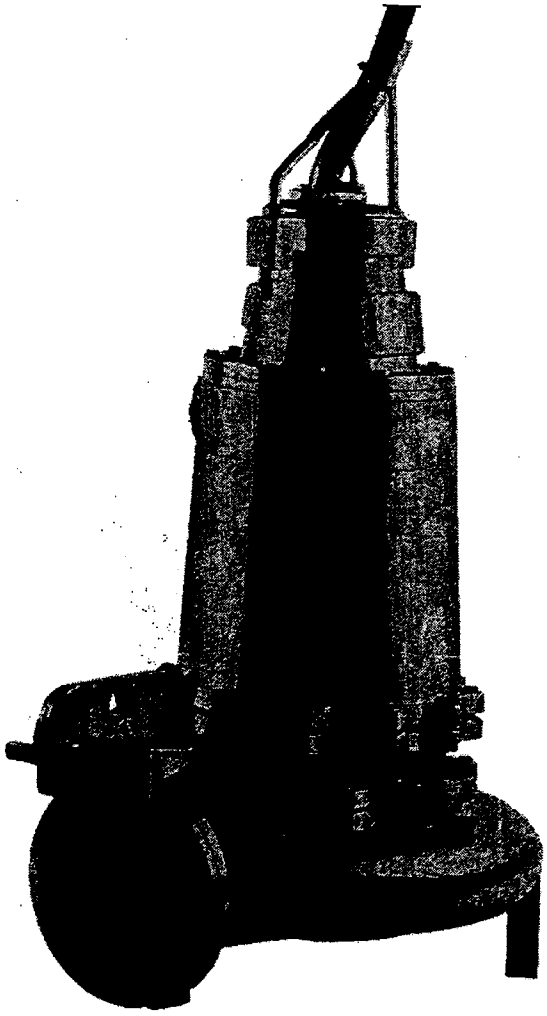
Myers®

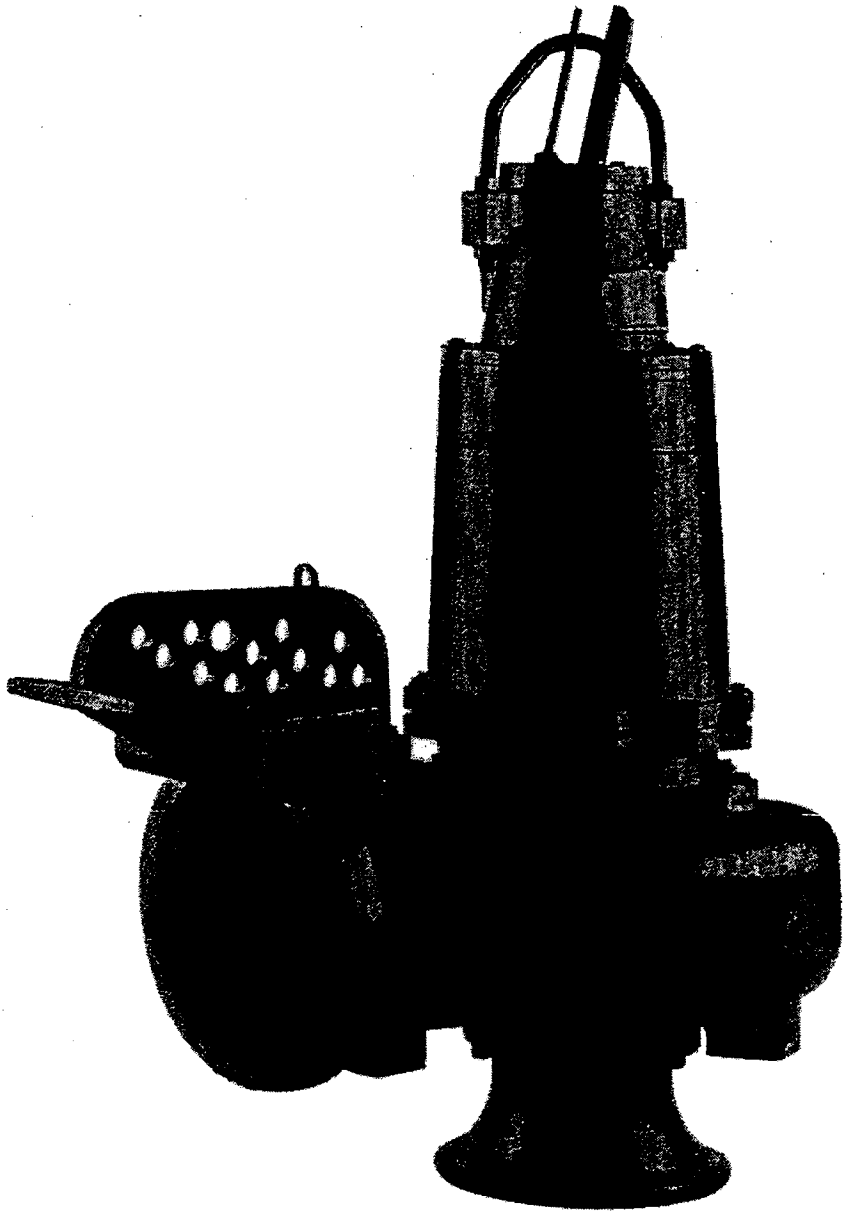
Pentair Pump Group

8VL, 8VLX* and 12VL, 12VLX* Submersible Non-Clog Pumps Installation and Service Manual

*** Used in Hazardous Locations Class 1, Division 1, Groups C and D**



8VL & 8VLX



12VL & 12VLX

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CAUTION!
Read these safety warnings first before installing, servicing, or operating any pump.

GENERAL
1. Most accidents can be avoided by using ***COMMON SENSE.***
2. Read the operation and maintenance instruction manual supplied with the pump.
3. Do not wear loose clothing that can become entangled in the impeller or other moving parts.
4. This pump is designed to handle materials which could cause illness or disease through direct exposure.

   Wear adequate protective clothing when working on the pump or piping.

ELECTRICAL
WARNING: Only qualified persons shall conduct services and installations of this pump. The pump must be wired by a qualified electrician, using an approved starter box and switching device.

5. To reduce the risk of electrical shock, pump must be properly grounded in accordance with the National Electric Code and all applicable state and local codes and ordinances.
6. To reduce risk of electrical shock, disconnect the pump from the power source before handling or servicing.
7. Any wiring to be done on pumps should be done by a qualified electrician.
8 Never operate a pump with a power cord that has frayed or brittle insulation.
9. Never let cords or plugs lay in water.
10. Never handle connected power cords with wet hands.

PUMPS
11. Pump builds up heat and pressure during operation, allow time for pump to cool before handling or servicing.
12. Only qualified personnel should install, operate or repair pump.
13. Keep clear of suction and discharge openings. **DO NOT** insert fingers in pump with power connected.
14. Do not pump hazardous material not recommended for pump (flammable, caustic, etc.).
15. Make sure lifting handles are securely fastened each time before lifting.
16. Do not lift pump by the power cord.
17. Do not exceed manufacturers recommendation for maximum performance, as this could cause the motor to overheat.
18. Secure the pump in its operating position so it can not tip over, fall or slide.
19. Keep hands and feet away from impeller when power is connected.
20. Submersible non-clog pumps are not approved for use in swimming pools, recreational water installations, decorative fountains or any installation where human contact with the pumped fluid is common.
21. Do not operate pump without safety devices in place.
22. For hazardous locations, use pumps that are listed and classified for such locations.

IMPORTANT! F. E. Myers is not responsible for losses, injury or death resulting from a failure to observe these safety precautions, misuse or abuse of pumps or equipment.

GENERAL INFORMATION:
Pump Models: These instructions cover the installation and service of the Myers 8VL, 12VL, 8VLX and 12VLX series non-clog submersible pumps. The 8VLX, 12VLX models are Factory Mutual approved and listed explosion proof for hazardous sewage locations Class 1, Division 1, Groups C and D.

Motor HP & Voltages: These non-clog pumps are offered in three phase wiring configuration only. Voltages and speeds will vary according to the application and can be seen in the tables in this manual. Up through 40 HP stators are available with dual voltage configurations that will allow either 230V or 460V internal connections.

Electrical Controls: All of these pump models must be used with a control panel. Myers built control panels are designed to supply the correct electrical controls, motor starting equipment and include the circuitry for moisture and heat sensors. It is recommended that a Myers built control panel be used so that all warranties apply.

General Construction: The 8VLX and 12VLX motor construction is designed to meet Factory Mutual requirements for Class 1, Division 1, Group C and D sewage applications. The 8VLX and 12VLX models are certified and nameplated with this approval. A cross sectional view of the internal workings of the pumps can be seen on page 6. The motor chamber and seal chamber are filled with a high dielectric type oil for improved lubrication and heat transfer of the bearings and motor. Since the bearings have been designed for 50,000 hours of life, the oil should never require replacement under normal operating conditions. An air space above the oil level in both the seal and motor chambers is provided to allow for the expansion of the oil when at operating temperature. The power and

control lines are sealed and strain relieved on the outside entrance with a standard cord grip, and internally through the use of a dielectric potting resin surrounding the electrical wires. Internal connection wiring diagrams are shown in Figure 2. All of the pump fasteners and shafts are made from corrosion resistant stainless steel, while the pump castings are made of ASTM A-48 Class 30 cast iron. The wear ring is bronze and all impellers are two vane enclosed non-clog design made from ductile iron.

General Installation: Various configurations and methods of plumbing this series of non-clog pumps may be used; however, for ease of installation and service a Myers 8" or 12" rail lift-out system is recommended.

Note: If the 8VLX or 12VLX explosion proof pumps are used in conjunction with a rail lift-out system, it must be a Factory Mutual approved non-sparking, explosion-proof system. The Myers approved lift-out models are:

8" Lift-Out	12" Lift-Out
SRAX88	SRAX1212

If these Guidelines are not followed, the Factory Mutual Explosion Proof approval is void.

Explosion Proof Service: These pumps are to be used for handling sewage, wastewater and storm water only. ***Do not*** use in other hazardous locations. These motors must be repaired and serviced only at Myers Authorized Service Centers or at the Myers Factory. Any unauthorized field repair voids warranty and the explosion proof rating.

CAUTION: **After the pump is installed and sewage has entered the basin there is *"Danger"*. Sewage water gives off methane and hydrogen sulfide gases, which are poisonous. Never enter a wet well unless the cover is open for a sufficient period of time to allow fresh air into the basin. It is recommended that a man in the basin have a harness on with a rope to the surface, so that he can be pulled out in case of asphyxiation. It is for this reason that Myers recommends using the rail lift-out system so that no service is required inside the basin.**

Motor: Each motor is provided with heat sensor thermostats attached directly to the motor windings. The thermostats open if the motor windings see excessive heat and, in turn, open the motor contactor in the control panel, breaking the power to the pump. When the motor is stopped due to an overheated condition, it will not start until the motor has cooled and the heat sensor reset button is manually pushed on the front of the Myers control panel. This circuitry is provided in the Myers control panel designs.

