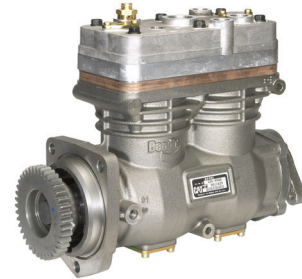
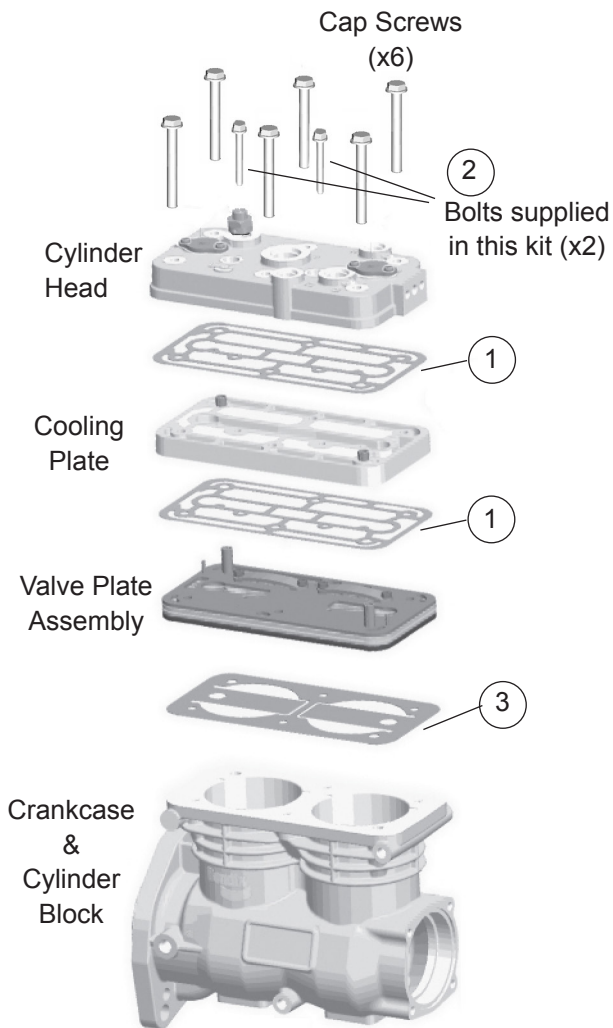


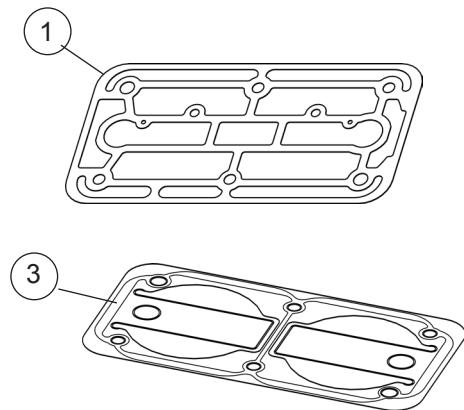
# Installation Instructions



## BENDIX® BA-922® AIR COMPRESSOR HEAD GASKET KIT



**Bendix® BA-922®  
Air Compressor**



Kit Contents		
Item No.	Description	Qty.
1	Head Gasket	2
2	M6 x 1 Bolt	2
3	Inlet Reed Valve Gasket	1

Figure 1 – Exploded View



## 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.

## 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 these instructions. Follow all industry general safety guidelines, including, but not limited to, those in this document.

### PREPARATION FOR DISASSEMBLY

Remove the balance of road dirt and grease from the exterior of the compressor with a cleaning solvent. Mark the rear end cover or end cover adapter in relation to the crankcase. It is recommended, but not specifically necessary, to mark the relationships of the cylinder head, cooling plate, valve plate assembly, crankcase and cylinder block assembly.

A convenient method to indicate the above relationships is to use a metal scribe to mark the parts with numbers or lines. Do not use marking methods such as chalk that can be wiped off or obliterated during rebuilding.

Prior to disassembly make certain that the appropriate kits and/or replacement parts are available. When using this kit, Bendix also recommends servicing the two unloaders used on this compressor (Kit 5014473).

See *Figure 1* during the entire disassembly and assembly procedure. If it is necessary to remove the compressor, refer to instructions contained in the drive components gasket kit for full disassembly instructions.

