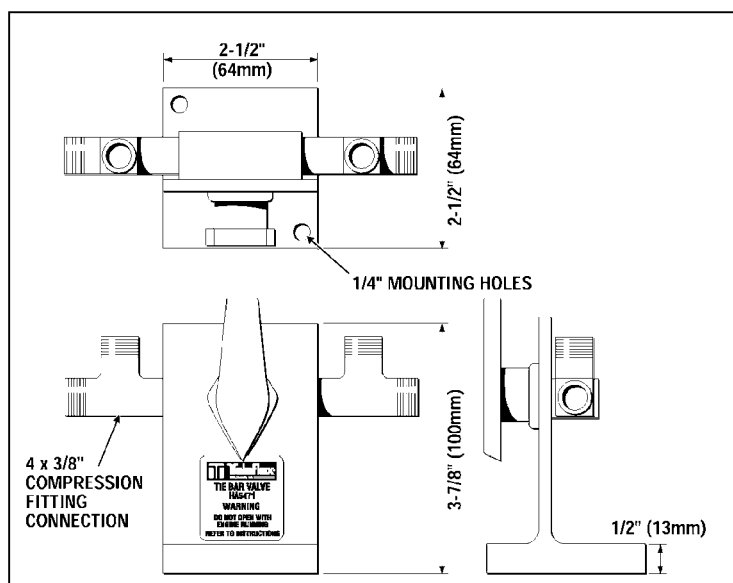


SeaStar cat/pontoon steering *Alignment Valve for "Hydraulic Tie Bar"* (when a mechanical tie bar cannot be used)

The SeaStar® Cylinder Alignment Valve (part # HA5471-2) will allow for the periodic required realignment of two outboard motors or rudders that are linked together with a Hydraulic Tie Bar as opposed to a solid link or a Mechanical Tie Bar.

A standard helm and SeaStar hoses may be used on vessels not exceeding speeds of 55 MPH. Boats exceeding 55 MPH must use the SeaStar Pro Helm Pump (part # HH5770) and SeaStar Pro Kevlar® Hoses.

FIGURE 1 -
HA5471-2 ALIGNMENT VALVE



Bleeding Instructions:

NOTE: See diagrams at right for bleed fitting numbers.

1. Fill helm with oil and attach filler device/container to helm.
2. Open valve.
3. Open bleed fitting no. 1 and pull cylinder shaft all the way out on fitting no. 1 side of cylinder.
4. Turn steering wheel clockwise until an air free stream of oil comes forth from bleed fitting no. 1. **DO NOT ALLOW SHAFT TO MOVE BACK INTO CYLINDER. DO NOT USE A WRENCH TO HOLD SHAFT.**
5. Close bleed fitting no. 1.
6. Open bleed fitting no. 2 and pull cylinder shaft all the way out on fitting no. 2 side of cylinder.
7. Turn steering wheel counter-clockwise until an air free stream of oil comes forth from bleed fitting no. 2, then close bleed fitting no. 2.
8. Open bleed fitting no. 3 and pull cylinder shaft all the way out on fitting no. 3 side of cylinder.
9. Turn steering wheel counter-clockwise until an air free stream of oil comes forth from bleed fitting no. 3, then close bleed fitting no. 3.
10. Open bleed fitting no. 4 and pull cylinder shaft all the way out on fitting no. 4 side of cylinder.
11. Turn steering wheel counter-clockwise until an air free stream of oil comes forth from bleed fitting no. 4, then close bleed fitting no. 4.
12. Turn steering wheel back and forth from hardover to hardover a couple of times. Align cylinders by pulling cylinder rod all the way out on the same side of each cylinder and close valve.

Realignment Instructions:

Engines Toed Outwards (propellers too far apart):

1. Turn the wheel hard over to Starboard. (Both cylinders move; cylinder B reaches hard over first).
2. Open the valve.
3. Continue to turn the wheel hard over to Starboard. (Only cylinder A moves and reaches hard over).
4. Close the valve.

Engines Toed Inwards (propellers too close together):

1. Turn the wheel hard over to Port. (Both cylinders move; cylinder B reaches hard over first).
2. Open the valve.
3. Continue to turn the wheel hard over to Port. (Only cylinder A moves and reaches hard over).
4. Close the valve.

NOTE: Due to the potential for leakage across the piston seals, it is possible for the engines to get out of synchronization. We are unable to predict, due to circumstances beyond our control, the frequency that misalignment may occur, therefore **engine alignment should be checked and corrected as required before leaving the dock.**

CAUTION: Side Mount or Unbalanced Cylinders, such as SeaStar cylinder HC5370 can only be used with the valve by re-orienting the port engine tilt tube, to allow for mounting cylinder on the port (left) side of the port engine. Cylinder rods must face each other.

WARNING: The use of a standard helm at high speed (55 MPH+) or a high load, e.g.: full throttle forward/reverse, may cause a vacuum in the liquid tie bar and cause engine/rudders to misalign, resulting in momentary loss of steering control. This will not occur if a SeaStar Pro Helm Pump (part # HH5770) is used.

FIGURE 2 - PIVOT MOUNT CYLINDER (TOE OUT)

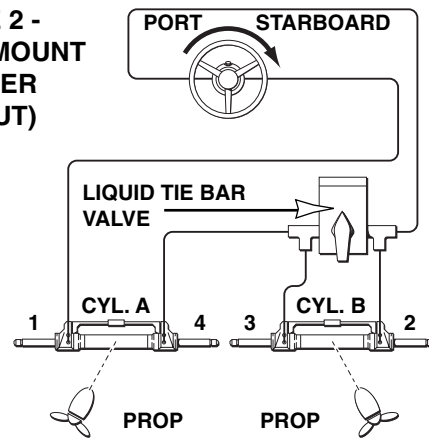


FIGURE 3 - SIDE MOUNT CYLINDER (TOE OUT)

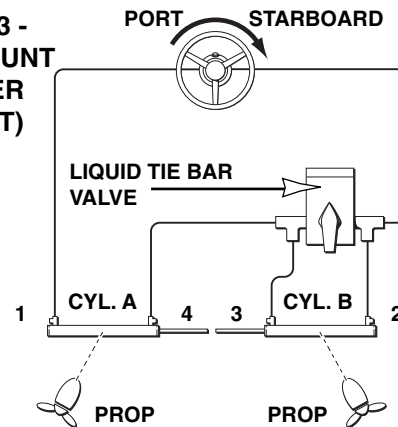


FIGURE 4 - PIVOT MOUNT CYLINDER (TOE IN)

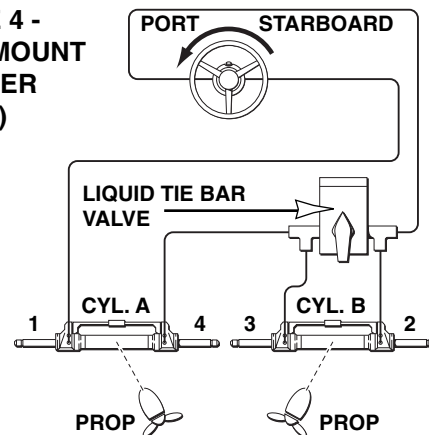


FIGURE 5 - SIDE MOUNT CYLINDER (TOE IN)

