

## Installation and Operation Pump & Rinse

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### IMPORTANT

**The Motor and Control Panel Was Wired For Electrical Power Specified At The Time Of Purchase  
See Wiring Diagram Inside The Door of The Control Panel  
Any Changes Should Be Done By A Licenced Electrician**

### WARNING

**Check All Factory Wiring To Motor and Control Panel**

It is the responsibility of the purchaser to have the electrical service installed by a licensed electrician in accordance with the power requirements of the motor, the electrical service available and local electrical codes. **Failure to have the electricity installed correctly will result in damage to the pump and potential bodily injury, loss of life and property damage from electrical shock and fire.**

### CAUTION

**Pump and Plumbing Must Be Secure**

**Peristaltic pumps will cause significant vibrations. The pump must be firmly bolted into position.**

**Surface conditions may require isolation pads on the frame and pulsation dampeners on the suction and/or discharge ports. Plumbing joints and hangers must be secure. Plumbing hangers may have to be closer than usual.**

**The degree of pulsation will vary based on head conditions at the installation sight. The higher the head conditions the greater severity of the vibration.**

### CAUTION

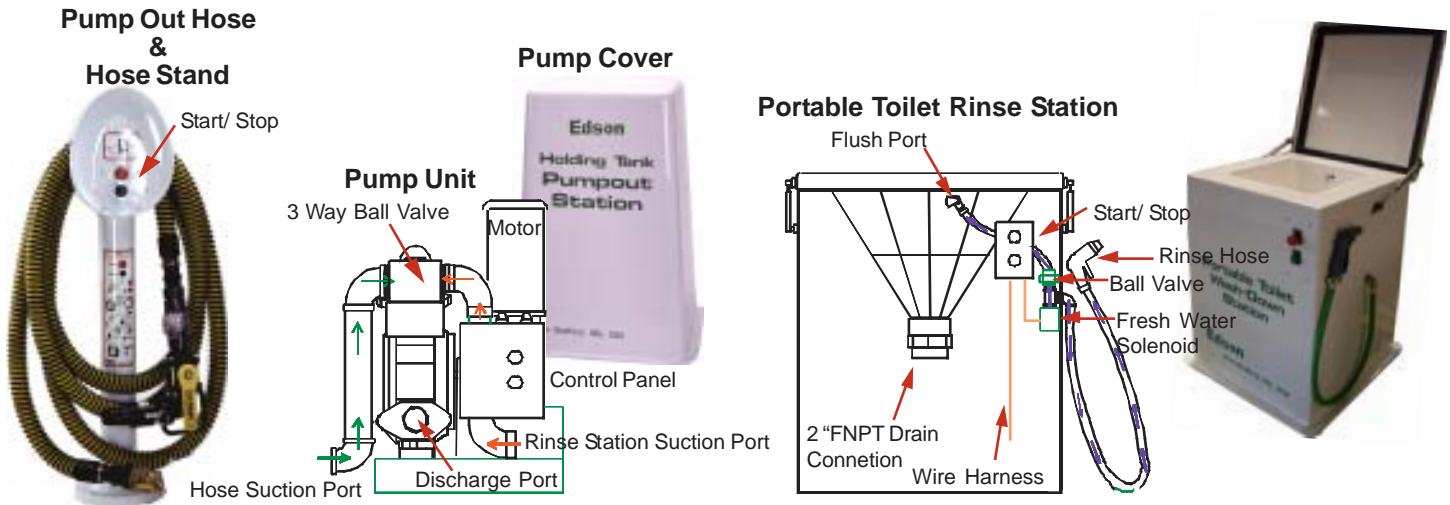
**Do Not Distort The Mounting Frame When Bolting Pump Unit In Place.**

**If the surface on which the pump unit is located is not smooth and level, bolting down the pump unit without shimming will distort the pump mounting frame. This may cause unnecessary vibration between the pump and the motor drive resulting in undue wear on the shaft bearings of both pump and motor drive.**

# Installation Guidelines:

## Overview

Installing the Edson Pump and Rinse requires a little planning. The Hose Stand and/or Rinse Station can be located some distance from the pump unit. Whatever the distance, planning the electrical connections and plumbing are necessary. Following is a list of things that need to be done.



## Electrical:

1. Wire Appropriate Electrical Power To The Control Panel. Make sure motor rotation give suction on 3 way ball valve port.
2. Connect The Rinse Station Start/ Stop to The Pump Unit Control Panel - The rinse station stop/start has a 10 ft wire harness installed with wires numbered. These need to be connected to the terminal strip in the pump unit control panel. If the distance between the rinse station and the pump unit requires longer wires then the electrician should provide appropriate wiring.
3. Connect Hose Stand Start/Stop to The Pump Unit Control Panel - The stop and start button contact blocks on the hose stand have numbered pig tail wires installed that correspond to connections on the pump unit control panel terminal strip. Electrician must install appropriate wires between the two.

