

STA-RITE

OWNERS MANUAL

INSTALLATION AND OPERATING INSTRUCTIONS
REPAIR PARTS LIST

Horizontal Multi-Stage Jet Pumps “HMS-1FL” Series

MODELS

3/4 HP	1 HP	1-1/2 HP
HMSD-1FL	HMSE-1FL	HMSF-1FL

STA-RITE INDUSTRIES
293 Wright St., Delavan, WI 53115

Deep Well Installation



Under certain conditions, horizontal multi-stage pumps can develop extremely high pressure. Install a pressure relief valve capable of passing entire pump flow at 75 PSI.

Do not allow pump, pressure tank, piping, or any other system component containing water to freeze. Freezing may damage system, leading to injury or flooding. Allowing pump or system components to freeze will void warranty.

NOTICE: Support pump base to avoid strain on casing adapter or pump. Lack of support can damage adapter or pump.

Figure 2 shows casing adapter bolted directly to pump body.

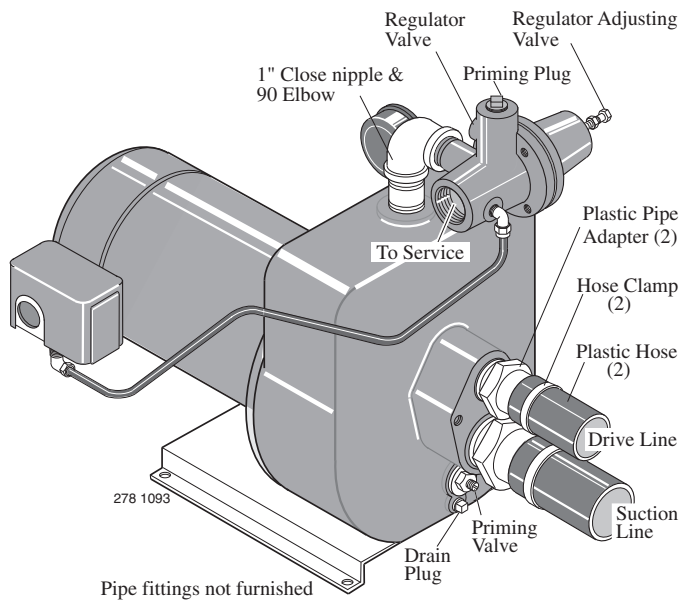


Figure 1 – Deep Well Installation

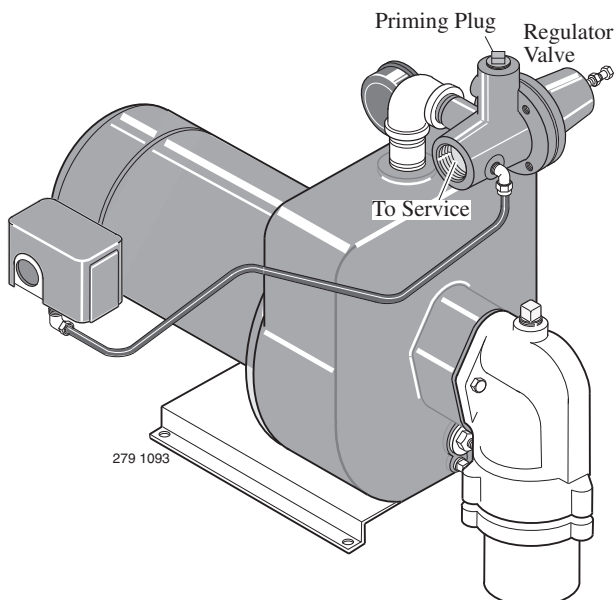


Figure 2 – Well Casing Adapter bolted directly to pump

Shallow Well Installation

NOTICE: If no foot valve is used, install 1" check valve in horizontal line.

Priming the Deep Well Pump

To prime pump, completely close the priming valve located just below the suction opening by turning screw clockwise. This valve will be left closed during operation in a deep well installation. See Figure 1.

Close regulator adjusting valve, located on end of regulator, by turning stem clockwise. See Figure 1.

Remove priming plug from top of regulator valve, see Figure 1, and fill with clean water. Replace plug.

Start pump and run a few moments.

