

**SEASTAR™**

## SEAL REPLACEMENT

### Steering Cylinders Model Numbers: HC5328-3 & HC5329-3

Throughout this publication, Warnings and Cautions (accompanied by the International Hazard Symbol) are used to alert the user or installer to special instructions concerning a particular service or operation that may be hazardous if performed incorrectly or carelessly. **OBSERVE THESE CAREFULLY!** These 'safety alerts' alone cannot eliminate the hazards that they signal. Strict compliance to these special instructions when performing the installation and maintenance, plus 'common sense', are major accident prevention measures.

#### ⚠ WARNING

**Hazards or unsafe practices which could result in severe personal injury/death. Failure to comply with ANY warning may lead to loss of steering control. Loss of steering control may lead to unpredictable boat behavior causing ejection from vessel, or a collision with an object, resulting in property damage, personal injury and/or death.**

#### ⚠ CAUTION

**Hazards or unsafe practices which could result in minor injury, or product/property damage.**

#### NOTICE

*Important information to assist with the installation/maintenance of the steering system and is not hazard-related.*

#### NOTICE

*Protect yourself and your environment. ALWAYS wear approved safety glasses and protective equipment to avoid injury. ALWAYS dispose of used oil in an environmentally conscientious manner and be sure to adhere to local and Federal environmental laws. Keep your waters clean so that they can be enjoyed by all.*

### Applicable Cylinders

CYLINDER PART#	DESCRIPTION	SEAL KIT & GLAND END
HC5328-3	Power Assist Cylinder	HP6087
HC5329-3	Power Assist Cylinder	HP6087

### Tools Required

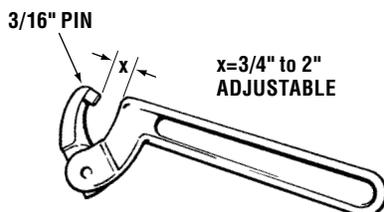
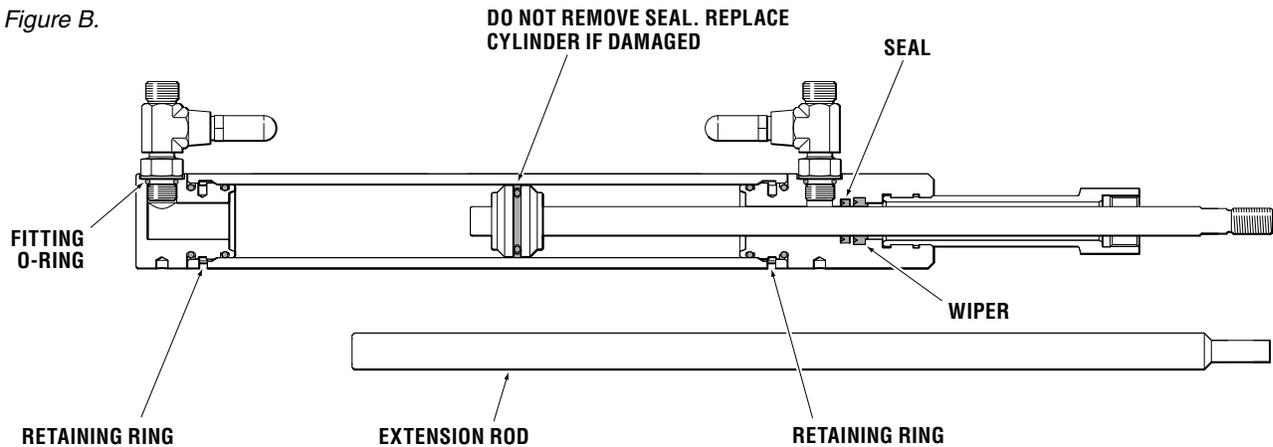


Figure A. Spanner Pin Wrench.

- Spanner pin wrench (see Figure A for wrench specifications).
- Needle nose pliers.
- 5/16" Wrench, open or box end type.
- 3/4" Wrench, open or box end/crescent type.
- 7/16" Wrench, box end/crescent type.
- 1-1/4" Wrench, box end/crescent type.
- 1/2" Socket and socket wrench.



Figure B.



**⚠ CAUTION**

Before attempting to replace these seals check the cylinder shaft surface for any signs of damage, such as; scratches, burrs, dents, dings or pitting. If there is any damage to the shaft the steering cylinder will need to be replaced completely. Installing seals into a cylinder with a damaged cylinder shaft will result in a leak.

## Seal Replacement Procedure

### Step 1

Inspect shaft for nicks, dings, scratches, pitting or any other defects. If defects are present, do not replace seals; cylinder must be replaced.