## Plumbing:

1. Connect The Pump Out Hose To The Hose Suction Port Of The Pump Unit - If hose stand is next to the pump unit the hose can be screwed directly into pump by installing the 1/1/2" reducer bushing of the port. If the hose stand is some distance from the pump unit, run 2" pipe or full vacuum suction hose to the hose stand.
2. Connect The 2" Drain From The Rinse Station to The Rinse Station Suction Port Of The Pump Unit - Use 2" pipe or hose rated for full vacuum of 29 inches of mercury.
3. Connect A Water Line to The Fresh Water Solenoid Inside The Rinse Station. Adjust flow with the ball valve.
4. Connect 2" Discharge Port To Sewer.
5. All Plumbing Fittings Must Be Air Tight.



If possible all connections should be made by bringing wires and plumbing from under the cover and rinse station. If this is not possible cutting holes to allow connections through the fiberglass cover and rinse station should be oriented so they do not interfere with access and use of the components.

## Test The Pump Out Unit.

- Insure all ball valves on suction and discharge are open.
- Clamp one of the adapter fittings into the end of the hose.
- Push the green start button on the pump unit cover or the hose stand depending on equipment.
- Put you palm over the end of the hose. You should feel an immediate strong suction. If you use a vacuum gauge, vacuum pressure should build to 25"hg to 27"hg.
- Hold the hose end into the water. Water should flow immediately into the hose. Let it run till timer runs out and check for leaks.



## Test The Rinse Station.

- Insure all ball valves on suction and discharge are open.
- Open lid and push the green start button on the front of the station.
- The pump unit should start and the 3-way ball valve on the pump inlet should change position. If you are near the pump unit, you should hear the pump running and a noise of the motorized ball valve changing position.
- Simultaneously with the pump starting the solenoid on the wash-down station, fresh waterline should open and water should start to flow from the spigot inside the sink.
- The pump should be able to pump the water flowing into the sink. If water splashes out of the sink or the pump is unable to keep up with the flow close down the flow from the waterline.
- Check the rinse hose. If necessary adjust small ball valve on the solenoid assembly to balance pressure for rinse hose.
- Let unit run till it times out. There may be a small amount of water remaining in the sink and the sink drain.

