



OCTOPUS

DETAIL INSTALLATION GUIDE

REV: A 30 MAY 2008

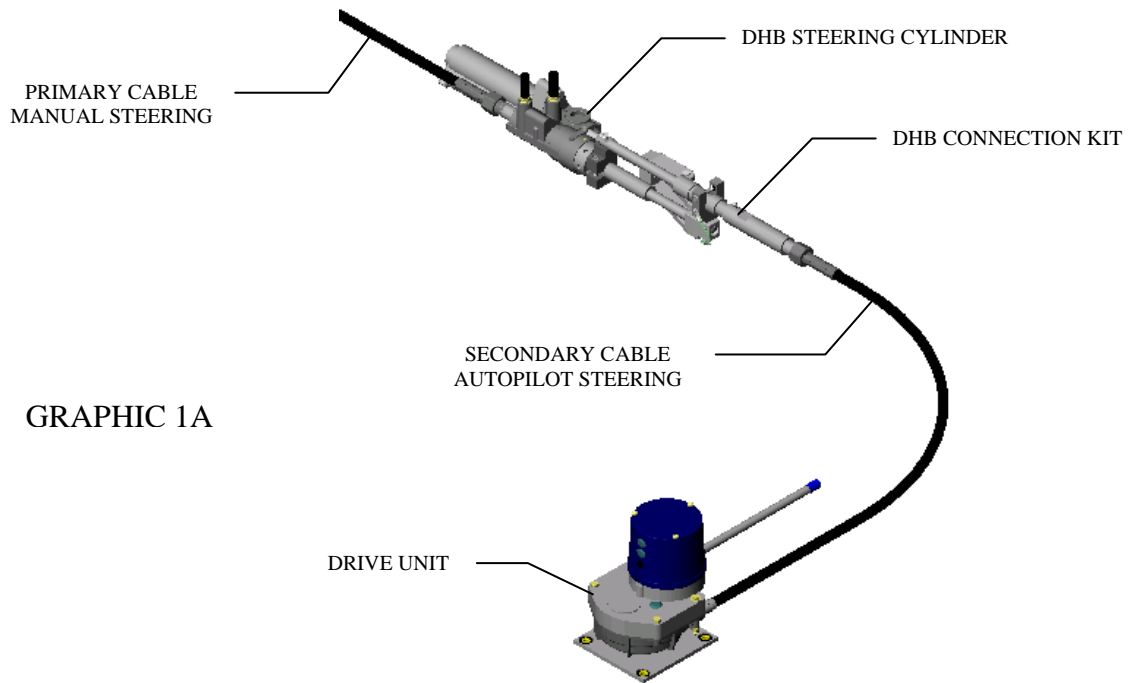


OC15SUK12A – I/O CONNECTION KIT – MERCUISER DHB STEERING CYLINDER

A. SYSTEM OVERVIEW:

1. The Octopus DHB installation kit can be retro-fitted to mechanical push-pull cable controlled sterndrive power assisted steering cylinders made by Mercruiser. The DHB steering system is fitted to Alpha One Generation II and Bravo Sterndrives from 1994 and newer. Installation of the kit allows the addition of a second steering cable which can be used for autopilot control when connected to the Octopus Remote Mechanical Drive or Jog control when connected to the Octopus Intellisteer remote Mechanical Drive.

Note: See separate guide for Universal I/O Connection Kit OC15SUK12 – for older Mercruiser Saginaw Steering Systems – (pre model 1994) and Volvo models 872215 & 3860882 Sterndrive Steering Systems.



GRAPHIC 1A

B. REQUIRED PARTS:

1. Part # OC15SUK12A I/O installation kit Mercruiser DHB steering system
2. Part # OC15109-6 secondary steering cable (6 foot standard) – other lengths available (Equivalent Steering Cables manufactured by Morse, Uflex or Teleflex may be used with the addition of cable end adapters. OC15SUK08 for the Uflex M66 or Teleflex SSC62 - OC15SUK07 for the Uflex M47, Teleflex SSC72 or Morse 304415)
3. OCAFMDRERW or OCAFMDREW drive unit (see separate detail installation guide)
4. General Shop Tools

