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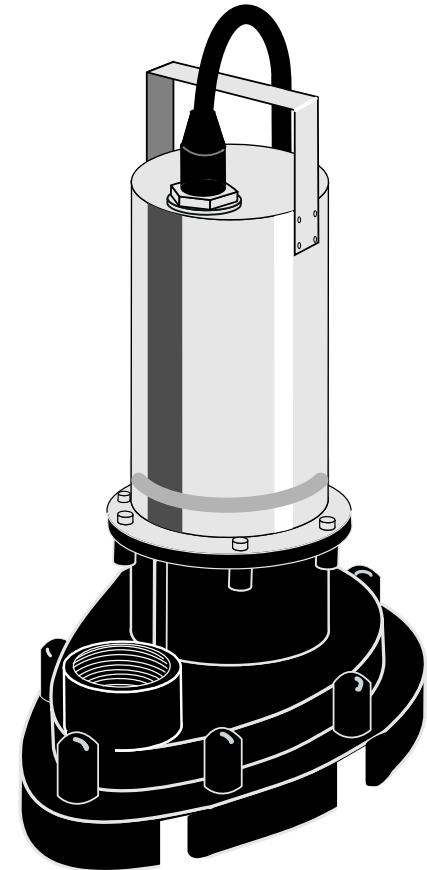
Canada: Mississauga, Ontario • Mexico: Apodaca, N.L.

L-SE-TL-002 Rev. 2/96  
Made in USA

# Model EF33E

## Economy Effluent Pump

### Installation and Operating Instructions



Please leave these instructions with the pump for future reference.





# Installation Procedures

## Electrical Procedures

The installation of automatic pumps with tethered float switches or non-automatic pumps using auxiliary tethered float switches is the responsibility of the installing party and care should be taken that the tethered float switch will not hang up on the pump apparatus.

1. Level control switching can be accomplished using several commercially available systems. If using multiple float switches, the separation must be such that there is no possibility of entanglement. Suggested minimum is 4" between centers.
2. Adjust the switch(es) vertical position so that turn-off occurs slightly above the center of the motorhousing. Higher is better.
3. **Wiring: Single-phase units:** Plug the 3-pronged plug into a grounded receptacle. If an extension cord is used it should not exceed 100 feet.
4. **Rotation Check:** Not required on single-phase units.

**CAUTION: DO NOT PHYSICALLY FEEL FOR THE IMPELLER ROTATION. SERIOUS INJURY COULD RESULT.**

## Piping

### Requirements and Considerations

Receiver basin or wet-well size should allow sufficient room for unimpeded movement of the **float switches (A, above right)**, if employed. It should be large enough to stay within the recommended maximum of twenty starts per hour. The basin or wet-well must have a solid and homogeneous bottom and free of any debris.

The **discharge pipe (B, above right)** should be sized at least as large as the pump's discharge port. If a larger size is being considered, ensure that the liquid velocity in the pipe does not go below 2 feet/second (30 GPM in 2 1/2" pipe or 50 GPM in 3" pipe) to prevent solids settling.

Install a **check valve (C, above right)** specifically designed for solids handling on the discharge pipe so as to prevent back flow into the receiver. Follow the valve manufacturer's recommendation regarding valve orientation.

# Parts Diagram

## Parts Listing - Economy Effluent Pump

Pos No#	Part Number	Description	Qty.
1	See Kits	Screw, Philips	8
2	See Kits	Base Plate	1
3	See Kits	O-Ring	1
4	See Kits	Impeller	1
5	Not Serviceable	Spacer	1
6	See Kits	Mechanical Seal	1
7	See Kits	Volute	1
8	See Kits	O-Ring (Motor Housing)	1
9	Not Serviceable	Motor 115V (Welded)	1
10	Not Serviceable	Capacitor Clip	1
11	Not Serviceable	Capacitor	1
12	Not Serviceable	Wire Harness Black	1
13	Not Serviceable	Wire Harness Green	1
14	Not Serviceable	Motor Housing	1
15	See Kits	Screw Hi-Lo Torx	6
16	See Kits	O-Ring	1
17	See Kits	3-Pin Connector	1
18	See Kits	Cable Nut	1
19	See Kits	Power Cord	1
20	See Kits	Float Switch	(Optional)