The thermostats are made by Texas Instrument Co., Model #9700K-46-333, and are set to open at a temperature of 302°F (150°C). The maximum contact rating is 18 amps at 115 VAC and 12 amps at 230 VAC. Motor winding insulation is good for Class F (311°F, 155°C, or higher).

Note: Failure to use proper circuitry and to connect the motor overheat protection in the control panel would negate all warranties and Factory Mutual Approval.

Motor Seal Failure Warning: The seal chamber is oil filled and provided with moisture sensing probes to detect water leakage through the lower shaft seal. The probes can also detect moisture present in the upper motor housing.

The presence of water energizes a red seal leak warning light at the control panel. This is a *warning light only*, and does not stop the motor. It indicates a leak has occurred and the pump must be repaired. Normally, this indicates the outboard seal has leaked. Allowing the unit to operate too long after the warning could cause upper seal leakage along with motor failure.

The resistance across the moisture sensing (seal failure) probes, should be checked after a seal leak warning light has lit. This can be done by disconnecting the red and orange control wires from the control panel, and measuring the resistance with an ohm meter between the wires. For a standard, non-explosion proof pump the reading should be 100,000 ohms or greater, and for an explosion proof pump the reading should be above 30,000 ohms. If the measured values are below those indicated above, then the pump may have a lower seal failure and require service.

On the Myers explosion proof control panels the seal leak test switch tests the seal leak circuit continuity. When pushed the seal leak test bulb should light. If the test bulb does not light it means either the wiring circuitry to the seal leak probes has been broken or the bulb has burned out.

Note: Myers built control panels supply the correct circuitry for moisture and heat sensor connections. Failure to install the correct circuitry with proper connection would negate warranty and Factory Mutual Approval. See Figure 3.

Motor Power Cord, Control Cord and Cord Cap Assembly: Each motor power cord has 4 conductors - white, black, red and green. For a three phase motor the red, black and white conductors connect to the three line leads, and the green is connected to a good ground. Interchanging any two line leads will reverse the rotation of the motor.

Note: Rotation should be clockwise when observed from the top of the pump. This can be checked by noting which direction the pump torque is upon initial starting. A properly rotating pump will torque counter-clockwise upon start.

The control cable has 5 conductors - black, white, red, orange and green. White and black connect to the heat sensor terminals in the control panels; red and orange connect to the seal failure terminals in the control panel; and the green connects to the ground in the control panel.

The cord cap is epoxy potted. The cord cap provides for a sealed wire connection with terminals so that connections can be made without breaking the motor seal. This allows the cord cap, with cords, to be removed from the motor. With this arrangement, the cords can be permanently installed in a sealed fitting in the sump. This should be an approved explosion proof junction box for hazardous locations. ***The control and power cables cannot be spliced!*** When the pump is removed for service, the cord cap can stay and be reinstalled when pump is returned.

Note: Each cable has a green ground wire and must be properly grounded per the National Electric Code and local codes.

Electrical Motor Controls: All electrical controls and motor starting equipment should be as specified in these instructions. Consult factory for any acceptable alternates. For hazardous locations the controls and control panel must be installed outside the hazardous area, or approved explosion proof controls that are intrinsically safe must be used.

Junction Box: If a junction box is used in a hazardous location, it must be an explosion proof approved type with explosion proof cord connectors. Wires from the junction box must pass through an explosion proof seal connector.

Level Sensing Controls: Intrinsically safe type float controls are recommended for all applications and required for explosion proof service. An intrinsically safe control panel relay will limit the current and voltage to the level controls. A Myers' control panel can be supplied with this type circuitry.

The float level controls maintain the basin sewage water level by controlling pump turn-on and turn-off levels.

1. The lower turn-off control should be set so that the pump stops at approximately the top of the pump. Consult the factory for any settings below this point.

2. The upper turn-on control should be set above the lower turn-off control. The exact height between the two controls is determined by the number of pump starts desired and the depth of the basin. A maximum of 10 starts per hour should not be exceeded.

3. The override control is set at a specified height above the upper turn-on control.

4. The alarm control is set about 6" to 12" above the override control.

5. No control should be set above the inlet invert.

Electrical Connections: All electrical wiring must be in accordance with local code and only qualified electricans should make the installations. Complete wiring diagrams are included for use in making the installation. All wires should be checked for shorts to ground with an ohmmeter or megger after the connections are made. This is important, as one grounded wire can cause failure of the pump, control panel or personal injury.

Pump: The fluid end of the pump is field serviceable and can be disassembled in case of wear, damage, plugging or outboard seal failure. The following will describe the disassembly and reassembly process.

Disassembly

1. With the pump located in a secure place, remove the bolts fastening the seal housing to the volute. The motor and impeller can now be removed as a unit.

2. Lay the unit down on its side. If the lower seal is to be removed, it is recommended that the oil in the seal chamber be drained. This can be done by removing the lower seal chamber plug and draining the oil into a holding container.

3. To remove the impeller, first remove the bolts from the nose cone. Loctite™ is used on these bolts and heating to 450-500°F may be required to help loosen. The nose cone will pull off. Using a proper

wrench, the impeller retaining bolt and washer must be removed. This may require a piece of wood placed between the vanes to keep the impeller from rotating while removing the bolt. Once the bolt has been removed, tap lightly with a hammer around the outside diameter of the impeller to loosen from tapered shaft and key.

Caution-The impeller is large and heavy and will need to be supported.

4. If the lower seal needs removed, first remove the compression spring that rides between the impeller and the seal assembly. Next take a pair of screwdrivers and remove the compression ring that surrounds the rubber bellows on the rotating portion of the seal assembly. Again using the screwdrivers, pry the remaining portion of the rotating seal assembly off of the shaft. The ceramic stationary can be removed by placing a screwdriver between the rubber and the ceramic face, and then prying, working around the entire diameter. Note, these parts should be discarded and a new seal assembly installed.

5. If the oil in the seal chamber was drained, examine the contents to determine if the upper seal has been damaged. Signs of grit or other abrasive material may indicate that the upper seal has also been damaged. Pressurizing the motor housing assembly between 7 and 10 PSI and observing any drop in pressure will indicate if the upper seal is functioning properly.

   Note: Upper seal repairs must be done at a Myers Authorized Service Center or at the Myers factory. Any unauthorized field repair voids warranty and the explosion proof approval on the Factory Mutual listed pump.

6. The wear ring can be removed from the volute for repair or replacement. First remove the retaining screws from the wear ring. With a soft mallet the wear ring can be tapped out of the volute case.

Reassembly

1. Remove the ceramic portion of the new seal from the package. Brush new dielectric oil around the rubber portion of the stationary assembly and into the pocket in the seal housing. Note, keep the oil off the seal face. Without scratching the seal face, press the ceramic stationary portion into the seal housing. A piece of PVC pipe that fits onto the face of the seal works well for installation. With clean cloth, lightly wipe the face of the seal surface to make sure it is dirt free. Remove the rotating portion of the seal from the package and lubricate the inside diameter of the rubber bellows and the outside diameter of the shaft. Place the seal over the shaft (make sure the key is removed). Evenly press on the body of the rotational assembly and slide it down the shaft until the seal faces meet. A PVC pipe with the inside diameter slightly larger than the shaft diameter can work well to press the rotational assembly into position. Once the seal assembly is in position, place the spring over the register on the rotational portion of the seal.

2. Position the key into the seat in the shaft. Align the impeller onto the shaft, making sure that the seal spring is registered properly onto the back side of the impeller. Insert the bolt and washer assembly into the shaft and tighten to 193 ft.-lbs. Replace the nose cone onto the impeller. The proper Loctite should be applied to the bolts. Install and tighten.

3. Fill the seal chamber with new dielectric oil. An air gap of 10-15% volume must be left for the expansion of the oil when it is at operating temperature.

4. The brass wear ring can be aligned with the retaining holes and tapped into place with a soft mallet. The proper Loctite should be applied to the bolts. Install and tighten.

5. The motor and impeller assembly can be installed into the volute. Make sure that the impeller aligns properly with the volute. Install the volute retaining bolts and tighten.

5. Air tends to trap in the pump case when water rises in the sump or when the pump is lowered into the water after service. To vent off this air, a small hole is drilled into the volute casting. ***Be sure this vent hole is clean after any service work on pump.*** Air venting is not a problem after initial start.

