1 Phase Simplex Control Panel for Grinder and Vortex Pumps

Owner and Operational Manual

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Introduction

Before proceeding with the installation or operation of the control panel read all instructions thoroughly as well as comply with all Federal, State and Local Codes, Regulations and Practices. The control panel must be installed by qualified personnel familiar with all applicable local electrical and mechanical codes. Refer to the National Electrical Code (NFPA 70). Failure to properly install and test this product can result in personal injury or equipment malfunction. All conduit connected to the panel must be sealed with conduit sealant to prevent moisture or gases from entering the panel. NEMA 1 enclosures are for indoor use only while NEMA 4X panel enclosures may be used indoors or outdoors. Refer to panel model name-plate on inside of door for enclosure rating. Note: If options are ordered that affect the number of floats, refer to the panel schematic for complete information.

This Control Panel Is Used With The Following Pumps

G2DT-01	G2DT-21	V1D-01	V1D-21	G2D-01	G2D-21	V15D-01
V15D-21	V2D-21	G3D-01	G3D-21	V2D-01	V3D-01	V3D-21

Safety Guidelines

1. DO NOT USE WITH FLAMMABLE OR EXPLOSIVE FLUIDS SUCH AS GASOLINE, FUEL OIL, KEROSENE, ETC. DO NOT USE IN EXPLOSIVE ATMOSPHERES. CONTROL PANEL SHOULD ONLY BE USED IN WATER AND WASTEWATER APPLICATIONS THAT ARE NOT RATED AS A HAZARDOUS LOCATION.
2. DO NOT WORK ON THE CONTROL PANEL WITH LIVE VOLTAGE APPLIED TO THE CONTROL PANEL WITH WET HANDS OR WHEN STANDING ON A WET SURFACE.
3. DISCONNECT ALL ELECTRICAL SERVICE BEFORE WORKING OR HANDLING THE CONTROL PANEL.
4. INCOMING VOLTAGE MUST MATCH THE CONTROL PANEL VOLTAGE. REFER TO THE PANEL SCHEMATIC FOR COMPLETE INFORMATION.

Installation of the Control Panel:

1. Determine mounting location for the control panel. If splicing is required between the level switches and the panel, we recommend a junction box. CAUTION! Use conduit sealant and waterproof wire nuts for connections. Make sure all connections are water tight.
2. Determine conduit entrance locations on control panel and install per local codes. Check schematic and determine number of power sources required. Use conduit sealant on all conduits to prevent moisture and gases from entering control panel.
3. Connect control/alarm and pump power conductors to the proper terminals. The schematic and terminal blocks will be labeled for proper connection.
4. Verify correct panel operation after installation of panel, power and level switches are complete.

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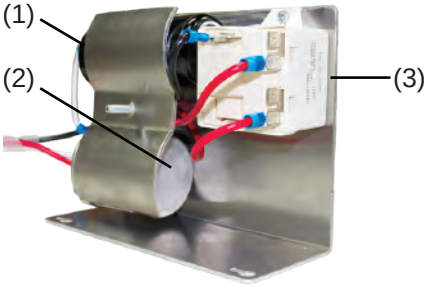
Installing the Starter Pack

#1. The Starter Pack (Fig. A) comes pre assembled with the start capacitor (1) run capacitor (2) and start relay (3) mounted on a plug and play bracket.

