KOFON Drive the World

KOFON | CaesarPlanetary

Servo Planetary Gearbox Advanced Line

2023 Edition

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Product Catalog

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 esbalished in 2010.

Now it employs over 950 staffs worldwide. We focus on the development, manufacturing and sales of the high precison planetary gearbox, strain wave gear, spiral bevel gearbox, planetary roller screw and KGV 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.

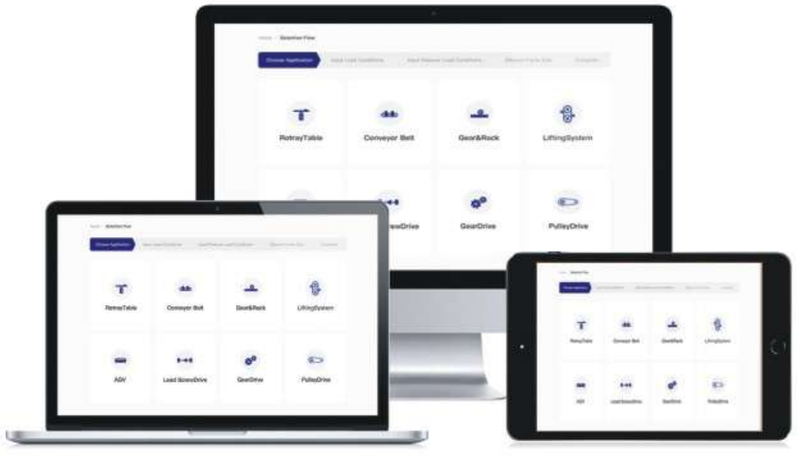




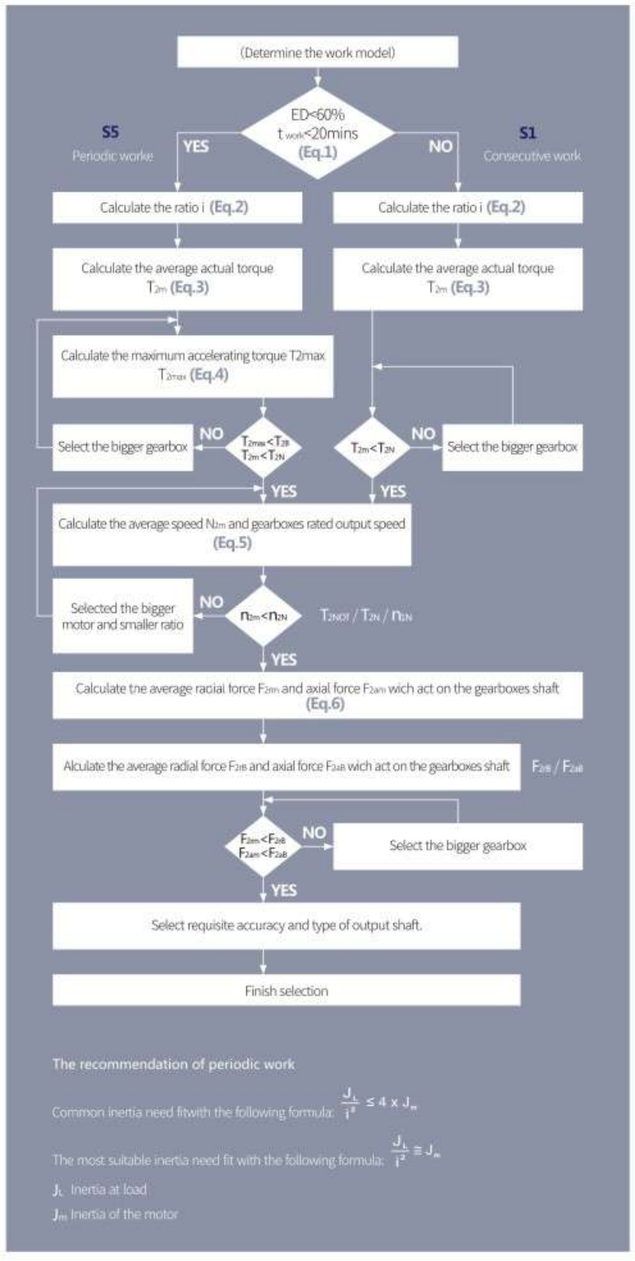


Benefit with Powerful Gearbox Design Programme (KDP)

- 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



The recommendation of periodic work

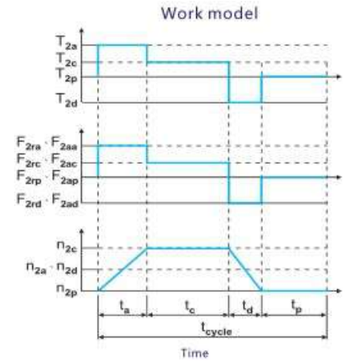
Common inertia need fitwith the following formula: $\frac{J_L}{i^2} \le 4 \times J_m$

The most suitable inertia need fit with the following formula: $\frac{J_L}{i^2} \cong J_m$

J_L Inertia at load

J_m Inertia of the motor

Work model



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. $i \cong \frac{n_m}{n_{work}}$

n_m Output speed of motor

n_{work} Actual speed on work (Eq.2)

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

K_A Coefficient at load

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

$F_{2am} = \sqrt[3]{\frac{n_{2a} \times t_a \times F_{2aa}^{\ 3} + n_{2c} \times t_c \times F_{2ac}^{\ 3} + n_{2d} \times t_d \times F_{2ad}^{\ 3}}{n_{2a} \times t_a + n_{2c} \times t_c + n_{2d} \times t_d}}$ (Eq.6)

Order Instructions

Order Code: KPE — 120 — 02 — 015 — S1 — P1 — Servo Motor

KPE

Gearbox Series: KPE

120

Gearbox Size

02

Gearbox Stage

015

Gearbox Ratio

S1

S1: Output shaft with key
S2: Output shaft without key

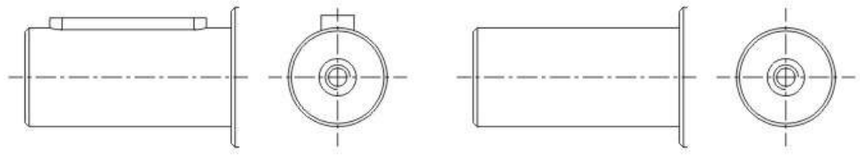
P1

Gearbox Precision

Servo Motor

Motor Manufacturer and model

Output Shaft Key Option



S1: Output shaft with key

S2: Output shaft without key

Ordering Example: KPE120-2-15-S1-P2-ABB-8M1230

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

Product Catalog

KPE 01

KVE 23

KPLN 41

XA 63

XAR 85

KPLF-B 105

KPX-B 127

KVX-B 149

KPG 169

KVG 187

KPH 205

KVH 227

Installation Instruction 246

Maintenance Instructions 248

KOFON® Drive the World | CaesarPlanetary®

KPE

Powerful. High Precision. Reliable

- Servo Planetary Gearbox

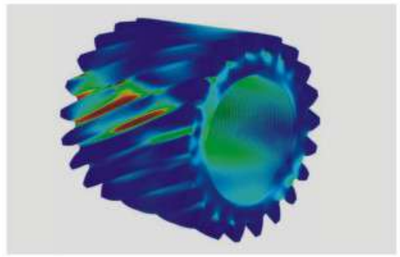
Advanced Gearbox Solution





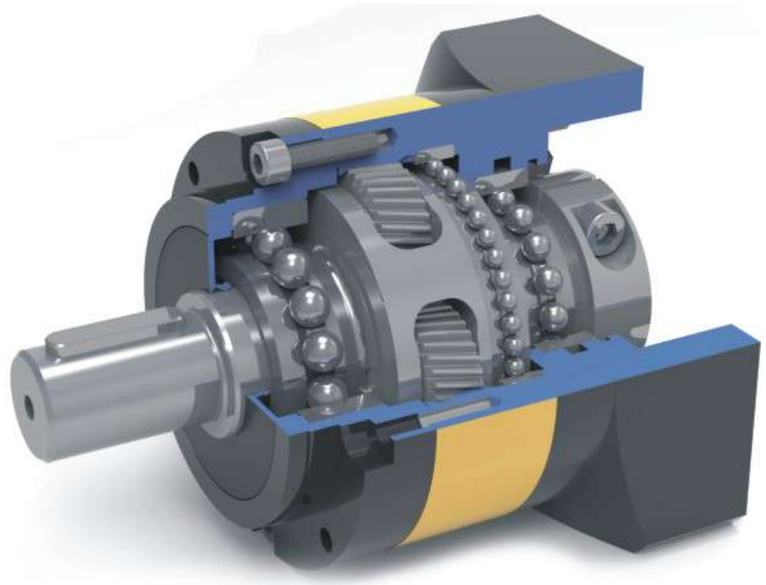
Helical Gear System Technology

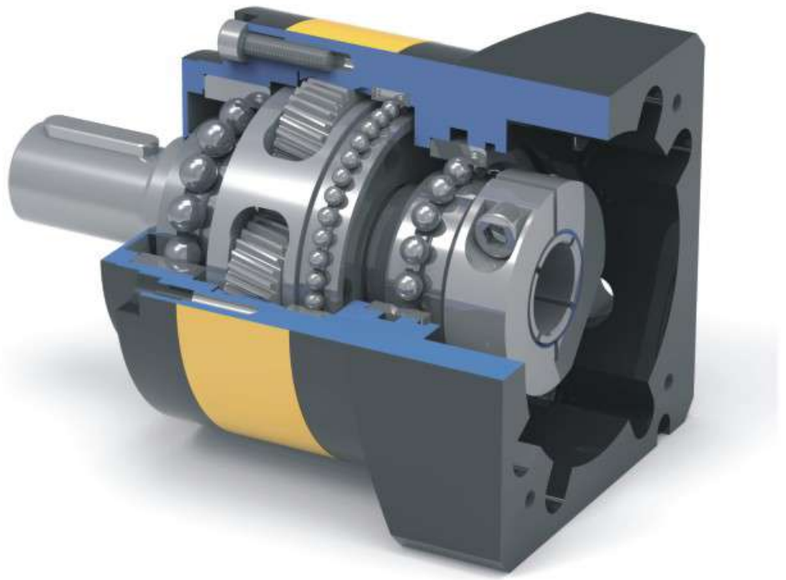
Thanks to the tooth to tooth compact ratio more than 60%.The helical gearing and full needle bearing bring the benefits including higher torque capacity, smooth and lower noise running, decreased backlash and higher efficiency.



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.

Order Instructions

Order Code:

KPE — 120 — 02 — 015 — S1 — P1 — Servo Motor

KPE

Gearbox Series: KPE

120

Gearbox Size

02

Gearbox Stage

015

Gearbox Ratio

S1

S1: Output shaft with key
S2: Output shaft without key

P1

Gearbox Precision

Servo Motor

Motor Manufacturer and model

Technical Memo

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	63	63	60	57	54	42	42
		in.lb	531	558	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_{2e}	*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
Maximum Torsional Backlash	j_t	arcmin	≤ 7							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	2.7–3							
		in.lb/arcmin	23.89–26.55							
Maximum Radial Load	F_{2AMax}	*N*	770							
		lb$_f$	173							
Maximum Axial Load	F_{2AMax}	*N*	380							
		lb$_f$	85							
Max. Tilting Moment	M_{2KMax}	*Nm*	17.65							
		in.lb	156.21							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	0.6							
		lb$_m$	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	21	14	21
		in.lb	177	177	186	186	186	177	186	186	186	186	177	159	186	124	186
Emergency Stop Torque	T_{2Not}	*Nm*	60	60	63	63	63	60	63	63	63	63	60	54	63	42	63
		in.lb	531	531	558	558	558	531	558	558	558	558	531	478	558	372	558
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	37.8	25.2	37.8
		in.lb	319	319	335	335	335	319	335	335	335	335	319	287	335	223	335
Maximum Torque	T_{2e}	*Nm*	40	40	42	42	42	40	42	42	42	42	40	36	42	28	42
		in.lb	354	354	372	372	372	354	372	372	372	372	354	319	372	248	372
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	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	0.71
Maximum Torsional Backlash	j_t	arcmin	≤ 10														
Torsional Rigidity	C_{t21}	*Nm/arcmin*	2.8–3														
		in.lb/arcmin	24.78–26.55														
Maximum Radial Load	F_{2AMax}	*N*	770														
		lb$_f$	173														
Maximum Axial Load	F_{2QMax}	*N*	380														
		lb$_f$	85														
Max. Tilting Moment	M_{2KMax}	*Nm*	13														
		in.lb	115														
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	95														
Operating Temperature		℃	−25 to +90														
		F	−13 to +194														
Lubrication			Synthetic Lubrication Grease														
Mouting Position			Any Directions														
Protection Class			IP 65														
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)														
Weight	*m*	kg	0.9														
		lb$_m$	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_{2e}	*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
Maximum Torsional Backlash	j_t	arcmin	≤ 6							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	6.5–7							
		in.lb/arcmin	57.52–61.95							
Maximum Radial Load	F_{2AMax}	*N*	1500							
		lb_f	337							
Maximum Axial Load	F_{2GMax}	*N*	760							
		lb_f	171							
Max. Tilting Moment	M_{2KMax}	*Nm*	28							
		in.lb	248							
Mass Moment of Inertia	j_1	$kgcm^2$	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	1.4							
		lb_m	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	52	42	52
		in.lb	496	443	460	487	487	407	460	487	487	487	487	443	398	460	372	460
Emergency Stop Torque	T_{2Not}	*Nm*	168	150	156	165	165	138	156	165	165	165	165	150	135	156	126	156
		in.lb	1487	1328	1381	1460	1460	1221	1381	1460	1460	1460	1460	1328	1195	1381	1115	1381
Maximum Acceleration Torque	T_{2B}	*Nm*	100.8	90	93.6	99	99	82.8	93.6	99	99	99	99	90	81	93.6	75.6	93.6
		in.lb	892	797	828	876	876	733	828	876	876	876	876	797	717	828	669	828
Maximum Torque	T_{2e}	*Nm*	112	100	104	110	110	92	104	110	110	110	110	100	90	104	84	104
		in.lb	991	885	920	974	974	814	920	974	974	974	974	885	797	920	743	920
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	0.17	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	1.50	1.33	1.33	1.33	1.33	1.33
Maximum Torsional Backlash	j_t	arcmin	≤ 8															
Torsional Rigidity	C_{t21}	*Nm/arcmin*	6.6–7															
		in.lb/arcmin	58.41–61.95															
Maximum Radial Load	F_{2AMax}	*N*	1500															
		lb_f	337															
Maximum Axial Load	F_{2GMax}	*N*	760															
		lb_f	171															
Max. Tilting Moment	M_{2KMax}	*Nm*	28															
		in.lb	248															
Mass Moment of Inertia	j_1	$kgcm^2$	0.127	0.124	0.12	0.075	0.075	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.075	0.064	0.064	0.064
Operating Noise Level	L_{PA}	dB(A)	< 58															
Efficiency at Full loading	η	%	95															
Operating Temperature		℃	−25 to +90															
		F	−13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)															
Weight	*m*	kg	1.6															
		lb_m	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_{2e}	*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
Maximum Torsional Backlash	j_t	arcmin	≤ 6							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	12–14							
		in.lb/arcmin	106.2–123.90							
Maximum Radial Load	F_{2AMax}	*N*	3200							
		lb$_f$	719							
Maximum Axial Load	F_{2GMax}	*N*	1600							
		lb$_f$	360							
Max. Tilting Moment	M_{2KMax}	*Nm*	142.4							
		in.lb	1260							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	3.3							
		lb$_m$	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	155	105	155
		in.lb	1106	1106	1283	1283	1372	1106	1283	1372	1372	1372	1372	1283	1018	1372	929	1372
Emergency Stop Torque	T_{2Not}	*Nm*	375	375	435	435	465	375	435	465	465	465	465	435	345	465	315	465
		in.lb	3319	3319	3850	3850	4116	3319	3850	4116	4116	4116	4116	3850	3053	4116	2788	4116
Maximum Acceleration Torque	T_{2B}	*Nm*	225	225	261	261	279	225	261	279	279	279	279	261	207	279	189	279
		in.lb	1991	1991	2310	2310	2469	1991	2310	2469	2469	2469	2469	2310	1832	2469	1673	2469
Maximum Torque	T_{2e}	*Nm*	250	250	290	290	310	250	290	310	310	310	310	290	230	310	210	310
		in.lb	2213	2213	2567	2567	2744	2213	2567	2744	2744	2744	2744	2567	2036	2744	1859	2744
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
Maximum Torsional Backlash	j_t	arcmin	≤ 8															
Torsional Rigidity	C_{t21}	*Nm/arcmin*	13–14															
		in.lb/arcmin	115.06–123.91															
Maximum Radial Load	F_{2AMax}	*N*	3200															
		lb$_f$	719															
Maximum Axial Load	F_{2GMax}	*N*	1600															
		lb$_f$	360															
Max. Tilting Moment	M_{2KMax}	*Nm*	142.4															
		in.lb	1260															
Mass Moment of Inertia	j_1	kgcm^2	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	0.39
Operating Noise Level	L_{PA}	dB(A)	< 60															
Efficiency at Full loading	η	%	95															
Operating Temperature		℃	−25 to +90															
		F	−13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)															
Weight	*m*	kg	4.5															
		lb$_m$	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
Maximum Torsional Backlash	j_t	arcmin	≤ 6							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	22–26							
		in.lb/arcmin	194.72–230.12							
Maximum Radial Load	F_{2AMax}	*N*	6700							
		lb$_f$	1506							
Maximum Axial Load	F_{2GMax}	*N*	3300							
		lb$_f$	742							
Max. Tilting Moment	M_{2KMax}	*Nm*	406.2							
		in.lb	3595.15							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	5.5							
		lb$_m$	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
Maximum Torsional Backlash	j_t	arcmin	≤ 8															
Torsional Rigidity	C_{t21}	*Nm/arcmin*	23–26															
		in.lb/arcmin	203.57–230.12															
Maximum Radial Load	F_{2AMax}	*N*	6700															
		lb$_f$	1506															
Maximum Axial Load	F_{2GMax}	*N*	3300															
		lb$_f$	742															
Max. Tilting Moment	M_{2KMax}	*Nm*	406.2															
		in.lb	3595.15															
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	95															
Operating Temperature		℃	−25 to +90															
		F	−13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)															
Weight	*m*	kg	8															
		lb$_m$	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_{2e}	*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
Maximum Torsional Backlash	j_t	arcmin	≤ 6							
Torsional Rigidity	C_{21}	*Nm/arcmin*	45–52							
		in.lb/arcmin	398.28–460.24							
Maximum Radial Load	F_{2AMax}	*N*	9600							
		lb$_f$	2158							
Maximum Axial Load	F_{2GMax}	*N*	4800							
		lb$_f$	1079							
Max. Tilting Moment	M_{2KMax}	*Nm*	830.4							
		in.lb	7349.62							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	20							
		lb$_m$	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	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	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_{2B}	*Nm*	900	900	990	1170	1170	810	990	1170	990	1170	1170	1098	918	918	792	792
		in.lb	7966	7966	8762	10355	10355	7169	8762	10355	8762	10355	10355	9718	8125	8125	7010	7010
Maximum Torque	T_{2e}	*Nm*	1000	1000	1100	1300	1300	900	1100	1300	1100	1300	1300	1220	1020	1020	880	880
		in.lb	8851	8851	9736	11506	11506	7966	9736	11506	9736	11506	11506	10798	9028	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
Maximum Torsional Backlash	j_t	arcmin	≤ 8															
Torsional Rigidity	C_{21}	*Nm/arcmin*	45–52															
		in.lb/arcmin	398.28–460.24															
Maximum Radial Load	F_{2AMax}	*N*	9600															
		lb$_f$	2158															
Maximum Axial Load	F_{2GMax}	*N*	4800															
		lb$_f$	1079															
Max. Tilting Moment	M_{2KMax}	*Nm*	830.4															
		in.lb	7349.62															
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	95															
Operating Temperature		℃	−25 to +90															
		F	−13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)															
Weight	*m*	kg	25															
		lb$_m$	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_{2e}	*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
Maximum Torsional Backlash	j_t	arcmin	≤ 6							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	120–138							
		in.lb/arcmin	1062.08–1221.40							
Maximum Radial Load	F_{2AMax}	*N*	14000							
		lb$_f$	3147							
Maximum Axial Load	F_{2GMax}	*N*	7000							
		lb$_f$	1574							
Max. Tilting Moment	M_{2KMax}	*Nm*	1386							
		in.lb	12267.07							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	31							
		lb$_m$	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_{2e}	*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
Maximum Torsional Backlash	j_t	arcmin	≤ 8															
Torsional Rigidity	C_{t21}	*Nm/arcmin*	125–138															
		in.lb/arcmin	1106.34–1221.40															
Maximum Radial Load	F_{2AMax}	*N*	14000															
		lb$_f$	3147															
Maximum Axial Load	F_{2GMax}	*N*	7000															
		lb$_f$	1574															
Max. Tilting Moment	M_{2KMax}	*Nm*	1386															
		in.lb	12267.07															
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	95															
Operating Temperature		℃	−25 to +90															
		F	−13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)															
Weight	*m*	kg	39															
		lb$_m$	86															

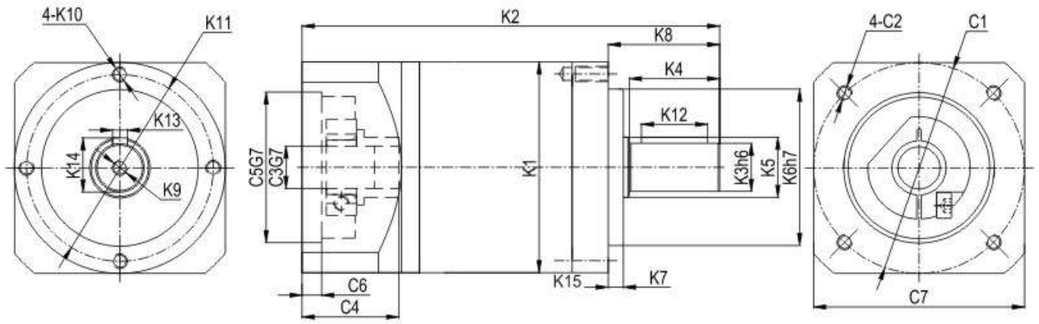
KPE235 1-stage

			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_{2e}	*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
Maximum Torsional Backlash	j_t	arcmin	≤ 6							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	200–220							
		in.lb/arcmin	1770.14–1947.15							
Maximum Radial Load	F_{2AMax}	*N*	16000							
		lb_f	3597							
Maximum Axial Load	F_{2GMax}	*N*	8000							
		lb_f	1798							
Max. Tilting Moment	M_{2KMax}	*Nm*	2350							
		in.lb	20800							
Mass Moment of Inertia	j_1	$kgcm^2$	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	53							
		lb_m	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_{2e}	*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
Maximum Torsional Backlash	j_t	arcmin	≤ 8															
Torsional Rigidity	C_{t21}	*Nm/arcmin*	205–220															
		in.lb/arcmin	1814.39–1947.15															
Maximum Radial Load	F_{2AMax}	*N*	16000															
		lb_f	3597															
Maximum Axial Load	F_{2GMax}	*N*	8000															
		lb_f	1798															
Max. Tilting Moment	M_{2KMax}	*Nm*	1936															
		in.lb	17134.96															
Mass Moment of Inertia	j_1	$kgcm^2$	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	η	%	95															
Operating Temperature		℃	−25 to +90															
		F	−13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)															
Weight	*m*	kg	66															
		lb_m	145.5															

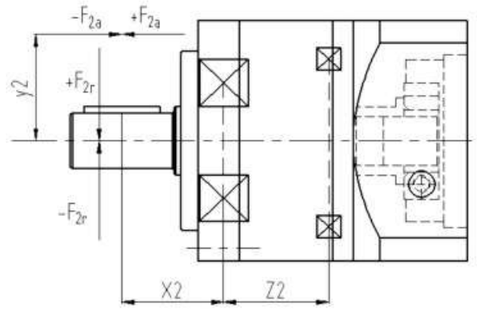
KPE Dimensions



Model	KPE050		KPE070		KPE090		KPE120		KPE160		KPE205		KPE235	
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

KPE Titling moment



$$M_{2kb}=[F_{2a}xy_2+F_{2rb}x(X_2+Z_2)]/1000$$

KPE	050	070	090	120	160	205	235
Z2[mm]	8.2	30.5	33.5	45	66.5	72.5	83.5
M_{2Kb}	19	90	214	603	1275	2013	2676

Technical Memo

Technical Memo

KOFON Drive the World | CaesarPlanetary®

KVE

Powerful. High Precision. Reliable

- Servo Planetary Gearbox

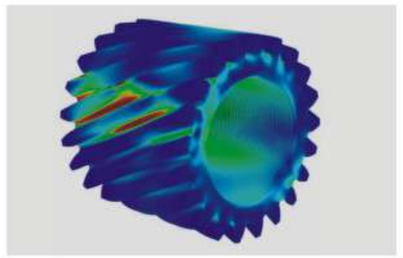
Advanced Gearbox Solution





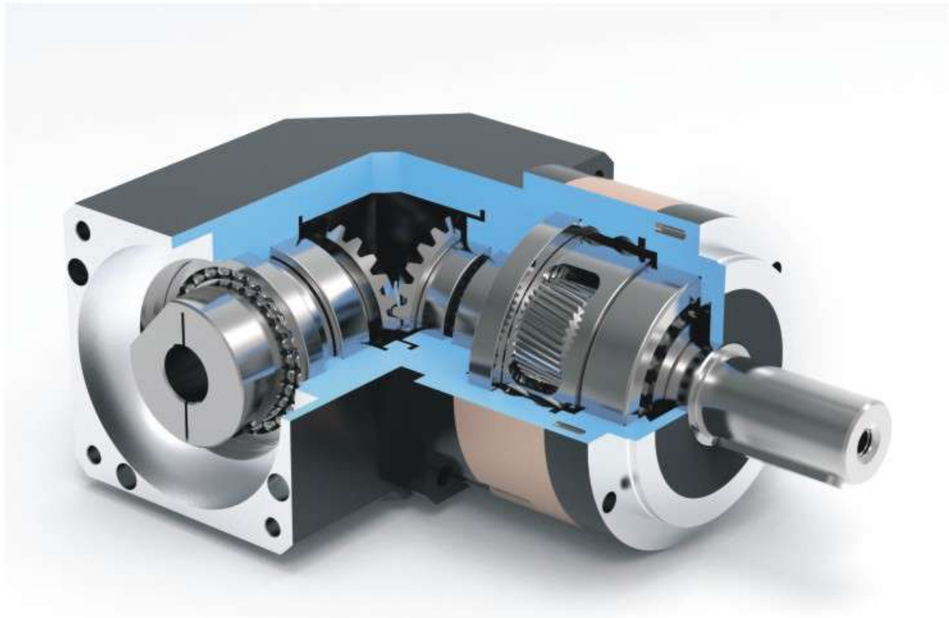
Helical Gear System Technology

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.

Order Instructions

Order Code:

KVE — 120 — 02 — 015 — S1 — P1 — Servo Motor

KVE

Gearbox Series: KVE

120

Gearbox Size

02

Gearbox Stage

015

Gearbox Ratio

S1

S1: Output shaft with key
S2: Output shaft without key

P1

Gearbox Precision

Servo Motor

Motor Manufacturer and model

Technical Memo

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*	82.8	93.6	99	90	90	81	75.6	75.6
		in.lb	733	828	876	797	797	717	669	669
Maximum Torque	T_{2e}	*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
Maximum Torsional Backlash	j_t	arcmin	≤ 6							
Torsional Rigidity	C_{21}	*Nm/arcmin*	6.5–7							
		in.lb/arcmin	57.53–61.95							
Maximum Radial Load	F_{2AMax}	*N*	1500							
		lb$_f$	337							
Maximum Axial Load	F_{2GMax}	*N*	760							
		lb$_f$	171							
Max. Tilting Moment	M_{2KMax}	*Nm*	28							
		in.lb	247.82							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	1.4							
		lb$_m$	3.1							

KVE070 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	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	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	797	717	717	669	669
Maximum Torque	T_{2e}	*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	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	0.17	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	1.50	1.33	1.33	1.33	1.33	1.33
Maximum Torsional Backlash	j_t	arcmin	≤ 8															
Torsional Rigidity	C_{21}	*Nm/arcmin*	6.6–7															
		in.lb/arcmin	58.41–61.95															
Maximum Radial Load	F_{2AMax}	*N*	1500															
		lb$_f$	337															
Maximum Axial Load	F_{2GMax}	*N*	760															
		lb$_f$	171															
Max. Tilting Moment	M_{2KMax}	*Nm*	28															
		in.lb	247.82															
Mass Moment of Inertia	j_1	kgcm^2	0.127	0.124	0.12	0.075	0.075	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.075	0.064	0.064	0.064
Operating Noise Level	L_{PA}	dB(A)	< 58															
Efficiency at Full loading	η	%	95															
Operating Temperature		℃	−25 to +90															
		F	−13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)															
Weight	*m*	kg	1.6															
		lb$_m$	3.5															

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_{2e}	*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
Maximum Torsional Backlash	j_t	arcmin	≤6							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	12–14							
		in.lb/arcmin	106.21–123.91							
Maximum Radial Load	F_{2AMax}	*N*	3200							
		lb$_f$	719							
Maximum Axial Load	F_{2GMax}	*N*	1600							
		lb$_f$	360							
Max. Tilting Moment	M_{2KMax}	*Nm*	142							
		in.lb	1256.8							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	3.3							
		lb$_m$	7.3							

KVE090 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_{2e}	*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
Maximum Torsional Backlash	j_t	arcmin	≤8															
Torsional Rigidity	C_{t21}	*Nm/arcmin*	13–14															
		in.lb/arcmin	115.06–123.10															
Maximum Radial Load	F_{2AMax}	*N*	3200															
		lb$_f$	719															
Maximum Axial Load	F_{2GMax}	*N*	1600															
		lb$_f$	360															
Max. Tilting Moment	M_{2KMax}	*Nm*	142															
		in.lb	1256.8															
Mass Moment of Inertia	j_1	kgcm^2	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	0.39
Operating Noise Level	L_{PA}	dB(A)	< 60															
Efficiency at Full loading	η	%	95															
Operating Temperature		℃	−25 to +90															
		F	−13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)															
Weight	*m*	kg	4.5															
		lb$_m$	9.9															

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_{2e}	*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
Maximum Torsional Backlash	j_t	arcmin	≤ 6							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	22–26							
		in.lb/arcmin	194.72–230.12							
Maximum Radial Load	F_{2AMax}	*N*	6700							
		lb$_f$	1506							
Maximum Axial Load	F_{2GMax}	*N*	3300							
		lb$_f$	742							
Max. Tilting Moment	M_{2KMax}	*Nm*	460							
		in.lb	4071.32							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	96							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	12.1							
		lb$_m$	26.7							

KVE120 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_{2e}	*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
Maximum Torsional Backlash	j_t	arcmin	≤8															
Torsional Rigidity	C_{t21}	*Nm/arcmin*	23–26															
		in.lb/arcmin	203.57–230.12															
Maximum Radial Load	F_{2AMax}	*N*	6700															
		lb$_f$	1506															
Maximum Axial Load	F_{2GMax}	*N*	3300															
		lb$_f$	742															
Max. Tilting Moment	M_{2KMax}	*Nm*	460															
		in.lb	4071.32															
Mass Moment of Inertia	j_1	kgcm^2	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	1.3	1.3	1.3
Operating Noise Level	L_{PA}	dB(A)	< 63															
Efficiency at Full loading	η	%	95															
Operating Temperature		℃	−25 to +90															
		F	−13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)															
Weight	*m*	kg	8															
		lb$_m$	17.6															

KVE160 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_{2e}	*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
Maximum Torsional Backlash	j_t	arcmin	≤6							
Torsional Rigidity	C_{21}	*Nm/arcmin*	45–52							
		in.lb/arcmin	398.28–460.24							
Maximum Radial Load	F_{2AMax}	*N*	9600							
		lb$_f$	2158							
Maximum Axial Load	F_{2GMax}	*N*	4800							
		lb$_f$	1079							
Max. Tilting Moment	M_{2KMax}	*Nm*	830							
		in.lb	7346.08							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	20							
		lb$_m$	44.1							

KVE160 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	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	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_{2B}	*Nm*	900	900	990	1170	1170	810	990	1170	990	1170	1170	1098	918	918	792	792
		in.lb	7966	7966	8762	10355	10355	7169	8762	10355	8762	10355	10355	9718	8125	8125	7010	7010
Maximum Torque	T_{2e}	*Nm*	1000	1000	1100	1300	1300	900	1100	1300	1100	1300	1300	1220	1020	1020	880	880
		in.lb	8851	8851	9736	11506	11506	7966	9736	11506	9736	11506	11506	10798	9028	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
Maximum Torsional Backlash	j_t	arcmin	≤8															
Torsional Rigidity	C_{21}	*Nm/arcmin*	45–52															
		in.lb/arcmin	398.28–460.24															
Maximum Radial Load	F_{2AMax}	*N*	9600															
		lb$_f$	2158															
Maximum Axial Load	F_{2GMax}	*N*	4800															
		lb$_f$	1079															
Max. Tilting Moment	M_{2KMax}	*Nm*	830															
		in.lb	7346.08															
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	95															
Operating Temperature		℃	−25 to +90															
		F	−13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)															
Weight	*m*	kg	25															
		lb$_m$	55.1															

