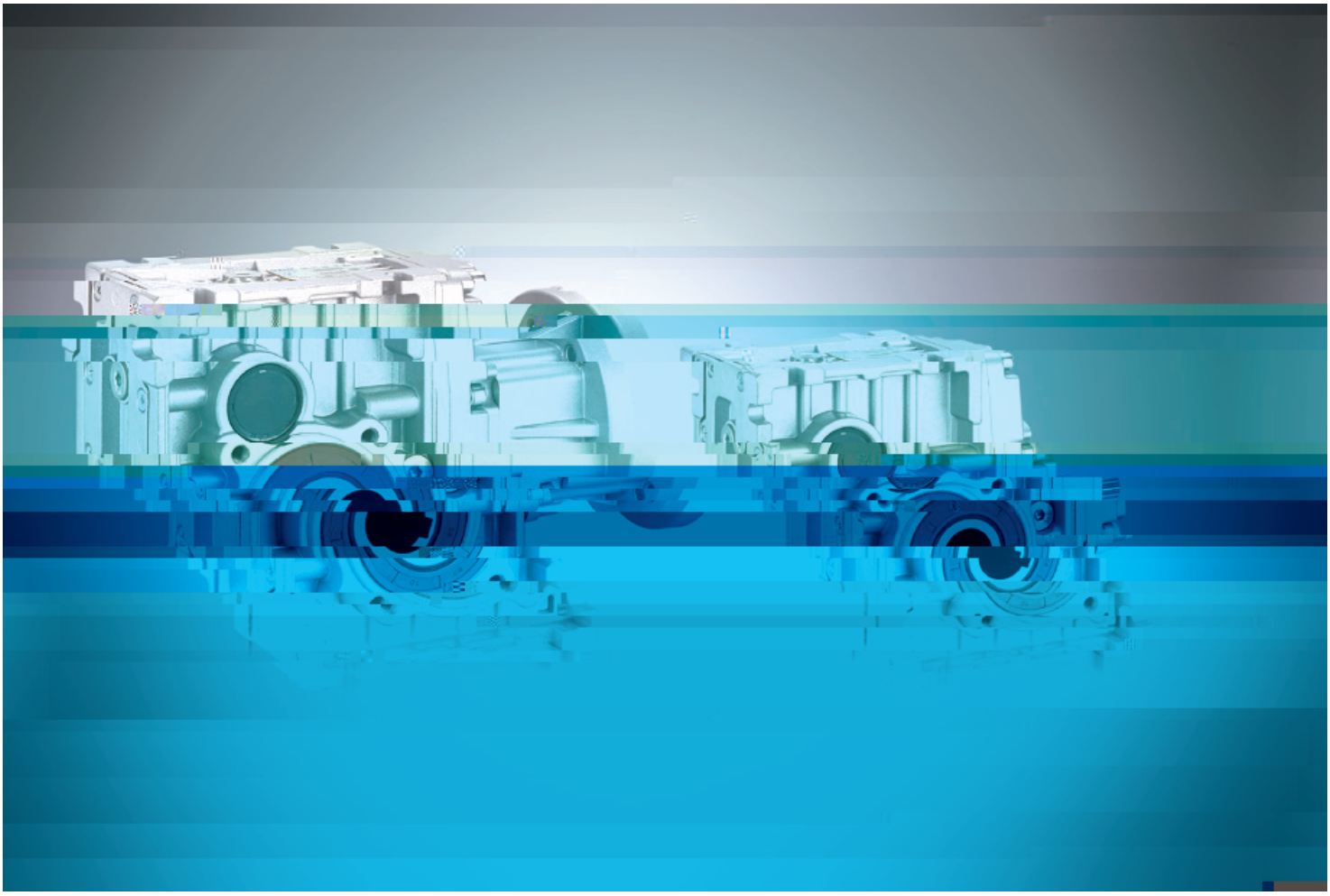


TKM

TKM Series Helical-Hypoid Gear Units

DECELERATOR & OTORS

1. Basic Structure

No.	Parts
1	/ Pinion
2	/ Gear
3	/ Pinon shaft
4	/ Gear
5	/ Pinon shaft
6	/ Gear
7	/ Hollow shaft
8	/ Closing cap
9	/ Oil seal
10	/ Intput flange
11	/ Bearing
12	/ Hole-circlip
13	/ Inner hex screw
14	/ Intput shaft
15	/ Spacer
16	/ Key
17	/ Breather valve
18	/ Gearcase
19	/ Stifte
20	/ Bearing
21	/ Bearing
22	/ Bearing
23	/ Housing gasket
24	/ Bearing

