

Installation and Operation Pump & Rinse

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IMPORTANT

This Model 286EP Pump Out was built to operate on 230 Volt, 1 Phase, 60HZ electrical power. Study electrical section on manual pages 5- and check all wiring inside control panel and motor junction box to insure it conforms to the electrical service to be used. This must be done by a licensed electrician

Pump Out System



CAUTION

Be Careful Removing Pump Cover. An Electrical Cable Is Connected From The Cover Switches And The Pump Unit Control Panel.

ENTER YOUR SYSTEM DATA HERE

SERIAL No.

MOTOR

Components Description

Pump Assembly: fig.1

1. 2hp/1ph/230v/60hz/tefc motor and a 20 to 1 ratio gear reducer is coupled to a 35 GPM peristaltic pump. All arranged on an aluminum frame.
2. A contact/timer control box is included.
3. A 3 way motorized ball valve is installed on the pump inlet and 2" pipe and fittings are connected to each intake side, one to the back right side for connection to the wash-down station drain and the other to the left for connection to the pump out hose. **A 2" X 1 1/2" 90° bronze elbow is provided for the hose connection. A 2" union, a 2" X 4" nipple and a 2" female adapter for completing the connection to the wash-down drain during installation.**

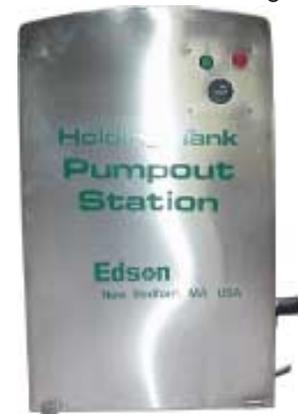
fig.1



Pump Cover: fig.2

1. Stainless Steel or White Fiberglass (Stainless Shown).
2. A Green Start and a Red Stop switch installed in the front are used to start the pump when the pump out hose is used.
3. A non-resetable hour meter is installed to measure the pumps total run time.
4. The Start/Stop Switches and the hour meter are wired to the control panel with a set of long electrical cables that allows the cover to be lifted clear of the pump unit for maintenance and service.
5. Holes are cut in the cover, one on the left for connecting the pump out hose to the pump unit, one on the back right for connecting the wash-down station to the pump unit and one to the right front for connecting the wash-down station electrical cable to the control panel.

fig.2



Hose Stand & Pump Out Hose Assembly: fig.3

1. Stainless Steel or White Powder Coated Aluminum (Stainless Shown).
2. 1 1/2" Pump Out Hose, 90° Ball Valve, Sight Glass/Check Valve, Quick Clamp Adapter, Complete Set of Deck Adapters
3. Pump out hose ends in male 1 1/2" thread that screws into the left hand side of the pump unit.

fig.3



Portable Toilet Wash-Down Station: fig.4

fig.4

1. Stainless Steel or White Fiberglass (Stainless Shown).
2. A Green Start and a Red Stop switch installed in the front are used to start the pump when the wash-down station is used.
3. The sink drain is plumbed to a bulk head fitting on the back left hand side of the wash-down unit.
4. A rinse hose and a sink flush spigot are connected to an electrical solenoid mounted inside the wash-down station on the right side.
5. With a water line connected to the solenoid and the wash-down electrical cable connected to the control panel on the pump unit, when the Start switch is pushed the pump comes on to the wash-down station and water flows into the sink and is available for the rinse hose,



Layout Dimension:

