Assembly sequence

1. Remove any transport securing devices.
2. Loosen but do not remove tightening bolt and tighten gently by hand until there is no play between the flanges and the inner ring.
3. Slide the shrink disc onto the hollow shaft until the outer clamping flange is flush with the hollow shaft. The shrink disc is easier to slide on if the bore of the inner ring is lightly greased.
4. Prior to mounting, grease the solid shaft only in the area which will later come into contact with the bronze bush in the hollow shaft of the gear unit. Do not grease the bronze bush, in order to prevent grease penetrating the area around the shrink connection.
5. The hollow shaft of the gear unit must be completely de-greased and **completely free of grease.**
6. In the area of the shrink connection the solid shaft of the machine must be degreased and **completely free** of grease.
7. Insert the solid shaft of the machine into the hollow shaft so as to completely fill the area around the shrink connection.
8. Position the clamping flange by gently tightening the bolts.
9. Tighten the tensioning bolts successively in a clockwise direction by several turns – not crosswise – with approx. ¼ rotation per turn. Tighten the bolts with a torque wrench to the torque indicated on the shrink disc.
10. When the tensioning bolts have been tightened, there must be an even gap between the clamping flanges. If this is not the case, the gear unit must be dismantled and the shrink disc connection checked for correct fit.

Dismantling sequence:

1. Loosen the tensioning bolts successively in a clockwise direction by several turns with approx. ¼ rotation per turn. Do not remove the bolts from their thread.
2. Loosen the clamping flanges from the cone of the inner ring.
3. Remove the gear unit from the solid shaft of the machine.

If a shrink disk has been in use for a long period or is dirty, it must be dismantled, cleaned and the conical surfaces coated with Molykote G Rapid Plus or a similar lubricant before it is refitted. The threads and head surfaces of the screws must be treated with grease without Molykote. Any damaged or corroded elements must be replaced.

3.9 Fitting the covers

WARNING **Risk of injury**

There is a danger of injury due to shrink discs and freely rotating shaft journals.

- Use a cover (Option H and Option H66) as a guard.
- If this does not achieve sufficient protection against contact according to the required protection type, the machinery and plant constructor must ensure this by means of special attached components.

All fixing screws must be used and tightened to the correct torque (please see chapter 6.5 "Torque values"). For covers with Option H66, press in the new / new condition closing cap by tapping it lightly with a hammer.

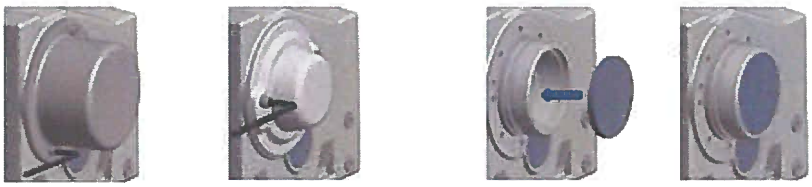


Figure 15: Fitting the covers, Option SH, Option H, and Option H66

3.10 Fitting the covers

WARNING **Risk of injury**

There is a danger of injury due to freely rotating shaft journals.

- Use a cover cap as a guard
- If this does not achieve sufficient protection against contact according to the required protection type, the machinery and plant constructor must ensure this by means of special attached components.

Many versions of the universal worm gear unit are supplied with plastic cover caps as standard. These cover caps protect the shaft sealing ring against the entry of dust and other possible contamination. The cover caps can be removed by hand without the use of tools and pushed onto the A or B side.

The cover cap must be removed before installing the universal worm gear unit. After installation is complete, the cover cap must be pushed into the threaded holes on the output flange on the corresponding side. Care must be taken that the cover cap is removed and pushed on vertically, in order not to damage the expansion elements of the cover cap.

Fig. 16: Removal and fitting of the cover cap

3.11 Fitting a standard motor

The maximum permitted motor weights indicated in the table below must not be exceeded when attaching the motor to an IEC/NEMA adapter:

Maximum permitted motor weights														
IEC motor size	63	71	80	90	100	112	132	160	180	200	225	250	280	315
NEMA motor size		56C	143T	145T	182T	184T	210T	250T	280T	324T	326T	365T		
Max. motor weight [kg]	25	30	40	50	60	80	100	200	250	350	500	700	1000	1500

WARNING **Risk of injury**

Severe injuries may be caused by rapidly rotating parts when installing and servicing couplings.

Secure the drive unit against accidental switch-on.

Assembly procedure to attach a standard motor to the IEC adapter (Option IEC/NEMA adapter)

1. Clean the motor shaft and flange surfaces of the motor and the IEC /NEMA adapter and check for damage. The mounting dimensions and tolerances of the motor must conform to DIN EN 50347/NEMA MG1 Part 4.
2. Push the coupling sleeve onto the motor shaft so that the motor parallel key engages into the groove in the sleeve on tightening.
3. Tighten the coupling sleeve on the motor shaft in accordance with the motor manufacturer's instructions until it touches the collar. With motor sizes 90, 160, 180 and 225, any spacer bushes must be positioned between the coupling sleeve and the collar. With standard helical gear units, dimension B between the coupling sleeve and the collar must be observed (see Figure 17). Certain NEMA adapters require adjustment of the coupling in accordance with the specifications indicated on the adhesive plate.
4. If the coupling half contains a threaded pin, the coupling must be secured axially on the shaft. The threaded pin must be coated prior to use with a securing lubricant e.g. Loctite 242, Loxeal 54-03 and tightened to the correct torque (please see chapter 6.5 "Torque values").

5. Sealing of the flange surfaces of the motor and the IEC/NEMA adapter is recommended if the motor is installed outdoors or in a humid environment. Before the motor is installed, the flange surfaces must be completely coated with surface sealant Loctite 574 or Loxeal 58-14 so that the flange seals after mounting.
6. Mount the motor on the IEC/NEMA adapter. Do not forget to fit the gear rim or the splined sleeve provided (see illustration below).
7. Tighten the bolts of the IEC/NEMA adapter with the correct torque (please see chapter 6.5 "Torque values").

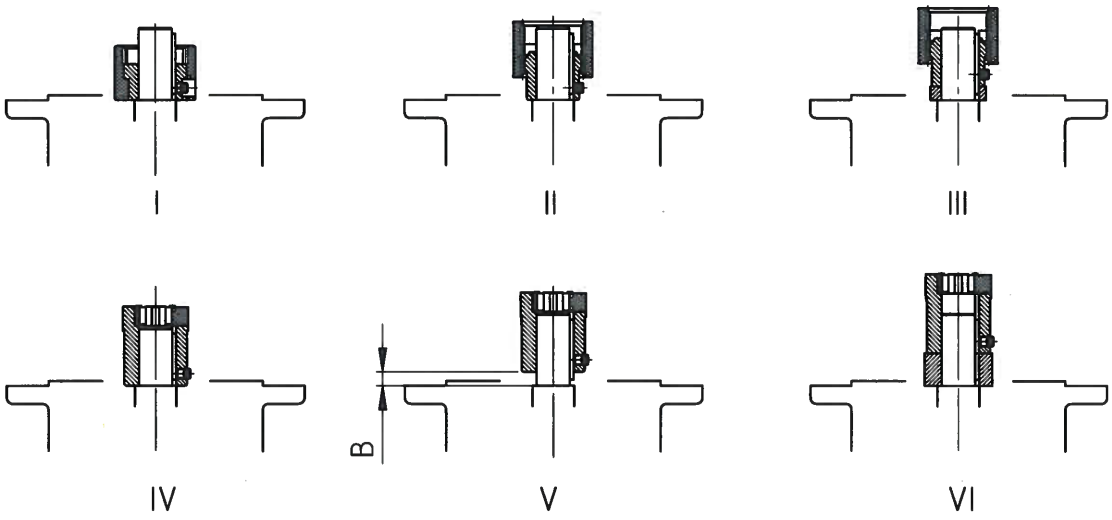


Figure 17: Fitting the coupling onto the motor shaft - various types of coupling

I Curved tooth coupling

II Curved tooth coupling, two-part

III Curved tooth coupling, two-part with spacer bush

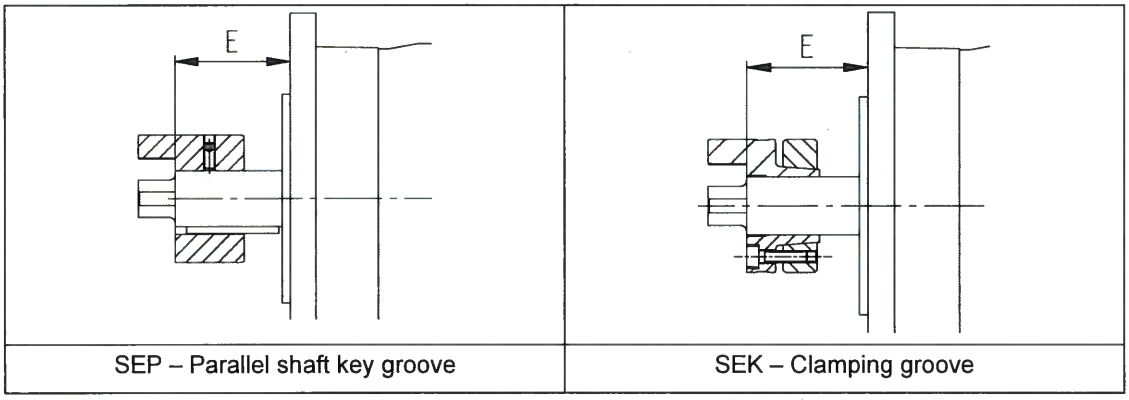
IV Claw coupling, two-part

V Claw coupling, two-part, observe dimension B:

Standard helical gear unit: SK 0, SK 01, SK 20, SK 25, SK 30, SK 33 (2-stage) SK 010, SK 200, SK 250, SK 300, SK 330 (3-stage)		
	IEC size 63	IEC size 71
Dimension B (Fig. V)	B = 4.5 mm	B = 11.5 mm

VI Claw coupling two-part with spacer bush

3.12 Installation of a servo motor (Option SEP / SEK)



SEP – Parallel shaft key groove	SEK – Clamping groove

E = Coupling installation size of flange system

Cylinder type	Coupling size*	Installation size E [mm]
SE. 100	GS 19	40
SE. 130	GS 24	50
SE. 165	GS 28	58
SE. 215	GS 28	80
	GS 48	80
SE. 300	GS 48	82

*) All coupling sizes are available as SEP or SEK versions, the ring gear has a hardness of (Shore) 98 Sh-A-GS, colour red

Table 4: Allocation of cylinder types to coupling sizes

To prevent damage to the coupling, the dimension E which is stated in Table 12 must be complied with!

Assembly sequence for the connection of a servo motor to the servo adapter (Option SEP / SEK)

Please refer to the coupling manufacturer's operating/installation instructions for the assembly of the two halves of the coupling.

3.13 Fitting the cooling coil to the cooling system

WARNING — **Risk of injury**

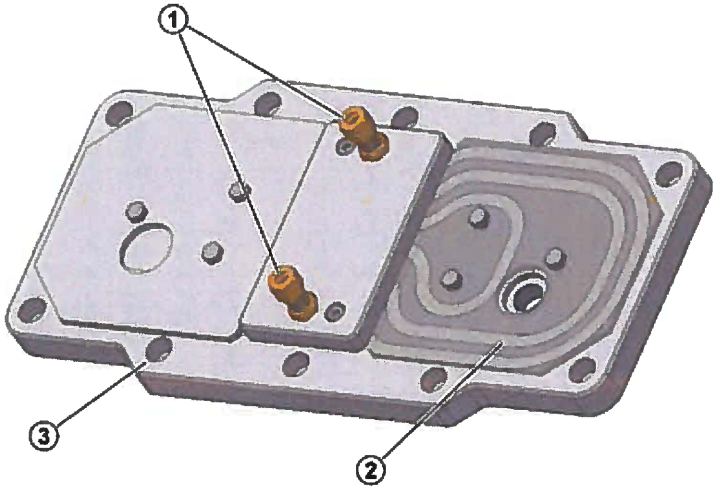
Possibility of injury due to pressure discharge.

Ensure that the pressure is released from the cooling circuit before carrying out any work on the gear unit.

The cooling coil is installed in the casing cover. Cutting ring screw threads according to DIN 2353 are located at the casing cover for the connection of a pipe with an external diameter of 10 mm.

Remove the closing cap from the screw neck prior to assembly to avoid any contamination of the cooling system. The screw necks should be connected with the coolant circuit, which must be provided by the operator. The flow direction of the coolant is irrelevant.

Make sure not to twist the screw necks during or after assembly as the cooling coil may be damaged. It must be ensured that no external forces act on the cooling coil.



	Explanation
1	Cutting ring screw threads
2	Cooling coil
3	Housing cover

Figure 18: Cooling cover

3.14 Installation of an oil expansion tank, Option OA

The expansion tank must be installed vertically with the hose connection facing downwards and the vent plug upwards. Please note the attached factory standard 0-530-04 for the installation.

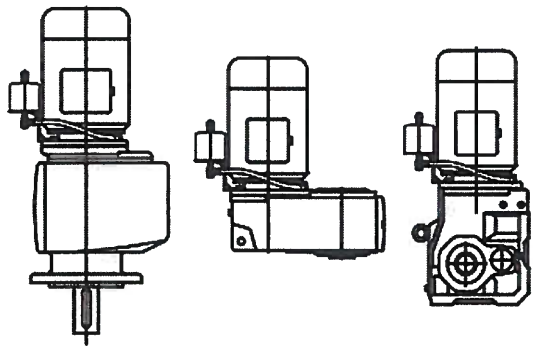


Figure 19: Installing the expansion tank

3.15 Subsequent paintwork

NOTICE **Damage to the device**

For retrospective painting of the gear unit, the radial seals, rubber elements, pressure venting valves, hoses, type plates, adhesive labels and motor coupling components must not come into contact with paints, lacquers or solvents, as otherwise components may be damaged or made illegible.

4 Commissioning

4.1 Check the oil level

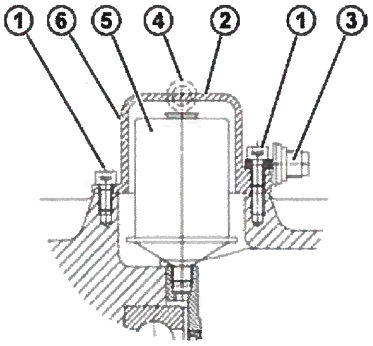
The oil level must be checked prior to commissioning (please see chapter 5.2 "Service and Maintenance Work").

4.2 Activating the automatic lubricant dispenser

Some gear unit types with standard motor (Option IEC/NEMA) have an automatic lubricant dispenser for the roller bearings. This dispenser must be activated prior to commissioning. The cartridge case cover of the adapter for attaching an IEC/NEMA standard motor has a red information sign for the activation of the lubricant dispenser. A grease escape opening which is closed with a G1/4 cap screw is located opposite to the lubricant dispenser. After activation of the lubricant dispenser, the cap screw can be removed and replaced with the grease collection container (Part No. 28301210) which is supplied separately with the delivery.

Activating the automatic lubricant dispenser:

1. Loosen and remove the cylindrical screws.
2. Remove the cartridge cover.
3. Screw the activation screw into the lubricant dispenser until the lug breaks off at the defined fracture point
4. Re-fit the cartridge cover and fasten it with the cylindrical screw (please see chapter 6.5 "Torque values").
5. Mark activation date on the adhesive label indicating the month/year



Explanation	
1	Cylindrical screw M8 x 16
2	Cartridge cover
3	Activation screw
4	Lug
5	Lubricant sensor
6	Position of adhesive label

Figure 20: Activating the automatic lubricant dispenser with standard motor mounting

Adhesive label:

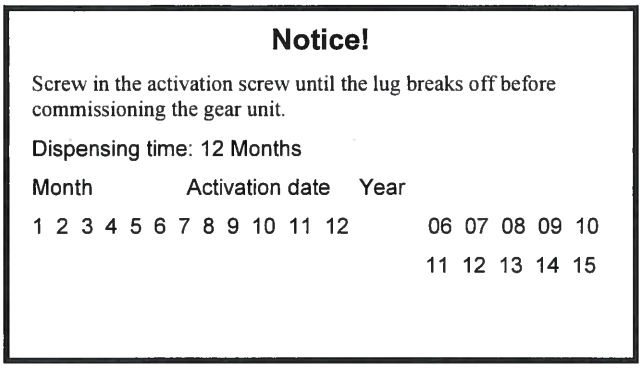


Figure 21: Adhesive label

4.3 Operation with lubricant cooling

Water cooling

NOTICE **Gear unit damage**

The gear unit may be damaged by overheating.

The drive may only be commissioned after the cooling spiral has been connected to the cooling circuit, and the cooling circuit has been put into operation.

The coolant must have a similar thermal capacity as water (specific thermal capacity at 20°C c=4.18 kJ/kgK). Industrial water without any air bubbles or sediments is recommended as a coolant. The hardness of the water must be between 1 dH and 15 dH; the pH value must be between pH 7.4 and pH 9.5. No aggressive liquids may be added to the coolant!

The **coolant pressure** must not exceed **8 bar**. The required **quantity of coolant** is **10 litres/minute**, and the **coolant inlet temperature** must not exceed 40°C; we recommend **10°C.**

We also recommend fitting a pressure reducer or similar at the coolant inlet to avoid damage due to excessive pressure.

If there is a danger of frost the operator should add a suitable anti-freeze solution to the cooling water.

The **temperature of the cooling water** and the **cooling water flow rate** must be supervised and ensured by the operator.