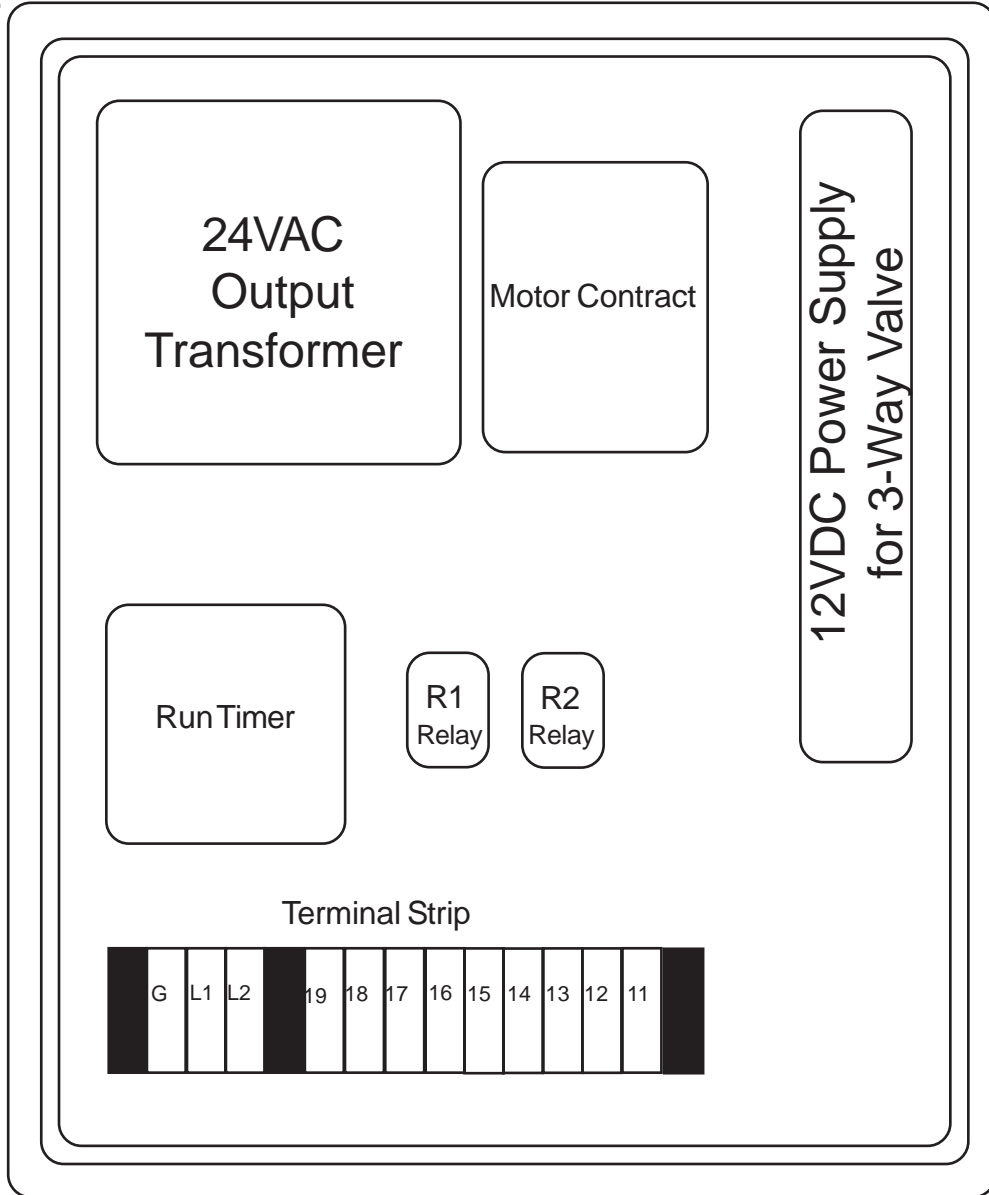


3-Way Motorized Ball Valve



# Electrical

Panel Locator:



## IMPORTANT

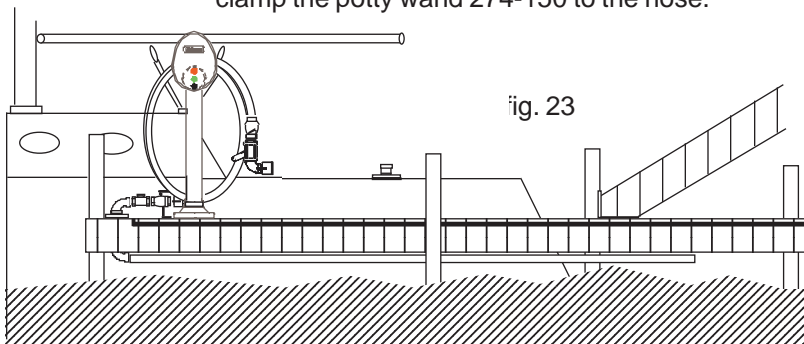
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See Wiring Diagram Inside The Door of The Control Panel  
Any Changes Should Be Done By A Licenced Electrician

# Pumping Out

## 1. All Ball Valves Except Ball Valve On The End Of The Hose Must Be Opened.

## 2. Prepare The Waste Deck Fitting On the Boat.

- Remove the cap from the boat deck fitting.
- Screw in a deck adapter, 273-150 (1 1/2") or 273-125 (1 1/4").
- If neither fit, clamp the universal nozzle 272QC-150 to the hose.
- If pumping out a portable holding tank or bucket, clamp the potty wand 274-150 to the hose.

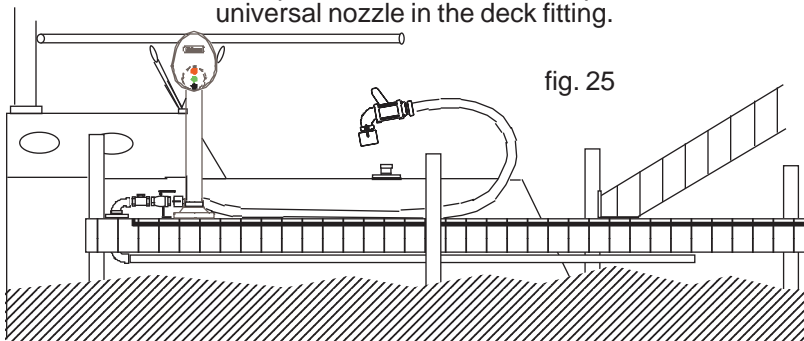
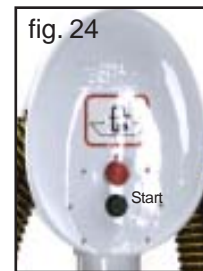


## 3. Turn On The Pump Out System.

- Push the green start button on the pump unit cover or the hose stand depending on equipment.