Front View

fig.5

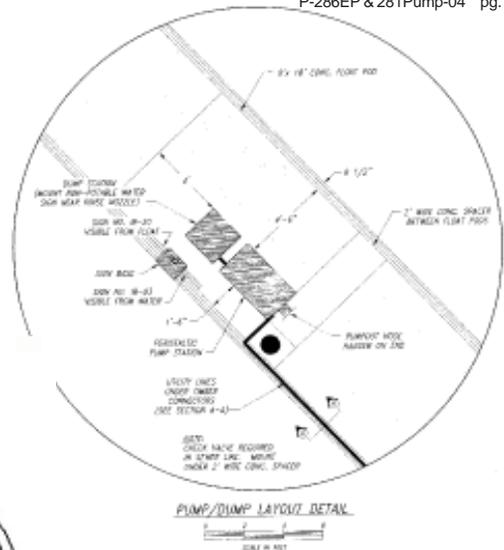
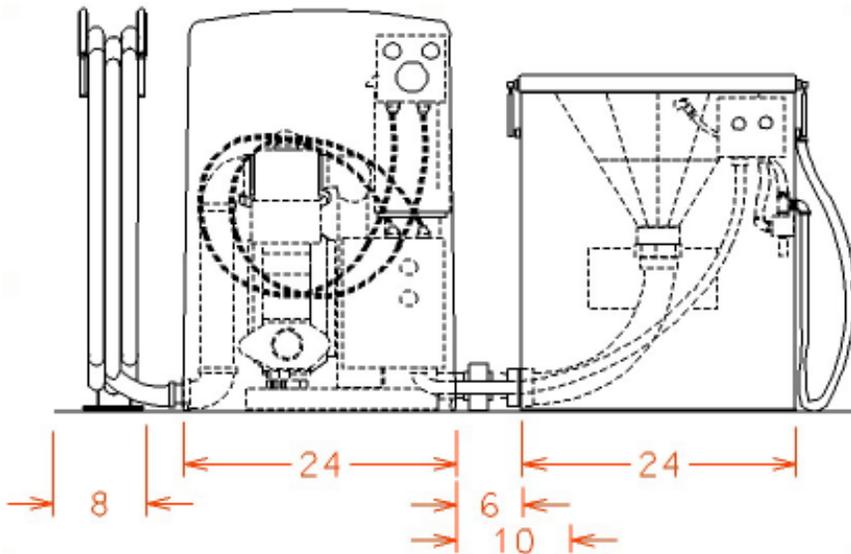
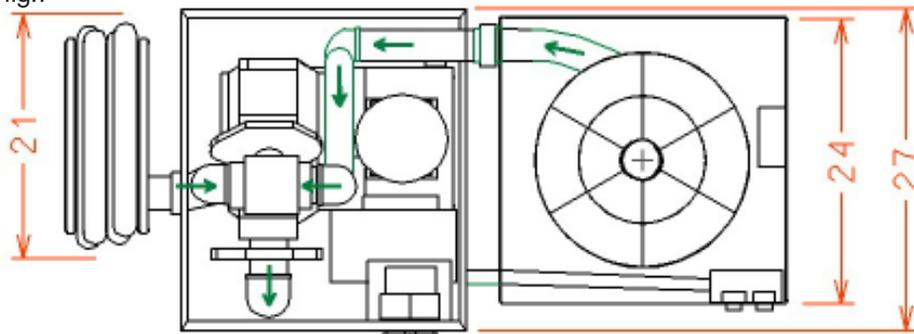


fig.6



Top View

fig.7



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

Be Careful Removing Pump Cover.

An Electrical Cable Is Connected From The Cover Switches And The Pump Unit Control Panel.

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 the use of 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.

Step 1. Place The Pump Unit fig. 8

- Check All Bolts - Make sure that all bolts on the pump are secure.
- Bolt Pump Frame To Surface - Pump frame has 4 bolt down flanges use these to secure the unit to the surface with lag bolts or similar fasteners. fig 9
- Allow Room for The Cover



fig.9

Step 2. Prepare and Place The Wash-Down Station fig. 10

- Drill mounting holes in the internal base flange. Locate the Wash-Down to the right of the pump with the drain port aligned with the right rear pump inlet. fig 11 Mark the surface for the mounting holes and install appropriate stainless bolt studs. Leave room to install the 2" union. fig. 12



fig.8

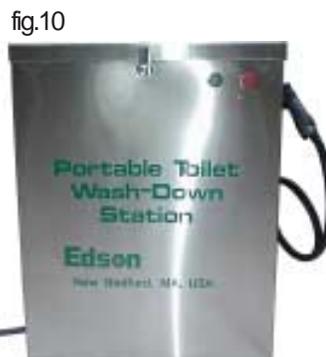


fig.10



fig.11



fig.12

Step 3. Install Plumbing

- **Connect water line** to 1/2" electric solenoid inside Wash-fig. 13 Down. An appropriate back flow preventer and shut-off should be installed on the water line.fig. 13
- **Connect Wash-Down drain** port to pump inlet. A few schedule 80 pvc fittings were included. fig. 14. It is recommended that a union be used to allow for ease of service when required. Check that the pump cover clears the plumbing before welding the fittings.
- **Connect the pump out hose** to the other pump inlet by screwing one end of the pump out hose into the 1 1/2 bronze elbow on the 2nd pump inlet port on the left side of the pump unit.fig. 15
- **Install a 2" discharge line** to the 2" elbow on pump discharge port. There is no pre cut exit through the pump unit cover. If possible the line should go down and exit under the cover in the most appropriate direction. If necessary cut an inverted "U" in the cover and route the discharge line out to the sewer.fig.16



