

Teleflex®

MARINE

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*Before you do it your way,
please try it our way*

⚠ WARNING

The SeaStar/BayStar Side mount and Splashwell mount cylinders are that of an unbalanced design **DO NOT** install a SeaStar PRO helm with either of these cylinders, or, any other unbalanced cylinder. SeaStar PRO helms are **NOT** compatible with any unbalanced cylinder.

⚠ WARNING

These cylinders are intended for use on an outboard engine **ONLY**. Failure to adhere to this warning may lead to loss of steering control. Loss of steering control may lead to unpredictable boat behavior and/or ejection from the boat resulting in property damage, personal injury and/or death.

SIDE MOUNT CYLINDERS: HC5370-3 & HC4670-3

NOTICE

The side mount cylinder is installed in the same fashion as a steering cable.

- Slide well greased extension rod into thoroughly cleaned and rust free engine steering/tilt tube. (Item 1, Figure 1).
- Attach the cylinder rod end to the extension rod by inserting it into the mating hole of the extension rod (Item 2, Figure 1).
- Align holes in cylinder rod & extension rod, then insert special pin (item 3, Figure 1) through the hole joining both rods together. If the holes do not line up properly, rotate the extension rod 180°.
- While holding pin in place, slide the rod and pin assembly into the steering/tilt tube.
- Thread cylinder to steering/tilt tube and torque to 50–75 ft-lbs.
Note: Resistance will be felt; this is due to the anti-vibration pellet.

- Confirm no interference with any other equipment throughout the engine steering range, and in ALL trim/tilt positions, if interference is noticed it **MUST** be corrected prior to use.
- If applicable, connect tiebar (Part# HO5009A) to the tiller arms of both engines.
- Bleed steering system as outlined in the Filling & Purging section of this document.

⚠ WARNING

DO NOT modify or change the pin, or the hole in the cylinder rod and/or extension rod. Any modification can drastically reduce the strength and integrity of this attachment point. Failure to adhere to this warning may result in component separation. Separation of components may lead to unpredictable boat behavior and/or ejection from boat leading to property damage, personal injury and/or death.

