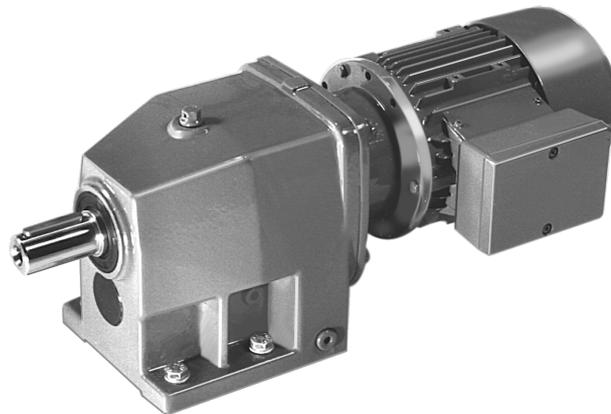




Operating and maintenance instructions

Helical geared motors NR/I



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Caution

It is presumed that fundamental project work as well as all work with regard to transport, assembly, installation, starting-up, maintenance and repair is performed by qualified personnel or supervised by skilled labour taking overall responsibility. Make absolutely sure that no voltage is applied at all while work is being done on the geared motor. Drive must also be secured against switching on.

Caution

Any deviation from normal operating conditions (increased power consumption, temperature, vibrations, noise etc.) or warning signals by monitoring equipment suggest malfunction. Inform the responsible maintenance personnel at once to prevent the trouble from getting worse and causing, directly or indirectly, serious physical injury or material damage.

In case of doubt disconnect the machine immediately!

Preparing and performing Installation

- Transport latches on drive are designed to carry the drive weight
- the foundation (base) should be of adequate size and vibration-proof
- install gear unit or geared motor rigid and braceless ensure sufficient ventilation
- make use of tapped hole (DIN 332) to suit fastening to the shaft end
- avoid shocks on shafts (bearing damage!)
- preferably use flexible coupling between output shaft and driven machine
- fit output elements to shaft end or secure feather key before starting the motor

Connection of motor

- connect motor according to diagram
- make sure that mains voltage/frequency are in accordance with nameplate information
- make secure protective conductor connection
- if motor is running in reverse direction, interchange two phases
- close unused cable entrances holes and the box itself in a dust- and watertight manner
- install protective switches to prevent overload and phase failure
- set motor protection switch to nominal current
- wiring diagrams on the last page

Starting up

- in case of long-time storage take special precautions (as provided in works standard sheet "Extended Storage")
- check position of oil-level plug with help of mounting position tables in applicable catalogue
- check oil-level
- prior to starting-up, remove vent plug from vent screw if necessary
- if not specified otherwise, first oil filling as shown in list of lubricants
- air-cooled motors are designed for ambient temperatures between -20°C and $+40^{\circ}\text{C}$ and for installation at altitudes ≤ 1.000 m above M.S.L.
- their use in hazardous areas is prohibited unless they are expressly intended for such use (follow additional instructions)

Maintenance

MOTOR

- remove dust deposit (overheating)
- dismount anti-friction bearings for cleaning and refill with grease
- ensure that the bearing cage is packed to about 1/3 with grease, distribute evenly
- select proper type of lubricating grease from following table

GEARBOX

- regular oil level check
- change lubricant every 10.000 working hours or after two years at the latest
- combine the lubrication change with thorough cleaning of gear unit
- lubricant changing intervals will be twice as long if synthetic products are used
- extreme working conditions (high air humidity, aggressive media and large temperature variations) call for reduced lubricant changing intervals

Synthetic and mineral lubricants must not be mixed either for filling or for disposal!