Air/Oil cooler

The version and all important data for the air/oil cooler can be obtained from Catalogue G1000, or contact the manufacturer of the cooling unit.

4.4 Running-in time for the worm gear unit

Information **Running-in time**

In order to achieve maximum efficiency of the worm gear unit, the gear unit must be subjected to a running-in period of approx. 25 h – 48 h under maximum load.

There may be a reduction in efficiency before the running-in period is complete.

4.5 Checklist

Checklist		
Subject of check	**Date checked:**	**Information see Section**
Is the vent plug activated or the pressure vent screwed in?		3.4
Does the required configuration conform with the actual installation?		6.1
Are the external gear shaft forces within permitted limits (chain tension)?		3.6
Is the torque support correctly fitted?		3.7
Are contact guards fitted to rotating components?		3.9
Is the automatic lubricant dispenser activated?		4.2
Is the cooling cover connected to the cooling circuit?		3.13 4.3

5 Service and maintenance

⚠ WARNING **Danger of burns**

The surfaces of gear units or geared motors may become hot during or shortly after operation.

- Installation and maintenance work must only be performed when gear unit is at a standstill and has cooled down. The drive must be isolated and secured to prevent accidental start-up.
- Wear protective gloves.
- Shield hot surfaces with contact guards.

5.1 Service and Maintenance Intervals

Service and Maintenance Intervals	Service and Maintenance Work	Information see Section
At least every six months	• Visual inspection • Check for running noises • Check the oil level • Re-grease / remove excess grease (only applicable for free drive shaft / Option W and for agitator bearings / Option VL2 / VL3) • Replace the automatic lubricator / remove excess grease (for operating times < 8 h / day): (A replacement interval of 1 year is permissible for the lubricant dispenser) (Only for IEC / NEMA standard motor mounting). Empty or replace the lubricant collection container with every second replacement of the lubricant dispenser.	5.2
For operating temperatures up to 80 °C every 10000 operating hours, at least every 2 years	• Change the oil (The interval is doubled if filled with synthetic products) • Cleaning or replacing the vent plug • Replace shaft sealing rings if worn	5.2
Every 20000 operating hours, at least every 4 years	• Re-lubrication of the bearings in the gear unit	5.2
At least every 10 years	• General overhaul	5.2

Information — **Oil change intervals**

The oil change intervals apply for normal operating conditions and operating temperatures up to 80 °C. The oil change intervals are reduced in the case of extreme conditions (operating temperatures higher than 80 °C, high humidity, aggressive environment and frequent fluctuations in the operating temperature).

5.2 Service and Maintenance Work

WARNING — **Severe personal injury**

Severe injury and material damage may be caused by incorrect servicing and maintenance work.

Servicing and maintenance work must only be performed by qualified specialist personnel. Wear the necessary protective clothing for servicing and maintenance work (e.g. industrial footwear, protective gloves, goggles, etc.)

WARNING — **Severe personal injury**

Risk of injury due to rapidly rotating and hot machine components.

Installation and maintenance work must only be performed when gear units are at a standstill and have cooled down. The drive must be isolated and secured to prevent accidental start-up.

WARNING — **Severe personal injury**

Particles or liquids thrown up during servicing and maintenance can cause injuries.

- Observe the safety information when cleaning with compressed air or a pressure washer.

WARNING — **Danger of burns**

Danger of burns due to hot oil.

- Allow the gear unit to cool down before carrying out maintenance or repair work.
- Wear protective gloves.

NOTICE — **Leaks**

Take care that no dirt or water enters the shaft sealing rings or the vents when cleaning

Dirt or water in the shaft sealing rings may cause leaks.

Visual inspection

The gear unit must be checked for leaks. In addition, the gear unit must be inspected for external damage and cracks in the hoses, hose connections and rubber buffers. Have the gear unit repaired in case of leaks, e.g. dripping gear oil or cooling water, damage or cracks. Please contact the NORD service department.

Information — **Shaft sealing rings**

Shaft sealing rings are rubbing seals and have sealing lips made from an elastomer material. These sealing lips are lubricated with a special grease at the factory. This reduces the wear due to their function and ensures a long service life. An oil film in the region of the rubbing sealing lip is therefore normal and is not due to leakage.(please see chapter 6.7 "Leaks and seals")

Check for running noises

If the gear unit produces unusual running noises and/or vibrations, this could indicate damage to the gear unit. In this case the gear should be shut down and a general overhaul carried out.

Check the oil level

Section 6.1 "Configurations and maintenance" describes the versions and the corresponding oil level screws. With double gear units, the oil level must be checked on both units. The pressure vent must be at the position marked in Section 6.1 "Configurations and maintenance"Bauformen und Wartung</dg_ref_source_inline>.

The oil level does not need to be checked on gear units without oil level screw (please see chapter 6.1 "Configurations and maintenance").

Gear unit types that are not supplied full of oil must be filled before the oil level is checked.

Check the oil level with an oil temperature of between 20 °C to 40 °C.

1. The oil level may only be checked when the gear unit is at a standstill and has cooled down. The gear unit must be secured to prevent accidental switch-on.
2. The oil level screw corresponding to the version must be screwed out (please see chapter 6.1 "Configurations and maintenance").

Information — **Checking the oil level**

At the first oil level check a small amount of oil may escape, as the oil level may be below the lower edge of the oil level hole.

3. **Gear units with oil level screw:** The correct oil level is at the lower edge of the oil level hole. If the oil level is too low, this must be corrected using the correct type of oil. An oil level glass is available instead of the oil level screw
4. **Gear units with an oil level tank:** The oil level must be checked in the oil level tank with the aid of the dipstick plug (thread G1 1/4). The oil level must be between the upper and lower marking when the dipstick is fully screwed in (see Figure 22). Top up the oil level with the relevant type of oil as necessary. These gearboxes may only be operated in the configuration stated in Section 6.1 "Configurations and maintenance".
5. The oil level screw or the cap screw with dipstick and all other loosened screws must be correctly re-tightened.

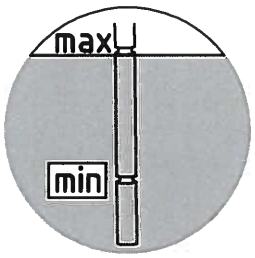


Figure 22: Checking the oil level with a dipstick

Re-greasing

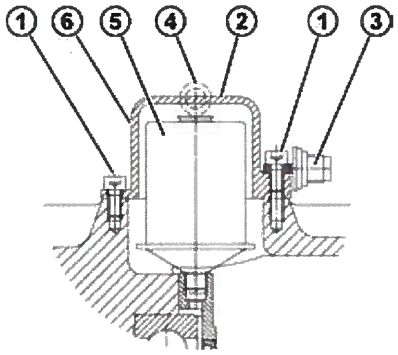
Some gear unit designs (free drive shaft, Option W, agitator designs VL2 and VL3) are equipped with a re-greasing device.

For agitator versions VL2 and VL3, the vent screw located opposite to the grease nipple must be unscrewed before re-greasing. Grease should be injected until a quantity of 20 - 25 g escapes from the vent hole. After this, the vent plug must be reinserted and tightened.

For Option W and some IEC adapters, the outer roller bearing must be re-greased with approx. 20 - 25 g of grease via the grease nipple provided. Remove any excess grease from the adapter.

Recommended grease: Petamo GHY 133N (please see chapter 6.2 "Lubricants") (Fa. Klüber Lubrication).

Replacing the automatic lubricant dispenser



	Explanation
1	Cylindrical screws M8 x 16
2	Cartridge cover
3	Activation screw
4	Lug
5	Lubricant sensor
6	Position of adhesive label

Figure 23: Replacing the automatic lubricant dispenser with standard motor mounting

The cartridge cover must be unscrewed. The lubrication dispenser is screwed out and replaced with a new component (Part No. 283 0100). Remove any excess grease from the adapter. Then activate (please see chapter 4.2 "Activating the automatic lubricant dispenser").

Empty or replace the grease collection container (Part No. 28301210) with every second replacement of the lubricant container. To empty the container, unscrew it from the screw fitting. The container has an internal piston, which can be pressed back with a rod with a maximum diameter of 10 mm. Collect the grease which is pressed out and dispose of it correctly. Due to the shape of the container, a residual quantity of grease remains in the container. After emptying and cleaning the container, it can be screwed back into the drain hole in the IEC adapter. Replace the container with a new one if it is damaged.

Change the oil

The figures in Section 6.1 "Configurations and maintenance" show the oil drain screw, the oil level screw and the pressure vent screw for various designs.

Procedure:

1. Place a catchment vessel under the oil drain screw or the oil drain cock.
2. Completely remove the oil level screw or screwed sealing plug with dipstick if an oil level tank is being used and unscrew oil drain screw.

WARNING **Danger of burns**

Danger of burns due to hot oil.

- Allow the gear unit to cool down before carrying out maintenance or repair work.
- Wear protective gloves.

3. Drain all the oil from the gear unit.
4. If the sealing ring of the oil drain screw or oil level screw is damaged in the thread, a new oil level screw must be used or the thread must be cleaned and coated with securing lubricant, e.g. Loctite 242, Loxeal 54-03 prior to insertion.
5. Screw the oil drain screw into the hole and tighten to the correct torque (please see chapter 6.5 "Torque values").
6. Using a suitable filling device, refill with oil of the same type through the oil level hole until oil emerges from the oil level hole. (The oil can also be filled through the pressure vent screw or a sealing plug located higher than the oil level). If an oil level tank is used, fill the oil through the upper inlet (thread G1¼) until the oil level is set as described in Section 5.2 "Service and Maintenance Work".
7. Wait at least 15 minutes, or at least 30 minutes if an oil level tank is used, and then check the oil level. Proceed as described in Section 5.2 "Service and Maintenance Work".

Information — **Oil level**

The oil does not need to be changed on gear units without oil level screw (please see chapter 6.1 "Configurations and maintenance"). These gear units are lubricated for life.

Standard helical gear units have no oil level screw. Here, the oil is topped up through the pressure vent bolt using the quantities listed in the table in Section 6.4 "Helical gear unit".

Cleaning or replacing the vent plug

Unscrew the vent screw and thoroughly clean it (e.g. with compressed air) and fit the vent screw in the same place, If necessary, use a new vent screw with a new sealing ring.

Replace the shaft sealing ring

Once the shaft sealing ring has reached the end of its service life, the oil film in the region of the sealing lip increases and a measurable leakage with dripping oil occurs. **The shaft sealing ring must then be replaced.** The space between the sealing lip and the protective lip must be filled approximately 50 % with grease on fitting (recommended grease: PETAMO GHY 133N). Take care that after fitting, the new shaft sealing ring does not run in the old wear track.

Re-lubricating bearings

For bearings which are not oil-lubricated and whose holes are completely above the oil level, replace the roller bearing grease (recommended grease: PETAMO GHY 133N). Please contact the NORD service department.

General overhaul

For this, the gear unit must be completely dismantled. The following work must be carried out:

- Clean all gear unit components
- Examine all gear unit components for damage
- All damaged components must be replaced
- All roller bearings must be replaced
- Replace back stops if fitted
- Replace all seals, radial seals and Nilos rings
- Replace plastic and elastomer components of the motor coupling

The general overhaul must be carried out by qualified personnel in a specialist workshop with appropriate equipment in observance of national regulations and laws. We recommend that the general overhaul is carried out by the NORD Service department.

6 Appendix

6.1 Configurations and maintenance

Explanation of symbols for the following version illustrations:

Venting

Oil level

Oil drain

Information **Gear unit - Lubrication**

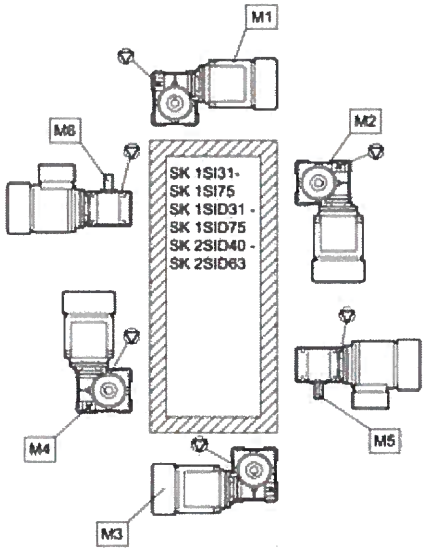
SK 320, SK 172, SK 272, SK 372 as well as SK 273 and SK 373, SK 01282 NB, SK 0282 NB, SK 1382 NB and UNIVERSAL / MINIBLOC gear units are lubricated for life. These gear units do not have an oil filler screw.

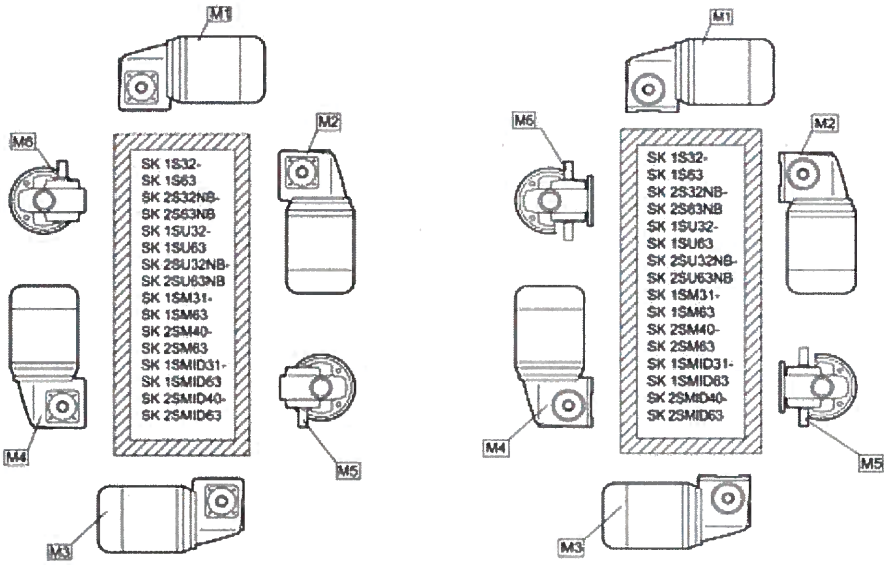
UNIVERSAL / MINIBLOC worm gear units

NORD UNIVERSAL / MINIBLOC worm gear units are suitable for all installation positions. They have an oil filler which is independent of the configuration.

As an option, types SI and SMI can be equipped with a vent screw. Gear units with vents must be installed in the stated position.

Types SI, SMI, S, SM and SU as 2-stage gear unit types and types SI, SMI as worm gear units for direct motor mounting have an oil filler which depends on the configuration and must be installed in the stated position.





Parallel shaft gear units with oil level tank

The following applies for SK 9282, SK 9382, SK 10282, SK 10382, SK 10382.1, SK 11282, SK 11382, SK 11382.1 and SK 12382 in the M4 configuration with oil level tank:

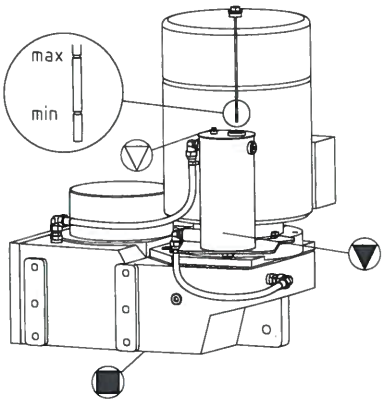
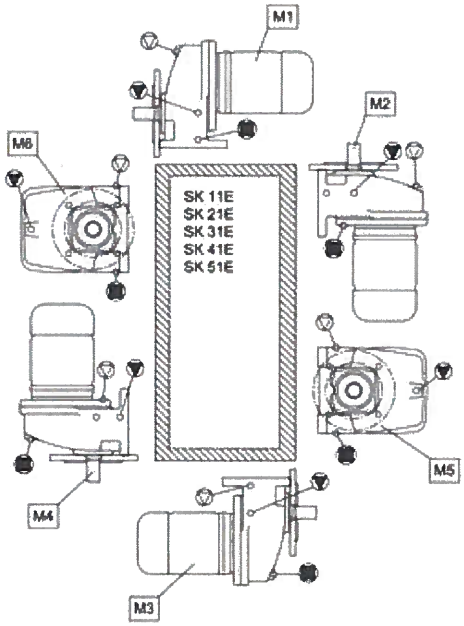
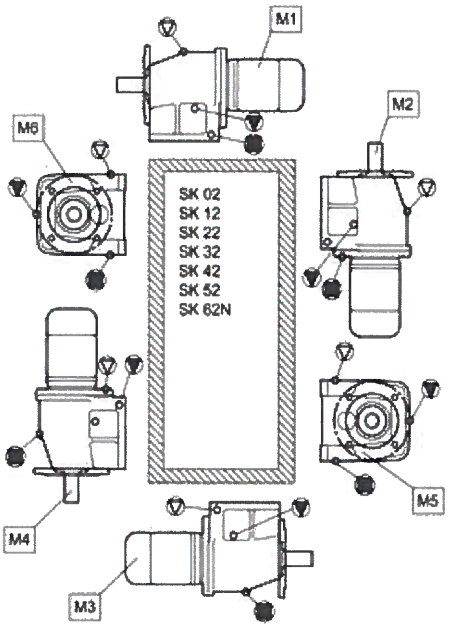
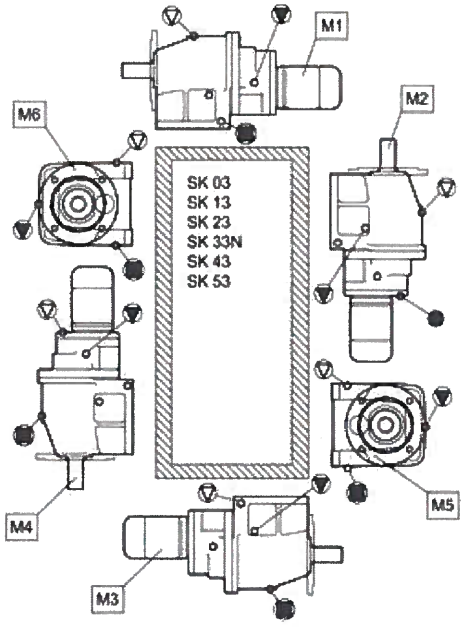
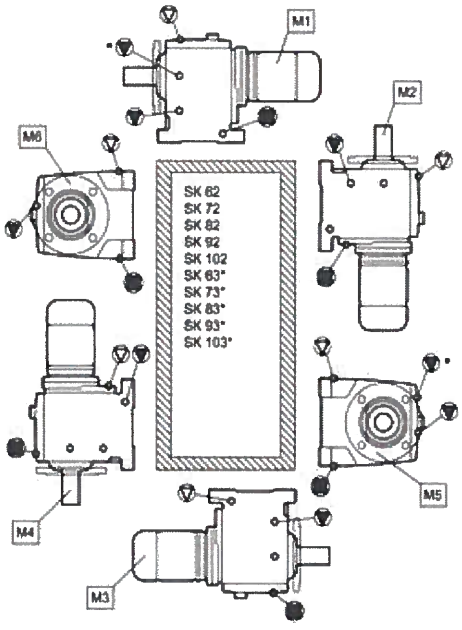


