

## Servo Planetary Gearbox Advanced Line

**KOFON**  
Drive the World

| CaesarPlanetary®

Servo Planetary Gearbox Advanced Line

2022 Edition



## CaesarPlanetary®

CaesarPlanetary® is the core sub-brand under flag of **KOFON**® Motion Group. The CaesarPlanetary® focuses on the servo planetary gearbox technology and manufacturing. It is dedicated to serve global automation customers with high level servo planetary gearbox products and professional motion technical service.

The **KOFON**® possesses expertise for the mastery of high precision motion control technologies. The company group established in 1998.

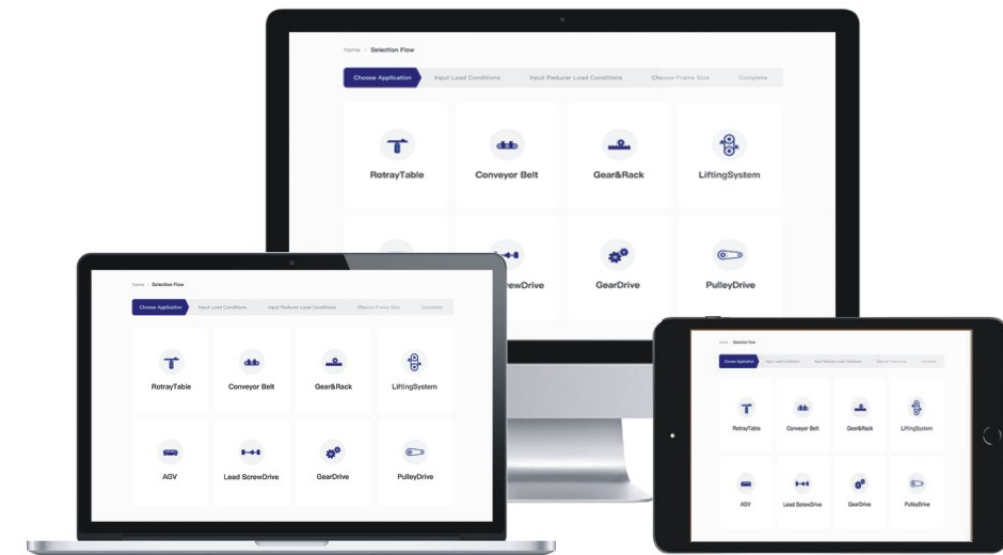
Now it employs over 650 staffs worldwide. We focus on the development, manufacturing and sales of the high precision planetary gearbox, spiral bevel gearbox and industrial automation integration solutions. Our reliable competence industry including high precision machine tools, intelligent logistic systems, robotics and new energy.

Kofon Motion aim to be dedicated to serve global customers with the reliable precision motion solutions.



## Benefit with Powerful Gearbox Design Programme (KDP)

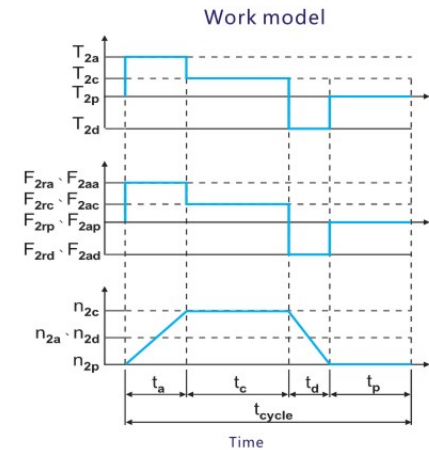
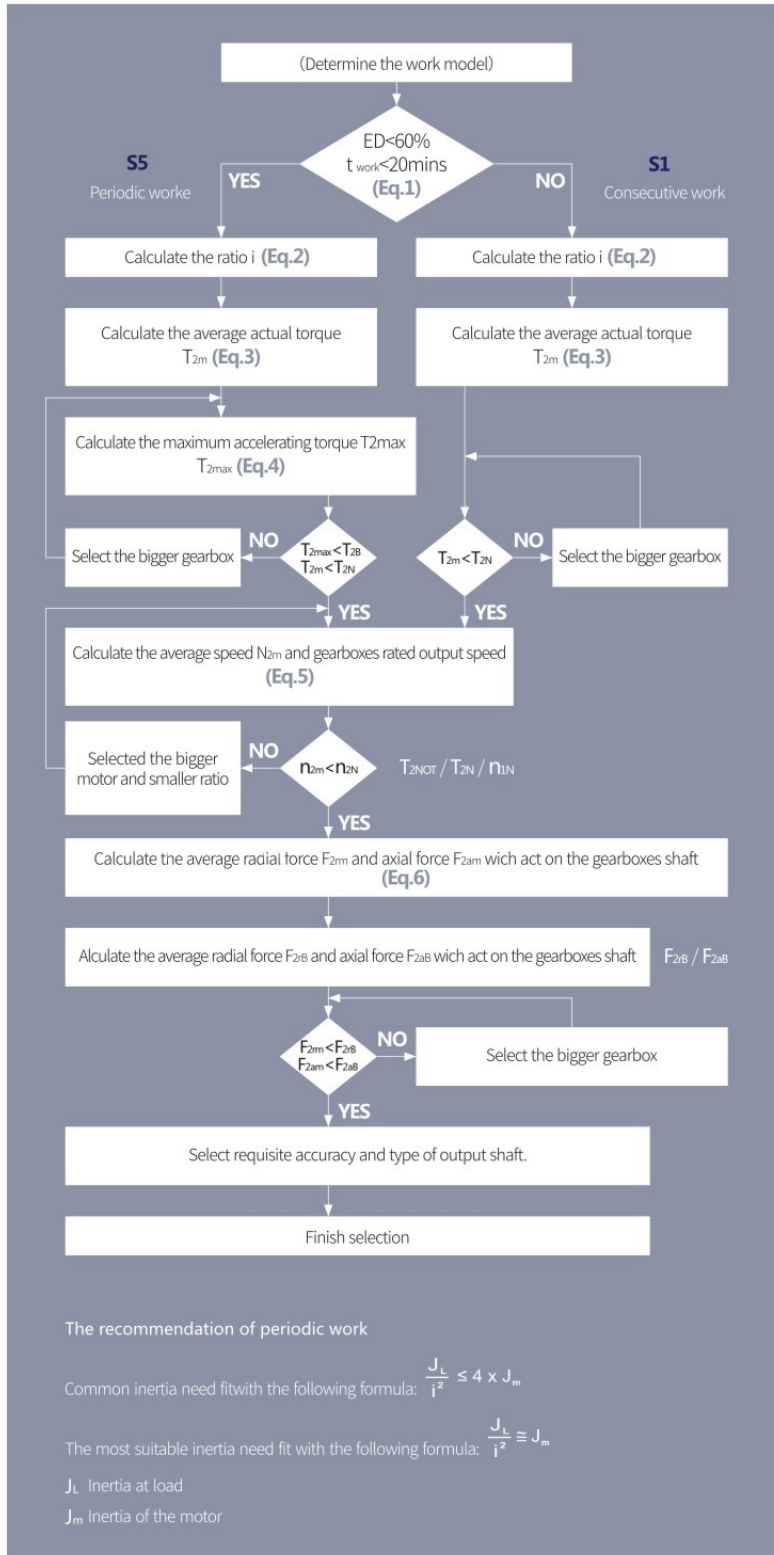
- The Kofon Design Programme (KDP) support you to realize the optimal portfolio of servo motor and gearbox by few steps.
- The KDP makes it available to get access to almost servo motors in the global market, and huge numbers of applications like pinions, spindles, belts, conveyors, rotary tables.
- You can also find the solutions by different industrial application sections from KDP online.
- The drawings could be download free from KDP online and the available drawing in format pdf, dwg and step.





Gearbox Selection

Order Instructions



$$1. ED = \frac{t_a + t_c + t_d}{t_{cycle}} \times 100\%, t_{work} = t_a + t_c + t_d$$

Eq.1  
 explanation :  
 a:accelerated c:constant  
 d:deceleration p:stop

$$2. i = \frac{n_m}{n_{work}}$$

Eq.2  
 n<sub>m</sub> Output speed of motor  
 n<sub>work</sub> Actual speed on work

$$3. T_{2m} = \sqrt[3]{\frac{n_{2a} \times t_a \times T_{2a}^3 + n_{2c} \times t_c \times T_{2c}^3 + n_{2d} \times t_d \times T_{2d}^3}{n_{2a} \times t_a + n_{2c} \times t_c + n_{2d} \times t_d}}$$

Eq.3

$$4. T_{2max} = T_{mB} \times i \times k_A \times \eta$$

Eq.4

KA Coefficient at load

KA	Periodic times/hour
1.0	0-1,000
1.1	1,000-1,500
1.3	1,500-2,000
1.6	2,000-3,000
1.8	3,000-5,000

T<sub>mB</sub> The maximum output torque of motor  
 η gearbox efficiency on work

Eq.4

$$5. n_{2a} = n_{2d} = \frac{1}{2} \times n_{2c}$$

$$n_{2m} = \frac{n_{2a} \times t_a + n_{2c} \times t_c + n_{2d} \times t_d}{t_a + t_c + t_d}$$

$$n_{2N} = \frac{n_{1N}}{i}$$

Eq.5

$$6. F_{2m} = \sqrt[3]{\frac{n_{2a} \times t_a \times F_{2ra}^3 + n_{2c} \times t_c \times F_{2rc}^3 + n_{2d} \times t_d \times F_{2rd}^3}{n_{2a} \times t_a + n_{2c} \times t_c + n_{2d} \times t_d}}$$

Eq.6

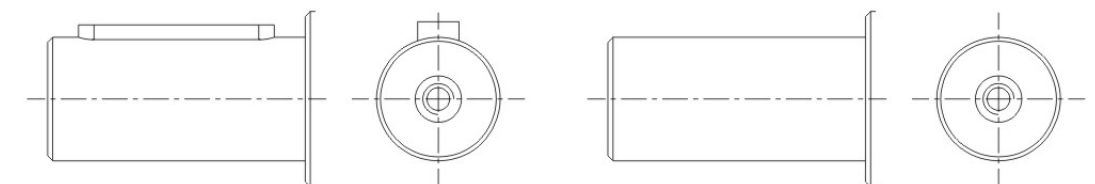
$$F_{2am} = \sqrt[3]{\frac{n_{2a} \times t_a \times F_{2aa}^3 + n_{2c} \times t_c \times F_{2ac}^3 + n_{2d} \times t_d \times F_{2ad}^3}{n_{2a} \times t_a + n_{2c} \times t_c + n_{2d} \times t_d}}$$

Eq.6

Order Code: KPL — 120 — 02 — 015 — S1 — P0 — Servo Motor

- KPL**  
Gearbox Series: KPL
- 120**  
Gearbox Size
- 02**  
Gearbox Stage
- 015**  
Gearbox Ratio
- S1**  
S1: Output shaft with key  
S2: Output shaft without key
- P0**  
Gearbox Precision
- Servo Motor**  
Motor Manufacturer and model

Output Shaft Key Option



S1: Output shaft with key

S2: Output shaft without key

Ordering Example: KPL120-2-15-S1-P2-ABB-8M1230

If there is any question, please ask our engineering sales for solutions.

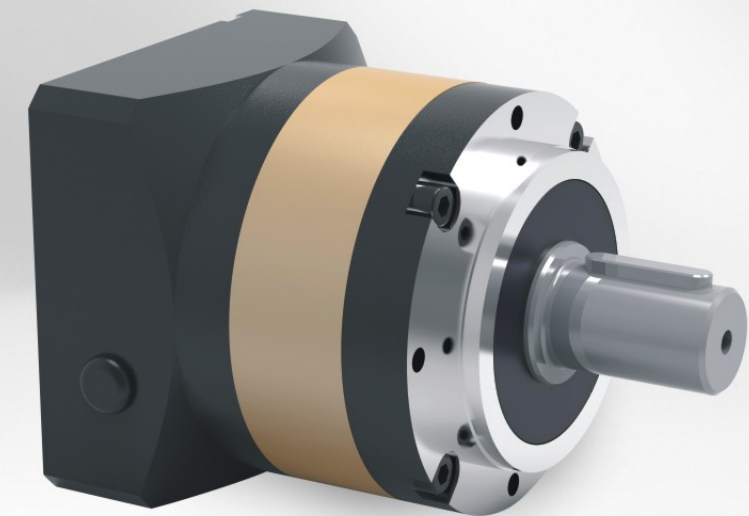
Product Catalog

KPE .....	01
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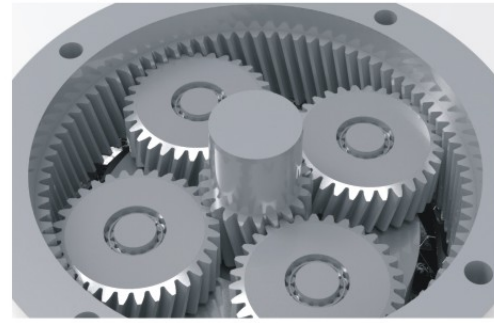
# KPE

Powerful. High Precision. Reliable

- ▶ Servo Planetary Gearbox  
Advanced Gearbox Solution

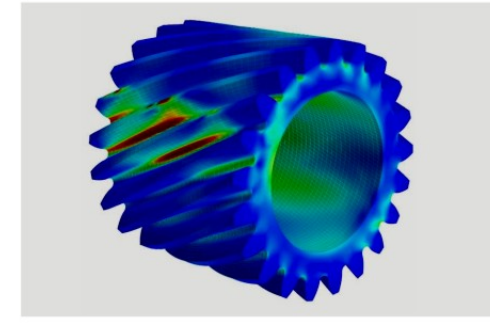






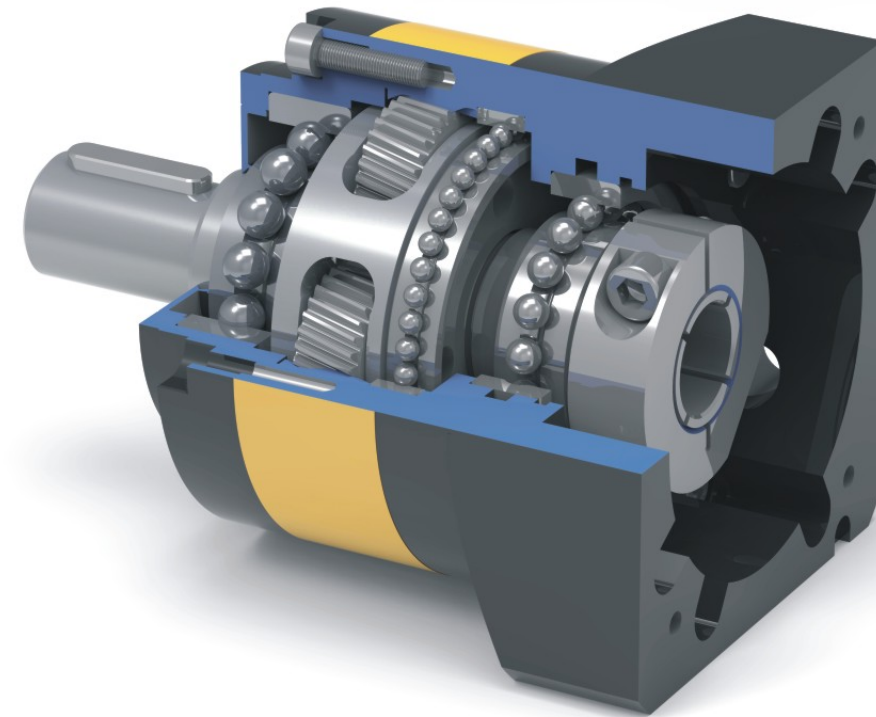
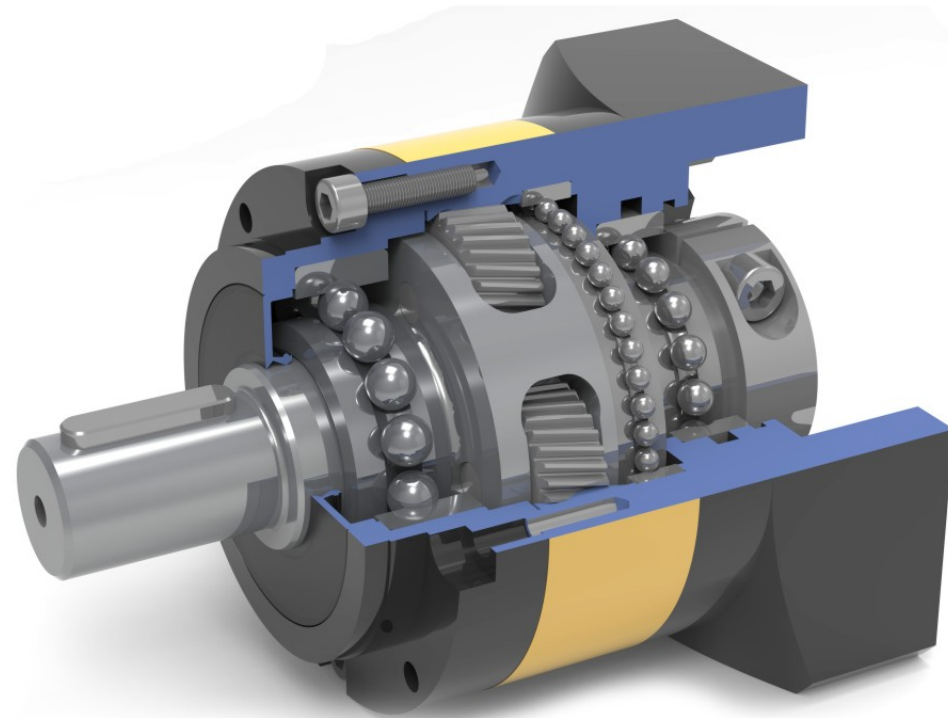
**Helical Gear System Technology**

Thanks to the tooth to tooth compact ratio more than 60%. The helical gearing and full needle bearing bring the benefits including higher torque capacity, smooth and lower noise running, decreased backlash and higher efficiency.



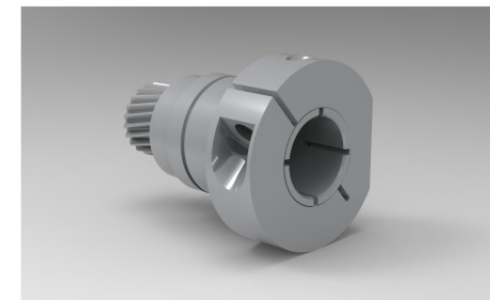
**Super Gear Grinding and Heat Treatment Technology**

The global leading gear grinding technology brings the great improvement for the tooth profile optimization, with the high level carburizing and quenching heat treatment technology to reach high precision and gear harden performance.



**Master CageSpindle Planetary Carrier**

The patented Master CageSpindle integrated planetary carrier support planetary gearbox to increase constructional strength running stability and rigidity significantly. Synthetic grease lubrication allows maintenance free for gearbox whole service life.



**Dynamic Balance Clamping and Sealing System**

For the gearbox input dynamic balance clamping design with perfect concentricity to decrease backlash and increase gearbox operation stability. The ultra sealing system offers grease leakage protection and support gearbox to reach IP65.





KPE050 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	20	21	21	20	19	18	14	14	
		in.lb	177	186	186	177	168	159	124	124	
Emergency Stop Torque	$T_{2Not}$	Nm	60	60	63	60	57	54	42	42	
		in.lb	531	531	558	531	504	478	372	372	
Maximum Acceleration Torque	$T_{2B}$	Nm	36	37.8	37.8	36	34.2	32.4	25.2	25.2	
		in.lb	319	335	335	319	303	287	223	223	
Maximum Torque	$T_{2a}$	Nm	40	42	42	40	38	36	28	28	
		in.lb	354	372	372	354	336	319	248	248	
Permitted Average Input Speed	$n_{1N}$	rpm	4000								
Maximum Input Speed	$n_{1Max}$	rpm	8000								
Mean No Load Running Torque	$T_{012}$	Nm	0.11	0.1	0.09	0.09	0.08	0.08	0.08	0.08	
		in.lb	0.97	0.89	0.80	0.80	0.71	0.71	0.71	0.71	
Standard Backlash P1	$j_1$	arcmin	≤ 8								
Reduced Low Backlash P0	$j_1$	arcmin	≤ 5								
Torsional Rigidity	$C_{021}$	Nm/arcmin	3	3	3	2.85	2.85	2.85	2.85	2.85	
		in.lb/arcmin	26.55	26.55	26.55	25.22	25.22	25.22	25.22	25.22	
Maximum Radial Load	$F_{2AMax}$	N	770								
		lb <sub>r</sub>	173								
Maximum Axial Load	$F_{2OMax}$	N	380								
		lb <sub>r</sub>	85								
Max. Tilting Moment	$M_{2KMax}$	Nm	25								
		in.lb	220								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.031	0.022	0.019	0.017	0.017	0.017	0.017	0.017	
Operating Noise Level	$L_{PA}$	dB(A)	< 56								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	0.6								
		lb <sub>m</sub>	1.3								

KPE050 2-stage

		2-stage																
Ratio	i		12	15	16	20	25	30	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	20	20	21	21	21	20	21	21	21	21	20	18	18	14	14	
		in.lb	177	177	186	186	186	177	186	186	186	186	177	159	159	124	124	
Emergency Stop Torque	$T_{2Not}$	Nm	60	60	63	63	63	60	63	63	63	63	60	54	54	42	42	
		in.lb	531	531	558	558	558	531	558	558	558	558	531	478	478	372	372	
Maximum Acceleration Torque	$T_{2B}$	Nm	36	36	37.8	37.8	37.8	36	37.8	37.8	37.8	37.8	36	32.4	32.4	25.2	25.2	
		in.lb	319	319	335	335	335	319	335	335	335	335	319	287	287	223	223	
Maximum Torque	$T_{2a}$	Nm	40	40	42	42	42	40	42	42	42	42	40	36	36	28	28	
		in.lb	354	354	372	372	372	354	372	372	372	372	354	319	319	248	248	
Permitted Average Input Speed	$n_{1N}$	rpm	4000															
Maximum Input Speed	$n_{1Max}$	rpm	8000															
Mean No Load Running Torque	$T_{012}$	Nm	0.1	0.1	0.1	0.1	0.1	0.09	0.09	0.09	0.09	0.09	0.09	0.08	0.08	0.08	0.08	
		in.lb	0.89	0.89	0.89	0.89	0.89	0.80	0.80	0.80	0.80	0.80	0.80	0.71	0.71	0.71	0.71	
Standard Backlash P1	$j_1$	arcmin	≤ 11															
Reduced Low Backlash P0	$j_1$	arcmin	≤ 8															
Torsional Rigidity	$C_{021}$	Nm/arcmin	3	3	3	3	3	3	3	3	3	3	3	2.85	2.85	2.85	2.85	
		in.lb/arcmin	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	25.22	25.22	25.22	25.22	
Maximum Radial Load	$F_{2AMax}$	N	770															
		lb <sub>r</sub>	173															
Maximum Axial Load	$F_{2OMax}$	N	380															
		lb <sub>r</sub>	85															
Max. Tilting Moment	$M_{2KMax}$	Nm	40															
		in.lb	352															
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.029	0.027	0.022	0.019	0.017	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	
Operating Noise Level	$L_{PA}$	dB(A)	< 56															
Efficiency at Full loading	$\eta$	%	95															
Operating Temperature		°C	-25 to +90															
		F	-13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)															
Weight	$m$	kg	0.9															
		lb <sub>m</sub>	2															

KPE070 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	46	52	55	50	50	45	42	42	
		in.lb	407	460	487	443	443	398	372	372	
Emergency Stop Torque	$T_{2Not}$	Nm	138	156	165	150	150	135	126	126	
		in.lb	1221	1381	1460	1328	1328	1195	1115	1115	
Maximum Acceleration Torque	$T_{2B}$	Nm	82.8	93.6	99	90	90	81	75.6	75.6	
		in.lb	733	828	876	797	797	717	669	669	
Maximum Torque	$T_{2a}$	Nm	92	104	110	100	100	90	84	84	
		in.lb	814	920	974	885	885	797	743	743	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	6000								
Mean No Load Running Torque	$T_{012}$	Nm	0.24	0.2	0.17	0.15	0.15	0.15	0.15	0.15	
		in.lb	2.12	1.77	1.50	1.33	1.33	1.33	1.33	1.33	
Standard Backlash P1	$j_1$	arcmin	≤ 6								
Reduced Low Backlash P0	$j_1$	arcmin	≤ 3								
Torsional Rigidity	$C_{021}$	Nm/arcmin	7	7	7	6.5	6.5	6.5	6.5	6.5	
		in.lb/arcmin	61.95	61.95	61.95	57.53	57.53	57.53	57.53	57.53	
Maximum Radial Load	$F_{2AMax}$	N	1500								
		lb <sub>r</sub>	337								
Maximum Axial Load	$F_{2OMax}$	N	760								
		lb <sub>r</sub>	171								
Max. Tilting Moment	$M_{2KMax}$	Nm	40								
		in.lb	352								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.16	0.14	0.13	0.13	0.13	0.13	0.13	0.13	
Operating Noise Level	$L_{PA}$	dB(A)	< 58								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	1.4								
		lb <sub>m</sub>	3.1								

KPE070 2-stage

		2-stage																	
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	56	50	52	55	55	46	52	55	55	55	55	50	45	45	42	42	
		in.lb	496	443	460	487	487	407	460	487	487	487	487	487	443	398	398	372	372
Emergency Stop Torque	$T_{2Not}$	Nm	168	150	156	165	165	138	156	165	165	165	165	150	135	135	126	126	
		in.lb	1487	1328	1381	1460	1460	1221	1381	1460	1460	1460	1460	1460	1328	1195	1195	1115	1115
Maximum Acceleration Torque	$T_{2B}$	Nm	100.8	90	93.6	99	99	82.8	93.6	99	99	99	99	90	81	81	75.6	75.6	
		in.lb	892	797	828	876	876	733	828	876	876	876	876	876	797	717	717	669	669
Maximum Torque	$T_{2a}$	Nm	112	100	104	110	110	92	104	110	110	110	110	100	90	90	84	84	
		in.lb	991	885	920	974	974	814	920	974	974	974	974	974	885	797	797	743	743
Permitted Average Input Speed	$n_{1N}$	rpm	3000																
Maximum Input Speed	$n_{1Max}$	rpm	6000																
Mean No Load Running Torque	$T_{012}$	Nm	0.2	0.17	0.2	0.17	0.17	0.15	0.2	0.15	0.15	0.15	0.15	0.17	0.15	0.15	0.15	0.15	
		in.lb	1.77	1.50	1.77	1.50	1.50	1.33	1.77	1.33	1.33	1.33	1.33	1.50	1.33	1.33	1.33	1.33	
Standard Backlash P1	$j_1$	arcmin	≤ 8																
Reduced Low Backlash P0	$j_1$	arcmin	≤ 5																
Torsional Rigidity	$C_{021}$	Nm/arcmin	7	7	7	7	7	7	7	7	7	7	7	6.5	6.5	6.5	6.5	6.5	
		in.lb/arcmin	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	57.53	57.53	57.53	57.53	
Maximum Radial Load	$F_{2AMax}$	N	1500																
		lb <sub>r</sub>	337																
Maximum Axial Load	$F_{2OMax}$	N	760																
		lb <sub>r</sub>	171																
Max. Tilting Moment	$M_{2KMax}$	Nm	80																
		in.lb	704																
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.127	0.124	0.12	0.075	0.075	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.075	0.064	0.064	
Operating Noise Level	$L_{PA}$	dB(A)	< 58																
Efficiency at Full loading	$\eta$	%	95																
Operating Temperature		°C	-25 to +90																
		F	-13 to +194																
Lubrication			Synthetic Lubrication Grease																
Mouting Position			Any Directions																
Protection Class			IP 65																
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																
Weight	$m$	kg	1.6																
		lb <sub>m</sub>	3.5																



KPE090 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	125	145	155	145	135	115	105	105	
		in.lb	1106	1283	1372	1283	1195	1018	929	929	
Emergency Stop Torque	$T_{2Not}$	Nm	375	435	465	435	405	345	315	315	
		in.lb	3319	3850	4116	3850	3585	3053	2788	2788	
Maximum Acceleration Torque	$T_{2B}$	Nm	225	261	279	261	243	207	189	189	
		in.lb	1991	2310	2469	2310	2151	1832	1673	1673	
Maximum Torque	$T_{2a}$	Nm	250	290	310	290	270	230	210	210	
		in.lb	2213	2567	2744	2567	2390	2036	1859	1859	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	6000								
Mean No Load Running Torque	$T_{012}$	Nm	0.38	0.36	0.31	0.29	0.25	0.25	0.25	0.25	
		in.lb	3.36	3.19	2.74	2.57	2.21	2.21	2.21	2.21	
Standard Backlash P1	$j_1$	arcmin	≤ 6								
Reduced Low Backlash P0	$j_1$	arcmin	≤ 3								
Torsional Rigidity	$C_{021}$	Nm/arcmin	14	14	14	13	13	13	13	13	
		in.lb/arcmin	123.91	123.91	123.91	115.06	115.06	115.06	115.06	115.06	
Maximum Radial Load	$F_{2AMax}$	N	3200								
		lb <sub>r</sub>	719								
Maximum Axial Load	$F_{2OMax}$	N	1600								
		lb <sub>r</sub>	360								
Max. Tilting Moment	$M_{2KMax}$	Nm	90								
		in.lb	792								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.61	0.48	0.47	0.47	0.47	0.45	0.44	0.44	
Operating Noise Level	$L_{PA}$	dB(A)	< 60								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	3.3								
		lb <sub>m</sub>	7.3								

KPE090 2-stage

		2-stage																	
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	125	125	145	145	155	125	145	155	155	155	155	145	115	115	105	105	
		in.lb	1106	1106	1283	1283	1372	1106	1283	1372	1372	1372	1372	1283	1018	1018	929	929	
Emergency Stop Torque	$T_{2Not}$	Nm	375	375	435	435	465	375	435	465	465	465	465	435	345	345	315	315	
		in.lb	3319	3319	3850	3850	4116	3319	3850	4116	4116	4116	4116	3850	3053	3053	2788	2788	
Maximum Acceleration Torque	$T_{2B}$	Nm	225	225	261	261	279	225	261	279	279	279	279	261	207	207	189	189	
		in.lb	1991	1991	2310	2310	2469	1991	2310	2469	2469	2469	2469	2310	1832	1832	1673	1673	
Maximum Torque	$T_{2a}$	Nm	250	250	290	290	310	250	290	310	310	310	310	290	230	230	210	210	
		in.lb	2213	2213	2567	2567	2744	2213	2567	2744	2744	2744	2744	2567	2036	2036	1859	1859	
Permitted Average Input Speed	$n_{1N}$	rpm	3000																
Maximum Input Speed	$n_{1Max}$	rpm	6000																
Mean No Load Running Torque	$T_{012}$	Nm	0.36	0.31	0.36	0.31	0.31	0.31	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	
		in.lb	3.19	2.74	3.19	2.74	2.74	2.74	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	
Standard Backlash P1	$j_1$	arcmin	≤ 8																
Reduced Low Backlash P0	$j_1$	arcmin	≤ 5																
Torsional Rigidity	$C_{021}$	Nm/arcmin	14	14	14	14	14	14	14	14	14	14	14	13	13	13	13	13	
		in.lb/arcmin	123.91	123.91	123.91	123.91	123.91	123.91	123.91	123.91	123.91	123.91	123.91	115.06	115.06	115.06	115.06	115.06	
Maximum Radial Load	$F_{2AMax}$	N	3200																
		lb <sub>r</sub>	719																
Maximum Axial Load	$F_{2OMax}$	N	1600																
		lb <sub>r</sub>	360																
Max. Tilting Moment	$M_{2KMax}$	Nm	200																
		in.lb	1760																
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.44	0.44	0.43	0.44	0.44	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39		
Operating Noise Level	$L_{PA}$	dB(A)	< 60																
Efficiency at Full loading	$\eta$	%	95																
Operating Temperature		°C	-25 to +90																
		F	-13 to +194																
Lubrication			Synthetic Lubrication Grease																
Mouting Position			Any Directions																
Protection Class			IP 65																
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																
Weight	$m$	kg	4.5																
		lb <sub>m</sub>	9.9																

KPE120 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	210	300	320	300	290	255	220	220	
		in.lb	1859	2655	2832	2655	2567	2257	1947	1947	
Emergency Stop Torque	$T_{2Not}$	Nm	630	900	960	900	870	765	660	660	
		in.lb	5576	7966	8497	7966	7700	6771	5841	5841	
Maximum Acceleration Torque	$T_{2B}$	Nm	378	540	576	540	522	459	396	396	
		in.lb	3346	4779	5098	4779	4620	4062	3505	3505	
Maximum Torque	$T_{2a}$	Nm	420	600	640	600	580	510	440	440	
		in.lb	3717	5310	5664	5310	5133	4514	3894	3894	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	6000								
Mean No Load Running Torque	$T_{012}$	Nm	1	0.95	0.85	0.81	0.78	0.78	0.78	0.78	
		in.lb	8.85	8.41	7.52	7.17	6.90	6.90	6.90	6.90	
Standard Backlash P1	$j_1$	arcmin	≤ 6								
Reduced Low Backlash P0	$j_1$	arcmin	≤ 3								
Torsional Rigidity	$C_{021}$	Nm/arcmin	25	25	25	23	23	23	23	23	
		in.lb/arcmin	221.27	221.27	221.27	203.57	203.57	203.57	203.57	203.57	
Maximum Radial Load	$F_{2AMax}$	N	6700								
		lb <sub>r</sub>	1506								
Maximum Axial Load	$F_{2OMax}$	N	3300								
		lb <sub>r</sub>	742								
Max. Tilting Moment	$M_{2KMax}$	Nm	150								
		in.lb	1320								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	3.25	2.74	2.71	2.62	2.62	2.62	2.62	2.57	
Operating Noise Level	$L_{PA}$	dB(A)	< 63								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	5.5								
		lb <sub>m</sub>	12.1								

KPE120 2-stage

		2-stage																		
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100		
Nominal Output Torque		Nm	310	310	300	300	320	210	305	320	320	320	320	300	255	255	220	220		
		in.lb	2744	2744	2655	2655	2832	1859	2699	2832	2832	2832	2832	2655	2257	2257	1947	1947		
Emergency Stop Torque	$T_{2Not}$	Nm	930	930	900	900	960	630	915	960	960	960	960	900	765	765	660	660		
		in.lb	8231	8231	7966	7966	8497	5576	8098	8497	8497	8497	8497	7966	6771	6771	5841	5841		
Maximum Acceleration Torque	$T_{2B}$	Nm	558	558	540	540	576	378	549	576	576	576	576	540	459	459	396	396		
		in.lb	4939	4939	4779	4779	5098	3346	4859	5098	5098	5098	5098	4779	4062	4062	3505	3505		
Maximum Torque	$T_{2a}$	Nm	620	620	600	600	640	420	610	640	640	640	640	600	510	510	440	440		
		in.lb	5487	5487	5310	5310	5664	3717	5399	5664	5664	5664	5664	5310	4514	4514	3894	3894		
Permitted Average Input Speed	$n_{1N}$	rpm	3000																	
Maximum Input Speed	$n_{1Max}$	rpm	6000																	
Mean No Load Running Torque	$T_{012}$	Nm	0.95	0.85	0.95	0.85	0.85	0.81	0.78	0.78	0.78	0.78	0.78	0.81	0.78	0.78	0.78	0.78		
		in.lb	8.41	7.52	8.41	7.52	7.52	7.17	6.90	6.90	6.90	6.90	6.90	7.17	6.90	6.90	6.90	6.90		
Standard Backlash P1	$j_1$	arcmin	≤ 8																	
Reduced Low Backlash P0	$j_1$	arcmin	≤ 5																	
Torsional Rigidity	$C_{021}$	Nm/arcmin	25	25	25	25	25	25	25	25	25	25	25	23	23	23	23	23		
		in.lb/arcmin	221.27	221.27	221.27	221.27	221.27	221.27	221.27	221.27	221.27	221.27	221.27	203.57	203.57	203.57	203.57	203.57		
Maximum Radial Load	$F_{2AMax}$	N	6700																	
		lb <sub>r</sub>	1506																	
Maximum Axial Load	$F_{2OMax}$	N	3300																	
		lb <sub>r</sub>	742																	
Max. Tilting Moment	$M_{2KMax}$	Nm	400																	
		in.lb	3520																	
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	2.56	2.58	1.75	1.5	1.49	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.5	1.3	1.3	1.3		
Operating Noise Level	$L_{PA}$	dB(A)	< 63																	
Efficiency at Full loading	$\eta$	%	95																	
Operating Temperature		°C	-25 to +90																	
		F	-13 to +194																	
Lubrication			Synthetic Lubrication Grease																	
Mouting Position			Any Directions																	
Protection Class			IP 65																	
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																	
Weight	$m$	kg	8																	
		lb <sub>m</sub>	17.6																	



KPE160 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	450	550	650	610	540	510	440	440	
		in.lb	3983	4868	5753	5399	4779	4514	3894	3894	
Emergency Stop Torque	$T_{2Not}$	Nm	1350	1650	1950	1830	1620	1530	1320	1320	
		in.lb	11948	14604	17259	16197	14338	13542	11683	11683	
Maximum Acceleration Torque	$T_{2B}$	Nm	810	990	1170	1098	972	918	792	792	
		in.lb	7169	8762	10355	9718	8603	8125	7010	7010	
Maximum Torque	$T_{2a}$	Nm	900	1100	1300	1220	1080	1020	880	880	
		in.lb	7966	9736	11506	10798	9559	9028	7789	7789	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	6000								
Mean No Load Running Torque	$T_{012}$	Nm	2.55	2.45	2.3	2.2	2.2	2.2	2.2	2.2	
		in.lb	22.57	21.68	20.36	19.47	19.47	19.47	19.47	19.47	
Standard Backlash P1	$j_1$	arcmin	≤ 6								
Reduced Low Backlash P0	$j_1$	arcmin	≤ 3								
Torsional Rigidity	$C_{021}$	Nm/arcmin	50	50	50	45	45	45	45	45	
		in.lb/arcmin	442.54	442.54	442.54	398.28	398.28	398.28	398.28	398.28	
Maximum Radial Load	$F_{2AMax}$	N	9600								
		lb <sub>r</sub>	2158								
Maximum Axial Load	$F_{2OMax}$	N	4800								
		lb <sub>r</sub>	1079								
Max. Tilting Moment	$M_{2KMax}$	Nm	480								
		in.lb	4224								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	12.31	7.54	7.42	7.25	7.25	7.14	7.14	7.14	
Operating Noise Level	$L_{PA}$	dB(A)	< 65								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	20								
		lb <sub>m</sub>	44.1								

KPE160 2-stage

		2-stage																		
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100		
Nominal Output Torque		Nm	500	500	550	650	650	450	550	650	550	650	650	610	510	440	440	440	440	
		in.lb	4425	4425	4868	5753	5753	3983	4868	5753	4868	5753	5753	5399	4514	4514	3894	3894	3894	
Emergency Stop Torque	$T_{2Not}$	Nm	1500	1500	1650	1950	1950	1350	1650	1950	1650	1950	1950	1830	1530	1320	1320	1320	1320	
		in.lb	13276	13276	14604	17259	17259	11948	14604	17259	14604	17259	17259	16197	13542	13542	11683	11683	11683	
Maximum Acceleration Torque	$T_{2B}$	Nm	900	900	990	1170	1170	810	990	1170	990	1170	1170	1098	918	792	792	792	792	
		in.lb	7966	7966	8762	10355	10355	7169	8762	10355	8762	10355	10355	9718	8125	7010	7010	7010		
Maximum Torque	$T_{2a}$	Nm	1000	1000	1100	1300	1300	900	1100	1300	1100	1300	1300	1220	1020	880	880	880	880	
		in.lb	8851	8851	9736	11506	11506	7966	9736	11506	9736	11506	11506	10798	9028	7789	7789	7789		
Permitted Average Input Speed	$n_{1N}$	rpm	3000																	
Maximum Input Speed	$n_{1Max}$	rpm	6000																	
Mean No Load Running Torque	$T_{012}$	Nm	2.45	2.3	2.45	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	
		in.lb	21.68	20.36	21.68	20.36	20.36	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	
Standard Backlash P1	$j_1$	arcmin	≤ 8																	
Reduced Low Backlash P0	$j_1$	arcmin	≤ 5																	
Torsional Rigidity	$C_{021}$	Nm/arcmin	50	50	50	50	50	50	50	50	50	50	50	45	45	45	45	45	45	
		in.lb/arcmin	442.54	442.54	442.54	442.54	442.54	442.54	442.54	442.54	442.54	442.54	442.54	398.28	398.28	398.28	398.28	398.28		
Maximum Radial Load	$F_{2AMax}$	N	9600																	
		lb <sub>r</sub>	2158																	
Maximum Axial Load	$F_{2OMax}$	N	4800																	
		lb <sub>r</sub>	1079																	
Max. Tilting Moment	$M_{2KMax}$	Nm	850																	
		in.lb	7480																	
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	12.35	12.35	7.47	6.65	5.81	6.34	6.34	5.36	4.08	5.36	4.08	7.40	7.50	7.40	7.40	7.40		
Operating Noise Level	$L_{PA}$	dB(A)	< 65																	
Efficiency at Full loading	$\eta$	%	95																	
Operating Temperature		°C	-25 to +90																	
		F	-13 to +194																	
Lubrication			Synthetic Lubrication Grease																	
Mouting Position			Any Directions																	
Protection Class			IP 65																	
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																	
Weight	$m$	kg	25																	
		lb <sub>m</sub>	55.1																	

KPE205 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	650	1250	1200	1000	1000	1000	910	910	
		in.lb	5753	11063	10621	8851	8851	8851	8054	8054	
Emergency Stop Torque	$T_{2Not}$	Nm	1950	3750	3600	3000	3000	3000	2730	2730	
		in.lb	17259	33190	31863	26552	26552	26552	24162	24162	
Maximum Acceleration Torque	$T_{2B}$	Nm	1170	2250	2160	1800	1800	1800	1638	1638	
		in.lb	10355	19914	19118	15931	15931	15931	14497	14497	
Maximum Torque	$T_{2a}$	Nm	1300	2500	2400	2000	2000	2000	1820	1820	
		in.lb	11506	22127	21242	17701	17701	17701	16108	16108	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	4000								
Mean No Load Running Torque	$T_{012}$	Nm	3.5	3.3	3.15	3	3	3	3	3	
		in.lb	30.98	29.21	27.88	26.55	26.55	26.55	26.55	26.55	
Standard Backlash P1	$j_1$	arcmin	≤ 6								
Reduced Low Backlash P0	$j_1$	arcmin	≤ 3								
Torsional Rigidity	$C_{021}$	Nm/arcmin	140	140	140	140	130	130	130	130	
		in.lb/arcmin	1239.1	1239.1	1239.1	1239.1	1150.6	1150.6	1150.6	1150.6	
Maximum Radial Load	$F_{2AMax}$	N	14000								
		lb <sub>r</sub>	3147								
Maximum Axial Load	$F_{2OMax}$	N	7000								
		lb <sub>r</sub>	1574								
Max. Tilting Moment	$M_{2KMax}$	Nm	1300								
		in.lb	11440								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	28.98	23.67	22.75	22.48	22.48	22.59	22.59	22.55	
Operating Noise Level	$L_{PA}$	dB(A)	< 67								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	31								
		lb <sub>m</sub>	68.3								

KPE205 2-stage

		2-stage																		
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100		
Nominal Output Torque		Nm	650	850	1250	1200	1200	650	1250	1200	1200	1200	1200	1000	1000	1000	910	910		
		in.lb	5753	7523	11063	10621	10621	5753	11063	10621	10621	10621	10621	8851	8851	8851	8054	8054		
Emergency Stop Torque	$T_{2Not}$	Nm	1950	2550	3750	3600	3600	1950	3750	3600	3600	3600	3600	3000	3000	3000	2730	2730		
		in.lb	17259	22569	33190	31863	31863	17259	33190	31863	31863	31863	31863	26552	26552	26552	24162	24162		
Maximum Acceleration Torque	$T_{2B}$	Nm	1170	1530	2250	2160	2160	1170	2250	2160	2160	2160	2160	1800	1800	1800	1638	1638		
		in.lb	10355	13542	19914	19118	19118	10355	19914	19118	19118	19118	19118	15931	15931	15931	14497	14497		
Maximum Torque	$T_{2a}$	Nm	1300	1700	2500	2400	2400	1300	2500	2400	2400	2400	2400	2000	2000	2000	1820	1820		
		in.lb	11506	15046	22127	21242	21242	11506	22127	21242	21242	21242	21242	17701	17701	17701	16108	16108		
Permitted Average Input Speed	$n_{1N}$	rpm	3000																	
Maximum Input Speed	$n_{1Max}$	rpm	4000																	
Mean No Load Running Torque	$T_{012}$	Nm	2.45	2.3	2.45	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2		
		in.lb	21.68	20.36	21.68	20.36	20.36	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47		
Standard Backlash P1	$j_1$	arcmin	≤ 8																	
Reduced Low Backlash P0	$j_1$	arcmin	≤ 5																	
Torsional Rigidity	$C_{021}$	Nm/arcmin	140	140	140	140	140	140	140	140	140	140	140	130	130	130	130	130		
		in.lb/arcmin	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1150.6	1150.6	1150.6	1150.6	1150.6		
Maximum Radial Load	$F_{2AMax}$	N	14000																	
		lb <sub>r</sub>	3147																	
Maximum Axial Load	$F_{2OMax}$	N	7000																	
		lb <sub>r</sub>	1574																	
Max. Tilting Moment	$M_{2KMax}$	Nm	1280																	
		in.lb	11264																	
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	12.35	12.30	7.54	7.42	7.54	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14			
Operating Noise Level	$L_{PA}$	dB(A)	< 67																	
Efficiency at Full loading	$\eta$	%	95																	
Operating Temperature		°C	-25 to +90																	
		F	-13 to +194																	
Lubrication			Synthetic Lubrication Grease																	
Mouting Position			Any Directions																	
Protection Class			IP 65																	
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																	
Weight	$m$	kg	39																	
		lb <sub>m</sub>	86																	



KPE235 1-stage

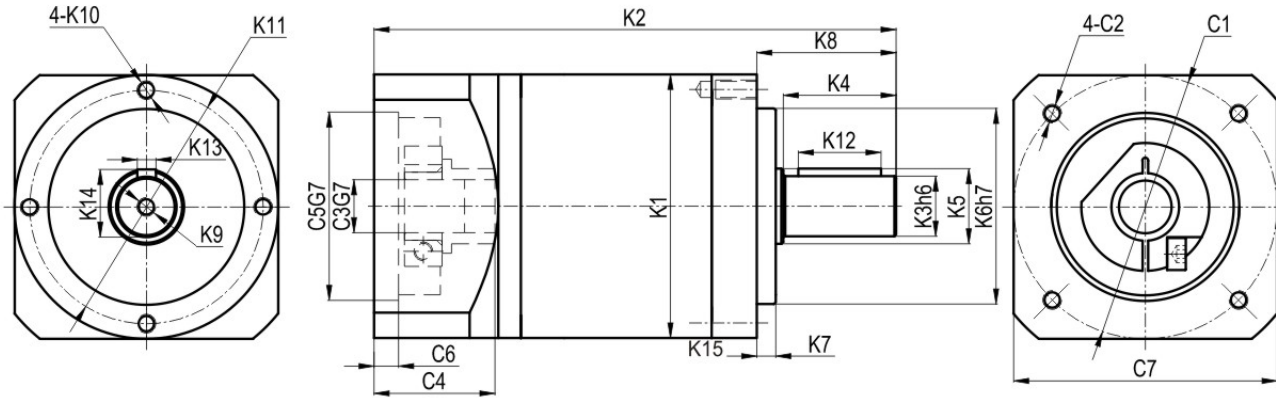
		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	1200	1800	2050	1850	1750	1550	1500	1500	
		in.lb	10621	15931	18144	16374	15489	13719	13276	13276	
Emergency Stop Torque	$T_{2Not}$	Nm	3600	5400	6150	5550	5250	4650	4500	4500	
		in.lb	31863	47794	54432	49121	46466	41156	39828	39828	
Maximum Acceleration Torque	$T_{2B}$	Nm	2160	3240	3690	3330	3150	2790	2700	2700	
		in.lb	19118	28676	32659	29473	27880	24693	23897	23897	
Maximum Torque	$T_{2a}$	Nm	2400	3600	4100	3700	3500	3100	3000	3000	
		in.lb	21242	31863	36288	32748	30977	27437	26552	26552	
Permitted Average Input Speed	$n_{1N}$	rpm	2000								
Maximum Input Speed	$n_{1Max}$	rpm	4000								
Mean No Load Running Torque	$T_{012}$	Nm	5.2	5	4.85	4.67	4.67	4.67	4.67	4.67	
		in.lb	46.02	44.25	42.93	41.33	41.33	41.33	41.33	41.33	
Standard Backlash P1	$j_1$	arcmin	≤ 6								
Reduced Low Backlash P0	$j_1$	arcmin	≤ 3								
Torsional Rigidity	$C_{021}$	Nm/arcmin	220	220	220	200	200	200	200	200	
		in.lb/arcmin	1947.2	1947.2	1947.2	1770.1	1770.1	1770.1	1770.1	1770.1	
Maximum Radial Load	$F_{2AMax}$	N	16000								
		lb <sub>r</sub>	3597								
Maximum Axial Load	$F_{2OMax}$	N	8000								
		lb <sub>r</sub>	1798								
Max. Tilting Moment	$M_{2KMax}$	Nm	1800								
		in.lb	15840								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	69.61	54.37	53.27	50.84	50.84	50.84	50.84	50.56	
Operating Noise Level	$L_{PA}$	dB(A)	< 70								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	53								
		lb <sub>m</sub>	117								

KPE235 2-stage

		2-stage																	
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	1200	1200	1800	2050	2050	1200	1800	2050	2050	2050	2050	1850	1550	1550	1500	1500	
		in.lb	10621	10621	15931	18144	18144	10621	15931	18144	18144	18144	18144	16374	13719	13719	13276	13276	
Emergency Stop Torque	$T_{2Not}$	Nm	3600	3600	5400	6150	6150	3600	5400	6150	6150	6150	6150	5550	4650	4650	4500	4500	
		in.lb	31863	31863	47794	54432	54432	31863	47794	54432	54432	54432	54432	49121	41156	41156	39828	39828	
Maximum Acceleration Torque	$T_{2B}$	Nm	2160	2160	3240	3690	3690	2160	3240	3690	3690	3690	3690	3330	2790	2790	2700	2700	
		in.lb	19118	19118	28676	32659	32659	19118	28676	32659	32659	32659	32659	29473	24693	24693	23897	23897	
Maximum Torque	$T_{2a}$	Nm	2400	2400	3600	4100	4100	2400	3600	4100	4100	4100	4100	3700	3100	3100	3000	3000	
		in.lb	21242	21242	31863	36288	36288	21242	31863	36288	36288	36288	36288	32748	27437	27437	26552	26552	
Permitted Average Input Speed	$n_{1N}$	rpm	2000																
Maximum Input Speed	$n_{1Max}$	rpm	4000																
Mean No Load Running Torque	$T_{012}$	Nm	3.3	3.15	3.3	3.15	3.15	3	3	3	3	3	3	3	3	3	3	3	
		in.lb	29.21	27.88	29.21	27.88	27.88	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	
Standard Backlash P1	$j_1$	arcmin	≤ 8																
Reduced Low Backlash P0	$j_1$	arcmin	≤ 5																
Torsional Rigidity	$C_{021}$	Nm/arcmin	220	220	220	220	220	220	220	220	220	220	220	200	200	200	200	200	
		in.lb/arcmin	1947.2	1947.2	1947.2	1947.2	1947.2	1947.2	1947.2	1947.2	1947.2	1947.2	1947.2	1770.1	1770.1	1770.1	1770.1	1770.1	
Maximum Radial Load	$F_{2AMax}$	N	16000																
		lb <sub>r</sub>	3597																
Maximum Axial Load	$F_{2OMax}$	N	8000																
		lb <sub>r</sub>	1798																
Max. Tilting Moment	$M_{2KMax}$	Nm	2350																
		in.lb	20680																
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	28.98	28.92	23.67	22.75	22.75	22.59	22.59	22.59	22.59	22.59	22.59	22.59	22.59	22.59	22.59	22.59	
Operating Noise Level	$L_{PA}$	dB(A)	< 70																
Efficiency at Full loading	$\eta$	%	95																
Operating Temperature		°C	-25 to +90																
		F	-13 to +194																
Lubrication			Synthetic Lubrication Grease																
Mouting Position			Any Directions																
Protection Class			IP 65																
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																
Weight	$m$	kg	66																
		lb <sub>m</sub>	145.5																



