

MERITOR WABCO

Installation Guide

Cylinder Head Replacement Kit

Part Number 911 906 800 2
(Replaces Part Number 911 153 931 2)

This cylinder head replacement kit is for use on Meritor WABCO System Saver 318 compressors used on Mack E-Tech engines. The kit includes the cylinder head assembly with head gasket and reed valves and four cylinder head retention bolts.

WARNING

To prevent serious eye injury, always wear safe eye protection when you perform vehicle maintenance or service.

Remove all pressure from the air system before you disconnect any component. Pressurized air can cause serious personal injury.

Park the vehicle on a level surface. Block the wheels to prevent the vehicle from moving. Support the vehicle with safety stands. Do not work under a vehicle supported only by jacks. Jacks can slip and fall over. Serious personal injury and damage to components can result.

For technical assistance, please contact the ArvinMeritor Customer Service Center at 800-535-5560. For your reference Meritor WABCO service and maintenance publications are available on our web site:

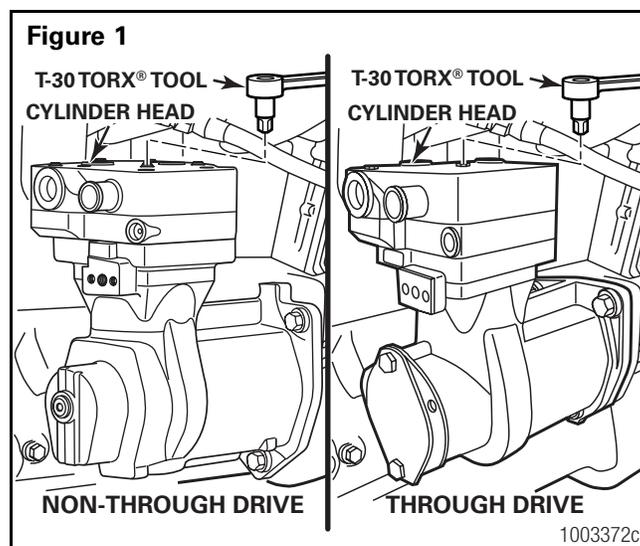
www.meritorwabco.com

The instructions given in this bulletin are general. Depending on the type of vehicle involved, additional steps may be required. For example, there may be a power steering pump installed at the back of the compressor and most installations will have a governor mounted to the side of the compressor. Refer to the vehicle manufacturer's manual for information about removing and replacing these components.

NOTE: Air and water fittings are not included in this replacement kit. If it is necessary to replace any of these fittings when installing the new cylinder head, use steel replacement fittings only.

Cylinder Head Replacement

Check the installation to ensure there is enough clearance above the cylinder head to allow the use of a Torx® tool. If there is enough room to work, you should be able to replace the cylinder head without removing the entire compressor from the vehicle. **Figure 1.**



To replace the cylinder head without removing the compressor from the vehicle, follow the instructions in Part I, Cylinder Head Removal and Installation.

If the compressor must be removed in order to replace the cylinder head, follow the instructions given in Part II, Compressor Removal and Installation.

I. Cylinder Head Removal and Installation

A. Removal

When removing the cylinder head from the crankcase, do not damage the crankcase since it will not be replaced.

1. Set the spring (parking) brakes and block the wheels of the vehicle.
2. Drain the air pressure from the system.
3. Drain the engine coolant system and the cylinder head of the compressor.
4. Use a cleaning solvent to remove road dirt and grease from the exterior of the compressor.
5. Remove the air and water lines leading to the cylinder head.
6. Remove the four hex head bolts that attach the cylinder head to the crankcase. Remove the cylinder head and cylinder head gasket.

Figure 2.

7. Use a cleaning solvent to clean the top of the crankcase.

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 cloth.

B. Installation

NOTE: A T-30 Torx® tool is required for this procedure.

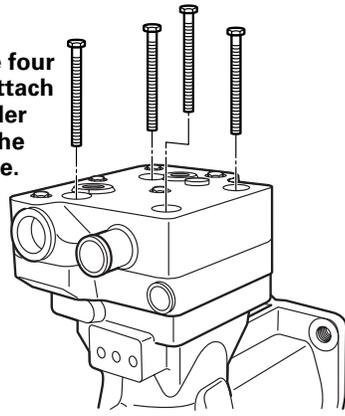
Before you begin, remove any protective covering from the top of the crankcase and inspect the piston bore to ensure it is free of debris.

