

Installation Instructions



BENDIX® D-2® GOVERNOR MAINTENANCE KIT

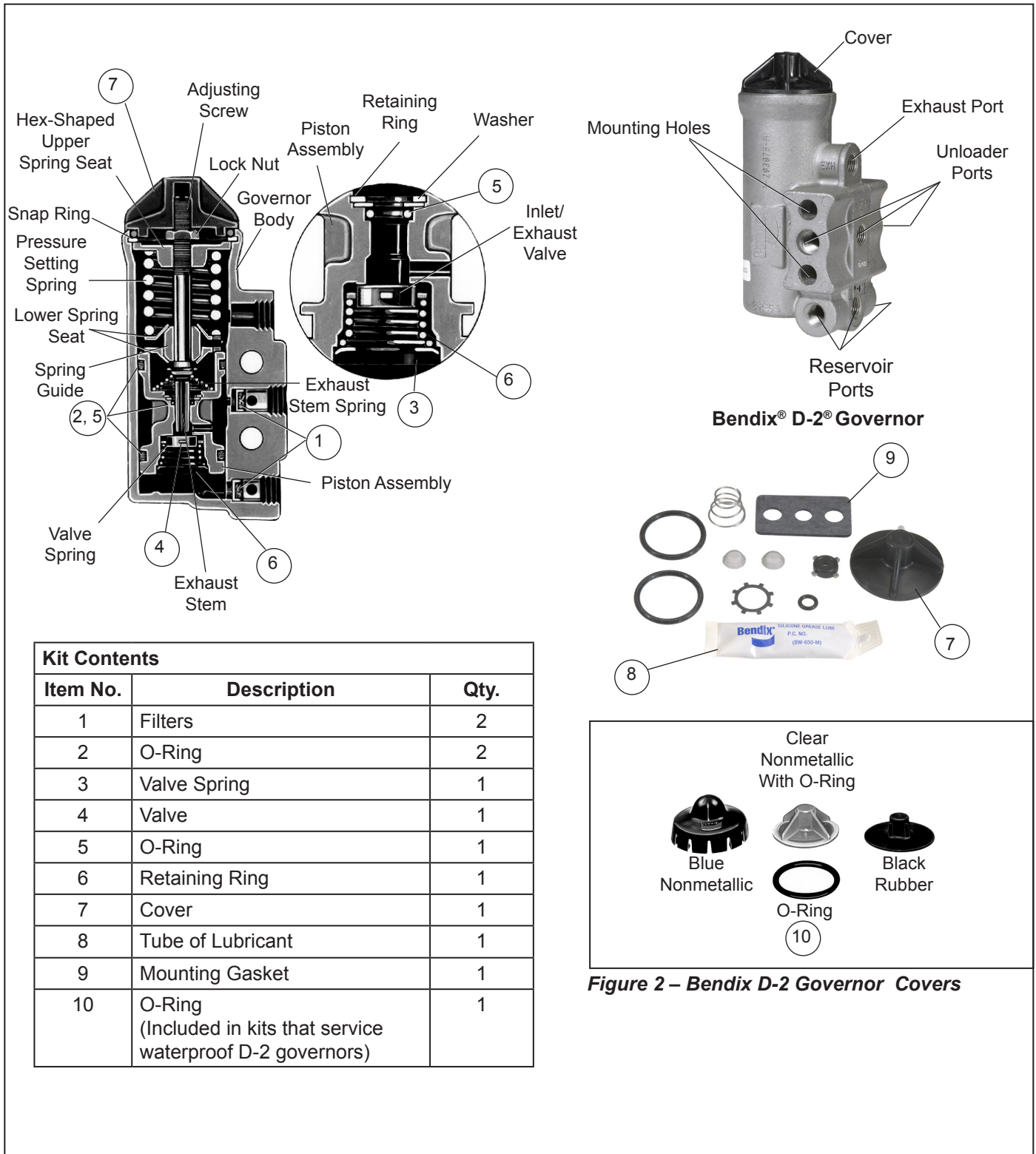


Figure 1 – Bendix® D-2® Governor Kit Contents

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.
- ▲ You should consult the vehicle manufacturer's operating and service manuals, and any related literature, in conjunction with the Guidelines above.
- ▲ 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.