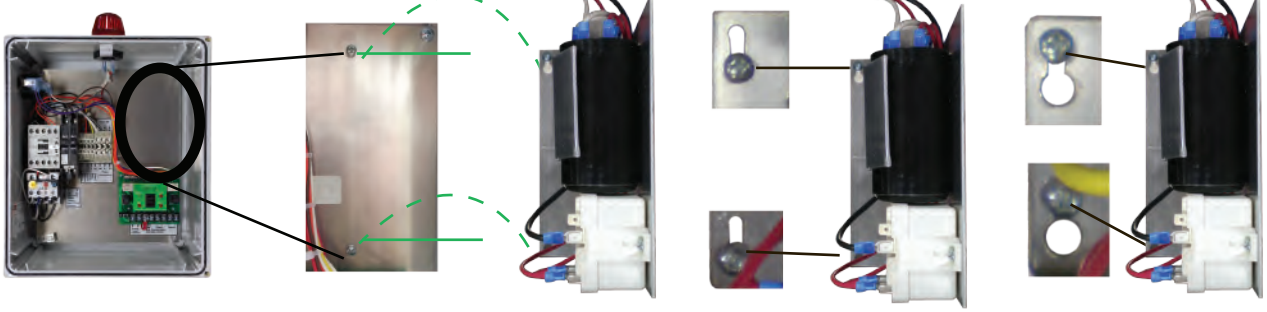
(Fig. A)
Top View



(Fig. A)
Side View

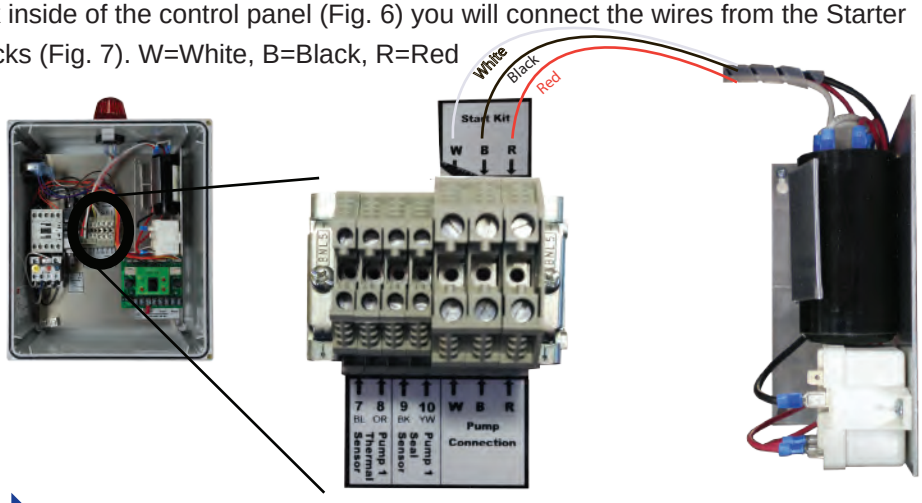
#2. Use the empty space on the top right side of the control panel to mount the Starter Pack. (Fig. 1). To secure the Starter Pack to the control panel, place (Fig. 3) on top of (Fig. 2) by setting the bracket on top of the screws (Fig. 4), then slide the bracket down so the screws are in the narrow part of the mounting holes (Fig. 5), then tighten the screws.

(Fig. 1) (Fig. 2) (Fig. 3) (Fig. 4) (Fig. 5)



#3. After securing the Starter Pack inside of the control panel (Fig. 6) you will connect the wires from the Starter Pack to the top of the terminal blocks (Fig. 7). W=White, B=Black, R=Red

(Fig. 6)



(Fig. 7)

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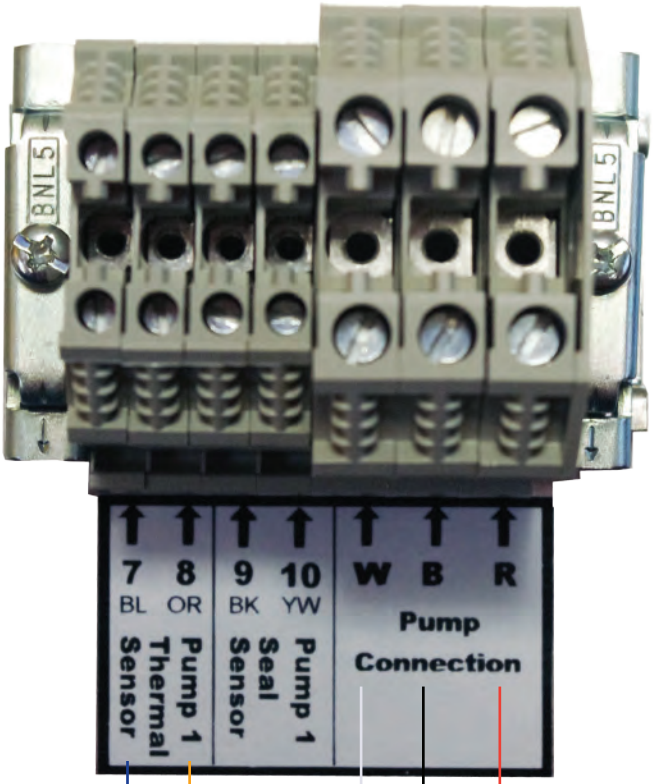
Connecting the Pump and Thermal Wires:

