Accumulator Charging Valve (Brake) - Test and Adjust

Table 1

Required Tools	
Part Number	**Description**
1U-5481	Pressure Gauge Group

WARNING

Escaping fluid under pressure, even a pinhole size leak, can penetrate body tissue, causing serious injury, and possible death. If fluid is injected into your skin, it must be treated immediately by a doctor familiar with this type of injury.

Always use a board or cardboard when checking for a leak.

WARNING

Personal injury or death can result if two persons are not used in the following procedure.

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Refer to Special Publication, NENG2500, "Caterpillar Tools and Shop Products Guide" for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

"Procedure 1" is a quick method for checking the cut-out pressure. This procedure also indicates whether the oil pressure switch for the service brakes and the brake oil pressure indicator operate correctly. The procedure provides an estimate of the accumulator precharge pressure and an estimate of the number of brake applications before the brake oil pressure indicator turns on.

"Procedure 2" determines whether the cut-in pressure and the cut-out pressure are correct. This procedure also provides the required steps for adjusting the brake accumulator charging valve.

Procedure 1

1. Stop the engine. Engage the parking brake. Depress the brake pedal repeatedly until there is no brake oil pressure.

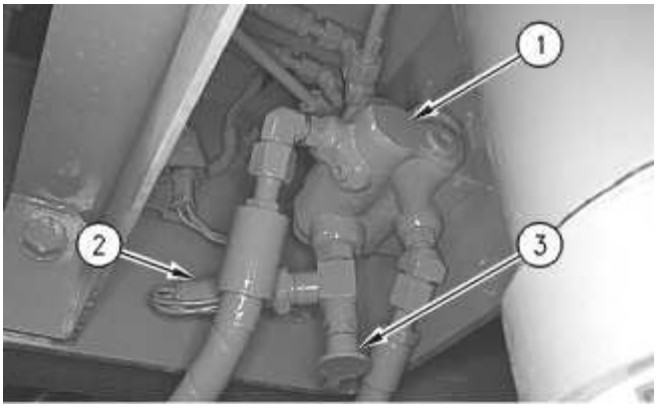

Illustration 1 g00497446

Components for the Service Brakes

(1) Accumulator charging valve. (2) Oil pressure switch for service brakes. (3) Test port.

2. Connect a 0 to 40000 kPa (0 to 5800 psi) pressure gauge at test port (3) on brake accumulator charging valve (1). The accumulator charging valve is located on the left side of the machine under the operator's platform. The accumulator charging valve is mounted on a steel plate which is located next to the brake accumulators.

3. Observe the pressure gauge. Before you start the engine, the oil pressure must be 0 kPa (0 psi).

4. Start the engine. Allow the oil pressure to increase to the cut-out pressure. The correct cut-out pressure should be 14500 ± 345 kPa (2100 ± 50 psi).

5. After the brake accumulators have been completely charged and the correct cut-out pressure has been obtained, stop the engine.

6. Turn the engine key start switch to the ON position, but do not start the engine.

7. Apply the service brakes repeatedly. Pause for two seconds between each of the brake applications and count the number of applications. Observe the pressure gauge as you apply the brakes.