fig. 14



fig. 15

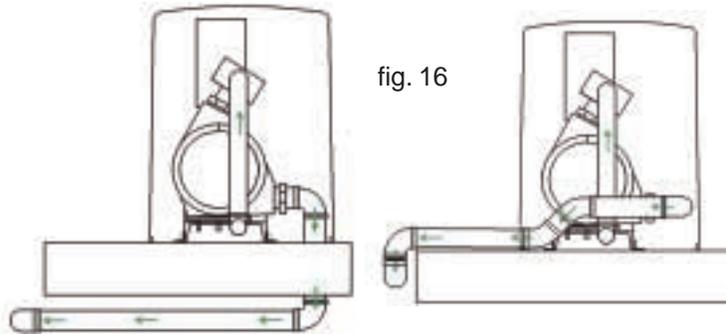


fig. 16



fig. 17

Step 4. Install Electrical Service - Wiring Diagram, Page 7

Caution
All Electrical Connections Must Be Installed By A Licensed Electrician In Accordance With Local Codes

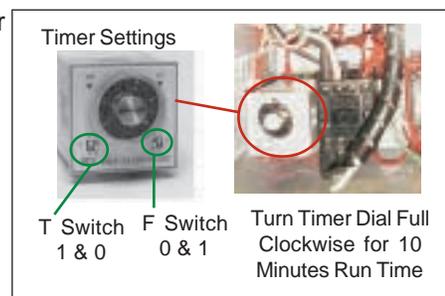
- **Connect Wash Down Electrical Cable** to the control panel. Just connect the conduit elbow to the precut hole in the bottom of the panel. The wires are numbered. Connect them to the corresponding numbers on the terminal strip fig.17

Important
This Pump Unit Is Wired For 120 Volt 1 Phase Electrical Power
The 2 hp Motor Run On 120 Volt 1 Phase Is Rated At 23 FLA

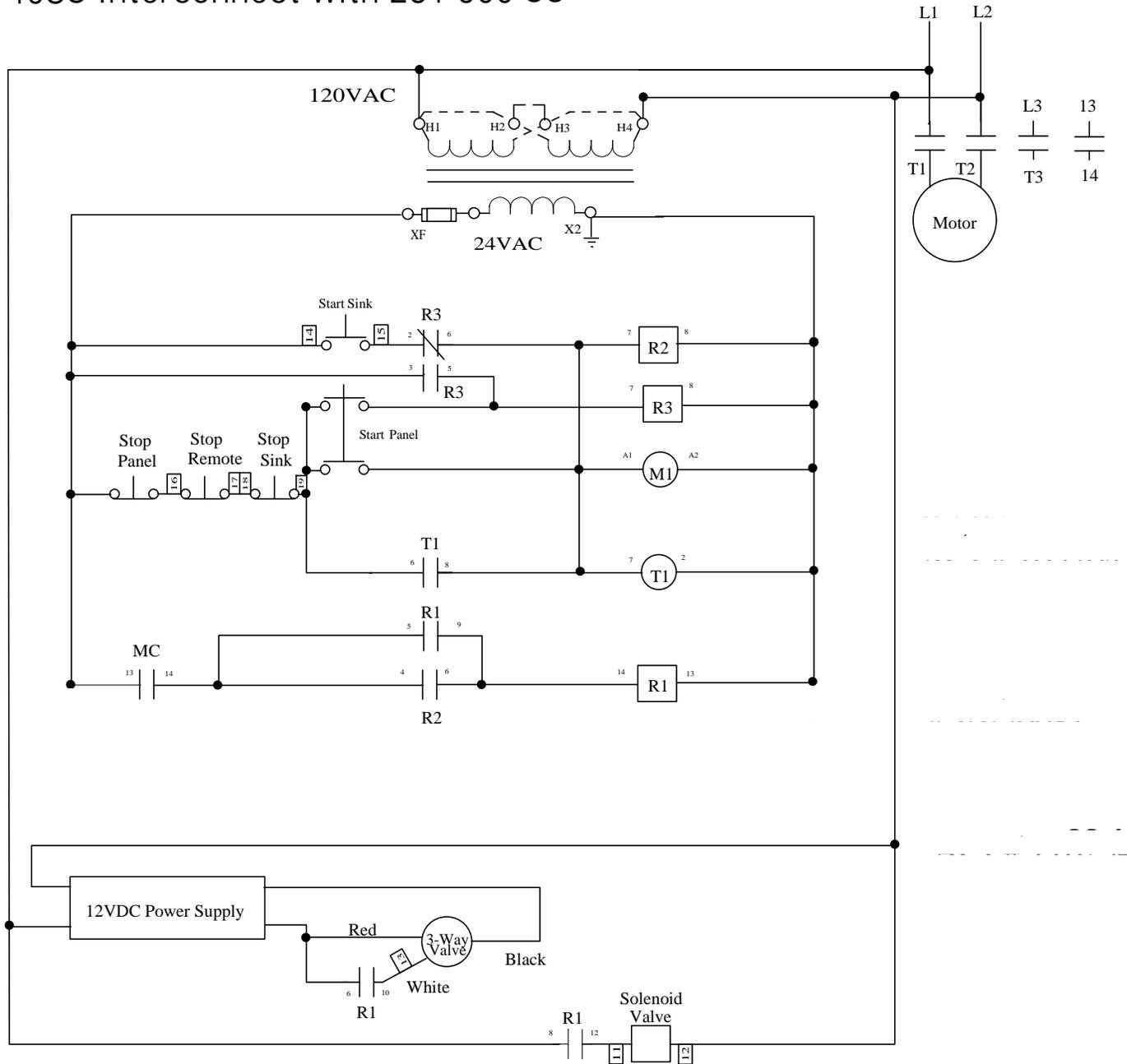
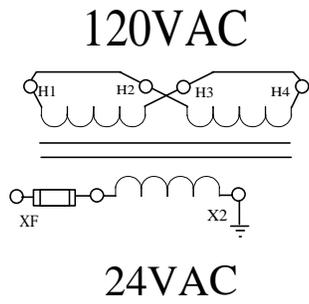
- **Wire Electrical Power** to L1, L2 on contact block and ground to the ground stud on the panel plate. The motor full load amp draw requires the electrical power to be supplied with a 30 amp line using 10 gauge wire. fig. 18
- **Set Run Timer** for 5 to 10 min. The T switches on the face of the timer relay are set for 10 sec. to 10 min. Rotate the dial to the desired run time. If a longer time is needed, reset the T switches per the chart on the side of the timer relay and adjust the dial to the time needed. fig.18



