HYDRAULIC TESTING

TX420 & 425

Introduction

Due to the many types and manufacturers of test equipment, the test hoses and fittings needed will vary. Refer to the connection information at each hydraulic test location.

Test hose specifications must exceed maximum system flow and pressure and must be compatible with the type of fluid in the hydraulic system.

Flow Testing

The five components listed A, B, C, D and E are the primary testing locations for the TX models (Fig. 1918).

A. 2-Spool loader valve - C. LH Hydrostat
   90º fitting
B. 2-Spool loader valve - E. Flush face coupler
   45º fitting
   D. RH Hydrostat
   F. Flow meter

A. & B. 2-Spool Valve Hose Fitting and Coupler (Fig. 1919)
   - Valve Hose Fitting - 13/16” - 16 ORFS 90º & 45º
   - Valve Hose Fitting Coupler - 13/16” - 16 x 13/16” ORFS

Note: ORFS = O-ring Face Seal

Fig 1918 PICT-4310a

A. 2-Spool loader valve - C. LH Hydrostat
   90º fitting
B. 2-Spool loader valve - E. Flush face coupler
   45º fitting
   D. RH Hydrostat
   F. Flow meter

C. LH Drive Hydrostat Pump

Pump Fitting – 1” - 14 ORF – 90º Female (Fig. 1920)

Fig 1919 PICT-3521a

Fig 1920 DSC-0576a
HYDRAULIC TESTING

D. RH Drive Hydrostat Pump

Pump Fitting – 13/16” - 16 ORFS – Straight Female (Fig. 1921)

![Fig 1921](DSC-0579a)

E. Couplers

Coupler End – 7/8” - 14 UNF-2B O-ring Seal (Fig. 1922)

![Fig 1922](DSC-0580a)

Test hoses:

<table>
<thead>
<tr>
<th>Diameter</th>
<th>Length</th>
<th>PSI Rated</th>
</tr>
</thead>
<tbody>
<tr>
<td>-8</td>
<td>3’ (91.4cm)</td>
<td>5000</td>
</tr>
</tbody>
</table>

Test Gauge – 3/4”-16 – 37º Female (Fig. 1923)

![Fig 1923](DSC-0577a)

E. Flow Tester (Fig. 1924)

![Fig 1924](PICT-3520a)

A. Pressure gauge
B. Flow gauge
C. Restriction valve
Hydraulic Testing

Hydraulic testing needs to be done in a systematic manner with a basic understanding of the hydraulic system and functions. It is recommended that you have the hydraulic schematic for the model and serial number being tested. Schematics can be obtained from this service manual or from the Toro Operator Manual or Parts Catalog provided with the unit.

The TX420 and TX425 hydraulic system utilizes a dual gear pump to push oil to all the hydraulic components of the unit. The TX420 and TX425 hydraulic systems can be separated into three circuits: loader, auxiliary and drive. These hydraulic systems are open circuit systems that allow oil to flow when the valves and hydrostatic pumps are in neutral position.

The dual gear pump draws the oil from the hydraulic tank and pushes the oil through the hydraulic lines, hoses and valves. The pump creates the flow [gallons per minute (gpm)]. The auxiliary and loader circuits are separate circuits which operate at their own pressure and flow. Return line oil from the loader circuit is used to supply oil to the two drive system hydrostatic pumps.

The recommended flow (gpm) and pressure (psi) values for each of the different circuits are located in the specification section of this manual. Refer to those values to properly troubleshoot each circuit. The tests in the following section need to be done at various locations to determine which component(s) may not be functioning correctly.

Oil is drawn from the hydraulic tank by the front section of the dual gear pump (furthest from engine) and flows into the loader valve. The loader valve relief restricts the hydraulic oil which creates system pressure (psi). When the loader valve is moved forward or back from neutral position it directs the hydraulic oil to the lift cylinder. When the loader valve is moved left and right it directs hydraulic oil to the tilt cylinder.

Oil is drawn from the hydraulic tank by the rear section of the dual gear pump (closest to the engine) and flows into the auxiliary valve. The auxiliary valve relief restricts the hydraulic oil which creates system pressure (psi). The auxiliary valve directs the hydraulic oil to the couplers. When the auxiliary lever is moved toward the drive handle the female coupler is pressurized, which runs the attachment in forward drive. When the auxiliary lever is moved away from drive handle the male coupler is pressurized and the attachment runs in reverse drive.

