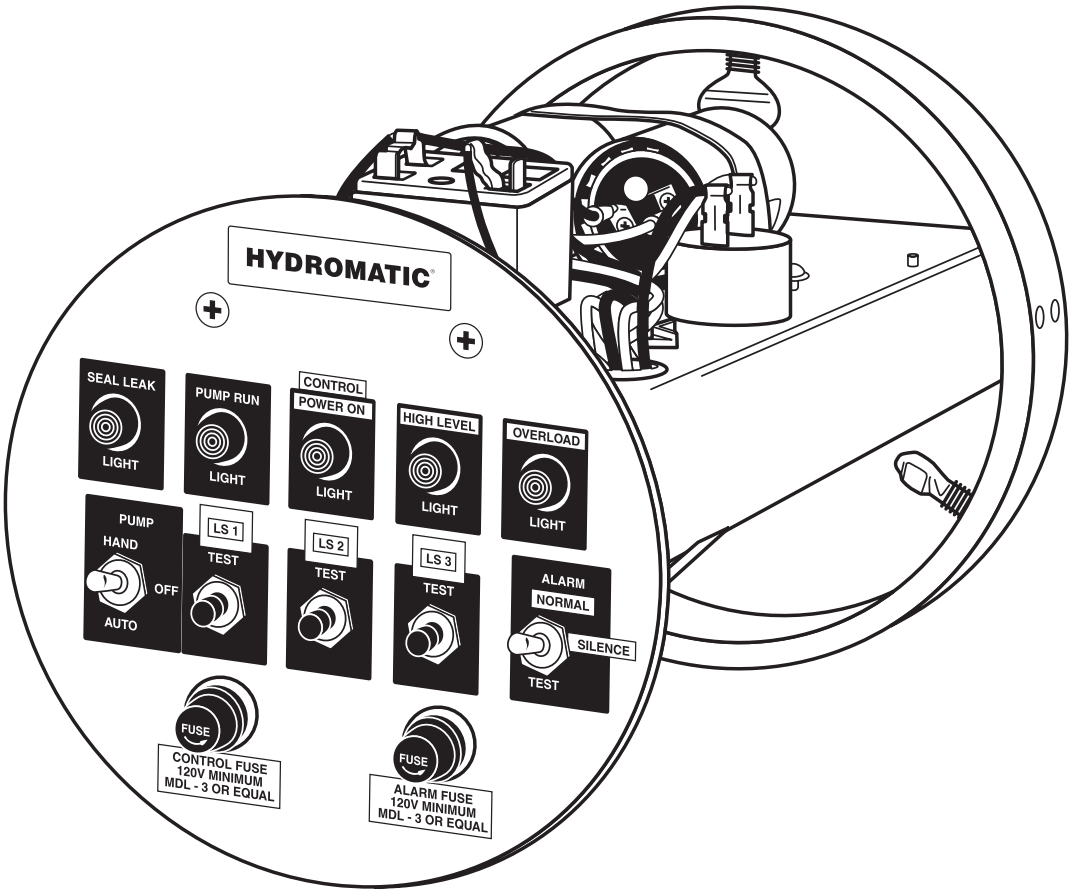
PENTAIR

HYDROMATIC®



MODEL HRS
HYDROMATIC RETRACTABLE SYSTEM
INSTALLATION AND SERVICE MANUAL

NOTE! To the installer: Please make sure you provide this manual to the owner of the equipment or to the responsible party who maintains the system.

Item # H-03-430 | Part # 5625-430-1 | | 11/02/12

General Information

Thank you for purchasing your Hydromatic® HRS. To help ensure years of trouble-free operation, please read the following manual carefully.

Before Operation:

Read the following instructions carefully. Reasonable care and safe methods should be practiced. Check local codes and requirements before installation.

Attention:

This manual contains important information for the safe use of this product. Read this manual completely before using this product and refer to it often for continued safe product use. DO NOT THROW AWAY OR LOSE THIS MANUAL. Keep it in a safe place so that you may refer to it often.

WARNING: Before handling these pumps and controls, always disconnect the power first. Do not smoke or use sparkable electrical devices or flames in a septic (gaseous) or possible septic sump.