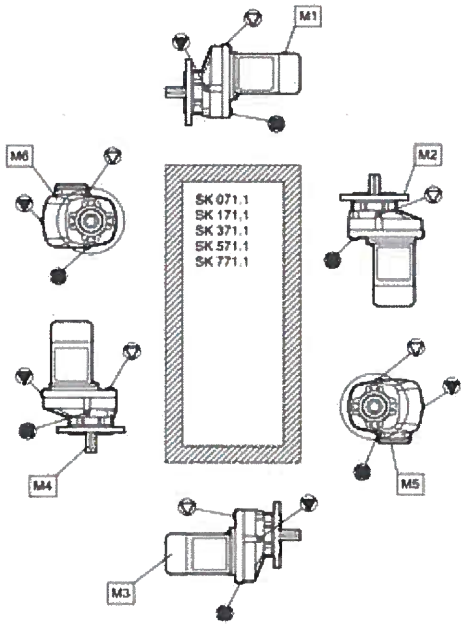
Figure 24: Oil level check with oil level tank

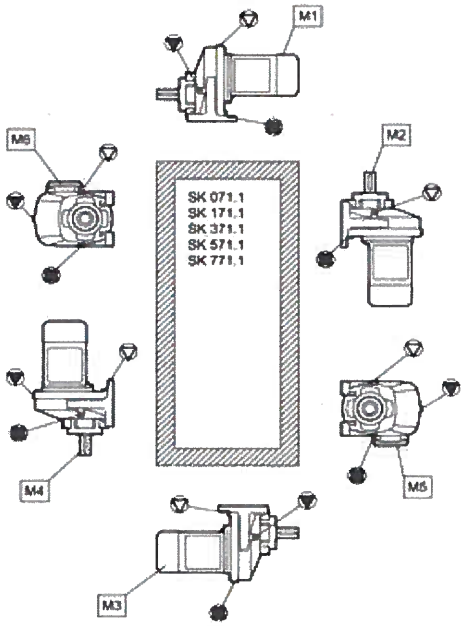

M1
M2
M6
SK 11E
SK 21E
SK 31E
SK 41E
SK 51E
M5
M4
M3

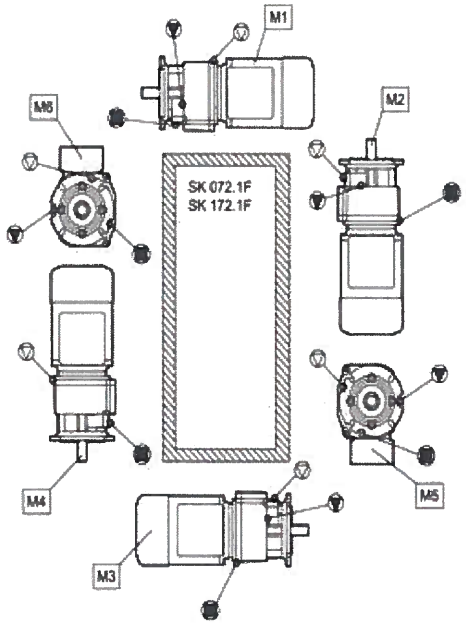

M1
M2
M6
SK 02
SK 12
SK 22
SK 32
SK 42
SK 52
SK 62N
M5
M4
M3

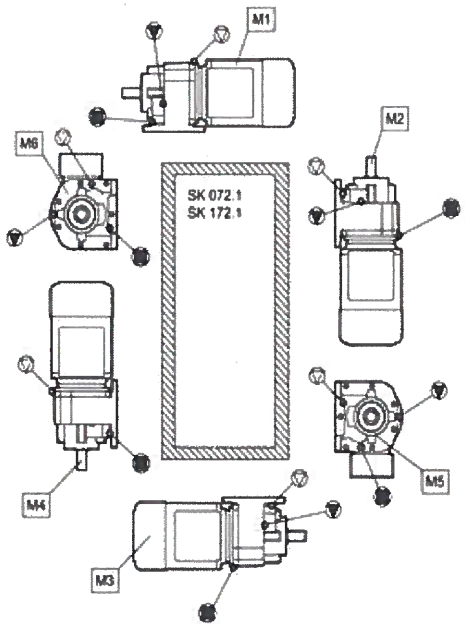

M1
M2
M6
SK 03
SK 13
SK 23
SK 33N
SK 43
SK 53
M5
M4
M3

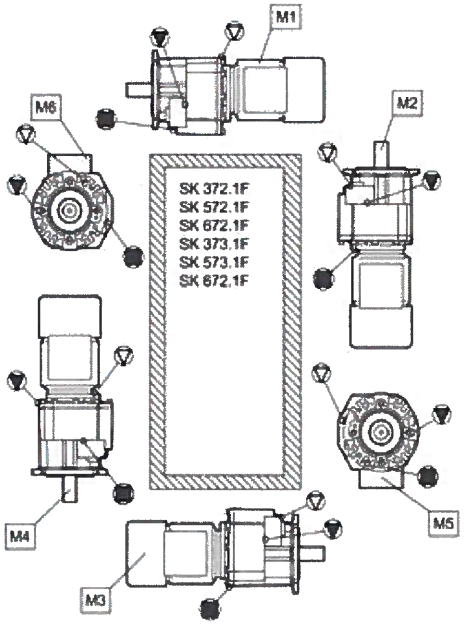

M1
M2
M6
SK 62
SK 72
SK 82
SK 92
SK 102
SK 63*
SK 73*
SK 83*
SK 93*
SK 103*
M5
M4
M3

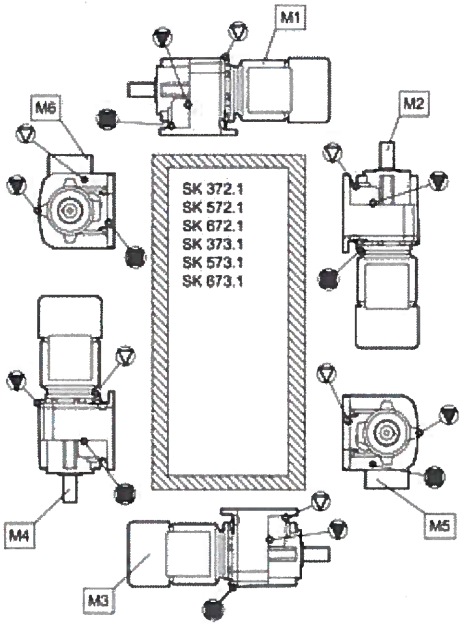

M1
M6
M2
SK 071.1
SK 171.1
SK 371.1
SK 571.1
SK 771.1
M4
M5
M3

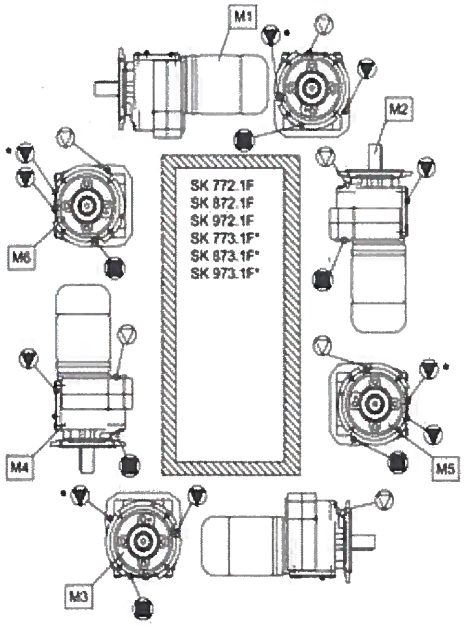

M1
M6
M2
SK 071.1
SK 171.1
SK 371.1
SK 571.1
SK 771.1
M4
M5
M3

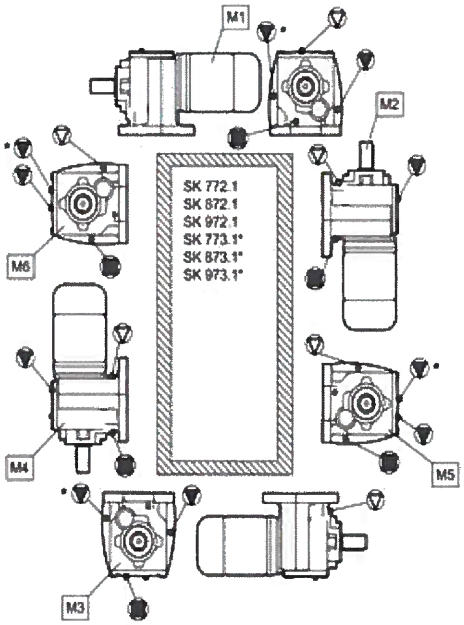

M1
M6
M2
SK 072.1F
SK 172.1F
M4
M5
M3

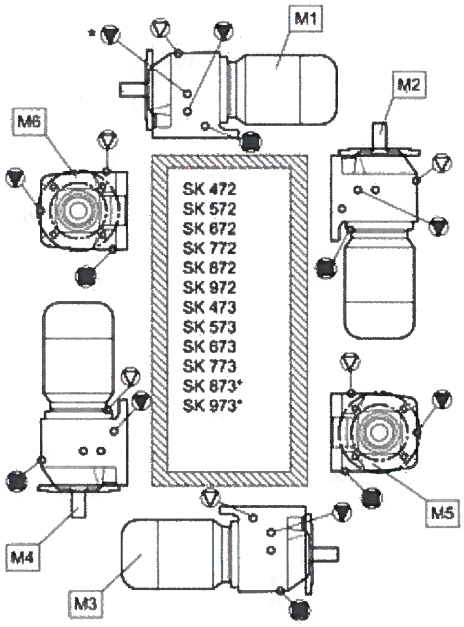

M1
M6
M2
SK 072.1
SK 172.1
M4
M5
M3

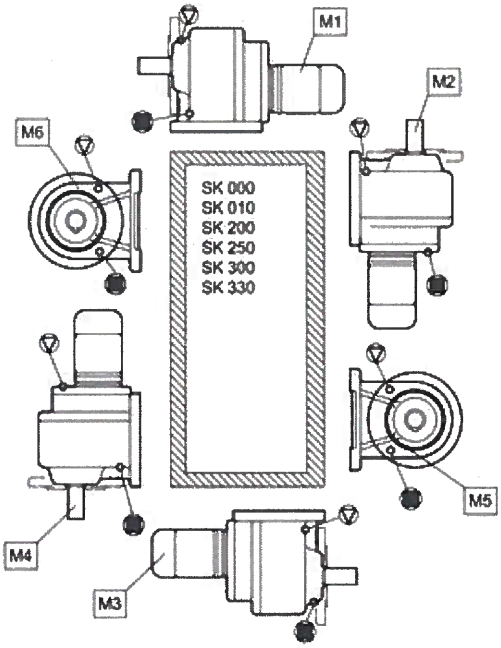

M1
M2
M3
M4
M5
M6
SK 372.1F
SK 572.1F
SK 672.1F
SK 373.1F
SK 573.1F
SK 673.1F

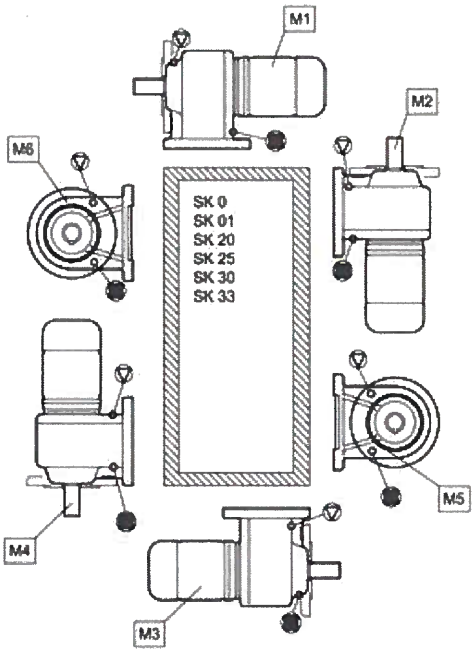

M1
M2
M3
M4
M5
M6
SK 372.1
SK 572.1
SK 672.1
SK 373.1
SK 573.1
SK 673.1

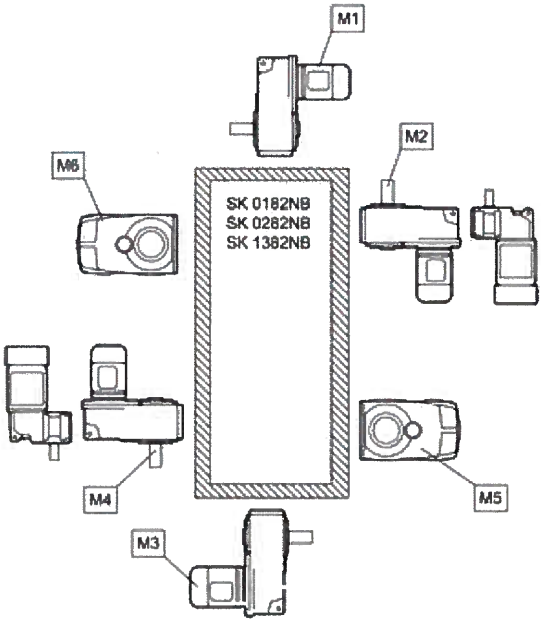

M1
M2
M3
M4
M5
M6
SK 772.1F
SK 872.1F
SK 972.1F
SK 773.1F*
SK 873.1F*
SK 973.1F*

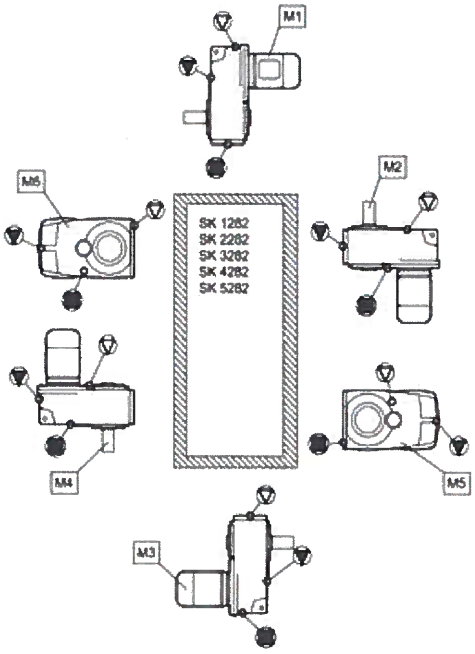

M1
M2
M3
M4
M5
M6
SK 772.1
SK 872.1
SK 972.1
SK 773.1*
SK 873.1*
SK 973.1*

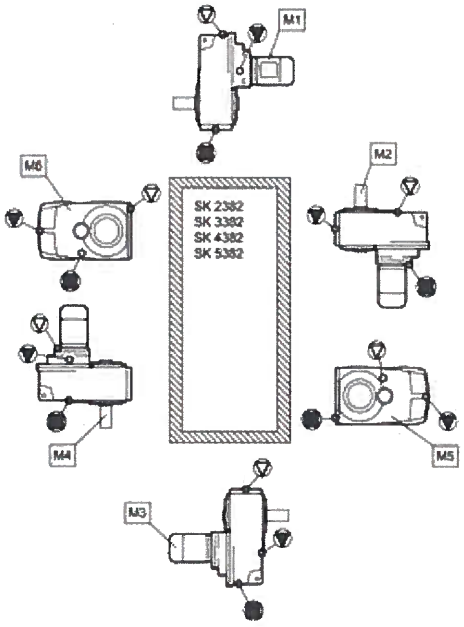

M1
M2
M6
SK 472
SK 572
SK 672
SK 772
SK 872
SK 972
SK 473
SK 573
SK 673
SK 773
SK 873*
SK 973*
M5
M4
M3

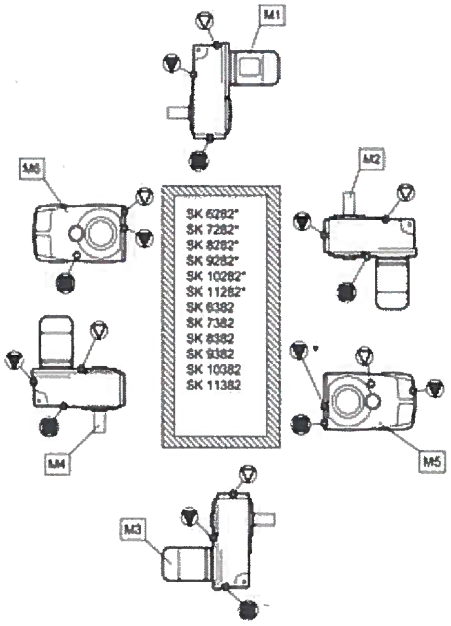

M1
M2
M6
SK 000
SK 010
SK 200
SK 250
SK 300
SK 330
M5
M4
M3

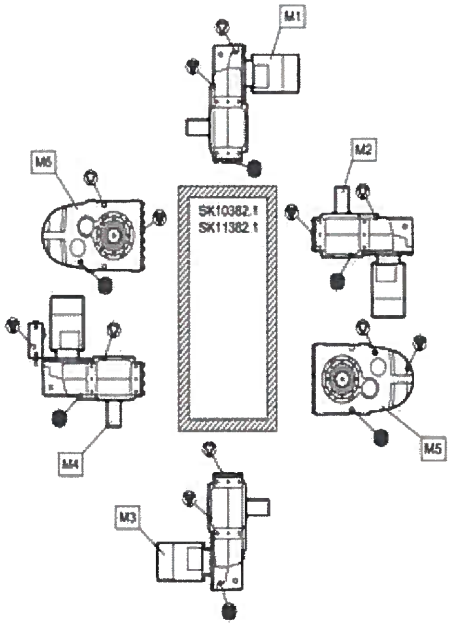

M1
M2
M6
SK 0
SK 01
SK 20
SK 25
SK 30
SK 33
M5
M4
M3

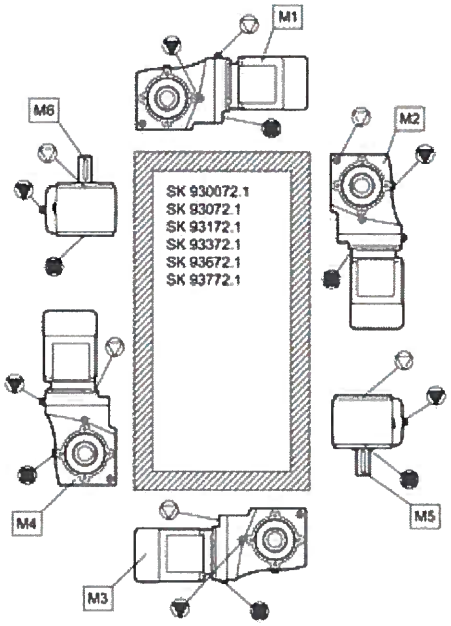

M1
M2
M6
SK 0182NB
SK 0282NB
SK 1382NB
M4
M5
M3

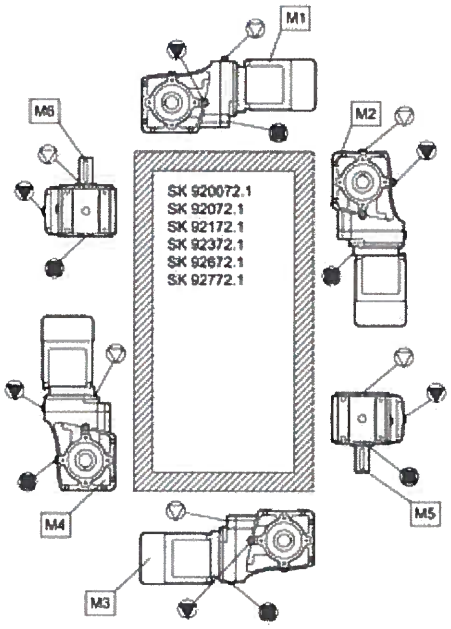

M1
M6
SK 1282
SK 2282
SK 3282
SK 4282
SK 5282
M2
M4
M5
M3

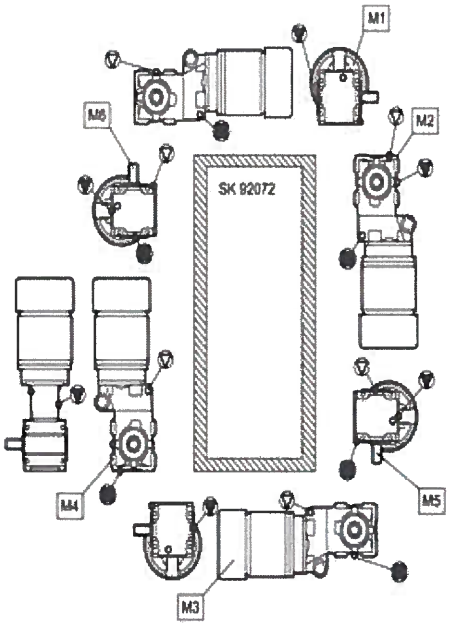

M1
M6
SK 2382
SK 3382
SK 4382
SK 5382
M2
M4
M5
M3

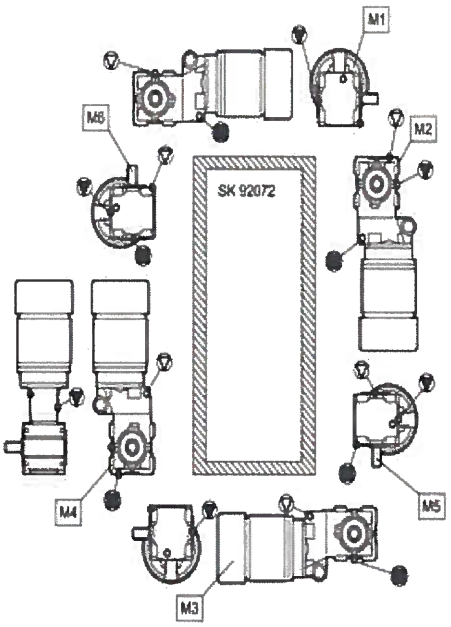

M1
M6
M2
SK 6282*
SK 7282*
SK 8282*