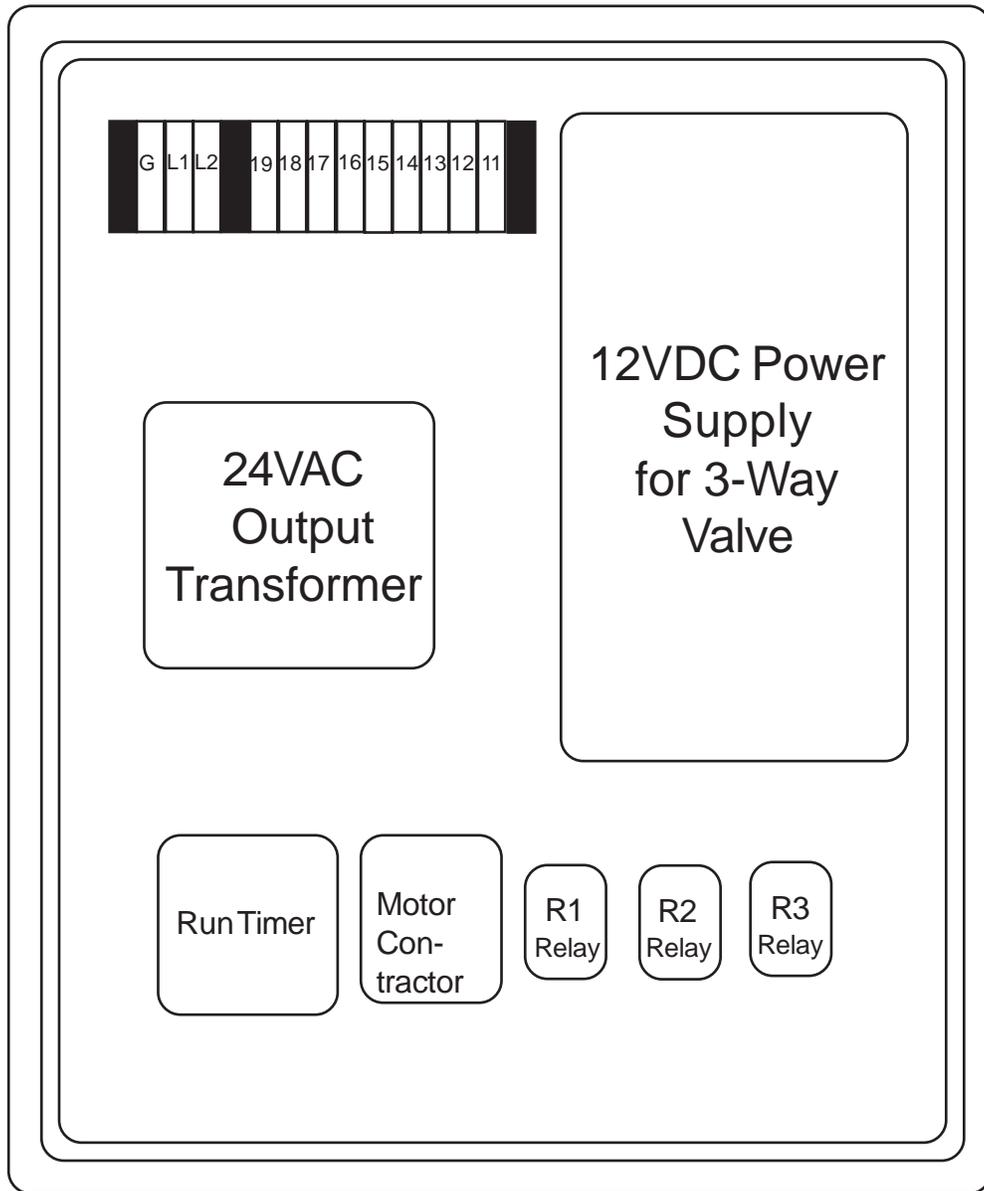
Wash-Down Cable



Control Panel 286EP-40SS Interconnect with 281-300 SS



Panel Locator



Step 5. Install The Pump Unit Cover

- Place the cover over the pump and secure it with stainless bolt studs and wing nut. fig. 19

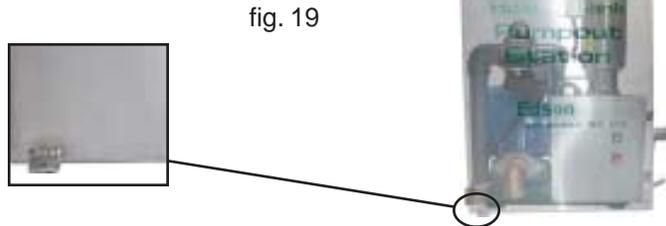


fig. 19

Step 6. Install The Hose Stand

- Locate the hose stand to the left of the pump unit in a position that makes it easy and natural to wind and unwind the pump out hose fig. 20



fig. 20

Step 7. Complete The Hose Assembly

- **Use Pipe Sealant On All Threads When Assembling Hose Components.**
- Part 158MF-150NY is an optional fitting used to adapt the thread on the hose end to quick clamp.
- 274-150 is a nozzle extension for use when pumping out portable toilets
- 273-150 & 125 are waste deck fitting adapters. They are screwed into a boat waste deck fitting so the hose can be clamped in place.
- 272QC-150 is a nozzle for use when either of the waste deck fitting adapters cannot not be screwed into the boat fitting. It is clamped onto the suction end of the hose and then held into the boat waste deck fitting.