Cylinder head valve components **MUST** be aligned in the proper position in order for the compressor to function.

1. Align the hole in the cylinder head gasket with the unloader passage with the unloader passage on the top of the crankcase. **Figure 3.**
2. Install the sliding leaf. The two holes in the sliding leaf must be installed over the two pins on the base of the cylinder head. **Figure 4.**

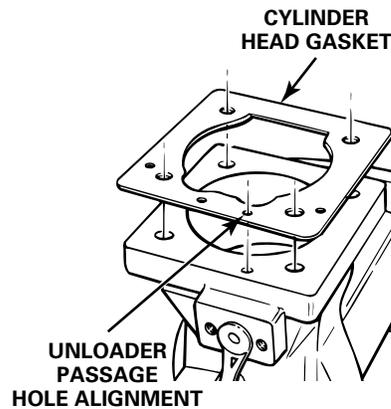
Figure 2

Remove the four bolts that attach the cylinder head to the crankcase.



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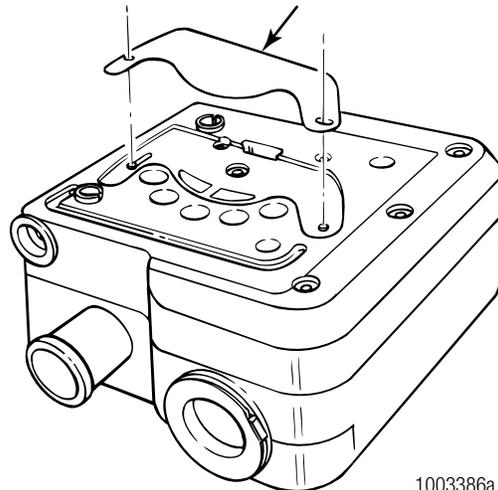
Figure 3



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Figure 4

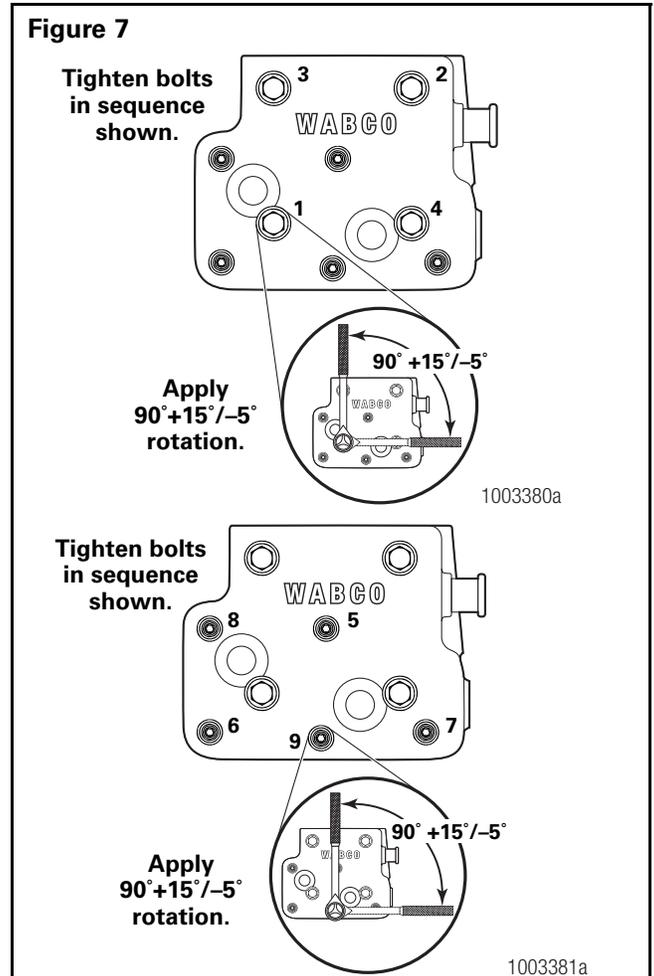
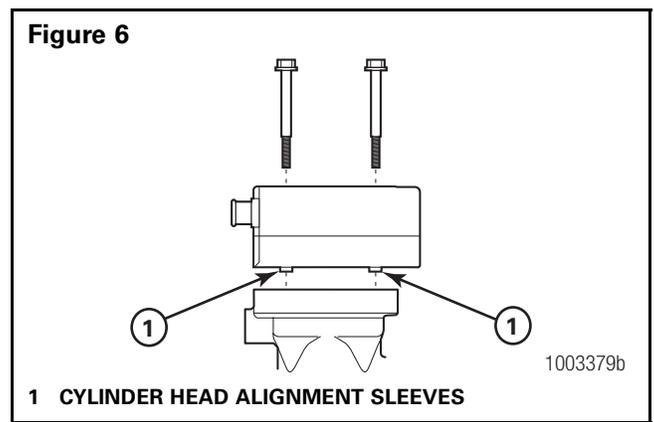
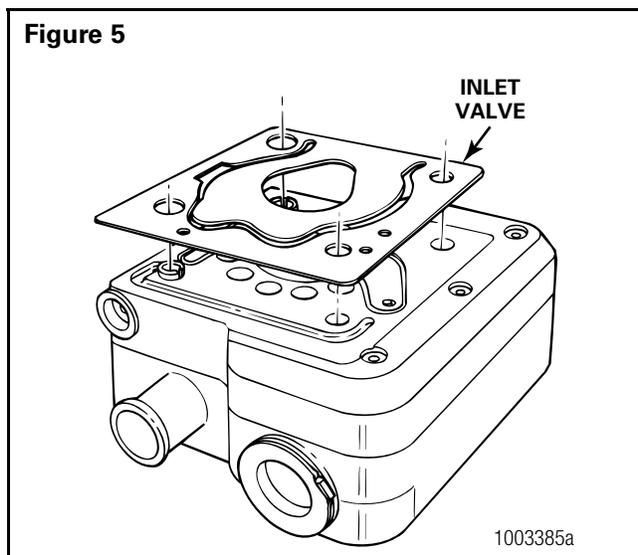
SLIDING LEAF VALVE



