

Recommended Lubricants for Oil-free Air Screw Compressors of CD Series



NOTE

Our CD range provides absolute oil free air compression. Other rotating parts like gears need to be lubricated to ensure long life, high performance and reliability. This document provides you with all respective lubrication recommendation.

TYPE OF LUBRICANTS

We wish to draw the attention of our clients to the fact that proper lubrication of our high-tech machines is a major precondition for their reliable operation. Proper use of the most suitable lubricants helps achieve the best performance and avoid operational trouble.

For this reason we recommend that suitable oils having the following properties be used: non-ageing, anti-corrosive, low foaming tendency. The following types of oil have proved satisfactory in the past:

- Turbine oils L-TD according to DIN 51515, or
- Hydraulic oils HLP according to DIN 51524, part 2.

We are not in a position to test the suitability of the various types of lubricants available on the market since this involves long-term testing. For this reason we cannot release any individual lubricant either.

However, all lubricants meeting the requirements defined in these recommendations are generally admissible provided their use does not give rise to any adverse conditions.

SELECTION OF LUBRICANTS

Viscosity is the most important criterion of a lubricant for our compressors. It must be at least 20 mm²/s (cSt) at the inlet to the bearings or to the teeth mesh of the drive and timing gears. In selecting the lubricant, account must be taken of the temperatures involved since the oil viscosity is highly dependent on the respective temperature.

Normally an oil inlet temperature of 50 °C at the lube points is envisaged on water-cooled oil coolers used generally on compressor trains. When, however, air-cooled oil coolers are used, it is often possible to attain higher oil temperatures. For this reason we recommend a selection of basic viscosities as per the following table:

Oil inlet temp. °C	up to 50	up to 60	up to 70	up to 80
ISO viscosity class	VG 32	VG 46	VG 68	VG 100
Viscosity at 40 °C mm ² /s	28.8-35.2	41.4-50.6	61.2-74.8	90-110

In order to prevent wear on anti-friction bearings and drive and timing gears as far as possible, it is recommended that only oils containing wear-reducing additives - designed to at least ensure the FZG load stage 9 - be used.

ADMIXTURES, CONTAMINATIONS

• Water

Water in oil can cause lubricant break which could result in bearings failure. For this reason care must always be exercised to see that no water finds access into the oil tank.

• Dirt

Abrasive contaminations such as, for example, grinding or blasting residues, generally cause heavy bearing damage. It is therefore necessary that the lubricant is filtered in the most suitable manner (recommended filter fineness $\beta_{25} = 75$ according to ISO 4572).

When using oil filters with an internal bypass it must further be ensured that this is never activated. Particular attention has to be paid to the fact that the bypass is not even opened in the event of a machine cold start if the pressure loss rises due to increased viscosity.

Such an effect is particularly dangerous as in such a case any previously filtered-out residues would be washed into the bearings at a great concentration together with the oil.

Since even fresh oil frequently contains large amounts of contamination, it is recommended that the oil be filtered when filling the oil tank (recommended filter fineness $\beta_6 = 100$ according to ISO 4572).

COLD START

If the machines are operated in areas where the oil can cool down substantially during long shutdowns, then the oil must be heated with an oil heater to make it flow freely *before* re-starting the machine.

A starting oil viscosity of 1000 mm²/s is required for our CD series. Please refer to the VT diagrams of mineral oil companies to ascertain at what temperature this viscosity is attained.