## Recommended Torques

Part Name	Pos. Number	Torque
Philips Screw	1	45 in.-lbs. ± 20 in.-lbs.
Impeller	4	50 in.-lbs. ± 10 in.-lbs.
Torx Screws	15	55 in.-lbs. ± 20 in.-lbs.
Cable Relief Nut	20	90 in.-lbs. Hold for 30 sec.

SEE KITS ON NEXT PAGE

# Maintenance and Service

## WARNING

**FOR YOUR PROTECTION, ALWAYS DISCONNECT THE PUMP FROM ITS POWER SOURCE BEFORE HANDLING.** Single phase 115 Volt pumps are supplied with a 3-prong grounded plug to help protect you against the possibility of electrical shock. **DO NOT UNDER ANY CIRCUMSTANCES REMOVE THE GROUND PIN.** The 3-prong plug **MUST** be inserted into a mating 3-prong grounded receptacle. If the installation does not have such a receptacle, it must be changed to the proper type, wired and grounded in accordance with the National Electrical Code and all applicable local codes and ordinances.

## Impeller Replacement (Refer to page 7, Parts Diagram)

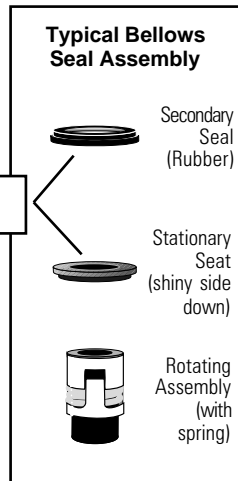
1. Remove the philips screws (pos.1) on the bottom of the pump and the base plate (pos.2) and O-Ring (pos.3).
2. Hold the impeller from rotating by inserting a long screwdriver and catching the impeller vane.
3. Insert a 1/4" blade screwdriver into the shaft and rotate the shaft clockwise. If the impeller won't budge, use a rubber hammer to strike the impeller vane in a counter clockwise direction and break it free, then continue with the screwdriver until it is removed. Do not lose spacer(pos.5) between impeller and mechanical seal.
4. (Reverse these procedures for reassembly.)

## Mechanical Seal Replacement:

After impeller is removed:

1. Slide the mechanical seal rotating assembly off the shaft by turning counterclockwise and pulling at the same time.
2. The stationary seat and rubber seal assembly (seated firmly in the housing) is removed by gently prying. All mechanical seal components must be in good condition or it may leak. Therefore, it is highly recommended that you replace the complete Bellows-type mechanical seal assembly whenever the seal has been removed.
3. Push the mechanical seal stationary seat (and seal) into the bore using the thumb or forefinger. Make sure it is seated properly, and square. Wipe with a lint-free cloth.
4. Mount the mechanical seal rotating assembly (with spring) by pushing onto the shaft and rotating counterclockwise at the same time.

These two fit snug together



It is permissible to use a light lubricant, such as glycerin, in the bore for the mechanical seal seat and on the shaft to facilitate assembly. Do not contaminate the mechanical seal sealing faces with lubricant. Proceed with reassembly.