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NOTE: A light application of engine oil will hold the sliding leaf to the inlet valve.

3. Position the inlet valve on the bottom of the cylinder head. Align the large holes. **Figure 5.**
4. Flip the cylinder head over, being careful not to dislodge the sliding leaf and inlet valve.
5. Position the cylinder head on top of the crankcase. Ensure the notched pins on the cylinder head align with the recesses in the block. Only two bolt holes have cylinder head alignment sleeves. **Figure 6.**
6. Install the four hex head mounting bolts that hold the cylinder head in place. Tighten the mounting bolts in sequence (1 - 2 - 3 - 4) to 18.5 to ± 2.5 lb-ft (25 to ± 5 N•m). Then, apply $90^\circ + 15^\circ / -5^\circ$ rotation to the four cylinder head bolts. Use an angular gauge to check the rotation. **T**
7. Use a T-30 Torx® tool to tighten the five Torx® head screws in sequence (5 - 6 - 7 - 8 - 9) to 4.4 lb-ft (6 ± 0.6 N•m). Then, apply an additional $90^\circ + 15^\circ / -5^\circ$ rotation to the five Torx® head screws. Use an angular gauge to check the rotation. **Figure 7.** **T**
8. Connect all air and water lines leading to the cylinder head. Tighten per Mack specifications.
9. Add engine coolant to the cooling system. Use the coolant recommended by the engine manufacturer. Visually inspect the engine and compressor for leaks.
10. Test the installation before removing the wheel blocks. (Refer to Part III, Performance Testing.)



II. Compressor Removal and Installation

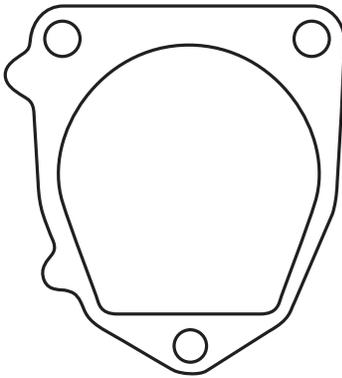
The removal instructions given in this manual are general. Depending on the type of vehicle involved, additional steps may be required. Refer to the vehicle manufacturer's manual for additional information.

The front of the Meritor WABCO System Saver 318 air compressor is mounted to the engine.

Before you remove the compressor, make sure you have a replacement gasket to install with the new compressor (Mack Part Number 590GB2159).

Figure 8.