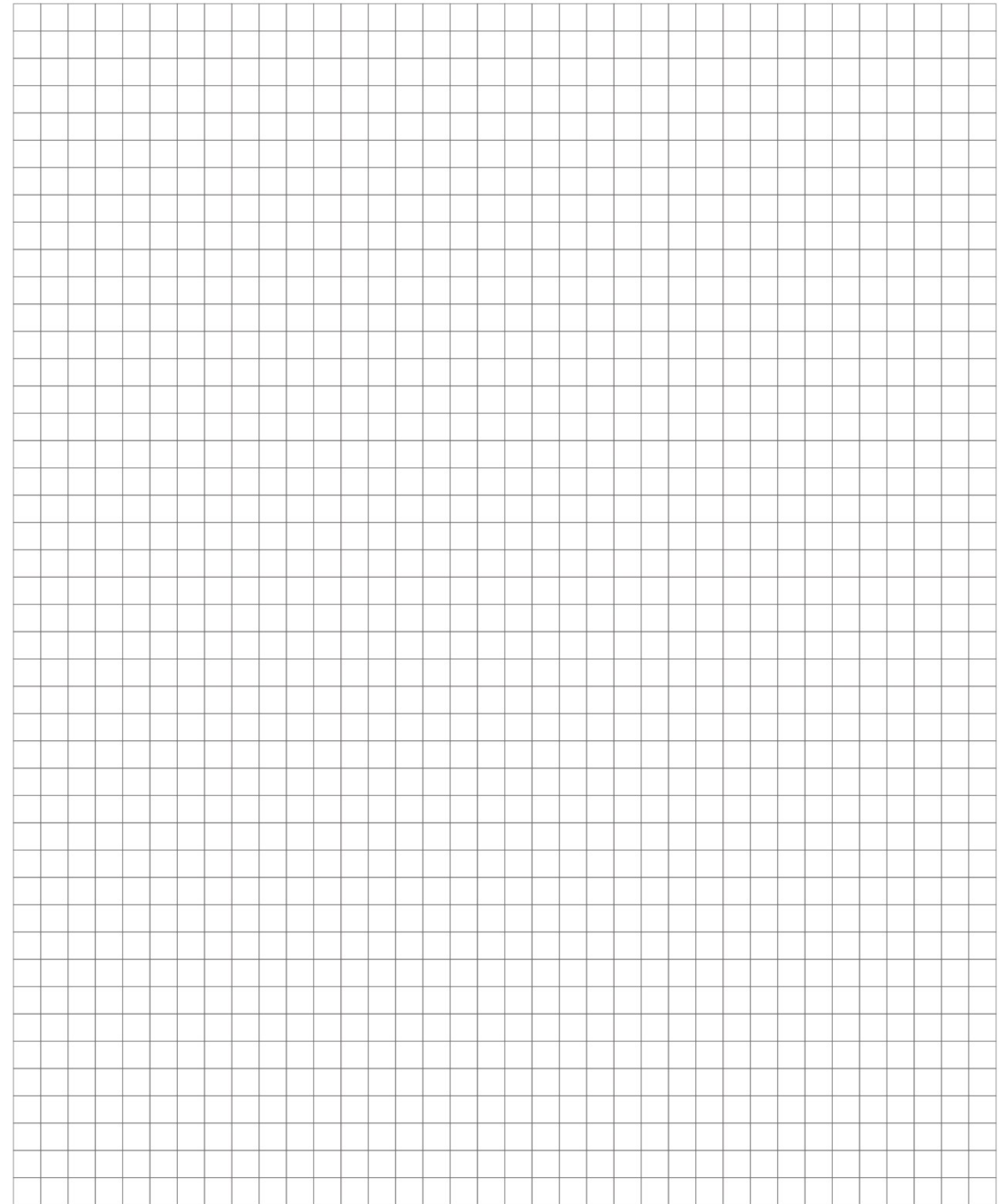
KPE Dimensions



Model	KPE050		KPE070		KPE090		KPE120		KPE160		KPE205		KPE235	
	1	2	1	2	1	2	1	2	1	2	1	2	1	2
K1	50		70		89		120		160		205		235	
	1.969		2.756		3.504		4.724		6.299		8.071		9.252	
K2	88.5	103.5	115	138.7	138	169.3	198	239.8	275.5	336.5	288	348	357.5	402
	3.484	4.075	4.528	5.461	5.433	6.665	7.795	9.441	10.846	13.248	11.339	13.701	14.075	15.827
K3	12		16		22		32		40		55		75	
	0.472		0.630		0.866		1.260		1.575		2.165		2.953	
K4	23		30		36		50		80		82		105	
	0.906		1.181		1.417		1.969		3.150		3.228		4.134	
K5	15		20		30		40		50		60		85	
	0.591		0.787		1.181		1.575		1.969		2.362		3.346	
K6	35		52		68		90		130		160		180	
	1.378		2.047		2.677		3.543		5.118		6.299		7.087	
K7	4		5		10		12		15		20		30	
	0.157		0.197		0.394		0.472		0.591		0.787		1.181	
K8	28		37		48		65		97		105		126	
	1.102		1.457		1.890		2.559		3.819		4.134		4.961	
K9	M3X9		M5X12		M6X16		M10X22		M12X25		M20X40		M20X40	
K10	M4X10		M5X11		M6X15		M8X19		M12X20		M12X22		M16X28	
K11	44		62		80		108		145		184		210	
	1.732		2.441		3.150		4.252		5.709		7.244		8.268	
K12	16		22		28		40		70		70		90	
	0.630		0.866		1.102		1.575		2.756		2.756		3.543	
K13	4		5		6		10		12		16		20	
	0.157		0.197		0.236		0.394		0.472		0.630		0.787	
K14	13.5		18		24.5		35		43		59		79.5	
	0.531		0.709		0.965		1.378		1.693		2.323		3.130	
C1	46		70		90		145		200		215	200	235	215
	1.811		2.756		3.543		5.709		7.874		8.465	7.874	9.252	8.465
C2	M4X10		M5X12		M6X15		M8X20		M12X25		M12X25	M12X25	M12X25	M12X25
C3	8		14		19		24		35		42	35	55	42
	0.315		0.551		0.748		0.945		1.378		1.654	1.378	2.165	1.654
C4	26.1		32.1		41.6		61.3		82		82.5	82	115.5	82.5
	1.028		1.264		1.638		2.413		3.228		3.248	3.228	4.547	3.248
C5	30		50		70		110		114.3		180	114.3	200	180
	1.181		1.969		2.756		4.331		4.500		7.087	4.500	7.874	7.087
C6	5		6.5		6.5		8		8		8	8	8	8
	0.197		0.256		0.256		0.315		0.315		0.315	0.315	0.315	0.315
C7	50		70		89		120		175		190	175	220	190
	1.969		2.756		3.504		4.724		6.890		7.480	6.890	8.661	7.480

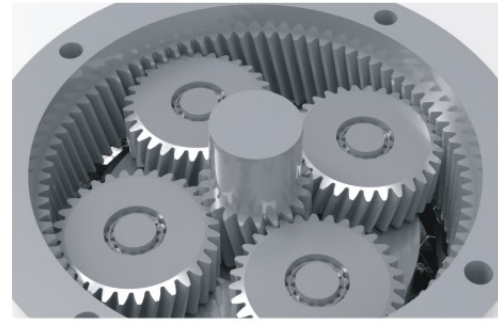
The dimensions modified as per the applied motor flanges.  
You can get the specific gearbox drawing solution by KDP(Kofon Design Programme) on line from our website: [www.kofon-motion.com](http://www.kofon-motion.com)

Technical Memo



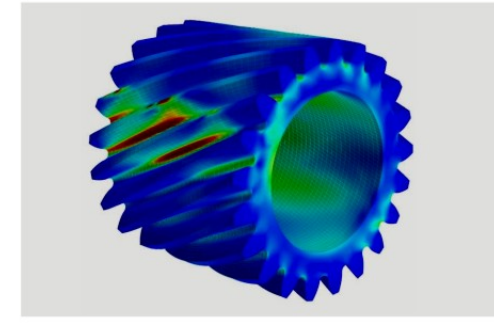






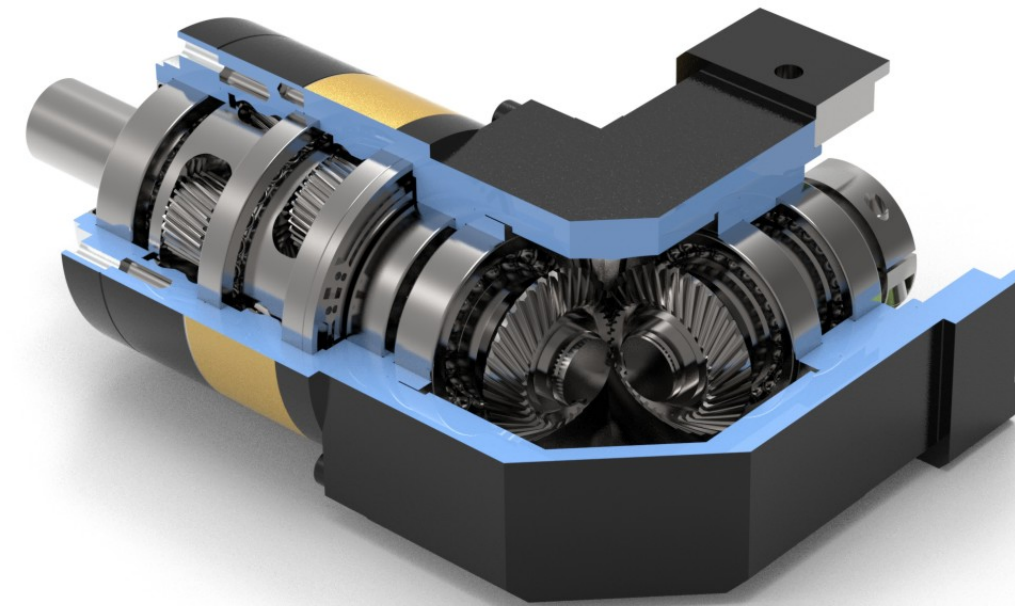
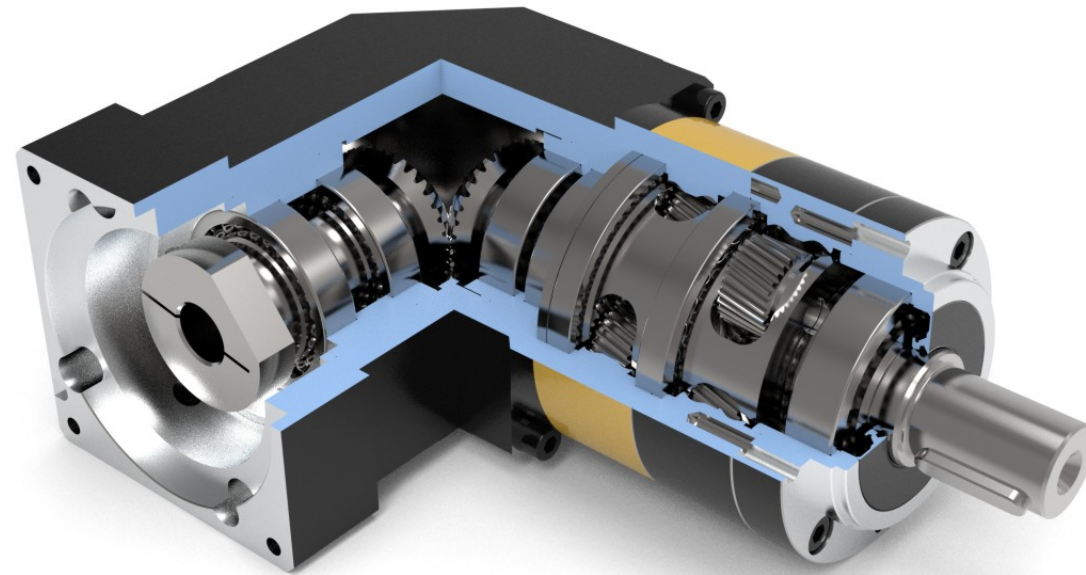
**Helical Gear System Technology**

Thanks to the tooth to tooth compact ratio more than 60%. The helical gearing and full needle bearing bring the benefits including higher torque capacity, smooth and lower noise running, decreased backlash and higher efficiency.



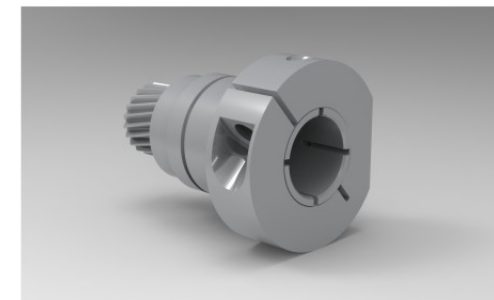
**Super Gear Grinding and Heat Treatment Technology**

The global leading gear grinding technology brings the great improvement for the tooth profile optimization, with the high level carburizing and quenching heat treatment technology to reach high precision and gear harden performance.



**Master CageSpindle Planetary Carrier**

The patented Master CageSpindle integrated planetary carrier support planetary gearbox to increase constructional strength running stability and rigidity significantly. Synthetic grease lubrication allows maintenance free for gearbox whole service life.



**Dynamic Balance Clamping and Sealing System**

For the gearbox input dynamic balance clamping design with perfect concentricity to decrease backlash and increase gearbox operation stability. The ultra sealing system offers grease leakage protection and support gearbox to reach IP65.

KVE Series Servo Planetary Gearbox

KVE Series Servo Planetary Gearbox





KVE070 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	46	52	55	50	50	45	42	42	
		in.lb	407	460	487	443	443	398	372	372	
Emergency Stop Torque	$T_{2Not}$	Nm	138	156	165	150	150	135	126	126	
		in.lb	1221	1381	1460	1328	1328	1195	1115	1115	
Maximum Acceleration Torque	$T_{2B}$	Nm	82	93	99	90	90	81	75	75	
		in.lb	726	823	876	797	797	717	664	664	
Maximum Torque	$T_{2a}$	Nm	92	104	110	100	100	90	84	84	
		in.lb	814	920	974	885	885	797	743	743	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	6000								
Mean No Load Running Torque	$T_{012}$	Nm	0.36	0.3	0.25	0.23	0.23	0.23	0.23	0.23	
		in.lb	3.19	2.66	2.21	2.04	2.04	2.04	2.04	2.04	
Maximum Torsional Backlash	$j_i$	arcmin	≤ 8								
Torsional Rigidity	$C_{G1}$	Nm/arcmin	7	7	7	7	7	7	7	7	
		in.lb/arcmin	62	62	62	62	62	62	62	62	
Maximum Radial Load	$F_{2AMax}$	N	1500								
		lb <sub>f</sub>	337								
Maximum Axial Load	$F_{2OMax}$	N	760								
		lb <sub>f</sub>	171								
Max. Tilting Moment	$M_{2KMax}$	Nm	40								
		in.lb	354								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	1.09	0.093	0.078	0.07	0.069	0.065	0.065	0.065	
Operating Noise Level	$L_{PA}$	dB(A)	< 63								
Efficiency at Full loading	$\eta$	%	96								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_h$	h	20,000(Continuous Operation)								
Weight	$m$	kg	2.3								
		lb <sub>m</sub>	5								

KVE070 2-stage

		2-stage																			
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	70	80	90	100		
Nominal Output Torque		Nm	46	50	52	55	55	55	52	55	55	55	50	36	36	36	33	33			
		in.lb	407	443	460	487	487	487	460	487	487	487	487	443	319	319	319	292	292		
Emergency Stop Torque	$T_{2Not}$	Nm	138	150	156	165	165	165	156	165	165	165	150	108	108	108	99	99			
		in.lb	1221	1328	1381	1460	1460	1460	1381	1460	1460	1460	1460	1328	956	956	956	876	876		
Maximum Acceleration Torque	$T_{2B}$	Nm	83	90	94	99	99	99	94	99	99	99	90	65	65	65	59	59			
		in.lb	733	797	828	876	876	876	828	876	876	876	876	797	574	574	574	526	526		
Maximum Torque	$T_{2a}$	Nm	92	100	104	110	110	110	104	110	110	110	100	72	72	72	66	66			
		in.lb	814	885	920	974	974	974	920	974	974	974	974	885	637	637	637	584	584		
Permitted Average Input Speed	$n_{1N}$	rpm	3000																		
Maximum Input Speed	$n_{1Max}$	rpm	6000																		
Mean No Load Running Torque	$T_{012}$	Nm	0.3	0.26	0.3	0.26	0.26	0.23	0.3	0.23	0.23	0.23	0.26	0.23	0.23	0.23	0.23	0.23	0.23	0.23	
		in.lb	2.66	2.30	2.66	2.30	2.30	2.04	2.66	2.04	2.04	2.04	2.30	2.04	2.04	2.04	2.04	2.04	2.04	2.04	
Maximum Torsional Backlash	$j_i$	arcmin	-8																		
Torsional Rigidity	$C_{G1}$	Nm/arcmin	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7		
		in.lb/arcmin	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62		
Maximum Radial Load	$F_{2AMax}$	N	1500																		
		lb <sub>f</sub>	337																		
Maximum Axial Load	$F_{2OMax}$	N	760																		
		lb <sub>f</sub>	171																		
Max. Tilting Moment	$M_{2KMax}$	Nm	40																		
		in.lb	354																		
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.105	0.088	0.088	0.075	0.075	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.075	0.064	0.064	0.064		
Operating Noise Level	$L_{PA}$	dB(A)	< 63																		
Efficiency at Full loading	$\eta$	%	94																		
Operating Temperature		°C	-25 to +90																		
		F	-13 to +194																		
Lubrication			Synthetic Lubrication Grease																		
Mouting Position			Any Directions																		
Protection Class			IP 65																		
Service lifetime	$L_h$	h	20,000(Continuous Operation)																		
Weight	$m$	kg	2.8																		
		lb <sub>m</sub>	6.2																		

KVE Series Servo Planetary Gearbox

KVE Series Servo Planetary Gearbox



KVE090 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	125	145	155	145	135	115	105	105	
		in.lb	1106	1283	1372	1283	1195	1018	929	929	
Emergency Stop Torque	$T_{2Not}$	Nm	375	435	465	435	405	345	315	315	
		in.lb	3319	3850	4116	3850	3585	3053	2788	2788	
Maximum Acceleration Torque	$T_{2B}$	Nm	225	261	279	261	243	207	189	189	
		in.lb	1991	2310	2469	2310	2151	1832	1673	1673	
Maximum Torque	$T_{2a}$	Nm	250	290	310	290	270	230	210	210	
		in.lb	2213	2567	2744	2567	2390	2036	1859	1859	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	6000								
Mean No Load Running Torque	$T_{012}$	Nm	0.57	0.54	0.46	0.44	0.38	0.38	0.38	0.38	
		in.lb	5.04	4.78	4.07	3.89	3.36	3.36	3.36	3.36	
Maximum Torsional Backlash	$j_i$	arcmin	≤ 6								
Torsional Rigidity	$C_{G1}$	Nm/arcmin	14	14	14	14	14	14	14	14	
		in.lb/arcmin	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	
Maximum Radial Load	$F_{2AMax}$	N	3200								
		lb <sub>f</sub>	719								
Maximum Axial Load	$F_{2OMax}$	N	1600								
		lb <sub>f</sub>	360								
Max. Tilting Moment	$M_{2KMax}$	Nm	90								
		in.lb	797								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.61	0.52	0.45	0.42	0.40	0.39	0.39	0.39	
Operating Noise Level	$L_{PA}$	dB(A)	< 65								
Efficiency at Full loading	$\eta$	%	96								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_h$	h	20,000(Continuous Operation)								
Weight	$m$	kg	5.4								
		lb <sub>m</sub>	11.9								

KVE090 2-stage

		2-stage																		
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	70	80	90	100	
Nominal Output Torque		Nm	125	125	145	145	155	155	145	155	155	155	145	92	92	92	84	84		
		in.lb	1106	1106	1283	1283	1372	1372	1283	1372	1372	1372	1372	1283	814	814	814	743	743	
Emergency Stop Torque	$T_{2Not}$	Nm	375	375	435	435	465	465	435	465	465	465	465	435	276	276	276	252	252	
		in.lb	3319	3319	3850	3850	4116	4116	3850	4116	4116	4116	4116	3850	2443	2443	2443	2230	2230	
Maximum Acceleration Torque	$T_{2B}$	Nm	225	225	261	261	279	279	261	279	279	279	279	261	165	165	165	151	151	
		in.lb	1991	1991	2310	2310	2469	2469	2310	2469	2469	2469	2469	2310	1460	1460	1460	1336	1336	
Maximum Torque	$T_{2a}$	Nm	250	250	290	290	310	310	290	310	310	310	290	184	184	184	168	168		
		in.lb	2213	2213	2567	2567	2744	2744	2567	2744	2744	2744	2744	2567	1629	1629	1629	1487	1487	
Permitted Average Input Speed	$n_{1N}$	rpm	3000																	
Maximum Input Speed	$n_{1Max}$	rpm	6000																	
Mean No Load Running Torque	$T_{012}$	Nm	0.54	0.47	0.54	0.47	0.47	0.47	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	
		in.lb	4.78	4.16	4.78	4.16	4.16	4.16	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	
Maximum Torsional Backlash	$j_i$	arcmin	≤ 8																	
Torsional Rigidity	$C_{G1}$	Nm/arcmin	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14		
		in.lb/arcmin	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9		
Maximum Radial Load	$F_{2AMax}$	N	3200																	
		lb <sub>f</sub>	719																	
Maximum Axial Load	$F_{2OMax}$	N	1600																	
		lb <sub>f</sub>	360																	
Max. Tilting Moment	$M_{2KMax}$	Nm	90																	
		in.lb	797																	
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.67	0.5	0.5	0.44	0.44	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39		
Operating Noise Level	$L_{PA}$	dB(A)	< 65																	
Efficiency at Full loading	$\eta$	%	94																	
Operating Temperature		°C	-25 to +90																	
		F	-13 to +194																	
Lubrication			Synthetic Lubrication Grease																	
Mouting Position			Any Directions																	
Protection Class			IP 65																	
Service lifetime	$L_h$	h	20,000(Continuous Operation)																	
Weight	$m$	kg	6.8																	
		lb <sub>m</sub>	15																	

KVE Series Servo Planetary Gearbox

KVE Series Servo Planetary Gearbox

KVE120 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	210	300	320	300	290	255	220	220	
		in.lb	1859	2655	2832	2655	2567	2257	1947	1947	
Emergency Stop Torque	$T_{2Not}$	Nm	630	900	960	900	870	765	660	660	
		in.lb	5576	7966	8497	7966	7700	6771	5841	5841	
Maximum Acceleration Torque	$T_{2B}$	Nm	378	540	576	540	522	459	396	396	
		in.lb	3346	4779	5098	4779	4620	4062	3505	3505	
Maximum Torque	$T_{2a}$	Nm	420	600	640	600	580	510	440	440	
		in.lb	3717	5310	5664	5310	5133	4514	3894	3894	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	6000								
Mean No Load Running Torque	$T_{012}$	Nm	1.5	1.43	1.28	1.22	1.17	1.17	1.17	1.17	
		in.lb	13.28	12.66	11.33	10.80	10.36	10.36	10.36	10.36	
Maximum Torsional Backlash	$j_i$	arcmin	≤ 6								
Torsional Rigidity	$C_{G1}$	Nm/arcmin	25	25	25	25	25	25	25	25	
		in.lb/arcmin	221.3	221.3	221.3	221.3	221.3	221.3	221.3	221.3	
Maximum Radial Load	$F_{2AMax}$	N	6700								
		lb <sub>f</sub>	1506								
Maximum Axial Load	$F_{2QMax}$	N	3300								
		lb <sub>f</sub>	742								
Max. Tilting Moment	$M_{2KMax}$	Nm	150								
		in.lb	1328								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	3.25	2.74	2.71	2.71	2.62	2.62	2.62	2.57	
Operating Noise Level	$L_{PA}$	dB(A)	< 68								
Efficiency at Full loading	$\eta$	%	96								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_h$	h	20,000(Continuous Operation)								
Weight	$m$	kg	12.1								
		lb <sub>m</sub>	26.7								

KVE120 2-stage

		2-stage																		
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	70	80	90	100	
Nominal Output Torque		Nm	210	300	300	300	320	210	305	320	320	320	320	300	204	204	204	176	176	
		in.lb	1859	2655	2655	2655	2832	1859	2699	2832	2832	2832	2832	2655	1806	1806	1806	1558	1558	
Emergency Stop Torque	$T_{2Not}$	Nm	630	900	900	900	960	630	915	960	960	960	960	900	612	612	612	528	528	
		in.lb	5576	7966	7966	7966	8497	5576	8098	8497	8497	8497	8497	7966	5417	5417	5417	4673	4673	
Maximum Acceleration Torque	$T_{2B}$	Nm	378	540	540	540	576	378	549	576	576	576	576	540	367	367	367	317	317	
		in.lb	3346	4779	4779	4779	5098	3346	4859	5098	5098	5098	5098	4779	3250	3250	3250	2804	2804	
Maximum Torque	$T_{2a}$	Nm	420	600	600	600	640	420	610	640	640	640	640	600	408	408	408	352	352	
		in.lb	3717	5310	5310	5310	5664	3717	5399	5664	5664	5664	5664	5310	3611	3611	3611	3115	3115	
Permitted Average Input Speed	$n_{1N}$	rpm	3000																	
Maximum Input Speed	$n_{1Max}$	rpm	6000																	
Mean No Load Running Torque	$T_{012}$	Nm	1.43	1.28	1.43	1.28	1.28	1.22	1.17	1.17	1.17	1.17	1.17	1.17	1.22	1.17	1.17	1.17	1.17	
		in.lb	12.66	11.33	12.66	11.33	11.33	10.80	10.36	10.36	10.36	10.36	10.36	10.36	10.80	10.36	10.36	10.36	10.36	
Maximum Torsional Backlash	$j_i$	arcmin	≤ 10																	
Torsional Rigidity	$C_{G1}$	Nm/arcmin	25	25	25	25	25	25	25	25	25	25	25	23	23	-	23	23	23	
		in.lb/arcmin	221.3	221.3	221.3	221.3	221.3	221.3	221.3	221.3	221.3	221.3	221.3	203.6	203.6	-	203.6	203.6	203.6	
Maximum Radial Load	$F_{2AMax}$	N	6700																	
		lb <sub>f</sub>	1506																	
Maximum Axial Load	$F_{2QMax}$	N	3300																	
		lb <sub>f</sub>	742																	
Max. Tilting Moment	$M_{2KMax}$	Nm	150																	
		in.lb	1328																	
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	2.56	2.58	1.75	1.5	1.49	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.5	1.5	1.49	1.49	1.45	
Operating Noise Level	$L_{PA}$	dB(A)	< 68																	
Efficiency at Full loading	$\eta$	%	94																	
Operating Temperature		°C	-25 to +90																	
		F	-13 to +194																	
Lubrication			Synthetic Lubrication Grease																	
Mouting Position			Any Directions																	
Protection Class			IP 65																	
Service lifetime	$L_h$	h	20,000(Continuous Operation)																	
Weight	$m$	kg	14																	
		lb <sub>m</sub>	30.9																	



KVE160 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	350	550	650	610	540	510	440	440	
		in.lb	3098	4868	5753	5399	4779	4514	3894	3894	
Emergency Stop Torque	$T_{2Not}$	Nm	1050	1650	1950	1830	1620	1530	1320	1320	
		in.lb	9293	14604	17259	16197	14338	13542	11683	11683	
Maximum Acceleration Torque	$T_{2B}$	Nm	630	990	1170	1098	972	918	792	792	
		in.lb	5576	8762	10355	9718	8603	8125	7010	7010	
Maximum Torque	$T_{2a}$	Nm	700	1100	1300	1220	1080	1020	880	880	
		in.lb	6195	9736	11506	10798	9559	9028	7789	7789	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	6000								
Mean No Load Running Torque	$T_{012}$	Nm	3.83	3.68	3.45	3.3	3.3	3.3	3.3	3.3	
		in.lb	33.90	32.57	30.53	29.21	29.21	29.21	29.21	29.21	
Maximum Torsional Backlash	$j_i$	arcmin	≤ 6								
Torsional Rigidity	$C_{G1}$	Nm/arcmin	50	50	50	45	45	45	45	45	
		in.lb/arcmin	442.5	442.5	442.5	398.3	398.3	398.3	398.3	398.3	
Maximum Radial Load	$F_{2AMax}$	N	9600								
		lb <sub>f</sub>	2158								
Maximum Axial Load	$F_{2OMax}$	N	4800								
		lb <sub>f</sub>	1079								
Max. Tilting Moment	$M_{2KMax}$	Nm	480								
		in.lb	4248								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	12.31	7.54	7.42	7.42	7.25	7.14	7.14	7.14	
Operating Noise Level	$L_{PA}$	dB(A)	< 70								
Efficiency at Full loading	$\eta$	%	96								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_h$	h	20,000(Continuous Operation)								
Weight	$m$	kg	26								
		lb <sub>m</sub>	57.3								

KVE160 2-stage

		2-stage																		
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	70	80	90	100	
Nominal Output Torque		Nm	350	500	550	650	650	650	550	650	650	550	650	610	408	408	408	352	352	
		in.lb	3097.7	4425.4	4867.9	5753	5753	5753	4867.9	5753	4867.9	5753	5753	5398.9	3611.1	3611.1	3611.1	3115.4	3115.4	
Emergency Stop Torque	$T_{2Not}$	Nm	1050	1500	1650	1950	1950	1950	1650	1950	1650	1950	1950	1830	1224	1224	1224	1056	1056	
		in.lb	9293.2	13276	14604	17259	17259	17259	14604	17259	14604	17259	17259	16197	10833	10833	10833	9346.3	9346.3	
Maximum Acceleration Torque	$T_{2B}$	Nm	630	900	990	1170	1170	1170	990	1170	990	1170	1170	1098	734	734	734	634	634	
		in.lb	5575.9	7965.6	8762.2	10355	10355	10355	8762.2	10355	8762.2	10355	10355	9718.1	6500	6500	6500	5607.8	5607.8	
Maximum Torque	$T_{2a}$	Nm	700	1000	1100	1300	1300	1300	1100	1300	1100	1300	1300	1220	816	816	816	704	704	
		in.lb	6195.5	8850.7	9735.8	11506	11506	11506	9735.8	11506	9735.8	11506	11506	10798	7222.2	7222.2	7222.2	6230.9	6230.9	
Permitted Average Input Speed	$n_{1N}$	rpm	3000																	
Maximum Input Speed	$n_{1Max}$	rpm	6000																	
Mean No Load Running Torque	$T_{012}$	Nm	3.68	3.45	3.45	3.45	3.45	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	
		in.lb	32.57	30.53	30.53	30.53	30.53	29.21	29.21	29.21	29.21	29.21	29.21	29.21	29.21	29.21	29.21	29.21	29.21	
Maximum Torsional Backlash	$j_i$	arcmin	≤ 10																	
Torsional Rigidity	$C_{G1}$	Nm/arcmin	50	50	50	50	50	50	50	50	50	50	50	45	45	45	45	45	45	
		in.lb/arcmin	442.5	442.5	442.5	442.5	442.5	442.5	442.5	442.5	442.5	442.5	442.5	442.5	398.3	398.3	398.3	398.3	398.3	
Maximum Radial Load	$F_{2AMax}$	N	9600																	
		lb <sub>f</sub>	2158																	
Maximum Axial Load	$F_{2OMax}$	N	4800																	
		lb <sub>f</sub>	1079																	
Max. Tilting Moment	$M_{2KMax}$	Nm	480																	
		in.lb	4248																	
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	12.35	12.35	7.47	6.65	5.81	6.34	6.34	5.36	4.08	5.36	4.08	7.40	7.50	7.50	7.40	7.40		
Operating Noise Level	$L_{PA}$	dB(A)	< 70																	
Efficiency at Full loading	$\eta$	%	94																	
Operating Temperature		°C	-25 to +90																	
		F	-13 to +194																	
Lubrication			Synthetic Lubrication Grease																	
Mouting Position			Any Directions																	
Protection Class			IP 65																	
Service lifetime	$L_h$	h	20,000(Continuous Operation)																	
Weight	$m$	kg	31																	
		lb <sub>m</sub>	68.3																	

KVE205 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	650	1250	1200	1000	1000	1000	910	910	
		in.lb	5753	11063	10621	8851	8851	8851	8054	8054	
Emergency Stop Torque	$T_{2Not}$	Nm	1950	3750	3600	3000	3000	3000	2730	2730	
		in.lb	17259	33190	31863	26552	26552	26552	24162	24162	
Maximum Acceleration Torque	$T_{2B}$	Nm	1170	2250	2160	1800	1800	1800	1638	1638	
		in.lb	10355	19914	19118	15931	15931	15931	14497	14497	
Maximum Torque	$T_{2a}$	Nm	1300	2500	2400	2000	2000	2000	1820	1820	
		in.lb	11506	22127	21242	17701	17701	17701	16108	16108	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	4000								
Mean No Load Running Torque	$T_{012}$	Nm	5.25	4.95	4.73	4.5	4.5	4.5	4.5	4.5	
		in.lb	46.47	43.81	41.86	39.83	39.83	39.83	39.83	39.83	
Maximum Torsional Backlash	$j_i$	arcmin	≤ 8								
Torsional Rigidity	$C_{G1}$	Nm/arcmin	140	140	140	140	140	140	140	140	
		in.lb/arcmin	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	
Maximum Radial Load	$F_{2AMax}$	N	14000								
		lb <sub>f</sub>	3147								
Maximum Axial Load	$F_{2OMax}$	N	7000								
		lb <sub>f</sub>	1574								
Max. Tilting Moment	$M_{2KMax}$	Nm	1300								
		in.lb	11506								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	28.98	23.67	22.75	22.75	22.48	22.59	22.59	22.55	
Operating Noise Level	$L_{PA}$	dB(A)	< 72								
Efficiency at Full loading	$\eta$	%	96								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_h$	h	20,000(Continuous Operation)								
Weight	$m$	kg	41								
		lb <sub>m</sub>	90.4								

KVE205 2-stage

		2-stage																		
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	70	80	90	100	
Nominal Output Torque		Nm	650	850	1250	1250	1200	1200	1250	1200	1200	1200	1200	1000	800	800	800	728	728	
		in.lb	5753	7523	11063	11063	10621	10621	11063	10621	10621	10621	10621	8851	7081	7081	7081	6443	6443	
Emergency Stop Torque	$T_{2Not}$	Nm	1950	2550	3750	3750	3600	3600	3750	3600	3600	3600	3600	3000	2400	2400	2400	2184	2184	
		in.lb	17259	22569	33190	33190	31863	31863	33190	31863	31863	31863	31863	26552	21242	21242	21242	19330	19330	
Maximum Acceleration Torque	$T_{2B}$	Nm	1170	1530	2250	2250	2160	2160	2250	2160	2160	2160	2160	1800	1440	1440	1440	1310	1310	
		in.lb	10355	13542	19914	19914	19118	19118	19914	19118	19118	19118	19118	15931	12745	12745	12745	11594	11594	
Maximum Torque	$T_{2a}$	Nm	1300	1700	2500	2500	2400	2400	2500	2400	2400	2400	2400	2000	1600	1600	1600	1456	1456	
		in.lb	11506	15046	22127	22127	21242	21242	22127	21242	21242	21242	21242	17701	14161	14161	14161	12887	12887	
Permitted Average Input Speed	$n_{1N}$	rpm	3000																	
Maximum Input Speed	$n_{1Max}$	rpm	4000																	
Mean No Load Running Torque	$T_{012}$	Nm	3.68	3.45	3.68	3.45	3.45	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	
		in.lb	32.57	30.53	32.57	30.53	30.53	29.21	29.21	29.21	29.21	29.21	29.21	29.21	29.21	29.21	29.21	29.21	29.21	
Maximum Torsional Backlash	$j_i$	arcmin	≤ 10																	
Torsional Rigidity	$C_{G1}$	Nm/arcmin	140	140	140	140	140	140	140	140	140	140	140	140	135	135	135	135		
		in.lb/arcmin	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1194.8	1194.8	1194.8	1194.8		
Maximum Radial Load	$F_{2AMax}$	N	14000																	
		lb <sub>f</sub>	3147																	
Maximum Axial Load	$F_{2OMax}$	N	7000																	
		lb <sub>f</sub>	1574																	
Max. Tilting Moment	$M_{2KMax}$	Nm	1300																	
		in.lb	11506																	
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	12.35	12.35	7.54	7.42	7.54	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14		
Operating Noise Level	$L_{PA}$	dB(A)	< 72																	
Efficiency at Full loading	$\eta$	%	94																	
Operating Temperature		°C	-25 to +90																	
		F	-13 to +194																	
Lubrication			Synthetic Lubrication Grease																	
Mouting Position			Any Directions																	
Protection Class			IP 65																	
Service lifetime	$L_h$	h	20,000(Continuous Operation)																	
Weight	$m$	kg	49																	
		lb <sub>m</sub>	108																	

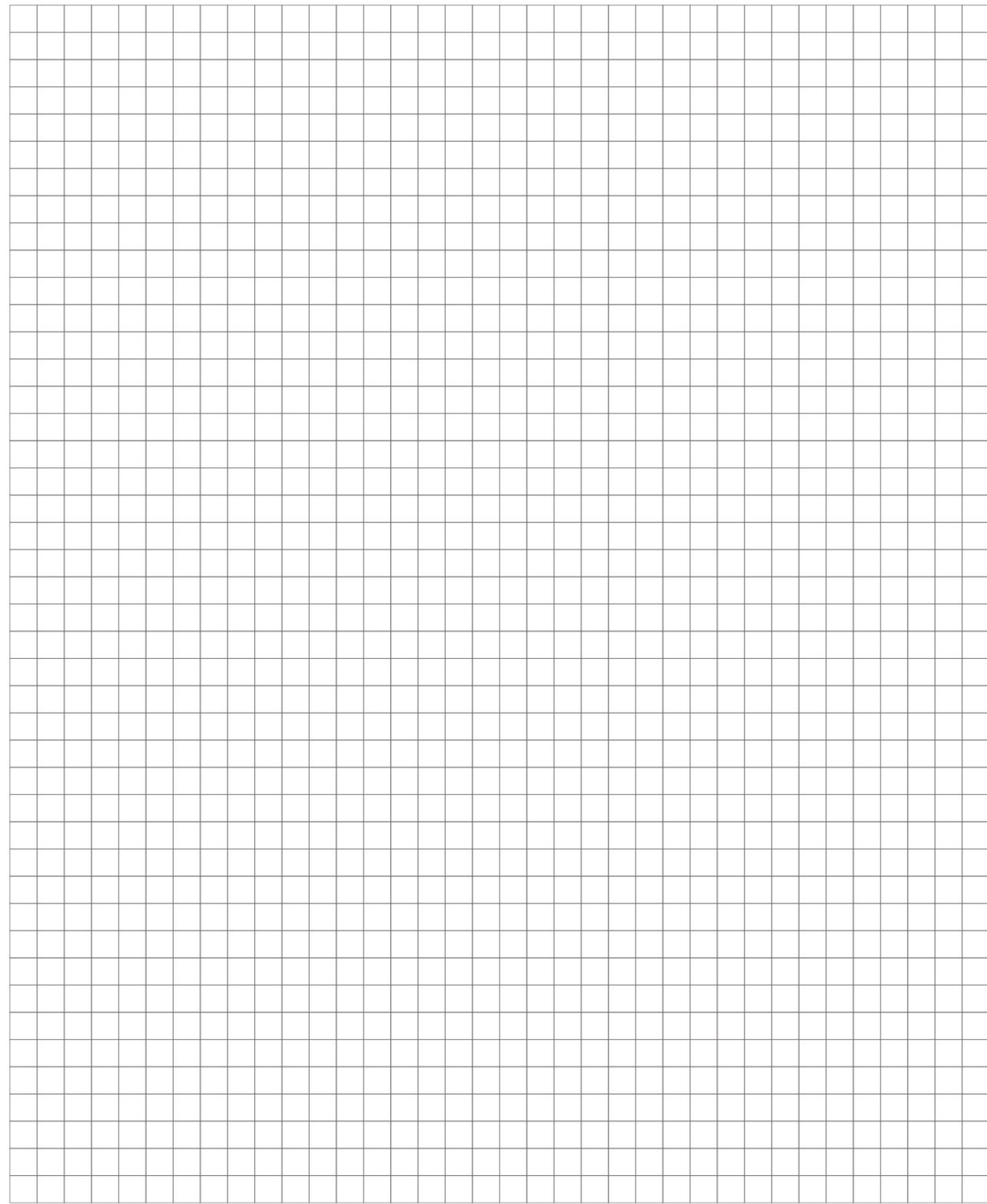
KVE Series Servo Planetary Gearbox

KVE Series Servo Planetary Gearbox





Technical Memo

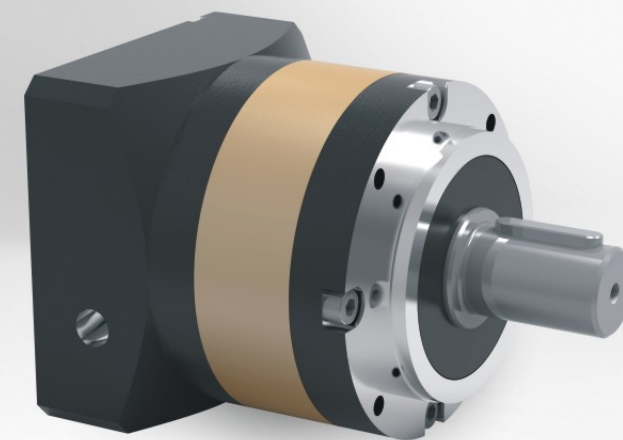


KVE Series Servo Planetary Gearbox

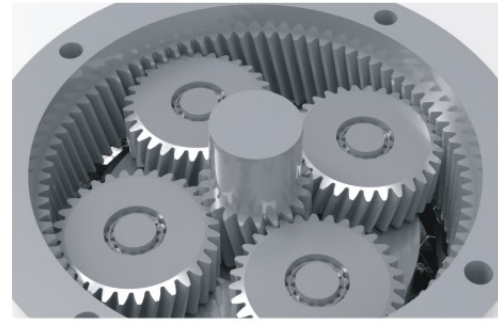
# KPL

Powerful. High Precision. Reliable

- ▶ Servo Planetary Gearbox  
Advanced Gearbox Solution

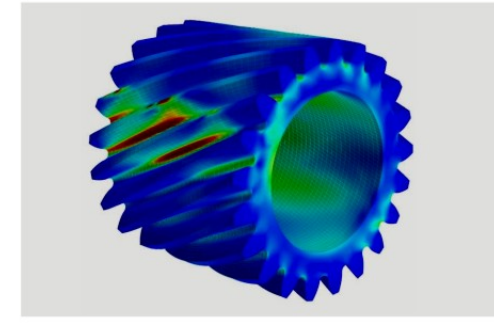






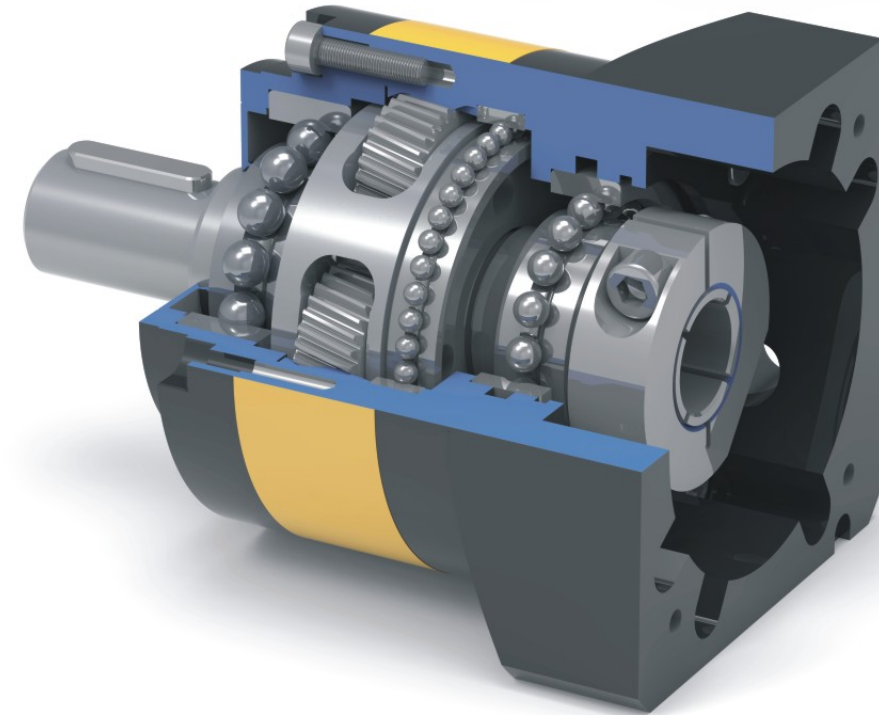
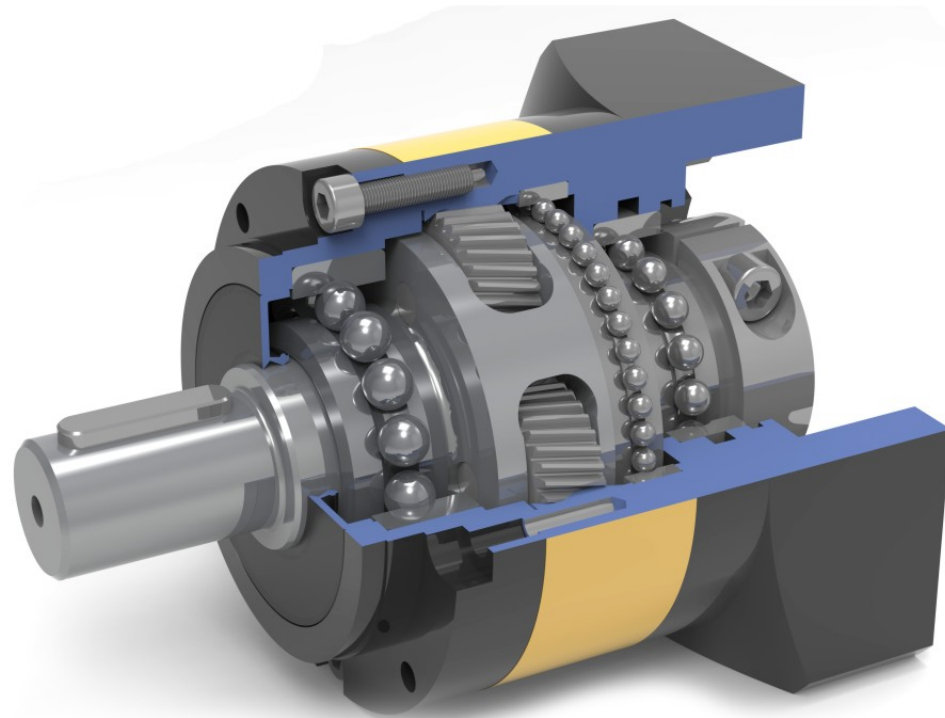
**Helical Gear System Technology**

Thanks to the tooth to tooth compact ratio more than 60%. The helical gearing and full needle bearing bring the benefits including higher torque capacity, smooth and lower noise running, decreased backlash and higher efficiency.



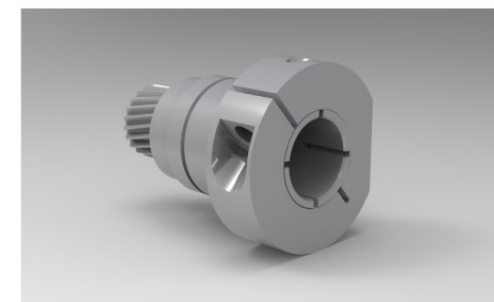
**Super Gear Grinding and Heat Treatment Technology**

The global leading gear grinding technology brings the great improvement for the tooth profile optimization, with the high level carburizing and quenching heat treatment technology to reach high precision and gear harden performance.



**Master CageSpindle Planetary Carrier**

The patented Master CageSpindle integrated planetary carrier support planetary gearbox to increase constructional strength running stability and rigidity significantly. Synthetic grease lubrication allows maintenance free for gearbox whole service life.



**Dynamic Balance Clamping and Sealing System**

For the gearbox input dynamic balance clamping design with perfect concentricity to decrease backlash and increase gearbox operation stability. The ultra sealing system offers grease leakage protection and support gearbox to reach IP65.

