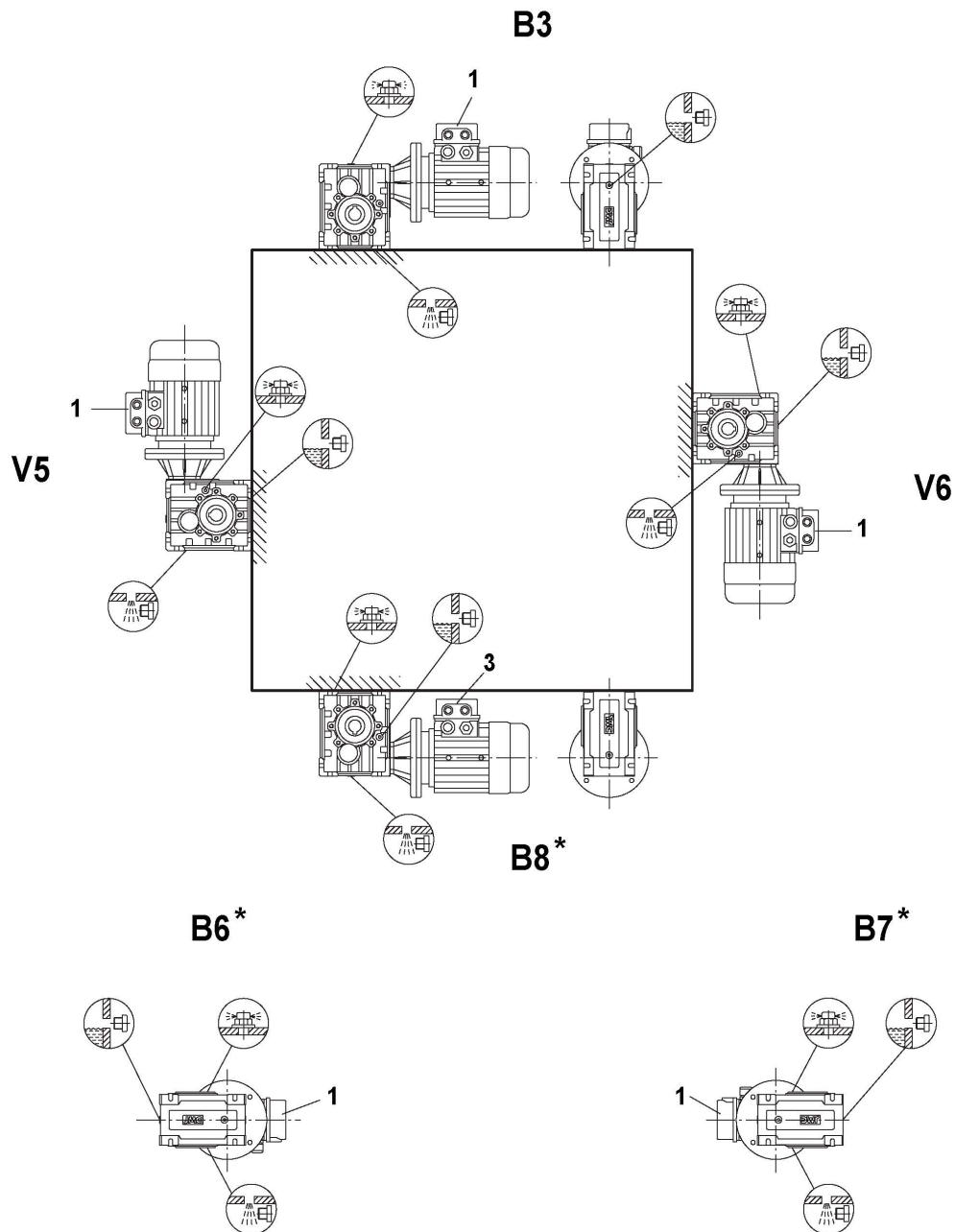
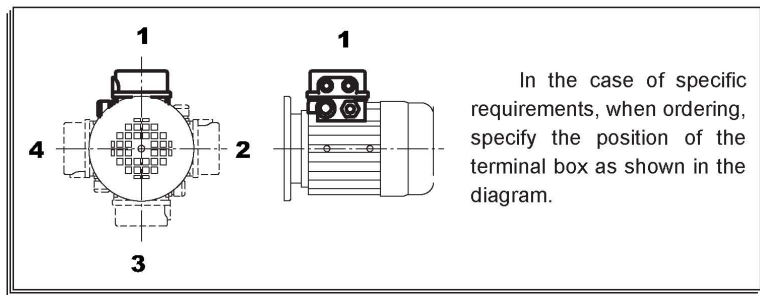


