

Service and Support

Advanced Troubleshooting Guide

**1999 TO 2005 DC THRUSTERS WITH 4-WIRE
CONTROL SYSTEM**

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Responsibility of the Installer

MC_0038

The installer must read this document to ensure necessary familiarity with the product before installation.

Instructions in this document cannot be guaranteed to comply with all international and national regulations. It is the responsibility of the installer to follow all applicable international and national regulations when installing Sleipner products.

The recommendations given in this document are guidelines ONLY, and Sleipner strongly recommends that advice is obtained from a person familiar with the particular vessel and applicable regulations.

This document contains general installation instructions intended to support experienced installers. If you are not skilled in this type of work, please contact professional installers for assistance.

If required by local regulation, electrical work must be done by a licensed professional.

Appropriate health and safety procedures must be followed during installation.

Faulty installation of Sleipner products will render all warranties given by Sleipner Motor AS.



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MC_0020

WARNING

This guide is intended for Thrusters utilizing Sleipner "Plug and Play" wiring only, and not intended for thrusters utilizing Sleipners Automatic Main Switch or Sleipners voltage conversion box.

IMPORTANT

Each product manual contain a basic trouble-shooting section. Read over the user manuals and familiarize yourself with the product. This guide is designed to supplement these trouble-shooting guides providing illustrated instructions for more advanced issues.

Recommended Tools For Troubleshooting

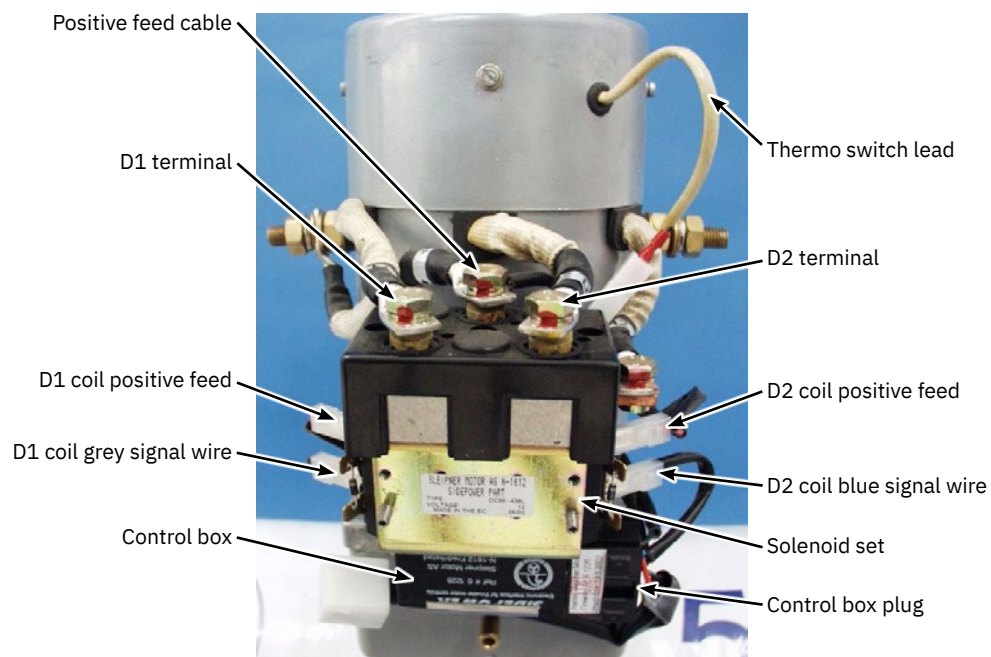
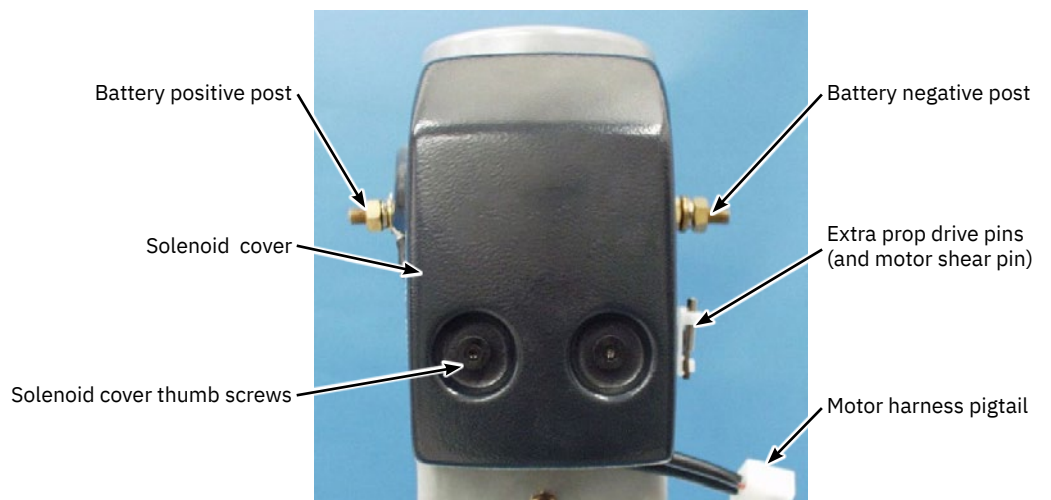
MC_0495

- Metric Allen Wrenches, 4mm to 12 mm
- Metric wrenches or sockets
- Needle Nose Vise-Grips
(for holding jam nuts when removing battery cables from motor)
- Phillips head screwdriver
- Small jumper wire
(with male quick disconnect terminals if available)
- 12" jumper wire with alligator clips
- Multi-meter (with alligator clips if available)



Identifying Thruster Parts

MC_0495



If Control Panel does not turn on.

