

Bendix® TC-2™ Trailer Control Brake Valve

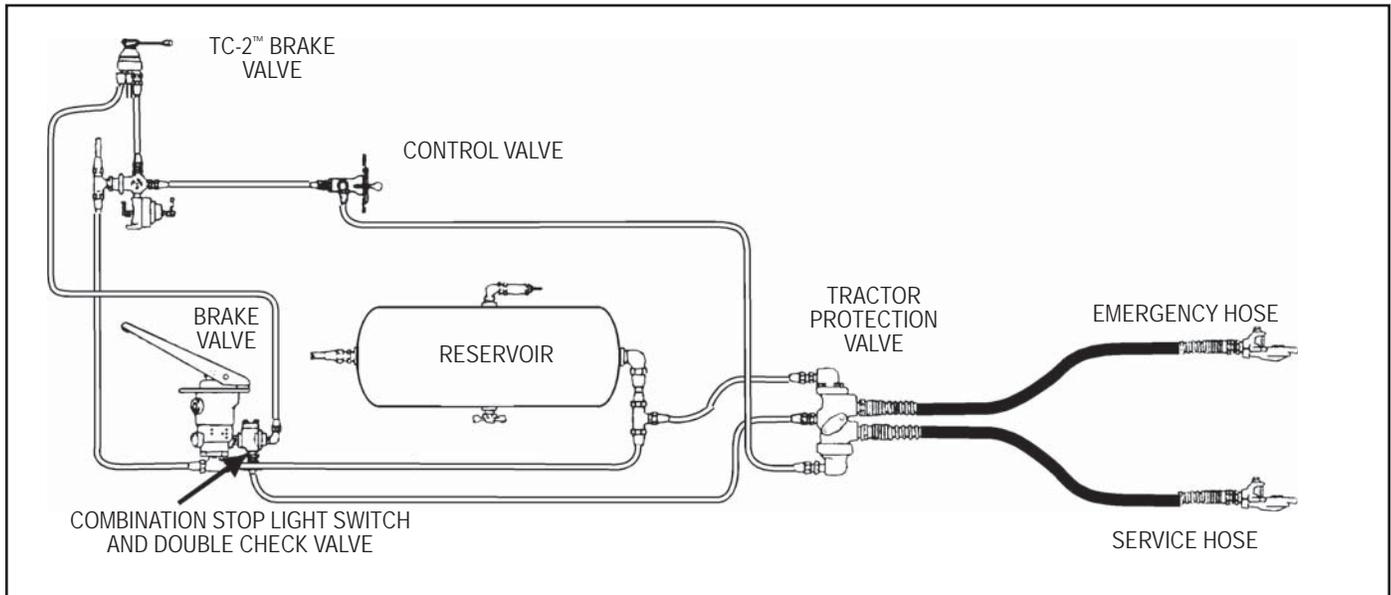


FIGURE 1 TC-2™ TRAILER CONTROL BRAKE VALVE TYPICAL PIPING DIAGRAM

DESCRIPTION

The TC-2™ brake valve is a hand operated control valve which features a graduated control of air pressure. The most common application is the control of trailer brakes independent of tractor brakes; however, the valve may be remotely operated type valve is connected to the operating handle by a linkage rod.

The TC-2™ brake valve is not intended for use as a parking control valve and should not be used for that purpose.

OPERATION

APPLYING

When the handle or actuating lever is moved in a clockwise direction from the released position, force is exerted on the pressure graduating spring through the action of the cam and cam follower. The force of the spring on the piston causes it to move down.

The exhaust seat, which is in the center of the piston, contacts the exhaust valve and closes the exhaust passage in the piston. The continued downward movement of the piston moves the inlet valve off its seat. Reservoir air pressure flows by the open inlet valve and out the delivery port.



FIGURE 2 EXTERIOR VIEW

HOLDING

The air pressure that flows by the open inlet valve also becomes effective on the bottom area of the piston. As the force of the air pressure beneath the piston balances the force of the depressed graduating spring above, the piston lifts slightly and the inlet valve returns to its seat. The exhaust valve remains seated so the flow of air through the valve is stopped and air pressure in the service line is held.