CALIFORNIA PROPOSITION 65 WARNING:

⚠WARNING This product and related accessories contain chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

Installation Instructions

Electrical Connections:

The contractor must conform to the latest requirements of the National Electrical Code and any local codes. All conduit and cables shall be in accordance with NEC code NFPA#70. To maintain UL type 4X and CSA ENCL 4 rating, use UL type 4 and CSA weatherproof conduit hubs when connecting to this enclosure. Prior to conducting any installation, repair or service with regard to the control panel, refer to the schematic appropriate for that panel. The schematic will provide guidance with regard to the terminal block connections.

CAUTION: Nonmetallic enclosure does not provide grounding conduit connections. Use grounding bushing and jumper wires.

Make the following Electrical Connections:

a. Connect the pump leads to the control panel. When connecting the pump leads it is very critical that the proper sequence be maintained.

   On single phase pumps, the color coded pump leads black, white, red, must be connected to the appropriate terminals as directed by the control schematic.

b. Connect all the float control leads to the appropriate panel terminal blocks. Contractor must be very careful in locating the floats at the proper elevations.

c. **Before connecting power to the control panel, make sure all control switches (e.g. H-O-A switch) and protective devices (e.g. breakers) are in the off position. Now connect power to the circuit breaker as directed by the schematic.**

d. **Power must be the correct voltage for the pump model. Power must have neutral to supply 120 volts to control circuit.**

e. **Control panel must be grounded properly per NEC and / or local codes. To facilitate this, a ground lug is provided on the control panel.**

Start-up Checklist

WARNING: Before handling these pumps and controls, always disconnect power first. Do not smoke or use sparkable electrical devices or flames in a septic (gaseous) or possible septic sump.

Check List:

1. Check junction box for moisture.
2. Check wiring of pump black, white, red power wires.
3. Check wiring of heat sensor and seal failure wires if supplied.
4. Energize control panel. (Turn on power to panel.)
5. Check overload relay and verify it has reset.
6. **WARNING!** *Live voltage can kill!* Check voltage to the panel and to the control circuit using a voltmeter.

Start-up Checklist

7. Check float operation and response to control panel to the float operation. For sequence of operation, refer to design specification.
8. Check full load current with amp probe and compare it with the nameplate rating. (Clamp amp probe around black pump wire.)
9. With pump running, check discharge to verify the pump is running. Check for flow.
10. Check operation of start relay, per procedure in Item #6 of Maintenance Instructions.
11. Make sure H-O-A switch is left in the Auto position after start-up is completed.

Pump Start-up:

Refer to pump Installation and Service Manual.

Periodic Maintenance

WARNING: Before handling these pumps and controls, always disconnect the power first. Do not smoke or use sparkable electrical devices or flames in a septic (gaseous) or possible septic sump.

The maintenance schedule will vary with the operating and environmental conditions. It will also vary with the specific type of control supplied. The list herein is a guide only.

1. Exercise breaker through two cycles. Be careful not to overexercise as the breaker is not a switching device. Excessive operations tend to affect the trip curve of the breaker.
2. Check run light operation by running pump in Hand.
3. Check continuity through control fuse.
4. Check voltage to the panel and to the control circuit.
5. Check the pump full load amps.
6. Check the start relay by using an amp probe around the red wire (start winding). Amp probe should display a very brisk action from zero to locked rotor and back to operating load. This action occurs on pump start, and the action must show no lazy movement.
7. Check enclosure for moisture. Moisture may cause chattering of relays and contactors.
8. Check control capsule gasket for proper seal. This can be a visual inspection.
9. Check labels to verify they have not been damaged.
10. Pull floats and check for proper operation and ensure there is no foreign buildup on them.

Panel Troubleshooting

WARNING: Before handling these pumps and controls, always disconnect the power first. Do not smoke or use sparkable electrical devices or flames in a septic (gaseous) or possible septic sump.

1. Pump does not run in Hand position.

a. Check pump circuit breaker and control fuse for tripping or for blown condition.

b. Check incoming power voltage and control circuit voltage.

c. Check overload relay to see if it is tripped. Reset relay if tripped.

d. **With the power off**, check motor heat sensor continuity.

e. Check wiring of pump to control panel. It should agree with the schematic.

f. Check contactor coil resistance. It should be 125 to 150 ohms.