fig. 21

Step 8. Test The Pump Out Unit. fig. 22

- Insure all ball valves on suction and discharge are open.
- Clamp one of the adapter fittings into the end of the hose.fig 23
- Push the green start button on the pump unit cover or the hose stand depending on equipment.fig. 24
- 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. fig. 25
- 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.

fig. 22



fig. 23



fig. 24



fig. 25



Step 9. Test The Wash-Down Station. fig. 26

- Insure all ball valves on suction and discharge are open.
- Open lid and push the green start button on the front of the station.fig 27
- 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. fig 28
- 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. fig. 29
- Let unit run till it times out. There should be a small amount of water in the sink and the sink drain.

fig.26



fig.27



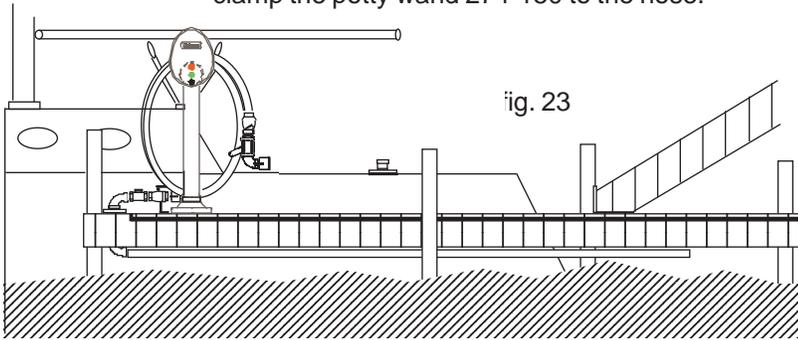
fig.29



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.