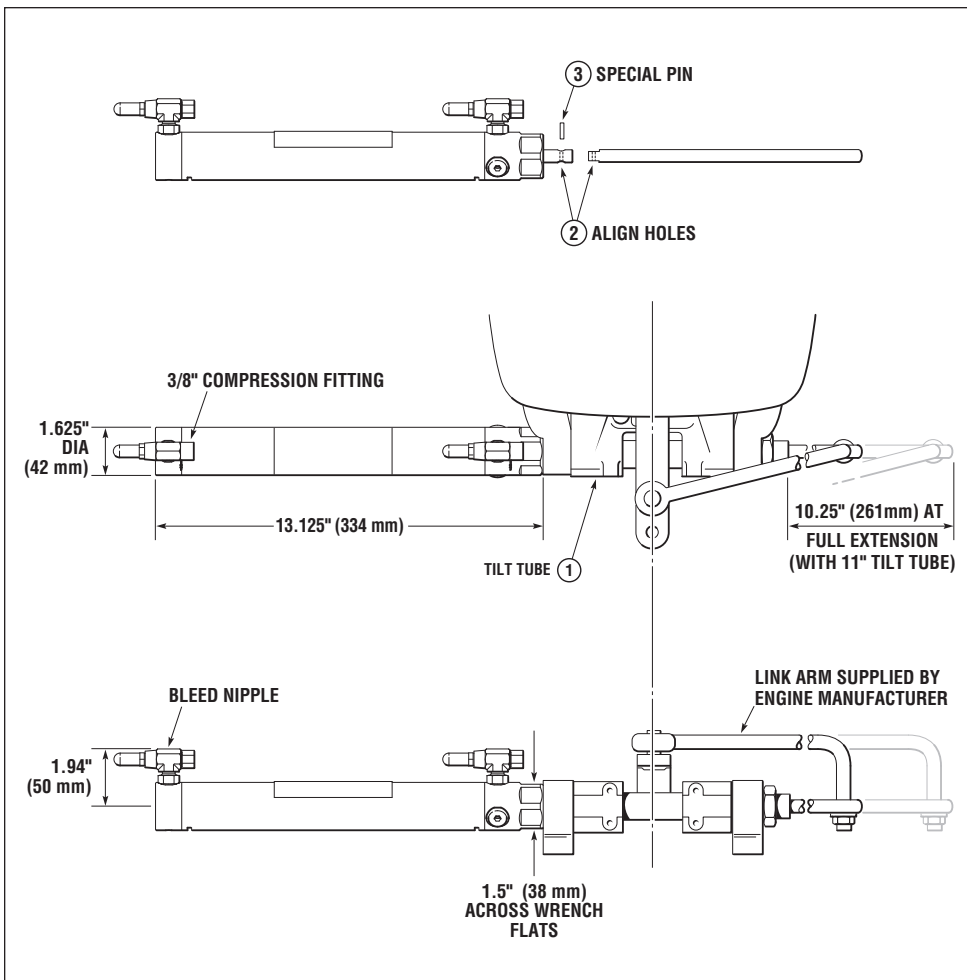


Figure 1. HC5370-3 Side Mount Cylinder.



INSTALLATION INSTRUCTIONS SUPPLEMENTAL



NOTICE

All linkages (drag link, steering link arms etc.) are to be purchased by the installer, builder and/or owner. These linkages are available from your engine manufacturer and are required to complete the installation of your steering cylinder.

NOTICE

These unbalanced cylinders can exert greater force while pushing the cylinder rod out of the body (extending). By mounting the cylinder(s) on the appropriate side, engine torque and steering loads can be balanced.

SPLASHWELL MOUNT CYLINDER: HC5380-3

NOTICE

BEFORE attempting installation of this Splashwell Mount Cylinder, consult the mounting configuration below for proper position of the mounting foot to the transom. As the Splashwell cylinder requires through bolting on the transom it will be necessary to contact the boat manufacturer for proper preparation of the transom holes.

- Draw out the mounting configuration of the cylinder, including the 3/8" holes on the transom.

- Drill and prepare through transom holes as recommended by boat manufacturer.
- Secure cylinder to transom using Grade 5, or better, stainless steel bolts.
- Connect cylinder to the steering arm of the outboard motor using the provided nut/bolt. Torque to 20 ft-lb.
- Bleed steering system as outlined in the Filling & Purging section.
- Confirm no interference with any other equipment throughout the engine steering range, and in ALL trim/tilt positions, if interference is noticed it **MUST** be corrected prior to use.

