Hydrapulse Switch
Ace-84

Owners Manual

SONNY'S Enterprises, Inc.
5605 Hiatus Road
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INTRODUCTION

This Manual contains information that is vital to the successful installation, operation and maintenance of your SONNY'S vehicle washing equipment.

Please read, and understand, the full contents of this manual before installation and operation of the equipment. Keep this booklet in a location where it may be used for ongoing reference.

Should you have any questions on the operation or servicing of this equipment please contact

TECHNICAL SERVICES DEPT.

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THANK YOU FOR YOUR CONFIDENCE IN SONNY'S !!!!!

SAFETY REQUIREMENTS

1. Only those employees specifically instructed by the location manager will be permitted to enter the wash tunnel to perform inspections or maintenance.
2. Do not enter the wash tunnel when the equipment is operating.
3. Always exercise caution when walking through the wash area, may be slippery conditions.
4. Be cautious when walking through the tunnel to avoid running into or tripping over equipment.
5. Do not ever run through the wash area.
6. Do not perform any work on equipment unless you performed Lock-Out Safety Precautions.
7. When maintenance requires that a piece of equipment be in operation, one qualified maintenance person must stay at the power disconnect switch while that equipment is operating.
8. All electrically powered equipment must have manually operated disconnects capable of being locked in the "OFF" position. Equipment that has been "locked out" for any reason can only be restarted by the person who performed the "lock out" operation.
9. Do not attempt to repair or adjust any pressurized liquid or pneumatic part, hose, pipe or fitting while that equipment is in operation.
10. Any "Stop" switch activated must be reset only by the person who initiated the operation.
11. Electrical connections and repairs are to be performed by a Licensed Electrician only.
12. Store all cleaning and washing solutions and oils in a well ventilated area.
13. Clean up fluid spills immediately to prevent hazardous safety conditions.
14. Be certain to follow all safety procedures on MSDS Sheets for each chemical product used.
15. All new employees must be thoroughly trained in safe operating and maintenance practices.
16. All employees must attend periodically scheduled safety procedure sessions.
17. Do not operate any piece of equipment that requires safety covers with those covers removed or improperly installed.
18. Do not allow any part of your body or other object to come in contact with moving machinery.
19. Do not wear loose fitting clothing or jewelry around moving machinery.
20. At least two qualified maintenance people must be present when performing equipment repairs or preventative maintenance.
21. When working on any equipment that is higher than a person's shoulders always use a fiberglass ladder that is in good condition.

Mounting

The HYDRAPULSE SWITCH should be wall mounted in a dry area. Once the unit is mounted, the hydraulic connections should be made as shown in figure 1. The SUPPLY line going from the power pack to the ACE 84 should be used.

NOTE: When plumbing the Hydrapulse motor, DO NOT OVER TIGHTEN FITTINGS. This may crack the motor and void the warranty.