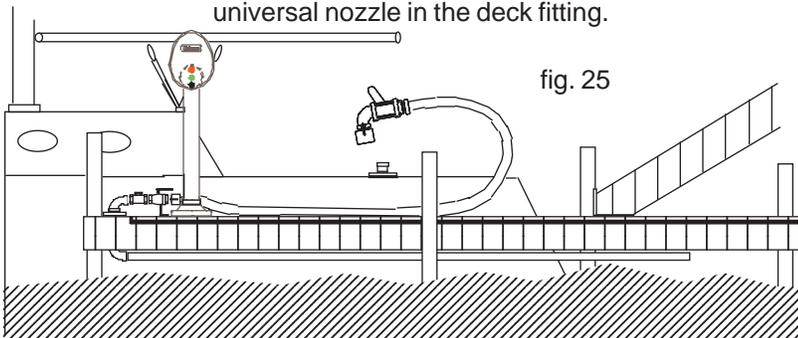


3. Turn On The Pump Out System.

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

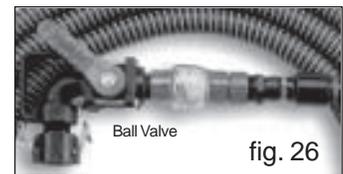
4. Connecting The Hose To The Boat

- 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.

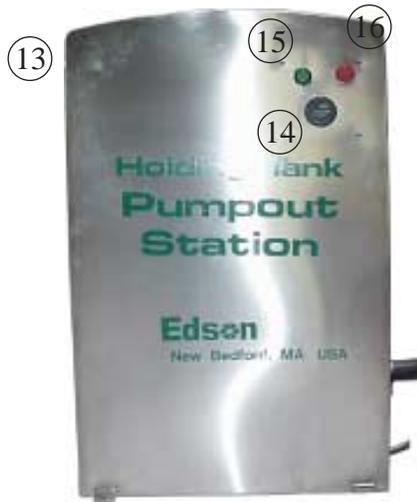
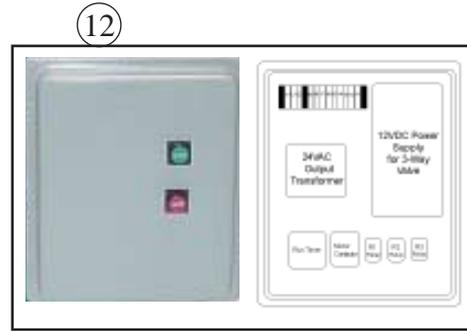
- Put the hose into water & open the ball valve long enough to flush the hose and plumbing.
- Lift the hose and close the ball valve.
- Push the Red Stop Button.

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 Drawing



Parts List

Qty

286EP-40SS - Pump Out - 2 Hp Peristaltic Station Stainless Steel 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
.	161-A-1975	Shaft Coupling Body, 7/8" Bore	1
.	161-A-1914	Shaft Coupling Insert	1
8	160-A-2007	Elbow, 90 Degree, Reducer 2" x 1-1/2" Bronze	1
9	160-A-2008	Elbow, 2" 90 Degree, Brass	1
10	161-D-180	Pump Frame, Peristaltic - Painted	1
11	161-A-2294	Electrical Box Mounting Plate	1
12	161-A-2324	Electrical Control Panel, Starter 2Hp 1Ph 120V	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 8542A240	1
13	161-B-857	Pump Enclosure with signs, Stainless Steel	1
14	161-A-2390	Hour Meter	1
15	161-A-2043	Button - Green Start Button - 2 NO	1
16	161-A-1705-FL	Button, Momentary, Red Flush Mount	1
17	161-A-1757	Hose Stand Stainless Steel	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-SS Wash-Down Station Stainless With Pump & Rinse Options