Your pump has 5 colored wires. White, Black, Red, Blue and Orange

Pump Connection: The White, Black and Red wires connect to the terminal block labeled **Pump Connection**.W=White, B=Black, R=Red

Pump 1 Thermal Sensor: The remaining two wires will be Blue and Orange. They are connected to the terminal block labeled **Pump 1 Thermal Sensor**. BL=Blue, OR=Orange



Testing the Thermal Sensor:

#1. Put one ohm meter probe on the Blue wire and one on the Orange wire.

#2. If the reading is 0 or near 0 the thermal sensor is good.

If the reading is OL the pump has been or currently is overloaded.

Pump

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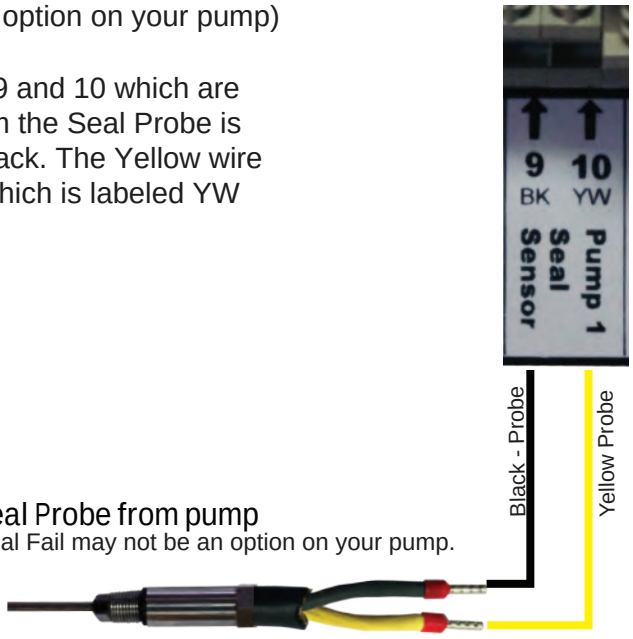
Pump 1 Seal Fail Probe: (Seal Fail may not be an option on your pump)

The Seal Probe wires are connected to terminals 9 and 10 which are labeled **Pump 1 Seal Sensor**. The Black wire from the Seal Probe is connected to terminal 9 which is labeled BK for Black. The Yellow wire from the Seal Probe is connected to terminal 10 which is labeled YW



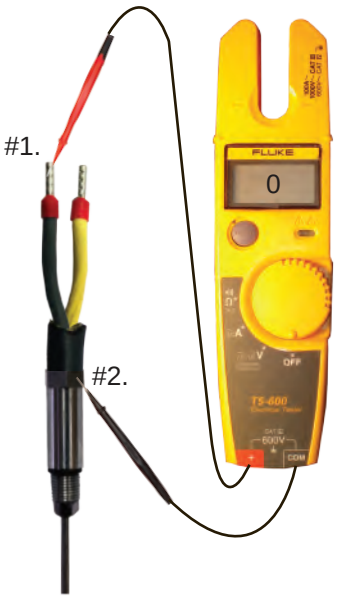
Testing Seal Fail Probes:

#1. Put one ohm meter probe on the Black wire of the sensor.

#2. Place the other ohm meter probe on the "Hex" Nut portion of the sensor. The ohm meter should read "continuity" or close to zero ohms, If it reads "open" or "High" ohms then the sensor is defective.

