Installation Instructions

KIT
PC. No. 289062

MAINTENANCE KIT FOR VM-3 MANIFOLD

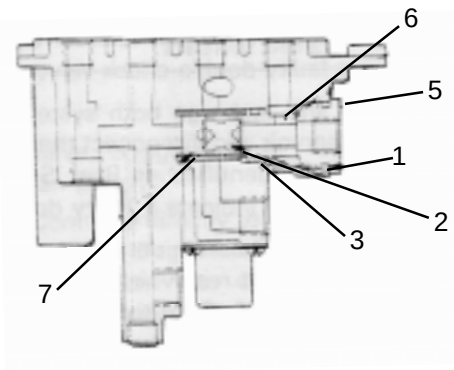

Figure 1

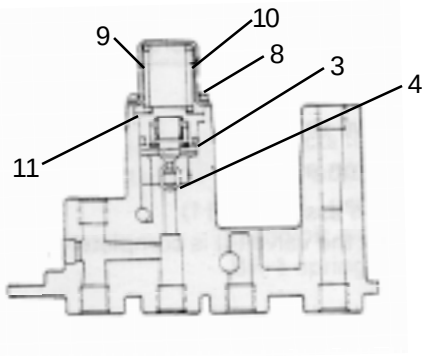

Figure 2

Qty.	Description	Key No.
1	O-Ring	1
2	O-Ring	3
1	Shuttle Valve	2
1	Inlet & Exhaust Valve	4
1	Tube of Lubricant	—

Figure 1 This kit consists of the parts listed above.

IMPORTANT! 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.**
2. **Stop the engine when working around the vehicle.**
3. **If the vehicle is equipped with air brakes, make certain to drain the air pressure from all reservoirs before beginning ANY work on the vehicle.**
4. **Following the vehicle manufacturer's recommended procedures, deactivate the electrical system in manner that removes all electrical power from the vehicle.**
5. **When working in the engine compartment the engine should be shut off. 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.**
6. **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.**
7. **Never exceed recommended pressures and always wear safety glasses.**
8. **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.**
9. **Use only genuine Bendix replacement parts, components, and kits. Replacement hardware, tubing, hose, fittings, etc. should be of equivalent size, type, and strength as original equipment and be designed specifically for such applications and systems.**
10. **Components with stripped threads or damaged parts should be replaced rather than repaired. Repairs requiring machining or welding should not be attempted unless specifically approved and stated by the vehicle or component manufacturer.**
11. **Prior to returning the vehicle to service, make certain all components and systems are restored to their proper operating condition.**

REMOVAL

1. Park the vehicle on a level surface and block the wheels.
2. Drain air pressure from **all** reservoirs.
3. Identify and remove all air lines and electrical connections.
4. Remove VM-3 from the vehicle.

DISASSEMBLY

1. Remove cap nut (5).
2. Remove and discard O-Ring (1) from cap nut (5).
3. Remove valve seat (6) and remove and discard O-Ring (3). Caution should be exercised when removing these parts to prevent valve seat damage.
4. Remove shuttle valve (2) and valve guide (7).
   NOTE*: Valve guide (7) may come out during Step 3 above. Discard shuttle valve (2).*
5. Remove the four machine screws (8) and remove the spring (10).
   NOTE*: The spring (10) will exert a slight force on cap (9) while the screws (8) are being removed.*
6. Remove the piston assembly (11).
7. Remove and discard O-Ring (3) and valve (4).
   NOTE*:* ***Do not*** *attempt further disassembly of the piston assembly (11).*
   NOTE*: The valve (4) must be removed in a manner that will not harm the piston stem.*

ASSEMBLY

Prior to assembly, wash all metal parts in mineral spirits or equivalent and dry thoroughly. Using the lubricant provided, coat all O-Rings, O-Ring grooves and bores.

1. Install O-Ring (1) on cap nut (5).
2. Install O-Ring (3) on valve seat (6).
3. Install O-Ring (3) on piston assembly (11).
4. Install valve (4) an piston assembly (11).
   NOTE*: Make certain that the valve (4) is completely on the piston stem.*
5. Insert piston assembly (11) in the valve body and install spring (10) on top of the piston.
6. Install cap (9) on the valve body and secure using the four machine screws (8). Torque the screws to 20-30 inch pounds. (2.3-3.4 N.m)
7. Install valve guide (7) on valve seat (6) and insert shuttle valve (2) in valve guide (7).
8. Install valve seat in valve body making certain that the valve guide goes into its groove in the body. (Figure 1) NOTE: If the valve guide is properly seated in the valve body, the cap nut (5) should **not** contact the valve seat (6) until it is completely screwed into the body.
9. Install cap nut (5) in valve body and torque to **150-400** inch pounds. (17-45 N.m)

INSTALLATION

1. Install the VM-3 on the vehicle.
2. Reinstall all air lines and electrical connections as identified during "Removal".
3. Build up air system pressure to governor cut-out.
4. Perform Operating and Leakage Checks prior to placing vehicle back in service.