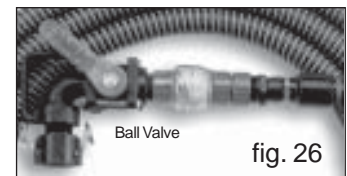
## 4. Connecting The Hose To The Boat

- Unwind the hose all the way from the hose stand.
- Clamp the hose to the deck adapter or hold the universal nozzle in the deck fitting.



## 5. Open The Hose Ball Valve Slowly & Pump Out.

- When the holding tank is empty, close the ball valve.
- Pump water through your toilet into the holding tank.
- Pump out again. This procedure rinses the entire system and helps to prevent odor.
- Close The Ball Valve & Disconnect The Hose

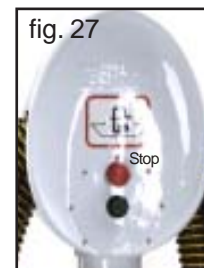


## 6. Flush the Hose.

- Put the hose into water & open the ball valve long enough to flush the hose and plumbing.
- Lift the hose and close the ball valve.
- Push the Red Stop Button.

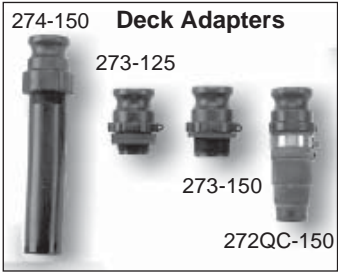
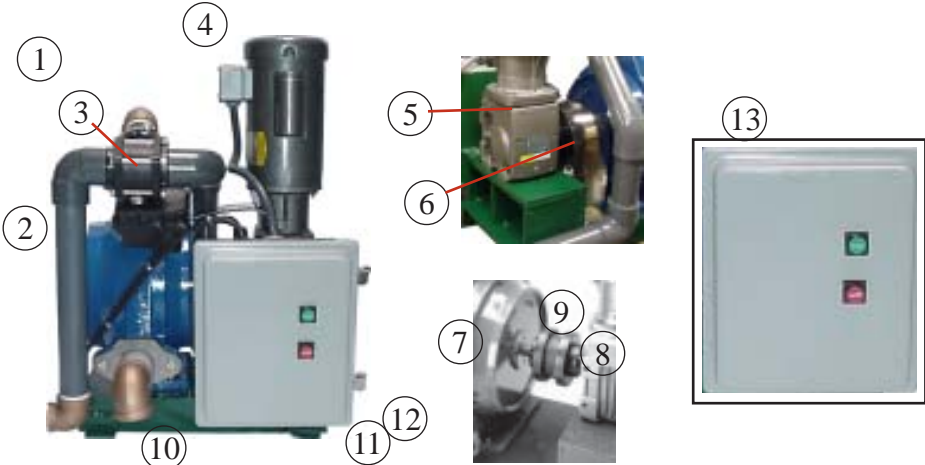
## 7. Clean Up.

- Curl the hose onto the hose stand.
- Secure the boat deck fitting.
- Rinse the deck and pump out with water.
- Wash your hands.





**Parts List**



## Parts List

Qty

### 286EP-40-PR - Pump Out - 2 Hp Peristaltic Station With Pump And Rinse Options

Key #	Order No.	Description	Qty
1	286EP-PUMP	Pump Out - 2 Hp Peristaltic Pump Assembly - PUMP ONLY	1
2	161-A-1910	Peristaltic Pump ONLY	1
3	161-A-2441	Motorized Ball Valve	1
4	161-A-1912	Motor, 2HP Single Phase 120/240 volt, 3450RPM, 56C, TEFC	1
5	161-A-1977	Helical Worm Gear Unit	1
6	161-A-1997	Coupling Cover for 286EP, 16 Gauge Stainless Electropolished	1
7	161-A-1913	Shaft Coupling Body, 1" Bore	1
8	161-A-1975	Shaft Coupling Body, 7/8" Bore	1
9	161-A-1914	Shaft Coupling Insert	1
10	160-A-2008	Elbow, 2" 90 Degree, Brass	1
11	161-D-180	Pump Frame, Peristaltic - Painted	1
12	161-A-2294	Electrical Box Mounting Plate	1
13	161-A-2599	Electrical Control Panel	1
	161-A-2369-A	Relay Socket, 24 Volt (115867)	2
	161-A-2369-B	Relay, 24 Volt (105704)	2
	161-A-2442	Relay, 4 Pole, 24 Volt	1
	161-A-2443	Relay Socket, 4 Pole, 24 Volt	1
	161-A-2445	Power Supply, 12 Volt 120 Watt	1
	161-A-1861	Timer, Multi Functional, Timer ONLY	1
14	161-B-808	Pump Enclosure with signs	1
15	260-284	Hose Stand	1
16	161-A-2043	Button - Green Start Button - 2 NO	1
17	161-A-1705-FL	Button, Momentary, Red Flush Mount	1
18	261-25-150	Hose - Pump Out Hose Assembly - 25 Feet Long	1
	262-25-150	Hose - Pump Out Hose ONLY - 25 Feet Long	1
	159MA-150NY	Hose Coupling - Threaded Male 1-1/2" Nylon	2
	160-A-2424	Hose Clamp, Single Ear Oetiker, Stainless	2
	269CL-150V	Check Valve/Sight Glass - 1 1/2" - Viton Gasket	1
	264-90-150	Ball Valve - 1-1/2" 90 Degree	1
	152FM-150NY	Quick Clamp Adapter FE QC x MNPT 1-1/2" Polypropylene	1
	273-125	Deck Fill Adapter - 1-1/4"	1
	273-150	Deck Fill Adapter - 1-1/2"	1
	272QC-150	Pump Out Nozzle - Quick Clamp	1
	274-150	Potty Wand	1