#3. Put one ohm meter probe on the seal probe.

#4. Place the other ohm meter probe on the yellow wire. The ohm meter should read "continuity" or close to zero ohms, If it reads "open" or "High" ohms then the sensor is defective.



Sensor is good:

Sensor is good:

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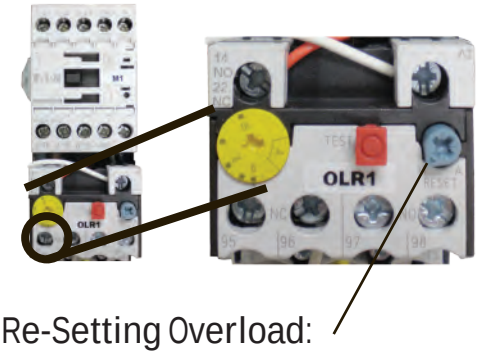
Setting Overload FLA to Pump FLA:

Use a phillips head screwdriver to adjust the yellow dial to the full load amps (FLA) of your pump. i.e. If the FLA of your pump is 6.0 you would set the yellow dial on the overload relay to 6.



Re-Setting Overload:

To reset a tripped overload, push the blue RESET switch. Make sure the dial is in the ”H” position.

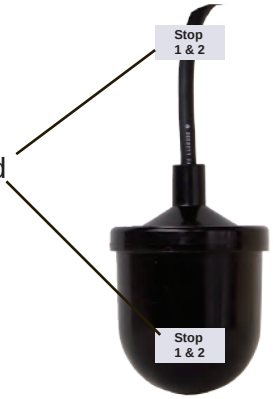
To verify the Overload has tripped.

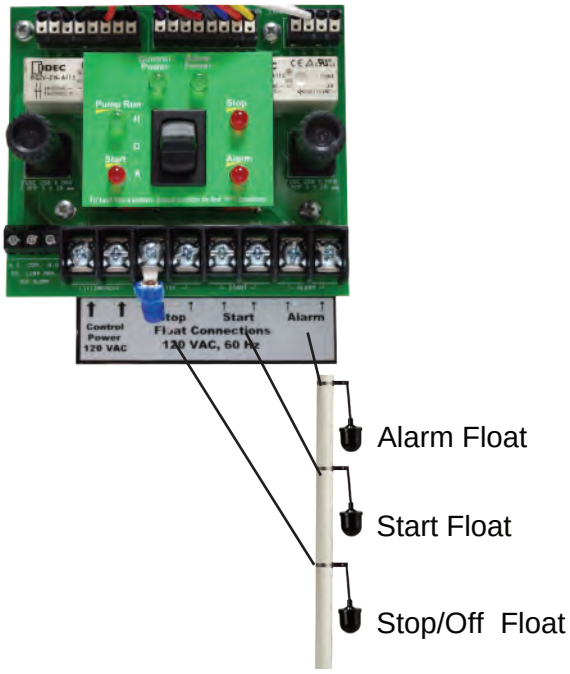
Use an ohm meter to verify if an overload has tripped. Place one of the ohm meter probes on terminal 97 of the overload and place the other probe of the ohm meter on 98 of the overload. If your reading is high the overload is not tripped. If your reading shows continuity or 0 ohms, the unit is tripped and should be reset.

Mounting Level Switches:

Float switches are most commonly used, but 1 Phase Simplex Grinder & Vortex control panels can also be used with any dry contact type of level or pressure switch. Illustration shows float switches installed for pump down applications. Refer to float switch instructions for mounting of clamp or weighted floats.

Float switches are labeled on both buoy end and cord end for easy installation.