If pressure does not build up, remove priming plug and refill with more water. All of the trapped air in pump body was not removed.

Restart pump.

When pump is completely primed and builds up pressure, slowly open the regulator valve, (turn counter-clockwise), and observe the pressure reading on the pressure gauge.

When the pump reaches a point where it will lose prime, cavitation noise can be heard.

The best, or correct, pressure gauge setting is approximately 3 pounds higher than the pressure gauge reading was when the pump started to lose prime.

If pump loses prime, repeat the priming procedure above and this time open regulator valve only until the correct pressure reading is reached.

If a vacuum gauge is available, screw it into the 1/8" AVC tapping on front of tank body. Adjust regulator until 20" of vacuum is registered on the gauge. Tighten locknut on regulator. This method will give maximum performance of the unit.

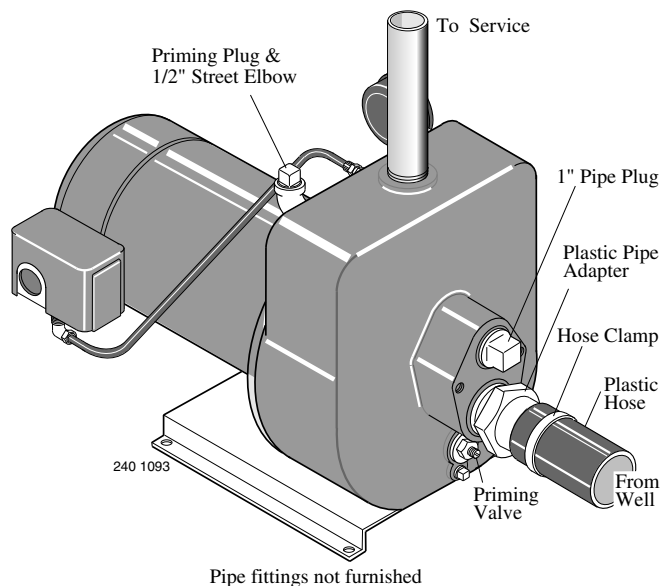


Figure 3 – Shallow Well Installation

HMSC pumps come equipped with pressure switch set to operate within a 20-40 PSI range. HMSD, HMSE, and HMSF pumps have 30-50 PSI pressure switches. When pump is used with precharged tank in system, set tank pre-charge at 18 PSI with a 20-40 PSI switch; set tank pre-charge at 28 PSI with a 30-50 PSI switch. Check tank pre-charge annually with an ordinary tire gauge. Pre-charge is set with no water pressure on system.

Priming the Shallow Well Pump

⚠ CAUTION **Never run pump dry.** Running pump without water may cause pump to overheat, damaging seal and possibly causing burns to persons handling pump. Fill pump with water before starting.

⚠ WARNING **Never run pump against closed discharge.** To do so can boil water inside pump, causing hazardous pressure in unit, risk of explosion and possibly scalding persons handling pump.

To prime the pump, completely open the priming valve located just below the suction opening on the tank body by turning the valve stem counter-clockwise all the way until it stops. This valve may be left open during operation as a shallow well pump with no jet. See Figure 3 and "NOTICE" below.

Remove priming plug from top of elbow (see Figure 3), and fill with clean water. Replace plug.

Start pump and between 45-60 seconds. If water is not being pumped, turn off pump and repeat priming process.

NOTICE: If a bolt-on jet is being used, after pump is primed, close the priming valve during operation as a shallow well pump.

Service – Draining for Winter

⚠ CAUTION **Do not touch an operating motor.** Modern motors are designed to operate at high temperatures. To avoid burns when servicing pump, allow it to cool for 20 minutes after shut-down before handling.

When the pump is to be disconnected from service, or is in danger of freezing, it should be drained. The pump has a drain plug which must be removed. Remove the priming plug to vent the pump.

If pump and motor are damaged due to freezing, the Warranty is void.

