MERCRUISER SERVICE BULLETIN

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Field Test Procedures for Hydraulic System with Hydraulic Pump Test Gauge (C-91-52915A2) *(Section X)*

FIELD TEST PROCEDURES for HYDRAULIC SYSTEM with HYDRAULIC PUMP TEST GAUGE (C-91-52915A2)

(For Miscellaneous Section X)

Boat or Bench Test Procedures to Detect Trim Cylinder and Reverse Lock Valve Internal Leaks

TEST 1 - "Up" Cylinder Check: When trim cylinders will not hold drive in "TRIM" or "UP" positions

TEST 2 - "Down" Cylinder Check: When trim cylinders fail to hold drive in "Reverse" and/or prevent the unit from returning to a full "DOWN" position

NOTE: Remove aft anchor pin when TESTS 1 and 2 are performed on boat.

TEST 3 - "Reverse" lock valve internal leak check (trim cylinders OK) when drive unit will not hold reverse thrust

NOTE: If reverse lock valve is leaking, because of blown-out "O" ring or cracked cover, perform TEST 2, No. 2 "trail out" valve relief pressure test.*

Precautionary Procedures While Checking Hydraulic Assemblies

Clean assembly and work area before removing fittings to prevent oil contamination. Wipe hydraulic oil away from fittings after making connections so that external leaks may be detected. Even a very slight leak will cause a drop in pressure.

TEST 1 - "Up" Cylinder Check

NOTE: Purge air from lines before making connections.

1. Install test gauge in "Up" circuit with both valves ("A" and "B") open. (Figure 1)
2. Operate trim "Up" or "Out" to full cylinder extension and check for external leaks.
3. Read gauge pressure. Pressure should remain steady - approximately 2500-3500 PSI (162-232kg/sq.cm).

*NOTE: If pressure is less than 2500 PSI, check pump.**

4. Close valve "A" and stop pump. Line pressure should remain steady. If pressure drops, cylinder is defective.
5. Remove test gauge and reinstall original lines. Keep hydraulic and gauge assemblies clean!
6. Repeat above procedure on other cylinder.

(OVER)

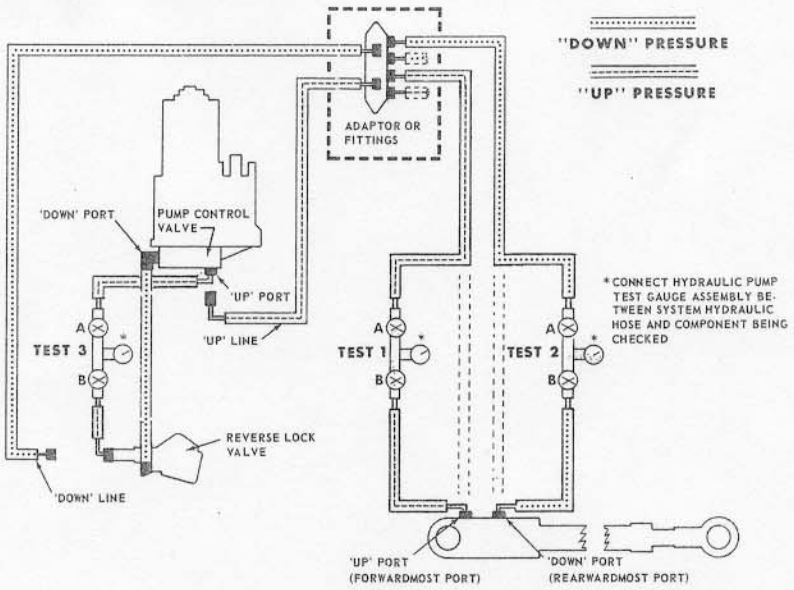

Figure 1. Hydraulic Circuits

TEST 2 - "Down" Cylinder Check

1. Install test gauge in "Down" circuit with both valves (A and B) open. (Figure 1)
2. Operate trim "DOWN" or "IN" to full cylinder retraction and check for external leaks.
   NOTE: Failure of cylinder to retract (with gauge reading 600-1000 PSI [42-70kg/sq. cm.]) indicates a defect.
3. While operating trim "DOWN" or "IN", close valve "A" and stop pump. Read gauge pressure. Pressure should remain steady at 550-850 PSI (39-60kg/sq.cm.). If pressure drops after closing valve, cylinder is defective.
   NOTE: If pump pressure does not rise above 550 PSI, check pump or pump control valve.**
4. Remove test gauge and reinstall original lines. Keep hydraulic and gauge assemblies clean.
5. Repeat above procedure on the other cylinder.

TEST 3 - "Reverse" Lock Valve Leak Check

1. Disconnect "Up" line from hydraulic pump. Cap line, then install test gauge line into "Up" circuit. (Figure 1) Keep hydraulic and gauge assemblies clean.
2. Disconnect "Down" line on reverse lock valve (Figure 1) leading from cylinders. Cap line, then install test gauge line to reverse lock valve. Open valve "A" and "B".
3. Move reverse lock valve to the closed position (shift into reverse), aligning marks.
4. Place a jumper lead between blue wire on white terminal block on pump and blue lead on pump solenoid to bypass the open reverse interlock switch.

> **CAUTION: Under no other circumstances bypass the reverse interlock switch. If the switch is bypassed, and the pump is run in the "Up" direction, the boosting action of the cylinders will build hydraulic pressures which could damage the cylinders and/or hydraulic lines.**

5. Operate trim "Up". Pump pressure should be 2500-3500 PSI (162-232kg/sq.cm.).
   *NOTE: If pressure is less than 2500 lbs., check pump.**
6. Close valve "A" and stop pump. Gauge pressure should remain steady. If pressure continues to drop, reverse lock valve assembly is defective.
7. Remove test gauge jumper lead and reinstall original lines.

** Refer to field test procedures for hydraulic pumps included with Hydraulic Pump Test Gauge (C-91-52915A2).*