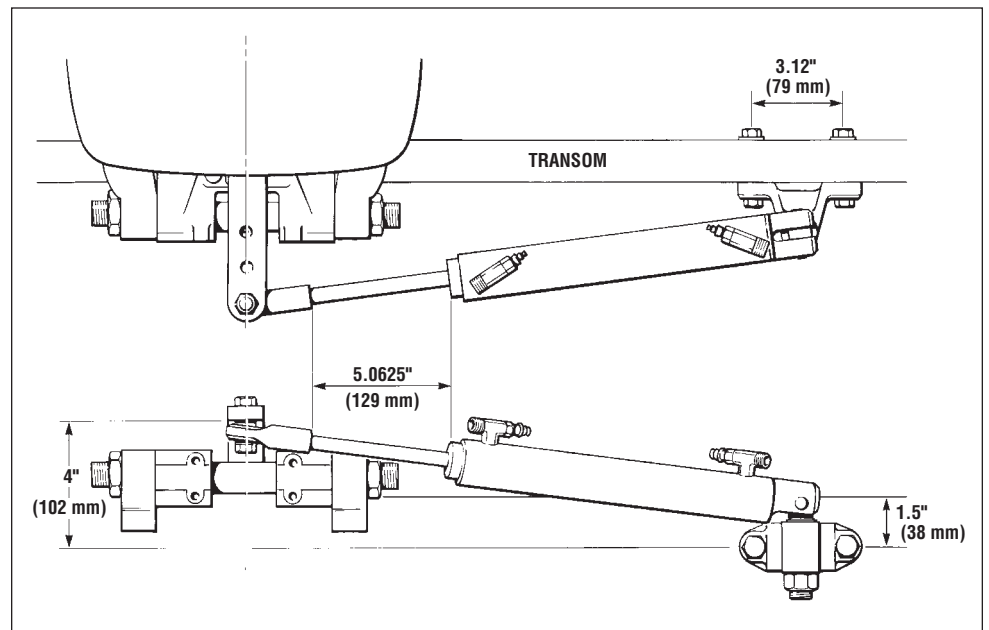


Figure 2. HC5380-3 Splashwell Mount Cylinder.

PLUMBING DIAGRAM

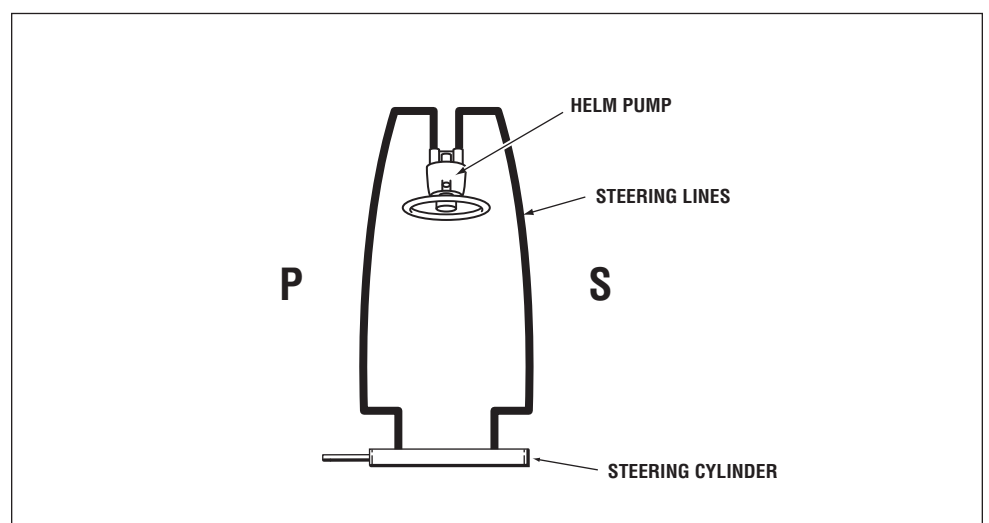


Figure 3. HC5370-3 and HC5380-3 Plumbing Diagram.

FILLING & PURGING THE SYSTEM

READ FIRST

NOTICE

If using SeaStar Power Assist please refer to the installation manual included with your Power Assist for specific bleeding details.

This procedure requires two people. One person may not be able to remove all the air from the system which will result in spongy, unresponsive steering.

During the entire filling procedure, oil **must** be visible in the filler tube. **Do not** allow the oil level to disappear into the helm pump, as this may introduce air into the system and increase your filling time.

Step 1 Single Station One Cylinder

- Screw the threaded end of the filler tube into the helm filler hole.
- Remove the cap from the oil bottle and holding upright, screw into the filler tube bottle cap. Poke hole in the bottom of the bottle.
- Fill the helm pump full of oil (refer to figure 4). Oil should always be visible in the filler tube. Use the next bottle at any time throughout the procedure when the oil level drops in the filler tube. Do not proceed with step two until helm is full of oil.

HYDRAULIC FLUID REQUIREMENTS

2 bottles (2 quarts or liters) for single station and single cylinder systems.