### CYLINDER HEAD

1. Remove the six hex head cap screws and washers from the cylinder head and retain them for re-installation.
2. Remove and discard the two bolts (2) located in the center of the head. Gently tap the head, cooling plate and valve plate assembly with a soft mallet to break the inlet reed valve gasket seal. Lift the cylinder head with cooling plate and valve plate assembly off the cylinder block.
3. Remove and discard the metal reed valve/gasket (3).
4. Gently tap the head, cooling plate and valve plate assembly with a soft mallet to break the head gasket seals (1). Then separate the cylinder head from the cooling plate and valve plate assembly and remove the gasket between them.
5. Turn the aluminum cylinder head over to expose the interior portion of the head.

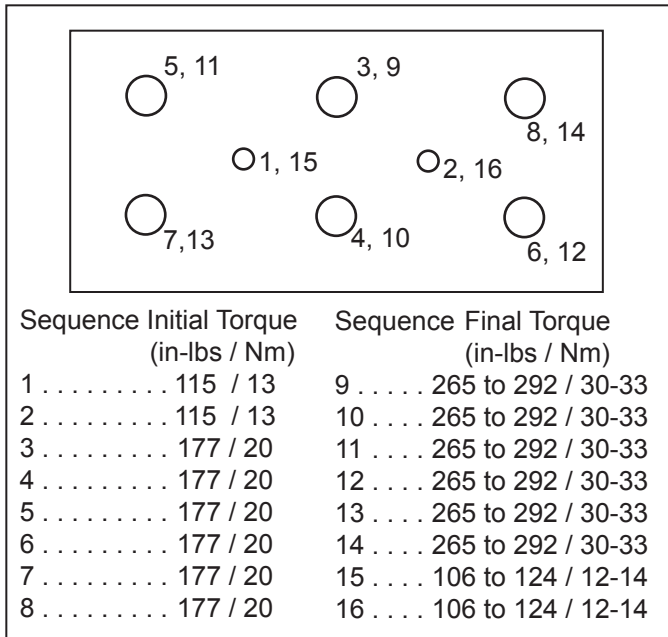
## CLEANING OF PARTS

### GENERAL

All parts should be cleaned in a good commercial grade of solvent and dried prior to inspection.

### CYLINDER HEAD

1. Carefully remove all gasket material adhering to the aluminum cylinder head, steel valve plate assembly and cast iron cylinder block. Make certain not to deeply



**Figure 2 – Bendix® BA-922® Compressor Head Bolt Torque Sequence**

- scratch or mar the gasket surfaces. Pay particular attention to the gasket surfaces of the aluminum head.
- Remove carbon deposits from the discharge and inlet cavities of the cylinder head and valve plate assembly. They must be open and clear in both assemblies. Make certain not to damage the aluminum head.
  - Remove rust and scale from the cooling cavities and passages in the head and valve plate assembly and use shop air to clear debris from the passages.
  - Check the threads in all cylinder head ports for galling. Minor chasing is permitted.

## INSPECTION OF PARTS

### CYLINDER HEAD & VALVE PLATE

- Carefully inspect the cylinder head gasket surfaces for deep gouges and nicks. If detected, the compressor must be replaced.
- Carefully inspect the valve plate assembly gasket surfaces for deep gouges and nicks. Pay particular attention to the metal gasket surface. A metal inlet reed valve/gasket is used between the valve plate assembly and cylinder block. This surface must be smooth and free of all but the most minor scratching. If excessive marring or gouging is detected, the compressor must be replaced.

### CYLINDER BLOCK

- Check the cylinder head gasket surface on the cylinder block for nicks, gouges, and marring. A metal gasket is used to seal the cylinder head to the cylinder block. This surface must be smooth and free of all but the most minor scratching. If excessive marring or gouging is detected, the compressor must be replaced.

## TORQUE SPECIFICATIONS

### Assembly Torques in in-lbs

M8x1.25-6g Cylinder Head .....	265-292 (30-33 Nm)
M5x0.75-6g Unloader Cap .....	62-71 (7-8 Nm)
M8x1.25-6g Governor Adapter .....	195-213 (22-24 Nm)
Inlet Port Fittings	
1 3/16"-12 UN-2B .....	575-637 (65-72 Nm)
M27 x 2.0 .....	575-637 (65-72 Nm)
Discharge Port Fittings	
7/8"-14 UNF-2B .....	460-504 (52-57 Nm)
M22 x 1.5 .....	195-213 (22-24 Nm)
Water Port Fittings	
3/4"-16 UNF-2B .....	319-245 (36-39 Nm)
M18 x 1.5-6g .....	230-257 (26-29 Nm)
Unloader Port Fittings	
1/8"-27 NPT .....	2 - 3 TFFT <sup>1</sup>
M10 x 1.5-6g .....	120-145 (14-16 Nm)
Safety Valve Port	
M16 x 1.5 .....	230-257 (26-29 Nm)
3/4"-16 UNF-2B .....	319-345 (36-39 Nm)
7/8"-14 UNF-2A .....	319-345 (36-39 Nm)
1/2"-14 NPT .....	2 - 3 TFFT <sup>1</sup>
Oil Port	
7/16"-20 UNF .....	97-115 (11-13 Nm)
M12 x 1.5-6g .....	142-159 (16-18 Nm)