REMOVAL

1. Block and hold vehicle by means other than the air brakes.
2. Drain air brake system.
3. If the governor is compressor-mounted, disconnect the reservoir air line. If the governor is remote-mounted, disconnect both the unloader and the reservoir air lines.
4. Remove governor mounting bolts, then governor.

DISASSEMBLY

1. Clean the governor exterior of dirt and grease.
2. If the governor cover is marked nonadjustable and the adjusting screw has been sheared off, this is a nonserviceable governor and must be replaced with a new or remanufactured unit.
3. If the governor has a blue nonmetallic cover, hold the governor with one hand, with your other hand grip the cover from the top and pull up with your thumb until the cover disengages from the governor body. If the top cover on the governor is made of rubber or clear nonmetallic material, unscrew the cover until it releases from the adjusting screw of the governor. Remove o-ring (10). **NOTE:** o-ring (10) is used on high-temperature and waterproof governors only. See *Figure 2*.

4. With a pair of retaining ring pliers, remove the spring assembly retaining ring and save.
5. Pull the adjusting screw and spring assembly out of the governor body.

NOTE: Disassembly of the spring assembly normally is not required. (Reuse and do not wash the assembly.) If disassembly of the spring assembly is necessary, the following instructions apply; otherwise, proceed to Step 6.

Remove the lock nut, then the hex-shaped upper spring seat from the adjusting screw. Remove the pressure setting spring, lower spring seat, spring guide, and the other lower spring seat from the adjusting screw.

6. Gently tap the open end of the valve body on a flat surface to remove the exhaust stem, the exhaust stem spring, and the piston assembly. The exhaust stem and piston may be made of metal or nonmetallic material.
7. Remove and discard the two o-rings on the piston outside diameter (O.D.) and with a hooked wire remove and discard the o-ring (5) from the piston inside diameter (I.D.). On a nonmetallic piston, the washer and retaining ring may be removed to facilitate removal of o-ring (5).
8. If the piston assembly is nonmetallic (see Figure 3), use a small screwdriver and carefully insert the blade between two of the ears of the retaining ring (6) in the bottom of the piston and pry the retaining ring (6) out of the piston and discard. Remove valve spring (3) and the inlet/exhaust valve (4) and discard.

If the piston assembly is metallic, disengage the valve spring (3) from the recess in bottom of the piston, remove valve spring (3), and the inlet/exhaust valve (4) and discard.

9. Remove and discard the filters (1) from the unloader and reservoir ports in the governor body.

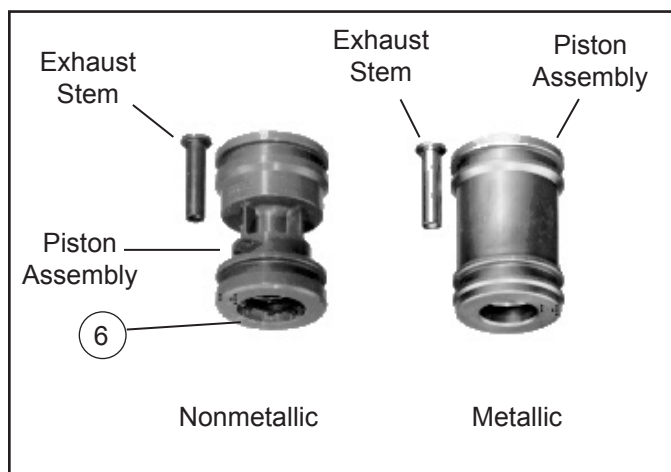


Figure 3 – Piston Comparison

CLEANING AND INSPECTION

1. Clean all remaining parts in mineral spirits.
2. Inspect body for cracks or other damage. Be particularly careful that all air passages in the body, exhaust stem, and piston are not obstructed.
3. Check springs for cracks, distortion, or corrosion.
4. Replace all parts which are worn or damaged.

ASSEMBLY

Prior to assembly, lubricate the two lower body bores, all o-rings, and o-ring grooves with lubricant provided. **NOTE:** Be sure to lubricate the spring guide and adjusting screw if disassembled.

1. Install the o-ring (5) in the piston. Replace the washer and retaining ring on the nonmetallic piston if removed during the disassembly.
2. Drop the inlet/exhaust valve (4) into place at the bottom of the piston.
3. Nonmetallic Piston: Install the inlet/exhaust valve spring (3) with the small end against the valve, place the retaining ring (6) on top of the large end of the valve spring (3) [concave side of retaining ring (6) facing away from piston], press into piston with your thumb, making sure all ears of the retaining ring (6) are seated into the piston as far as possible. **NOTE:** Do not use a press or hammer to install the retaining ring. Excessive force may damage the piston.

