



Service Data

SD-03-3652

Bendix® TP-3® Tractor Protection Valve

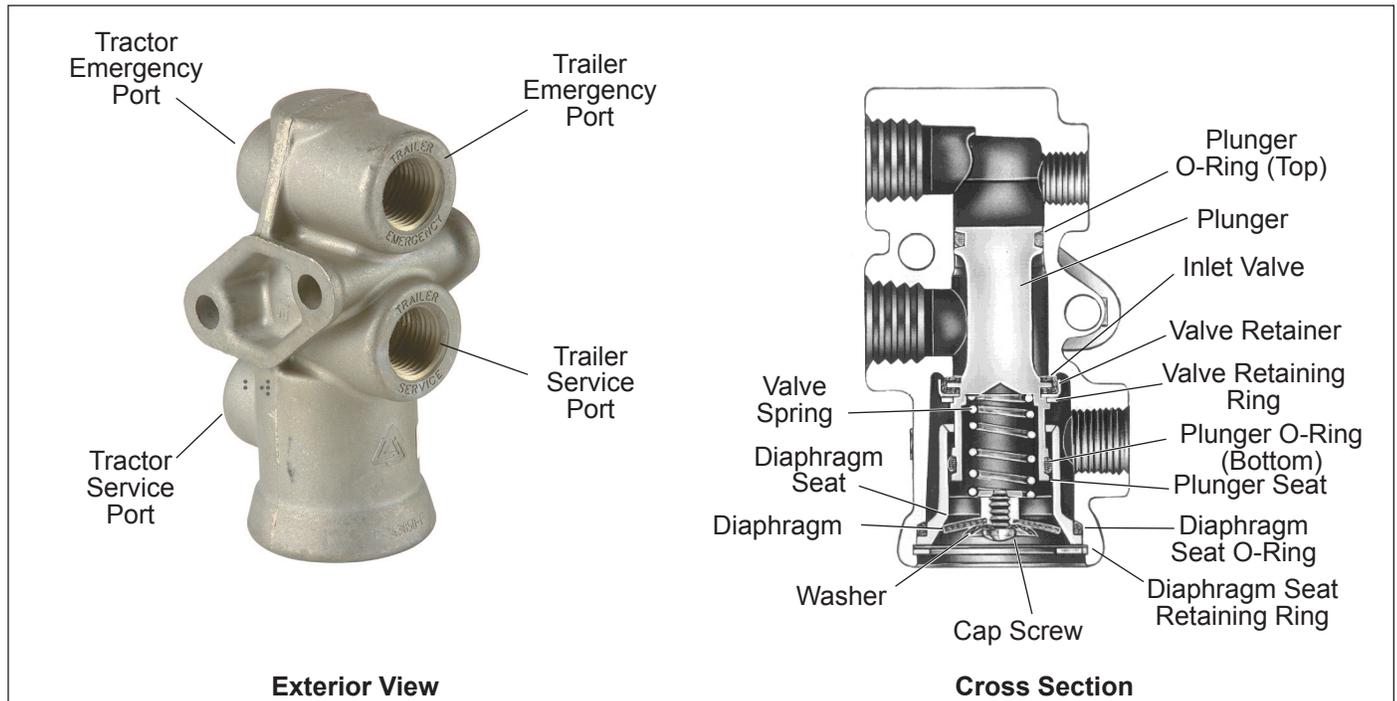


Figure 1 - Bendix® TP-3® Tractor Protection Valve

DESCRIPTION

The Bendix® TP-3® tractor protection valve is used in combination with the Bendix® PP-3™ trailer supply valve on pre-121 tractors, and the Bendix® PP-7™ trailer supply valve – or the Bendix® MV-3® dash control valve – on post-121 tractors. It contains a passage for trailer supply air and a service line shut off valve. It is normally mounted behind the cab, with the delivery line from the trailer supply valve connected into the tractor emergency port and a delivery line from the brake valve connected to the tractor service port. The trailer supply and service hoses are mounted in their respective ports in the TP-3 valve. See Figure 2.

OPERATION

Air from the trailer supply valve passes through the emergency ports of the TP-3 valve to supply the trailer air system and simultaneously exerts pressure on the end of the plunger. The TP-3 valve requires approximately 45 psi to open the inlet valve. Whenever the pressure from the trailer supply valve drops below 45 psi, the TP-3 valve will close the service line shut-off valve.