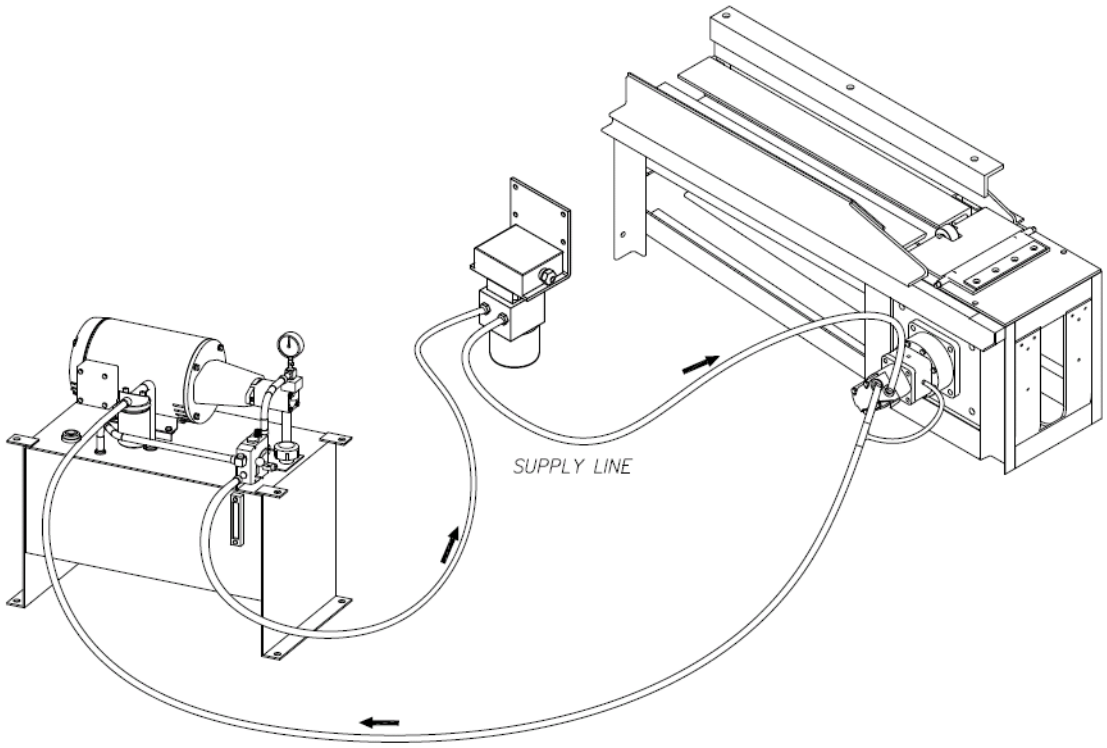

FIGURE #1

Wiring

The Hydrapulse Switch requires 9 - 24VAC or DC to operate and provides a dry contact closure as output. A supply current of 15 - 30 mA (0.4 W) depending on the supply voltage is required. The output contacts are rated at 500 mA (1/2 A) maximum. An AC adapter is provided to supply power to the Hydrapulse Switch. This can be mounted anywhere and wired to the unit.

NOTE: We highly recommend using this adapter and NOT the power from your controller.

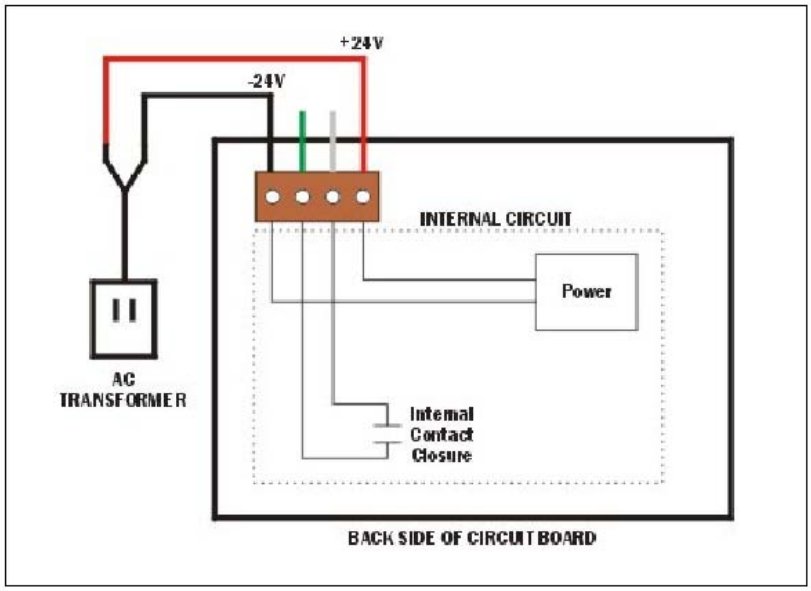

FIGURE #2

When Using A Commander Controller

When connecting the Hydrapulse Switch to an Auto Pilot Commander controller, the pulse wires get connected to TB5 located on the right side of the main circuit board (CC64).

When Using A Wash Pilot or Other Controller

For connections to other controllers check the installation manuals for these controllers. If the controller requires a contact closure connect the GREEN and WHITE wires to the input terminals and the RED and BLACK wires to the power observing voltages and polarities. If on the other hand it requires a voltage level as input a connection scheme, a qualified technician or an Auto Pilot technical support will be able to assist you.

Powering Up

Once all connections are completed satisfactorily turn the power on, the display should read “0.00”.

