Information on Discontinued 24V Leeson Motor

Due to the fact that the 24V 1/2 HP Motor used in the 24V Newport 400 was discontinued by Leeson as of January 2022, we have created this guide in order to assist you in replacing a faulty or aging Motor on a 24V Newport 400. As of Summer 2022, all Newport 400 systems (Both 24V & 12V configurations) will come equipped with a 12V 1/2 HP Leeson Motor. If you purchased a 24V Newport 400 before Summer 2022, in the event of a motor failure, this guide will assist you in replacing your motor and reprogramming your speed control so that your system can work seamlessly with the new 12V Motor installed.

Section 1: Replacing the Motor

Tools Needed:

- Magnet
- #2 Phillips Screwdriver
- Multimeter
- 7/16" Nut Driver or Box Wrench (Crescent Wrench will also work for loosening nuts on Motor Leads)
- 1/8" Hex Key (Removing External Magnet)

1.1) **Disconnect your system from its main power source.**

1.2) Open up the front cover behind the prefilters by removing the six (6) 1/4-20 X 1/2" machine screws and nylon washers. You may need to remove some plumbing in order to fully access the the motor.

Figure 1

1.3) Disconnect all plumbing to the Pump Head **if replacing old 24V Motor with new 12V Motor**.

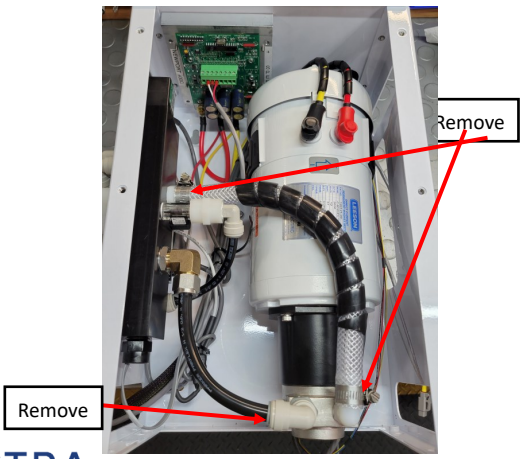

Figure 2

Figure 3

Continue to next page...

1.4) Disconnect the Motor Leads from the brass studs on the Motor using a 7/16 Nut Driver or Box Wrench.

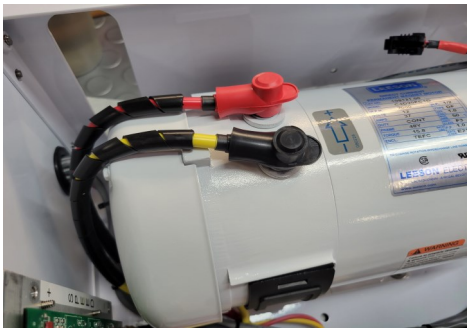

Figure 4

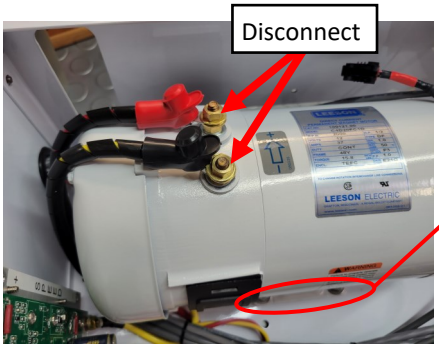

Figure 5

>>>Replace the discontinued 24V 1/2 Motor with the new 12V 1/2 Motor now.

Leave the motor leads off of the brass contact studs for now. <<<

1.5) Ensure that the negative probe (black) on the multimeter maintains contact with the negative motor lead (yellow wire) and that the positive probe (red) on the multimeter maintains contact with the positive motor lead (red wire). Turn on the multimeter and set it to measure **DC Voltage**.

1.6) Carefully re-connect the system to its main power source.

1.7) Prepare to reprogram the PWM Speed Control output voltage (to the Motor) in order to properly set the various run speeds for your new motor.

