



Service Data

SD-03-3655

Bendix® TP-5™ Tractor Protection Valve

DESCRIPTION

The Bendix® TP-5™ tractor protection valve is a panel or crossmember mounted unit designed to replace the Bendix® TP-3® valve plus two additional double check valves and quick release functions. It may be used in conjunction with the Bendix® MV-3® module or independently. It contains a service line shut-off valve with exhaust function, a service line quick release valve and two double check valves.

OPERATION

The function of the TP-5™ valve is to receive all pneumatic signals pertinent to the operation of the trailer brake system, transmit the same to the trailer and also to protect the tractor air supply in case of separation of the connecting lines to the trailer.

TRACTOR PROTECTION PORTION

Air from the trailer supply control valve in the cab, such as the MV-3® module, enters at the trailer supply delivery port and passes out the trailer supply port and simultaneously acts upon the service line shut-off piston moving the service line inlet valve off its seat and opening the service line

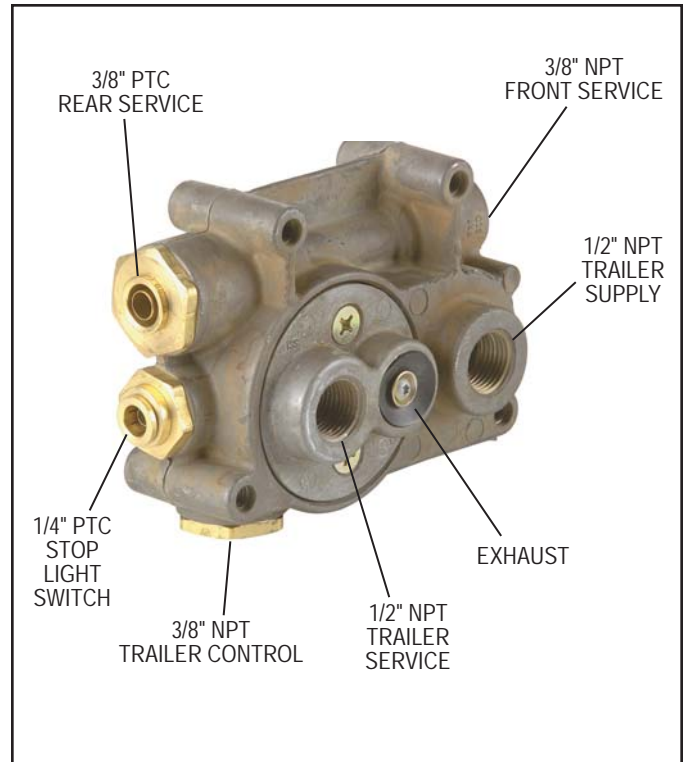


FIGURE 1 - BENDIX® TP-5™ TRACTOR PROTECTION VALVE EXTERIOR

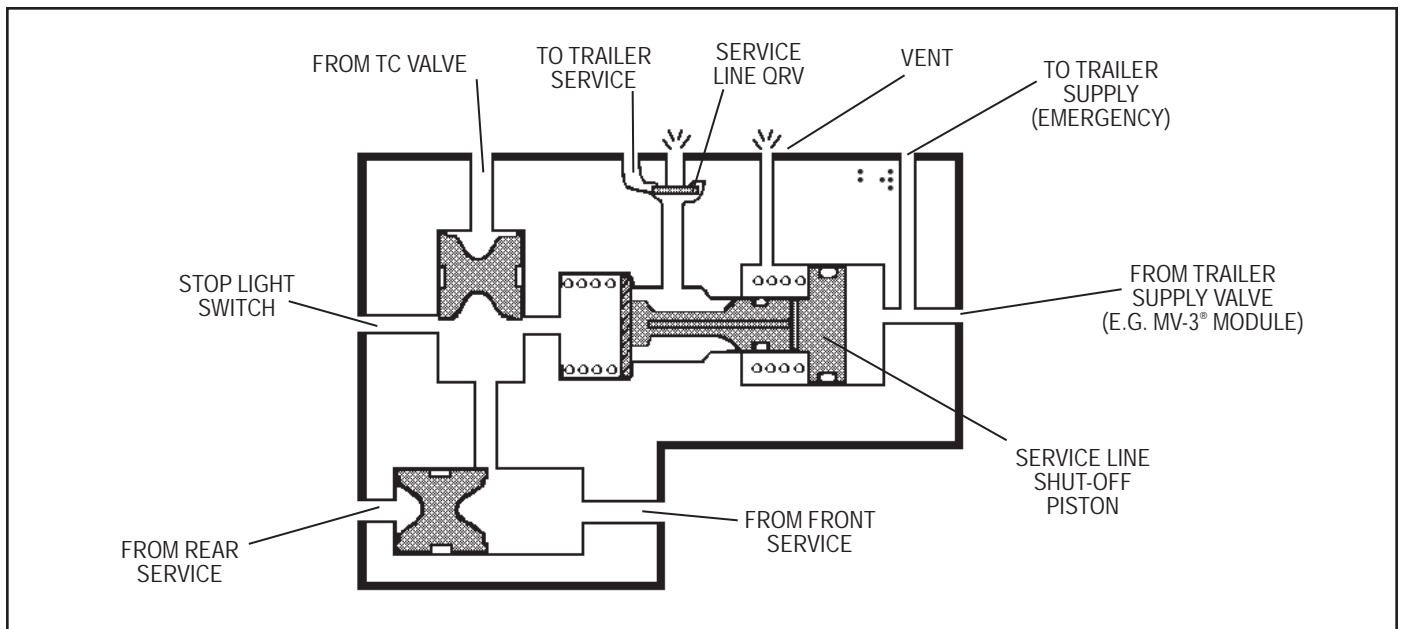


FIGURE 2 - BENDIX® TP-5™ TRACTOR PROTECTION VALVE SCHEMATIC DIAGRAM