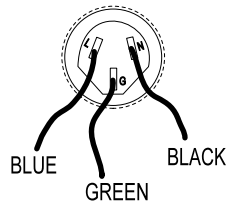
# Maintenance and Service

## Power Cable Replacement:

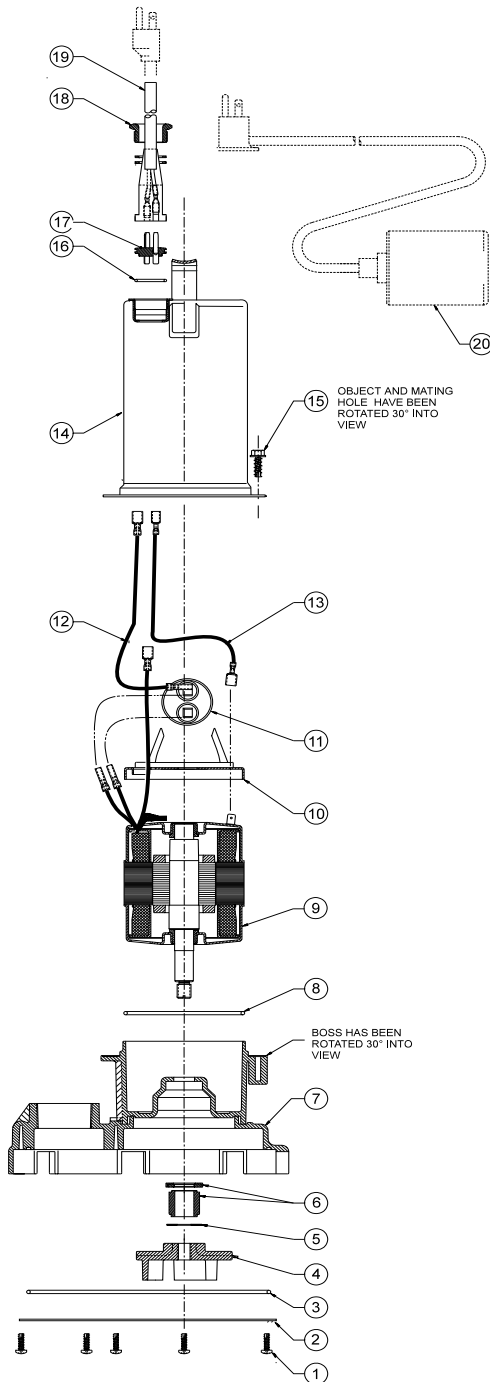
The pump should be disconnected from any power before any work is started involving the power cable.

1. Unscrew cable nut (pos.18) securing the power cord (pos.19) to the pump and slide it along the power cord.
2. Unplug the cord from the motor by gently rocking the plug from side to side while lifting. Do not allow the 3-pin connector (pos.17) to be removed.
3. In the event pin connector is removed and wires come loose refer to wiring diagram (pg.7).

# Parts Diagram



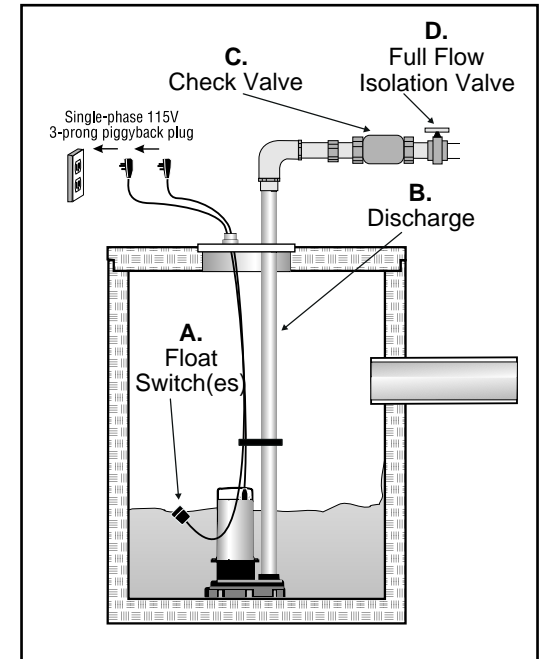
Wiring Diagram  
3-Pin Connector



# Installation Procedures

## Typical Effluent Installation

Install a **full flow isolation valve (D, above right)** on the discharge line, after the check valve, to aid in maintenance work. On duplex installations, manifold to a common discharge line after the isolation valves.



