

# Installation Instructions



## BENDIX® SPRING BRAKE MAINTENANCE KIT

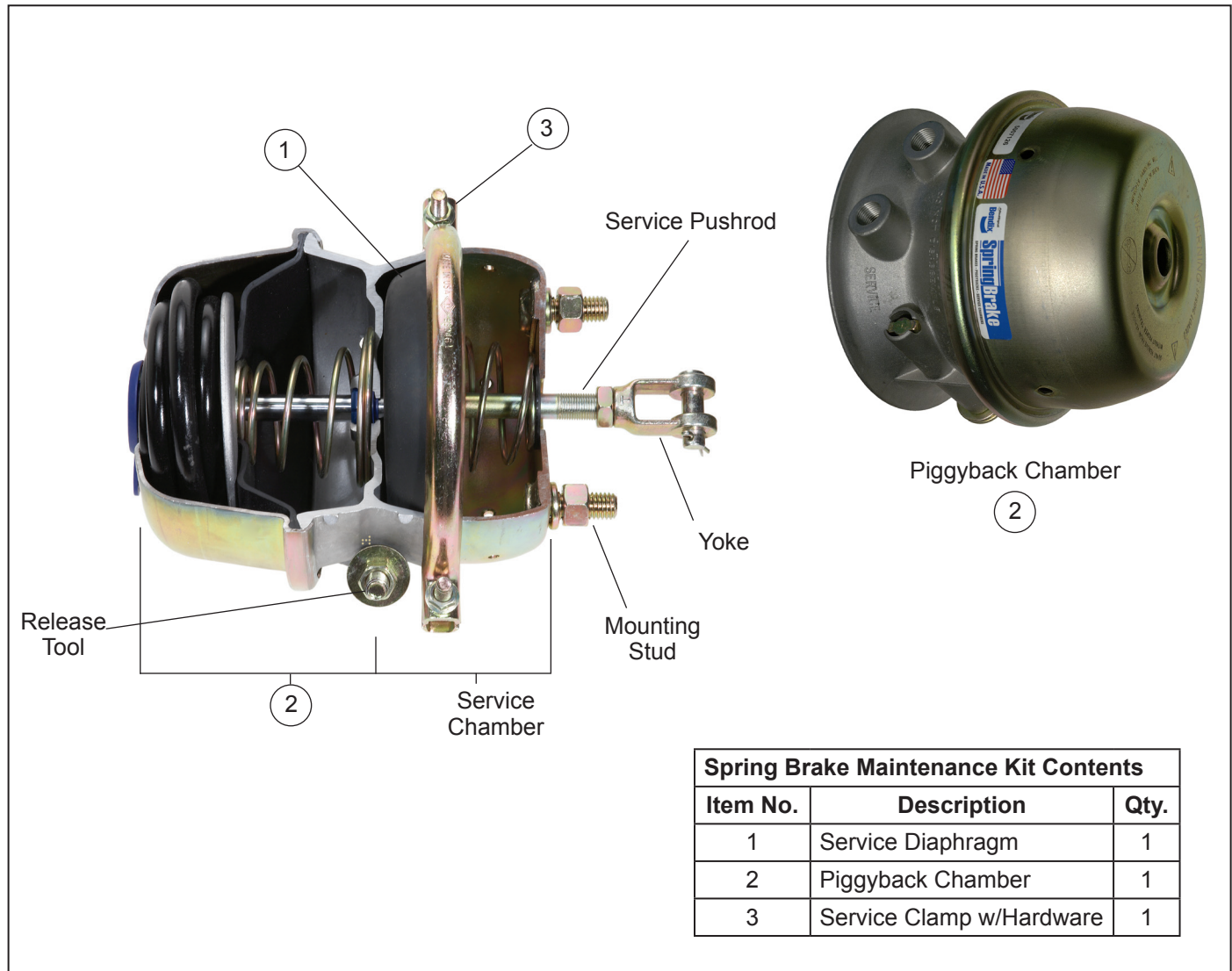


Figure 1 – Bendix® Spring Brake

### KIT DESCRIPTION

This instruction sheet covers multiple kits. Not all components shown here are included in each kit. This instruction sheet covers the installation of the service diaphragm (1), piggyback chamber (2), and the service clamp with hardware (3) for servicing the Bendix® spring brake. Components not replaced by the kit being installed are to be reused. Discard all removed components that are being serviced with the contents of this kit.