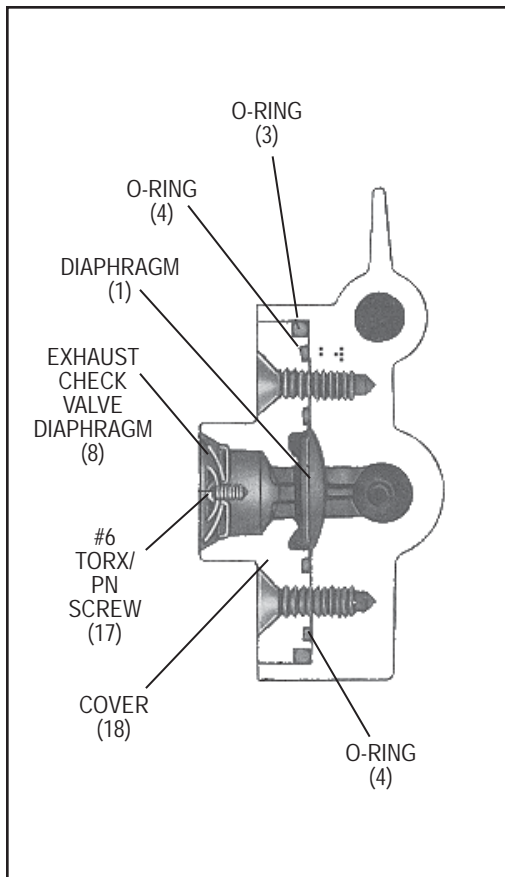


FIGURE 3 - BENDIX® TP-5™ TRACTOR PROTECTION VALVE END SECTIONAL VIEW

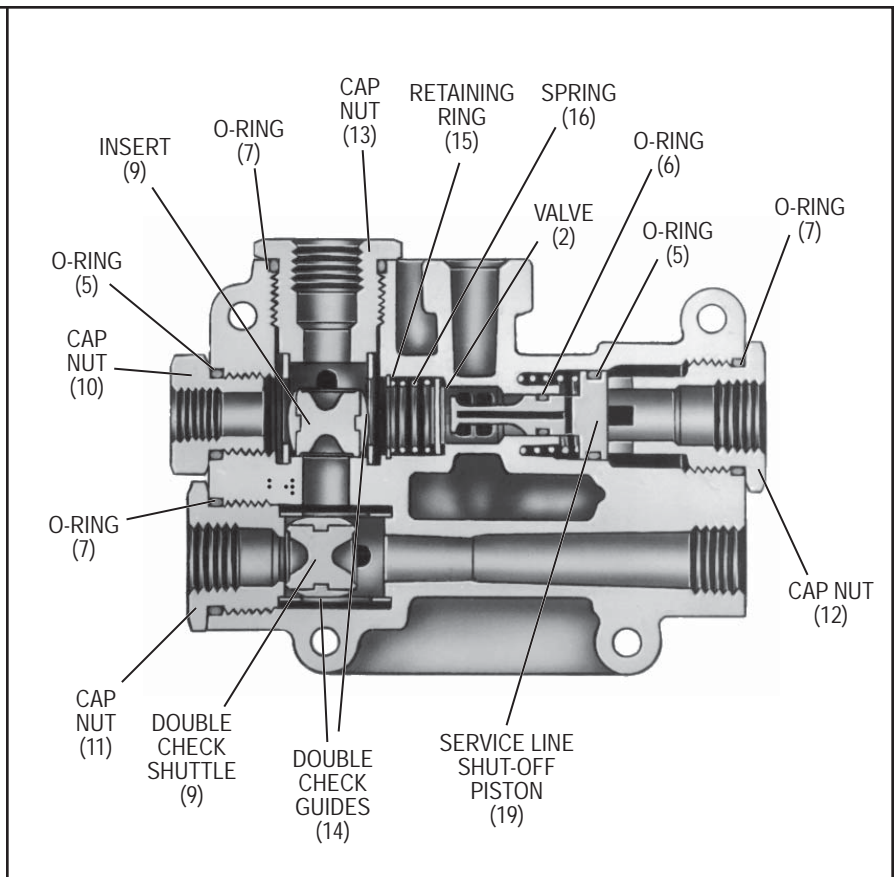


FIGURE 4 - BENDIX® TP-5™ TRACTOR PROTECTION VALVE SIDE SECTIONAL VIEW

passage (see Figure 2). With common air to the supply side and service side of the manifold the valve should open at approximately 45 psi.

If the Bendix® MV-3® tractor supply valve is manually or automatically moved to the exhaust position, the service line shut-off valve will close at approximately 10 psi and the exhaust passage in the plunger will vent the trailer service line.

DOUBLE CHECK VALVES

The two double check valves in the Bendix® TP-5™ valve, as seen in schematic view Figure 2, serve to pick up the highest pressure service signal from either the tractor front brake circuit, rear brake circuit or TC valve signal, operating the trailer brakes accordingly. The stop light switch port also picks up this signal and actuates the stop light switch.

SERVICE LINE QUICK RELEASE VALVE

The trailer service line port is located in the cover, as seen in Figure 3. This cover also houses a quick release valve. Diaphragm (Item 1 in Figure 3) seals off the exhaust port on application and upon release of service line application, permits the trailer service line air to exhaust through the exhaust port, thus permitting faster release times for trailer brake release.

PREVENTIVE MAINTENANCE

Important: Review the Bendix Warranty Policy before performing any intrusive maintenance procedures. A warranty may be voided if intrusive maintenance is performed during the warranty period.

No two vehicles operate under identical conditions; as a result, maintenance intervals may vary. Experience is a valuable guide in determining the best maintenance interval for air brake system components. At a minimum, the TP-5™ valve should be inspected every 6 months or 1500 operating hours, whichever comes first, for proper operation. Should the TP-5™ valve not meet the elements of the operational tests noted in this document, further investigation and service of the valve may be required.

A maintenance kit is available under part number 289061. For the latest service parts and kits, refer to the Bendix Quick Reference Catalog (BW1114) available for order or download at www.bendix.com.

SERVICE CHECKS

OPERATING AND LEAKAGE CHECKS

1. Charge the air brake system to governor cut-out, block the wheels, and place tractor protection control valve in the emergency position.