KPL Series Servo Planetary Gearbox

KPL Series Servo Planetary Gearbox





KPL050 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	20	21	21	20	19	18	14	14	
		in.lb	177	186	186	177	168	159	124	124	
Emergency Stop Torque	$T_{2Not}$	Nm	60	60	63	60	57	54	42	42	
		in.lb	531	531	558	531	504	478	372	372	
Maximum Acceleration Torque	$T_{2B}$	Nm	36	37.8	37.8	36	34.2	32.4	25.2	25.2	
		in.lb	319	335	335	319	303	287	223	223	
Maximum Torque	$T_{2a}$	Nm	40	42	42	40	38	36	28	28	
		in.lb	354	372	372	354	336	319	248	248	
Permitted Average Input Speed	$n_{1N}$	rpm	4000								
Maximum Input Speed	$n_{1Max}$	rpm	8000								
Mean No Load Running Torque	$T_{012}$	Nm	0.11	0.1	0.09	0.09	0.08	0.08	0.08	0.08	
		in.lb	0.97	0.89	0.80	0.80	0.71	0.71	0.71	0.71	
Standard Backlash P1	$j_i$	arcmin	≤ 8								
Reduced Low Backlash P0	$j_i$	arcmin	≤ 5								
Torsional Rigidity	$C_{021}$	Nm/arcmin	3	3	3	2.85	2.85	2.85	2.85	2.85	
		in.lb/arcmin	26.55	26.55	26.55	25.22	25.22	25.22	25.22	25.22	
Maximum Radial Load	$F_{2AMax}$	N	770								
		lb <sub>f</sub>	173								
Maximum Axial Load	$F_{2OMax}$	N	380								
		lb <sub>f</sub>	85								
Max. Tilting Moment	$M_{2KMax}$	Nm	25								
		in.lb	220								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.031	0.022	0.019	0.017	0.017	0.017	0.017	0.017	
Operating Noise Level	$L_{PA}$	dB(A)	< 56								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	0.6								
		lb <sub>m</sub>	1.3								

KPL050 2-stage

		2-stage																
Ratio	i		12	15	16	20	25	30	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	20	20	21	21	21	20	21	21	21	20	18	18	14	14		
		in.lb	177	177	186	186	186	177	186	186	186	186	177	159	159	124	124	
Emergency Stop Torque	$T_{2Not}$	Nm	60	60	63	63	63	60	63	63	63	60	54	54	42	42		
		in.lb	531	531	558	558	558	531	558	558	558	558	531	478	478	372	372	
Maximum Acceleration Torque	$T_{2B}$	Nm	36	36	37.8	37.8	37.8	36	37.8	37.8	37.8	36	32.4	32.4	25.2	25.2		
		in.lb	319	319	335	335	335	319	335	335	335	335	319	287	287	223	223	
Maximum Torque	$T_{2a}$	Nm	40	40	42	42	42	40	42	42	42	40	36	36	28	28		
		in.lb	354	354	372	372	372	354	372	372	372	372	354	319	319	248	248	
Permitted Average Input Speed	$n_{1N}$	rpm	4000															
Maximum Input Speed	$n_{1Max}$	rpm	8000															
Mean No Load Running Torque	$T_{012}$	Nm	0.1	0.1	0.1	0.1	0.1	0.09	0.09	0.09	0.09	0.09	0.08	0.08	0.08	0.08		
		in.lb	0.89	0.89	0.89	0.89	0.89	0.80	0.80	0.80	0.80	0.80	0.71	0.71	0.71	0.71		
Standard Backlash P1	$j_i$	arcmin	≤ 11															
Reduced Low Backlash P0	$j_i$	arcmin	≤ 8															
Torsional Rigidity	$C_{021}$	Nm/arcmin	3	3	3	3	3	3	3	3	3	3	2.85	2.85	2.85	2.85		
		in.lb/arcmin	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	25.22	25.22	25.22	25.22	
Maximum Radial Load	$F_{2AMax}$	N	770															
		lb <sub>f</sub>	173															
Maximum Axial Load	$F_{2OMax}$	N	380															
		lb <sub>f</sub>	85															
Max. Tilting Moment	$M_{2KMax}$	Nm	40															
		in.lb	352															
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.029	0.027	0.022	0.019	0.017	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016		
Operating Noise Level	$L_{PA}$	dB(A)	< 56															
Efficiency at Full loading	$\eta$	%	95															
Operating Temperature		°C	-25 to +90															
		F	-13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)															
Weight	$m$	kg	0.9															
		lb <sub>m</sub>	2															

KPL070 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	46	52	55	50	50	45	42	42	
		in.lb	407	460	487	443	443	398	372	372	
Emergency Stop Torque	$T_{2Not}$	Nm	138	156	165	150	150	135	126	126	
		in.lb	1221	1381	1460	1328	1328	1195	1115	1115	
Maximum Acceleration Torque	$T_{2B}$	Nm	82.8	93.6	99	90	90	81	75.6	75.6	
		in.lb	733	828	876	797	797	717	669	669	
Maximum Torque	$T_{2a}$	Nm	92	104	110	100	100	90	84	84	
		in.lb	814	920	974	885	885	797	743	743	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	6000								
Mean No Load Running Torque	$T_{012}$	Nm	0.24	0.2	0.17	0.15	0.15	0.15	0.15	0.15	
		in.lb	2.12	1.77	1.50	1.33	1.33	1.33	1.33	1.33	
Standard Backlash P1	$j_i$	arcmin	≤ 6								
Reduced Low Backlash P0	$j_i$	arcmin	≤ 3								
Torsional Rigidity	$C_{21}$	Nm/arcmin	7	7	7	6.5	6.5	6.5	6.5	6.5	
		in.lb/arcmin	61.95	61.95	61.95	57.53	57.53	57.53	57.53	57.53	
Maximum Radial Load	$F_{2AMax}$	N	1500								
		lb <sub>r</sub>	337								
Maximum Axial Load	$F_{2OMax}$	N	760								
		lb <sub>r</sub>	171								
Max. Tilting Moment	$M_{2KMax}$	Nm	40								
		in.lb	352								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.16	0.14	0.13	0.13	0.13	0.13	0.13	0.13	
Operating Noise Level	$L_{PA}$	dB(A)	< 58								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	1.4								
		lb <sub>m</sub>	3.1								

KPL070 2-stage

		2-stage																	
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	56	50	52	55	55	46	52	55	55	55	55	50	45	45	42	42	
		in.lb	496	443	460	487	487	407	460	487	487	487	487	487	443	398	398	372	372
Emergency Stop Torque	$T_{2Not}$	Nm	168	150	156	165	165	138	156	165	165	165	165	150	135	135	126	126	
		in.lb	1487	1328	1381	1460	1460	1221	1381	1460	1460	1460	1460	1460	1328	1195	1195	1115	1115
Maximum Acceleration Torque	$T_{2B}$	Nm	100.8	90	93.6	99	99	82.8	93.6	99	99	99	99	90	81	81	75.6	75.6	
		in.lb	892	797	828	876	876	733	828	876	876	876	876	876	797	717	717	669	669
Maximum Torque	$T_{2a}$	Nm	112	100	104	110	110	92	104	110	110	110	110	100	90	90	84	84	
		in.lb	991	885	920	974	974	814	920	974	974	974	974	974	885	797	797	743	743
Permitted Average Input Speed	$n_{1N}$	rpm	3000																
Maximum Input Speed	$n_{1Max}$	rpm	6000																
Mean No Load Running Torque	$T_{012}$	Nm	0.2	0.17	0.2	0.17	0.17	0.15	0.2	0.15	0.15	0.15	0.15	0.17	0.15	0.15	0.15	0.15	
		in.lb	1.77	1.50	1.77	1.50	1.50	1.33	1.77	1.33	1.33	1.33	1.33	1.50	1.33	1.33	1.33	1.33	
Standard Backlash P1	$j_i$	arcmin	≤ 8																
Reduced Low Backlash P0	$j_i$	arcmin	≤ 5																
Torsional Rigidity	$C_{21}$	Nm/arcmin	7	7	7	7	7	7	7	7	7	7	7	6.5	6.5	6.5	6.5		
		in.lb/arcmin	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	57.53	57.53	57.53	57.53	
Maximum Radial Load	$F_{2AMax}$	N	1500																
		lb <sub>r</sub>	337																
Maximum Axial Load	$F_{2OMax}$	N	760																
		lb <sub>r</sub>	171																
Max. Tilting Moment	$M_{2KMax}$	Nm	80																
		in.lb	704																
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.127	0.124	0.12	0.075	0.075	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.075	0.064	0.064	
Operating Noise Level	$L_{PA}$	dB(A)	< 58																
Efficiency at Full loading	$\eta$	%	95																
Operating Temperature		°C	-25 to +90																
		F	-13 to +194																
Lubrication			Synthetic Lubrication Grease																
Mouting Position			Any Directions																
Protection Class			IP 65																
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																
Weight	$m$	kg	1.6																
		lb <sub>m</sub>	3.5																

KPL Series Servo Planetary Gearbox

KPL Series Servo Planetary Gearbox



KPL090 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	125	145	155	145	135	115	105	105	
		in.lb	1106	1283	1372	1283	1195	1018	929	929	
Emergency Stop Torque	$T_{2Not}$	Nm	375	435	465	435	405	345	315	315	
		in.lb	3319	3850	4116	3850	3585	3053	2788	2788	
Maximum Acceleration Torque	$T_{2a}$	Nm	225	261	279	261	243	207	189	189	
		in.lb	1991	2310	2469	2310	2151	1832	1673	1673	
Maximum Torque	$T_{2a}$	Nm	250	290	310	290	270	230	210	210	
		in.lb	2213	2567	2744	2567	2390	2036	1859	1859	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	6000								
Mean No Load Running Torque	$T_{012}$	Nm	0.38	0.36	0.31	0.29	0.25	0.25	0.25	0.25	
		in.lb	3.36	3.19	2.74	2.57	2.21	2.21	2.21	2.21	
Standard Backlash P1	$j_1$	arcmin	≤ 6								
Reduced Low Backlash P0	$j_1$	arcmin	≤ 3								
Torsional Rigidity	$C_{021}$	Nm/arcmin	14	14	14	13	13	13	13	13	
		in.lb/arcmin	123.91	123.91	123.91	115.06	115.06	115.06	115.06	115.06	
Maximum Radial Load	$F_{2AMax}$	N	3200								
		lb <sub>r</sub>	719								
Maximum Axial Load	$F_{2OMax}$	N	1600								
		lb <sub>r</sub>	360								
Max. Tilting Moment	$M_{2KMax}$	Nm	90								
		in.lb	792								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.61	0.48	0.47	0.47	0.47	0.45	0.44	0.44	
Operating Noise Level	$L_{PA}$	dB(A)	< 60								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	3.3								
		lb <sub>m</sub>	7.3								

KPL090 2-stage

		2-stage																	
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	125	125	145	145	155	125	145	155	155	155	155	145	115	115	105	105	
		in.lb	1106	1106	1283	1283	1372	1106	1283	1372	1372	1372	1372	1283	1018	1018	929	929	
Emergency Stop Torque	$T_{2Not}$	Nm	375	375	435	435	465	375	435	465	465	465	465	435	345	345	315	315	
		in.lb	3319	3319	3850	3850	4116	3319	3850	4116	4116	4116	4116	3850	3053	3053	2788	2788	
Maximum Acceleration Torque	$T_{2a}$	Nm	225	225	261	261	279	225	261	279	279	279	279	261	207	207	189	189	
		in.lb	1991	1991	2310	2310	2469	1991	2310	2469	2469	2469	2469	2310	1832	1832	1673	1673	
Maximum Torque	$T_{2a}$	Nm	250	250	290	290	310	250	290	310	310	310	310	290	230	230	210	210	
		in.lb	2213	2213	2567	2567	2744	2213	2567	2744	2744	2744	2744	2567	2036	2036	1859	1859	
Permitted Average Input Speed	$n_{1N}$	rpm	3000																
Maximum Input Speed	$n_{1Max}$	rpm	6000																
Mean No Load Running Torque	$T_{012}$	Nm	0.36	0.31	0.36	0.31	0.31	0.31	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	
		in.lb	3.19	2.74	3.19	2.74	2.74	2.74	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	
Standard Backlash P1	$j_1$	arcmin	≤ 8																
Reduced Low Backlash P0	$j_1$	arcmin	≤ 5																
Torsional Rigidity	$C_{021}$	Nm/arcmin	14	14	14	14	14	14	14	14	14	14	14	13	13	13	13	13	
		in.lb/arcmin	123.91	123.91	123.91	123.91	123.91	123.91	123.91	123.91	123.91	123.91	123.91	115.06	115.06	115.06	115.06	115.06	
Maximum Radial Load	$F_{2AMax}$	N	3200																
		lb <sub>r</sub>	719																
Maximum Axial Load	$F_{2OMax}$	N	1600																
		lb <sub>r</sub>	360																
Max. Tilting Moment	$M_{2KMax}$	Nm	200																
		in.lb	1760																
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.44	0.44	0.43	0.44	0.44	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39		
Operating Noise Level	$L_{PA}$	dB(A)	< 60																
Efficiency at Full loading	$\eta$	%	95																
Operating Temperature		°C	-25 to +90																
		F	-13 to +194																
Lubrication			Synthetic Lubrication Grease																
Mouting Position			Any Directions																
Protection Class			IP 65																
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																
Weight	$m$	kg	4.5																
		lb <sub>m</sub>	9.9																

KPL Series Servo Planetary Gearbox

KPL Series Servo Planetary Gearbox

KPL120 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	210	300	320	300	290	255	220	220	
		in.lb	1859	2655	2832	2655	2567	2257	1947	1947	
Emergency Stop Torque	$T_{2Not}$	Nm	630	900	960	900	870	765	660	660	
		in.lb	5576	7966	8497	7966	7700	6771	5841	5841	
Maximum Acceleration Torque	$T_{2B}$	Nm	378	540	576	540	522	459	396	396	
		in.lb	3346	4779	5098	4779	4620	4062	3505	3505	
Maximum Torque	$T_{2a}$	Nm	420	600	640	600	580	510	440	440	
		in.lb	3717	5310	5664	5310	5133	4514	3894	3894	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	6000								
Mean No Load Running Torque	$T_{012}$	Nm	1	0.95	0.85	0.81	0.78	0.78	0.78	0.78	
		in.lb	8.85	8.41	7.52	7.17	6.90	6.90	6.90	6.90	
Standard Backlash P1	$j_i$	arcmin	≤ 6								
Reduced Low Backlash P0	$j_i$	arcmin	≤ 3								
Torsional Rigidity	$C_{021}$	Nm/arcmin	25	25	25	23	23	23	23	23	
		in.lb/arcmin	221.27	221.27	221.27	203.57	203.57	203.57	203.57	203.57	
Maximum Radial Load	$F_{2AMax}$	N	6700								
		lb <sub>r</sub>	1506								
Maximum Axial Load	$F_{2OMax}$	N	3300								
		lb <sub>r</sub>	742								
Max. Tilting Moment	$M_{2KMax}$	Nm	150								
		in.lb	1320								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	3.25	2.74	2.71	2.62	2.62	2.62	2.62	2.57	
Operating Noise Level	$L_{PA}$	dB(A)	< 63								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	5.5								
		lb <sub>m</sub>	12.1								

KPL120 2-stage

		2-stage																	
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	310	310	300	300	320	210	305	320	320	320	320	300	255	255	220	220	
		in.lb	2744	2744	2655	2655	2832	1859	2699	2832	2832	2832	2832	2655	2257	2257	1947	1947	
Emergency Stop Torque	$T_{2Not}$	Nm	930	930	900	900	960	630	915	960	960	960	960	900	765	765	660	660	
		in.lb	8231	8231	7966	7966	8497	5576	8098	8497	8497	8497	8497	7966	6771	6771	5841	5841	
Maximum Acceleration Torque	$T_{2B}$	Nm	558	558	540	540	576	378	549	576	576	576	576	540	459	459	396	396	
		in.lb	4939	4939	4779	4779	5098	3346	4859	5098	5098	5098	5098	4779	4062	4062	3505	3505	
Maximum Torque	$T_{2a}$	Nm	620	620	600	600	640	420	610	640	640	640	640	600	510	510	440	440	
		in.lb	5487	5487	5310	5310	5664	3717	5399	5664	5664	5664	5664	5310	4514	4514	3894	3894	
Permitted Average Input Speed	$n_{1N}$	rpm	3000																
Maximum Input Speed	$n_{1Max}$	rpm	6000																
Mean No Load Running Torque	$T_{012}$	Nm	0.95	0.85	0.95	0.85	0.85	0.81	0.78	0.78	0.78	0.78	0.78	0.81	0.78	0.78	0.78	0.78	
		in.lb	8.41	7.52	8.41	7.52	7.52	7.17	6.90	6.90	6.90	6.90	6.90	7.17	6.90	6.90	6.90	6.90	
Standard Backlash P1	$j_i$	arcmin	≤ 8																
Reduced Low Backlash P0	$j_i$	arcmin	≤ 5																
Torsional Rigidity	$C_{021}$	Nm/arcmin	25	25	25	25	25	25	25	25	25	25	25	23	23	23	23	23	
		in.lb/arcmin	221.27	221.27	221.27	221.27	221.27	221.27	221.27	221.27	221.27	221.27	221.27	203.57	203.57	203.57	203.57	203.57	
Maximum Radial Load	$F_{2AMax}$	N	6700																
		lb <sub>r</sub>	1506																
Maximum Axial Load	$F_{2OMax}$	N	3300																
		lb <sub>r</sub>	742																
Max. Tilting Moment	$M_{2KMax}$	Nm	400																
		in.lb	3520																
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	2.56	2.58	1.75	1.5	1.49	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.5	1.3	1.3	1.3	
Operating Noise Level	$L_{PA}$	dB(A)	< 63																
Efficiency at Full loading	$\eta$	%	95																
Operating Temperature		°C	-25 to +90																
		F	-13 to +194																
Lubrication			Synthetic Lubrication Grease																
Mouting Position			Any Directions																
Protection Class			IP 65																
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																
Weight	$m$	kg	8																
		lb <sub>m</sub>	17.6																

KPL Series Servo Planetary Gearbox

KPL Series Servo Planetary Gearbox



KPL160 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	450	550	650	610	540	510	440	440	
		in.lb	3983	4868	5753	5399	4779	4514	3894	3894	
Emergency Stop Torque	$T_{2Not}$	Nm	1350	1650	1950	1830	1620	1530	1320	1320	
		in.lb	11948	14604	17259	16197	14338	13542	11683	11683	
Maximum Acceleration Torque	$T_{2a}$	Nm	810	990	1170	1098	972	918	792	792	
		in.lb	7169	8762	10355	9718	8603	8125	7010	7010	
Maximum Torque	$T_{2a}$	Nm	900	1100	1300	1220	1080	1020	880	880	
		in.lb	7966	9736	11506	10798	9559	9028	7789	7789	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	6000								
Mean No Load Running Torque	$T_{012}$	Nm	2.55	2.45	2.3	2.2	2.2	2.2	2.2	2.2	
		in.lb	22.57	21.68	20.36	19.47	19.47	19.47	19.47	19.47	
Standard Backlash P1	$j_1$	arcmin	≤ 6								
Reduced Low Backlash P0	$j_1$	arcmin	≤ 3								
Torsional Rigidity	$C_{021}$	Nm/arcmin	50	50	50	45	45	45	45	45	
		in.lb/arcmin	442.54	442.54	442.54	398.28	398.28	398.28	398.28	398.28	
Maximum Radial Load	$F_{2AMax}$	N	9600								
		lb <sub>r</sub>	2158								
Maximum Axial Load	$F_{2OMax}$	N	4800								
		lb <sub>r</sub>	1079								
Max. Tilting Moment	$M_{2KMax}$	Nm	480								
		in.lb	4224								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	12.31	7.54	7.42	7.25	7.25	7.14	7.14	7.14	
Operating Noise Level	$L_{PA}$	dB(A)	< 65								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	20								
		lb <sub>m</sub>	44.1								

KPL160 2-stage

		2-stage																	
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	500	500	550	650	650	450	550	650	550	650	650	610	510	440	440		
		in.lb	4425	4425	4868	5753	5753	3983	4868	5753	4868	5753	5753	5399	4514	4514	3894	3894	
Emergency Stop Torque	$T_{2Not}$	Nm	1500	1500	1650	1950	1950	1350	1650	1950	1650	1950	1950	1830	1530	1320	1320		
		in.lb	13276	13276	14604	17259	17259	11948	14604	17259	14604	17259	17259	16197	13542	13542	11683	11683	
Maximum Acceleration Torque	$T_{2a}$	Nm	900	900	990	1170	1170	810	990	1170	990	1170	1170	1098	918	792	792		
		in.lb	7966	7966	8762	10355	10355	7169	8762	10355	8762	10355	10355	9718	8125	7010	7010		
Maximum Torque	$T_{2a}$	Nm	1000	1000	1100	1300	1300	900	1100	1300	1100	1300	1300	1220	1020	880	880		
		in.lb	8851	8851	9736	11506	11506	7966	9736	11506	9736	11506	11506	10798	9028	7789	7789		
Permitted Average Input Speed	$n_{1N}$	rpm	3000																
Maximum Input Speed	$n_{1Max}$	rpm	6000																
Mean No Load Running Torque	$T_{012}$	Nm	2.45	2.3	2.45	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	
		in.lb	21.68	20.36	21.68	20.36	20.36	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	
Standard Backlash P1	$j_1$	arcmin	≤ 8																
Reduced Low Backlash P0	$j_1$	arcmin	≤ 5																
Torsional Rigidity	$C_{021}$	Nm/arcmin	50	50	50	50	50	50	50	50	50	50	50	45	45	45	45		
		in.lb/arcmin	442.54	442.54	442.54	442.54	442.54	442.54	442.54	442.54	442.54	442.54	442.54	398.28	398.28	398.28	398.28		
Maximum Radial Load	$F_{2AMax}$	N	9600																
		lb <sub>r</sub>	2158																
Maximum Axial Load	$F_{2OMax}$	N	4800																
		lb <sub>r</sub>	1079																
Max. Tilting Moment	$M_{2KMax}$	Nm	850																
		in.lb	7480																
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	12.35	12.35	7.47	6.65	5.81	6.34	6.34	5.36	4.08	5.36	4.08	7.40	7.50	7.40	7.40		
Operating Noise Level	$L_{PA}$	dB(A)	< 65																
Efficiency at Full loading	$\eta$	%	95																
Operating Temperature		°C	-25 to +90																
		F	-13 to +194																
Lubrication			Synthetic Lubrication Grease																
Mouting Position			Any Directions																
Protection Class			IP 65																
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																
Weight	$m$	kg	25																
		lb <sub>m</sub>	55.1																

KPL Series Servo Planetary Gearbox

KPL Series Servo Planetary Gearbox

KPL205 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	650	1250	1200	1000	1000	1000	910	910	
		in.lb	5753	11063	10621	8851	8851	8851	8054	8054	
Emergency Stop Torque	$T_{2Not}$	Nm	1950	3750	3600	3000	3000	3000	2730	2730	
		in.lb	17259	33190	31863	26552	26552	26552	24162	24162	
Maximum Acceleration Torque	$T_{2a}$	Nm	1170	2250	2160	1800	1800	1800	1638	1638	
		in.lb	10355	19914	19118	15931	15931	15931	14497	14497	
Maximum Torque	$T_{2a}$	Nm	1300	2500	2400	2000	2000	2000	1820	1820	
		in.lb	11506	22127	21242	17701	17701	17701	16108	16108	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	4000								
Mean No Load Running Torque	$T_{012}$	Nm	3.5	3.3	3.15	3	3	3	3	3	
		in.lb	30.98	29.21	27.88	26.55	26.55	26.55	26.55	26.55	
Standard Backlash P1	$j_1$	arcmin	≤ 6								
Reduced Low Backlash P0	$j_1$	arcmin	≤ 3								
Torsional Rigidity	$C_{21}$	Nm/arcmin	140	140	140	140	130	130	130	130	
		in.lb/arcmin	1239.1	1239.1	1239.1	1239.1	1150.6	1150.6	1150.6	1150.6	
Maximum Radial Load	$F_{2AMax}$	N	14000								
		lb <sub>r</sub>	3147								
Maximum Axial Load	$F_{2OMax}$	N	7000								
		lb <sub>r</sub>	1574								
Max. Tilting Moment	$M_{2KMax}$	Nm	1300								
		in.lb	11440								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	28.98	23.67	22.75	22.48	22.48	22.59	22.59	22.55	
Operating Noise Level	$L_{PA}$	dB(A)	< 67								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	31								
		lb <sub>m</sub>	68.3								

KPL205 2-stage

		2-stage																		
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100		
Nominal Output Torque		Nm	650	850	1250	1200	1200	650	1250	1200	1200	1200	1200	1000	1000	1000	910	910		
		in.lb	5753	7523	11063	10621	10621	5753	11063	10621	10621	10621	10621	8851	8851	8851	8054	8054		
Emergency Stop Torque	$T_{2Not}$	Nm	1950	2550	3750	3600	3600	1950	3750	3600	3600	3600	3600	3000	3000	3000	2730	2730		
		in.lb	17259	22569	33190	31863	31863	17259	33190	31863	31863	31863	31863	26552	26552	26552	24162	24162		
Maximum Acceleration Torque	$T_{2a}$	Nm	1170	1530	2250	2160	2160	1170	2250	2160	2160	2160	2160	1800	1800	1800	1638	1638		
		in.lb	10355	13542	19914	19118	19118	10355	19914	19118	19118	19118	19118	15931	15931	15931	14497	14497		
Maximum Torque	$T_{2a}$	Nm	1300	1700	2500	2400	2400	1300	2500	2400	2400	2400	2400	2000	2000	2000	1820	1820		
		in.lb	11506	15046	22127	21242	21242	11506	22127	21242	21242	21242	21242	17701	17701	17701	16108	16108		
Permitted Average Input Speed	$n_{1N}$	rpm	3000																	
Maximum Input Speed	$n_{1Max}$	rpm	4000																	
Mean No Load Running Torque	$T_{012}$	Nm	2.45	2.3	2.45	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2		
		in.lb	21.68	20.36	21.68	20.36	20.36	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47		
Standard Backlash P1	$j_1$	arcmin	≤ 8																	
Reduced Low Backlash P0	$j_1$	arcmin	≤ 5																	
Torsional Rigidity	$C_{21}$	Nm/arcmin	140	140	140	140	140	140	140	140	140	140	140	130	130	130	130	130		
		in.lb/arcmin	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1150.6	1150.6	1150.6	1150.6	1150.6		
Maximum Radial Load	$F_{2AMax}$	N	14000																	
		lb <sub>r</sub>	3147																	
Maximum Axial Load	$F_{2OMax}$	N	7000																	
		lb <sub>r</sub>	1574																	
Max. Tilting Moment	$M_{2KMax}$	Nm	1280																	
		in.lb	11264																	
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	12.35	12.30	7.54	7.42	7.54	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14			
Operating Noise Level	$L_{PA}$	dB(A)	< 67																	
Efficiency at Full loading	$\eta$	%	95																	
Operating Temperature		°C	-25 to +90																	
		F	-13 to +194																	
Lubrication			Synthetic Lubrication Grease																	
Mouting Position			Any Directions																	
Protection Class			IP 65																	
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																	
Weight	$m$	kg	39																	
		lb <sub>m</sub>	86																	

KPL Series Servo Planetary Gearbox

KPL Series Servo Planetary Gearbox



KPL235 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	1200	1800	2050	1850	1750	1550	1500	1500	
		in.lb	10621	15931	18144	16374	15489	13719	13276	13276	
Emergency Stop Torque	$T_{2Not}$	Nm	3600	5400	6150	5550	5250	4650	4500	4500	
		in.lb	31863	47794	54432	49121	46466	41156	39828	39828	
Maximum Acceleration Torque	$T_{2a}$	Nm	2160	3240	3690	3330	3150	2790	2700	2700	
		in.lb	19118	28676	32659	29473	27880	24693	23897	23897	
Maximum Torque	$T_{2a}$	Nm	2400	3600	4100	3700	3500	3100	3000	3000	
		in.lb	21242	31863	36288	32748	30977	27437	26552	26552	
Permitted Average Input Speed	$n_{1N}$	rpm	2000								
Maximum Input Speed	$n_{1Max}$	rpm	4000								
Mean No Load Running Torque	$T_{012}$	Nm	5.2	5	4.85	4.67	4.67	4.67	4.67	4.67	
		in.lb	46.02	44.25	42.93	41.33	41.33	41.33	41.33	41.33	
Standard Backlash P1	$j_i$	arcmin	≤ 6								
Reduced Low Backlash P0	$j_i$	arcmin	≤ 3								
Torsional Rigidity	$C_{021}$	Nm/arcmin	220	220	220	200	200	200	200	200	
		in.lb/arcmin	1947.2	1947.2	1947.2	1770.1	1770.1	1770.1	1770.1	1770.1	
Maximum Radial Load	$F_{2AMax}$	N	16000								
		lb <sub>r</sub>	3597								
Maximum Axial Load	$F_{2OMax}$	N	8000								
		lb <sub>r</sub>	1798								
Max. Tilting Moment	$M_{2KMax}$	Nm	1800								
		in.lb	15840								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	69.61	54.37	53.27	50.84	50.84	50.84	50.84	50.56	
Operating Noise Level	$L_{PA}$	dB(A)	< 70								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	53								
		lb <sub>m</sub>	117								

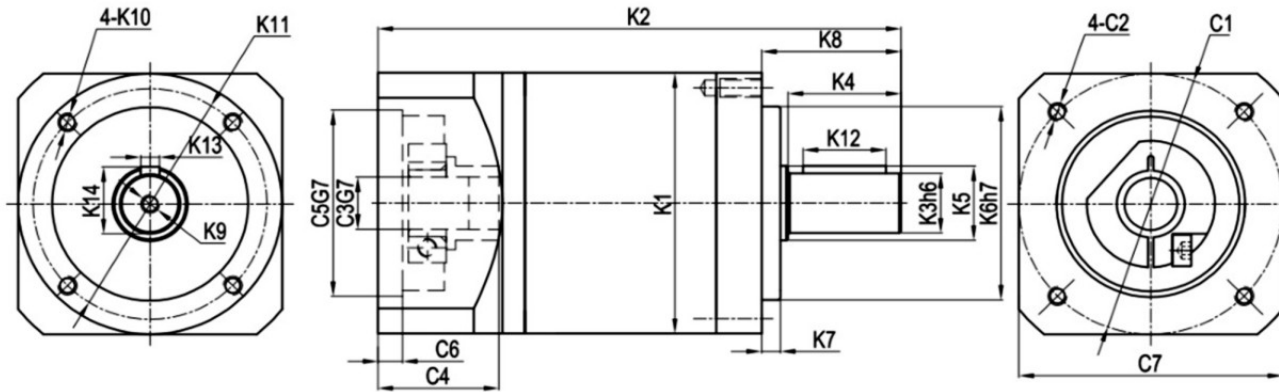
KPL235 2-stage

		2-stage																	
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	1200	1200	1800	2050	2050	1200	1800	2050	2050	2050	2050	1850	1550	1550	1500	1500	
		in.lb	10621	10621	15931	18144	18144	10621	15931	18144	18144	18144	18144	16374	13719	13719	13276	13276	
Emergency Stop Torque	$T_{2Not}$	Nm	3600	3600	5400	6150	6150	3600	5400	6150	6150	6150	6150	5550	4650	4650	4500	4500	
		in.lb	31863	31863	47794	54432	54432	31863	47794	54432	54432	54432	54432	49121	41156	41156	39828	39828	
Maximum Acceleration Torque	$T_{2a}$	Nm	2160	2160	3240	3690	3690	2160	3240	3690	3690	3690	3690	3330	2790	2790	2700	2700	
		in.lb	19118	19118	28676	32659	32659	19118	28676	32659	32659	32659	32659	29473	24693	24693	23897	23897	
Maximum Torque	$T_{2a}$	Nm	2400	2400	3600	4100	4100	2400	3600	4100	4100	4100	4100	3700	3100	3100	3000	3000	
		in.lb	21242	21242	31863	36288	36288	21242	31863	36288	36288	36288	36288	32748	27437	27437	26552	26552	
Permitted Average Input Speed	$n_{1N}$	rpm	2000																
Maximum Input Speed	$n_{1Max}$	rpm	4000																
Mean No Load Running Torque	$T_{012}$	Nm	3.3	3.15	3.3	3.15	3.15	3	3	3	3	3	3	3	3	3	3	3	
		in.lb	29.21	27.88	29.21	27.88	27.88	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	
Standard Backlash P1	$j_i$	arcmin	≤ 8																
Reduced Low Backlash P0	$j_i$	arcmin	≤ 5																
Torsional Rigidity	$C_{021}$	Nm/arcmin	220	220	220	220	220	220	220	220	220	220	220	200	200	200	200	200	
		in.lb/arcmin	1947.2	1947.2	1947.2	1947.2	1947.2	1947.2	1947.2	1947.2	1947.2	1947.2	1947.2	1770.1	1770.1	1770.1	1770.1	1770.1	
Maximum Radial Load	$F_{2AMax}$	N	16000																
		lb <sub>r</sub>	3597																
Maximum Axial Load	$F_{2OMax}$	N	8000																
		lb <sub>r</sub>	1798																
Max. Tilting Moment	$M_{2KMax}$	Nm	2350																
		in.lb	20680																
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	28.98	28.92	23.67	22.75	22.75	22.59	22.59	22.59	22.59	22.59	22.59	22.59	22.59	22.59	22.59	22.59	
Operating Noise Level	$L_{PA}$	dB(A)	< 70																
Efficiency at Full loading	$\eta$	%	95																
Operating Temperature		°C	-25 to +90																
		F	-13 to +194																
Lubrication			Synthetic Lubrication Grease																
Mouting Position			Any Directions																
Protection Class			IP 65																
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																
Weight	$m$	kg	66																
		lb <sub>m</sub>	145.5																

KPL Series Servo Planetary Gearbox

KPL Series Servo Planetary Gearbox

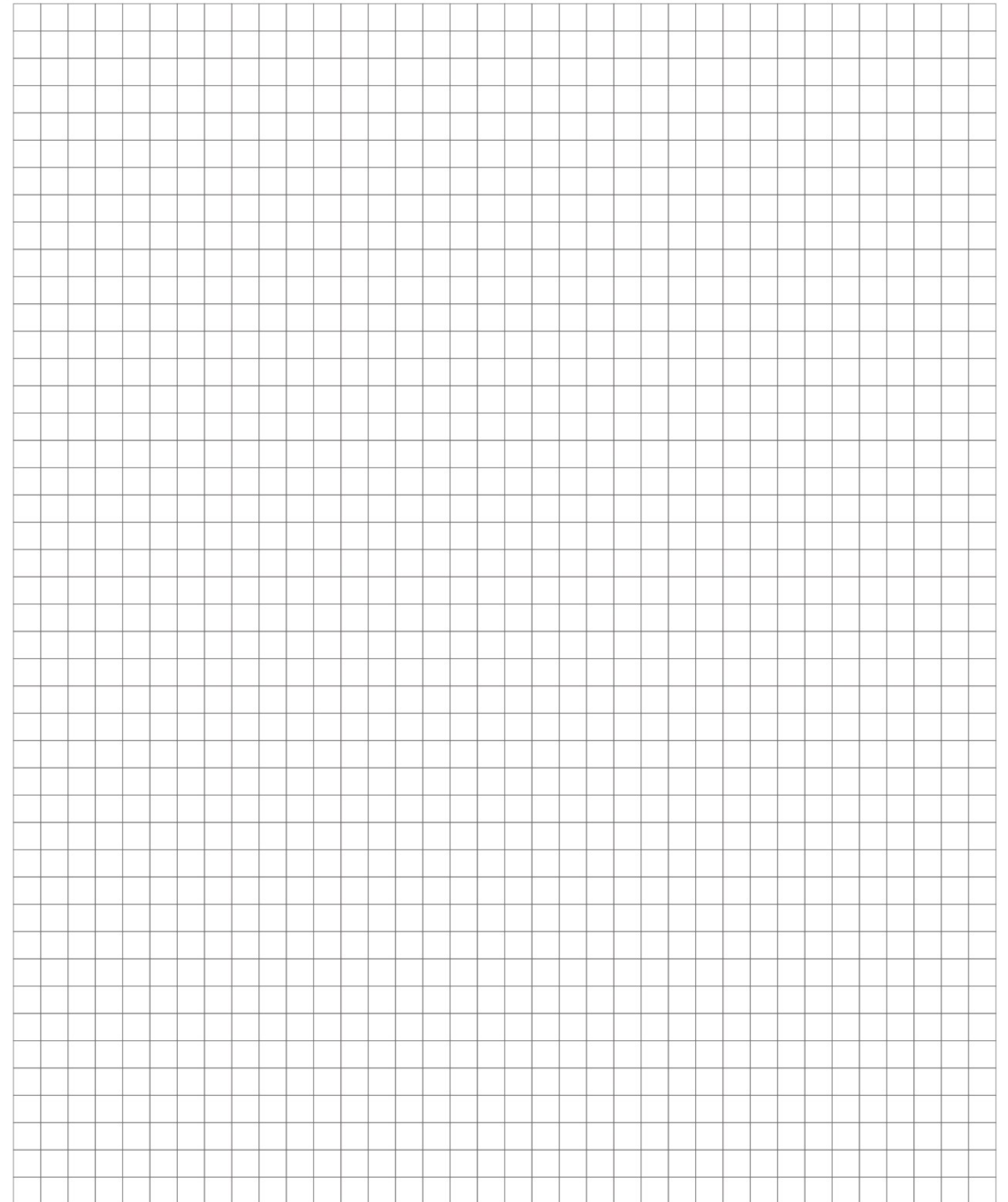
KPL Dimensions



Model	KPL050		KPL070		KPL090		KPL120		KPL160		KPL205		KPL235	
Stage	1	2	1	2	1	2	1	2	1	2	1	2	1	2
K1	50		70		89		120		160		205		235	
	1.969		2.756		3.504		4.724		6.299		8.071		9.252	
K2	88.5	103.5	115	138.7	138	169.3	198	239.8	275.5	336.5	288	348	357.5	402
	3.484	4.075	4.528	5.461	5.433	6.665	7.795	9.441	10.846	13.248	11.339	13.701	14.075	15.827
K3	12		16		22		32		40		55		75	
	0.472		0.630		0.866		1.260		1.575		2.165		2.953	
K4	23		30		36		50		80		82		105	
	0.906		1.181		1.417		1.969		3.150		3.228		4.134	
K5	15		20		30		40		50		60		85	
	0.591		0.787		1.181		1.575		1.969		2.362		3.346	
K6	35		52		68		90		130		160		180	
	1.378		2.047		2.677		3.543		5.118		6.299		7.087	
K7	4		5		10		12		15		20		30	
	0.157		0.197		0.394		0.472		0.591		0.787		1.181	
K8	28		37		48		65		97		105		126	
	1.102		1.457		1.890		2.559		3.819		4.134		4.961	
K9	M3X9		M5X12		M6X16		M10X22		M12X25		M20X40		M20X40	
K10	M4X10		M5X11		M6X15		M8X19		M12X20		M12X22		M16X28	
K11	44		62		80		108		145		184		210	
	1.732		2.441		3.150		4.252		5.709		7.244		8.268	
K12	16		22		28		40		70		70		90	
	0.630		0.866		1.102		1.575		2.756		2.756		3.543	
K13	4		5		6		10		12		16		20	
	0.157		0.197		0.236		0.394		0.472		0.630		0.787	
K14	13.5		18		24.5		35		43		59		79.5	
	0.531		0.709		0.965		1.378		1.693		2.323		3.130	
C1	46		70		90		145		200		215	200	235	215
	1.811		2.756		3.543		5.709		7.874		8.465	7.874	9.252	8.465
C2	M4X10		M5X12		M6X15		M8X20		M12X25		M12X25	M12X25	M12X25	M12X25
C3	8		14		19		24		35		42	35	55	42
	0.315		0.551		0.748		0.945		1.378		1.654	1.378	2.165	1.654
C4	26.1		32.1		41.6		61.3		82		82.5	82	115.5	82.5
	1.028		1.264		1.638		2.413		3.228		3.248	3.228	4.547	3.248
C5	30		50		70		110		114.3		180	114.3	200	180
	1.181		1.969		2.756		4.331		4.500		7.087	4.500	7.874	7.087
C6	5		6.5		6.5		8		8		8	8	8	8
	0.197		0.256		0.256		0.315		0.315		0.315	0.315	0.315	0.315
C7	50		70		89		120		175		190	175	220	190
	1.969		2.756		3.504		4.724		6.890		7.480	6.890	8.661	7.480

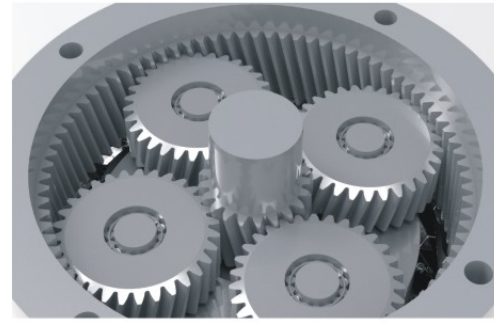
The dimensions modified as per the applied motor flanges.  
 You can get the specific gearbox drawing solution by KDP(Kofon Design Programme) on line from our website: [www.kofon-motion.com](http://www.kofon-motion.com)

Technical Memo



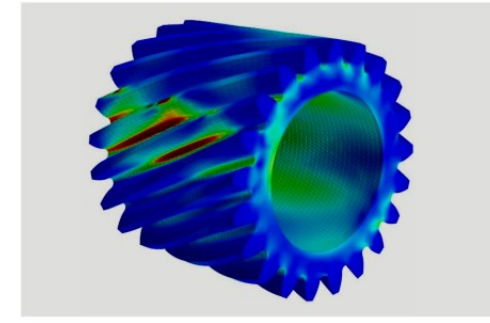






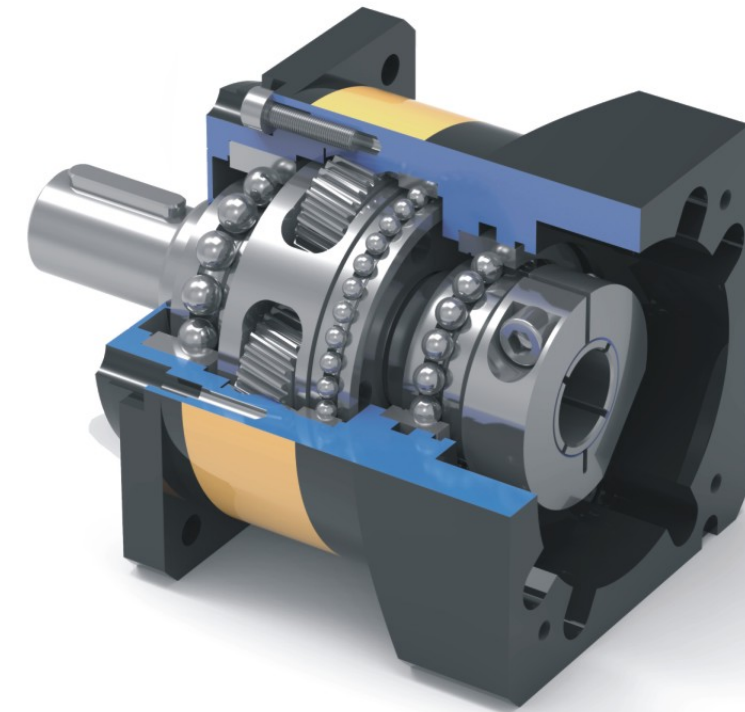
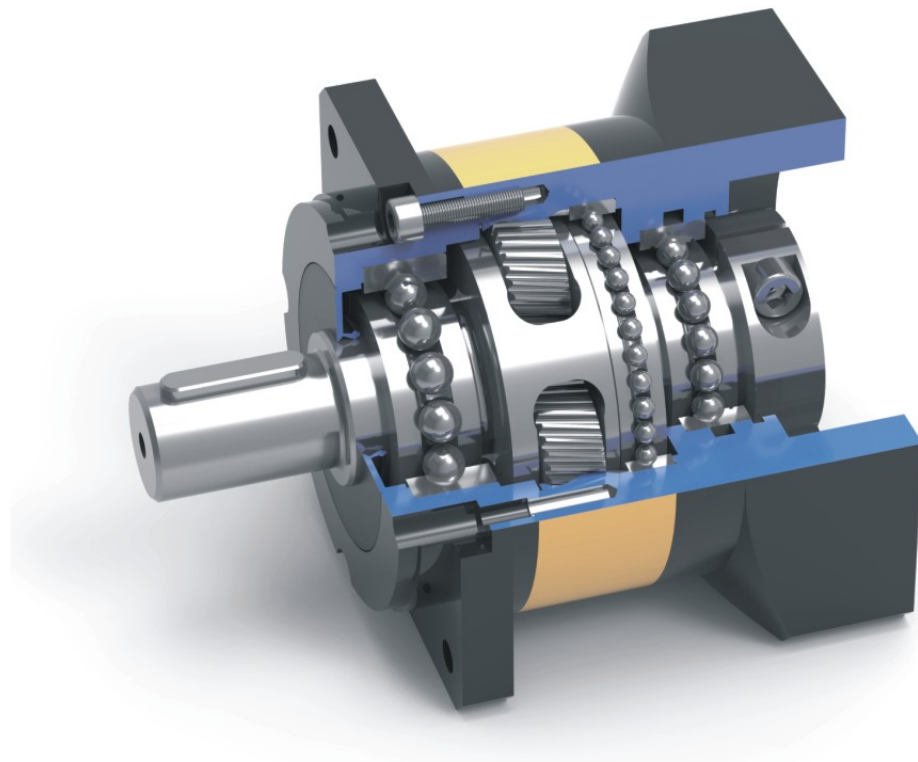
**Helical Gear System Technology**

Thanks to the tooth to tooth compact ratio more than 60%. The helical gearing and full needle bearing bring the benefits including higher torque capacity, smooth and lower noise running, decreased backlash and higher efficiency.



**Super Gear Grinding and Heat Treatment Technology**

The global leading gear grinding technology brings the great improvement for the tooth profile optimization, with the high level carburizing and quenching heat treatment technology to reach high precision and gear harden performance.



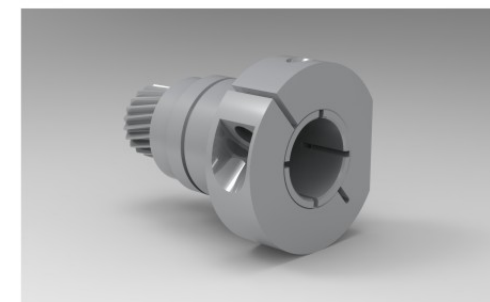
KPLF Series Servo Planetary Gearbox

KPLF Series Servo Planetary Gearbox



**Master CageSpindle Planetary Carrier**

The patented Master CageSpindle integrated planetary carrier support planetary gearbox to increase constructional strength running stability and rigidity significantly. Synthetic grease lubrication allows maintenance free for gearbox whole service life.



**Dynamic Balance Clamping and Sealing System**

For the gearbox input dynamic balance clamping design with perfect concentricity to decrease backlash and increase gearbox operation stability. The ultra sealing system offers grease leakage protection and support gearbox to reach IP65.





KPLF050 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	20	21	21	20	19	18	14	14	
		in.lb	177	186	186	177	168	159	124	124	
Emergency Stop Torque	$T_{2Not}$	Nm	60	60	63	60	57	54	42	42	
		in.lb	531	531	558	531	504	478	372	372	
Maximum Acceleration Torque	$T_{2B}$	Nm	36	37.8	37.8	36	34.2	32.4	25.2	25.2	
		in.lb	319	335	335	319	303	287	223	223	
Maximum Torque	$T_{2a}$	Nm	40	42	42	40	38	36	28	28	
		in.lb	354	372	372	354	336	319	248	248	
Permitted Average Input Speed	$n_{1N}$	rpm	4000								
Maximum Input Speed	$n_{1Max}$	rpm	8000								
Mean No Load Running Torque	$T_{012}$	Nm	0.11	0.1	0.09	0.09	0.08	0.08	0.08	0.08	
		in.lb	0.97	0.89	0.80	0.80	0.71	0.71	0.71	0.71	
Standard Backlash P1	$j_i$	arcmin	≤ 8								
Reduced Low Backlash P0	$j_i$	arcmin	≤ 5								
Torsional Rigidity	$C_{021}$	Nm/arcmin	3	3	3	2.85	2.85	2.85	2.85	2.85	
		in.lb/arcmin	26.55	26.55	26.55	25.22	25.22	25.22	25.22	25.22	
Maximum Radial Load	$F_{2AMax}$	N	770								
		lb <sub>r</sub>	173								
Maximum Axial Load	$F_{2OMax}$	N	380								
		lb <sub>r</sub>	85								
Max. Tilting Moment	$M_{2KMax}$	Nm	25								
		in.lb	220								
Mass Moment of Inertia	$j_i$	kgcm <sup>2</sup>	0.031	0.022	0.019	0.017	0.017	0.017	0.017	0.017	
Operating Noise Level	$L_{PA}$	dB(A)	< 56								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	0.6								
		lb <sub>m</sub>	1.3								

KPLF050 2-stage

		2-stage																
Ratio	i		12	15	16	20	25	30	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	20	20	21	21	21	20	21	21	21	21	20	18	18	14	14	
		in.lb	177	177	186	186	186	177	186	186	186	186	177	159	159	124	124	
Emergency Stop Torque	$T_{2Not}$	Nm	60	60	63	63	63	60	63	63	63	63	60	54	54	42	42	
		in.lb	531	531	558	558	558	531	558	558	558	558	531	478	478	372	372	
Maximum Acceleration Torque	$T_{2B}$	Nm	36	36	37.8	37.8	37.8	36	37.8	37.8	37.8	37.8	36	32.4	32.4	25.2	25.2	
		in.lb	319	319	335	335	335	319	335	335	335	335	319	287	287	223	223	
Maximum Torque	$T_{2a}$	Nm	40	40	42	42	42	40	42	42	42	42	40	36	36	28	28	
		in.lb	354	354	372	372	372	354	372	372	372	372	354	319	319	248	248	
Permitted Average Input Speed	$n_{1N}$	rpm	4000															
Maximum Input Speed	$n_{1Max}$	rpm	8000															
Mean No Load Running Torque	$T_{012}$	Nm	0.1	0.1	0.1	0.1	0.1	0.09	0.09	0.09	0.09	0.09	0.09	0.08	0.08	0.08	0.08	
		in.lb	0.89	0.89	0.89	0.89	0.89	0.80	0.80	0.80	0.80	0.80	0.80	0.71	0.71	0.71	0.71	
Standard Backlash P1	$j_i$	arcmin	≤ 11															
Reduced Low Backlash P0	$j_i$	arcmin	≤ 8															
Torsional Rigidity	$C_{021}$	Nm/arcmin	3	3	3	3	3	3	3	3	3	3	3	2.85	2.85	2.85	2.85	
		in.lb/arcmin	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	25.22	25.22	25.22	25.22	
Maximum Radial Load	$F_{2AMax}$	N	770															
		lb <sub>r</sub>	173															
Maximum Axial Load	$F_{2OMax}$	N	380															
		lb <sub>r</sub>	85															
Max. Tilting Moment	$M_{2KMax}$	Nm	40															
		in.lb	352															
Mass Moment of Inertia	$j_i$	kgcm <sup>2</sup>	0.029	0.027	0.022	0.019	0.017	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	
Operating Noise Level	$L_{PA}$	dB(A)	< 56															
Efficiency at Full loading	$\eta$	%	95															
Operating Temperature		°C	-25 to +90															
		F	-13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)															
Weight	$m$	kg	0.9															
		lb <sub>m</sub>	2															



KPLF070 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	46	52	55	50	50	45	42	42	
		in.lb	407	460	487	443	443	398	372	372	
Emergency Stop Torque	$T_{2Not}$	Nm	138	156	165	150	150	135	126	126	
		in.lb	1221	1381	1460	1328	1328	1195	1115	1115	
Maximum Acceleration Torque	$T_{2B}$	Nm	82.8	93.6	99	90	90	81	75.6	75.6	
		in.lb	733	828	876	797	797	717	669	669	
Maximum Torque	$T_{2a}$	Nm	92	104	110	100	100	90	84	84	
		in.lb	814	920	974	885	885	797	743	743	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	6000								
Mean No Load Running Torque	$T_{012}$	Nm	0.24	0.2	0.17	0.15	0.15	0.15	0.15	0.15	
		in.lb	2.12	1.77	1.50	1.33	1.33	1.33	1.33	1.33	
Standard Backlash P1	$j_i$	arcmin	≤ 6								
Reduced Low Backlash P0	$j_i$	arcmin	≤ 3								
Torsional Rigidity	$C_{d21}$	Nm/arcmin	7	7	7	6.5	6.5	6.5	6.5	6.5	
		in.lb/arcmin	61.95	61.95	61.95	57.53	57.53	57.53	57.53	57.53	
Maximum Radial Load	$F_{2AMax}$	N	1500								
		lb <sub>r</sub>	337								
Maximum Axial Load	$F_{2OMax}$	N	760								
		lb <sub>r</sub>	171								
Max. Tilting Moment	$M_{2KMax}$	Nm	40								
		in.lb	352								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.16	0.14	0.13	0.13	0.13	0.13	0.13	0.13	
Operating Noise Level	$L_{PA}$	dB(A)	< 58								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	1.4								
		lb <sub>m</sub>	3.1								

KPLF070 2-stage

		2-stage																	
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	56	50	52	55	55	46	52	55	55	55	55	50	45	45	42	42	
		in.lb	496	443	460	487	487	407	460	487	487	487	487	487	443	398	398	372	372
Emergency Stop Torque	$T_{2Not}$	Nm	168	150	156	165	165	138	156	165	165	165	165	150	135	135	126	126	
		in.lb	1487	1328	1381	1460	1460	1221	1381	1460	1460	1460	1460	1460	1328	1195	1195	1115	1115
Maximum Acceleration Torque	$T_{2B}$	Nm	100.8	90	93.6	99	99	82.8	93.6	99	99	99	99	90	81	81	75.6	75.6	
		in.lb	892	797	828	876	876	733	828	876	876	876	876	876	797	717	717	669	669
Maximum Torque	$T_{2a}$	Nm	112	100	104	110	110	92	104	110	110	110	110	100	90	90	84	84	
		in.lb	991	885	920	974	974	814	920	974	974	974	974	974	885	797	797	743	743
Permitted Average Input Speed	$n_{1N}$	rpm	3000																
Maximum Input Speed	$n_{1Max}$	rpm	6000																
Mean No Load Running Torque	$T_{012}$	Nm	0.2	0.17	0.2	0.17	0.17	0.15	0.2	0.15	0.15	0.15	0.15	0.17	0.15	0.15	0.15	0.15	
		in.lb	1.77	1.50	1.77	1.50	1.50	1.33	1.77	1.33	1.33	1.33	1.33	1.50	1.33	1.33	1.33	1.33	
Standard Backlash P1	$j_i$	arcmin	≤ 8																
Reduced Low Backlash P0	$j_i$	arcmin	≤ 5																
Torsional Rigidity	$C_{d21}$	Nm/arcmin	7	7	7	7	7	7	7	7	7	7	7	6.5	6.5	6.5	6.5		
		in.lb/arcmin	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	57.53	57.53	57.53	57.53	
Maximum Radial Load	$F_{2AMax}$	N	1500																
		lb <sub>r</sub>	337																
Maximum Axial Load	$F_{2OMax}$	N	760																
		lb <sub>r</sub>	171																
Max. Tilting Moment	$M_{2KMax}$	Nm	80																
		in.lb	704																
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.127	0.124	0.12	0.075	0.075	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.075	0.064	0.064	
Operating Noise Level	$L_{PA}$	dB(A)	< 58																
Efficiency at Full loading	$\eta$	%	95																
Operating Temperature		°C	-25 to +90																
		F	-13 to +194																
Lubrication			Synthetic Lubrication Grease																
Mouting Position			Any Directions																
Protection Class			IP 65																
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																
Weight	$m$	kg	1.6																
		lb <sub>m</sub>	3.5																

