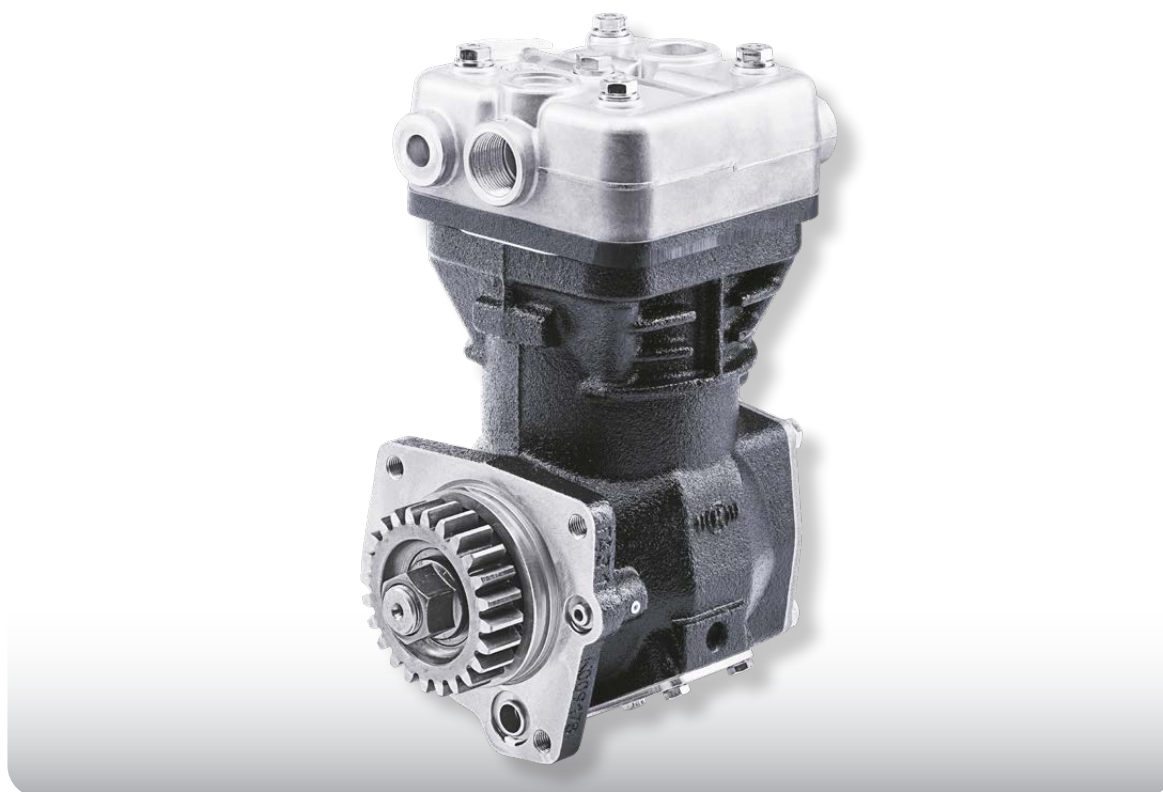


# INSTALLATION INSTRUCTIONS



## REPLACING AN AIR COMPRESSOR INSTALLATION GUIDELINES

## Safety and Environmental Guidelines:

Note: The safety advice listed below is applicable to general service and diagnostic work on braking systems. Also observe any recommendations from the axle or vehicle manufacturer concerning towing, jacking-up and securing the vehicle.

**CAUTION:** KNORR-BREMSE IS NOT LIABLE FOR ANY INJURIES OR DAMAGES CAUSED BY IMPROPER USE OF SPECIFIED SERVICE KITS AND/OR SERVICE TOOLS. FURTHERMORE, MISUSE OF TOOLS OR INCORRECT INSTALLATION OR APPLICATION OF SERVICE KITS MAY RESULT IN DAMAGE OR POTENTIALLY UNSAFE VEHICLE OPERATIONS. IN THIS CASE, KNORR-BREMSE DOES NOT HAVE ANY WARRANTY OBLIGATIONS.