No.	Parts
25	/ Key
26	/ Oil seal
27	/ Inner hex screw
28	/ Bearing
30	/ Bearing
31	/ 3 stage gearcase
32	/ Hole-circlip
33	/ Hole-circlip
34	/ Rubber boot
35	/ Bearing
36	/ Key
37	/ Bearing
39	/ Shaft-circlip
40	/ Output flage
41	/ Inner hex screw
42	/ Key
44	/ Oil plug
47	/ Oil seal
48	/ Shaft-circlip
49	/ Gasket
50	/ Key
51	/ Key
52	/ Double output shaft
53	/ Single output shaft

2. Sumarize

2.1 Proddd ardrid

Load classifications:

• Screw feeders for light materials, fans, assembly lines, conveyor belts for light materials, small mixers, lifts, cleaning machines, fillers, control machines.

• Winding devices, woodwor⁄ing machine feeders, goods lifts, balancers, threading machines, medium mixers, conveyor belts for heavy materials, winches, sliding doors, fertilize scrapers, pac⁄ing machines, concrete mixers, crane mechanisms, milling cutters, folding machines, gear pumps.

• Mixers for heavy materials, shears, presses, centrifuges, rotating supports, winches and lifts for heavy materials, grinding lathes, stone mills, buc⁄et elevators, drilling machines, hammer mills, cam presses, folding machines, turntables, tumbing barrels, vibrators, shredders.

4.5.2 Mass Acceleration Factor

;

The mass acceleration factor is calculated as follows:

$$f_a = \frac{J_c}{J_m}$$

f_a Mass acceleration factor

J_c Ꝁ All external mass moments of inertia (⁄gm^2)

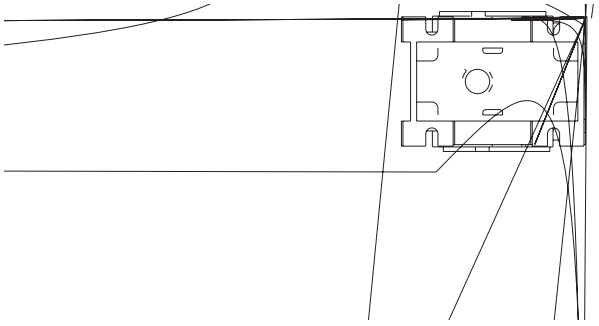
J_m

mn m

4.6 Overhung loads and axial forces

ئۆ ٿ ~ ئۆ ɔ Ꝁ Ɵ ڕ ٮ ٮ ٮ Ɵ Ꝁ fz ٮΩ ; :

When determining the resulting radial loads, the type of transmission elements, mounted on the shaft end must be considered. Various transmission elements are corresponding with following transmission element factors fz:



6. Gear Unit Selection Tables

6.1 Possible Geometrical Combinations

TKM050.... n_1=1400r/min **130Nm**

¨E ڑ ˝ یی Gear Unit	i ǻ Nominal	i Actual	n_2 [r/min]	M_{2max} [Nm]	F_{r2} [N]	63B5	71B5 71B14	80B5 80B14	90B5 90B14
3 /3 Stage									
TKM050C	300	283.14	4.8	110	4100				
TKM050C	250	239.8	5.8	130	4100				
TKM050C	200	196.7	7	130	4100				
TKM050C	150	144	9.6	130	4000				
TKM050C	120	118	12	130	3770				
TKM050C	100	99.2	14	130	3560				
TKM050C	75	73.2	19	130	3220				
TKM050C	60	67.22	23	120	3030				
TKM050C	50	51.4	27	110	2860				
2 /2 Stage									
TKM050B	60	57.67	24	110	2960				
TKM050B	50	48.85	29	130	2790				
TKM050B	40	40.08	35	130	2610				
TKM050B	30	29.33	48	130	2350				
TKM050B	25	24.06	59	130	2200				
TKM050B	20	20.20	70	130	2080				
TKM050B	15	14.92	94	130	1880				
TKM050B	12.5	12.47	113	130	1770				
TKM050B	10	10.47	134	130	1670				
TKM050B	7.5	7.73	182	100	1510				