KPLF Series Servo Planetary Gearbox

KPLF Series Servo Planetary Gearbox

KPLF090 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	125	145	155	145	135	115	105	105	
		in.lb	1106	1283	1372	1283	1195	1018	929	929	
Emergency Stop Torque	$T_{2Not}$	Nm	375	435	465	435	405	345	315	315	
		in.lb	3319	3850	4116	3850	3585	3053	2788	2788	
Maximum Acceleration Torque	$T_{2a}$	Nm	225	261	279	261	243	207	189	189	
		in.lb	1991	2310	2469	2310	2151	1832	1673	1673	
Maximum Torque	$T_{2a}$	Nm	250	290	310	290	270	230	210	210	
		in.lb	2213	2567	2744	2567	2390	2036	1859	1859	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	6000								
Mean No Load Running Torque	$T_{012}$	Nm	0.38	0.36	0.31	0.29	0.25	0.25	0.25	0.25	
		in.lb	3.36	3.19	2.74	2.57	2.21	2.21	2.21	2.21	
Standard Backlash P1	$j_i$	arcmin	≤ 6								
Reduced Low Backlash P0	$j_i$	arcmin	≤ 3								
Torsional Rigidity	$C_{021}$	Nm/arcmin	14	14	14	13	13	13	13	13	
		in.lb/arcmin	123.91	123.91	123.91	115.06	115.06	115.06	115.06	115.06	
Maximum Radial Load	$F_{2AMax}$	N	3200								
		lb <sub>r</sub>	719								
Maximum Axial Load	$F_{2OMax}$	N	1600								
		lb <sub>r</sub>	360								
Max. Tilting Moment	$M_{2KMax}$	Nm	90								
		in.lb	792								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.61	0.48	0.47	0.47	0.47	0.45	0.44	0.44	
Operating Noise Level	$L_{PA}$	dB(A)	< 60								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	3.3								
		lb <sub>m</sub>	7.3								

KPLF090 2-stage

		2-stage																	
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	125	125	145	145	155	125	145	155	155	155	155	145	115	115	105	105	
		in.lb	1106	1106	1283	1283	1372	1106	1283	1372	1372	1372	1372	1283	1018	1018	929	929	
Emergency Stop Torque	$T_{2Not}$	Nm	375	375	435	435	465	375	435	465	465	465	465	435	345	345	315	315	
		in.lb	3319	3319	3850	3850	4116	3319	3850	4116	4116	4116	4116	3850	3053	3053	2788	2788	
Maximum Acceleration Torque	$T_{2a}$	Nm	225	225	261	261	279	225	261	279	279	279	279	261	207	207	189	189	
		in.lb	1991	1991	2310	2310	2469	1991	2310	2469	2469	2469	2469	2310	1832	1832	1673	1673	
Maximum Torque	$T_{2a}$	Nm	250	250	290	290	310	250	290	310	310	310	310	290	230	230	210	210	
		in.lb	2213	2213	2567	2567	2744	2213	2567	2744	2744	2744	2744	2567	2036	2036	1859	1859	
Permitted Average Input Speed	$n_{1N}$	rpm	3000																
Maximum Input Speed	$n_{1Max}$	rpm	6000																
Mean No Load Running Torque	$T_{012}$	Nm	0.36	0.31	0.36	0.31	0.31	0.31	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	
		in.lb	3.19	2.74	3.19	2.74	2.74	2.74	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	
Standard Backlash P1	$j_i$	arcmin	≤ 8																
Reduced Low Backlash P0	$j_i$	arcmin	≤ 5																
Torsional Rigidity	$C_{021}$	Nm/arcmin	14	14	14	14	14	14	14	14	14	14	14	13	13	13	13	13	
		in.lb/arcmin	123.91	123.91	123.91	123.91	123.91	123.91	123.91	123.91	123.91	123.91	123.91	115.06	115.06	115.06	115.06	115.06	
Maximum Radial Load	$F_{2AMax}$	N	3200																
		lb <sub>r</sub>	719																
Maximum Axial Load	$F_{2OMax}$	N	1600																
		lb <sub>r</sub>	360																
Max. Tilting Moment	$M_{2KMax}$	Nm	200																
		in.lb	1760																
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.44	0.44	0.43	0.44	0.44	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39		
Operating Noise Level	$L_{PA}$	dB(A)	< 60																
Efficiency at Full loading	$\eta$	%	95																
Operating Temperature		°C	-25 to +90																
		F	-13 to +194																
Lubrication			Synthetic Lubrication Grease																
Mouting Position			Any Directions																
Protection Class			IP 65																
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																
Weight	$m$	kg	4.5																
		lb <sub>m</sub>	9.9																



KPLF120 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	210	300	320	300	290	255	220	220	
		in.lb	1859	2655	2832	2655	2567	2257	1947	1947	
Emergency Stop Torque	$T_{2Not}$	Nm	630	900	960	900	870	765	660	660	
		in.lb	5576	7966	8497	7966	7700	6771	5841	5841	
Maximum Acceleration Torque	$T_{2B}$	Nm	378	540	576	540	522	459	396	396	
		in.lb	3346	4779	5098	4779	4620	4062	3505	3505	
Maximum Torque	$T_{2a}$	Nm	420	600	640	600	580	510	440	440	
		in.lb	3717	5310	5664	5310	5133	4514	3894	3894	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	6000								
Mean No Load Running Torque	$T_{012}$	Nm	1	0.95	0.85	0.81	0.78	0.78	0.78	0.78	
		in.lb	8.85	8.41	7.52	7.17	6.90	6.90	6.90	6.90	
Standard Backlash P1	$j_i$	arcmin	≤ 6								
Reduced Low Backlash P0	$j_i$	arcmin	≤ 3								
Torsional Rigidity	$C_{021}$	Nm/arcmin	25	25	25	23	23	23	23	23	
		in.lb/arcmin	221.27	221.27	221.27	203.57	203.57	203.57	203.57	203.57	
Maximum Radial Load	$F_{2AMax}$	N	6700								
		lb <sub>r</sub>	1506								
Maximum Axial Load	$F_{2OMax}$	N	3300								
		lb <sub>r</sub>	742								
Max. Tilting Moment	$M_{2KMax}$	Nm	150								
		in.lb	1320								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	3.25	2.74	2.71	2.62	2.62	2.62	2.62	2.57	
Operating Noise Level	$L_{PA}$	dB(A)	< 63								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	5.5								
		lb <sub>m</sub>	12.1								

KPLF120 2-stage

		2-stage																	
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	310	310	300	300	320	210	305	320	320	320	320	300	255	255	220	220	
		in.lb	2744	2744	2655	2655	2832	1859	2699	2832	2832	2832	2832	2655	2257	2257	1947	1947	
Emergency Stop Torque	$T_{2Not}$	Nm	930	930	900	900	960	630	915	960	960	960	960	900	765	765	660	660	
		in.lb	8231	8231	7966	7966	8497	5576	8098	8497	8497	8497	8497	7966	6771	6771	5841	5841	
Maximum Acceleration Torque	$T_{2B}$	Nm	558	558	540	540	576	378	549	576	576	576	576	540	459	459	396	396	
		in.lb	4939	4939	4779	4779	5098	3346	4859	5098	5098	5098	5098	4779	4062	4062	3505	3505	
Maximum Torque	$T_{2a}$	Nm	620	620	600	600	640	420	610	640	640	640	640	600	510	510	440	440	
		in.lb	5487	5487	5310	5310	5664	3717	5399	5664	5664	5664	5664	5310	4514	4514	3894	3894	
Permitted Average Input Speed	$n_{1N}$	rpm	3000																
Maximum Input Speed	$n_{1Max}$	rpm	6000																
Mean No Load Running Torque	$T_{012}$	Nm	0.95	0.85	0.95	0.85	0.85	0.81	0.78	0.78	0.78	0.78	0.78	0.81	0.78	0.78	0.78	0.78	
		in.lb	8.41	7.52	8.41	7.52	7.52	7.17	6.90	6.90	6.90	6.90	6.90	7.17	6.90	6.90	6.90	6.90	
Standard Backlash P1	$j_i$	arcmin	≤ 8																
Reduced Low Backlash P0	$j_i$	arcmin	≤ 5																
Torsional Rigidity	$C_{021}$	Nm/arcmin	25	25	25	25	25	25	25	25	25	25	25	23	23	23	23	23	
		in.lb/arcmin	221.27	221.27	221.27	221.27	221.27	221.27	221.27	221.27	221.27	221.27	221.27	203.57	203.57	203.57	203.57	203.57	
Maximum Radial Load	$F_{2AMax}$	N	6700																
		lb <sub>r</sub>	1506																
Maximum Axial Load	$F_{2OMax}$	N	3300																
		lb <sub>r</sub>	742																
Max. Tilting Moment	$M_{2KMax}$	Nm	400																
		in.lb	3520																
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	2.56	2.58	1.75	1.5	1.49	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.5	1.3	1.3	1.3	
Operating Noise Level	$L_{PA}$	dB(A)	< 63																
Efficiency at Full loading	$\eta$	%	95																
Operating Temperature		°C	-25 to +90																
		F	-13 to +194																
Lubrication			Synthetic Lubrication Grease																
Mouting Position			Any Directions																
Protection Class			IP 65																
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																
Weight	$m$	kg	8																
		lb <sub>m</sub>	17.6																

KPLF Series Servo Planetary Gearbox

KPLF Series Servo Planetary Gearbox

KPLF160 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	450	550	650	610	540	510	440	440	
		in.lb	3983	4868	5753	5399	4779	4514	3894	3894	
Emergency Stop Torque	$T_{2Not}$	Nm	1350	1650	1950	1830	1620	1530	1320	1320	
		in.lb	11948	14604	17259	16197	14338	13542	11683	11683	
Maximum Acceleration Torque	$T_{2a}$	Nm	810	990	1170	1098	972	918	792	792	
		in.lb	7169	8762	10355	9718	8603	8125	7010	7010	
Maximum Torque	$T_{2a}$	Nm	900	1100	1300	1220	1080	1020	880	880	
		in.lb	7966	9736	11506	10798	9559	9028	7789	7789	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	6000								
Mean No Load Running Torque	$T_{012}$	Nm	2.55	2.45	2.3	2.2	2.2	2.2	2.2	2.2	
		in.lb	22.57	21.68	20.36	19.47	19.47	19.47	19.47	19.47	
Standard Backlash P1	$j_1$	arcmin	≤ 6								
Reduced Low Backlash P0	$j_1$	arcmin	≤ 3								
Torsional Rigidity	$C_{21}$	Nm/arcmin	50	50	50	45	45	45	45	45	
		in.lb/arcmin	442.54	442.54	442.54	398.28	398.28	398.28	398.28	398.28	
Maximum Radial Load	$F_{2AMax}$	N	9600								
		lb <sub>r</sub>	2158								
Maximum Axial Load	$F_{2OMax}$	N	4800								
		lb <sub>r</sub>	1079								
Max. Tilting Moment	$M_{2KMax}$	Nm	480								
		in.lb	4224								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	12.31	7.54	7.42	7.25	7.25	7.14	7.14	7.14	
Operating Noise Level	$L_{PA}$	dB(A)	< 65								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	20								
		lb <sub>m</sub>	44.1								

KPLF160 2-stage

		2-stage																	
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	500	500	550	650	650	450	550	650	550	650	650	610	510	440	440	440	
		in.lb	4425	4425	4868	5753	5753	3983	4868	5753	4868	5753	5753	5399	4514	4514	3894	3894	
Emergency Stop Torque	$T_{2Not}$	Nm	1500	1500	1650	1950	1950	1350	1650	1950	1650	1950	1950	1830	1530	1320	1320		
		in.lb	13276	13276	14604	17259	17259	11948	14604	17259	14604	17259	17259	16197	13542	13542	11683	11683	
Maximum Acceleration Torque	$T_{2a}$	Nm	900	900	990	1170	1170	810	990	1170	990	1170	1170	1098	918	792	792		
		in.lb	7966	7966	8762	10355	10355	7169	8762	10355	8762	10355	10355	9718	8125	7010	7010		
Maximum Torque	$T_{2a}$	Nm	1000	1000	1100	1300	1300	900	1100	1300	1100	1300	1300	1220	1020	880	880		
		in.lb	8851	8851	9736	11506	11506	7966	9736	11506	9736	11506	11506	10798	9028	7789	7789		
Permitted Average Input Speed	$n_{1N}$	rpm	3000																
Maximum Input Speed	$n_{1Max}$	rpm	6000																
Mean No Load Running Torque	$T_{012}$	Nm	2.45	2.3	2.45	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	
		in.lb	21.68	20.36	21.68	20.36	20.36	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	
Standard Backlash P1	$j_1$	arcmin	≤ 8																
Reduced Low Backlash P0	$j_1$	arcmin	≤ 5																
Torsional Rigidity	$C_{21}$	Nm/arcmin	50	50	50	50	50	50	50	50	50	50	50	45	45	45	45		
		in.lb/arcmin	442.54	442.54	442.54	442.54	442.54	442.54	442.54	442.54	442.54	442.54	442.54	398.28	398.28	398.28	398.28		
Maximum Radial Load	$F_{2AMax}$	N	9600																
		lb <sub>r</sub>	2158																
Maximum Axial Load	$F_{2OMax}$	N	4800																
		lb <sub>r</sub>	1079																
Max. Tilting Moment	$M_{2KMax}$	Nm	850																
		in.lb	7480																
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	12.35	12.35	7.47	6.65	5.81	6.34	6.34	5.36	4.08	5.36	4.08	7.40	7.50	7.40	7.40		
Operating Noise Level	$L_{PA}$	dB(A)	< 65																
Efficiency at Full loading	$\eta$	%	95																
Operating Temperature		°C	-25 to +90																
		F	-13 to +194																
Lubrication			Synthetic Lubrication Grease																
Mouting Position			Any Directions																
Protection Class			IP 65																
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																
Weight	$m$	kg	25																
		lb <sub>m</sub>	55.1																



KPLF205 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	650	1250	1200	1000	1000	1000	910	910	
		in.lb	5753	11063	10621	8851	8851	8851	8054	8054	
Emergency Stop Torque	$T_{2Not}$	Nm	1950	3750	3600	3000	3000	3000	2730	2730	
		in.lb	17259	33190	31863	26552	26552	26552	24162	24162	
Maximum Acceleration Torque	$T_{2a}$	Nm	1170	2250	2160	1800	1800	1800	1638	1638	
		in.lb	10355	19914	19118	15931	15931	15931	14497	14497	
Maximum Torque	$T_{2a}$	Nm	1300	2500	2400	2000	2000	2000	1820	1820	
		in.lb	11506	22127	21242	17701	17701	17701	16108	16108	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	4000								
Mean No Load Running Torque	$T_{012}$	Nm	3.5	3.3	3.15	3	3	3	3	3	
		in.lb	30.98	29.21	27.88	26.55	26.55	26.55	26.55	26.55	
Standard Backlash P1	$j_i$	arcmin	≤ 6								
Reduced Low Backlash P0	$j_i$	arcmin	≤ 3								
Torsional Rigidity	$C_{21}$	Nm/arcmin	140	140	140	140	130	130	130	130	
		in.lb/arcmin	1239.1	1239.1	1239.1	1239.1	1150.6	1150.6	1150.6	1150.6	
Maximum Radial Load	$F_{2AMax}$	N	14000								
		lb <sub>r</sub>	3147								
Maximum Axial Load	$F_{2OMax}$	N	7000								
		lb <sub>r</sub>	1574								
Max. Tilting Moment	$M_{2KMax}$	Nm	1300								
		in.lb	11440								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	28.98	23.67	22.75	22.48	22.48	22.59	22.59	22.55	
Operating Noise Level	$L_{PA}$	dB(A)	< 67								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	31								
		lb <sub>m</sub>	68.3								

KPLF205 2-stage

		2-stage																	
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	650	850	1250	1200	1200	650	1250	1200	1200	1200	1200	1000	1000	1000	910	910	
		in.lb	5753	7523	11063	10621	10621	5753	11063	10621	10621	10621	10621	8851	8851	8851	8054	8054	
Emergency Stop Torque	$T_{2Not}$	Nm	1950	2550	3750	3600	3600	1950	3750	3600	3600	3600	3600	3000	3000	3000	2730	2730	
		in.lb	17259	22569	33190	31863	31863	17259	33190	31863	31863	31863	31863	26552	26552	26552	24162	24162	
Maximum Acceleration Torque	$T_{2a}$	Nm	1170	1530	2250	2160	2160	1170	2250	2160	2160	2160	2160	1800	1800	1800	1638	1638	
		in.lb	10355	13542	19914	19118	19118	10355	19914	19118	19118	19118	19118	15931	15931	15931	14497	14497	
Maximum Torque	$T_{2a}$	Nm	1300	1700	2500	2400	2400	1300	2500	2400	2400	2400	2400	2000	2000	2000	1820	1820	
		in.lb	11506	15046	22127	21242	21242	11506	22127	21242	21242	21242	21242	17701	17701	17701	16108	16108	
Permitted Average Input Speed	$n_{1N}$	rpm	3000																
Maximum Input Speed	$n_{1Max}$	rpm	4000																
Mean No Load Running Torque	$T_{012}$	Nm	2.45	2.3	2.45	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	
		in.lb	21.68	20.36	21.68	20.36	20.36	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	
Standard Backlash P1	$j_i$	arcmin	≤ 8																
Reduced Low Backlash P0	$j_i$	arcmin	≤ 5																
Torsional Rigidity	$C_{21}$	Nm/arcmin	140	140	140	140	140	140	140	140	140	140	140	130	130	130	130	130	
		in.lb/arcmin	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1150.6	1150.6	1150.6	1150.6	1150.6	
Maximum Radial Load	$F_{2AMax}$	N	14000																
		lb <sub>r</sub>	3147																
Maximum Axial Load	$F_{2OMax}$	N	7000																
		lb <sub>r</sub>	1574																
Max. Tilting Moment	$M_{2KMax}$	Nm	1280																
		in.lb	11264																
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	12.35	12.30	7.54	7.42	7.54	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	
Operating Noise Level	$L_{PA}$	dB(A)	< 67																
Efficiency at Full loading	$\eta$	%	95																
Operating Temperature		°C	-25 to +90																
		F	-13 to +194																
Lubrication			Synthetic Lubrication Grease																
Mouting Position			Any Directions																
Protection Class			IP 65																
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																
Weight	$m$	kg	39																
		lb <sub>m</sub>	86																

**KPLF235 1-stage**

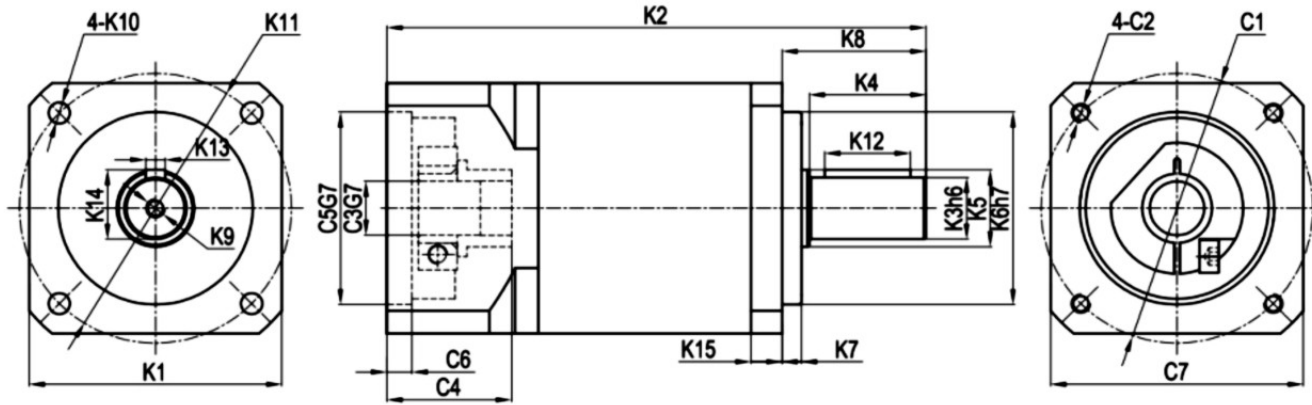
		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	1200	1800	2050	1850	1750	1550	1500	1500	
		in.lb	10621	15931	18144	16374	15489	13719	13276	13276	
Emergency Stop Torque	$T_{2Not}$	Nm	3600	5400	6150	5550	5250	4650	4500	4500	
		in.lb	31863	47794	54432	49121	46466	41156	39828	39828	
Maximum Acceleration Torque	$T_{2B}$	Nm	2160	3240	3690	3330	3150	2790	2700	2700	
		in.lb	19118	28676	32659	29473	27880	24693	23897	23897	
Maximum Torque	$T_{2a}$	Nm	2400	3600	4100	3700	3500	3100	3000	3000	
		in.lb	21242	31863	36288	32748	30977	27437	26552	26552	
Permitted Average Input Speed	$n_{1N}$	rpm	2000								
Maximum Input Speed	$n_{1Max}$	rpm	4000								
Mean No Load Running Torque	$T_{012}$	Nm	5.2	5	4.85	4.67	4.67	4.67	4.67	4.67	
		in.lb	46.02	44.25	42.93	41.33	41.33	41.33	41.33	41.33	
Standard Backlash P1	$j_1$	arcmin	≤ 6								
Reduced Low Backlash P0	$j_1$	arcmin	≤ 3								
Torsional Rigidity	$C_{021}$	Nm/arcmin	220	220	220	200	200	200	200	200	
		in.lb/arcmin	1947.2	1947.2	1947.2	1770.1	1770.1	1770.1	1770.1	1770.1	
Maximum Radial Load	$F_{2AMax}$	N	16000								
		lb <sub>r</sub>	3597								
Maximum Axial Load	$F_{2OMax}$	N	8000								
		lb <sub>r</sub>	1798								
Max. Tilting Moment	$M_{2KMax}$	Nm	1800								
		in.lb	15840								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	69.61	54.37	53.27	50.84	50.84	50.84	50.84	50.56	
Operating Noise Level	$L_{PA}$	dB(A)	< 70								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	53								
		lb <sub>m</sub>	117								

**KPLF235 2-stage**

		2-stage																	
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	1200	1200	1800	2050	2050	1200	1800	2050	2050	2050	2050	1850	1550	1550	1500	1500	
		in.lb	10621	10621	15931	18144	18144	10621	15931	18144	18144	18144	18144	16374	13719	13719	13276	13276	
Emergency Stop Torque	$T_{2Not}$	Nm	3600	3600	5400	6150	6150	3600	5400	6150	6150	6150	6150	5550	4650	4650	4500	4500	
		in.lb	31863	31863	47794	54432	54432	31863	47794	54432	54432	54432	54432	49121	41156	41156	39828	39828	
Maximum Acceleration Torque	$T_{2B}$	Nm	2160	2160	3240	3690	3690	2160	3240	3690	3690	3690	3690	3330	2790	2790	2700	2700	
		in.lb	19118	19118	28676	32659	32659	19118	28676	32659	32659	32659	32659	29473	24693	24693	23897	23897	
Maximum Torque	$T_{2a}$	Nm	2400	2400	3600	4100	4100	2400	3600	4100	4100	4100	4100	3700	3100	3100	3000	3000	
		in.lb	21242	21242	31863	36288	36288	21242	31863	36288	36288	36288	36288	32748	27437	27437	26552	26552	
Permitted Average Input Speed	$n_{1N}$	rpm	2000																
Maximum Input Speed	$n_{1Max}$	rpm	4000																
Mean No Load Running Torque	$T_{012}$	Nm	3.3	3.15	3.3	3.15	3.15	3	3	3	3	3	3	3	3	3	3	3	
		in.lb	29.21	27.88	29.21	27.88	27.88	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	
Standard Backlash P1	$j_1$	arcmin	≤ 8																
Reduced Low Backlash P0	$j_1$	arcmin	≤ 5																
Torsional Rigidity	$C_{021}$	Nm/arcmin	220	220	220	220	220	220	220	220	220	220	220	200	200	200	200	200	
		in.lb/arcmin	1947.2	1947.2	1947.2	1947.2	1947.2	1947.2	1947.2	1947.2	1947.2	1947.2	1947.2	1770.1	1770.1	1770.1	1770.1	1770.1	
Maximum Radial Load	$F_{2AMax}$	N	16000																
		lb <sub>r</sub>	3597																
Maximum Axial Load	$F_{2OMax}$	N	8000																
		lb <sub>r</sub>	1798																
Max. Tilting Moment	$M_{2KMax}$	Nm	2350																
		in.lb	20680																
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	28.98	28.92	23.67	22.75	22.75	22.59	22.59	22.59	22.59	22.59	22.59	22.59	22.59	22.59	22.59	22.59	
Operating Noise Level	$L_{PA}$	dB(A)	< 70																
Efficiency at Full loading	$\eta$	%	95																
Operating Temperature		°C	-25 to +90																
		F	-13 to +194																
Lubrication			Synthetic Lubrication Grease																
Mouting Position			Any Directions																
Protection Class			IP 65																
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																
Weight	$m$	kg	66																
		lb <sub>m</sub>	145.5																



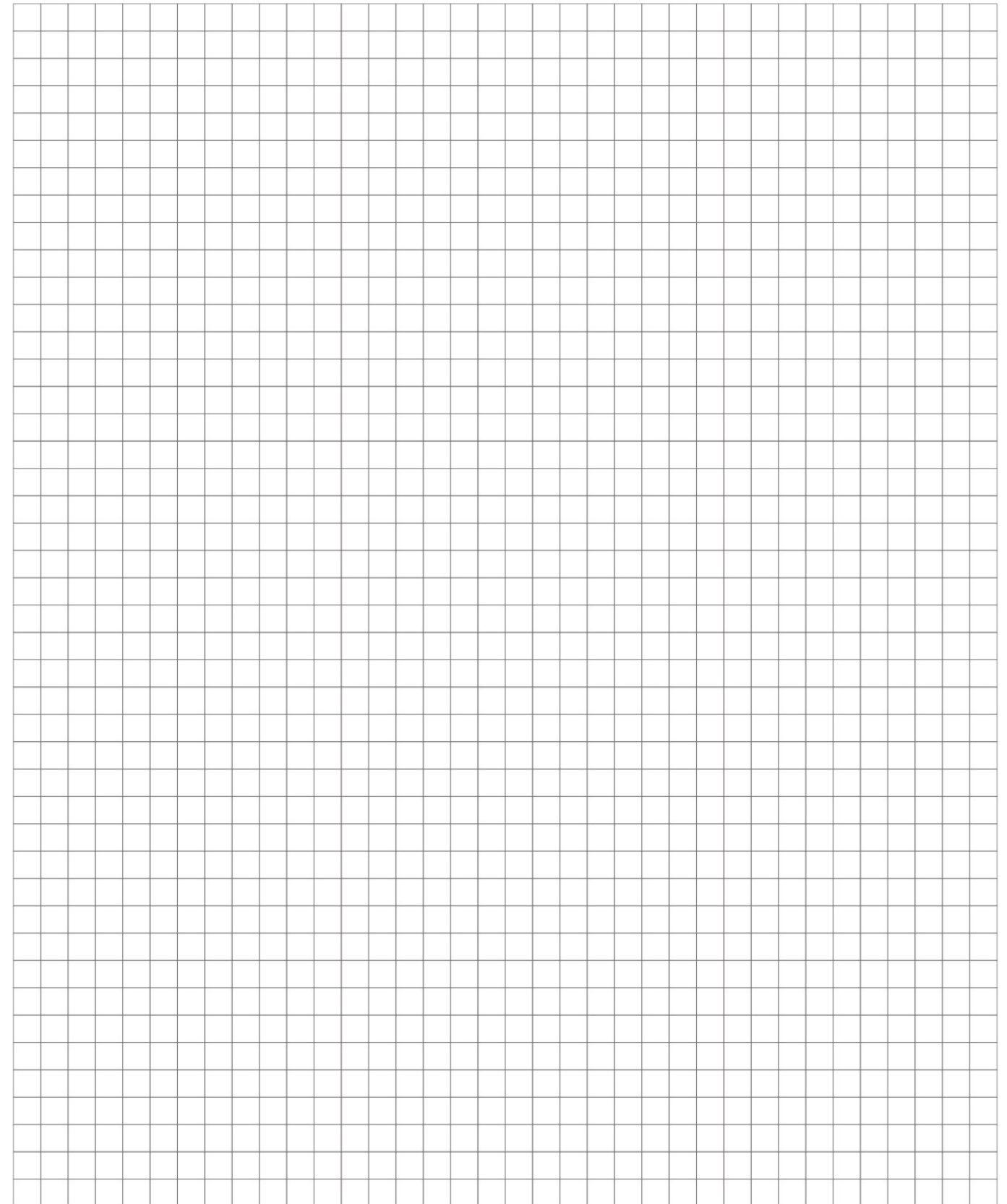
**KPLF Dimensions**



Model	KPLF050		KPLF070		KPLF090		KPLF120		KPLF160		KPLF205		KPLF235													
	1	2	1	2	1	2	1	2	1	2	1	2	1	2												
K1	52	70	89	120	175	210	240	88.5	103.5	115	138.7	138	169.3	198	239.8	275.5	336.5	288	348	357.5	402					
K2	2.047	2.756	3.504	4.724	6.890	8.268	9.449	3.484	4.075	4.528	5.461	5.433	6.665	7.795	9.441	10.846	13.248	11.339	13.701	14.075	15.827					
K3	12	16	22	32	40	55	75	0.472	0.630	0.866	1.260	1.575	2.165	2.953	0.906	1.181	1.417	1.969	3.150	3.228	4.134					
K4	23	30	36	50	80	82	105	0.906	1.181	1.417	1.969	3.150	3.228	4.134	15	20	30	40	50	60	85					
K5	15	20	30	40	50	60	85	0.591	0.787	1.181	1.575	1.969	2.362	3.346	40	50	80	110	130	180	235					
K6	40	50	80	110	130	180	235	1.575	1.969	3.150	4.331	5.118	7.087	9.252	4	5	10	12	15	20	30					
K7	4	5	10	12	15	20	30	0.157	0.197	0.394	0.472	0.591	0.787	1.181	28	37	48	65	97	105	126					
K8	28	37	48	65	97	105	126	1.102	1.457	1.890	2.559	3.819	4.134	4.961	1.102	1.457	1.890	2.559	3.819	4.134	4.961					
K9	M3X9	M5X12	M6X16	M10X22	M12X25	M20X40	M20X40	4.5	5.5	6.5	9	11	13	17	0.177	0.217	0.256	0.354	0.433	0.512	0.669					
K10	4.5	5.5	6.5	9	11	13	17	60	85	100	130	185	230	275	2.362	3.346	3.937	5.118	7.283	9.055	10.827					
K11	2.362	3.346	3.937	5.118	7.283	9.055	10.827	16	22	28	40	70	90	0.630	0.866	1.102	1.575	2.756	2.756	3.543						
K12	0.630	0.866	1.102	1.575	2.756	2.756	3.543	4	5	6	10	12	16	20	0.157	0.197	0.236	0.394	0.472	0.630	0.787					
K13	4	5	6	10	12	16	20	13.5	18	24.5	35	43	59	79.5	0.531	0.709	0.965	1.378	1.693	2.323	3.130					
K14	0.531	0.709	0.965	1.378	1.693	2.323	3.130	5	8	10	14	15	18	18	0.197	0.315	0.394	0.551	0.591	0.709	0.709					
K15	0.197	0.315	0.394	0.551	0.591	0.709	0.709	C1	46	70	90	145	200	215	200	235	215	1.811	2.756	3.543	5.709	7.874	8.465	7.874	9.252	8.465
C1	1.811	2.756	3.543	5.709	7.874	8.465	8.465	C2	M4X10	M5X12	M6X15	M8X20	M12X25	M12X25	M12X25	M12X25	M12X25	8	14	19	24	35	42	35	55	42
C2	M4X10	M5X12	M6X15	M8X20	M12X25	M12X25	M12X25	C3	8	14	19	24	35	42	35	55	42	0.315	0.551	0.748	0.945	1.378	1.654	1.378	2.165	1.654
C3	8	14	19	24	35	42	35	C4	0.315	0.551	0.748	0.945	1.378	1.654	1.378	2.165	1.654	26.1	32.1	41.6	61.3	82	82.5	82	115.5	82.5
C4	26.1	32.1	41.6	61.3	82	82.5	82	C5	1.028	1.264	1.638	2.413	3.228	3.248	3.228	4.547	3.248	30	50	70	110	114.3	180	114.3	200	180
C5	30	50	70	110	114.3	180	114.3	C6	1.181	1.969	2.756	4.331	4.500	7.087	4.500	7.874	7.087	5	6.5	6.5	8	8	8	8	8	8
C6	5	6.5	6.5	8	8	8	8	C7	0.197	0.256	0.256	0.315	0.315	0.315	0.315	0.315	0.315	50	70	89	120	175	190	175	220	190
C7	50	70	89	120	175	190	175		1.969	2.756	3.504	4.724	6.890	7.480	6.890	8.661	7.480									

The dimensions modified as per the applied motor flanges.  
You can get the specific gearbox drawing solution by KDP(Kofon Design Programme) on line from our website: [www.kofon-motion.com](http://www.kofon-motion.com)

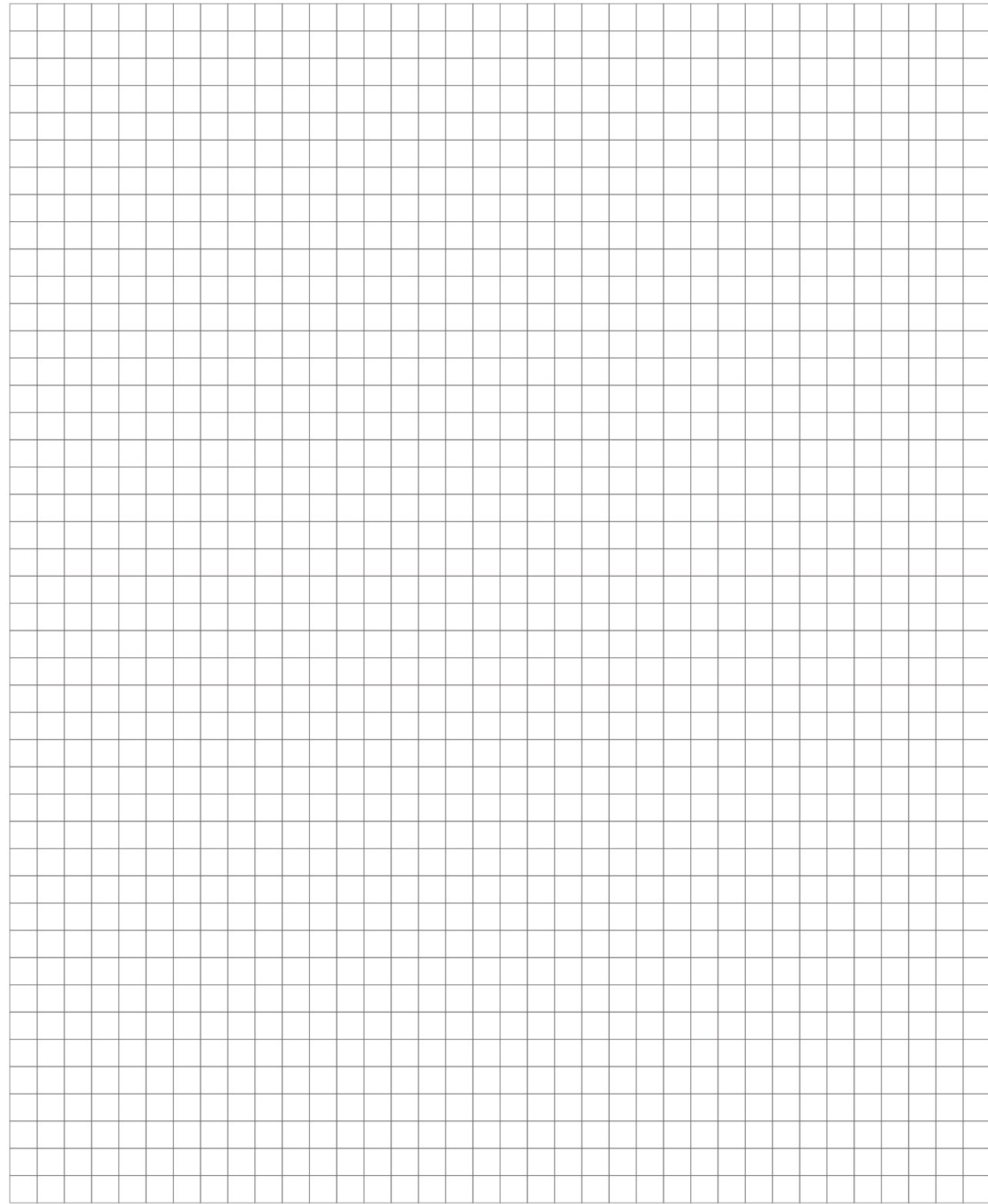
Technical Memo



KPLF Series Servo Planetary Gearbox

KPLF Series Servo Planetary Gearbox

Technical Memo

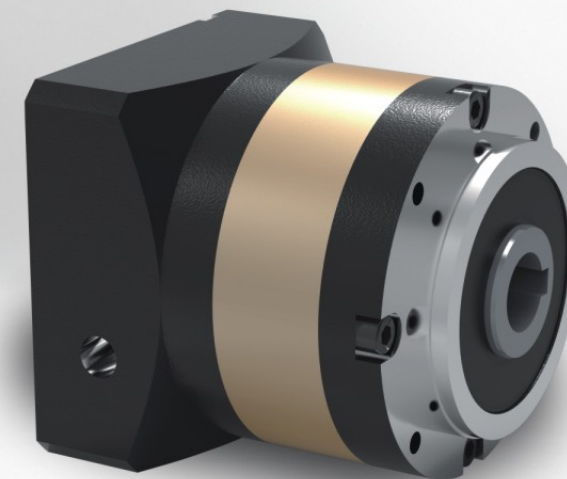


KPLF Series Servo Planetary Gearbox

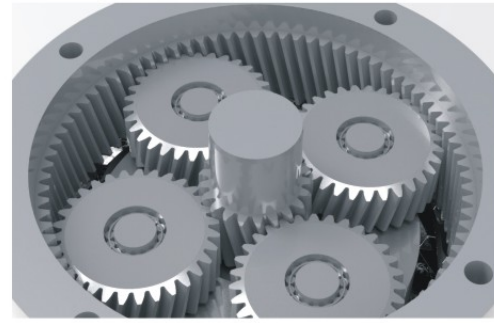
# KPLN

Powerful. High Precision. Reliable

- ▶ Servo Planetary Gearbox
- Advanced Gearbox Solution

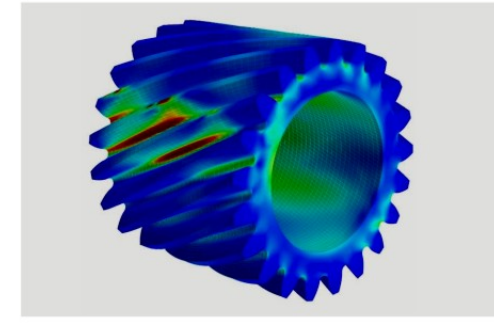






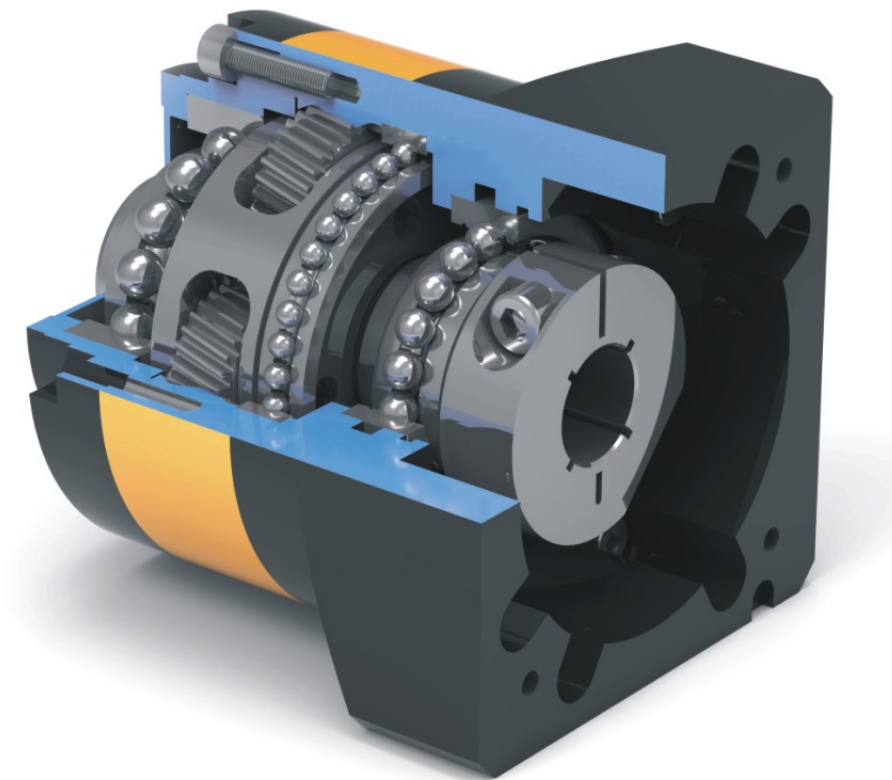
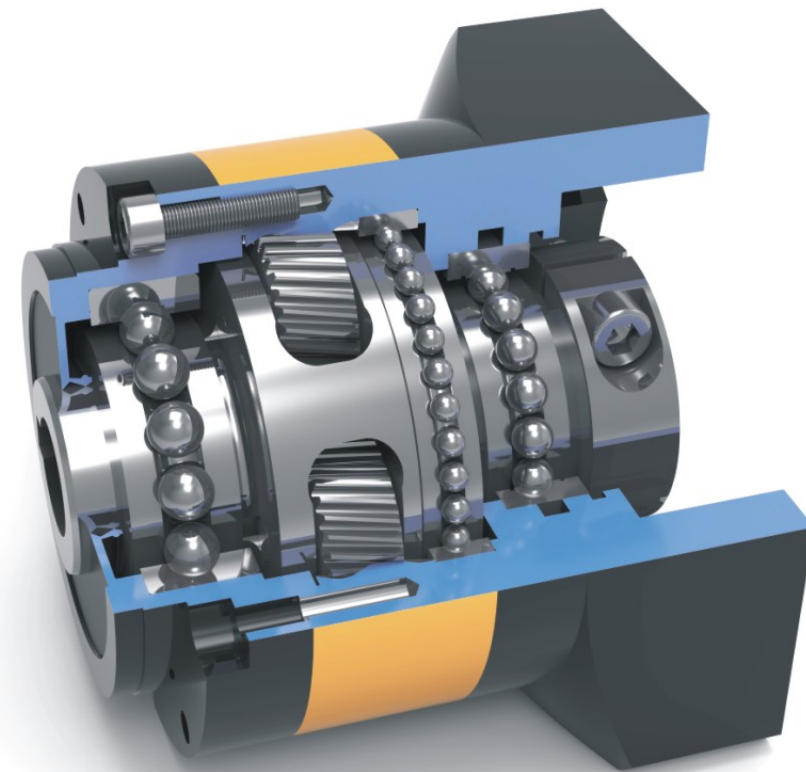
**Helical Gear System Technology**

Thanks to the tooth to tooth compact ratio more than 60%. The helical gearing and full needle bearing bring the benefits including higher torque capacity, smooth and lower noise running, decreased backlash and higher efficiency.



**Super Gear Grinding and Heat Treatment Technology**

The global leading gear grinding technology brings the great improvement for the tooth profile optimization, with the high level carburizing and quenching heat treatment technology to reach high precision and gear harden performance.



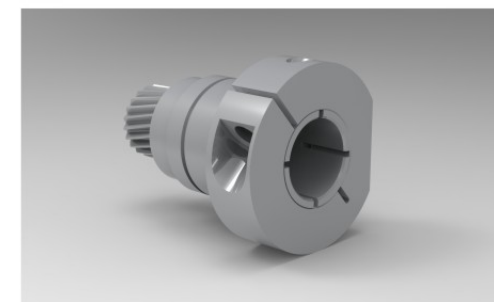
KPLN Series Servo Planetary Gearbox

KPLN Series Servo Planetary Gearbox



**Master CageSpindle Planetary Carrier**

The patented Master CageSpindle integrated planetary carrier support planetary gearbox to increase constructional strength running stability and rigidity significantly. Synthetic grease lubrication allows maintenance free for gearbox whole service life.



**Dynamic Balance Clamping and Sealing System**

For the gearbox input dynamic balance clamping design with perfect concentricity to decrease backlash and increase gearbox operation stability. The ultra sealing system offers grease leakage protection and support gearbox to reach IP65.