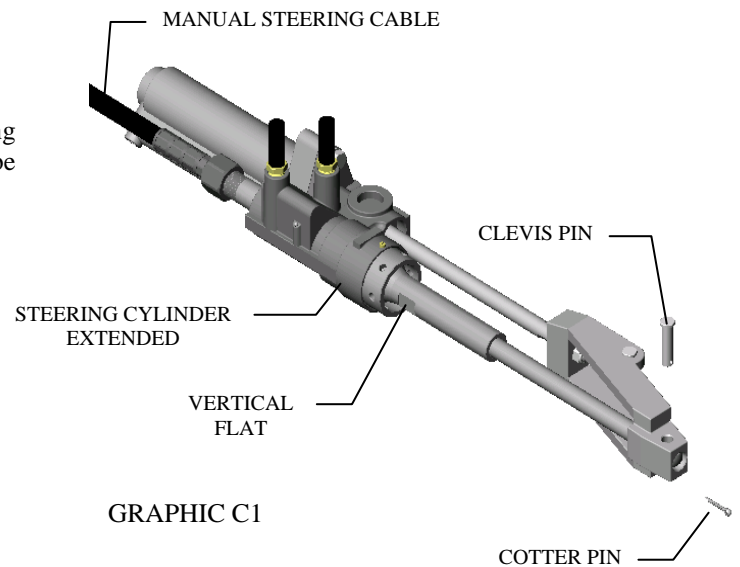
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C. INSTALLATION PROCEDURE

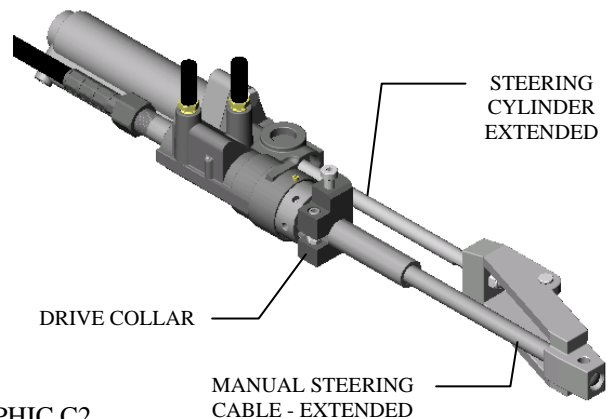
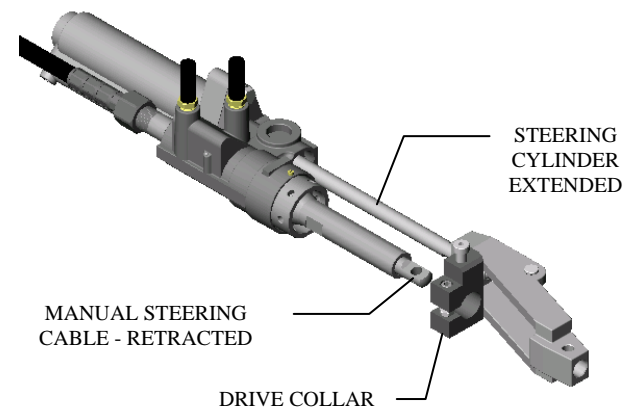
C1. Prepare Steering Cylinder

- i. Using the manual steering helm, extend the steering cylinder to full HO as shown. Note that it may be necessary to run the engine to achieve this.
- ii. Using shop tools, remove the cotter pin and clevis pin connecting the manual steering cable rod end to the steering cylinder clevis bracket.
- iii. Adjust the position of the flats on the steering cylinder sleeve to vertical or near vertical. Note that it may be necessary to crack the nut on the manual steering cable to achieve this. If so re-torque the nut to 175 in-lbs (20Nm).



C2. Install Drive Collar

- i. Using the manual steering helm, retract the manual steering cable to full HO as shown.
- ii. Loosen the clamp screw and lock nut on the Drive Collar.
- iii. Assemble Drive Collar onto sleeve of steering cylinder. See graphic for orientation. **DO NOT** tighten clamp screw at this time.
- iv. Using the manual steering helm, extend the manual steering cable back to full HO as shown.

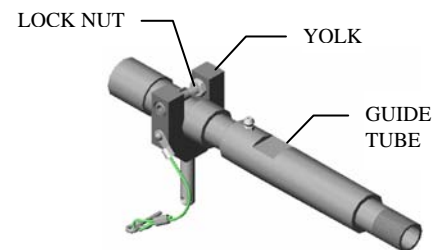
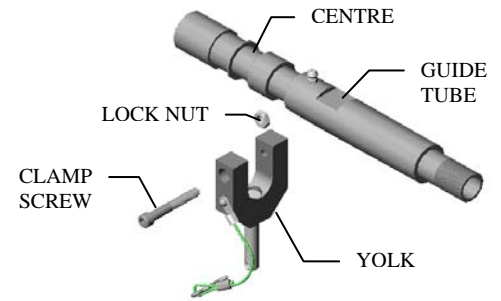