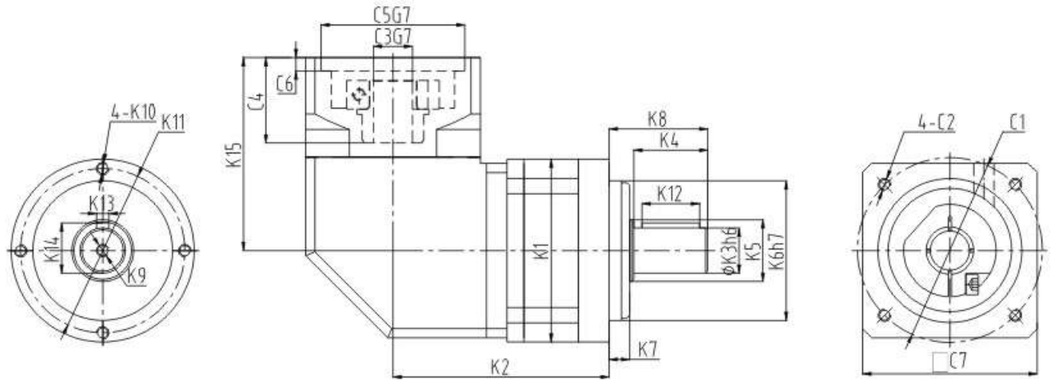
KVE205 1-stage

			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_{2e}	*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
Maximum Torsional Backlash	j_t	arcmin	≤6							
Torsional Rigidity	C_{21}	*Nm/arcmin*	120–138							
		in.lb/arcmin	1062.08–1221.40							
Maximum Radial Load	F_{2AMax}	*N*	14000							
		lb$_f$	3147							
Maximum Axial Load	F_{2GMax}	*N*	7000							
		lb$_f$	1574							
Max. Tilting Moment	M_{2KMax}	*Nm*	1386							
		in.lb	12267.07							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	31							
		lb$_m$	68.3							

KVE205 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_{2e}	*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
Maximum Torsional Backlash	j_t	arcmin	≤8															
Torsional Rigidity	C_{21}	*Nm/arcmin*	125–138															
		in.lb/arcmin	1106.34–1221.40															
Maximum Radial Load	F_{2AMax}	*N*	14000															
		lb$_f$	3147															
Maximum Axial Load	F_{2GMax}	*N*	7000															
		lb$_f$	1574															
Max. Tilting Moment	M_{2KMax}	*Nm*	1386															
		in.lb	12267.07															
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	95															
Operating Temperature		℃	−25 to +90															
		F	−13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)															
Weight	*m*	kg	39															
		lb$_m$	86															

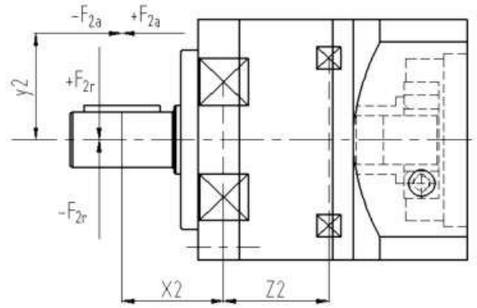
KVE Dimensions



Model	KVE070		KVE090		KVE120		KVE160		KVE205	
Stage	1	2	1	2	1	2	1	2	1	2
K1	Φ70		Φ89		Φ120		Φ160		Φ205	
K2	93	116.7	105.2	136.5	154	198.5	187	248	204.5	251.5
K3	Φ16		Φ22		Φ32		Φ40		Φ55	
K4	30		36		50		80		82	
K5	Φ20		Φ30		Φ40		Φ50		Φ60	
K6	Φ52		Φ68		Φ90		Φ130		Φ160	
K7	5		10		12		15		20	
K8	37		48		65		97		105	
K9	M5X12		M6X16		M10X22		M12X25		M20X40	
K10	M5X12		M6X15		M8X19		M12X20		M12X20	
K11	Φ62		Φ80		Φ108		Φ145		Φ184	
K12	22		28		40		70		70	
K13	5		6		10		12		16	
K14	18		24.5		35		43		59	
K15	82.5		94		140		169		169	
C1	Φ70		Φ90		Φ145		Φ200		Φ200	
C2	M5X12		M6X15		M8X20		M12X25		M12X25	
C3	Φ14		Φ19		Φ24		Φ35		Φ35	
C4	32.1		41.6		61.3		82		82	
C5	Φ50		Φ70		Φ110		Φ114.3		Φ114.3	
C6	6.5		6.5		8		8		8	
C7	65		85		120		175		175	

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

KVE Titling moment



$$M_{2kb}=[F_{2a}xy_2+F_{2rb}x(X_2+Z_2)]/1000$$

KVE	050	070	090	120	160	205	235
Z2[mm]	8.2	30.5	33.5	45	66.5	72.5	83.5
M_{2Kb}	19	90	214	603	1275	2013	2676

Technical Memo

Technical Memo

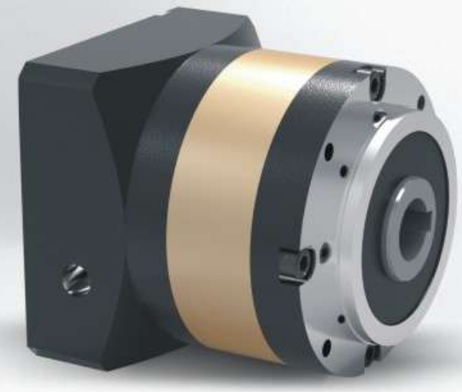
KOFON Drive the World | CaesarPlanetary®

KPLN

Powerful. High Precision. Reliable

- Servo Planetary Gearbox

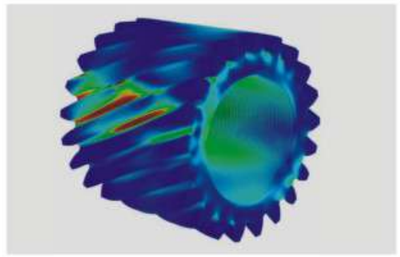
Advanced Gearbox Solution





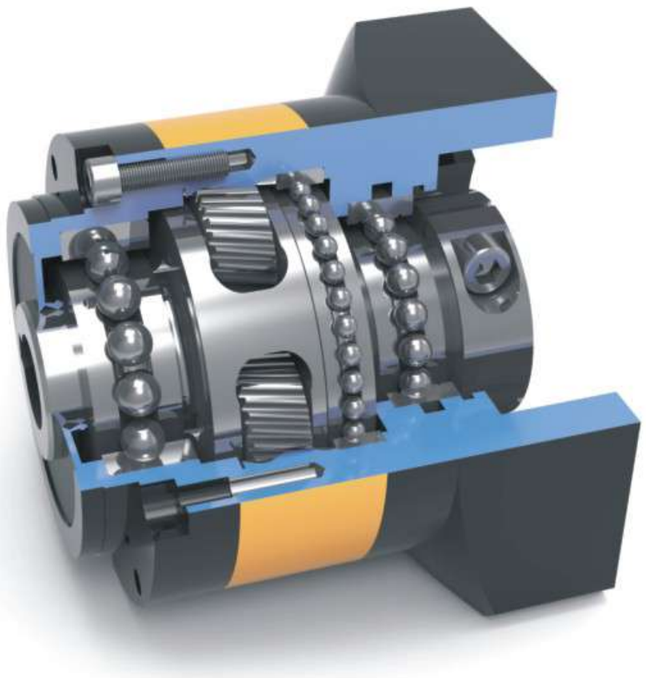
Helical Gear System Technology

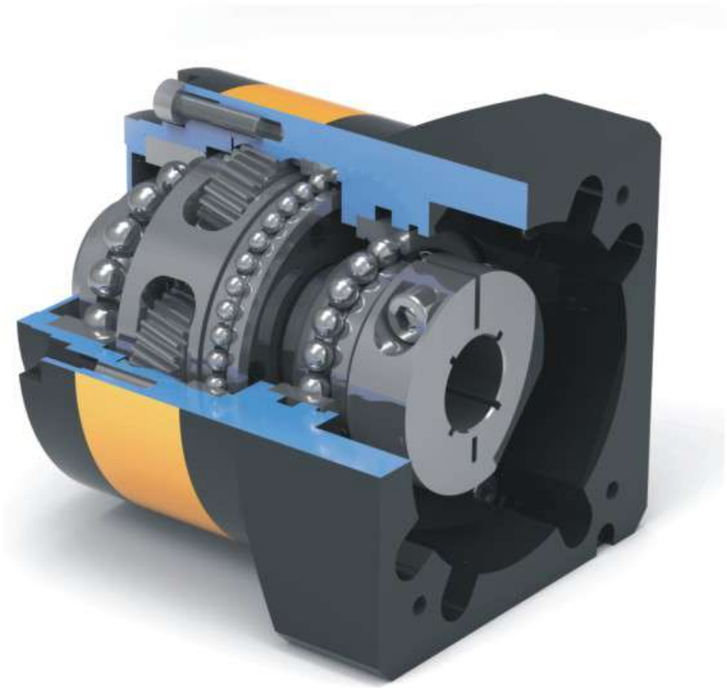
Thanks to the tooth to tooth compact ratio more than 60%.The helical gearing and full needle bearing bring the benefits including higher torque capacity, smooth and lower noise running, decreased backlash and higher efficiency.



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.







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.

Order Instructions

Order Code:

KPLN — 120 — 02 — 015 — S1 — P1 — Servo Motor

KPLN

Gearbox Series: KPLN

120

Gearbox Size

02

Gearbox Stage

015

Gearbox Ratio

S1

S1: Output shaft with key
S2: Output shaft without key

P1

Gearbox Precision

Servo Motor

Motor Manufacturer and model

Technical Memo

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	63	63	60	57	54	42	42
		in.lb	531	558	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
Maximum Torsional Backlash	j_t	arcmin	≤ 6							
Torsional Rigidity	C_{21}	*Nm/arcmin*	2.7–3							
		in.lb/arcmin	23.90–26.55							
Maximum Radial Load	F_{2AMax}	*N*	770							
		lb$_f$	173							
Maximum Axial Load	F_{2GMax}	*N*	380							
		lb$_f$	85							
Max. Tilting Moment	M_{2KMax}	*Nm*	13							
		in.lb	115.06							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	0.5							
		lb$_m$	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	0.08	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	0.71
Maximum Torsional Backlash	j_t	arcmin	≤ 8														
Torsional Rigidity	C_{21}	*Nm/arcmin*	2.8–3														
		in.lb/arcmin	24.78–26.55														
Maximum Radial Load	F_{2AMax}	*N*	770														
		lb$_f$	173														
Maximum Axial Load	F_{2GMax}	*N*	380														
		lb$_f$	85														
Max. Tilting Moment	M_{2KMax}	*Nm*	13														
		in.lb	115.06														
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	95														
Operating Temperature		℃	−25 to +90														
		F	−13 to +194														
Lubrication			Synthetic Lubrication Grease														
Mouting Position			Any Directions														
Protection Class			IP 65														
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)														
Weight	*m*	kg	0.8														
		lb$_m$	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_{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
Maximum Torsional Backlash	j_t	arcmin	≤ 6							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	6.5–7							
		in.lb/arcmin	57.53–61.95							
Maximum Radial Load	F_{2AMax}	*N*	1500							
		lb$_f$	337							
Maximum Axial Load	F_{2GMax}	*N*	760							
		lb$_f$	171							
Max. Tilting Moment	M_{2KMax}	*Nm*	40							
		in.lb	354.03							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	1.3							
		lb$_m$	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	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	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	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	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	0.17	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	1.50	1.33	1.33	1.33	1.33	1.33
Maximum Torsional Backlash	j_t	arcmin	≤ 8															
Torsional Rigidity	C_{t21}	*Nm/arcmin*	6.6–7															
		in.lb/arcmin	58.41–61.95															
Maximum Radial Load	F_{2AMax}	*N*	1500															
		lb$_f$	337															
Maximum Axial Load	F_{2GMax}	*N*	760															
		lb$_f$	171															
Max. Tilting Moment	M_{2KMax}	*Nm*	40															
		in.lb	354.03															
Mass Moment of Inertia	j_1	kgcm^2	0.127	0.124	0.12	0.075	0.075	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.075	0.064	0.064	0.064
Operating Noise Level	L_{PA}	dB(A)	< 58															
Efficiency at Full loading	η	%	95															
Operating Temperature		℃	−25 to +90															
		F	−13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)															
Weight	*m*	kg	1.5															
		lb$_m$	3.3															

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_{2e}	*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
Maximum Torsional Backlash	j_t	arcmin	≤ 6							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	12–14							
		in.lb/arcmin	106.21–123.91							
Maximum Radial Load	F_{2AMax}	*N*	3200							
		lb$_f$	719							
Maximum Axial Load	F_{2GMax}	*N*	1600							
		lb$_f$	360							
Max. Tilting Moment	M_{2KMax}	*Nm*	200							
		in.lb	1760							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	3.1							
		lb$_m$	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_{2e}	*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
Maximum Torsional Backlash	j_t	arcmin	≤ 8															
Torsional Rigidity	C_{t21}	*Nm/arcmin*	13–14															
		in.lb/arcmin	115.06–123.91															
Maximum Radial Load	F_{2AMax}	*N*	3200															
		lb$_f$	719															
Maximum Axial Load	F_{2GMax}	*N*	1600															
		lb$_f$	360															
Max. Tilting Moment	M_{2KMax}	*Nm*	145															
		in.lb	1283.35															
Mass Moment of Inertia	j_1	kgcm^2	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	0.39
Operating Noise Level	L_{PA}	dB(A)	< 60															
Efficiency at Full loading	η	%	95															
Operating Temperature		℃	−25 to +90															
		F	−13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)															
Weight	*m*	kg	4.2															
		lb$_m$	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_{2e}	*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
Maximum Torsional Backlash	j_t	arcmin	≤ 6							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	22–26							
		in.lb/arcmin	194.72–230.12							
Maximum Radial Load	F_{2AMax}	*N*	6700							
		lb$_f$	1506							
Maximum Axial Load	F_{2GMax}	*N*	3300							
		lb$_f$	742							
Max. Tilting Moment	M_{2KMax}	*Nm*	320							
		in.lb	2832.22							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	5.1							
		lb$_m$	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_{2e}	*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
Maximum Torsional Backlash	j_t	arcmin	≤ 8															
Torsional Rigidity	C_{t21}	*Nm/arcmin*	23–26															
		in.lb/arcmin	203.57–230.12															
Maximum Radial Load	F_{2AMax}	*N*	6700															
		lb$_f$	1506															
Maximum Axial Load	F_{2GMax}	*N*	3300															
		lb$_f$	742															
Max. Tilting Moment	M_{2KMax}	*Nm*	320															
		in.lb	2832.22															
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	95															
Operating Temperature		℃	−25 to +90															
		F	−13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)															
Weight	*m*	kg	7.5															
		lb$_m$	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_{2B}	*Nm*	810	990	1170	1098	972	918	792	792
		in.lb	7169	8762	10355	9718	8603	8125	7010	7010
Maximum Torque	T_{2e}	*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
Maximum Torsional Backlash	j_t	arcmin	≤ 6							
Torsional Rigidity	C_{21}	*Nm/arcmin*	45–52							
		in.lb/arcmin	398.28–460.24							
Maximum Radial Load	F_{2AMax}	*N*	9600							
		lb$_f$	2158							
Maximum Axial Load	F_{2GMax}	*N*	4800							
		lb$_f$	1079							
Max. Tilting Moment	M_{2KMax}	*Nm*	540							
		in.lb	4779.38							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	19							
		lb$_m$	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	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	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_{2B}	*Nm*	900	900	990	1170	1170	810	990	1170	990	1170	1170	1098	918	918	792	792
		in.lb	7966	7966	8762	10355	10355	7169	8762	10355	8762	10355	10355	9718	8125	8125	7010	7010
Maximum Torque	T_{2e}	*Nm*	1000	1000	1100	1300	1300	900	1100	1300	1100	1300	1300	1220	1020	1020	880	880
		in.lb	8851	8851	9736	11506	11506	7966	9736	11506	9736	11506	11506	10798	9028	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
Maximum Torsional Backlash	j_t	arcmin	≤ 8															
Torsional Rigidity	C_{21}	*Nm/arcmin*	45–52															
		in.lb/arcmin	398.28–460.24															
Maximum Radial Load	F_{2AMax}	*N*	9600															
		lb$_f$	2158															
Maximum Axial Load	F_{2GMax}	*N*	4800															
		lb$_f$	1079															
Max. Tilting Moment	M_{2KMax}	*Nm*	540															
		in.lb	4779.38															
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	95															
Operating Temperature		℃	−25 to +90															
		F	−13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)															
Weight	*m*	kg	24															
		lb$_m$	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_{2B}	*Nm*	1170	2250	2160	1800	1800	1800	1638	1638
		in.lb	10355	19914	19118	15931	15931	15931	14497	14497
Maximum Torque	T_{2e}	*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
Maximum Torsional Backlash	j_t	arcmin	≤ 6							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	120–138							
		in.lb/arcmin	1062.08–1221.40							
Maximum Radial Load	F_{2AMax}	*N*	14000							
		lb$_f$	3147							
Maximum Axial Load	F_{2GMax}	*N*	7000							
		lb$_f$	1574							
Max. Tilting Moment	M_{2KMax}	*Nm*	1270							
		in.lb	11240.39							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	30							
		lb$_m$	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_{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_{2e}	*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
Maximum Torsional Backlash	j_t	arcmin	≤ 8															
Torsional Rigidity	C_{t21}	*Nm/arcmin*	125–138															
		in.lb/arcmin	1106.34–1221.40															
Maximum Radial Load	F_{2AMax}	*N*	14000															
		lb$_f$	3147															
Maximum Axial Load	F_{2GMax}	*N*	7000															
		lb$_f$	1574															
Max. Tilting Moment	M_{2KMax}	*Nm*	1270															
		in.lb	11240.39															
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	95															
Operating Temperature		℃	−25 to +90															
		F	−13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)															
Weight	*m*	kg	38															
		lb$_m$	83.6															

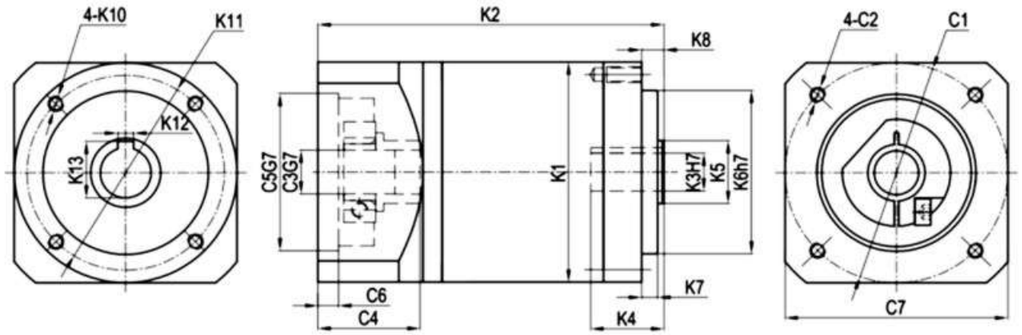
KPLN235 1-stage

			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_{2e}	*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
Maximum Torsional Backlash	j_t	arcmin	≤ 6							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	200–220							
		in.lb/arcmin	1770.14–1947.15							
Maximum Radial Load	F_{2AMax}	*N*	16000							
		lb$_f$	3597							
Maximum Axial Load	F_{2GMax}	*N*	8000							
		lb$_f$	1798							
Max. Tilting Moment	M_{2KMax}	*Nm*	2350							
		in.lb	20680							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	51							
		lb$_m$	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_{2e}	*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
Maximum Torsional Backlash	j_t	arcmin	≤ 8															
Torsional Rigidity	C_{t21}	*Nm/arcmin*	205–220															
		in.lb/arcmin	1814.39–1947.15															
Maximum Radial Load	F_{2AMax}	*N*	16000															
		lb$_f$	3597															
Maximum Axial Load	F_{2GMax}	*N*	8000															
		lb$_f$	1798															
Max. Tilting Moment	M_{2KMax}	*Nm*	2350															
		in.lb	20680															
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	95															
Operating Temperature		℃	−25 to +90															
		F	−13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)															
Weight	*m*	kg	64															
		lb$_m$	140.8															

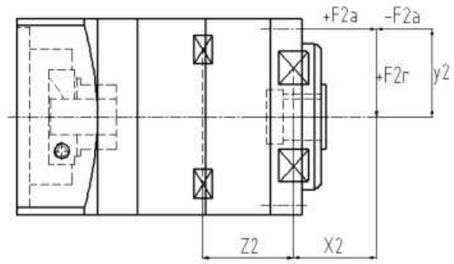
KPLN Dimensions



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

KPLN Titling moment



$$M_{2Kb} = \frac{F_{2a} \cdot y_2 + F_{2rb} \cdot (X_2 + Z_2)}{1000}$$

KPLN	050	070	090	120	160	205	235
Z2[mm]	8.2	30.5	33.5	45	66.5	72.5	83.5
M_{2Kb}	19	90	214	603	1275	2013	2676

Technical Memo

Technical Memo

KOFON Drive the World | CaesarPlanetary®

XA

Powerful. High Precision. Reliable

- Servo Planetary Gearbox

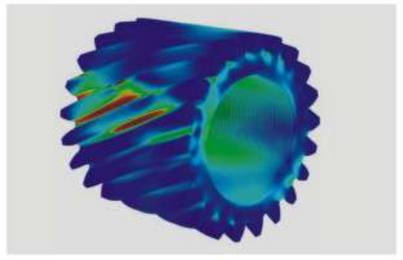
Advanced Gearbox Solution





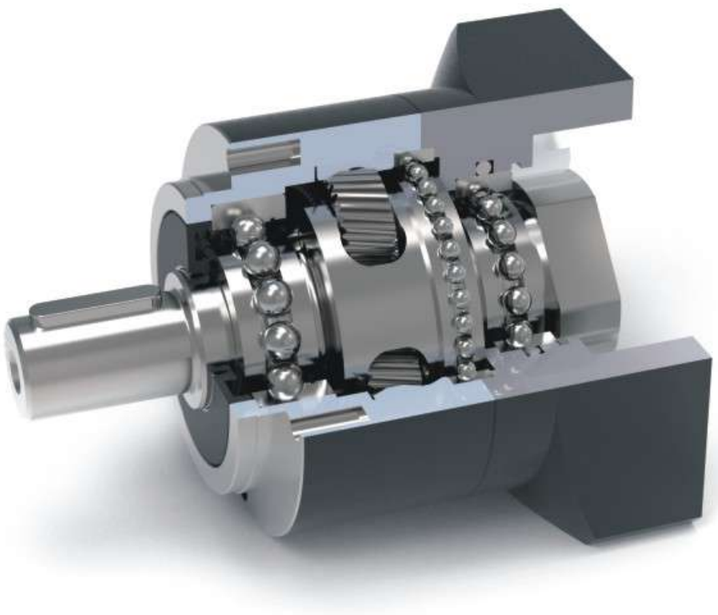
Helical Gear System Technology

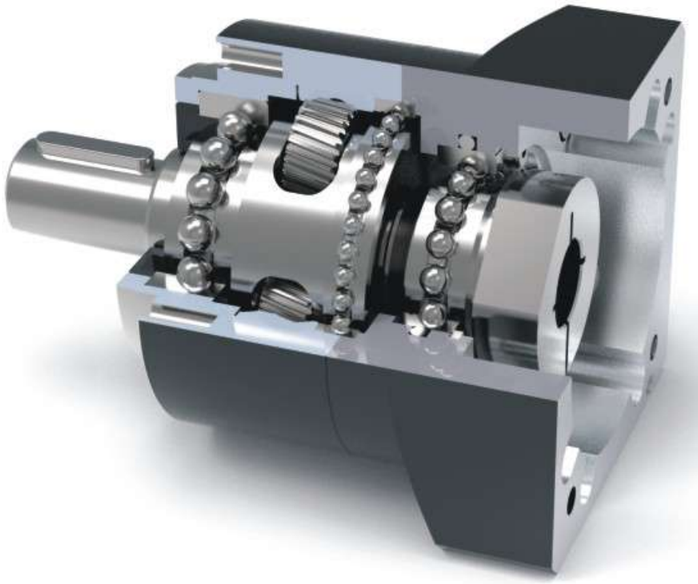
Thanks to the tooth to tooth compact ratio more than 60%.The helical gearing and full needle bearing bring the benefits including higher torque capacity, smooth and lower noise running, decreased backlash and higher efficiency. Integrated housing engineering with super skiving gearing tooling craft.



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.

XA Series Servo Planetary Gearbox

Order Instructions

Order Code:

XA — 120 — 02 — 015 — S1 — P0 — Servo Motor

XA

Gearbox Series: XA

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

Technical Memo

XA Series Servo Planetary Gearbox

XA050 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	63	63	60	57	54	42	42
		in.lb	531	558	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_t	arcmin	≤6							
Reduced Low Backlash P0	j_t	arcmin	≤4							
Torsional Rigidity	C_{21}	*Nm/arcmin*	3							
		in.lb/arcmin	26.55							
Maximum Radial Load	F_{2AMax}	*N*	770							
		lb_f	173							
Maximum Axial Load	F_{2OMax}	*N*	380							
		lb_f	85							
Max. Tilting Moment	M_{2KMax}	*Nm*	19							
		in.lb	168							
Mass Moment of Inertia	j_1	$kgcm^2$	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	0.6							
		lb_m	1.3							

XA050 2-stage

			2-stage											
Ratio	i		15	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	20	21	21	21	21	21	21	21	20	19	18	14	14
		in.lb	177	186	186	186	186	186	186	186	177	168	159	124	124
Emergency Stop Torque	T_{2Not}	*Nm*	60	63	63	63	63	63	63	63	60	57	54	42	42
		in.lb	531	558	558	558	558	558	558	558	531	504	478	372	372
Maximum Acceleration Torque	T_{2B}	*Nm*	36	37.8	37.8	37.8	37.8	37.8	37.8	37.8	36	34.2	32.4	25.2	25.2
		in.lb	319	335	335	335	335	335	335	335	319	303	287	223	223
Maximum Torque	T_{2a}	*Nm*	40	42	42	42	42	42	42	42	40	38	36	28	28
		in.lb	354	372	372	372	372	372	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*	0.1	0.1	0.1	0.09	0.09	0.09	0.09	0.09	0.08	0.08	0.08	0.08	0.08
		in.lb	0.89	0.89	0.89	0.80	0.80	0.80	0.80	0.80	0.71	0.71	0.71	0.71	0.71
Standard Backlash P1	j_t	arcmin	≤8												
Reduced Low Backlash P0	j_t	arcmin	≤6												
Torsional Rigidity	C_{21}	*Nm/arcmin*	3												
		in.lb/arcmin	26.55												
Maximum Radial Load	F_{2AMax}	*N*	770												
		lb_f	173												
Maximum Axial Load	F_{2OMax}	*N*	380												
		lb_f	85												
Max. Tilting Moment	M_{2KMax}	*Nm*	19												
		in.lb	168												
Mass Moment of Inertia	j_1	$kgcm^2$	0.027	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	η	%	95												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	0.9												
		lb_m	2												

XA070 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	56	52	52	50	50	45	42	42
		in.lb	496	460	460	443	443	398	372	372
Emergency Stop Torque	T_{2Not}	*Nm*	168	156	156	150	150	135	126	126
		in.lb	1487	1381	1381	1328	1328	1195	1115	1115
Maximum Acceleration Torque	T_{2B}	*Nm*	100.8	93.6	93.6	90	90	81	75.6	75.6
		in.lb	892	828	828	797	797	717	669	669
Maximum Torque	T_{2a}	*Nm*	112	104	104	100	100	90	84	84
		in.lb	991	920	920	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_t	arcmin	≤5							
Reduced Low Backlash P0	j_t	arcmin	≤3							
Ultra Low Backlash PU	j_t	arcmin	≤1							
Torsional Rigidity	C_{21}	*Nm/arcmin*	7							
		in.lb/arcmin	61.95							
Maximum Radial Load	F_{2AMax}	*N*	1500							
		lb$_f$	337							
Maximum Axial Load	F_{2GMax}	*N*	760							
		lb$_f$	171							
Max. Tilting Moment	M_{2KMax}	*Nm*	90							
		in.lb	797							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	1.4							
		lb$_m$	3.1							

XA070 2-stage

			2-stage												
Ratio	i		15	20	25	30	32	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	56	52	52	52	52	52	52	52	52	50	50	45	42	42
		in.lb	496	460	460	460	460	460	460	460	460	443	443	398	372	372
Emergency Stop Torque	T_{2Not}	*Nm*	168	156	156	156	156	156	156	156	156	150	150	135	126	126
		in.lb	1487	1381	1381	1381	1381	1381	1381	1381	1381	1328	1328	1195	1115	1115
Maximum Acceleration Torque	T_{2B}	*Nm*	100.8	93.6	93.6	93.6	93.6	93.6	93.6	93.6	93.6	90	90	81	75.6	75.6
		in.lb	892	828	828	828	828	828	828	828	828	797	797	717	669	669
Maximum Torque	T_{2a}	*Nm*	112	104	104	104	104	104	104	104	104	100	100	90	84	84
		in.lb	991	920	920	920	920	920	920	920	920	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*	0.17	0.17	0.17	0.15	0.2	0.15	0.15	0.15	0.17	0.15	0.15	0.15	0.15	0.15
		in.lb	1.50	1.50	1.50	1.33	1.77	1.33	1.33	1.33	1.50	1.33	1.33	1.33	1.33	1.33
Standard Backlash P1	j_t	arcmin	≤7													
Reduced Low Backlash P0	j_t	arcmin	≤5													
Ultra Low Backlash PU	j_t	arcmin	≤3													
Torsional Rigidity	C_{21}	*Nm/arcmin*	7													
		in.lb/arcmin	61.95													
Maximum Radial Load	F_{2AMax}	*N*	1500													
		lb$_f$	337													
Maximum Axial Load	F_{2GMax}	*N*	760													
		lb$_f$	171													
Max. Tilting Moment	M_{2KMax}	*Nm*	90													
		in.lb	797													
Mass Moment of Inertia	j_1	kgcm^2	0.124	0.075	0.075	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064
Operating Noise Level	L_{PA}	dB(A)	< 58													
Efficiency at Full loading	η	%	95													
Operating Temperature		℃	−25 to +90													
		F	−13 to +194													
Lubrication			Synthetic Lubrication Grease													
Mouting Position			Any Directions													
Protection Class			IP 65													
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)													
Weight	*m*	kg	1.60													
		lb$_m$	3.5													

XA090 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	160	145	155	145	145	142	142	142
		in.lb	1416	1283	1372	1283	1283	1257	1257	1257
Emergency Stop Torque	T_{2Not}	*Nm*	480	435	465	435	435	426	426	426
		in.lb	4248	3850	4116	3850	3850	3770	3770	3770
Maximum Acceleration Torque	T_{2B}	*Nm*	288	261	279	261	261	255.6	255.6	255.6
		in.lb	2549	2310	2469	2310	2310	2262	2262	2262
Maximum Torque	T_{2a}	*Nm*	320	290	310	290	290	284	284	284
		in.lb	2832	2567	2744	2567	2567	2514	2514	2514
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_t	arcmin	≤5							
Reduced Low Backlash P0	j_t	arcmin	≤3							
Ultra Low Backlash PU	j_t	arcmin	≤1							
Torsional Rigidity	C_{21}	*Nm/arcmin*	14							
		in.lb/arcmin	123.91							
Maximum Radial Load	F_{2AMax}	*N*	3200							
		lb$_f$	719							
Maximum Axial Load	F_{2GMax}	*N*	1600							
		lb$_f$	360							
Max. Tilting Moment	M_{2KMax}	*Nm*	214							
		in.lb	1894.05							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	3.3							
		lb$_m$	7.3							

XA090 2-stage

			2-stage												
Ratio	i		15	20	25	30	32	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	160	145	155	155	155	155	155	155	155	145	145	142	142	142
		in.lb	1416	1283	1372	1372	1372	1372	1372	1372	1372	1283	1283	1257	1257	1257
Emergency Stop Torque	T_{2Not}	*Nm*	480	435	465	465	465	465	465	465	465	435	435	426	426	426
		in.lb	4248	3850	4116	4116	4116	4116	4116	4116	4116	3850	3850	3770	3770	3770
Maximum Acceleration Torque	T_{2B}	*Nm*	288	261	279	279	279	279	279	279	279	261	261	255.6	255.6	255.6
		in.lb	2549	2310	2469	2469	2469	2469	2469	2469	2469	2310	2310	2262	2262	2262
Maximum Torque	T_{2a}	*Nm*	320	290	310	310	310	310	310	310	310	290	290	284	284	284
		in.lb	2832	2567	2744	2744	2744	2744	2744	2744	2744	2567	2567	2514	2514	2514
Permitted Average Input Speed	n_{1N}	*rpm*	3000													
Maximum Input Speed	n_{1Max}	*rpm*	6000													
Mean No Load Running Torque	T_{012}	*Nm*	0.31	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	2.74	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_t	arcmin	≤7													
Reduced Low Backlash P0	j_t	arcmin	≤5													
Ultra Low Backlash PU	j_t	arcmin	≤3													
Torsional Rigidity	C_{21}	*Nm/arcmin*	14													
		in.lb/arcmin	123.91													
Maximum Radial Load	F_{2AMax}	*N*	3200													
		lb$_f$	719													
Maximum Axial Load	F_{2GMax}	*N*	1600													
		lb$_f$	360													
Max. Tilting Moment	M_{2KMax}	*Nm*	214													
		in.lb	1894													
Mass Moment of Inertia	j_1	kgcm^2	0.44	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)	< 60													
Efficiency at Full loading	η	%	95													
Operating Temperature		℃	−25 to +90													
		F	−13 to +194													
Lubrication			Synthetic Lubrication Grease													
Mouting Position			Any Directions													
Protection Class			IP 65													
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)													
Weight	*m*	kg	4.50													
		lb$_m$	9.9													