| Schmierstoffsorten / Type of lubricant / Type de lubrifiant | | | | | | | | | | | |
|--|---|--------------------------------------|------------------|-----------------------|----------------------------------|---|--|---|-----------------------|---|---|
| Schmierstoffart Type of lubricant Type de lubrifiant | Umgebungstemp. Ambient temp. Temp. ambiante °C | Viskosität Viscosity Viscosité | ARAL | BP | Castrol | DEA | Esso | KLOBER LUBRICATION | Mobil | Shell | TRIBOL |
| Mineralöl Mineral oil Huile minérale | - 5... 40 (normal) | ISO VG 220 | Degol BG 220 | Energol GR-XP 220 | Alpha SP 220 Alpha MW 220 | Deagear DX SAE 85W-90 Falcon CLP 220 | Spartan EP 220 | Klüberoil GEM 1-220 | Mobil- gear 630 | Shell Omala Oel 220 | Tribol 1100 / 220 |
| | - 15... 25 | ISO VG 100 | Degol BG 100 | Energol GR-XP 100 | Alpha SP 100 Alpha MW 100 | Deagear DX SAE 80W Falcon CLP 150 | Spartan EP 100 | Klüberoil GEM 1-100 | Mobil- gear 629 | Shell Omala Oel 100 | Tribol 1100 / 100 |
| | * - 50... -15 | ISO VG 15 | Vitolol 1010 | Bartran HV15 | Hyspin AWS 15 Hyspin SP 15 | Airkraft Hydraulic Oil 15 | Univis J 13 | Isoflex MT 30 rot | Mobil DTE 11 M | Shell Tellus Oel T 15 | Tribol 770 |
| Synthetisches Öl Synthetic Oil Huile synthétique | -10... 80 | ISO VG 680 | | | | | | Klübersynth GH 6-680 | | | Tribol 800 / 680 |
| | -20... 60 -40... -10 | ISO VG 220 ISO VG 32 | Degol GS 220 | Energyn SG-XP 220 | Alphasyn T 220 Alphasyn EP220 | Polydea PGLP 220 | Umlauföl S 220 | Klübersynth GH 6-220 Klübersynth GH 6-32 | Glygoyle 30 | Shell Tivela Oel WB | Tribol 800 / 220 |
| Fließfett (Mineralölbasis) Fluid grease (mineral oil base) Graisse fluide (base huile minérale) | - 20... 50 (normal) | | Aralub FDP 00 | Energrese FG-00 EP | CLS Grease | Orona GF 1464-00 | Fibrax EP 370 | Microlube GB 00 | Mobil- lex 44 | Shell Spezial- Getriebefett H Shell Grease S. 3655 | Molub-Alloy Fett 00 |
| Synthetisches Fließfett Synthetic fluid grease Graisse fluide synthétique | - 35... 60 | | Aralub SKA 00 | Energyn GSF | | Glissando 6833 EP 00 | Fließfett S 420 | Klübersynth GE 46 - 1200 | Glygoyle Grease 00 | Shell Tivela compound A | Tribol 800 / 1000 |
| Wälzlager / Anti friction bearings / Roulements à rouleaux | | | | | | | | | | | |
| Fett (Mineralölbasis) Grease (mineral oil base) Graisse (base huile minérale) | - 30... 60 | | Aralub HL 3 | Energrese LS 3 | LZV - EP | Glissando 30 | Mehrzweck- fett Beacon 3 | Centplex 3 | Mobilux 3 | Shell Alvania Fett G3 o. R 3 | Tribol 3030 |
| | * - 50... 110 | | Aralub HL 2 | Energrese LS 2 | | Glissando 20 Glissando FT 3 | Mehrzweck- fett Beacon 2 Unirex Lotemp EP | Centplex 2 | Mobilux 2 | Shell Alvania Fett G2 o. R 2 | Tribol 4020/220-2 Molub-Alloy 3780 |
| Synthetisches Fett Synthetic grease Graisse synthétique | * - 50... 110 | | Aralub SKL 2 | | Product 783/46 | Discor 8 - EP 2 | Beacon 325 | Isoflex Topas NB52 | Mobiltemp SHC 32 | Aero Shell Grease 16 oder 7 | Tribol 4747 / 220 - 2 |

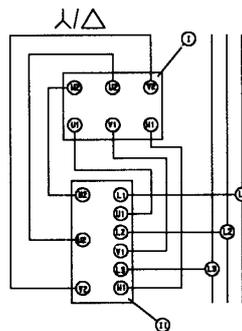
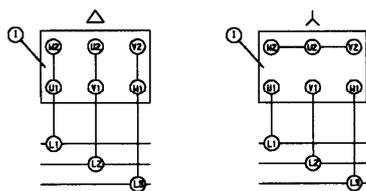
* Bei Umgebungstemperaturen unterhalb -30°C und oberhalb ca. 60°C sind Wellendichtringe in besonderer Werkstoffqualität einzusetzen.