1 additional bottle for each additional helm, cylinder, or autopilot.

NOTICE

These instructions will result in hydraulic oil flushed in and out of the system. Oil can be re-used if filtered through a fine mesh screen such as those used for gasoline. If unable to filter oil, an additional bottle of oil is required.

NOTICE

Bleeder may refer to cylinders fitted with bleed tee fittings or bleed screws. If fitted with bleed tee fitting, open bleeder by unscrewing bleed nipple nut two turns.

HYDRAULIC FLUID

Recommended oils for your steering system are;

- SeaStar Hydraulic Fluid, part# HA5430
- Texaco HO15
- Shell Aero Fluid #41
- Esso Univil N15
- Chevron Aviation Fluid A
- Mobil Aero HFA
- Fluids meeting MIL-PRF-5606H spec's.
- Automatic transmission fluid Dexron II may be used in an emergency.

! WARNING

Never use brake fluid. Any non-approved fluid may cause irreparable damage, loss of steering, and cancellation of warranty.

In cases of extreme emergency any non-toxic, non-flammable fluid may provide temporary steering.

NOTICE

Filling the helm full of oil can be done faster if oil is poured into the helm prior to connecting filler tube and oil bottle to the helm.

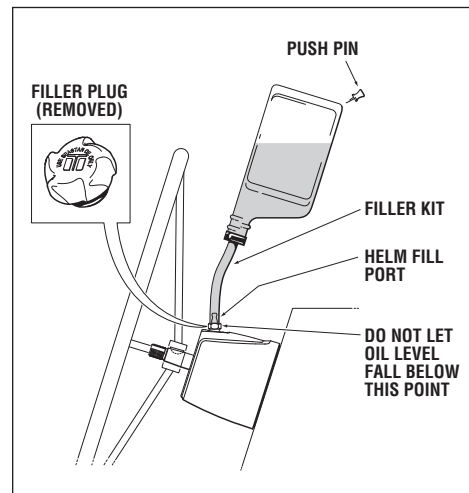


Figure 4.

Step 2

- When air bubbles have stopped coming out of the helm, turn the steering wheel clockwise until the cylinder rod is fully extended on one side of the cylinder.
- Open left side bleeder as indicated in the diagram.

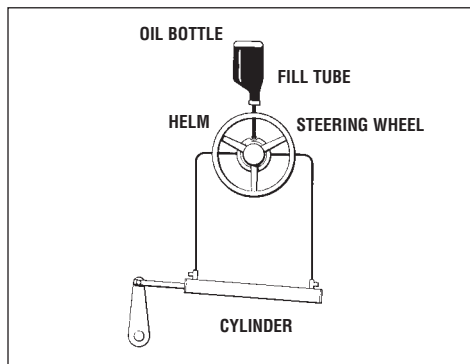


Figure 5.

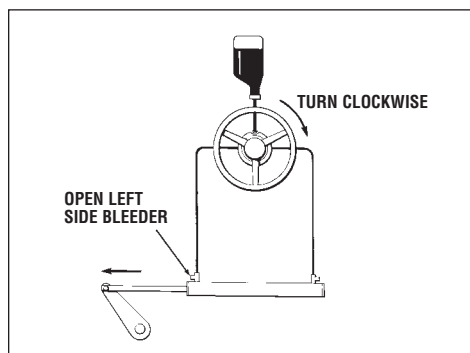


Figure 6.

Step 3

- Holding the cylinder rod (to prevent it from moving back into the cylinder) turn the steering wheel counter-clockwise until a steady stream of air free oil comes out of the bleeder. (Drain out approx. 1/2 bottle of oil or as required.)
- While continuing to turn the wheel, close the bleeder and let go of the cylinder rod.