XA120 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	335	300	320	300	300	295	295	295
		in.lb	2965	2655	2832	2655	2655	2611	2611	2611
Emergency Stop Torque	T_{2Not}	*Nm*	1005	900	960	900	900	885	885	885
		in.lb	8895	7966	8497	7966	7966	7833	7833	7833
Maximum Acceleration Torque	T_{2B}	*Nm*	603	540	576	540	540	531	531	531
		in.lb	5337	4779	5098	4779	4779	4700	4700	4700
Maximum Torque	T_{2a}	*Nm*	670	600	640	600	600	590	590	590
		in.lb	5930	5310	5664	5310	5310	5222	5222	5222
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_t	arcmin	≤5							
Reduced Low Backlash P0	j_t	arcmin	≤3							
Ultra Low Backlash PU	j_t	arcmin	≤1							
Torsional Rigidity	C_{21}	*Nm/arcmin*	26							
		in.lb/arcmin	230.12							
Maximum Radial Load	F_{2AMax}	*N*	6700							
		lb$_f$	1506							
Maximum Axial Load	F_{2AMax}	*N*	3300							
		lb$_f$	742							
Max. Tilting Moment	M_{2KMax}	*Nm*	603							
		in.lb	5337							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	5.5							
		lb$_m$	12.1							

XA120 2-stage

			2-stage												
Ratio	i		15	20	25	30	32	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	335	300	320	320	320	320	320	320	320	300	300	295	295	295
		in.lb	2965	2655	2832	2832	2832	2832	2832	2832	2832	2655	2655	2611	2611	2611
Emergency Stop Torque	T_{2Not}	*Nm*	1005	900	960	960	960	960	960	960	960	900	900	885	885	885
		in.lb	8895	7966	8497	8497	8497	8497	8497	8497	8497	7966	7966	7833	7833	7833
Maximum Acceleration Torque	T_{2B}	*Nm*	603	540	576	576	576	576	576	576	576	540	540	531	531	531
		in.lb	5337	4779	5098	5098	5098	5098	5098	5098	5098	4779	4779	4700	4700	4700
Maximum Torque	T_{2a}	*Nm*	670	600	640	640	640	640	640	640	640	600	600	590	590	590
		in.lb	5930	5310	5664	5664	5664	5664	5664	5664	5664	5310	5310	5222	5222	5222
Permitted Average Input Speed	n_{1N}	*rpm*	3000													
Maximum Input Speed	n_{1Max}	*rpm*	6000													
Mean No Load Running Torque	T_{012}	*Nm*	0.85	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	7.52	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_t	arcmin	≤7													
Reduced Low Backlash P0	j_t	arcmin	≤5													
Ultra Low Backlash PU	j_t	arcmin	≤3													
Torsional Rigidity	C_{21}	*Nm/arcmin*	26													
		in.lb/arcmin	230.12													
Maximum Radial Load	F_{2AMax}	*N*	6700													
		lb$_f$	1506													
Maximum Axial Load	F_{2AMax}	*N*	3300													
		lb$_f$	742													
Max. Tilting Moment	M_{2KMax}	*Nm*	603													
		in.lb	5337													
Mass Moment of Inertia	j_1	kgcm^2	2.58	1.5	1.49	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Operating Noise Level	L_{PA}	dB(A)	< 63													
Efficiency at Full loading	η	%	95													
Operating Temperature		℃	−25 to +90													
		F	−13 to +194													
Lubrication			Synthetic Lubrication Grease													
Mouting Position			Any Directions													
Protection Class			IP 65													
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)													
Weight	*m*	kg	8.00													
		lb$_m$	17.6													

XA160 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	630	550	620	600	575	550	510	510
		in.lb	5576	4868	5487	5310	5089	4868	4514	4514
Emergency Stop Torque	T_{2Not}	*Nm*	1890	1650	1860	1800	1725	1650	1530	1530
		in.lb	16728	14604	16462	15931	15267	14604	13542	13542
Maximum Acceleration Torque	T_{2B}	*Nm*	1134	990	1116	1080	1035	990	918	918
		in.lb	10037	8762	9877	9559	9160	8762	8125	8125
Maximum Torque	T_{2a}	*Nm*	1260	1100	1240	1200	1150	1100	1020	1020
		in.lb	11152	9736	10975	10621	10178	9736	9028	9028
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_t	arcmin	≤5							
Reduced Low Backlash P0	j_t	arcmin	≤3							
Ultra Low Backlash PU	j_t	arcmin	≤1							
Torsional Rigidity	C_{21}	*Nm/arcmin*	52							
		in.lb/arcmin	460.24							
Maximum Radial Load	F_{2AMax}	*N*	9600							
		lb$_f$	2158							
Maximum Axial Load	F_{2AMax}	*N*	4800							
		lb$_f$	1079							
Max. Tilting Moment	M_{2KMax}	*Nm*	1275							
		in.lb	11285							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	20							
		lb$_m$	44.1							

XA160 2-stage

			2-stage												
Ratio	i		15	20	25	30	32	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	630	550	620	620	620	620	620	620	620	600	575	550	510	510
		in.lb	5576	4868	5487	5487	5487	5487	5487	5487	5487	5310	5089	4868	4514	4514
Emergency Stop Torque	T_{2Not}	*Nm*	1890	1650	1860	1860	1860	1860	1860	1860	1860	1800	1725	1650	1530	1530
		in.lb	16728	14604	16462	16462	16462	16462	16462	16462	16462	15931	15267	14604	13542	13542
Maximum Acceleration Torque	T_{2B}	*Nm*	1134	990	1116	1116	1116	1116	1116	1116	1116	1080	1035	990	918	918
		in.lb	10037	8762	9877	9877	9877	9877	9877	9877	9877	9559	9160	8762	8125	8125
Maximum Torque	T_{2a}	*Nm*	1260	1100	1240	1240	1240	1240	1240	1240	1240	1200	1150	1100	1020	1020
		in.lb	11152	9736	10975	10975	10975	10975	10975	10975	10975	10621	10178	9736	9028	9028
Permitted Average Input Speed	n_{1N}	*rpm*	3000													
Maximum Input Speed	n_{1Max}	*rpm*	6000													
Mean No Load Running Torque	T_{012}	*Nm*	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
		in.lb	21.24	21.24	21.24	20.36	20.36	20.36	20.36	20.36	20.36	20.36	20.36	20.36	20.36	20.36
Standard Backlash P1	j_t	arcmin	≤7													
Reduced Low Backlash P0	j_t	arcmin	≤5													
Ultra Low Backlash PU	j_t	arcmin	≤3													
Torsional Rigidity	C_{21}	*Nm/arcmin*	52													
		in.lb/arcmin	460.24													
Maximum Radial Load	F_{2AMax}	*N*	9600													
		lb$_f$	2158													
Maximum Axial Load	F_{2AMax}	*N*	4800													
		lb$_f$	1079													
Max. Tilting Moment	M_{2KMax}	*Nm*	1275													
		in.lb	11285													
Mass Moment of Inertia	j_1	kgcm^2	12.35	6.65	5.81	6.34	6.34	5.36	4.08	5.36	4.08	7.4	7.4	7.4	7.4	7.4
Operating Noise Level	L_{PA}	dB(A)	< 65													
Efficiency at Full loading	η	%	95													
Operating Temperature		℃	−25 to +90													
		F	−13 to +194													
Lubrication			Synthetic Lubrication Grease													
Mouting Position			Any Directions													
Protection Class			IP 65													
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)													
Weight	*m*	kg	25.00													
		lb$_m$	55.1													

XA205 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	1220	1170	1170	1100	1100	1060	1060	1060
		in.lb	10798	10355	10355	9736	9736	9382	9382	9382
Emergency Stop Torque	T_{2Not}	*Nm*	3660	3510	3510	3300	3300	3180	3180	3180
		in.lb	32394	31066	31066	29207	29207	28145	28145	28145
Maximum Acceleration Torque	T_{2B}	*Nm*	2196	2106	2106	1980	1980	1908	1908	1908
		in.lb	19436	18640	18640	17524	17524	16887	16887	16887
Maximum Torque	T_{2e}	*Nm*	2440	2340	2340	2200	2200	2120	2120	2120
		in.lb	21596	20711	20711	19472	19472	18763	18763	18763
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_t	arcmin	≤5							
Reduced Low Backlash P0	j_t	arcmin	≤3							
Ultra Low Backlash PU	j_t	arcmin	≤1							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	138							
		in.lb/arcmin	1221.4							
Maximum Radial Load	F_{2AMax}	*N*	14000							
		lb$_f$	3147							
Maximum Axial Load	F_{2AMax}	*N*	7000							
		lb$_f$	1574							
Max. Tilting Moment	M_{2KMax}	*Nm*	2013							
		in.lb	17816							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	31							
		lb$_m$	68.3							

XA205 2-stage

			2-stage												
Ratio	i		15	20	25	30	32	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	1220	1170	1170	1170	1170	1170	1170	1170	1170	1100	1100	1060	1060	1060
		in.lb	10798	10355	10355	10355	10355	10355	10355	10355	10355	9736	9736	9382	9382	9382
Emergency Stop Torque	T_{2Not}	*Nm*	3660	3510	3510	3510	3510	3510	3510	3510	3510	3300	3300	3180	3180	3180
		in.lb	32394	31066	31066	31066	31066	31066	31066	31066	31066	29207	29207	28145	28145	28145
Maximum Acceleration Torque	T_{2B}	*Nm*	2196	2106	2106	2106	2106	2106	2106	2106	2106	1980	1980	1908	1908	1908
		in.lb	19436	18640	18640	18640	18640	18640	18640	18640	18640	17524	17524	16887	16887	16887
Maximum Torque	T_{2e}	*Nm*	2440	2340	2340	2340	2340	2340	2340	2340	2340	2200	2200	2120	2120	2120
		in.lb	21596	20711	20711	20711	20711	20711	20711	20711	20711	19472	19472	18763	18763	18763
Permitted Average Input Speed	n_{1N}	*rpm*	3000													
Maximum Input Speed	n_{1Max}	*rpm*	4000													
Mean No Load Running Torque	T_{012}	*Nm*	2.3	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	20.36	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_t	arcmin	≤7													
Reduced Low Backlash P0	j_t	arcmin	≤5													
Ultra Low Backlash PU	j_t	arcmin	≤3													
Torsional Rigidity	C_{t21}	*Nm/arcmin*	138													
		in.lb/arcmin	1221.40													
Maximum Radial Load	F_{2AMax}	*N*	14000													
		lb$_f$	3147													
Maximum Axial Load	F_{2AMax}	*N*	7000													
		lb$_f$	1574													
Max. Tilting Moment	M_{2KMax}	*Nm*	2013													
		in.lb	17816													
Mass Moment of Inertia	j_1	kgcm^2	12.3	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	η	%	95													
Operating Temperature		℃	−25 to +90													
		F	−13 to +194													
Lubrication			Synthetic Lubrication Grease													
Mouting Position			Any Directions													
Protection Class			IP 65													
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)													
Weight	*m*	kg	39.00													
		lb$_m$	86													

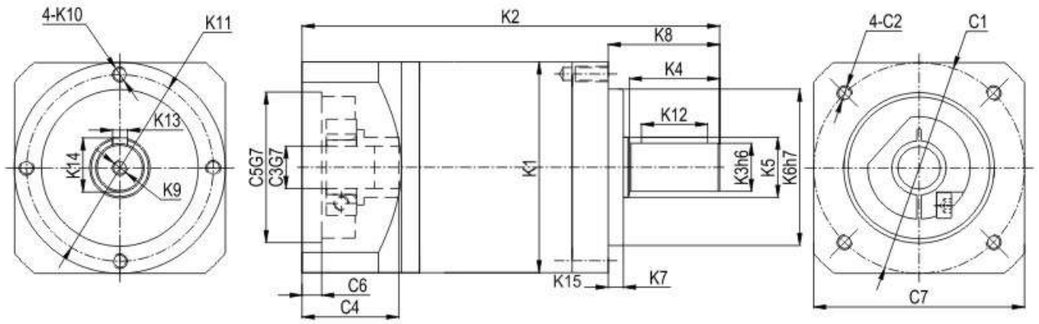
XA235 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	2050	2000	2000	1900	1900	1800	1800	1800
		in.lb	18144	17701	17701	16816	16816	15931	15931	15931
Emergency Stop Torque	T_{2Not}	*Nm*	6150	6000	6000	5700	5700	5400	5400	5400
		in.lb	54432	53104	53104	50449	50449	47794	47794	47794
Maximum Acceleration Torque	T_{2B}	*Nm*	3690	3600	3600	3420	3420	3240	3240	3240
		in.lb	32659	31863	31863	30269	30269	28676	28676	28676
Maximum Torque	T_{2e}	*Nm*	4100	4000	4000	3800	3800	3600	3600	3600
		in.lb	36288	35403	35403	33633	33633	31863	31863	31863
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_t	arcmin	≤5							
Reduced Low Backlash P0	j_t	arcmin	≤3							
Ultra Low Backlash PU	j_t	arcmin	≤1							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	220							
		in.lb/arcmin	1947.2							
Maximum Radial Load	F_{2AMax}	*N*	16000							
		lb$_f$	3597							
Maximum Axial Load	F_{2AMax}	*N*	8000							
		lb$_f$	1798							
Max. Tilting Moment	M_{2KMax}	*Nm*	2676							
		in.lb	23684							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	53							
		lb$_m$	117							

XA235 2-stage

			2-stage												
Ratio	i		15	20	25	30	32	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	2050	2000	2000	2000	2000	2000	2000	2000	2000	1900	1900	1800	1800	1800
		in.lb	18144	17701	17701	17701	17701	17701	17701	17701	17701	16816	16816	15931	15931	15931
Emergency Stop Torque	T_{2Not}	*Nm*	6150	6000	6000	6000	6000	6000	6000	6000	6000	5700	5700	5400	5400	5400
		in.lb	54432	53104	53104	53104	53104	53104	53104	53104	53104	50449	50449	47794	47794	47794
Maximum Acceleration Torque	T_{2B}	*Nm*	3690	3600	3600	3600	3600	3600	3600	3600	3600	3420	3420	3240	3240	3240
		in.lb	32659	31863	31863	31863	31863	31863	31863	31863	31863	30269	30269	28676	28676	28676
Maximum Torque	T_{2e}	*Nm*	4100	4000	4000	4000	4000	4000	4000	4000	4000	3800	3800	3600	3600	3600
		in.lb	36288	35403	35403	35403	35403	35403	35403	35403	35403	33633	33633	31863	31863	31863
Permitted Average Input Speed	n_{1N}	*rpm*	2000													
Maximum Input Speed	n_{1Max}	*rpm*	4000													
Mean No Load Running Torque	T_{012}	*Nm*	3.15	3.15	3.15	3	3	3	3	3	3	3	3	3	3	3
		in.lb	27.88	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_t	arcmin	≤7													
Reduced Low Backlash P0	j_t	arcmin	≤5													
Ultra Low Backlash PU	j_t	arcmin	≤3													
Torsional Rigidity	C_{t21}	*Nm/arcmin*	220													
		in.lb/arcmin	1947.15													
Maximum Radial Load	F_{2AMax}	*N*	16000													
		lb$_f$	3597													
Maximum Axial Load	F_{2AMax}	*N*	8000													
		lb$_f$	1798													
Max. Tilting Moment	M_{2KMax}	*Nm*	2676													
		in.lb	23684													
Mass Moment of Inertia	j_1	kgcm^2	28.92	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	η	%	95													
Operating Temperature		℃	−25 to +90													
		F	−13 to +194													
Lubrication			Synthetic Lubrication Grease													
Mouting Position			Any Directions													
Protection Class			IP 65													
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)													
Weight	*m*	kg	66.00													
		lb$_m$	145.5													

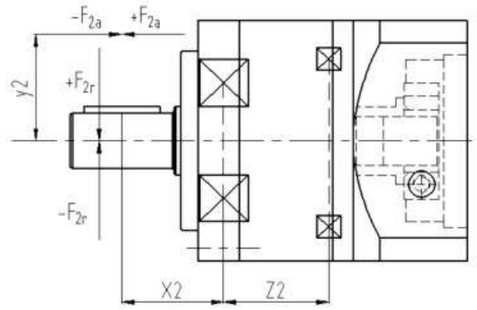
XA Dimensions



Model	XA050		XA070		XA090		XA120		XA160		XA205		XA235	
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

XA Titling moment



$$M_{2kb}=[F_{2a}xy_2+F_{2rb}x(X_2+Z_2)]/1000$$

XA	050	070	090	120	160	205	235
Z2[mm]	8.2	30.5	33.5	45	66.5	72.5	83.5
M_{2Kb}	19	90	214	603	1275	2013	2676

Technical Memo

Technical Memo

XAR

Powerful. High Precision. Reliable

- Servo Planetary Gearbox

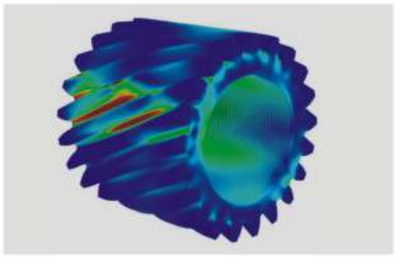
Advanced Gearbox Solution





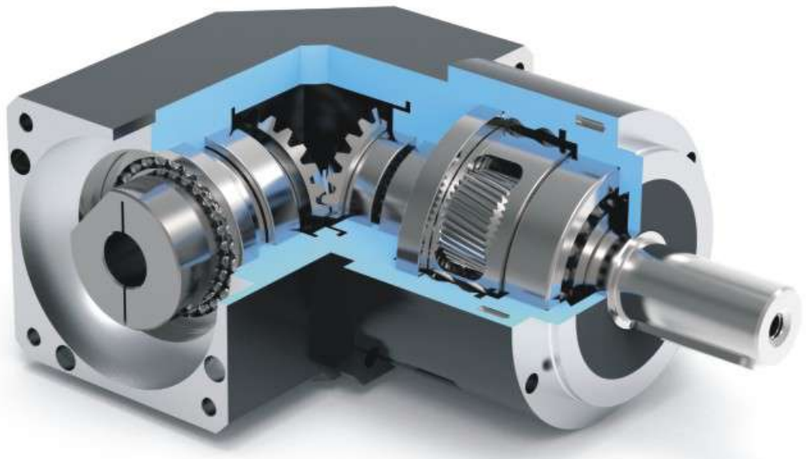
Helical Gear System Technology

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. Integrated housing engineering with super skiving gearing tooling craft.



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.

Order Instructions

Order Code:

XAR — 120 — 02 — 015 — S1 — P0 — Servo Motor

XAR

Gearbox Series: XAR

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

Technical Memo

XAR Series Servo Planetary Gearbox

XAR070 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	56	52	52	50	50	45	42	42
		in.lb	496	460	460	443	443	398	372	372
Emergency Stop Torque	T_{2Not}	*Nm*	168	156	156	150	150	135	126	126
		in.lb	1487	1381	1381	1328	1328	1195	1115	1115
Maximum Acceleration Torque	T_{2B}	*Nm*	100.8	93.6	93.6	90	90	81	75.6	75.6
		in.lb	892	828	828	797	797	717	669	669
Maximum Torque	T_{2a}	*Nm*	112	104	104	100	100	90	84	84
		in.lb	991	920	920	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*	0.29	0.25	0.22	0.2	0.2	0.2	0.2	0.2
		in.lb	2.57	2.21	1.95	1.77	1.77	1.77	1.77	1.77
Standard Backlash P1	j_t	arcmin	≤7							
Reduced Low Backlash P0	j_t	arcmin	≤5							
Ultra Low Backlash PU	j_t	arcmin	≤3							
Torsional Rigidity	C_{21}	*Nm/arcmin*	7							
		in.lb/arcmin	61.95							
Maximum Radial Load	F_{2AMax}	*N*	1500							
		lb$_f$	337							
Maximum Axial Load	F_{2AMax}	*N*	760							
		lb$_f$	171							
Max. Tilting Moment	M_{2KMax}	*Nm*	90							
		in.lb	797							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	95							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	2.2							
		lb$_m$	4.8							

XAR070 2-stage

			2-stage											
Ratio	i		15	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	56	52	52	52	52	52	52	52	50	50	45	42	42
		in.lb	496	460	460	460	460	460	460	460	443	443	398	372	372
Emergency Stop Torque	T_{2Not}	*Nm*	168	156	156	156	156	156	156	156	150	150	135	126	126
		in.lb	1487	1381	1381	1381	1381	1381	1381	1381	1328	1328	1195	1115	1115
Maximum Acceleration Torque	T_{2B}	*Nm*	100.8	93.6	93.6	93.6	93.6	93.6	93.6	93.6	90	90	81	75.6	75.6
		in.lb	892	828	828	828	828	828	828	828	797	797	717	669	669
Maximum Torque	T_{2a}	*Nm*	112	104	104	104	104	104	104	104	100	100	90	84	84
		in.lb	991	920	920	920	920	920	920	920	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*	0.22	0.22	0.22	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		in.lb	1.95	1.95	1.95	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77
Standard Backlash P1	j_t	arcmin	≤9												
Reduced Low Backlash P0	j_t	arcmin	≤7												
Ultra Low Backlash PU	j_t	arcmin	≤5												
Torsional Rigidity	C_{21}	*Nm/arcmin*	7												
		in.lb/arcmin	61.95												
Maximum Radial Load	F_{2AMax}	*N*	1500												
		lb$_f$	337												
Maximum Axial Load	F_{2AMax}	*N*	760												
		lb$_f$	171												
Max. Tilting Moment	M_{2KMax}	*Nm*	90												
		in.lb	797												
Mass Moment of Inertia	j_1	kgcm^2	0.075	0.075	0.075	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	η	%	93												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	2												
		lb$_m$	5.28												

XAR090 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	160	145	155	145	145	142	142	142
		in.lb	1416	1283	1372	1283	1283	1257	1257	1257
Emergency Stop Torque	T_{2Not}	*Nm*	480	435	465	435	435	426	426	426
		in.lb	4248	3850	4116	3850	3850	3770	3770	3770
Maximum Acceleration Torque	T_{2B}	*Nm*	288	261	279	261	261	255.6	255.6	255.6
		in.lb	2549	2310	2469	2310	2310	2262	2262	2262
Maximum Torque	T_{2a}	*Nm*	320	290	310	290	290	284	284	284
		in.lb	2832	2567	2744	2567	2567	2514	2514	2514
Permitted Average Input Speed	n_{1N}	*rpm*	3000							
Maximum Input Speed	n_{1Max}	*rpm*	6000							
Mean No Load Running Torque	T_{012}	*Nm*	0.43	0.41	0.36	0.34	0.3	0.3	0.3	0.3
		in.lb	3.81	3.63	3.19	3.01	2.66	2.66	2.66	2.66
Standard Backlash P1	j_t	arcmin	≤7							
Reduced Low Backlash P0	j_t	arcmin	≤5							
Ultra Low Backlash PU	j_t	arcmin	≤3							
Torsional Rigidity	C_{21}	*Nm/arcmin*	14							
		in.lb/arcmin	123.91							
Maximum Radial Load	F_{2AMax}	*N*	3200							
		lb$_f$	719							
Maximum Axial Load	F_{2DMax}	*N*	1600							
		lb$_f$	360							
Max. Tilting Moment	M_{2KMax}	*Nm*	214							
		in.lb	1894							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	95							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	5.3							
		lb$_m$	11.7							

XAR090 2-stage

			2-stage											
Ratio	i		15	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	160	145	155	155	155	155	155	155	145	145	142	142	142
		in.lb	1416	1283	1372	1372	1372	1372	1372	1372	1283	1283	1257	1257	1257
Emergency Stop Torque	T_{2Not}	*Nm*	480	435	465	465	465	465	465	465	435	435	426	426	426
		in.lb	4248	3850	4116	4116	4116	4116	4116	4116	3850	3850	3770	3770	3770
Maximum Acceleration Torque	T_{2B}	*Nm*	288	261	279	279	279	279	279	279	261	261	255.6	255.6	255.6
		in.lb	2549	2310	2469	2469	2469	2469	2469	2469	2310	2310	2262	2262	2262
Maximum Torque	T_{2a}	*Nm*	320	290	310	310	310	310	310	310	290	290	284	284	284
		in.lb	2832	2567	2744	2744	2744	2744	2744	2744	2567	2567	2514	2514	2514
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	0.36	0.36	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		in.lb	3.19	3.19	3.19	2.66	2.66	2.66	2.66	2.66	2.66	2.66	2.66	2.66	2.66
Standard Backlash P1	j_t	arcmin	≤9												
Reduced Low Backlash P0	j_t	arcmin	≤7												
Ultra Low Backlash PU	j_t	arcmin	≤5												
Torsional Rigidity	C_{21}	*Nm/arcmin*	14												
		in.lb/arcmin	123.91												
Maximum Radial Load	F_{2AMax}	*N*	3200												
		lb$_f$	719												
Maximum Axial Load	F_{2DMax}	*N*	1600												
		lb$_f$	360												
Max. Tilting Moment	M_{2KMax}	*Nm*	214												
		in.lb	1894												
Mass Moment of Inertia	j_1	kgcm^2	0.44	0.44	0.44	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	η	%	93												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	7												
		lb$_m$	14.3												

XAR120 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	335	300	320	300	300	295	295	295
		in.lb	2965	2655	2832	2655	2655	2611	2611	2611
Emergency Stop Torque	T_{2Not}	*Nm*	1005	900	960	900	900	885	885	885
		in.lb	8895	7966	8497	7966	7966	7833	7833	7833
Maximum Acceleration Torque	T_{2B}	*Nm*	603	540	576	540	540	531	531	531
		in.lb	5337	4779	5098	4779	4779	4700	4700	4700
Maximum Torque	T_{2a}	*Nm*	670	600	640	600	600	590	590	590
		in.lb	5930	5310	5664	5310	5310	5222	5222	5222
Permitted Average Input Speed	n_{1N}	*rpm*	3000							
Maximum Input Speed	n_{1Max}	*rpm*	6000							
Mean No Load Running Torque	T_{012}	*Nm*	1.2	1.15	1.05	1.01	0.98	0.98	0.98	0.98
		in.lb	10.62	10.18	9.29	8.94	8.67	8.67	8.67	8.67
Standard Backlash P1	j_t	arcmin	≤7							
Reduced Low Backlash P0	j_t	arcmin	≤5							
Ultra Low Backlash PU	j_t	arcmin	≤3							
Torsional Rigidity	C_{21}	*Nm/arcmin*	26							
		in.lb/arcmin	230.12							
Maximum Radial Load	F_{2AMax}	*N*	6700							
		lb$_f$	1506							
Maximum Axial Load	F_{2DMax}	*N*	3300							
		lb$_f$	742							
Max. Tilting Moment	M_{2KMax}	*Nm*	603							
		in.lb	5337							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	95							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	9							
		lb$_m$	19.8							

XAR120 2-stage

			2-stage											
Ratio	i		15	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	335	300	320	320	320	320	320	320	300	300	295	295	295
		in.lb	2965	2655	2832	2832	2832	2832	2832	2832	2655	2655	2611	2611	2611
Emergency Stop Torque	T_{2Not}	*Nm*	1005	900	960	960	960	960	960	960	900	900	885	885	885
		in.lb	8895	7966	8497	8497	8497	8497	8497	8497	7966	7966	7833	7833	7833
Maximum Acceleration Torque	T_{2B}	*Nm*	603	540	576	576	576	576	576	576	540	540	531	531	531
		in.lb	5337	4779	5098	5098	5098	5098	5098	5098	4779	4779	4700	4700	4700
Maximum Torque	T_{2a}	*Nm*	670	600	640	640	640	640	640	640	600	600	590	590	590
		in.lb	5930	5310	5664	5664	5664	5664	5664	5664	5310	5310	5222	5222	5222
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	1.05	1.05	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
		in.lb	9.29	9.29	9.29	8.67	8.67	8.67	8.67	8.67	8.67	8.67	8.67	8.67	8.67
Standard Backlash P1	j_t	arcmin	≤9												
Reduced Low Backlash P0	j_t	arcmin	≤7												
Ultra Low Backlash PU	j_t	arcmin	≤5												
Torsional Rigidity	C_{21}	*Nm/arcmin*	26												
		in.lb/arcmin	230.12												
Maximum Radial Load	F_{2AMax}	*N*	6700												
		lb$_f$	1506												
Maximum Axial Load	F_{2DMax}	*N*	3300												
		lb$_f$	742												
Max. Tilting Moment	M_{2KMax}	*Nm*	603												
		in.lb	5337												
Mass Moment of Inertia	j_1	kgcm^2	1.5	1.5	1.49	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.53	1.53	1.49
Operating Noise Level	L_{PA}	dB(A)	< 68												
Efficiency at Full loading	η	%	93												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	13												
		lb$_m$	28.6												

XAR160 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	630	550	620	600	575	550	510	510
		in.lb	5576	4868	5487	5310	5089	4868	4514	4514
Emergency Stop Torque	T_{2Not}	*Nm*	1890	1650	1860	1800	1725	1650	1530	1530
		in.lb	16728	14604	16462	15931	15267	14604	13542	13542
Maximum Acceleration Torque	T_{2B}	*Nm*	1134	990	1116	1080	1035	990	918	918
		in.lb	10037	8762	9877	9559	9160	8762	8125	8125
Maximum Torque	T_{2a}	*Nm*	1260	1100	1240	1200	1150	1100	1020	1020
		in.lb	11152	9736	10975	10621	10178	9736	9028	9028
Permitted Average Input Speed	n_{1N}	*rpm*	3000							
Maximum Input Speed	n_{1Max}	*rpm*	6000							
Mean No Load Running Torque	T_{012}	*Nm*	2.75	2.65	2.5	2.4	2.4	2.4	2.4	2.4
		in.lb	24.34	23.45	22.13	21.24	21.24	21.24	21.24	21.24
Standard Backlash P1	j_t	arcmin	≤7							
Reduced Low Backlash P0	j_t	arcmin	≤5							
Ultra Low Backlash PU	j_t	arcmin	≤3							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	52							
		in.lb/arcmin	460.24							
Maximum Radial Load	F_{2AMax}	*N*	9600							
		lb$_f$	2158							
Maximum Axial Load	F_{2AMax}	*N*	4800							
		lb$_f$	1079							
Max. Tilting Moment	M_{2KMax}	*Nm*	1275							
		in.lb	11285							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	95							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	26							
		lb$_m$	57.2							

XAR160 2-stage

			2-stage											
Ratio	i		15	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	630	550	620	620	620	620	620	620	600	575	550	510	510
		in.lb	5576	4868	5487	5487	5487	5487	5487	5487	5310	5089	4868	4514	4514
Emergency Stop Torque	T_{2Not}	*Nm*	1890	1650	1860	1860	1860	1860	1860	1860	1800	1725	1650	1530	1530
		in.lb	16728	14604	16462	16462	16462	16462	16462	16462	15931	15267	14604	13542	13542
Maximum Acceleration Torque	T_{2B}	*Nm*	1134	990	1116	1116	1116	1116	1116	1116	1080	1035	990	918	918
		in.lb	10037	8762	9877	9877	9877	9877	9877	9877	9559	9160	8762	8125	8125
Maximum Torque	T_{2a}	*Nm*	1260	1100	1240	1240	1240	1240	1240	1240	1200	1150	1100	1020	1020
		in.lb	11152	9736	10975	10975	10975	10975	10975	10975	10621	10178	9736	9028	9028
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	2.6	2.6	2.6	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
		in.lb	23.01	23.01	23.01	23.01	22.13	22.13	22.13	22.13	22.13	22.13	22.13	22.13	22.13
Standard Backlash P1	j_t	arcmin	≤9												
Reduced Low Backlash P0	j_t	arcmin	≤7												
Ultra Low Backlash PU	j_t	arcmin	≤5												
Torsional Rigidity	C_{t21}	*Nm/arcmin*	52												
		in.lb/arcmin	460.24												
Maximum Radial Load	F_{2AMax}	*N*	9600												
		lb$_f$	2158												
Maximum Axial Load	F_{2AMax}	*N*	4800												
		lb$_f$	1079												
Max. Tilting Moment	M_{2KMax}	*Nm*	1275												
		in.lb	11285												
Mass Moment of Inertia	j_1	kgcm^2	7.47	6.65	5.81	6.34	5.36	4.08	5.36	4.08	4.08	4.08	7.4	7.3	7.3
Operating Noise Level	L_{PA}	dB(A)	< 70												
Efficiency at Full loading	η	%	93												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	31												
		lb$_m$	68.2												