TABLE I
Recommended Fusing and Wiring Data – 60 Cycle Motors

MOTOR HP	VOLTS	MAX. LOAD AMPERES	BRANCH FUSE* RATING AMPS	DISTANCE IN FEET FROM MOTOR TO METER				
				0' to 100'	101' to 200'	201' to 300'	301' to 400'	401' to 500'
				WIRE SIZE				
3/4	115	14.8	20	12	8	6	6	4
3/4	230	7.4	15	14	14	14	12	10
1	115	19.2	25	10	8	6	4	4
1	230	9.6	15	14	14	12	10	10
1-1/2	115	24.0	30	10	6	6	4	3
1-1/2	230	12.0	15	14	14	12	10	10

*Fusetrons are recommended instead of fuses on all motor circuits.

Electrical

⚠ Disconnect power before working on pump, motor, pressure switch, or wiring.

MOTOR SWITCH SETTINGS

Your motor terminal board (located under the motor end cover) should look like one of those below. If the motor can operate at either 115 or 230 volts, it is set at the factory to 230 volts. Do not change motor wiring if line voltage is 230 volts, or if you have a single voltage motor.

⚠ CAUTION Never wire a 115 volt motor to a 230 volt line.

Plug Type Voltage Selector

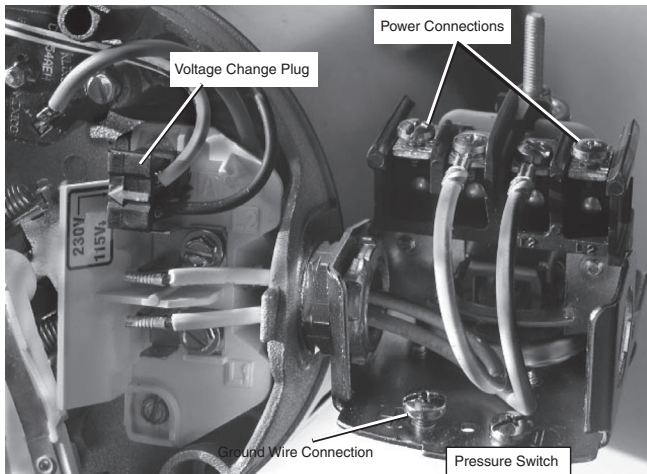


Figure 4: Voltage set to 230 volts, Plug Type

Voltage is factory set to 230 volts. To change to 115 volts:

1. Make sure power is off.
2. Pull the voltage change plug off of the tabs.
3. Move the voltage change plug to the 115 volt position. The plug will now cover 2 metal tabs and the arrow on the plug will line up with the 115V arrow on the label (see Figure 5).

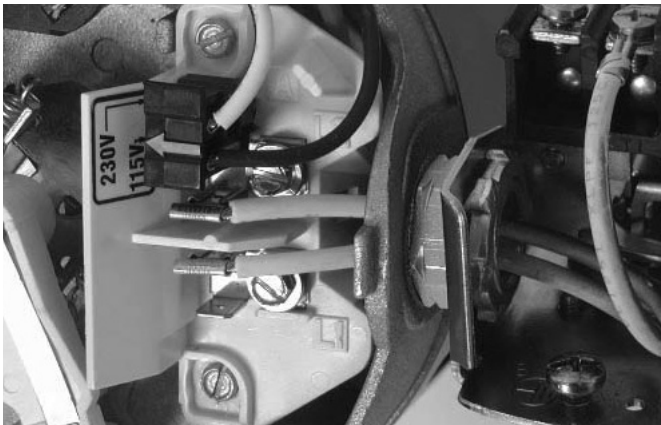


Figure 5: Voltage set to 115 volts, Plug Type

4. Attach the incoming power leads to the two outer screws on the pressure switch as shown in Figure 4.
5. Attach the ground wire to one of the grounding connections, shown in Figure 4.
6. If there are other wires, they should be capped.
7. Reinstall the Motor end cover.