TKM063.... n_1=1400r/min **200Nm**

¨E ڑ ˝ یی Gear Unit	i ǻ Nominal	i Actual	n_2 [r/min]	M_{2max} [Nm]	F_{r2} [N]	63B5	71B5 71B14	80B5 80B14	90B5 90B14
3 /3 Stage									
TKM063C	300	289	4.7	170	4800				
TKM063C	250	230	5.8	200	4800				
TKM063C	200	200	7.2	200	4800				
TKM063C	150	157	9.3	200	4650				
TKM063C	125	124.9	12	200	4330				
TKM063C	100	97.7	14	200	4070				
TKM063C	75	71.5	20	160	3650				
TKM063C	60	64.7	23	140	3480				
TKM063C	50	50.65	27	120	3270				
2 /2 Stage									
TKM063B	60	63.83	24	170	3430				
TKM063B	50	50.28	29	200	3190				
TKM063B	40	40.15	36	200	2940				
TKM063B	30	31.42	47	200	2720				
TKM063B	25	24.98	58	200	2530				
TKM063B	20	19.5	70	200	2380				
TKM063B	15	14.3	96	190	2130				
TKM063B	12.5	12.94	111	165	2030				
TKM063B	10	10.13	134	135	1910				
TKM063B	7.5	7.41	185	100	1710				

TKM075.... n_1=1400r/min **350Nm**

TKM090.... n_1=1400r/min **500Nm**

6.2 TKM .... **Performance Paramater**

TKM .... **Performance Paramater**

TKM .... **Performance Paramater**

TKM .... **Performance Paramater**

TKM .... **Performance Paramater**

P_{1n} [kW]	n_2 [r/min]	M_{2n} [Nm]	i ắ Nominal	i Actual	F_{r2} [N]	fs		

TKM .... **Performance Paramater**

P_{1n} [kW]	n_2 [r/min]	M_{2n} [Nm]	i ắ Nominal	i Actual	F_{r2} [N]	fs			

TKM .... **Performance Paramater**

TKM .... **Performance Paramater**

TKM .... **Performance Paramater**

P1n [kW]	n2 [r/min]	M2n [Nm]	i ǻ Nominal	i Actual	Fr2 [N]	fs			Page
0.55	56	89	25	25.78	3500	3.9	TKM075B	80B5/B14	30
	14.4	335	60	60	5480	1.0	TKM075C	80B5/B14	30
	18.3	264	50	47	5060	1.3			
	15.1	326	60	57	5390	1.1	TKM075B	80B5/B14	30
	18.7	264	50	49.76	5030	1.3			
	22.4	220	40	38	4730	1.6			
	29.8	166	30	29.6	4310	2.1			
	36	138	25	25.78	4050	2.5			
	45	109	20	19.09	3740	3.2			
	60	83	15	14.87	3410	4.2			
	9.5	509	300	295.18	7990	0.9	TKM090C	80B5/B14	31
	11.6	416	250	240.89	7470	1.2			
	14.0	346	200	200.66	7030	1.4			
	18.5	261	150	151.20	6390	1.9			
	22.2	217	125	125.95	6010	2.3			
	28.2	171	100	99.22	5550	2.9			
	37	130	75	75.45	5070	3.8			
	45	108	60	62.43	4760	4.2			
	57	85	50	49.18	4390	4.1			
	9.3	522	150	151.20	8050	1.0	TKM090C	71B5	31
	11.1	435	125	125.95	7580	1.2			
	14.1	342	100	99.22	7000	1.5			
	18.6	260	75	75.45	6390	1.9			
	22.4	215	60	62.43	6000	2.1			