XAR205 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	1220	1170	1170	1100	1100	1060	1060	1060
		in.lb	10798	10355	10355	9736	9736	9382	9382	9382
Emergency Stop Torque	T_{2Not}	*Nm*	3660	3510	3510	3300	3300	3180	3180	3180
		in.lb	32394	31066	31066	29207	29207	28145	28145	28145
Maximum Acceleration Torque	T_{2B}	*Nm*	2196	2106	2106	1980	1980	1908	1908	1908
		in.lb	19436	18640	18640	17524	17524	16887	16887	16887
Maximum Torque	T_{2a}	*Nm*	2440	2340	2340	2200	2200	2120	2120	2120
		in.lb	21596	20711	20711	19472	19472	18763	18763	18763
Permitted Average Input Speed	n_{1N}	*rpm*	1500							
Maximum Input Speed	n_{1Max}	*rpm*	3000							
Mean No Load Running Torque	T_{012}	*Nm*	3.9	3.8	3.55	3.4	3.4	3.4	3.4	3.4
		in.lb	34.52	33.63	31.42	30.09	30.09	30.09	30.09	30.09
Standard Backlash P1	j_t	arcmin	≤7							
Reduced Low Backlash P0	j_t	arcmin	≤5							
Ultra Low Backlash PU	j_t	arcmin	≤3							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	138							
		in.lb/arcmin	1221.40							
Maximum Radial Load	F_{2AMax}	*N*	14000							
		lb$_f$	3147							
Maximum Axial Load	F_{2AMax}	*N*	7000							
		lb$_f$	1574							
Max. Tilting Moment	M_{2KMax}	*Nm*	2013							
		in.lb	17816							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	95							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	41							
		lb$_m$	90.2							

XAR205 2-stage

			2-stage											
Ratio	i		15	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	1220	1170	1170	1170	1170	1170	1170	1170	1100	1100	1060	1060	1060
		in.lb	10798	10355	10355	10355	10355	10355	10355	10355	9736	9736	9382	9382	9382
Emergency Stop Torque	T_{2Not}	*Nm*	3660	3510	3510	3510	3510	3510	3510	3510	3300	3300	3180	3180	3180
		in.lb	32394	31066	31066	31066	31066	31066	31066	31066	29207	29207	28145	28145	28145
Maximum Acceleration Torque	T_{2B}	*Nm*	2196	2106	2106	2106	2106	2106	2106	2106	1980	1980	1908	1908	1908
		in.lb	19436	18640	18640	18640	18640	18640	18640	18640	17524	17524	16887	16887	16887
Maximum Torque	T_{2a}	*Nm*	2440	2340	2340	2340	2340	2340	2340	2340	2200	2200	2120	2120	2120
		in.lb	21596	20711	20711	20711	20711	20711	20711	20711	19472	19472	18763	18763	18763
Permitted Average Input Speed	n_{1N}	*rpm*	1500												
Maximum Input Speed	n_{1Max}	*rpm*	3000												
Mean No Load Running Torque	T_{012}	*Nm*	2.7	2.7	2.7	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
		in.lb	23.90	23.90	23.90	23.01	23.01	23.01	23.01	23.01	23.01	23.01	23.01	23.01	23.01
Standard Backlash P1	j_t	arcmin	≤9												
Reduced Low Backlash P0	j_t	arcmin	≤7												
Ultra Low Backlash PU	j_t	arcmin	≤5												
Torsional Rigidity	C_{t21}	*Nm/arcmin*	138												
		in.lb/arcmin	1221.40												
Maximum Radial Load	F_{2AMax}	*N*	14000												
		lb$_f$	3147												
Maximum Axial Load	F_{2AMax}	*N*	7000												
		lb$_f$	1574												
Max. Tilting Moment	M_{2KMax}	*Nm*	2013												
		in.lb	17816												
Mass Moment of Inertia	j_1	kgcm^2	7.42	7.42	7.54	7.14	7.14	22.55	7.14	7.14	7.14	7.14	7.54	7.54	7.42
Operating Noise Level	L_{PA}	dB(A)	< 72												
Efficiency at Full loading	η	%	93												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	49												
		lb$_m$	107.8												

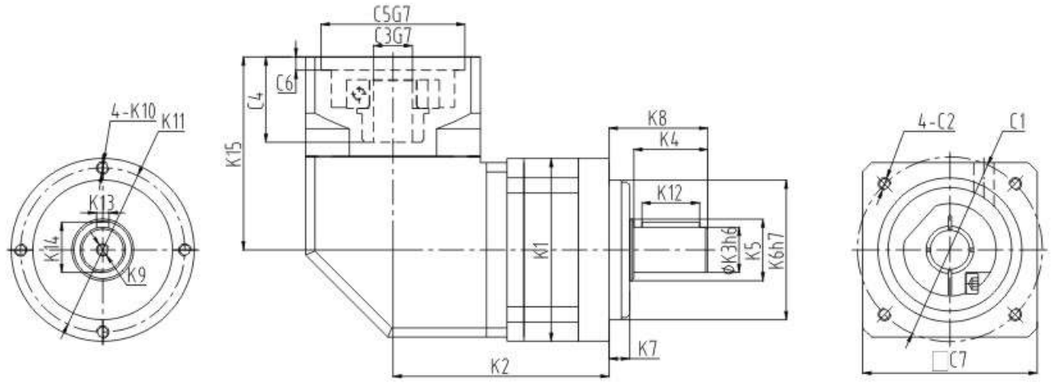
XAR235 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	2050	2000	2000	1900	1900	1800	1800	1800
		in.lb	18144	17701	17701	16816	16816	15931	15931	15931
Emergency Stop Torque	T_{2Not}	*Nm*	6150	6000	6000	5700	5700	5400	5400	5400
		in.lb	54432	53104	53104	50449	50449	47794	47794	47794
Maximum Acceleration Torque	T_{2B}	*Nm*	3690	3600	3600	3420	3420	3240	3240	3240
		in.lb	32659	31863	31863	30269	30269	28676	28676	28676
Maximum Torque	T_{2e}	*Nm*	4100	4000	4000	3800	3800	3600	3600	3600
		in.lb	36288	35403	35403	33633	33633	31863	31863	31863
Permitted Average Input Speed	n_{1N}	*rpm*	1500							
Maximum Input Speed	n_{1Max}	*rpm*	3000							
Mean No Load Running Torque	T_{012}	*Nm*	5.6	5.4	5.25	5.07	5.07	5.07	5.07	5.07
		in.lb	49.56	47.79	46.47	44.87	44.87	44.87	44.87	44.87
Standard Backlash P1	j_t	arcmin	≤7							
Reduced Low Backlash P0	j_t	arcmin	≤5							
Ultra Low Backlash PU	j_t	arcmin	≤3							
Torsional Rigidity	C_{21}	*Nm/arcmin*	220							
		in.lb/arcmin	1947.15							
Maximum Radial Load	F_{2AMax}	*N*	16000							
		lb$_f$	3597							
Maximum Axial Load	F_{2DMax}	*N*	8000							
		lb$_f$	1798							
Max. Tilting Moment	M_{2KMax}	*Nm*	2676							
		in.lb	23684							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	95							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	68							
		lb$_m$	149.6							

XAR235 2-stage

			2-stage											
Ratio	i		15	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	2050	2000	2000	2000	2000	2000	2000	2000	1900	1900	1800	1800	1800
		in.lb	18144	17701	17701	17701	17701	17701	17701	17701	16816	16816	15931	15931	15931
Emergency Stop Torque	T_{2Not}	*Nm*	6150	6000	6000	6000	6000	6000	6000	6000	5700	5700	5400	5400	5400
		in.lb	54432	53104	53104	53104	53104	53104	53104	53104	50449	50449	47794	47794	47794
Maximum Acceleration Torque	T_{2B}	*Nm*	3690	3600	3600	3600	3600	3600	3600	3600	3420	3420	3240	3240	3240
		in.lb	32659	31863	31863	31863	31863	31863	31863	31863	30269	30269	28676	28676	28676
Maximum Torque	T_{2e}	*Nm*	4100	4000	4000	4000	4000	4000	4000	4000	3800	3800	3600	3600	3600
		in.lb	36288	35403	35403	35403	35403	35403	35403	35403	33633	33633	31863	31863	31863
Permitted Average Input Speed	n_{1N}	*rpm*	1500												
Maximum Input Speed	n_{1Max}	*rpm*	3000												
Mean No Load Running Torque	T_{012}	*Nm*	3.55	3.55	3.55	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
		in.lb	31.42	31.42	31.42	30.09	30.09	30.09	30.09	30.09	30.09	30.09	30.09	30.09	30.09
Standard Backlash P1	j_t	arcmin	≤9												
Reduced Low Backlash P0	j_t	arcmin	≤7												
Ultra Low Backlash PU	j_t	arcmin	≤5												
Torsional Rigidity	C_{21}	*Nm/arcmin*	220												
		in.lb/arcmin	1947.15												
Maximum Radial Load	F_{2AMax}	*N*	16000												
		lb$_f$	3597												
Maximum Axial Load	F_{2DMax}	*N*	8000												
		lb$_f$	1798												
Max. Tilting Moment	M_{2KMax}	*Nm*	2676												
		in.lb	23684												
Mass Moment of Inertia	j_1	kgcm^2	22.75	22.75	22.75	22.59	22.59	22.59	22.59	22.59	22.59	22.75	22.75	22.59	22.59
Operating Noise Level	L_{PA}	dB(A)	< 75												
Efficiency at Full loading	η	%	93												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	78												
		lb$_m$	171.6												

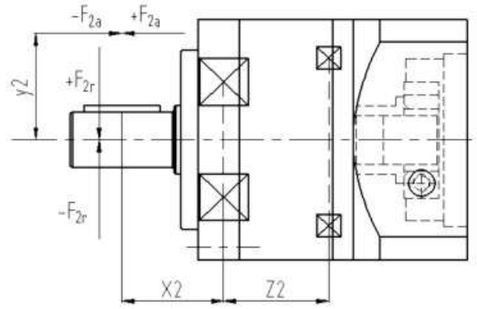
XAR Dimensions



Model	XAR070		XAR090		XAR120		XAR160		XAR205	
Stage	1	2	1	2	1	2	1	2	1	2
K1	Φ70		Φ89		Φ120		Φ160		Φ205	
K2	93	116.7	105.2	136.5	154	198.5	187	248	204.5	251.5
K3	Φ16		Φ22		Φ32		Φ40		Φ55	
K4	30		36		50		80		82	
K5	Φ20		Φ30		Φ40		Φ50		Φ60	
K6	Φ52		Φ68		Φ90		Φ130		Φ160	
K7	5		10		12		15		20	
K8	37		48		65		97		105	
K9	M5X12		M6X16		M10X22		M12X25		M20X40	
K10	M5X12		M6X15		M8X19		M12X20		M12X20	
K11	Φ62		Φ80		Φ108		Φ145		Φ184	
K12	22		28		40		70		70	
K13	5		6		10		12		16	
K14	18		24.5		35		43		59	
K15	82.5		94		140		169		169	
C1	Φ70		Φ90		Φ145		Φ200		Φ200	
C2	M5X12		M6X15		M8X20		M12X25		M12X25	
C3	Φ14		Φ19		Φ24		Φ35		Φ35	
C4	32.1		41.6		61.3		82		82	
C5	Φ50		Φ70		Φ110		Φ114.3		Φ114.3	
C6	6.5		6.5		8		8		8	
C7	65		85		120		175		175	

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

XAR Titling moment



$$M_{2kb}=[F_{2a}xy_2+F_{2rb}x(X_2+Z_2)]/1000$$

XAR	050	070	090	120	160	205	235
Z2[mm]	8.2	30.5	33.5	45	66.5	72.5	83.5
M_{2Kb}	19	90	214	603	1275	2013	2676

Technical Memo

Technical Memo

KPLF-B

Powerful. High Precision. Reliable

- Servo Planetary Gearbox

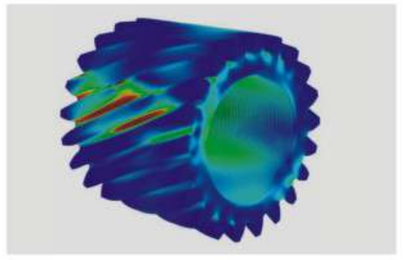
Advanced Gearbox Solution





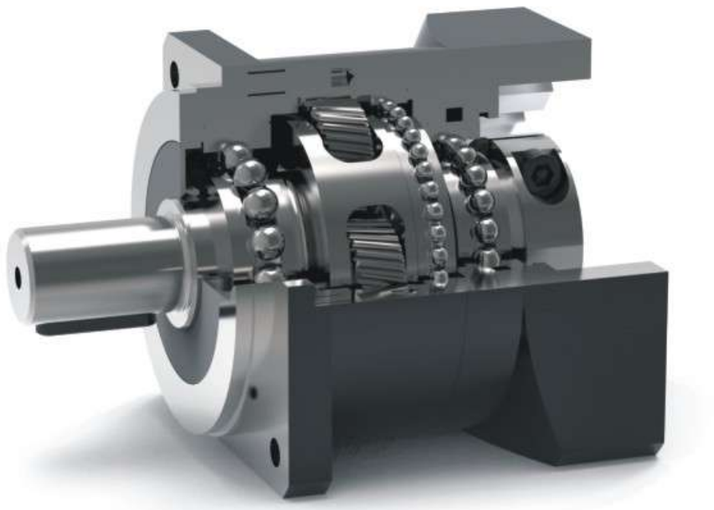
Helical Gear System Technology

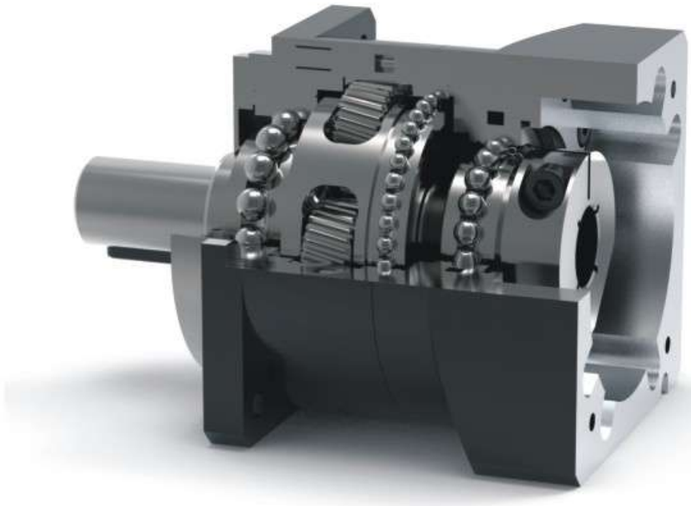
Thanks to the tooth to tooth compact ratio more than 60%.The helical gearing and full needle bearing bring the benefits including higher torque capacity, smooth and lower noise running, decreased backlash and higher efficiency. Integrated housing engineering with super skiving gearing tooling craft.



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.

Order Instructions

Order Code:

KPLF-B — 120 — 02 — 015 — S1 — P0 — Servo Motor

KPLF-B

Gearbox Series: KPLF-B

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

Technical Memo

KPLF-B050 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	20	21	21	20	19	17	15	15
		in.lb	177	186	186	177	168	159	124	124
Emergency Stop Torque	T_{2Not}	*Nm*	60	63	63	60	57	54	42	42
		in.lb	531	558	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_{2e}	*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_t	arcmin	≤ 6							
Reduced Low Backlash P0	j_t	arcmin	≤ 4							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	2.7–3							
		in.lb/arcmin	23.90–26.55							
Maximum Radial Load	F_{2AMax}	*N*	770							
		lb$_f$	173							
Maximum Axial Load	F_{2AMax}	*N*	380							
		lb$_f$	85							
Max. Tilting Moment	M_{2KMax}	*Nm*	17.65							
		in.lb	156.21							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	0.6							
		lb$_m$	1.3							

KPLF-B050 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	21	21	21	21	21	20	17	17	15	15
		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_{2e}	*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	0.08	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	0.71
Standard Backlash P1	j_t	arcmin	≤ 8														
Reduced Low Backlash P0	j_t	arcmin	≤ 6														
Torsional Rigidity	C_{t21}	*Nm/arcmin*	2.8–3														
		in.lb/arcmin	24.78–26.55														
Maximum Radial Load	F_{2AMax}	*N*	770														
		lb$_f$	173														
Maximum Axial Load	F_{2AMax}	*N*	380														
		lb$_f$	85														
Max. Tilting Moment	M_{2KMax}	*Nm*	17.65														
		in.lb	156.21														
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	95														
Operating Temperature		℃	−25 to +90														
		F	−13 to +194														
Lubrication			Synthetic Lubrication Grease														
Mouting Position			Any Directions														
Protection Class			IP 65														
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)														
Weight	*m*	kg	0.9														
		lb$_m$	2														

KPLF-B070 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	56	52	52	48	48	43	43	43
		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_t	arcmin	≤ 5							
Reduced Low Backlash P0	j_t	arcmin	≤ 3							
Ultra Low Backlash PU	j_t	arcmin	≤ 1							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	6.5–7							
		in.lb/arcmin	57.53–61.95							
Maximum Radial Load	F_{2AMax}	*N*	1500							
		lb_f	337							
Maximum Axial Load	F_{2GMax}	*N*	760							
		lb_f	171							
Max. Tilting Moment	M_{2KMax}	*Nm*	28							
		in.lb	247.82							
Mass Moment of Inertia	j_1	$kgcm^2$	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	1.4							
		lb_m	3.1							

KPLF-B070 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	56	52	52	52	52	52	52	52	52	52	48	43	43	43	43
		in.lb	496	443	460	487	487	407	460	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	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	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	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	0.17	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	1.50	1.33	1.33	1.33	1.33	1.33
Standard Backlash P1	j_t	arcmin	≤ 7															
Reduced Low Backlash P0	j_t	arcmin	≤ 5															
Ultra Low Backlash PU	j_t	arcmin	≤ 3															
Torsional Rigidity	C_{t21}	*Nm/arcmin*	6.6–7															
		in.lb/arcmin	58.41–61.95															
Maximum Radial Load	F_{2AMax}	*N*	1500															
		lb_f	337															
Maximum Axial Load	F_{2GMax}	*N*	760															
		lb_f	171															
Max. Tilting Moment	M_{2KMax}	*Nm*	28															
		in.lb	247.82															
Mass Moment of Inertia	j_1	$kgcm^2$	0.127	0.124	0.12	0.075	0.075	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.075	0.064	0.064	0.064
Operating Noise Level	L_{PA}	dB(A)	< 58															
Efficiency at Full loading	η	%	95															
Operating Temperature		℃	−25 to +90															
		F	−13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)															
Weight	*m*	kg	1.6															
		lb_m	3.5															

KPLF-B090 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	160	158	158	150	145	142	142	142
		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_t	arcmin	≤ 5							
Reduced Low Backlash P0	j_t	arcmin	≤ 3							
Ultra Low Backlash PU	j_t	arcmin	≤ 1							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	12−14							
		in.lb/arcmin	106.21−123.91							
Maximum Radial Load	F_{2AMax}	*N*	3200							
		lb$_f$	719							
Maximum Axial Load	F_{2QMax}	*N*	1600							
		lb$_f$	360							
Max. Tilting Moment	M_{2KMax}	*Nm*	142.4							
		in.lb	1260.34							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	3.3							
		lb$_m$	7.3							

KPLF-B090 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	160	160	158	158	158	158	158	158	158	158	158	150	142	142	142	142
		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_t	arcmin	≤ 7															
Reduced Low Backlash P0	j_t	arcmin	≤ 5															
Ultra Low Backlash PU	j_t	arcmin	≤ 3															
Torsional Rigidity	C_{t21}	*Nm/arcmin*	13−14															
		in.lb/arcmin	115.06−123.91															
Maximum Radial Load	F_{2AMax}	*N*	3200															
		lb$_f$	719															
Maximum Axial Load	F_{2QMax}	*N*	1600															
		lb$_f$	360															
Max. Tilting Moment	M_{2KMax}	*Nm*	142.4															
		in.lb	1260.34															
Mass Moment of Inertia	j_1	kgcm^2	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	0.39
Operating Noise Level	L_{PA}	dB(A)	< 60															
Efficiency at Full loading	η	%	95															
Operating Temperature		℃	−25 to +90															
		F	−13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)															
Weight	*m*	kg	4.5															
		lb$_m$	9.9															

KPLF-B120 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	335	330	330	310	305	295	295	295
		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_{2e}	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_t	arcmin	≤ 5							
Reduced Low Backlash P0	j_t	arcmin	≤ 3							
Ultra Low Backlash PU	j_t	arcmin	≤ 1							
Torsional Rigidity	C_{t21}	Nm/arcmin	22–26							
		in.lb/arcmin	194.72–230.12							
Maximum Radial Load	F_{2AMax}	N	6700							
		lb_f	1506							
Maximum Axial Load	F_{2QMax}	N	3300							
		lb_f	742							
Max. Tilting Moment	M_{2KMax}	Nm	406.2							
		in.lb	3595.15							
Mass Moment of Inertia	j_1	kgcm²	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	m	kg	5.5							
		lb_m	12.1							

KPLF-B120 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	335	335	330	330	330	330	330	330	330	330	330	310	295	295	295	295
		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_{2e}	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_t	arcmin	≤ 7															
Reduced Low Backlash P0	j_t	arcmin	≤ 5															
Ultra Low Backlash PU	j_t	arcmin	≤ 3															
Torsional Rigidity	C_{t21}	Nm/arcmin	23–26															
		in.lb/arcmin	203.57–230.12															
Maximum Radial Load	F_{2AMax}	N	6700															
		lb_f	1506															
Maximum Axial Load	F_{2QMax}	N	3300															
		lb_f	742															
Max. Tilting Moment	M_{2KMax}	Nm	406.2															
		in.lb	3595.15															
Mass Moment of Inertia	j_1	kgcm²	2.56	2.58	1.75	1.5	1.49	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	η	%	95															
Operating Temperature		℃	−25 to +90															
		F	−13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)															
Weight	m	kg	8															
		lb_m	17.6															

KPLF-B160 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	630	620	620	600	575	550	550	550
		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_t	arcmin	≤ 5							
Reduced Low Backlash P0	j_t	arcmin	≤ 3							
Ultra Low Backlash PU	j_t	arcmin	≤ 1							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	45–52							
		in.lb/arcmin	398.28–460.24							
Maximum Radial Load	F_{2AMax}	*N*	9600							
		lb$_f$	2158							
Maximum Axial Load	F_{2AMax}	*N*	4800							
		lb$_f$	1079							
Max. Tilting Moment	M_{2KMax}	*Nm*	830.4							
		in.lb	7349.62							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	20							
		lb$_m$	44.1							

KPLF-B160 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	630	630	620	620	620	620	620	620	620	620	620	600	550	550	550	550
		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	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_{2B}	*Nm*	900	900	990	1170	1170	810	990	1170	990	1170	1170	1098	918	918	792	792
		in.lb	7966	7966	8762	10355	10355	7169	8762	10355	8762	10355	10355	9718	8125	8125	7010	7010
Maximum Torque	T_{2a}	*Nm*	1000	1000	1100	1300	1300	900	1100	1300	1100	1300	1300	1220	1020	1020	880	880
		in.lb	8851	8851	9736	11506	11506	7966	9736	11506	9736	11506	11506	10798	9028	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_t	arcmin	≤ 7															
Reduced Low Backlash P0	j_t	arcmin	≤ 5															
Ultra Low Backlash PU	j_t	arcmin	≤ 3															
Torsional Rigidity	C_{t21}	*Nm/arcmin*	45–52															
		in.lb/arcmin	398.28–460.24															
Maximum Radial Load	F_{2AMax}	*N*	9600															
		lb$_f$	2158															
Maximum Axial Load	F_{2AMax}	*N*	4800															
		lb$_f$	1079															
Max. Tilting Moment	M_{2KMax}	*Nm*	830.4															
		in.lb	7349.62															
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	95															
Operating Temperature		℃	−25 to +90															
		F	−13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)															
Weight	*m*	kg	25															
		lb$_m$	55.1															

KPLF-B205 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	1220	1170	1170	1100	1100	1060	1060	1060
		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_{2e}	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_t	arcmin	≤ 5							
Reduced Low Backlash P0	j_t	arcmin	≤ 3							
Ultra Low Backlash PU	j_t	arcmin	≤ 1							
Torsional Rigidity	C_{t21}	Nm/arcmin	120−138							
		in.lb/arcmin	1062.08−1221.40							
Maximum Radial Load	F_{2AMax}	N	14000							
		lb_f	3147							
Maximum Axial Load	F_{2QMax}	N	7000							
		lb_f	1574							
Max. Tilting Moment	M_{2KMax}	Nm	1386							
		in.lb	12267.07							
Mass Moment of Inertia	j_1	kgcm²	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	m	kg	31							
		lb_m	68.3							

KPLF-B205 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	1220	1220	1170	1170	1170	1170	1170	1170	1170	1170	1100	1060	1060	1060	1060
		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_{2e}	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_t	arcmin	≤ 7															
Reduced Low Backlash P0	j_t	arcmin	≤ 5															
Ultra Low Backlash PU	j_t	arcmin	≤ 3															
Torsional Rigidity	C_{t21}	Nm/arcmin	125−138															
		in.lb/arcmin	1106.34−1221.40															
Maximum Radial Load	F_{2AMax}	N	14000															
		lb_f	3147															
Maximum Axial Load	F_{2QMax}	N	7000															
		lb_f	1574															
Max. Tilting Moment	M_{2KMax}	Nm	1386															
		in.lb	12267.07															
Mass Moment of Inertia	j_1	kgcm²	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	η	%	95															
Operating Temperature		℃	−25 to +90															
		F	−13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)															
Weight	m	kg	39															
		lb_m	86															

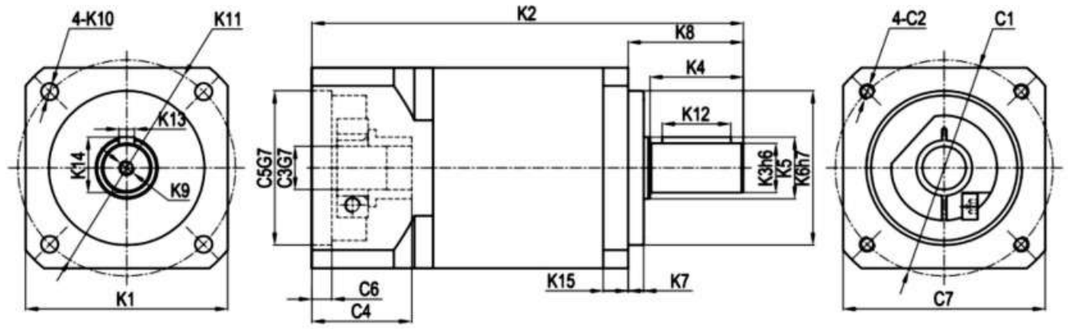
KPLF-B235 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	2050	2000	2000	1900	1900	1800	1800	1800
		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_{2e}	*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_t	arcmin	≤ 5							
Reduced Low Backlash P0	j_t	arcmin	≤ 3							
Ultra Low Backlash PU	j_t	arcmin	≤ 1							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	200–220							
		in.lb/arcmin	1770.14–1947.15							
Maximum Radial Load	F_{2AMax}	*N*	16000							
		lb_f	3597							
Maximum Axial Load	F_{2AMax}	*N*	8000							
		lb_f	1798							
Max. Tilting Moment	M_{2KMax}	*Nm*	1936							
		in.lb	17134.96							
Mass Moment of Inertia	j_1	kgcm²	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	53							
		lb_m	117							

KPLF-B235 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	2050	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	1900	1800	1800	1800	1800
		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_{2e}	*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_t	arcmin	≤ 7															
Reduced Low Backlash P0	j_t	arcmin	≤ 5															
Ultra Low Backlash PU	j_t	arcmin	≤ 3															
Torsional Rigidity	C_{t21}	*Nm/arcmin*	205–220															
		in.lb/arcmin	1814.39–1947.15															
Maximum Radial Load	F_{2AMax}	*N*	16000															
		lb_f	3597															
Maximum Axial Load	F_{2QMax}	*N*	8000															
		lb_f	1798															
Max. Tilting Moment	M_{2KMax}	*Nm*	1936															
		in.lb	17134.96															
Mass Moment of Inertia	j_1	kgcm²	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	η	%	95															
Operating Temperature		℃	−25 to +90															
		F	−13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)															
Weight	*m*	kg	66															
		lb_m	145.5															

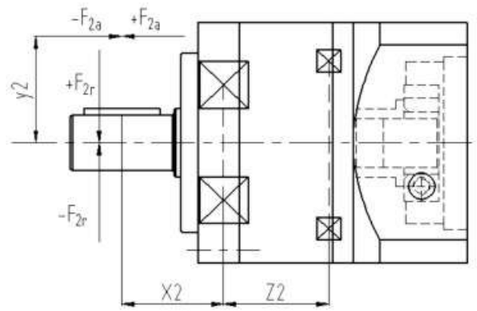
KPLF-B Dimensions



Model	KPLF-B050		KPLF-B070		KPLF-B090		KPLF-B120		KPLF-B160		KPLF-B205		KPLF-B235	
Stage	1	2	1	2	1	2	1	2	1	2	1	2	1	2
K1	52		70		89		120		175		210		240	
	2.047		2.756		3.504		4.724		6.890		8.268		9.449	
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	40		50		80		110		130		180		235	
	1.575		1.969		3.150		4.331		5.118		7.087		9.252	
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	4.5		5.5		6.5		9		11		13		17	
	0.177		0.217		0.256		0.354		0.433		0.512		0.669	
K11	60		85		100		130		185		230		275	
	2.362		3.346		3.937		5.118		7.283		9.055		10.827	
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	
K15	5		8		10		14		15		18		18	
	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	
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

KPLF-B Titling moment



$$M_{2kb}=[F_{2a}xy_2+F_{2rb}x(X_2+Z_2)]/1000$$

KPLF-B	050	070	090	120	160	205	235
Z2[mm]	8.2	30.5	33.5	45	66.5	72.5	83.5
M_{2Kb}	19	90	214	603	1275	2013	2676

Technical Memo

Technical Memo

KOFON Drive the World | CaesarPlanetary®

KPX-B

Powerful. High Precision. Reliable

- Servo Planetary Gearbox

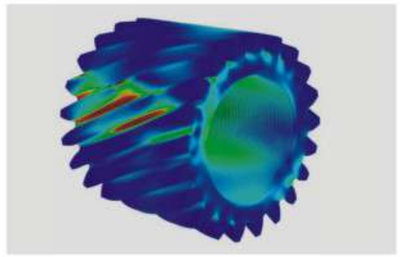
Advanced Gearbox Solution





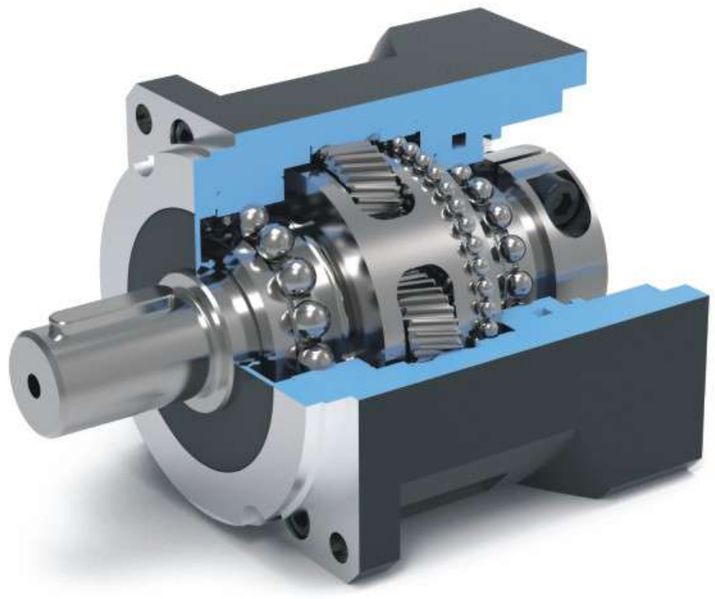
Helical Gear System Technology

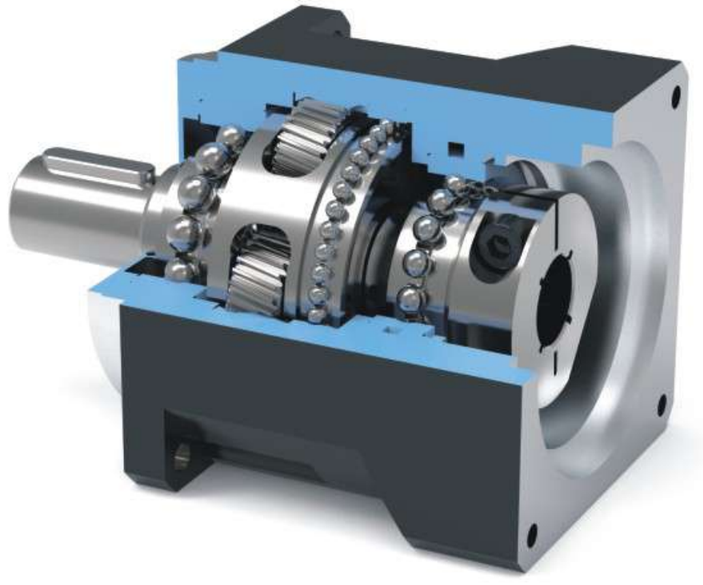
Thanks to the tooth to tooth compact ratio more than 60%.The helical gearing and full needle bearing bring the benefits including higher torque capacity, smooth and lower noise running, decreased backlash and higher efficiency. Integrated housing engineering with super skiving gearing tooling craft.