### 281-300-PR Wash-Down Station With Pump & Rinse Options

Key #	Order No.	Description	Qty
19	160-A-1418	Gas Hinges W/ 2 Flat Mounting Pads	2
20		Flush Hose	1
21	161-A-2043	Button - Green Start Button - 2 NO	1
22	161-A-1705-FL	Button, Momentary, Red Flush Mount	1
23	161-A-2444	Solenoid Valve, 1/2" 110 Volt	1

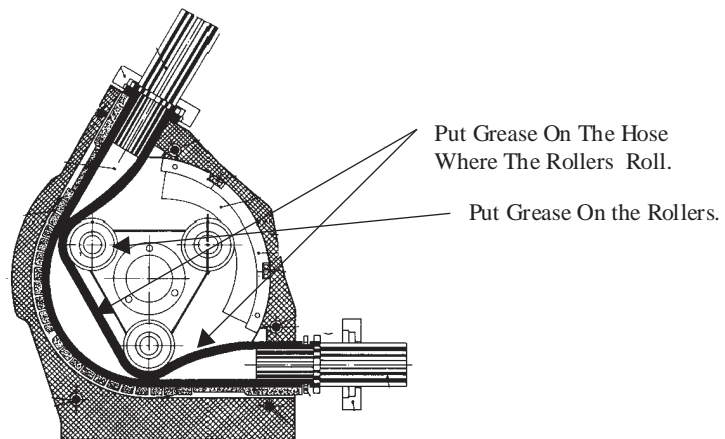
## Maintenance

### **WARNING**

**Turn Off & Lock Out Electrical Service To The Pump Motor Before Performing Any Pump Maintenance.  
Failure To Do This Could Result in Bodily Injury**