SK 9282*
SK 10282*
SK 11282*
SK 6382
SK 7382
SK 8382
SK 9382
SK 10382
SK 11382
M4
M5
M3

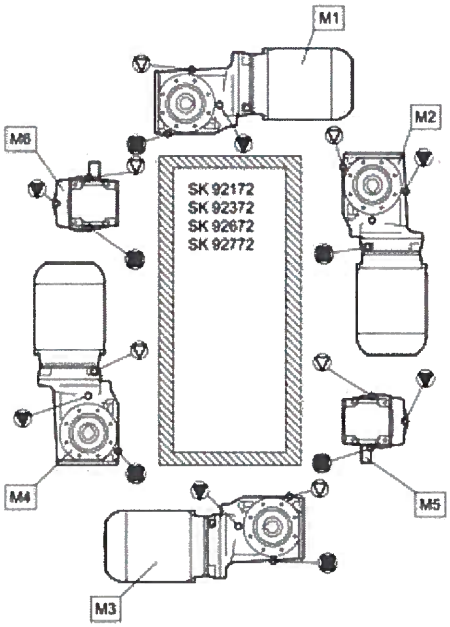

M1
M6
M2
SK10382.1
SK11382.1
M4
M5
M3

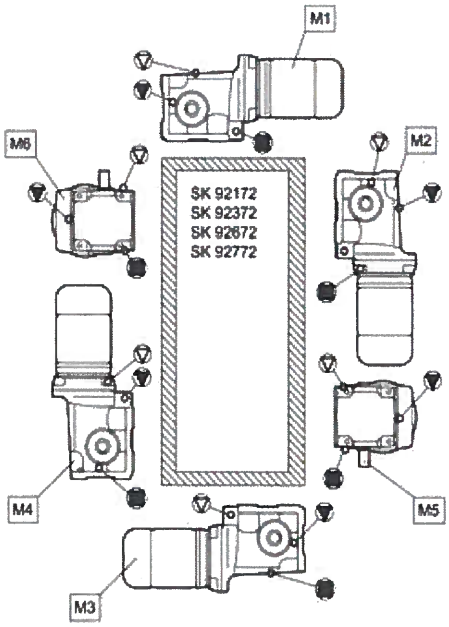

M1
M6
M2
SK 930072.1
SK 93072.1
SK 93172.1
SK 93372.1
SK 93672.1
SK 93772.1
M4
M5
M3

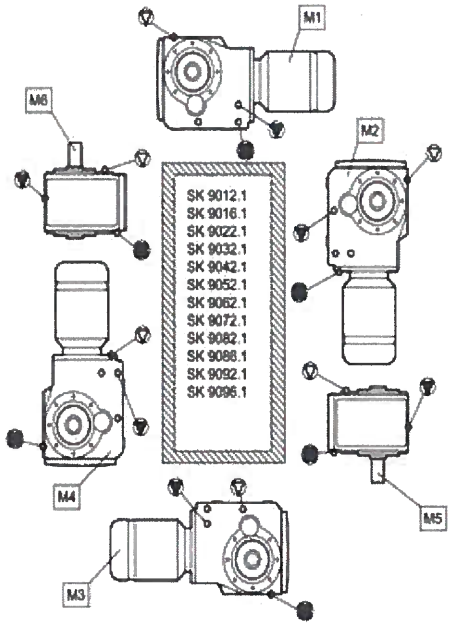

M1
M6
M2
SK 920072.1
SK 92072.1
SK 92172.1
SK 92372.1
SK 92672.1
SK 92772.1
M4
M5
M3

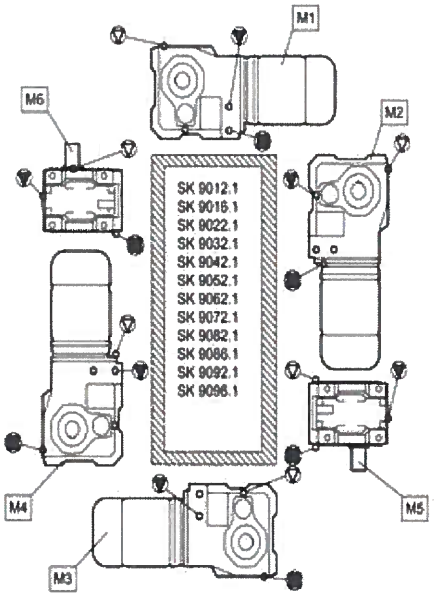

M1
M6
M2
SK 92072
M4
M5
M3

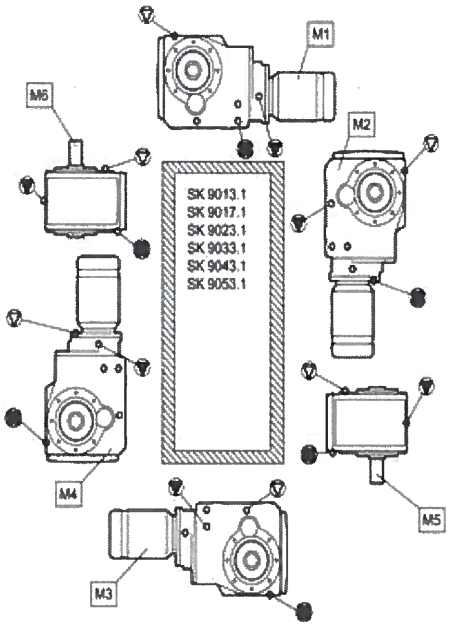

M1
M6
M2
SK 92072
M4
M5
M3

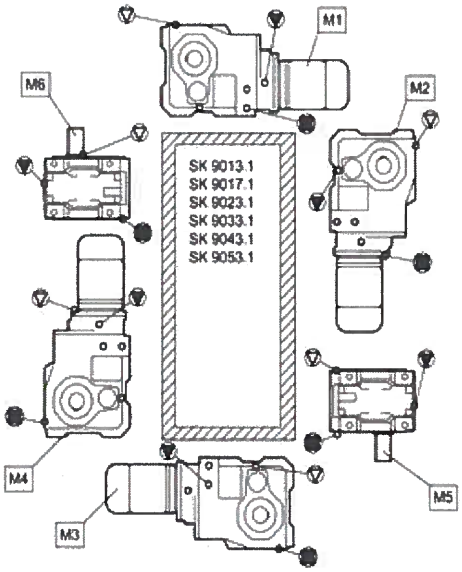

M1
M2
M3
M4
M5
M6
SK 92172
SK 92372
SK 92672
SK 92772

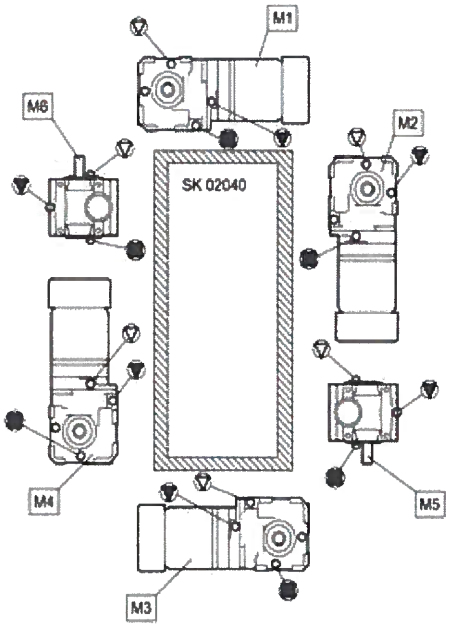

M1
M2
M3
M4
M5
M6
SK 92172
SK 92372
SK 92672
SK 92772

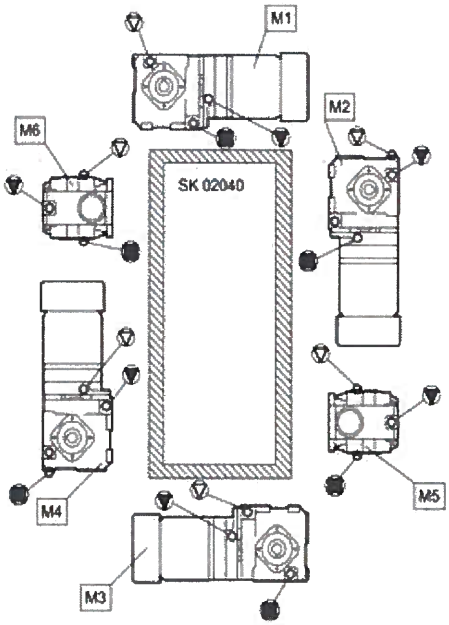

M1
M2
M3
M4
M5
M6
SK 9012.1
SK 9016.1
SK 9022.1
SK 9032.1
SK 9042.1
SK 9052.1
SK 9062.1
SK 9072.1
SK 9082.1
SK 9086.1
SK 9092.1
SK 9096.1

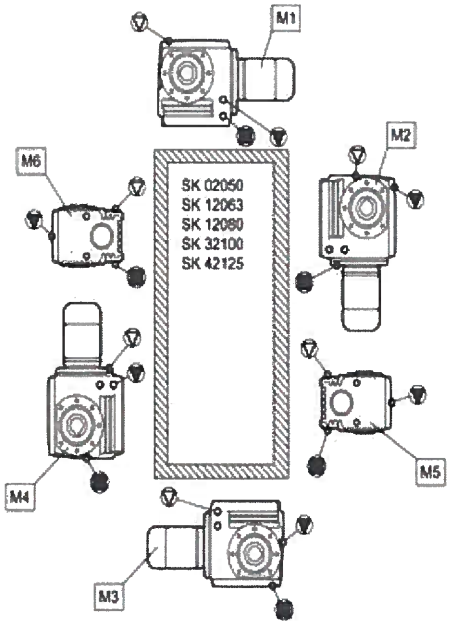

M1
M2
M3
M4
M5
M6
SK 9012.1
SK 9016.1
SK 9022.1
SK 9032.1
SK 9042.1
SK 9052.1
SK 9062.1
SK 9072.1
SK 9082.1
SK 9086.1
SK 9092.1
SK 9096.1

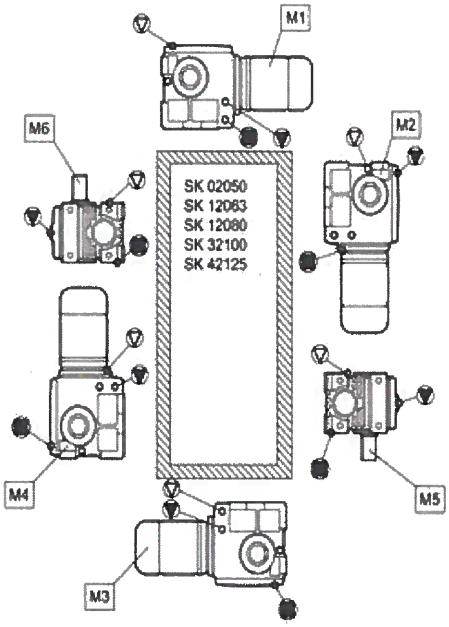

M1
M6
M2
SK 9013.1
SK 9017.1
SK 9023.1
SK 9033.1
SK 9043.1
SK 9053.1
M4
M5
M3

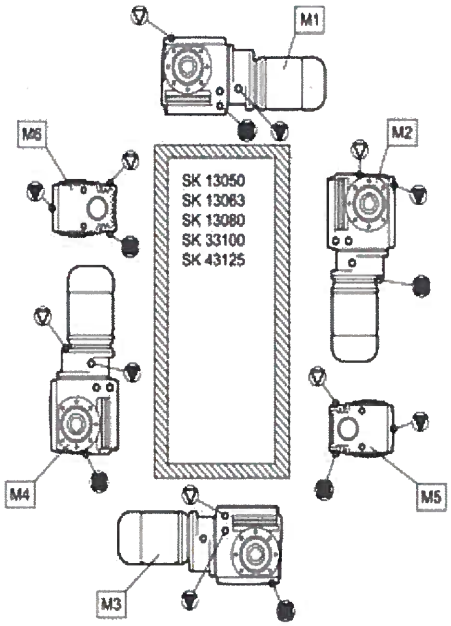

M1
M6
M2
SK 9013.1
SK 9017.1
SK 9023.1
SK 9033.1
SK 9043.1
SK 9053.1
M4
M5
M3

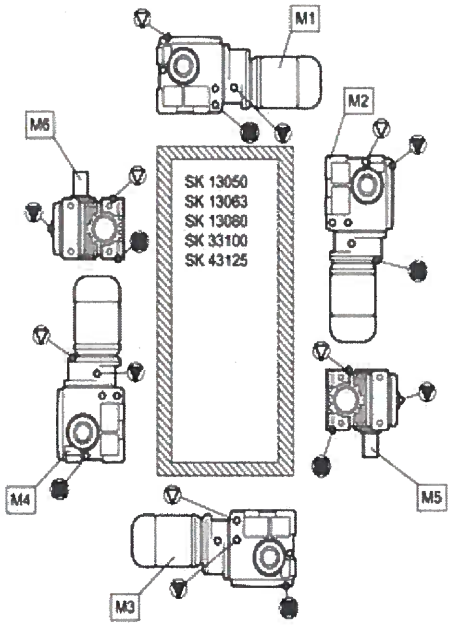

M1
M6
M2
SK 02040
M4
M5
M3


M1
M6
M2
SK 02040
M4
M5
M3


M1
M6
M2
SK 02050
SK 12063
SK 12080
SK 32100
SK 42125
M4
M5
M3


M1
M6
M2
SK 02050
SK 12063
SK 12080
SK 32100
SK 42125
M4
M5
M3


M1
M6
M2
SK 13050
SK 13063
SK 13080
SK 33100
SK 43125
M4
M5
M3


M1
M6
M2
SK 13050
SK 13063
SK 13080
SK 33100
SK 43125
M4
M5
M3

6.2 Lubricants

With the exception of type SK 11282, SK 11382, SK 12382 and SK 9096.1 gear units, all gear units are filled with lubricant ready for operation in the required installation position when delivered. This initial filling corresponds to a lubricant from the column for the ambient temperatures (normal version) in the lubricant table.