GENERAL SAFETY GUIDELINES

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 a Bendix® 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® brand 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 Automatic 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.
2. Disconnect the trailer service line hose coupling. Make a trailer hand control valve application. Cover the 1/16 inch vent hole in the service line shut-off valve area of the Bendix® TP-5™ valve body. Check for leakage at hose coupling and at exhaust port at the TP-5™ valve. Excessive leakage at either port indicates a faulty inlet valve, item 2 on Figure 4.
 3. With the hand control valve still applied, turn the ignition on and check for the stop light function.
 4. Release the hand control valve application and place the tractor protection valve in the normal position.
 5. Connect the tractor service hose coupling to a test gauge, re-apply the hand control valve and note that there is pressure at the service hose coupling.
 6. Check for leakage at the service line quick release valve. Excessive leakage would indicate a defective diaphragm (1). See Figure 3.
 7. With the service line pressure still applied through the hand control valve, check for leakage at the brake valve exhaust. Excessive leakage indicates a defective double check valve shuttle.
 8. Check for leakage at the 1/16 inch vent hole. Leakage indicates either o-ring (6) or o-ring (5) on the service line shut-off piston (19) is defective. Note the same size o-ring is identified as (5) is also used on cap nut (10).
 9. Release the hand control valve application and re-check for leakage at the vent hole. If the leakage continues, the large o-ring (5) is the cause for the leak and if the leakage stops, the smaller o-ring (6) is the cause of the leak.
 10. Make and hold a foot brake application. Check for leakage at exhaust of hand control valve. Excessive leakage indicates a faulty double check valve shuttle.

11. Release the foot brake application, disconnect the line from primary service brake circuit at Bendix® TP-5™ valve delivery port (PCD) and block off the end of the line from the brake valve. Make a foot brake application and observe for leakage at the PCD delivery port.
12. Reconnect the primary circuit line and reverse the procedure with the secondary circuit line (SCD). Excessive leakage in either (11) or (12) indicates a faulty double check valve shuttle. Restore the secondary circuit connection to the TP-5™ valve.

If the valve does not function as described above, or leakage is excessive, the valve should be exchanged or replaced at the nearest authorized Bendix Parts distributor. If this is not possible the following should prove helpful.

DISASSEMBLY

1. Block the wheels and drain the air brake systems.
2. Remove all air lines and the stop light switch from the manifold and remove the unit from the vehicle.
3. Remove the four cap nuts, (items 10, 11, 12, and 13) from the body. Identify the cap nuts to their respective ports before removing. Remove the o-ring (3 of item 7 and one of item 5). See Figure 4.
4. Remove the double check guides (14) and double check shuttles (9).
5. Reach into the port marked BLK-SLS with a set of snap ring pliers and remove the snap ring (15), spring (16), and valve (2).
6. Remove the two screws which hold the cover (18) to the body. Remove the two small o-rings (4) and one large o-ring (3). Remove the quick release valve diaphragm (1). See Figure 3.
7. Remove the 6-32 pan head screw (17) and remove the exhaust check valve diaphragm (8).

CLEANING AND INSPECTION

1. Clean all metal parts in mineral spirits and dry them completely.
2. Inspect all parts for excessive wear or deterioration. Inspect valve seats for nicks or burrs. Check the valve spring for cracks or corrosion.
3. Inspect the bores of the valve housing for deep scuffing or gouges.

Replace all parts that were discarded and any parts not found to be serviceable during inspection, using only genuine Bendix replacement parts.

ASSEMBLY

Before assembling the TP-5™ valve, lubricate all o-rings, o-ring grooves, body bores and rubbing surfaces with Bendix silicone lubricant (Pc. No. 291126) or equivalent.

NOTE: When using pipe thread sealant during assembly and installation, take particular care to prevent the sealant from entering the valve itself. Apply the sealant beginning with the second thread back from the end.

1. Re-install inlet valve (2), spring (16) and lock ring (15) in body. See Figure 4.
2. Install shuttle guides (14) and shuttles (9) and their respective cap nuts (10) and (11).
3. Install the o-rings (5) and (6) on the service line shut-off plunger (19), and install spring (20), plunger and corresponding cap nut (12) with o-ring (7).
4. Position the quick release valve diaphragm in the body (18) and the o-rings (3) and (4) on the cover and install the cover in its cavity in the body. See Figure 3.
5. Replace the exhaust seal diaphragm (8) in the cover.

TESTING

Test the re-assembled valve per *Operating and Leakage Checks*.