The drive system uses two hydrostatic pumps and two wheel motors. The hydrostatic pumps are supplied with low pressure oil returned from the loader valve. This oil is filtered and then fed to the hydrostatic pumps. (A 5 psi check valve on the return hose between the filter and tank is used to ensure a constant supply of oil to the hydrostatic pumps). When the drive handle is moved out of the neutral position, hydraulic oil is pumped to the wheel motors that drive the tracks.

Hydrostatic Testing Procedures

**WARNING:**
Certain procedures require the vehicle engine to be operated and the vehicle to be raised off the ground. To prevent possible injury to the servicing technician and/or bystanders, ensure the vehicle is properly secured.

**WARNING:**
Do not attempt any adjustments with the engine running. Use extreme caution while working in or around all vehicle linkage! Follow all safety procedures outlined in the Operators Manual.

The purpose of the flow test is to isolate and determine if there is a problem with either the hydrostatic pump or the wheel motor.

**CAUTION:**
Ensure all fittings and hoses are attached securely. This test is being completed on the vehicle’s high pressure lines. Failure to perform this test properly could result in bodily injury.
HYDRAULIC TESTING

Auxiliary Circuit Pressure Test

Note: Make sure the engine RPM is checked and set properly prior to any hydraulic testing.

This test checks the auxiliary circuit system pressure. The components involved in this test are: gear pump, auxiliary valve, auxiliary couplers and hoses.

A pressure test can be done by using a flow type or a non flow type tester. Each tester has its own advantages and disadvantages.

Flow Type
Advantages of a flow type tester are that pressure and flow can be obtained with this one tester and the hydraulic load can applied slowly to compare the relativity between pressure and flow. Restrictor on flow meter can be turn inward prior to activating the hydraulic valve for pressure testing.

Disadvantage of flow type tester is the expense and the hydraulic load is slowly applied and the engine rpm can be overcame prior to reaching recommended system pressure.

Non Flow Type
Advantages of a non flow type tester are there simpler, less expensive and fewer steps to obtain test results. The hydraulic load is applied quickly and system pressure can be obtained prior to engine rpm is overcame.

Disadvantage of non flow type tester is it can only be used for pressure testing.

This manual will be using a flow type tester for the hydraulic testing. A non flow tester can also be used to obtain hydraulic pressure readings.

Auxiliary Circuit Pressure Test Procedures

This test checks the system pressure of the auxiliary circuit. The components involved are gear pump, auxiliary valve, auxiliary couplers and hoses/lines. When the auxiliary tests to the recommendations the attachment may be at fault.

1. Warm the hydraulic fluid to operating temperature.
2. Set park brake.
3. Shut the engine off.
4. Cycle auxiliary valve to remove pressure at the couplers. Connect the pressure/flow test gauge into the couplers (Fig. 1925).
Note: Have the restrictor valve fully closed on flow meter (Fig. 1926).

5. Start the engine and run at the full recommended RPM.

6. Stroke the auxiliary valve (Fig. 1927).

7. Take reading of the pressure at the gauge (Fig. 1928).

   Recommended pressure: 3000 psi (206.89 bar)

Prior to adjusting pressure relief, flow test should be done. If adjustment of the auxiliary pressure relief valve is required, continue on. If not, skip to step 8.

   a. Unlatch and open the rear access panel (Fig. 1929).
HYDRAULIC TESTING

b. Using a 13mm wrench, loosen the jam nut on the auxiliary valve pressure adjustment screw (Fig. 1930).

c. Using a 4mm Allen wrench, adjust the pressure adjustment screw (Fig. 1931):
   • Turn the screw clockwise to increase the pressure.
   • Turn the screw counter-clockwise to decrease the pressure.

d. After achieving the recommended 3000 psi (206.89 bar), tighten the jam nut to lock the pressure adjustment screw in place (Fig. 1932).

e. If pressure can not be adjusted to the recommended specification, replace or rebuild the valve or valve relief.

8. Disconnect the pressure/flow gauge (Fig. 1933).
9. Check the hydraulic fluid level; add as needed.
10. Start the engine and check for leaks.
11. Close and latch the rear access door.
12. Release park brake.

**Auxiliary Circuit Flow Test**

This test checks the system flow of the auxiliary circuit. The components involved in this test are: gear pump, auxiliary valve, auxiliary couplers and hoses. When the traction unit tests to the recommendation the attachment may be at fault.

**Auxiliary Circuit Flow Test Procedures**

1. Warm the hydraulic fluid to operating temperature.
2. Set park brake.
3. Shut the engine off.
4. Cycle auxiliary valve to remove pressure at the couplers. Connect the pressure/flow test gauge into the couplers (Fig. 1934).
5. Start the engine and run at the full recommended RPM.
6. Stroke the auxiliary valve (Fig. 1936).