Roller bearing greases

This table shows comparable roller bearing greases from various manufacturers. The manufacturer can be changed for a given grease type. Getriebebau NORD must be contacted in case of change of grease type or ambient temperature range, as otherwise no warranty for the functionality of our gear units can be accepted.

Lubricant type	Ambient temperature	Castrol	FUCHS	KLÜBER LUBRICATION	Mobil	
Mineral oil-based grease	-30 ... 60 C	Tribol GR 100-2 PD	Renolit GP 2 Renolit LZR 2 H	-	Mobilux EP 2	Gadus S2 V100 2
	-50 ... 40 C	Optitemp LG 2	Renolit WTF 2	-	-	-
Synthetic grease	-25 ... 80 °C	Tribol GR 4747/220-2 HAT	Renolit HLT 2 Renolit LST 2	PETAMO GHY 133 N Klüberplex BEM 41-132	Mobiltemp SHC 32	
Biodegradable grease	-25 ... 40 °C	-	Plantogel 2 S	Klüberbio M 72-82	Mobil SHC Grease 102 EAL	Naturelle Grease EP2

Table 5: Roller bearing greases

Lubricant table

This table shows comparable lubricants from various manufacturers. The manufacturer can be changed within a particular viscosity or lubricant type. Getriebebau NORD must be contacted in case of change of viscosity or lubricant type, as otherwise no warranty for the functionality of our gearboxes can be accepted.

Lubricant type	Details on type plate	DIN (ISO) / Ambient temperature	Castrol	FUCHS	KLÜBER LUBRICATION	Mobil	Shell	TOTAL
Mineral oil	CLP 680	ISO VG 680 0...40 °C	Alpha EP 680 Alpha SP 680 Optigear BM 680 Optigear Synthetic 1100/680	Renolin CLP 680 Renolin CLP 680 Plus	Klüberoil GEM 1-680 N	Mobilgear 600 XP 680	Omala S2 G 680	Carter EP 680 Carter XEP 680
	CLP 220	ISO VG 220 -10...40 °C	Alpha EP 220 Alpha SP 220 Optigear BM 220 Optigear Synthetic 1100/220	Renolin CLP 220 Renolin CLP 220 Plus Renolin Gear 220 VCI	Klüberoil GEM 1-220 N	Mobilgear 600 XP 220	Omala S2 G 220	Carter EP 220 Carter XEP 220
	CLP 100	ISO VG 100 -15...25 °C	Alpha EP 100 Alpha SP 100 Optigear BM 100 Optigear Synthetic 1100/100	Renolin CLP 100 Renolin CLP 100 Plus	Klüberoil GEM 1-100 N	Mobilgear 600 XP 100	Omala S2 G 100	Carter EP 100
Synthetic oil (Polyglycol)	CLP PG 680	ISO VG 680 -20...40 °C	Alphasyn GS 680 Optigear Synthetic 800/680	Renolin PG 680	Klübersynth GH 6-680	Mobil Glygoyle 680	Omala S4 WE 680	Carter SY 680 Carter SG 680
	CLP PG 220	ISO VG 220 -25...80 °C	Alphasyn GS 220 Alphasyn PG 220 Optigear Synthetic 800/220	Renolin PG 220	Klübersynth GH 6-220	Mobil Glygoyle 220	Omala S4 WE 220	-
Synthetic oil (hydrocarbon)	CLP HC 460	ISO VG 460 -30...80 °C	Alphasyn EP 460 Optigear Synthetic PD 460	Renolin Unisyn CLP 460	Klübersynth GEM 4-460 N	Mobil SHC 634	Omala S4 GX 460	Carter SH 460
	CLP HC 220	ISO VG 220 -40...80 °C	Alphasyn EP 220 Optigear Synthetic PD 220	Renolin Unisyn CLP 220 Renolin Unisyn Gear VCI	Klübersynth GEM 4-220 N	Mobil SHC 630	Omala S4 GX 220	Carter SH 220
Bio-degradable oil	CLP E 680	ISO VG 680 -5...40 °C	-	Plantogear 680 S	-	-	-	-
	CLP E 220	ISO VG 220 -5...40 °C	Performance Bio GE 220 ESS Performance Bio GE 220 ESU	Plantogear 220 S	Klübersynth GEM 2-220	-	Naturelle Gear Fluid EP 220	-

Lubricant type	Details on type plate	DIN (ISO) / Ambient temperature	Castrol	FUCHS	KLÜBER LUBRICATION	Mobil	Shell	TOTAL
Food grade oil	CLP PG H1 680	ISO VG 680 -5...40 °C	Optileb GT 1800/680	Cassida Fluid WG 680	Klübersynth UH1 6-680	Mobil Glygoyle 680		-
	CLP PG H1 220	ISO VG 220 -25...40 °C	Optileb GT 1800/200	Cassida Fluid WG 220	Klübersynth UH1 6-220	Mobil Glygoyle 220		Nevastane SY 220
	CLP HC H1 680	ISO VG 680 -5...40 °C	Optileb GT 680	Cassida Fluid GL 680	Klüberoil 4 UH1-680 N	-		-
	CLP PG H1 220	ISO VG 220 -25...40 °C	Optileb GT 220	Cassida Fluid GL 220	Klüberoil 4 UH1-220 N	Mobil SHC Cibus 220		Nevastane XSH 220
Gear unit fluid grease		-25 ... 60 °C	Tribol GR 100-00 PD Tribol GR 3020/1000-00 PD Spheerol EPL 00	Renolit Duraplex EP 00 Renolit LST 00	MICROLUBE GB 00 Klübersynth GE 46-1200	Mobil Chassis Grease LBZ Mobil Glygoyle Grease 00	Alvania EP(LF)2 -	Multis EP 00 Marson SY 00

Table 6: Lubricant table

6.3 Lubricant quantities

Information — **Lubricants**

After changing the lubricant, and in particular after the initial filling, the oil level may change during the first few hours of operation, as the oil galleries and the hollow spaces only fill gradually during operation.

The oil level is still within the permissible tolerance.

If at the express request of the customer, an oil inspection glass is installed at an additional charge, we recommend that the customer corrects the oil level after an operating period of approx. 2 hours, so that when the gear unit is at a standstill and has cooled down, the oil level is visible in the inspection glass. Only then, is it possible to check the oil level by means of the inspection glass.

The filling quantities stated in the following tables are for guidance only. The precise quantities vary depending on the exact gear ratio. When filling, always observe the oil level screw hole as an indicator of the precise quantity of oil.

* Gear unit types SK 11282, SK 11382, SK 11382.1, SK 12382 and SK 9096.1 are normally supplied without oil.

6.4 Helical gear unit

													
⇨ 🕮 6.1	M1	M2	M3	M4	M5	M6	⇨ 🕮 6.1	M1	M2	M3	M4	M5	M6
SK11E	0,25	0,50	0,65	0,50	0,40	0,40	SK11E F	0,30	0,50	0,50	0,45	0,40	0,40
SK21E	0,60	1,20	1,30	1,00	1,00	1,00	SK21E F	0,50	1,20	1,30	0,60	0,90	0,90
SK31E	1,10	2,00	2,20	1,70	1,50	1,50	SK31E F	0,90	1,80	1,65	1,30	1,25	1,25
SK41E	1,60	2,60	3,30	2,80	2,30	2,30	SK41E F	1,20	2,30	2,70	2,00	1,90	1,90
SK51E	1,80	3,50	4,10	4,00	3,80	3,80	SK51E F	1,80	3,50	4,10	3,00	3,80	3,80
													
SK02	0,20	0,75	0,75	0,65	0,60	0,60	SK02 F	0,25	0,70	0,70	0,70	0,50	0,50
SK12	0,25	0,80	0,85	0,75	0,55	0,55	SK12 F	0,35	0,85	0,90	0,90	0,70	0,70
SK22	0,50	1,90	2,10	1,80	1,40	1,40	SK22 F	0,70	1,80	1,80	1,80	1,40	1,40
SK32	0,90	2,50	3,10	3,10	2,00	2,00	SK32 F	1,20	2,80	3,10	3,10	2,20	2,20
SK42	1,40	4,50	4,50	4,30	3,20	3,20	SK42 F	1,80	4,40	4,50	4,00	3,70	3,70
SK52	2,50	7,00	6,80	6,80	5,10	5,10	SK52 F	3,00	6,80	6,20	7,40	5,60	5,60
													
SK62	6,50	15,00	13,00	16,00	15,00	15,00	SK62 F	7,00	15,00	14,00	16,50	16,00	16,00
SK72	10,00	23,00	18,00	26,00	23,00	23,00	SK72 F	10,00	23,00	18,50	28,00	23,00	23,00
SK82	14,00	35,00	27,00	44,00	32,00	32,00	SK82 F	15,00	37,00	29,00	45,00	34,50	34,50
SK92	25,00	73,00	47,00	76,00	52,00	52,00	SK92 F	26,00	73,00	47,00	78,00	52,00	52,00
SK102	36,00	79,00	66,00	102,00	71,00	71,00	SK102 F	40,00	81,00	66,00	104,00	72,00	72,00
													
SK03	0,35	1,20	0,80	1,00	0,70	0,70	SK03 F	0,55	0,95	0,90	1,20	0,90	0,90
SK13	0,75	1,30	1,30	1,20	0,75	0,75	SK13 F	1,00	1,30	1,30	1,20	1,00	1,00
SK23	1,20	2,00	1,90	2,40	1,60	1,60	SK23 F	1,40	2,60	2,30	2,80	2,80	2,80
SK33N	1,75	3,00	3,40	4,00	2,30	2,30	SK33N F	2,20	3,00	3,40	4,20	2,30	2,30
SK43	3,00	5,60	5,20	6,60	3,60	3,60	SK43 F	3,50	5,70	5,00	6,10	4,10	4,10
SK53	4,50	8,70	7,70	8,70	6,00	6,00	SK53 F	5,20	8,40	7,00	8,90	6,70	6,70
													
SK63	13,00	14,50	14,50	16,00	13,00	13,00	SK63 F	13,50	14,00	15,50	16,00	14,00	14,00
SK73	20,50	20,00	22,50	27,00	20,00	20,00	SK73 F	22,00	22,50	23,00	27,50	20,00	20,00
SK83	30,00	31,00	34,00	37,00	33,00	33,00	SK83 F	31,00	34,00	35,00	40,00	34,00	34,00
SK93	53,00	70,00	59,00	72,00	49,00	49,00	SK93 F	53,00	70,00	59,00	74,00	49,00	49,00
SK103	74,00	71,00	74,00	97,00	67,00	67,00	SK103 F	69,00	78,00	78,00	99,00	67,00	67,00

Table 7: Lubricant quantities for helical gear units

NORDBLOC

													
📖 6.1	M1	M2	M3	M4	M5	M6	📖 6.1	M1	M2	M3	M4	M5	M6
SK072.1	0,16	0,32	0,21	0,23	0,18	0,20	SK072.1 F	0,16	0,32	0,21	0,23	0,18	0,20
SK172.1	0,27	0,59	0,42	0,45	0,32	0,39	SK172.1 F	0,27	0,59	0,42	0,45	0,32	0,39
SK372.1	0,45	1,05	0,75	1,00	0,60	0,65	SK372.1 F	0,45	1,05	0,75	1,00	0,60	0,65
SK572.1	0,75	1,90	1,50	2,00	1,10	1,15	SK572.1 F	0,75	1,90	1,50	2,00	1,10	1,15
SK672.1	1,10	2,60	2,15	2,70	1,55	1,65	SK672.1 F	1,10	2,60	2,15	2,70	1,55	1,65
SK772.1	1,30	3,80	2,40	3,20	1,60	2,50	SK772.1 F	1,30	3,80	2,40	3,30	1,70	2,40
SK872.1	2,90	7,80	4,60	6,40	2,50	4,00	SK872.1 F	3,20	7,50	5,10	6,70	2,60	4,30
SK972.1	4,50	12,00	7,50	11,50	4,20	7,50	SK972.1 F	4,50	12,50	8,00	12,50	4,50	7,70
SK772.1VL	2,00	3,80	2,40	3,20	1,60	2,50	SK772.1VL F	2,00	3,80	2,40	3,30	1,70	2,40
SK872.1VL	5,00	7,80	4,60	6,40	2,50	4,00	SK872.1VL F	5,00	7,50	5,10	6,70	2,60	4,30
SK972.1VL	8,50	12,00	7,50	11,50	4,20	7,50	SK972.1VL F	8,50	12,50	8,00	12,50	4,50	7,70
													
SK373.1	0,45	1,05	0,75	1,00	0,60	0,65	SK373.1 F	0,45	1,05	0,75	1,00	0,60	0,65
SK573.1	0,75	1,90	1,50	2,00	1,10	1,15	SK573.1 F	0,75	1,90	1,50	2,00	1,10	1,15
SK673.1	1,10	2,60	2,15	2,70	1,55	1,65	SK673.1 F	1,10	2,60	2,15	2,70	1,55	1,65
SK773.1	2,30	3,80	3,30	3,20	2,40	3,10	SK773.1 F	2,00	3,50	3,20	2,90	2,30	3,00
SK873.1	4,20	7,80	5,90	6,40	4,10	5,90	SK873.1 F	4,10	7,60	6,90	6,60	5,00	6,60
SK973.1	7,50	12,00	10,50	11,50	7,50	10,50	SK973.1 F	7,40	12,20	11,10	11,60	8,00	10,90
SK773.1VL	2,30	3,80	3,30	3,20	2,40	3,10	SK773.1VL F	2,00	3,50	3,20	2,90	2,30	3,00
SK873.1VL	4,20	7,80	5,90	6,40	4,10	5,90	SK873.1VL F	4,10	7,60	6,90	6,60	5,00	6,60
SK973.1VL	7,50	12,00	10,50	11,50	7,50	10,50	SK973.1VL F	7,40	12,20	11,10	11,60	8,00	10,90
													
SK071.1/071.1F	0,18	0,40	0,38	0,40	0,30	0,30							
SK171.1/171.1F	0,22	0,40	0,36	0,40	0,33	0,33							
SK371.1/371.1F	0,35	0,58	0,55	0,58	0,49	0,49							
SK571.1/671.1F	0,48	0,86	0,80	0,92	0,68	0,68							
SK771.1/771.1F	0,90	1,50	1,20	1,70	1,16	1,16							

Table 8: Lubricant quantities for NORDBLOC

NORDBLOC helical gear units

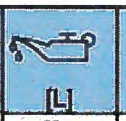
													
⇨ 6.1	M1	M2	M3	M4	M5	M6	⇨ 6.1	M1	M2	M3	M4	M5	M6
SK172	0,35	0,50	0,50	0,50	0,50	0,50	SK172 F	0,35	0,50	0,50	0,50	0,50	0,50
SK272	0,60	1,00	1,00	1,00	1,00	1,00	SK272 F	0,60	1,00	1,00	1,00	1,00	1,00
SK372	0,60	1,00	1,00	1,00	1,00	1,00	SK372 F	0,60	1,00	1,00	1,00	1,00	1,00
SK472	1,00	1,90	1,90	2,00	1,80	1,80	SK472 F	1,00	1,90	1,90	1,90	1,90	1,50
SK572	1,00	1,90	1,90	2,00	1,80	1,80	SK572 F	1,00	1,90	1,90	1,90	1,90	1,50
SK672	1,40	3,40	3,10	3,15	1,45	3,15	SK672 F	1,15	3,40	2,70	2,80	1,25	2,70
SK772	2,00	3,30	3,50	4,20	2,70	3,30	SK772 F	1,60	3,30	3,50	3,30	3,10	3,10
SK872	3,70	9,60	9,10	7,30	4,70	8,00	SK872 F	3,50	9,00	7,90	7,70	3,90	7,20
SK972	6,50	16,00	15,70	14,70	8,50	14,00	SK972 F	6,50	15,00	13,00	13,50	6,50	12,00
													