Dial Type Voltage Selector

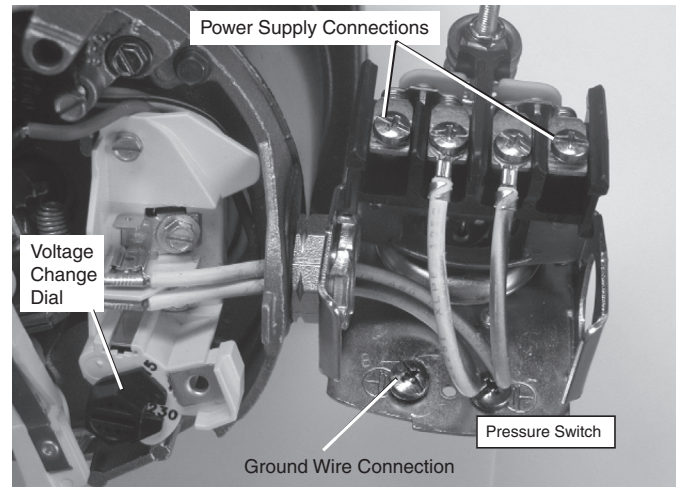


Figure 6: Voltage set to 230 volts, Dial Type

Voltage is factory set to 230 volts. To change to 115 volts:

1. Make sure power is off.
2. Turn the dial counter-clockwise until 115 shows in the dial window as shown in Figure 7.

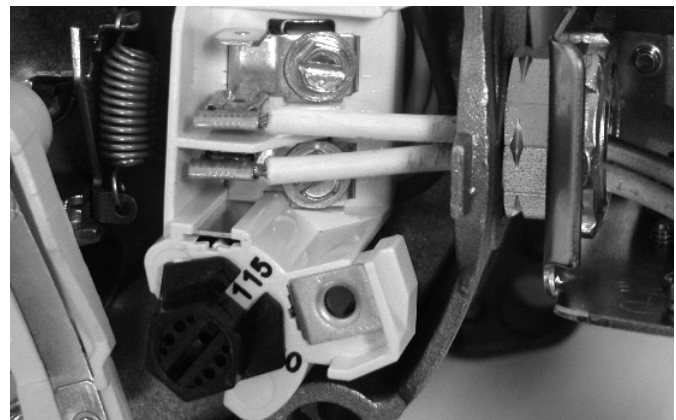


Figure 7: Voltage set to 115 volts, Dial Type

3. Attach the incoming power leads to the two outer screws on the pressure switch as shown in Figure 6.
4. Attach the ground wire to the grounding connections as shown in Figure 6.
5. If there are other wires, they should be capped.
6. Reinstall the Motor end cover.

⚠ WARNING **Hazardous voltage. Can shock, burn, or kill. Connect ground wire before connecting power supply wires. Use the wire size (including the ground wire) specified in the wiring chart.** If possible, connect the pump to a separate branch circuit with no other appliances on it.

⚠ WARNING **Explosion hazard. Do not ground to a gas supply line.**

WIRING CONNECTIONS

⚠ WARNING **Fire hazard.** Incorrect voltage can cause a fire or seriously damage the motor and voids the warranty. The supply voltage must be within $\pm 10\%$ of the motor nameplate voltage.

NOTICE: Dual-voltage motors are factory wired for 230 volts. If necessary, reconnect the motor for 115 volts, as shown. Do not alter the wiring in single voltage motors.

Install, ground, wire, and maintain your pump in compliance with the National Electrical Code (NEC) or the Canadian Electrical Code (CEC), as applicable, and with all local codes and ordinances that apply. Consult your local building inspector for code information.

Connection Procedure:

1. Connect the ground wire first as shown in Figure 4. The ground wire must be a solid copper wire at least as large as the power supply wires.
2. There must be a solid metal connection between the pressure switch and the motor for motor grounding protection. If the pressure switch is not connected to the motor, connect the green ground screw in the switch to the green ground screw under the motor end cover. Use a solid copper wire at least as large as the power supply wires.
3. Connect the ground wire to a grounded lead in a service panel, to a metal underground water pipe, to a metal well casing at least ten feet (3M) long, or to a ground electrode provided by the power company or the hydro authority.
4. Connect the power supply wires to the pressure switch as shown in Figure 4.

LIMITED WARRANTY

STA-RITE warrants to the original consumer purchaser ("Purchaser" or "You") of the products listed below, that they will be free from defects in material and workmanship for the Warranty Period shown below.