## 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.



**WARNING:** Not all wheels and valve stems are compatible with Bendix® Air Disc Brakes. Use only wheels and valve stems approved by the vehicle manufacturer to avoid the risk of valve stem shear and other compatibility issues.

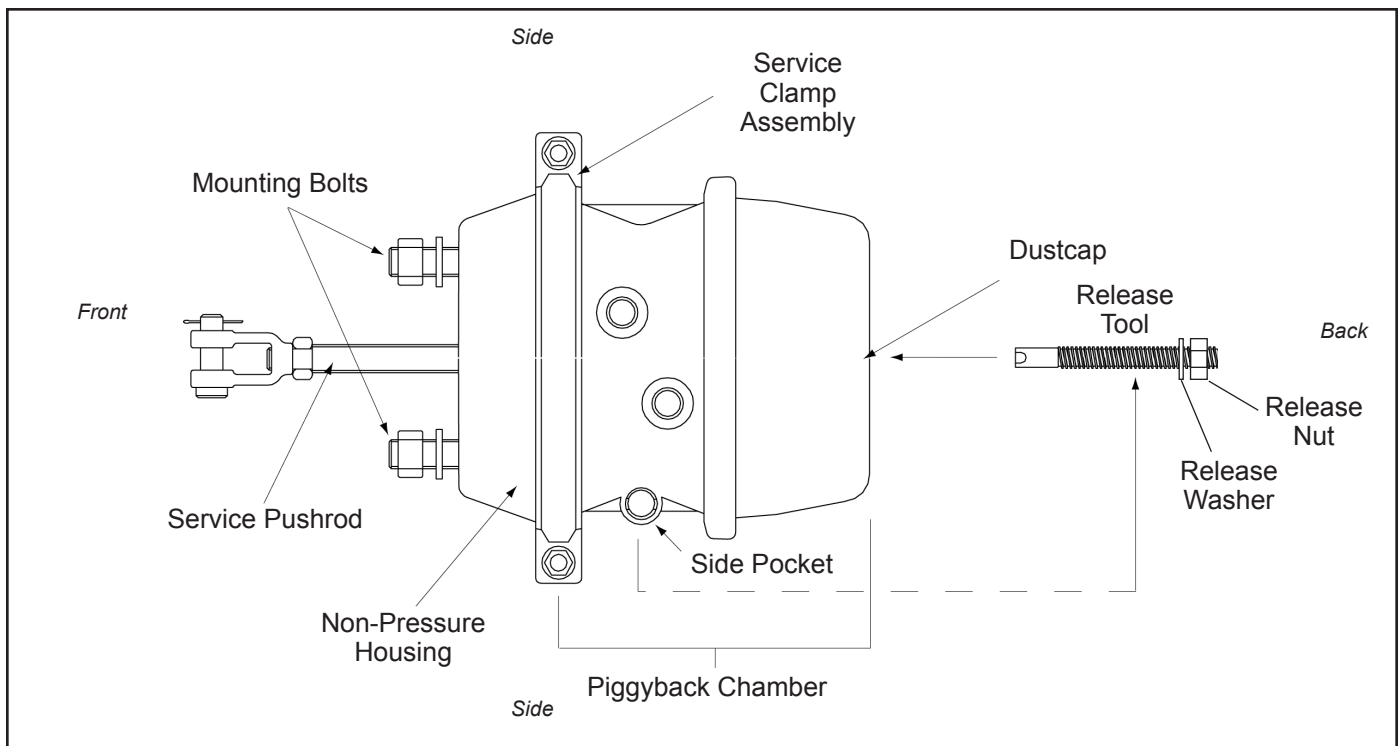


**WARNING: AVOID CREATING DUST. POSSIBLE CANCER AND LUNG DISEASE HAZARD.**

While Bendix Spicer Foundation Brake LLC does not offer asbestos brake linings, the long-term affects of some non-asbestos fibers have not been determined. Current Occupational Safety and Health Administration (OSHA) Regulations cover exposure levels to some components of non-asbestos linings, but not all. The following precautions must be used when handling these materials.

Avoid creating dust. Compressed air or dry brushing must never be used for cleaning brake assemblies or the work area.