SK273	0,62	1,10	1,10	1,10	1,10	1,10	SK273 F	0,62	1,10	1,10	1,10	1,10	1,10
SK373	0,55	1,10	1,10	1,10	1,10	1,10	SK373 F	0,55	1,10	1,10	1,10	1,10	1,10
SK473	1,30	2,50	2,10	2,40	2,10	2,10	SK473 F	1,25	2,40	2,10	2,50	2,10	2,10
SK573	1,30	2,50	2,10	2,40	2,10	2,10	SK573 F	1,25	2,40	2,10	2,50	2,10	2,10
SK673	1,80	3,80	3,20	3,40	2,90	3,00	SK673 F	1,70	3,80	3,00	3,20	3,00	3,00
SK773	2,50	4,50	3,70	4,60	3,30	3,30	SK773 F	2,30	5,00	3,60	4,50	3,90	3,90
SK873	6,20	8,40	7,50	9,10	7,50	7,50	SK873 F	5,00	8,80	7,60	8,00	8,00	8,00
SK973	11,00	15,80	13,00	16,00	13,30	13,00	SK973 F	10,30	16,50	13,00	16,00	14,00	14,00

Table 9: Lubricant quantities for NORDBLOC helical gear units

Standard helical gear units

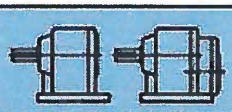
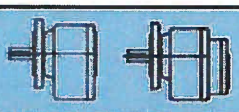
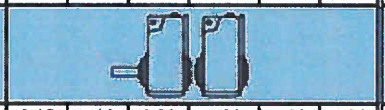
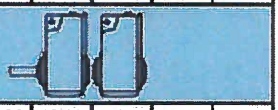
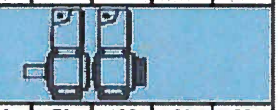
													
⇨🕮 6.1	M1	M2	M3	M4	M5	M6	⇨🕮 6.1	M1	M2	M3	M4	M5	M6
SK20	0,55	1,00	0,55	1,00	0,55	0,55	SK20 F	0,35	0,60	0,35	0,60	0,35	0,35
SK0	0,13	0,22	0,13	0,22	0,13	0,13	SK0 F	0,13	0,22	0,13	0,22	0,13	0,13
SK01	0,22	0,38	0,22	0,38	0,22	0,22	SK01 F	0,22	0,38	0,22	0,38	0,22	0,22
SK25	0,50	1,00	0,50	1,00	0,50	0,50	SK25 F	0,50	1,00	0,50	1,00	0,50	0,50
SK33	1,00	1,60	1,00	1,60	1,00	1,00	SK33 F	1,00	1,50	1,00	1,50	1,00	1,00
SK30	0,90	1,30	0,90	1,30	0,90	0,90	SK30 F	0,70	1,10	0,70	1,10	0,70	0,70
SK300	1,20	2,00	1,20	2,00	1,20	1,20	SK300 F	1,25	1,50	1,20	1,80	1,30	0,95
SK330	1,80	2,80	1,80	2,80	1,80	1,80	SK330 F	1,60	2,50	1,60	2,90	1,90	1,40
SK200	0,80	1,30	0,80	1,30	0,80	0,80	SK200 F	0,65	0,95	0,70	1,10	0,80	0,50
SK010	0,38	0,60	0,38	0,60	0,38	0,38	SK010 F	0,35	0,65	0,40	0,74	0,50	0,30
SK250	1,20	1,50	1,20	1,50	1,20	1,20	SK250 F	0,90	1,40	1,00	1,60	1,30	0,80
SK000	0,24	0,40	0,24	0,41	0,24	0,24	SK000 F	0,24	0,41	0,24	0,41	0,24	0,24

Table 10: Lubricant quantities for standard helical gear units

Parallel shaft gear units

													
⇨🕮 6.1	M1	M2	M3	M4	M5	M6	⇨🕮 6.1	M1	M2	M3	M4	M5	M6
SK0182NB A	0,40	0,55	0,55	0,40	0,40	0,40							
SK0282NB A	0,70	1,10	0,80	1,10	0,90	0,90							
							SK1382NB A	1,40	2,30	2,20	2,20	2,00	2,00
													
SK1282 A	0,95	1,30	0,90	1,30	1,00	1,00	SK2382 A	2,30	2,70	2,10	3,20	2,00	2,00
SK2282 A	1,70	2,30	1,70	2,20	1,90	1,90	SK3382 A	3,80	4,30	3,00	5,50	3,00	3,00
SK3282 A	2,80	4,00	3,30	3,80	3,00	3,00	SK4382 A	6,10	6,90	4,90	8,40	5,00	5,00
SK4282 A	4,20	5,40	4,40	5,00	4,20	4,20	SK5382 A	12,50	12,00	6,70	14,00	8,30	8,30
SK5282 A	7,50	8,80	7,50	8,80	7,20	7,20	SK1382 A	1,45	1,60	1,15	1,70	1,10	1,10
													
SK6282 A	17,00	15,50	12,50	17,50	11,00	14,00	SK6382 A	16,00	13,00	10,00	18,00	14,00	12,50
SK7282 A	25,50	21,00	20,50	27,00	16,00	21,00	SK7382 A	22,00	21,00	16,00	25,00	23,00	22,00
SK8282 A	37,50	33,00	30,50	44,00	31,00	31,00	SK8382 A	34,50	32,50	25,00	38,00	35,00	30,00
SK9282 A	74,50	70,00	56,00	80,00	65,00	59,00	SK9382 A	73,50	70,00	43,00	74,50	65,00	60,00
													
SK10282 A	90	90	40	90	60	82	SK10382 A	85	90	73	100	80	80
SK11282 A	165	160	145	195	100	140	SK11382 A	160	155	140	210	155	135
							SK12382 A	160	155	140	210	155	135
							SK10382.1 A	76,0	80,0	71,0	92,5	71,5	66,5
							SK11382.1 A	127	133	118	194	124	112

* For further information see page 58

Table 11: Lubricant quantities for parallel shaft gear units

Bevel gear units

													
6.1	M1	M2	M3	M4	M5	M6	6.1	M1	M2	M3	M4	M5	M6
SK92072	0,40	0,60	0,50	0,55	0,40	0,40	SK92072 A	0,40	0,60	0,55	0,55	0,40	0,40
SK92172	0,60	0,90	1,00	1,10	1,10	0,80	SK92172 A	0,50	1,00	0,90	1,05	0,90	0,60
SK92372	0,90	1,60	1,50	1,90	1,50	0,90	SK92372 A	1,20	1,60	1,50	1,90	1,30	1,30
SK92672	1,80	3,50	3,60	3,40	2,60	2,60	SK92672 A	1,60	2,80	2,50	3,30	2,40	2,40
SK92772	2,30	4,50	4,60	5,30	4,10	4,10	SK92772 A	2,80	4,40	4,50	5,50	3,50	3,50
													
SK92072.1	0,26	0,49	0,42	0,54	0,29	0,31	SK93072.1	0,39	0,93	0,79	1,02	0,49	0,62
SK92172.1	0,34	0,61	0,52	0,67	0,42	0,48	SK93172.1	0,60	1,17	0,94	1,22	0,65	0,85
SK92372.1	0,43	0,92	0,73	0,83	0,55	0,61	SK93372.1	1,00	1,97	1,65	2,14	1,12	1,34
SK92672.1	0,85	1,60	1,20	1,50	1,02	1,02	SK93672.1	1,80	3,23	2,71	3,80	2,02	2,45
SK92772.1	1,30	2,65	1,86	2,45	1,60	1,60	SK93772.1	2,72	4,63	3,70	5,40	2,93	3,25
SK920072.1	0,21	0,47	0,36	0,34	0,28	0,28	SK930072.1	0,28	0,65	0,56	0,54	0,39	0,39
													
SK9012.1	0,70	1,70	1,90	2,10	1,10	1,50	SK9012.1 A	1,00	1,90	1,90	2,20	1,20	1,70
SK9016.1	0,70	1,70	1,90	2,10	1,10	1,50	SK9016.1 A	1,00	1,90	1,90	2,20	1,20	1,70
SK9022.1	1,30	2,90	3,30	3,80	1,70	2,80	SK9022.1 A	1,60	3,50	3,50	4,20	2,30	2,80
SK9032.1	1,80	5,40	6,10	6,80	3,00	4,60	SK9032.1 A	2,10	4,80	6,40	7,10	3,30	5,10
SK9042.1	4,40	9,00	10,00	10,70	5,20	7,70	SK9042.1 A	4,50	10,00	10,00	11,50	6,50	8,20
SK9052.1	6,50	16,00	19,00	21,50	11,00	15,50	SK9052.1 A	7,50	16,50	20,00	23,50	11,50	18,00
SK9062.1	10,00	27,50	32,00	36,00	18,00	24,00	SK9062.1 A	12,00	27,50	33,00	38,50	19,00	26,00
SK9072.1	10,00	27,50	32,00	36,00	18,00	24,00	SK9072.1 A	12,00	27,50	33,00	38,50	19,00	26,00
SK9082.1	17,00	51,50	62,50	71,50	33,00	46,50	SK9082.1 A	21,00	54,00	66,00	80,00	38,00	52,00
SK9086.1	29,00	73,00	85,00	102,00	48,00	62,00	SK9086.1 A	36,00	78,00	91,00	107,00	53,00	76,00
SK9092.1	41,00	157,00	170,00	172,00	80,00	90,00	SK9092.1 A	40,00	130,00	154,00	175,00	82,00	91,00
SK9096.1	70,00	187,00	194,00	254,00	109,00	152,00	SK9096.1 A	80,00	187,00	193,00	257,00	113,00	156,00
													
SK9013.1	1,35	2,10	2,15	2,75	1,00	1,80	SK9013.1 A	1,45	2,30	2,10	2,80	1,05	1,80
SK9017.1	1,30	2,00	2,10	2,70	1,00	1,70	SK9017.1 A	1,45	2,30	2,10	2,80	1,05	1,80
SK9023.1	2,20	3,20	3,60	4,70	2,20	2,90	SK9023.1 A	2,30	3,50	3,80	5,30	2,20	3,40
SK9033.1	3,10	5,70	6,30	8,00	3,40	4,80	SK9033.1 A	3,70	5,70	6,70	8,60	3,60	5,30
SK9043.1	5,00	10,10	11,00	13,30	5,70	8,10	SK9043.1 A	6,50	10,50	11,90	14,70	6,70	9,30
SK9053.1	10,00	17,00	20,00	24,50	11,50	16,50	SK9053.1 A	13,00	18,00	21,50	26,50	13,00	17,00

* For further information see page 58

Table 12: Lubricant quantities for bevel gear units

Helical worm gear units

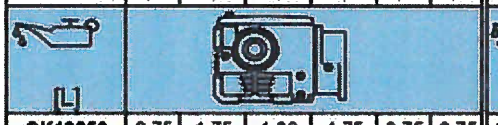
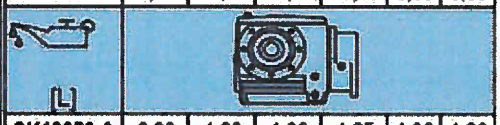
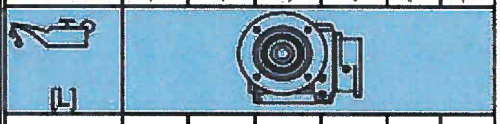
													
⇨🕮 6.1	M1	M2	M3	M4	M5	M6		M1	M2	M3	M4	M5	M6
SK02040	0,40	0,80	0,75	0,65	0,50	0,50	SK02040 A	0,40	0,70	0,65	0,65	0,55	0,55
SK02050	0,40	1,40	1,10	1,30	0,70	0,70	SK02050 A	0,45	1,40	1,15	1,10	0,75	0,75
SK12063	0,60	1,80	1,20	1,60	1,00	1,00	SK12063 A	0,55	1,45	1,60	1,60	1,10	1,10
SK12080	0,90	3,10	2,40	3,00	1,80	1,80	SK12080 A	0,80	3,10	3,20	2,80	1,80	1,80
SK32100	1,50	6,30	5,60	5,50	3,60	3,60	SK32100 A	1,50	5,60	5,60	5,30	4,00	4,00
SK42125	2,80	11,80	10,20	10,00	6,20	6,20	SK42125 A	3,00	12,50	10,80	10,80	6,50	6,50
													
SK13050	0,75	1,75	1,30	1,75	0,75	0,75	SK13050 A	0,90	1,80	1,30	1,65	1,30	1,30
SK13063	1,00	2,30	1,50	2,20	1,10	1,10	SK13063 A	1,05	2,10	1,80	2,10	1,40	1,40
SK13080	1,70	3,50	3,50	3,50	2,00	2,00	SK13080 A	1,60	3,60	2,90	3,75	2,00	2,00
SK33100	2,40	6,40	5,40	6,50	3,40	3,40	SK33100 A	2,60	6,00	5,80	6,00	3,50	3,50
SK43125	4,25	13,00	10,50	13,50	7,20	7,20	SK43125 A	4,60	13,60	11,40	14,30	7,60	7,60
													
SK02040 F	0,40	0,70	0,65	0,65	0,55	0,55							
SK02050 F	0,40	1,50	1,25	1,20	0,90	0,75	SK13050 F	0,75	1,80	1,50	1,70	1,05	0,90
SK12063 F	0,50	1,95	1,70	1,75	1,20	0,95	SK13063 F	1,00	2,30	1,90	2,20	1,35	1,10
SK12080 F	0,90	3,70	3,20	3,40	2,50	2,30	SK13080 F	1,60	3,80	3,50	3,90	2,70	2,50
SK32100 F	1,40	6,30	6,10	6,10	4,00	3,60	SK33100 F	2,65	7,20	6,40	7,60	4,30	3,80
SK42125 F	3,00	11,50	11,50	11,00	8,40	7,30	SK43125 F	4,70	15,00	13,00	16,00	9,00	7,70

Table 13: Lubricant quantities for Helical worm gear units

6.5 Torque values

Dimensions	Bolt Torques [Nm]					
	Screw connections in the strength classes			Cover screws	Threaded pin on coupling	Screw connections on protective covers
	8.8	10.9	12.9			
M4	3.2	5	6	-	-	-
M5	6.4	9	11	-	2	-
M6	11	16	19	-	-	6.4
M8	27	39	46	11	10	11
M10	53	78	91	11	17	27
M12	92	135	155	27	40	53
M16	230	335	390	35	-	92
M20	460	660	770	-	-	230
M24	790	1150	1300	80	-	460
M30	1600	2250	2650	170	-	-
M36	2780	3910	4710	-	-	1600
M42	4470	6290	7540	-	-	-
M48	6140	8640	16610	-	-	-
M56	9840	13850	24130	-	-	-
G½	-	-	-	75	-	-
G¾	-	-	-	110	-	-
G1	-	-	-	190	-	-
G1¼	-	-	-	240	-	-
G1½				300		-

Table 14: Torque values

Assembling the hose fittings

Oil the thread of the union nut, the cutting ring and the screw neck. Tighten the union nut with the wrench until the point where the union nut can only be turned with considerably more force. Turn the union nut of the screw fitting approx. 30° to 60° further but not more than 90°. For this the screw neck must be held with a wrench. Remove excess oil from the screw fitting

6.6 Troubleshooting

WARNING — **Injury to persons**

There is a slipping hazard in case of leaks.

Clean the soiled floor and machine components before starting troubleshooting.

WARNING — **Injury to persons**

Risk of injury due to rapidly rotating and hot machine components.

Troubleshooting must only be performed when gear units are at a standstill and have cooled down. The drive must be isolated and secured to prevent accidental start-up.

NOTICE — **Gear unit damage**

Damage to the gear unit is possible in case of faults.

Shut down the drive unit immediately in case of any faults in the gear unit.

Gear unit malfunctions		
Fault	**Possible cause**	**Remedy**
Unusual running noises, vibrations	Oil too low or bearing damage or gear wheel damage	Consult NORD Service
Oil escaping from the gear unit or motor	Defective seal	Consult NORD Service
Oil escaping from pressure vent	Incorrect oil level or incorrect, contaminated oil or unfavourable operating conditions	Oil change, use oil expansion tank (Option OA)
Gear unit becomes too hot	Unfavourable installation conditions or gear unit damage	Consult NORD Service
Shock when switching on, vibrations	Defective motor coupling or loose gear unit mounting or defective rubber element	Replace elastomer gear rim, tighten motor and gear unit fastening bolts, replace rubber element
Output shaft does not rotate although motor is running	Fracture in gear unit or defective motor coupling or shrink disc slippage	Consult NORD Service

Table 15: Overview of malfunctions

6.7 Leaks and seals

Gear units are filled with oil or grease to lubricate the moving parts. Seals prevent the escape of lubricants. A complete seal is not technically possible, as a certain film of moisture, for example on the radial shaft sealing rings is normal and advantageous for a long-term seal. In the region of vents, moisture due to oil may be visible due to the escape of oil mist because of the function. In the case of grease-lubricated labyrinth seals, e.g. Taconite sealing systems, used grease emerges from the sealing gap due to the principle of operation. This apparent leak is not a fault.