8VL/8VLX and 12VL/12VLX Pumps

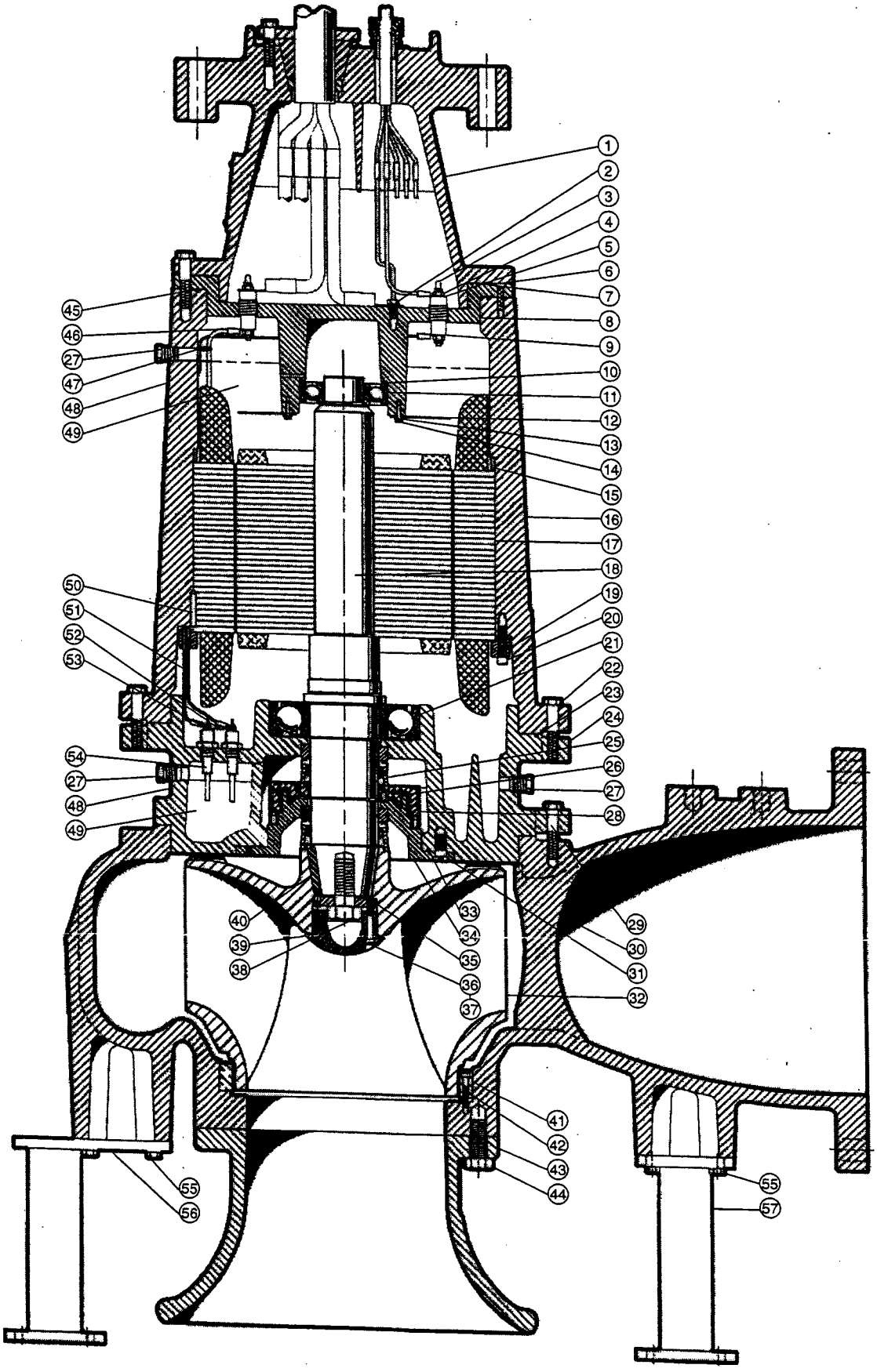

FIG. 1

REF. NO.	DESCRIPTION	NO. REQ'D.	PART NUMBERS	
			8VL/8VLX	12VL/12VLX
1	Cord Cap Complete	1	See Chart	See Chart
2	Cap Screw, Hex Hd., 1/4- x 5/8"	1	19099A029	19099A029
3	Protector, Thread	13	17272A021	17272A021
4	Lock Nut, 1/4-20	23	11904A005	11904A005
5	Terminal, Electrical	13	23555A000	23555A000
6	Machine Screw, Socket Flat Hd., 5/16-18 x 1"	4	07597A017	07597A017
7	O-Ring, 12-1/4 x 12 x 1/8	1	05876A178	05876A178
8	Plate, Terminal	1	25257D000	25257D000
8A	Wire, Jumper, Black 6 GA. x 6" Long	As Req'd	09859A793	09859A793
8A	Wire, Jumper, Black 4 GA. x 6" Long	As Req'd	09859A825	09859A825
8B	Wire, Jumper, Black 6 GA. x 10" Long	1	09859A785	09859A785
8B	Wire, Jumper, Black 4 GA. x 10" Long	1	09859A787	09859A787
9	Terminal, Ring Tongue, 1/4 Stud, 16-14 Wire	2	12074A038	12074A038
10	Washer, Spring Wave	1	19331A009	19331A009
11	Bearing, Ball, Upper	1	08565A026	08565A026
12	Wire Guard	1	25453B000	25453B000
13	Lockwasher, Shakeproof, Internal, No. 10	4	06107A015	06107A015
14	Machine Screw, Hex Wash. Hd. #10-24 x 5/8"	4	18475A006	18475A006
15	Ring, Stator Spacer	1	See Chart	See Chart
16	Housing, Motor	1	25258F000	25258F000
17	Stator	1	See Chart	See Chart
18	Rotor with Shaft	1	See Chart	See Chart
	Shaft Only (For All H.P. Units)	1	25446D000	25446D000
19	Retainer, Motor	4	25259D000	25259D000
20	Cap Screw, Socket Hd., 5/16-18 x 1-1/2"	8	06106A016	06106A016
21	Bearing, Angular Ball	1	25833A004	25833A004
22	Cap Screw, Hex Hd., 1/2-13 x 2-1/2"	12	19103A048	19103A048
23	O-Ring, 16-7/8 x 16-1/2 x 3/16	1	05876A180	05876A180
24	Housing, Seal	1	25264F000	25264F000
25	Seal, 3" Shaft	2	25449A000	25449A000
26	Ring, Retaining	1	12558A031	12558A031
27	Plug, 3/8" NPT Pipe	3	05022A062	05022A062
28	Seal, Labyrinth	1	25262C000	25262C000
29	Cap Screw, Hex Hd., 1/2-13 x 2-1/4"	24	19103A049	19103A049
30	Case, Volute	1	25254F000	25457F000
31	Machine Screw, Flat Hd., 7/16-20 x 1"	6	07597A034	07597A034
32	Impeller - Specify O.D.	1	25252D500	25456E500
33	O-Ring, 7-1/2 x 7-1/4 x 1/8"	1	05876A127	05876A127
34	Plate, Seal	1	25261D000	25261D000
35	Washer, Impeller Retainer	1	25463A000	25463A000
36	Cap Screw, Socket Hd., 1/4-28	3	06106A043	06106A044
37	Sealant, Loctite Grade 222	1	14550A005	14550A005
38	Cap Screw, Hex Hd., 7/8-14 x 2"	1	19107A004	19107A004
39	Cone, Impeller Nose	1	26015B030	26015B030
40	Key, Square	1	05818A071	05818A010
41	Ring, Wear	1	25260D000	25458D000
42	Screw, Socket Hd.	6 (8VL) 4 (12VL)	06106A039	06106A045
43	Inlet, Bell	1	–	25459E000
44	Cap Screw, Hex Hd., 3/4-10 x 1-3/4"	8	–	19106A017
45	O-Ring, 13-1/4 x 13 x 1/8"	1	05876A179	05876A179
46	Terminal, Ring Tongue	9	12074A037	12074A037
47	Tie, Plastic Cable	3 (575V)		
48	Emblem, Oil Fill	10	17190A004	17190A004
49	Oil, Transformer (5 Gal. Can)	2	23395A000	23395A000
50	Key, Square, 1/4 x 1/4 x 1-1/4"	5.75 Gal.	11009A006K	11009A006K
51	Wire with Terminal, Seal Sensor	1	05818A050	05818A050
52	Resistor (For 8VLX & 12 VLX Only)	2	09859A821	09859A821
53	Lockwasher, Shakeproof, Internal, No. 6	1	22912A000	22912A000
54	Electrode, Water Sensor	2	06107A010	06107A010
55	Cap Screw, Hex Hd., 1/2-13 x 1-1/4"	2	25455A000	25455A000
56	Leg, Support	12	–	19103A052
57	Leg, Support, Discharge	2	–	25469D000
–	Stud, 7/8-9 x 4-1/4" (Not Shown, Lower Volute)	1	–	25469D001
–	Washer, 1-3/4 x 29/32 x 1/8 (Not Shown)	3	05659A121	–
–	Hex Nut, 7/8-9 (Not Shown)	3	05030A245	–
		3	19109A090	–

PUMP CATALOG NUMBERS		1 CORD CAP ASS'Y.		18 ROTOR	17 STATOR	15 RING,
		25' LGTHS.	SPECIFY LGTH.	W/SHAFT	ONLY	STATOR SPACER
8VL150M8-03	8VLX150M8-03	25256D001	25256D901	25447D000	25444D000	25465D003
8VL150M8-23	8VLX150M8-23	25256D001	25256D901	25447D000	25444D000	25465D003
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8VL200M8-03	8VLX200M8-03	25256D001	25256D901	25447D002	25444D002	25465D001
8VL200M8-23	8VLX200M8-23	25256D001	25256D901	25447D000	25444D000	25465D003
8VL200M8-43	8VLX200M8-43	25256D001	25256D901	25447D000	25444D000	25465D003
8VL200M8-53	8VLX200M8-53	25256D000	25256D900	25447D000	25444D001	25465D003
8VL250M8-03	8VLX250M8-03	25256D002	25256D902	25447D002	25444D002	25465D001
8VL250M8-23	8VLX250M8-23	25256D002	25256D902	25447D002	25444D002	25465D001
8VL250M8-43	8VLX250M8-43	25256D000	25256D900	25447D002	25444D002	25465D001
8VL250M8-53	8VLX250M8-53	25256D000	25256D900	25447D002	25444D003	25465D001
8VL300M6-23	8VLX300M6-23	25256D002	25256D902	25447D006	25444D004	25465D002
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8VL500M6-43	8VLX500M6-43	25256D001	25256D901	25447D007	25444D013	25465D000
8VL500M6-53	8VLX500M6-53	25256D001	25256D901	25447D007	25444D014	25465D000
8VL600M6-43	8VLX600M6-43	25256D002	25256D902	25447D008	25444D008	–
8VL600M6-53	8VLX600M6-53	25256D001	25256D901	25447D008	25444D009	–
8VL750M4-43	8VLX750M4-43	25256D003	25256D903	25447D010	25444D015	–
8VL750M4-53	8VLX750M4-53	25256D002	25256D902	25447D010	25444D016	–
8VL1000M4-43	8VLX1000M4-43	25256D004	25256D904	25447D010	25444D010	–
8VL1000M4-53	8VLX1000M4-53	25256D004	25256D904	25447D010	25444D011	–
8VL1250M4-43	8VLX1250M4-43	25256D004	25256D904	25447D010	25444D010	–
8VL1250M4-53	8VLX1250M4-53	25256D004	25256D904	25447D010	25444D011	–
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12VL300M8-23	12VLX300M8-23	25256D002	25256D902	25447D002	25444D002	25465D001
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12VL400M6-43	12VLX400M6-43	25256D001	25256D901	25447D006	25444D006	25465D002
12VL400M6-53	12VLX400M6-53	25256D001	25256D901	25447D006	25444D007	25465D002
12VL500M6-23	12VLX500M6-23	25256D004	25256D904	25447D007	25444D012	25465D000
12VL500M6-43	12VLX500M6-43	25256D001	25256D901	25447D007	25444D013	25465D000
12VL500M6-53	12VLX500M6-53	25256D001	25256D901	25447D007	25444D014	25465D000
12VL600M6-43	12VLX600M6-43	25256D002	25256D902	25447D008	25444D008	–
12VL600M6-53	12VLX600M6-53	25256D001	25256D901	25447D008	25444D009	–
12VL750M6-43	12VLX750M6-43	25256D003	25256D903	25447D008	25444D017	–
12VL750M6-53	12VLX750M6-53	25256D002	25256D902	25447D008	25444D018	–