2. Pump does not run in Auto position.

a. Check items (a.) through (d.) per Item #1.

b. Floats may be miswired to control panel. Check float type (N.O. or N.C.) and hook up by referring to the schematic. If the start and stop floats are hooked in reverse, pump will short cycle and will not pump the level down.

c. Is the water level in the system high enough to activate floats?

d1. With the power off, remove off float and on float wires and replace with two jumpers made from insulated wire.

d2. Turn power on (with H-O-A switch in Auto position). If pump runs, the problem is in one of the floats.

d3. If the problem is in a float, **Turn power off**, remove jumper and reconnect the upper float. Turn power on and see if pump will run in Auto. This will help identify which float is the problem. Turn power off before

Panel Troubleshooting

removing any jumper or reconnecting any float.

3. **Pump runs, but run light does not energize.**
   a. Run light is neon. Remove light and check on outside 120V source.
   b. Check for loose wire at light or in panel.

4. **Pump runs but does not pump down the wet well.**
   a. Impeller may be dragging in volute due to solids. High amperage draw would identify this.
   b. Refer to the pump manual for other possibilities such as closed discharge gate valve, etc.

5. **Severe humming chattering of contactors and control relays.**
   a. There may be low voltage. Check voltage to the panel and to the control circuit using a voltmeter. This low voltage condition may even cause severe chattering and burnout of relays. Contactors require a minimum of 85% of full voltage to pull in without chatter. If the problem is a recurring one, measure voltage with recorder on a 24 hour basis.
   b. Contactor may have dust around magnet of coil structure. Dry or clean as required.
   c. Make sure the floats are located away from any turbulence.
   d. Dry out the junction box (if furnished); moisture in the junction box may tend to cause relays to energize intermittently.

6. **Nuisance tripping of overload on the motor starters or the circuit breakers.**
   a. Check all reset buttons and tripped breakers.
   b. Check pump and draw with amp probe and compare to nameplate amps on pump.
   c. The impeller may be locked up due to excessive debris or solids.
   d. Possible motor failure (fault on windings).
   e. Pump may be miswired to terminal block.

WARNING: Disconnect all power from the panel before making these checks.

7. **Motor winding resistance readings.**
   a. Disconnect all three motor leads.
   b. Using a volt-ohm meter, with the scale set on RX1, measure the resistance between the leads with chart figure A.

Chart Figure A

Winding	Typical Motor Leads	Resistance Reading
Main	Black to White	Lowest
Start	Black to Red	Next Lowest (Middle)
Both	White to Red	Highest

8. **Capacitor Check.**
   a. Make sure the capacitors are discharged. **Use extreme caution; severe shock hazard may exist with capacitors.**
   b. Disconnect the capacitor leads and connect a volt-ohm meter to the capacitor terminals.
   c. The meter should indicate low ohms when it is first connected, but as the capacitor becomes charged (by the meter), it will return to a reading of infinity (open circuit).

   NOTE: Set the meter on the RX10,000 scale to check the run capacitor.

   Set the meter on the RX1,000 scale to check the start capacitor.

9. **Start relay check.**
   a. Check the coil resistance. It should be 5500 to 6000 ohms.
   b. Install a clamp on amp meter around the start winding lead.
   c. Set the amp meter scale to at least 2 times the pump motor full load current.
   d. Place the H-O-A switch in the Hand position to start the pump.
   e. The meter should read approximately 2 times full load current during starting.
   f. After the motor has started (within one second), the current should drop to full load current or less.

10. Motor voltage check:

Component	Typical Motor Lead	Mode	Voltage Reading
Main Winding	Black to White	Start	Line Voltage
Main Winding	Black to White	Run	Line Voltage
Start Winding	Black to Red	Start	Line Voltage
Start Winding	Black to Red	Run	120% Line Voltage

11. Short cycling pump.

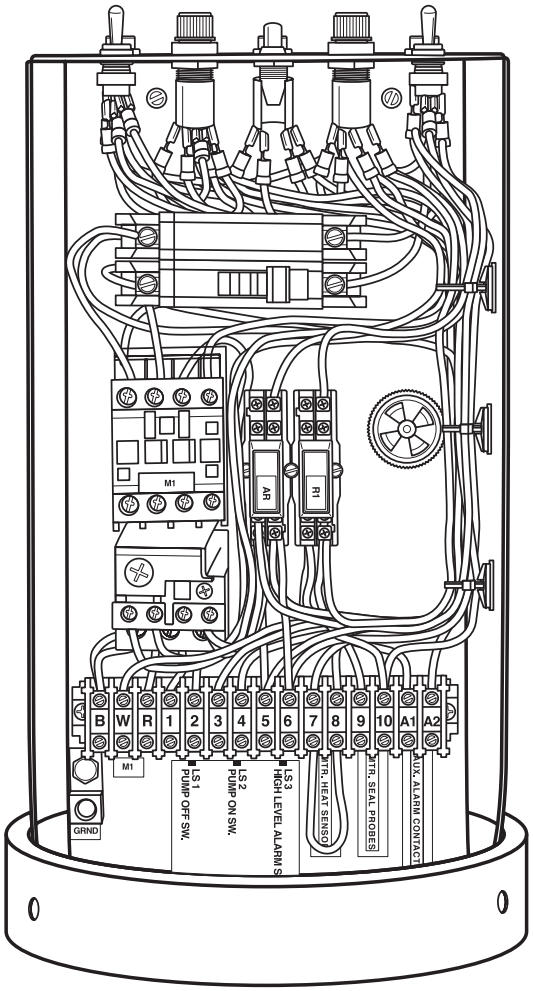
a. Check float controls.