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 Bendix TP-3 valve should be inspected every 6 months or 1500 operating hours, whichever comes first, for proper operation. Should the TP-3 valve not meet the elements of the operational tests noted in this document, further investigation and service of the valve may be required.



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 guidelines should be observed AT ALL TIMES:

- ▲ Park the vehicle on a level surface, apply the parking brakes and always block the wheels. Always wear personal protection equipment.
- ▲ Stop the engine and remove the 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.
- ▲ 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.
- ▲ 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, a Bendix® DRM™ dryer reservoir module, or a Bendix® AD-9si® air dryer, be sure to drain the purge reservoir.
- ▲ Following the vehicle manufacturer's recommended procedures, deactivate the electrical system in a manner that safely removes all electrical power from the vehicle.
- ▲ Never exceed manufacturer's recommended pressures.
- ▲ Never connect or disconnect a hose or line containing pressure; it may whip and/or cause hazardous airborne dust and dirt particles. Wear eye protection. Slowly open connections with care, and verify that no pressure is present. Never remove a component or plug unless you are certain all system pressure has been depleted.
- ▲ Use only genuine Bendix® brand replacement parts, components and kits. Replacement hardware, tubing, hose, fittings, wiring, etc. must be of equivalent size, type and strength as original equipment and be designed specifically for such applications and systems.
- ▲ 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.
- ▲ Prior to returning the vehicle to service, make certain all components and systems are restored to their proper operating condition.
- ▲ 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.
- ▲ The power **MUST** be temporarily disconnected from the radar sensor whenever any tests **USING A DYNAMOMETER** are conducted on a vehicle equipped with a Bendix® Wingman® system.
- ▲ You should consult the vehicle manufacturer's operating and service manuals, and any related literature, in conjunction with the Guidelines above.

OPERATING AND LEAKAGE CHECKS

1. Block and/or hold the vehicle by a means other than the air brakes during these tests. Place the trailer supply valve in the emergency position and disconnect the trailer supply and service couplings.
2. With the tractor reservoirs charged to at least 100 psi, make and hold a full service brake application. Leakage at either tractor hose coupling should not exceed a one (1) inch bubble in five seconds (100 SCCM).
3. Connect the trailer supply or emergency line hose coupling and place the trailer supply valve in the run position. Leakage at the service coupling should not exceed a one (1) inch bubble in five seconds (100 SCCM).
4. Connect the service coupling and make and hold a full service brake application: Leakage at the diaphragm end of the Bendix® TP-3® valve shall not exceed a one (1) inch bubble in three seconds (175 SCCM).

NOTE: If the TP-3 valve does not function as described, or if leakage is excessive, it is recommended that it be replaced or repaired using genuine Bendix service replacement parts.

REMOVAL

Remove the trailer hose assemblies from the TP-3 valve. Disconnect the tractor service and supply lines and remove the TP-3 valve.

INSTALLATION

When installing the TP-3 valve, refer to Figure 2, and the following explanation, for proper connections.

1. The delivery line from the Bendix® MV-3® dash control valve is connected to the tractor emergency port of the TP-3 valve.
2. The delivery line from the brake valve (or double-check valve) is connected to the tractor service port of the TP-3 valve.
3. Trailer hose assemblies are installed in the trailer emergency and trailer service ports of the TP-3 valve.

