Neleflex® MARINE

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

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Seastar

SUPPLEMENTAL

HYDRAULIC STEERING

Cleaning fluids containing ammonia, acids or any other corrosive ingredients MUST NOT be used for cleaning any part of this Hydraulic Steering System. Failure to comply will cause serious damage to the steering system, resulting in possible loss of steering, causing property damage, personal injury and/or death.

MOUNTING THE HELM

Mount the SeaStar helm to the dash board as required for your model-application. Refer to instructions and use appropriate mounting template.

The helm may be mounted with the helm shaft horizontal, vertical or any angle in between.

The filler plug must always be in the uppermost position.

If more than one steering station is installed, the fillvent plug on all but the uppermost helm must be replaced with a non-vent plug which is included in a dual station fitting kit. (Part# HA5432).

Determine desired mounting position. Ensure that the steering wheel will not interfere with other functional equipment. Check for adequate space behind dash for fitting and line connections.

Fittings inserted in the rear of the helm should be installed until finger tight and then turned an additional 1–1/2 to 2–1/2 turns depending on desired orientation of fitting, DO NOT exceed 156 in./lbs (17.6 Nm). DO NOT use Steel Fittings with SeaStar Helm Pumps use Brass fittings ONLY.

Use self-locking type fasteners only; substituting non-self locking fasteners can result in loosening or separation of equipment and loss of steering control. DO NOT exceed 110 in./lbs. (12 Nm) torque on helm and wedge nuts and bolts.

NOTICE

Ports marked R are for the connection of additional helm and auto pilot compensating lines. Straight connectors may be substituted.

Use a pipe sealant such as Loctite P.S.T. or equivalent on all pipe threads. Do not use "tape" sealers. Mount helm to dashboard or console and lightly

grease taper of helm shaft. Mount steering wheel to helm.

Tighten steering wheel shaft nut before filling and purging the steering system. Tighten nut to 150 in./lbs. (17 Nm). Do not exceed 200 in./lbs. (22 Nm).

CAUTION

If a 20° mounting wedge is used, cut out dash as per mounting wedge template and mount helm directly to the 20° wedge.

Do not use the SeaStar Pro 2.0 Helm with the Side Mount Cylinder HC5370 or the Splashwell Mount Cylinder 5380 as it is incompatible with all unbalanced steering cylinders.



DASHBOARD MOUNTING TEMPLATE

Mounting template for Standard Front Mount applications only.

NOTICE

Important information on reverse side, DO NOT cut out.

- 1. Tape to dash and use center punch for locating holes on dash, or photocopy if required to use as a drilling template.
- 2. Before drilling holes, check that helm location will allow unrestricted movement of the steering wheel.
- 3. Drill the 3" diameter center hole and the four 5/16" diameter mounting holes, positioned



FILLING & PURGING THE SYSTEM

READ FIRST

NOTICE

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

These instructions show how to fill and purge a Single Station, Single Cylinder System. Refer to **diagrams** "A" for Front Mount outboard cylinders, and **diagrams** "B" for all other cylinders, such as outboard Side Mount, outboard Splashwell Mount, Sterndrive and Inboard cylinders. For twin station and/or twin cylinder filling and purging instructions read instructions overleaf first and then proceed.

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

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 auto pilot.

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 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

If cylinder is fitted with bleed screws, open bleeder by removing bleed screw completely. Loosening bleed screw only, will not cause sufficient oil flow to purge system.

into the system and increase your filling time

HYDRAULIC FLUID

Recommended oils for your steering system are:

- SeaStar Hydraulic Fluid, part# HA5430
- Texaco H015
- Shell Aero Fluid #41
- Esso Univis N15
- Chevron Aviation Fluid A
- Mobil Aero HFA
- Fluids meeting MIL-PRF-5606H specifications.
- · Automatic transmission fluid Dexron II may be used in an emergency.

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, nonflammable 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.



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 (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.



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 bleeder as indicated on your applicable

diagram (A or B).



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.

Diagram B

TURN COUNTER

CLOSE LEFT SIDE BLEEDER

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.

CYLINDER NO.1

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CYLINDER NO.2



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.





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.





Step 4

• Continue turning the steering wheel counter-clock wise until the cylinder rod is fully extended at other side of cylinder.



(Steering wheel will come to a stop)Open bleeder.

Diagram B TURN COUNTER-CLOCKWISE

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 applicable diagram (A or B) in step 5.

ACAUTION

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. Turning the wheel port (left) will retract the cylinder rod.





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.



Oil Level and System Check

Helm mounted with wheel shaft completely horizontal must be filled to bottom of filler hole at all times. Do not allow oil level to drop more than 1/4"(6.3mm) Helms mounted on a 20° angle or with wheel shaft vertical, oil level should be within 1/2" (12.7mm) of hole. Check oil level periodically.

At this time the steering system should be checked for proper connections of hose, tube and fittings, possible leaks, and air removal. To do so, turn steering wheel (any one on a multi-steering station) and pressurize very hard to port. Apply enough force to the wheel to exceed pressure relief valve pressure. You will not harm the helm or the system. While pressure is maintained on the steering wheel, check all port (left) fittings and line connections. Repeat procedure by turning wheel to starboard. Watch the oil level in the helm pump when pressurizing the steering wheel in either hard over positions. If there is no obvious drop in oil level, air has been removed. If there is an obvious drop in oil level, you are compressing air and further filling and purging is required. Repeat Steps 1 thru 5. If no leaks are obvious, your steering system is ready for use. If leaks are found, correct before using. Failure to correct a leak can lower oil level in system and result in loss of steering.