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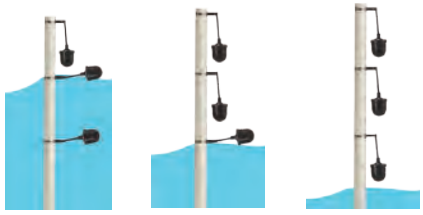
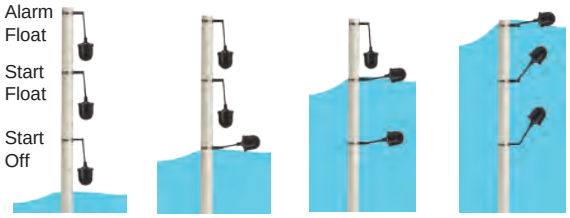
Normal Float switch function as tank fills:

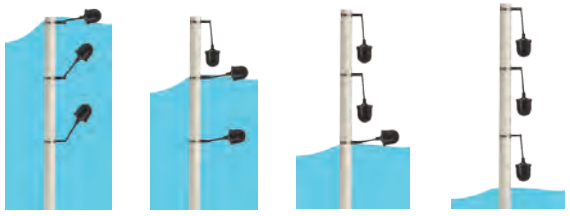
Normal Float switch function as tank empty's:



Abnormal Float switch function as tank fills:



Abnormal Float switch function as tank empty's:

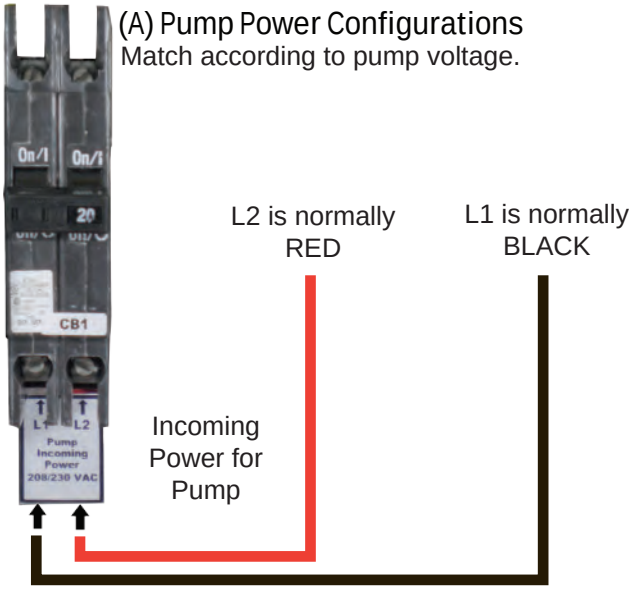


Incoming Power Configurations:

Illustrations below shows how to connect power for the pump and the control circuits. Use two incoming power sources. (A) is the pump circuit and (B) is the alarm circuit.

(A) Pump Power Configurations

Match according to pump voltage.



(B) Alarm/Control Power Configurations

L1 N
120 V

CONNECT ALL GROUNDS TO GROUND LUG

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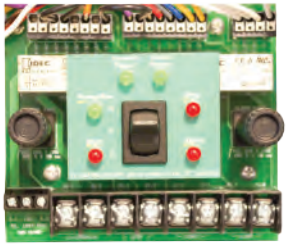
Simplex Circuit Board Command Center



There is one HOA (Hand-Off-Auto) switch. This HOA switch is also used as the System Test switch for diagnosing the control panel.

1. 2. Two green power “on” indicators provide visual indication for the control and alarm fuses. Fuses must be replaced with 1 amp fast acting 5mm X 20mm fuses.

3. 

The Pump Run indicator light is green. If this light is illuminated the pump is running.

4. 

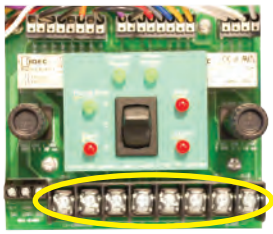
5. 

6. 

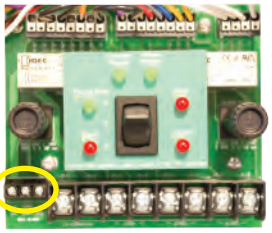
The Stop float, Start float and Alarm float indicator lights are red.

Circuit Board Terminal Blocks:

1 Phase Simplex Grinder & Vortex control panels use two terminal blocks for alarm mode configurations. An 8 position main terminal block is for power and level switch connections. A separate 3 position terminal block is used for dry auxiliary contacts. A 5 amp, 120 VAC max load can be applied to the auxiliary terminals. The auxiliary contacts are Form C, Single Pole, Double Throw. (Common, Normally Open, Normally Closed). Contacts change state when in alarm condition.