**NOTICE**

DO NOT attempt this repair with the steering cylinder installed on the boat. ALL work must be completed in a clean, dirt/debris free working area.

- Using a 1-1/4" wrench, loosen and remove the Extension Tube.

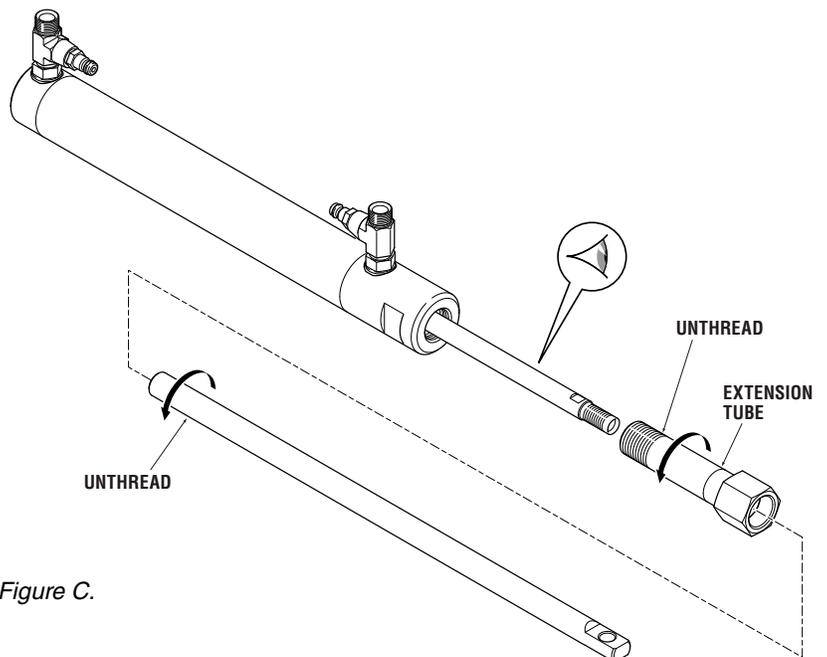
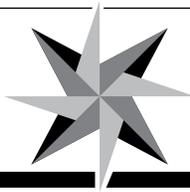


Figure C.



## Step 2

While securing hose fitting with a 5/8" open wrench, loosen the 5/8" hose fitting nut and remove the fitting from the cylinder body.

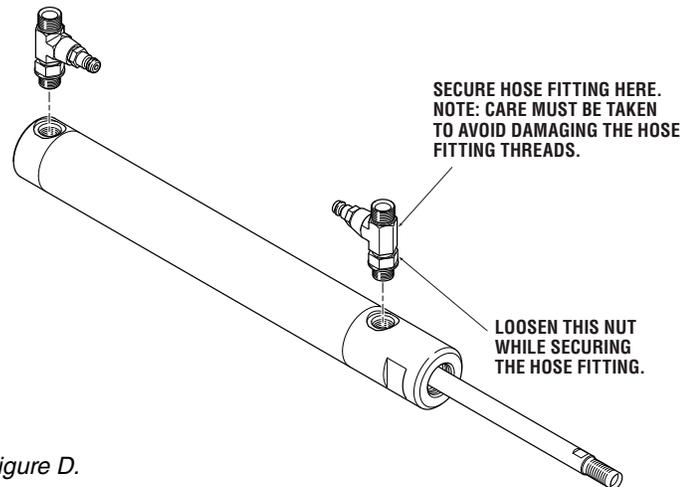


Figure D.

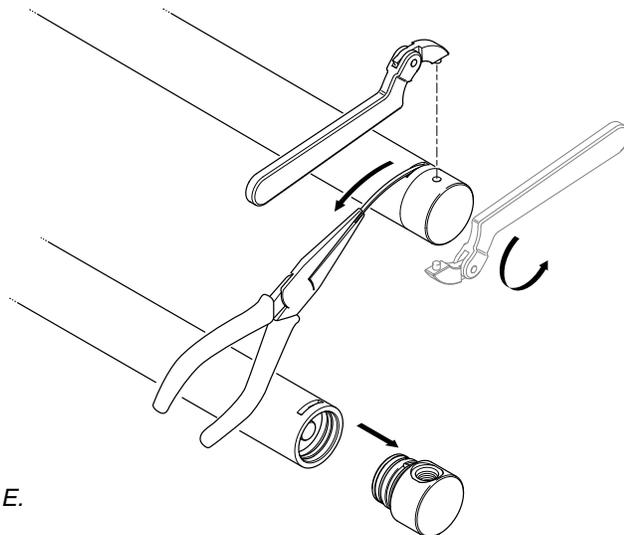
## Step 3

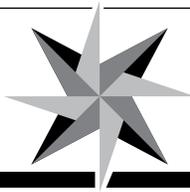
Remove the retaining rings that secure both end glands as outlined below.