RELEASING

When the handle or operating lever is moved in a counterclockwise direction the force above the piston is decreased. The air pressure beneath will then lift the piston, moving it away from the exhaust valve. With the exhaust passage open, air pressure in the service line will exhaust out the exhaust port of the valve.

PREVENTIVE MAINTENANCE

Important: Review the warranty policy before performing any intrusive maintenance procedures. An extended warranty may be voided if intrusive maintenance is performed during this period.

Because no two vehicles operate under identical conditions, maintenance and maintenance intervals will vary. Experience is a valuable guide in determining the best maintenance interval for any one particular operation.

Visually check for physical damage to the brake valve such as broken air lines and broken or missing parts.

Every 3 months, 25,000 miles or 900 operating hours perform Operating and Leakage Tests.

SERVICE CHECKS

OPERATING TEST

Connect an accurate test gauge to a delivery port. When the handle is moved to the fully applied position, the gauge should register full reservoir pressure. NOTE: Some valves may be preset to deliver lower than reservoir pressure; however, the standard valves generally used on tractors are set to deliver full reservoir pressure. Intermediate positions should deliver proportional intermediate pressures. Upon release, the gauge should immediately register zero.

LEAKAGE TEST

Locate the exhaust port or exhaust line and apply a soap solution. (It is common practice to connect a line from the valve exhaust port to a location remote from the immediate driver's area.) With the valve in the released position, exhaust leakage should not exceed a 1" bubble in 5 seconds (100 sccm).

With the valve fully applied, leakage at the exhaust should not exceed a 1" bubble in 3 seconds (175 sccm). If the valve does not function as described or leakage is excessive, it is recommended that it be replaced with a new or remanufactured unit, or repaired with genuine parts available at Bendix outlets.

REMOVING AND INSTALLING

REMOVING

1. Block and hold vehicle by means other than air brakes.
2. Drain air brake system.

3. If remote-operated type valve, disconnect the operating mechanism.
4. Disconnect air lines from valve.
5. Remove mounting clamp bolts, clamp, and then valve.

INSTALLING

1. Check and clean air lines to valve.
2. Operating mechanism for remote type should be checked functionally and for proper adjustment.
3. Mount valve with clamp and mounting bolts.
4. Tighten mounting bolts evenly to approximately 200 inch pounds torque (3/8-16 bolt torque 180-220 inch pounds.)
5. If remote type valve, connect operating mechanism.

DISASSEMBLY

HANDLE OPERATED VALVE

1. Drive out the spirol pin and remove the handle, head, and head seal o-ring.
2. Remove handle o-ring.
3. Remote Operated Type Valve: Remove set screw, head and head seal o-ring.
4. Remove adjusting ring lock washer.
5. Remove cap screws that hold body and cover together; separate cover from body.
6. Remove gasket and graduating spring.
7. Remove cam and cam follower from cover.
8. Unscrew and remove adjusting ring.
9. Remove piston and piston return spring from body.
10. Remove piston o-ring.
11. Remove inlet and exhaust insert screws and lock washers, then insert and o-ring seal.
12. The inlet and exhaust valve insert can be disassembled if desired or necessary.
13. Insert some object such as a cap screw in the supply port to hold the inlet valve on its seat.
14. Depress the exhaust valve guide and spring; remove the exhaust valve.
15. Remove stem with inlet valve from inlet seat and remove inlet valve from stem.

CLEANING AND INSPECTION OF PARTS

1. Clean all metal parts in mineral spirits.
2. Wipe rubber parts clean.
3. Inspect valve seats for nicks or burrs.
4. Check all springs for distortion, cracks, and corrosion.
5. All rubber parts should be inspected for wear or deterioration.
6. Replace all parts not considered serviceable during their inspection with genuine Bendix replacement parts.