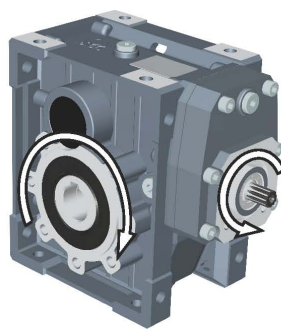
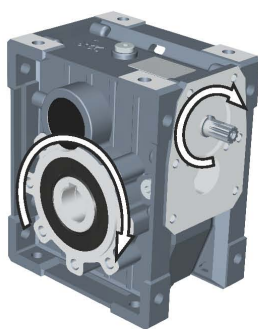
9.3 **TKM.. OR TKB..** Mounting Positions

Symbol	Meaning
	Breather valve
	Oil level plug
	Oil drain plug



*: It means the lubricant can't be added according to the oil level line plug, but also higher the plug the fill quantity as shown in the table

9.4 Direction of rotation



The motor can be run either CW or CCW while using with gearbox, the left chart is recommended

TKM..B / TKB..B

TKM..C / TKB..C

10. INSTALLATION

10.1 Note recommendations

To install the gear units it is necessary to note the following recommendations:

1. Check the correct direction of rotation of the gear units output shaft before fitting the unit to the machine.
2. Before mount with the prime mover and device, please check the reducer's every axial diameter, aperture, key and key slot, to be sure their dimensions are not deviation, and avoid assembling too tight or too loose, unless it will influence the reducer's performance.
3. The mounting on the machine must be stable to avoid any vibration.
4. Whenever possible, protect the gear units against solar radiation and bad weather.
5. In the case of particularly lengthy periods of storage (4-6 months), if the oil seal is not immersed in the lubricant inside the unit, it is recommended to change it since the rubber could stick to the shaft or may even have lost the elasticity it needs to function properly.
6. Painting must definitely not go over rubber parts and the holes on the breather plugs, if any.
7. When connect with hollow or solid shaft, please grease the joint to avoid lock or oxidation.
8. Check the correct level of the lubricant through the indicator, if there is one.
9. Starting must take place gradually, without immediately applying the maximum load.
10. Supporting unit is required when using various of reducer matched with motor directly and the weight of motor is a little bigger than common.
11. Ensure the motor cools correctly by assuring good passage of air from the fan side.
12. In the case of ambient temperatures $< -5^{\circ}\text{C}$ or $> +40^{\circ}\text{C}$ call the Technical Service.

10.2 Critical applications

The performance given in the catalogue correspond to mounting position B3 or similar, when the first stage is not entirely immersed in oil. For other mounting positions and/or particular input speeds, refer to the tables that highlight different critical situations for each size of gear units. It is also necessary to take due consideration of and carefully assess the following applications by calling our Technical Service:

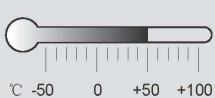
1. As a speed increasing.
2. Applications with especially high inertia.
3. Use in services that could be hazardous for people if the gear units fails.
4. Applications with high dynamic strain on the case of the gear units.
5. In places with T° under -5°C or over 40°C .
6. Use in chemically aggressive environments.
7. Use in a salty environment.
8. Use in radioactive environments.
9. Use in environments pressures other than atmospheric pressure.
10. Mounting positions not envisaged in the catalogue.