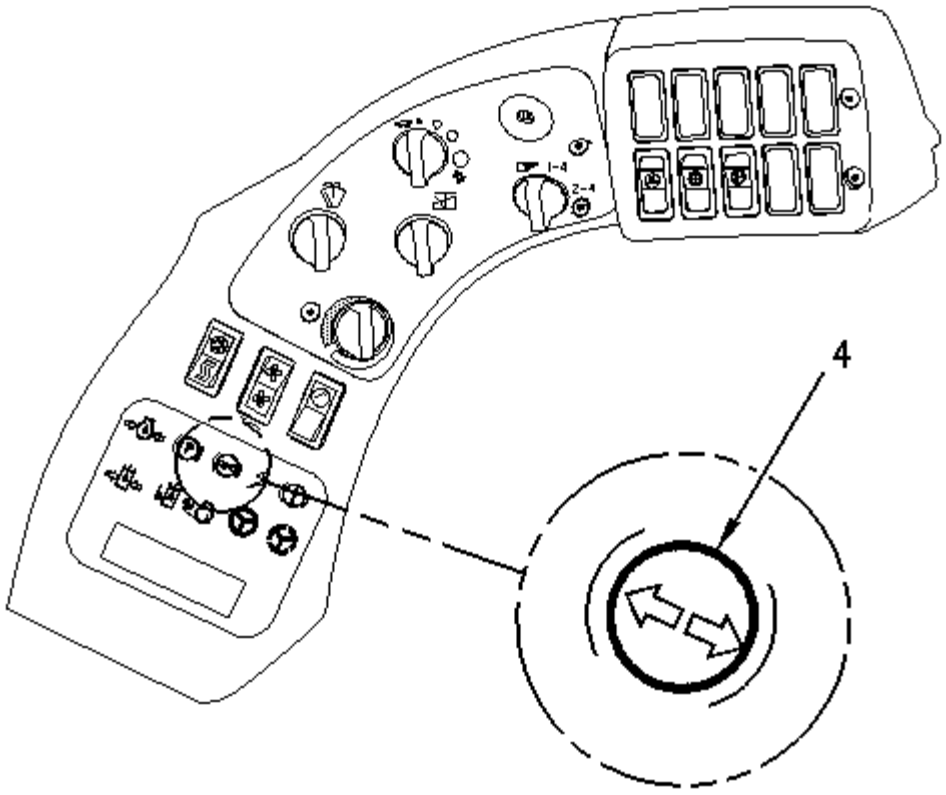

Illustration 2 g00905221

(4) Brake oil pressure indicator.

8. When the reading on the pressure gauge decreases to 9000 ± 540 kPa (1300 ± 78 psi), brake oil pressure indicator (4) will turn on. This indicates the operational status of brake oil pressure indicator (4). This also indicates the operational status of the oil pressure switch for the service brakes. Oil pressure switch (2) is located beside accumulator charging valve (1).

9. Continue to apply the service brakes. Pause for one or two seconds between each of the brake applications. When the pressure drops off rapidly, this indicates the approximate nitrogen precharge pressure in the brake accumulators.

10. Determine the number of brake applications that were required before the sudden pressure drop in Step 9. This number should be more than five times.

11. If the cut-out pressure is not within the specification, complete Steps 7 through 12 in "Procedure 2". If the nitrogen precharge pressure is not within the specification, see the following reference.

    Reference: For additional information on the testing and adjusting of the brake accumulators, refer to Testing And Adjusting, "Brake Accumulator - Test and Charge" for the machine that is being serviced.

Procedure 2

Note: Use the same operational conditions that were used in "Procedure 1". Use the same precautions that were used in "Procedure 1".

1. Stop the engine. Engage the parking brake. Depress the brake pedal repeatedly until there is no brake oil pressure.

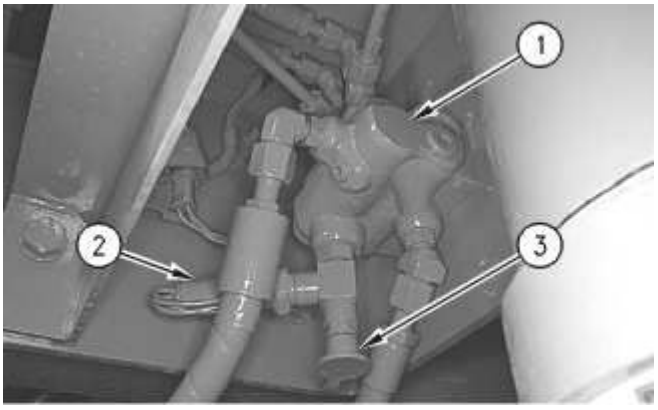

Illustration 3 g00497446

Components for the Service Brakes

(1) Accumulator charging valve. (2) Oil pressure switch for service brakes. (3) Test port.

2. Connect a 0 to 40000 kPa (0 to 5800 psi) pressure gauge at test port (3) on brake accumulator charging valve (1). The accumulator charging valve is located on the left side of the machine under the operator's platform. The accumulator charging valve is mounted on a steel plate which is located next to the brake accumulators.

3. Observe the pressure gauge. Before you start the engine, the oil pressure must be 0 kPa (0 psi).

4. Start the engine and immediately raise to high idle.

5. The oil pressure must increase to a maximum. Record this pressure. This is the cut-out pressure of the brake accumulator charging valve. The correct cut-out pressure should be 14500 ± 345 kPa (2100 ± 50 psi).

6. With the engine in operation, slowly apply the service brakes. Apply the service brakes several times in succession. Verify that the pressure drops consistently. At the point of the specified cut -in, the pressure begins to increase quickly.