TKM .... **Performance Paramater**

P_{1n} [kW]	n_2 [r/min]	M_{2n} [Nm]	ắ i Nominal	i Actual	F_{r2} [N]	fs			

TKM .... **Performance Paramater**

P_{1n} [kW]	n_2 [r/min]	M_{2n} [Nm]	i ắ Nominal	i Actual	F_{r2} [N]	fs			

TKM .... **Performance Paramater**

P1n [kW]	n2 [r/min]	M2n [Nm]	i Nominal	i Actual	Fr2 [N]	fs			Page
1.1	71	140	20	19.09	3230	2.5	TKM075B	90B5/B14	30
	93	106	15	14.87	2950	3.3			
	113	88	12.5	11.8	2770	4.0			
	29.8	332	30	29.6	4310	1.1	TKM075B	90B5/B14	30
	36	276	25	25.78	4050	1.3			
	45	218	20	19.09	3740	1.6			
	60	166	15	14.87	3410	2.1			
	72	137	12.5	11.8	3210	2.6			

TKM .... **Performance Paramater**

TKM .... **Performance Paramater**

P_{1n} [kW]	n_2 [r/min]	M_{2n} [Nm]	i Nominal	i Actual	F_{r2} [N]	fs			Page
2.2	35	566	40	40.13	5170	0.9	TKM090B	100B5/B14	31
	46	427	30	30.24	4710	1.2			
	56	355	25	25.19	4430	1.4			
	71	280	20	19.84	4090	1.8			
	93	213	15	15.09	3730	2.3			
	112	176	12.5	12.49	3510	2.6			
	142	139	10	9.84	3240	2.6			
	187	106	7.5	7.48	2950	2.7			
	36	553	25	25.19	5130	0.9	TKM090B	112B5/B14	31
	45	435	20	19.84	4740	1.1			
	60	331	15	15.09	4330	1.5			
	72	274	12.5	12.49	4060	1.7			
	91	216	10	9.84	3750	1.7			
	120	164	7.5	7.48	3420	1.7			
3.0	70	386	40	38	3240	0.9	TKM075B	100B5/B14	30
	93	291	30	29.6	2950	1.2			
	111	242	25	25.78	2770	1.4			
	141	191	20	19.09	2560	1.8			
	186	145	15	14.87	2340	2.4			
	224	120	12.5	11.8	2190	2.9			
	285	95	10	9.21	2030	3.7			
	374	72	7.5	8	1850	3.9			
	93	290	15	14.87	2950	1.2	TKM075B	100B5/B14	30
	112	240	12.5	11.8	2770	1.5			
	142	189	10	9.21	2550	1.8			
	187	144	7.5	8	2330	1.9			
	47	568	60	59.04	4670	0.8	TKM090B	100B5/B14	31
	58	463	50	48.48	4360	1.1			
	70	386	40	40.13	4110	1.3			
	93	291	30	30.24	3740	1.7			
	111	242	25	25.19	3520	2.1			
	141	191	20	19.84	3250	2.6			
	186	145	15	15.09	2960	3.4			
	224	120	12.5	12.49	2780	3.8			
	285	95	10	9.84	2570	3.8			
	374	72	7.5	7.48	2340	3.9			
	56	485	25	25.19	4430	1.0	TKM090B	100B5/B14	31
	71	382	20	19.84	4090	1.3			
	93	290	15	15.09	3730	1.7			
	112	240	12.5	12.49	3510	1.8			
	142	189	10	9.84	3240	1.9			
	187	144	7.5	7.48	2950	1.9			
4.0	111	323	25	25.78	2770	1.1	TKM075B	112B5/B14	30
	141	254	20	19.09	2560	1.4			
	186	194	15	14.87	2340	1.8			