Calibration

You will need the following items to calibrate your Hydrapulse Switch:

- Stopwatch
- Wax-pencil or Marker
- Measuring Tape

Process

1. Place two marks 200 inches apart on the conveyor. These marks will be used to time a conveyor roller.
2. Remove the cover from the Hydrapulse Switch Enclosure and locate the three buttons shown in Figure 3.
3. Turn on the conveyor. After a few seconds the display will stabilize. Once calibrated the display will show an average speed for the last 2 seconds. The Hydrapulse Switch can display your conveyor speed in two formats: ‘feet per minute’ or ‘cars per hour’ (a standard car length and space is 21 feet). To select ‘feet per minute’ press and release button 1. For ‘cars per hour’ press and release button 2.

FIGURE 3

All calibration values are in ‘feet per minute’ once the unit has been calibrated to match your conveyor the display format can be selected as shown above.

NOTE: The conveyor must be running and brought up to a high constant speed throughout the entire calibration process. Cars should not be on the conveyor during calibration.

4. Press and release button 1. This sets the display to ‘feet per minute’.

5. Using your stopwatch, measure the time **in seconds** that it takes a roller to go from your first mark, to your second mark.
6. Calculate your conveyor speed using the formula: 1,000 divided by the time recorded in step 5.

NOTE: For accurate results use speed values between 40 and 90 'feet per minute'. If value is less than 40 or greater than 90, use flow control to adjust conveyor speed, repeat steps 5 & 6.

7. Press and release button 3. The left digit on the display will begin to flash. Use buttons 1 and 2 to adjust the display to match the value calculated in step 6, noting the decimal place. Button 1 increases the display while button 2 decreases it. If buttons 1 and 2 are held down, the display will change quickly.
8. Once the display matches the calculated value press and release button 3. The display will now go blank for 15 seconds. After 15 seconds the display will now read "2.0" and the middle digit will now be flashing. Using buttons 1 and 2, adjust the display to set the number of pulses you wish the Hydrapulse Switch to generate per foot of conveyor movement.

   For example: If you want your pulses to be 6 inches apart, leave the display at "2.0". For 8 inches apart, adjust the display to "1.50".

   If you are trying to match an existing pulse rate you can calculate that by dividing a function's pulse count by the distance to the enter switch. Use functions at the end of the tunnel to be most accurate.

   For example: If the air dryer was previously set at 100 pulses and is at a distance of 60 feet, the pulse rate is 100/60 or 1.67 pulses per foot. The formula for calculating this number is 12/(the number of inches for each pulse).

NOTE: For customers with DRB Controllers – DRB's tunnel controllers prefer to have one pulse per sprocket revolution. This means that if you have a standard 12-tooth sprocket, then your pulses per foot rate should be 0.37(12"/31.92" per sprocket revolution=0.37)

9. After the pulse rate has been set, press and release button 3. After a few seconds the display should now show the speed of the conveyor. If the value is incorrect, repeat steps 1 to 6.
10. You can now select the display format. For display in 'feet per minute' press button 1. For 'cars per hour' press button 2.
11. Replace cover. the Hydrapulse Unit is now calibrated to match your conveyor. The values recorded are retained even if the power is removed.

Converting Conveyor Speed

Inches per Second x 14.3 = Cars per Hour (i.e. 7 Inches per Second = 100 CPH)

Feet per Minute x 2.86 = Cars per Hour (i.e. 35 Feet per Minute = 100 CPH)

Unit Assembly Instructions

Materials

Sensor Assembly (1)

75’ Hyrapulse Cable (1)

½” Strain Relief (2)

Hydrapulse Decal (1)

5 x 5 x 3 Plastic Enclosure (1)

Back Plate Enclosure (1)

Motor Mounting Bracket (1)

Motor Cover (1)

Hydrapulse Hydraulic Motor (1)

Hydrapulse Circuit Board (1)

Hydrapulse 24VAC Transformer (1)

Sensor Mounting Bracket (1)

16-Tooth Sprocket (1)

Screw, Hex 3/8-16 x ¾ (4) ZN *

Washer, Ext Tooth 3/8 (4) ZN*

Screw, Ph Phil 6-32 x 3/8 (8) ZN*

Washer, Ext Tooth #6 (8) ZN**

* Hardware to secure the motor

** Hardware to secure the enclosure cover, enclosure back plate, and sensor bracket.

Preparing the Sensor – The cherry sensor has three (3) wires (black, blue, tan) and will come with two (2) lock washers.