GRAPHIC C2

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C3. Pre-Assemble Guide Tube to Yolk - (only if required, this step is factory assembled before shipping)

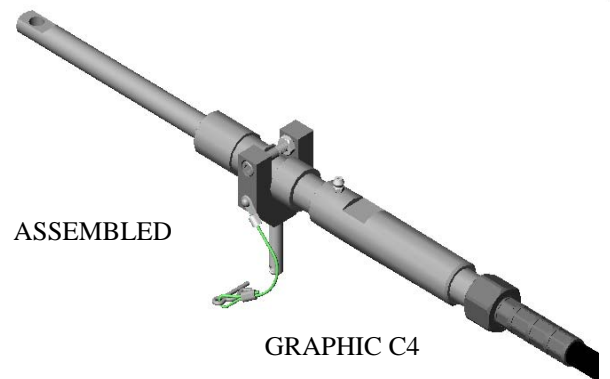
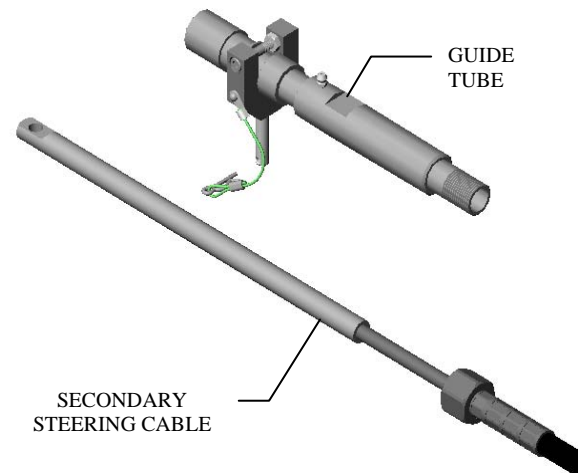
- i. Crack lock nut and remove both clamp screw and lock nut from Yolk.
- ii. Lower Guide Tube into Yolk – engaging Yolk slot onto centre groove of Guide Tube.
- iii. Insert Clamp Screw into front leg of Yolk and engage Lock Nut – screw into both Lock Nut and rear leg of Yolk.
- iv. Torque Clamp Screw to Yolk to 27 in-lbs. (3 Nm). Torque Lock Nut to Yolk to 45 in-lbs. (5 Nm).



GRAPHIC C3

C4. Pre-assemble Secondary Steering Cable to Guide Tube/Yolk

- i. Ensure that both the nut and the male thread are lubricated with marine quality grease before assembly.
- ii. Ensure that the static portion of the rod end and the inside of the guide tube are liberally coated with marine quality grease.
- iii. Insert the rod end portion of the secondary steering cable into the threaded side of the guide tube assembly.
- iv. Engage 7/8-14 UNF nut on male thread, hand tighten and torque to 175 in-lbs (20Nm). Note that the nut has an internal thread locking feature that can increase the effort required to initial hand tighten.