**Note:** Have the restrictor valve fully open on flow meter (Fig. 1935).
HYDRAULIC TESTING

7. Take the reading of flow at the gauge (Fig. 1937).
   Recommended pressure: 11 gpm (41.6 liters); 3000 psi (206.89 bar)

8. If flow does not meet specification, then rebuild or replace the gear pump.

   **Note:** Prior to pump R & R, make sure valve spool is being fully stroked.

9. Disconnect the pressure/flow gauge (Fig. 1938).

10. Check the hydraulic fluid; add as needed.

11. Start the unit and check for leaks.

12. Release park brake.

13. Shut the engine off.

14. Close and latch the hood.

**Flow Test Gear Pump to Loader Valve**

This test determines the flow output of the gear pump. The components involved in this test are: hydraulic line and pump. If the gear pump flow test meets specifications, then the loader valve or hydraulic line may be at fault.

**Flow Test Gear Pump to Loader Valve Procedures**

1. Warm hydraulic fluid to operating temperature.

2. Set park brake.


4. Open the rear access door.

5. Position a drain pan under the loader valve.
6. Remove the hydraulic line nut from the loader valve outlet fitting (Fig. 1939).

7. Install the tester fitting into the previously removed hydraulic line (Fig. 1940).

8. Connect one side of the pressure/flow gauge to the tester fitting just installed (Fig. 1941).

9. Connect the other side of the pressure/flow gauge to the loader valve outlet port (Fig. 1942).
HYDRAULIC TESTING

10. Start the engine and run at full recommended RPM.
11. Take the reading of flow at the gauge (Fig. 1943).
   Recommended pressure: 2400 psi (165 bar)

   Fig 1943  PICT-3540

12. If the pump does not meet flow specification, check for suction hose restriction, pump pulley slippage and then repair or replace the pump.

13. Disconnect the pressure/flow gauge and fitting from the hydraulic line and loader valve.

14. Replace the o-rings and reinstall the hydraulic line into the loader valve port (Fig. 1944).

   Fig 1944  PICT-3528

15. Check the hydraulic fluid and add as needed.
16. Start the engine and check for leaks.
17. Remove drain pan.
18. Release park brake.
19. Shut the engine off.
20. Close the rear access door.

TX420 & 425 210000501 & up

Loader Circuit Pressure Test

This test determines if the loader valve relief is properly set or working correctly. The components involved in this test are: gear pump, hydraulic lines, loader valve and test port fitting. If the pressure can not be adjusted to meet specification then the loader valve or relief valve will need to be repaired or replaced. If the pressure meets specification the loader valve is not the problem. The lift or tilt cylinder could be at fault.

System flow test should be completed to assure proper flow from the pump is obtained.

Pressure Tester (Fig. 1945):
Loader Circuit Pressure Test Procedures

Note: There are 2 possible test locations available depending on the machine model and serial number:

- TX420 & 425 210000501 - 240000300 test location at the loader valve
- TX420 & 425 240000301 & higher test location in the hydraulic line

The procedure for both test locations is the same. The following procedure was performed at the loader valve test port.

1. Warm hydraulic fluid to operating temperature.
2. Set park brake.
4. Remove the yellow cap from the loader valve test port (Fig. 1946).
5. Connect the pressure gauge to the loader valve test port (Fig. 1947).
6. Start the engine and run at the full recommended RPM.
7. Actuate the auxiliary valve to develop pressure (Fig. 1948).
HYDRAULIC TESTING

Note: Prior to adjusting pressure relief, flow test should be done.

8. Take the pressure gauge reading (Fig. 1949).
   The pressure gauge should read 2400 psi (165 bar). If adjustment of the loader valve is required, continue on. If not, skip to step 9.

   a. Unlatch and open the rear access door.
   b. Using a 13mm wrench, loosen the jam nut on the loader valve pressure adjustment screw (Fig. 1950).

c. Using a 4mm Allen wrench, adjust the pressure adjustment screw (Fig. 1951):
   - Turn the screw clockwise to increase the pressure
   - Turn the screw counter-clockwise to decrease the pressure.

d. After achieving the recommended 2400 psi (165 bar), tighten the jam nut to lock the pressure adjustment screw in place (Fig. 1952).
HYDRAULIC TESTING

This test determines if the loader valve relief is properly set or working correctly. The components involved in this test are: gear pump, hydraulic lines, loader valve and test port fitting. If the pressure cannot be adjusted to meet specification then the loader valve or relief valve will need to be repaired or replaced. If the pressure meets specification, the loader valve is not the problem. The lift or tilt cylinder could be at fault.