1. Slip the three wires through shrink hose to bundle them together, allowing no more than two inches to be exposed at the end. The shrink hose should press up against the sensor and should be heated in place.

Picture Here

2. Strip the three wires so that 1mm of wire is exposed.
3. Crimp a wire lead on the end of each wire.

Pic Here

4. Insert the leads into the 3-prong wire connector in such a way that when the cable is plugged into the PC board, the order should be: tan on top, blue in the middle, black on bottom. Do not plug the connector into the PC board.
5. Screw one lock washer onto the sensor about mid-way and then slide the sensor bracket onto the sensor. The other lock washer can be screwed on to hold the bracket in plae. The sensor bracket should have the “L” part where the screws bolt it down pointing away from the front of the sensor.

Pic Here

Preparing the Cable – The cable is the 4-wire 22AWG cable; there is a black, red, green and white wire. This cable is generally cut in 50ft runs.

Pic Here

1. Strip the four (4) wires on one end so 1mm of wire is exposed.
2. Crimp a wire lead onto each of the four (4) wires.

Connecting the Cable

Pic Here

1. The connector is plugged into the back of the board, and the LCD screen is facing away from the assembler, the color order from left to right should be: black, white, green, red.
2. Strip each of the four (4) wires on the other end of the cable. The length of the exposed wire can vary. The green and the white wires will be the dry contact and the black and the red will be the power for the board. How these are connected to the controller is up to the installer (reference attached wire diagram).
3. Insert the leads into the 4-pin connector. The order should be that the black and red wires are the outer two pins, the white and the green wires are the inner two pins. If the connector is plugged into the back of the board, and the LCD screen is facing away from the assembler, the color order from left to right shoud be: black, white, green, red.

4. Strip each of the four (4) wires on the other end of the cable. The length of the exposed wire can vary. The green and the white wires will be the dry contact and the the black and the red will be the power for the board. How these are connected to the controller is up to the installer.

Pic Here

Preparing the Motor Assembly

1. The motor should be oriented with the hydraulic connections pointing to the left or the right.

Pic Here

2. Bolt the motor bracket down to the motor using four (4) bolts and four (4) washers. The bracket should be positioned so that the “L” is pointing towards the assembler.

Two pics, side by side go here

3. Secure the sprocket to the motor shaft.

Two pics, side by side go here

4. Bolt the sensor assembly to the motor bracket with the sensor pointing towards the sprocket.

Pic here

5. Adjust and secure the sensor so that there is no more than 1 credit card width between the sensor and the teeth of the sprocket.

Pic here

6. Insert the sensor fitting into the motor cover and pull the tail of the sensor through it.

Pic Here

7. Bolt the motor cover onto the motor bracket.

Pic here

Preparing the Control Box

1. Screw the PC board standoff’s into the back plate of the enclosure.

Pic here

2. Insert the sensor fitting into the side wall of the enxlosure.

Pic here

3. Secure the PC board to the standoffs.

Pic here

4. Attach the face plate to the enclosure.

5. Apply the decal onto the face plate in such a way as to allow the LCD screen of the PC board to be visible.

Final Assembly – The following should be bundled together for shipping:

1. The completed motor assembly.
2. The completed control box.
3. The prepared 50ft cable.
4. The 24VAC power supply adapter.
5. The instruction manual.

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CUSTOMER SERVICE

Please contact SONNY'S Equipment Department for installation and/or operational questions regarding this piece of equipment.

Please refer to the Parts list in this manual or our Parts Catalog and contact SONNY'S Customer Service Order Entry Department for any replacement parts for this piece of equipment.

For Equipment Repairs please visit the web at **www.sonnysdirect.com/manual**.

DEPARTMENT	PHONE NUMBERS	FAX NUMBERS
Toll Free Main Line	800-327-8723	800-495-4049
Equipment Department	954-720-4100	954-720-9292

Or you can email Sales at sales@sonnysdirect.com

Thank you for being a SONNY'S car wash equipment owner!

From all of us here at