- Using a spanner wrench turn end gland 'counter-clockwise' until the retaining ring end becomes visible in the retaining ring slot.
- Using a small, flat head screwdriver, pry up slightly on the end of the retaining wire to provide an area to grab with needle nose pliers.
- Grab onto retaining wire with needle nose pliers.
- Using spanner wrench, turn end gland 'counter-clockwise' pulling the retaining wire out with the pliers.
- Once the retaining wire is removed tap the the cylinder shaft using a non-marring hammer. Tap the shaft until the gland releases from the cylinder body.

### NOTICE

*DO NOT* remove cylinder shaft from steering cylinder body.





**Step 4** Repeat Step 3 for the opposite end gland.

**NOTICE**

If the retaining ring does not become visible in the fitting port of the cylinder barrel, it may have broken off inside the cylinder. The only way to remove the broken retaining ring at this point is to tap a second retaining ring in behind the first, forcing the broken ring to be ejected.

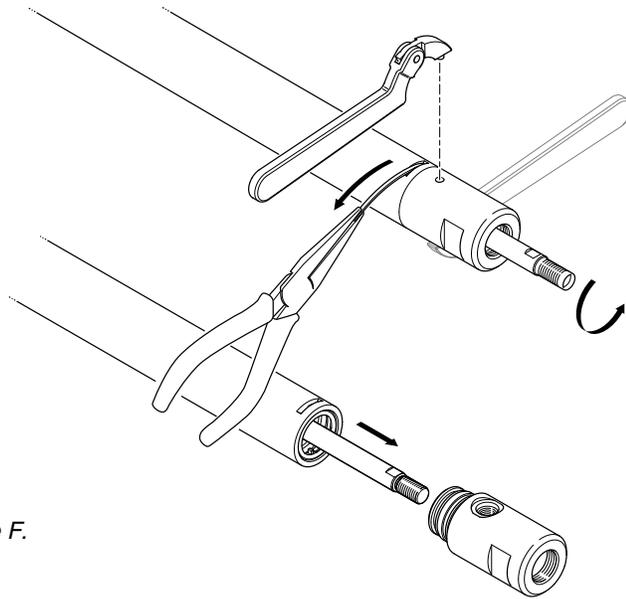


Figure F.

**Step 5** Installing new End Gland.

- Lubricate seals with steering fluid.
- Carefully slide gland over shaft.
- Push gland into place.
- Using the spanner pin wrench, turn the end gland clockwise, drawing the retaining ring into the end gland. Continue turning the end gland until the retaining ring is drawn into the groove (as shown in Figure G).

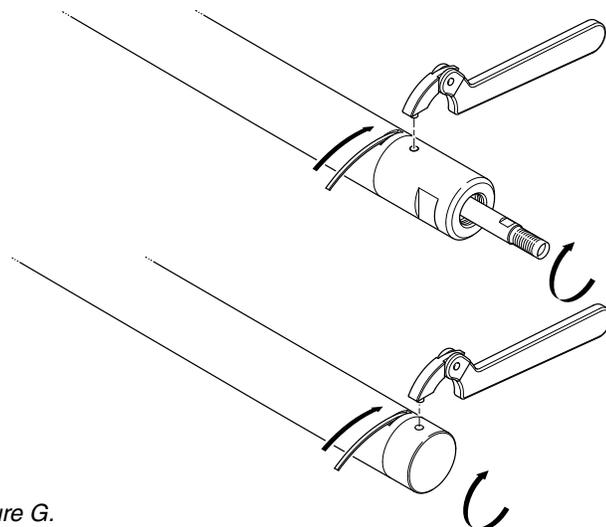
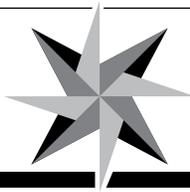


Figure G.



## Step 6

Install and realign the tee fittings.

- 1 Back off lock nut (item 1, figure I), counter-clockwise, until it stops.
- 2 Thread fitting into cylinder body until fitting washer (item 2, figure I) contacts the face of the cylinder port. Tighten hand tight, DO NOT TORQUE FITTING INTO GLAND.
- 3 Position fitting to desired orientation by turning it counter-clockwise to a MAXIMUM of 1 full turn.
- 4 While holding fitting with a wrench, tighten the locknut (item 1, figure I) and torque to 40–43 ft-lb.
- 5 Purge system as per your cylinder instruction manual.

### ⚠ WARNING

SeaStar Solutions recommends that the hose and hose fittings are checked on a regular basis to ensure the safe operation of the steering system.