Metallic Piston: Install the inlet/exhaust valve spring (3) with the small end against the valve. Press the spring down until the larger coiled end snaps into the recess inside the piston.

4. Install the piston o-rings (2) on the piston.
5. Install the exhaust stem spring in the piston with the large coil end next to the piston.
6. Install the exhaust stem through the spring and into the piston.
7. Install the assembled piston into the governor body.
8. If the spring assembly was not disassembled, proceed to Step 9. If the spring assembly was disassembled, the following instructions apply: install on the adjusting screw in this order; lower spring seat, spring guide, spring seat, pressure setting spring, hex-shaped upper spring seat. Screw the upper spring seat onto the adjusting screw until the distance from the top of the seat to the bottom of the adjusting screw head is approximately 1-7/8". Install the lock nut.
9. Install the adjusting screw and spring assembly into the governor body.
10. Install the snap ring making certain that it seats completely into the groove in the governor body.

11. If the cover provided in the kit is black rubber, install it by pushing it onto the adjusting screw.

If the cover provided in the kit is clear nonmetallic, install the o-ring (10) and screw the cover onto the adjusting screw. Tighten the cover until it bottoms out on the governor body.

NOTE: O-ring (10) is used only on high-temp and waterproof governors.

If the cover provided in the kit is blue nonmetallic, place the cover over one edge of the top of the governor, with your index finger, catch the knob on the top of the cover and pull until the cover snaps into place.

NOTE: The nonmetallic cover should be at room temperature for ease of assembly. Do not attempt to force the cover on when positioned square to the governor body.

12. Install filter (1) in the governor body. The head of a pencil makes a satisfactory installation tool.

INSTALLATION

1. If the governor is compressor-mounted, clean the mounting pad on both the compressor and governor. Clean the connecting line, or lines. Be certain the unloading port is clear and clean.

If the governor is mounted remotely, it should be positioned so that its exhaust port points down. It should be mounted higher than the compressor so that its connecting lines will drain away from the governor.

2. Install the governor.
3. If it is a compressor-mounted type, use the governor mounting gasket provided.
4. Connect the air lines to the governor.

OPERATING AND LEAKAGE TEST

Operating Tests

Start the vehicle engine and build up air pressure in the air brake system; check the pressure registered by a dash or test gauge at the time the governor cuts out, stopping the compression of air by the compressor. The cut-out pressure should be in accordance with the pressure setting of the piece number being used. (Common cut-out pressures are between 105-125 psi.)

With the engine still running, make a series of brake applications to reduce the air pressure and observe at what pressure the governor cuts in the compressor. As in the case of the cut-out pressure, the cut-in pressure should be in accordance with the pressure setting of the piece number being used. (Common cut-in pressures are between 90-105 psi.)

Never condemn or adjust the governor pressure settings unless they are checked with an accurate test gauge or a dash gauge that is registering accurately. If the pressure settings of the governor are inaccurate, or it is necessary that they be changed, the adjustment procedure is as follows:

NOTE: If the governor cover is marked nonadjustable and the adjusting screw has been sheared off, this is a nonserviceable governor and must be replaced with a new or remanufactured unit.

- A. Remove the top cover from the governor.
- B. Loosen the adjusting screw locknut.
- C. **To raise the pressure settings**, turn the adjusting screw counterclockwise.

To lower the pressure settings, turn the adjusting screw clockwise.

NOTE: Be careful not to over-adjust. Each 1/4 turn of the adjusting screw raises or lowers the pressure setting approximately 4 psi.

- D. When proper adjustment is obtained, tighten the adjusting screw locknut and replace the cover.

NOTE: The pressure range between cut-in and cut-out is not adjustable.

Leakage Test

Leakage tests on the Bendix® D-2® governor should be made in both cut-in and cut-out positions.

Cut-In Position

Apply soap solution around the cover and the exhaust port. Slight bubble leakage is permitted. Excessive leakage indicates a faulty inlet valve or lower piston o-ring.

Cut-Out Position

Apply soap solution around the cover and to the exhaust port. Slight bubble leakage is permitted. Excessive leakage indicates a faulty exhaust valve seat, exhaust stem o-ring, or o-ring at the top of the piston.

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