Product	Warranty Period
Water Systems Products — jet pumps, small centrifugal pumps, submersible pumps and related accessories	<i>whichever occurs first:</i> 12 months from date of original installation, or 18 months from date of manufacture
Signature 2000® Fibrewound Tanks	5 years from date of original installation
Pro-Source Plus™ Fibrewound Tanks	5 years from date of original installation
Pro-Source™ Steel Pressure Tanks	5 years from date of original installation
Pro-Source™ Epoxy-Lined Tanks	3 years from date of original installation
Sump/Sewage/Effluent Products	12 months from date of original installation, or 18 months from date of manufacture

Our warranty will not apply to any product that, in our sole judgement, has been subject to negligence, misapplication, improper installation, or improper maintenance. Without limiting the foregoing, operating a three phase motor with single phase power through a phase converter will void the warranty. Note also that three phase motors must be protected by three-leg, ambient compensated, extra-quick trip overload relays of the recommended size or the warranty is void.

Your only remedy, and STA-RITE's only duty, is that STA-RITE repair or replace defective products (at STA-RITE's choice). You must pay all labor and shipping charges associated with this warranty and must request warranty service through the installing dealer as soon as a problem is discovered. No request for service will be accepted if received after the Warranty Period has expired. This warranty is not transferable.

STA-RITE SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, OR CONTINGENT DAMAGES WHATSOEVER.

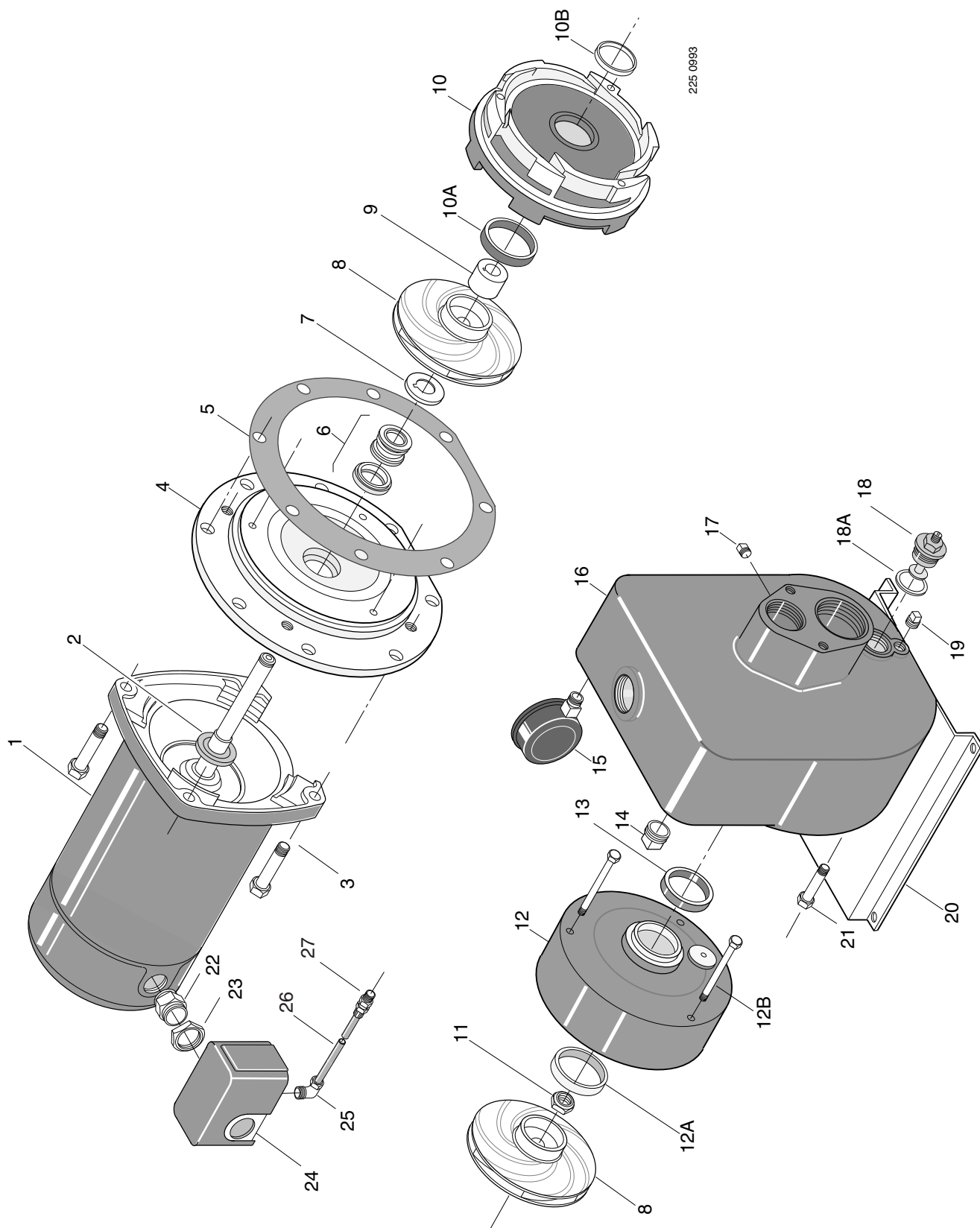
THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESS AND IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE FOREGOING WARRANTIES SHALL NOT EXTEND BEYOND THE DURATION EXPRESSLY PROVIDED HEREIN.