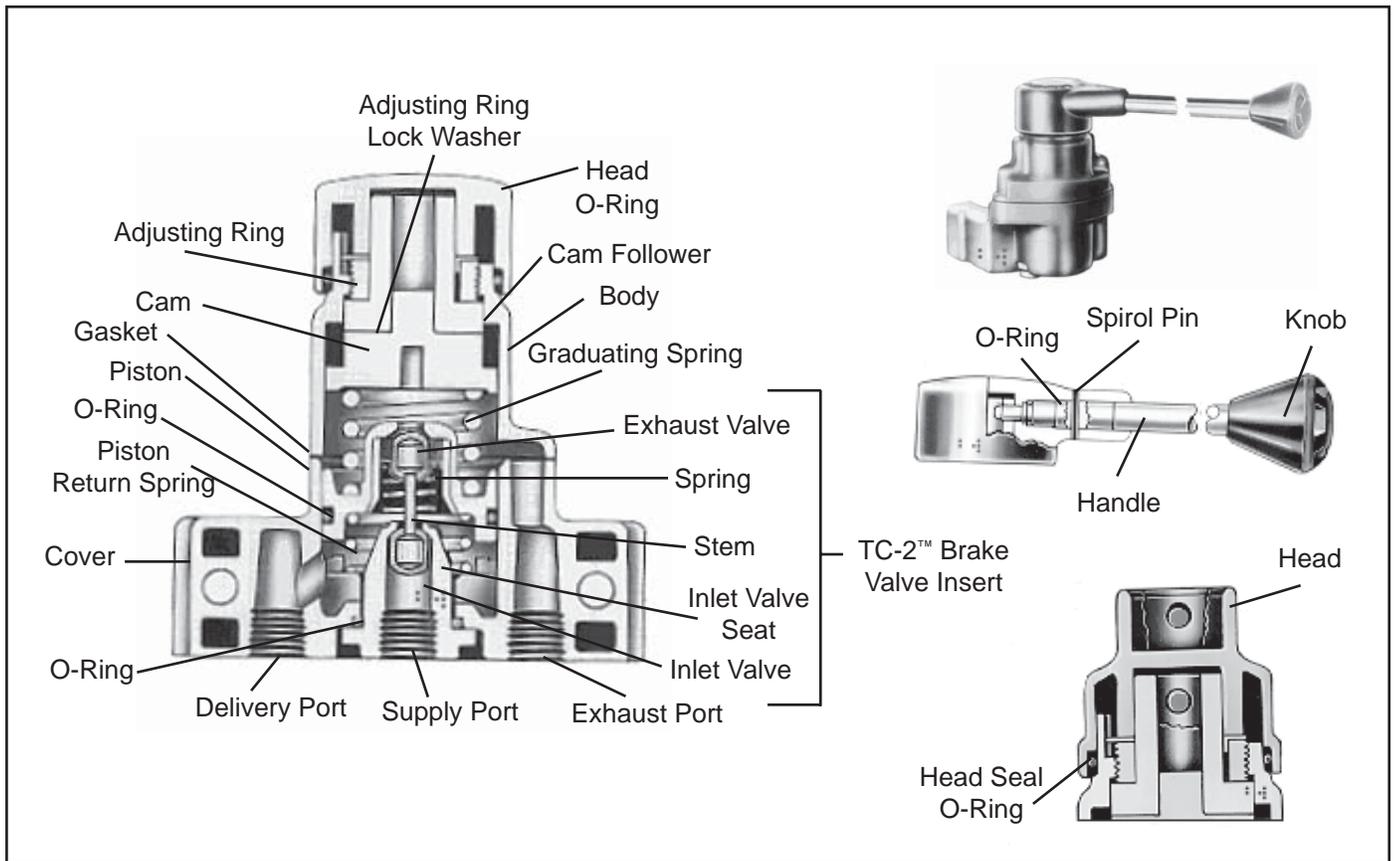


FIGURE 3 - SECTIONAL VIEW

ASSEMBLY

Prior to assembly, lubricate the body and cover bores, cam and cam follower, piston o-ring, and cover top with Dow Corning 55-M pneumatic grease (Bendix piece number 291126).