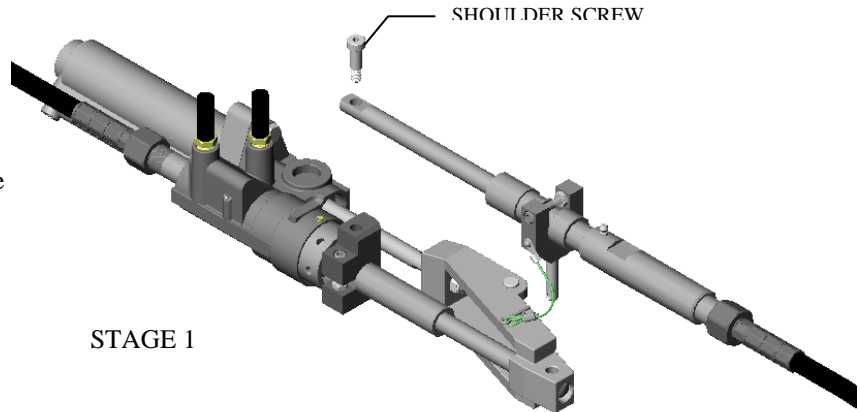
GRAPHIC C4

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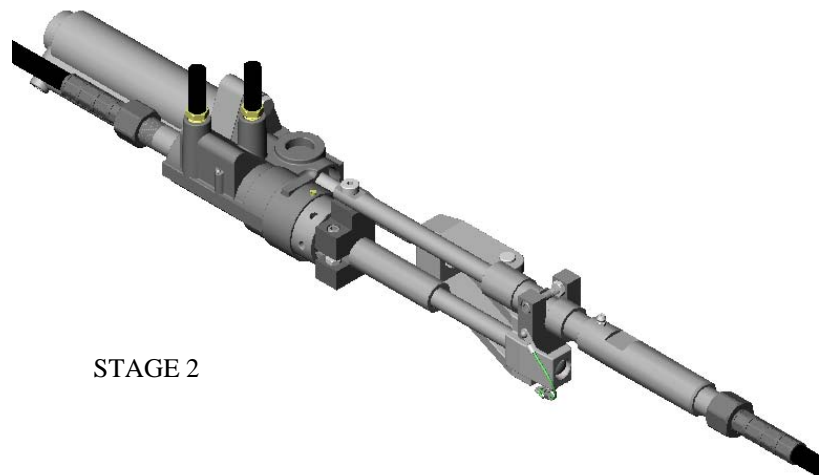
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C5. Assemble I/O Kit & Second Steering Cable to Steering Cylinder

- i. Remove Shoulder Screw from Drive Collar.
- ii. Position I/O Kit & Second Steering Cable above the Steering Cylinder as shown in Stage 1 graphic
- iii. Lower I/O Kit & Second Steering Cable onto Steering Cylinder. Ensure that the clevis pin enters the both the holes in the Steering Cylinder clevis bracket and the manual Steering Cable rod end. Insert Hitch Pin.



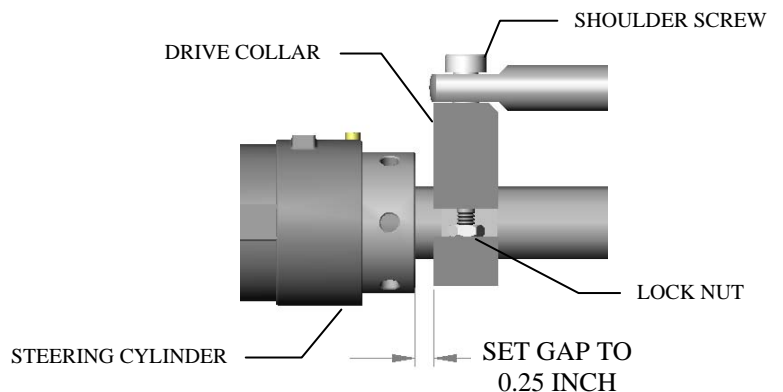
- iv. As the tiller arm has been disturbed after original clevis pin was removed at C1, it may prevent the engagement of the new York clevis pin. If so, align cross hole in manual Steering Cable rod end with hole in Steering Cylinder clevis bracket by adjusting the manual steering helm slightly.



- v. Adjust the position of the Second Cable rod end and the Drive Collar to align the Shoulder Screw holes. Insert Shoulder Screw – Torque to 55 inlbs (6Nm). Note that the Shoulder Screw has a thread locking feature which increases the torque required for thread running.

- vi. Axially position Drive Collar to set the 0.25 inches gap (see graphic). Torque Clamp Screw to Drive Collar to 175 in-lbs. (19 Nm). Torque Lock Nut to Drive Collar to 45 inlbs (5Nm).

- vii. It is recommended that the drive unit is NOT attached to the Second Steering Cable when performing operation v. & vi. above. If the drive unit is already attached, it will be HARDER to fine adjust the position of the cable rod end. Providing 12v dc power to the clutch and motor circuit may be necessary.



GRAPHIC C5

DETAIL INSTALLATION GUIDE (continued)
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C6. Install Drive Unit

- i. See separate Detail Installation Guide for Drive Unit.

C7. Perform Interference Evaluation (2 people required)

- i. The drive unit **MUST** be installed with the Second Steering Cable Assembled before performing the Interference Evaluation. Note that the Guide Tube and Steering Cable Outer Jacket (at the Guide Tube end) **DO MOVE** when the steering system is activated.
- ii. It is extremely important that an **OPERATING CLEARANCE CHECK** be performed between the new I/O Kit & Second Steering Cable and **ALL** adjacent hardware including hoses, electrical cables and control cables.
- iii. With one person operating the manual steering Helm and one person observing the tiller area. Slowly run the tiller to full HO left and then to full HO right while the observer ensures that there are no physical interferences. Note that it may be necessary to run the engine to achieve this operation.
- iv. It may be necessary to re-rout hoses, electrical cables or control cables. **ALL** hardware must be well clear of the new I/O Kit and Second Steering Cable. Note that chaffing can occur if parts are allowed to come into contact.