1. System flow test should be completed to assure proper flow from the pump is obtained.

Pressure Tester (Fig. 1955):

TX420 200000100 - 210000499

Loader Circuit Pressure Test

This test determines if the loader valve relief is properly set or working correctly. The components involved in this test are: gear pump, hydraulic lines, loader valve and test port fitting. If the pressure cannot be adjusted to meet specification then the loader valve or relief valve will need to be repaired or replaced. If the pressure meets specification, the loader valve is not the problem. The lift or tilt cylinder could be at fault.

System flow test should be completed to assure proper flow from the pump is obtained.

Pressure Tester (Fig. 1955):

11. Check hydraulic fluid and add as needed.

12. Start unit and check for leaks.


HYDRAULIC TESTING

Loader Circuit Pressure Test Procedures

1. Park the unit on level ground.
2. Set the park brake.
3. Let the engine and hydraulic fluid cool prior to testing.
4. Cycle the loader valve to relieve any pressure from the circuit.

Note: There is no hydraulic test port for the drive or the loader circuit so the test will be performed on either the left or right loader arm hydraulic cylinder hose.

5. The proper test port fittings need to be purchased at a local hydraulic supplier.

Listed below are the Parker Hydraulics part numbers to make the test port for hydraulic pressure testing (Fig. 1956).

A. 6R6LO-S T-fitting o-ring faced
B. PD36BTL fitting

6. Position absorbent towels under the loader arm cylinder hose.
7. Cut the 2 plastic ties securing the hydraulic hose to the loader arm cylinder (Fig. 1957).

8. Using a 13/16" wrench, loosen and remove the hydraulic hose from the loader arm lift cylinder (Fig. 1958).
9. Using a 13/16” wrench, install the test port T-fitting into the hydraulic cylinder hose (Fig. 1959).

10. Using a 13/16” wrench, install the test port T-fitting onto the cylinder fitting (Fig. 1960).

11. Connect the pressure gauge onto the test port T-fitting (Fig. 1961).

12. Start the engine and run at the full recommended RPM.

13. Position the loader valve handle in the “Lower” position (do not advance to the “Float” position).

14. Take the pressure gauge reading (Fig. 1962).
15. The pressure gauge should read 2400 psi (165 bar). If pressure does not meet specification, check for hydraulic line restrictions and the relief valve on the loader valve. Then repair or replace loader valve.

Prior to adjusting pressure relief, flow test should be done.

16. Disconnect the pressure gauge from the test port T-fitting (Fig. 1963).

17. Using a 13/16" wrench, loosen and remove the test port T-fitting from the cylinder fitting (Fig. 1964).

18. Using a 13/16" wrench, loosen and remove the test port T-fitting from the hydraulic cylinder hose (Fig. 1965).

19. Using a 13/16" wrench, install the hydraulic hose to the loader arm lift cylinder (Fig. 1966).
20. Install the 2 plastic ties securing the hydraulic hose to the loader arm cylinder (Fig. 1967).

21. Check hydraulic fluid and add as needed.

22. Start unit and check for leaks.

23. Release park brake.

24. Shut the engine off.

**Hydrostatic Pump Flow Test**

This test is the same for both the left and right hydrostatic pumps and determines if the pumps produce enough oil flow to drive the wheel motors. The components involved in this test are: hydrostatic pump, hydraulic lines, wheel motors, hydraulic filter and 5 psi (.344 bar) check valve. If the hydrostatic pump meets the specification then the wheel motor may be at fault.

**Hydrostatic Pump Flow Test Procedures**

Special care should be taken to prevent debris from entering the pump or wheel motor ports.

Raise the unit and get both tracks off the ground. Use jack stands to support the unit. Refer to "Lifting Unit for Service" on page 8-2 (Fig. 1968).

Open the rear access door.
Left Drive System Flow Test

1. Mark one of the left hydrostatic pump lines and fittings with the letter "A", and the other line and fitting with the letter "B" (Fig. 1969).