According to the test conditions as per DIN 3761, the leak is determined by the medium which is to be sealed, which in test bench tests exceeds the function-related moisture in a defined test period and which results in dripping of the medium which is to be sealed. The measured quantity which is then collected is designated as leakage.

Definition of leakage according to DIN 3761 and its appropriate use					
		Location of leak			
Term	Explanation	Shaft sealing ring	in IEC adapter	Housing joint	Venting
Sealed	No moisture apparent	No reason for complaint	No reason for complaint	No reason for complaint	No reason for complaint
Damp	Moisture film locally restricted (not an area)	No reason for complaint	No reason for complaint	No reason for complaint	No reason for complaint
Wet	Moisture film beyond the extent of the component	No reason for complaint	No reason for complaint	Repair if necessary	No reason for complaint
Measurable leakage	Recognisable stream, dripping	Repair recommended	Repair recommended	Repair recommended	Repair recommended
Temporary leakage	Temporary malfunction of the sealing system or oil leak due to transport *)	No reason for complaint	No reason for complaint	Repair if necessary	No reason for complaint
Apparent leakage	Apparent leakage, e.g. due to soiling, sealing systems which can be re-lubricated	No reason for complaint	No reason for complaint	No reason for complaint	No reason for complaint

Table 16: Definition of leaks according to DIN 3761

*) Previous experience has shown that moist or wet radial shaft sealing rings stop leaking later. Therefore, under no circumstances can replacement be recommended at this stage. The reason for momentary moisture may be e.g. small particles under the sealing lip.

6.8 Repair information

For enquiries to our technical and mechanical service departments, please have the precise gear unit type (type plate) and if necessary the order number (type plate) to hand.

6.8.1 Repairs

The device must be sent to the following address if it needs repairing:

Getriebebau NORD GmbH & Co. KG

Service Department

Getriebebau-Nord-Straße 1

22941 Bargteheide

No guarantee can be given for any attachments, such as encoders or external fans, if a gear unit or geared motor is sent for repair.

Please remove all non-original parts from the gear unit or geared motor.

Information — **Reason for return**

If possible, the reason for returning the component or device should be stated. If necessary, at least one contact should be stated in case of queries.

This is important in order to keep repair times as short and efficient as possible.

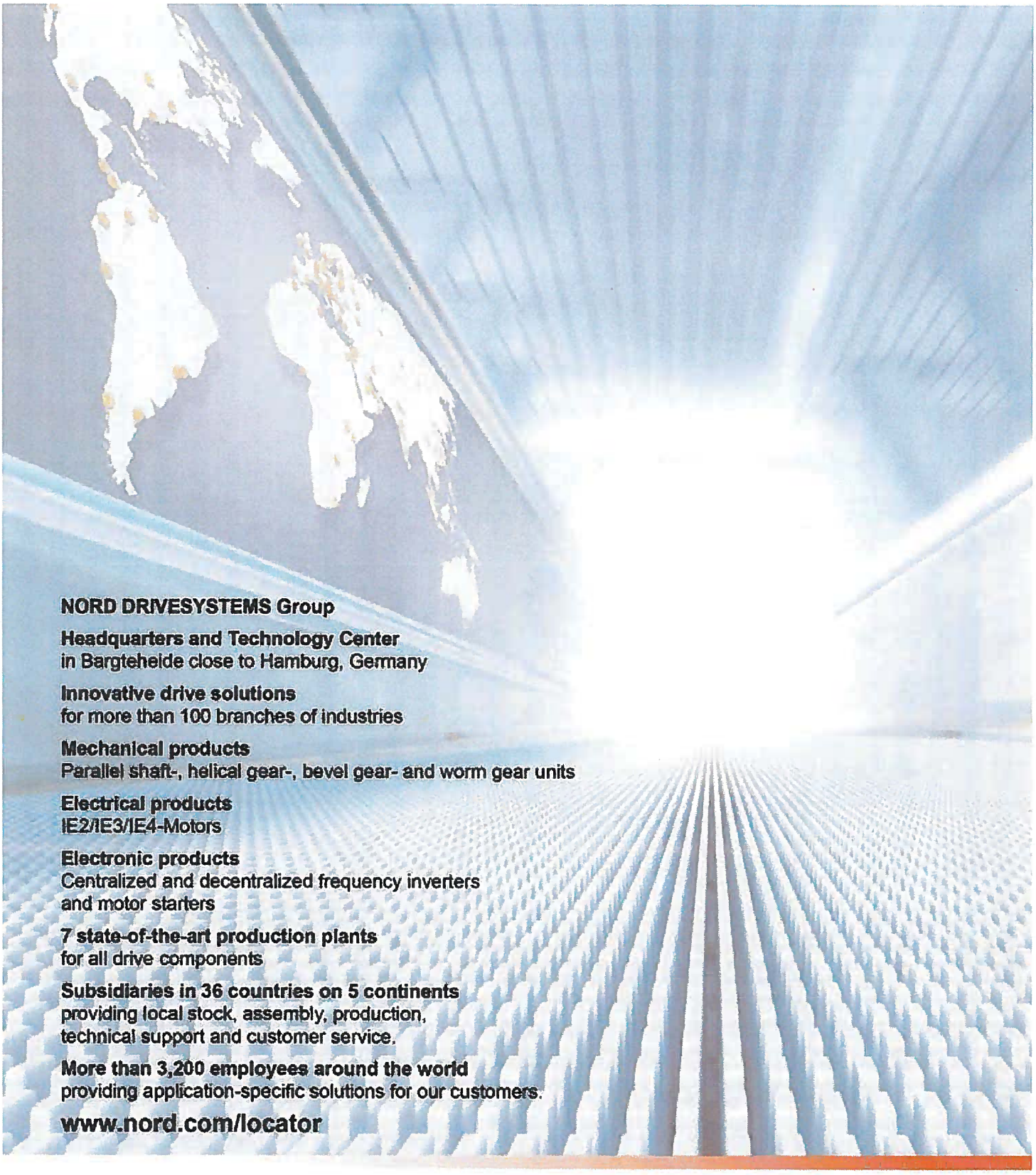
6.8.2 Internet information

In addition, the country-specific operating and installation instructions in the available languages can be found on our Internet site: www.nord.com

6.9 Abbreviations

2D	Dust explosion protected gear units zone 21
2G	Explosion protected gear units with ignition protection class "c"
3D	Dust explosion protected gear units zone 22
ATEX	**AT**mospheres **EX**plosibles
B5	Flange fastening with through holes
B14	Flange fastening with threaded holes
CW	Clockwise, right-hand direction of rotation
CCW	Counter-clockwise, left-hand direction of rotation
°dH	Water hardness in German hardness degrees: 1°dH = 0.1783 mmol/l
DIN	German standards institute
EC	European Community
EN	European standard
FR	Radial transverse force
FA	Axial force
IE1	Motors with standard efficiency
IE2	Motors with high efficiency
IEC	International Electrotechnical Commission
NEMA	National Electrical Manufacturers Association
IP55	International Protection
ISO	International Standardisation Organisation
pH	pH value
PPE	Personal Protective Equipment
RL	Directive
VCI	Volatile Corrosion Inhibitor
WN	Getriebebau NORD factory standard

Key word index



NORD DRIVESYSTEMS Group

Headquarters and Technology Center
in Bargteheide close to Hamburg, Germany

Innovative drive solutions
for more than 100 branches of industries

Mechanical products
Parallel shaft-, helical gear-, bevel gear- and worm gear units

Electrical products
IE2/IE3/IE4-Motors

Electronic products
Centralized and decentralized frequency inverters
and motor starters

7 state-of-the-art production plants
for all drive components

Subsidiaries in 36 countries on 5 continents
providing local stock, assembly, production,
technical support and customer service.

More than 3,200 employees around the world
providing application-specific solutions for our customers.

www.nord.com/locator

Headquarters:

Getriebebau NORD GmbH & Co. KG
Getriebebau-Nord-Straße 1
22941 Bargteheide, Germany
Fon +49 (0) 4532 / 289-0
Fax +49 (0) 4532 / 289-2253
info@nord.com, www.nord.com

Member of the NORD DRIVESYSTEMS Group

NORD
DRIVESYSTEMS

6052802 / 3816

VL2 & VL3 AGITATOR
MIXER & SHREDDER REDUCERS

NORD DRIVESYSTEMS

VL2 - SPREAD BEARING DESIGN

Increased bearing spreads with an oversized double row spherical bearing on the lower side. It is commonly used in shredders, mixers or applications requiring increased bearing load carrying capacities.

VL3 - SPREAD BEARING DESIGN

In addition to the VLII design an oil leakage control system is added. Our Dry Cavity System provides a very high degree of oil safety. The anti-leak QUADRILIP™ Oil Sealing System is enhanced with an oil collection cavity (just-in-case) and various ways to sense and remove the leakage from the cavity. Standard is a viewable oil sight indicator with an optional capacitive proximity switch and control available for electronic indication of a leak.

OPTIONS TO BOTH DESIGNS

You may include a grease zerk to lubricate the lower bearing, and a removable plug to allow excess grease to purge from the bearing cavity.

Unit Size	B5 Flange Diameter		Solid Shaft Diameter		Hollow Shaft Diameter		Shrink Disc Diameter		Output Bearings		Bearing Spread	
	[in]	[mm]	[in]	[mm]	[in]	[mm]	[in]	[mm]	upper	lower	[in]	[mm]
Offset Parallel (Clincher)												
SK 1282	7.87	200	1.250	30	1.188	30	1.250	30	6009Z	22210E	4.91	125
SK 2282 or SK 2382	9.84	250	1.375	35	1.438	35	1.500	35	NUP210E	22212E	5.55	141
SK 3282 or SK 3382	11.81	300	1.875	45	1.625	40	1.625	40	NUP211E	22213E	6.58	167
SK 4282 or SK 4382	11.81	300	2.250	55	2.062	50	2.000	50	NUP214E	22216E	8.45	215
SK 5282 or SK 5382	13.78	350	2.500	65	2.438	60	2.500	60	NUP217E	22219E	9.92	252
SK 6282 or SK 6382	15.75	400	3.000	75	2.750	70	3.000	70	NUP220E	23222E	12.67	322
SK 7282 or SK 7382	17.72	450	3.500	90	3.188	80	3.188	80	NUP222E	23224E	14.08	358
SK 8282 or SK 8382	21.65	550	4.250	110	4.062	100	4.000	100	NUP226E	23228E	16.76	426
SK 9282 or SK 9382	25.98	660	5.250	140	4.750	120	4.750	125	NUP232E	23236E	19.04	484
SK 10282 or SK 10382	25.98	660	6.250	160	----	----	6.250	160	23044MB	22244MB	23.70	602
SK 11282 or SK 11382	25.98	660	7.000	180	----	----	7.000	180	23048MB	22244MB	24.29	617
SK 12382	25.98	660	7.000	180	----	----	7.000	180	23048MB	22244MB	24.29	617
Helical-Bevel Speed Reducer												
SK 9012.1 or SK 9013.1	7.87	200	1.250	30	1.375	35	1.375	35	6010Z	22210E	6.17	157
SK 9016.1 or SK 9017.1	7.87	200	1.375	35	1.500	40	1.500	40	6010Z	22210E	6.17	157
SK 9022.1 or SK 9023.1	9.84	250	1.375	35	1.500	40	1.500	40	6010Z	22210E	7.13	181
SK 9032.1 or SK 9033.1	11.81	300	1.750	45	2.000	50	2.000	50	6014 2RS	22214ES	8.17	207
SK 9042.1 or SK 9043.1	13.78	350	2.375	65	2.375	60	2.375	60	NUP216E	22219ES	10.47	266
SK 9052.1 or SK 9053.1	15.75	400	2.875	75	2.750	70	3.250	70	NUP220E	23222ES	13.28	337
SK 9072.1	17.72	450	3.625	90	3.250	80	3.250	80	NUP222E	23224ES	15.74	400
SK 9072.1/32	17.72	450	3.625	90	3.250	80	3.250	80	NUP222E	23224ES	15.74	400
SK 9072.1/42	17.72	450	3.625	90	3.250	80	3.250	80	NUP222E	23224ES	15.74	400
SK 9082.1	21.65	550	4.375	110	4.000	110	4.000	110	NUP228E	23228ES	18.61	473
SK 9082.1/42	21.65	550	4.375	110	4.000	110	4.000	110	NUP228E	23228ES	18.61	473
SK 9082.1/52	21.65	550	4.375	110	4.000	110	4.000	110	NUP228E	23228ES	18.61	473
SK 9086.1	25.98	660	4.750	120	4.750	120	4.750	125	22232E	23236ES	21.50	546
SK 9086.1/52	25.98	660	4.750	120	4.750	120	4.750	125	22232E	23236ES	21.50	546
SK 9092.1	25.98	660	5.500	140	----	----	5.500	150	23040E	23236ES	25.57	650
SK 9092.1/52	25.98	660	5.500	140	----	----	5.500	150	23040E	23236ES	25.57	650
SK 9096.1	25.98	660	7.500	190	----	----	----	----	23040E	23236ES	25.57	650
SK 9096.1/62	25.98	660	7.500	190	----	----	----	----	23040E	23236ES	25.57	650
SK 9096.1/63	25.98	660	7.500	190	----	----	----	----	23040E	23236ES	25.57	650

VL2 & VL3 AGITATOR

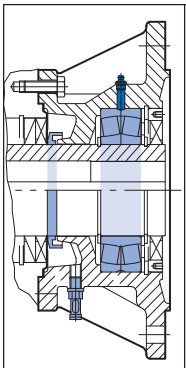
RATIO & SPEED

OFFSET PARALLEL CLINCHER

- Ratio range : 4.03:1 to 6616.79:1
- Speed range from 1750 rpm motor : 0.26 to 434 rpm
- 95.5% minimum standard efficiency

90 SERIES RIGHT ANGLE BEVEL

- Ratio range : 8.04:1 to 4916.63:1
- Speed range from 1750 rpm motor : 0.36 to 218 rpm
- 95.5% minimum standard efficiency



STANDARD CONFIGURATION

- B5 flange housing style
- Output shaft types : Keyed solid shaft, Keyed hollow shaft, Keyless shrink disc connector
- VLII-spread bearing design has an Increased bearing spread, and a Large double row spherical bearing on lower side
- VLIII-dry cavity design : VLII with added oil leakage control, Oil flinger, Oil accumulation cavity, Sight glass to shows if oil is present in the control cavity

STANDARD CONFIGURATION OPTIONS

Regreasable zerk lubricating nipple for lower bearing, Capacitive oil sensing switch, Capacitive oil switch

SHAFT DATA

- AISI 4140 output shaft material
- Inch shaft key dimensions according to AISI B17
- Metric shaft key dimensions according to DIN 6885
- Standard output shaft drill and tap
- Shrink disc size range [in] :1.250 to 7.000
- Shrink disc size range [mm] : 30 to 180

INTERNAL PARTS ASSEMBLY

- Heavy press fit assembly method
- Standard reversing duty
- Typical backlash range [arc minutes] : 6 to 13

GEARING

- Up to AGMA Class 13 quality rating on gears
- 58 Rockwell C minimum hardness of steel gears
- Ground or skive hobbed hard finishing of gear teeth
- Standard drop forged gear blanks
- 275% momentary overload capacity
- Standard hunting tooth ratios

HOUSING

- Class 35 gray iron typical housing material
- Single setup machining method
- UNICASE™ one piece main housing design
- Seals directly contact main housing
- Exceptional housing torsional stiffness
- Thick housing wall section
- Castings are dip sealed

BEARINGS

- ABEC-1 quality bearings
- Bearing spread is larger than standard unit by at least 50%
- Double row spherical lower output bearing
- Optional housing with grease zerk available for lower bearing regreasing
- NIGI 2EP lithium based lower bearing lubricant
- 50,000 + hours of L10 output bearing life

LUBRICANT & SEALING COMPONENTS

- Factory filled ISO 220 mineral oil
- Standard AUTOVENT™ breather style
- QUADRILIP™ output seal system
- 3 double lip & 2 single lip output shaft oil seals
- Double lipped lower flange seal
- Nitrile rubber oil seals

LUBRICANT & SEALING OPTIONS

Custom synthetic lubricating oil, High or low temperature lubricating oil, Fluid grease lubricant, Food grade lubricating oil, Long term storage preparation, Magnetic drain plug, Bullseye sight glass, Custom drain plug, Fluorinated rubber oil seal material

ENVIRONMENTAL PROTECTION

- Exterior primer coverage : all metal exterior surfaces
- Paint type : Water Based Resin
- Paint additive : 316 stainless steel flakes
- USDA incidental contact exposure : H1

ENVIRONMENTAL OPTIONS

Severe duty and washdown duty paint options, Custom paint, Top side shaft covers

DRIVESYSTEMS

www.nord.com

NORD Gear Corporation
National Customer Service Toll-Free: 888.314.6673
info.us@nord.com