- ▲ Bendix recommends that workers doing brake work must take steps to minimize exposure to airborne brake lining particles. Proper procedures to reduce exposure include working in a well-ventilated area, segregation of areas where brake work is done, use of local filtered ventilation systems or use of enclosed cells with filtered vacuums. Respirators approved by the Mine Safety and Health Administration (MSHA) or National Institute for Occupational Safety and Health (NIOSH) should be worn at all times during brake servicing.
- ▲ Workers must wash before eating, drinking, or smoking; shower after working, and should not wear work clothes home. Work clothes should be vacuumed and laundered separately without shaking.
- ▲ OSHA & EPA Regulations regarding testing, disposal of waste, and methods of reducing exposure for asbestos are set forth in 29 & 40 Code of Federal Regulations §1910.1001 & 61.150, respectively. These Regulations provide valuable information which can be utilized to reduce exposure to airborne particles.
- ▲ Safety Data Sheets on this product, as required by OSHA, are available from Bendix. Call 1-800-247-2725 and speak to the Tech Team or e-mail [techteam@bendix.com](mailto:techteam@bendix.com).



**Figure 2 – Bendix® Piggyback Spring Brake**

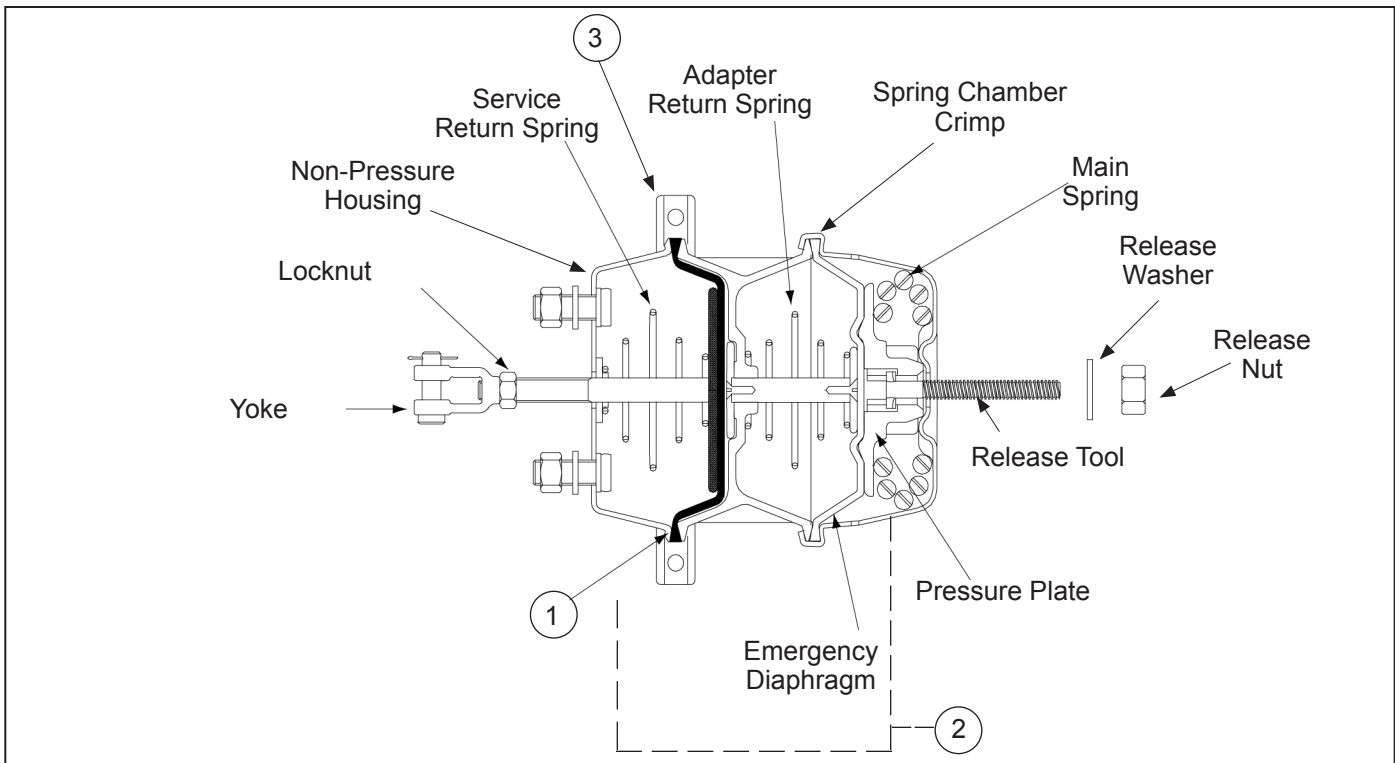
**⚠ WARNING**

- ⚠ **Piggyback assemblies contain a loaded compression spring. Property damage, serious injury or death may occur if instructions are not followed completely.**
- ⚠ **DO NOT service a spring brake chamber if it has structural damage of any kind. Replace the complete assembly. Dismount a damaged spring brake by first cutting the service pushrod with an acetylene torch to relieve any force it might have.**
- ⚠ **Do not strike any part of a spring brake chamber for any reason. This may cause structural damage.**
- ⚠ **Be careful not to drop a spring brake chamber at anytime. If dropped, inspect for signs of structural damage. Replace complete assembly if damaged.**
- ⚠ **The emergency diaphragm of a piggyback assembly cannot be replaced. Replace the whole piggyback spring brake assembly.**
- ⚠ **Always work from the side of the spring brake chamber. Never work from the front or back.**

**MECHANICAL RELEASE (CAGING) OF THE BENDIX® PIGGYBACK SPRING BRAKE**

**⚠ WARNING**

- ⚠ **Do not mechanically release (cage) the spring if there is any structural damage to the actuator. Caging the spring in such a chamber may cause serious injury or death!**
1. Remove the dust cap from the keyhole in the center of the piggyback spring brake chamber.
  2. Remove the release tool assembly from the side pocket of the adapter base.
  3. To aid with caging, 80-100 psi of pressure may be applied to the parking brake.
  4. Insert the release tool (T-bolt) through the release tool keyhole and into the pressure plate. See *Figure 3*.
  5. Turn the release tool 1/4 turn clockwise.
  6. Pull on the release tool to seat it properly in the pressure plate.
  7. Attach the release washer and nut.
  8. To cage the main spring, tighten the release nut with a hand wrench and ensure the service pushrod is retracting.