KPLN050 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	20	21	21	20	19	18	14	14	
		in.lb	177	186	186	177	168	159	124	124	
Emergency Stop Torque	$T_{2Not}$	Nm	60	60	63	60	57	54	42	42	
		in.lb	531	531	558	531	504	478	372	372	
Maximum Acceleration Torque	$T_{2B}$	Nm	36	37.8	37.8	36	34.2	32.4	25.2	25.2	
		in.lb	319	335	335	319	303	287	223	223	
Maximum Torque	$T_{2a}$	Nm	40	42	42	40	38	36	28	28	
		in.lb	354	372	372	354	336	319	248	248	
Permitted Average Input Speed	$n_{1N}$	rpm	4000								
Maximum Input Speed	$n_{1Max}$	rpm	8000								
Mean No Load Running Torque	$T_{012}$	Nm	0.11	0.1	0.09	0.09	0.08	0.08	0.08	0.08	
		in.lb	0.97	0.89	0.80	0.80	0.71	0.71	0.71	0.71	
Standard Backlash P1	$j_i$	arcmin	≤ 8								
Reduced Low Backlash P0	$j_i$	arcmin	≤ 5								
Torsional Rigidity	$C_{021}$	Nm/arcmin	3	3	3	2.85	2.85	2.85	2.85	2.85	
		in.lb/arcmin	26.55	26.55	26.55	25.22	25.22	25.22	25.22	25.22	
Maximum Radial Load	$F_{2AMax}$	N	770								
		lb <sub>f</sub>	173								
Maximum Axial Load	$F_{2OMax}$	N	380								
		lb <sub>f</sub>	85								
Max. Tilting Moment	$M_{2KMax}$	Nm	40								
		in.lb	352								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.031	0.022	0.019	0.017	0.017	0.017	0.017	0.017	
Operating Noise Level	$L_{PA}$	dB(A)	< 56								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	0.5								
		lb <sub>m</sub>	11								

KPLN050 2-stage

		2-stage																
Ratio	i		12	15	16	20	25	30	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	20	20	21	21	21	20	21	21	21	21	20	18	18	14	14	
		in.lb	177	177	186	186	186	177	186	186	186	186	177	159	159	124	124	
Emergency Stop Torque	$T_{2Not}$	Nm	60	60	63	63	63	60	63	63	63	63	60	54	54	42	42	
		in.lb	531	531	558	558	558	531	558	558	558	558	531	478	478	372	372	
Maximum Acceleration Torque	$T_{2B}$	Nm	36	36	37.8	37.8	37.8	36	37.8	37.8	37.8	37.8	36	32.4	32.4	25.2	25.2	
		in.lb	319	319	335	335	335	319	335	335	335	335	319	287	287	223	223	
Maximum Torque	$T_{2a}$	Nm	40	40	42	42	42	40	42	42	42	42	40	36	36	28	28	
		in.lb	354	354	372	372	372	354	372	372	372	372	354	319	319	248	248	
Permitted Average Input Speed	$n_{1N}$	rpm	4000															
Maximum Input Speed	$n_{1Max}$	rpm	8000															
Mean No Load Running Torque	$T_{012}$	Nm	0.1	0.1	0.1	0.1	0.1	0.09	0.09	0.09	0.09	0.09	0.09	0.08	0.08	0.08	0.08	
		in.lb	0.89	0.89	0.89	0.89	0.89	0.80	0.80	0.80	0.80	0.80	0.80	0.71	0.71	0.71	0.71	
Standard Backlash P1	$j_i$	arcmin	≤ 11															
Reduced Low Backlash P0	$j_i$	arcmin	≤ 8															
Torsional Rigidity	$C_{021}$	Nm/arcmin	3	3	3	3	3	3	3	3	3	3	2.85	2.85	2.85	2.85	2.85	
		in.lb/arcmin	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	25.22	25.22	25.22	25.22	
Maximum Radial Load	$F_{2AMax}$	N	770															
		lb <sub>f</sub>	173															
Maximum Axial Load	$F_{2OMax}$	N	380															
		lb <sub>f</sub>	85															
Max. Tilting Moment	$M_{2KMax}$	Nm	40															
		in.lb	352															
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.029	0.027	0.022	0.019	0.017	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	
Operating Noise Level	$L_{PA}$	dB(A)	< 56															
Efficiency at Full loading	$\eta$	%	95															
Operating Temperature		°C	-25 to +90															
		F	-13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)															
Weight	$m$	kg	0.8															
		lb <sub>m</sub>	1.8															

KPLN070 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	46	52	55	50	50	45	42	42	
		in.lb	407	460	487	443	443	398	372	372	
Emergency Stop Torque	$T_{2Not}$	Nm	138	156	165	150	150	135	126	126	
		in.lb	1221	1381	1460	1328	1328	1195	1115	1115	
Maximum Acceleration Torque	$T_{2a}$	Nm	82.8	93.6	99	90	90	81	75.6	75.6	
		in.lb	733	828	876	797	797	717	669	669	
Maximum Torque	$T_{2a}$	Nm	92	104	110	100	100	90	84	84	
		in.lb	814	920	974	885	885	797	743	743	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	6000								
Mean No Load Running Torque	$T_{012}$	Nm	0.24	0.2	0.17	0.15	0.15	0.15	0.15	0.15	
		in.lb	2.12	1.77	1.50	1.33	1.33	1.33	1.33	1.33	
Standard Backlash P1	$j_i$	arcmin	≤ 6								
Reduced Low Backlash P0	$j_i$	arcmin	≤ 3								
Torsional Rigidity	$C_{021}$	Nm/arcmin	7	7	7	6.5	6.5	6.5	6.5	6.5	
		in.lb/arcmin	61.95	61.95	61.95	57.53	57.53	57.53	57.53	57.53	
Maximum Radial Load	$F_{2AMax}$	N	1500								
		lb <sub>r</sub>	337								
Maximum Axial Load	$F_{2OMax}$	N	760								
		lb <sub>r</sub>	171								
Max. Tilting Moment	$M_{2KMax}$	Nm	80								
		in.lb	704								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.16	0.14	0.13	0.13	0.13	0.13	0.13	0.13	
Operating Noise Level	$L_{PA}$	dB(A)	< 58								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	1.3								
		lb <sub>m</sub>	2.9								

KPLN070 2-stage

		2-stage																	
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	56	50	52	55	55	46	52	55	55	55	55	50	45	45	42	42	
		in.lb	496	443	460	487	487	407	460	487	487	487	487	487	443	398	398	372	372
Emergency Stop Torque	$T_{2Not}$	Nm	168	150	156	165	165	138	156	165	165	165	165	150	135	135	126	126	
		in.lb	1487	1328	1381	1460	1460	1221	1381	1460	1460	1460	1460	1460	1328	1195	1195	1115	1115
Maximum Acceleration Torque	$T_{2a}$	Nm	100.8	90	93.6	99	99	82.8	93.6	99	99	99	99	90	81	81	75.6	75.6	
		in.lb	892	797	828	876	876	733	828	876	876	876	876	876	797	717	717	669	669
Maximum Torque	$T_{2a}$	Nm	112	100	104	110	110	92	104	110	110	110	110	100	90	90	84	84	
		in.lb	991	885	920	974	974	814	920	974	974	974	974	974	885	797	797	743	743
Permitted Average Input Speed	$n_{1N}$	rpm	3000																
Maximum Input Speed	$n_{1Max}$	rpm	6000																
Mean No Load Running Torque	$T_{012}$	Nm	0.2	0.17	0.2	0.17	0.17	0.15	0.2	0.15	0.15	0.15	0.15	0.17	0.15	0.15	0.15	0.15	0.15
		in.lb	1.77	1.50	1.77	1.50	1.50	1.33	1.77	1.33	1.33	1.33	1.33	1.50	1.33	1.33	1.33	1.33	1.33
Standard Backlash P1	$j_i$	arcmin	≤ 8																
Reduced Low Backlash P0	$j_i$	arcmin	≤ 5																
Torsional Rigidity	$C_{021}$	Nm/arcmin	7	7	7	7	7	7	7	7	7	7	7	6.5	6.5	6.5	6.5	6.5	
		in.lb/arcmin	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	57.53	57.53	57.53	57.53	57.53
Maximum Radial Load	$F_{2AMax}$	N	1500																
		lb <sub>r</sub>	337																
Maximum Axial Load	$F_{2OMax}$	N	760																
		lb <sub>r</sub>	171																
Max. Tilting Moment	$M_{2KMax}$	Nm	80																
		in.lb	704																
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.127	0.124	0.12	0.075	0.075	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.075	0.064	0.064	0.064
Operating Noise Level	$L_{PA}$	dB(A)	< 58																
Efficiency at Full loading	$\eta$	%	95																
Operating Temperature		°C	-25 to +90																
		F	-13 to +194																
Lubrication			Synthetic Lubrication Grease																
Mouting Position			Any Directions																
Protection Class			IP 65																
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																
Weight	$m$	kg	1.5																
		lb <sub>m</sub>	3.3																

KPLN Series Servo Planetary Gearbox

KPLN Series Servo Planetary Gearbox



KPLN090 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	125	145	155	145	135	115	105	105	
		in.lb	1106	1283	1372	1283	1195	1018	929	929	
Emergency Stop Torque	$T_{2Not}$	Nm	375	435	465	435	405	345	315	315	
		in.lb	3319	3850	4116	3850	3585	3053	2788	2788	
Maximum Acceleration Torque	$T_{2B}$	Nm	225	261	279	261	243	207	189	189	
		in.lb	1991	2310	2469	2310	2151	1832	1673	1673	
Maximum Torque	$T_{2a}$	Nm	250	290	310	290	270	230	210	210	
		in.lb	2213	2567	2744	2567	2390	2036	1859	1859	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	6000								
Mean No Load Running Torque	$T_{012}$	Nm	0.38	0.36	0.31	0.29	0.25	0.25	0.25	0.25	
		in.lb	3.36	3.19	2.74	2.57	2.21	2.21	2.21	2.21	
Standard Backlash P1	$j_i$	arcmin	≤ 6								
Reduced Low Backlash P0	$j_i$	arcmin	≤ 3								
Torsional Rigidity	$C_{021}$	Nm/arcmin	14	14	14	13	13	13	13	13	
		in.lb/arcmin	123.91	123.91	123.91	115.06	115.06	115.06	115.06	115.06	
Maximum Radial Load	$F_{2AMax}$	N	3200								
		lb <sub>r</sub>	719								
Maximum Axial Load	$F_{2OMax}$	N	1600								
		lb <sub>r</sub>	360								
Max. Tilting Moment	$M_{2KMax}$	Nm	200								
		in.lb	1760								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.61	0.48	0.47	0.47	0.47	0.45	0.44	0.44	
Operating Noise Level	$L_{PA}$	dB(A)	< 60								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	3.1								
		lb <sub>m</sub>	6.8								

KPLN090 2-stage

		2-stage																	
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	125	125	145	145	155	125	145	155	155	155	155	145	115	115	105	105	
		in.lb	1106	1106	1283	1283	1372	1106	1283	1372	1372	1372	1372	1283	1018	1018	929	929	
Emergency Stop Torque	$T_{2Not}$	Nm	375	375	435	435	465	375	435	465	465	465	465	435	345	345	315	315	
		in.lb	3319	3319	3850	3850	4116	3319	3850	4116	4116	4116	4116	3850	3053	3053	2788	2788	
Maximum Acceleration Torque	$T_{2B}$	Nm	225	225	261	261	279	225	261	279	279	279	279	261	207	207	189	189	
		in.lb	1991	1991	2310	2310	2469	1991	2310	2469	2469	2469	2469	2310	1832	1832	1673	1673	
Maximum Torque	$T_{2a}$	Nm	250	250	290	290	310	250	290	310	310	310	310	290	230	230	210	210	
		in.lb	2213	2213	2567	2567	2744	2213	2567	2744	2744	2744	2744	2567	2036	2036	1859	1859	
Permitted Average Input Speed	$n_{1N}$	rpm	3000																
Maximum Input Speed	$n_{1Max}$	rpm	6000																
Mean No Load Running Torque	$T_{012}$	Nm	0.36	0.31	0.36	0.31	0.31	0.31	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	
		in.lb	3.19	2.74	3.19	2.74	2.74	2.74	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	
Standard Backlash P1	$j_i$	arcmin	≤ 8																
Reduced Low Backlash P0	$j_i$	arcmin	≤ 5																
Torsional Rigidity	$C_{021}$	Nm/arcmin	14	14	14	14	14	14	14	14	14	14	14	13	13	13	13	13	
		in.lb/arcmin	123.91	123.91	123.91	123.91	123.91	123.91	123.91	123.91	123.91	123.91	123.91	115.06	115.06	115.06	115.06	115.06	
Maximum Radial Load	$F_{2AMax}$	N	3200																
		lb <sub>r</sub>	719																
Maximum Axial Load	$F_{2OMax}$	N	1600																
		lb <sub>r</sub>	360																
Max. Tilting Moment	$M_{2KMax}$	Nm	200																
		in.lb	1760																
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.44	0.44	0.43	0.44	0.44	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39		
Operating Noise Level	$L_{PA}$	dB(A)	< 60																
Efficiency at Full loading	$\eta$	%	95																
Operating Temperature		°C	-25 to +90																
		F	-13 to +194																
Lubrication			Synthetic Lubrication Grease																
Mouting Position			Any Directions																
Protection Class			IP 65																
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																
Weight	$m$	kg	4.2																
		lb <sub>m</sub>	9.3																

KPLN120 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	210	300	320	300	290	255	220	220	
		in.lb	1859	2655	2832	2655	2567	2257	1947	1947	
Emergency Stop Torque	$T_{2Not}$	Nm	630	900	960	900	870	765	660	660	
		in.lb	5576	7966	8497	7966	7700	6771	5841	5841	
Maximum Acceleration Torque	$T_{2B}$	Nm	378	540	576	540	522	459	396	396	
		in.lb	3346	4779	5098	4779	4620	4062	3505	3505	
Maximum Torque	$T_{2a}$	Nm	420	600	640	600	580	510	440	440	
		in.lb	3717	5310	5664	5310	5133	4514	3894	3894	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	6000								
Mean No Load Running Torque	$T_{012}$	Nm	1	0.95	0.85	0.81	0.78	0.78	0.78	0.78	
		in.lb	8.85	8.41	7.52	7.17	6.90	6.90	6.90	6.90	
Standard Backlash P1	$j_i$	arcmin	≤ 6								
Reduced Low Backlash P0	$j_i$	arcmin	≤ 3								
Torsional Rigidity	$C_{021}$	Nm/arcmin	25	25	25	23	23	23	23	23	
		in.lb/arcmin	221.27	221.27	221.27	203.57	203.57	203.57	203.57	203.57	
Maximum Radial Load	$F_{2AMax}$	N	6700								
		lb <sub>f</sub>	1506								
Maximum Axial Load	$F_{2OMax}$	N	3300								
		lb <sub>f</sub>	742								
Max. Tilting Moment	$M_{2KMax}$	Nm	400								
		in.lb	3520								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	3.25	2.74	2.71	2.62	2.62	2.62	2.62	2.57	
Operating Noise Level	$L_{PA}$	dB(A)	< 63								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	5.1								
		lb <sub>m</sub>	11.2								

KPLN120 2-stage

		2-stage																	
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	310	310	300	300	320	210	305	320	320	320	320	300	255	255	220	220	
		in.lb	2744	2744	2655	2655	2832	1859	2699	2832	2832	2832	2832	2655	2257	2257	1947	1947	
Emergency Stop Torque	$T_{2Not}$	Nm	930	930	900	900	960	630	915	960	960	960	960	900	765	765	660	660	
		in.lb	8231	8231	7966	7966	8497	5576	8098	8497	8497	8497	8497	7966	6771	6771	5841	5841	
Maximum Acceleration Torque	$T_{2B}$	Nm	558	558	540	540	576	378	549	576	576	576	576	540	459	459	396	396	
		in.lb	4939	4939	4779	4779	5098	3346	4859	5098	5098	5098	5098	4779	4062	4062	3505	3505	
Maximum Torque	$T_{2a}$	Nm	620	620	600	600	640	420	610	640	640	640	640	600	510	510	440	440	
		in.lb	5487	5487	5310	5310	5664	3717	5399	5664	5664	5664	5664	5310	4514	4514	3894	3894	
Permitted Average Input Speed	$n_{1N}$	rpm	3000																
Maximum Input Speed	$n_{1Max}$	rpm	6000																
Mean No Load Running Torque	$T_{012}$	Nm	0.95	0.85	0.95	0.85	0.85	0.81	0.78	0.78	0.78	0.78	0.78	0.81	0.78	0.78	0.78	0.78	
		in.lb	8.41	7.52	8.41	7.52	7.52	7.17	6.90	6.90	6.90	6.90	6.90	7.17	6.90	6.90	6.90	6.90	
Standard Backlash P1	$j_i$	arcmin	≤ 8																
Reduced Low Backlash P0	$j_i$	arcmin	≤ 5																
Torsional Rigidity	$C_{021}$	Nm/arcmin	25	25	25	25	25	25	25	25	25	25	23	23	23	23	23		
		in.lb/arcmin	221.27	221.27	221.27	221.27	221.27	221.27	221.27	221.27	221.27	221.27	203.57	203.57	203.57	203.57	203.57		
Maximum Radial Load	$F_{2AMax}$	N	6700																
		lb <sub>f</sub>	1506																
Maximum Axial Load	$F_{2OMax}$	N	3300																
		lb <sub>f</sub>	742																
Max. Tilting Moment	$M_{2KMax}$	Nm	400																
		in.lb	3520																
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	2.56	2.58	1.75	1.5	1.49	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.5	1.3	1.3		
Operating Noise Level	$L_{PA}$	dB(A)	< 63																
Efficiency at Full loading	$\eta$	%	95																
Operating Temperature		°C	-25 to +90																
		F	-13 to +194																
Lubrication			Synthetic Lubrication Grease																
Mouting Position			Any Directions																
Protection Class			IP 65																
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																
Weight	$m$	kg	7.5																
		lb <sub>m</sub>	16.5																



KPLN160 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	450	550	650	610	540	510	440	440	
		in.lb	3983	4868	5753	5399	4779	4514	3894	3894	
Emergency Stop Torque	$T_{2Not}$	Nm	1350	1650	1950	1830	1620	1530	1320	1320	
		in.lb	11948	14604	17259	16197	14338	13542	11683	11683	
Maximum Acceleration Torque	$T_{2a}$	Nm	810	990	1170	1098	972	918	792	792	
		in.lb	7169	8762	10355	9718	8603	8125	7010	7010	
Maximum Torque	$T_{2a}$	Nm	900	1100	1300	1220	1080	1020	880	880	
		in.lb	7966	9736	11506	10798	9559	9028	7789	7789	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	6000								
Mean No Load Running Torque	$T_{012}$	Nm	2.55	2.45	2.3	2.2	2.2	2.2	2.2	2.2	
		in.lb	22.57	21.68	20.36	19.47	19.47	19.47	19.47	19.47	
Standard Backlash P1	$j_1$	arcmin	≤ 6								
Reduced Low Backlash P0	$j_1$	arcmin	≤ 3								
Torsional Rigidity	$C_{021}$	Nm/arcmin	50	50	50	45	45	45	45	45	
		in.lb/arcmin	442.54	442.54	442.54	398.28	398.28	398.28	398.28	398.28	
Maximum Radial Load	$F_{2AMax}$	N	9600								
		lb <sub>r</sub>	2158								
Maximum Axial Load	$F_{2OMax}$	N	4800								
		lb <sub>r</sub>	1079								
Max. Tilting Moment	$M_{2KMax}$	Nm	850								
		in.lb	7480								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	12.31	7.54	7.42	7.25	7.25	7.14	7.14	7.14	
Operating Noise Level	$L_{PA}$	dB(A)	< 65								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	19								
		lb <sub>m</sub>	41.8								

KPLN160 2-stage

		2-stage																		
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100		
Nominal Output Torque		Nm	500	500	550	650	650	450	550	650	550	650	650	610	510	440	440	440	440	
		in.lb	4425	4425	4868	5753	5753	3983	4868	5753	4868	5753	5753	5399	4514	4514	3894	3894	3894	
Emergency Stop Torque	$T_{2Not}$	Nm	1500	1500	1650	1950	1950	1350	1650	1950	1650	1950	1950	1830	1530	1320	1320	1320	1320	
		in.lb	13276	13276	14604	17259	17259	11948	14604	17259	14604	17259	17259	16197	13542	13542	11683	11683	11683	
Maximum Acceleration Torque	$T_{2a}$	Nm	900	900	990	1170	1170	810	990	1170	990	1170	1170	1098	918	792	792	792	792	
		in.lb	7966	7966	8762	10355	10355	7169	8762	10355	8762	10355	10355	9718	8125	7010	7010	7010	7010	
Maximum Torque	$T_{2a}$	Nm	1000	1000	1100	1300	1300	900	1100	1300	1100	1300	1300	1220	1020	880	880	880	880	
		in.lb	8851	8851	9736	11506	11506	7966	9736	11506	9736	11506	11506	10798	9028	7789	7789	7789	7789	
Permitted Average Input Speed	$n_{1N}$	rpm	3000																	
Maximum Input Speed	$n_{1Max}$	rpm	6000																	
Mean No Load Running Torque	$T_{012}$	Nm	2.45	2.3	2.45	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	
		in.lb	21.68	20.36	21.68	20.36	20.36	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	
Standard Backlash P1	$j_1$	arcmin	≤ 8																	
Reduced Low Backlash P0	$j_1$	arcmin	≤ 5																	
Torsional Rigidity	$C_{021}$	Nm/arcmin	50	50	50	50	50	50	50	50	50	50	50	45	45	45	45	45		
		in.lb/arcmin	442.54	442.54	442.54	442.54	442.54	442.54	442.54	442.54	442.54	442.54	442.54	398.28	398.28	398.28	398.28	398.28		
Maximum Radial Load	$F_{2AMax}$	N	9600																	
		lb <sub>r</sub>	2158																	
Maximum Axial Load	$F_{2OMax}$	N	4800																	
		lb <sub>r</sub>	1079																	
Max. Tilting Moment	$M_{2KMax}$	Nm	850																	
		in.lb	7480																	
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	12.35	12.35	7.47	6.65	5.81	6.34	6.34	5.36	4.08	5.36	4.08	7.40	7.50	7.40	7.40	7.40		
Operating Noise Level	$L_{PA}$	dB(A)	< 65																	
Efficiency at Full loading	$\eta$	%	95																	
Operating Temperature		°C	-25 to +90																	
		F	-13 to +194																	
Lubrication			Synthetic Lubrication Grease																	
Mouting Position			Any Directions																	
Protection Class			IP 65																	
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																	
Weight	$m$	kg	24																	
		lb <sub>m</sub>	52.8																	

KPLN205 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	650	1250	1200	1000	1000	1000	910	910	
		in.lb	5753	11063	10621	8851	8851	8851	8054	8054	
Emergency Stop Torque	$T_{2Not}$	Nm	1950	3750	3600	3000	3000	3000	2730	2730	
		in.lb	17259	33190	31863	26552	26552	26552	24162	24162	
Maximum Acceleration Torque	$T_{2a}$	Nm	1170	2250	2160	1800	1800	1800	1638	1638	
		in.lb	10355	19914	19118	15931	15931	15931	14497	14497	
Maximum Torque	$T_{2a}$	Nm	1300	2500	2400	2000	2000	2000	1820	1820	
		in.lb	11506	22127	21242	17701	17701	17701	16108	16108	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	4000								
Mean No Load Running Torque	$T_{012}$	Nm	3.5	3.3	3.15	3	3	3	3	3	
		in.lb	30.98	29.21	27.88	26.55	26.55	26.55	26.55	26.55	
Standard Backlash P1	$j_i$	arcmin	≤ 6								
Reduced Low Backlash P0	$j_i$	arcmin	≤ 3								
Torsional Rigidity	$C_{021}$	Nm/arcmin	140	140	140	140	130	130	130	130	
		in.lb/arcmin	1239.1	1239.1	1239.1	1239.1	1150.6	1150.6	1150.6	1150.6	
Maximum Radial Load	$F_{2AMax}$	N	14000								
		lb <sub>r</sub>	3147								
Maximum Axial Load	$F_{2OMax}$	N	7000								
		lb <sub>r</sub>	1574								
Max. Tilting Moment	$M_{2KMax}$	Nm	1280								
		in.lb	11264								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	28.98	23.67	22.75	22.48	22.48	22.59	22.59	22.55	
Operating Noise Level	$L_{PA}$	dB(A)	< 67								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	30								
		lb <sub>m</sub>	66								

KPLN205 2-stage

		2-stage																	
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	650	850	1250	1200	1200	650	1250	1200	1200	1200	1200	1000	1000	1000	910	910	
		in.lb	5753	7523	11063	10621	10621	5753	11063	10621	10621	10621	10621	8851	8851	8851	8054	8054	
Emergency Stop Torque	$T_{2Not}$	Nm	1950	2550	3750	3600	3600	1950	3750	3600	3600	3600	3600	3000	3000	3000	2730	2730	
		in.lb	17259	22569	33190	31863	31863	17259	33190	31863	31863	31863	31863	26552	26552	26552	24162	24162	
Maximum Acceleration Torque	$T_{2a}$	Nm	1170	1530	2250	2160	2160	1170	2250	2160	2160	2160	2160	1800	1800	1800	1638	1638	
		in.lb	10355	13542	19914	19118	19118	10355	19914	19118	19118	19118	19118	15931	15931	15931	14497	14497	
Maximum Torque	$T_{2a}$	Nm	1300	1700	2500	2400	2400	1300	2500	2400	2400	2400	2400	2000	2000	2000	1820	1820	
		in.lb	11506	15046	22127	21242	21242	11506	22127	21242	21242	21242	21242	17701	17701	17701	16108	16108	
Permitted Average Input Speed	$n_{1N}$	rpm	3000																
Maximum Input Speed	$n_{1Max}$	rpm	4000																
Mean No Load Running Torque	$T_{012}$	Nm	2.45	2.3	2.45	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	
		in.lb	21.68	20.36	21.68	20.36	20.36	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	
Standard Backlash P1	$j_i$	arcmin	≤ 8																
Reduced Low Backlash P0	$j_i$	arcmin	≤ 5																
Torsional Rigidity	$C_{021}$	Nm/arcmin	140	140	140	140	140	140	140	140	140	140	140	130	130	130	130	130	
		in.lb/arcmin	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1150.6	1150.6	1150.6	1150.6	1150.6	
Maximum Radial Load	$F_{2AMax}$	N	14000																
		lb <sub>r</sub>	3147																
Maximum Axial Load	$F_{2OMax}$	N	7000																
		lb <sub>r</sub>	1574																
Max. Tilting Moment	$M_{2KMax}$	Nm	1280																
		in.lb	11264																
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	12.35	12.30	7.54	7.42	7.54	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	
Operating Noise Level	$L_{PA}$	dB(A)	< 67																
Efficiency at Full loading	$\eta$	%	95																
Operating Temperature		°C	-25 to +90																
		F	-13 to +194																
Lubrication			Synthetic Lubrication Grease																
Mouting Position			Any Directions																
Protection Class			IP 65																
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																
Weight	$m$	kg	38																
		lb <sub>m</sub>	83.6																

KPLN Series Servo Planetary Gearbox

KPLN Series Servo Planetary Gearbox



KPLN235 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	1200	1800	2050	1850	1750	1550	1500	1500	
		in.lb	10621	15931	18144	16374	15489	13719	13276	13276	
Emergency Stop Torque	$T_{2Not}$	Nm	3600	5400	6150	5550	5250	4650	4500	4500	
		in.lb	31863	47794	54432	49121	46466	41156	39828	39828	
Maximum Acceleration Torque	$T_{2B}$	Nm	2160	3240	3690	3330	3150	2790	2700	2700	
		in.lb	19118	28676	32659	29473	27880	24693	23897	23897	
Maximum Torque	$T_{2a}$	Nm	2400	3600	4100	3700	3500	3100	3000	3000	
		in.lb	21242	31863	36288	32748	30977	27437	26552	26552	
Permitted Average Input Speed	$n_{1N}$	rpm	2000								
Maximum Input Speed	$n_{1Max}$	rpm	4000								
Mean No Load Running Torque	$T_{012}$	Nm	5.2	5	4.85	4.67	4.67	4.67	4.67	4.67	
		in.lb	46.02	44.25	42.93	41.33	41.33	41.33	41.33	41.33	
Standard Backlash P1	$j_i$	arcmin	≤ 6								
Reduced Low Backlash P0	$j_i$	arcmin	≤ 3								
Torsional Rigidity	$C_{021}$	Nm/arcmin	220	220	220	200	200	200	200	200	
		in.lb/arcmin	1947.2	1947.2	1947.2	1770.1	1770.1	1770.1	1770.1	1770.1	
Maximum Radial Load	$F_{2AMax}$	N	16000								
		lb <sub>f</sub>	3597								
Maximum Axial Load	$F_{2OMax}$	N	8000								
		lb <sub>f</sub>	1798								
Max. Tilting Moment	$M_{2KMax}$	Nm	2350								
		in.lb	20680								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	69.61	54.37	53.27	50.84	50.84	50.84	50.84	50.56	
Operating Noise Level	$L_{PA}$	dB(A)	< 70								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	51								
		lb <sub>m</sub>	112.2								

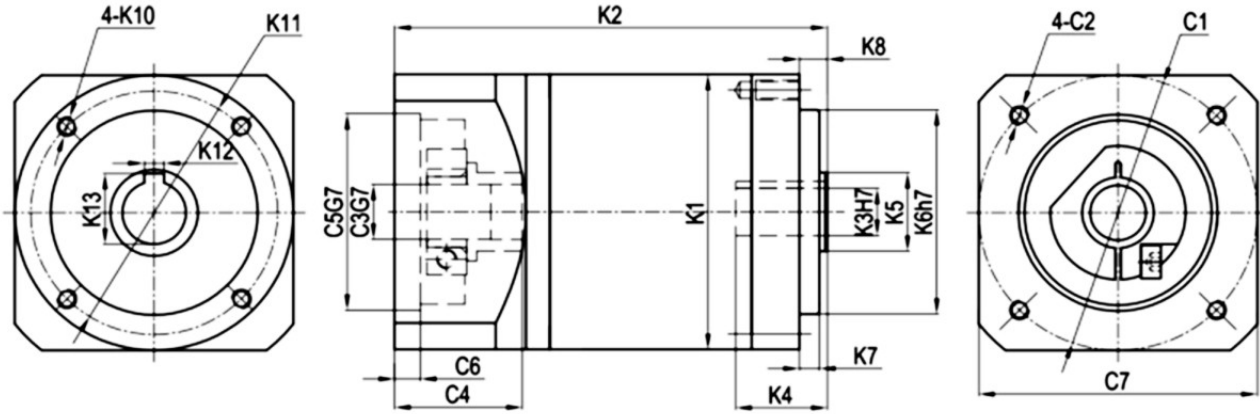
KPLN235 2-stage

		2-stage																	
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	1200	1200	1800	2050	2050	1200	1800	2050	2050	2050	2050	1850	1550	1550	1500	1500	
		in.lb	10621	10621	15931	18144	18144	10621	15931	18144	18144	18144	18144	16374	13719	13719	13276	13276	
Emergency Stop Torque	$T_{2Not}$	Nm	3600	3600	5400	6150	6150	3600	5400	6150	6150	6150	6150	5550	4650	4650	4500	4500	
		in.lb	31863	31863	47794	54432	54432	31863	47794	54432	54432	54432	54432	49121	41156	41156	39828	39828	
Maximum Acceleration Torque	$T_{2B}$	Nm	2160	2160	3240	3690	3690	2160	3240	3690	3690	3690	3690	3330	2790	2790	2700	2700	
		in.lb	19118	19118	28676	32659	32659	19118	28676	32659	32659	32659	32659	29473	24693	24693	23897	23897	
Maximum Torque	$T_{2a}$	Nm	2400	2400	3600	4100	4100	2400	3600	4100	4100	4100	4100	3700	3100	3100	3000	3000	
		in.lb	21242	21242	31863	36288	36288	21242	31863	36288	36288	36288	36288	32748	27437	27437	26552	26552	
Permitted Average Input Speed	$n_{1N}$	rpm	2000																
Maximum Input Speed	$n_{1Max}$	rpm	4000																
Mean No Load Running Torque	$T_{012}$	Nm	3.3	3.15	3.3	3.15	3.15	3	3	3	3	3	3	3	3	3	3	3	
		in.lb	29.21	27.88	29.21	27.88	27.88	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	
Standard Backlash P1	$j_i$	arcmin	≤ 8																
Reduced Low Backlash P0	$j_i$	arcmin	≤ 5																
Torsional Rigidity	$C_{021}$	Nm/arcmin	220	220	220	220	220	220	220	220	220	220	220	200	200	200	200	200	
		in.lb/arcmin	1947.2	1947.2	1947.2	1947.2	1947.2	1947.2	1947.2	1947.2	1947.2	1947.2	1947.2	1770.1	1770.1	1770.1	1770.1	1770.1	
Maximum Radial Load	$F_{2AMax}$	N	16000																
		lb <sub>f</sub>	3597																
Maximum Axial Load	$F_{2OMax}$	N	8000																
		lb <sub>f</sub>	1798																
Max. Tilting Moment	$M_{2KMax}$	Nm	2350																
		in.lb	20680																
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	28.98	28.92	23.67	22.75	22.75	22.59	22.59	22.59	22.59	22.59	22.59	22.59	22.59	22.59	22.59	22.59	
Operating Noise Level	$L_{PA}$	dB(A)	< 70																
Efficiency at Full loading	$\eta$	%	95																
Operating Temperature		°C	-25 to +90																
		F	-13 to +194																
Lubrication			Synthetic Lubrication Grease																
Mouting Position			Any Directions																
Protection Class			IP 65																
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																
Weight	$m$	kg	64																
		lb <sub>m</sub>	140.8																

KPLN Series Servo Planetary Gearbox

KPLN Series Servo Planetary Gearbox

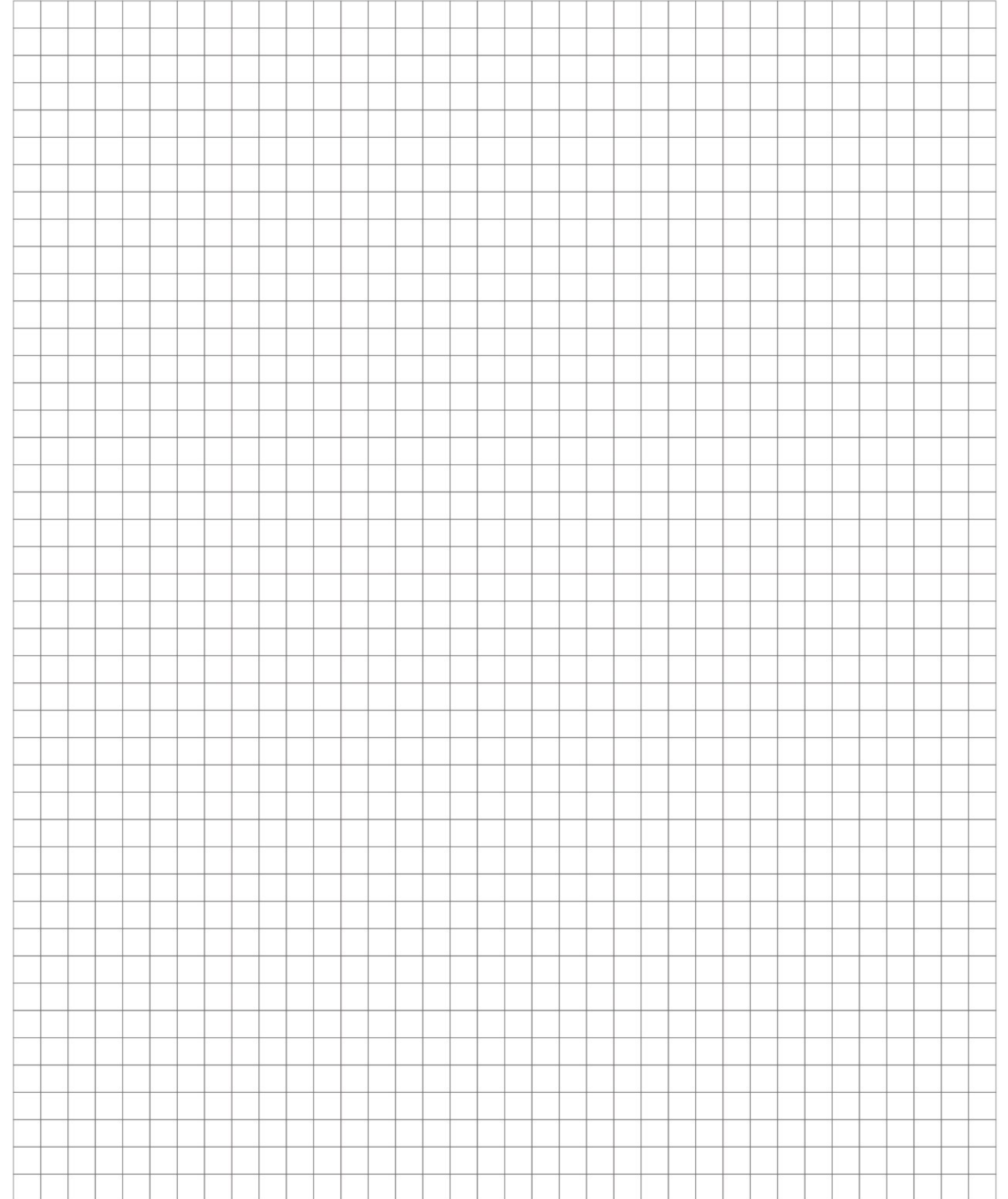
KPLN Dimensions



Model	KPLN070		KPLN090		KPLN120		KPLN160		KPLN205		KPLN235	
Stage	1	2	1	2	1	2	1	2	1	2	1	2
K1	70		89		120		160		205		205	
	2.756		3.504		4.724		6.299		8.071		8.071	
K2	85	108.7	102	133.3	148	189.8	195.5	256.5	288	268	261.5	306
	3.346	4.280	4.016	5.248	5.827	7.472	7.697	10.098	11.339	10.551	10.295	12.047
K3	12		18		25		38		2MX24ZX30PX6H		2.5MX24ZX30PX6H	
	0.472		0.709		0.984		1.496					
K4	23		25		36		45		48		65	
	0.906		0.984		1.417		1.772		1.890		2.559	
K5	20		30		40		60		60		85	
	0.787		1.181		1.575		2.362		2.362		3.346	
K6	52		68		90		130		160		180	
	2.047		2.677		3.543		5.118		6.299		7.087	
K7	5		10		12		17		23		30	
	0.197		0.394		0.472		0.669		0.906		1.181	
K8	7		12		15		17		23		42	
	0.276		0.472		0.591		0.669		0.906		1.654	
K10	M5X11		M6X15		M8X19		M12X20		M12X22		M16X25	
K11	62		80		108		145		184		210	
	2.441		3.150		4.252		5.709		7.244		8.268	
K12	4		6		8		10					
	0.157		0.236		0.315		0.394					
K13	13.8		20.8		28.3		41.3					
	0.543		0.819		1.114		1.626					
C1	70		90		145		200		215	200	235	200
	2.756		3.543		5.709		7.874		8.465	7.874	9.252	7.874
C2	M5X12		M6X15		M8X20		M12X25		M12X25	M12X25	M12X25	
C3	14		19		24		35		42	35	55	35
	0.551		0.748		0.945		1.378		1.654	1.378	2.165	1.378
C4	32.1		41.6		61.3		82		82.5	82	115.5	82
	1.264		1.638		2.413		3.228		3.248	3.228	4.547	3.228
C5	50		70		110		114.3		180	114.3	200	114.3
	1.969		2.756		4.331		4.500		7.087	4.500	7.874	4.500
C6	6.5		6.5		8		8		8	8	8	
	0.256		0.256		0.315		0.315		0.315	0.315	0.315	
C7	70		89		120		175		190	175	220	175
	2.756		3.504		4.724		6.890		7.480	6.890	8.661	6.890

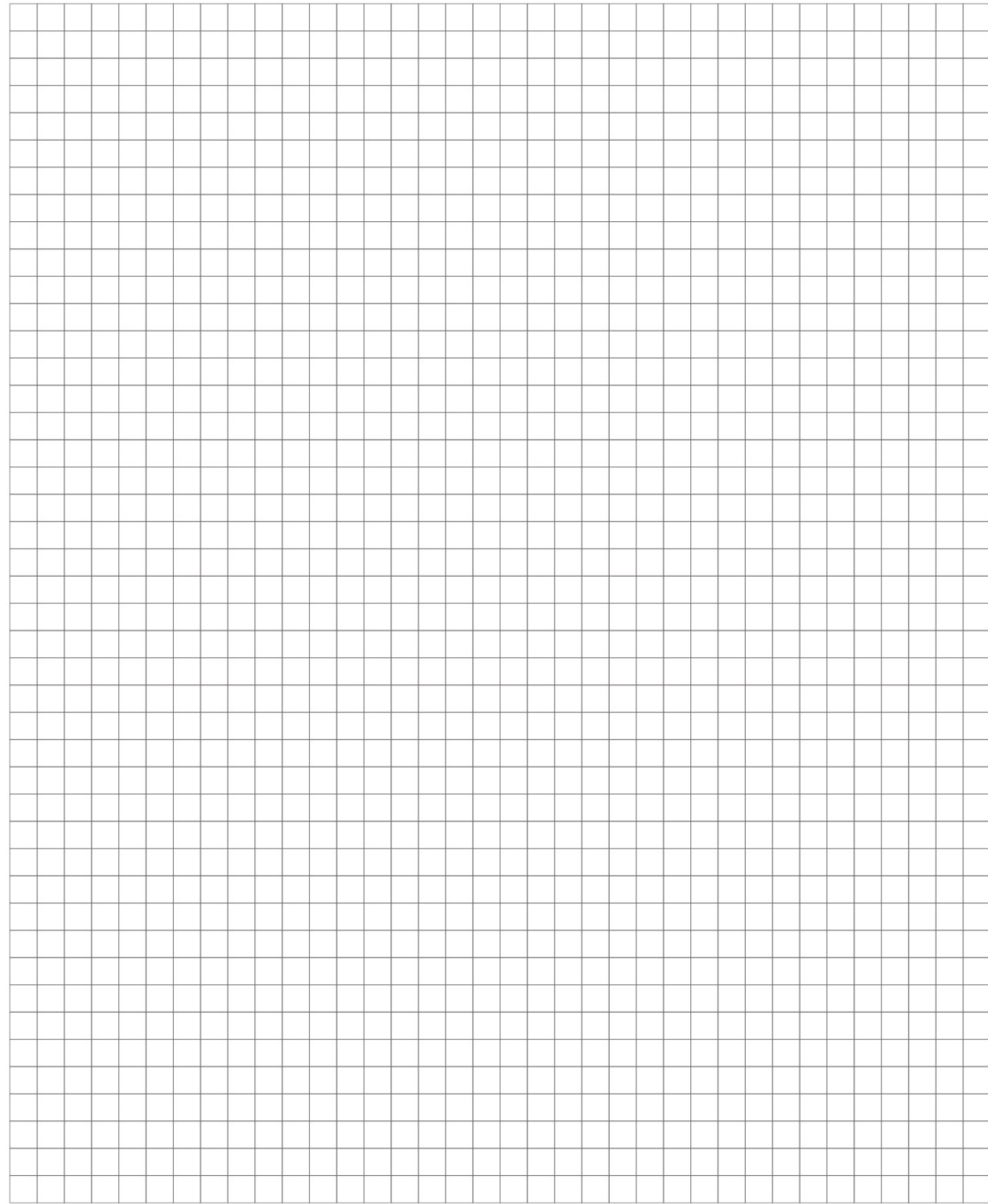
The dimensions modified as per the applied motor flanges.  
 You can get the specific gearbox drawing solution by KDP(Kofon Design Programme) on line from our website: [www.kofon-motion.com](http://www.kofon-motion.com)

Technical Memo





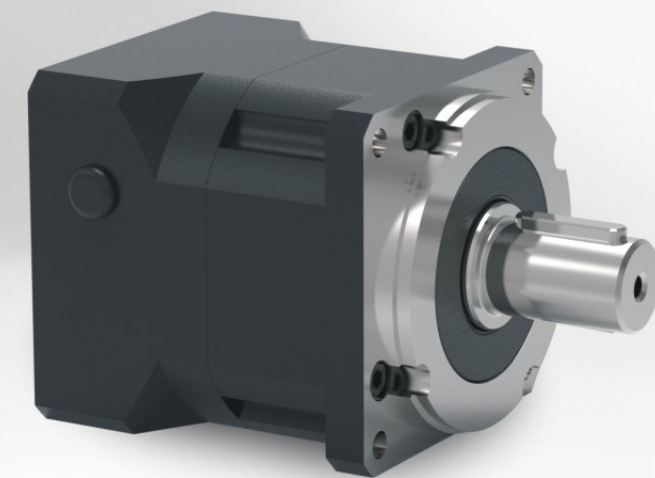
Technical Memo

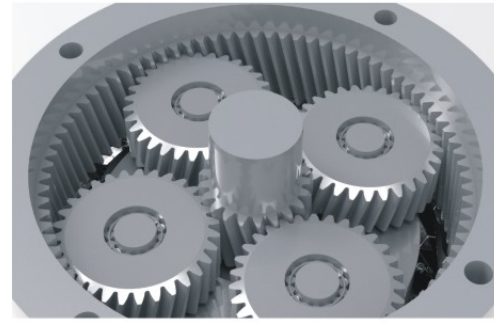


# KPX

Powerful. High Precision. Reliable

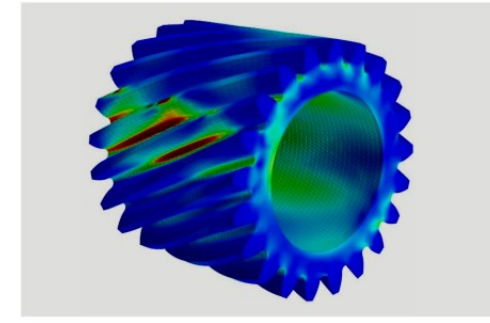
- ▶ Servo Planetary Gearbox
- Advanced Gearbox Solution





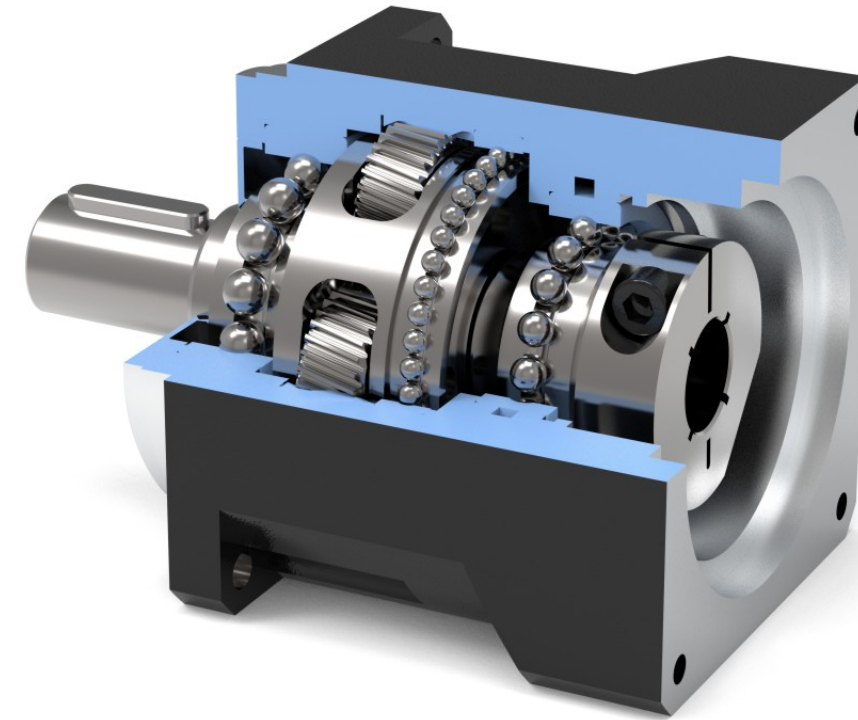
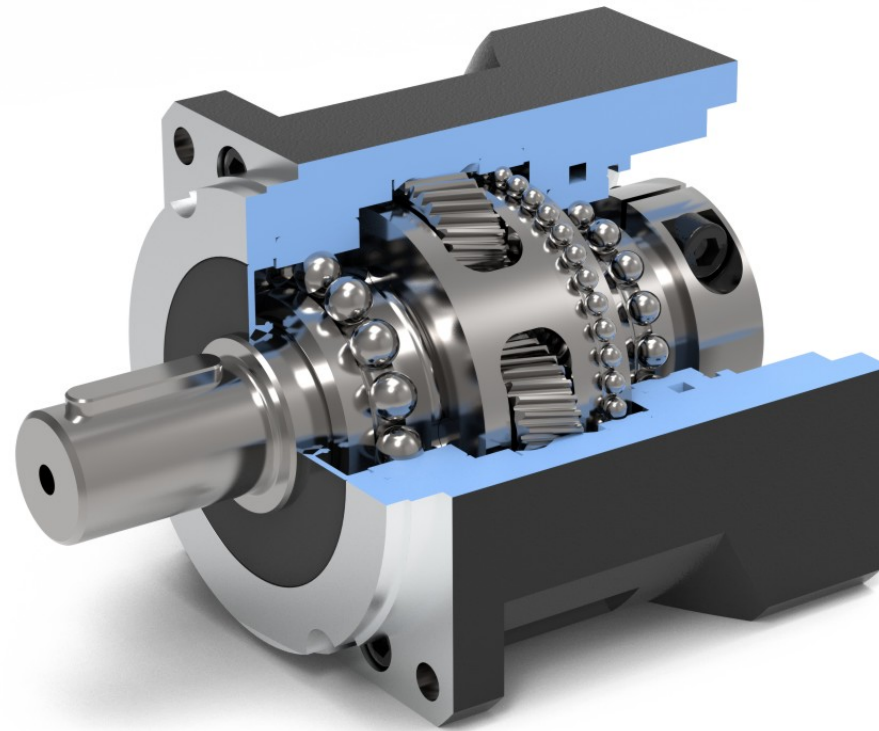
**Helical Gear System Technology**

Thanks to the tooth to tooth compact ratio more than 60%. The helical gearing and full needle bearing bring the benefits including higher torque capacity, smooth and lower noise running, decreased backlash and higher efficiency.



**Super Gear Grinding and Heat Treatment Technology**

The global leading gear grinding technology brings the great improvement for the tooth profile optimization, with the high level carburizing and quenching heat treatment technology to reach high precision and gear harden performance.



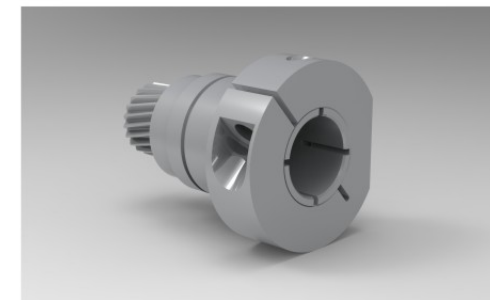
KPX Series Servo Planetary Gearbox

KPX Series Servo Planetary Gearbox



**Master CageSpindle Planetary Carrier**

The patented Master CageSpindle integrated planetary carrier support planetary gearbox to increase constructional strength running stability and rigidity significantly. Synthetic grease lubrication allows maintenance free for gearbox whole service life.



**Dynamic Balance Clamping and Sealing System**

For the gearbox input dynamic balance clamping design with perfect concentricity to decrease backlash and increase gearbox operation stability. The ultra sealing system offers grease leakage protection and support gearbox to reach IP65.





KPX045 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	20	21	21	20	19	18	14	14	
		in.lb	177	186	186	177	168	159	124	124	
Emergency Stop Torque	$T_{2Not}$	Nm	60	60	63	60	57	54	42	42	
		in.lb	531	531	558	531	504	478	372	372	
Maximum Acceleration Torque	$T_{2B}$	Nm	36	37.8	37.8	36	34.2	32.4	25.2	25.2	
		in.lb	319	335	335	319	303	287	223	223	
Maximum Torque	$T_{2a}$	Nm	40	42	42	40	38	36	28	28	
		in.lb	354	372	372	354	336	319	248	248	
Permitted Average Input Speed	$n_{1N}$	rpm	4000								
Maximum Input Speed	$n_{1Max}$	rpm	8000								
Mean No Load Running Torque	$T_{012}$	Nm	0.11	0.1	0.09	0.09	0.08	0.08	0.08	0.08	
		in.lb	0.97	0.89	0.80	0.80	0.71	0.71	0.71	0.71	
Standard Backlash P1	$j_i$	arcmin	≤ 8								
Reduced Low Backlash P0	$j_i$	arcmin	≤ 5								
Torsional Rigidity	$C_{021}$	Nm/arcmin	3	3	3	2.85	2.85	2.85	2.85	2.85	
		in.lb/arcmin	26.55	26.55	26.55	25.22	25.22	25.22	25.22	25.22	
Maximum Radial Load	$F_{2AMax}$	N	770								
		lb <sub>r</sub>	173								
Maximum Axial Load	$F_{2OMax}$	N	380								
		lb <sub>r</sub>	85								
Max. Tilting Moment	$M_{2KMax}$	Nm	25								
		in.lb	220								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.031	0.022	0.019	0.017	0.017	0.017	0.017	0.017	
Operating Noise Level	$L_{PA}$	dB(A)	< 56								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	0.6								
		lb <sub>m</sub>	1.3								

KPX045 2-stage

		2-stage																
Ratio	i		12	15	16	20	25	30	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	20	20	21	21	21	20	21	21	21	21	20	18	18	14	14	
		in.lb	177	177	186	186	186	177	186	186	186	186	177	159	159	124	124	
Emergency Stop Torque	$T_{2Not}$	Nm	60	60	63	63	63	60	63	63	63	63	60	54	54	42	42	
		in.lb	531	531	558	558	558	531	558	558	558	558	531	478	478	372	372	
Maximum Acceleration Torque	$T_{2B}$	Nm	36	36	37.8	37.8	37.8	36	37.8	37.8	37.8	37.8	36	32.4	32.4	25.2	25.2	
		in.lb	319	319	335	335	335	319	335	335	335	335	319	287	287	223	223	
Maximum Torque	$T_{2a}$	Nm	40	40	42	42	42	40	42	42	42	42	40	36	36	28	28	
		in.lb	354	354	372	372	372	354	372	372	372	372	354	319	319	248	248	
Permitted Average Input Speed	$n_{1N}$	rpm	4000															
Maximum Input Speed	$n_{1Max}$	rpm	8000															
Mean No Load Running Torque	$T_{012}$	Nm	0.1	0.1	0.1	0.1	0.1	0.09	0.09	0.09	0.09	0.09	0.09	0.08	0.08	0.08	0.08	
		in.lb	0.89	0.89	0.89	0.89	0.89	0.80	0.80	0.80	0.80	0.80	0.80	0.71	0.71	0.71	0.71	
Standard Backlash P1	$j_i$	arcmin	≤ 11															
Reduced Low Backlash P0	$j_i$	arcmin	≤ 8															
Torsional Rigidity	$C_{021}$	Nm/arcmin	3	3	3	3	3	3	3	3	3	3	2.85	2.85	2.85	2.85		
		in.lb/arcmin	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	25.22	25.22	25.22		
Maximum Radial Load	$F_{2AMax}$	N	770															
		lb <sub>r</sub>	173															
Maximum Axial Load	$F_{2OMax}$	N	380															
		lb <sub>r</sub>	85															
Max. Tilting Moment	$M_{2KMax}$	Nm	40															
		in.lb	352															
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.029	0.027	0.022	0.019	0.017	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016		
Operating Noise Level	$L_{PA}$	dB(A)	< 56															
Efficiency at Full loading	$\eta$	%	95															
Operating Temperature		°C	-25 to +90															
		F	-13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)															
Weight	$m$	kg	0.9															
		lb <sub>m</sub>	2															



KPX065 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	46	52	55	50	50	45	42	42	
		in.lb	407	460	487	443	443	398	372	372	
Emergency Stop Torque	$T_{2Not}$	Nm	138	156	165	150	150	135	126	126	
		in.lb	1221	1381	1460	1328	1328	1195	1115	1115	
Maximum Acceleration Torque	$T_{2B}$	Nm	82.8	93.6	99	90	90	81	75.6	75.6	
		in.lb	733	828	876	797	797	717	669	669	
Maximum Torque	$T_{2a}$	Nm	92	104	110	100	100	90	84	84	
		in.lb	814	920	974	885	885	797	743	743	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	6000								
Mean No Load Running Torque	$T_{012}$	Nm	0.24	0.2	0.17	0.15	0.15	0.15	0.15	0.15	
		in.lb	2.12	1.77	1.50	1.33	1.33	1.33	1.33	1.33	
Standard Backlash P1	$j_i$	arcmin	≤ 6								
Reduced Low Backlash P0	$j_i$	arcmin	≤ 3								
Torsional Rigidity	$C_{021}$	Nm/arcmin	7	7	7	6.5	6.5	6.5	6.5	6.5	
		in.lb/arcmin	61.95	61.95	61.95	57.53	57.53	57.53	57.53	57.53	
Maximum Radial Load	$F_{2AMax}$	N	1500								
		lb <sub>r</sub>	337								
Maximum Axial Load	$F_{2OMax}$	N	760								
		lb <sub>r</sub>	171								
Max. Tilting Moment	$M_{2KMax}$	Nm	40								
		in.lb	352								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.16	0.14	0.13	0.13	0.13	0.13	0.13	0.13	
Operating Noise Level	$L_{PA}$	dB(A)	< 58								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	1.4								
		lb <sub>m</sub>	3.1								

KPX065 2-stage

		2-stage																	
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	56	50	52	55	55	46	52	55	55	55	55	50	45	45	42	42	
		in.lb	496	443	460	487	487	407	460	487	487	487	487	487	443	398	398	372	372
Emergency Stop Torque	$T_{2Not}$	Nm	168	150	156	165	165	138	156	165	165	165	165	150	135	135	126	126	
		in.lb	1487	1328	1381	1460	1460	1221	1381	1460	1460	1460	1460	1460	1328	1195	1195	1115	1115
Maximum Acceleration Torque	$T_{2B}$	Nm	100.8	90	93.6	99	99	82.8	93.6	99	99	99	99	90	81	81	75.6	75.6	
		in.lb	892	797	828	876	876	733	828	876	876	876	876	876	797	717	717	669	669
Maximum Torque	$T_{2a}$	Nm	112	100	104	110	110	92	104	110	110	110	110	100	90	90	84	84	
		in.lb	991	885	920	974	974	814	920	974	974	974	974	974	885	797	797	743	743
Permitted Average Input Speed	$n_{1N}$	rpm	3000																
Maximum Input Speed	$n_{1Max}$	rpm	6000																
Mean No Load Running Torque	$T_{012}$	Nm	0.2	0.17	0.2	0.17	0.17	0.15	0.2	0.15	0.15	0.15	0.15	0.17	0.15	0.15	0.15	0.15	
		in.lb	1.77	1.50	1.77	1.50	1.50	1.33	1.77	1.33	1.33	1.33	1.33	1.50	1.33	1.33	1.33	1.33	
Standard Backlash P1	$j_i$	arcmin	≤ 8																
Reduced Low Backlash P0	$j_i$	arcmin	≤ 5																
Torsional Rigidity	$C_{021}$	Nm/arcmin	7	7	7	7	7	7	7	7	7	7	7	6.5	6.5	6.5	6.5		
		in.lb/arcmin	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	57.53	57.53	57.53	57.53	
Maximum Radial Load	$F_{2AMax}$	N	1500																
		lb <sub>r</sub>	337																
Maximum Axial Load	$F_{2OMax}$	N	760																
		lb <sub>r</sub>	171																
Max. Tilting Moment	$M_{2KMax}$	Nm	80																
		in.lb	704																
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.127	0.124	0.12	0.075	0.075	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.075	0.064	0.064	
Operating Noise Level	$L_{PA}$	dB(A)	< 58																
Efficiency at Full loading	$\eta$	%	95																
Operating Temperature		°C	-25 to +90																
		F	-13 to +194																
Lubrication			Synthetic Lubrication Grease																
Mouting Position			Any Directions																
Protection Class			IP 65																
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																
Weight	$m$	kg	1.6																
		lb <sub>m</sub>	3.5																