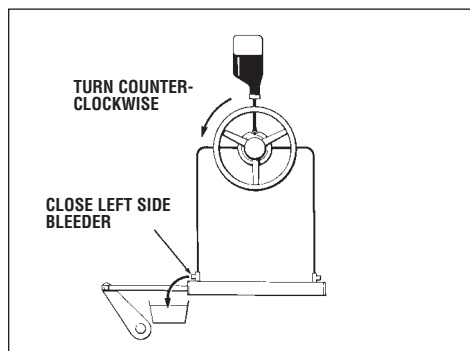


Figure 7.

Step 4

- Continue turning the steering wheel counter-clockwise until the cylinder rod is fully extended at other side of cylinder. (Steering wheel will come to a stop)
- Fill and Purge is now complete, continue to Oil Level and System Check.

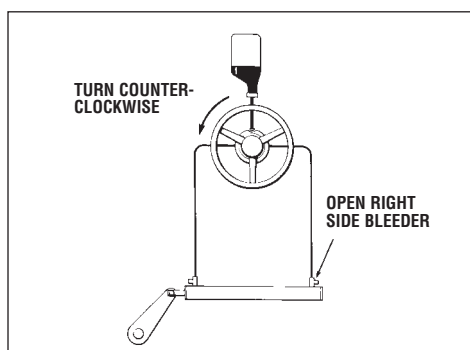


Figure 8.

Step 5

- Holding the cylinder rod (to prevent it from moving back into the cylinder) turn the steering wheel clockwise until a steady stream of air free oil comes out of bleeder.
- While continuing to turn the wheel, close the bleeder and let go of the cylinder rod.

Fill and purge is now complete.

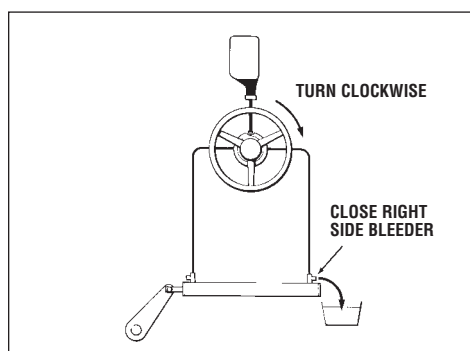


Figure 9.

Cylinder Fitting Installation (if required)

- 1 Back off locknut (Item 1), counter-clockwise, until it stops.
- 2 Thread fitting into cylinder body until fitting washer (item 2) contacts cylinder.
- 3 Position fitting by turning it counter-clockwise to a MAXIMUM of 1 (one) turn.
- 4 While holding fitting with a wrench, tighten the locknut (item 1) and torque to 19-21 ft-lb.

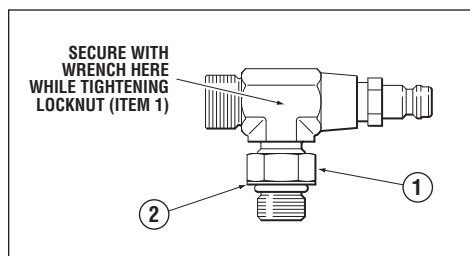


Figure 14.

Single Station Twin Cylinder

When performing steps 1 through 5, perform instructions in each step first on cylinder no. 1 and then on cylinder no. 2, before proceeding to the next step. **ie:** Perform instructions referring to right side of cylinder first on cylinder no. 1 and then on cylinder no. 2. Oil requirements 4 - 5 bottles.

Note: Refer to Oil Level and System Check.

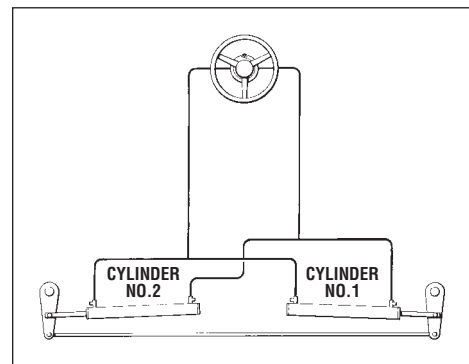


Figure 10.