Figure 8

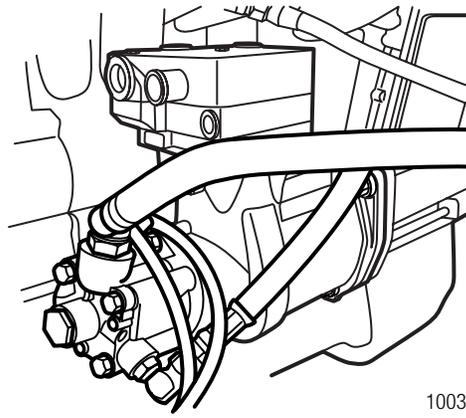


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A. Removal

1. Set the spring (parking) brakes and block the wheels of the vehicle.
2. Drain the air pressure from the air system.
3. Drain the engine cooling system and the cylinder head of the compressor.
4. Disconnect all air and water lines leading to the compressor.
5. **Through-drive version air compressor only:** If there is a power steering pump installed at the **back** of the compressor, remove the power steering pump. **Figure 9.** Disconnect the power steering pump. Refer to the manufacturer's manual for specific information. It is not necessary to remove pumps installed at the front of the compressor.

Figure 9

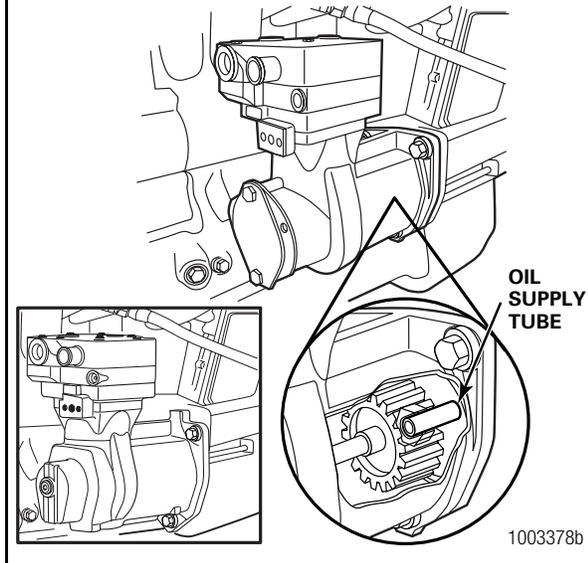


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6. Remove the discharge and coolant fittings. Note fitting locations to aid in assembly.
7. Loosen the three flange mounting bolts that hold the compressor to the engine.
8. Remove the compressor from the vehicle.

Remove and retain the oil supply tube that runs between the compressor and the engine. Figure 10.

Figure 10



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B. Installation

1. Reinstall the oil supply tube.
2. Install a new compressor gasket.
3. Position the compressor on the engine.
4. Install the three flange mounting bolts. Tighten to 15 lb-ft (20 N•m) +90° rotation. 
5. Attach the discharge and coolant fittings. Tighten to 22 lb-ft (30 N•m) +360° maximum to position fitting. 
6. Connect all air and water and lines leading to the compressor. Tighten per Mack specifications.
7. **Through-drive version air compressor only:** If necessary, reinstall the power steering pump. Refer to the manufacturer's maintenance manual to make sure the installation is to the proper specifications.
8. Add engine coolant to the cooling system. Use the coolant recommended by the engine manufacturer. Visually inspect the engine and compressor for leaks.
9. Start the engine and allow air system to build to governor cutout. Stop the engine. Use a soap and water solution at connection points to check for air leaks. Make any necessary repairs.
10. Test the installation before removing the wheel blocks. Follow the instructions in Part III, Performance Testing, of this bulletin.

III. Performance Testing

Test the vehicle air system as follows:

1. With wheels blocked and spring (parking) brakes applied, bleed the vehicle air system reservoir gauges down (apply brakes several times) to approximately 85 psi.
2. With the engine running at full governed speed (no load, no air accessories being used), the compressor should reach governor cutout pressure, then unload.

If the compressor does not reach governor cutout pressure, check for air leaks in the system. If reservoir volume and engine RPM are per original vehicle manufacturer's specifications, system plumbing leakage must be checked and, if necessary, repaired. See air system leakage test procedures which follow.

If the compressor fails to unload, verify proper governor operation.

Air System Leakage Test

(Conforms to North American Uniform Roadside Inspection Criteria)

1. Park the vehicle on a level surface. Apply the parking brakes. Disconnect any attached or towed vehicles (semi-trailer, full trailer, dolly, etc.). Leave engine on.
2. Chock the tires.
3. Release the parking brakes.
4. With the compressor in pumping mode, engine at idle and service brakes fully applied gauge must stay between 80-90 psi or gradually rise.

If pressure is not maintained (pressure drops) there is an air leak in the system.

Listen for air leaks. Soapy water or high frequency acoustic detectors may be used to detect any leaks. Make the necessary repairs.

MERITOR WABCO

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