

Installation Instructions



BENDIX® BA-921® COMPRESSOR UNLOADER CAP REPLACEMENT KIT

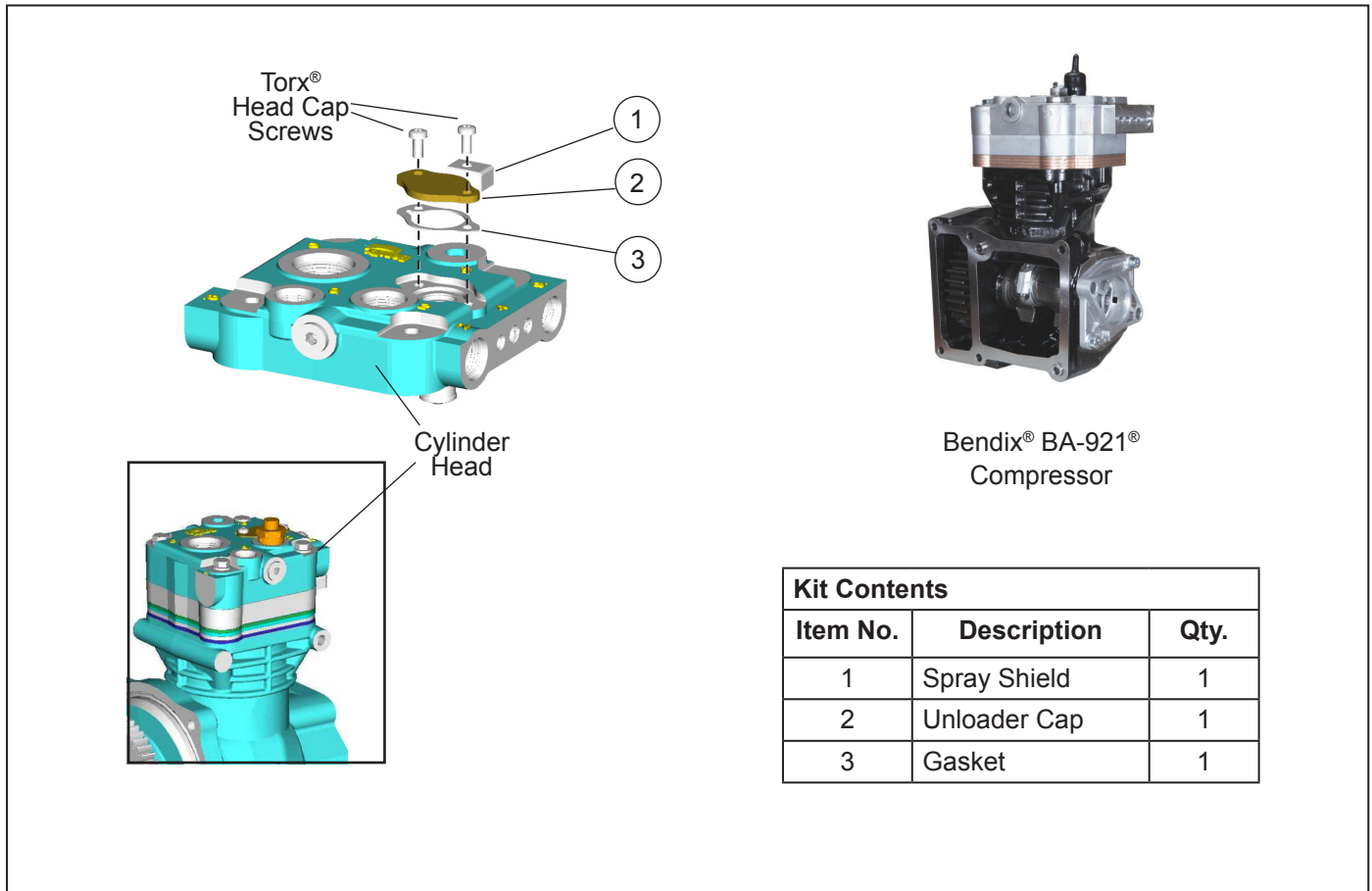


Figure 1 – Bendix® BA-921® Compressor Unloader Cap Replacement Kit Contents

VEHICLE PREPARATION

These instructions are general and are intended to be a guide. In some cases additional preparations and precautions are necessary. In all cases follow the instructions contained in the vehicle maintenance manual in lieu of the instructions, precautions, and procedures presented in this document.