Twin Station Twin Cylinder

Follow same procedure as instructed for single station-twin cylinders, beginning at station no. 1, and repeat entire procedure at station no. 2.

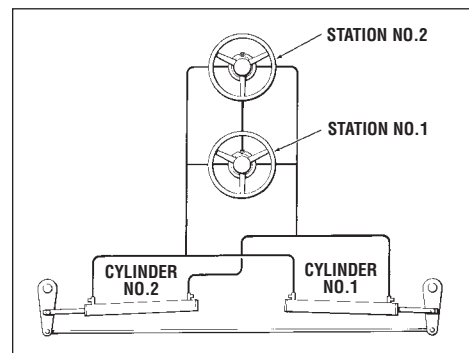


Figure 11.

Twin Station Single Cylinder

Perform steps 1 through 5 at station no. 1. Then repeat steps 1 - 5 at station no. 2. Oil requirements 4 - 5 bottles.

Note: Refer to Oil Level and System Check.

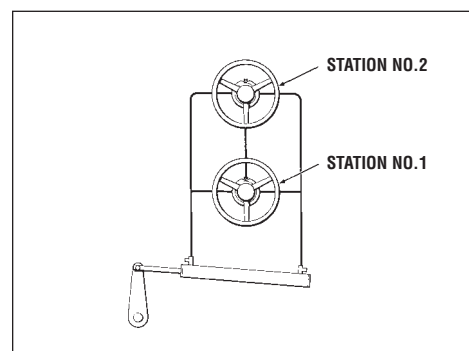


Figure 12.

Oil Level Set

- Proper oil level set can be obtained by opening bleeder and turning steering wheel until fluid level reaches top of plastic filler fitting and then turning wheel one more full turn. As indicated in step 5.

! CAUTION

For unbalanced cylinders the oil level in the helm must be set with the cylinder rod fully retracted. Failing to observe this caution will result in an oil spill at the helm.

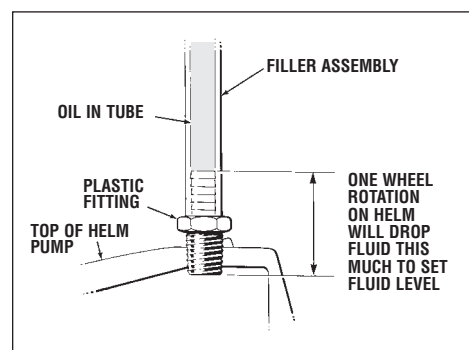


Figure 13.

Oil Level and System Check

! CAUTION

When setting fluid level as per the instructions noted above, the steering cylinder shaft MUST be completely retracted. Failure to do so WILL result in oil spillage from the helm pump filler port and/or extremely difficult steering.

For helms mounted with the wheel shaft completely vertical, the fluid level must be filled to the bottom of the filler hole WITH the shaft fully retracted, do NOT allow fluid level to drop below 1/4". For helms mounted on a 20 degree angle, or, with the wheel shaft completely horizontal, oil level should be within 1/2" of the bottom threads of the filler port, WITH the shaft fully retracted. Teleflex recommends that the oil level is checked prior to each outing.

At this time the steering system should be checked for proper connections of hoses, tubing and all fittings to detect any leaks and proper air removal. To do so, turn steering wheel (any wheel in a multi-station application) to the port side until wheel stops, after the wheel stops, force the wheel another full turn

past stop. This will not harm the system. While leaving the wheel in this position, visually inspect ALL items in the steering system for any signs of leaks. Repeat this procedure by turning the wheel to the starboard side. If no leaks are noticed, your steering system is ready for use. If leaks are found, they MUST be correct prior to use.

! WARNING

Failure to cure any leaks in the system may lead to loss of steering control. Loss of steering control may lead to unpredictable boat behavior and/or ejection from the boat resulting in property damage, personal injury and/or death.