

Mönninghoff electromagnetic tooth clutches

Series 546.00.3.0

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Page 1 of 2

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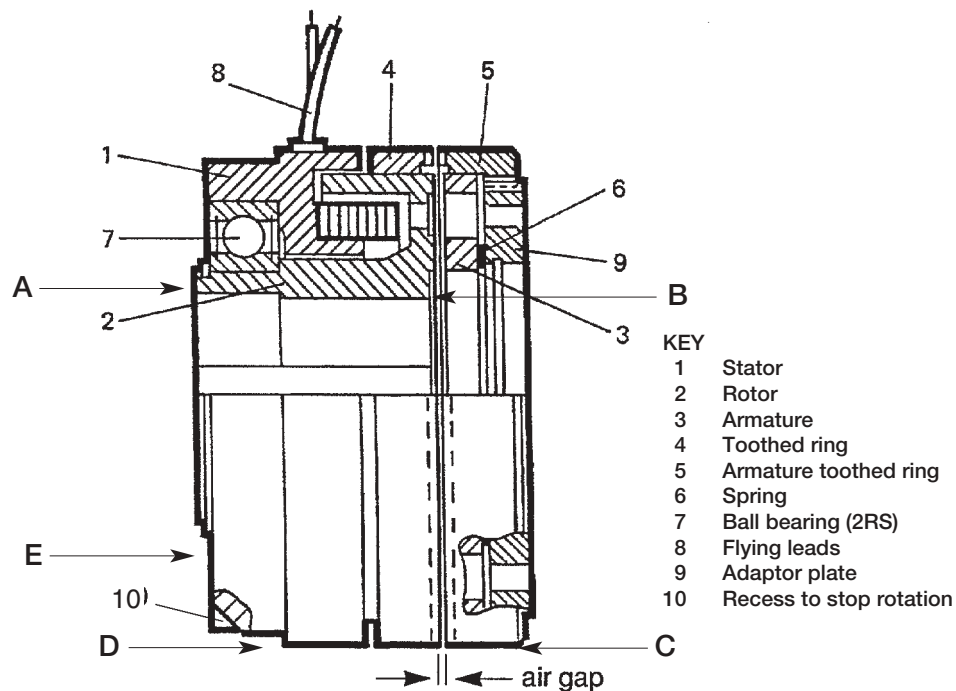
Fitting and operating instructions

1. Description

Mönninghoff electromagnetic tooth clutches series 24.546.00.3.0 are bearing mounted stationary field designs, suitable for oil or dry running.

These clutches transmit torque from a shaft with a keyway, through the rotor (2). When the coil in the stator (1) is energised, the armature (5) is pulled in and the torque is transmitted from the teeth on the face of the rotor (2) to the teeth on the face of the armature (5) and then by a second set of radial teeth to the adaptor plate (9). When the stator (1) is de-energised, the armature (5) is withdrawn by a flat prestressed spring (6).

Thus torque can be transmitted from the shaft to the adaptor plate. The clutch will equally well transmit torque in the reverse direction.



Clutches are designed for static or low speed engagement. The maximum engagement speed depends on the inertias, frequency of engagement, flexibility in the drive and the tooth form of the clutch. Standard teeth typically are limited in a range 10-40 r/min, other tooth forms can allow engagement up to about 200 r/min. Disengagement can be done at high speed.

2. Installation

Warning. The alignment between armature and rotor is critical if a long trouble free life is to be achieved. It is strongly recommended that both rotor and armature are mounted on the same shaft with a bearing to support the armature. In this way misalignment between these parts is not possible. The drive can be taken from the adaptor plate by chain or belt (offset drive) or by flexible coupling (inline drive).

Lenze

Lenze Ltd. Caxton Road, Bedford MK41 0HT
Tel: 01234 321321 • Fax: 01234 261815
EMail: sales@lenze.co.uk • www.lenze.co.uk

Vertical mounting of this unit is permissible.

The stator/rotor assembly should be fitted to a shaft with tolerance h7 to j6. Note the undercut under the bearing which prevents distortion of the bore. Use the full length of the keyway. Take care in pressing the assembly on to the shaft. Do not apply force at points C, D or E, use only points A and B. Do not hammer the assembly.

Prevent the stator from revolving using the recess (10) taking care not to apply force which will load the bearing.

Armatures are available in two designs. Types 4 and 6 have tapped holes in the adaptor plate for bolts to come in from outside the clutch. Types 5 and 7 have clearance holes for bolts to come in from the rotor side, the bolt head sits inside the armature plate.

Holes are also provided in the adaptor plate for dowel pins. If the connecting bolts can be supplied in high tensile material and torque tightened correctly, then dowel pins are unnecessary. Otherwise they should be fitted. Armatures are supplied assembled. The bore of the adaptor plate is toleranced and a circlip groove is provided so that a bearing can be fitted between the adaptor plate and the shaft which will ensure concentricity. Use shims and a spacer between this bearing and the rotor to set the air gap which is measured between the crowns of the two sets of teeth.

Clutch size	12	13	15	21	23	25	31	32
Air gap (mm) \pm 0.1	0.2	0.3	0.3	0.4	0.4	0.4	0.5	0.5

3. Electrical Connection

Clutches are normally operated from a 24 V d.c. supply. A transformer rectifier such as the Simplavolt is suitable.

The control switch is best placed on the d.c. side of the rectifier. Switching the a.c. line on the other side of the rectifier is possible but this results in longer switch off response times.

4. Oil Running

Dry running or running in an oil mist is possible. Do not immerse the clutch. Oils should be of a viscosity up to $24 \times 10^{-6} \text{ m}^2/\text{s}$ at 50°C ($3^\circ\text{E}/50^\circ\text{C}$).

5. Maintenance

Clutches are normally maintenance free in oil or dry running applications. The tooth rings cannot be replaced individually and where tooth damage occurs it is necessary to replace the complete clutch. It is recommended that you do not attempt to separate the stator from the rotor as this process is likely to damage the rotor.