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.

Order Instructions

Order Code:

KPX-B — 120 — 02 — 015 — S1 — P0 — Servo Motor

KPX-B

Gearbox Series: KPX-B

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

Technical Memo

KPX-B Series Servo Planetary Gearbox

KPX-B045 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	63	63	60	57	54	42	42
		in.lb	531	558	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_t	arcmin	≤ 6							
Reduced Low Backlash P0	j_t	arcmin	≤ 4							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	3							
		in.lb/arcmin	26.55							
Maximum Radial Load	F_{2AMax}	*N*	770							
		lb_f	173							
Maximum Axial Load	F_{2AMax}	*N*	380							
		lb_f	85							
Max. Tilting Moment	M_{2KMax}	*Nm*	19							
		in.lb	168							
Mass Moment of Inertia	j_1	$kgcm^2$	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	0.6							
		lb_m	1.3							

KPX-B045 2-stage

			2-stage											
Ratio	i		15	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	20	21	21	21	21	21	21	21	20	19	18	14	14
		in.lb	177	186	186	186	186	186	186	186	177	168	159	124	124
Emergency Stop Torque	T_{2Not}	*Nm*	60	63	63	63	63	63	63	63	60	57	54	42	42
		in.lb	531	558	558	558	558	558	558	558	531	504	478	372	372
Maximum Acceleration Torque	T_{2B}	*Nm*	36	37.8	37.8	37.8	37.8	37.8	37.8	37.8	36	34.2	32.4	25.2	25.2
		in.lb	319	335	335	335	335	335	335	335	319	303	287	223	223
Maximum Torque	T_{2a}	*Nm*	40	42	42	42	42	42	42	42	40	38	36	28	28
		in.lb	354	372	372	372	372	372	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*	0.1	0.1	0.1	0.09	0.09	0.09	0.09	0.09	0.08	0.08	0.08	0.08	0.08
		in.lb	0.89	0.89	0.89	0.80	0.80	0.80	0.80	0.80	0.71	0.71	0.71	0.71	0.71
Standard Backlash P1	j_t	arcmin	≤8												
Reduced Low Backlash P0	j_t	arcmin	≤6												
Torsional Rigidity	C_{t21}	*Nm/arcmin*	3												
		in.lb/arcmin	26.55												
Maximum Radial Load	F_{2AMax}	*N*	770												
		lb_f	173												
Maximum Axial Load	F_{2AMax}	*N*	380												
		lb_f	85												
Max. Tilting Moment	M_{2KMax}	*Nm*	19												
		in.lb	168												
Mass Moment of Inertia	j_1	$kgcm^2$	0.027	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	η	%	95												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	0.9												
		lb_m	2												

KPX-B065 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	56	52	52	50	50	45	42	42
		in.lb	496	460	460	443	443	398	372	372
Emergency Stop Torque	T_{2Not}	*Nm*	168	156	156	150	150	135	126	126
		in.lb	1487	1381	1381	1328	1328	1195	1115	1115
Maximum Acceleration Torque	T_{2B}	*Nm*	100.8	93.6	93.6	90	90	81	75.6	75.6
		in.lb	892	828	828	797	797	717	669	669
Maximum Torque	T_{2a}	*Nm*	112	104	104	100	100	90	84	84
		in.lb	991	920	920	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_t	arcmin	≤5							
Reduced Low Backlash P0	j_t	arcmin	≤3							
Ultra Low Backlash PU	j_t	arcmin	≤1							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	7							
		in.lb/arcmin	61.95							
Maximum Radial Load	F_{2AMax}	*N*	1500							
		lb_f	337							
Maximum Axial Load	F_{2AMax}	*N*	760							
		lb_f	171							
Max. Tilting Moment	M_{2KMax}	*Nm*	90							
		in.lb	797							
Mass Moment of Inertia	j_1	kgcm²	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	1.4							
		lb_m	3.1							

KPX-B065 2-stage

			2-stage												
Ratio	i		15	20	25	30	32	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	56	52	52	52	52	52	52	52	52	50	50	45	42	42
		in.lb	496	460	460	460	460	460	460	460	460	443	443	398	372	372
Emergency Stop Torque	T_{2Not}	*Nm*	168	156	156	156	156	156	156	156	156	150	150	135	126	126
		in.lb	1487	1381	1381	1381	1381	1381	1381	1381	1381	1328	1328	1195	1115	1115
Maximum Acceleration Torque	T_{2B}	*Nm*	100.8	93.6	93.6	93.6	93.6	93.6	93.6	93.6	93.6	90	90	81	75.6	75.6
		in.lb	892	828	828	828	828	828	828	828	828	797	797	717	669	669
Maximum Torque	T_{2a}	*Nm*	112	104	104	104	104	104	104	104	104	100	100	90	84	84
		in.lb	991	920	920	920	920	920	920	920	920	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*	0.17	0.17	0.17	0.15	0.2	0.15	0.15	0.15	0.17	0.15	0.15	0.15	0.15	0.15
		in.lb	1.50	1.50	1.50	1.33	1.77	1.33	1.33	1.33	1.50	1.33	1.33	1.33	1.33	1.33
Standard Backlash P1	j_t	arcmin	≤7													
Reduced Low Backlash P0	j_t	arcmin	≤5													
Ultra Low Backlash PU	j_t	arcmin	≤3													
Torsional Rigidity	C_{t21}	*Nm/arcmin*	7													
		in.lb/arcmin	61.95													
Maximum Radial Load	F_{2AMax}	*N*	1500													
		lb_f	337													
Maximum Axial Load	F_{2AMax}	*N*	760													
		lb_f	171													
Max. Tilting Moment	M_{2KMax}	*Nm*	90													
		in.lb	797													
Mass Moment of Inertia	j_1	kgcm²	0.124	0.075	0.075	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064
Operating Noise Level	L_{PA}	dB(A)	< 58													
Efficiency at Full loading	η	%	95													
Operating Temperature		℃	−25 to +90													
		F	−13 to +194													
Lubrication			Synthetic Lubrication Grease													
Mouting Position			Any Directions													
Protection Class			IP 65													
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)													
Weight	*m*	kg	1.60													
		lb_m	3.5													

KPX-B085 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	160	145	155	145	145	142	142	142
		in.lb	1416	1283	1372	1283	1283	1257	1257	1257
Emergency Stop Torque	T_{2Not}	*Nm*	480	435	465	435	435	426	426	426
		in.lb	4248	3850	4116	3850	3850	3770	3770	3770
Maximum Acceleration Torque	T_{2B}	*Nm*	288	261	279	261	261	255.6	255.6	255.6
		in.lb	2549	2310	2469	2310	2310	2262	2262	2262
Maximum Torque	T_{2a}	*Nm*	320	290	310	290	290	284	284	284
		in.lb	2832	2567	2744	2567	2567	2514	2514	2514
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_t	arcmin	≤ 5							
Reduced Low Backlash P0	j_t	arcmin	≤ 3							
Ultra Low Backlash PU	j_t	arcmin	≤ 1							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	14							
		in.lb/arcmin	123.91							
Maximum Radial Load	F_{2AMax}	*N*	3200							
		lb_f	719							
Maximum Axial Load	F_{2AMax}	*N*	1600							
		lb_f	360							
Max. Tilting Moment	M_{2KMax}	*Nm*	214							
		in.lb	1894.05							
Mass Moment of Inertia	j_1	$kgcm^2$	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	3.3							
		lb_m	7.3							

KPX-B085 2-stage

			2-stage												
Ratio	i		15	20	25	30	32	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	160	145	155	155	155	155	155	155	155	145	145	142	142	142
		in.lb	1416	1283	1372	1372	1372	1372	1372	1372	1372	1283	1283	1257	1257	1257
Emergency Stop Torque	T_{2Not}	*Nm*	480	435	465	465	465	465	465	465	465	435	435	426	426	426
		in.lb	4248	3850	4116	4116	4116	4116	4116	4116	4116	3850	3850	3770	3770	3770
Maximum Acceleration Torque	T_{2B}	*Nm*	288	261	279	279	279	279	279	279	279	261	261	255.6	255.6	255.6
		in.lb	2549	2310	2469	2469	2469	2469	2469	2469	2469	2310	2310	2262	2262	2262
Maximum Torque	T_{2a}	*Nm*	320	290	310	310	310	310	310	310	310	290	290	284	284	284
		in.lb	2832	2567	2744	2744	2744	2744	2744	2744	2744	2567	2567	2514	2514	2514
Permitted Average Input Speed	n_{1N}	*rpm*	3000													
Maximum Input Speed	n_{1Max}	*rpm*	6000													
Mean No Load Running Torque	T_{012}	*Nm*	0.31	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	2.74	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_t	arcmin	≤7													
Reduced Low Backlash P0	j_t	arcmin	≤5													
Ultra Low Backlash PU	j_t	arcmin	≤3													
Torsional Rigidity	C_{t21}	*Nm/arcmin*	14													
		in.lb/arcmin	123.91													
Maximum Radial Load	F_{2AMax}	*N*	3200													
		lb_f	719													
Maximum Axial Load	F_{2AMax}	*N*	1600													
		lb_f	360													
Max. Tilting Moment	M_{2KMax}	*Nm*	214													
		in.lb	1894													
Mass Moment of Inertia	j_1	$kgcm^2$	0.44	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)	< 60													
Efficiency at Full loading	η	%	95													
Operating Temperature		℃	−25 to +90													
		F	−13 to +194													
Lubrication			Synthetic Lubrication Grease													
Mouting Position			Any Directions													
Protection Class			IP 65													
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)													
Weight	*m*	kg	4.5													
		lb_m	9.9													

KPX-B115 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	335	300	320	300	300	295	295	295
		in.lb	2965	2655	2832	2655	2655	2611	2611	2611
Emergency Stop Torque	T_{2Not}	*Nm*	1005	900	960	900	900	885	885	885
		in.lb	8895	7966	8497	7966	7966	7833	7833	7833
Maximum Acceleration Torque	T_{2B}	*Nm*	603	540	576	540	540	531	531	531
		in.lb	5337	4779	5098	4779	4779	4700	4700	4700
Maximum Torque	T_{2e}	*Nm*	670	600	640	600	600	590	590	590
		in.lb	5930	5310	5664	5310	5310	5222	5222	5222
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_t	arcmin	≤5							
Reduced Low Backlash P0	j_t	arcmin	≤3							
Ultra Low Backlash PU	j_t	arcmin	≤1							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	26							
		in.lb/arcmin	230.12							
Maximum Radial Load	F_{2AMax}	*N*	6700							
		lb_f	1506							
Maximum Axial Load	F_{2AMax}	*N*	3300							
		lb_f	742							
Max. Tilting Moment	M_{2KMax}	*Nm*	603							
		in.lb	5337							
Mass Moment of Inertia	j_1	$kgcm^2$	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	5.5							
		lb_m	12.1							

KPX-B115 2-stage

			2-stage												
Ratio	i		15	20	25	30	32	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	335	300	320	320	320	320	320	320	320	300	300	295	295	295
		in.lb	2965	2655	2832	2832	2832	2832	2832	2832	2832	2655	2655	2611	2611	2611
Emergency Stop Torque	T_{2Not}	*Nm*	1005	900	960	960	960	960	960	960	960	900	900	885	885	885
		in.lb	8895	7966	8497	8497	8497	8497	8497	8497	8497	7966	7966	7833	7833	7833
Maximum Acceleration Torque	T_{2B}	*Nm*	603	540	576	576	576	576	576	576	576	540	540	531	531	531
		in.lb	5337	4779	5098	5098	5098	5098	5098	5098	5098	4779	4779	4700	4700	4700
Maximum Torque	T_{2e}	*Nm*	670	600	640	640	640	640	640	640	640	600	600	590	590	590
		in.lb	5930	5310	5664	5664	5664	5664	5664	5664	5664	5310	5310	5222	5222	5222
Permitted Average Input Speed	n_{1N}	*rpm*	3000													
Maximum Input Speed	n_{1Max}	*rpm*	6000													
Mean No Load Running Torque	T_{012}	*Nm*	0.85	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	7.52	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_t	arcmin	≤7													
Reduced Low Backlash P0	j_t	arcmin	≤5													
Ultra Low Backlash PU	j_t	arcmin	≤3													
Torsional Rigidity	C_{t21}	*Nm/arcmin*	26													
		in.lb/arcmin	230.12													
Maximum Radial Load	F_{2AMax}	*N*	6700													
		lb_f	1506													
Maximum Axial Load	F_{2AMax}	*N*	3300													
		lb_f	742													
Max. Tilting Moment	M_{2KMax}	*Nm*	603													
		in.lb	5337													
Mass Moment of Inertia	j_1	$kgcm^2$	2.58	1.5	1.49	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Operating Noise Level	L_{PA}	dB(A)	< 63													
Efficiency at Full loading	η	%	95													
Operating Temperature		℃	−25 to +90													
		F	−13 to +194													
Lubrication			Synthetic Lubrication Grease													
Mouting Position			Any Directions													
Protection Class			IP 65													
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)													
Weight	*m*	kg	8													
		lb_m	17.6													

KPX-B Series Servo Planetary Gearbox

KPX-B142 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	630	550	620	600	575	550	510	510
		in.lb	5576	4868	5487	5310	5089	4868	4514	4514
Emergency Stop Torque	T_{2Not}	*Nm*	1890	1650	1860	1800	1725	1650	1530	1530
		in.lb	16728	14604	16462	15931	15267	14604	13542	13542
Maximum Acceleration Torque	T_{2B}	*Nm*	1134	990	1116	1080	1035	990	918	918
		in.lb	10037	8762	9877	9559	9160	8762	8125	8125
Maximum Torque	T_{2a}	*Nm*	1260	1100	1240	1200	1150	1100	1020	1020
		in.lb	11152	9736	10975	10621	10178	9736	9028	9028
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_t	arcmin	≤5							
Reduced Low Backlash P0	j_t	arcmin	≤3							
Ultra Low Backlash PU	j_t	arcmin	≤1							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	52							
		in.lb/arcmin	460.24							
Maximum Radial Load	F_{2AMax}	*N*	9600							
		lb_f	2158							
Maximum Axial Load	F_{2GMax}	*N*	4800							
		lb_f	1079							
Max. Tilting Moment	M_{2KMax}	*Nm*	1275							
		in.lb	11285							
Mass Moment of Inertia	j_1	$kgcm^2$	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	20							
		lb_m	44.1							

KPX-B142 2-stage

			2-stage												
Ratio	i		15	20	25	30	32	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	630	550	620	620	620	620	620	620	620	600	575	550	510	510
		in.lb	5576	4868	5487	5487	5487	5487	5487	5487	5487	5310	5089	4868	4514	4514
Emergency Stop Torque	T_{2Not}	*Nm*	1890	1650	1860	1860	1860	1860	1860	1860	1860	1800	1725	1650	1530	1530
		in.lb	16728	14604	16462	16462	16462	16462	16462	16462	16462	15931	15267	14604	13542	13542
Maximum Acceleration Torque	T_{2B}	*Nm*	1134	990	1116	1116	1116	1116	1116	1116	1116	1080	1035	990	918	918
		in.lb	10037	8762	9877	9877	9877	9877	9877	9877	9877	9559	9160	8762	8125	8125
Maximum Torque	T_{2a}	*Nm*	1260	1100	1240	1240	1240	1240	1240	1240	1240	1200	1150	1100	1020	1020
		in.lb	11152	9736	10975	10975	10975	10975	10975	10975	10975	10621	10178	9736	9028	9028
Permitted Average Input Speed	n_{1N}	*rpm*	3000													
Maximum Input Speed	n_{1Max}	*rpm*	6000													
Mean No Load Running Torque	T_{012}	*Nm*	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
		in.lb	21.24	21.24	21.24	20.36	20.36	20.36	20.36	20.36	20.36	20.36	20.36	20.36	20.36	20.36
Standard Backlash P1	j_t	arcmin	≤7													
Reduced Low Backlash P0	j_t	arcmin	≤5													
Ultra Low Backlash PU	j_t	arcmin	≤3													
Torsional Rigidity	C_{t21}	*Nm/arcmin*	52													
		in.lb/arcmin	460.24													
Maximum Radial Load	F_{2AMax}	*N*	9600													
		lb_f	2158													
Maximum Axial Load	F_{2GMax}	*N*	4800													
		lb_f	1079													
Max. Tilting Moment	M_{2KMax}	*Nm*	1275													
		in.lb	11285													
Mass Moment of Inertia	j_1	$kgcm^2$	12.35	6.65	5.81	6.34	6.34	5.36	4.08	5.36	4.08	7.4	7.4	7.4	7.4	7.4
Operating Noise Level	L_{PA}	dB(A)	< 65													
Efficiency at Full loading	η	%	95													
Operating Temperature		℃	−25 to +90													
		F	−13 to +194													
Lubrication			Synthetic Lubrication Grease													
Mouting Position			Any Directions													
Protection Class			IP 65													
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)													
Weight	*m*	kg	25													
		lb_m	55.1													

KPX-B Series Servo Planetary Gearbox

KPX-B180 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	1220	1170	1170	1100	1100	1060	1060	1060
		in.lb	10798	10355	10355	9736	9736	9382	9382	9382
Emergency Stop Torque	T_{2Not}	*Nm*	3660	3510	3510	3300	3300	3180	3180	3180
		in.lb	32394	31066	31066	29207	29207	28145	28145	28145
Maximum Acceleration Torque	T_{2B}	*Nm*	2196	2106	2106	1980	1980	1908	1908	1908
		in.lb	19436	18640	18640	17524	17524	16887	16887	16887
Maximum Torque	T_{2e}	*Nm*	2440	2340	2340	2200	2200	2120	2120	2120
		in.lb	21596	20711	20711	19472	19472	18763	18763	18763
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_t	arcmin	≤5							
Reduced Low Backlash P0	j_t	arcmin	≤3							
Ultra Low Backlash PU	j_t	arcmin	≤1							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	138							
		in.lb/arcmin	1221.4							
Maximum Radial Load	F_{2AMax}	*N*	14000							
		lb_f	3147							
Maximum Axial Load	F_{2AMax}	*N*	7000							
		lb_f	1574							
Max. Tilting Moment	M_{2KMax}	*Nm*	2013							
		in.lb	17816							
Mass Moment of Inertia	j_1	kgcm²	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	31							
		lb_m	68.3							

KPX-B180 2-stage

			2-stage												
Ratio	i		15	20	25	30	32	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	1220	1170	1170	1170	1170	1170	1170	1170	1170	1100	1100	1060	1060	1060
		in.lb	10798	10355	10355	10355	10355	10355	10355	10355	10355	9736	9736	9382	9382	9382
Emergency Stop Torque	T_{2Not}	*Nm*	3660	3510	3510	3510	3510	3510	3510	3510	3510	3300	3300	3180	3180	3180
		in.lb	32394	31066	31066	31066	31066	31066	31066	31066	31066	29207	29207	28145	28145	28145
Maximum Acceleration Torque	T_{2B}	*Nm*	2196	2106	2106	2106	2106	2106	2106	2106	2106	1980	1980	1908	1908	1908
		in.lb	19436	18640	18640	18640	18640	18640	18640	18640	18640	17524	17524	16887	16887	16887
Maximum Torque	T_{2e}	*Nm*	2440	2340	2340	2340	2340	2340	2340	2340	2340	2200	2200	2120	2120	2120
		in.lb	21596	20711	20711	20711	20711	20711	20711	20711	20711	19472	19472	18763	18763	18763
Permitted Average Input Speed	n_{1N}	*rpm*	3000													
Maximum Input Speed	n_{1Max}	*rpm*	4000													
Mean No Load Running Torque	T_{012}	*Nm*	2.3	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	20.36	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_t	arcmin	≤7													
Reduced Low Backlash P0	j_t	arcmin	≤5													
Ultra Low Backlash PU	j_t	arcmin	≤3													
Torsional Rigidity	C_{t21}	*Nm/arcmin*	138													
		in.lb/arcmin	1221.40													
Maximum Radial Load	F_{2AMax}	*N*	14000													
		lb_f	3147													
Maximum Axial Load	F_{2AMax}	*N*	7000													
		lb_f	1574													
Max. Tilting Moment	M_{2KMax}	*Nm*	2013													
		in.lb	17816													
Mass Moment of Inertia	j_1	kgcm²	12.3	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	η	%	95													
Operating Temperature		℃	−25 to +90													
		F	−13 to +194													
Lubrication			Synthetic Lubrication Grease													
Mouting Position			Any Directions													
Protection Class			IP 65													
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)													
Weight	*m*	kg	39													
		lb_m	86													

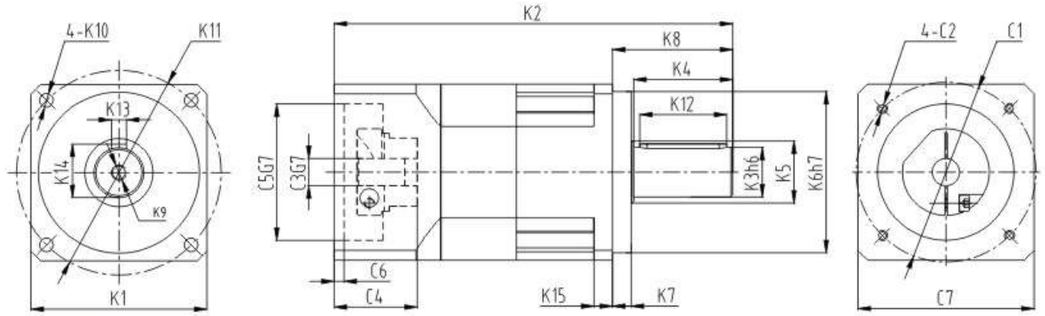
KPX-B220 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	2050	2000	2000	1900	1900	1800	1800	1800
		in.lb	18144	17701	17701	16816	16816	15931	15931	15931
Emergency Stop Torque	T_{2Not}	*Nm*	6150	6000	6000	5700	5700	5400	5400	5400
		in.lb	54432	53104	53104	50449	50449	47794	47794	47794
Maximum Acceleration Torque	T_{2B}	*Nm*	3690	3600	3600	3420	3420	3240	3240	3240
		in.lb	32659	31863	31863	30269	30269	28676	28676	28676
Maximum Torque	T_{2e}	*Nm*	4100	4000	4000	3800	3800	3600	3600	3600
		in.lb	36288	35403	35403	33633	33633	31863	31863	31863
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_t	arcmin	≤5							
Reduced Low Backlash P0	j_t	arcmin	≤3							
Ultra Low Backlash PU	j_t	arcmin	≤1							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	220							
		in.lb/arcmin	1947.2							
Maximum Radial Load	F_{2AMax}	*N*	16000							
		lb_f	3597							
Maximum Axial Load	F_{2AMax}	*N*	8000							
		lb_f	1798							
Max. Tilting Moment	M_{2KMax}	*Nm*	2676							
		in.lb	23684							
Mass Moment of Inertia	j_1	$kgcm^2$	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	53							
		lb_m	117							

KPX-B220 2-stage

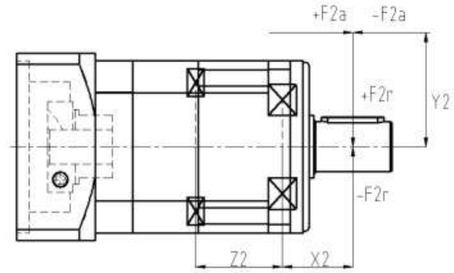
			2-stage												
Ratio	i		15	20	25	30	32	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	2050	2000	2000	2000	2000	2000	2000	2000	2000	1900	1900	1800	1800	1800
		in.lb	18144	17701	17701	17701	17701	17701	17701	17701	17701	16816	16816	15931	15931	15931
Emergency Stop Torque	T_{2Not}	*Nm*	6150	6000	6000	6000	6000	6000	6000	6000	6000	5700	5700	5400	5400	5400
		in.lb	54432	53104	53104	53104	53104	53104	53104	53104	53104	50449	50449	47794	47794	47794
Maximum Acceleration Torque	T_{2B}	*Nm*	3690	3600	3600	3600	3600	3600	3600	3600	3600	3420	3420	3240	3240	3240
		in.lb	32659	31863	31863	31863	31863	31863	31863	31863	31863	30269	30269	28676	28676	28676
Maximum Torque	T_{2e}	*Nm*	4100	4000	4000	4000	4000	4000	4000	4000	4000	3800	3800	3600	3600	3600
		in.lb	36288	35403	35403	35403	35403	35403	35403	35403	35403	33633	33633	31863	31863	31863
Permitted Average Input Speed	n_{1N}	*rpm*	2000													
Maximum Input Speed	n_{1Max}	*rpm*	4000													
Mean No Load Running Torque	T_{012}	*Nm*	3.15	3.15	3.15	3	3	3	3	3	3	3	3	3	3	3
		in.lb	27.88	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_t	arcmin	≤7													
Reduced Low Backlash P0	j_t	arcmin	≤5													
Ultra Low Backlash PU	j_t	arcmin	≤3													
Torsional Rigidity	C_{t21}	*Nm/arcmin*	220													
		in.lb/arcmin	1947.15													
Maximum Radial Load	F_{2AMax}	*N*	16000													
		lb_f	3597													
Maximum Axial Load	F_{2AMax}	*N*	8000													
		lb_f	1798													
Max. Tilting Moment	M_{2KMax}	*Nm*	2676													
		in.lb	23684													
Mass Moment of Inertia	j_1	$kgcm^2$	28.92	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	η	%	95													
Operating Temperature		℃	−25 to +90													
		F	−13 to +194													
Lubrication			Synthetic Lubrication Grease													
Mouting Position			Any Directions													
Protection Class			IP 65													
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)													
Weight	*m*	kg	66													
		lb_m	145.5													

KPX-B Dimensions



Model	KPX-B045		KPX-B065		KPX-B085		KPX-B115		KPX-B142		KPX-B180		KPX-B220	
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	

KPX-B Titling moment



$$M_{2Kb} = \frac{F_{2a} \cdot y_2 + F_{2rb} \cdot (X_2 + Z_2)}{1000}$$

KPX-B	045	065	085	115	142	180	220
Z2[mm]	8.2	30.5	33.5	45	66.5	72.5	83.5
M_{2Kb}	19	90	214	603	1275	2013	2676

Technical Memo

Technical Memo

Technical Memo

KOFON Drive the World | CaesarPlanetary

KVX-B

Powerful. High Precision. Reliable

- Servo Planetary Gearbox

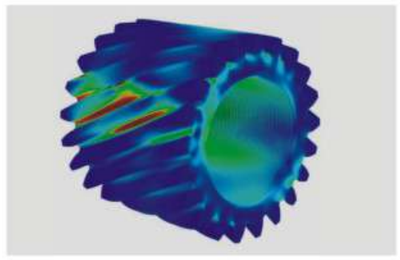
Advanced Gearbox Solution





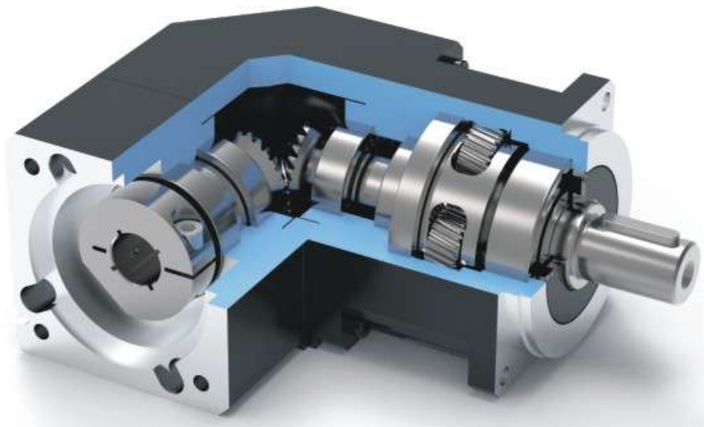
Helical Gear System Technology

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. Integrated housing engineering with super skiving gearing tooling craft.



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.

Order Instructions

Order Code:

KVX-B — 120 — 02 — 015 — S1 — P0 — Servo Motor

KVX-B

Gearbox Series: KVX-B

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

Technical Memo

KVX-B065 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	56	52	52	50	50	45	42	42
		in.lb	496	460	460	443	443	398	372	372
Emergency Stop Torque	T_{2Not}	*Nm*	168	156	156	150	150	135	126	126
		in.lb	1487	1381	1381	1328	1328	1195	1115	1115
Maximum Acceleration Torque	T_{2B}	*Nm*	100.8	93.6	93.6	90	90	81	75.6	75.6
		in.lb	892	828	828	797	797	717	669	669
Maximum Torque	T_{2a}	*Nm*	112	104	104	100	100	90	84	84
		in.lb	991	920	920	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*	0.29	0.25	0.22	0.2	0.2	0.2	0.2	0.2
		in.lb	2.57	2.21	1.95	1.77	1.77	1.77	1.77	1.77
Standard Backlash P1	j_t	arcmin	≤7							
Reduced Low Backlash P0	j_t	arcmin	≤5							
Ultra Low Backlash PU	j_t	arcmin	≤3							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	7							
		in.lb/arcmin	61.95							
Maximum Radial Load	F_{2AMax}	*N*	1500							
		lb_f	337							
Maximum Axial Load	F_{2GMax}	*N*	760							
		lb_f	171							
Max. Tilting Moment	M_{2KMax}	*Nm*	90							
		in.lb	797							
Mass Moment of Inertia	j_1	$kgcm^2$	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	η	%	95							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	2.2							
		lb_m	4.8							

KVX-B065 2-stage

			2-stage											
Ratio	i		15	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	56	52	52	52	52	52	52	52	50	50	45	42	42
		in.lb	496	460	460	460	460	460	460	460	443	443	398	372	372
Emergency Stop Torque	T_{2Not}	*Nm*	168	156	156	156	156	156	156	156	150	150	135	126	126
		in.lb	1487	1381	1381	1381	1381	1381	1381	1381	1328	1328	1195	1115	1115
Maximum Acceleration Torque	T_{2B}	*Nm*	100.8	93.6	93.6	93.6	93.6	93.6	93.6	93.6	90	90	81	75.6	75.6
		in.lb	892	828	828	828	828	828	828	828	797	797	717	669	669
Maximum Torque	T_{2a}	*Nm*	112	104	104	104	104	104	104	104	100	100	90	84	84
		in.lb	991	920	920	920	920	920	920	920	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*	0.22	0.22	0.22	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		in.lb	1.95	1.95	1.95	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77
Standard Backlash P1	j_t	arcmin	≤9												
Reduced Low Backlash P0	j_t	arcmin	≤7												
Ultra Low Backlash PU	j_t	arcmin	≤5												
Torsional Rigidity	C_{t21}	*Nm/arcmin*	7												
		in.lb/arcmin	61.95												
Maximum Radial Load	F_{2AMax}	*N*	1500												
		lb_f	337												
Maximum Axial Load	F_{2GMax}	*N*	760												
		lb_f	171												
Max. Tilting Moment	M_{2KMax}	*Nm*	90												
		in.lb	797												
Mass Moment of Inertia	j_1	$kgcm^2$	0.075	0.075	0.075	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	η	%	93												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	2.4												
		lb_m	5.28												

KVX-B085 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	160	145	155	145	145	142	142	142
		in.lb	1416	1283	1372	1283	1283	1257	1257	1257
Emergency Stop Torque	T_{2Not}	*Nm*	480	435	465	435	435	426	426	426
		in.lb	4248	3850	4116	3850	3850	3770	3770	3770
Maximum Acceleration Torque	T_{2B}	*Nm*	288	261	279	261	261	255.6	255.6	255.6
		in.lb	2549	2310	2469	2310	2310	2262	2262	2262
Maximum Torque	T_{2a}	*Nm*	320	290	310	290	290	284	284	284
		in.lb	2832	2567	2744	2567	2567	2514	2514	2514
Permitted Average Input Speed	n_{1N}	*rpm*	3000							
Maximum Input Speed	n_{1Max}	*rpm*	6000							
Mean No Load Running Torque	T_{012}	*Nm*	0.43	0.41	0.36	0.34	0.3	0.3	0.3	0.3
		in.lb	3.81	3.63	3.19	3.01	2.66	2.66	2.66	2.66
Standard Backlash P1	j_t	arcmin	≤7							
Reduced Low Backlash P0	j_t	arcmin	≤5							
Ultra Low Backlash PU	j_t	arcmin	≤3							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	14							
		in.lb/arcmin	123.91							
Maximum Radial Load	F_{2AMax}	*N*	3200							
		lb_f	719							
Maximum Axial Load	F_{2GMax}	*N*	1600							
		lb_f	360							
Max. Tilting Moment	M_{2KMax}	*Nm*	214							
		in.lb	1894							
Mass Moment of Inertia	j_1	$kgcm^2$	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	η	%	95							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	5.3							
		lb_m	11.7							