8 position terminal block



Auxiliary contact terminal block

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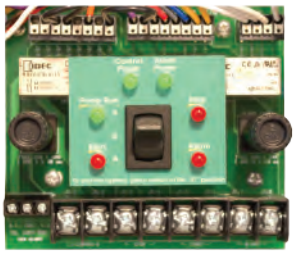
1 Phase Simplex - How to use the System Test switch

#1. Check the incoming power on the top of the command center.



Fuses are good.

If the indicator lights are illuminated the fuses are good.

If one or both of the indicators are not illuminated the fuse or fuses need to be replaced. If the fuse or fuses do not fix the problem the incoming power needs to be examined.

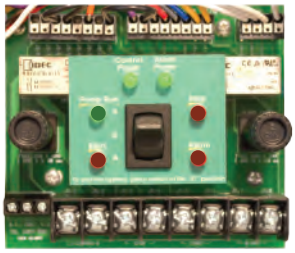
Alarm Fuse needs to be replaced

Control Fuse needs to be

#2. View the current status of your system.

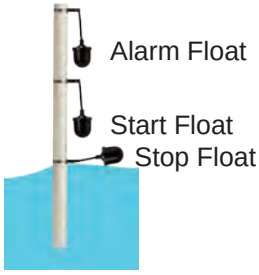
The indicator lights illuminate as each float rises with the liquid level in the tank.

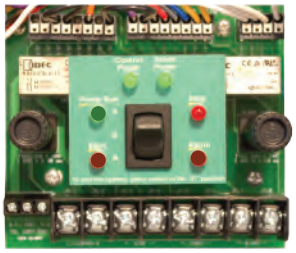
#1.



All three floats are not activated. Only the Control Power and Alarm Power indicator lights should be illuminated.

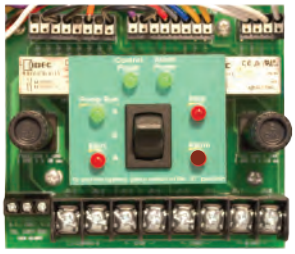
#2.

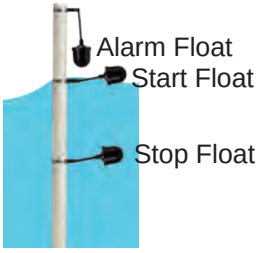




If the Stop float is activated the Stop light will illuminate.

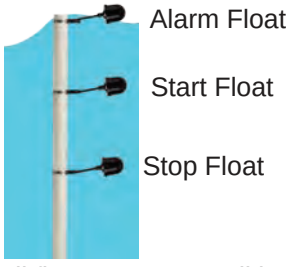
#3.

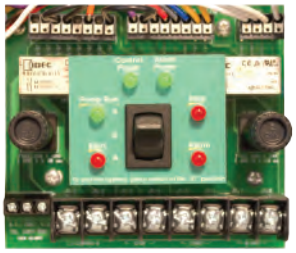




The Stop float and the Start float are activated so the Stop float and the Start float indicator lights are illuminated.

#4.





All floats are up so all indicators are illuminated.

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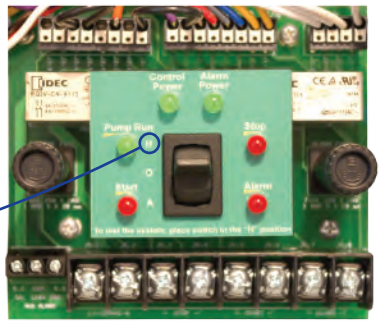
1 Phase Simplex - How to use the System Test switch

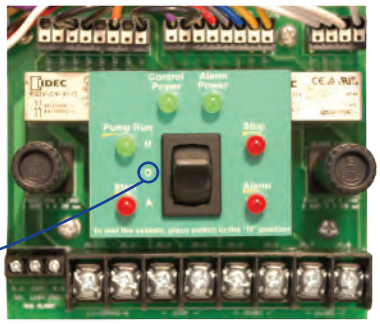
#3. Operating the pump manually with the HOA (Hand-Off-Auto)