STANDARD UNITS		EXPLOSION PROOF		MOTOR DESCRIPTION
ENGR. NO.	CATALOG NO.	ENGR. NO.	CATALOG NO.	
25250F000	8VL150M8-03	25250F600	8VLX150M8-03	15 H.P.-200 VOLT-3 PH-870 RPM
25250F001	8VL150M8-23	25250F601	8VLX150M8-23	15 H.P.-230 VOLT-3 PH-870 RPM
25250F002	8VL150M8-43	25250F602	8VLX150M8-43	15 H.P.-460 VOLT-3 PH-870 RPM
25250F003	8VL150M8-53	25250F603	8VLX150M8-53	15 H.P.-575 VOLT-3 PH-870 RPM
25250F010	8VL200M8-03	25250F610	8VLX200M8-03	20 H.P.-200 VOLT-3 PH-870 RPM
25250F011	8VL200M8-23	25250F611	8VLX200M8-23	20 H.P.-230 VOLT-3 PH-870 RPM
25250F012	8VL200M8-43	25250F612	8VLX200M8-43	20 H.P.-460 VOLT-3 PH-870 RPM
25250F013	8VL200M8-53	25250F613	8VLX200M8-53	20 H.P.-575 VOLT-3 PH-870 RPM
25250F020	8VL250M8-03	25250F620	8VLX250M8-03	25 H.P.-200 VOLT-3 PH-870 RPM
25250F021	8VL250M8-23	25250F621	8VLX250M8-23	25 H.P.-230 VOLT-3 PH-870 RPM
25250F022	8VL250M8-43	25250F622	8VLX250M8-43	25 H.P.-460 VOLT-3 PH-870 RPM
25250F023	8VL250M8-53	25250F623	8VLX250M8-53	25 H.P.-575 VOLT-3 PH-870 RPM
25250F030	8VL300M6-23	25250F630	8VLX300M6-23	30 H.P.-230 VOLT-3 PH-1150 RPM
25250F031	8VL300M6-43	25250F631	8VLX300M6-43	30 H.P.-460 VOLT-3 PH-1150 RPM
25250F032	8VL300M6-53	25250F632	8VLX300M6-53	30 H.P.-575 VOLT-3 PH-1150 RPM
25250F040	8VL400M6-23	25250F640	8VLX400M6-23	40 H.P.-230 VOLT-3 PH-1150 RPM
25250F041	8VL400M6-43	25250F641	8VLX400M6-43	40 H.P.-460 VOLT-3 PH-1150 RPM
25250F042	8VL400M6-53	25250F642	8VLX400M6-53	40 H.P.-575 VOLT-3 PH-1150 RPM
25250F050	8VL500M6-23	25250F650	8VLX500M6-23	50 H.P.-230 VOLT-3 PH-1150 RPM
25250F051	8VL500M6-43	25250F651	8VLX500M6-43	50 H.P.-460 VOLT-3 PH-1150 RPM
25250F052	8VL500M6-53	25250F652	8VLX500M6-53	50 H.P.-575 VOLT-3 PH-1150 RPM
25250F060	8VL600M6-43	25250F660	8VLX600M6-43	60 H.P.-460 VOLT-3 PH-1150 RPM
25250F061	8VL600M6-53	25250F661	8VLX600M6-53	60 H.P.-575 VOLT-3 PH-1150 RPM
25250F070	8VL750M4-43	25250F670	8VLX750M4-43	75 H.P.-460 VOLT-3 PH-1750 RPM
25250F071	8VL750M4-53	25250F671	8VLX750M4-53	75 H.P.-575 VOLT-3 PH-1750 RPM
25250F080	8VL1000M4-43	25250F680	8VLX1000M4-43	100 H.P.-460 VOLT-3 PH-1750 RPM
25250F081	8VL1000M4-53	25250F681	8VLX1000M4-53	100 H.P.-575 VOLT-3 PH-1750 RPM
25250F090	8VL1250M4-43	25250F690	8VLX1250M4-43	125 H.P.-460 VOLT-3 PH-1750 RPM
25250F091	8VL1250M4-53	25250F691	8VLX1250M4-53	125 H.P.-575 VOLT-3 PH-1750 RPM
25450F000	12VL150M8-03	25450F600	12VLX150M8-03	15 H.P.-200 VOLT-3 PH-870 RPM
25450F001	12VL150M8-23	25450F601	12VLX150M8-23	15 H.P.-230 VOLT-3 PH-870 RPM
25450F002	12VL150M8-43	25450F602	12VLX150M8-43	15 H.P.-460 VOLT-3 PH-870 RPM
25450F003	12VL150M8-53	25450F603	12VLX150M8-53	15 H.P.-575 VOLT-3 PH-870 RPM
25450F010	12VL200M8-03	25450F610	12VLX200M8-03	20 H.P.-200 VOLT-3 PH-870 RPM
25450F011	12VL200M8-23	25450F611	12VLX200M8-23	20 H.P.-230 VOLT-3 PH-870 RPM
25450F012	12VL200M8-43	25450F612	12VLX200M8-43	20 H.P.-460 VOLT-3 PH-870 RPM
25450F013	12VL200M8-53	25450F613	12VLX200M8-53	20 H.P.-575 VOLT-3 PH-870 RPM
25450F020	12VL250M8-03	25450F620	12VLX250M8-03	25 H.P.-200 VOLT-3 PH-870 RPM
25450F021	12VL250M8-23	25450F621	12VLX250M8-23	25 H.P.-230 VOLT-3 PH-870 RPM
25450F022	12VL250M8-43	25450F622	12VLX250M8-43	25 H.P.-460 VOLT-3 PH-870 RPM
25450F023	12VL250M8-53	25450F623	12VLX250M8-53	25 H.P.-575 VOLT-3 PH-870 RPM
25450F030	12VL300M8-23	25450F630	12VLX300M8-23	30 H.P.-230 VOLT-3 PH-870 RPM
25450F031	12VL300M8-43	25450F631	12VLX300M8-43	30 H.P.-460 VOLT-3 PH-870 RPM
25450F032	12VL300M8-53	25450F632	12VLX300M8-53	30 H.P.-575 VOLT-3 PH-870 RPM
25450F040	12VL400M6-23	25450F640	12VLX400M6-23	40 H.P.-230 VOLT-3 PH-1150 RPM
25450F041	12VL400M6-43	25450F641	12VLX400M6-43	40 H.P.-460 VOLT-3 PH-1150 RPM
25450F042	12VL400M6-53	25450F642	12VLX400M6-53	40 H.P.-575 VOLT-3 PH-1150 RPM
25450F050	12VL500M6-23	25450F650	12VLX500M6-23	50 H.P.-230 VOLT-3 PH-1150 RPM
25450F051	12VL500M6-43	25450F651	12VLX500M6-43	50 H.P.-460 VOLT-3 PH-1150 RPM
25450F052	12VL500M6-53	25450F652	12VLX500M6-53	50 H.P.-575 VOLT-3 PH-1150 RPM
25450F060	12VL600M6-43	25450F660	12VLX600M6-43	60 H.P.-460 VOLT-3 PH-1150 RPM
25450F061	12VL600M6-53	25450F661	12VLX600M6-53	60 H.P.-575 VOLT-3 PH-1150 RPM
25450F070	12VL750M6-43	25450F670	12VLX750M6-43	75 H.P.-460 VOLT-3 PH-1150 RPM
25450F071	12VL750M6-53	25450F671	12VLX750M6-53	75 H.P.-575 VOLT-3 PH-1150 RPM