KVX-B085 2-stage

			2-stage											
Ratio	i		15	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	160	145	155	155	155	155	155	155	145	145	142	142	142
		in.lb	1416	1283	1372	1372	1372	1372	1372	1372	1283	1283	1257	1257	1257
Emergency Stop Torque	T_{2Not}	*Nm*	480	435	465	465	465	465	465	465	435	435	426	426	426
		in.lb	4248	3850	4116	4116	4116	4116	4116	4116	3850	3850	3770	3770	3770
Maximum Acceleration Torque	T_{2B}	*Nm*	288	261	279	279	279	279	279	279	261	261	255.6	255.6	255.6
		in.lb	2549	2310	2469	2469	2469	2469	2469	2469	2310	2310	2262	2262	2262
Maximum Torque	T_{2a}	*Nm*	320	290	310	310	310	310	310	310	290	290	284	284	284
		in.lb	2832	2567	2744	2744	2744	2744	2744	2744	2567	2567	2514	2514	2514
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	0.36	0.36	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		in.lb	3.19	3.19	3.19	2.66	2.66	2.66	2.66	2.66	2.66	2.66	2.66	2.66	2.66
Standard Backlash P1	j_t	arcmin	≤9												
Reduced Low Backlash P0	j_t	arcmin	≤7												
Ultra Low Backlash PU	j_t	arcmin	≤5												
Torsional Rigidity	C_{t21}	*Nm/arcmin*	14												
		in.lb/arcmin	123.91												
Maximum Radial Load	F_{2AMax}	*N*	3200												
		lb_f	719												
Maximum Axial Load	F_{2GMax}	*N*	1600												
		lb_f	360												
Max. Tilting Moment	M_{2KMax}	*Nm*	214												
		in.lb	1894												
Mass Moment of Inertia	j_1	$kgcm^2$	0.44	0.44	0.44	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	η	%	93												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	7												
		lb_m	14.3												

KVX-B115 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	335	300	320	300	300	295	295	295
		in.lb	2965	2655	2832	2655	2655	2611	2611	2611
Emergency Stop Torque	T_{2Not}	*Nm*	1005	900	960	900	900	885	885	885
		in.lb	8895	7966	8497	7966	7966	7833	7833	7833
Maximum Acceleration Torque	T_{2B}	*Nm*	603	540	576	540	540	531	531	531
		in.lb	5337	4779	5098	4779	4779	4700	4700	4700
Maximum Torque	T_{2a}	*Nm*	670	600	640	600	600	590	590	590
		in.lb	5930	5310	5664	5310	5310	5222	5222	5222
Permitted Average Input Speed	n_{1N}	*rpm*	3000							
Maximum Input Speed	n_{1Max}	*rpm*	6000							
Mean No Load Running Torque	T_{012}	*Nm*	1.2	1.15	1.05	1.01	0.98	0.98	0.98	0.98
		in.lb	10.62	10.18	9.29	8.94	8.67	8.67	8.67	8.67
Standard Backlash P1	j_t	arcmin	≤7							
Reduced Low Backlash P0	j_t	arcmin	≤5							
Ultra Low Backlash PU	j_t	arcmin	≤3							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	26							
		in.lb/arcmin	230.12							
Maximum Radial Load	F_{2AMax}	*N*	6700							
		lb_f	1506							
Maximum Axial Load	F_{2GMax}	*N*	3300							
		lb_f	742							
Max. Tilting Moment	M_{2KMax}	*Nm*	603							
		in.lb	5337							
Mass Moment of Inertia	j_1	$kgcm^2$	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	η	%	95							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	9							
		lb_m	19.8							

KVX-B115 2-stage

			2-stage											
Ratio	i		15	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	335	300	320	320	320	320	320	320	300	300	295	295	295
		in.lb	2965	2655	2832	2832	2832	2832	2832	2832	2655	2655	2611	2611	2611
Emergency Stop Torque	T_{2Not}	*Nm*	1005	900	960	960	960	960	960	960	900	900	885	885	885
		in.lb	8895	7966	8497	8497	8497	8497	8497	8497	7966	7966	7833	7833	7833
Maximum Acceleration Torque	T_{2B}	*Nm*	603	540	576	576	576	576	576	576	540	540	531	531	531
		in.lb	5337	4779	5098	5098	5098	5098	5098	5098	4779	4779	4700	4700	4700
Maximum Torque	T_{2a}	*Nm*	670	600	640	640	640	640	640	640	600	600	590	590	590
		in.lb	5930	5310	5664	5664	5664	5664	5664	5664	5310	5310	5222	5222	5222
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	1.05	1.05	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
		in.lb	9.29	9.29	9.29	8.67	8.67	8.67	8.67	8.67	8.67	8.67	8.67	8.67	8.67
Standard Backlash P1	j_t	arcmin	≤9												
Reduced Low Backlash P0	j_t	arcmin	≤7												
Ultra Low Backlash PU	j_t	arcmin	≤5												
Torsional Rigidity	C_{t21}	*Nm/arcmin*	26												
		in.lb/arcmin	230.12												
Maximum Radial Load	F_{2AMax}	*N*	6700												
		lb_f	1506												
Maximum Axial Load	F_{2GMax}	*N*	3300												
		lb_f	742												
Max. Tilting Moment	M_{2KMax}	*Nm*	603												
		in.lb	5337												
Mass Moment of Inertia	j_1	$kgcm^2$	1.5	1.5	1.49	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.53	1.53	1.49
Operating Noise Level	L_{PA}	dB(A)	< 68												
Efficiency at Full loading	η	%	93												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	13												
		lb_m	28.6												

KVX-B Series Servo Planetary Gearbox

KVX-B142 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	630	550	620	600	575	550	510	510
		in.lb	5576	4868	5487	5310	5089	4868	4514	4514
Emergency Stop Torque	T_{2Not}	*Nm*	1890	1650	1860	1800	1725	1650	1530	1530
		in.lb	16728	14604	16462	15931	15267	14604	13542	13542
Maximum Acceleration Torque	T_{2B}	*Nm*	1134	990	1116	1080	1035	990	918	918
		in.lb	10037	8762	9877	9559	9160	8762	8125	8125
Maximum Torque	T_{2a}	*Nm*	1260	1100	1240	1200	1150	1100	1020	1020
		in.lb	11152	9736	10975	10621	10178	9736	9028	9028
Permitted Average Input Speed	n_{1N}	*rpm*	3000							
Maximum Input Speed	n_{1Max}	*rpm*	6000							
Mean No Load Running Torque	T_{012}	*Nm*	2.75	2.65	2.5	2.4	2.4	2.4	2.4	2.4
		in.lb	24.34	23.45	22.13	21.24	21.24	21.24	21.24	21.24
Standard Backlash P1	j_t	arcmin	≤7							
Reduced Low Backlash P0	j_t	arcmin	≤5							
Ultra Low Backlash PU	j_t	arcmin	≤3							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	52							
		in.lb/arcmin	460.24							
Maximum Radial Load	F_{2AMax}	*N*	9600							
		lb_f	2158							
Maximum Axial Load	F_{2GMax}	*N*	4800							
		lb_f	1079							
Max. Tilting Moment	M_{2KMax}	*Nm*	1275							
		in.lb	11285							
Mass Moment of Inertia	j_1	$kgcm^2$	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	η	%	95							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	26							
		lb_m	57.2							

KVX-B142 2-stage

			2-stage											
Ratio	i		15	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	630	550	620	620	620	620	620	620	600	575	550	510	510
		in.lb	5576	4868	5487	5487	5487	5487	5487	5487	5310	5089	4868	4514	4514
Emergency Stop Torque	T_{2Not}	*Nm*	1890	1650	1860	1860	1860	1860	1860	1860	1800	1725	1650	1530	1530
		in.lb	16728	14604	16462	16462	16462	16462	16462	16462	15931	15267	14604	13542	13542
Maximum Acceleration Torque	T_{2B}	*Nm*	1134	990	1116	1116	1116	1116	1116	1116	1080	1035	990	918	918
		in.lb	10037	8762	9877	9877	9877	9877	9877	9877	9559	9160	8762	8125	8125
Maximum Torque	T_{2a}	*Nm*	1260	1100	1240	1240	1240	1240	1240	1240	1200	1150	1100	1020	1020
		in.lb	11152	9736	10975	10975	10975	10975	10975	10975	10621	10178	9736	9028	9028
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	2.6	2.6	2.6	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
		in.lb	23.01	23.01	23.01	23.01	22.13	22.13	22.13	22.13	22.13	22.13	22.13	22.13	22.13
Standard Backlash P1	j_t	arcmin	≤9												
Reduced Low Backlash P0	j_t	arcmin	≤7												
Ultra Low Backlash PU	j_t	arcmin	≤5												
Torsional Rigidity	C_{t21}	*Nm/arcmin*	52												
		in.lb/arcmin	460.24												
Maximum Radial Load	F_{2AMax}	*N*	9600												
		lb_f	2158												
Maximum Axial Load	F_{2GMax}	*N*	4800												
		lb_f	1079												
Max. Tilting Moment	M_{2KMax}	*Nm*	1275												
		in.lb	11285												
Mass Moment of Inertia	j_1	$kgcm^2$	7.47	6.65	5.81	6.34	5.36	4.08	5.36	4.08	4.08	4.08	7.4	7.3	7.3
Operating Noise Level	L_{PA}	dB(A)	< 70												
Efficiency at Full loading	η	%	93												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	31												
		lb_m	68.2												

KVX-B Series Servo Planetary Gearbox

KVX-B180 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	1220	1170	1170	1100	1100	1060	1060	1060
		in.lb	10798	10355	10355	9736	9736	9382	9382	9382
Emergency Stop Torque	T_{2Not}	*Nm*	3660	3510	3510	3300	3300	3180	3180	3180
		in.lb	32394	31066	31066	29207	29207	28145	28145	28145
Maximum Acceleration Torque	T_{2B}	*Nm*	2196	2106	2106	1980	1980	1908	1908	1908
		in.lb	19436	18640	18640	17524	17524	16887	16887	16887
Maximum Torque	T_{2a}	*Nm*	2440	2340	2340	2200	2200	2120	2120	2120
		in.lb	21596	20711	20711	19472	19472	18763	18763	18763
Permitted Average Input Speed	n_{1N}	*rpm*	1500							
Maximum Input Speed	n_{1Max}	*rpm*	3000							
Mean No Load Running Torque	T_{012}	*Nm*	3.9	3.8	3.55	3.4	3.4	3.4	3.4	3.4
		in.lb	34.52	33.63	31.42	30.09	30.09	30.09	30.09	30.09
Standard Backlash P1	j_t	arcmin	≤7							
Reduced Low Backlash P0	j_t	arcmin	≤5							
Ultra Low Backlash PU	j_t	arcmin	≤3							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	138							
		in.lb/arcmin	1221.40							
Maximum Radial Load	F_{2AMax}	*N*	14000							
		lb_f	3147							
Maximum Axial Load	F_{2GMax}	*N*	7000							
		lb_f	1574							
Max. Tilting Moment	M_{2KMax}	*Nm*	2013							
		in.lb	17816							
Mass Moment of Inertia	j_1	$kgcm^2$	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	η	%	95							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	41							
		lb_m	90.2							

KVX-B180 2-stage

			2-stage											
Ratio	i		15	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	1220	1170	1170	1170	1170	1170	1170	1170	1100	1100	1060	1060	1060
		in.lb	10798	10355	10355	10355	10355	10355	10355	10355	9736	9736	9382	9382	9382
Emergency Stop Torque	T_{2Not}	*Nm*	3660	3510	3510	3510	3510	3510	3510	3510	3300	3300	3180	3180	3180
		in.lb	32394	31066	31066	31066	31066	31066	31066	31066	29207	29207	28145	28145	28145
Maximum Acceleration Torque	T_{2B}	*Nm*	2196	2106	2106	2106	2106	2106	2106	2106	1980	1980	1908	1908	1908
		in.lb	19436	18640	18640	18640	18640	18640	18640	18640	17524	17524	16887	16887	16887
Maximum Torque	T_{2a}	*Nm*	2440	2340	2340	2340	2340	2340	2340	2340	2200	2200	2120	2120	2120
		in.lb	21596	20711	20711	20711	20711	20711	20711	20711	19472	19472	18763	18763	18763
Permitted Average Input Speed	n_{1N}	*rpm*	1500												
Maximum Input Speed	n_{1Max}	*rpm*	3000												
Mean No Load Running Torque	T_{012}	*Nm*	2.7	2.7	2.7	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
		in.lb	23.90	23.90	23.90	23.01	23.01	23.01	23.01	23.01	23.01	23.01	23.01	23.01	23.01
Standard Backlash P1	j_t	arcmin	≤9												
Reduced Low Backlash P0	j_t	arcmin	≤7												
Ultra Low Backlash PU	j_t	arcmin	≤5												
Torsional Rigidity	C_{t21}	*Nm/arcmin*	138												
		in.lb/arcmin	1221.40												
Maximum Radial Load	F_{2AMax}	*N*	14000												
		lb_f	3147												
Maximum Axial Load	F_{2GMax}	*N*	7000												
		lb_f	1574												
Max. Tilting Moment	M_{2KMax}	*Nm*	2013												
		in.lb	17816												
Mass Moment of Inertia	j_1	$kgcm^2$	7.42	7.42	7.54	7.14	7.14	22.55	7.14	7.14	7.14	7.14	7.54	7.54	7.42
Operating Noise Level	L_{PA}	dB(A)	< 72												
Efficiency at Full loading	η	%	93												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	49												
		lb_m	107.8												

KVX-B220 1-stage

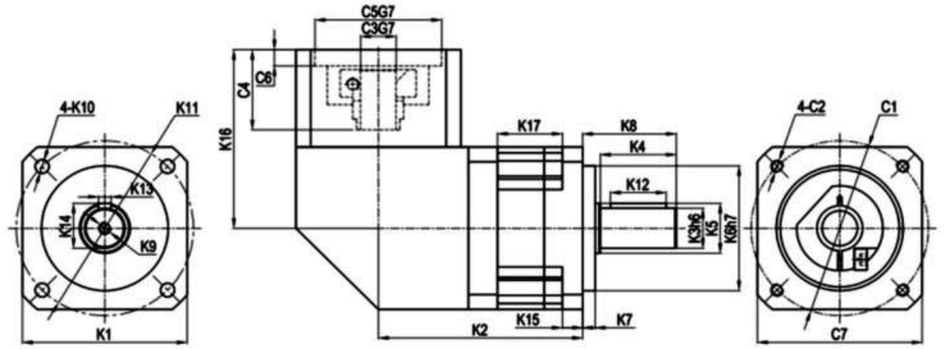
			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	2050	2000	2000	1900	1900	1800	1800	1800
		in.lb	18144	17701	17701	16816	16816	15931	15931	15931
Emergency Stop Torque	T_{2Not}	*Nm*	6150	6000	6000	5700	5700	5400	5400	5400
		in.lb	54432	53104	53104	50449	50449	47794	47794	47794
Maximum Acceleration Torque	T_{2B}	*Nm*	3690	3600	3600	3420	3420	3240	3240	3240
		in.lb	32659	31863	31863	30269	30269	28676	28676	28676
Maximum Torque	T_{2e}	*Nm*	4100	4000	4000	3800	3800	3600	3600	3600
		in.lb	36288	35403	35403	33633	33633	31863	31863	31863
Permitted Average Input Speed	n_{1N}	*rpm*	1500							
Maximum Input Speed	n_{1Max}	*rpm*	3000							
Mean No Load Running Torque	T_{012}	*Nm*	5.6	5.4	5.25	5.07	5.07	5.07	5.07	5.07
		in.lb	49.56	47.79	46.47	44.87	44.87	44.87	44.87	44.87
Standard Backlash P1	j_t	arcmin	≤7							
Reduced Low Backlash P0	j_t	arcmin	≤5							
Ultra Low Backlash PU	j_t	arcmin	≤3							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	220							
		in.lb/arcmin	1947.15							
Maximum Radial Load	F_{2AMax}	*N*	16000							
		lb_f	3597							
Maximum Axial Load	F_{2AMax}	*N*	8000							
		lb_f	1798							
Max. Tilting Moment	M_{2KMax}	*Nm*	2676							
		in.lb	23684							
Mass Moment of Inertia	j_1	$kgcm^2$	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	η	%	95							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	68							
		lb_m	149.6							

KVX-B220 2-stage

			2-stage											
Ratio	i		15	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	2050	2000	2000	2000	2000	2000	2000	2000	1900	1900	1800	1800	1800
		in.lb	18144	17701	17701	17701	17701	17701	17701	17701	16816	16816	15931	15931	15931
Emergency Stop Torque	T_{2Not}	*Nm*	6150	6000	6000	6000	6000	6000	6000	6000	5700	5700	5400	5400	5400
		in.lb	54432	53104	53104	53104	53104	53104	53104	53104	50449	50449	47794	47794	47794
Maximum Acceleration Torque	T_{2B}	*Nm*	3690	3600	3600	3600	3600	3600	3600	3600	3420	3420	3240	3240	3240
		in.lb	32659	31863	31863	31863	31863	31863	31863	31863	30269	30269	28676	28676	28676
Maximum Torque	T_{2e}	*Nm*	4100	4000	4000	4000	4000	4000	4000	4000	3800	3800	3600	3600	3600
		in.lb	36288	35403	35403	35403	35403	35403	35403	35403	33633	33633	31863	31863	31863
Permitted Average Input Speed	n_{1N}	*rpm*	1500												
Maximum Input Speed	n_{1Max}	*rpm*	3000												
Mean No Load Running Torque	T_{012}	*Nm*	3.55	3.55	3.55	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
		in.lb	31.42	31.42	31.42	30.09	30.09	30.09	30.09	30.09	30.09	30.09	30.09	30.09	30.09
Standard Backlash P1	j_t	arcmin	≤9												
Reduced Low Backlash P0	j_t	arcmin	≤7												
Ultra Low Backlash PU	j_t	arcmin	≤5												
Torsional Rigidity	C_{t21}	*Nm/arcmin*	220												
		in.lb/arcmin	1947.15												
Maximum Radial Load	F_{2AMax}	*N*	16000												
		lb_f	3597												
Maximum Axial Load	F_{2AMax}	*N*	8000												
		lb_f	1798												
Max. Tilting Moment	M_{2KMax}	*Nm*	2676												
		in.lb	23684												
Mass Moment of Inertia	j_1	$kgcm^2$	22.75	22.75	22.75	22.59	22.59	22.59	22.59	22.59	22.59	22.75	22.75	22.59	22.59
Operating Noise Level	L_{PA}	dB(A)	< 75												
Efficiency at Full loading	η	%	93												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	78												
		lb_m	171.6												

KVX-B Series Servo Planetary Gearbox

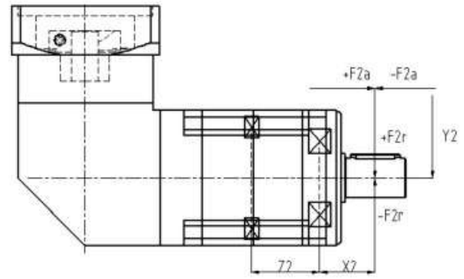
KVX-B Dimensions



Model	KVX-B065		KVX-B085		KVX-B115		KVX-B142		KVX-B180		KVX-B220	
Stage	1	2	1	2	1	2	1	2	1	2	1	2
K1	65		85		110		142		180		220	
	2.559		3.346		4.331		5.591		7.087		8.661	
K2	93	116.7	105.2	136.5	154	195.8	187	248	204.5	251.5	220	285.5
	3.661	4.594	4.142	5.374	6.063	7.709	7.362	9.764	8.051	9.902	8.661	11.240
K3	16		22		32		40		55		75	
	0.630		0.866		1.260		1.575		2.165		2.953	
K4	30		36		50		80		82		105	
	1.181		1.417		1.969		3.150		3.228		4.134	
K5	20		25		40		55		60		85	
	0.787		0.984		1.575		2.165		2.362		3.346	
K6	50		80		110		130		160		180	
	1.969		3.150		4.331		5.118		6.299		7.087	
K7	5		10		12		15		20		30	
	0.197		0.394		0.472		0.591		0.787		1.181	
K8	37		48		65		97		105		138	
	1.457		1.890		2.559		3.819		4.134		5.433	
K9	M5X12		M6X16		M10X22		M12X26		M20X40		M20X40	
K10	5.5		6.5		9		11		13		17	
	0.217		0.256		0.354		0.433		0.512		0.669	
K11	70		100		130		165		215		250	
	2.756		3.937		5.118		6.496		8.465		9.843	
K12	22		28		40		70		70		90	
	0.866		1.102		1.575		2.756		2.756		3.543	
K13	5		6		10		12		16		20	
	0.197		0.236		0.394		0.472		0.630		0.787	
K14	18		24.5		35		43		59		79.5	
	0.709		0.965		1.378		1.693		2.323		3.130	
K15	8		10		14		15		20		20	
	0.315		0.394		0.551		0.591		0.787		0.787	
K16	83		94		140		169		204	169	210	204
	3.248		3.701		5.512		6.654		8.031	6.654	8.268	8.031
K17	37.6	61.3	39.7	66	60	101.8	80	141	69		81	
	1.480	2.413	1.563	2.598	2.362	4.008	3.150	5.551	2.7		3.2	
C1	70		90		145		200		215	200	235	215
	2.756		3.543		5.709		7.874		8.465	7.874	9.252	8.465
C2	M5X12		M6X15		M8X20		M12X12		M12X25	M12X25	M12X25	M12X25
C3	14		19		24		35		42	35	42	35
	0.551		0.748		0.945		1.378		1.654	1.378	1.654	1.378
C4	32.1		41.3		61.3		81.3		82.5	81.3	116	82.5
	1.264		1.626		2.413		3.201		3.248	3.201	4.567	3.248
C5	50		70		110		114.3		180	114.3	200	180
	1.969		2.756		4.331		4.500		7.087	4.500	7.874	7.087
C6	6.5		6.5		8		6.5		8	8	8	8
	0.256		0.256		0.315		0.256		0.315	0.315	0.315	0.315
C7	65		85		120		175		190	175	220	190
	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

KVX-B Titling moment



$$M_{2Kb} = \frac{F_{2a} \cdot y_2 + F_{2rb} \cdot (X_2 + Z_2)}{1000}$$

KVX-B	045	065	085	115	142	180	220
Z2[mm]	8.2	30.5	33.5	45	66.5	72.5	83.5
M_{2Kb}	19	90	214	603	1275	2013	2676

Technical Memo

KVX-B Series Servo Planetary Gearbox

Technical Memo

KOFON Drive the World | CaesarPlanetary

KPG

Powerful. High Precision. Reliable

- Servo Planetary Gearbox

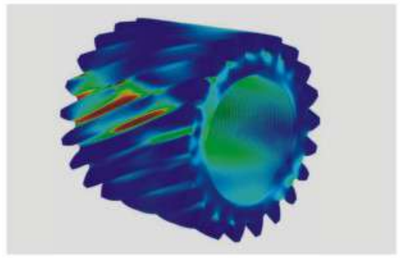
Advanced Gearbox Solution





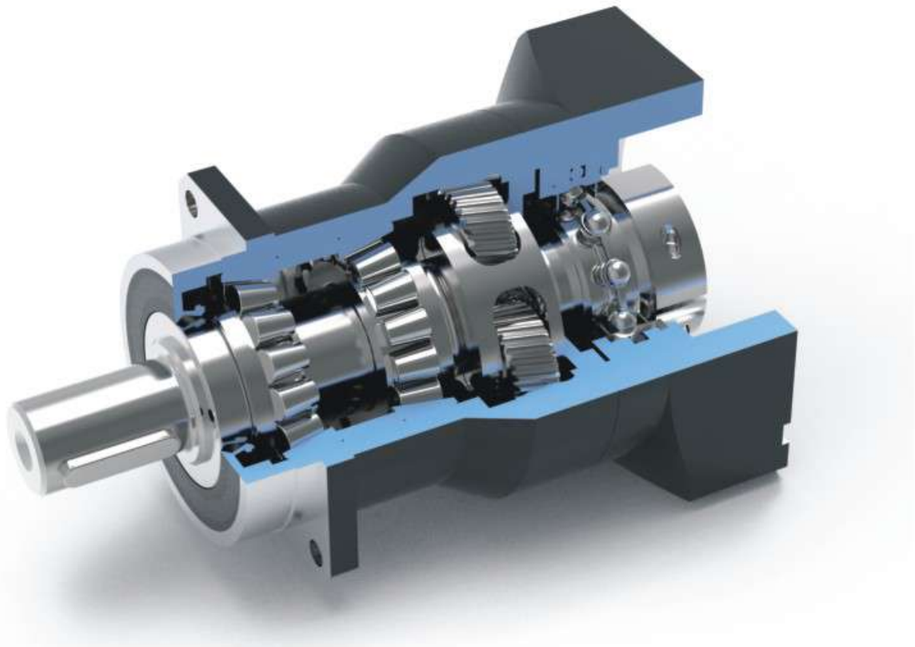
Helical Gear System Technology

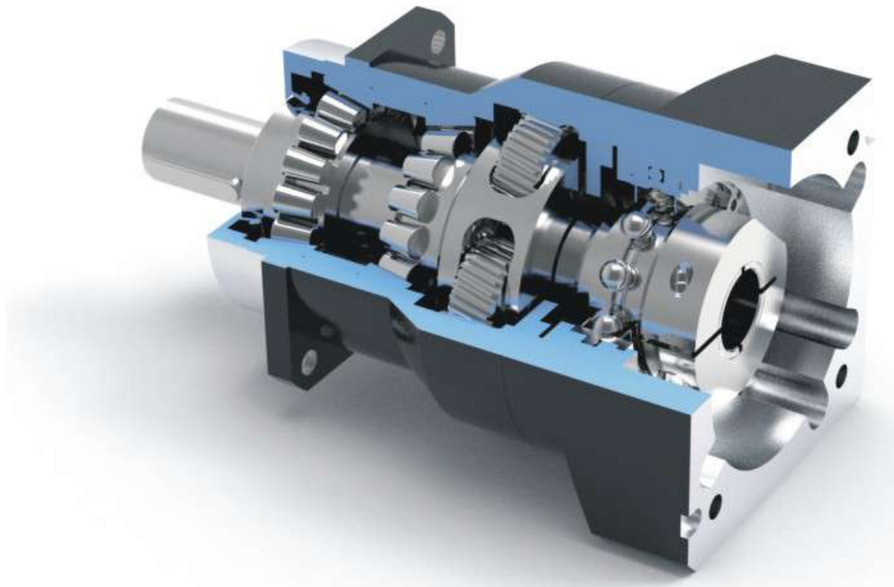
Thanks to the tooth to tooth compact ratio more than 60%.The helical gearing and full needle bearing bring the benefits including higher torque capacity, smooth and lower noise running, decreased backlash and higher efficiency. Integrated housing engineering with super skiving gearing tooling craft.



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.

Order Instructions

Order Code:

KPG — 120 — 02 — 015 — S1 — P0 — Servo Motor

KPG

Gearbox Series: KPG

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

Technical Memo

KPG Series Servo Planetary Gearbox

KPG070 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	3603	4073	4308	3917	3917	3525	3290	3290
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*	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	0.25
		in.lb	2.66	2.39	2.21	2.21	2.21	2.21	2.21	2.21
Standard Backlash P1	j_t	arcmin	≤5							
Reduced Low Backlash P0	j_t	arcmin	≤3							
Ultra Low Backlash PU	j_t	arcmin	≤1							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	7							
		in.lb/arcmin	61.95							
Maximum Radial Load	F_{2AMax}	*N*	4300							
		lb$_f$	967							
Maximum Axial Load	F_{2AMax}	*N*	3900							
		lb$_f$	877							
Max. Tilting Moment	M_{2KMax}	*Nm*	227							
		in.lb	2009							
Mass Moment of Inertia	j_1	kgcm^2	0.160	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	1.6							
		lb$_m$	3.5							

KPG070 2-stage

			2-stage											
Ratio	i		15	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	46	52	55	55	55	55	55	55	50	50	45	42	42
		in.lb	407	460	487	487	487	487	487	487	443	443	398	372	372
Emergency Stop Torque	T_{2Not}	*Nm*	138	156	165	165	165	165	165	165	150	150	135	126	126
		in.lb	1221	1381	1460	1460	1460	1460	1460	1460	1328	1328	1195	1115	1115
Maximum Acceleration Torque	T_{2B}	*Nm*	82.8	93.6	99	99	99	99	99	99	90	90	81	75.6	75.6
		in.lb	733	828	876	876	876	876	876	876	797	797	717	669	669
Maximum Torque	T_{2a}	*Nm*	92	104	110	110	110	110	110	110	100	100	90	84	84
		in.lb	814	920	974	974	974	974	974	974	885	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*	0.27	0.27	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
		in.lb	2.39	2.39	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21
Standard Backlash P1	j_t	arcmin	≤7												
Reduced Low Backlash P0	j_t	arcmin	≤5												
Ultra Low Backlash PU	j_t	arcmin	≤3												
Torsional Rigidity	C_{t21}	*Nm/arcmin*	7												
		in.lb/arcmin	61.95												
Maximum Radial Load	F_{2AMax}	*N*	4300												
		lb$_f$	967												
Maximum Axial Load	F_{2QMax}	*N*	3900												
		lb$_f$	877												
Max. Tilting Moment	M_{2KMax}	*Nm*	227												
		in.lb	2009												
Mass Moment of Inertia	j_1	kgcm^2	0.127	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	η	%	95												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	1.9												
		lb$_m$	4.2												

KPG090 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*	0.46	0.41	0.39	0.35	0.35	0.35	0.35	0.35
		in.lb	4.07	3.63	3.45	3.10	3.10	3.10	3.10	3.10
Standard Backlash P1	j_t	arcmin	≤5							
Reduced Low Backlash P0	j_t	arcmin	≤3							
Ultra Low Backlash PU	j_t	arcmin	≤1							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	14							
		in.lb/arcmin	123.91							
Maximum Radial Load	F_{2AMax}	*N*	7000							
		lb$_f$	1574							
Maximum Axial Load	F_{2AMax}	*N*	6300							
		lb$_f$	1416							
Max. Tilting Moment	M_{2KMax}	*Nm*	440							
		in.lb	3894							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	3.5							
		lb$_m$	7.3							

KPG090 2-stage

			2-stage											
Ratio	i		15	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	125	145	155	155	155	155	155	155	145	135	115	105	105
		in.lb	1106	1283	1372	1372	1372	1372	1372	1372	1283	1195	1018	929	929
Emergency Stop Torque	T_{2Not}	*Nm*	375	435	465	465	465	465	465	465	435	405	345	315	315
		in.lb	3319	3850	4116	4116	4116	4116	4116	4116	3850	3585	3053	2788	2788
Maximum Acceleration Torque	T_{2B}	*Nm*	225	261	279	279	279	279	279	279	261	243	207	189	189
		in.lb	1991	2310	2469	2469	2469	2469	2469	2469	2310	2151	1832	1673	1673
Maximum Torque	T_{2a}	*Nm*	250	290	310	310	310	310	310	310	290	270	230	210	210
		in.lb	2213	2567	2744	2744	2744	2744	2744	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*	0.41	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	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_t	arcmin	≤7												
Reduced Low Backlash P0	j_t	arcmin	≤5												
Ultra Low Backlash PU	j_t	arcmin	≤3												
Torsional Rigidity	C_{t21}	*Nm/arcmin*	14												
		in.lb/arcmin	123.91												
Maximum Radial Load	F_{2AMax}	*N*	7000												
		lb$_f$	1574												
Maximum Axial Load	F_{2AMax}	*N*	6300												
		lb$_f$	1416												
Max. Tilting Moment	M_{2KMax}	*Nm*	440												
		in.lb	3894												
Mass Moment of Inertia	j_1	kgcm^2	0.440	0.440	0.390	0.39	0.39	0.390	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	η	%	95												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	3.8												
		lb$_m$	9.9												

KPG120 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*	1.05	0.95	0.91	0.88	0.88	0.88	0.88	0.88
		in.lb	9.29	8.41	8.05	7.79	7.79	7.79	7.79	7.79
Standard Backlash P1	j_t	arcmin	≤5							
Reduced Low Backlash P0	j_t	arcmin	≤3							
Ultra Low Backlash PU	j_t	arcmin	≤1							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	26							
		in.lb/arcmin	230.12							
Maximum Radial Load	F_{2AMax}	*N*	10000							
		lb$_f$	2248							
Maximum Axial Load	F_{2QMax}	*N*	9000							
		lb$_f$	2023							
Max. Tilting Moment	M_{2KMax}	*Nm*	843							
		in.lb	7461							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	8.1							
		lb$_m$	17.8							

KPG120 2-stage

			2-stage											
Ratio	i		15	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	210	300	320	320	320	320	320	320	300	290	255	220	220
		in.lb	1859	2655	2832	2832	2832	2832	2832	2832	2655	2567	2257	1947	1947
Emergency Stop Torque	T_{2Not}	*Nm*	630	900	960	960	960	960	960	960	900	870	765	660	660
		in.lb	5576	7966	8497	8497	8497	8497	8497	8497	7966	7700	6771	5841	5841
Maximum Acceleration Torque	T_{2B}	*Nm*	378	540	576	576	576	576	576	576	540	522	459	396	396
		in.lb	3346	4779	5098	5098	5098	5098	5098	5098	4779	4620	4062	3505	3505
Maximum Torque	T_{2a}	*Nm*	420	600	640	640	640	640	640	640	600	580	510	440	440
		in.lb	3717	5310	5664	5664	5664	5664	5664	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*	0.95	0.95	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
		in.lb	8.41	8.41	7.79	7.79	7.79	7.79	7.79	7.79	7.79	7.79	7.79	7.79	7.79
Standard Backlash P1	j_t	arcmin	≤7												
Reduced Low Backlash P0	j_t	arcmin	≤5												
Ultra Low Backlash PU	j_t	arcmin	≤3												
Torsional Rigidity	C_{t21}	*Nm/arcmin*	26												
		in.lb/arcmin	230.12												
Maximum Radial Load	F_{2AMax}	*N*	10000												
		lb$_f$	2248												
Maximum Axial Load	F_{2QMax}	*N*	9000												
		lb$_f$	2023												
Max. Tilting Moment	M_{2KMax}	*Nm*	843												
		in.lb	7461												
Mass Moment of Inertia	j_1	kgcm^2	2.580	1.500	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.49	1.49	1.45	1.45
Operating Noise Level	L_{PA}	dB(A)	< 63												
Efficiency at Full loading	η	%	95												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	12												
		lb$_m$	26.4												

