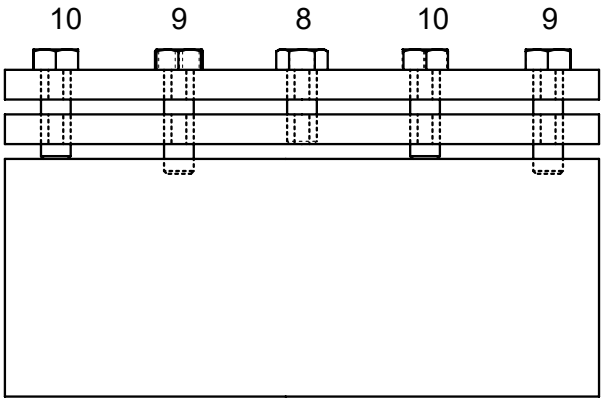
**To lower the impeller all the way down:**

Loosen (3) #10 Bearing Housing Adjusting Screws - (Loosen like a lug nut on your car).
Loosen (3) #9 Bearing Housing Locking Screws - (Loosen like a lug nut on your car).
Loosen the #10 Bearing Housing Adjusting Screw until the coupling will not spin any more.

**To raise the impeller:**

Turn #10 Bearing Housing Adjusting Screw (3) 1/4 turn on each.
Coupling should spin freely. If it does not spin freely, turn the #10 Bearing Housing Adjusting Screws (3) another 1/4 turn on each.
Once the impeller spins freely tighten #9 Bearing Housing Locking Screws (3). This will lock the impeller in place.



1 - Motor Support
5 - Coupling Assembly
6 - Shaft Key - Coupling End
7 - Bearing Cap
8 - Bearing Cap - Clamping Screws
9 - Bearing Housing - Locking Screws
10 - Bearing Housing - Adjusting Screws
11 - Bearing Cap Seal*
12 - Thrust Bearing Lock Nut*
13 - Thrust Bearing Lock Washer*
14 - Thrust Bearing Housing
15 - Thrust Bearing*
16 - Shaft
17 - Powerframe
18 - Nilos Ring*
19 - Radial Bearing Lock Nut*
21 - Radial Bearing*
22 - Grease Seal*
23 - Insert Ring*
24 - Closure Seal*
25 - Cover Plate
26 - Top Plate Adapter
27 - Column Pipe
28 - Casing Support
29 - Throttle Bushing*
33 - Casing Adapter
34 - Casing Adapter O-Ring*
35 - Casing
36 - Impeller
37 - Suction Head Gasket*
38 - Suction Head
39 - Impeller Washer*
40 - Impeller Nut/Bolt*
41 - Cotter Pin*
42 - Impeller Key*
43 - Discharge Flange Gasket*
44 - Discharge Elbow
45 - Discharge Pipe
46 - Support Ring
47 - Discharge Flange
48 - Concentric Reducer

* Recommended Spare Parts