KPX085 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	125	145	155	145	135	115	105	105	
		in.lb	1106	1283	1372	1283	1195	1018	929	929	
Emergency Stop Torque	$T_{2Not}$	Nm	375	435	465	435	405	345	315	315	
		in.lb	3319	3850	4116	3850	3585	3053	2788	2788	
Maximum Acceleration Torque	$T_{2B}$	Nm	225	261	279	261	243	207	189	189	
		in.lb	1991	2310	2469	2310	2151	1832	1673	1673	
Maximum Torque	$T_{2a}$	Nm	250	290	310	290	270	230	210	210	
		in.lb	2213	2567	2744	2567	2390	2036	1859	1859	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	6000								
Mean No Load Running Torque	$T_{012}$	Nm	0.38	0.36	0.31	0.29	0.25	0.25	0.25	0.25	
		in.lb	3.36	3.19	2.74	2.57	2.21	2.21	2.21	2.21	
Standard Backlash P1	$j_1$	arcmin	≤ 6								
Reduced Low Backlash P0	$j_1$	arcmin	≤ 3								
Torsional Rigidity	$C_{021}$	Nm/arcmin	14	14	14	13	13	13	13	13	
		in.lb/arcmin	123.91	123.91	123.91	115.06	115.06	115.06	115.06	115.06	
Maximum Radial Load	$F_{2AMax}$	N	3200								
		lb <sub>r</sub>	719								
Maximum Axial Load	$F_{2OMax}$	N	1600								
		lb <sub>r</sub>	360								
Max. Tilting Moment	$M_{2KMax}$	Nm	90								
		in.lb	792								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.61	0.48	0.47	0.47	0.47	0.45	0.44	0.44	
Operating Noise Level	$L_{PA}$	dB(A)	< 60								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	3.3								
		lb <sub>m</sub>	7.3								

KPX085 2-stage

		2-stage																	
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	125	125	145	145	155	125	145	155	155	155	155	145	115	115	105	105	
		in.lb	1106	1106	1283	1283	1372	1106	1283	1372	1372	1372	1372	1283	1018	1018	929	929	
Emergency Stop Torque	$T_{2Not}$	Nm	375	375	435	435	465	375	435	465	465	465	465	435	345	345	315	315	
		in.lb	3319	3319	3850	3850	4116	3319	3850	4116	4116	4116	4116	3850	3053	3053	2788	2788	
Maximum Acceleration Torque	$T_{2B}$	Nm	225	225	261	261	279	225	261	279	279	279	279	261	207	207	189	189	
		in.lb	1991	1991	2310	2310	2469	1991	2310	2469	2469	2469	2469	2310	1832	1832	1673	1673	
Maximum Torque	$T_{2a}$	Nm	250	250	290	290	310	250	290	310	310	310	310	290	230	230	210	210	
		in.lb	2213	2213	2567	2567	2744	2213	2567	2744	2744	2744	2744	2567	2036	2036	1859	1859	
Permitted Average Input Speed	$n_{1N}$	rpm	3000																
Maximum Input Speed	$n_{1Max}$	rpm	6000																
Mean No Load Running Torque	$T_{012}$	Nm	0.36	0.31	0.36	0.31	0.31	0.31	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	
		in.lb	3.19	2.74	3.19	2.74	2.74	2.74	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	
Standard Backlash P1	$j_1$	arcmin	≤ 8																
Reduced Low Backlash P0	$j_1$	arcmin	≤ 5																
Torsional Rigidity	$C_{021}$	Nm/arcmin	14	14	14	14	14	14	14	14	14	14	14	13	13	13	13	13	
		in.lb/arcmin	123.91	123.91	123.91	123.91	123.91	123.91	123.91	123.91	123.91	123.91	123.91	115.06	115.06	115.06	115.06	115.06	
Maximum Radial Load	$F_{2AMax}$	N	3200																
		lb <sub>r</sub>	719																
Maximum Axial Load	$F_{2OMax}$	N	1600																
		lb <sub>r</sub>	360																
Max. Tilting Moment	$M_{2KMax}$	Nm	200																
		in.lb	1760																
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.44	0.44	0.43	0.44	0.44	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39		
Operating Noise Level	$L_{PA}$	dB(A)	< 60																
Efficiency at Full loading	$\eta$	%	95																
Operating Temperature		°C	-25 to +90																
		F	-13 to +194																
Lubrication			Synthetic Lubrication Grease																
Mouting Position			Any Directions																
Protection Class			IP 65																
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																
Weight	$m$	kg	4.5																
		lb <sub>m</sub>	9.9																



KPX115 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	210	300	320	300	290	255	220	220	
		in.lb	1859	2655	2832	2655	2567	2257	1947	1947	
Emergency Stop Torque	$T_{2Not}$	Nm	630	900	960	900	870	765	660	660	
		in.lb	5576	7966	8497	7966	7700	6771	5841	5841	
Maximum Acceleration Torque	$T_{2B}$	Nm	378	540	576	540	522	459	396	396	
		in.lb	3346	4779	5098	4779	4620	4062	3505	3505	
Maximum Torque	$T_{2a}$	Nm	420	600	640	600	580	510	440	440	
		in.lb	3717	5310	5664	5310	5133	4514	3894	3894	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	6000								
Mean No Load Running Torque	$T_{012}$	Nm	1	0.95	0.85	0.81	0.78	0.78	0.78	0.78	
		in.lb	8.85	8.41	7.52	7.17	6.90	6.90	6.90	6.90	
Standard Backlash P1	$j_1$	arcmin	≤ 6								
Reduced Low Backlash P0	$j_1$	arcmin	≤ 3								
Torsional Rigidity	$C_{021}$	Nm/arcmin	25	25	25	23	23	23	23	23	
		in.lb/arcmin	221.27	221.27	221.27	203.57	203.57	203.57	203.57	203.57	
Maximum Radial Load	$F_{2AMax}$	N	6700								
		lb <sub>f</sub>	1506								
Maximum Axial Load	$F_{2OMax}$	N	3300								
		lb <sub>f</sub>	742								
Max. Tilting Moment	$M_{2KMax}$	Nm	150								
		in.lb	1320								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	3.25	2.74	2.71	2.62	2.62	2.62	2.62	2.57	
Operating Noise Level	$L_{PA}$	dB(A)	< 63								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	5.5								
		lb <sub>m</sub>	12.1								

KPX115 2-stage

		2-stage																	
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	310	310	300	300	320	210	305	320	320	320	320	300	255	255	220	220	
		in.lb	2744	2744	2655	2655	2832	1859	2699	2832	2832	2832	2832	2655	2257	2257	1947	1947	
Emergency Stop Torque	$T_{2Not}$	Nm	930	930	900	900	960	630	915	960	960	960	960	900	765	765	660	660	
		in.lb	8231	8231	7966	7966	8497	5576	8098	8497	8497	8497	8497	7966	6771	6771	5841	5841	
Maximum Acceleration Torque	$T_{2B}$	Nm	558	558	540	540	576	378	549	576	576	576	576	540	459	459	396	396	
		in.lb	4939	4939	4779	4779	5098	3346	4859	5098	5098	5098	5098	4779	4062	4062	3505	3505	
Maximum Torque	$T_{2a}$	Nm	620	620	600	600	640	420	610	640	640	640	640	600	510	510	440	440	
		in.lb	5487	5487	5310	5310	5664	3717	5399	5664	5664	5664	5664	5310	4514	4514	3894	3894	
Permitted Average Input Speed	$n_{1N}$	rpm	3000																
Maximum Input Speed	$n_{1Max}$	rpm	6000																
Mean No Load Running Torque	$T_{012}$	Nm	0.95	0.85	0.95	0.85	0.85	0.81	0.78	0.78	0.78	0.78	0.78	0.81	0.78	0.78	0.78	0.78	
		in.lb	8.41	7.52	8.41	7.52	7.52	7.17	6.90	6.90	6.90	6.90	6.90	7.17	6.90	6.90	6.90	6.90	
Standard Backlash P1	$j_1$	arcmin	≤ 8																
Reduced Low Backlash P0	$j_1$	arcmin	≤ 5																
Torsional Rigidity	$C_{021}$	Nm/arcmin	25	25	25	25	25	25	25	25	25	25	25	23	23	23	23	23	
		in.lb/arcmin	221.27	221.27	221.27	221.27	221.27	221.27	221.27	221.27	221.27	221.27	221.27	203.57	203.57	203.57	203.57	203.57	
Maximum Radial Load	$F_{2AMax}$	N	6700																
		lb <sub>f</sub>	1506																
Maximum Axial Load	$F_{2OMax}$	N	3300																
		lb <sub>f</sub>	742																
Max. Tilting Moment	$M_{2KMax}$	Nm	400																
		in.lb	3520																
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	2.56	2.58	1.75	1.5	1.49	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.5	1.3	1.3	1.3	
Operating Noise Level	$L_{PA}$	dB(A)	< 63																
Efficiency at Full loading	$\eta$	%	95																
Operating Temperature		°C	-25 to +90																
		F	-13 to +194																
Lubrication			Synthetic Lubrication Grease																
Mouting Position			Any Directions																
Protection Class			IP 65																
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																
Weight	$m$	kg	8																
		lb <sub>m</sub>	17.6																

KPX142 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	450	550	650	610	540	510	440	440	
		in.lb	3983	4868	5753	5399	4779	4514	3894	3894	
Emergency Stop Torque	$T_{2Not}$	Nm	1350	1650	1950	1830	1620	1530	1320	1320	
		in.lb	11948	14604	17259	16197	14338	13542	11683	11683	
Maximum Acceleration Torque	$T_{2a}$	Nm	810	990	1170	1098	972	918	792	792	
		in.lb	7169	8762	10355	9718	8603	8125	7010	7010	
Maximum Torque	$T_{2a}$	Nm	900	1100	1300	1220	1080	1020	880	880	
		in.lb	7966	9736	11506	10798	9559	9028	7789	7789	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	6000								
Mean No Load Running Torque	$T_{012}$	Nm	2.55	2.45	2.3	2.2	2.2	2.2	2.2	2.2	
		in.lb	22.57	21.68	20.36	19.47	19.47	19.47	19.47	19.47	
Standard Backlash P1	$j_1$	arcmin	≤ 6								
Reduced Low Backlash P0	$j_1$	arcmin	≤ 3								
Torsional Rigidity	$C_{021}$	Nm/arcmin	50	50	50	45	45	45	45	45	
		in.lb/arcmin	442.54	442.54	442.54	398.28	398.28	398.28	398.28	398.28	
Maximum Radial Load	$F_{2AMax}$	N	9600								
		lb <sub>r</sub>	2158								
Maximum Axial Load	$F_{2OMax}$	N	4800								
		lb <sub>r</sub>	1079								
Max. Tilting Moment	$M_{2KMax}$	Nm	480								
		in.lb	4224								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	12.31	7.54	7.42	7.25	7.25	7.14	7.14	7.14	
Operating Noise Level	$L_{PA}$	dB(A)	< 65								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	20								
		lb <sub>m</sub>	44.1								

KPX142 2-stage

		2-stage																	
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	500	500	550	650	650	450	550	650	550	650	650	610	510	440	440	440	
		in.lb	4425	4425	4868	5753	5753	3983	4868	5753	4868	5753	5753	5399	4514	4514	3894	3894	
Emergency Stop Torque	$T_{2Not}$	Nm	1500	1500	1650	1950	1950	1350	1650	1950	1650	1950	1950	1830	1530	1320	1320		
		in.lb	13276	13276	14604	17259	17259	11948	14604	17259	14604	17259	17259	16197	13542	13542	11683	11683	
Maximum Acceleration Torque	$T_{2a}$	Nm	900	900	990	1170	1170	810	990	1170	990	1170	1170	1098	918	792	792		
		in.lb	7966	7966	8762	10355	10355	7169	8762	10355	8762	10355	10355	9718	8125	7010	7010		
Maximum Torque	$T_{2a}$	Nm	1000	1000	1100	1300	1300	900	1100	1300	1100	1300	1300	1220	1020	880	880		
		in.lb	8851	8851	9736	11506	11506	7966	9736	11506	9736	11506	11506	10798	9028	7789	7789		
Permitted Average Input Speed	$n_{1N}$	rpm	3000																
Maximum Input Speed	$n_{1Max}$	rpm	6000																
Mean No Load Running Torque	$T_{012}$	Nm	2.45	2.3	2.45	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	
		in.lb	21.68	20.36	21.68	20.36	20.36	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	
Standard Backlash P1	$j_1$	arcmin	≤ 8																
Reduced Low Backlash P0	$j_1$	arcmin	≤ 5																
Torsional Rigidity	$C_{021}$	Nm/arcmin	50	50	50	50	50	50	50	50	50	50	50	45	45	45	45		
		in.lb/arcmin	442.54	442.54	442.54	442.54	442.54	442.54	442.54	442.54	442.54	442.54	442.54	398.28	398.28	398.28	398.28		
Maximum Radial Load	$F_{2AMax}$	N	9600																
		lb <sub>r</sub>	2158																
Maximum Axial Load	$F_{2OMax}$	N	4800																
		lb <sub>r</sub>	1079																
Max. Tilting Moment	$M_{2KMax}$	Nm	850																
		in.lb	7480																
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	12.35	12.35	7.47	6.65	5.81	6.34	6.34	5.36	4.08	5.36	4.08	7.40	7.50	7.40	7.40		
Operating Noise Level	$L_{PA}$	dB(A)	< 65																
Efficiency at Full loading	$\eta$	%	95																
Operating Temperature		°C	-25 to +90																
		F	-13 to +194																
Lubrication			Synthetic Lubrication Grease																
Mouting Position			Any Directions																
Protection Class			IP 65																
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																
Weight	$m$	kg	25																
		lb <sub>m</sub>	55.1																

KPX Series Servo Planetary Gearbox

KPX Series Servo Planetary Gearbox



KPX180 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	650	1250	1200	1000	1000	1000	910	910	
		in.lb	5753	11063	10621	8851	8851	8851	8054	8054	
Emergency Stop Torque	$T_{2Not}$	Nm	1950	3750	3600	3000	3000	3000	2730	2730	
		in.lb	17259	33190	31863	26552	26552	26552	24162	24162	
Maximum Acceleration Torque	$T_{2B}$	Nm	1170	2250	2160	1800	1800	1800	1638	1638	
		in.lb	10355	19914	19118	15931	15931	15931	14497	14497	
Maximum Torque	$T_{2a}$	Nm	1300	2500	2400	2000	2000	2000	1820	1820	
		in.lb	11506	22127	21242	17701	17701	17701	16108	16108	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	4000								
Mean No Load Running Torque	$T_{012}$	Nm	3.5	3.3	3.15	3	3	3	3	3	
		in.lb	30.98	29.21	27.88	26.55	26.55	26.55	26.55	26.55	
Standard Backlash P1	$j_1$	arcmin	≤ 6								
Reduced Low Backlash P0	$j_1$	arcmin	≤ 3								
Torsional Rigidity	$C_{21}$	Nm/arcmin	140	140	140	140	130	130	130	130	
		in.lb/arcmin	1239.1	1239.1	1239.1	1239.1	1150.6	1150.6	1150.6	1150.6	
Maximum Radial Load	$F_{2AMax}$	N	14000								
		lb <sub>r</sub>	3147								
Maximum Axial Load	$F_{2OMax}$	N	7000								
		lb <sub>r</sub>	1574								
Max. Tilting Moment	$M_{2KMax}$	Nm	1300								
		in.lb	11440								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	28.98	23.67	22.75	22.48	22.48	22.59	22.59	22.55	
Operating Noise Level	$L_{PA}$	dB(A)	< 67								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	31								
		lb <sub>m</sub>	68.3								

KPX180 2-stage

		2-stage																		
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100		
Nominal Output Torque		Nm	650	850	1250	1200	1200	650	1250	1200	1200	1200	1200	1000	1000	1000	910	910		
		in.lb	5753	7523	11063	10621	10621	5753	11063	10621	10621	10621	10621	8851	8851	8851	8054	8054		
Emergency Stop Torque	$T_{2Not}$	Nm	1950	2550	3750	3600	3600	1950	3750	3600	3600	3600	3600	3000	3000	3000	2730	2730		
		in.lb	17259	22569	33190	31863	31863	17259	33190	31863	31863	31863	31863	26552	26552	26552	24162	24162		
Maximum Acceleration Torque	$T_{2B}$	Nm	1170	1530	2250	2160	2160	1170	2250	2160	2160	2160	2160	1800	1800	1800	1638	1638		
		in.lb	10355	13542	19914	19118	19118	10355	19914	19118	19118	19118	19118	15931	15931	15931	14497	14497		
Maximum Torque	$T_{2a}$	Nm	1300	1700	2500	2400	2400	1300	2500	2400	2400	2400	2400	2000	2000	2000	1820	1820		
		in.lb	11506	15046	22127	21242	21242	11506	22127	21242	21242	21242	21242	17701	17701	17701	16108	16108		
Permitted Average Input Speed	$n_{1N}$	rpm	3000																	
Maximum Input Speed	$n_{1Max}$	rpm	4000																	
Mean No Load Running Torque	$T_{012}$	Nm	2.45	2.3	2.45	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2		
		in.lb	21.68	20.36	21.68	20.36	20.36	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47		
Standard Backlash P1	$j_1$	arcmin	≤ 8																	
Reduced Low Backlash P0	$j_1$	arcmin	≤ 5																	
Torsional Rigidity	$C_{21}$	Nm/arcmin	140	140	140	140	140	140	140	140	140	140	140	130	130	130	130	130		
		in.lb/arcmin	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1239.1	1150.6	1150.6	1150.6	1150.6			
Maximum Radial Load	$F_{2AMax}$	N	14000																	
		lb <sub>r</sub>	3147																	
Maximum Axial Load	$F_{2OMax}$	N	7000																	
		lb <sub>r</sub>	1574																	
Max. Tilting Moment	$M_{2KMax}$	Nm	1280																	
		in.lb	11264																	
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	12.35	12.30	7.54	7.42	7.54	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14			
Operating Noise Level	$L_{PA}$	dB(A)	< 67																	
Efficiency at Full loading	$\eta$	%	95																	
Operating Temperature		°C	-25 to +90																	
		F	-13 to +194																	
Lubrication			Synthetic Lubrication Grease																	
Mouting Position			Any Directions																	
Protection Class			IP 65																	
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																	
Weight	$m$	kg	39																	
		lb <sub>m</sub>	86																	

KPX220 1-stage

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	1200	1800	2050	1850	1750	1550	1500	1500	
		in.lb	10621	15931	18144	16374	15489	13719	13276	13276	
Emergency Stop Torque	$T_{2Not}$	Nm	3600	5400	6150	5550	5250	4650	4500	4500	
		in.lb	31863	47794	54432	49121	46466	41156	39828	39828	
Maximum Acceleration Torque	$T_{2B}$	Nm	2160	3240	3690	3330	3150	2790	2700	2700	
		in.lb	19118	28676	32659	29473	27880	24693	23897	23897	
Maximum Torque	$T_{2a}$	Nm	2400	3600	4100	3700	3500	3100	3000	3000	
		in.lb	21242	31863	36288	32748	30977	27437	26552	26552	
Permitted Average Input Speed	$n_{1N}$	rpm	2000								
Maximum Input Speed	$n_{1Max}$	rpm	4000								
Mean No Load Running Torque	$T_{012}$	Nm	5.2	5	4.85	4.67	4.67	4.67	4.67	4.67	
		in.lb	46.02	44.25	42.93	41.33	41.33	41.33	41.33	41.33	
Standard Backlash P1	$j_1$	arcmin	≤ 6								
Reduced Low Backlash P0	$j_1$	arcmin	≤ 3								
Torsional Rigidity	$C_{021}$	Nm/arcmin	220	220	220	200	200	200	200	200	
		in.lb/arcmin	1947.2	1947.2	1947.2	1770.1	1770.1	1770.1	1770.1	1770.1	
Maximum Radial Load	$F_{2AMax}$	N	16000								
		lb <sub>r</sub>	3597								
Maximum Axial Load	$F_{2OMax}$	N	8000								
		lb <sub>r</sub>	1798								
Max. Tilting Moment	$M_{2KMax}$	Nm	1800								
		in.lb	15840								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	69.61	54.37	53.27	50.84	50.84	50.84	50.84	50.56	
Operating Noise Level	$L_{PA}$	dB(A)	< 70								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	53								
		lb <sub>m</sub>	117								

KPX220 2-stage

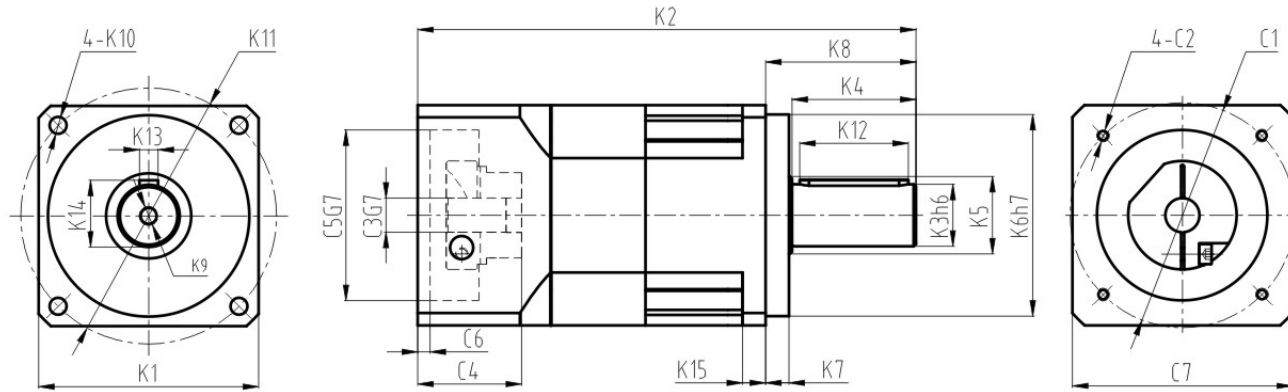
		2-stage																		
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100		
Nominal Output Torque		Nm	1200	1200	1800	2050	2050	1200	1800	2050	2050	2050	2050	1850	1550	1550	1500	1500		
		in.lb	10621	10621	15931	18144	18144	10621	15931	18144	18144	18144	18144	16374	13719	13719	13276	13276		
Emergency Stop Torque	$T_{2Not}$	Nm	3600	3600	5400	6150	6150	3600	5400	6150	6150	6150	6150	5550	4650	4650	4500	4500		
		in.lb	31863	31863	47794	54432	54432	31863	47794	54432	54432	54432	54432	49121	41156	41156	39828	39828		
Maximum Acceleration Torque	$T_{2B}$	Nm	2160	2160	3240	3690	3690	2160	3240	3690	3690	3690	3690	3330	2790	2790	2700	2700		
		in.lb	19118	19118	28676	32659	32659	19118	28676	32659	32659	32659	32659	29473	24693	24693	23897	23897		
Maximum Torque	$T_{2a}$	Nm	2400	2400	3600	4100	4100	2400	3600	4100	4100	4100	4100	3700	3100	3100	3000	3000		
		in.lb	21242	21242	31863	36288	36288	21242	31863	36288	36288	36288	36288	32748	27437	27437	26552	26552		
Permitted Average Input Speed	$n_{1N}$	rpm	2000																	
Maximum Input Speed	$n_{1Max}$	rpm	4000																	
Mean No Load Running Torque	$T_{012}$	Nm	3.3	3.15	3.3	3.15	3.15	3	3	3	3	3	3	3	3	3	3	3		
		in.lb	29.21	27.88	29.21	27.88	27.88	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55		
Standard Backlash P1	$j_1$	arcmin	≤ 8																	
Reduced Low Backlash P0	$j_1$	arcmin	≤ 5																	
Torsional Rigidity	$C_{021}$	Nm/arcmin	220	220	220	220	220	220	220	220	220	220	220	200	200	200	200	200		
		in.lb/arcmin	1947.2	1947.2	1947.2	1947.2	1947.2	1947.2	1947.2	1947.2	1947.2	1947.2	1947.2	1770.1	1770.1	1770.1	1770.1	1770.1		
Maximum Radial Load	$F_{2AMax}$	N	16000																	
		lb <sub>r</sub>	3597																	
Maximum Axial Load	$F_{2OMax}$	N	8000																	
		lb <sub>r</sub>	1798																	
Max. Tilting Moment	$M_{2KMax}$	Nm	2350																	
		in.lb	20680																	
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	28.98	28.92	23.67	22.75	22.75	22.59	22.59	22.59	22.59	22.59	22.59	22.59	22.59	22.59	22.59	22.59		
Operating Noise Level	$L_{PA}$	dB(A)	< 70																	
Efficiency at Full loading	$\eta$	%	95																	
Operating Temperature		°C	-25 to +90																	
		F	-13 to +194																	
Lubrication			Synthetic Lubrication Grease																	
Mouting Position			Any Directions																	
Protection Class			IP 65																	
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																	
Weight	$m$	kg	66																	
		lb <sub>m</sub>	145.5																	

KPX Series Servo Planetary Gearbox

KPX Series Servo Planetary Gearbox



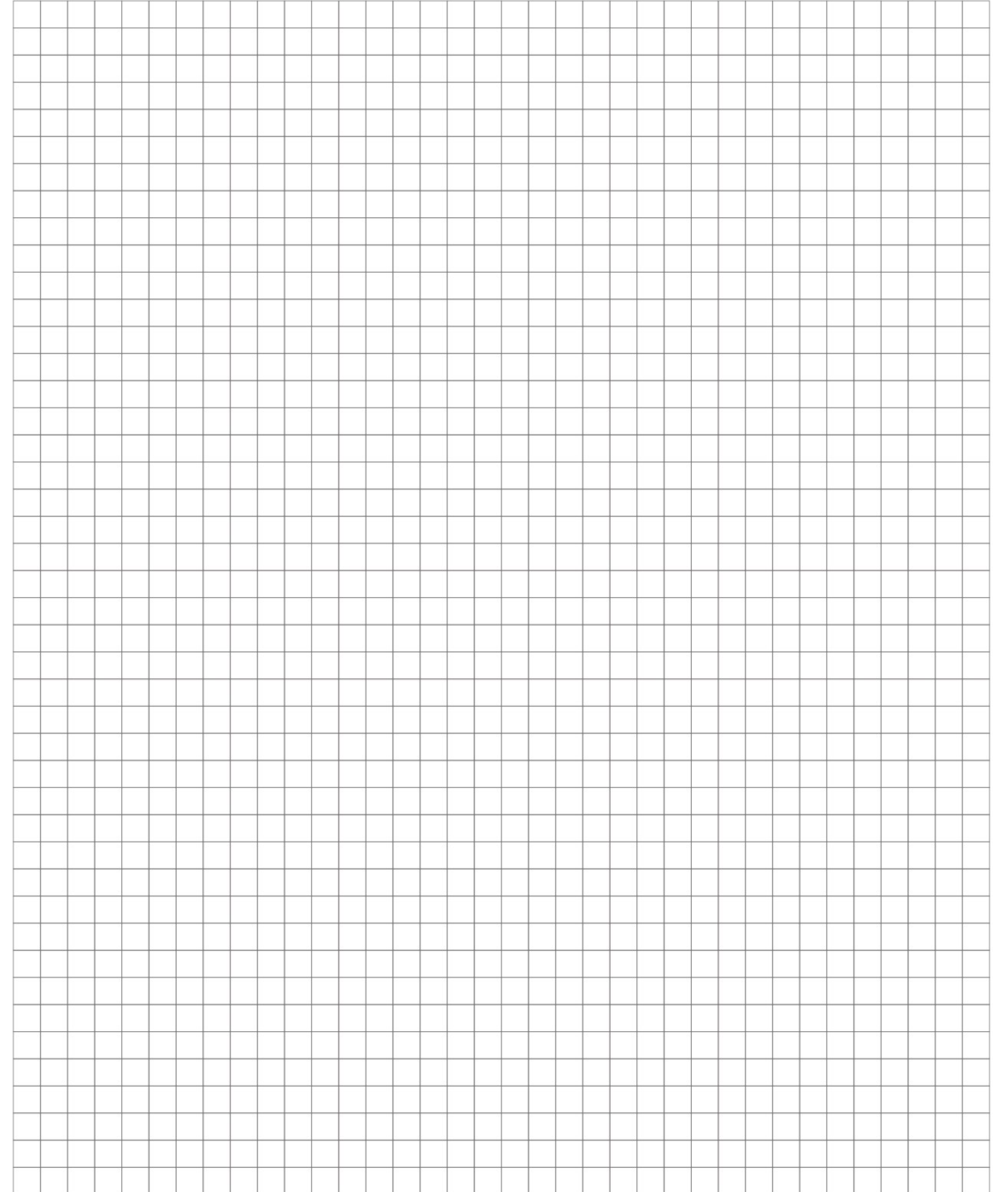
KPX Dimensions



Model	KPX045		KPX065		KPX085		KPX115		KPX142		KPX180		KPX220	
Stage	1	2	1	2	1	2	1	2	1	2	1	2	1	2
K1	45	65	85	110	142	180	220							
	1.772	2.559	3.346	4.331	5.591	7.087	8.661							
K2	88.5	103.5	115	138.7	138	169.3	198	239.8	275.5	336.5	288	348	357.5	402
	3.484	4.075	4.528	5.461	5.433	6.665	7.795	9.441	10.846	13.248	11.339	13.701	14.075	15.827
K3	12	16	22	32	40	55	75							
	0.472	0.630	0.866	1.260	1.575	2.165	2.953							
K4	23	30	36	50	80	82	105							
	0.906	1.181	1.417	1.969	3.150	3.228	4.134							
K5	15	20	30	40	50	60	85							
	0.591	0.787	1.181	1.575	1.969	2.362	3.346							
K6	35	50	80	110	130	160	180							
	1.378	1.969	3.150	4.331	5.118	6.299	7.087							
K7	4	5	10	12	15	20	30							
	0.157	0.197	0.394	0.472	0.591	0.787	1.181							
K8	28	37	48	65	97	105	138							
	1.102	1.457	1.890	2.559	3.819	4.134	5.433							
K9	M3X9	M5X12	M6X16	M10X22	M12X25	M20X40	M20X40							
K10	M4X10	5.5	6.5	9	11	13	17							
K11	50	70	100	130	165	215	250							
	1.969	2.756	3.937	5.118	6.496	8.465	9.843							
K12	16	22	28	40	70	70	90							
	0.630	0.866	1.102	1.575	2.756	2.756	3.543							
K13	4	5	6	10	12	16	20							
	0.157	0.197	0.236	0.394	0.472	0.630	0.787							
K14	13.5	18	24.5	35	43	59	79.5							
	0.531	0.709	0.965	1.378	1.693	2.323	3.130							
C1	46	70	90	145	200	215	200	235	215					
	1.811	2.756	3.543	5.709	7.874	8.465	7.874	9.252	8.465					
C2	M4X10	M5X12	M6X15	M8X20	M12X25	M12X25	M12X25	M12X25	M12X25					
C3	8	14	19	24	35	42	35	55	42					
	0.315	0.551	0.748	0.945	1.378	1.654	1.378	2.165	1.654					
C4	26.1	32.1	41.6	61.3	82	82.5	82	115.5	82.5					
	1.028	1.264	1.638	2.413	3.228	3.248	3.228	4.547	3.248					
C5	30	50	70	110	114.3	180	114.3	200	180					
	1.181	1.969	2.756	4.331	4.500	7.087	4.500	7.874	7.087					
C6	5	6.5	6.5	8	8	8	8	8	8					
	0.197	0.256	0.256	0.315	0.315	0.315	0.315	0.315	0.315					
C7	45	65	85	120	175	190	175	220	190					
	1.772	2.559	3.346	4.724	6.890	7.480	6.890	8.661	7.480					

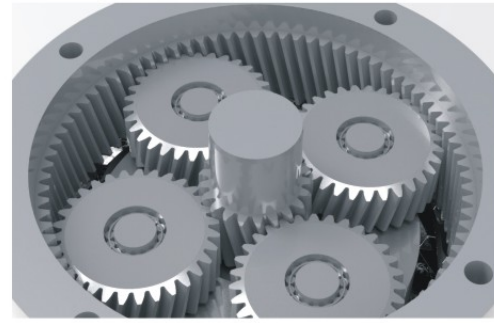
The dimensions modified as per the applied motor flanges.  
You can get the specific gearbox drawing solution by KDP(Kofon Design Programme) on line from our website: [www.kofon-motion.com](http://www.kofon-motion.com)

Technical Memo



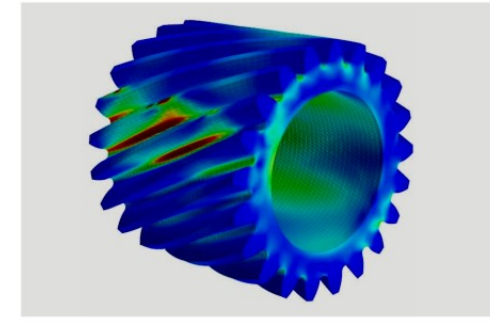






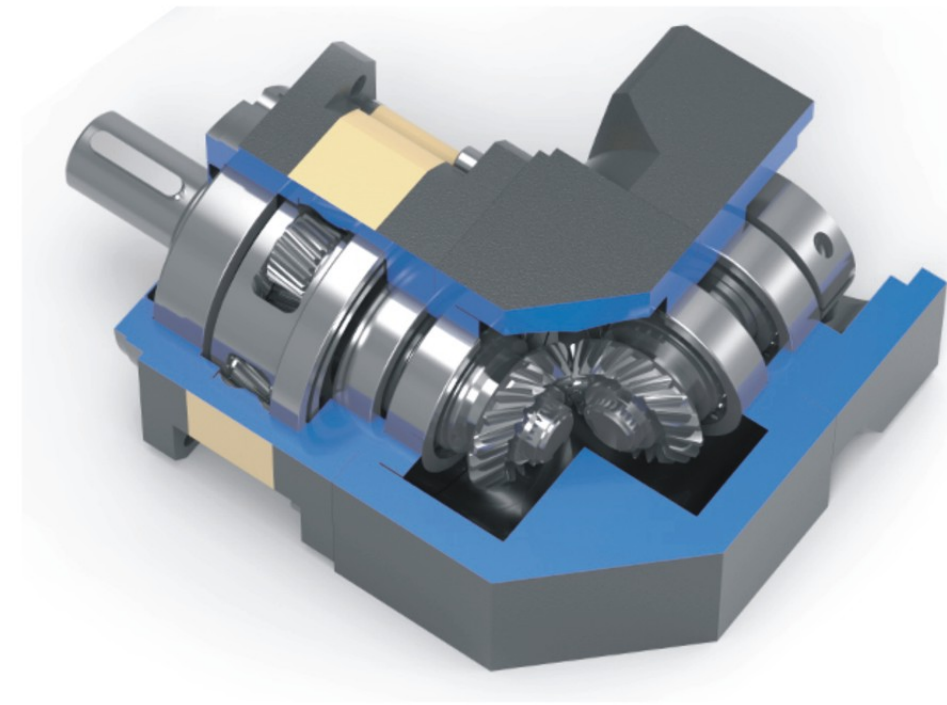
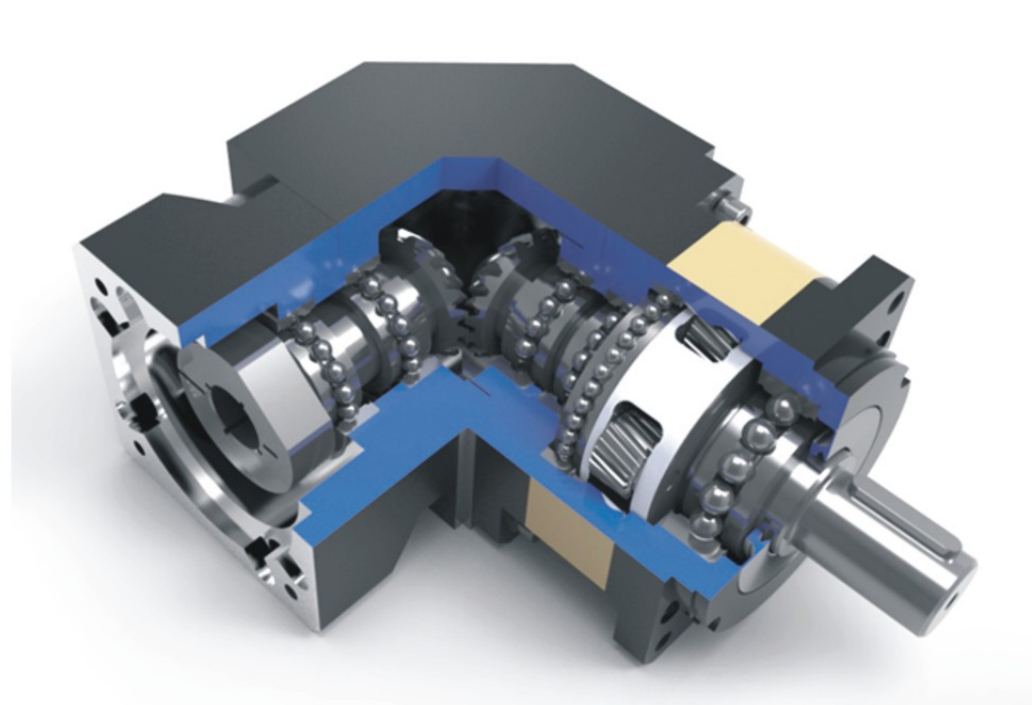
**Helical Gear System Technology**

Thanks to the tooth to tooth compact ratio more than 60%. The helical gearing and full needle bearing bring the benefits including higher torque capacity, smooth and lower noise running, decreased backlash and higher efficiency.



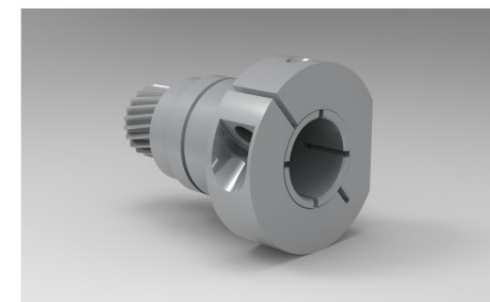
**Super Gear Grinding and Heat Treatment Technology**

The global leading gear grinding technology brings the great improvement for the tooth profile optimization, with the high level carburizing and quenching heat treatment technology to reach high precision and gear harden performance.



**Master CageSpindle Planetary Carrier**

The patented Master CageSpindle integrated planetary carrier support planetary gearbox to increase constructional strength running stability and rigidity significantly. Synthetic grease lubrication allows maintenance free for gearbox whole service life.



**Dynamic Balance Clamping and Sealing System**

For the gearbox input dynamic balance clamping design with perfect concentricity to decrease backlash and increase gearbox operation stability. The ultra sealing system offers grease leakage protection and support gearbox to reach IP65.





**KVX065 1-stage**

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	15	52	55	50	50	45	42	42	
		in.lb	133	460	487	443	443	398	372	372	
Emergency Stop Torque	$T_{2Not}$	Nm	138	156	165	150	150	135	126	126	
		in.lb	1221	1381	1460	1328	1328	1195	1115	1115	
Maximum Acceleration Torque	$T_{2B}$	Nm	82.8	93.6	99	90	90	81	75.6	75.6	
		in.lb	733	828	876	797	797	717	669	669	
Maximum Torque	$T_{2a}$	Nm	92	104	110	100	100	90	84	84	
		in.lb	814	920	974	885	885	797	743	743	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	6000								
Mean No Load Running Torque	$T_{012}$	Nm	0.24	0.2	0.17	0.15	0.15	0.15	0.15	0.15	
		in.lb	2.12	1.77	1.50	1.33	1.33	1.33	1.33	1.33	
Standard Backlash P1	$j_1$	arcmin	≤ 8								
Reduced Low Backlash P0	$j_1$	arcmin	≤ 5								
Torsional Rigidity	$C_{021}$	Nm/arcmin	3	3	3	3	3	3	3	3	
		in.lb/arcmin	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	
Maximum Radial Load	$F_{2AMax}$	N	1500								
		lb <sub>r</sub>	337								
Maximum Axial Load	$F_{2OMax}$	N	760								
		lb <sub>r</sub>	171								
Max. Tilting Moment	$M_{2KMax}$	Nm	40								
		in.lb	352								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.160	0.140	0.130	0.130	0.130	0.130	0.130	0.130	
Operating Noise Level	$L_{PA}$	dB(A)	< 63								
Efficiency at Full loading	$\eta$	%	95								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	2.2								
		lb <sub>m</sub>	4.8								

**KVX065 2-stage**

		2-stage																	
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	56	50	52	55	55	46	52	55	55	55	55	50	45	45	42	42	
		in.lb	496	443	460	487	487	407	460	487	487	487	487	487	443	398	398	372	372
Emergency Stop Torque	$T_{2Not}$	Nm	168	150	156	165	165	138	156	165	165	165	165	150	135	135	126	126	
		in.lb	1487	1328	1381	1460	1460	1221	1381	1460	1460	1460	1460	1460	1328	1195	1195	1115	1115
Maximum Acceleration Torque	$T_{2B}$	Nm	100.8	90	93.6	99	99	82.8	93.6	99	99	99	99	90	81	81	75.6	75.6	
		in.lb	892	797	828	876	876	733	828	876	876	876	876	876	797	717	717	669	669
Maximum Torque	$T_{2a}$	Nm	112	100	104	110	110	92	104	110	110	110	110	100	90	90	84	84	
		in.lb	991	885	920	974	974	814	920	974	974	974	974	974	885	797	797	743	743
Permitted Average Input Speed	$n_{1N}$	rpm	3000																
Maximum Input Speed	$n_{1Max}$	rpm	6000																
Mean No Load Running Torque	$T_{012}$	Nm	0.2	0.2	0.2	0.17	0.17	0.15	0.2	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
		in.lb	1.77	1.77	1.77	1.50	1.50	1.33	1.77	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33
Standard Backlash P1	$j_1$	arcmin	≤ 10																
Reduced Low Backlash P0	$j_1$	arcmin	≤ 7																
Torsional Rigidity	$C_{021}$	Nm/arcmin	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
		in.lb/arcmin	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	
Maximum Radial Load	$F_{2AMax}$	N	1500																
		lb <sub>r</sub>	337																
Maximum Axial Load	$F_{2OMax}$	N	760																
		lb <sub>r</sub>	171																
Max. Tilting Moment	$M_{2KMax}$	Nm	80																
		in.lb	708																
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.127	0.124	0.120	0.075	0.075	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.075	0.064	0.064	
Operating Noise Level	$L_{PA}$	dB(A)	< 63																
Efficiency at Full loading	$\eta$	%	95																
Operating Temperature		°C	-25 to +90																
		F	-13 to +194																
Lubrication			Synthetic Lubrication Grease																
Mouting Position			Any Directions																
Protection Class			IP 65																
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																
Weight	$m$	kg	2.4																
		lb <sub>m</sub>	5.3																

**KVX085 1-stage**

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	54	145	155	145	135	115	105	105	
		in.lb	478	1283	1372	1283	1195	1018	929	929	
Emergency Stop Torque	$T_{2Not}$	Nm	375	435	465	435	405	345	315	315	
		in.lb	3319	3850	4115	3850	3584	3053	2788	2788	
Maximum Acceleration Torque	$T_{2B}$	Nm	225	261	279	261	243	207	189	189	
		in.lb	1991	2310	2469	2310	2151	1832	1673	1673	
Maximum Torque	$T_{2a}$	Nm	250	290	310	290	270	230	210	210	
		in.lb	2213	2567	2744	2567	2390	2036	1859	1859	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	6000								
Mean No Load Running Torque	$T_{012}$	Nm	0.38	0.36	0.31	0.29	0.25	0.25	0.25	0.25	
		in.lb	3.36	3.19	2.74	2.57	2.21	2.21	2.21	2.21	
Standard Backlash P1	$j_1$	arcmin	≤ 8								
Reduced Low Backlash P0	$j_1$	arcmin	≤ 5								
Torsional Rigidity	$C_{021}$	Nm/arcmin	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	
		in.lb/arcmin	42.48	42.48	42.48	42.48	42.48	42.48	42.48	42.48	
Maximum Radial Load	$F_{2AMax}$	N	3200								
		lb <sub>r</sub>	719								
Maximum Axial Load	$F_{2OMax}$	N	1600								
		lb <sub>r</sub>	360								
Max. Tilting Moment	$M_{2KMax}$	Nm	90								
		in.lb	792								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.61	0.48	0.47	0.47	0.47	0.45	0.44	0.44	
Operating Noise Level	$L_{PA}$	dB(A)	< 65								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	5.3								
		lb <sub>m</sub>	11.7								

**KVX085 2-stage**

		2-stage																		
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100		
Nominal Output Torque		Nm	125	125	145	145	155	125	145	155	155	155	155	145	115	115	105	105		
		in.lb	1106	1106	1283	1283	1372	1106	1283	1372	1372	1372	1372	1283	1018	1018	929	929		
Emergency Stop Torque	$T_{2Not}$	Nm	375	375	435	435	465	375	435	465	465	465	465	435	345	345	315	315		
		in.lb	3319	3319	3850	3850	4115	3319	3850	4115	4115	4115	4115	3850	3053	3053	2788	2788		
Maximum Acceleration Torque	$T_{2B}$	Nm	225	225	261	261	279	225	261	279	279	279	279	261	207	207	189	189		
		in.lb	1991	1991	2310	2310	2469	1991	2310	2469	2469	2469	2469	2310	1832	1832	1673	1673		
Maximum Torque	$T_{2a}$	Nm	250	250	290	290	310	250	290	310	310	310	310	290	230	230	210	210		
		in.lb	2213	2213	2567	2567	2744	2213	2567	2744	2744	2744	2744	2567	2036	2036	1859	1859		
Permitted Average Input Speed	$n_{1N}$	rpm	3000																	
Maximum Input Speed	$n_{1Max}$	rpm	6000																	
Mean No Load Running Torque	$T_{012}$	Nm	0.36	0.27	0.36	0.31	0.31	0.31	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25		
		in.lb	3.19	2.39	3.19	2.74	2.74	2.74	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21		
Standard Backlash P1	$j_1$	arcmin	≤ 10																	
Reduced Low Backlash P0	$j_1$	arcmin	≤ 7																	
Torsional Rigidity	$C_{021}$	Nm/arcmin	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8		
		in.lb/arcmin	42.48	42.48	42.48	42.48	42.48	42.48	42.48	42.48	42.48	42.48	42.48	42.48	42.48	42.48	42.48	42.48		
Maximum Radial Load	$F_{2AMax}$	N	3200																	
		lb <sub>r</sub>	719																	
Maximum Axial Load	$F_{2OMax}$	N	1600																	
		lb <sub>r</sub>	360																	
Max. Tilting Moment	$M_{2KMax}$	Nm	200																	
		in.lb	1770																	
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.44	0.44	0.43	0.44	0.44	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.44	0.39	0.44		
Operating Noise Level	$L_{PA}$	dB(A)	< 65																	
Efficiency at Full loading	$\eta$	%	95																	
Operating Temperature		°C	-25 to +90																	
		F	-13 to +194																	
Lubrication			Synthetic Lubrication Grease																	
Mouting Position			Any Directions																	
Protection Class			IP 65																	
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																	
Weight	$m$	kg	6.5																	
		lb <sub>m</sub>	14.3																	



**KVX115 1-stage**

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	120	300	320	300	290	255	220	220	
		in.lb	1062	2655	2832	2655	2567	2257	1947	1947	
Emergency Stop Torque	$T_{2Not}$	Nm	630	900	960	900	870	765	660	660	
		in.lb	5576	7965	8496	7965	7700	6770	5841	5841	
Maximum Acceleration Torque	$T_{2B}$	Nm	378	540	576	540	522	459	396	396	
		in.lb	3345	4779	5098	4779	4620	4062	3505	3505	
Maximum Torque	$T_{2a}$	Nm	420	600	640	600	580	510	440	440	
		in.lb	3717	5310	5664	5310	5133	4514	3894	3894	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	6000								
Mean No Load Running Torque	$T_{012}$	Nm	1	0.95	0.85	0.81	0.78	0.78	0.78	0.78	
		in.lb	8.85	8.41	7.52	7.17	6.90	6.90	6.90	6.90	
Standard Backlash P1	$j_i$	arcmin	≤ 8								
Reduced Low Backlash P0	$j_i$	arcmin	≤ 5								
Torsional Rigidity	$C_{021}$	Nm/arcmin	10	10	10	10	10	10	10	10	
		in.lb/arcmin	88.50	88.50	88.50	88.50	88.50	88.50	88.50	88.50	
Maximum Radial Load	$F_{2AMax}$	N	6700								
		lb <sub>r</sub>	1506								
Maximum Axial Load	$F_{2OMax}$	N	3300								
		lb <sub>r</sub>	742								
Max. Tilting Moment	$M_{2KMax}$	Nm	150								
		in.lb	1320								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	3.25	2.74	2.71	2.71	2.62	2.62	2.62	2.57	
Operating Noise Level	$L_{PA}$	dB(A)	< 68								
Efficiency at Full loading	$\eta$	%	95								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	9								
		lb <sub>m</sub>	19.8								

**KVX115 2-stage**

		2-stage																	
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	310	310	300	300	320	210	305	320	320	320	320	300	255	255	220	220	
		in.lb	2744	2744	2655	2655	2832	1859	2699	2832	2832	2832	2832	2655	2257	2257	1947	1947	
Emergency Stop Torque	$T_{2Not}$	Nm	930	930	900	900	960	630	915	960	960	960	960	900	765	765	660	660	
		in.lb	8231	8231	7965	7965	8496	5576	8098	8496	8496	8496	8496	7965	6770	6770	5841	5841	
Maximum Acceleration Torque	$T_{2B}$	Nm	558	558	540	540	576	378	549	576	576	576	576	540	459	459	396	396	
		in.lb	4938	4938	4779	4779	5098	3345	4859	5098	5098	5098	5098	4779	4062	4062	3505	3505	
Maximum Torque	$T_{2a}$	Nm	620	620	600	600	640	420	610	640	640	640	640	600	510	510	440	440	
		in.lb	5487	5487	5310	5310	5664	3717	5399	5664	5664	5664	5664	5310	4514	4514	3894	3894	
Permitted Average Input Speed	$n_{1N}$	rpm	3000																
Maximum Input Speed	$n_{1Max}$	rpm	6000																
Mean No Load Running Torque	$T_{012}$	Nm	0.95	0.85	0.95	0.85	0.85	0.85	0.85	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	
		in.lb	8.41	7.52	8.41	7.52	7.52	7.52	7.52	6.90	6.90	6.90	6.90	6.90	6.90	6.90	6.90	6.90	
Standard Backlash P1	$j_i$	arcmin	≤ 10																
Reduced Low Backlash P0	$j_i$	arcmin	≤ 7																
Torsional Rigidity	$C_{021}$	Nm/arcmin	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	
		in.lb/arcmin	88.50	88.50	88.50	88.50	88.50	88.50	88.50	88.50	88.50	88.50	88.50	88.50	88.50	88.50	88.50	88.50	
Maximum Radial Load	$F_{2AMax}$	N	6700																
		lb <sub>r</sub>	1506																
Maximum Axial Load	$F_{2OMax}$	N	3300																
		lb <sub>r</sub>	742																
Max. Tilting Moment	$M_{2KMax}$	Nm	400																
		in.lb	3540																
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	2.56	2.58	1.75	1.5	1.49	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.5	1.49	1.45	
Operating Noise Level	$L_{PA}$	dB(A)	< 68																
Efficiency at Full loading	$\eta$	%	92																
Operating Temperature		°C	-25 to +90																
		F	-13 to +194																
Lubrication			Synthetic Lubrication Grease																
Mouting Position			Any Directions																
Protection Class			IP 65																
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																
Weight	$m$	kg	13																
		lb <sub>m</sub>	28.6																