KPG160 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_{2e}	*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*	2.6	2.5	2.4	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	21.24
Standard Backlash P1	j_t	arcmin	≤5							
Reduced Low Backlash P0	j_t	arcmin	≤3							
Ultra Low Backlash PU	j_t	arcmin	≤1							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	52							
		in.lb/arcmin	460.24							
Maximum Radial Load	F_{2AMax}	*N*	19000							
		lb$_f$	4271							
Maximum Axial Load	F_{2QMax}	*N*	17000							
		lb$_f$	3822							
Max. Tilting Moment	M_{2KMax}	*Nm*	2222							
		in.lb	19666							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	15.5							
		lb$_m$	34.1							

KPG160 2-stage

			2-stage											
Ratio	i		15	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	350	550	650	650	650	650	650	650	610	540	510	440	440
		in.lb	3098	4868	5753	5753	5753	5753	5753	5753	5399	4779	4514	3894	3894
Emergency Stop Torque	T_{2Not}	*Nm*	1050	1650	1950	1950	1950	1950	1950	1950	1830	1620	1530	1320	1320
		in.lb	9293	14604	17259	17259	17259	17259	17259	17259	16197	14338	13542	11683	11683
Maximum Acceleration Torque	T_{2B}	*Nm*	630	990	1170	1170	1170	1170	1170	1170	1098	972	918	792	792
		in.lb	5576	8762	10355	10355	10355	10355	10355	10355	9718	8603	8125	7010	7010
Maximum Torque	T_{2e}	*Nm*	700	1100	1300	1300	1300	1300	1300	1300	1220	1080	1020	880	880
		in.lb	6195	9736	11506	11506	11506	11506	11506	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*	2.6	2.6	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
		in.lb	23.01	23.01	22.13	22.13	22.13	22.13	22.13	22.13	22.13	22.13	22.13	22.13	22.13
Standard Backlash P1	j_t	arcmin	≤7												
Reduced Low Backlash P0	j_t	arcmin	≤5												
Ultra Low Backlash PU	j_t	arcmin	≤3												
Torsional Rigidity	C_{t21}	*Nm/arcmin*	52												
		in.lb/arcmin	460.24												
Maximum Radial Load	F_{2AMax}	*N*	19000												
		lb$_f$	4271												
Maximum Axial Load	F_{2QMax}	*N*	17000												
		lb$_f$	3822												
Max. Tilting Moment	M_{2KMax}	*Nm*	2222												
		in.lb	19666												
Mass Moment of Inertia	j_1	kgcm^2	12.350	6.650	4.08	4.08	4.08	5.360	4.08	5.36	4.08	4.08	7.4	7.3	7.3
Operating Noise Level	L_{PA}	dB(A)	< 65												
Efficiency at Full loading	η	%	95												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	28												
		lb$_m$	61.6												

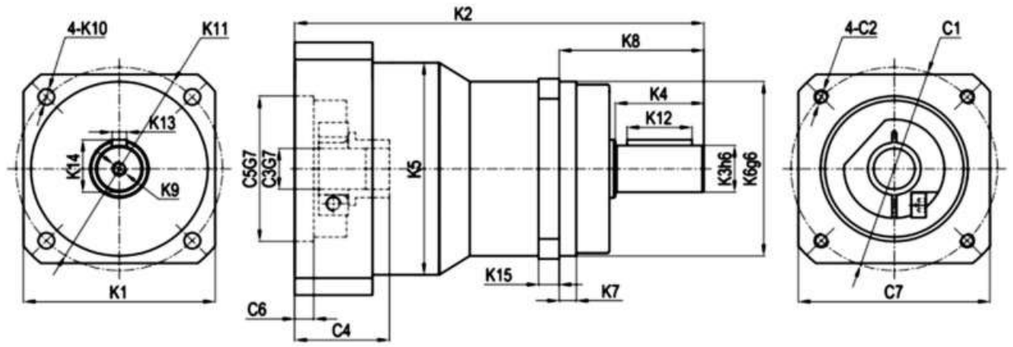
KPG205 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	1250	1200	1000	1000	1000	1000	910	910
		in.lb	11063	10621	8851	8851	8851	8851	8054	8054
Emergency Stop Torque	T_{2Not}	*Nm*	3750	3600	3000	3000	3000	3000	2730	2730
		in.lb	33190	31863	26552	26552	26552	26552	24162	24162
Maximum Acceleration Torque	T_{2B}	*Nm*	2250	2160	1800	1800	1800	1800	1638	1638
		in.lb	19914	19118	15931	15931	15931	15931	14497	14497
Maximum Torque	T_{2a}	*Nm*	2500	2400	2000	2000	2000	2000	1820	1820
		in.lb	22127	21242	17701	17701	17701	17701	16108	16108
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	3.2
		in.lb	30.98	30.09	28.32	28.32	28.32	28.32	28.32	28.32
Standard Backlash P1	j_t	arcmin	≤5							
Reduced Low Backlash P0	j_t	arcmin	≤3							
Ultra Low Backlash PU	j_t	arcmin	≤1							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	138							
		in.lb/arcmin	1221.40							
Maximum Radial Load	F_{2AMax}	*N*	24000							
		lb$_f$	5395							
Maximum Axial Load	F_{2AMax}	*N*	22000							
		lb$_f$	4946							
Max. Tilting Moment	M_{2KMax}	*Nm*	2907							
		in.lb	25729							
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	39							
		lb$_m$	85.8							

KPG205 2-stage

			2-stage											
Ratio	i		15	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	1250	1200	1000	1000	1000	1000	1000	1000	1000	1000	1000	910	910
		in.lb	11063	10621	8851	8851	8851	8851	8851	8851	8851	8851	8851	8054	8054
Emergency Stop Torque	T_{2Not}	*Nm*	3750	3600	3000	3000	3000	3000	3000	3000	3000	3000	3000	2730	2730
		in.lb	33190	31863	26552	26552	26552	26552	26552	26552	26552	26552	26552	24162	24162
Maximum Acceleration Torque	T_{2B}	*Nm*	2250	2160	1800	1800	1800	1800	1800	1800	1800	1800	1800	1638	1638
		in.lb	19914	19118	15931	15931	15931	15931	15931	15931	15931	15931	15931	14497	14497
Maximum Torque	T_{2a}	*Nm*	2500	2400	2000	2000	2000	2000	2000	2000	2000	2000	2000	1820	1820
		in.lb	22127	21242	17701	17701	17701	17701	17701	17701	17701	17701	17701	16108	16108
Permitted Average Input Speed	n_{1N}	*rpm*	2500												
Maximum Input Speed	n_{1Max}	*rpm*	4000												
Mean No Load Running Torque	T_{012}	*Nm*	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	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_t	arcmin	≤7												
Reduced Low Backlash P0	j_t	arcmin	≤5												
Ultra Low Backlash PU	j_t	arcmin	≤3												
Torsional Rigidity	C_{t21}	*Nm/arcmin*	138												
		in.lb/arcmin	1221.40												
Maximum Radial Load	F_{2AMax}	*N*	24000												
		lb$_f$	5395												
Maximum Axial Load	F_{2QMax}	*N*	22000												
		lb$_f$	4946												
Max. Tilting Moment	M_{2KMax}	*Nm*	2907												
		in.lb	25729												
Mass Moment of Inertia	j_1	kgcm^2	12.350	7.420	7.14	7.14	7.14	7.140	7.14	7.14	7.14	7.14	7.54	7.42	7.42
Operating Noise Level	L_{PA}	dB(A)	< 67												
Efficiency at Full loading	η	%	95												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	40												
		lb$_m$	88												

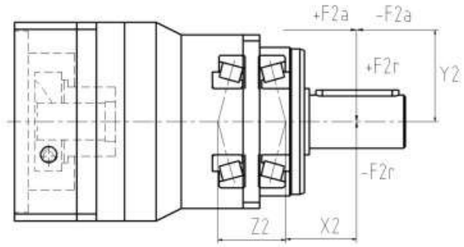
KPG Dimensions



Model	KPG070		KPG090		KPG120		KPG160		KPG205	
Stage	1	2	1	2	1	2	1	2	1	2
K1	62		75		100		140		180	
	2.441		2.953		3.937		5.512		7.087	
K2	155	161	195	229	240	261	295	310	315.5	360
	6.102	6.339	7.677	9.016	9.449	10.276	11.614	12.205	12.421	14.173
K3	16		22		32		40		55	
	0.630		0.866		1.260		1.575		2.165	
K4	28		36		58		82		82	
	1.102		1.417		2.283		3.228		3.228	
K5	70		90		120		160		205	
	2.756		3.543		4.724		6.299		8.071	
K6	60		70		90		130		160	
	2.362		2.756		3.543		5.118		6.299	
K7	5		6		8		10		12	
	0.197		0.236		0.315		0.394		0.472	
K8	48		56		88		112		112	
	1.890		2.205		3.465		4.409		4.409	
K9	M5X12		M6X16		M10X22		M12X25		M20X40	
K10	5.5		7		9		11		13	
	0.217		0.256		0.354		0.433		0.512	
K11	68		85		120		165		215	
	2.677		3.346		4.724		6.496		8.465	
K12	25		32		50		65		65	
	0.984		1.260		1.969		2.559		2.559	
K13	5		6		10		12		16	
	0.197		0.236		0.394		0.472		0.630	
K14	18		24.5		35		43		59	
	0.709		0.965		1.378		1.693		2.323	
K15	6		7		10		12		15	
	0.236		0.276		0.394		0.472		0.591	
C1	90	70	145	90	145	90	200	145	215	200
	3.543	2.756	5.709	3.543	5.709	3.543	7.874	5.709	8.465	7.874
C2	M6X15	M5X12	M8X20	M6X15	M8X20	M6X15	M12X25	M8X20	M12X25	M12X25
C3	19	14	24	19	24	19	35	24	42	35
	0.748	0.551	0.945	0.748	0.945	0.748	1.378	0.945	1.654	1.378
C4	41.6	32.1	61.3	41.6	61.3	41.6	82	61.3	82	82
	1.638	1.264	2.413	1.638	2.413	1.638	3.228	2.413	3.228	3.228
C5	70	50	110	70	110	70	114.3	110	180	114.3
	2.756	1.969	4.331	2.756	4.331	2.756	4.500	4.331	7.087	4.500
C6	6.5	6.5	8	6.5	8	6.5	8	8	8	8
	0.256	0.256	0.315	0.256	0.315	0.256	0.315	0.315	0.315	0.315
C7	80	70	120	89	120	89	175	120	190	175
	3.150	2.756	4.724	3.504	4.724	3.504	6.890	4.724	7.480	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

KPG Titling moment



$$M_{2Kb} = \frac{F_{2a} \cdot y_2 + F_{2rb} \cdot (X_2 + Z_2)}{1000}$$

KPG	070	090	120	160	205	235
Z2[mm]	23.74	28.74	41.07	58.6	58.79	100.66
M_{2Kb}	227	440	843	2222	2907	5024

Technical Memo

KPG Series Servo Planetary Gearbox

Technical Memo

KOFON Drive the World | CaesarPlanetary

KVG

Powerful. High Precision. Reliable

- Servo Planetary Gearbox

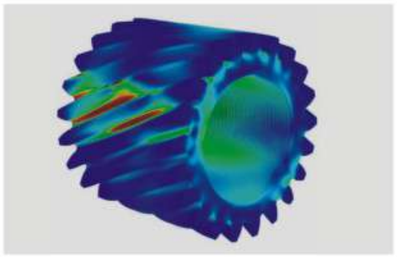
Advanced Gearbox Solution





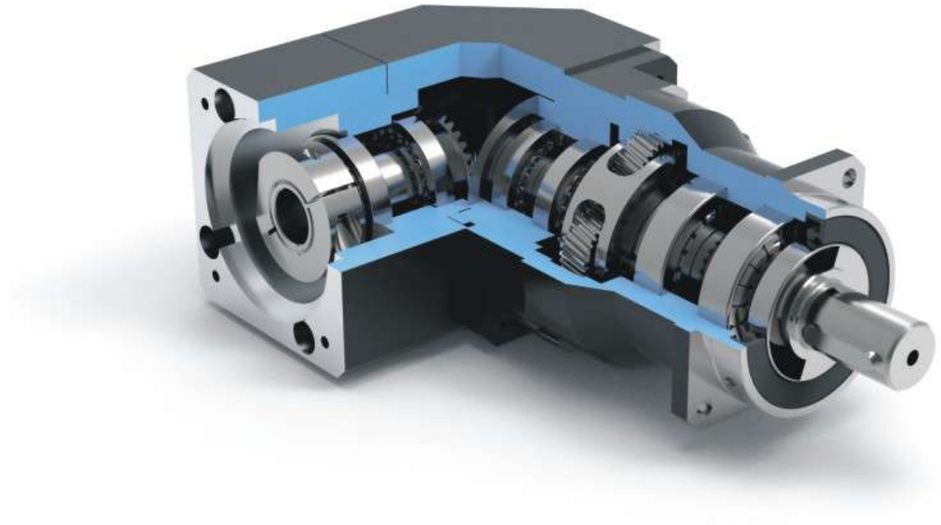
Helical Gear System Technology

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. Integrated housing engineering with super skiving gearing tooling craft.



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.

Order Instructions

Order Code:

KVG — 120 — 02 — 015 — P0 — Servo Motor

KVG

Gearbox Series: KVG

120

Gearbox Size

02

Gearbox Stage

015

Gearbox Ratio

P0

Gearbox Precision

Servo Motor

Motor Manufacturer and model

Technical Memo

KVG Series Servo Planetary Gearbox

KVG070 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*	83	94	99	90	90	81	76	76
		in.lb	733	828	876	797	797	717	669	669
Maximum Torque	T_{2e}	*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*	0.35	0.32	0.3	0.3	0.3	0.3	0.3	0.3
		in.lb	3.10	2.83	2.66	2.66	2.66	2.66	2.66	2.66
Standard Backlash P1	j_t	arcmin	≤7							
Reduced Low Backlash P0	j_t	arcmin	≤5							
Ultra Low Backlash PU	j_t	arcmin	≤3							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	7							
		in.lb/arcmin	61.95							
Maximum Radial Load	F_{2AMax}	*N*	4300							
		lb_f	967							
Maximum Axial Load	F_{2AMax}	*N*	3900							
		lb_f	877							
Max. Tilting Moment	M_{2KMax}	*Nm*	227							
		in.lb	2009							
Mass Moment of Inertia	j_1	$kgcm^2$	0.16	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	η	%	95							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	4.6							
		lb_m	10.14							

KVG070 2-stage

			2-stage											
Ratio	i		15	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	46	52	55	55	55	55	55	55	50	50	45	42	42
		in.lb	407	460	487	487	487	487	487	487	443	443	398	372	372
Emergency Stop Torque	T_{2Not}	*Nm*	138	156	165	165	165	165	165	165	150	150	135	126	126
		in.lb	1221	1381	1460	1460	1460	1460	1460	1460	1328	1328	1195	1115	1115
Maximum Acceleration Torque	T_{2B}	*Nm*	83	94	99	99	99	99	99	99	90	90	81	76	76
		in.lb	733	828	876	876	876	876	876	876	797	797	717	669	669
Maximum Torque	T_{2e}	*Nm*	92	104	110	110	110	110	110	110	100	100	90	84	84
		in.lb	814	920	974	974	974	974	974	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*	0.32	0.32	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		in.lb	2.83	2.83	2.66	2.66	2.66	2.66	2.66	2.66	2.66	2.66	2.66	2.66	2.66
Standard Backlash P1	j_t	arcmin	≤9												
Reduced Low Backlash P0	j_t	arcmin	≤7												
Ultra Low Backlash PU	j_t	arcmin	≤5												
Torsional Rigidity	C_{t21}	*Nm/arcmin*	7												
		in.lb/arcmin	61.95												
Maximum Radial Load	F_{2AMax}	*N*	4300												
		lb_f	967												
Maximum Axial Load	F_{2AMax}	*N*	3900												
		lb_f	877												
Max. Tilting Moment	M_{2KMax}	*Nm*	227												
		in.lb	2009												
Mass Moment of Inertia	j_1	$kgcm^2$	0.088	0.075	0.075	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	η	%	93												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	7												
		lb_m	15.43												

KVG090 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_{2e}	*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*	0.51	0.46	0.44	0.4	0.4	0.4	0.4	0.4
		in.lb	4.51	4.07	3.89	3.54	3.54	3.54	3.54	3.54
Standard Backlash P1	j_t	arcmin	≤7							
Reduced Low Backlash P0	j_t	arcmin	≤5							
Ultra Low Backlash PU	j_t	arcmin	≤3							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	14							
		in.lb/arcmin	123.91							
Maximum Radial Load	F_{2AMax}	*N*	7000							
		lb_f	1574							
Maximum Axial Load	F_{2GMax}	*N*	6300							
		lb_f	1416							
Max. Tilting Moment	M_{2KtMax}	*Nm*	440							
		in.lb	3894							
Mass Moment of Inertia	j_1	$kgcm^2$	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	η	%	95							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	7.4							
		lb_m	16.31							

KVG090 2-stage

			2-stage											
Ratio	i		15	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	125	145	155	155	155	155	155	155	145	135	115	105	105
		in.lb	1106	1283	1372	1372	1372	1372	1372	1372	1283	1195	1018	929	929
Emergency Stop Torque	T_{2Not}	*Nm*	375	435	465	465	465	465	465	465	435	405	345	315	315
		in.lb	3319	3850	4116	4116	4116	4116	4116	4116	3850	3585	3053	2788	2788
Maximum Acceleration Torque	T_{2B}	*Nm*	225	261	279	279	279	279	279	279	261	243	207	189	189
		in.lb	1991	2310	2469	2469	2469	2469	2469	2469	2310	2151	1832	1673	1673
Maximum Torque	T_{2e}	*Nm*	250	290	310	310	310	310	310	310	290	270	230	210	210
		in.lb	2213	2567	2744	2744	2744	2744	2744	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	0.46	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		in.lb	4.07	4.07	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54
Standard Backlash P1	j_t	arcmin	≤9												
Reduced Low Backlash P0	j_t	arcmin	≤7												
Ultra Low Backlash PU	j_t	arcmin	≤5												
Torsional Rigidity	C_{t21}	*Nm/arcmin*	14												
		in.lb/arcmin	123.91												
Maximum Radial Load	F_{2AMax}	*N*	7000												
		lb_f	1574												
Maximum Axial Load	F_{2GMax}	*N*	6300												
		lb_f	1416												
Max. Tilting Moment	M_{2KtMax}	*Nm*	440												
		in.lb	3894												
Mass Moment of Inertia	j_1	$kgcm^2$	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
Operating Noise Level	L_{PA}	dB(A)	< 65												
Efficiency at Full loading	η	%	93												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	9.8												
		lb_m	21.61												

KVG120 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*	1.25	1.15	1.11	1.08	1.08	1.08	1.08	1.08
		in.lb	11.06	10.18	9.82	9.56	9.56	9.56	9.56	9.56
Standard Backlash P1	j_t	arcmin	≤7							
Reduced Low Backlash P0	j_t	arcmin	≤5							
Ultra Low Backlash PU	j_t	arcmin	≤3							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	26							
		in.lb/arcmin	230.12							
Maximum Radial Load	F_{2AMax}	*N*	10000							
		lb_f	2248							
Maximum Axial Load	F_{2GMax}	*N*	9000							
		lb_f	2023							
Max. Tilting Moment	M_{2KtMax}	*Nm*	843							
		in.lb	7461							
Mass Moment of Inertia	j_1	$kgcm^2$	3.25	2.74	2.71	2.71	2.71	2.62	2.62	2.57
Operating Noise Level	L_{PA}	dB(A)	< 68							
Efficiency at Full loading	η	%	95							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	12.1							
		lb_m	26.68							

KVG120 2-stage

			2-stage											
Ratio	i		15	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	210	300	320	320	320	320	320	320	300	290	255	220	220
		in.lb	1859	2655	2832	2832	2832	2832	2832	2832	2655	2567	2257	1947	1947
Emergency Stop Torque	T_{2Not}	*Nm*	630	900	960	960	960	960	960	960	900	870	765	660	660
		in.lb	5576	7966	8497	8497	8497	8497	8497	8497	7966	7700	6771	5841	5841
Maximum Acceleration Torque	T_{2B}	*Nm*	378	540	576	576	576	576	576	576	540	522	459	396	396
		in.lb	3346	4779	5098	5098	5098	5098	5098	5098	4779	4620	4062	3505	3505
Maximum Torque	T_{2a}	*Nm*	420	600	640	640	640	640	640	640	600	580	510	440	440
		in.lb	3717	5310	5664	5664	5664	5664	5664	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*	1.15	1.15	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08
		in.lb	10.18	10.18	9.56	9.56	9.56	9.56	9.56	9.56	9.56	9.56	9.56	9.56	9.56
Standard Backlash P1	j_t	arcmin	≤9												
Reduced Low Backlash P0	j_t	arcmin	≤7												
Ultra Low Backlash PU	j_t	arcmin	≤5												
Torsional Rigidity	C_{t21}	*Nm/arcmin*	26												
		in.lb/arcmin	230.12												
Maximum Radial Load	F_{2AMax}	*N*	10000												
		lb_f	2248												
Maximum Axial Load	F_{2GMax}	*N*	9000												
		lb_f	2023												
Max. Tilting Moment	M_{2KtMax}	*Nm*	843												
		in.lb	7461												
Mass Moment of Inertia	j_1	$kgcm^2$	2.58	1.5	1.49	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)	< 68												
Efficiency at Full loading	η	%	93												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	14												
		lb_m	30.86												

KVG160 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_{2e}	*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*	2.40	2.40	2.44	2.44	2.44	2.44	2.44	2.44
		in.lb	21.24	21.24	21.60	21.60	21.60	21.60	21.60	21.60
Standard Backlash P1	j_t	arcmin	≤7							
Reduced Low Backlash P0	j_t	arcmin	≤5							
Ultra Low Backlash PU	j_t	arcmin	≤3							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	52							
		in.lb/arcmin	460.24							
Maximum Radial Load	F_{2AMax}	*N*	19000							
		lb_f	4271							
Maximum Axial Load	F_{2GMax}	*N*	17000							
		lb_f	3822							
Max. Tilting Moment	M_{2KtMax}	*Nm*	2222							
		in.lb	19666							
Mass Moment of Inertia	j_1	$kgcm^2$	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	η	%	95							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	25							
		lb_m	55.12							

KVG160 2-stage

			2-stage											
Ratio	i		15	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	350	550	650	650	650	650	650	650	610	540	510	440	440
		in.lb	3098	4868	5753	5753	5753	5753	5753	5753	5399	4779	4514	3894	3894
Emergency Stop Torque	T_{2Not}	*Nm*	1050	1650	1950	1950	1950	1950	1950	1950	1830	1620	1530	1320	1320
		in.lb	9293	14604	17259	17259	17259	17259	17259	17259	16197	14338	13542	11683	11683
Maximum Acceleration Torque	T_{2B}	*Nm*	630	990	1170	1170	1170	1170	1170	1170	1098	972	918	792	792
		in.lb	5576	8762	10355	10355	10355	10355	10355	10355	9718	8603	8125	7010	7010
Maximum Torque	T_{2e}	*Nm*	700	1100	1300	1300	1300	1300	1300	1300	1220	1080	1020	880	880
		in.lb	6195	9736	11506	11506	11506	11506	11506	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	3	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
		in.lb	26.55	26.55	25.67	25.67	25.67	25.67	25.67	25.67	25.67	25.67	25.67	25.67	25.67
Standard Backlash P1	j_t	arcmin	≤9												
Reduced Low Backlash P0	j_t	arcmin	≤7												
Ultra Low Backlash PU	j_t	arcmin	≤5												
Torsional Rigidity	C_{t21}	*Nm/arcmin*	52												
		in.lb/arcmin	460.24												
Maximum Radial Load	F_{2AMax}	*N*	19000												
		lb_f	4271												
Maximum Axial Load	F_{2GMax}	*N*	17000												
		lb_f	3822												
Max. Tilting Moment	M_{2KtMax}	*Nm*	2222												
		in.lb	19666												
Mass Moment of Inertia	j_1	$kgcm^2$	12.35	6.65	5.81	6.34	5.36	4.08	5.36	4.08	7.4	7.5	7.4	7.4	7.3
Operating Noise Level	L_{PA}	dB(A)	< 70												
Efficiency at Full loading	η	%	93												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	30												
		lb_m	66.14												

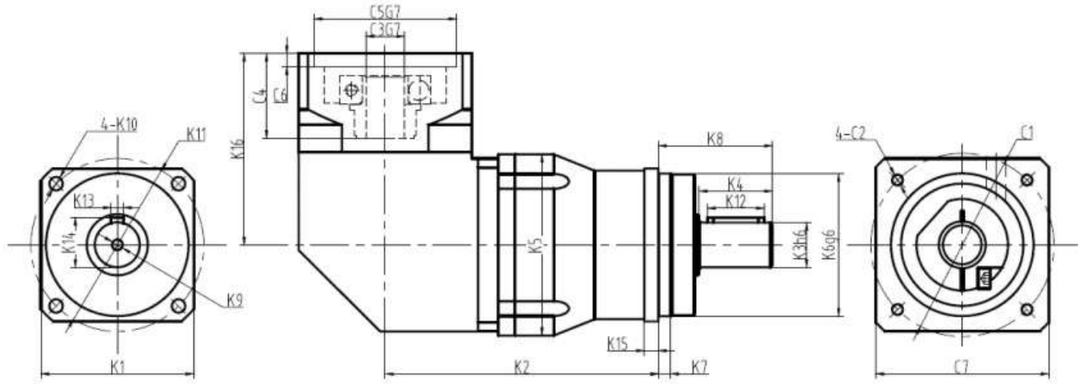
KVG205 1-stage

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	1250	1200	1000	1000	1000	1000	910	910
		in.lb	11063	10621	8851	8851	8851	8851	8054	8054
Emergency Stop Torque	T_{2Not}	*Nm*	3750	3600	3000	3000	3000	3000	2730	2730
		in.lb	33190	31863	26552	26552	26552	26552	24162	24162
Maximum Acceleration Torque	T_{2B}	*Nm*	2250	2160	1800	1800	1800	1800	1638	1638
		in.lb	19914	19118	15931	15931	15931	15931	14497	14497
Maximum Torque	T_{2e}	*Nm*	2500	2400	2000	2000	2000	2000	1820	1820
		in.lb	22127	21242	17701	17701	17701	17701	16108	16108
Permitted Average Input Speed	n_{1N}	*rpm*	2500							
Maximum Input Speed	n_{1Max}	*rpm*	4000							
Mean No Load Running Torque	T_{012}	*Nm*	3.90	3.80	3.60	3.60	3.60	3.60	3.60	3.60
		in.lb	34.52	33.63	31.86	31.86	31.86	31.86	31.86	31.86
Standard Backlash P1	j_t	arcmin	≤7							
Reduced Low Backlash P0	j_t	arcmin	≤5							
Ultra Low Backlash PU	j_t	arcmin	≤3							
Torsional Rigidity	C_{t21}	*Nm/arcmin*	138							
		in.lb/arcmin	1221.40							
Maximum Radial Load	F_{2AMax}	*N*	24000							
		lb_f	5395							
Maximum Axial Load	F_{2GMax}	*N*	22000							
		lb_f	4946							
Max. Tilting Moment	M_{2KtMax}	*Nm*	2907							
		in.lb	25729							
Mass Moment of Inertia	j_1	$kgcm^2$	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	η	%	95							
Operating Temperature		℃	−25 to +90							
		F	−13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
Weight	*m*	kg	49							
		lb_m	108.03							

KVG205 2-stage

			2-stage											
Ratio	i		15	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	1250	1200	1000	1000	1000	1000	1000	1000	1000	1000	1000	910	910
		in.lb	11063	10621	8851	8851	8851	8851	8851	8851	8851	8851	8851	8054	8054
Emergency Stop Torque	T_{2Not}	*Nm*	3750	3600	3000	3000	3000	3000	3000	3000	3000	3000	3000	2730	2730
		in.lb	33190	31863	26552	26552	26552	26552	26552	26552	26552	26552	26552	24162	24162
Maximum Acceleration Torque	T_{2B}	*Nm*	2250	2160	1800	1800	1800	1800	1800	1800	1800	1800	1800	1638	1638
		in.lb	19914	19118	15931	15931	15931	15931	15931	15931	15931	15931	15931	14497	14497
Maximum Torque	T_{2e}	*Nm*	2500	2400	2000	2000	2000	2000	2000	2000	2000	2000	2000	1820	1820
		in.lb	22127	21242	17701	17701	17701	17701	17701	17701	17701	17701	17701	16108	16108
Permitted Average Input Speed	n_{1N}	*rpm*	2500												
Maximum Input Speed	n_{1Max}	*rpm*	4000												
Mean No Load Running Torque	T_{012}	*Nm*	2.9	2.9	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
		in.lb	25.67	25.67	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78
Standard Backlash P1	j_t	arcmin	≤9												
Reduced Low Backlash P0	j_t	arcmin	≤7												
Ultra Low Backlash PU	j_t	arcmin	≤5												
Torsional Rigidity	C_{t21}	*Nm/arcmin*	138												
		in.lb/arcmin	1221.40												
Maximum Radial Load	F_{2AMax}	*N*	24000												
		lb_f	5395												
Maximum Axial Load	F_{2GMax}	*N*	22000												
		lb_f	4946												
Max. Tilting Moment	M_{2KtMax}	*Nm*	2907												
		in.lb	25729												
Mass Moment of Inertia	j_1	$kgcm^2$	12.35	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)	< 72												
Efficiency at Full loading	η	%	93												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	55												
		lb_m	121.25												

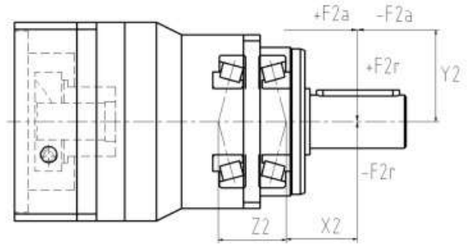
KVG Dimensions



Model	KVG070		KVG090		KVG120		KVG160		KVG205	
Stage	1	2	1	2	1	2	1	2	1	2
K1	Φ62		Φ75		Φ100		Φ140		Φ180	
K2	112	135.7	134.2	165.5	173	214.8	200.5	261.5	244.5	291.5
K3	Φ16		Φ22		Φ32		Φ40		Φ55	
K4	28		36		58		82		82	
K5	Φ70		Φ90		Φ120		Φ160		Φ205	
K6	ϕ60		Φ70		Φ90		Φ130		Φ160	
K7	5		6		8		10		12	
K8	48		56		88		112		112	
K9	M5X12		M6X16		M10X22		M12X25		M20X40	
K10	Φ5.5		Φ6.5		Φ9		Φ114.3		Φ13	
K11	Φ68		Φ85		Φ120		Φ165		Φ215	
K12	22		32		50		65		65	
K13	5		6		10		12		16	
K14	18		24.5		35		43		59	
K15	6		7		10		12		15	
C1	Φ70		Φ90		Φ145		Φ200		Φ200	
C2	M5X12		M6X15		M8X20		M12X25		M12X25	
C3	Φ14		Φ19		Φ24		Φ35		Φ35	
C4	32.1		41.6		61.3		82		82	
C5	Φ50		Φ70		Φ110		Φ114.3		Φ114.3	
C6	6.5		6.5		8		8		8	
C7	65		85		120		175		175	

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

KVG Titling moment



$$M_{2Kb} = \frac{F_{2a} \cdot y_2 + F_{2rb} \cdot (X_2 + Z_2)}{1000}$$

KVG	070	090	120	160	205	235
Z2[mm]	23.74	28.74	41.07	58.6	58.79	100.66
M_{2Kb}	227	440	843	2222	2907	5024

Technical Memo

Technical Memo

KOFON Drive the World | CaesarPlanetary

KPH

Powerful. High Precision. Reliable

- Servo Planetary Gearbox

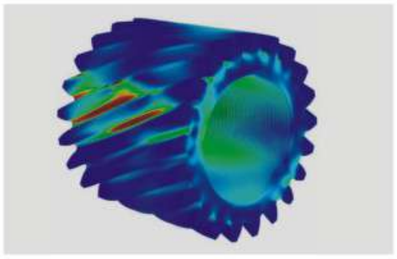
Advanced Gearbox Solution





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. Integrated housing engineering with super skiving gearing tooling craft.



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.