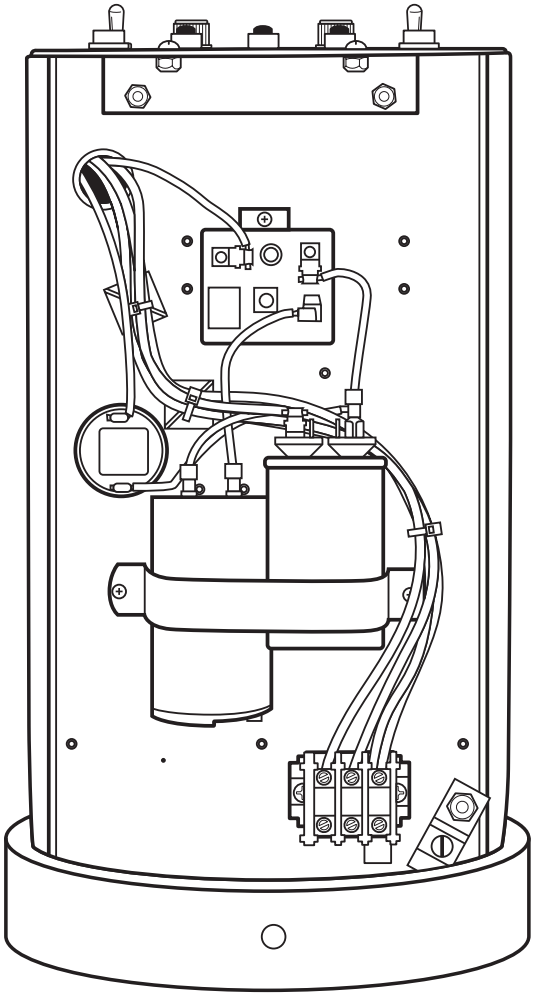
12. Run light stays on.

a. Selector switch may be in the Hand position.

