



# OCTOPUS

## DETAIL INSTALLATION GUIDE

REV. A 30 May 2008



### REMOTE – ROTARY MECHANICAL DRIVE

#### A. SYSTEM OVERVIEW:

1. The Octopus remote rotary mechanical autopilot drive (model MDR-40) makes it easy and economical to install a Jog control (Octopus Intellisteer) or an automatic pilot on smaller powerboats steered with mechanical push pull cable steering systems including Outboards, Inboard/Outboards also small sailboats with access to the quadrant or tiller.
2. The remote drive unit can be installed in any convenient location. It requires the addition of a second steering cable and cable connection kit. The location of the drive unit relative to the second cable connection kit will determine the required length of the second steering cable. As a guide, a 72 inch (6 foot – 2 metre) cable is required to connect a drive located in the port side of the engine compartment to a connection kit mounted on a single engined I/O vessel.

Note: See Octopus Selection & Installation Guide for Remote – Rotary Mechanical Drive for additional information on the different types of second steering cable connection kits that are available. See also Octopus Selection & Installation Guide for Behind the Dashboard – Rotary Mechanical Drive for additional information on a drive unit that replaces the manual helm and uses the existing steering cable.

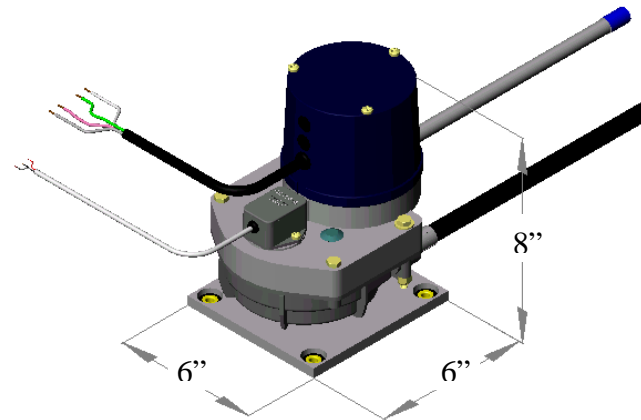
#### B. REQUIRED PARTS:

- |                                    |  |
|------------------------------------|--|
| 1. Part # AFMDRERW                 | Remote Rotary Mechanical Drive Unit                  |
| 2. Part # OC15109-6                | 6 foot long Steering Cable (other lengths available) |
| 3. Part # OC15SUK-12 or -15 or -19 | Cable Connection Kit                                 |
| 4. Part # OC15SUK06A thru -H       | Rudder Feed Back Module                              |
| 5. General Shop Tools              |  |

#### C. PREPARATION:

Before performing an installation, you must establish the following:

1. The installation site (for the drive) will provide adequate space to accommodate the drive envelope including the entry and exit points for the steering cable. The drive can be mounted at any angle and the steering cable entry/exit points can be reversed if required. See detailed graphics of drive envelope and mounting samples below. Note that no access for maintenance purposes is required.
2. That the selected second steering cable connection kit is correct for the steering system on the vessel.



