



Service Data

SD-11-550

Bendix® BA-3800™ Single-Cylinder Compressor

1. INTRODUCTION

The function of the air compressor is to provide and maintain air under pressure to operate devices in air brake systems. The Bendix® BA-3800™ compressor is a naturally aspirated single-cylinder reciprocating compressor with a rated displacement of 20.0 cubic feet per minute at 1500 RPM.

The compressor consists of a water-cooled cylinder head assembly and an integral water-cooled crankcase assembly.

The cylinder head assembly is made up of the cylinder head, intermediate plate, and valve plate assembly and uses two (2) sealing gaskets. Both the cylinder head and valve plate are aluminum. The cylinder head contains air and water ports, as well as an unloader assembly. The valve plate may contain a water port. Both the cylinder head and valve plate assist in cooling.

The valve plate assembly has valve openings and passages for air and engine coolant to flow into and out of the cylinder head. The compressor's discharge valves are part of the valve plate assembly. The inlet reed valve/gasket is installed between the valve plate assembly and the top of the crankcase.

The cast iron crankcase houses the piston assembly, connecting rod, crankshaft, and related bearings. An end cover encloses the internal components. The compressor gear engages the engine drive gear.

The BA-3800 compressor is equipped with a safety valve to protect the compressor head, for example, in the event of a discharge line blockage downstream of the compressor. Excessive air pressure will cause the safety valve to unseat, release air pressure, and give an audible alert to the operator. The safety valve is installed in the cylinder head safety valve port, directly connected to the cylinder head discharge port.

The side of the cylinder head is etched with information identifying the customer part number, Bendix part number, and manufacturing date. See Figure 2.

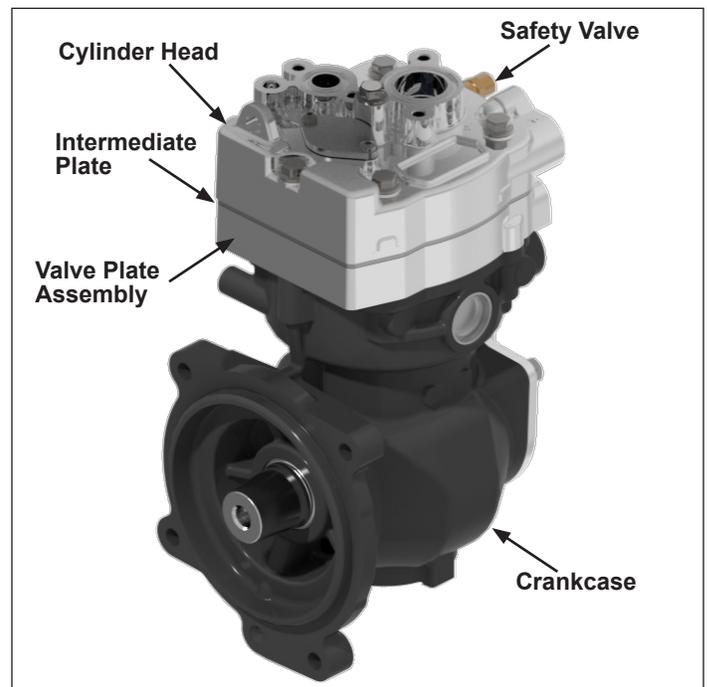


Figure 1 – Bendix BA-3800 Compressor

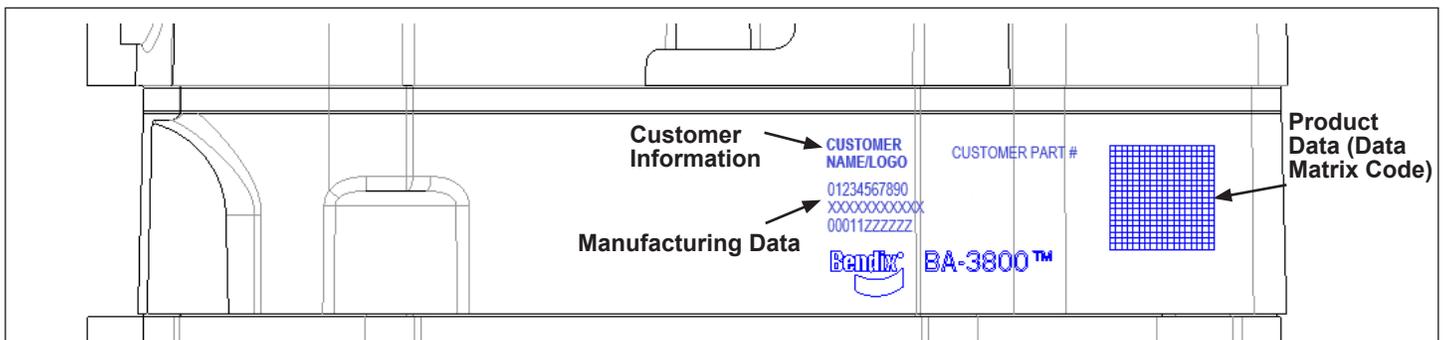


Figure 2 – Cylinder Head Etching

TABLE OF CONTENTS

1. Introduction	1
2. Operation	4
3. Preventive Maintenance	7
4. Service Tests	8
5. Compressor Replacement	10
Technical Specifications	14



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, a Bendix® AD-9si®, AD-HF®, or AD-HFi® 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.