WIRING DIAGRAMS

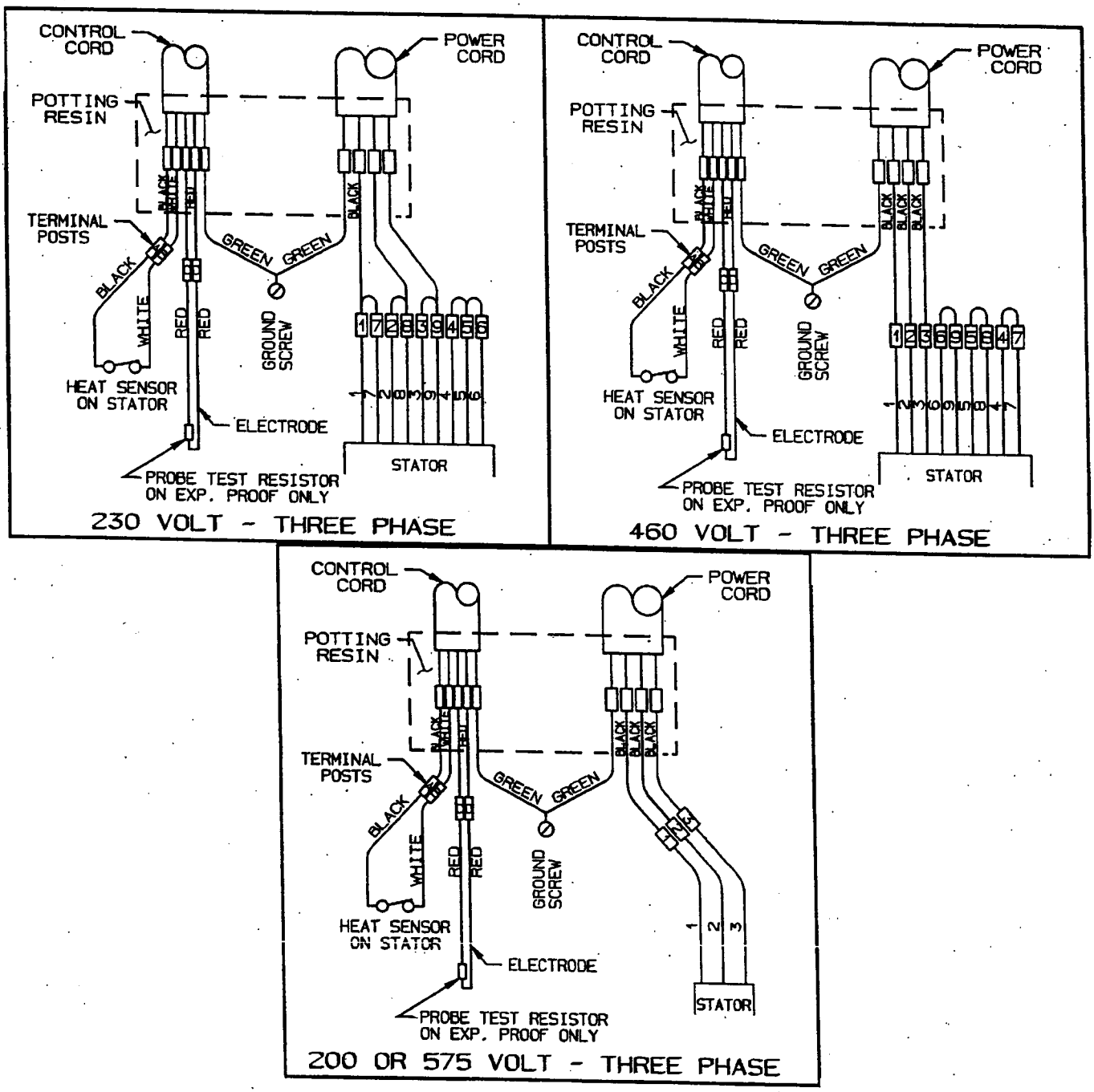


FIG. 2

TYPICAL WIRING DIAGRAM FOR 8VLX AND 12VLX PUMPS

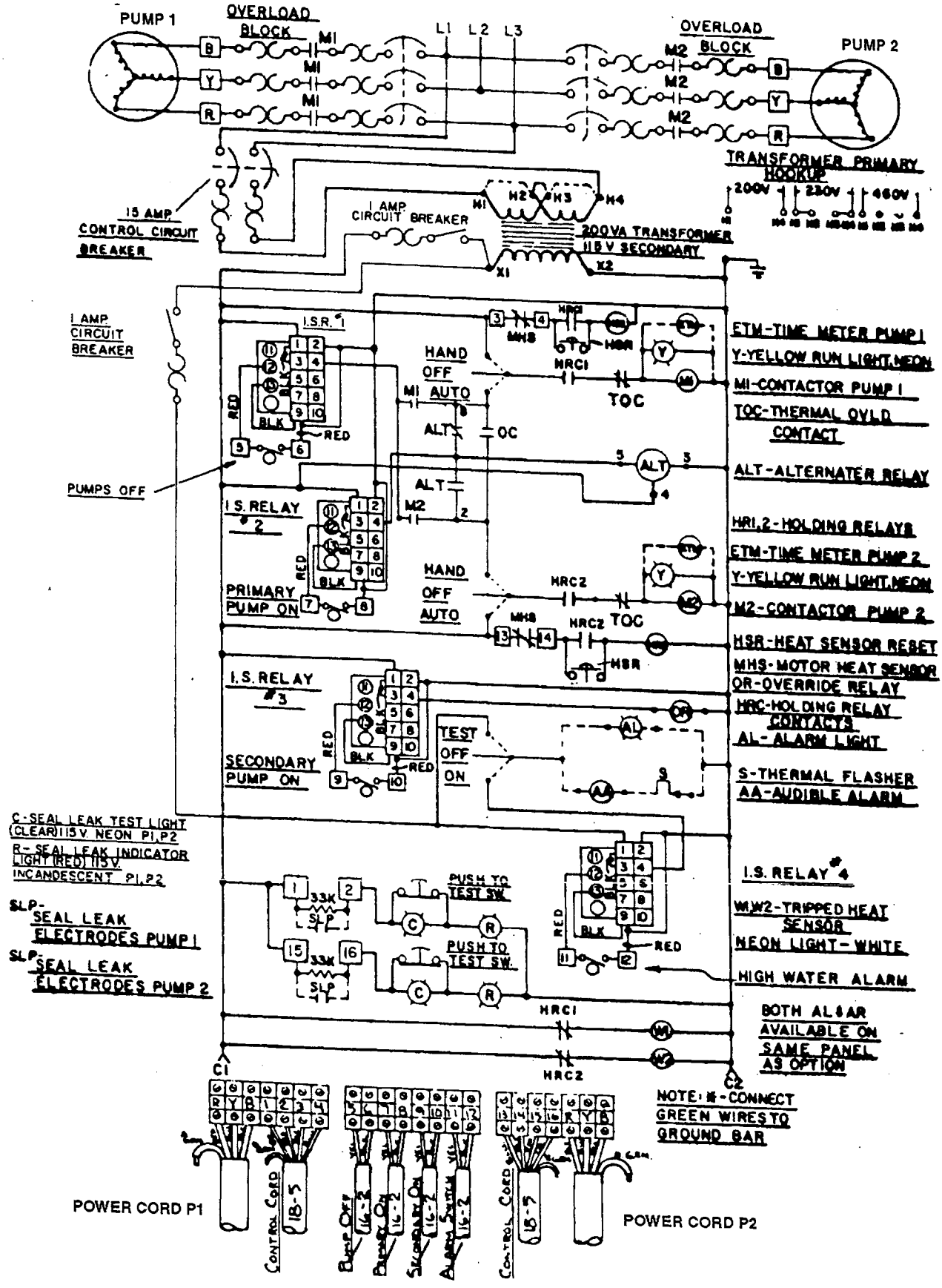


FIG. 3

CHECK LIST IF PUMP DOES NOT OPERATE PROPERLY

Checking for Moisture in Motor: Use an ohmmeter or a megger and set on highest scale. Readings on the large power cord between any of the conductors red, black or white to the green conductor or to the motor housing should be greater than 1,000,000 ohms (1 megaohm). A motor will probably run with a lower reading, but if the pump is out of service and the value of the reading is below 1,000,000 ohms (1 megaohm), the motor housing and stator should be removed and baked in a drying oven at 220°F. This service work should only be done at an authorized service station. ***Note, readings should be taken with line leads disconnected from the control panel.***

Resistance of Windings: Every motor winding has a fixed resistance. The windings must check close to the values given in the tables to operate properly. Verification of the proper wiring of a dual voltage motor can also be checked by measuring the motor winding resistance. See the motor electrical data chart. Use an ohmmeter and set to the one ohm scale. Read the resistance with the motor leads disconnected from the pump control panel.

CONDITION	PROBABLE CAUSE
Red light comes on at control box.	This indicates some water has leaked past the lower seal and has entered the seal chamber and made contact with the electrode probe. Pump must be removed for replacement of lower seal. This preventative repair will save an expensive motor.
Overload trips at control box and alarm buzzer or flashing red light comes on due to high water level in basin.	1. Push in on red reset button to reset overload. If overload trips again after short run, pump has some damage and must be removed from basin for checking. 2. Trouble may be from clogged impeller causing motor to overload or could be from failed motor. 3. Trouble may be from faulty component in control box. Always check control box before removing pump.
Yellow run light stays on continuously.	1. Indicates H-O-A switch may be in the hand position. 2. Level control switch may have failed causing pump to continue to operate when water is below lower control. 3. Impeller may be partially clogged causing pump to operate at very reduced capacity. 4. Gate valve or check valve may be clogged causing low pump flow. 5. Pump may be air logged.
Circuit breaker trips.	1. Reset breaker by pushing completely down on handle then back to on position. If breaker trips again in few seconds it indicates excessive load probably caused by a short in the motor or control box. Check out instructions given with control box before pulling pump. 2. If this condition happens after an electrical storm, motor or control box may be damaged by lightning. 3. Resistance reading of the motor with lead wires disconnected from the control box can determine if trouble is in motor or control box.

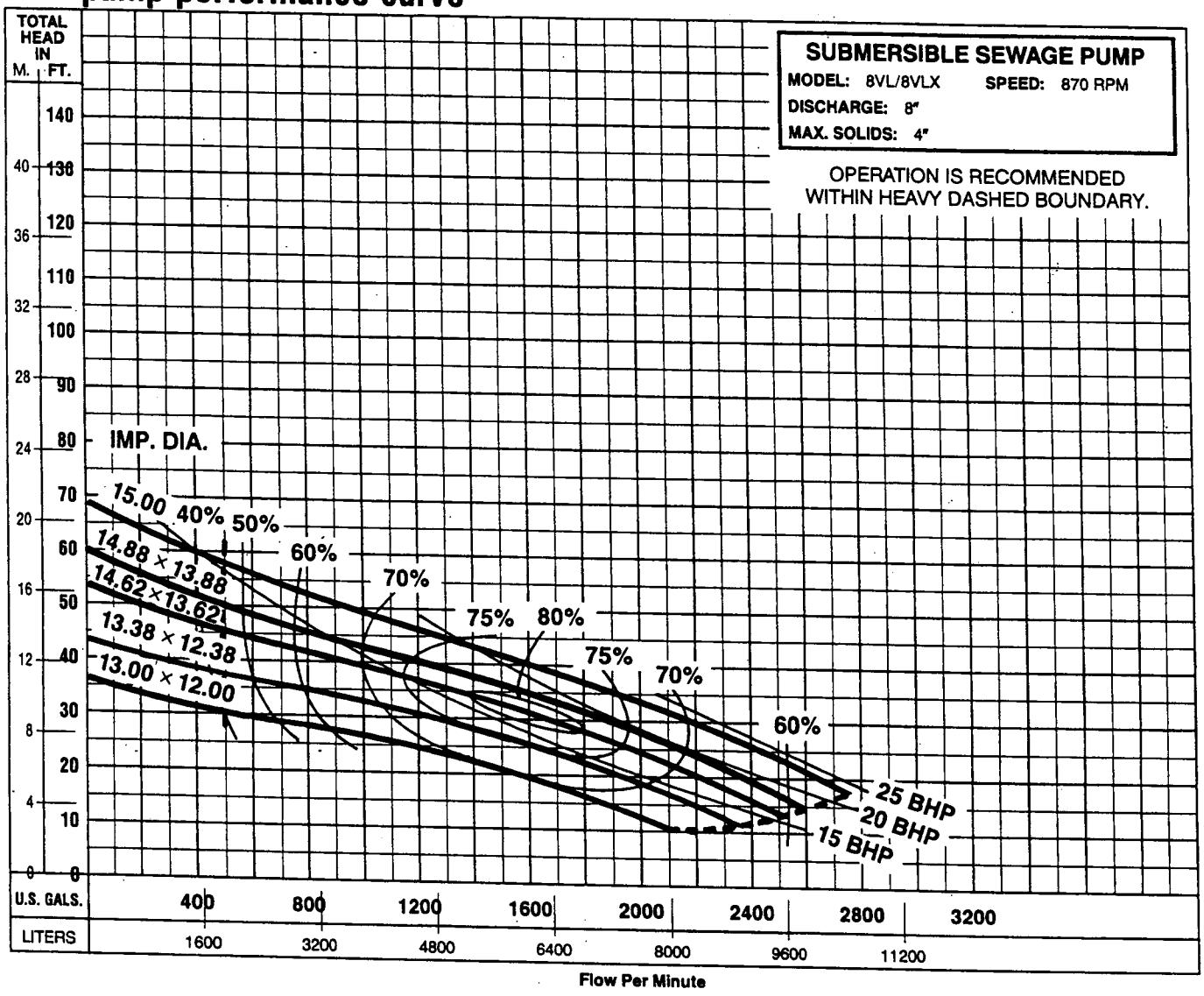
CONDITION	PROBABLE CAUSE
Pump is noisy and pump rate is low.	1. Impeller may be partially clogged with some foreign objects causing noise and overload on the motor. 2. Impeller may be rubbing on wear ring due to bent shaft or misalignment. 3. Pump may be operating too close to shut-off. Check head.
Grease and solids have accumulated around pump pump and will not pump out of basin.	1. Lower control switch may be set too high. 2. Run pump on hand operation for several minutes with small amount of water running into basin to clean out solids and grease. This allows pump to break suction and surge which will break up the solids. If level switch is set properly this condition generally will not occur. 3. Trash and grease may have accumulated around floats causing pump to operate erratically.

IMPORTANT – Pump should be thoroughly cleaned of trash and deposits before starting disassembly operations.

CAUTION – DISCONNECT ALL POWER AND CONTROL WIRES TO MOTOR AT CONTROL PANEL BEFORE STARTING DISASSEMBLY OPERATIONS. NEVER RELY ON OPENING CIRCUIT BREAKER ONLY.

CAP SCREW	TORQUE VALUE
3/8-16	20 ft.-lbs.
1/2-13	43 ft.-lbs.
5/8-11	93 ft.-lbs.
3/4-10	128 ft.-lbs.
7/8-14	193 ft.-lbs.

pump performance curve



Pump performance is based on clear water (1.0 specific gravity @ 68°F) and pump fluid end (hydraulic) efficiency. Motor data based on 40°C ambient temperature.