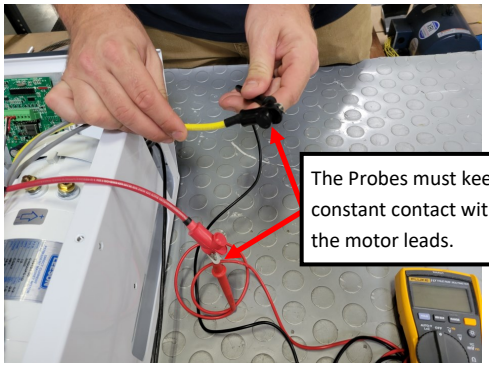

Figure 6

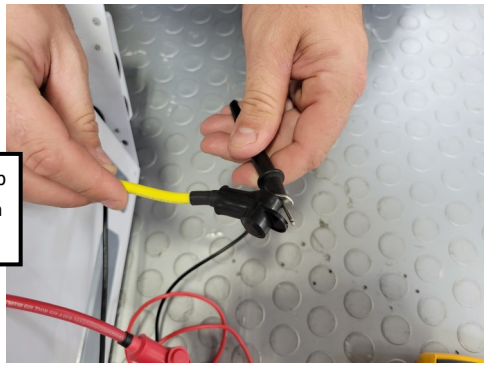

Figure 7

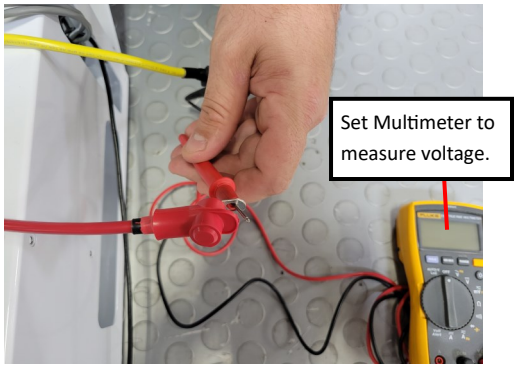

Figure 8

1.8) You will need to access the Speed (-) magnetic reed switch with your magnet. We recommend removing the four (4) 1/4-20 X 1/2” machine screws that hold the top plate that the PWM Speed Control is mounted to. While not necessary, this will help you access the PWM Speed Control board more easily.

Recommended to remove these screws

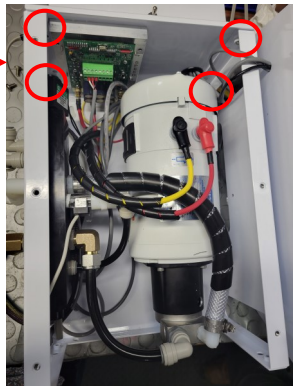

Figure 9

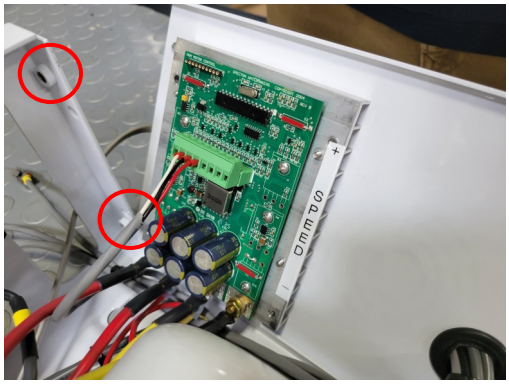

Figure 10

Section 2: Programming Run High Speed

Note: Each Motor has three programmed run speeds: **Run HI, Run LO, & FLUSH**. The speeds can only be reprogrammed with a magnet once each specific run speed has been engaged (either via the Spectra Connect or the Toggle Switch) and then are manually adjusted using the magnet.

2.1) Press 'Start' on your Spectra Connect touchscreen display. Press either 'Fill Tank' or 'AutoRun' to start the system.

Figure 11

Figure 12

2.2) Once the system has started and you see the screen in Figure 13, ensure that the switch in the upper right hand corner is set to 'Run High'.