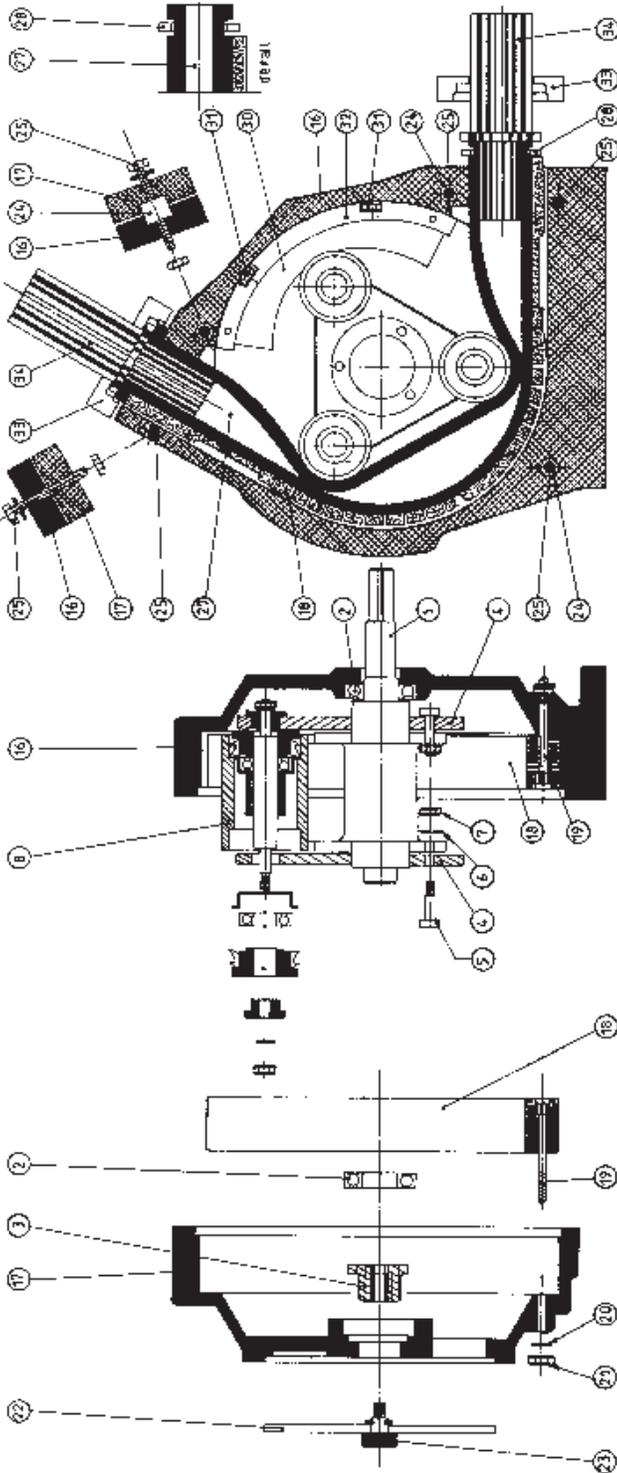
Key #	Order No.	Description	Qty
19	160-A-1418	Gas Hinges W/ 2 Flat Mounting Pads	2
20		Flush Hose	1
21	161-A-2043	Button - Green Start Button - 2 NO	1
22	161-A-1705-FL	Button, Momentary, Red Flush Mount	1
23	161-A-2444	Solenoid Valve, 1/2" 110 Volt	1