* With ambient temperatures below -30°C and above approx. 60°C shaft sealing rings of a special material quality must be used.

* Lors d'une température ambiante inférieure à -30°C ou supérieure à environ 60°C, il y a lieu d'utiliser des joints d'étanchéité spéciaux.

Wiring diagrams

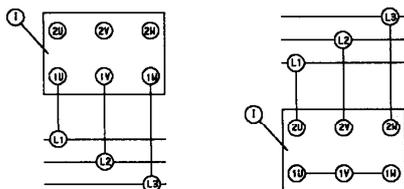
Drehstrom-Motor mit Kurzschlußanker
Three phase squirrel-cage motor
Moteur triphasé à cage d'écureuil



I) Klemmbrett
Terminal board
Plaque à bornes

II) Schalter
Switch
Démarreur

Drehstrom-Motor mit Kurzschlußanker, in Dahlander-Schaltung
Three phase squirrel-cage motor, Dahlander connection
Moteur triphasé à cage d'écureuil, couplage Dahlander

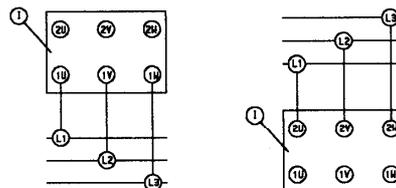


niedrige
low
inférieure

- Drehzahl
- speed
- vitesse

- hohe
- high
- supérieure

Drehstrom-Motor polumschaltbar, zwei getrennte Wicklungen, zwei Drehzahlen
Three phase motor, polechanging, two separate windings, two speeds
Moteur triphasé à commutation de pôles, deux bobinages séparés, deux vitesses



niedrige
low
inférieure

- Drehzahl
- speed
- vitesse

- hohe
- high
- supérieure

Capacity [cm³]

| Art.-Nr. | Type | Horizontal position | | | | | | | | Vertical position | | | |
|--|--------|---------------------|------|------|------|------|------|------|-------|-------------------|------|------|------|
| | | B3 | B6 | B7 | B8 | B5 | B5I | B5II | B5III | V1 | V3 | V5 | V6 |
| 431003xx 431014xx 431025xx 431038xx 431048xx 431059xx | SK 02 | 150 | 400 | 400 | 700 | 250 | 600 | 500 | 500 | 600 | 600 | 600 | 600 |
| 431024xx 431047xx 431058xx 431070xx 431081xx | SK 12 | 250 | 500 | 500 | 850 | 350 | 900 | 600 | 600 | 900 | 850 | 750 | 750 |
| 431002xx | SK 13 | 600 | 700 | 700 | 1100 | 850 | 1200 | 950 | 950 | 1200 | 1200 | 1200 | 1250 |
| 431036xx 431046xx 431069xx 431080xx | SK 22 | 500 | 1350 | 1350 | 2000 | 700 | 2000 | 1550 | 1550 | 1800 | 2000 | 1800 | 1800 |
| 431011xx 431034xx 431044xx | SK 23 | 1300 | 1600 | 1600 | 2300 | 2500 | 1500 | 2800 | 2800 | 2800 | 2600 | 2350 | 2400 |
| 431010xx | SK 33N | 1600 | 2300 | 2300 | 3200 | 1900 | 3500 | 2600 | 2600 | 4400 | 3400 | 4200 | 2900 |

Standard lubricant for the gearboxes is mineral oil. Synthetic oil is available at surcharge.