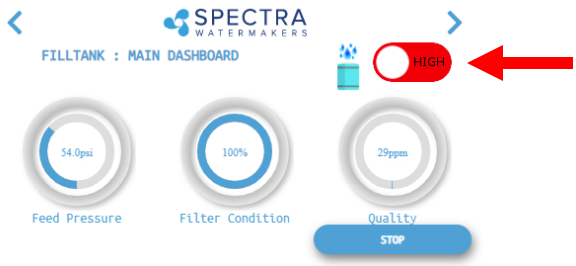

Figure 13

2.3) Be sure that the probes maintain constant contact with the with the Motor leads. Use the multimeter to monitor the voltage coming from the PWM Speed Control.

To lower the voltage, take a small magnet and tap the red Magnetic Reed Switch on the lower right hand side of the PWM Speed Control (**near the Speed negative label**). This will begin lowering the voltage and should be reflected on your multimeter. <u>You will need to tap the magnet to the red Magnetic Reed Switch between **140-150** times to cut the voltage in half to reach the desired voltage for the Motor to operate at the correct speed on 'Run High'</u>.

Newport 400 **12V** - Run Speed	Target Voltage (On Multimeter)
Run HIGH	**13.5 VDC**

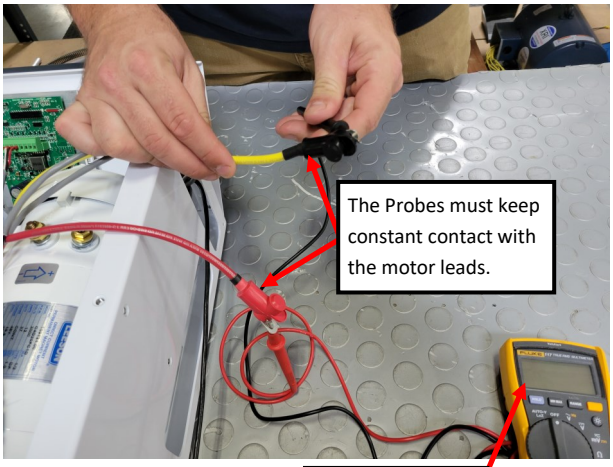

Figure 14

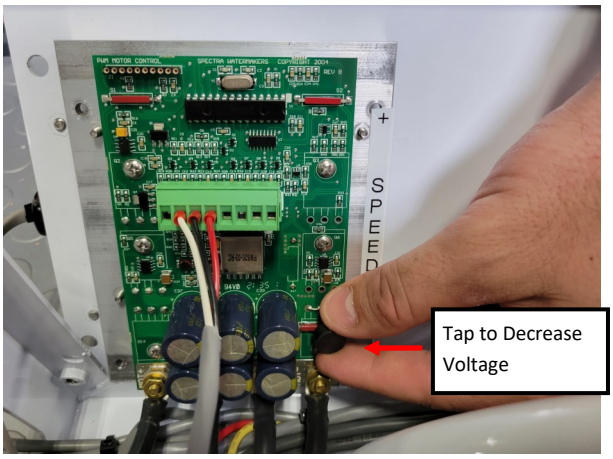

Figure 15

2.4) Once your voltage has been correctly set on your PWM Speed Control, you can stop running the motor by pressing 'Stop' on the Spectra Connect touchscreen.

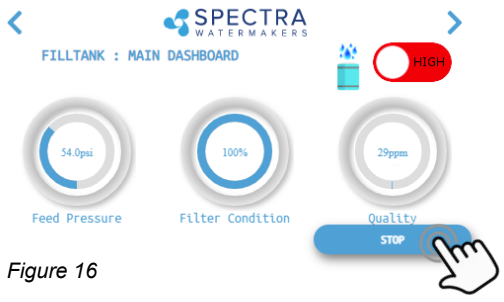

Figure 16

Run High speed should now be successfully programmed.

Section 3: Programming Run Low Speed

Note: Each Motor has three programmed run speeds: **Run HI, Run LO, & FLUSH**. The speeds can only be reprogrammed with a magnet once each specific run speed has been engaged (either via the Spectra Connect or the Toggle Switch) and then are manually adjusted using the magnet.