Before and during working on or around compressed air systems and devices, the following precautions should be observed:

- 1 Always wear safety glasses when working with air pressure.
- 2 Never exceed the vehicle manufacturer's recommended air pressures.
- 3 Never look into air jets or direct them at anyone.
- 4 Never connect or disconnect a hose or line containing pressure; it may whip as air escapes.
- 5 When removing or servicing a product, ensure all pressure related to the specific system it is contained in has been depleted to 0 bar. Be aware that if the vehicle is equipped with an air dryer system, it can also contain air pressure along with its purge reservoir, if fitted, even after pressure has been drained from the other reservoirs.
- 6 If it is necessary to drain the air pressure from reservoirs, etc., keep away from brake actuator push rods and levers since they may move as system pressure drops. On vehicles fitted with air suspension, it is advised when undertaking such work, to support the chassis from sudden lowering and therefore prevent any possibility of being trapped between the chassis and axle or ground.
- 7 Park the vehicle on a level surface, apply the parking brakes, and always chock the wheels as depleting vehicle air system pressure may cause the vehicle to roll.
- 8 When working under or around the vehicle, and particularly when working in the engine compartment, the engine should be shut off and the ignition key removed. Where circumstances require that the engine be running, EXTREME CAUTION should be taken to prevent personal injury resulting from contact with moving, rotating, leaking, heated or electrically charged components. Additionally, it is advisable to place a clear sign on or near the steering wheel advising that there is work in progress on the vehicle.
- 9 When working on vehicles equipped with air suspension, to guard against injury due to unexpected downward movement of the chassis caused by sudden pressure loss in the suspension system, ensure that the vehicle chassis is mechanically supported with a 'prop' between the chassis and the axle or between the chassis and the ground.
- 10 Examine all pipework for signs of kinks, dents, abrasion, drying out or overheating. Be aware that kinks in pipework may result in air pressure being trapped in the pipework and associated equipment. Replacement hardware, tubing, hose, fittings, etc. must be of equivalent size, type and strength as original equipment and be designed specifically for such applications and systems. Check the attachment of all pipework; it should be installed so that it cannot abrade or be subjected to excessive heat.
- 11 Components with stripped threads or damaged/corroded parts must be replaced completely. Do not attempt repairs requiring machining or welding unless specifically stated and approved by the vehicle or component manufacturer.
- 12 Never attempt to install, remove, disassemble or assemble a device until you have read and thoroughly understood the recommended procedures. Some units contain powerful springs and injury can result if not properly dismantled and reassembled. Use only the correct tools and observe all precautions pertaining to use of those tools.
- 13 Before removing any device note its position and the connections of all pipework so that the replacement/serviced device can be properly installed. Ensure that adequate support or assistance is provided for the removal/installation of heavy items.
- 14 Only use genuine replacement parts, components and kits as supplied by Knorr-Bremse or the vehicle manufacturer. Only use the recommended tools as specified in related Knorr-Bremse instructions.
- 15 The serviced or replaced product must be checked for correct function and effectiveness.
- 16 If products have been dismantled, serviced or replaced, whose performance could affect braking performance or system behaviour, this should be checked on a roller dynamometer. Bear in mind that a lower performance may be experienced during the bedding-in phase if new brake pads/linings and/or brake discs/drums have been fitted.
- 17 The use of impact screwdrivers or impact wrenches in conjunction with Knorr-Bremse service tools for air disc brakes is not permitted. The service tools are not designed for such use. It is likely that the tools or the vehicle will be damaged and there is a serious risk of injury – see Caution on previous page.
- 18 Do not use compressed air to clean the disc brake. Avoid air contamination of brake dust.
- 19 Prior to returning the vehicle to service, make certain that all components and the complete brake systems are leak free and restored to their proper operating condition.

## Welding

To avoid damage to electronic components when carrying out electrical welding, the following precautions should be observed:

- 1 In all cases, before starting any electrical welding, remove all connections from any electronic control units or modules, noting their position and the order in which they are removed.
- 2 When re-inserting the electrical connectors (in reverse order) it is essential that they are fitted to their correct assigned position - if necessary this must be checked by PC Diagnostics.



## Disposal of Waste Equipment by Business Users in the European Union

This symbol on the product, packaging or in user instructions, indicates that this product must not be disposed of with other general waste. Instead, it is your responsibility to dispose of the waste electrical and electronic parts of this product by handing them over to a company or organisation authorised for the recycling of waste electrical and electronic equipment. For more information about arrangements for waste equipment disposal please contact your Knorr-Bremse distributor or local Knorr-Bremse representative.

CONTENT

1. Poor pump-up performance or excessive oil carry over . . . . .	3
2. Carbon formation in the compressor or delivery pipe . . . . .	4
3. Crankshaft/con rod wear. . . . .	4
4. Slippage of the drive gear . . . . .	4



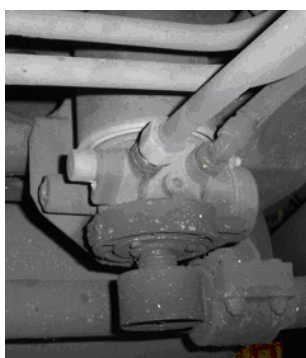
**Note:**  
When an air compressor is replaced it is important that any factors outside of the compressor which may have created the need for the replacement or have been created by the old compressor are eliminated otherwise the new compressor will not give the expected performance or durability.