1. Press inlet valve on stem. A little water in the boot valve or some soap on the stem will make it easier to press on the inlet valve.
2. Place stem with inlet valve installed in inlet seat. Insert some object such as a cap screw to hold the inlet valve up against its seat.
3. Position spring and exhaust valve guide.
4. Depress guide and spring, then press exhaust valve on stem.
5. Place seal o-ring over insert seat and with cap screws and lock washers install inlet and exhaust insert in body. Recommended torque on insert cap screws is 60 to 80 inch pounds.
6. Install piston return spring.
7. Install piston o-ring on piston and install piston in body.
8. Install adjusting ring in cover and screw it down until it is flush with top of cover.
9. Place cam follower and cam in cover.
10. Position graduating spring and gasket in body.

11. Connect body to cover; tighten cap screws evenly and torque to 75-95 inch pounds.
12. Install adjusting ring lock washer, head seal o-ring, and head.
13. Install set screw in head of remote-operated type valves. At this stage, before installing handle and spirol pin of handle-operated type valve, if facilities are available the rebuilt valve should be tested and adjusted. If facilities are not available, the valve can be tested on the vehicle.

TESTING REBUILT TC-2™ BRAKE VALVE

Perform "Operating and Leakage Tests" as outlined in "Service Checks" section.

ADJUSTMENT

Generally, the TC-2™ brake valve should deliver full reservoir pressure; however, there are a few exceptions in special applications.

1. If the delivered pressure is below specified final delivery pressure, it can be adjusted by removing the head and adjusting ring lock washer and rotating the adjusting ring clockwise to raise the delivery pressure.
2. If the delivery pressure is above specified final delivery pressure, it can be lowered by rotating the adjusting ring counterclockwise.

A spanner wrench can be used to rotate the adjusting ring, but if such a wrench is not available, the adjusting ring can be turned with a small screwdriver inserted in one of the inner notches of the ring. Turning the adjusting ring one notch will raise the delivered pressure approximately 5 psi.

WARNING! PLEASE READ AND FOLLOW THESE INSTRUCTIONS TO AVOID PERSONAL INJURY OR DEATH:

When working on or around a vehicle, the following general precautions should be observed at all times.

1. Park the vehicle on a level surface, apply the parking brakes, and always block the wheels. Always wear safety glasses.
2. Stop the engine and remove ignition key when working under or around the vehicle. When working in the engine compartment, the engine should be shut off and the ignition key should be removed. Where circumstances require that the engine be in operation, **EXTREME CAUTION** should be used to prevent personal injury resulting from contact with moving, rotating, leaking, heated or electrically charged components.
3. Do not attempt to install, remove, disassemble or assemble a component until you have read and thoroughly understand the recommended procedures. Use only the proper tools and observe all precautions pertaining to use of those tools.
4. If the work is being performed on the vehicle's air brake system, or any auxiliary pressurized air systems, make certain to drain the air pressure

from all reservoirs before beginning **ANY** work on the vehicle. If the vehicle is equipped with an AD-IS® air dryer system or a dryer reservoir module, be sure to drain the purge reservoir.

5. Following the vehicle manufacturer's recommended procedures, deactivate the electrical system in a manner that safely removes all electrical power from the vehicle.
6. Never exceed manufacturer's recommended pressures.
7. Never connect or disconnect a hose or line containing pressure; it may whip. Never remove a component or plug unless you are certain all system pressure has been depleted.
8. Use only genuine Bendix® replacement parts, components and kits. Replacement hardware, tubing, hose, fittings, etc. must be of equivalent size, type and strength as original equipment and be designed specifically for such applications and systems.
9. Components with stripped threads or damaged parts should be replaced rather than repaired. Do not attempt repairs requiring machining or welding unless specifically stated and approved by the vehicle and component manufacturer.
10. Prior to returning the vehicle to service, make certain all components and systems are restored to their proper operating condition.
11. For vehicles with Antilock Traction Control (ATC), the ATC function must be disabled (ATC indicator lamp should be ON) prior to performing any vehicle maintenance where one or more wheels on a drive axle are lifted off the ground and moving.