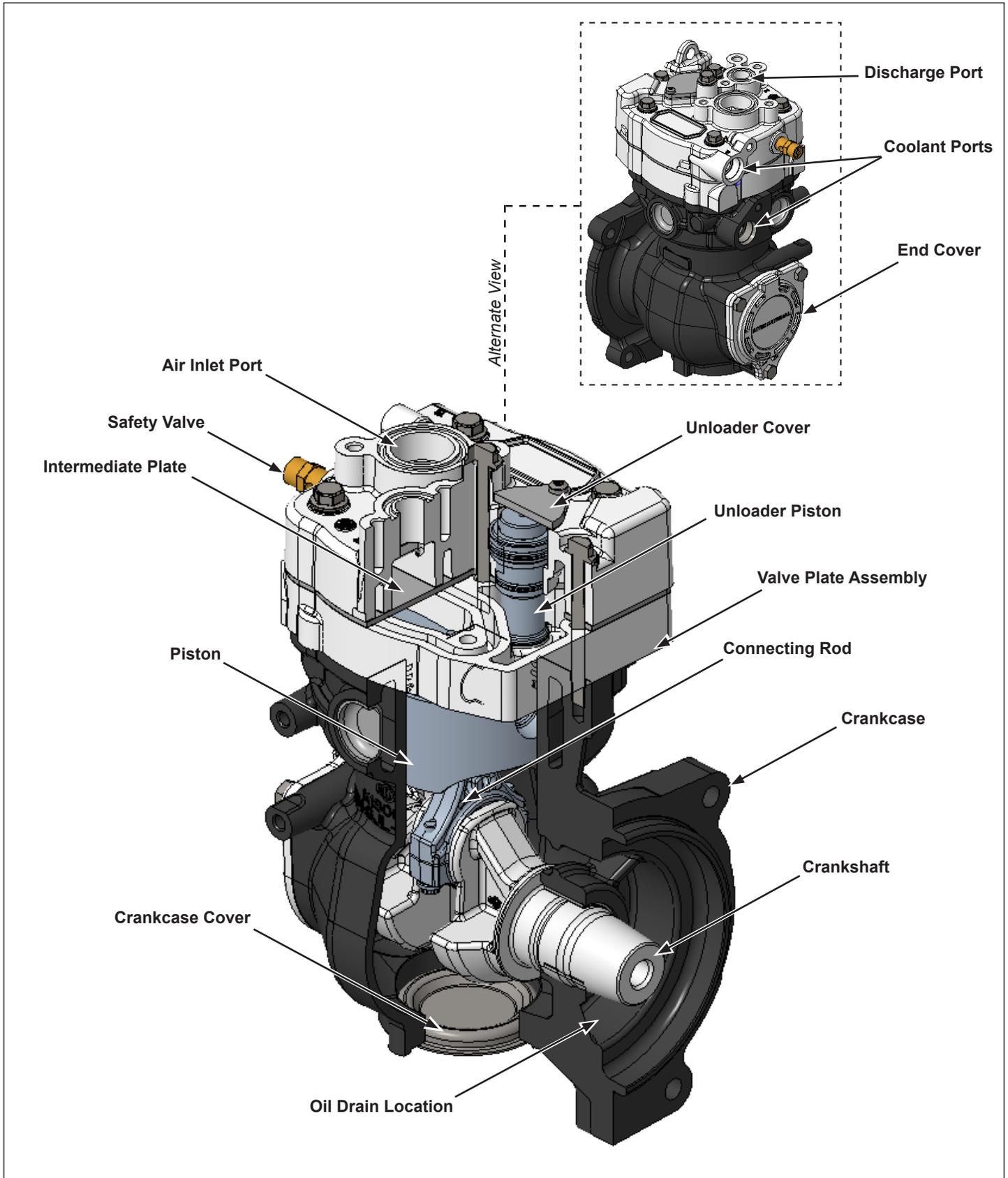


Figure 3 – Bendix BA-3800 Compressor Cutaway

2. OPERATION

The compressor is driven by the vehicle's engine and functions continuously while the engine is in operation. Actual compression of air is controlled by the compressor unloading mechanism operating in conjunction with a governor.

AIR INTAKE (LOADED)

Just as the piston begins the down stroke (a position known as Top Dead Center, or "TDC"), the vacuum created in the cylinder bore above the piston causes the inlet reed valve/gasket to flex open. Atmospheric air flows through the open inlet valve and fills the cylinder bore above the piston. See *Figure 4*.

AIR COMPRESSION (LOADED)

When the piston reaches the bottom of the stroke (a position known as Bottom Dead Center, or "BDC"), the inlet reed valve/gasket closes. Air above the piston is trapped by the closed inlet reed valve/gasket and is compressed as the piston moves upwards. When air in the cylinder bore reaches a pressure greater than that of the system pressure, the discharge reed valves open and allow air to flow into the discharge line and air brake system. See *Figure 5*.

At the same time, air flows into the hollow center of the unloader piston through an opening in the end of the piston.

Compressed air acts on the interior surfaces of the unloader piston and, along with the unloader piston spring, holds the unloader piston in the down position, against its seat on the valve plate.

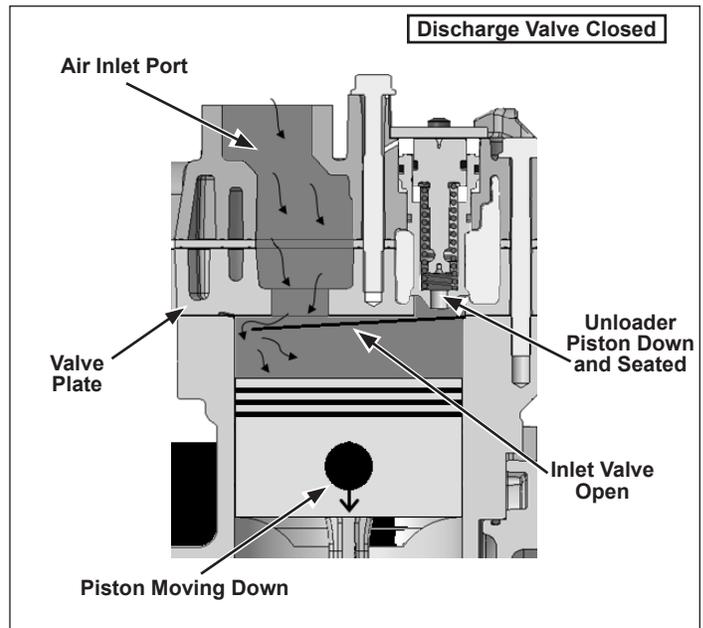


Figure 4 – Operation: Loaded (Intake)