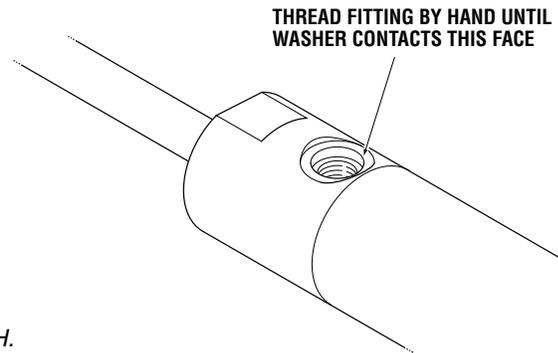


Figure H.

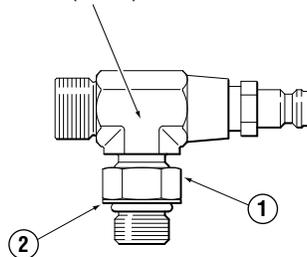
### ⚠ WARNING

Failure to properly tighten the locknut (item 1, figure I) may lead to loss of steering control. Loss of steering control may result in unpredictable boat behavior, collision with an obstacle and/or ejection from vessel, leading to property damage, personal injury and/or death.

### NOTICE

Care **MUST** be taken to avoid any damage to the hose fitting threads.

SECURE WITH 5/8"  
OPEN ENDED WRENCH  
HERE WHILE TIGHTENING  
LOCKNUT (ITEM 1)



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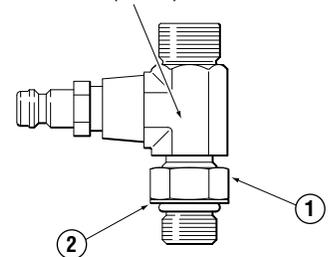
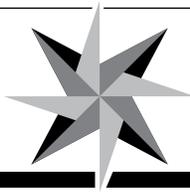


Figure I.

### ⚠ CAUTION

Leaks could cause loss of steering resulting in property damage and/or personal injury.

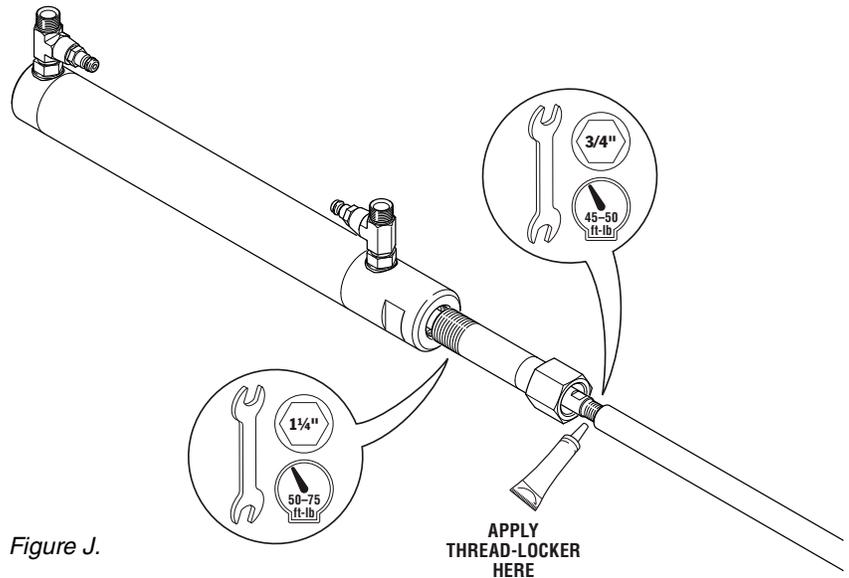


**Step 7** Using a 1-1/4" wrench, install extension tube into end gland.

**Step 8** Install steering cylinder as outlined in your Installation and Owner's Manual.

## NOTICE

*If you do not have a manual or installation instructions please contact SeaStar Solutions technical support at 604-248-3858 or visit [www.seastarsolutions.com](http://www.seastarsolutions.com)*



## Before Operating Your Boat

After the cylinder has been installed and the steering system bled free of air, ensure that the following check list is carried out.

### ⚠ WARNING

**The following checks should be completed prior to every use.**

- 1 Check fluid level in helm pump (highest helm in a multi-station system).
- 2 Verify immediate response when turning steering wheel(s).
- 3 Visually inspect ALL steering hoses and fittings for wear, kinking and/or leaks.
- 4 Check for binding, loose, worn or leaking steering components.

### ⚠ WARNING

**DO NOT operate boat if ANY component is not in proper working condition.**