1. Block the wheels of the vehicle and drain the air pressure from all the reservoirs in the system.
2. Remove as much road dirt and grease from the exterior of the compressor as possible.



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.

DISASSEMBLY

Refer to Figures 1 through 4 throughout removal and installation.

1. Read the General Safety Guidelines and follow steps 1 and 2 under the VEHICLE PREPARATION heading.
2. Locate the two Torx® head cap screws that secure the unloader cap (2) to the cylinder head and remove any remaining contamination in the area to prevent it from entering the unloader bore.
3. Restrain the spring force exerted by the balance piston spring, hold the unloader cap in place while removing the two cap screws using a T25 Torx socket. Carefully release the hold on the unloader cap (2) until the spring force is relaxed, then remove and discard the unloader cap (2). Retain the Torx head cap screws.
4. Remove and discard the unloader cap gasket (3). Carefully clean the cylinder head to remove any gasket residue, taking care not to permit any contamination to enter the unloader piston.

ASSEMBLY

1. Install the new unloader gasket (3) (See Figure 2.)
2. Position the new unloader cap (2) on top of the balance piston making certain the upper, stamped surface with the logo is visible and that the vent groove is on the underside and oriented towards the edge of the cylinder head. Using manual pressure, gently push the balance piston into the unloader piston until the unloader cap rests against the cylinder head. (See Figure 4.)
3. Install the splash shield (1) onto the Torx head cap screw nearer to the outside of the cylinder head, orienting the shield so that it will cover the edge of the unloader cap (2) and shield the vent groove. (See Figure 3.) Install the Torx head cap screws, making sure that the cap screw with the splash shield is installed in the hole nearer the edge of the cylinder head. **Use a T25 Torx socket to torque to 62 to 71 in-lbs.**
4. Follow steps under the RETURNING THE VEHICLE TO SERVICE section below.

RETURNING THE VEHICLE TO SERVICE

1. Install any fittings removed during disassembly, if applicable, in the same position on the compressor as noted and marked during disassembly. Make certain the threads are clean and the fittings are free of corrosion. Replace as necessary. See the **TORQUE SPECIFICATIONS** for various fitting sizes and types of thread.
2. Before returning the vehicle to service, perform the OPERATION AND LEAKAGE TESTS specified below. Pay particular attention to all lines reconnected during installation and check for air, oil, and coolant leaks at compressor connections. Also check for noisy operation and repair or replace components as needed.



Figure 2 – Gasket

OPERATION & LEAKAGE TESTS

1. Start the engine and be sure that the air system steadily builds pressure.
2. With the system air pressure increasing, check for cylinder head gasket air leakage. Apply a soap solution around the cylinder head. Check the gaskets between the cylinder head, cooling plate, and valve plate assembly for air leakage. No leakage is permitted, except at the vent groove on the unloader cap, where a leakage of a 1 inch bubble in one minute is permitted past the splash shield.

If leakage is detected elsewhere, try re-torquing the head bolts after draining all air pressure. Leakage at the head gasket would indicate that the head gasket needs to be replaced. Replace the compressor if replacing the head gasket does not resolve the leakage problem.

3. Allow air system pressure to build and be sure that the compressor unloads properly at the specified governor cut-out pressure. Repeat this test three times, ensuring that the compressor unloads at approximately the same pressure each time. If the compressor fails to unload by at least 150 psi system pressure, check all air lines to and from the governor. Make certain each line is clear (unobstructed) and not kinked, or leaking. Repair or replace the governor as needed. Recheck the unloader kit installation.