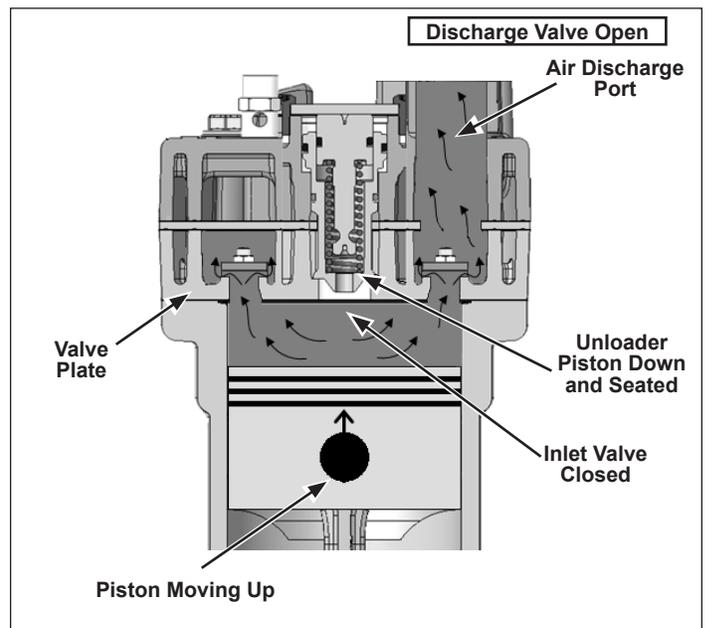


Figure 5 – Operation: Loaded (Compression)

NON-COMPRESSION OF AIR (UNLOADED)

When air pressure in the supply reservoir reaches the cut-out setting of the governor, the governor delivers system air to the compressor unloader port. Air entering the unloader port acts on the unloader piston causing the piston to move away from its seat on the valve plate assembly. When the unloader piston is unseated, an air passageway is opened between the cylinder bore and a secondary compartment, or "closed room," in the interior of the cylinder head.

As the piston moves from Bottom Dead Center (BDC) to Top Dead Center (TDC), air in the cylinder bore flows past the unseated unloader piston, into the "closed room." The size of the closed room is sufficient to accept the compressed air provided by the compressor piston without creating excessive air pressure in the closed room. On the piston down stroke (TDC to BDC) air flows in the reverse direction, from the "closed room" past the unseated unloader piston and inlet reed valve/gasket, and into the cylinder bore as shown in *Figure 6*.

NOTE: For optimum performance, it is recommended that the air dryer is equipped with a "turbo cut-off" (discharge line closed) feature.

LUBRICATION

The vehicle's engine provides a continuous supply of oil to the compressor. Oil is routed from the engine to the compressor's oil inlet.

NOTE: There is no external oil supply line; the oil delivery is located at the engine to compressor mounting face.

This pressurized oil flows to the front crankshaft journal associated with the mounting flange, which, via an oil passage in the crankshaft, routes pressurized oil to the connecting rod bearings and the rear crankshaft journal. Spray lubrication of the cylinder bore and connecting rod wrist pin bushing is obtained as oil is forced out around the crankshaft journals by engine oil pressure. Oil then falls to the bottom of the compressor crankcase and is returned to the engine through the opening at the compressor mounting flange.

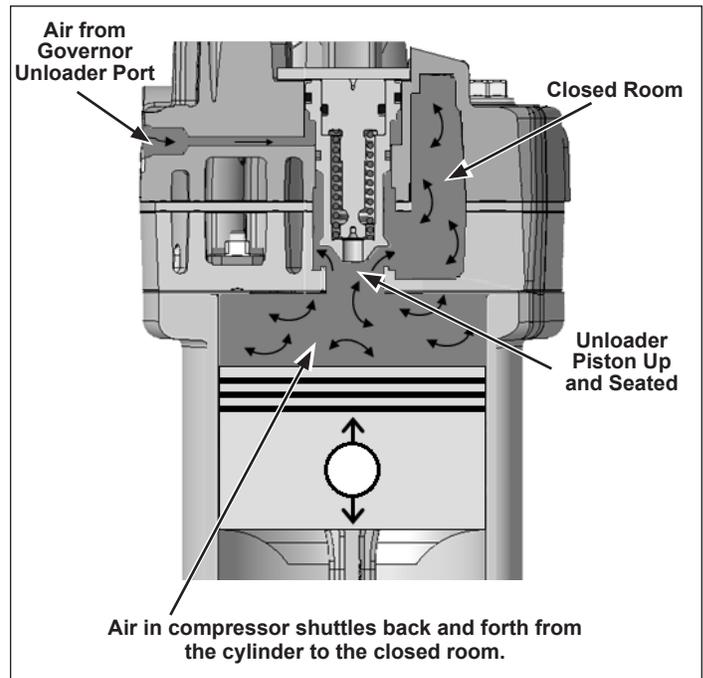


Figure 6 – Operation: Unloaded

COOLING

The BA-3800 compressor is cooled by air flowing through the engine compartment as it passes the compressor and by the flow of engine coolant through the crankcase and cylinder head.

Coolant supplied by the engine cooling system passes through connecting lines into the crankcase and passes through internal passages in the valve plate assembly, intermediate plate, and cylinder head and returns to the engine.

Figure 7 illustrates the approved coolant flow connections. Proper cooling is important in minimizing discharge air temperatures - see the product specifications on page 14 for specific requirements.