1 Phase Simplex
command center

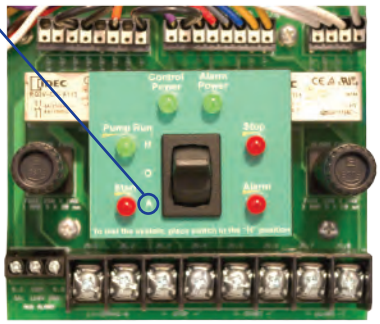
Place the HOA (Hand-Off-Auto) switch in the H "Hand" position to turn the pump on manually.



Place the HOA (Hand-Off-Auto) switch in the O "Off" position to turn the the pump off from operation completely.



Place the HOA (Hand-Off-Auto) switch in the A "Auto" position to turn the pump with float control. When the water level raises the stop and start float the pump turns on and stays on until the stop float drops down. If the liquid raises the high level float a visual and audio alarm will trigger.



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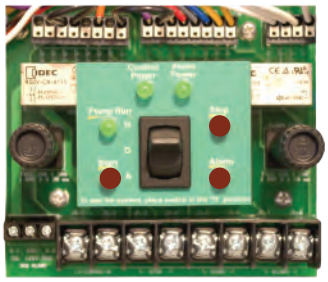
1 Phase Simplex - How to use the System Test switch

#4. Using the System Test switch to troubleshoot your control panel.

Fig. #1.



Place the HOA (Hand-Off-Auto) switch in the H "Hand" position. The Pump Run indicator light will illuminate and the pump will turn on.

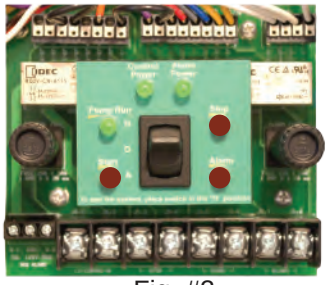
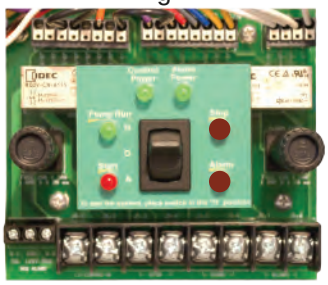


Fig. #2.

Place the HOA (Hand-Off-Auto) switch in the H "Hand" position and you will be automatically checking the true status of the floats.
EXAMPLE: Fig #2. The green pump run light is illuminated because the HOA switch is in the hand mode.

Fig. #2A.

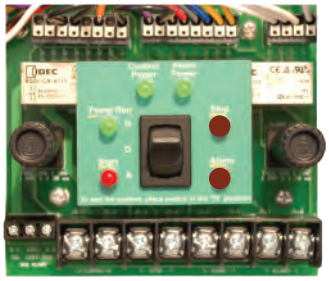


EXAMPLE: Fig#2A

The Start float indicator is illumi-

The Stop float indicator light is not.

Illustration (Fig#3A) shows the Stop float is activated, but the indicator light on the command center in (Fig#2A) is not illuminated. The Stop float is not working properly and should be replaced.



EXAMPLE: Fig#2B The same indicator lights are illuminated.

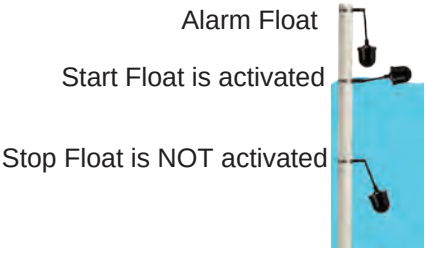
The Start float indicator is illumi-

The Stop float indicator light is not.

Example (Fig#3B) shown below is demonstrating that the same float is not working, but for a different reason. In this example the float is hung up in the tank.

(Fig#3A)

(Fig#3B)



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