2. Using a 1-1/8" offset wrench, disconnect the two hydraulic lines from the left hydrostatic pump (Fig. 1970).

3. Using a 1-1/8" offset wrench, install the flow test hoses to the open hydrostatic pump fittings (Fig. 1971).

4. Connect the flow tester to the two hydraulic test lines (Fig. 1972).
HYDRAULIC TESTING

5. Start the engine and bring the engine speed up to 2800 rpm.

6. Move the traction control in the left direction, in full forward motion. Operate without any load for approximately 2 minutes; this allows the system oil temperature to rise (Fig. 1974).

Note: Raising the system oil temperature will make a difference in the readings you receive. To complete the test accurately, the oil temperature must be near normal system operating temperatures. Suggested temperature range 160° - 210° F (71.1° - 98.9° C).

7. Turn the restriction valve until it reads 300 psi (21 bar) (Fig. 1975).
HYDRAULIC TESTING

8. At 300 psi (21 bar), note the gpm reading (Fig. 1976).

Note: The gpm reading can vary between left and right hydrostatic pumps.

9. Then turn the restriction valve to 1100 psi (76 bar) (Fig. 1977).

10. At 1100 psi (76 bar) note gpm reading. Determine flow droop.

Example:
- 300 psi (21 bar) reading 8 gpm (30 l/min) 1st reading
- 1100 psi (76 bar) reading 6.0 gpm (24.6 l/min) 2nd reading
  1.0 gpm (5.6 l/min) (the difference)

Subtract the first gpm reading from the second gpm reading. This will determine your “flow droop”.

Note: The acceptable gpm “flow droop” or (difference) is: 2.0 gpm (7.6 l/min). If the difference exceeds these values, the hydrostatic pump droop is not acceptable.

If the values have been met, the issue would be in the wheel motor or connecting lines/fittings. Refer to “Wheel Motor Removal” on page 8-35.

11. Disconnect the flow tester.

12. Replace the hydraulic fitting o-rings and reconnect the hydraulic lines.

Note: Use caution when connecting and disconnecting hydraulic components. The hydraulic oil may be hot.

13. Start the engine and check for leaks.

14. Remove the absorbent towels.

15. Lower the unit back onto the floor.
Right Drive System Flow Test

1. Place absorbent towel over the battery.

2. Mark one of the right hydrostatic pump lines and fittings with the letter "A", and the other line and fitting with the letter "B" (Fig. 1978).

3. Using a 15/16" offset wrench, disconnect the two hydraulic hoses from the RH hydrostatic pump (Fig. 1979).

4. Mark the alignment of the fittings to the pump (Fig 1980).

5. Loosen the fitting nuts on each pump fitting (Fig 1981).
6. Turn both pump fittings so they are facing rearward (Fig 1982).

7. Connect the flow gauge hoses to the two hydraulic ports on the hydrostatic pump (Fig. 1983).

8. Connect the flow tester to the two hydraulic test lines (Fig. 1984).

9. Start the engine and bring the engine speed up to 2800 rpm.

Note: Before performing this test, make sure the bypass valve, located on the front side of the lower pump, is closed (Fig. 1985).
HYDRAULIC TESTING

10. Move the traction control in the right direction, in full forward motion. Operate without any load for approximately 2 minutes, this allows the system oil temperature to rise (Fig. 1986).

**Note:** Raising the system oil temperature will make a difference in the readings you receive. To complete the test accurately, the oil temperature must be near normal system operating temperatures. Suggested temperature range 160° - 210° F (71.1° - 98.9° C).

11. Turn the restriction valve until you read 300 psi (21 bar) (Fig. 1987).

12. At 300 psi (21 bar), note the gpm reading (Fig. 1988).

**Note:** The gpm reading can vary between left and right hydrostatic pumps.

13. Then turn the restriction valve to 1100 psi (76 bar) (Fig. 1989).

Example:
- 300 psi (21 bar) reading 8 gpm (30 l/min) 1st reading
- 1100 psi (76 bar) reading 6.0 gpm (24.6 l/min) 2nd reading 1.0 gpm (5.6 l/min) (the difference)

Subtract the first gpm reading from the second gpm reading. This will determine your “flow droop”.

Note: The acceptable gpm “flow droop” or (difference) is 2.0 gpm (7.6 l/min). If the difference exceeds these values, the hydrostatic pump droop is not acceptable.

If the values have been met, the issue would be in the wheel motor or connecting lines/fittings. Refer to “Wheel Motor Removal” on page 8-35.

15. Release the handle.

16. Shut the engine off.

17. Disconnect the flow tester from the test hoses (Fig. 1990).

Note: Use caution when connecting and disconnecting hydraulic components. The hydraulic oil may be hot.