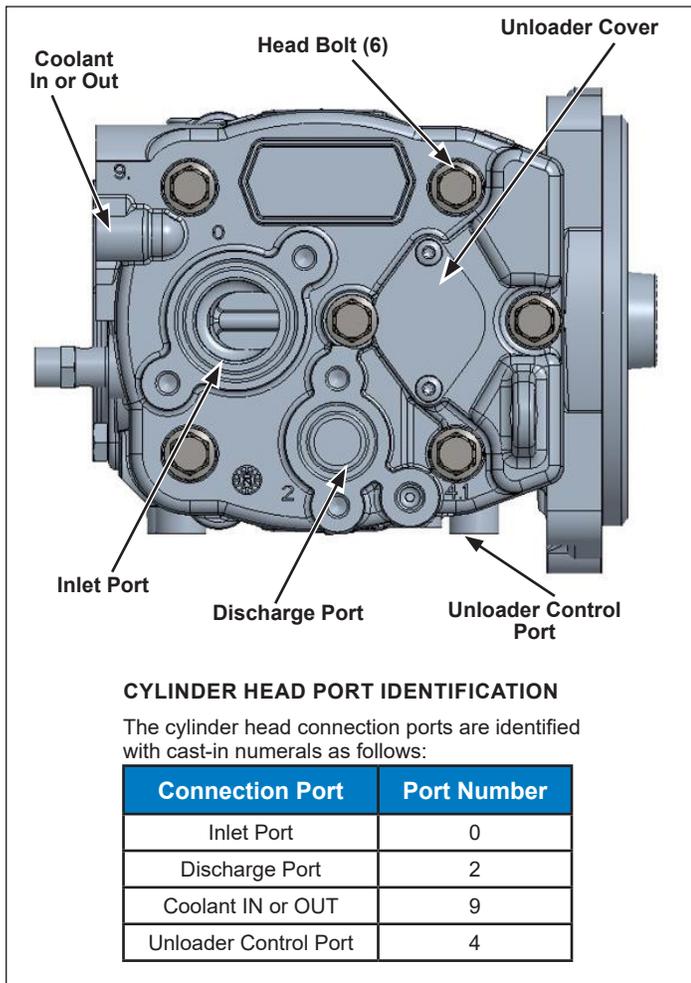


Figure 7 – BA-3800 Cylinder Head

AIR INDUCTION

The BA-3800 compressor is only permitted to be naturally aspirated. The use of engine turbocharger as an air source is not allowed. See Figure 8 for an example of a naturally aspirated air induction system.

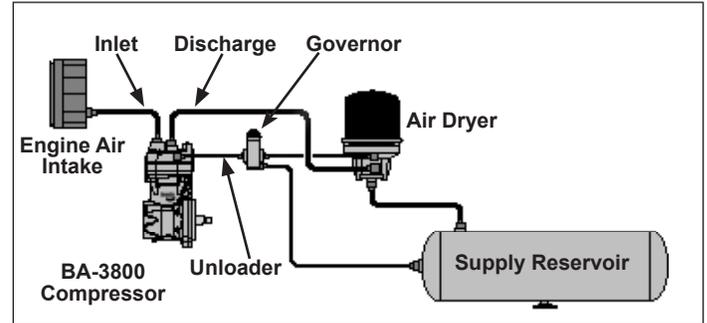


Figure 8 – Compressor Charging System Example

3. PREVENTIVE MAINTENANCE

Regularly scheduled maintenance is the single most important factor in maintaining the air brake charging system. Refer to *BW1971, Advanced Troubleshooting Guide for Air Brake Compressors*, on *B2Bendix.com* for a guide to various considerations that must be given to maintenance of the compressor and other related charging system components.

Review the Bendix® Warranty Policy before performing any intrusive maintenance procedures. An extended warranty may be voided if intrusive maintenance is performed during this period.

EVERY 6 MONTHS, 1800 OPERATING HOURS, OR AFTER EACH 50,000 MILES, WHICHEVER OCCURS FIRST, PERFORM THE FOLLOWING INSPECTIONS AND TESTS:

AIR INDUCTION

The BA-3800 compressor is designed for connection to the vacuum side of the engine's air induction system.

A supply of clean air is one of the single most important factors in compressor preventive maintenance. Since the air supply for the compressor and engine is the engine air cleaner, periodic maintenance of the engine air filter is necessary.

Inspect the compressor air induction system each time engine air cleaner maintenance is performed.

1. Inspect the intake hose adapters for physical damage. Make certain to check the adapters at both ends of the intake hose or tubing.
2. Inspect the intake hose clamps and tighten them if needed.
3. Inspect the intake hose or line for signs of drying, cracking, chafing, and ruptures and replace if necessary.
4. If using a threaded compressor inlet fitting, verify that the fitting is tight (check the torque).
5. Any metal tubes should also be tight (torqued properly) to the mating fitting. Inspect the metal tubes for any cracks or breaks and replace if necessary.
6. Confirm the induction plumbing does not collapse when the compressor is in the loaded mode.
7. Check for any other forms of inlet restrictions that would increase intake vacuum when in the loaded mode.

COMPRESSOR COOLING

To inspect compressor cooling, complete the following steps:

1. Inspect the compressor discharge port, inlet cavity, and discharge line for evidence of restrictions and carbon build-up.

NOTE: If more than $\frac{1}{16}$ in. of carbon is found, thoroughly clean or replace the affected parts. In some cases, carbon build-up indicates inadequate cooling.

2. Closely inspect the compressor cooling system.
3. Check all compressor coolant lines for kinks and restrictions to flow. The minimum coolant line size is $\frac{3}{8}$ -in. I.D.
4. Check coolant lines for internal clogging from rust scale.

NOTE: If coolant lines appear suspicious, check the coolant flow and compare to the technical specifications at the end of this document.

5. Carefully inspect the coolant system for restrictions.

COMPRESSOR LUBRICATION

NOTE: The compressor utilizes an internal oil feed design.

To inspect compressor lubrication, complete the following steps:

1. Check the exterior of the compressor (e.g. around the mounting face) for the presence of oil seepage.
2. Refer to *BW1971, Advanced Troubleshooting Guide for Air Brake Compressors*, on *B2Bendix.com* for appropriate tests and corrective action, if needed.
3. Refer to the technical specifications at the end of this document for oil pressure minimum values.
4. Repair or replace the oil sealing ring if damage or seepage is found.

NOTE: All reciprocating compressors pass a minimal amount of oil. Air dryers will remove the majority of oil before it can enter the air brake system. If compressor oil passing is suspected, refer to *BW1971, Advanced Troubleshooting Guide for Brake Compressors*, on *B2Bendix.com* for the symptoms and corrective actions.