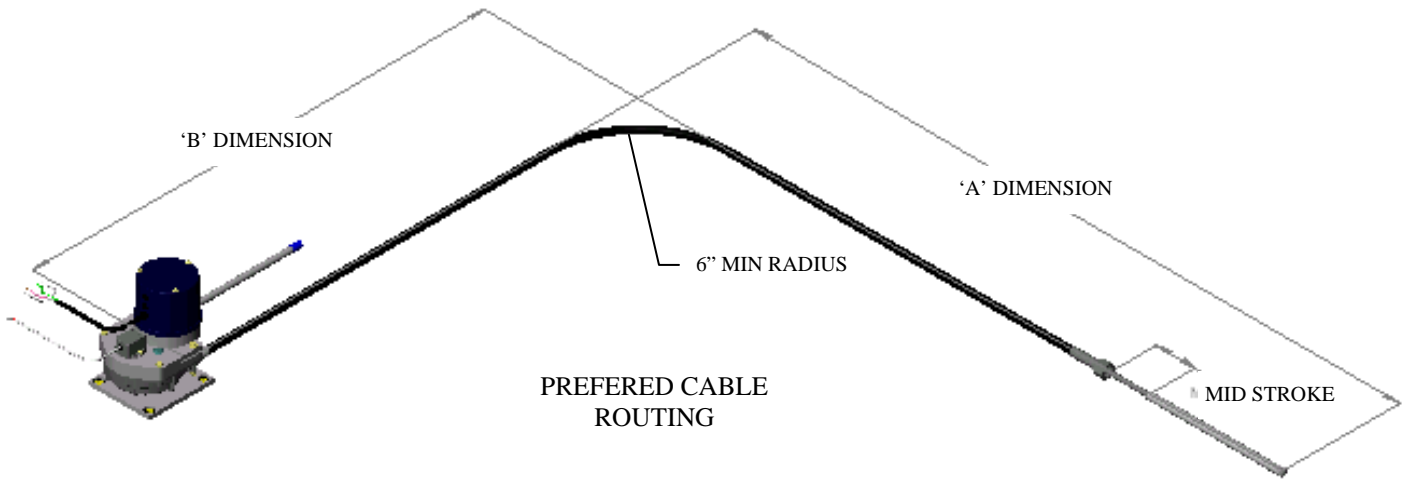
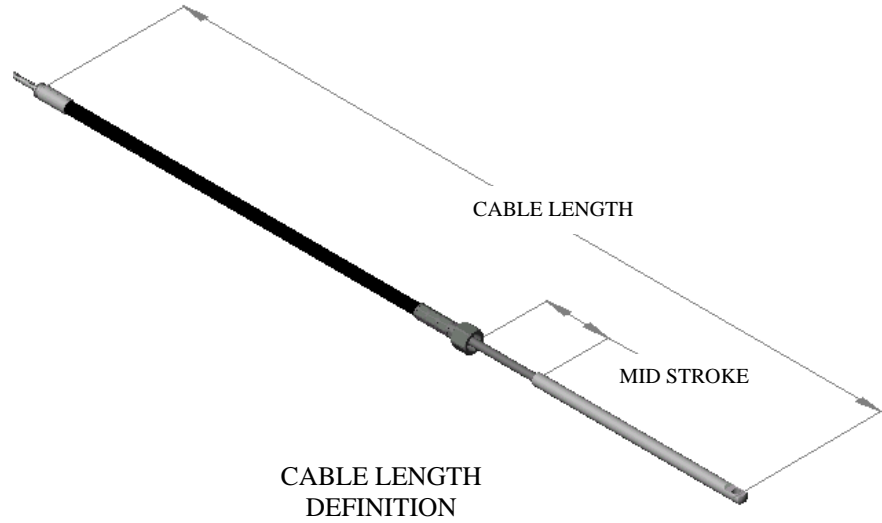
DRIVE ENVELOPE

**OCTOPUS PRECISION PRODUCTS - VANCOUVER CANADA**  
**TEL 604 940 2010 - FAX 604 952 2650**

**DETAIL INSTALLATION GUIDE (continued)**  
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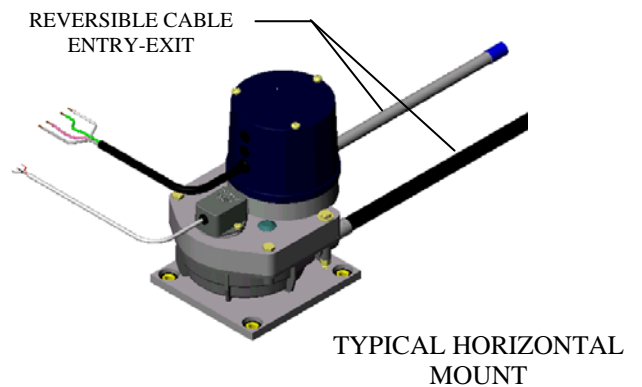
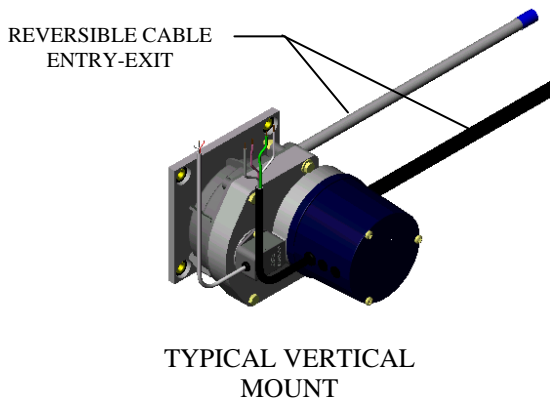
C. PREPARATION (Continued)