Available Models		Motor Electrical Data											
Standard	Explosion-Proof	HP	Volts	Phase	Start Amps	Run Amps	Service Factor Amps	Run KW	Service Factor KW	Start KVA	Run KVA	NEC CODE LETTER	Service Factor
8VL150M8-03	8VLX150M8-03	15	200	3	334	53.4	61.2	13.4	15.8	116	18.5	J	1.2
8VL150M8-23	8VLX150M8-23	15	230	3	290	46.4	53.2	13.4	15.8	116	18.5	J	1.2
8VL150M8-43	8VLX150M8-43	15	460	3	145	23.2	26.6	13.4	15.8	116	18.5	J	1.2
8VL150M8-53	8VLX150M8-53	15	575	3	116	18.6	21.3	13.4	15.8	116	18.5	J	1.2
8VL200M8-03	8VLX200M8-03	20	200	3	334	67.2	78.5	17.6	20.9	116	23.2	G	1.2
8VL200M8-23	8VLX200M8-23	20	230	3	290	58.4	68.3	17.6	20.9	116	23.2	G	1.2
8VL200M8-43	8VLX200M8-43	20	460	3	145	29.2	34.1	17.6	20.9	116	23.2	G	1.2
8VL200M8-53	8VLX200M8-53	20	575	3	116	23.3	27.3	17.6	20.9	116	23.2	G	1.2
8VL250M8-03	8VLX250M8-03	25	200	3	501	84.2	101.0	21.2	26.4	175	29.2	H	1.2
8VL250M8-23	8VLX250M8-23	25	230	3	436	73.2	87.8	21.2	26.4	175	29.2	H	1.2
8VL250M8-43	8VLX250M8-43	25	460	3	218	36.6	44.0	21.2	26.4	175	29.2	H	1.2
8VL250M8-53	8VLX250M8-53	25	575	3	174	29.3	35.1	21.2	26.4	175	29.2	H	1.2

Motor Efficiencies and Power Factor									
		Motor Efficiency %				Power Factor %			
HP	Phase	Service Factor Load	100% Load	75% Load	50% Load	Service Factor Load	100% Load	75% Load	50% Load
15	3	85.0	83.5	81.5	75	74.5	72.5	68.0	59.0
20	3	85.5	85.0	83.5	80	77.0	75.5	72.5	66.0
25	3	85.0	88.0	87.0	83	75.3	72.7	68.5	59.5

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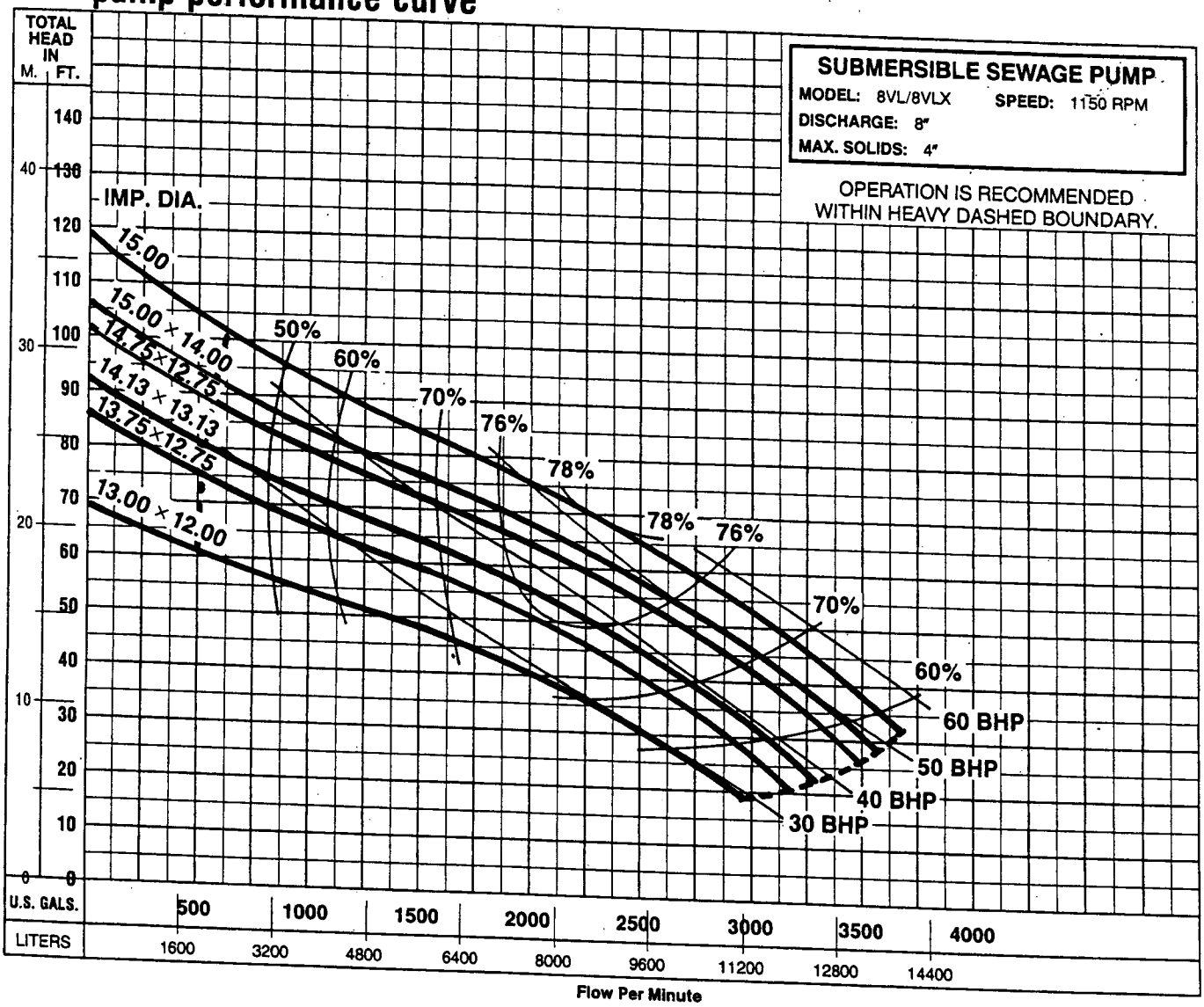
pump performance curve



Pump performance is based on clear water (1.0 specific gravity @ 68°F) and pump fluid end (hydraulic) efficiency. Motor data based on 40°C ambient temperature.

Available Models		Motor Electrical Data											
Standard	Explosion-Proof	HP	Volts	Phase	Start Amps	Run Amps	Service Factor Amps	Run KW	Service Factor KW	Start KVA	Run KVA	NEC CODE LETTER	Service Factor
8VL300M6-23	8VLX300M6-23	30	230	3	580	88.4	106.0	26.0	31.2	230	35.2	J	1.2
8VL300M6-43	8VLX300M6-43	30	460	3	290	44.2	53.0	26.0	31.2	230	35.2	J	1.2
8VL300M6-53	8VLX300M6-53	30	575	3	232	35.3	42.4	26.0	31.2	230	35.2	J	1.2
8VL400M6-23	8VLX400M6-23	40	230	3	580	110.4	132.5	34.3	41.2	230	44.0	G	1.2
8VL400M6-43	8VLX400M6-43	40	460	3	290	55.2	66.2	34.3	41.2	230	44.0	G	1.2
8VL400M6-53	8VLX400M6-53	40	575	3	232	44.2	53.0	34.3	41.2	230	44.0	G	1.2
8VL500M6-23	8VLX500M6-23	50	230	3	417	138.0	165.6	42.6	51.4	290	63.3	G	1.2
8VL500M6-43	8VLX500M6-43	50	460	3	363	69.0	82.8	42.6	51.4	290	63.3	G	1.2
8VL500M6-53	8VLX500M6-53	50	575	3	290	55.2	66.2	42.6	51.4	290	63.3	G	1.2
8VL600M6-43	8VLX600M6-43	60	460	3	405	82.7	101.0	51.4	62.7	323	65.9	F	1.2
8VL600M6-53	8VLX600M6-53	60	575	3	324	66.2	80.8	51.4	62.7	323	65.9	F	1.2

Motor Efficiencies and Power Factor									
		Motor Efficiency %				Power Factor %			
HP	Phase	Service Factor Load	100% Load	75% Load	50% Load	Service Factor Load	100% Load	75% Load	50% Load
30	3	86	86	84	79.0	73.9	73.8	67.8	55.0
40	3	87	87	86	82.5	78.0	78.0	73.8	65.2
50	3	87	88	87	85.0	78.0	77.5	77.5	68.0
60	3	86	87	87	86.0	78.0	78.0	78.0	72.5

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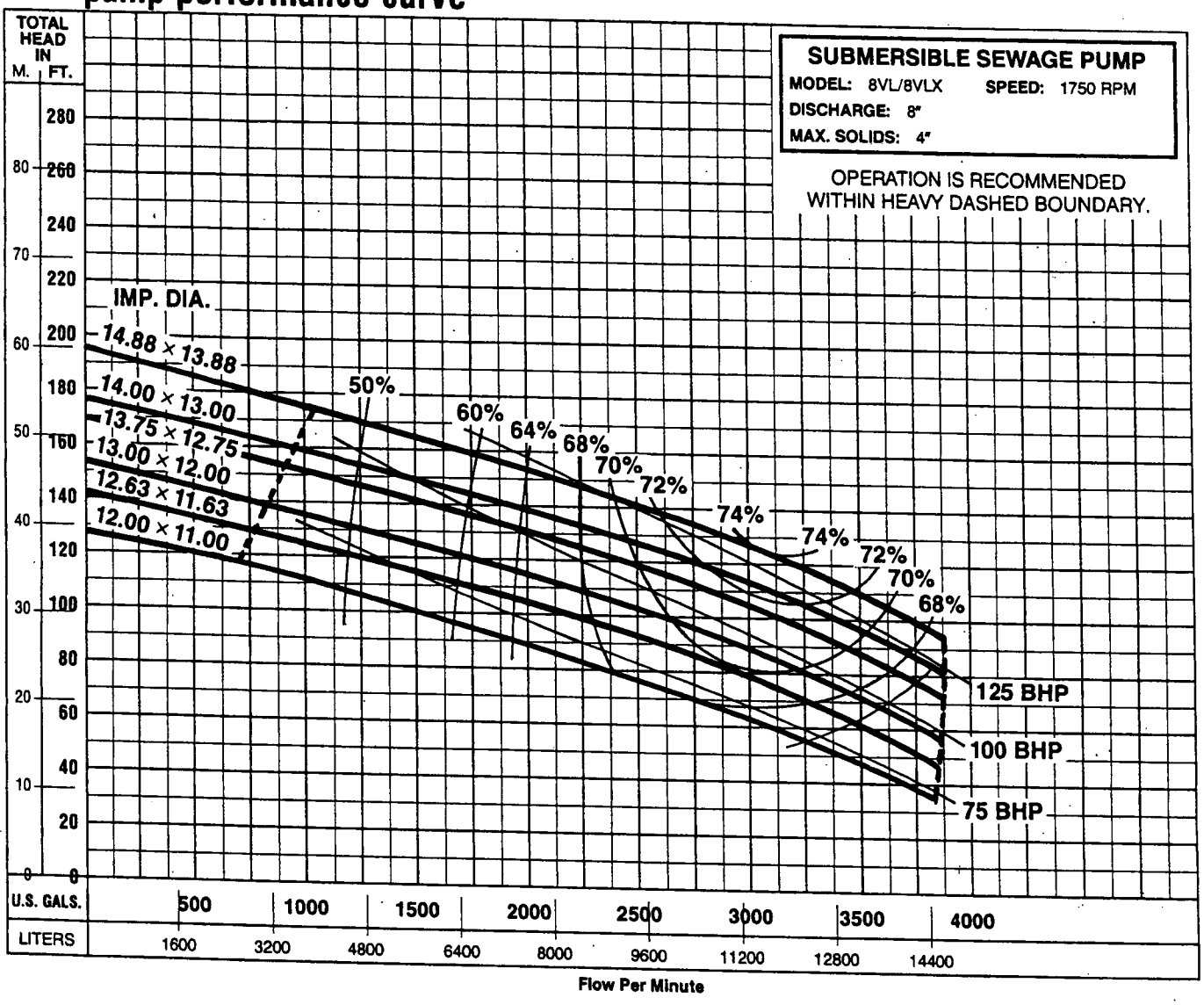
pump performance curve