COMPRESSOR DRIVE

To inspect compressor drive alignment and functionality, complete the following steps:

1. Check for noisy compressor operation, which could indicate excessive drive component wear. Adjust and/or replace as necessary.
2. Check all compressor mounting bolts and retighten evenly if necessary.
3. Inspect for oil leakage. Replace parts or the compressor as necessary.

COMPRESSOR UNLOADER AND GOVERNOR

Test and inspect the compressor unloader and governor system for proper operation and pressure setting by completing the following steps:

1. Using shop air, pressurize the unloader port of the compressor. With the unloader port pressurized, listen for an audible leak near the center bolt of the compressor. Check for leakage at the unloader port. If leakage is present, replace leaking or worn o-rings.

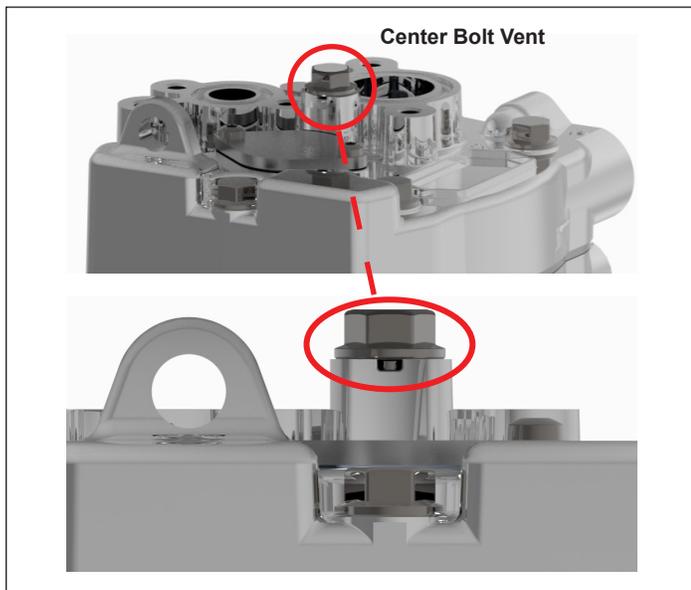


Figure 9 – Center Bolt Vent

2. Make certain the unloader system lines are connected as illustrated in *Figure 8*.
3. Cycle the compressor through the loaded and unloaded cycle several times. Make certain that the governor cuts in (compressor resumes compressing air) at a minimum of 94 psi (cut-out should be approximately 15 - 20 psi greater than cut-in pressure). Adjust or replace the governor as required.

NOTE: Make sure the compressor cycles to the loaded and unloaded conditions promptly. If prompt action is not noted, replace the governor and/or repair the unloader line.



Replacement air governors must have a minimum cut-in pressure of 94 psi. The cut-in pressure is the lowest system pressure registered in the gauges before the compressor resumes compressing air.

Compressors with no signal line to the unloader port should have a vent cap (e.g. Bendix Part Number 222797) installed in the port. **Under no circumstances should the port be plugged or left open.**

4. SERVICE TESTS

GENERAL

The compressor operating and leakage tests listed below need not be performed on a regular basis. These tests should be performed when it is suspected that leakage is substantially affecting compressor build-up performance, or when it is suspected that the compressor is “cycling” between the loaded (pumping) and unloaded (non-pumping) modes due to unloader leakage.

IN-SERVICE OPERATING TESTS

Compressor Performance: Build-up Test

This test is performed with the vehicle parked and the engine operating at maximum recommended governed speed.

1. Fully charge the air system to governor cut-out (air dryer purges).
2. Pump the service brake pedal to lower the system air pressure below 80 psi using the dash gauges.
3. As the air pressure builds back up, measure the time from when the dash gauge passes 85 psi to the time it passes 100 psi. The time should not exceed 40 seconds.
4. If the time exceeds 40 seconds, test for (and fix) any air leaks, and then re-test the compressor performance.
5. If the vehicle does not pass the test the second time, refer to *BW1971, Advanced Troubleshooting Guide for Air Brake Compressors*, on B2Bendix.com to assist your investigation of the cause(s).

NOTE: All new vehicles are certified using the FMVSS 121 air pressure build-up time requirements test by the vehicle manufacturer; however, the above test is a useful guide for in-service vehicles.

Optional Comparative Performance Check

It may be useful to also conduct the build-up test with the engine running at high idle (instead of the maximum governed speed), and record the time required to raise the system pressure a selected range (e.g., from 90 to 120 psi, or from 100 to 120 psi, etc.) in the vehicle's maintenance files. Subsequent build-up times throughout the vehicle's service life can then be compared to the first one recorded.

NOTE: The 40-second guide in the test above does not apply to this build-up time. If the performance degrades significantly over time, refer to *BW1971, Advanced Troubleshooting Guide for Brake Compressors, on B2Bendix.com* to assist investigation of the cause(s).

NOTE: When comparing build-up times, be sure to make an allowance for any air system modifications which would cause longer times, such as adding air components or reservoirs. Always check for air system leakage.

LEAKAGE TESTS

Refer to the standard Air Brake System and Accessory Leakage test found in *BW1971, Advanced Troubleshooting Guide for Air Brake Compressors, on B2Bendix.com*.

NOTE: Leakage in the air supply system (components connected to the supply reservoir such as the governor, air dryer, reservoir drain cocks, safety valve, and check valves) will not be registered on the vehicle dash gauges and must be tested separately. Refer to the applicable documentation for individual component leakage tests and the Test and Checklist published in *BW5057, Bendix Air Brake System Handbook*, and on the back of *BW1396, Bendix Dual Circuit Brake System Troubleshooting Card, on B2Bendix.com*.

CYLINDER HEAD

To inspect for cylinder head gasket air leakage, complete the following steps:

1. With the engine running, lower air system pressure to 60 psi and apply a soap solution around the cylinder head.
2. Check the gasket between the cylinder head and the valve plate assembly, as well as the inlet reed valve/gasket between the valve plate assembly and the crankcase for air leakage.
3. No leakage is permitted. If leakage is detected, replace the compressor.