(Light between two On buttons does not light)

1. Check battery power.
 - The control panel is powered through the bow thruster. The thruster is usually on its own circuit, meaning the positive and negative battery cables run directly between the thruster and the battery. A fuse should be installed on the positive cable within 72" of the battery, check that it is not blown. A battery switch is usually installed in close proximity to the fuse and battery, check that the battery switch is turned on.



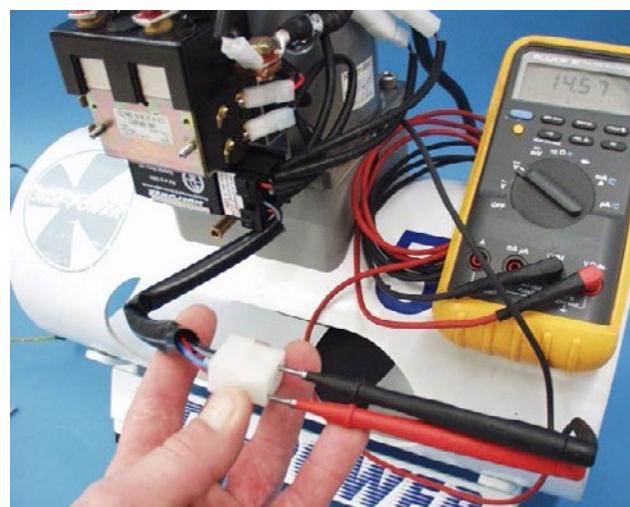
Control panel on

2. Check voltage at the thruster.
 - You should read battery voltage at the thruster. If there is no voltage at the thruster there is a problem with the power supply, check the battery, fuse, switch, or cabling.



Checking voltage at thruster

3. Check for voltage on the control harness pigtail on motor and at control panel.
 - With multi-meter set to DC volts, check from red wire (positive) to black wire (negative) on motor wiring harness pigtail. If there is battery voltage at the thruster battery cables, but no voltage at the motor harness pigtail, than proceed to step 4.
 - If there is battery voltage on the motor control harness repeat step 3 on control harness at the control panel to ensure there is no fault with the control harness run. If there is battery voltage at control panel then there is a problem with the control panel. Please contact your local Sleipner distributor for service support.



Checking voltage on motor harness

4. Check control system positive and negative.

- Check for voltage between the battery negative stud and red wire on motor harness pigtail.
 - **If no voltage is present**, then check that all motor harness and control box plug connections are tight and in place. If the motor harness checks out, then there may be a problem with the control box. Please contact your local Sleipner distributor for service support.
 - **If voltage is present**, locate the thermo switch lead and unplug it from the motor harness. With multi-meter set on ohm (Ω), check for continuity between the thermo switch lead and the battery negative stud. There should be continuity; ohms will go close to 0 (usually about 0.2Ω - 0.5Ω).
- ◊ **If there is no continuity** between thermo switch lead and battery negative stud, then please contact your local Sleipner distributor for service support.
- ◊ **If there is continuity** between thermo switch lead and battery negative stud then there is a problem with the control box or the motor wiring harness. Please contact your local Sleipner distributor for service support.



Checking voltage on motor harness to battery negative stud



Checking continuity between thermo switch lead and battery negative post

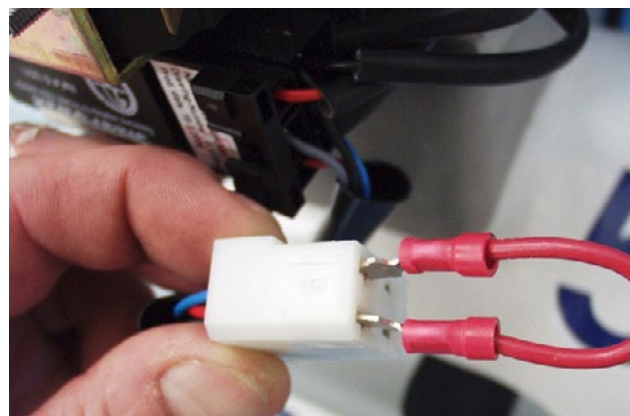
If control panel does turn on but thruster does not run, or thruster runs in one direction only.

(NB: The preceding tests are to be performed while the boat is in the water. Please contact your local Sleipner distributor for service support if you have any questions.)