3.1) Press 'Start' on your Spectra Connect touchscreen display. Press either 'Fill Tank' or 'AutoRun' to start the

Figure 17

Figure 18

3.2) Once the system has started and you see the screen in Figure 19, ensure that the switch in the upper right hand corner is set to 'Run Low'.

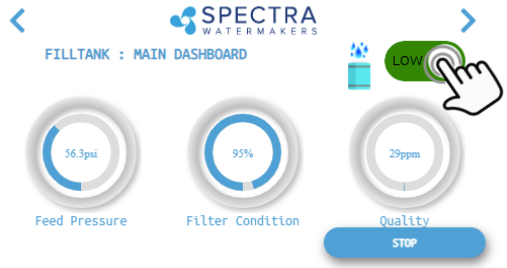

Figure 19

Continue to next page...

3.3) Be sure that the probes maintain constant contact with the with the Motor leads. Use the multimeter to monitor the voltage coming from the PWM Speed Control.

To lower the voltage, take a small magnet and tap the red Magnetic Reed Switch on the lower right hand side of the PWM Speed Control (**near the Speed negative label**). This will begin lowering the voltage and should be reflected on your multimeter. You will need to tap the magnet to the red Magnetic Reed Switch between **140-150** times to cut the voltage in half to reach the desired voltage for the Motor to operate at the correct speed on 'Run Low'.

Newport 400 **12V** - Run Speed	Target Voltage (On Multimeter)
Run LOW	**9.5 VDC**

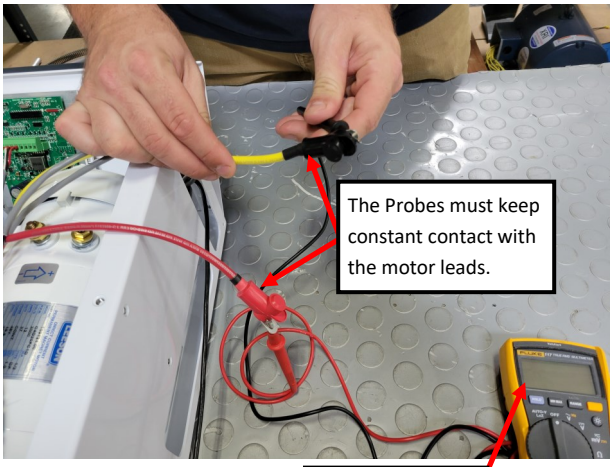

Figure 20

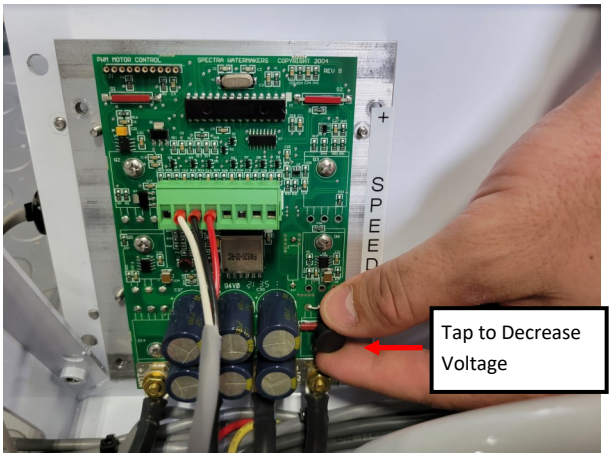

Figure 21

3.4) Once your voltage has been correctly set on your PWM Speed Control, you can stop running the motor by pressing 'Stop' on the Spectra Connect touchscreen.

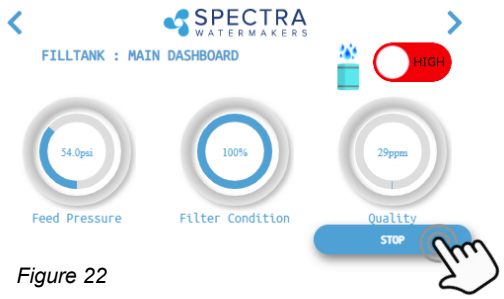

Figure 22

Run Low speed should now be successfully programmed.