INLET, DISCHARGE, AND UNLOADER

NOTE: In order to test the inlet and discharge valves and the unloader piston, it is necessary to have shop air pressure and an assortment of fittings. A soap solution is also required.

To test the inlet and discharge valves and the unloader piston, complete the following steps:

1. With the engine shut off, drain ALL air pressure from the vehicle.
2. Disconnect the inlet and discharge lines and remove the governor or its line or adapter fitting.
3. Using shop air, pressurize the unloader port of the compressor. With the unloader port pressurized, listen for an audible leak near the center bolt of the compressor. Check for leakage at the unloader port. If leakage is present, replace leaking or worn o-rings. See *Figure 9*.
4. Apply air pressure to the discharge port and then apply and release air pressure to the inlet port. Apply a soap solution around the inlet port. Listen for an escape of air, and watch for soap bubble development at the compressor inlet. A barely audible or visible escape of air is generally acceptable.

NOTE: If excessive leakage is noted in Steps 3 or 4, replace the compressor with a genuine Bendix replacement available from any authorized Bendix parts outlet.

While it is possible to test for inlet, discharge, and unloader piston leakage, it may not be practical to do so. Inlet and discharge valve leakage can generally be detected by longer compressor build-up and recovery times. Compare current compressor build-up times with the last several recorded times. Make certain to test for air system leakage before making a determination that performance has been lost.

Unloader leakage is generally exhibited by excessive compressor cycling between the loaded and unloaded condition.

To check for unloader leakage, complete the following steps:

1. With service and supply system leakage below the maximum allowable limits and the vehicle parked, bring system pressure to governor cut-out and allow the engine to idle.
2. The compressor should remain unloaded for a minimum of 5-10 minutes. If compressor cycling occurs more frequently and service and supply system leakage is within tolerance, replace the compressor or repair the compressor unloader system using a genuine Bendix maintenance kit available from authorized Bendix parts outlets.

5. COMPRESSOR REPLACEMENT

READ THE GENERAL SAFETY GUIDELINES ON PAGE 2 OF THIS DOCUMENT BEFORE PROCEEDING.

GENERAL

The following disassembly and assembly procedure is for reference purposes and assumes that a repair of the compressor is being undertaken. Several maintenance kits are available and the instructions provided with these parts and kits should be followed in lieu of the instructions presented here.

Description	Part Number
Unloader Kit	K203786
Discharge Safety Valve	K039542
Compressor to Engine Mounting Face Sealant	Supplied by the Engine Manufacturer
Compressor to Engine Oil Seal O-ring (some applications)	Supplied by the Engine Manufacturer

MAINTENANCE KITS AND SERVICE PARTS

NOTE: All components shown in *Figure 10* with a key number are available in kits and/or as individual service parts.

REMOVAL

In many instances, it may not be necessary to remove the compressor from the vehicle when installing the various maintenance kits and service parts. The maintenance technician must assess the installation and determine the correct course of action. 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.

To remove the compressor from the vehicle, complete the following steps:

1. Block the wheels of the vehicle and drain the air pressure from all the reservoirs in the system.
2. Drain the engine cooling system and the cylinder head of the compressor. Identify and disconnect all air, water, and oil lines leading to the compressor. Take care not to lose the face seals for the fluid fittings, as they will be needed during reassembly.
3. Remove as much road dirt and grease from the exterior of the compressor as possible. Take care not to lose the face seal, as it will be needed during reassembly.
4. Remove the discharge fitting, if applicable, and note the position on the compressor to aid in reassembly. Take care not to lose the face seal, as it will be needed during reassembly.

5. Remove any supporting bracketing attached to the compressor and note the position(s) on the compressor to aid in reassembly.
6. Remove the mounting bolts that retain the compressor to the engine block. Remove the compressor from the vehicle.
7. Inspect the drive gear and associated drive parts for visible wear or damage. If the compressor drive gear is worn or damaged, the compressor and the compressor drive gear must be replaced. Refer to the engine manufacturer's service documentation to address the associated engine drive parts.
8. **If the compressor is being replaced, STOP HERE and proceed to the *Installing the Compressor* section on page 13.**