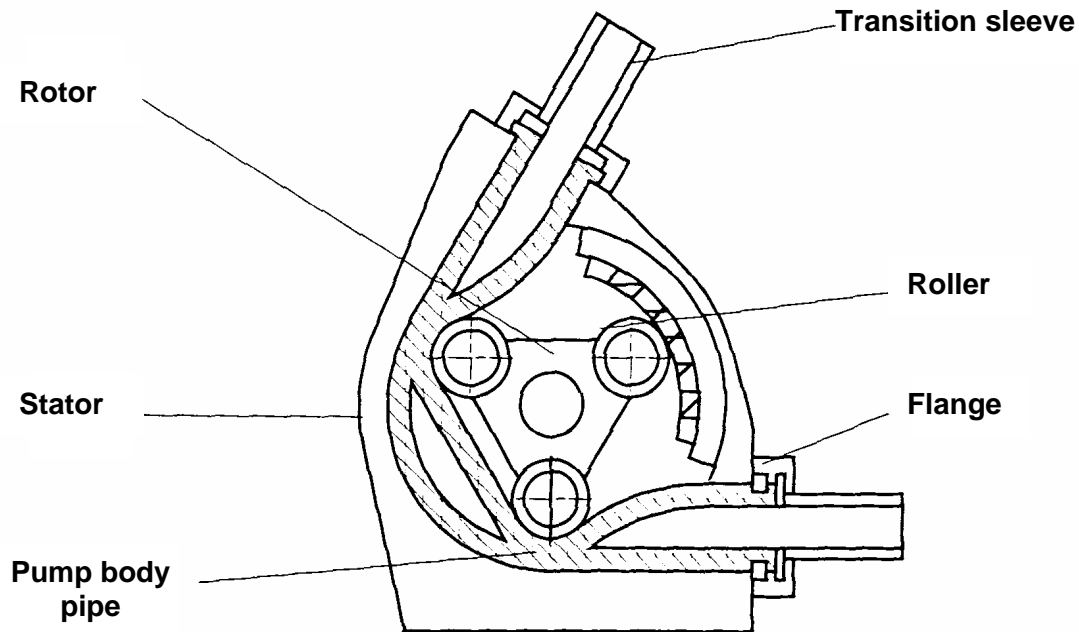
#### **1. Greasing The Hose**

- Turn off and lock out all electrical power to the peristaltic pump.
- Remove the main fiberglass cover from over the pump unit.
- Remove the clear plastic cover from the face of the pump.
- Using the grease gun and the long nozzle, apply a bead of grease along the surface of the hose where the rollers make contact. Apply grease to the exposed surface of the rollers.





## Operating principle



The principle of peristaltic pumping is based on the ability of the pipe made of a flexible material (elastomer type) to deform and then return to its initial shape. A drive causes the rotor equipped with a roller to rotate. The pipe is compressed by the roller, and closes occlusively. Behind the roller, the return of the pipe to its initial shape creates a vacuum, which exerts suction on the product. The volume of product between two rollers is transferred inside the pipe from the suction part of the pump to the discharge part. Under the pressure of the second roller, the product is discharged in the pipework. The capacity obtained varies according to pipe diameter, and the rotational speed of the rotor.

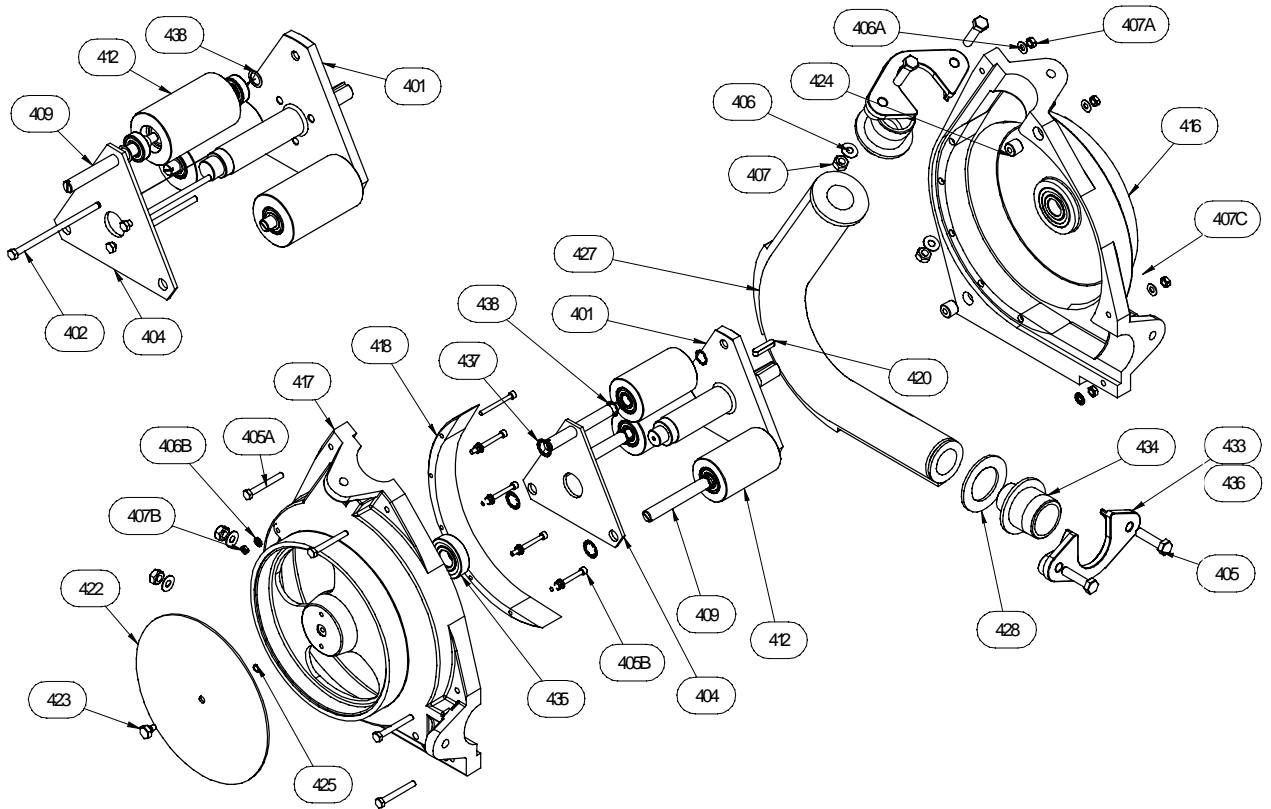
### **Direction of Rotation**

The pump's symmetric construction makes it fully reversible by simply changing the direction of rotation. Maximum pump performance characteristics and specifications are obtained in both directions.