18. Remove the test hoses from the pump fittings (Fig. 1991).

19. Turn the pump fitting so that the alignment marks line up (Fig. 1992).
20. Tighten the nuts to secure the fittings into position (Fig. 1993).

**Note:** Before reconnecting the hydraulic lines, install new o-rings in the fittings.

21. Install the hydraulic hoses to the pump fittings so that the letters A and B on the hoses line up with the A and B on the pump fittings (Fig. 1994).

22. Start the engine and check for leaks.

23. Remove the absorbent towel(s).

24. Lower the unit back onto the floor.

**TX420 & 425**

**Traction Control Tracking Adjustment, Full Forward Position**

If the traction unit does not drive straight when you hold the traction control against the reference bar, complete the following procedure:

**Note:** Whenever an adjustment is made, check to make sure the set screws contact stops in the full forward position.

1. Drive the traction unit with the traction control against the reference bar, noting in which direction the traction unit veers.

2. Release the traction control.

**Note:** When the traction control is stroked fully forward and the unit has severe pull to the left or right, a problem with the pump control linkage or a hydraulic component is indicated.

**Note:** When the traction control is stroked fully and a gradual pull happens, the tracking adjustment can be made. A very slight tracking error is considered normal.
3. If the traction unit veers left, loosen the right jam nut and adjust the tracking set screw on the rear of traction control (Fig. 1995).

![Fig 1995](image)

A. Right jam nut  
B. Operator handle  
C. Reference bar

4. If the traction unit veers right, loosen the left jam nut and adjust the tracking set screw on front of the traction control (Fig. 1996).

![Fig 1996](image)

A. Left jam nut  
B. Operator handle  
C. Reference bar

5. Repeat steps 1 through 4 until the traction unit drives straight in the full forward position.

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**Traction Control Neutral Adjustment**

If the traction unit creeps forward or backward when the traction control is in neutral (and the unit is fully warmed up), make the neutral adjustment:

1. Park the traction unit on a flat surface and lower the loader arm.
2. Stop the engine and remove the key.
3. Lift/support the traction unit so that both tracks are off of the ground. Refer to “Lifting Unit for Service” on page 8-2.
4. Open the rear access cover (Fig. 1997).

**Note:** Slight creeping of tracks in the forward or reverse drive with tracks off the ground can be a normal condition.
5. Loosen the jam nuts on the traction rods, under the control panel (Fig. 1998).

![Fig 1998]

A. Traction rods  B. Jam nuts

6. Start the traction unit and set the engine throttle to 1/3 engine throttle speed.

7. If the left track moves, lengthen or shorten the right traction rod until the track stops moving.

8. If the right track moves, lengthen or shorten the left traction rod until the track stops moving.

9. Tighten the jam nuts.

10. Close the rear access cover.

11. Stop the engine and lower the traction unit to the ground.

12. Test for proper operation.

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Purging Air Procedures

Due to the effects air has on efficiency in hydrostatic drive applications, it is critical that air is purged from the system.

These purge procedures should be implemented anytime a hydrostatic system or hydraulic line has been opened to facilitate maintenance or any additional oil has been added to the system.

Air creates inefficiency because it has compression and expansion rates that are higher than that of oil.

Trapped air in the oil may cause the following symptoms:
1. Noisy operation.
2. Lack of power or drive after short-term operation.
3. High oil temperature and excessive expansion of oil.

Before starting, make sure the reservoir is at the proper oil level. If it is not, fill to the vehicle specifications, refer to the "Hydraulic Reservoir Tank, Checking the Hydraulic Fluid" section on page 3-4.
HYDRAULIC TESTING

The following procedures should be performed with the vehicle drive tracks off the ground, and then repeated under normal operating conditions.

1. Lift/support the unit so that both tracks are off the ground and free to rotate. Refer to "Lifting Unit for Service" on page 8-2.

2. Start the engine and run it at slow idle engine speed for about 20 seconds.

3. Push the traction control to the full forward position and hold. The tracks should begin to slowly rotate. Once the tracks begin to rotate smoothly, run for 20 more seconds. Pull the traction control to the full reverse position and hold. Again, the tracks should begin to slowly rotate in reverse. Once the tracks begin to rotate smoothly, allow to run for 30 more seconds.

4. Raise and lower the loader arm 4 complete cycles. Raise the loader arm and put it into the float position. The loader arm should drop.

5. Cycle the dump cylinder 4 complete cycles.

6. Stop the engine and check the oil level in the reservoir. Add as necessary.

7. It may be necessary to repeat steps 2 through 6 until all the air is completely purged from the system.