Avoid applications where even partial immersion of the gear units is required.

The maximum torque that the gear units can support must not exceed two times the nominal torque ($f_s = 1$) stated in the performance tables. Intended for momentary overloads due to starting at full load, braking, shocks or other causes, particularly those that are dynamic.

11. LUBRICATION

11.1 Types of lubrication

						lubrication type
TKM.. TKB..	Standard -10 +40	VG 220	Shell Omala 220	Mobilgear 630	BP Energol GR-XP 220	Mineral oil
	-20 +25	VG 150 VG 100	Shell Omala 100	Mobilgear 627	BP Energol GR-XP 100	
	-30 +10	VG 68-46 VG 32	Shell Tellus T 32	Mobil D.T.E. 13M		
	-40 -20	VG 22 VG 15	Shell Tellus T 15	Mobil D.T.E. 11M	BP Energol HLP-HM 15	
	-40 +80	VG 220	Shell Omala HD 220	Mobil SHC 630		Synthetic oil
	-40 +40	VG 150		Mobil SHC 629		
	-40 +10	VG 32		Mobil SHC 624		

11.2 Lubricant fill quantity

The specified fill quantities are recommended values. The precise values vary depending on the number of stages and gear ratio. When filling, it is essential to check the oil level plug since it indicates the precise oil capacity. The following tables show guide values for lubricant fill quantities in relation to the mounting position (B3、B6、B7……)

TKM.. Lubricant fill quantity

Gear units	Fill quantity in liters (L)					
	B3	B6	B7	B8	V5	V6
TKM28B	0.22	0.20*	0.13*	0.15	0.25	0.14
TKM28C #	0.07	0.04	0.04	0.05	0.08	0.09
TKM38B	0.42	0.35*	0.24*	0.22	0.46	0.25
TKM38C #	0.07	0.04	0.04	0.05	0.08	0.09
TKM48B	0.70	0.58*	0.42*	0.42	0.75	0.45
TKM48C #	0.13	0.09	0.09	0.09	0.15	0.17
TKM58B	1.21	0.95*	0.72*	0.67	1.30	0.74
TKM58C #	0.13	0.09	0.09	0.09	0.15	0.17
TKM68B	2.15	1.70*	1.10*	1.25	2.20	1.20
TKM68C #	0.25	0.17	0.17	0.20	0.32	0.36

TKB.. Lubricant fill quantity

Gear units	Fill quantity in liters (L)					
	B3	B6	B7	B8	V5	V6
TKB38B	0.38	0.35*	0.25*	0.26*	0.44	0.25
TKB38C #	0.07	0.04	0.04	0.05	0.08	0.09
TKB48B	0.66	0.60*	0.45*	0.48	0.78	0.48
TKB48C #	0.13	0.09	0.09	0.09	0.15	0.17
TKB58B	1.15	0.95*	0.70*	0.75*	1.25	0.75
TKB58C #	0.13	0.09	0.09	0.09	0.15	0.17
TKB68B	2.00	1.70*	1.10*	1.40*	2.20	1.20
TKB68C #	0.25	0.17	0.17	0.20	0.32	0.36

#: Means the oil quantity in the 3rd stage housing, as this one is separated from the 2nd housing, please fill them separately while in 3 stages.

*: It means the lubricant can't be added according to the oil level line plug, but also higher the plug the fill quantity as shown in the table