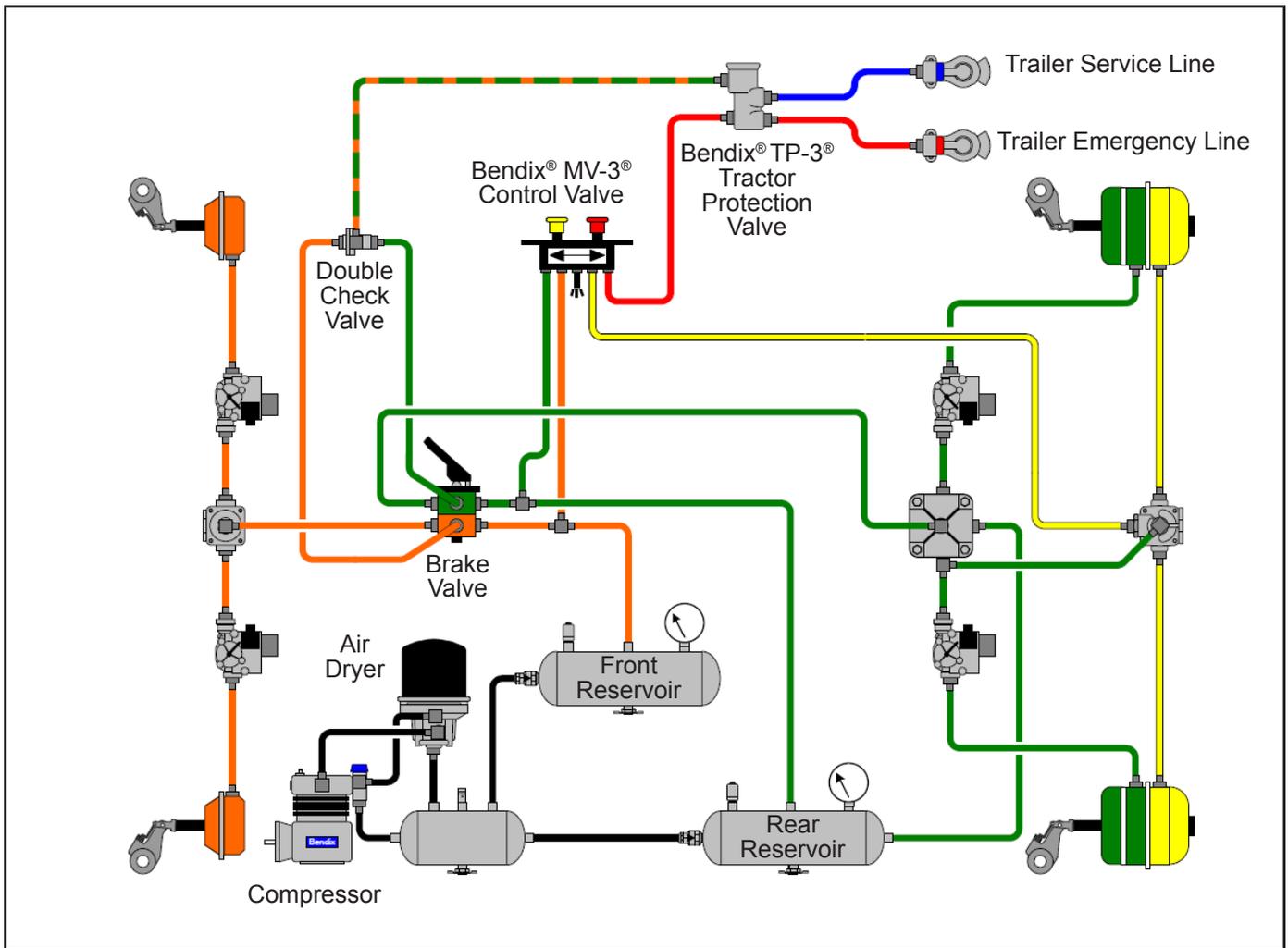


Figure 2 - System Schematic

DISASSEMBLY

(See Figure 1)

1. Remove the diaphragm seat retaining ring while holding the diaphragm seat in the body.
2. While still holding the diaphragm seat in the body, remove the date code ring.
3. Allow the seat to rise until the valve spring force is no longer present.
4. Remove the diaphragm seat assembly, valve spring, and plunger assembly.
5. Remove the diaphragm seat o-ring, cap screw, diaphragm washer, and diaphragm.
6. Remove the valve retainer ring, valve retainer, inlet valve, and both plunger o-rings—top and bottom—from the plunger.

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 Bendix® TP-3® tractor protection valve, lubricate all o-rings, o-ring grooves, body bores, and rubbing surfaces with Bendix silicone lubricant (Piece 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. Install the inlet valve on the plunger.
2. Position and force the valve retainer down over the inlet valve.
3. Install the retainer ring beneath the inlet valve retainer.

4. Install both plunger o-rings—top and bottom—in their proper grooves.
5. Place the plunger and valve assembly in the valve body.
6. Install the cap head screw, diaphragm washer with the cup side up, and diaphragm into the diaphragm seat.
7. Place the inlet valve spring into the plunger.
8. Install the diaphragm seat o-ring in the body.
9. Position the diaphragm seat assembly over the spring and plunger assembly and force it into the body.
10. Replace the date code washer and install the retaining ring making sure the retaining ring snaps fully into the groove.

TESTING SERVICED BENDIX® TP-3® VALVES

Perform the operating and leakage checks as outlined in previous section.



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