TKM .... **Performance Paramater**

P_{1n} [kW]	n_2 [r/min]	M_{2n} [Nm]	i Nominal	i Actual	F_{r2} [N]	fs		Page

6.3 TKM ...HS **Performance Paramater**

M_{2max} [Nm]	n_2 [r/min]	i ắ Nominal	i Actual	P_{1n} [kW]	F_{r2} [N]	F_{r1} [N]		

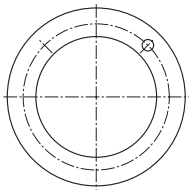
TKM ...HS **Performance Paramater**

M_{2max} [Nm]	n_2 [r/min]	i ắ Nominal	i Actual	P_{1n} [kW]	F_{r2} [N]	F_{r1} [N]		

7. Outline Dimension Sheet

7.1 TKM .... Outline Dimension

TKM050B..



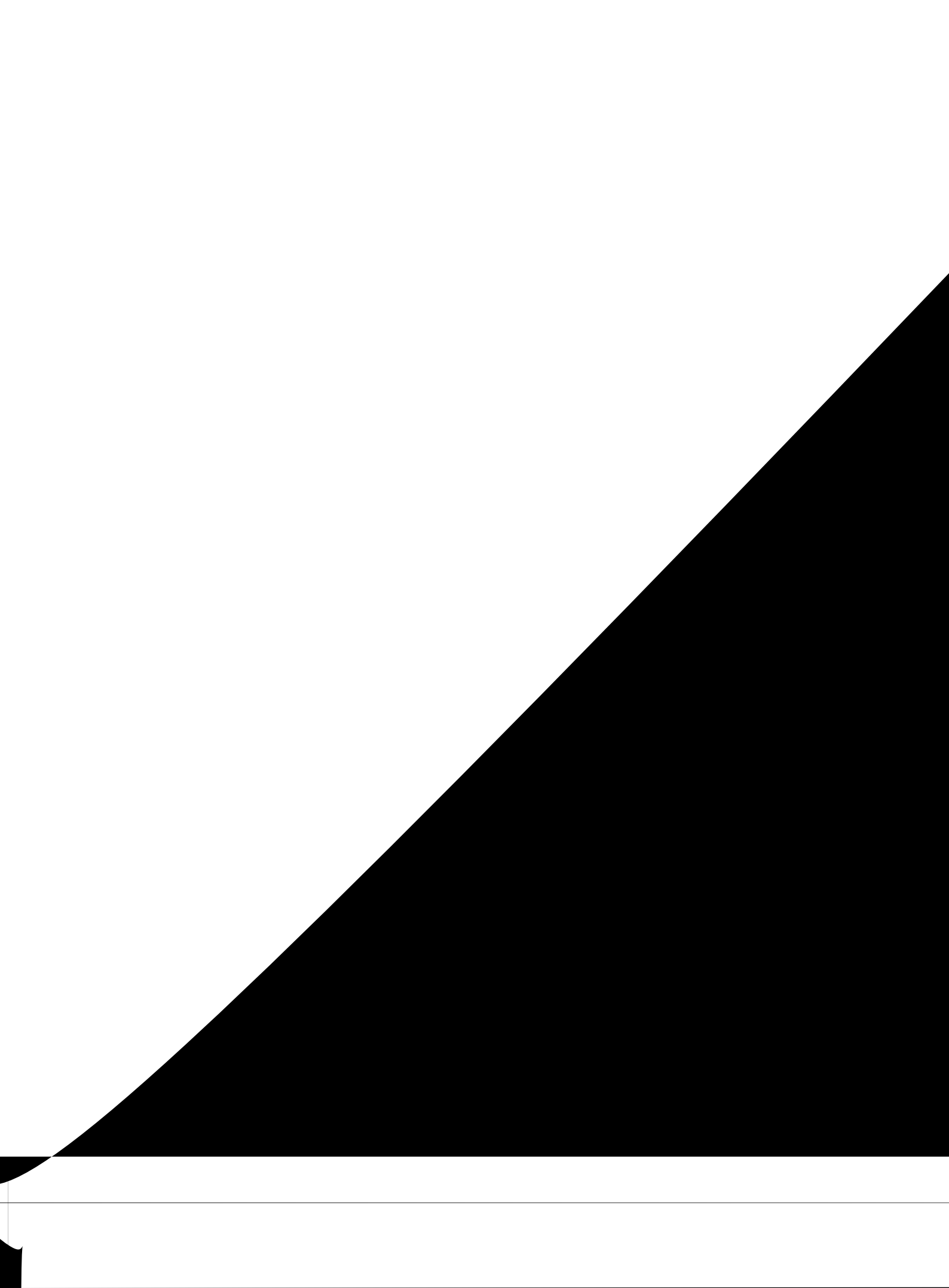
IEC	D(E8)	b	t	p	M	N	S	T	L1	L2	D1(H8)	b1	t1
63B5	11	4	12.8	140	115	95	9	4	106	140	20*	6*	22.8*
71B5	14	5	16.3	160	130	110	9	4	113	147	24*	8*	27.3*
71B14	14	5	16.3	105	85	70	7	4	113	147	25	8	28.3
80B5	19	6	21.8	200	165	130	11	4	133	167	* У ł ╥		
80B14	19	6	21.8	120	100	80	7	4	133	167	* Only on request		
90B14	24	8	27.3	140	115	95	9	4	133	167			