<sup>1</sup>Note: TFFT = Turns From Finger Tight

## DISCHARGE LINE

- Inspect the discharge line for kinks, damage, or carbon deposits. Replace as necessary. See the advanced troubleshooting guide in Service Data sheet SD-01-700 for more information (available on bendix.com).

## ASSEMBLY

**NOTE:** All torques specified in this manual are assembly torques and typically can be expected to fall off after assembly is accomplished. Do not re-torque after initial assembly torques fall unless instructed otherwise. A compiled listing of torque specifications is presented at the end of these instructions.

### IN-LBS TO FT-LBS

To convert in-lbs to ft-lbs of torque, divide in-lbs by 12.

Example:  $\frac{12 \text{ in-lbs}}{12} = 1 \text{ ft-lb}$

### FT-LBS TO IN-LBS

To convert ft-lbs to in-lbs of torque, multiply ft-lbs by 12.

Example:  $1 \text{ ft-lb} \times 12 = 12 \text{ in-lbs}$

## CYLINDER HEAD

1. Note the position of the protruding alignment pins on the cylinder block. Install the metal inlet reed valve/gasket over the alignment pins on the cylinder block.
2. 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.
3. Position and install one of the metal head gaskets (1) over the alignment bushings protruding from the valve plate assembly. When properly installed, the outline of the gasket matches the outline of the valve plate.
4. Install the cooling plate over the alignment bushings protruding from the valve plate assembly. Again, when properly installed, the outline of the cooling plate matches the outline of the valve plate.
5. Position and install the other metal head gasket (1) over the alignment bushings protruding from the cooling plate assembly. The outline of the gasket matches the outline of the cooling plate.
6. Position and install the cylinder head over the alignment bushings protruding from the cooling plate.  
*NOTE: The alignment bushings will only fit into two of the six cylinder head bolt holes.*
7. Install the two center bolts (2) provided in the kit, and re-use the six hex head cylinder head bolts and washers. Follow the order shown in *Figure 2* for the initial torque, and final torque figures shown.

## INSTALLING THE COMPRESSOR

1. 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 as listed in this document.
2. Inspect all air, oil, and coolant lines and fittings before reconnecting them to the compressor. Make certain o-ring seals are in good or new condition. Tighten all hose clamps.
3. Before returning the vehicle to service, perform the Operation and Leakage Tests specified in this manual. 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.

## TESTING REBUILT COMPRESSOR

In order to properly test a compressor under operating conditions, a test rack for correct mounting, cooling, lubricating, and driving the compressor is necessary. Such tests are not compulsory if the unit has been carefully rebuilt by an experienced person. A compressor efficiency or build up test can be run which is not too difficult. An engine lubricated compressor must be connected to an oil supply line of at least 15 psi pressure during the test and an oil return line must be installed to keep the crankcase drained. Connect to the compressor discharge port, a reservoir with

a volume of 1500 cubic inches, including the volume of the connecting line. With the compressor operating at 2100 RPM, the time required to raise the reservoir(s) pressure from 85 psi to 100 psi should not exceed 5 seconds. During this test, the compressor should be checked for gasket leakage and noisy operation, as well as unloader operation and leakage. If the compressor functions as indicated, reinstall on the vehicle connecting all lines as marked in the disassembly procedure.

## OPERATION & LEAKAGE TESTS

### COOLANT LEAKAGE TEST

1. Inspect the cylinder head for cracks or damage. With the compressor head fully assembled, apply shop air pressure to one of the coolant ports with all others plugged, and check for leakage by applying a soap solution to the exterior of the head. If leakage is detected in the cylinder head casting, replace the compressor.

### AIR LEAKAGE TEST

1. Start the engine and note that the air system steadily builds pressure.
2. With system air pressure increasing, check for cylinder head gasket air leakage by applying a soap solution around the cylinder head and check for air leakage. A one-inch bubble in one minute is acceptable.
3. Allow 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.
4. More complete compressor performance tests are provided in the Bendix Service Data sheet. This publication is available online at [bendix.com](http://bendix.com) or by calling 1-800-AIR-BRAKE (1-800-247-2725), option 5.



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