## List of spare parts

A list of spare parts for your pump is available from our Customer Service Department.  
Please give the Serial Number of your equipment

## Pump diagram



## Troubleshooting

See troubleshooting table below.



Warning! The pump body pipe is a wearing part. Its life-span varies according to the frequency of use, nature of the product being pumped, temperature, speed and discharge pressure.

Since the pipe's qualities are adapted to the product being pumped, it is essential to ensure compatibility, otherwise rapid destruction of the pipe, swelling or chemical corrosion etc. may occur.

Symptom	Cause	Solution
Pump does not prime itself, or does so with difficulty	a) Air intake at suction	a) Check for watertight connection between pump and connection piece.
	b) Poor condition of suction pipework	b) Particularly concerns flexible pipes (hoses) subject to pinching or internal separation. Provide reinforced hoses, resistant to pressure loss.
	c) Blockage	c) Clean suction connection piece, possibly by simply reversing the direction of pump rotation. Ensure filter or strainer is not clogged.
	d) Inadequate pump rating	d) Viscosity and/or concentration of dry matter require a higher passage diameter and reduced pump rotation speed.
	e) Head loss at suction	e) Reduce suction height, or modify pipework routing.
	f) Pump was out of service and immobile for a long period	f) Remove pipe from pump during long shutdown periods.
	g) Excessive suction height (5 m max.)	g) Move the pump nearer.
Pump drainage	a) Faulty seal	a) Proceed as described above.
Suction is operative, but pump does not discharge the product.	a) Blocked pipework	a) Apply a cleaning cycle, possibly by reversing direction of rotation.
	b) Pressure too high: inappropriate discharge connection piece	b) Diameter at least equal to the pump outlet opening (refer to paragraph 1.3).
	c) Discharge circuit creates too much head loss	c) Rearrange the installation to eliminate elbows and T-joints.
	d) Viscosity and/or concentration too high	d) Pump is undersized, and/or pump rotational speed is too high.
Leakage at pump outlet opening	a) Faulty seal	a) Check the pump/connection piece connection. Avoid having an elbow at 90° in immediate proximity to pump outlet.
	b) Undersized discharge connection piece	b) Refer to, and strictly observe, our installation recommendations concerning minimum diameter for each pump type.
Vibration in discharge connection piece	a) Pumping circuit creating hammer blows	a) Provide a flexible pipe connecting the pump to the connection piece. Possibly use a pulsation damper.

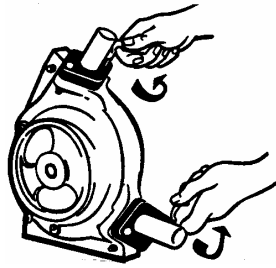
### Disassembly

Before carrying out any servicing on the pump, check that all necessary precautions have been taken: suction and discharge valves closed, pipework cleaned and purged, electrical power supply disconnected, and all usual measures concerning safety of personnel to be implemented in accordance with the texts in force.

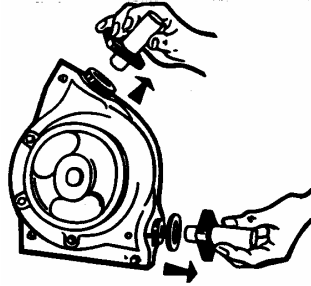


### Disassembly of pipe Ref. 427 and transition sleeves Ref. 434

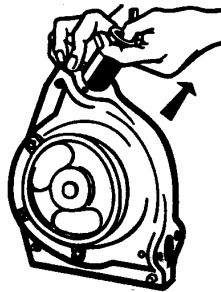
– Unscrew the mounting hardware of the transition sleeves Ref. 434 at the suction and discharge ends by pulling out the flanges Ref. 433.



- Remove the transition sleeves Ref. 434 and the removable flange Ref.428 from the pipe Ref. 427.



- Pull the pipe Ref.427 while running the pump.



### **Disassembly of cover Ref. 422**

- Unscrew and remove the cover mounting hardware Ref. 423.
- Remove the cover Ref. 422.

