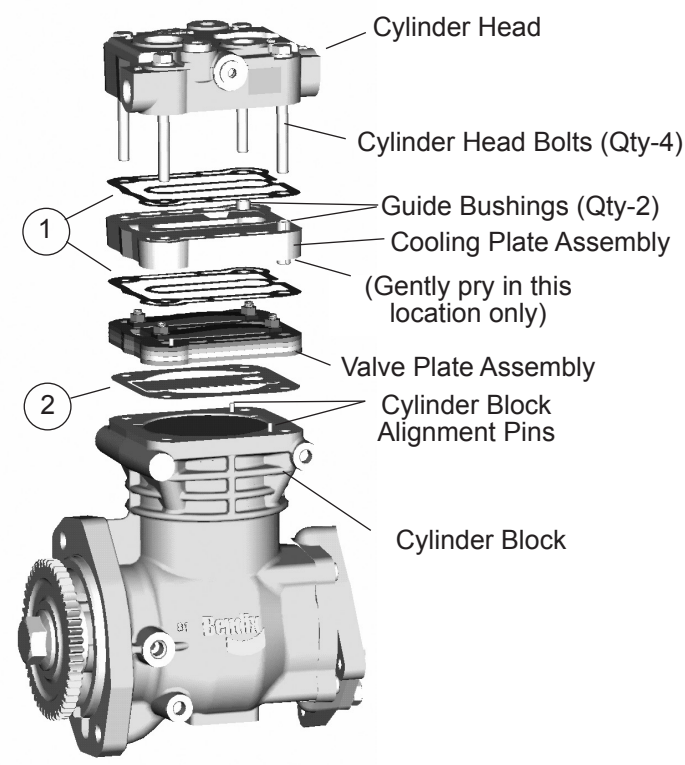
Installation Instructions

BENDIX® BA-921® COMPRESSOR HEAD GASKET KIT



Bendix® BA-921® Compressor

Kit Contents		
Item No.	**Description**	**Qty.**
1	Gasket	2
2	Inlet Reed Valve	1

Figure 1 – Compressor Head Exploded View

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.
3. Drain the engine cooling system and the cylinder head of the compressor. Identify and disconnect all air, water, and oil lines (if applicable) leading to the compressor.
4. Remove the discharge and inlet fittings, as applicable, and note their position on the compressor to aid in reassembly.
5. Remove any supporting bracketing attached to the compressor and note their positions on the compressor to aid in reassembly.

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.**

HEAD GASKET KIT INSTALLATION

1. Loosen the four hex-head bolts and washers in the cylinder head then gently tap the head, cooling plate assembly, and valve plate assembly with a soft mallet to break the gasket seals.
2. Remove the four cylinder head bolts and lift the cylinder head, cooling plate, and valve plate assembly off the cylinder block. Gently tap the head, cooling plate, and valve plate assembly with a soft mallet to break the gasket seal. Separate the head, cooling plate, and valve plate.

   Note: Two guide bushings are installed in the cooling plate to properly locate the cylinder head and valve plate to the cooling plate. In some cases it may be necessary to tap or gently pry the valve plate and/or cylinder head away from the cooling plate. Pry only the corner indicated in *Figure 1*. Use EXTREME CARE not to deeply scratch or gouge the gasket sealing surfaces of the cylinder head and cooling plate assembly.
3. Remove and discard the metal inlet reed valve/ gasket (2).
4. Remove and discard the gaskets (1) from between the cylinder head and cooling plate and the cooling plate and valve plate.
5. Carefully remove all gasket material adhering to the cylinder head and cooling plate, steel valve plate assembly and cast iron cylinder block. Make certain not to scratch, gouge or mar the gasket surfaces. Pay particular attention to the gasket surfaces of the head and cooling plate.

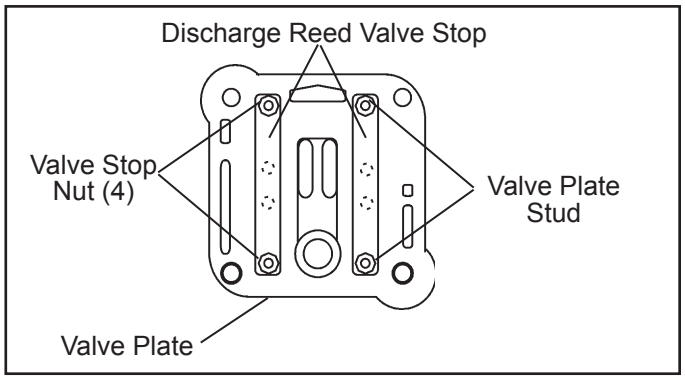


Figure 2 – Bendix® BA-921® Compressor Valve Plate

6. Remove carbon deposits from the discharge and inlet cavities of the cylinder head, cooling plate, and valve plate assembly. They must be open and clear in both assemblies. Make certain not to damage the components.

   Note: In some instances it may be necessary to disassemble the discharge reed valves and valve stops to remove carbon. In that case refer to *Figure 2* and:

   A. Remove the four nuts that secure the valve stops to the valve plate and lift off the valve stops and discharge reed valves.

B. Remove the carbon deposits from the stops and reed valves as well as the valve plate. CAUTION: When cleaning the reed valves **DO NOT USE A WIRE BRUSH.** The reed valves must be cleaned manually using steel wool or a fibrous abrasive pad. Deeply scratching, gouging, or nicking the reed valves will cause premature failure.

