All Makes
by Bendix CVS

Installation Instructions

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. Never remove a component or plug unless you are certain all system pressure has been depleted.**
- **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 Bendix® Wingman® Advanced™-equipped vehicle.**
- **You should consult the vehicle manufacturer's operating and service manuals, and any related literature, in conjunction with the Guidelines above.**

*FIGURE 1 – **WABCO® 85MM COMPRESSOR***

DESCRIPTION

This kit is intended for use when replacing the cylinder head assembly on a Wabco® 85 mm compressor. Follow all standard safety practices including, but not limited to, those found in this document. In many instances it may not be necessary to remove the compressor from the vehicle when installing this maintenance kit. 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.

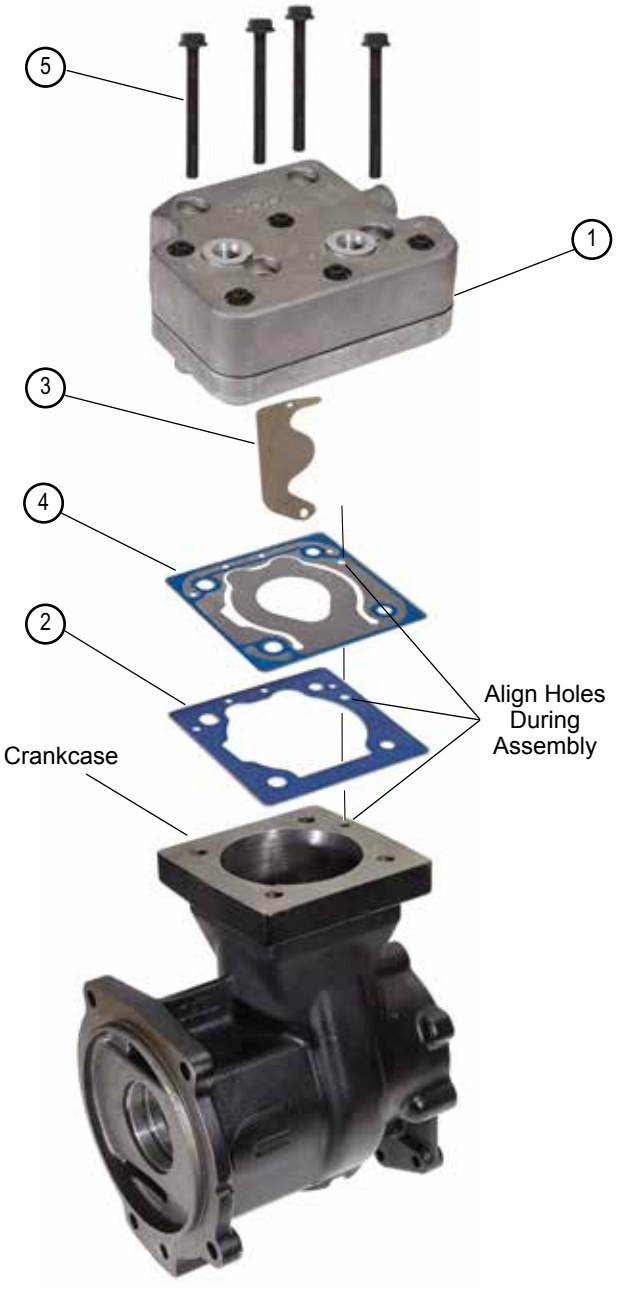
VEHICLE PREPARATION

1. Block the wheels of the vehicle and drain the air pressure from all the reservoirs in the system.
2. Remove road dirt and grease from the exterior of the compressor.
3. Drain the engine coolant system and the cylinder head of the compressor. Identify and disconnect all air hoses, 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. Similarly, remove any brackets supporting the compressor and note their positions on the compressor assembly.
6. If present, remove the governor and associated adapter and bolts from the cylinder head and note their position on the compressor to aid in reassembly.

REMOVAL OF EXISTING CYLINDER HEAD ASSEMBLY

1. Loosen the four M8 x 13 cylinder head bolts (5) in the cylinder head, then gently tap the cylinder head assembly with a soft mallet to break the seal between the cylinder head assembly (1) and the crankcase deck.
2. Remove and discard the four cylinder head bolts (5) from the cylinder head.
3. Lift the cylinder head assembly off of the crankcase.
4. Remove the cylinder head gasket (2) from the cylinder head assembly.

