

IEC Squirrel Cage Motors

Maintenance Instructions V1.05

Maintenance Instructions

1. General information

1.1. General

Work on electrical drives may be carried out by authorized specialist personnel only. All notes refer to standard motors in standard conditions in standard applications. In case of deviations, the specifications are to be correspondingly adapted.

1.2. Notes on safety

CAUTION

Before any work, it must be ensured that the drive is disconnected according to regulations (main, auxiliary and additional electrical circuits).

Drives or parts can reach temperatures > 50°C. The temperature must be checked.

Personal protective equipment is to be worn corresponding to circumstances (protective goggles ...)

In the case of cleaning agents, the directions for use are to be considered. Chemical agents must be compatible with the component parts of the machine.

2. Maintenance intervals

2.1. General

Thorough and regular maintenance work is necessary in order to identify faults at an early stage, and thus avoid ensuing damage.

Since the operating conditions and operating mode (e.g. FU operation) are very different, only general notice periods can be indicated with trouble-free operation. The maintenance intervals must therefore be adapted to local factors and the operating mode.

If condensate water openings are present, these must be opened at regular intervals according to climatic conditions.

2.2. Intervals

First inspection	->	After 500 operating hours	->	At the latest, after ½ year
Lubricating	->	See lubrication instruction plate		
Cleaning	->	According to local degree of contamination		
Main inspection	->	Approx. every 16,000 operating hours	->	At the latest, after 2 years
Cleaning				
- Possibly existing old-grease accumulation chambers and lubrication channels (with relubrication)				
- Cooling air paths	->	Cooling fins etc.		

2.3. First inspection

- Visual inspection
- Check the following when running:
 - That electric characteristic parameters are adhered to
 - That permissible temperatures in the bearing are not exceeded
 - That quiet running and bearing noises have not become worse
- Check the following at standstill:
 - No subsidence and cracks in the foundation
 - Secure seating of the nuts on the terminal studs (upper and lower nuts)
- Further tests are additionally necessary in case of special system-specific conditions

2.4. Main inspection

- Visual inspection
- Check the following when running:
 - That electric characteristic parameters are adhered to
 - That permissible temperatures in the bearing are not exceeded
 - That quiet running and bearing noises have not become worse

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- Check the following at standstill:

- No subsidence and cracks in the foundation
- Secure seating of the nuts on the terminal studs (upper and lower nuts)
- That the alignment of the three-phase AC current machine is within permissible tolerances
- That all fixing screws (for mechanical and electric connections) are securely tightened
- That the insulation resistance values of the windings are sufficiently large
- That lines and insulated parts are in proper condition and do not indicate any discoloration

- Further tests are additionally necessary with special system-specific conditions

3. Bearing support

The drives are equipped with roller bearings and grease lubrication. Above design size 280, relubrication equipment is available as standard, and is optional below this.

Only general notice periods can be indicated for the service life and relubrication. The operating hours are reduced in case of vertical machine installation, large vibration loading, frequent reverse operation, higher coolant temperature, higher rotation speeds etc. In case of a temperature increase of 10°C, this is halved e.g. the grease useful life and the relubrication schedule (relubrication schedules and grease useful life apply up to 40°C).

In case of longer storage time, the grease useful life of the bearing decreases. In case of permanent-lubrication bearings, the bearing service life decreases. A bearing replacement is recommended after a storage time of 12 months. After a storage time of 4 years, the bearing must be replaced.

3.1. Permanent-lubrication bearings

Motors with permanent-lubrication bearings have a recommended bearing replacement time under normal conditions as follows:

- KT 40°C, horizontal coupling operation -> 40,000 h
- KT 40°C, with axial and radial forces -> 20,000 h

The grease of the new bearing must have the following qualities and properties:

Motor heat class according to VDE 0530	Motor cooling temperature	Grease type of the bearing lubrication
F	-20... + 40°C	DIN 51825-K3N

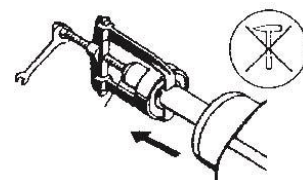
e.g. UNIREX N3 from ESSO (according to manufacturer: Run test B, in accordance with DIN 51806, passed at testing temperature +160°C)

The pulling off of roller bearings is basically to be implemented with a suitable pull-off device. We recommend a distance plate for the protection of the centering in the shaft end. To pull on the new bearing, this must be uniformly warmed up to approx. 80 - 100°C beforehand. Hard impacts (e.g. with a hammer, ...) are to be avoided.

Adjacent grease supply spaces are provided with a grease filling (e.g. in general 2/3 filled in the end shield for the purpose of sealing the shaft bore). The same grease type is to be provided for this as in the bearing. The mixing of different grease types is to be avoided.

NOTE: With replacement of the bearing, it is also recommended to renew sealing which is possibly existing and subject to wear (e.g. radial shaft seal).

Damaged parts are to be replaced by new items.



3.2. Bearings with relubrication equipment

In case of motors with relubrication equipment, relubrication schedules, grease quantity and grease type are to be taken from the rating plate or lubrication instruction plate.

In case of a storage time of more than 12 months, verification of the grease quality is to be carried out. If any de-oiling or dirt accumulation can be determined, relubrication must be carried out directly before the operational startup.

Lubricating:

- Clean the lubrication nipples (drive and non-drive side)
- Press in the prescribed grease with the quantity as specified in accordance with rating plate information, with machine running

Note: The bearing temperature first increases and later decreases to a normal value after the surplus grease has been forced out.

After approx. 4-6 relubrication operations, the bearing, lubrication channels and grease chambers must be cleaned of old grease. The ball bearing should be checked.