**Figure 3 – Bendix® Piggyback Spring Brake**

9. Do not over-torque the release tool assembly. Maximum torque is 35 ft-lbs.



**WARNING**



**WARNING**

**Do not use an impact wrench. An impact wrench may over-torque the release tool and cause damage to the pressure plate.**

10. The threaded portion of the release tool will extend approximately 2.9 inches out of the nut when fully released.

## INSTALLING THE BENDIX® PIGGYBACK SPRING BRAKE CHAMBER

*NOTE: The piggyback spring brake chamber can be replaced with the service brake chamber mounted to the vehicle or removed for ease of access.*



**WARNING**

**⚠ Do not mechanically release (cage) the spring if there is any structural damage to the brake. Caging the spring in such a chamber may cause serious injury or death! Replace the complete spring brake assembly.**

1. Mechanically release the old piggyback spring brake by following the original manufacturer's instructions.
2. Ensure air pressure is removed from all air reservoirs before removing the air hoses or working on the spring brake.

3. Remove air hoses from the spring brake chamber. Be sure to mark both hoses to ensure proper reinstallation.
4. Clamp a pair of vise grips around the service pushrod touching the non-pressure housing. This cages the service return spring.
5. If removal from the vehicle is necessary for servicing, perform the following: Remove the yoke pin, disconnect the yoke from the slack adjuster, remove the mounting nuts, washers, and lock washers. Remove the spring brake assembly using care to prevent the spring brake from falling.



**WARNING**

**⚠ Do not remove the spring chamber clamps.**

6. Remove and discard the clamp nuts and service clamp assembly (3), if included in the kit. Carefully remove the old piggyback chamber (2).
7. If the service diaphragm (1) is included in the kit, remove and replace it.
8. Line up the piggyback chamber (2), the service diaphragm (1), and the non-pressure housing, ensuring that they are centered.

9. Assemble the service clamp assembly (3). Ensure all parts are seated properly and remain centered.
10. Torque the clamp nuts to 25 ft-lbs. Remove the vise grips from the service pushrod.
11. If the assembly was removed: Install the spring brake assembly using the removed hardware. Torque the mounting nuts to 110 ft-lbs. Connect the yoke to the slack adjuster and install the yoke pin and the cotter pin.
12. Reconnect the emergency air line to the emergency port and reconnect the service air line to the service port.
13. Apply pressure to the service port of the spring brake. Do not exceed 150 psi. Test for leaks around the clamps. Minimal leakage is permitted (100 SCCM).
14. Uncage the main spring and return the release tool into the release tool side pocket.
15. Replace the dust cap in the keyhole.



**⚠ Check for proper service and emergency operation after servicing any part of the spring brake chamber(s). Check the brake adjustment if the combination spring brake was removed/installed. (Follow the vehicle manufacturer's instructions to adjust the brakes).**



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