Some states do not allow the exclusion or limitation of incidental or consequential damages or limitations on the duration of an implied warranty, so the above limitations or exclusions may not apply to You. This warranty gives You specific legal rights and You may also have other rights which vary from state to state.

This warranty supersedes and replaces all previous warranty publications.

STA-RITE INDUSTRIES
293 Wright St., Delavan, WI 53115

EXPLODED VIEW



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REPAIR PARTS

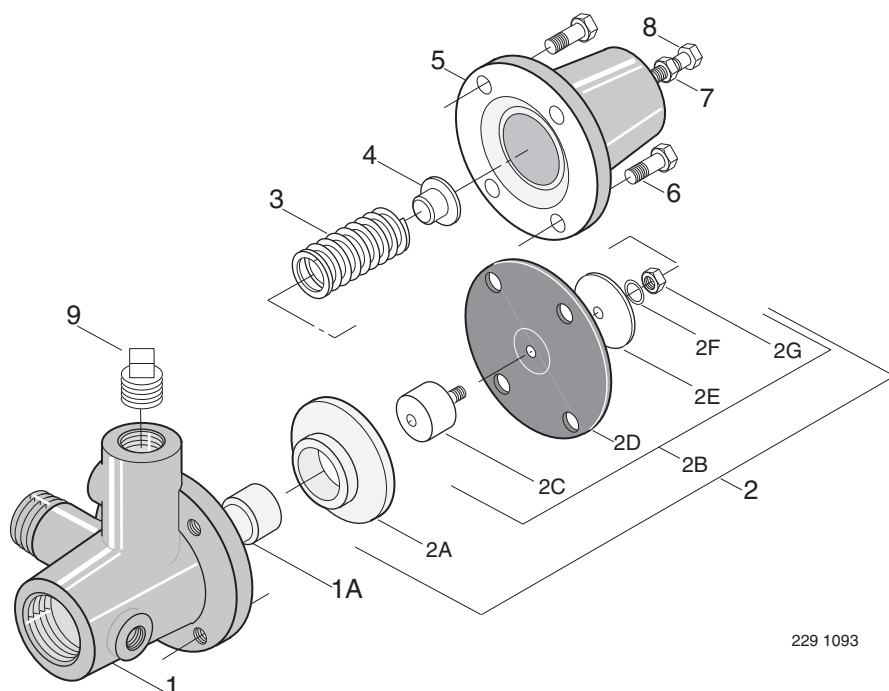
KEY NO.	PART DESCRIPTION	W/KIT	NO. USED	HMSD-1FL 3/4 HP	HMSE-1FL 1 HP	HMSF-1FL 1-1/2 HP
1	Motor, 60 Hz, 115/230V - Single Phase		1	A700DH	A700EH	A700FH
•1A	Key - Shaft	OH	2	U65-15SS	U65-15SS	U65-15SS
2	Water Slinger		1	17351-0009	17351-0009	17351-0009
3	Capscrew - 3/8" x 16 x 1" Hex Head		4	U30-74ZP	U30-74ZP	U30-74ZP
4	Seal Plate		1	L3-26	L3-26	L3-26
5	Gasket - Seal Plate	OH/SG	1	L20-43	L20-43	L20-43
6	Shaft Seal	OH/SG	1	U109-267	U109-267	U109-267
7	Spring Holder Washer	OH/SG	1	J24-11	J24-11	J24-11
8	Impeller	OH	2	L105-2PC	L105-2PB	L105-2P
9	Spacer - Impeller		1	J43-23	J43-23	J43-23
10	Diffuser Assembly w/Wear Rings		1	L101-45	L101-45	L101-45
10A	Wear Ring	OH	(1)	L23-9	L23-9	L23-9
10B	Wear Ring	OH	(1)	P23-19	P23-19	P23-19
11	Stop Nut - Shaft	OH	1	U36-175SSW	U36-175SSW	U36-175SSW
12	Diffuser Cover w/Wear Ring		1	L103-27	L103-27	L103-27
12A	Wear Ring		(1)	L23-9	L23-9	L23-9
12B	Capscrew - 1/4" - 20 x 3" Lg.		3	U30-528SS	U30-528SS	U30-528SS
13	Diffuser Ring	OH/SG	1	L21-1	L21-1	L21-1
14	Pipe Plug - 1/2" NPT		1	U78-59ZPS	U78-59ZPS	U78-59ZPS
15	Pressure Gauge		1	U239-8	U239-8	U239-8
16	Pump Body		1	L76-36	L76-36	L76-36
17	Pipe Plug - 1/8" NPT		1	U78-56ZPS	U78-56ZPS	U78-56ZPS
18	Valve Assembly		1	01322	01322	01322
18A	Gasket		1	L20-39	L20-39	L20-39
19	Plug - 1/4" NPT		1	U78-941ZPV	U78-941ZPV	U78-941ZPV
20	Base		1	U4-5	U4-5	U4-5
•20A	Lockwasher - 3/8"		2	U43-12ZP	U43-12ZP	U43-12ZP
•20B	Capscrew - 3/8" - 16 x 5/8" Lg.		2	U30-71ZP	U30-71ZP	U30-71ZP
21	Capscrew - 3/8" - 16 x 7/8" Hex Head		8	U30-73ZP	U30-73ZP	U30-73ZP
22	Connector		1	L43-5C	L43-5C	L43-5C
23	Locknut - 1/2"		1	U36-112ZP	U36-112ZP	U36-112ZP
24	Pressure Switch		1	U217-1216	U217-1216	U217-1217
25	Compression Fitting - Elbow - 1/4"		1	U111-212T	U111-212T	U111-212T
26	Tube - Pressure Switch		1	U37-677P	U37-677P	U37-677P
27	Compression Fitting - Straight - 1/4"		1	U111-100T	U111-100T	U111-100T