12. MAINTENANCE

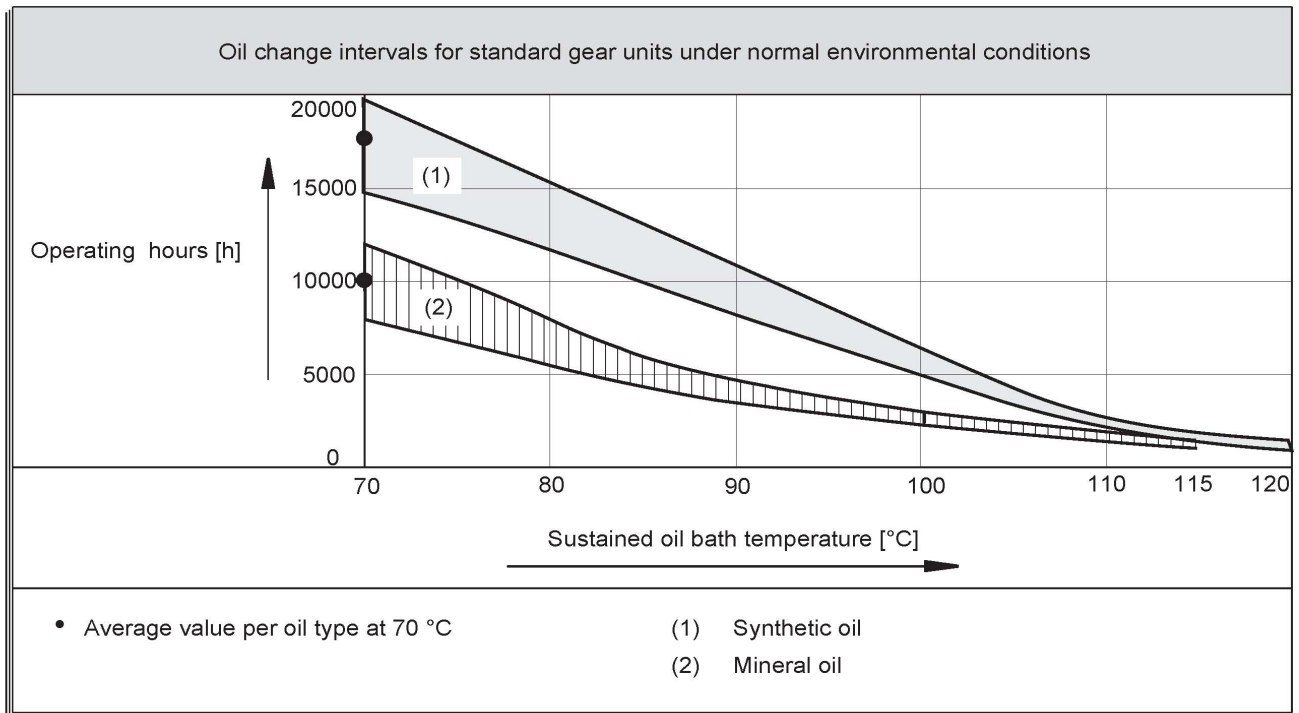
1). For gear units, first oil change should be after about 300 hours (run-in period). The right lotion is required to clean the gear units with care. Never mix the synthetic oil and mineral oil together.

2). Every 3000 working time, at least every 6 months, you have to check the oil and oil level, the seals visually for leakage. For IEC input gear units, the elastomer should be tested or replaced if necessary.

3). Depending on the operating conditions (see chart below), every 3 years at the latest for inspection is needed. Then change the mineral oil and replace the bearing grease.

4). Depending on the operating conditions, change the oil seals on output shaft.

5). Once the malfunctions appear, stop disassembling the parts, and firstly please contact the customer service (the information about specification, delivery date, series number, time used, name of machine, machine manufacturer, malfunction problems is required) , then take the reasonable measures.



13. STORAGE

- 1). Under roof, protected against rain and snow, no shock loads.
- 2). Underlay the block and other material between the ground and equipment.
- 3). The opened but not used gear units should be added with the anti-corrosive oil on its surface, and then return to the packing containers timely.
- 4). Two years or more given regular inspections. Check for cleanliness and mechanical damage as part of the inspection, Check corrosion protection.

14. NOTICE FOR ORDER

Please offer the following information when place the orders:

- 1). the model mark of the gear units (type, ratio, power and mounting position).
- 2). generally the gear units paint in silver.
- 3). quantity ordered.
- 4). other special requirements.
- 5). company, contact and telephone.