Pump performance is based on clear water (1.0 specific gravity @ 68°F) and pump fluid end (hydraulic) efficiency. Motor data based on 40°C ambient temperature.

Available Models		Motor Electrical Data											
Standard	Explosion-Proof	HP	Volts	Phase	Start Amps	Run Amps	Service Factor Amps	Run KW	Service Factor KW	Start KVA	Run KVA	NEC CODE LETTER	Service Factor
8VL750M4-43	8VLX750M4-43	75	460	3	540	101.8	122.2	64.2	77.0	430	81.0	G	1.2
8VL750M4-53	8VLX750M4-53	75	575	3	432	81.4	97.8	64.2	77.0	430	81.0	G	1.2
8VL1000M4-43	8VLX1000M4-43	100	460	3	725	129.0	155.0	85.7	103.0	578	103.0	G	1.2
8VL1000M4-53	8VLX1000M4-53	100	575	3	580	103.2	124.0	85.7	103.0	578	103.0	G	1.2
8VL1250M4-43	8VLX1250M4-43	125	460	3	725	165.0	175.0	108.0	115.0	578	131.0	G	1.1
8VL1250M4-53	8VLX1250M4-53	125	575	3	580	132.0	140.0	108.0	115.0	578	131.0	G	1.1

Motor Efficiencies and Power Factor									
		Motor Efficiency %				Power Factor %			
HP	Phase	Service Factor Load	100% Load	75% Load	50% Load	Service Factor Load	100% Load	75% Load	50% Load
75	3	87.1	87.1	87.3	83.5	79.1	79.2	79.1	79
100	3	87.0	88.0	87.0	84.0	83.4	83.4	79.2	77
125	3	86.0	86.3	88.0	87.0	82.5	82.0	80.0	78

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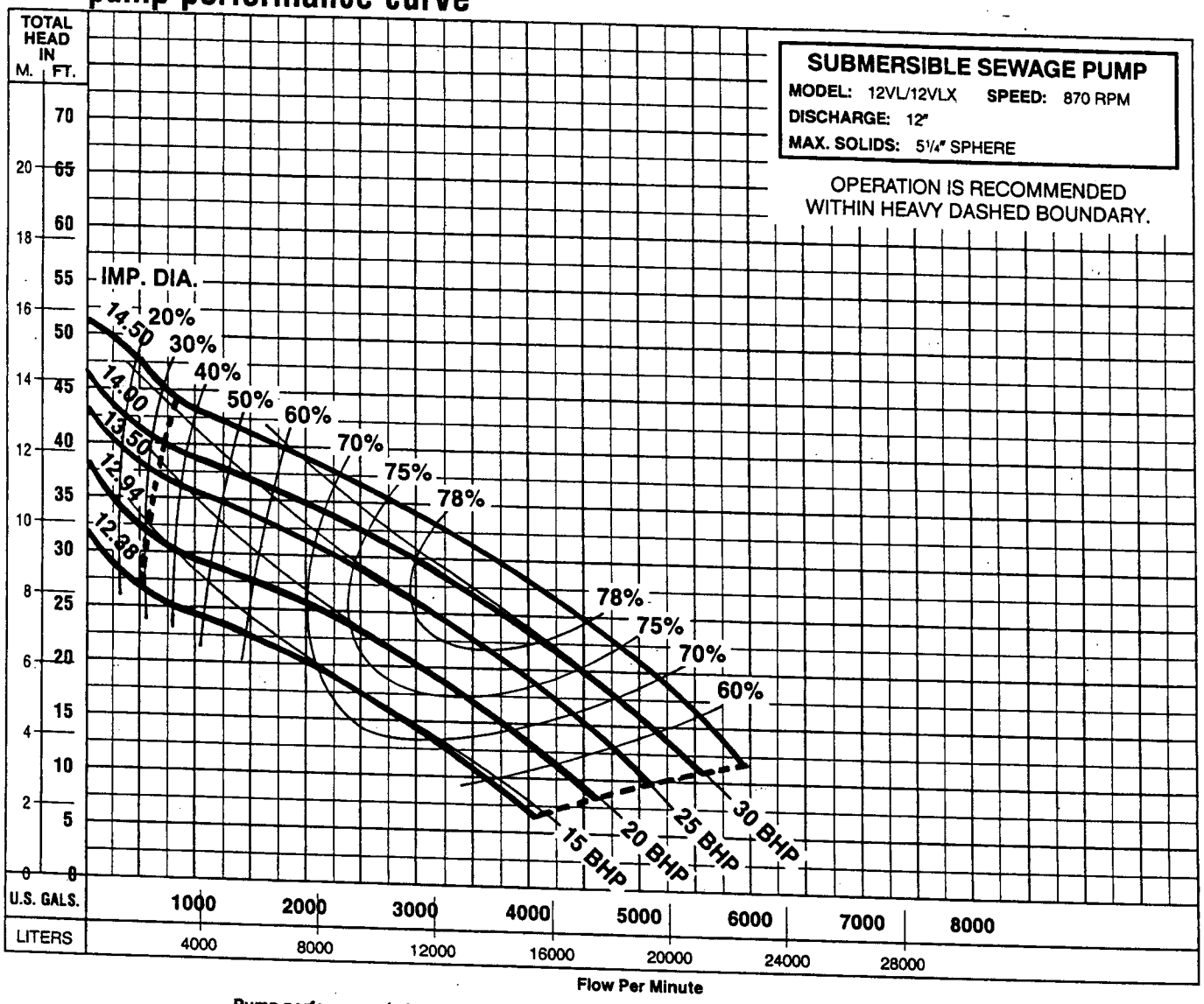
pump performance curve



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Available Models		Motor Electrical Data											
Standard	Explosion-Proof	HP	Volts	Phase	Start Amps	Run Amps	Service Factor Amps	Run KW	Service Factor KW	Start KVA	Run KVA	NEC CODE LETTER	Service Factor
12VL150M8-03	12VLX150M8-03	15	200	3	334	53.4	61.2	13.4	15.8	116	18.5	J	1.2
12VL150M8-23	12VLX150M8-23	15	230	3	290	46.4	53.2	13.4	15.8	116	18.5	J	1.2
12VL150M8-43	12VLX150M8-43	15	460	3	145	23.2	26.6	13.4	15.8	116	18.5	J	1.2
12VL150M8-53	12VLX150M8-53	15	575	3	116	18.6	21.3	13.4	15.8	116	18.5	J	1.2
12VL200M8-03	12VLX200M8-03	20	200	3	334	67.2	78.5	17.6	20.9	116	23.2	G	1.2
12VL200M8-23	12VLX200M8-23	20	230	3	290	58.4	68.3	17.6	20.9	116	23.2	G	1.2
12VL200M8-43	12VLX200M8-43	20	460	3	145	29.2	34.1	17.6	20.9	116	23.2	G	1.2
12VL200M8-53	12VLX200M8-53	20	575	3	116	23.3	27.3	17.6	20.9	116	23.2	G	1.2
12VL250M8-03	12VLX250M8-03	25	200	3	501	84.2	101.0	21.2	26.4	175	29.2	H	1.2
12VL250M8-23	12VLX250M8-23	25	230	3	436	73.2	87.8	21.2	26.4	175	29.2	H	1.2
12VL250M8-43	12VLX250M8-43	25	460	3	218	36.6	44.0	21.2	26.4	175	29.2	H	1.2
12VL250M8-53	12VLX250M8-53	25	575	3	174	29.3	35.1	21.2	26.4	175	29.2	H	1.2
12VL300M8-23	12VLX300M8-23	30	230	3	436	88.0	105.6	26.4	31.6	175	35.1	G	1.2
12VL300M8-43	12VLX300M8-43	30	460	3	218	44.0	52.8	26.4	31.6	175	35.1	G	1.2
12VL300M8-53	12VLX300M8-53	30	575	3	174	35.2	42.2	36.4	31.6	175	35.1	G	1.2

Motor Efficiencies and Power Factor									
		Motor Efficiency %				Power Factor %			
HP	Phase	Service Factor Load	100% Load	75% Load	50% Load	Service Factor Load	100% Load	75% Load	50% Load
15	3	85.0	83.5	81.5	75	74.5	72.5	68.0	59.0
20	3	85.5	85.0	83.5	80	77.0	75.5	72.5	66.0
25	3	85.0	88.0	87.0	83	74.3	72.7	68.5	59.5
30	3	85.0	85.0	88.0	85	75.1	75.3	70.8	60.0