NORD Gear Limited
Toll-Free in Canada: 800.668.4378
info.ca@nord.com

WEST
Corona, CA (Los Angeles)
Phone: 608.849.0190

MIDWEST
Waunakee, WI (Madison)
Phone: 608.849.7300

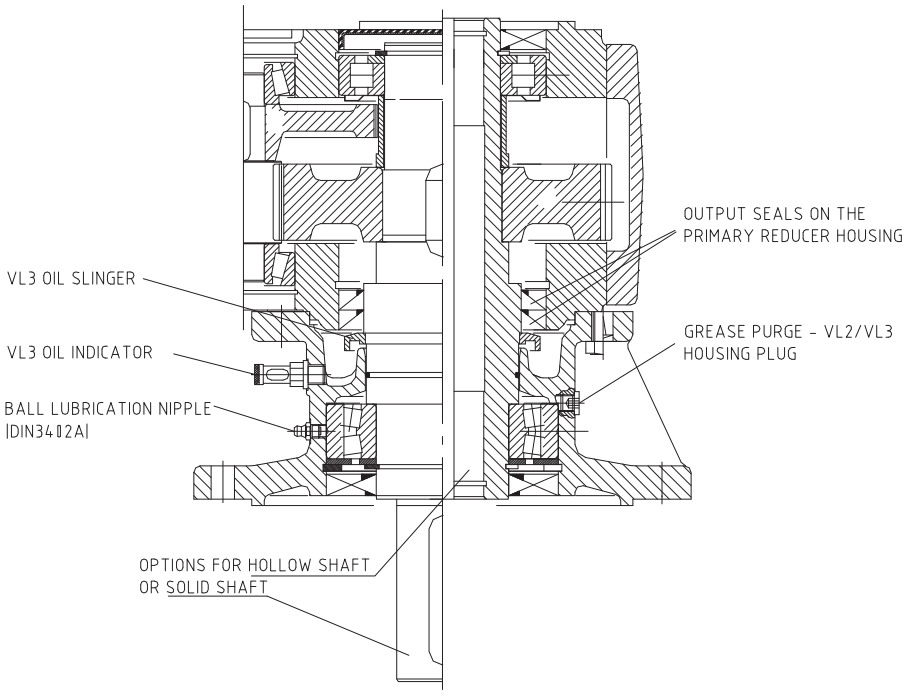
EAST
Charlotte, NC
Phone: 608.849.0140

CANADA
Brampton, ON (Toronto)
Phone: 905.796.3606

100200023/0509

PM064
GREASE LUBRICATION OF VL2/VL3 ASSEMBLY

TYPICAL VL2/VL3 ASSEMBLY - CLINCHER™ REDUCER SHOWN
BEVEL REDUCER OPTIONS ALSO AVAILABLE



VL2 & VL3 greased bearing lubrication
Standard factory lube:

STANDARD BEARING GREASE – NLGI 2EP Lithium

Ambient Temperature	Formulation
-20 to 140°F (-30 to 60°C)	Mineral

Optional bearing greases, which must be specified at time of order (do not mix grease formulations)

OPTIONAL BEARING GREASES

Ambient Temperature	Formulation	Manufacturer	Grease Brand Name
-40 to 230°F (-40 to 110°C)	Synthetic	Shell	Aeroshell 6
-40 to 230°F (-40 to 110°C)	*Food Grade* - Synthetic	Lubriplate	SFL1

Normal grease bearing re-lubrication intervals is every 5000 hours or every10 months (minimum)

GREASE QUANTITY

Clincher	**Helical/Bevel**	Grease Quantity
SK2282 - 5282	**SK9012.1 – 9052.1**	1 oz per interval
SK6282 - 8282	**SK9062.1 – 9082.1**	2 oz per interval
SK9282 – 12382	**SK9086.1 – 9092.1**	3 oz per interval

Note: Grease purge housing plug must be removed during the re-lubrication of the bearing.

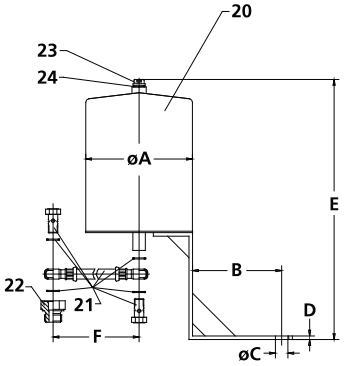
Remove and dispose of any old grease escaping the purge port, and re-install grease purge plug when finished.

LEFT BLANK

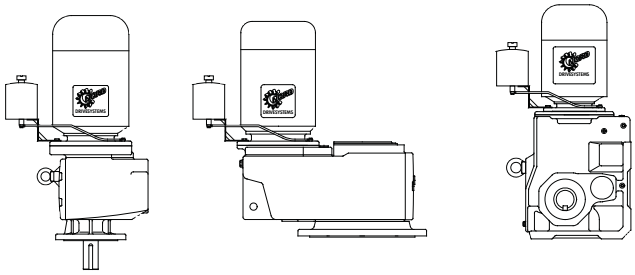
EXPANSION CHAMBERS INSTALLATION & MAINTENANCE MANUAL

Installation Instructions

Sometimes NORD requires the use of an oil expansion chamber when the motor or reducer input is mounted vertically. Consult your NORD catalog for additional information and application considerations.



1. Secure the gear reducer in the proper mounting position for the application and remove the vent plug from the gear reducer. The hose assembly kit (21) will be fitted to the reducer using the housing port provided.
2. When using the larger 2.7 and 5.4 liter chambers, screw the adapter fitting (22) into the reducer housing port. Use all sealing gaskets provided.
3. Mount the overflow tank (20) at the highest location from the reducer, as permitted by the hose assembly kit (21). Typical mounting configurations are represented below. Use one of the input cover's mounting bolts, to mount the chamber support leg to the reducer.



4. Be sure to use the proper fittings. Assemble one end of the vent-hose assembly (21) to bottom of the chamber and one-end to the reducer.
5. Secure the vent-plug (23) and gasket (24) that is supplied with the kit to the top of the expansion chamber.

STOP ***HARMFUL SITUATION*** **STOP**

Remove the protective "rubber element" from the supplied vent prior to use so that an open-vent is formed on top of the overflow tank. Avoid using a pressurized AUTOVENT™ breather on the overflow tank since this may create an undesired pressure-vacuum in the overflow tank.

Expansion Chamber Kit Dimensions & Parts List

Kit Part Number: 28390390 - 0.7 Liter Oil Expansion Chamber

Kit P/N	Ø A	B	Ø C	D	E	F	Units
28390390 (0.7 Liter)	3.94	1.97	0.53	0.20	8.50	19.69	inch
	100	50	13.5	5	216	500	mm

Item	Part Number	Description
20	28300390	Overflow Tank - 0.7 Liter
21	28310020	Flexible Vent Hose Assembly - Includes: Hose, metal gaskets & 2 Hollow Bolts (1 Bolt. - M12 X 1.5 and 1 Pc. - G1/4)
22	None	Adapter Fitting
23	22012004	Normal Style Vent Plug (M12 X 1.5, DIN 910)
24	25312150	Vent Plug Gasket (12 X 15.5 X 1.5)

Kit Part Number: 28390400 - 2.7 Liter Oil Expansion Chamber

Kit P/N	Ø A	B	Ø C	D	E	F	Units
28390400 (2.7 Liter)	5.91	4.92	0.69	0.20	15.22	27.56	inch
	150	125	17.5	5	386.5	700	mm

Item	Part Number	Description
20	28300400	Overflow Tank - 2.7 Liter
21	28310030	Flexible Vent Hose Assy - Includes: Hose, metal gaskets & 2 Hollow Bolts (2 Pcs. - G1/4)
22	22024030	Adapter Fitting (M24 X 1.5 to G1/4)
23	22012004	Normal Style Vent Plug (M12 X 1.5, DIN 910)
24	25312150	Vent Plug Gasket (12 X 15.5 X 1.5)

Kit Part Number: 28390400 - 2.7 Liter Oil Expansion Chamber

Kit P/N	Ø A	B	Ø C	D	E	F	Units
28390410 (5.4 Liter)	7.09	3.54	0.69	0.20	15.18	31.50	inch
	180	90	17.5	5	385.5	800	mm

Item	Part Number	Description
20	28300410	Overflow Tank - 5.4 Liter
21	28310040	Flexible Vent Hose Assy - Includes: Hose, metal gaskets & 2 Hollow Bolts (2 Pcs. - G1/4)
22	22030030	Adapter Fitting (M30 X 1.5 to G1/4)
23	22012004	Normal Style Vent Plug (M12 X 1.5, DIN 910)
24	25312150	Vent Plug Gasket (12 X 15.5 X 1.5)

Please see page 2 for gearbox compatability

Expansion Chamber Compatability Chart

Helical In-line	NORDBLOC™	NORDBLOC.1™	Clincher™	Helical-Bevel	Part Number	[lb]
SK 42/43 SK 52/53 SK 63	SK472/473 SK572/573 SK672/673 SK772/773 SK872/873 SK972/973	SK572.1/573.1* SK672.1/673.1*	SK 4282/4382 SK 5282/5382 SK 6382	SK 9042.1/9043.1 SK 9052.1/9053.1	28390390	11.0
SK 62 SK 72/73			SK 6282 SK 7282/7382	SK 9072.1 SK 9082.1	28390400	13.2
SK 82/83 SK 92/93 SK 102/103			SK 8282/8382	SK 9086.1 SK 9092.1	28390410	15.4

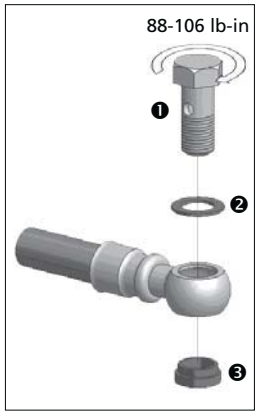
* Need to additionally order part #28390380 which is sub-assembly shown below.

Sub-Assembly P/N 28390380 for NORDBLOC®.1 gear units with M10x1 air vent.

❶	❷	❸	❹
			
1x DIN 7643 M10x1 283 00380	1x DIN 7603A Cu 10x16x1 253 10166	1x Ring 10x14x5 283 00370	1xDIN 9021 ø8,4 227 10840

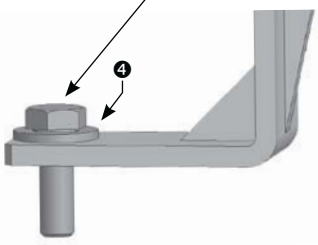
Assembly of the expansion unit at the gear unit. Types SK 572.1/573.1, SK 672.1/673.1

Vent Hose Sub-Assembly

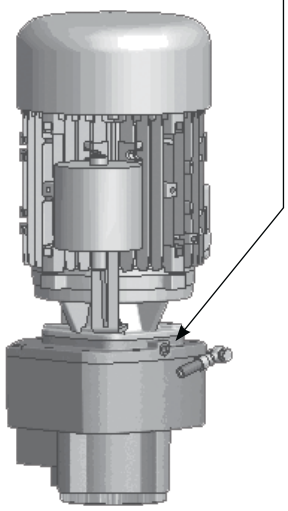


❹ For motor sizes 63, 71, 80, 90, 100 & 112

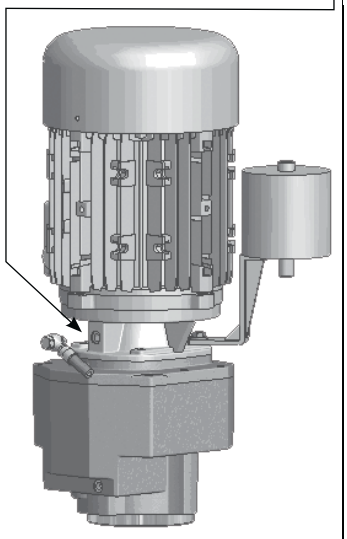
• Motor attachment bolt



Motor Sizes 63, 71 & 80:
Assembly vent-hose to port as shown.



Motor Sizes 90,100 & 112:
Assembly vent-hose to port as shown.



B 1091 – en

Motors

Operating and Assembly Instructions

NORD DRIVESYSTEMS

Safety and operating instructions for electric motors

(according to: Low Voltage Directive2006/95/EEC (as of 20/04/2016: 2014/35/EU

1 General

During operation, devices may, depending on their protection class, have live, bare, moving or rotating parts or hot surfaces.

Unauthorised removal of covers, improper use, incorrect installation or operation causes a risk of serious personal injury or material damage.

Further information can be found in this documentation.

All transportation, installation commissioning and maintenance work must be carried out by qualified personnel (compliant with IEC 364 or. CENELEC HD 384 or DIN VDE 0100 and IEC 664 or DIN VDE 0110 and national accident prevention regulations).

For the purposes of these basic safety instructions, qualified personnel are persons who are familiar with the assembly, installation, commissioning and operation of this product and who have the relevant qualifications for their work.

2. Proper use in Europe

The devices are components intended for installation in electrical systems or machines.

When installed in machines, the devices must not be commissioned (i.e. commencement of the proper use) until it has been ensured that the machine meets the provisions of the EC Directive 2006/42/EEC (Machinery Directive); EN 60204 must also be complied with.

Commissioning (i.e. implementation of proper use) is only permitted if the EMC directive (2004/108/EEC) is complied with (as of 20/04/2016: 2014/30/EU)).

Devices with a CE label meet the requirements of the Low Voltage Directive 2006/95/EEC (as of 20/04/2016: 2014/35/EU). The stated harmonized standards for the devices are used in the declaration of conformity.

Technical data and information for connection conditions can be found on the rating plate and in the documentation, and must be complied with.

The devices may only be used for safety functions which are described and explicitly approved.

3. Transport, storage

Information regarding transport, storage and correct handling must be complied with.

4. Installation

The installation and cooling of the equipment must be implemented according to the regulations in the corresponding documentation.

The devices must be protected against impermissible loads. Especially during transport and handling, components must not be deformed and/or insulation distances must not be changed.

Electrical components must not be mechanically damaged or destroyed (this may cause a health hazard!).

5. Electrical Connection

When working on live devices, the applicable national accident prevention regulations must be complied with (e.g. BGV A3, formerly VBG 4).

The electrical installation must be implemented according to the applicable regulations (e.g. cable cross-section, fuses, earth lead connections). Further instructions can be found in the documentation.

Information regarding EMC-compliant installation – such as shielding, earthing, location of filters and installation of cables – can be found in the documentation for the devices. These instructions must be complied with even with CE marked devices. Compliance with the limiting values specified in the EMC legal regulations is the responsibility of the manufacturer of the system or machine.

6. Operation

Where necessary, systems in which the devices are installed must be equipped with additional monitoring and protective equipment according to the applicable safety requirements, e.g. legislation concerning technical equipment, accident prevention regulations, etc.

The parameterisation and configuration of the devices must be selected so that no hazards can occur.

All covers must be kept closed during operation.

7. Maintenance and repairs

The following applies in particular for operation with frequency inverters:

After the devices are disconnected from the power supply, live equipment components and power connections should not be touched immediately, because of possible charged capacitors. Observe the applicable information signs located on the device.

Further information can be found in this documentation.

These safety instructions must be kept in a safe place!

Documentation

Title: B 1091

Order – No.: 6051302

Series: **Asynchronous motors / Synchronous motors**

• 1 and 3-phase asynchronous motors

SK 63*[1)]/*[2)] *[3)] up to SK 315*[1)]/*[2)] *[3)]

1) Power code: S, SA, SX, M, MA, MB, MX, L, LA, LB, LX, R, X, Y, A, W
- optionally supplemented with: H, P

2) Pole number labelling: 2, 4, 6, 8, ...

3) Further options

• 3-phase synchronous motors

SK 63*[1)]*[2)]/*[3)] *[4)] up to SK 132*[1)]*[2)]/*[3)] *[4)]

1) Winding version: T, F, ...

2) Power number: 1 to 9

3) Pole number labelling: 4, 6, 8, ...

4) Further options

• Three-phase asynchronous motors

SK 63*[1)]/*[2)] 2D *[3)] up to SK 200*[1)]/*[2)] 2D *[3)]

1) Power code: S, SA, SX, M, MA, MB, MX, L, LA, LB, LX, R, X, Y, A, W
- optionally supplemented with: H, P

2) Pole number labelling: 2, 4, 6

3) Options

with ATEX labelling II 2D Ex tb IIIC T . . . °C Db

SK 63*[1)]/*[2)] 3D *[3)] up to SK 200*[1)]/*[2)] 3D *[3)]

1) Power code: S, SA, SX, M, MA, MB, MX, L, LA, LB, LX, R, X, Y, A, W
- optionally supplemented with: H, P

2) Pole number labelling: 2, 4, 6

3) Options

with ATEX labelling II 3D Ex tc IIIB T . . . °C Dc

SK 63*[1)]/*[2)] 2G *[3)] up to SK 200*[1)]/*[2)] 2G *[3)]

1) Power code: S, SA, SX, M, MA, MB, MX, L, LA, LB, LX, R, X, Y, A, W
- optionally supplemented with: H, P

2) Pole number labelling: 2, 4, 6

3) further options

with ATEX labelling II 2G Ex e IIC T3 Gb

SK 63*[1)]/*[2)] 3G *[3)] up to SK 200*[1)]/*[2)] 3G *[3)]

1) Power code: S, SA, SX, M, MA, MB, MX, L, LA, LB, LX, R, X, Y, A, W
- optionally supplemented with: H, P

2) Pole number labelling: 2, 4, 6

3) further options

with ATEX labelling II 3G Ex nA IIC T3 Gc

Version list

Title, Date	Order number	Comments
B 1091, January 2015	6051302 / 0215	-
B 1091, March 2016	6051302 / 1016	• General corrections • Structural adjustments to document
B 1091, December 2016	6051302 / 4816	• General corrections
B 1091, June 2017	6051302 / 2417	• Technical supplements
B 1091, August 2017	6051302 / 3517	• Technical supplements

Copyright notice

Publisher

Getriebebau NORD GmbH & Co. KG
Getriebebau-Nord-Straße 1 • 22941 Bargteheide, Germany • http://www.nord.com/
Fon +49 (0) 45 32 / 289-0 • Fax +49 (0) 45 32 / 289-2253

Member of the NORD DRIVESYSTEMS Group