### **Disassembly of stator Ref. 417**

- Remove the transition sleeves Ref. 434 and the pipe Ref. 427 .
- Disassemble the cover Ref. 422
- Unscrew and remove the stator mounting hardware Ref. 417 on the pump support or base.
- Unscrew and remove the mounting hardware of stator Ref. 417 and stator Ref. 416.
- Withdraw stator Ref. 417 and remove it.
- Unscrew the seal mounting hardware Ref. 418 and remove both the hardware and the seal.
- Remove the bearing Ref. 435 of the stator Ref. 417.
- After removing the rotor, follow the same procedure for stator Ref. 416.

### **Disassembly of the assembled rotor**

- Remove the transition sleeves Ref. 434 and the pipe Ref. 427 .
- Disassemble the cover Ref. 422 .
- Disassemble the stator Ref. 417.
- Pull the rotor pin Ref. 401 assembly of the remaining flange Ref. 404 by extracting it from the bearing Ref. 435 assembled on the stator Ref. 416.

### **Disassembly of drive**

- Unscrew the mounting hardware of the drive on the pump base.
- Uncouple the drive from the pump by pulling it.
- Unscrew the motor mounting hardware on the reducing gear and disassemble the motor.

### **Reassembly**

#### **Reassembly of Stator Ref. 416**

- Place the bearings Ref. 435 in their housing in the stators Ref. 416 and 417 and press them home.
- Place the seals Ref. 418 on the stators Ref. 416 and 417 using their mounting hardware and screw down with torque
- Mount the brake tube support Ref. 432 fitted with the brake tube Ref. 430.
- Place the stator Ref. 416, fitted as above, on the pump support and fix the assembly with the corresponding hardware.

#### **Reassembly of assembled rotor**

- First, reassemble the stator assembly Ref. 416 .
- Place the equipped rotor assembly Ref. 401 on the stator assembly Ref. 416, in the bearing Ref. 435.

#### **Reassembly of cover Ref. 422**

- Grease the stator assembly Ref. 416 and the stator Ref. 417.
- Assemble stator Ref. 416 and stator Ref. 417 using centring pins.
- Fix the assembly using the corresponding hardware .
- Put the cover Ref. 422 in place and fix it using its hardware Ref. 423.



### Reassembly of drive

- Assemble the motor on the reducing gear and fix it using the corresponding hardware.
- Connect the resulting drive to the pump.

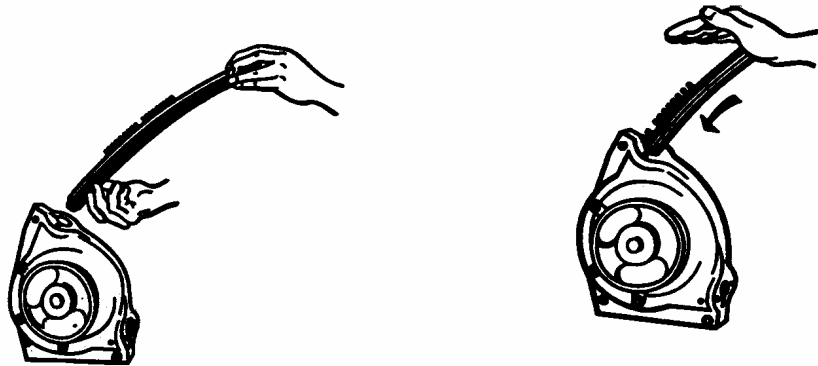


**Check that the drive shaft and the pump shaft are correctly aligned. If they are not, shim the pump support or the drive, if necessary.**

- Fix the drive on the pump base using its mounting hardware

### Reassembly of pipe Ref. 427 and transition sleeves Ref. 434

- Introduce the pipe Ref. 427, previously greased through the opening on the discharge side (at the top), while running the pump **in the reverse direction of rotation that allows disassembly.**



- When the pipe is in place, stop the pump.
- Place the securing flange Ref. 428 on the suction side.
- Put the transition sleeves Ref. 434 in place at the discharge and suction ends.
- Fix the transition sleeves Ref. 434 with its hardware and flange Ref. 433 (see torque paragraph 3.4.4).



**If only a pipe is being replaced, when reassembling, place grease into the pump through the openings at the suction and discharge ends on the pipe and put in place in this order (see paragraph 3.4.3).**

## **Equipment storage when not in use**

Apply the following procedure:

- Release pressure at the suction and discharge ends.
- Drain the pipework and the pump.
- Clean the pipework and the pump using a cleaning product that is compatible with the pumped product and pump materials.
- Run the pump for more effective cleaning.
- Switch off the pump.
- Isolate the pump from the rest of the circuit.

**RECOMMENDATIONS:**    **If the pump is not going to be used for a period of more than eight days, it is beneficial to remove the pipe from the pump.**