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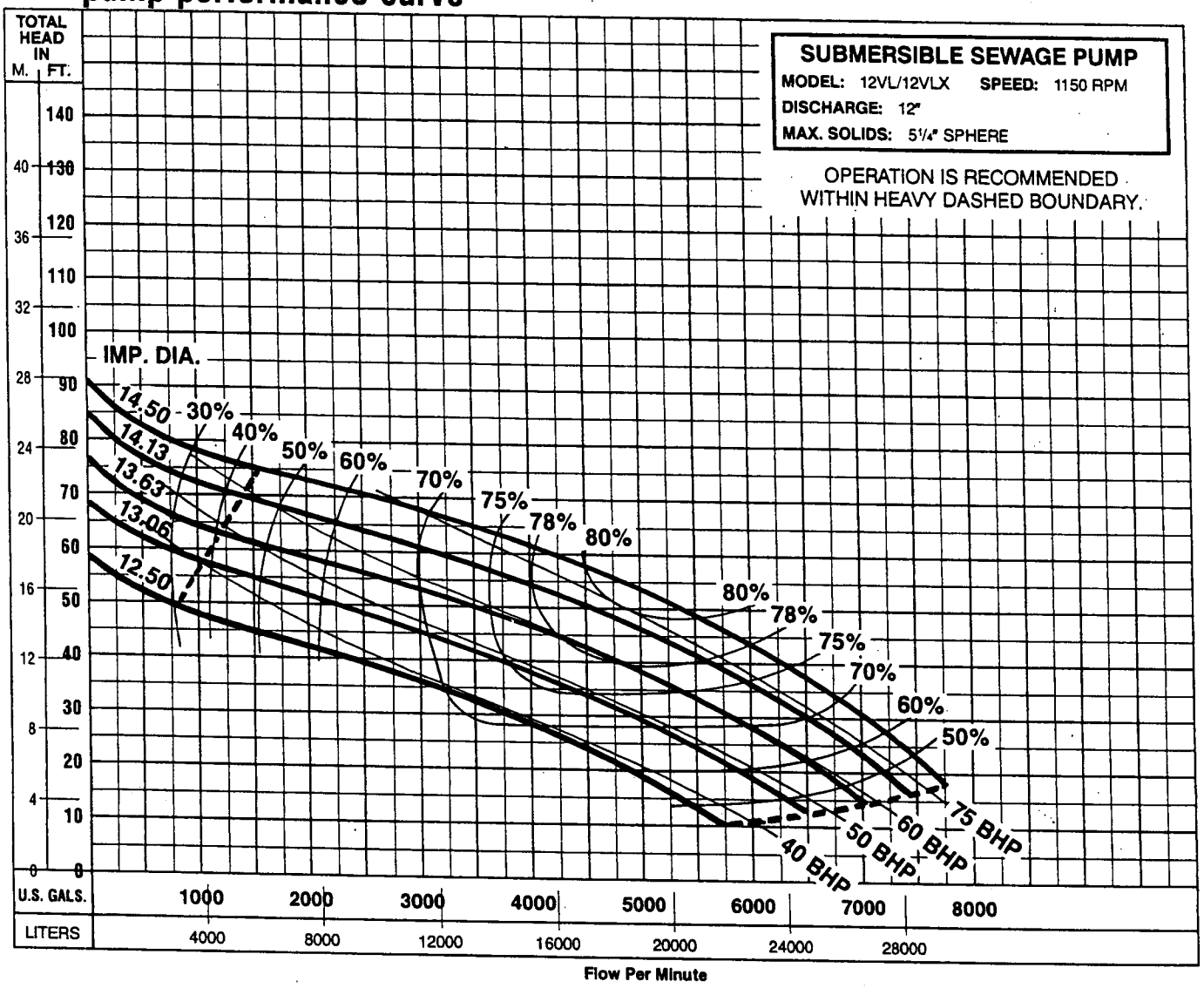
pump performance curve



Pump performance is based on clear water (1.0 specific gravity @ 68°F) and pump fluid end (hydraulic) efficiency. Motor data based on 40°C ambient temperature.

Available Models		Motor Electrical Data											
Standard	Explosion-Proof	HP	Volts	Phase	Start Amps	Run Amps	Service Factor Amps	Run KW	Service Factor KW	Start KVA	Run KVA	NEC CODE LETTER	Service Factor
12VL400M6-23	12VLX400M6-23	40	230	3	580	110.4	132.5	34.3	41.2	230	44.0	G	1.2
12VL400M6-43	12VLX400M6-43	40	460	3	290	55.2	66.2	34.3	41.2	230	44.0	G	1.2
12VL400M6-53	12VLX400M6-53	40	575	3	232	44.2	53.0	34.3	44.2	230	44.0	G	1.2
12VL500M6-23	12VLX500M6-23	50	230	3	417	138.0	165.6	42.6	51.4	290	63.3	G	1.2
12VL500M6-43	12VLX500M6-43	50	460	3	363	69.0	82.8	42.6	51.4	290	63.3	G	1.2
12VL500M6-53	12VLX500M6-53	50	575	3	290	55.2	66.2	42.6	51.4	290	63.3	G	1.2
12VL600M6-43	12VLX600M6-43	60	460	3	405	82.7	101.0	51.4	62.7	323	65.9	F	1.2
12VL600M6-53	12VLX600M6-53	60	575	3	324	66.2	80.8	51.4	62.7	323	65.9	F	1.2
12VL750M6-43	12VLX750M6-43	75	460	3	490	103.0	124.0	66.0	79.0	390	82.1	F	1.2
12VL750M6-53	12VLX750M6-53	75	575	3	392	82.4	99.2	66.0	79.0	390	82.1	F	1.2

Motor Efficiencies and Power Factor									
		Motor Efficiency %				Power Factor %			
HP	Phase	Service Factor Load	100% Load	75% Load	50% Load	Service Factor Load	100% Load	75% Load	50% Load
40	3	87	87	86	82.5	78	78.0	73.8	65.2
50	3	87	88	87	85.0	78	77.5	77.5	68.0
60	3	86	87	87	86.0	78	78.0	78.0	72.5
75	3	85	85	87	87.0	80	80.4	79.0	71.0

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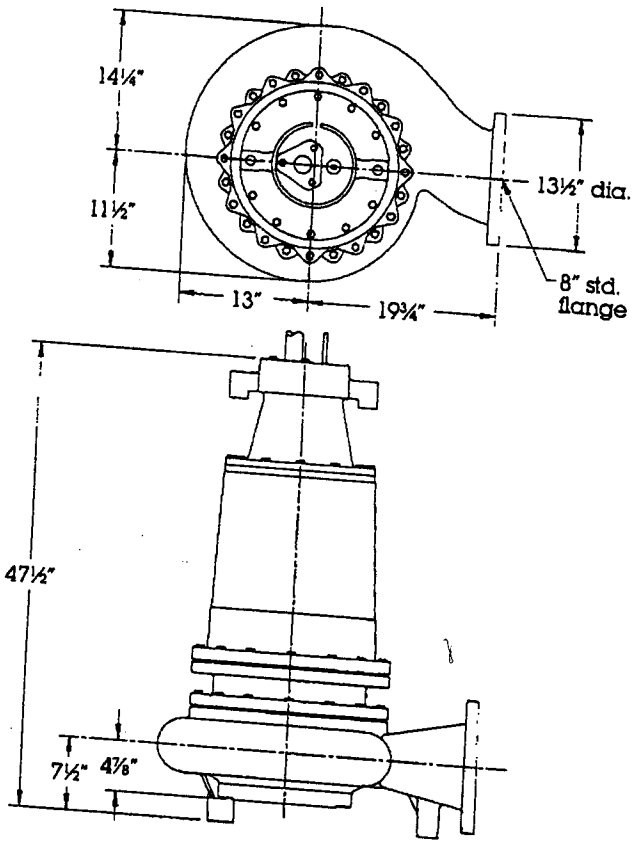
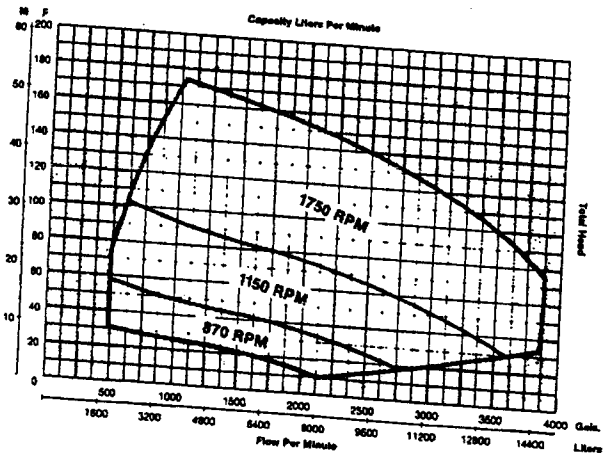
8VL (8" Submersible Non-Clog Wastewater Pump)

DIMENSIONS

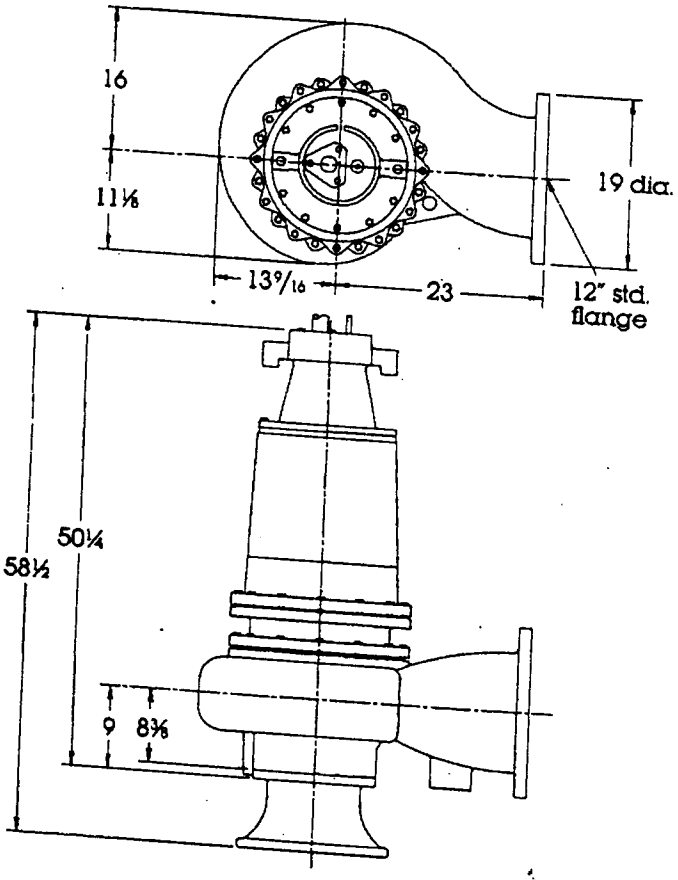


PERFORMANCE CURVE



12VL (12" Submersible Non-Clog Wastewater Pump)

DIMENSIONS



PERFORMANCE CURVE

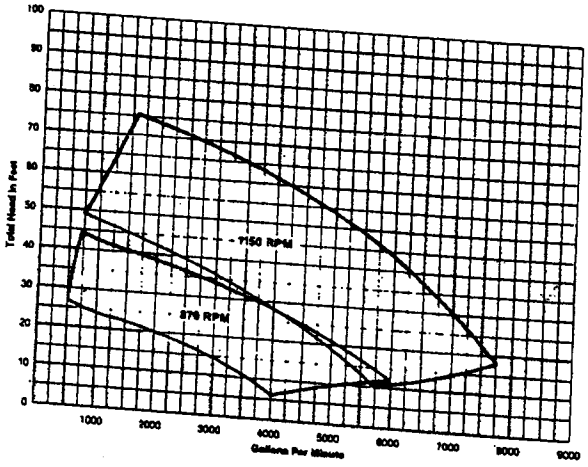


FIG. 4

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