ALL MAKES BY BENDIX CVS REPLACEMENT CYLINDER HEAD ASSEMBLY KIT FOR WABCO® 85MM COMPRESSORS



Cylinder Head Assembly Kit		
Key	**Description**	**Qty**
1	Cylinder Head Assembly	1
2	Cylinder Head Gasket	1
3	Sliding Leaf Valve	1
4	Inlet Valve	1
5	M8 x 13 Cylinder Head Bolts	4

FIGURE 2 – ***WABCO® 85MM COMPRESSOR CYLINDER HEAD ASSEMBLY EXPLODED VIEW***

5. Rotate the compressor crankshaft until the piston reaches the Top Dead Center (TDC) position. Remove all traces of carbon and varnish from the top of the piston by carefully scraping and using minimal solvent. Avoid getting debris and solvent in the space between the piston and the cylinder bore.
6. Use a cleaning solvent to clean the top of the crankcase deck.

Note: The piston bore must be kept free of debris. To avoid getting debris in the piston bore, cover the top of the crankcase with a clean shop rag until you are ready to install the new cylinder head assembly.

INSTALLATION OF THE CYLINDER HEAD ASSEMBLY

Before you begin, remove packaging related materials from all components. Also, inspect the piston bore to ensure it is free of any debris and ensure the top deck of the crankcase is wiped clean.

⚠ IMPORTANT

It's essential that all the cylinder head valve details are carefully set in the correct position for proper compressor operation.

1. Install the new cylinder head gasket (2) on the top of the compressor deck. Ensure the unloader passage hole is open and clear. *Refer to Figure 2.*
2. Install the sliding leaf valve (3) by locating it over the two pins at the bottom of the lower cylinder head. Apply a small amount of grease or oil onto the sliding leaf valve (3) for retention during the head installation. *Refer to Figure 3.*
3. Install the inlet valve (4) onto the lower cylinder head. Note that the inlet valve can only fit one way. *Refer to Figure 2.*
4. Invert the cylinder head assembly and ensure that the sliding leaf valve does not move out of position.
5. Position the cylinder head assembly (1) over the cylinder head gasket (2) on the crankcase deck. Ensure the alignment pin at the underside of the cylinder head engages with the oversized hole in the head gasket. Also, ensure that the cylinder head seats flush on top of the cylinder head and crankcase deck. When properly positioned the sides of the cylinder head are aligned with the crankcase and the head is flat against the crankcase deck. No rocking of the cylinder head is permitted. *Refer to Figure 2.*
6. Install the four new M8 x 13 cylinder head bolts (5) and snug them down finger tight. Using the torque pattern shown in Figure 4, torque the bolts A-D to the specification shown. *Note that a torque value is specified for steps one through four and an angular value is specified for steps five through eight.*
7. If required, using a Torx® T30 tool install the five T30 Torx screws and snug them down finger tight. Using the torque pattern in Figure 4, torque bolts E through I to the specification shown. *Note in Figure 4 that a torque value is specified for steps nine through thirteen and an angular value is specified for steps fourteen through eighteen.*
8. Follow the steps under, "Returning The Vehicle To Service," on the next page.