Section 4: Programming Flush Speed

Note: Each Motor has three programmed run speeds: **Run HI, Run LO, & FLUSH**. The speeds can only be reprogrammed with a magnet once each specific run speed has been engaged (either via the Spectra Connect or the Toggle Switch) and then are manually adjusted using the magnet.

4.1) Press 'Fresh Water Flush' on your Spectra Connect touchscreen display to start the Flush sequence.

Figure 23

4.2) Once the system Flush has started, you do not need to press any other button. When you see the screen in Figure 24, proceed to the next step.

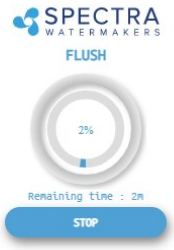

Figure 24

4.3) Be sure that the probes maintain constant contact with the with the Motor leads. Use the multimeter to monitor the voltage coming from the PWM Speed Control.

To lower the voltage, take a small magnet and tap the red Magnetic Reed Switch on the lower right hand side of the PWM Speed Control (**near the Speed negative label**). This will begin lowering the voltage and should be reflected on your multimeter. You will need to tap the magnet to the red Magnetic Reed Switch between **140-150** times to cut the voltage in half to reach the desired voltage for the Motor to operate at the correct speed on 'Run Low'.

Newport 400 **12V** - Run Speed	Target Voltage (On Multimeter)
FLUSH/Service	**5.3 VDC**

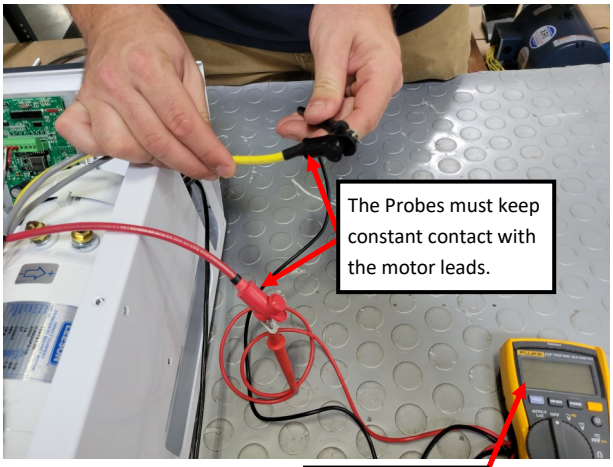

Figure 25

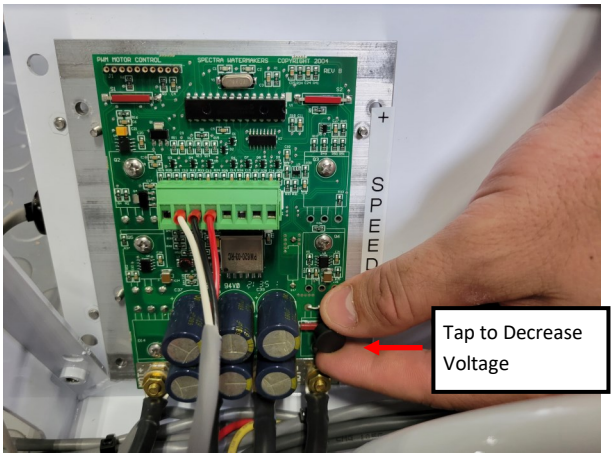

Figure 26

4.4) Once your voltage has been correctly set on your PWM Speed Control, you can stop running the motor by pressing 'Stop' on the Spectra Connect touchscreen.

Figure 27

Flush speed should now be successfully programmed.

Section 5: Reassembly

5.1) Once you have successfully replaced the motor and manually reprogrammed the PWM Speed Control, the panels, plumbing, and wiring that was temporarily removed should be reconnected and reassembled.