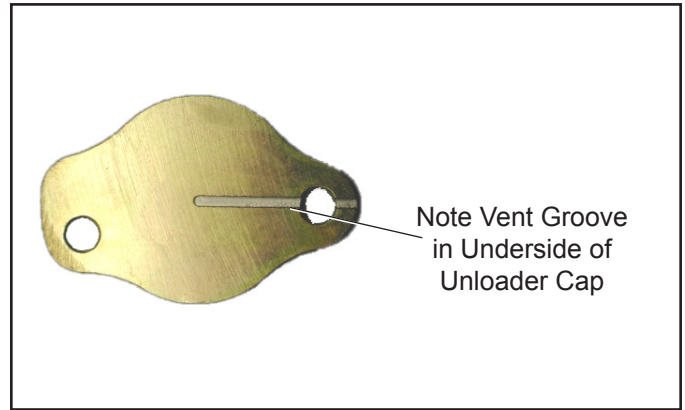


Figure 4 – Underside of Unloader Cap

TORQUE SPECIFICATIONS

Bolt, Nut or Screw.....	Assembly Torques
	(in-lbs)
Cylinder Head	
M8x1.25-6g Cylinder Head	265 - 292
Inlet Port Fittings	
1-3/16" - 12	575 - 637
1" - 12-1/2 NPT	1.5 - 2.5 TFFT ¹
Discharge Port Fittings	
7/8"-14 UNF	460 - 504
3/4"-14 NPT	2 - 3 TFFT ¹
Water Port Fittings	
3/4"-16 UNF	319 - 345
3/8"-18 NPT	2 - 3 TFFT ¹
Unloader Port Fittings	
1/8"-27 NPT	2 - 3 TFFT ¹
Safety Valve Port	
3/4"-16 UNF	319 - 345
1/2"-14 NPT	2 - 3 TFFT ¹
Oil Port	
7/16"-16 UNF	97 - 115

¹Note: TFFT = Turns From Finger Tight

Technical information is available online at bendix.com or by calling 1-800-AIR-BRAKE (1-800-247-2725), option 2.

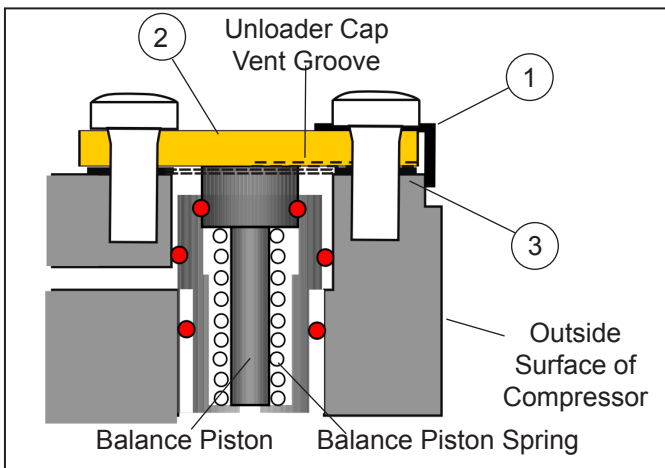
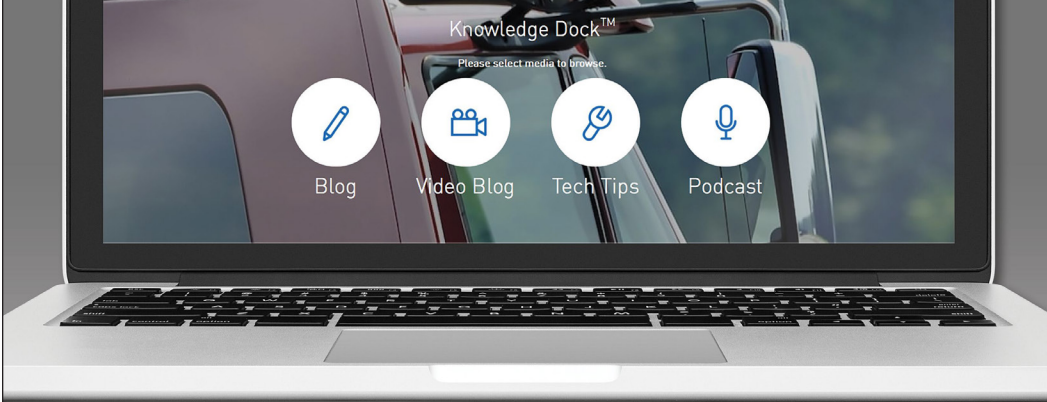



Figure 3 – Unloader Cross-Sectional View



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