**1. Poor pump-up performance or excessive oil carry over**

If the compressor is being replaced due to poor pump-up performance or excessive oil carry over, this may have been caused by one or several factors.

Carry out the following:

- Inspect the engine and compressor induction system for any blockage or damage to the inlet pipes. Check the condition of Induction Filter (check vehicle service records). Repair or replace as necessary.
- Establish the duty cycle of the compressor. If this is greater than 50% (compressor on-load more than 50% of running time) then check the air system for any leakage and ensure that the system pressure is in line with the vehicle manufacturer’s recommendations. Repair or replace as necessary.
- Check the condition of the air dryer exhaust. If there is oil or emulsified oil present (see photos) then replace the air dryer cartridge and check for any water/oil in the reservoirs - drain if necessary.



Normal air dryer exhaust



Air dryer exhaust with oil present

## 2. Carbon formation in the compressor or delivery pipe

If the Compressor is being replaced due to carbon formation in the compressor or delivery pipe, or due to reed valve/cylinder head/gasket failure, (leading to poor pump-up performance) check the following:

- All of the points in 1 above.
- Temperature of cooling air/coolant are within the engine/vehicle manufacturer's recommendations.
- Anti-freeze content of the coolant. If this is below the engine/vehicle manufacturer's recommendations then erosion can occur within the compressor.
- The condition of delivery pipe, but as this difficult to ascertain physically measure the pressure drop from the compressor outlet to the first reservoir. If this is greater than 1.5 bar then replace the compressor delivery pipe and also the fittings.

## 3. Crankshaft/con rod wear

If the compressor is being replaced due to crankshaft/con rod wear, check the following:

- Oil pressure and temperature should be within the vehicle/engine manufacturer's recommendations.
- Condition of engine oil filter (check vehicle service records).
- Frequency of change of the engine oil (check vehicle service records). Carry out oil change if necessary using oil to the vehicle/engine manufacturer's specification. Note: for modern engines good engine oil quality is essential for good compressor durability.
- Duty cycle of the compressor (see 1. above).

## 4. Slippage of the drive gear

If the compressor is being replaced due to slippage of the drive gear:

- Check the wear of the drive gear taper – use engineers' blue to check contact between crankshaft and gear. Replace the drive gear if necessary.
- Check that the crankshaft nut is in good condition and is tightened to the correct torque (see engine manufacturer's specification).
- If the drive gear is secured by a bolt, check that this is in good condition and does not 'bottom' in the threaded hole in the crankshaft – check that it is tightened to the correct torque (see engine manufacturer's specification).



Unworn gear



Worn gear



**WARNING!**

Remember to use only genuine Knorr-Bremse spares when servicing your Knorr-Bremse compressors

### Revision Details

Rev. 001	May 2022	Complete redesign
----------	----------	-------------------

**KEEP IT RUNNING**

**Up-to-date information on our products can be found on our website [truckservices.knorr-bremse.com](http://truckservices.knorr-bremse.com)**



**Knorr-Bremse Systems for Commercial Vehicles**

Moosacher Strasse 80 | 80809 Munich | Germany

Tel: +49 89 3547-0

Fax: +49 89 3547-2767

[truckservices.knorr-bremse.com](http://truckservices.knorr-bremse.com)

**Note**

All information is subject to change. A printed version of this document may therefore not correspond to the latest revision. To obtain the latest version, please visit our website [truckservices.knorr-bremse.com](http://truckservices.knorr-bremse.com) or contact a Knorr-Bremse representative in your area.

If service work is carried out on a vehicle based on information provided herein, it is the responsibility of the workshop to ensure the vehicle is fully tested and in full functional order before the vehicle is returned into service. Knorr-Bremse accepts no liability for problems caused as a result of appropriate tests not being carried out.

**Copyright © Knorr-Bremse AG**

All rights reserved, including industrial property rights applications. Knorr-Bremse AG retains any power of disposal, such as for copying and transferring.

**Disclaimer**

The information contained herein is intended for the exclusive use of trained persons within the commercial vehicle industry, and must not be passed on to any third party. All recommendations regarding products and their servicing or usage are with reference to Knorr-Bremse products and should not be considered applicable to products from other manufacturers. This information does not purport to be all-inclusive and no responsibility is assumed as a result of its use. We cannot accept any liability nor offer any guarantee regarding data accuracy, completeness or timeliness. The information does not represent any guarantee or ensured characteristics of the Products or Systems described. No liability can be accepted based on the information, its use, recommendations or advice provided. In no event may we be held liable for any damage or loss except in the case of wilful intent or gross negligence on our part, or if any mandatory legal provisions apply. This disclaimer is an English translation of a German text, which should be referred to for all legal purposes. Any legal disputes arising from the use of this information shall be subject to German law.