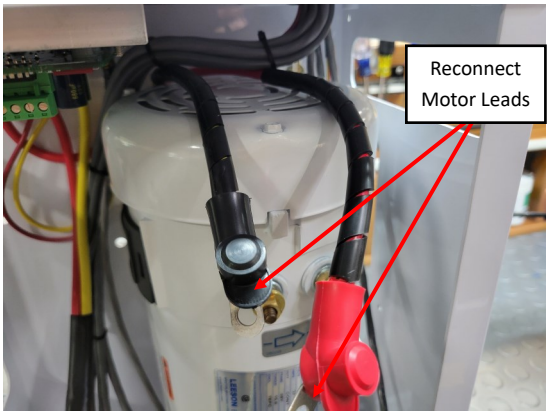

Figure 28

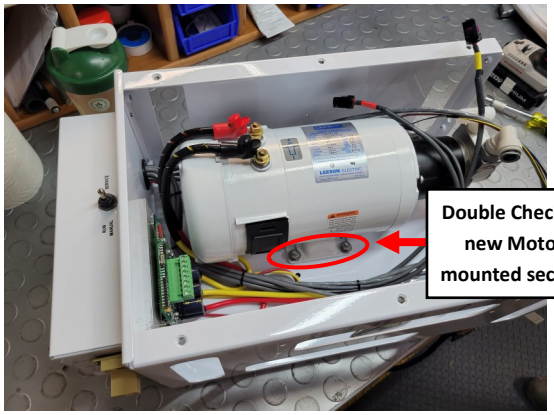

Figure 29

5.2) Mount the Pump Head onto the new Motor and reconnect all plumbing to the Pump Head (See Figure 30).

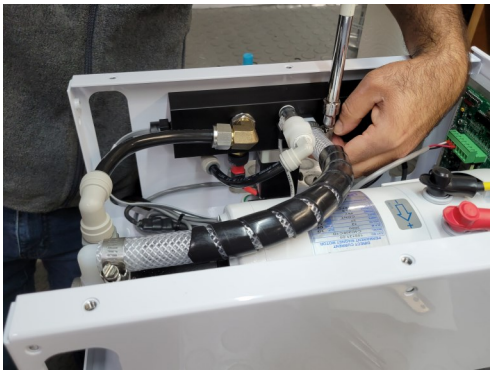

Figure 30

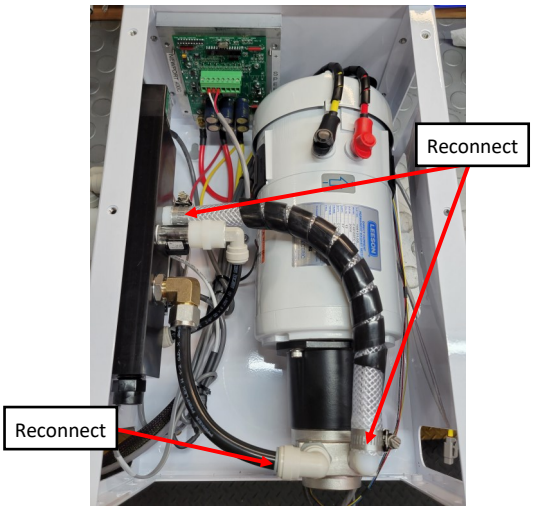

Figure 31

5.3) Once all wiring and plumbing has been reconnected, double check that all connections have been correctly placed. Reattached the top panel and front panel to the Feed Pump Chassis and reconnect all plumbing connected to the manifold. If done correctly, your 24V Newport 400 should now work seamlessly with the 12V 1/2 HP Leeson Motor.

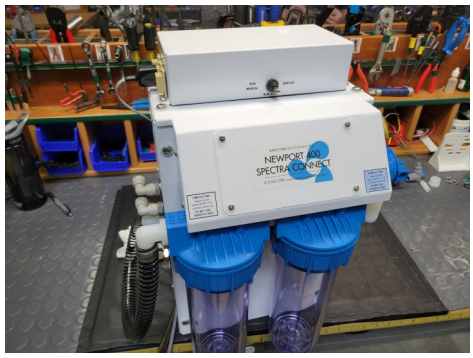

Figure 32

Upon completion of this guide, your PWM Speed Control should now be fully reprogrammed to send the proper voltage to the Motor so that it runs at the optimal speed on your Newport 400. Disconnect from main power, reconnect all plumbing fittings, and reattach any plates before starting up your system for full operation.