3. That the selected steering cable length (6 foot standard) and its routing from the connection kit to the drive unit is within acceptable limits. See the detailed graphics showing cable length definition, preferred routing and example of length calculation for different cable connection kits. It is recommended that bends are no smaller than the minimum bend radius (6") and that the total angle of all bends combined be minimized and no larger than 270 degrees.



**EXAMPLE OF STEERING CABLE LENGTH CALCULATION:**

Add 'A' + 'B' dimensions and subtract 4" for a 90 degree bend. Round UP result to nearest full foot size.



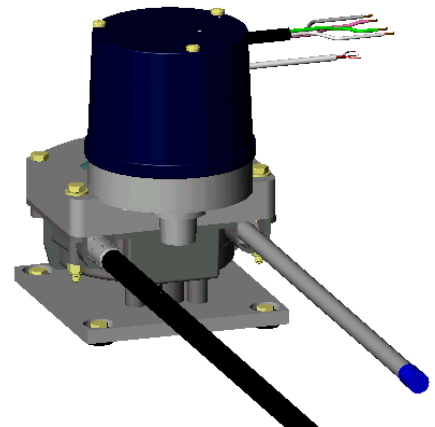
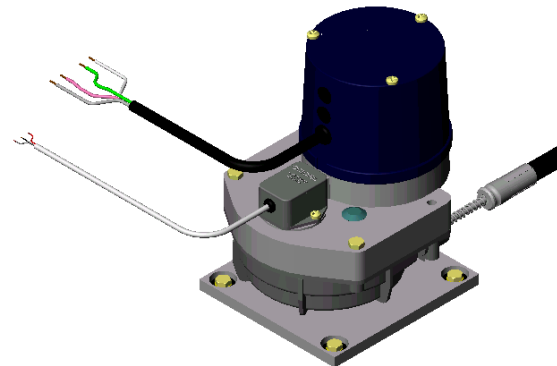
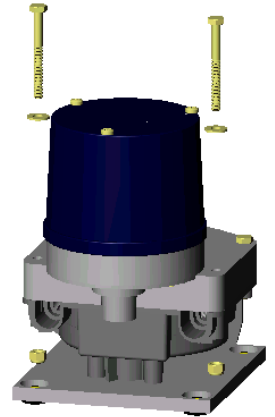
**DETAIL INSTALLATION GUIDE (continued)**  
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**D. RECOMMENDED INSTALLATION PROCEDURE**

D1. Install the Second Steering Cable Connection Kit and Steering Cable following the detailed installation procedure that is supplied with the kit. Ensure that the Cable routing follows the planned path.