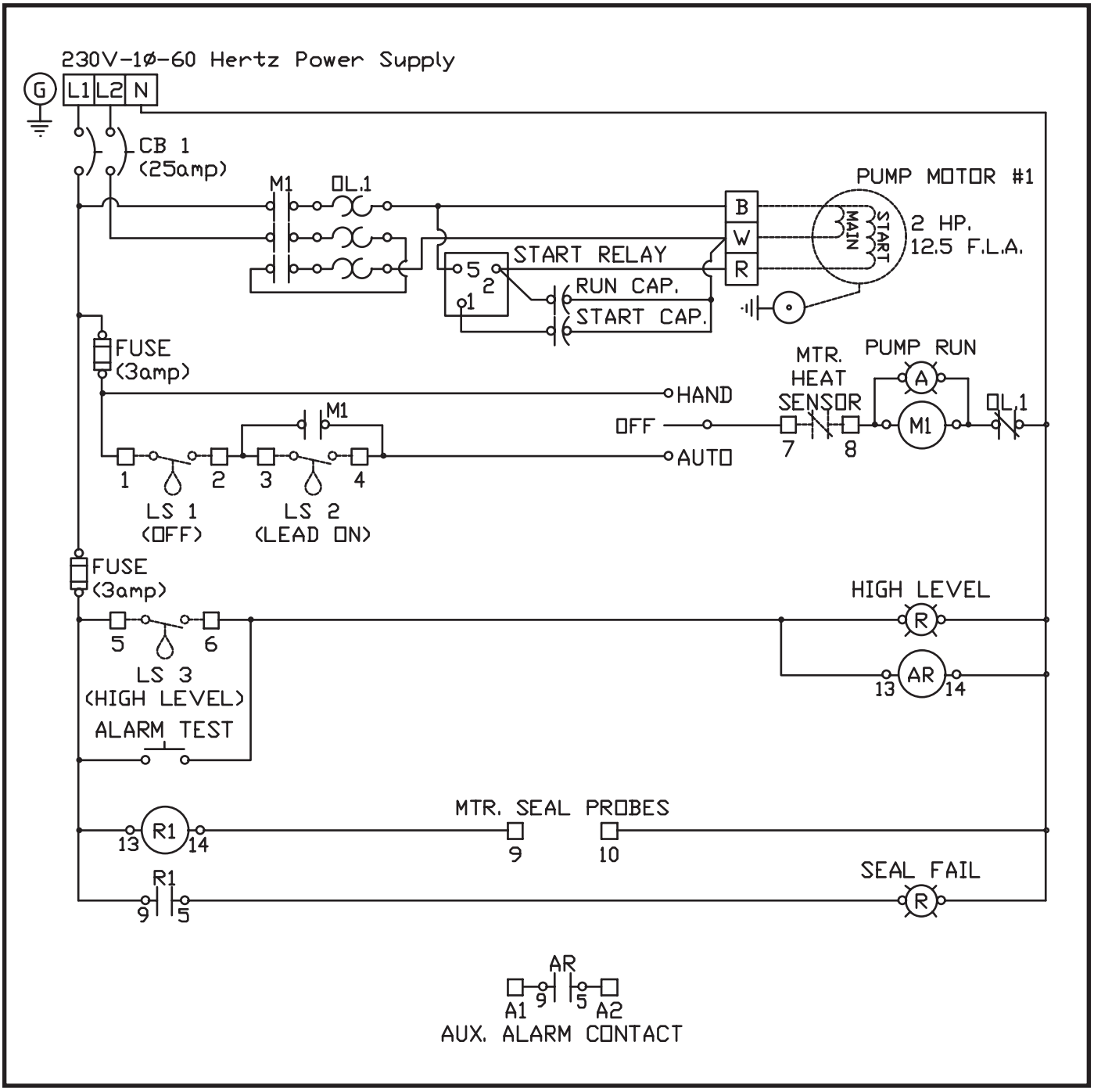
13. Test for blown fuse.

a. Check for continuity with a V-O-M set on ohm scale.





Panel Schematics



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STANDARD LIMITED WARRANTY

Pentair Hydromatic® warrants its products against defects in material and workmanship for a period of 12 months from the date of shipment from Pentair Hydromatic or 18 months from the manufacturing date, whichever occurs first – provided that such products are used in compliance with the requirements of the Pentair Hydromatic catalog and technical manuals for use in pumping raw sewage, municipal wastewater or similar, abrasive-free, noncorrosive liquids.

During the warranty period and subject to the conditions set forth, Pentair Hydromatic, at its discretion, will repair or replace to the original user, the parts that prove defective in materials and workmanship. Pentair Hydromatic reserves the right to change or improve its products or any portions thereof without being obligated to provide such a change or improvement for prior sold and/or shipped units.

Start-up reports and electrical schematics may be required to support warranty claims. Submit at the time of start up through the Pentair Hydromatic website: http://forms.pentairliterature.com/startupform/startupform.asp?type=h. Warranty is effective only if Pentair Hydromatic authorized control panels are used. All seal fail and heat sensing devices must be hooked up, functional and monitored or this warranty will be void. Pentair Hydromatic will cover only the lower seal and labor thereof for all dual seal pumps. Under no circumstance will Pentair Hydromatic be responsible for the cost of field labor, travel expenses, rented equipment, removal/reinstallation costs or freight expenses to and from the factory or an authorized Pentair Hydromatic service facility.

This limited warranty will not apply: (a) to defects or malfunctions resulting from failure to properly install, operate or maintain the unit in accordance with the printed instructions provided; (b) to failures resulting from abuse, accident or negligence; (c) to normal maintenance services and parts used in connection with such service; (d) to units that are not installed in accordance with applicable local codes, ordinances and good trade practices; (e) if the unit is moved from its original installation location; (f) if unit is used for purposes other than for what it is designed and manufactured; (g) to any unit that has been repaired or altered by anyone other than Pentair Hydromatic or an authorized Pentair Hydromatic service provider; (h) to any unit that has been repaired using non factory specified/ OEM parts.

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