(ˆ ₿) ≈ 4.2▶g, Weight (without motor) ≈ 4.2▶g

FC **FE**

		b	t	p	M	N	S	T	L1	L2	D1(H8)	b1	t1
		4	12.8	140	115	95	9	4	117	151	25	8	28.3
		5	16.3	160	130	110	9	4	124	158	28*	8	31.3
	14	5	16.3	105	85	70	7	4	124	158	30*	8	33.3
	19	6	21.8	200	165	130	11	4	144	178			
	19	6	21.8	120	100	80	7	4	144	178	*		
35	24	8	27.3	200	165	130	11	4	144	178	* Only on request		
90B14	24	8	27.3	140	115	95	9	4	144	178			

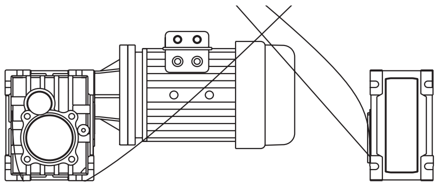
( ) ≈ 6.0 g, Weight (without motor) ≈ 6.0 g



Item	B	D2j6	G2	G3	a	b2	f2	t2
TKM050B	23	11	65	60	57			

9. Installation Positions Diagram

9.1 TKM .... Mounting Positions

B3	B6	V5	V6
			
B8	B7		

9.2 Position Diagram For Output Flange

FA1, FB1, FC1, FD1, FE1	FA2, FB2, FC2, FD2, FE2

9.3 Position Diagram For Single Output Shaft

SS1	SS2

9.4 Position of Motor Terminal Box

In the case of specific requirements, when ordering, specify the position of the terminal box as showen in the diagram.

10. Installation

10.1 Note Recommendations

To instal the reduction unit it is necessary to note the following recommendations:

- Check the correct direction of rotation of the reduction unit output shaft before fitting the unit to the machine.
- 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.
- The mounting on the machine must be stable to avoid any vibration.
- Whenever possible, protect the reduction unit against solar radiation

The perfomance 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/of particular input speeds, refer to the tables that highlight different critical situations for each size of reduction unit. It is also necessary to take due consideration of and carefully assess the follwing applications by calling our technical service:

- As a speed increasing.
- Applications with especially nigh inertia.
- Use in services that could be hazardous for people if the reduction unit fails.
- Applications with high dynamic strain on the case of the reduction unit.
- In places with To under -5°C or over 40°C.
- Use in chemically aggressive environments.
- Use in a salty environment.
- Use in radioactive environments.
- Use in environments pressures other than atmospheric pressure.
- Mounting positions not envisaged in the catalogue.

Avoid applications where even partial immersion of the reduction unit is required.