OPERATING AND LEAKAGE CHECKS

1. Start engine and charge both sides of dual system.
2. Stop engine, drain the front brake reservoir and disconnect tube fitting at port No. 1 in Figure 3 identified as Frt. Sup. Blue. Excessive leakage would indicate a faulty double check valve.
3. Restore and recharge both systems. Drain the rear brake reservoir and disconnect the fitting at port No. 3 in Figure 3, identified as Rear Sup. Grn. Excessive leakage would indicate a faulty double check valve.
4. After closing the drain cock and restoring the plumbing for the front reservoir, remove the fitting at port No. 4 in Figure 3. Start the engine and observe front dash gauge. Stop the engine when the gauge shows 40 p.s.i. (276 kPa). Excessive leakage from port No. 4 would indicate a faulty PR-4 valve. Restart the engine and observe front gauge. Air should start to blow from port No. 4 at 66-75 p.s.i (414-517 kPa), indicating PR-4 valve is operating correctly. With engine shut off, PR-4 valve should close and retain at least 60 p.s.i. (414 kPa) in front reservoir.

Port No.	Ident. on Casting	Function
1	Frt. Sup. Blue	Supply from No. 2 circuit reservoir.
2	Park Sup. Red	Delivers air from double check valve area to spring brake relay valve (R-8).
3	Rear Sup. Green	Supply from No. 1 circuit reservoir.
4	Rad. Fan	Delivers protected air supply from PR-4 valve. Suggested use - air operated fan clutch.
5	Diff. Lock Blk.	Connects directly to port No. 9 (Fig. 2) in cab. Suggested use - manifold connection to differential lockout mechanism. This is a 90° pass-through passage.
6	Trl. Sup. Yel.	Connects directly to port No. 10 in cab. Suggested use - deliver air from trailer supply valve (such as BW PP-7) to trailer. This is a 90° pass-through passage.
7	(None)	Connects directly to port No. 11 in cab. Suggested use - any auxiliary manifold function. This is a straight-through passage.
8	Air Rest. Blk.	Connects directly to port No. 12 in cab. Suggested use - air cleaner restriction gauge. This is a straight-through passage.
9	Prk. Del. Red	Connects directly to port No. 8 (Fig. 2) in cab. Suggested use - deliver air from park control valve to spring brake control valve (SR-1). This is a straight-through passage.
10	Spg. Brk. Rest.-Grn.	Connects to secondary circuit reservoir and to port No. 4 (Fig. 2) in cab. Suggested use - supplies secondary reservoir air to the balance port of the SR-1 spring brake control valve.

Port No.	Ident. on Casting	Function
1	Frt. Gauge Blue	Connects to gauge for No. 2 circuit reservoir.
2	Prk. Sup. Red	Supplies air from double check valve to park control valve.
3	Rear Gauge Green	Connects to gauge for No. 1 circuit reservoir.
4	Hand Brake Supply Green	Supplies air from No. 2 circuit reservoir to trailer hand control valve in cab. Connects with No. 10 on engine side.
5	Access Blk.	Supplies protected air from PR-4 valve to any accessory control in cab.
6	Access Blk.	Supplies protected air from PR-4 valve to any accessory control in cab.
7	Trl. Sup. Red	Supplies air from double check valve to trailer supply valve (tractor protection).
8	Prk. Del. Red	Receives air from delivery of park control valve to deliver to SR-1 spring brake control valve. Connects with No.9 on engine side.
9	Diff. Lock	Receives air from deliver of differential lockout control valve. Connects with No. 5 on engine side.
10	Trl. Del.	Receives air from trailer supply valve (tractor protection) to supply trailer. Connects to No. 6 on engine side.
11	(None)	Auxiliary manifold for any accessory function connects to No. 7 on engine side.
12	Air Rest. Blk.	Suggested use - air cleaner restriction gauge. Connects with No. 8 on engine side.