D2. Physically Install Drive Unit & Steering Cable

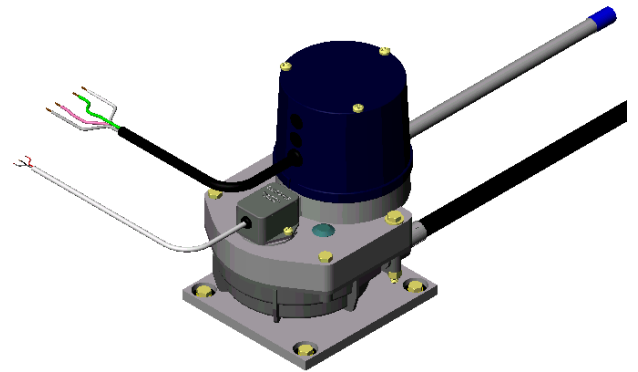
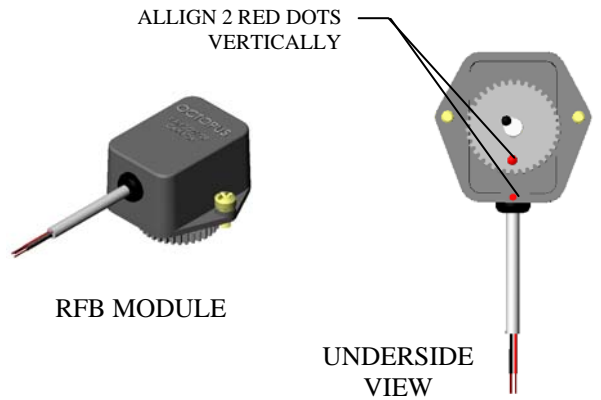
- i. Remove 2 steering cable entry – exit lock bolts, nuts and washers.
- ii. Position drive unit in final location. Verify position by simulating the steering cable connection whilst steering cable is NOT connected.
- iii. Transfer bolt pattern from the drive base plate (4 x ¼” diameter holes), into mounting structure.
- iv. Remove drive unit and prepare holes in mounting structure to receive mounting fasteners. Note that this connection does NOT transmit any steering loads.
- v. Re-position drive unit and install fasteners, tighten and torque.
- vi. Install steering cable in planned drive port. Guide inner cable into port and exert moderate force using 2 hands to drive cable around the driving hub. This action will back drive the unit and the inner cable will appear out of the opposite port. To complete the cable installation, the cable outer jacket will enter the port and butt against the drive housing. This will enable the insertion of the lock bolt.
- vii. Note that undue force required to drive the inner cable around the driving hub may be caused by the leading edge of the inner cable gouging into outer face of the nylon guide. Remove the cable and inspect the leading edge for sharp edges, if possible, twist the cable and re insert with sharp edge towards inside of radius or using a burr type tool remove the sharp edges.
- viii. Install spent cable tube in exit port.
- ix. Replace 2 x lock bolt, nut and washer. Tighten and torque 40-45 in-lbs (4Nm).



**DETAIL INSTALLATION GUIDE (continued)**  
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**D3. Physically Calibrate Rudder Feed Back Mechanism**

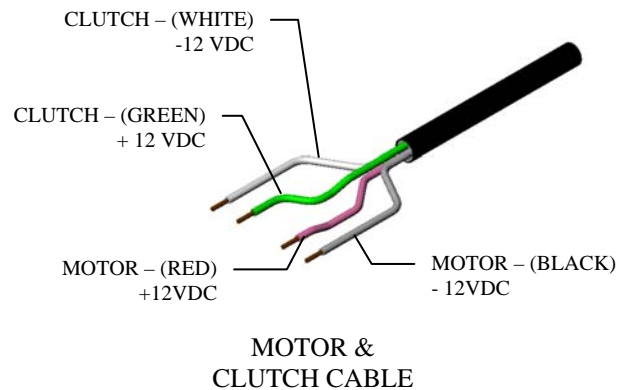
- i. Disassemble the RFB module from the drive housing, by removing 2 attach screws.
- ii. Center the gear on the RFB module by aligning the red paint mark on the gear with the red paint mark on the housing as shown in underside view graphic below.
- iii. By turning the steering wheel of the helm unit, centre the rudder. Note that on power assisted steering systems, you may need to run the engine to achieve this.
- iv. Reassemble the RFB module to the drive housing and install and tighten the 2 attach screws. Ensure that the mesh between the RFB module and the drive gear is not excessive.
- v. See Auto Pilot installation guide for instructions on additional software controlled RFB fine calibration and HO limitation.



**D4 Electrical Hook Up**

**D3a. Connect Motor and Clutch Power Supply Cable**

- i. Following Auto Pilot manufacturers installation guide and wiring diagram, connect 4 x 10 AWG wires (supplied in jacketed cable from drive) with Auto Pilot junction box.
- ii. Following Auto Pilot manufacturers installation guide, perform electrical tests.



**D3b. Connect Rudder Feed Back Signal Cable**

- i. Following Auto Pilot manufacturers installation guide and wiring diagram, connect 3 x 24 AWG wires + shield core (supplied in jacketed cable) from RFB module with Auto Pilot junction box.
- ii. Following Auto Pilot manufacturers installation guide, perform electrical tests.