The maximum torque that the gear reducer can support must not exceed two times the nominal torque (fs=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

	Shell	BP	
			矿物油 Mineral oil
			合成油 Synthetic oil

11.2 Lubrication Fill Quantity

ε ϧ ᵉ ɟ ϧ ɔ Ά ˧ Ⱪ Ă ɟ Ж ﯽ ᵐ ε ɟ ˜
Ж ϧ ˜ Ḥ ɟ
; Ψ Ώ Ό Ђ (B3 ɞ B6 ɞ B7……) Έ ȝ Ά ϧ Ẫ ᵉ ɟ

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……)

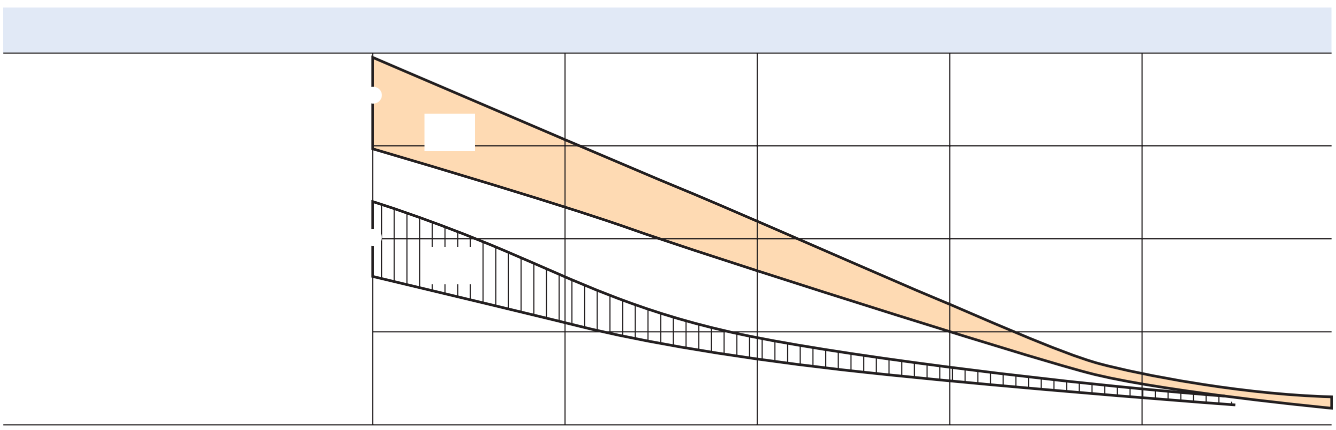
TKM.. **Lubrication Fill Quantity**

Gear Units	Fill quantity in liters(/L)					
	B3	B6	B7	B8	V5	V6
TKM050B	0.22	0.20*	0.13*	0.15	0.25	0.14
TKM050C	0.07	0.04	0.04	0.05	0.08	0.09
TKM063B	0.42	0.35*	0.24*	0.22	0.46	0.25
TKM063C	0.07	0.04	0.04	0.05	0.08	0.09
TKM075B	0.70	0.58*	0.42*	0.42	0.75	0.45
TKM075C	0.13	0.09	0.09	0.09	0.15	0.17
TKM090B	1.21	0.95*	0.72*	0.67	1.30	0.74
TKM090C	0.13	0.09	0.09	0.09	0.15	0.17

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

12. Maintenance

- 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.
- Every 3000 working time, at least every 6months, you have to check the oil and oil level, the seals visually for leakage. For IEC imput gear units, the elastomer should be tested or replaced if necessary.
- 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.
- Depending on the operating conditions, change the oil seals on output shaft.
- 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.



16. (Charge Characteristic Chart (for reference)

(Charge Characteristic Chart (for reference)

Metal Roller Machine	
** Sheet rolling mill	C
ıı ῃ ͑Υ ** Trimming shears	B
Pipe welder	C
(ᡁ)Soldering machine(belt material and wire rod)	B
Wire drawbench	B
Metal Processing Machine Tools	
͑Ω Power shaft	A
** Forging maehine	C
Drop hammer	C
ڛ Machine tool and necessary	A
ڛ ζ ꝃ Machine tool and main driving equipment	B
ώ Metal facing machineSold	

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