C. Note the locating lugs on each discharge reed valve and their corresponding indentations in the valve plate and install the valves on the valve plate studs. Install the valve stops (bowed side up) on the valve plate studs and secure it with the four nuts making certain the discharge reed valves are directly beneath them. Torque the nuts to 106-124 in-lbs.

7. Note the position of the protruding alignment pins on the cylinder block. Install the metal inlet reed valve/gasket (2) over the alignment pins on the cylinder block.
8. Position the valve plate assembly on the cylinder block so that the alignment pins in the cylinder block fit into the corresponding holes in the valve plate assembly.
9. Position and install the metal gasket (1) over the guide bushings protruding from the valve plate side of the cooling plate assembly. When properly installed, the outline of the gasket matches the outline of the cooling plate. Install the cooling plate with gasket (1) on the valve plate using the cooling plate guide bushings to locate and position both parts correctly.
10. Install the remaining gasket (1) over the guide bushings on the exposed side of the cooling plate assembly. Position and install the cylinder head over the alignment bushings protruding from the cooling plate assembly.
11. Install the four cylinder head bolts and washers and snug them down, then tighten evenly to a torque of 265-292 in-lbs using a crossing pattern.
12. Follow steps under the heading Returning the Vehicle to Service.

RETURNING THE VEHICLE TO SERVICE

1. Install any supporting brackets on the compressor in the same position noted and marked during removal.
2. Install the discharge, inlet, and governor adapter fittings, if applicable, in the same position on the compressor 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.*
3. Inspect all air, oil, and coolant lines and fittings before reconnecting them to the compressor. Make certain o-ring seals and hose clamps are in good condition.
4. Refill the engine cooling system.
5. Clean oil supply line before connecting this line to the compressor. Run the engine briefly to be sure oil is flowing freely through the supply line.
6. 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.

OPERATION & LEAKAGE TESTS

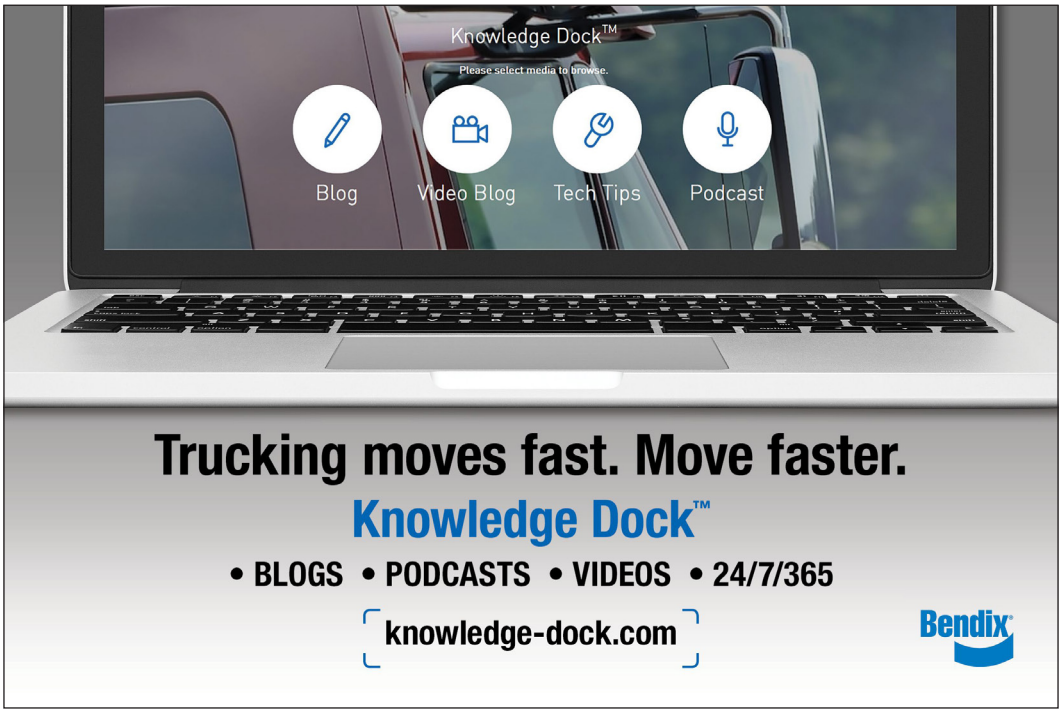
1. Start the engine and note that air system steadily builds pressure.
2. With system air pressure increasing, check for cylinder head gasket air leakage. Apply a soap solution around the cylinder head. Check the gaskets between the cylinder head, cooling plate, and valve plate assembly for air leakage. No leakage is permitted. If leakage is detected try re-torquing the head bolts after draining all air pressure. Replace the compressor if replacing the head gasket has not resolved the leakage problem.
3. Allow the air system pressure to build and note that the compressor unloads properly at the specified governor cut-out pressure. Repeat this test 3 times noting 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. If an unloader kit was also installed, recheck installation.
4. More complete compressor performance tests are provided in the Bendix Service Data Sheet. This publication is available online at www.bendix.com or by calling 1-800-AIR-BRAKE (1-800-247-2725).

TORQUE SPECIFICATIONS

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

[1]Note: TFFT = Turns From Finger Tight



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