7. If the cut-in pressure and the cut-out pressures are not within the specification, stop the engine and completely release all the oil pressure from the brake circuit by depressing the brake pedal. Loosen the hydraulic tank filler cap in order to make sure that there is no residual pressure in the hydraulic oil tank.

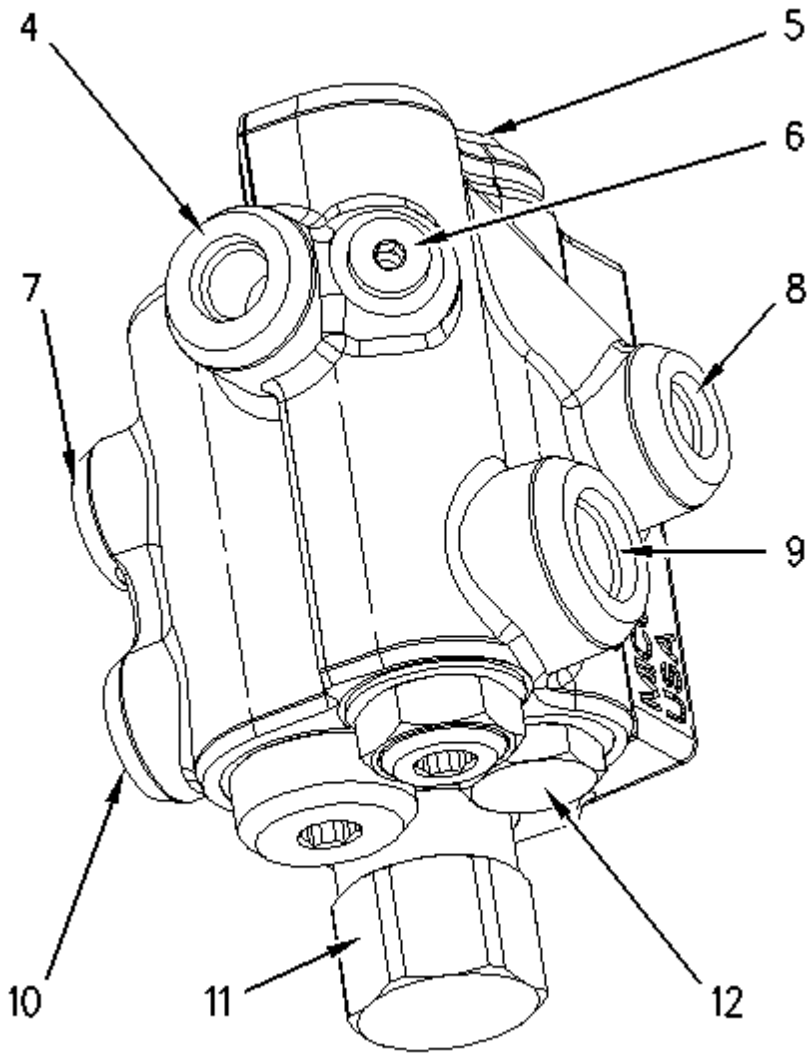

Illustration 4 g00819498

172-6144 Accumulator Charging Valve

(4) Inlet from the brake pump. (5) Outlet to the hydraulic oil tank. (6) Plug. (7) Accumulator port for the front brakes. (8) Outlet to the hydraulic oil filter. (9) Port for the oil pressure switch for the service brakes. (10) Accumulator port for the rear brakes. (11) Pressure relief valve. (12) Adjustment screw cover.

8. Remove the hex cap (12) that covers the adjustment screw.

   Note: The charging limits will move together. The range between cut-in pressure and the cut-out pressure is not adjustable.

9. Turn the adjustment screw by a quarter turn. Turning the adjustment screw clockwise will increase the cut-in pressure and the cut-out pressure. Turning the adjustment screw counterclockwise will decrease the cut-in pressure and the cut-out pressure.

10. Install the hex cap (12) that covers the adjustment screw, and tighten the hydraulic tank filler cap.

11. Start the engine. Make sure that the cut-in pressure and the cut-out pressure are within the specification. If the pressures are not within the specification, repeat Steps 7 through 11.

12. If the cut-in pressure and the cut-out pressure are not within the specification, the brake accumulator charging valve should be repaired or replaced.

Reference: For additional information on the testing and adjusting of the brake accumulators, refer to Testing And Adjusting, "Brake Accumulator - Test and Charge" for the machine that is being serviced.