**KVX142 1-stage**

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	270	550	650	610	540	510	440	440	
		in.lb	2390	4868	5753	5399	4779	4514	3894	3894	
Emergency Stop Torque	$T_{2Not}$	Nm	1050	1650	1950	1830	1620	1530	1320	1320	
		in.lb	9293	14603	17258	16196	14337	13541	11682	11682	
Maximum Acceleration Torque	$T_{2B}$	Nm	630	990	1170	1098	972	918	792	792	
		in.lb	5576	8762	10355	9717	8602	8124	7009	7009	
Maximum Torque	$T_{2a}$	Nm	700	1100	1300	1220	1080	1020	880	880	
		in.lb	6195	9735	11505	10797	9558	9027	7788	7788	
Permitted Average Input Speed	$n_{1N}$	rpm	3000								
Maximum Input Speed	$n_{1Max}$	rpm	6000								
Mean No Load Running Torque	$T_{012}$	Nm	2.55	2.45	2.3	2.2	2.2	2.2	2.2	2.2	
		in.lb	22.57	21.68	20.36	19.47	19.47	19.47	19.47	19.47	
Standard Backlash P1	$j_i$	arcmin	≤ 8								
Reduced Low Backlash P0	$j_i$	arcmin	≤ 5								
Torsional Rigidity	$C_{21}$	Nm/arcmin	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	
		in.lb/arcmin	254.00	254.00	254.00	254.00	254.00	254.00	254.00	254.00	
Maximum Radial Load	$F_{2AMax}$	N	9600								
		lb <sub>r</sub>	2157								
Maximum Axial Load	$F_{2OMax}$	N	4800								
		lb <sub>r</sub>	1079								
Max. Tilting Moment	$M_{2KMax}$	Nm	480								
		in.lb	4224								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	12.31	7.54	7.42	7.42	7.25	7.14	7.14	7.14	
Operating Noise Level	$L_{PA}$	dB(A)	< 70								
Efficiency at Full loading	$\eta$	%	95								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	26								
		lb <sub>m</sub>	57.2								

**KVX142 2-stage**

		2-stage																		
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	63	64	80	90	100	
Nominal Output Torque		Nm	500	500	550	650	650	450	550	650	550	650	610	510	510	510	440	440	440	
		in.lb	4425	4425	4868	5753	5753	3983	4868	5753	4868	5753	5753	5399	4514	4514	4514	3894	3894	
Emergency Stop Torque	$T_{2Not}$	Nm	1500	1500	1650	1950	1950	1350	1650	1950	1650	1950	1830	1530	1530	1530	1320	1320		
		in.lb	13275	13275	14603	17258	17258	11948	14603	17258	14603	17258	16196	13541	13541	13541	11682	11682		
Maximum Acceleration Torque	$T_{2B}$	Nm	900	900	990	1170	1170	810	990	1170	990	1170	1098	918	918	918	792	792		
		in.lb	7965	7965	8762	10355	10355	7169	8762	10355	8762	10355	9717	8124	8124	8124	7009	7009		
Maximum Torque	$T_{2a}$	Nm	1000	1000	1100	1300	1300	900	1100	1300	1100	1300	1220	1020	1020	1020	880	880		
		in.lb	8850	8850	9735	11505	11505	7965	9735	11505	9735	11505	10797	9027	9027	9027	7788	7788		
Permitted Average Input Speed	$n_{1N}$	rpm	3000																	
Maximum Input Speed	$n_{1Max}$	rpm	6000																	
Mean No Load Running Torque	$T_{012}$	Nm	2.45	2.3	2.45	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	
		in.lb	21.68	20.36	21.68	20.36	20.36	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	
Standard Backlash P1	$j_i$	arcmin	≤ 10																	
Reduced Low Backlash P0	$j_i$	arcmin	≤ 7																	
Torsional Rigidity	$C_{21}$	Nm/arcmin	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7		
		in.lb/arcmin	254.00	254.00	254.00	254.00	254.00	254.00	254.00	254.00	254.00	254.00	254.00	254.00	254.00	254.00	254.00	254.00		
Maximum Radial Load	$F_{2AMax}$	N	9600																	
		lb <sub>r</sub>	2157																	
Maximum Axial Load	$F_{2OMax}$	N	4800																	
		lb <sub>r</sub>	1079																	
Max. Tilting Moment	$M_{2KMax}$	Nm	850																	
		in.lb	7522.5																	
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	12.35	12.35	7.47	6.65	5.81	6.34	6.34	5.36	4.08	5.36	4.08	7.4	7.5	7.5	7.4	7.4		
Operating Noise Level	$L_{PA}$	dB(A)	< 70																	
Efficiency at Full loading	$\eta$	%	92																	
Operating Temperature		°C	-25 to +90																	
		F	-13 to +194																	
Lubrication			Synthetic Lubrication Grease																	
Mouting Position			Any Directions																	
Protection Class			IP 65																	
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																	
Weight	$m$	kg	31																	
		lb <sub>m</sub>	68.2																	



**KVX180 1-stage**

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	450	1250	1200	1000	1000	1000	910	910	
		in.lb	3983	11063	10620	8850	8850	8850	8054	8054	
Emergency Stop Torque	$T_{2Not}$	Nm	1950	3750	3600	3000	3000	3000	2730	2730	
		in.lb	17258	33188	31860	26550	26550	26550	24161	24161	
Maximum Acceleration Torque	$T_{2B}$	Nm	1170	2250	2160	1800	1800	1800	1638	1638	
		in.lb	10355	19913	19116	15930	15930	15930	14496	14496	
Maximum Torque	$T_{2a}$	Nm	1300	2500	2400	2000	2000	2000	1820	1820	
		in.lb	11505	22125	21240	17700	17700	17700	16107	16107	
Permitted Average Input Speed	$n_{1N}$	rpm	1500								
Maximum Input Speed	$n_{1Max}$	rpm	3000								
Mean No Load Running Torque	$T_{012}$	Nm	4	3.8	3.55	3.5	3.5	3.5	3.5	3.5	
		in.lb	35.40	33.63	31.42	30.98	30.98	30.98	30.98	30.98	
Standard Backlash P1	$j_i$	arcmin	≤ 8								
Reduced Low Backlash P0	$j_i$	arcmin	≤ 5								
Torsional Rigidity	$C_{021}$	Nm/arcmin	120	120	120	120	120	120	120	120	
		in.lb/arcmin	1062.00	1062.00	1062.00	1062.00	1062.00	1062.00	1062.00	1062.00	
Maximum Radial Load	$F_{2AMax}$	N	14000								
		lb <sub>r</sub>	3146								
Maximum Axial Load	$F_{2OMax}$	N	7000								
		lb <sub>r</sub>	1573								
Max. Tilting Moment	$M_{2KMax}$	Nm	1300								
		in.lb	11440								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	28.98	23.67	22.75	22.75	22.48	22.59	22.59	22.55	
Operating Noise Level	$L_{PA}$	dB(A)	< 72								
Efficiency at Full loading	$\eta$	%	95								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	41								
		lb <sub>m</sub>	90.2								

**KVX180 2-stage**

		2-stage																	
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	650	850	1250	1200	1200	650	1250	1200	1200	1200	1200	1000	1000	1000	910	910	
		in.lb	5753	7523	11063	10620	10620	5753	11063	10620	10620	10620	10620	8850	8850	8850	8054	8054	
Emergency Stop Torque	$T_{2Not}$	Nm	1950	2550	3750	3600	3600	1950	3750	3600	3600	3600	3600	3000	3000	3000	2730	2730	
		in.lb	17258	22568	33188	31860	31860	17258	33188	31860	31860	31860	31860	26550	26550	26550	24161	24161	
Maximum Acceleration Torque	$T_{2B}$	Nm	1170	1530	2250	2160	2160	1170	2250	2160	2160	2160	2160	1800	1800	1800	1638	1638	
		in.lb	10355	13541	19913	19116	19116	10355	19913	19116	19116	19116	19116	15930	15930	15930	14496	14496	
Maximum Torque	$T_{2a}$	Nm	1300	1700	2500	2400	2400	1300	2500	2400	2400	2400	2400	2000	2000	2000	1820	1820	
		in.lb	11505	15045	22125	21240	21240	11505	22125	21240	21240	21240	21240	17700	17700	17700	16107	16107	
Permitted Average Input Speed	$n_{1N}$	rpm	1500																
Maximum Input Speed	$n_{1Max}$	rpm	3000																
Mean No Load Running Torque	$T_{012}$	Nm	2.45	2.3	2.45	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	
		in.lb	21.68	20.36	21.68	20.36	20.36	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	
Standard Backlash P1	$j_i$	arcmin	≤ 10																
Reduced Low Backlash P0	$j_i$	arcmin	≤ 7																
Torsional Rigidity	$C_{021}$	Nm/arcmin	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	
		in.lb/arcmin	1062.00	1062.00	1062.00	1062.00	1062.00	1062.00	1062.00	1062.00	1062.00	1062.00	1062.00	1062.00	1062.00	1062.00	1062.00	1062.00	
Maximum Radial Load	$F_{2AMax}$	N	14000																
		lb <sub>r</sub>	3146																
Maximum Axial Load	$F_{2OMax}$	N	7000																
		lb <sub>r</sub>	1573																
Max. Tilting Moment	$M_{2KMax}$	Nm	1280																
		in.lb	11328																
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	12.35	12.3	7.54	7.42	7.54	7.14	7.14	7.14	22.55	7.14	7.14	7.14	7.54	7.54	7.42	7.42	
Operating Noise Level	$L_{PA}$	dB(A)	< 72																
Efficiency at Full loading	$\eta$	%	95																
Operating Temperature		°C	-25 to +90																
		F	-13 to +194																
Lubrication			Synthetic Lubrication Grease																
Mouting Position			Any Directions																
Protection Class			IP 65																
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																
Weight	$m$	kg	49																
		lb <sub>m</sub>	107.8																

**KVX220 1-stage**

		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	800	1800	2050	1850	1750	1550	1500	1500	
		in.lb	7080	15930	18143	16373	15488	13718	13275	13275	
Emergency Stop Torque	$T_{2Not}$	Nm	3600	5400	6150	5550	5250	4650	4500	4500	
		in.lb	31860	47790	54428	49118	46463	41153	39825	39825	
Maximum Acceleration Torque	$T_{2B}$	Nm	2160	3240	3690	3330	3150	2790	2700	2700	
		in.lb	19116	28674	32657	29471	27878	24692	23895	23895	
Maximum Torque	$T_{2a}$	Nm	2400	3600	4100	3700	3500	3100	3000	3000	
		in.lb	21240	31860	36285	32745	30975	27435	26550	26550	
Permitted Average Input Speed	$n_{1N}$	rpm	1500								
Maximum Input Speed	$n_{1Max}$	rpm	3000								
Mean No Load Running Torque	$T_{012}$	Nm	6	5.7	5.5	5.17	5.17	5.17	5.17	5.17	
		in.lb	53.10	50.45	48.68	45.75	45.75	45.75	45.75	45.75	
Standard Backlash P1	$j_i$	arcmin	≤ 8								
Reduced Low Backlash P0	$j_i$	arcmin	≤ 5								
Torsional Rigidity	$C_{21}$	Nm/arcmin	200	200	200	200	200	200	200	200	
		in.lb/arcmin	1770.00	1770.00	1770.00	1770.00	1770.00	1770.00	1770.00	1770.00	
Maximum Radial Load	$F_{2AMax}$	N	16000								
		lb <sub>r</sub>	3596								
Maximum Axial Load	$F_{2OMax}$	N	8000								
		lb <sub>r</sub>	1798								
Max. Tilting Moment	$M_{2KMax}$	Nm	1800								
		in.lb	15840								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	69.61	54.37	53.27	53.27	50.84	50.84	50.84	50.56	
Operating Noise Level	$L_{PA}$	dB(A)	< 75								
Efficiency at Full loading	$\eta$	%	95								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)								
Weight	$m$	kg	68								
		lb <sub>m</sub>	149.6								

**KVX220 2-stage**

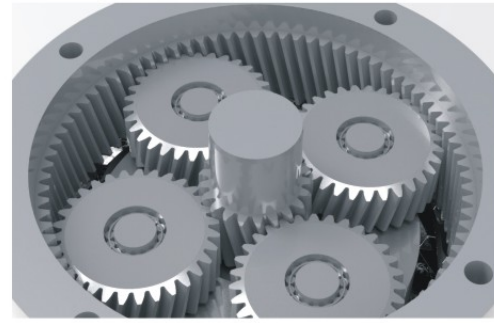
		2-stage																		
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100		
Nominal Output Torque		Nm	1200	1200	1800	2050	2050	1200	1800	2050	2050	2050	1850	1550	1550	1500	1500	1500	1500	
		in.lb	10620	10620	15930	18143	18143	10620	15930	18143	18143	18143	16373	13718	13718	13275	13275	13275	13275	
Emergency Stop Torque	$T_{2Not}$	Nm	3600	3600	5400	6150	6150	3600	5400	6150	6150	6150	6150	5550	4650	4650	4500	4500	4500	
		in.lb	31860	31860	47790	54428	54428	31860	47790	54428	54428	54428	54428	49118	41153	41153	39825	39825	39825	
Maximum Acceleration Torque	$T_{2B}$	Nm	2160	2160	3240	3690	3690	2160	3240	3690	3690	3690	3690	3330	2790	2790	2700	2700	2700	
		in.lb	19116	19116	28674	32657	32657	19116	28674	32657	32657	32657	32657	29471	24692	24692	23895	23895	23895	
Maximum Torque	$T_{2a}$	Nm	2400	2400	3600	4100	4100	2400	3600	4100	4100	4100	4100	3700	3100	3100	3000	3000	3000	
		in.lb	21240	21240	31860	36285	36285	21240	31860	36285	36285	36285	36285	32745	27435	27435	26550	26550	26550	
Permitted Average Input Speed	$n_{1N}$	rpm	1500																	
Maximum Input Speed	$n_{1Max}$	rpm	3000																	
Mean No Load Running Torque	$T_{012}$	Nm	3.8	3.15	3.8	3.55	3.55	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
		in.lb	33.63	27.88	33.63	31.42	31.42	30.98	30.98	30.98	30.98	30.98	30.98	30.98	30.98	30.98	30.98	30.98	30.98	
Standard Backlash P1	$j_i$	arcmin	≤ 10																	
Reduced Low Backlash P0	$j_i$	arcmin	≤ 7																	
Torsional Rigidity	$C_{21}$	Nm/arcmin	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	
		in.lb/arcmin	1770.00	1770.00	1770.00	1770.00	1770.00	1770.00	1770.00	1770.00	1770.00	1770.00	1770.00	1770.00	1770.00	1770.00	1770.00	1770.00	1770.00	
Maximum Radial Load	$F_{2AMax}$	N	16000																	
		lb <sub>r</sub>	3596																	
Maximum Axial Load	$F_{2OMax}$	N	8000																	
		lb <sub>r</sub>	1798																	
Max. Tilting Moment	$M_{2KMax}$	Nm	2350																	
		in.lb	20797.5																	
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	28.98	28.92	23.67	22.75	22.75	22.75	22.59	22.59	22.59	22.59	22.59	22.59	22.59	22.75	22.59	22.59		
Operating Noise Level	$L_{PA}$	dB(A)	< 75																	
Efficiency at Full loading	$\eta$	%	92																	
Operating Temperature		°C	-25 to +90																	
		F	-13 to +194																	
Lubrication			Synthetic Lubrication Grease																	
Mouting Position			Any Directions																	
Protection Class			IP 65																	
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																	
Weight	$m$	kg	78																	
		lb <sub>m</sub>	171.6																	





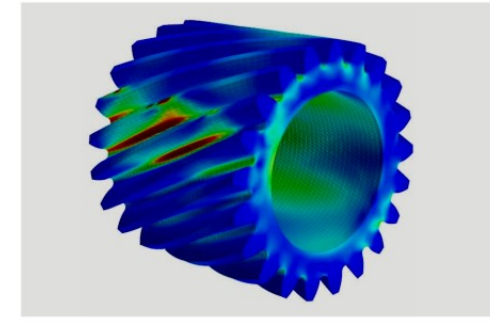






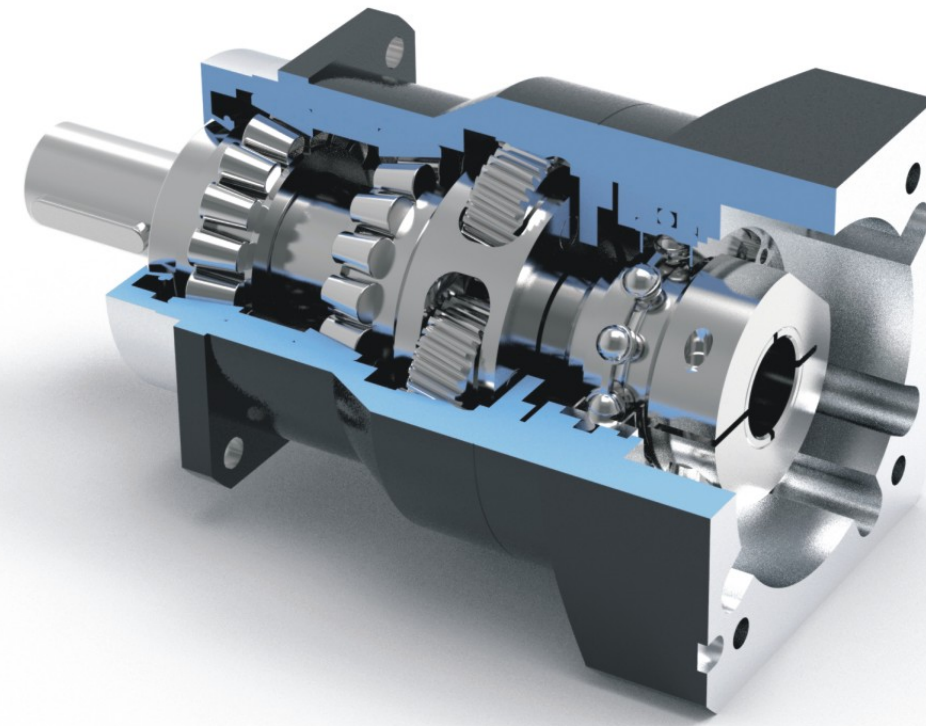
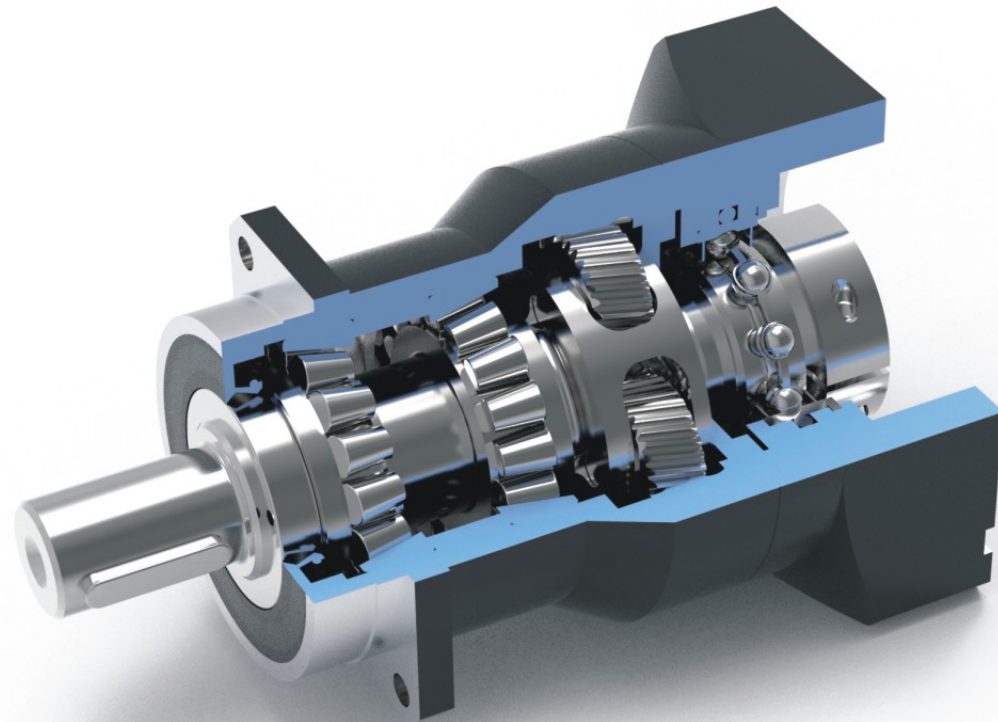
**Helical Gear System Technology**

Thanks to the tooth to tooth compact ratio more than 60%. The helical gearing and full needle bearing bring the benefits including higher torque capacity, smooth and lower noise running, decreased backlash and higher efficiency.



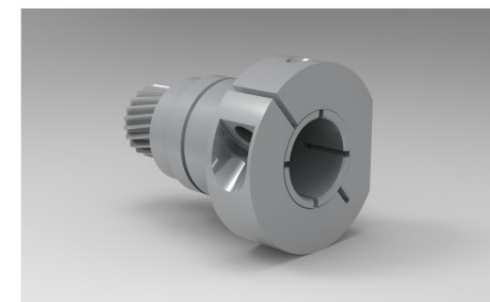
**Super Gear Grinding and Heat Treatment Technology**

The global leading gear grinding technology brings the great improvement for the tooth profile optimization, with the high level carburizing and quenching heat treatment technology to reach high precision and gear harden performance.



**Master CageSpindle Planetary Carrier**

The patented Master CageSpindle integrated planetary carrier support planetary gearbox to increase constructional strength running stability and rigidity significantly. Synthetic grease lubrication allows maintenance free for gearbox whole service life.



**Dynamic Balance Clamping and Sealing System**

For the gearbox input dynamic balance clamping design with perfect concentricity to decrease backlash and increase gearbox operation stability. The ultra sealing system offers grease leakage protection and support gearbox to reach IP65.





KPG070 1-stage

		1-stage								
Ratio	i		3	4	5	7	8	9	10	
Nominal Output Torque		Nm	46	52	55	50	45	42	42	
		in.lb	407	460	487	443	398	372	372	
Emergency Stop Torque	$T_{2Not}$	Nm	138	156	165	150	135	126	126	
		in.lb	1221	1381	1460	1328	1195	1115	1115	
Maximum Acceleration Torque	$T_{2B}$	Nm	82.8	93.6	99	90	81	75.6	75.6	
		in.lb	733	828	876	797	717	669	669	
Maximum Torque	$T_{2a}$	Nm	92	104	110	100	90	84	84	
		in.lb	814	920	974	885	797	743	743	
Permitted Average Input Speed	$n_{1N}$	rpm	4000							
Maximum Input Speed	$n_{1Max}$	rpm	6000							
Mean No Load Running Torque	$T_{012}$	Nm	0.3	0.27	0.25	0.25	0.25	0.25	0.25	
		in.lb	2.66	2.39	2.21	2.21	2.21	2.21	2.21	
Standard Backlash P1	$j_i$	arcmin	≤ 6							
Reduced Low Backlash P0	$j_i$	arcmin	≤ 3							
Torsional Rigidity	$C_{021}$	Nm/arcmin	7	7	7	7	7	7	7	
		in.lb/arcmin	61.95	61.95	61.95	61.95	61.95	61.95	61.95	
Maximum Radial Load	$F_{2AMax}$	N	4300							
		lb <sub>r</sub>	966							
Maximum Axial Load	$F_{2OMax}$	N	3900							
		lb <sub>r</sub>	876							
Max. Tilting Moment	$M_{2KMax}$	Nm	80							
		in.lb	708							
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.160	0.140	0.130	0.130	0.130	0.130	0.130	
Operating Noise Level	$L_{PA}$	dB(A)	< 58							
Efficiency at Full loading	$\eta$	%	95							
Operating Temperature		°C	-25 to +90							
		F	-13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)							
Weight	$m$	kg	1.6							
		lb <sub>m</sub>	3.5							

KPG070 2-stage

		2-stage																	
Ratio	i		12	15	16	20	24	25	30	32	35	40	45	50	60	64	80	90	100
Nominal Output Torque		Nm	56	56	52	55	55	55	55	52	55	55	55	55	50	36	36	33	33
		in.lb	496	496	460	487	487	487	487	460	487	487	487	487	487	443	319	319	292
Emergency Stop Torque	$T_{2Not}$	Nm	168	168	156	165	165	165	165	156	165	165	165	165	150	108	108	99	99
		in.lb	1487	1487	1381	1460	1460	1460	1460	1381	1460	1460	1460	1460	1328	956	956	876	876
Maximum Acceleration Torque	$T_{2B}$	Nm	100.8	100.8	93.6	99	99	99	99	93.6	99	99	99	99	90	64.8	64.8	59.4	59.4
		in.lb	892	892	828	876	876	876	876	828	876	876	876	876	797	573	573	526	526
Maximum Torque	$T_{2a}$	Nm	112	112	104	110	110	110	110	104	110	110	110	110	100	72	72	66	66
		in.lb	991	991	920	974	974	974	974	920	974	974	974	974	885	637	637	584	584
Permitted Average Input Speed	$n_{1N}$	rpm	4000																
Maximum Input Speed	$n_{1Max}$	rpm	6000																
Mean No Load Running Torque	$T_{012}$	Nm	0.3	0.27	0.3	0.27	0.27	0.27	0.3	0.3	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
		in.lb	2.66	2.39	2.66	2.39	2.39	2.39	2.66	2.66	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21
Standard Backlash P1	$j_i$	arcmin	≤ 6																
Reduced Low Backlash P0	$j_i$	arcmin	≤ 4																
Torsional Rigidity	$C_{021}$	Nm/arcmin	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
		in.lb/arcmin	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95	61.95
Maximum Radial Load	$F_{2AMax}$	N	4300																
		lb <sub>r</sub>	966																
Maximum Axial Load	$F_{2OMax}$	N	3900																
		lb <sub>r</sub>	876																
Max. Tilting Moment	$M_{2KMax}$	Nm	80																
		in.lb	708																
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.127	0.127	0.120	0.075	0.075	0.075	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.075	0.075	0.064	0.064
Operating Noise Level	$L_{PA}$	dB(A)	< 58																
Efficiency at Full loading	$\eta$	%	95																
Operating Temperature		°C	-25 to +90																
		F	-13 to +194																
Lubrication			Synthetic Lubrication Grease																
Mouting Position			Any Directions																
Protection Class			IP 65																
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																
Weight	$m$	kg	1.9																
		lb <sub>m</sub>	4.2																

KPG090 1-stage

		1-stage								
Ratio	i		3	4	5	7	8	9	10	
Nominal Output Torque		Nm	125	145	155	135	115	105	105	
		in.lb	1106	1283	1372	1195	1018	929	929	
Emergency Stop Torque	$T_{2Not}$	Nm	375	435	465	405	345	315	315	
		in.lb	3319	3850	4115	3584	3053	2788	2788	
Maximum Acceleration Torque	$T_{2a}$	Nm	225	261	279	243	207	189	189	
		in.lb	1991	2310	2469	2151	1832	1673	1673	
Maximum Torque	$T_{2a}$	Nm	250	290	310	270	230	210	210	
		in.lb	2213	2567	2744	2390	2036	1859	1859	
Permitted Average Input Speed	$n_{1N}$	rpm	3000							
Maximum Input Speed	$n_{1Max}$	rpm	6000							
Mean No Load Running Torque	$T_{012}$	Nm	0.46	0.41	0.39	0.35	0.35	0.35	0.35	
		in.lb	4.07	3.63	3.45	3.10	3.10	3.10	3.10	
Standard Backlash P1	$j_i$	arcmin	≤ 6							
Reduced Low Backlash P0	$j_i$	arcmin	≤ 3							
Torsional Rigidity	$C_{021}$	Nm/arcmin	14	14	14	14	14	14	14	
		in.lb/arcmin	123.9	123.9	123.9	123.9	123.9	123.9	123.9	
Maximum Radial Load	$F_{2AMax}$	N	7000							
		lb <sub>r</sub>	1573							
Maximum Axial Load	$F_{2OMax}$	N	6300							
		lb <sub>r</sub>	1416							
Max. Tilting Moment	$M_{2KMax}$	Nm	200							
		in.lb	1770							
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.61	0.48	0.47	0.47	0.45	0.44	0.44	
Operating Noise Level	$L_{PA}$	dB(A)	< 60							
Efficiency at Full loading	$\eta$	%	95							
Operating Temperature		°C	-25 to +90							
		F	-13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)							
Weight	$m$	kg	3.5							
		lb <sub>m</sub>	7.3							

KPG090 2-stage

		2-stage																		
Ratio	i		12	15	16	20	24	25	30	32	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	125	125	145	145	155	155	145	145	155	155	155	155	145	92	92	84	84	
		in.lb	1106	1106	1283	1283	1372	1372	1283	1283	1372	1372	1372	1372	1283	814	814	743	743	
Emergency Stop Torque	$T_{2Not}$	Nm	375	375	435	435	465	465	435	435	465	465	465	465	435	276	276	252	252	
		in.lb	3319	3319	3850	3850	4115	4115	3850	3850	4115	4115	4115	4115	3850	2443	2443	2230	2230	
Maximum Acceleration Torque	$T_{2a}$	Nm	225	225	261	261	279	279	261	261	279	279	279	279	261	165.6	165.6	151.2	151.2	
		in.lb	1991	1991	2310	2310	2469	2469	2310	2310	2469	2469	2469	2469	2310	1466	1466	1338	1338	
Maximum Torque	$T_{2a}$	Nm	250	250	290	290	310	310	290	290	310	310	310	310	290	184	184	168	168	
		in.lb	2213	2213	2567	2567	2744	2744	2567	2567	2744	2744	2744	2744	2567	1628	1628	1487	1487	
Permitted Average Input Speed	$n_{1N}$	rpm	3000																	
Maximum Input Speed	$n_{1Max}$	rpm	6000																	
Mean No Load Running Torque	$T_{012}$	Nm	0.46	0.41	0.46	0.41	0.41	0.46	0.41	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	
		in.lb	4.07	3.63	4.07	3.63	3.63	4.07	3.63	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	
Standard Backlash P1	$j_i$	arcmin	≤ 6																	
Reduced Low Backlash P0	$j_i$	arcmin	≤ 4																	
Torsional Rigidity	$C_{021}$	Nm/arcmin	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	
		in.lb/arcmin	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	123.9	
Maximum Radial Load	$F_{2AMax}$	N	7000																	
		lb <sub>r</sub>	1573																	
Maximum Axial Load	$F_{2OMax}$	N	6300																	
		lb <sub>r</sub>	1416																	
Max. Tilting Moment	$M_{2KMax}$	Nm	200																	
		in.lb	1770																	
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.44	0.44	0.43	0.44	0.44	0.44	0.43	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.44	0.44		
Operating Noise Level	$L_{PA}$	dB(A)	< 60																	
Efficiency at Full loading	$\eta$	%	93																	
Operating Temperature		°C	-25 to +90																	
		F	-13 to +194																	
Lubrication			Synthetic Lubrication Grease																	
Mouting Position			Any Directions																	
Protection Class			IP 65																	
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																	
Weight	$m$	kg	3.8																	
		lb <sub>m</sub>	9.9																	



KPG120 1-stage

		1-stage								
Ratio	i		3	4	5	7	8	9	10	
Nominal Output Torque		Nm	210	300	320	290	255	220	220	
		in.lb	1859	2655	2832	2567	2257	1947	1947	
Emergency Stop Torque	$T_{2Not}$	Nm	630	900	960	870	765	660	660	
		in.lb	5576	7965	8496	7700	6770	5841	5841	
Maximum Acceleration Torque	$T_{2a}$	Nm	378	540	576	522	459	396	396	
		in.lb	3345	4779	5098	4620	4062	3505	3505	
Maximum Torque	$T_{2a}$	Nm	420	600	640	580	510	440	440	
		in.lb	3717	5310	5664	5133	4514	3894	3894	
Permitted Average Input Speed	$n_{1N}$	rpm	3000							
Maximum Input Speed	$n_{1Max}$	rpm	6000							
Mean No Load Running Torque	$T_{012}$	Nm	1.05	0.95	0.91	0.88	0.88	0.88	0.88	
		in.lb	9.29	8.41	8.05	7.79	7.79	7.79	7.79	
Standard Backlash P1	$j_1$	arcmin	≤ 6							
Reduced Low Backlash P0	$j_1$	arcmin	≤ 3							
Torsional Rigidity	$C_{021}$	Nm/arcmin	25	25	25	25	25	25	25	
		in.lb/arcmin	221.25	221.25	221.25	221.25	221.25	221.25	221.25	
Maximum Radial Load	$F_{2AMax}$	N	10000							
		lb <sub>r</sub>	2247							
Maximum Axial Load	$F_{2OMax}$	N	9000							
		lb <sub>r</sub>	2022							
Max. Tilting Moment	$M_{2KMax}$	Nm	400							
		in.lb	3540							
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	3.25	2.74	2.71	2.62	2.62	2.62	2.57	
Operating Noise Level	$L_{PA}$	dB(A)	< 63							
Efficiency at Full loading	$\eta$	%	95							
Operating Temperature		°C	-25 to +90							
		F	-13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)							
Weight	$m$	kg	8.1							
		lb <sub>m</sub>	17.8							

KPG120 2-stage

		2-stage																		
Ratio	i		12	15	16	20	24	25	30	32	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	210	310	300	300	320	320	210	305	320	320	320	320	300	204	204	176	176	
		in.lb	1859	2744	2655	2655	2832	2832	1859	2699	2832	2832	2832	2832	2655	1805	1805	1558	1558	
Emergency Stop Torque	$T_{2Not}$	Nm	630	930	900	900	960	960	630	915	960	960	960	960	900	612	612	528	528	
		in.lb	5576	8231	7965	7965	8496	8496	5576	8098	8496	8496	8496	8496	7965	5416	5416	4673	4673	
Maximum Acceleration Torque	$T_{2a}$	Nm	378	558	540	540	576	576	378	549	576	576	576	576	540	367.2	367.2	316.8	316.8	
		in.lb	3345	4938	4779	4779	5098	5098	3345	4859	5098	5098	5098	5098	4779	3250	3250	2804	2804	
Maximum Torque	$T_{2a}$	Nm	420	620	600	600	640	640	420	610	640	640	640	640	600	408	408	352	352	
		in.lb	3717	5487	5310	5310	5664	5664	3717	5399	5664	5664	5664	5664	5310	3611	3611	3115	3115	
Permitted Average Input Speed	$n_{1N}$	rpm	3000																	
Maximum Input Speed	$n_{1Max}$	rpm	6000																	
Mean No Load Running Torque	$T_{012}$	Nm	1.05	0.95	1.05	0.95	0.95	1.05	0.95	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	
		in.lb	9.29	8.41	9.29	8.41	8.41	9.29	8.41	7.79	7.79	7.79	7.79	7.79	7.79	7.79	7.79	7.79	7.79	
Standard Backlash P1	$j_1$	arcmin	≤ 6																	
Reduced Low Backlash P0	$j_1$	arcmin	≤ 4																	
Torsional Rigidity	$C_{021}$	Nm/arcmin	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	
		in.lb/arcmin	221.25	221.25	221.25	221.25	221.25	221.25	221.25	221.25	221.25	221.25	221.25	221.25	221.25	221.25	221.25	221.25	221.25	
Maximum Radial Load	$F_{2AMax}$	N	10000																	
		lb <sub>r</sub>	2247																	
Maximum Axial Load	$F_{2OMax}$	N	9000																	
		lb <sub>r</sub>	2022																	
Max. Tilting Moment	$M_{2KMax}$	Nm	400																	
		in.lb	3540																	
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	2.56	2.58	1.75	1.5	1.49	1.49	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.5	1.49	1.49	1.45	
Operating Noise Level	$L_{PA}$	dB(A)	< 63																	
Efficiency at Full loading	$\eta$	%	95																	
Operating Temperature		°C	-25 to +90																	
		F	-13 to +194																	
Lubrication			Synthetic Lubrication Grease																	
Mouting Position			Any Directions																	
Protection Class			IP 65																	
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																	
Weight	$m$	kg	9																	
		lb <sub>m</sub>	19.8																	

KPG160 1-stage

		1-stage								
Ratio	i		3	4	5	7	8	9	10	
Nominal Output Torque		Nm	350	550	650	540	510	440	440	
		in.lb	3098	4868	5753	4779	4514	3894	3894	
Emergency Stop Torque	$T_{2Not}$	Nm	1050	1650	1950	1620	1530	1320	1320	
		in.lb	9293	14603	17258	14337	13541	11682	11682	
Maximum Acceleration Torque	$T_{2B}$	Nm	630	990	1170	972	918	792	792	
		in.lb	5576	8762	10355	8602	8124	7009	7009	
Maximum Torque	$T_{2a}$	Nm	700	1100	1300	1080	1020	880	880	
		in.lb	6195	9735	11505	9558	9027	7788	7788	
Permitted Average Input Speed	$n_{1N}$	rpm	3000							
Maximum Input Speed	$n_{1Max}$	rpm	6000							
Mean No Load Running Torque	$T_{012}$	Nm	2.6	2.5	2.4	2.4	2.4	2.4	2.4	
		in.lb	23.01	22.13	21.24	21.24	21.24	21.24	21.24	
Standard Backlash P1	$j_i$	arcmin	≤ 6							
Reduced Low Backlash P0	$j_i$	arcmin	≤ 3							
Torsional Rigidity	$C_{021}$	Nm/arcmin	50	50	50	50	50	50	50	
		in.lb/arcmin	442.5	442.5	442.5	442.5	442.5	442.5	442.5	
Maximum Radial Load	$F_{2AMax}$	N	19000							
		lb <sub>r</sub>	4270							
Maximum Axial Load	$F_{2OMax}$	N	17000							
		lb <sub>r</sub>	3820							
Max. Tilting Moment	$M_{2KMax}$	Nm	850							
		in.lb	7522.5							
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	12.31	7.54	7.42	7.25	7.14	7.14	7.14	
Operating Noise Level	$L_{PA}$	dB(A)	< 65							
Efficiency at Full loading	$\eta$	%	95							
Operating Temperature		°C	-25 to +90							
		F	-13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)							
Weight	$m$	kg	15.5							
		lb <sub>m</sub>	34.1							

KPG160 2-stage

		2-stage																		
Ratio	i		12	15	16	20	24	25	30	32	35	40	45	50	60	63	64	80	90	100
Nominal Output Torque		Nm	500	500	550	650	650	650	650	550	650	650	650	650	610	510	408	408	352	352
		in.lb	4425	4425	4868	5753	5753	5753	5753	4868	5753	4868	5753	5753	5399	4514	3611	3611	3115	3115
Emergency Stop Torque	$T_{2Not}$	Nm	1500	1500	1650	1950	1950	1950	1950	1650	1950	1650	1950	1950	1830	1530	1224	1224	1056	1056
		in.lb	13275	13275	14603	17258	17258	17258	17258	14603	17258	14603	17258	17258	16196	13541	10832	10832	9346	9346
Maximum Acceleration Torque	$T_{2B}$	Nm	900	900	990	1170	1170	1170	1170	990	1170	990	1170	1170	1098	918	734.4	734.4	633.6	633.6
		in.lb	7965	7965	8762	10355	10355	10355	10355	8762	10355	8762	10355	10355	9717	8124	6499	6499	5607	5607
Maximum Torque	$T_{2a}$	Nm	1000	1000	1100	1300	1300	1300	1300	1100	1300	1100	1300	1300	1220	1020	816	816	704	704
		in.lb	8850	8850	9735	11505	11505	11505	11505	9735	11505	9735	11505	11505	10797	9027	7222	7222	6230	6230
Permitted Average Input Speed	$n_{1N}$	rpm	3000																	
Maximum Input Speed	$n_{1Max}$	rpm	6000																	
Mean No Load Running Torque	$T_{012}$	Nm	2.6	2.5	2.6	2.5	2.5	2.6	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
		in.lb	23.01	22.13	23.01	22.13	22.13	23.01	22.13	21.24	21.24	21.24	21.24	21.24	21.24	21.24	21.24	21.24	21.24	21.24
Standard Backlash P1	$j_i$	arcmin	≤ 6																	
Reduced Low Backlash P0	$j_i$	arcmin	≤ 4																	
Torsional Rigidity	$C_{021}$	Nm/arcmin	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
		in.lb/arcmin	442.5	442.5	442.5	442.5	442.5	442.5	442.5	442.5	442.5	442.5	442.5	442.5	442.5	442.5	442.5	442.5	442.5	442.5
Maximum Radial Load	$F_{2AMax}$	N	19000																	
		lb <sub>r</sub>	4270																	
Maximum Axial Load	$F_{2OMax}$	N	17000																	
		lb <sub>r</sub>	3820																	
Max. Tilting Moment	$M_{2KMax}$	Nm	850																	
		in.lb	7522.5																	
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	12.35	12.35	7.47	6.65	5.81	6.65	5.81	6.34	5.36	4.08	5.36	4.08	7.4	7.5	7.4	7.4	7.4	
Operating Noise Level	$L_{PA}$	dB(A)	< 65																	
Efficiency at Full loading	$\eta$	%	95																	
Operating Temperature		°C	-25 to +90																	
		F	-13 to +194																	
Lubrication			Synthetic Lubrication Grease																	
Mouting Position			Any Directions																	
Protection Class			IP 65																	
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																	
Weight	$m$	kg	28																	
		lb <sub>m</sub>	61.6																	



KPG205 1-stage

		1-stage							
Ratio	i		3	4	5	7	8	9	10
Nominal Output Torque		Nm	1250	1200	1000	1000	1000	910	910
		in.lb	11063	10620	8850	8850	8850	8054	8054
Emergency Stop Torque	$T_{2Not}$	Nm	3750	3600	3000	3000	3000	2730	2730
		in.lb	33188	31860	26550	26550	26550	24161	24161
Maximum Acceleration Torque	$T_{2a}$	Nm	2250	2160	1800	1800	1800	1638	1638
		in.lb	19913	19116	15930	15930	15930	14496	14496
Maximum Torque	$T_{2a}$	Nm	2500	2400	2000	2000	2000	1820	1820
		in.lb	22125	21240	17700	17700	17700	16107	16107
Permitted Average Input Speed	$n_{1N}$	rpm	2500						
Maximum Input Speed	$n_{1Max}$	rpm	4000						
Mean No Load Running Torque	$T_{012}$	Nm	3.5	3.4	3.2	3.2	3.2	3.2	3.2
		in.lb	30.98	30.09	28.32	28.32	28.32	28.32	28.32
Standard Backlash P1	$j_1$	arcmin	≤ 6						
Reduced Low Backlash P0	$j_1$	arcmin	≤ 3						
Torsional Rigidity	$C_{021}$	Nm/arcmin	140	140	140	140	140	140	140
		in.lb/arcmin	1239	1239	1239	1239	1239	1239	1239
Maximum Radial Load	$F_{2AMax}$	N	24000						
		lb <sub>r</sub>	5393						
Maximum Axial Load	$F_{2OMax}$	N	22000						
		lb <sub>r</sub>	4944						
Max. Tilting Moment	$M_{2KMax}$	Nm	1280						
		in.lb	11328						
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	28.98	23.67	22.75	22.48	22.59	22.59	22.55
Operating Noise Level	$L_{PA}$	dB(A)	< 67						
Efficiency at Full loading	$\eta$	%	95						
Operating Temperature		°C	-25 to +90						
		F	-13 to +194						
Lubrication			Synthetic Lubrication Grease						
Mouting Position			Any Directions						
Protection Class			IP 65						
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)						
Weight	$m$	kg	39						
		lb <sub>m</sub>	85.8						

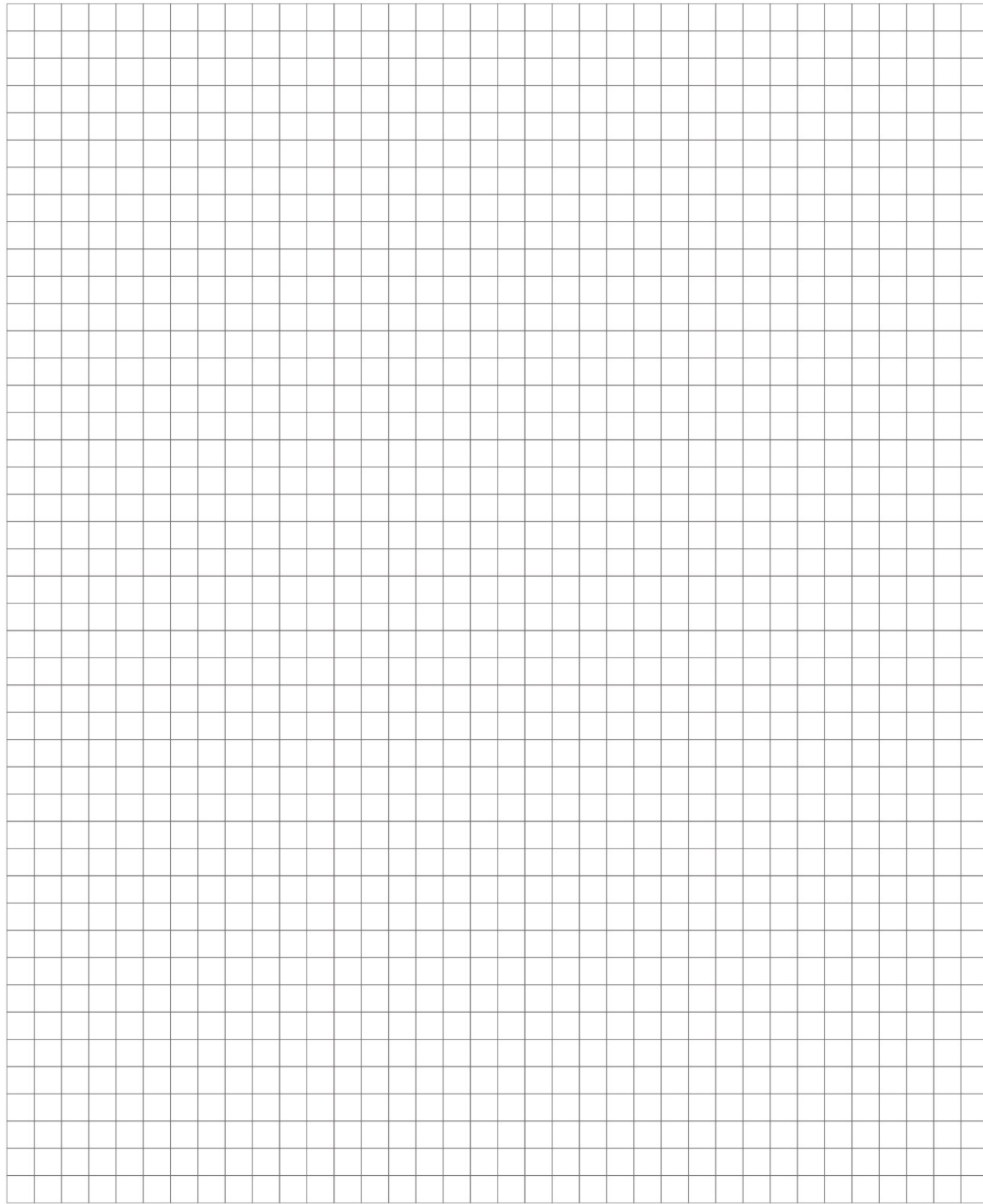
KPG205 2-stage

		2-stage																		
Ratio	i		12	15	16	20	24	25	30	32	35	40	45	50	60	63	64	80	90	100
Nominal Output Torque		Nm	650	650	1250	1200	1200	1200	1200	1250	1200	1200	1200	1200	1000	1000	800	800	728	728
		in.lb	5753	5753	11063	10620	10620	10620	10620	11063	10620	10620	10620	10620	8850	8850	7080	7080	6443	6443
Emergency Stop Torque	$T_{2Not}$	Nm	1950	1950	3750	3600	3600	3600	3600	3750	3600	3600	3600	3600	3000	3000	2400	2400	2184	2184
		in.lb	17258	17258	33188	31860	31860	31860	31860	33188	31860	31860	31860	31860	26550	26550	21240	21240	19328	19328
Maximum Acceleration Torque	$T_{2a}$	Nm	1170	1170	2250	2160	2160	2160	2160	2250	2160	2160	2160	2160	1800	1800	1440	1440	1310.4	1310.4
		in.lb	10355	10355	19913	19116	19116	19116	19116	19913	19116	19116	19116	19116	15930	15930	12744	12744	11597	11597
Maximum Torque	$T_{2a}$	Nm	1300	1300	2500	2400	2400	2400	2400	2500	2400	2400	2400	2400	2000	2000	1600	1600	1456	1456
		in.lb	11505	11505	22125	21240	21240	21240	21240	22125	21240	21240	21240	21240	17700	17700	14160	14160	12886	12886
Permitted Average Input Speed	$n_{1N}$	rpm	2500																	
Maximum Input Speed	$n_{1Max}$	rpm	4000																	
Mean No Load Running Torque	$T_{012}$	Nm	2.6	2.5	2.6	2.5	2.5	2.6	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
		in.lb	23.01	22.13	23.01	22.13	22.13	23.01	22.13	21.24	21.24	21.24	21.24	21.24	21.24	21.24	21.24	21.24	21.24	21.24
Standard Backlash P1	$j_1$	arcmin	≤ 6																	
Reduced Low Backlash P0	$j_1$	arcmin	≤ 4																	
Torsional Rigidity	$C_{021}$	Nm/arcmin	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140
		in.lb/arcmin	1239	1239	1239	1239	1239	1239	1239	1239	1239	1239	1239	1239	1239	1239	1239	1239	1239	1239
Maximum Radial Load	$F_{2AMax}$	N	24000																	
		lb <sub>r</sub>	5393																	
Maximum Axial Load	$F_{2OMax}$	N	22000																	
		lb <sub>r</sub>	4944																	
Max. Tilting Moment	$M_{2KMax}$	Nm	1280																	
		in.lb	11328																	
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	12.35	12.35	7.54	7.42	7.54	7.54	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.54	7.54	7.54	7.42	7.42
Operating Noise Level	$L_{PA}$	dB(A)	< 67																	
Efficiency at Full loading	$\eta$	%	93																	
Operating Temperature		°C	-25 to +90																	
		F	-13 to +194																	
Lubrication			Synthetic Lubrication Grease																	
Mouting Position			Any Directions																	
Protection Class			IP 65																	
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																	
Weight	$m$	kg	40																	
		lb <sub>m</sub>	88																	





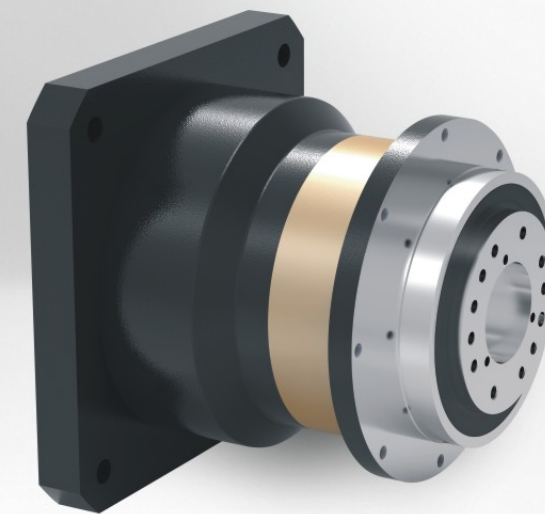
Technical Memo

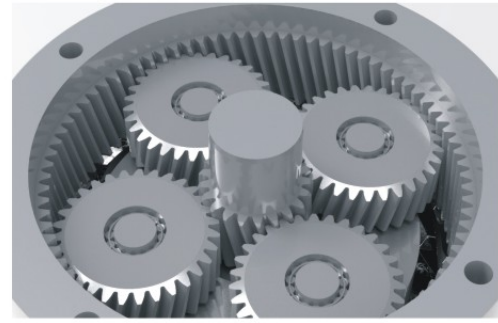


# KPH

Powerful. High Precision. Reliable

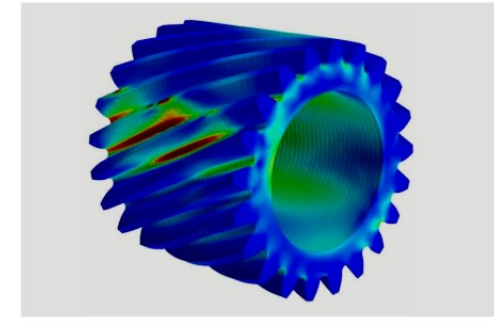
- ▶ Servo Planetary Gearbox
- Advanced Gearbox Solution





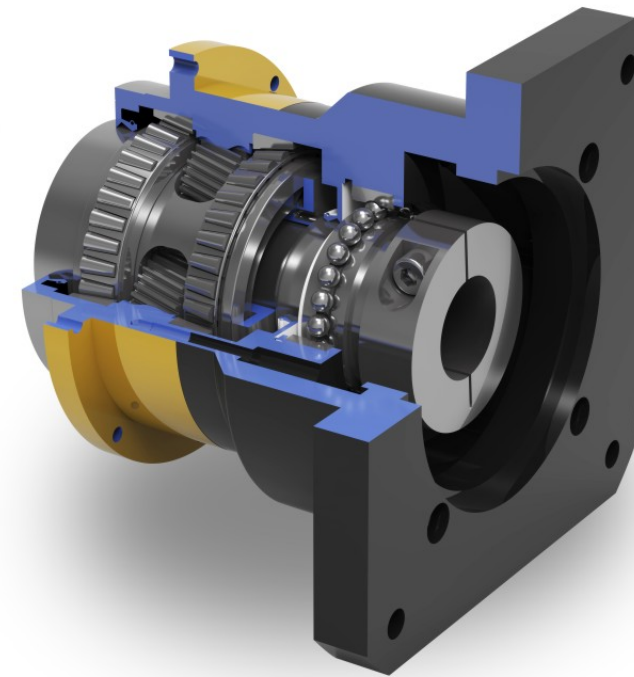
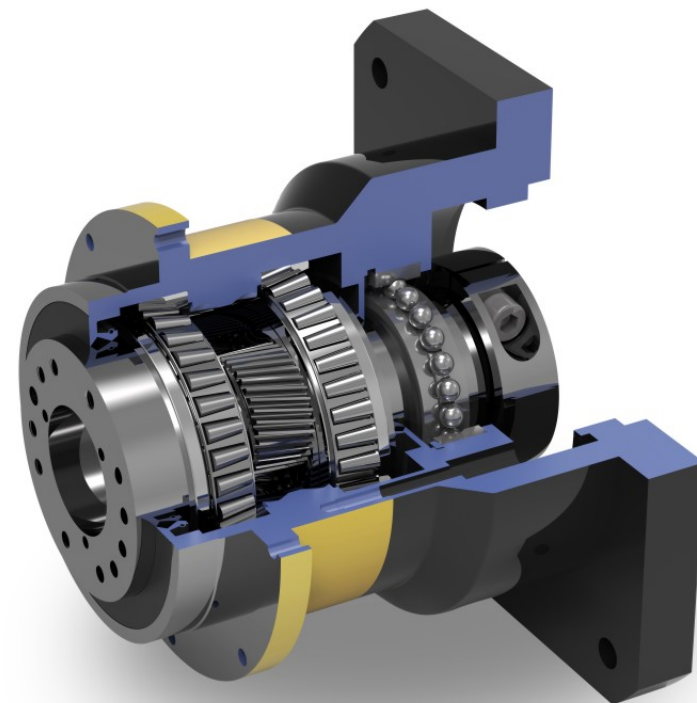
**Helical Gear System Technology**

Thanks to the tooth to tooth compact ratio more than 60%. The helical gearing and full needle bearing bring the benefits including higher torque capacity, smooth and lower noise running, decreased backlash and higher efficiency.