## Procedures

1. Position the pump to one side of the basin or wet-well so as to allow sufficient room for the float switch(es) to swing unobstructed. Also, ensure that the influence does not cascade directly on the switch(es).
2. If using receiver basin, ensure that the cover is gasketed properly and the discharge and vent lines are sealed against the cover. Failure to do so could mean outside water entering or objectionable odor escaping.

**NOTE: INSTALLATION OF COVER SHOULD BE DONE ONLY AFTER SUCCESSFULLY TESTING THE COMPLETE SYSTEM.**

## Final Installation Adjustments

1. Fill basin or wet-well.
2. Energize the pump(s) manually to verify proper operation.
3. Put the system in automatic mode and refill.
4. Observe turn-on and turn-off points. Adjust position of switches as required.
5. Install basin cover after system is adjusted properly.

# Spare Parts Kits

## Economy Pump Service Kits

<u>Pos No#</u>	<u>Part Description</u>	<u># in Kit</u>	<u>KIT NUMBER</u>
6	Mechanical Seal	1	96001577
4	Impeller	1	96001578
15	Screw Hi-Lo	6	
1	Screw	8	96001575
8	O-Ring (Motor Housing)	1	
3	O-Ring (Econ. Volutes)	1	
7	Volute	1	96001595
2	Baseplate	1	96001596
16	O-Ring	1	96001619
17	3-Pin Connector	1	
19	Power Cord 115V 10'	1	96001589
19	Power Cord 115V 20'	1	96001590
19	Power Cord 230V 10'	1	96001591
19	Power Cord 230V 20'	1	96001592
*	Motor Oil	1	96001620
20	Float Switch 1/3 & 1/2 HP 115V 10'	1	96001621
20	Float Switch 1/3 & 1/2 HP 115V 20'	1	96001624
20	Float Switch 1/3 & 1/2 HP 230V 10'	1	96001636
20	Float Switch 1/3 & 1/2 HP 230V 20'	1	96001637

# Pre-Installation Checklist

## 4. Is the Application Correct for This Pump ?

Compare the pump's nameplate data or its performance curve with the application in which you plan to install it. Will it perform the way you want it to perform?

Also, make sure the application falls within the following limits:

- Maximum Operating Limit(s):**  
Motor Duty: Continuous not to exceed 8 hours per 24 hour period.  
Liquid Temperature: 104°F (40°C) continuous operation, 122°F (50°C) intermittent operation; fully submerged.  
Starts Per Hour: 20, evenly distributed  
Solids Handling: 3/4"
- Ensure that receiver basin is well ventilated.
- Flammable gases can be present in a wet well or receiver basin due to bacterial action. Exercise extreme caution when working in and around such areas. Ensure that no sparks are generated that could ignite said gases.
- Effluent pumps are not designed for use in swimming pools or hazardous liquids.

# Installation Procedures

## Required Accessories

Accessories required to complete a system other than normal plumbing and electrical items are:

- Receiver basin or wet-well.
- Level control system: Float switch(es) or Diaphragm switch (or other types).
- Magnetic Contactor (optional for single-phase pumps).
- Duplex controller if two pumps are installed.

## Electrical Preparation

### Requirements and Considerations

The electrical connection should be carried out in accordance with local regulations. The pump **must** be grounded. Other electrical requirements include:

- The motor is already correctly wired from factory.
- Wire size must limit maximum voltage drop to 10% of nameplate voltage at motor terminals, or motor life and pump performance will be lowered.
- Always use correct horsepower-rate switches, contactors and starters.
- Do not carry or hang pump by the electrical cord. Use the handle for this purpose.
- Motor Protection:**  
**Single-phase:** Motor has a built in thermal protector which opens the circuit when overload condition is encountered. Protector automatically resets when motor cools.