PREPARATION FOR DISASSEMBLY

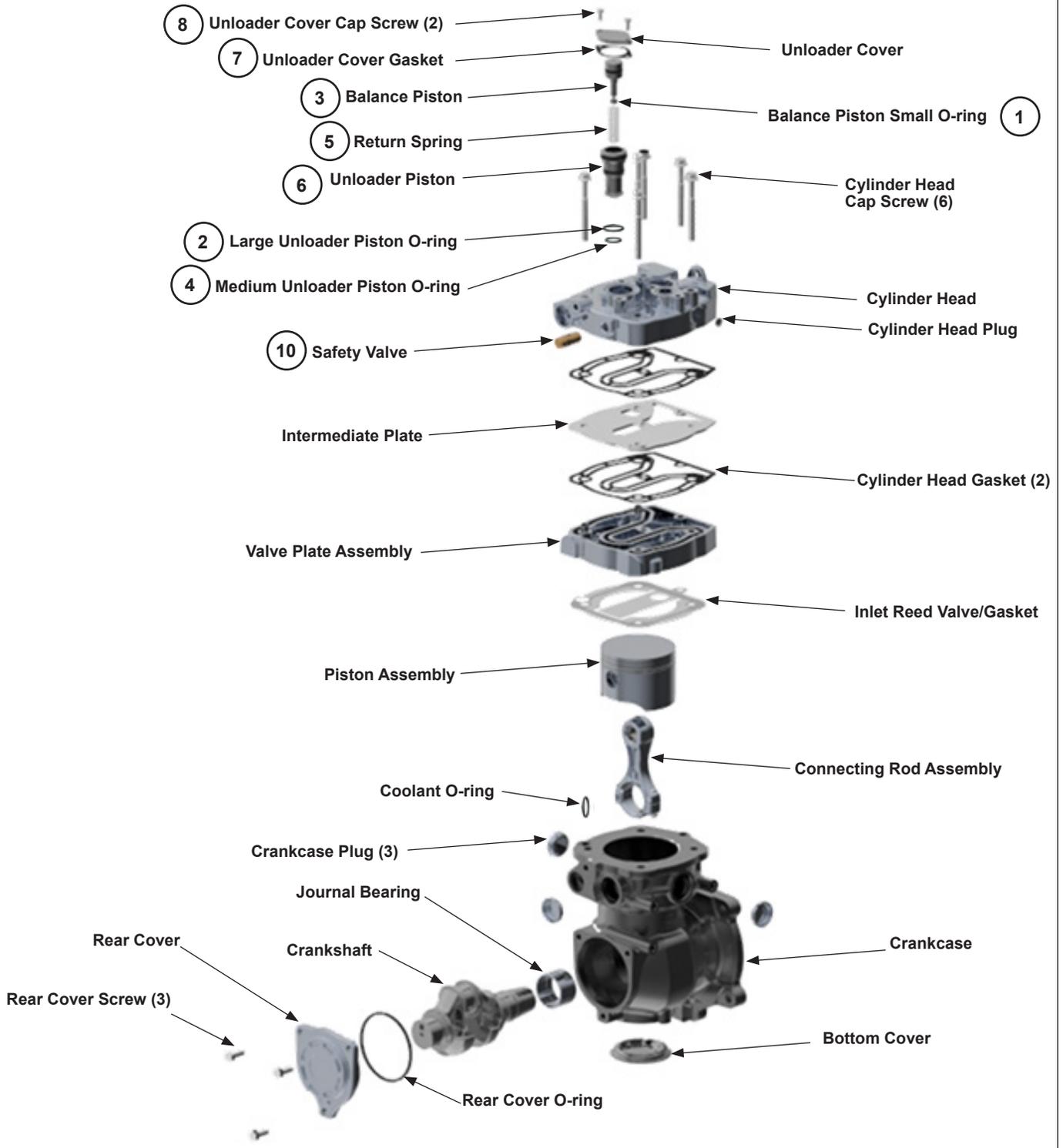
Refer to *Figure 10* during the entire disassembly and assembly procedure.

1. Place a clean rag over the openings that expose the gear and crankshaft/connecting rod assembly. No contamination is permitted in these areas.
2. Remove road dirt and grease from the exterior of the compressor with a cleaning solvent.
3. Prior to disassembly, make certain that the appropriate kits are available. Refer to *B2Bendix.com*.

UNLOADER VALVE

To disassemble the unloader valve, complete the following steps:

1. To restrain the spring force exerted by the return spring (5) of the unloader assembly, hold the unloader cover in place while removing the two unloader cover cap screws (8).
2. Carefully release the hold on the unloader cover until the spring force is relaxed, then remove the unloader cover.
3. Remove the unloader cover gasket (7).
4. Remove the balance piston (3) with its o-ring (1), return spring (5), and the unloader piston assembly, which includes the unloader piston (6), large unloader piston o-ring (2), and the medium unloader piston o-ring (4), from the cylinder head.



Unloader Kit Part Number K203786								
Item	Qty	Description	Item	Qty	Description	Item	Qty	Description
1	1	Small Balance Piston O-ring	4	1	Medium Unloader Piston O-ring	7	1	Unloader Cover Gasket
2	1	Large Unloader Piston O-ring	5	1	Return Spring	8	2	Unloader Cover Cap Screws
3	1	Balance Piston	6	1	Unloader Piston	9	1	Lubricant (not shown)

Safety Valve Kit Part Number K039542		
Item	Qty	Description
10	1	ST-4™ Safety Valve 250 psi

Figure 10 – Bendix BA-3800 Closed Room Compressor Exploded View

CLEANING OF PARTS

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

Crankcase

To clean the crankcase, complete the following steps:

1. Carefully remove all sealant gasket material adhering to the machined front face of the crankcase. See *Figure 3*.
2. Make certain not to scratch or mark the mounting surface. **NOTE:** Keep the compressor opening covered to prevent any sealant material from entering.
3. Repeat this process on the engine mounting face.

In lieu of the instructions and procedures presented in this document, follow the instructions contained in the vehicle maintenance documentation.

INSPECTION OF PARTS

Unloader Mechanism

1. If the unloader assembly has been removed from the cylinder head, the unloader assembly must be serviced using an unloader kit. *Refer to the Maintenance Kits section on page 10.*
2. If large amounts of carbon build-up are present on the unloader piston (6) seat or orifice or if the return spring exhibits compression set, the unloader components must be replaced with an unloader kit.
3. Carefully inspect the two (2) bores in the unloader cavity of the cylinder head for gouges or material transfer. If this is detected, the compressor should be replaced.

ASSEMBLY

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. *Refer to the Technical Specifications section on page 14.*

UNLOADER INSTALLATION

To install the unloader, complete the following steps:

1. Apply a coating of the lubricant provided in the unloader kit into the unloader bores (both diameters).
2. Apply additional lubricant to the two o-ring grooves on the unloader piston (6) and the o-ring groove on the balance piston.
3. Install the three o-rings (2, 4, 1) into the appropriate o-ring grooves on the unloader piston (6) and balance piston (3).
4. Apply another coating of the lubricant onto the exposed o-ring surfaces and onto the large diameter of the balance piston (3).
5. Apply additional lubricant to the larger internal bore in the unloader piston (6).
6. Install the unloader piston (6) with the pre-installed o-rings into the cylinder head unloader bore, making certain not to damage them in the process.
7. Install the return spring (5) in the unloader piston.
8. Apply a coating of lubricant to the largest diameter of the balance piston (3).
9. Install the small diameter end of the balance piston (3) through the center of the return spring (5).
10. Install the balance piston (3) and return spring (5) into the internal bore of the unloader piston (6).
11. Install the unloader cover gasket (7) on the cylinder head making certain both screw holes align.
12. Position the unloader cover on top of the balance piston (3).
13. Press and hold the unloader cover in place on the cylinder head.
14. Install both unloader cover cap screws (8).
15. Torque the cover cap screws (8) to 62 to 71 in-lbs (7-8 N•m).