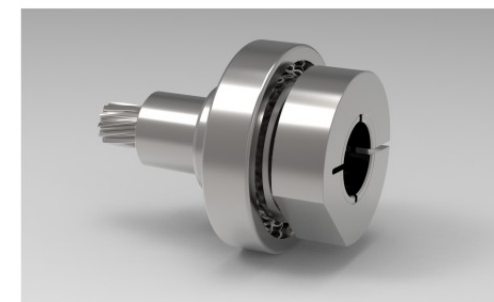
**Super Gear Grinding and Heat Treatment Technology**

The global leading gear grinding technology brings the great improvement for the tooth profile optimization, with the high level carburizing and quenching heat treatment technology to reach high precision and gear harden performance.



**Master CageSpindle Planetary Carrier**

The patented Master CageSpindle integrated planetary carrier support planetary gearbox to increase constructional strength running stability and rigidity significantly. Synthetic grease lubrication allows maintenance free for gearbox whole service life.



**Dynamic Balance Clamping and Sealing System**

For the gearbox input dynamic balance clamping design with perfect concentricity to decrease backlash and increase gearbox operation stability. The ultra sealing system offers grease leakage protection and support gearbox to reach IP65.





KPH050 1-stage

		1-stage						
Ratio	i		4	5	6	7	9	10
Nominal Output Torque		Nm	21	21	20	19	14	14
		in.lb	186	186	177	168	124	124
Emergency Stop Torque	$T_{2Not}$	Nm	63	63	60	57	52	52
		in.lb	558	558	531	504	372	372
Maximum Acceleration Torque	$T_{2B}$	Nm	37.8	37.8	36	34.2	25.2	25.2
		in.lb	335	335	319	303	223	223
Maximum Torque	$T_{2a}$	Nm	42	42	40	38	28	28
		in.lb	372	372	354	336	248	248
Permitted Average Input Speed	$n_{1N}$	rpm	4000					
Maximum Input Speed	$n_{1Max}$	rpm	8000					
Mean No Load Running Torque	$T_{012}$	Nm	0.15	0.14	0.12	0.12	0.12	0.11
		in.lb	1.33	1.24	1.06	1.06	1.06	0.97
Standard Backlash P1	$j_1$	arcmin	≤ 6					
Reduced Low Backlash P0	$j_1$	arcmin	≤ 3					
Torsional Rigidity	$C_{d21}$	Nm/arcmin	7.2	7.2	7.2	7.2	7.2	7.2
		in.lb/arcmin	63.72	63.72	63.72	63.72	63.72	63.72
Maximum Radial Load	$F_{2AMax}$	N	700					
		lb <sub>r</sub>	157					
Maximum Axial Load	$F_{2OMax}$	N	1450					
		lb <sub>r</sub>	326					
Max. Tilting Moment	$M_{2KMax}$	Nm	40					
		in.lb	354					
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.022	0.019	0.017	0.017	0.017	0.017
Operating Noise Level	$L_{PA}$	dB(A)	< 56					
Efficiency at Full loading	$\eta$	%	97					
Operating Temperature		°C	-25 to +90					
		F	-13 to +194					
Lubrication			Synthetic Lubrication Grease					
Mouting Position			Any Directions					
Protection Class			IP65					
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)					
Weight	$m$	kg	0.7					
		lb <sub>m</sub>	1.5					

KPH050 2-stage

		2-stage												
Ratio	i		12	15	16	20	25	35	45	50	63	70	100	
Nominal Output Torque		Nm	20	20	21	21	21	21	21	21	18	18	14	
		in.lb	177	177	186	186	186	186	186	186	159	159	124	
Emergency Stop Torque	$T_{2Not}$	Nm	60	60	63	63	63	63	63	63	54	54	42	
		in.lb	531	531	558	558	558	558	558	558	478	478	372	
Maximum Acceleration Torque	$T_{2B}$	Nm	36	36	37.8	37.8	37.8	37.8	37.8	37.8	32.4	32.4	25.2	
		in.lb	319	319	335	335	335	335	335	335	287	287	223	
Maximum Torque	$T_{2a}$	Nm	40	40	42	42	42	42	42	42	36	36	28	
		in.lb	354	354	372	372	372	372	372	372	319	319	248	
Permitted Average Input Speed	$n_{1N}$	rpm	4000											
Maximum Input Speed	$n_{1Max}$	rpm	8000											
Mean No Load Running Torque	$T_{012}$	Nm	0.15	0.14	0.15	0.14	0.14	0.12	0.12	0.12	0.12	0.12	0.11	
		in.lb	1.33	1.24	1.33	1.24	1.24	1.06	1.06	1.06	1.06	1.06	0.97	
Standard Backlash P1	$j_1$	arcmin	≤ 8											
Reduced Low Backlash P0	$j_1$	arcmin	≤ 5											
Torsional Rigidity	$C_{d21}$	Nm/arcmin	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	
		in.lb/arcmin	63.72	63.72	63.72	63.72	63.72	63.72	63.72	63.72	63.72	63.72	63.72	
Maximum Radial Load	$F_{2AMax}$	N	700											
		lb <sub>r</sub>	157											
Maximum Axial Load	$F_{2OMax}$	N	1450											
		lb <sub>r</sub>	326											
Max. Tilting Moment	$M_{2KMax}$	Nm	40											
		in.lb	354											
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.029	0.019	0.022	0.019	0.019	0.017	0.017	0.017	0.017	0.017	0.017	
Operating Noise Level	$L_{PA}$	dB(A)	< 56											
Efficiency at Full loading	$\eta$	%	95											
Operating Temperature		°C	-25 to +90											
		F	-13 to +194											
Lubrication			Synthetic Lubrication Grease											
Mouting Position			Any Directions											
Protection Class			IP65											
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)											
Weight	$m$	kg	1											
		lb <sub>m</sub>	2.2											



KPH070 1-stage

		1-stage								
Ratio	i		4	5	6	7	8	9	10	
Nominal Output Torque		Nm	52	55	50	50	45	42	42	
		in.lb	460	487	443	443	398	372	372	
Emergency Stop Torque	$T_{2Not}$	Nm	156	165	150	150	135	126	126	
		in.lb	1381	1460	1328	1328	1195	1115	1115	
Maximum Acceleration Torque	$T_{2B}$	Nm	93.6	99	90	90	81	75.6	75.6	
		in.lb	828	876	797	797	717	669	669	
Maximum Torque	$T_{2a}$	Nm	104	110	100	100	90	84	84	
		in.lb	920	974	885	885	797	743	743	
Permitted Average Input Speed	$n_{1N}$	rpm	3000							
Maximum Input Speed	$n_{1Max}$	rpm	6000							
Mean No Load Running Torque	$T_{012}$	Nm	0.3	0.27	0.25	0.25	0.25	0.25	0.25	
		in.lb	2.66	2.39	2.21	2.21	2.21	2.21	2.21	
Standard Backlash P1	$j_i$	arcmin	≤ 6							
Reduced Low Backlash P0	$j_i$	arcmin	≤ 3							
Torsional Rigidity	$C_{d21}$	Nm/arcmin	13.5	13.5	13.5	13.5	13.5	13.5	13.5	
		in.lb/arcmin	119.48	119.48	119.48	119.48	119.48	119.48	119.48	
Maximum Radial Load	$F_{2AMax}$	N	2500							
		lb <sub>r</sub>	562							
Maximum Axial Load	$F_{2OMax}$	N	2000							
		lb <sub>r</sub>	449							
Max. Tilting Moment	$M_{2KMax}$	Nm	40							
		in.lb	352							
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.140	0.130	0.130	0.130	0.130	0.130	0.130	
Operating Noise Level	$L_{PA}$	dB(A)	< 58							
Efficiency at Full loading	$\eta$	%	97							
Operating Temperature		°C	-25 to +90							
		F	-13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)							
Weight	$m$	kg	1.4							
		lb <sub>m</sub>	3.1							

KPH070 2-stage

		2-stage																
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100
Nominal Output Torque		Nm	56	50	52	55	55	55	52	55	55	55	55	50	36	36	33	33
		in.lb	496	443	460	487	487	487	460	487	487	487	487	487	443	319	319	292
Emergency Stop Torque	$T_{2Not}$	Nm	168	150	156	165	165	165	156	165	165	165	165	150	108	108	99	99
		in.lb	1487	1328	1381	1460	1460	1460	1381	1460	1460	1460	1460	1460	1328	956	956	876
Maximum Acceleration Torque	$T_{2B}$	Nm	100.8	90	93.6	99	99	99	93.6	99	99	99	99	90	64.8	64.8	59.4	59.4
		in.lb	892	797	828	876	876	876	828	876	876	876	876	876	797	573	573	526
Maximum Torque	$T_{2a}$	Nm	112	100	104	110	110	110	104	110	110	110	110	100	72	72	66	66
		in.lb	991	885	920	974	974	974	920	974	974	974	974	974	885	637	637	584
Permitted Average Input Speed	$n_{1N}$	rpm	3000															
Maximum Input Speed	$n_{1Max}$	rpm	6000															
Mean No Load Running Torque	$T_{012}$	Nm	0.3	0.27	0.3	0.27	0.27	0.27	0.3	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
		in.lb	2.66	2.39	2.66	2.39	2.39	2.39	2.66	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21
Standard Backlash P1	$j_i$	arcmin	≤ 8															
Reduced Low Backlash P0	$j_i$	arcmin	≤ 5															
Torsional Rigidity	$C_{d21}$	Nm/arcmin	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
		in.lb/arcmin	119.48	119.48	119.48	119.48	119.48	119.48	119.48	119.48	119.48	119.48	119.48	119.48	119.48	119.48	119.48	119.48
Maximum Radial Load	$F_{2AMax}$	N	2500															
		lb <sub>r</sub>	562															
Maximum Axial Load	$F_{2OMax}$	N	2000															
		lb <sub>r</sub>	449															
Max. Tilting Moment	$M_{2KMax}$	Nm	80															
		in.lb	708															
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.127	0.124	0.120	0.075	0.075	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.075	0.075	0.064
Operating Noise Level	$L_{PA}$	dB(A)	< 58															
Efficiency at Full loading	$\eta$	%	95															
Operating Temperature		°C	-25 to +90															
		F	-13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)															
Weight	$m$	kg	1.6															
		lb <sub>m</sub>	3.5															

KPH090 1-stage

		1-stage								
Ratio	i		4	5	6	7	8	9	10	
Nominal Output Torque		Nm	145	155	145	135	115	105	105	
		in.lb	1283	1372	1283	1195	1018	929	929	
Emergency Stop Torque	$T_{2Not}$	Nm	435	465	435	405	345	315	315	
		in.lb	3850	4115	3850	3584	3053	2788	2788	
Maximum Acceleration Torque	$T_{2B}$	Nm	261	279	261	243	207	189	189	
		in.lb	2310	2469	2310	2151	1832	1673	1673	
Maximum Torque	$T_{2a}$	Nm	290	310	290	270	230	210	210	
		in.lb	2567	2744	2567	2390	2036	1859	1859	
Permitted Average Input Speed	$n_{1N}$	rpm	3000							
Maximum Input Speed	$n_{1Max}$	rpm	6000							
Mean No Load Running Torque	$T_{012}$	Nm	0.46	0.41	0.39	0.35	0.35	0.35	0.35	
		in.lb	4.07	3.63	3.45	3.10	3.10	3.10	3.10	
Standard Backlash P1	$j_1$	arcmin	≤ 6							
Reduced Low Backlash P0	$j_1$	arcmin	≤ 3							
Torsional Rigidity	$C_{d21}$	Nm/arcmin	32	32	32	32	32	32	32	
		in.lb/arcmin	283.20	283.20	283.20	283.20	283.20	283.20	283.20	
Maximum Radial Load	$F_{2AMax}$	N	4500							
		lb <sub>r</sub>	1011							
Maximum Axial Load	$F_{2OMax}$	N	3500							
		lb <sub>r</sub>	787							
Max. Tilting Moment	$M_{2KMax}$	Nm	90							
		in.lb	792							
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.48	0.47	0.47	0.47	0.45	0.44	0.44	
Operating Noise Level	$L_{PA}$	dB(A)	< 60							
Efficiency at Full loading	$\eta$	%	97							
Operating Temperature		°C	-25 to +90							
		F	-13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)							
Weight	$m$	kg	3.3							
		lb <sub>m</sub>	7.3							

KPH090 2-stage

		2-stage																	
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	125	125	145	145	155	125	145	155	155	155	155	145	92	92	84	84	
		in.lb	1106	1106	1283	1283	1372	1106	1283	1372	1372	1372	1372	1283	814	814	743	743	
Emergency Stop Torque	$T_{2Not}$	Nm	375	375	435	435	465	375	435	465	465	465	465	435	276	276	252	252	
		in.lb	3319	3319	3850	3850	4115	3319	3850	4115	4115	4115	4115	3850	2443	2443	2230	2230	
Maximum Acceleration Torque	$T_{2B}$	Nm	225	225	261	261	279	225	261	279	279	279	279	261	165.6	165.6	151.2	151.2	
		in.lb	1991	1991	2310	2310	2469	1991	2310	2469	2469	2469	2469	2310	1466	1466	1338	1338	
Maximum Torque	$T_{2a}$	Nm	250	250	290	290	310	250	290	310	310	310	310	290	184	184	168	168	
		in.lb	2213	2213	2567	2567	2744	2213	2567	2744	2744	2744	2744	2567	1628	1628	1487	1487	
Permitted Average Input Speed	$n_{1N}$	rpm	3000																
Maximum Input Speed	$n_{1Max}$	rpm	6000																
Mean No Load Running Torque	$T_{012}$	Nm	0.46	0.41	0.46	0.41	0.41	0.41	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
		in.lb	4.07	3.63	4.07	3.63	3.63	3.63	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10
Standard Backlash P1	$j_1$	arcmin	≤ 8																
Reduced Low Backlash P0	$j_1$	arcmin	≤ 5																
Torsional Rigidity	$C_{d21}$	Nm/arcmin	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	
		in.lb/arcmin	283.20	283.20	283.20	283.20	283.20	283.20	283.20	283.20	283.20	283.20	283.20	283.20	283.20	283.20	283.20	283.20	
Maximum Radial Load	$F_{2AMax}$	N	4500																
		lb <sub>r</sub>	1011																
Maximum Axial Load	$F_{2OMax}$	N	3500																
		lb <sub>r</sub>	787																
Max. Tilting Moment	$M_{2KMax}$	Nm	200																
		in.lb	1770																
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.44	0.44	0.43	0.44	0.44	0.44	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.44	0.44	0.44	
Operating Noise Level	$L_{PA}$	dB(A)	< 60																
Efficiency at Full loading	$\eta$	%	95																
Operating Temperature		°C	-25 to +90																
		F	-13 to +194																
Lubrication			Synthetic Lubrication Grease																
Mouting Position			Any Directions																
Protection Class			IP 65																
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																
Weight	$m$	kg	4.5																
		lb <sub>m</sub>	9.9																



KPH120 1-stage

		1-stage								
Ratio	i		4	5	6	7	8	9	10	
Nominal Output Torque		Nm	300	320	300	290	255	220	220	
		in.lb	2655	2832	2655	2567	2257	1947	1947	
Emergency Stop Torque	$T_{2Not}$	Nm	900	960	900	870	765	660	660	
		in.lb	7965	8496	7965	7700	6770	5841	5841	
Maximum Acceleration Torque	$T_{2a}$	Nm	540	576	540	522	459	396	396	
		in.lb	4779	5098	4779	4620	4062	3505	3505	
Maximum Torque	$T_{2a}$	Nm	600	640	600	580	510	440	440	
		in.lb	5310	5664	5310	5133	4514	3894	3894	
Permitted Average Input Speed	$n_{1N}$	rpm	3000							
Maximum Input Speed	$n_{1Max}$	rpm	6000							
Mean No Load Running Torque	$T_{012}$	Nm	1.05	0.95	0.91	0.88	0.88	0.88	0.88	
		in.lb	9.29	8.41	8.05	7.79	7.79	7.79	7.79	
Standard Backlash P1	$j_1$	arcmin	≤6							
Reduced Low Backlash P0	$j_1$	arcmin	≤3							
Torsional Rigidity	$C_{d21}$	Nm/arcmin	81	81	81	81	81	81	81	
		in.lb/arcmin	716.85	716.85	716.85	716.85	716.85	716.85	716.85	
Maximum Radial Load	$F_{2AMax}$	N	7800							
		lb <sub>r</sub>	1753							
Maximum Axial Load	$F_{2OMax}$	N	6000							
		lb <sub>r</sub>	1348							
Max. Tilting Moment	$M_{2KMax}$	Nm	150							
		in.lb	1320							
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	2.74	2.71	2.71	2.62	2.62	2.62	2.57	
Operating Noise Level	$L_{PA}$	dB(A)	< 63							
Efficiency at Full loading	$\eta$	%	97							
		°C	-25 to +90							
Operating Temperature		F	-13 to +194							
		Synthetic Lubrication Grease								
Mouting Position	Any Directions									
Protection Class	IP 65									
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)							
Weight	$m$	kg	5.5							
		lb <sub>m</sub>	12.1							

KPH120 2-stage

		2-stage																		
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100		
Nominal Output Torque		Nm	310	310	300	300	320	210	305	320	320	320	320	300	204	204	176	176		
		in.lb	2744	2744	2655	2655	2832	1859	2699	2832	2832	2832	2832	2655	1805	1805	1558	1558		
Emergency Stop Torque	$T_{2Not}$	Nm	930	930	900	900	960	630	915	960	960	960	960	900	612	612	528	528		
		in.lb	8231	8231	7965	7965	8496	5576	8098	8496	8496	8496	8496	7965	5416	5416	4673	4673		
Maximum Acceleration Torque	$T_{2a}$	Nm	558	558	540	540	576	378	549	576	576	576	576	540	367.2	367.2	316.8	316.8		
		in.lb	4938	4938	4779	4779	5098	3345	4859	5098	5098	5098	5098	4779	3250	3250	2804	2804		
Maximum Torque	$T_{2a}$	Nm	620	620	600	600	640	420	610	640	640	640	640	600	408	408	352	352		
		in.lb	5487	5487	5310	5310	5664	3717	5399	5664	5664	5664	5664	5310	3611	3611	3115	3115		
Permitted Average Input Speed	$n_{1N}$	rpm	3000																	
Maximum Input Speed	$n_{1Max}$	rpm	6000																	
Mean No Load Running Torque	$T_{012}$	Nm	1.05	0.95	1.05	0.95	0.95	0.95	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88		
		in.lb	9.29	8.41	9.29	8.41	8.41	8.41	7.79	7.79	7.79	7.79	7.79	7.79	7.79	7.79	7.79	7.79		
Standard Backlash P1	$j_1$	arcmin	≤8																	
Reduced Low Backlash P0	$j_1$	arcmin	≤5																	
Torsional Rigidity	$C_{d21}$	Nm/arcmin	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81		
		in.lb/arcmin	716.85	716.85	716.85	716.85	716.85	716.85	716.85	716.85	716.85	716.85	716.85	716.85	716.85	716.85	716.85	716.85		
Maximum Radial Load	$F_{2AMax}$	N	7800																	
		lb <sub>r</sub>	1753																	
Maximum Axial Load	$F_{2OMax}$	N	6000																	
		lb <sub>r</sub>	1348																	
Max. Tilting Moment	$M_{2KMax}$	Nm	400																	
		in.lb	3540																	
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	2.56	2.58	1.75	1.5	1.49	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.5	1.3	1.3		
Operating Noise Level	$L_{PA}$	dB(A)	< 63																	
Efficiency at Full loading	$\eta$	%	95																	
		°C	-25 to +90																	
Operating Temperature		F	-13 to +194																	
		Synthetic Lubrication Grease																		
Mouting Position	Any Directions																			
Protection Class	IP 65																			
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																	
Weight	$m$	kg	8																	
		lb <sub>m</sub>	17.6																	

KPH160 1-stage

		1-stage								
Ratio	i		4	5	6	7	8	9	10	
Nominal Output Torque		Nm	550	650	610	540	510	440	440	
		in.lb	4868	5753	5399	4779	4514	3894	3894	
Emergency Stop Torque	$T_{2Not}$	Nm	1650	1950	1830	1620	1530	1320	1320	
		in.lb	14603	17258	16196	14337	13541	11682	11682	
Maximum Acceleration Torque	$T_{2a}$	Nm	990	1170	1098	972	918	792	792	
		in.lb	8762	10355	9717	8602	8124	7009	7009	
Maximum Torque	$T_{2a}$	Nm	1100	1300	1220	1080	1020	880	880	
		in.lb	9735	11505	10797	9558	9027	7788	7788	
Permitted Average Input Speed	$n_{1N}$	rpm	3000							
Maximum Input Speed	$n_{1Max}$	rpm	6000							
Mean No Load Running Torque	$T_{012}$	Nm	2.6	2.5	2.4	2.4	2.4	2.4	2.4	
		in.lb	23.01	22.13	21.24	21.24	21.24	21.24	21.24	
Standard Backlash P1	$j_1$	arcmin	≤6							
Reduced Low Backlash P0	$j_1$	arcmin	≤3							
Torsional Rigidity	$C_{d21}$	Nm/arcmin	155	155	155	155	155	155	155	
		in.lb/arcmin	1371.75	1371.75	1371.75	1371.75	1371.75	1371.75	1371.75	
Maximum Radial Load	$F_{2AMax}$	N	12000							
		lb <sub>r</sub>	2697							
Maximum Axial Load	$F_{2OMax}$	N	10000							
		lb <sub>r</sub>	2247							
Max. Tilting Moment	$M_{2KMax}$	Nm	480							
		in.lb	4224							
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	7.54	7.42	7.42	7.25	7.14	7.14	7.14	
Operating Noise Level	$L_{PA}$	dB(A)	< 65							
Efficiency at Full loading	$\eta$	%	97							
Operating Temperature		°C	-25 to +90							
		F	-13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)							
Weight	$m$	kg	20							
		lb <sub>m</sub>	44.0							

KPH160 2-stage

		2-stage																		
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	63	64	80	90	100	
Nominal Output Torque		Nm	500	500	550	650	650	450	550	650	650	550	650	610	510	408	408	352	352	
		in.lb	4425	4425	4868	5753	5753	3983	4868	5753	4868	5753	5753	5399	4514	3611	3611	3115	3115	
Emergency Stop Torque	$T_{2Not}$	Nm	1500	1500	1650	1950	1950	1350	1650	1950	1650	1950	1950	1830	1530	1224	1224	1056	1056	
		in.lb	13275	13275	14603	17258	17258	11948	14603	17258	14603	17258	17258	16196	13541	10832	10832	9346	9346	
Maximum Acceleration Torque	$T_{2a}$	Nm	900	900	990	1170	1170	810	990	1170	990	1170	1170	1098	918	734.4	734.4	633.6	633.6	
		in.lb	7965	7965	8762	10355	10355	7169	8762	10355	8762	10355	10355	9717	8124	6499	6499	5607	5607	
Maximum Torque	$T_{2a}$	Nm	1000	1000	1100	1300	1300	900	1100	1300	1100	1300	1300	1220	1020	816	816	704	704	
		in.lb	8850	8850	9735	11505	11505	7965	9735	11505	9735	11505	11505	10797	9027	7222	7222	6230	6230	
Permitted Average Input Speed	$n_{1N}$	rpm	3000																	
Maximum Input Speed	$n_{1Max}$	rpm	6000																	
Mean No Load Running Torque	$T_{012}$	Nm	2.6	2.5	2.6	2.5	2.5	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	
		in.lb	23.01	22.13	23.01	22.13	22.13	22.13	21.24	21.24	21.24	21.24	21.24	21.24	21.24	21.24	21.24	21.24	21.24	
Standard Backlash P1	$j_1$	arcmin	≤8																	
Reduced Low Backlash P0	$j_1$	arcmin	≤5																	
Torsional Rigidity	$C_{d21}$	Nm/arcmin	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	
		in.lb/arcmin	1371.75	1371.75	1371.75	1371.75	1371.75	1371.75	1371.75	1371.75	1371.75	1371.75	1371.75	1371.75	1371.75	1371.75	1371.75	1371.75		
Maximum Radial Load	$F_{2AMax}$	N	12000																	
		lb <sub>r</sub>	2697																	
Maximum Axial Load	$F_{2OMax}$	N	10000																	
		lb <sub>r</sub>	2247																	
Max. Tilting Moment	$M_{2KMax}$	Nm	850																	
		in.lb	7522.5																	
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	12.35	12.35	7.47	6.65	5.81	6.34	6.34	5.36	4.08	5.36	4.08	4.08	7.5	7.5	7.4	7.4	7.3	
Operating Noise Level	$L_{PA}$	dB(A)	< 65																	
Efficiency at Full loading	$\eta$	%	95																	
Operating Temperature		°C	-25 to +90																	
		F	-13 to +194																	
Lubrication			Synthetic Lubrication Grease																	
Mouting Position			Any Directions																	
Protection Class			IP 65																	
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																	
Weight	$m$	kg	25																	
		lb <sub>m</sub>	55																	



KPH205 1-stage

		1-stage								
Ratio	i		4	5	6	7	8	9	10	
Nominal Output Torque		Nm	1250	1200	1000	1000	1000	910	910	
		in.lb	11063	10620	8850	8850	8850	8054	8054	
Emergency Stop Torque	$T_{2Not}$	Nm	3750	3600	3000	3000	3000	2730	2730	
		in.lb	33188	31860	26550	26550	26550	24161	24161	
Maximum Acceleration Torque	$T_{2B}$	Nm	2250	2160	1800	1800	1800	1638	1638	
		in.lb	19913	19116	15930	15930	15930	14496	14496	
Maximum Torque	$T_{2a}$	Nm	2500	2400	2000	2000	2000	1820	1820	
		in.lb	22125	21240	17700	17700	17700	16107	16107	
Permitted Average Input Speed	$n_{1N}$	rpm	2000							
Maximum Input Speed	$n_{1Max}$	rpm	4000							
Mean No Load Running Torque	$T_{012}$	Nm	3.5	3.4	3.2	3.2	3.2	3.2	3.2	
		in.lb	30.98	30.09	28.32	28.32	28.32	28.32	28.32	
Standard Backlash P1	$j_1$	arcmin	≤6							
Reduced Low Backlash P0	$j_1$	arcmin	≤3							
Torsional Rigidity	$C_{d21}$	Nm/arcmin	448	448	448	448	448	448	448	
		in.lb/arcmin	3964.80	3964.80	3964.80	3964.80	3964.80	3964.80	3964.80	
Maximum Radial Load	$F_{2AMax}$	N	18000							
		lb <sub>r</sub>	4045							
Maximum Axial Load	$F_{2OMax}$	N	15000							
		lb <sub>r</sub>	3371							
Max. Tilting Moment	$M_{2KMax}$	Nm	1300							
		in.lb	11440							
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	23.67	22.75	22.75	22.48	22.59	22.59	22.55	
Operating Noise Level	$L_{PA}$	dB(A)	< 67							
Efficiency at Full loading	$\eta$	%	97							
Operating Temperature		°C	-25 to +90							
		F	-13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)							
Weight	$m$	kg	31							
		lb <sub>m</sub>	68.2							

KPH205 2-stage

		2-stage																		
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	63	64	80	90	100	
Nominal Output Torque		Nm	650	850	1250	1200	1200	650	1250	1200	1200	1200	1200	1000	1000	800	800	728	728	
		in.lb	5753	7523	11063	10620	10620	5753	11063	10620	10620	10620	10620	8850	8850	7080	7080	6443	6443	
Emergency Stop Torque	$T_{2Not}$	Nm	1950	2550	3750	3600	3600	1950	3750	3600	3600	3600	3600	3000	3000	2400	2400	2184	2184	
		in.lb	17258	22568	33188	31860	31860	17258	33188	31860	31860	31860	31860	26550	26550	21240	21240	19328	19328	
Maximum Acceleration Torque	$T_{2B}$	Nm	1170	1530	2250	2160	2160	1170	2250	2160	2160	2160	2160	1800	1800	1440	1440	1310.4	1310.4	
		in.lb	10355	13541	19913	19116	19116	10355	19913	19116	19116	19116	19116	15930	15930	12744	12744	11597	11597	
Maximum Torque	$T_{2a}$	Nm	1300	1700	2500	2400	2400	1300	2500	2400	2400	2400	2400	2000	2000	1600	1600	1456	1456	
		in.lb	11505	15045	22125	21240	21240	11505	22125	21240	21240	21240	21240	17700	17700	14160	14160	12886	12886	
Permitted Average Input Speed	$n_{1N}$	rpm	2000																	
Maximum Input Speed	$n_{1Max}$	rpm	4000																	
Mean No Load Running Torque	$T_{012}$	Nm	2.6	2.5	2.6	2.5	2.5	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	
		in.lb	23.01	22.13	23.01	22.13	22.13	22.13	21.24	21.24	21.24	21.24	21.24	21.24	21.24	21.24	21.24	21.24	21.24	
Standard Backlash P1	$j_1$	arcmin	≤8																	
Reduced Low Backlash P0	$j_1$	arcmin	≤5																	
Torsional Rigidity	$C_{d21}$	Nm/arcmin	448	448	448	448	448	448	448	448	448	448	448	448	448	448	448	448	448	
		in.lb/arcmin	3964.80	3964.80	3964.80	3964.80	3964.80	3964.80	3964.80	3964.80	3964.80	3964.80	3964.80	3964.80	3964.80	3964.80	3964.80	3964.80	3964.80	
Maximum Radial Load	$F_{2AMax}$	N	18000																	
		lb <sub>r</sub>	4045																	
Maximum Axial Load	$F_{2OMax}$	N	15000																	
		lb <sub>r</sub>	3371																	
Max. Tilting Moment	$M_{2KMax}$	Nm	1280																	
		in.lb	11328																	
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	12.35	12.3	7.54	7.42	7.54	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.54	7.54	7.54	7.42	7.42	
Operating Noise Level	$L_{PA}$	dB(A)	< 67																	
Efficiency at Full loading	$\eta$	%	95																	
Operating Temperature		°C	-25 to +90																	
		F	-13 to +194																	
Lubrication			Synthetic Lubrication Grease																	
Mouting Position			Any Directions																	
Protection Class			IP 65																	
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)																	
Weight	$m$	kg	39																	
		lb <sub>m</sub>	85.8																	

KPH255 1-stage

		1-stage							
Ratio	i		4	5	6	7	8	9	10
Nominal Output Torque		Nm	1800	2050	1850	1750	1550	1500	1500
		in.lb	15930	18143	16373	15488	13718	13275	13275
Emergency Stop Torque	$T_{2Not}$	Nm	5400	6150	5550	5250	4650	4500	4500
		in.lb	47790	54428	49118	46463	41153	39825	39825
Maximum Acceleration Torque	$T_{2a}$	Nm	3240	3690	3330	3150	2790	2700	2700
		in.lb	28674	32657	29471	27878	24692	23895	23895
Maximum Torque	$T_{2a}$	Nm	3600	4100	3700	3500	3100	3000	3000
		in.lb	31860	36285	32745	30975	27435	26550	26550
Permitted Average Input Speed	$n_{1N}$	rpm	2000						
Maximum Input Speed	$n_{1Max}$	rpm	4000						
Mean No Load Running Torque	$T_{012}$	Nm	5.5	5.25	5.1	5.1	5.1	5.1	5.1
		in.lb	48.68	46.46	45.14	45.14	45.14	45.14	45.14
Standard Backlash P1	$j_1$	arcmin	≤6						
Reduced Low Backlash P0	$j_1$	arcmin	≤3						
Torsional Rigidity	$C_{d21}$	Nm/arcmin	1050	1050	1050	1050	1050	1050	1050
		in.lb/arcmin	9292.50	9292.50	9292.50	9292.50	9292.50	9292.50	9292.50
Maximum Radial Load	$F_{2AMax}$	N	45000						
		lb <sub>r</sub>	10112						
Maximum Axial Load	$F_{2OMax}$	N	22500						
		lb <sub>r</sub>	5056						
Max. Tilting Moment	$M_{2KMax}$	Nm	1800						
		in.lb	15840						
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	37.37	33.27	30.27	27.84	25.84	24.84	23.56
Operating Noise Level	$L_{PA}$	dB(A)	< 70						
Efficiency at Full loading	$\eta$	%	97						
Operating Temperature		°C	-25 to +90						
		F	-13 to +194						
Lubrication			Synthetic Lubrication Grease						
Mouting Position			Any Directions						
Protection Class			IP 65						
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)						
Weight	$m$	kg	70						
		lb <sub>m</sub>	154.0						

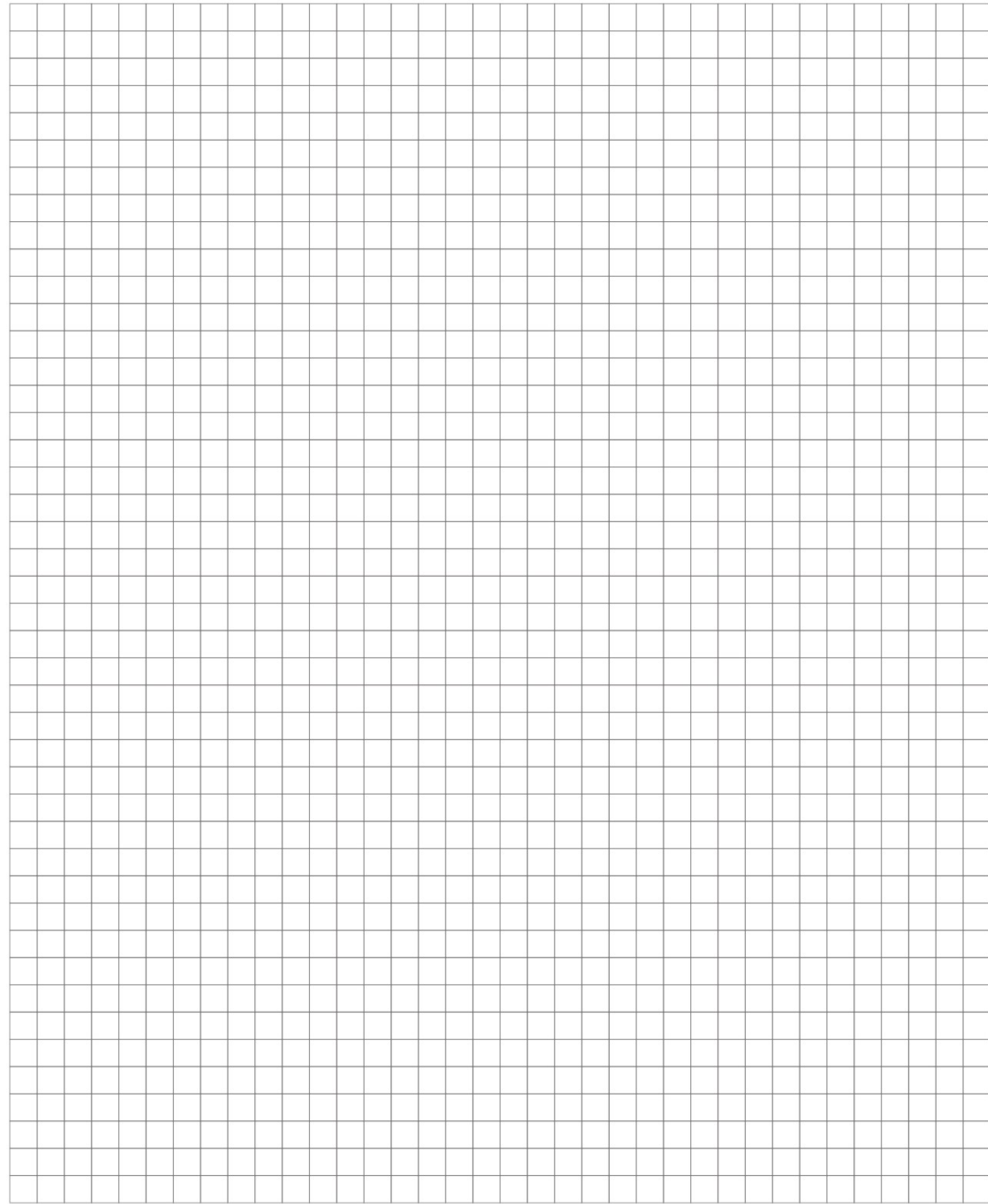
KPH255 2-stage

		2-stage																
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100
Nominal Output Torque		Nm	1800	1200	2800	3000	3000	1800	2800	2850	3050	2050	2850	2850	1850	1550	1200	1200
		in.lb	15930	10620	24780	26550	26550	15930	24780	25223	26993	18143	25223	25223	16373	13718	10620	10620
Emergency Stop Torque	$T_{2Not}$	Nm	5400	3600	8400	9000	9000	5400	8400	8550	9150	6150	8550	8550	5550	4650	3600	3600
		in.lb	47790	31860	74340	79650	79650	47790	74340	75668	80978	54428	75668	75668	49118	41153	31860	31860
Maximum Acceleration Torque	$T_{2a}$	Nm	3240	2160	5040	5400	5400	3240	5040	5130	5490	3690	5130	5130	3330	2790	2160	2160
		in.lb	28674	19116	44604	47790	47790	28674	44604	45401	48587	32657	45401	45401	29471	24692	19116	19116
Maximum Torque	$T_{2a}$	Nm	3600	2400	5600	6000	6000	3600	5600	5700	6100	4100	5700	5700	3700	3100	2400	2400
		in.lb	31860	21240	49560	53100	53100	31860	49560	50445	53985	36285	50445	50445	32745	27435	21240	21240
Permitted Average Input Speed	$n_{1N}$	rpm	2000															
Maximum Input Speed	$n_{1Max}$	rpm	4000															
Mean No Load Running Torque	$T_{012}$	Nm	3.5	3.4	3.5	3.4	3.4	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
		in.lb	30.98	30.09	30.98	30.09	30.09	28.32	28.32	28.32	28.32	28.32	28.32	28.32	28.32	28.32	28.32	28.32
Standard Backlash P1	$j_1$	arcmin	≤8															
Reduced Low Backlash P0	$j_1$	arcmin	≤5															
Torsional Rigidity	$C_{d21}$	Nm/arcmin	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050
		in.lb/arcmin	9292.50	9292.50	9292.50	9292.50	9292.50	9292.50	9292.50	9292.50	9292.50	9292.50	9292.50	9292.50	9292.50	9292.50	9292.50	9292.50
Maximum Radial Load	$F_{2AMax}$	N	45000															
		lb <sub>r</sub>	10112															
Maximum Axial Load	$F_{2OMax}$	N	22500															
		lb <sub>r</sub>	5056															
Max. Tilting Moment	$M_{2KMax}$	Nm	2350															
		in.lb	20797.5															
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	15.98	28.92	14.67	13.75	7.54	-	6.59	6.59	6.59	6.59	6.59	-	6.59	6.59	6.59	
Operating Noise Level	$L_{PA}$	dB(A)	< 70															
Efficiency at Full loading	$\eta$	%	95															
Operating Temperature		°C	-25 to +90															
		F	-13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	$L_{10}$	h	20,000(Continuous Operation)															
Weight	$m$	kg	80															
		lb <sub>m</sub>	176															

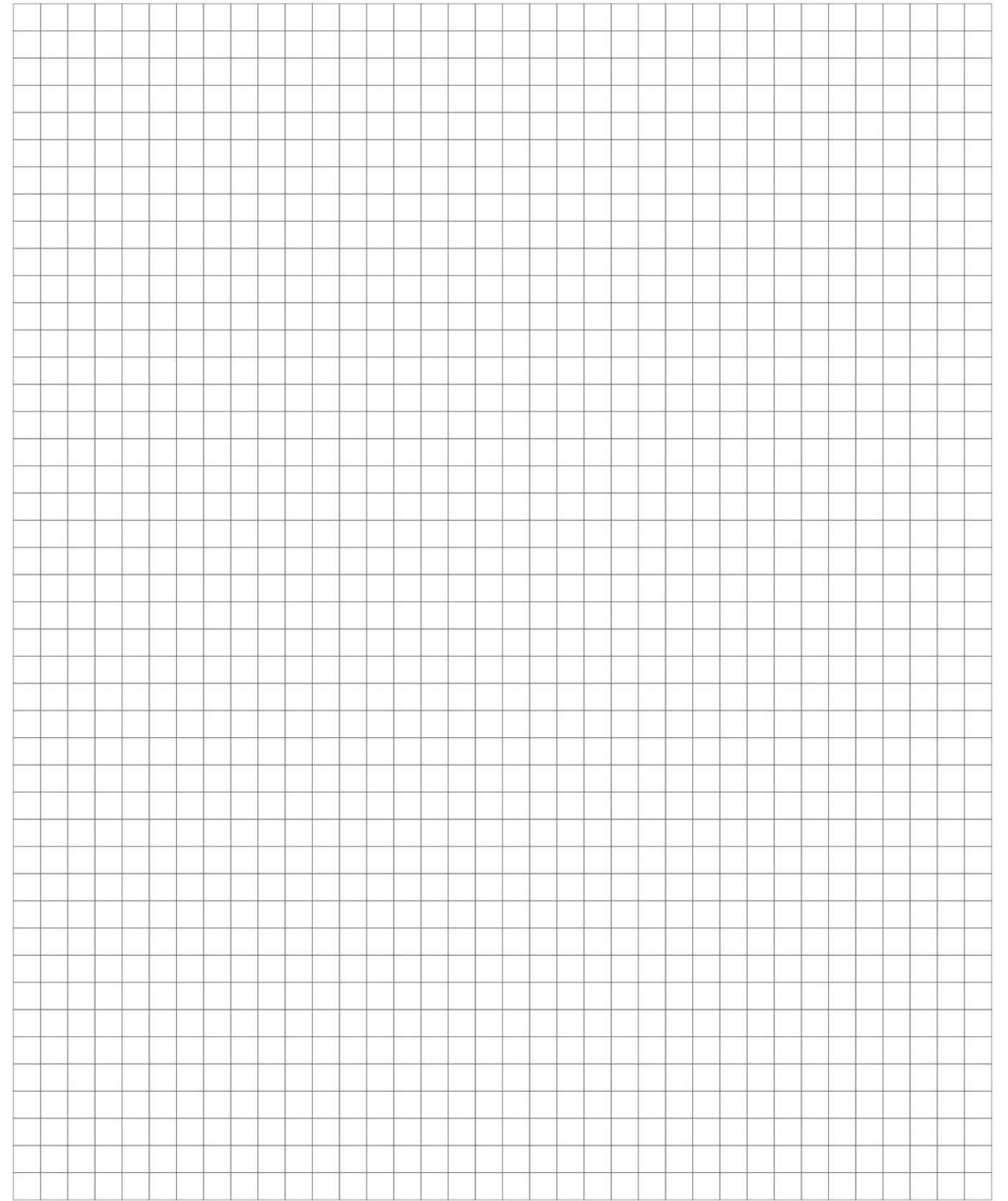




Technical Memo



Technical Memo





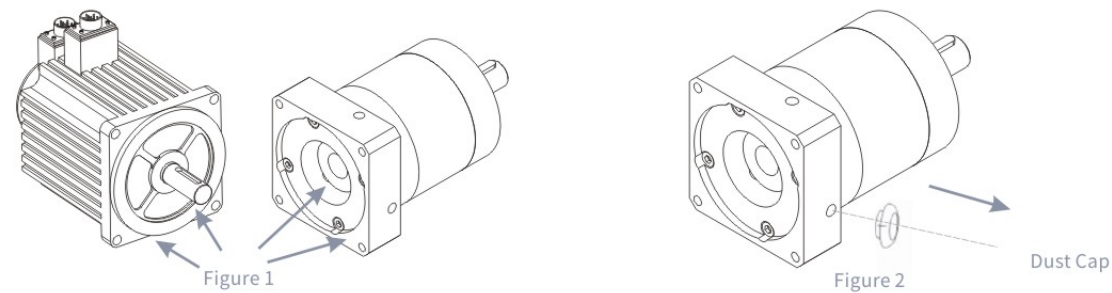
### Installation Instruction

Correct installation, use and maintenance of gearboxes are important to the normal operation of mechanical equipment. Therefore, please strictly follow the instruction below for correct installation, use and maintenance when you work with KOFON planetary gearboxes.

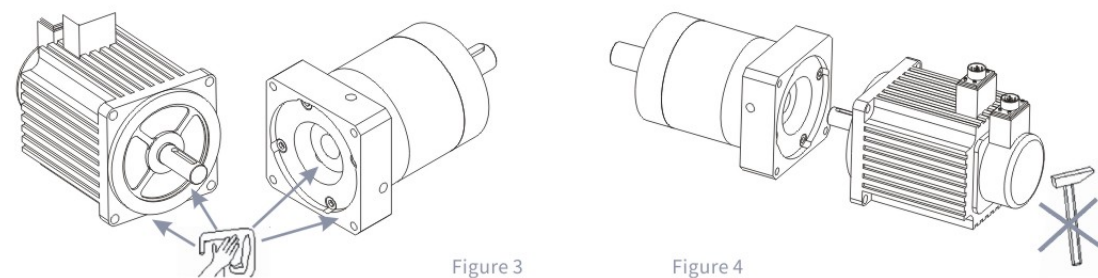
#### The Connection with the Prime Engine

**Step 1.** Before installation, please make sure that the motor and gearbox are intact, and strictly check whether or not the sizes of the connection parts of the motor fit the related parts of the gearbox, specifically the sizes of the motor spigot and the gearbox notch as well as the fitting tolerance.

**Step 2.** Remove the dust covers from the holes on the outside of the gearbox flange. Adjust the elastic clamping device of the input shaft so that the fastening bolts of it are aligned with the holes and then insert hex wrench to loosen the fastening bolts. This step applies to the coupling of tube clip type locking mechanism.



**Step 3.** Wipe away the anti-rust oil from the output shaft, the positioning spigot and gearbox coupling parts with gasoline or zinc sodium water to ensure tight connection and flexible operation and prevent unnecessary wear and tear. Naturally connect the motor with the gearbox, during which it shall be ensured that the coaxiality of the motor output shaft and the gearbox input shaft are the same and the flanges on the outsides of them are parallel. Inconsistent coaxiality will cause gear wear or broken motor shaft. Furthermore, it's forbidden to hit with a hammer or other objects for fear of damage to the bearing or gear caused by excessively great axial or radial force.



**Step 4.** Before connecting the motor with the gearbox, please align the orientations of the motor and the gearbox as could to ensure uniform force distribution. Partially screw on the mounting bolts at any two diagonal positions, and then the bolts at the other two diagonal positions. Fasten the four mountings bolts one by one. Finally, screw on and tighten the fastening bolts. All the fastening bolts need to be fixed and checked with torque wrench according to fixed torque moment data as indicated.

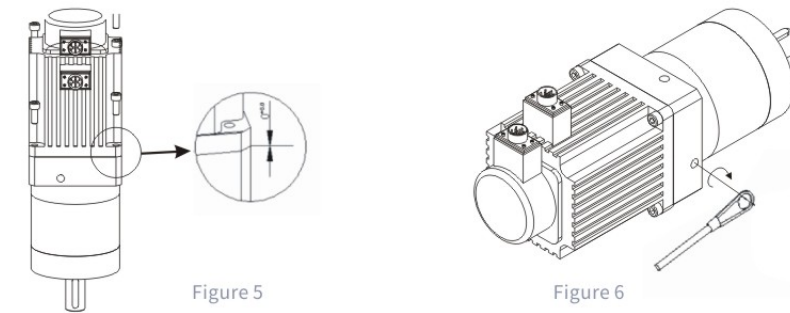


Table 1

	Product Model	KPL50/KPX45	KPL70/KPX65	KPL90/KPX85	KPL120/KPX115	KPL160/KPX142	KPX180/KPX220
Tightening Torque	TA (Nm)	4.5	9	15	36	36	81
Bolt Size	Sw (mm)	M4	M5	M6	M8	M8	M10

#### The Connection with the Working Machine

During the connection with the working machine, importance shall be attached to the transmission center axis alignment, and the error should be no greater than the compensation of the coupling used. Good alignment can extend the service life and achieve desirable transmission efficiency. When installing transmission parts on the output shaft, it is not allowed to hit with a hammer for fear of causing damage to the internal parts of the gearbox. Instead, we usually resort to the internal thread of the shaft end and the assembling fixture, and the transmission parts are pressed in with plug. It is better not to use rigid fixed coupling, because improper installation of such couplings will cause unnecessary external load, and result in early bearing damage, or even cracked output shaft.

#### The Fixing of Gearbox

Gearbox should be securely mounted on a stable foundation or bracket with smooth circulation of cooling air. Unstable foundation will cause vibration and noise during operation, and bring damage to the bearing and gear. When the transmission coupling contains protrusion part or when it's transmitted with gear or sprocket, installation of protective devices shall be considered. After the installation, a comprehensive check of the accuracy of the installation position and the reliability of tightness of all the fastening parts shall be conducted in turn to ensure a flexible rotation. The gearbox should be greased before empty weight trial operation which shall not be less than 2 hours. The operation should be smooth without shock, vibration, noise or oil leakage. Abnormality should be immediately handled. If the ambient temperature is too high or too low, the grease brand should be changed.