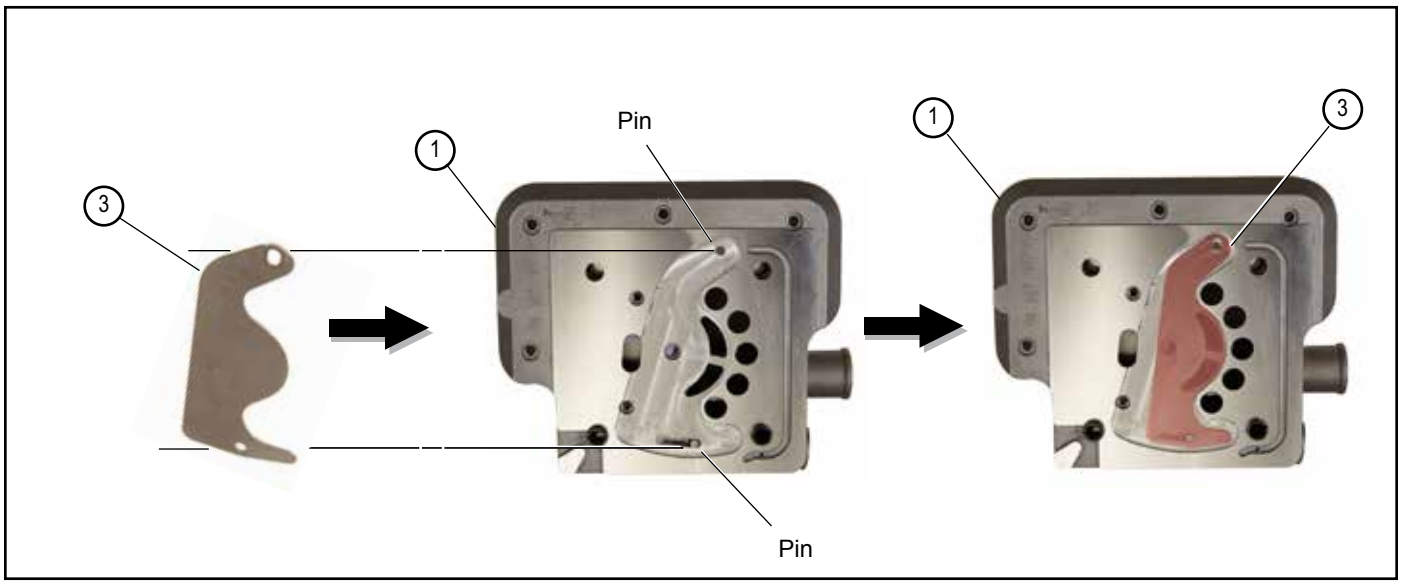


FIGURE 3 – ***WABCO® 85MM COMPRESSOR CYLINDER HEAD ASSEMBLY - SLIDING LEAF VALVE INSTALLATION***

RETURNING THE VEHICLE TO SERVICE

1. Re-install any brackets supporting the compressor in the same position as noted during their removal.
2. Install the discharge, inlet and governor adapter fittings, if applicable, in the same position on the compressor as noted and marked during disassembly. Make certain that the threads are clean and the fittings are free of corrosion. Replace as necessary.
3. Inspect all air hoses, oil and coolant lines, and fittings before reconnecting them to the compressor and governor (if applicable). Make certain the o-ring seals and hose clamps are in good condition.
4. Refill the engine cooling system.
5. Clean the oil supply line before connecting this line to the compressor. Run the engine briefly to be sure that oil is flowing freely through the supply line.
6. Before returning the vehicle to service, perform the "Operation and Leakage Tests" specified next. Pay particular attention to all lines reconnected during installation. Check for air, oil and coolant leaks at the compressor connections, and also check for noisy operation. Repair or replace components as needed.

OPERATION & LEAKAGE TESTS

1. Start the engine and confirm that the 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 removing all air pressure. Replace the compressor if this does not resolve the leakage problem.
3. Allow air system pressure to build and confirm that the compressor unloads properly at the specified governor cut-out pressure. Repeat this test three (3) times checking 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.

Torque Sequence			
Step	**Bolt**	**Torque (Nm)**	**Rotation (Degrees)**
1	A	25 + 0/-5	
2	B	25 + 0/-5	
3	C	25 + 0/-5	
4	D	25 + 0/-5	
5	A		90 + 15/-5
6	B		90 + 15/-5
7	C		90 + 15/-5
8	D		90 + 15/-5
9	E*	6 ± 0.6	
10	F	6 ± 0.6	
11	G	6 ± 0.6	
12	H	6 ± 0.6	
13	I	6 ± 0.6	
14	E*		90 + 15/-5
15	F		90 + 15/-5
16	G		90 + 15/-5
17	H		90 + 15/-5
18	I		90 + 15/-5

FIGURE 4 – ***WABCO® 85MM COMPRESSOR CYLINDER HEAD ASSEMBLY TORQUE SEQUENCE***