No 731 B

TECHNICAL SHEET

A-1910-Pump

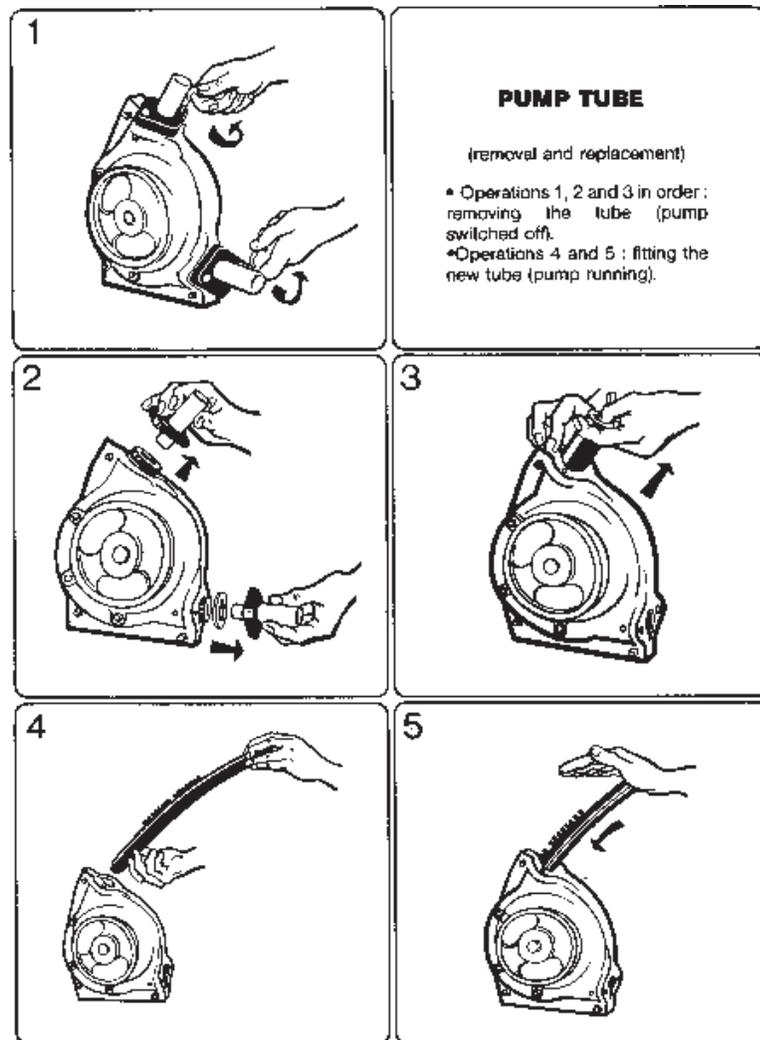
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Rep	No	Qty	ROTOR	Rep	No	Qty	ROLLER	Rep	No	Qty	STATOR
1	35103	1	ROTOR SHAFT	16	35010	1	ROLLER INCLUDING	16	35010	1	SOLID PART OF STATOR
2	39051	2	SEALED BALL BEARING 6305/2RS	17	35011	1	ROLLER BODY	17	35011	1	OPEN PART OF STATOR
3	35105	1	RING	18	35035	2	ROLLER AXLE	18	35035	2	SLIDE BAR
4	32106	2	ROTOR CHECK	19	35038	10	SEALED BALL BEARING 6201/2RS	19	35038	10	SLIDE BAR WITH STUDBOLT
5		6	ROTOR CHECK STUDBOLT	20		2	RUBBER SEAL, VR 225 TYPE	20		2	FAN SHAPED WASHER #6
6		8	FAN SHAPED WASHER #6	21		2	PROTECTING WASHER	21		2	FAN SHAPED WASHER #6
7		8	ROTOR #6	22	39287	2	PROTECTING WASHER	22	35012	1	CUP
				23		2	PROTECTING WASHER	23	90040	1	CUP FIRM SCREW (#2-1/2 x 1/4)
				24		2	FAN SHAPED WASHER #6	24	39043	3	STATOR CENTERING TEAT
				25		2	NUT #6	25		5	STATOR FIRM SCREW #6 AND NUT
						2	BEARING CARRIER				
						1	BEARING SPACER				

A-1910-Pump

WHEN ORDERING SPARE PARTS, KINDLY REFER TO TECHNICAL SHEET No 1518 AND OUSIE.
 1- TYPE OF PUMP INVOLVED AS WELL AS SERIAL NUMBER STAMPED ON MANIF PLATE.
 2- REFERENCE NUMBER OF PART REQUESTED (MANUFACTURING MARKS OF TUBES ARE CAST ON THEIR WALL)



GENERAL MAINTENANCE INSTRUCTIONS

REMOVING AND REPLACING THE TUBE

The diagrams above show how to perform these two operations (figures 1 to 5 inclusive).

DISASSEMBLING THE PUMP CASING

Although replacing the pump hose does not require the dismantling of the casing, it may happen that internal parts of same have to be checked, cleaned or replaced.

In such case, we recommend following procedure :

- Remove counter-flanges.
- Unscrew nuts and screws holding stator set together.
- Remove the open part of casing by pulling it towards you.
- If there is any difficulty in separating the two stators, insert a piece of wood or a blunt tool handle into the suction and discharge openings of the pump. Never use a hammer or a sharp tool which might cause damage.
- Flush down casing to eliminate abrasive or corrosive substances.
- Check that the rollers turn easily on their spindles. If they have seized up, replace the rollers.
- Replace the brake tube if it is worn.

N.B. : When ordering spare parts, refer to the technical sheet for the pump model in question.

Grease Hose Periodically See Instructions Attached Page 13



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.