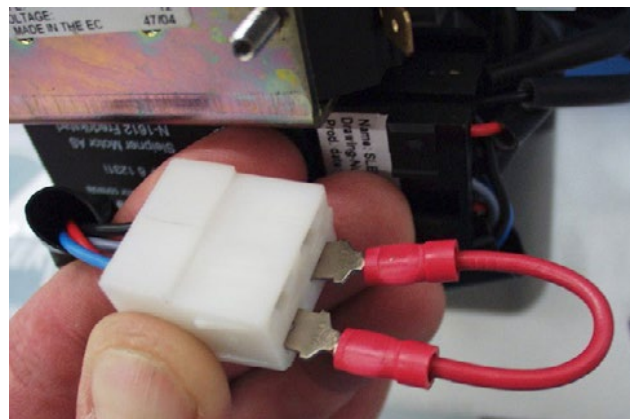
1. Bypass control panel and check thruster control box and solenoid operation.
- Remove control panel and unplug wiring harness or unplug control harness from motor harness pigtail, whichever is more convenient. On the four wire Amp connector (wiring harness if disconnected at control panel or motor pigtail if disconnected at motor), with short jumper wire, jump from red to blue for starboard run, and red to grey for port run.

(NB: Be careful not to jump red to black as this will permanently damage the control box.)

- ◊ **If thruster runs** when jumping red to blue and grey, than the control panel is most likely damaged. Please contact your local Sleipner distributor for service support.
- ◊ **If thruster does not run**, proceed to step 2.

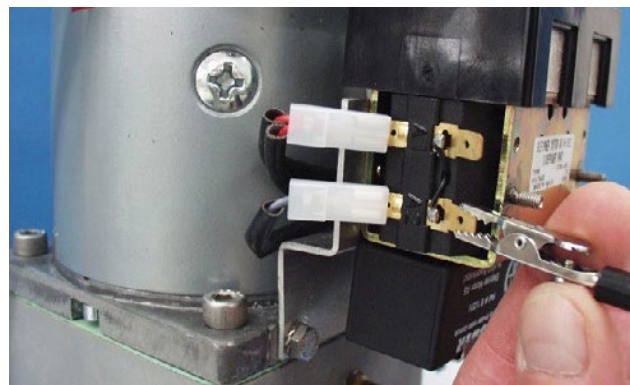


Jumping red to blue on motor pigtail



Jumping red to grey on motor pigtail

2. Bypass thruster control box and check thruster solenoid operation. With long jumper wire, jump from negative battery stud to D1 coil blue signal wire for port run, and to D2 coil blue signal wire for starboard run.
- **If thruster runs properly**, than the control box needs to be replaced.
- **If thruster does not run**, proceed to step 3



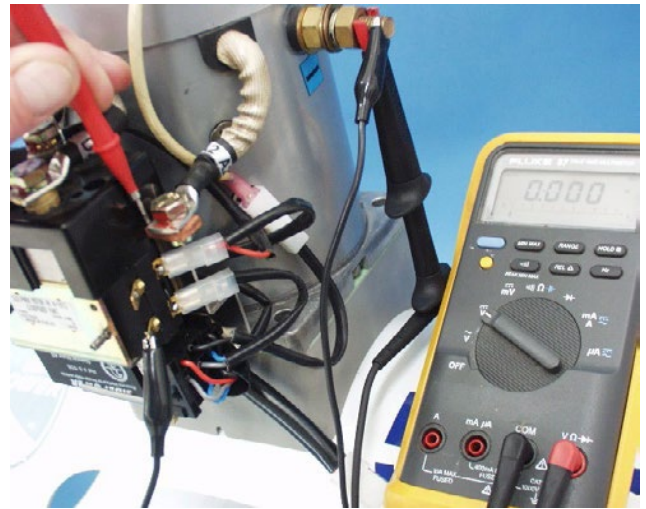
Jumping ground to grey on D1 coil

3. Check for solenoid output.
- With jumper wire still attached from step 2, check for voltage on the A2 terminal.
- ◊ **If no voltage is present** on A2 terminal then the solenoid pack may need to be replaced. Please contact your local Sleipner distributor for service support.
- ◊ **If voltage is present** on A2 terminal then the motor may be damaged. Please contact Your local Sleipner distributor for service support.



Jumping ground to blue on D2 coil

4. Check the operating voltage.
 - Once the thruster is operating properly, check the voltage between the battery positive post and the battery negative post while the thruster is running. The voltage will drop initially and then should level off after approximately 5-10 seconds.
 - The voltage should be no lower than 9.5 for a 12 volt thruster and 19 volts for a 24 volt thruster after the voltage has stabilized.
 - If the voltage does not stabilize and continues to drop below 9.5 or stabilizes below 9.5 for 12 volt thrusters (19 volts for 24 volt thrusters), then the battery source needs to be checked to ensure the amp capacity is sufficient to run the thruster or the cable run needs to be checked for voltage drop. Please contact your local Sleipner distributor for service support if you have low operating voltage.



Checking voltage on A2 with ground to blue jumper attached

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