INSTALLING THE COMPRESSOR

To install a compressor, complete the following steps:

1. Install the appropriate gasket or o-ring on the front flange of the compressor.
2. Make certain oil supply or return holes in the gasket are properly aligned with the compressor and engine.

NOTE: In some applications, an additional o-ring is required to seal the oil feed passageway between the compressor and engine gear case cover. Gasket sealants are not recommended.

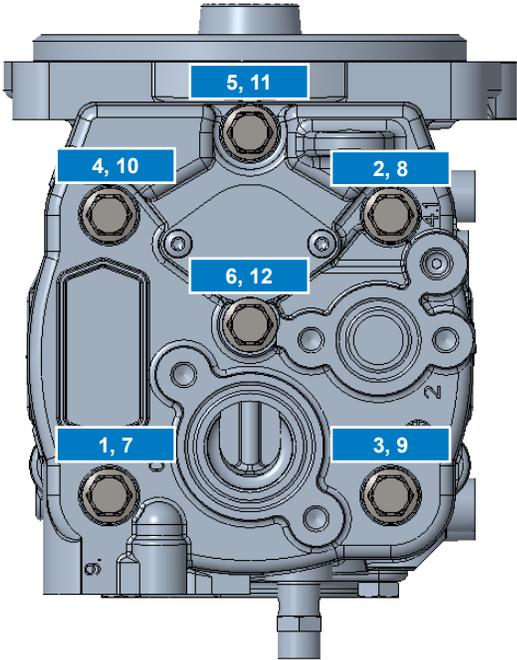
3. Secure the compressor on the engine and tighten the mounting bolts per the engine manufacturer's recommended torque requirements.
4. Install any supporting brackets on the compressor in the same position(s) noted and marked during disassembly. If a rear support bracket was on the original installation, hand tighten the bolts on both ends before torquing the bolts.

NOTE: It is important that the rear support bracket is flush to both surfaces before the bolts are torqued.

5. Inspect all air, oil, and coolant lines, seals, and fittings before reconnecting them to the compressor.
6. Make certain o-ring seals are in good or new condition, the threads are clean, and the fittings are free of corrosion. Replace as necessary.
7. Install the discharge, inlet, coolant, and governor adapter fittings, if applicable, along with mating seals, in the same position on the compressor noted and marked during disassembly.

NOTE: Refer to the *Technical Specifications* section on page 14 for various fitting sizes and types of thread.

8. Tighten all hose clamps.
9. Before returning the vehicle to service, perform the tests specified in the *Operation and Leakage Tests* sections. Pay particular attention to all lines and hoses disconnected during the maintenance and check for air, oil, and coolant leaks at compressor connections.
10. Check for noisy operation.



Sequence	Non-Lubricated Head Bolt Torque
1	14.8 ft-lbs (20 N•m)
2	
3	
4	
5	
6	
7	18.4 ft-lbs (25 N•m) 60°±5°
8	
9	
10	
11	
12	

- For the sequence 1-6, tighten all bolts to 14.8 ft-lbs (20 N•m).
- For the sequence 7-12, tighten all bolts to 18.4 ft-lbs (25 N•m) then tighten all bolts to 60°±5°.

NOTE: To confirm both bolts were tightened properly, the final torque angle recorded by the equipment must measure between 26.5 N•m and 46.0 N•m.

Figure 11 – Bendix BA-3800 Closed Room Compressor Head Bolt Torque Sequence

TECHNICAL SPECIFICATIONS

Specification	Value
Typical weight	33 lbs
Number of cylinders	1
Bore diameter	3.622 in. (92 mm)
Stroke	2.244 in. (57 mm)
Calculated displacement at 1500 RPM	20.0 CFM
Flow capacity @ 1800 RPM and 145 psi (10 bar)	18.3 CFM (520 L/min)
Flow capacity @ 3000 RPM and 145 psi (10 bar)	25.0 CFM (710 L/min)
Loaded power @ 1800 RPM and 145 psi (10 bar)	6.4 HP (4.8 kW)
Unloaded power @ 1800 RPM	1.0 HP (0.8 kW)
Minimum coolant flow at maximum RPM	1.6 gal/min
Maximum inlet air temperature	140°F (60°C)
Maximum discharge air temperature	320°F (160°C)
Minimum oil pressure required	14.5 psi (1.0 bar)
Minimum unloader line size	¼ in. I.D.
Recommended unloader line size	¼ in. I.D.
Minimum governor cut-out pressure	109 psi

Torque Specifications	Value
M8x1.25-6g cylinder head	221 in-lbs (25 N•m), then turn 60°± 5°
M5x0.75-6g unloader cap screws	62-71 in-lbs (7-8 N•m)
Discharge port fittings Two M8x1.5-6H screws	221 in-lbs (25 N•m) maximum
Water port fittings Two M8x1.5-6H screws	221 in-lbs (25 N•m) maximum
Unloader port fittings M10x1-6H	203 in-lbs (23 N•m) maximum
Safety valve port ¼"-18 NPT	200-249 in-lbs (22.5-28 N•m)
Inlet Air Port Fittings Two M8x1.5-6H screws	221 in-lbs (25 N•m) maximum

RELATED DOCUMENTATION

Go to B2Bendix.com to download the latest version of related technical documentation.

Document Number	Document Title
BW1971	Advanced Troubleshooting Guide for Air Brake Compressors
BW5057	Air Brake Handbook
BW1396	Bendix® Air Brake System Troubleshooting (ABS without ESP® Stability System)
SD-01-503	Bendix® D-2® Governor Service Data Sheet

BENDIX TECHNICAL SUPPORT

Contact the Bendix Tech Team at techteam@bendix.com or by phone at 1-800-AIR-BRAKE (1-800-247-2725), option 2, Monday through Thursday, 8:00 a.m. to 6:00 p.m. and Friday, 8:00 a.m. to 5:00 p.m. ET. Follow the instructions in the recorded message.



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