• Not shown.

SERVICE KITS

Seal and Gasket Kit	1	PP1625	PP1625	PP1625
Overhaul Kit	1	PP1631	PP1632	PP1633
NOTE: SG Included in Seal and Gasket Kit. OH Included in Overhaul Kit.				

J212-24H Regulator Valve EXPLODED VIEW



229 1093

REPAIR PARTS

KEY NO.	PART DESCRIPTION	QTY.	PART NUMBER
	Pressure Regulator – Complete	1	Pkg. 107
1	Regulator Body w/Seat	1	J112-14
1A	Seat	1	J66-16
2	Diaphragm Assembly w/Guide (Incl. 2A, 2B)	1	J220-16B
2A	Guide	1	J42-5
2B	Diaphragm Assembly (Incl. 2C, 2D, 2E, 2F, 2G)	1	J120-16
2C	Stem	1	J62-9
2D	Diaphragm	1	J20-16
2E	Spring Follower	1	J43-31
2F	Lockwasher	1	J43-23ZP
2G	Nut 1/4-20	1	U36-36ZP
3	Spring	1	J24-13
4	Spring Guide	1	J61-5
5	Bonnet	1	J52-9
6	Capscrew 5/16-18	4	U30-60ZP
7	Hex Nut 5/16-18	1	U36-37ZP
8	Adjusting Screw 5/16-18	1	U30-665ZP
9	Pipe Plug 1/2 NPT	1	U78-59ZPS
•	Compression Fitting 1/4" 90°EL	1	U111-86T
•	Tubing - Pressure Switch	1	U37-625P

• Not shown