Order Instructions

Order Code:

KPH — 120 — 02 — 015 — P0 — Servo Motor

KPH

Gearbox Series: KPH

120

Gearbox Size

02

Gearbox Stage

015

Gearbox Ratio

P0

Gearbox Precision

Servo Motor

Motor Manufacturer and model

Technical Memo

KPH050 1-stage

			1-stage						
Ratio	i		4	5	6	7	8	9	10
Nominal Output Torque		Nm	21	21	20	18	18	14	14
		in.lb	186	186	177	159	159	124	124
Emergency Stop Torque	T_{2Not}	*Nm*	63	63	60	54	54	42	42
		in.lb	558	558	531	478	478	372	372
Maximum Acceleration Torque	T_{2B}	*Nm*	37.8	37.8	36	32.4	32.4	25.2	25.2
		in.lb	335	335	319	287	287	223	223
Maximum Torque	T_{2a}	*Nm*	42	42	40	36	36	28	28
		in.lb	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*	0.15	0.14	0.12	0.12	0.12	0.12	0.11
		in.lb	1.33	1.24	1.06	1.06	1.06	1.06	0.97
Standard Backlash P1	j_t	arcmin	≤6						
Reduced Low Backlash P0	j_t	arcmin	≤4						
Torsional Rigidity	C_{t21}	*Nm/arcmin*	7						
		in.lb/arcmin	61.95						
Maximum Radial Load	F_{2AMax}	*N*	700						
		lb_f	157						
Maximum Axial Load	F_{2CMax}	*N*	450						
		lb_f	101						
Max. Tilting Moment	M_{2KMax}	*Nm*	28						
		in.lb	248						
Mass Moment of Inertia	j_1	kgcm²	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	η	%	97						
Operating Temperature		℃	−25 to +90						
		F	−13 to +194						
Lubrication			Synthetic Lubrication Grease						
Mouting Position			Any Directions						
Protection Class			IP65						
Service lifetime	L_{10}	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
Weight	*m*	kg	1						
		lb_m	1.54						

KPH050 2-stage

			2-stage											
Ratio	i		16	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	21	21	21	21	21	21	21	21	20	18	18	14	14
		in.lb	186	186	186	186	186	186	186	186	177	159	159	124	124
Emergency Stop Torque	T_{2Not}	*Nm*	63	63	63	63	63	63	63	63	60	54	54	42	42
		in.lb	558	558	558	558	558	558	558	558	531	478	478	372	372
Maximum Acceleration Torque	T_{2B}	*Nm*	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	36	32.4	32.4	25.2	25.2
		in.lb	335	335	335	335	335	335	335	335	319	287	287	223	223
Maximum Torque	T_{2a}	*Nm*	42	42	42	42	42	42	42	42	40	36	36	28	28
		in.lb	372	372	372	372	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_{022}	*Nm*	0.14	0.14	0.14	0.14	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.11	0.11
		in.lb	1.24	1.24	1.24	1.24	1.06	1.06	1.06	1.06	1.06	1.06	1.06	0.97	0.97
Standard Backlash P1	j_t	arcmin	≤8												
Reduced Low Backlash P0	j_t	arcmin	≤6												
Torsional Rigidity	C_{t21}	*Nm/arcmin*	7												
		in.lb/arcmin	61.95												
Maximum Radial Load	F_{2AMax}	*N*	700												
		lb_f	157												
Maximum Axial Load	F_{2CMax}	*N*	450												
		lb_f	101												
Max. Tilting Moment	M_{2KMax}	*Nm*	28												
		in.lb	248												
Mass Moment of Inertia	j_1	kgcm²	0.019	0.019	0.019	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017
Operating Noise Level	L_{PA}	dB(A)	< 56												
Efficiency at Full loading	η	%	95												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP65												
Service lifetime	L_{10}	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	1.1												
		lb_m	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_t	arcmin	≤5						
Reduced Low Backlash P0	j_t	arcmin	≤3						
Ultra Low Backlash PU	j_t	arcmin	≤1						
Torsional Rigidity	C_{t21}	*Nm/arcmin*	14						
		in.lb/arcmin	123.91						
Maximum Radial Load	F_{2AMax}	*N*	2500						
		lb$_f$	562						
Maximum Axial Load	F_{2QMax}	*N*	2000						
		lb$_f$	450						
Max. Tilting Moment	M_{2KMax}	*Nm*	80						
		in.lb	708						
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97						
Operating Temperature		℃	−25 to +90						
		F	−13 to +194						
Lubrication			Synthetic Lubrication Grease						
Mouting Position			Any Directions						
Protection Class			IP 65						
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
Weight	*m*	kg	1.4						
		lb$_m$	3.1						

KPH070 2-stage

			2-stage											
Ratio	i		16	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	52	52	55	55	55	55	55	55	50	50	45	42	42
		in.lb	460	460	487	487	487	487	487	487	443	443	398	372	372
Emergency Stop Torque	T_{2Not}	*Nm*	156	156	165	165	165	165	165	165	150	150	135	126	126
		in.lb	1381	1381	1460	1460	1460	1460	1460	1460	1328	1328	1195	1115	1115
Maximum Acceleration Torque	T_{2B}	*Nm*	93.6	93.6	99	99	99	99	99	99	90	90	81	75.6	75.6
		in.lb	828	828	876	876	876	876	876	876	797	797	717	669	669
Maximum Torque	T_{2a}	*Nm*	104	104	110	110	110	110	110	110	100	100	90	84	84
		in.lb	920	920	974	974	974	974	974	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*	0.27	0.27	0.27	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
		in.lb	2.39	2.39	2.39	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21
Standard Backlash P1	j_t	arcmin	≤7												
Reduced Low Backlash P0	j_t	arcmin	≤5												
Ultra Low Backlash PU	j_t	arcmin	≤3												
Torsional Rigidity	C_{t21}	*Nm/arcmin*	14												
		in.lb/arcmin	123.91												
Maximum Radial Load	F_{2AMax}	*N*	2500												
		lb$_f$	562												
Maximum Axial Load	F_{2QMax}	*N*	2000												
		lb$_f$	450												
Max. Tilting Moment	M_{2KMax}	*Nm*	80												
		in.lb	708												
Mass Moment of Inertia	j_1	kgcm^2	0.124	0.075	0.075	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	η	%	95												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	1.6												
		lb$_m$	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	4116	3850	3585	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_t	arcmin	≤5						
Reduced Low Backlash P0	j_t	arcmin	≤3						
Ultra Low Backlash PU	j_t	arcmin	≤1						
Torsional Rigidity	C_{t21}	*Nm/arcmin*	35						
		in.lb/arcmin	309.77						
Maximum Radial Load	F_{2AMax}	*N*	4500						
		lb$_f$	1012						
Maximum Axial Load	F_{2AMax}	*N*	3500						
		lb$_f$	787						
Max. Tilting Moment	M_{2KMax}	*Nm*	228						
		in.lb	2018						
Mass Moment of Inertia	j_t	kgcm^2	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	η	%	97						
Operating Temperature		℃	−25 to +90						
		F	−13 to +194						
Lubrication			Synthetic Lubrication Grease						
Mouting Position			Any Directions						
Protection Class			IP 65						
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
Weight	*m*	kg	3.3						
		lb$_m$	7.3						

KPH090 2-stage

			2-stage											
Ratio	i		16	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	145	145	155	155	155	155	155	155	145	135	115	105	105
		in.lb	1283	1283	1372	1372	1372	1372	1372	1372	1283	1195	1018	929	929
Emergency Stop Torque	T_{2Not}	*Nm*	435	435	465	465	465	465	465	465	435	405	345	315	315
		in.lb	3850	3850	4116	4116	4116	4116	4116	4116	3850	3585	3053	2788	2788
Maximum Acceleration Torque	T_{2B}	*Nm*	261	261	279	279	279	279	279	279	261	243	207	189	189
		in.lb	2310	2310	2469	2469	2469	2469	2469	2469	2310	2151	1832	1673	1673
Maximum Torque	T_{2a}	*Nm*	290	290	310	310	310	310	310	310	290	270	230	210	210
		in.lb	2567	2567	2744	2744	2744	2744	2744	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*	0.41	0.41	0.41	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
		in.lb	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
Standard Backlash P1	j_t	arcmin	≤7												
Reduced Low Backlash P0	j_t	arcmin	≤5												
Ultra Low Backlash PU	j_t	arcmin	≤3												
Torsional Rigidity	C_{t21}	*Nm/arcmin*	35												
		in.lb/arcmin	309.77												
Maximum Radial Load	F_{2AMax}	*N*	4500												
		lb$_f$	1012												
Maximum Axial Load	F_{2QMax}	*N*	3500												
		lb$_f$	787												
Max. Tilting Moment	M_{2KMax}	*Nm*	228												
		in.lb	2018												
Mass Moment of Inertia	j_t	kgcm^2	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	η	%	95												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	4.5												
		lb$_m$	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	7966	8497	7966	7700	6771	5841	5841
Maximum Acceleration Torque	T_{2B}	*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_t	arcmin	≤5						
Reduced Low Backlash P0	j_t	arcmin	≤3						
Ultra Low Backlash PU	j_t	arcmin	≤1						
Torsional Rigidity	C_{t21}	*Nm/arcmin*	90						
		in.lb/arcmin	796.56						
Maximum Radial Load	F_{2AMax}	*N*	7800						
		lb$_f$	1753						
Maximum Axial Load	F_{2QMax}	*N*	6000						
		lb$_f$	1349						
Max. Tilting Moment	M_{2KMax}	*Nm*	450						
		in.lb	3983						
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97						
Operating Temperature		℃	−25 to +90						
		F	−13 to +194						
Lubrication			Synthetic Lubrication Grease						
Mouting Position			Any Directions						
Protection Class			IP 65						
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
Weight	*m*	kg	5.5						
		lb$_m$	12.1						

KPH120 2-stage

			2-stage											
Ratio	i		16	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	300	300	320	320	320	320	320	320	300	290	255	220	220
		in.lb	2655	2655	2832	2832	2832	2832	2832	2832	2655	2567	2257	1947	1947
Emergency Stop Torque	T_{2Not}	*Nm*	900	900	960	960	960	960	960	960	900	870	765	660	660
		in.lb	7966	7966	8497	8497	8497	8497	8497	8497	7966	7700	6771	5841	5841
Maximum Acceleration Torque	T_{2B}	*Nm*	540	540	576	576	576	576	576	576	540	522	459	396	396
		in.lb	4779	4779	5098	5098	5098	5098	5098	5098	4779	4620	4062	3505	3505
Maximum Torque	T_{2a}	*Nm*	600	600	640	640	640	640	640	640	600	580	510	440	440
		in.lb	5310	5310	5664	5664	5664	5664	5664	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_{022}	*Nm*	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	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_t	arcmin	≤7												
Reduced Low Backlash P0	j_t	arcmin	≤5												
Ultra Low Backlash PU	j_t	arcmin	≤3												
Torsional Rigidity	C_{t21}	*Nm/arcmin*	90												
		in.lb/arcmin	796.56												
Maximum Radial Load	F_{2AMax}	*N*	7800												
		lb$_f$	1753												
Maximum Axial Load	F_{2QMax}	*N*	6000												
		lb$_f$	1349												
Max. Tilting Moment	M_{2KMax}	*Nm*	450												
		in.lb	3983												
Mass Moment of Inertia	j_1	kgcm^2	2.58	1.5	1.49	1.3	1.3	1.3	1.3	1.3	1.3	0.44	0.44	0.44	0.44
Operating Noise Level	L_{PA}	dB(A)	< 63												
Efficiency at Full loading	η	%	95												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	8												
		lb$_m$	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	14604	17259	16197	14338	13542	11683	11683
Maximum Acceleration Torque	T_{2B}	*Nm*	990	1170	1098	972	918	792	792
		in.lb	8762	10355	9718	8603	8125	7010	7010
Maximum Torque	T_{2a}	*Nm*	1100	1300	1220	1080	1020	880	880
		in.lb	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*	2.6	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_t	arcmin	≤5						
Reduced Low Backlash P0	j_t	arcmin	≤3						
Ultra Low Backlash PU	j_t	arcmin	≤1						
Torsional Rigidity	C_{t21}	*Nm/arcmin*	205						
		in.lb/arcmin	1814.39						
Maximum Radial Load	F_{2AMax}	*N*	12000						
		lb$_f$	2698						
Maximum Axial Load	F_{2QMax}	*N*	10000						
		lb$_f$	2248						
Max. Tilting Moment	M_{2KMax}	*Nm*	1012						
		in.lb	8957						
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97						
Operating Temperature		℃	−25 to +90						
		F	−13 to +194						
Lubrication			Synthetic Lubrication Grease						
Mouting Position			Any Directions						
Protection Class			IP 65						
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
Weight	*m*	kg	20						
		lb$_m$	44.0						

KPH160 2-stage

			2-stage											
Ratio	i		16	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	550	550	650	650	650	650	650	650	610	540	510	440	440
		in.lb	4868	4868	5753	5753	5753	5753	5753	5753	5399	4779	4514	3894	3894
Emergency Stop Torque	T_{2Not}	*Nm*	1650	1650	1950	1950	1950	1950	1950	1950	1830	1620	1530	1320	1320
		in.lb	14604	14604	17259	17259	17259	17259	17259	17259	16197	14338	13542	11683	11683
Maximum Acceleration Torque	T_{2B}	*Nm*	990	990	1170	1170	1170	1170	1170	1170	1098	972	918	792	792
		in.lb	8762	8762	10355	10355	10355	10355	10355	10355	9718	8603	8125	7010	7010
Maximum Torque	T_{2a}	*Nm*	1100	1100	1300	1300	1300	1300	1300	1300	1220	1080	1020	880	880
		in.lb	9736	9736	11506	11506	11506	11506	11506	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*	2.6	2.6	2.6	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
		in.lb	23.01	23.01	23.01	22.13	22.13	22.13	22.13	22.13	22.13	22.13	22.13	22.13	22.13
Standard Backlash P1	j_t	arcmin	≤7												
Reduced Low Backlash P0	j_t	arcmin	≤5												
Ultra Low Backlash PU	j_t	arcmin	≤3												
Torsional Rigidity	C_{t21}	*Nm/arcmin*	205												
		in.lb/arcmin	1814.39												
Maximum Radial Load	F_{2AMax}	*N*	12000												
		lb$_f$	2698												
Maximum Axial Load	F_{2QMax}	*N*	10000												
		lb$_f$	2248												
Max. Tilting Moment	M_{2KMax}	*Nm*	1012												
		in.lb	8957												
Mass Moment of Inertia	j_1	kgcm^2	12.35	6.65	5.81	5.36	5.36	4.08	5.36	4.08	7.4	7.4	7.4	7.3	7.3
Operating Noise Level	L_{PA}	dB(A)	< 65												
Efficiency at Full loading	η	%	95												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	25												
		lb$_m$	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	10621	8851	8851	8851	8054	8054
Emergency Stop Torque	T_{2Not}	*Nm*	3750	3600	3000	3000	3000	2730	2730
		in.lb	33190	31863	26552	26552	26552	24162	24162
Maximum Acceleration Torque	T_{2B}	*Nm*	2250	2160	1800	1800	1800	1638	1638
		in.lb	19914	19118	15931	15931	15931	14497	14497
Maximum Torque	T_{2a}	*Nm*	2500	2400	2000	2000	2000	1820	1820
		in.lb	22127	21242	17701	17701	17701	16108	16108
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_t	arcmin	≤5						
Reduced Low Backlash P0	j_t	arcmin	≤3						
Ultra Low Backlash PU	j_t	arcmin	≤1						
Torsional Rigidity	C_{t21}	*Nm/arcmin*	560						
		in.lb/arcmin	4956.39						
Maximum Radial Load	F_{2AMax}	*N*	18000						
		lb$_f$	4046						
Maximum Axial Load	F_{2AMax}	*N*	15000						
		lb$_f$	3372						
Max. Tilting Moment	M_{2KMax}	*Nm*	2050						
		in.lb	18144						
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97						
Operating Temperature		℃	−25 to +90						
		F	−13 to +194						
Lubrication			Synthetic Lubrication Grease						
Mouting Position			Any Directions						
Protection Class			IP 65						
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
Weight	*m*	kg	31						
		lb$_m$	68.2						

KPH205 2-stage

			2-stage											
Ratio	i		16	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	1250	1250	1200	1200	1200	1200	1200	1200	1000	1000	1000	910	910
		in.lb	11063	11063	10621	10621	10621	10621	10621	10621	8851	8851	8851	8054	8054
Emergency Stop Torque	T_{2Not}	*Nm*	3750	3750	3600	3600	3600	3600	3600	3600	3000	3000	3000	2730	2730
		in.lb	33190	33190	31863	31863	31863	31863	31863	31863	26552	26552	26552	24162	24162
Maximum Acceleration Torque	T_{2B}	*Nm*	2250	2250	2160	2160	2160	2160	2160	2160	1800	1800	1800	1638	1638
		in.lb	19914	19914	19118	19118	19118	19118	19118	19118	15931	15931	15931	14497	14497
Maximum Torque	T_{2a}	*Nm*	2500	2500	2400	2400	2400	2400	2400	2400	2000	2000	2000	1820	1820
		in.lb	22127	22127	21242	21242	21242	21242	21242	21242	17701	17701	17701	16108	16108
Permitted Average Input Speed	n_{1N}	*rpm*	2000												
Maximum Input Speed	n_{1Max}	*rpm*	4000												
Mean No Load Running Torque	T_{012}	*Nm*	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
		in.lb	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
Standard Backlash P1	j_t	arcmin	≤7												
Reduced Low Backlash P0	j_t	arcmin	≤5												
Ultra Low Backlash PU	j_t	arcmin	≤3												
Torsional Rigidity	C_{t21}	*Nm/arcmin*	560												
		in.lb/arcmin	4956.39												
Maximum Radial Load	F_{2AMax}	*N*	18000												
		lb$_f$	4046												
Maximum Axial Load	F_{2QMax}	*N*	15000												
		lb$_f$	3372												
Max. Tilting Moment	M_{2KMax}	*Nm*	2050												
		in.lb	18144												
Mass Moment of Inertia	j_1	kgcm^2	12.3	7.42	7.54	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	η	%	95												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	39												
		lb$_m$	85.8												

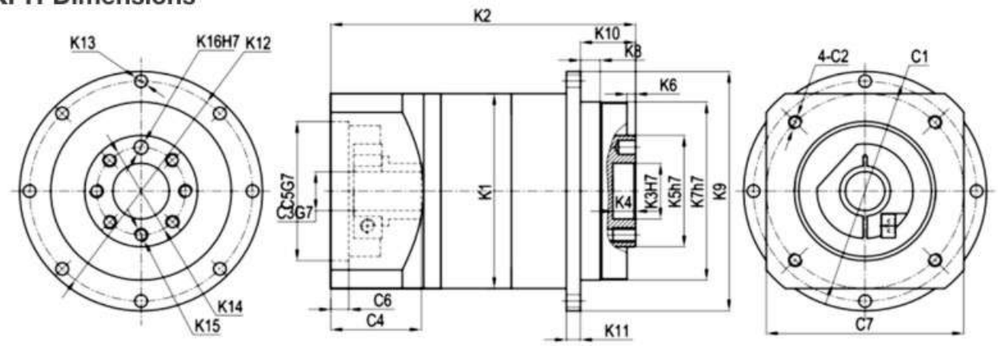
KPH255 1-stage

			1-stage						
Ratio	i		4	5	6	7	8	9	10
Nominal Output Torque		Nm	1800	2050	1850	1750	1550	1500	1500
		in.lb	15931	18144	16374	15489	13719	13276	13276
Emergency Stop Torque	T_{2Not}	*Nm*	5400	6150	5550	5250	4650	4500	4500
		in.lb	47794	54432	49121	46466	41156	39828	39828
Maximum Acceleration Torque	T_{2B}	*Nm*	3240	3690	3330	3150	2790	2700	2700
		in.lb	28676	32659	29473	27880	24693	23897	23897
Maximum Torque	T_{2a}	*Nm*	3600	4100	3700	3500	3100	3000	3000
		in.lb	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*	5.5	5.25	5.1	5.1	5.1	5.1	5.1
		in.lb	48.68	46.47	45.14	45.14	45.14	45.14	45.14
Standard Backlash P1	j_t	arcmin	≤5						
Reduced Low Backlash P0	j_t	arcmin	≤3						
Ultra Low Backlash PU	j_t	arcmin	≤1						
Torsional Rigidity	C_{t21}	*Nm/arcmin*	1130						
		in.lb/arcmin	10001.29						
Maximum Radial Load	F_{2AMax}	*N*	45000						
		lb$_f$	10116						
Maximum Axial Load	F_{2QMax}	*N*	22500						
		lb$_f$	5058						
Max. Tilting Moment	M_{2KMax}	*Nm*	6085						
		in.lb	53857						
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	97						
Operating Temperature		℃	−25 to +90						
		F	−13 to +194						
Lubrication			Synthetic Lubrication Grease						
Mouting Position			Any Directions						
Protection Class			IP 65						
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
Weight	*m*	kg	70						
		lb$_m$	154						

KPH255 2-stage

			2-stage											
Ratio	i		16	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	1800	1800	2050	2050	2050	2050	2050	2050	1850	1750	1550	1500	1500
		in.lb	15930	15930	18143	18143	18143	18143	18143	18143	16373	15488	13718	13275	13275
Emergency Stop Torque	T_{2Not}	*Nm*	5400	5400	6150	6150	6150	6150	6150	6150	5550	5250	4650	4500	4500
		in.lb	47790	47790	54428	54428	54428	54428	54428	54428	49118	46463	41153	39825	39825
Maximum Acceleration Torque	T_{2B}	*Nm*	3240	3240	3690	3690	3690	3690	3690	3690	3330	3150	2790	2700	2700
		in.lb	28674	28674	32657	32657	32657	32657	32657	32657	29471	27878	24692	23895	23895
Maximum Torque	T_{2a}	*Nm*	3600	3600	4100	4100	4100	4100	4100	4100	3700	3500	3100	3000	3000
		in.lb	31860	31860	36285	36285	36285	36285	36285	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*	3.4	3.4	3.4	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
		in.lb	30.09	30.09	30.09	28.32	28.32	28.32	28.32	28.32	28.32	28.32	28.32	28.32	28.32
Standard Backlash P1	j_t	arcmin	≤7												
Reduced Low Backlash P0	j_t	arcmin	≤5												
Ultra Low Backlash PU	j_t	arcmin	≤3												
Torsional Rigidity	C_{t21}	*Nm/arcmin*	1130												
		in.lb/arcmin	10001.29												
Maximum Radial Load	F_{2AMax}	*N*	45000												
		lb$_f$	10116												
Maximum Axial Load	F_{2QMax}	*N*	22500												
		lb$_f$	5058												
Max. Tilting Moment	M_{2KMax}	*Nm*	6085												
		in.lb	53857												
Mass Moment of Inertia	j_1	kgcm^2	28.92	13.75	7.54	6.59	6.59	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	η	%	95												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	80												
		lb$_m$	176												

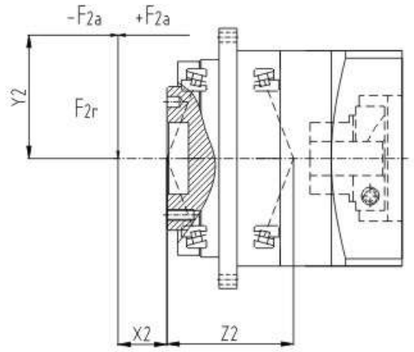
KPH Dimensions



Model	KPH050		KPH070		KPH090		KPH120		KPH160		KPH205		KPH255	
Stage	1	2	1	2	1	2	1	2	1	2	1	2	1	2
K1	60		70		90		120		160		210		253	
	2.362		2.756		3.543		4.724		6.299		8.268		9.961	
K2	92.8	107.8	108	131.7	137.2	168.5	177	218.8	232.7	293.7	235	297	307	402.5
	3.654	4.244	4.252	5.185	5.402	6.634	6.969	8.614	9.161	11.563	9.252	11.693	12.087	15.846
K3	12		20		31.5		40		50		80		100	
	0.472		0.787		1.240		1.575		1.969		3.150		3.937	
K4	4		8		12		12		12		22.5		20	
	0.157		0.315		0.472		0.472		0.472		0.886		0.787	
K5	28		40		63		80		100		160		180	
	1.102		1.575		2.480		3.150		3.937		6.299		7.087	
K6	3		3		6		6		6		6		12	
	0.118		0.118		0.236		0.236		0.236		0.236		0.472	
K7	47		64		90		110		140		200		255	
	1.850		2.520		3.543		4.331		5.512		7.874		10.039	
K8	7		7		10		10		14.6		15		20	
	0.276		0.276		0.394		0.394		0.575		0.591		0.787	
K9	72		86		118		145		179		247		300	
	2.835		3.386		4.646		5.709		7.047		9.724		11.811	
K10	17.5		19.5		30		29		38		56		66	
	0.689		0.768		1.181		1.142		1.496		2.205		2.598	
K11	4		5		8		10		10		12		18	
	0.157		0.197		0.315		0.394		0.394		0.472		0.709	
K12	67		79		109		135		168		233		280	
	2.638		3.110		4.291		5.315		6.614		9.173		11.024	
K13	3.4X8		4.5X8		5.5X8		5.5X8		6.6X12		9X12		13.5X16	
	0.134X8		0.177X8		0.217X8		0.217X8		0.260X12		0.354X12		0.531X12	
K14	20.0		31.5		50		63		80		125		140	
	0.787		1.240		1.969		2.480		3.150		4.921		5.512	
K15	4-M3X8		7-M5X8		7-M6X12		11-M6X15		11-M8X18		11-M10X17		12-M16X25	
K16	3X5		5X6		6X7		6X7		8X8		10X10		16X10	
	0.118X5		0.197X6		0.236X7		0.236X7		0.315X8		0.394X10		0.63X10	
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		
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	8	7.087
C6	5		6.5		6.5		8		8	8	8	0.315		
	0.197		0.256		0.256		0.315		0.315	0.315	0.315			
C7	60		70		97		120		175	190	175	220		190
	2.362		2.756		3.819		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

KPH Titling moment



$$M_{2kb} = \frac{2 \cdot F_{2a} \cdot y_2 + F_{2rb} \cdot (x_2 + Z_2)}{1000}$$

KPH	050	070	090	120	160	205	255
Z2[mm]	40.5	32.136	50.6	57.7	84.37	113.9	135.22
M_{2kb}	28	80	228	450	1012	2050	6085

Technical Memo

Technical Memo

KOFON Drive the World | CaesarPlanetary

KVH

Powerful. High Precision. Reliable

- Servo Planetary Gearbox

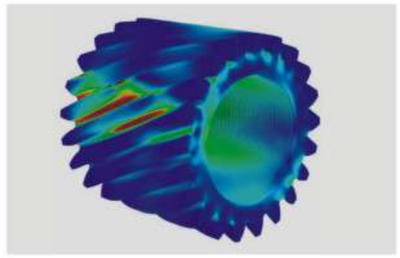
Advanced Gearbox Solution





Helical Gear System Technology

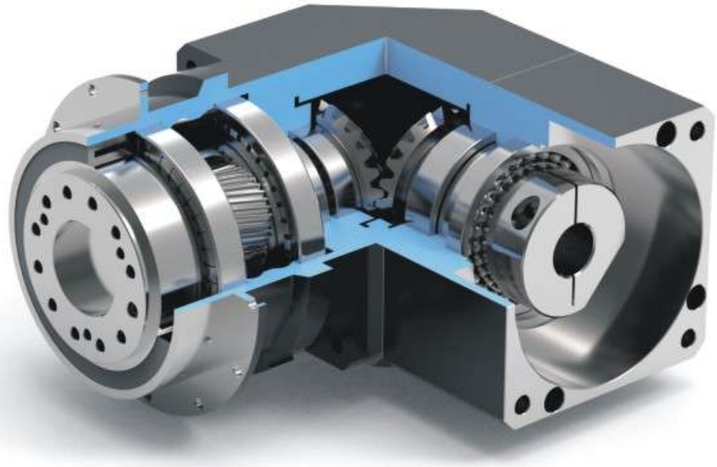
Thanks to the tooth to tooth compact ratio more than 60%.The helical gearing and full needle bearing bring the benefits including higher torque capacity, smooth and lower noise running, decreased backlash and higher efficiency. Integrated housing engineering with super skiving gearing tooling craft.



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.

Order Instructions

Order Code:

KVH — 120 — 02 — 015 — P0 — Servo Motor

KVH

Gearbox Series: KVH

120

Gearbox Size

02

Gearbox Stage

015

Gearbox Ratio

P0

Gearbox Precision

Servo Motor

Motor Manufacturer and model

Technical Memo

KVH070 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*	94	99	90	90	81	76	76
		in.lb	828	876	797	797	717	669	669
Maximum Torque	T_{2e}	*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*	0.35	0.32	0.3	0.3	0.3	0.3	0.3
		in.lb	3.10	2.83	2.66	2.66	2.66	2.66	2.66
Standard Backlash P1	j_t	arcmin	≤7						
Reduced Low Backlash P0	j_t	arcmin	≤5						
Ultra Low Backlash PU	j_t	arcmin	≤3						
Torsional Rigidity	C_{t21}	*Nm/arcmin*	14						
		in.lb/arcmin	123.91						
Maximum Radial Load	F_{2AMax}	*N*	2500						
		lb_f	562						
Maximum Axial Load	F_{2AMax}	*N*	2000						
		lb_f	450						
Max. Tilting Moment	M_{2KMax}	*Nm*	80						
		in.lb	708						
Mass Moment of Inertia	j_1	kgcm²	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	η	%	95						
Operating Temperature		℃	−25 to +90						
		F	−13 to +194						
Lubrication			Synthetic Lubrication Grease						
Mouting Position			Any Directions						
Protection Class			IP 65						
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
Weight	*m*	kg	2.3						
		lb_m	5.07						

KVH070 2-stage

			2-stage											
Ratio	i		16	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	52	52	55	55	55	55	55	55	50	50	45	42	42
		in.lb	460	460	487	487	487	487	487	487	443	443	398	372	372
Emergency Stop Torque	T_{2Not}	*Nm*	156	156	165	165	165	165	165	165	150	150	135	126	126
		in.lb	1381	1381	1460	1460	1460	1460	1460	1460	1328	1328	1195	1115	1115
Maximum Acceleration Torque	T_{2B}	*Nm*	93.6	93.6	99	99	99	99	99	99	90	90	81	75.6	75.6
		in.lb	828	828	876	876	876	876	876	876	797	797	717	669	669
Maximum Torque	T_{2e}	*Nm*	104	104	110	110	110	110	110	110	100	100	90	84	84
		in.lb	920	920	974	974	974	974	974	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*	0.32	0.32	0.32	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
		in.lb	2.83	2.83	2.83	2.66	2.66	2.66	2.66	2.66	2.66	2.66	2.66	2.66	2.66
Standard Backlash P1	j_t	arcmin	≤9												
Reduced Low Backlash P0	j_t	arcmin	≤7												
Ultra Low Backlash PU	j_t	arcmin	≤5												
Torsional Rigidity	C_{t21}	*Nm/arcmin*	14												
		in.lb/arcmin	123.91												
Maximum Radial Load	F_{2AMax}	*N*	2500												
		lb_f	562												
Maximum Axial Load	F_{2AMax}	*N*	2000												
		lb_f	450												
Max. Tilting Moment	M_{2KMax}	*Nm*	80												
		in.lb	708												
Mass Moment of Inertia	j_1	kgcm²	0.075	0.075	0.075	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	η	%	93												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	2.8												
		lb_m	6.17												

KVH090 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	4116	3850	3585	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_{2e}	*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*	0.51	0.46	0.44	0.85	0.85	0.85	0.85
		in.lb	4.51	4.07	3.89	7.52	7.52	7.52	7.52
Standard Backlash P1	j_t	arcmin	≤7						
Reduced Low Backlash P0	j_t	arcmin	≤5						
Ultra Low Backlash PU	j_t	arcmin	≤3						
Torsional Rigidity	C_{t21}	*Nm/arcmin*	35						
		in.lb/arcmin	309.77						
Maximum Radial Load	F_{2AMax}	*N*	4500						
		lb_f	1012						
Maximum Axial Load	F_{2AMax}	*N*	3500						
		lb_f	787						
Max. Tilting Moment	M_{2KMax}	*Nm*	228						
		in.lb	2018						
Mass Moment of Inertia	j_1	$kgcm^2$	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	η	%	95						
Operating Temperature		℃	−25 to +90						
		F	−13 to +194						
Lubrication			Synthetic Lubrication Grease						
Mouting Position			Any Directions						
Protection Class			IP 65						
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
Weight	*m*	kg	5.4						
		lb_m	119.05						

KVH090 2-stage

			2-stage											
Ratio	i		16	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	145	145	155	155	155	155	155	155	145	135	115	105	105
		in.lb	1283	1283	1372	1372	1372	1372	1372	1372	1283	1195	1018	929	929
Emergency Stop Torque	T_{2Not}	*Nm*	435	435	465	465	465	465	465	465	435	405	345	315	315
		in.lb	3850	3850	4116	4116	4116	4116	4116	4116	3850	3585	3053	2788	2788
Maximum Acceleration Torque	T_{2B}	*Nm*	261	261	279	279	279	279	279	279	261	165	165	151	151
		in.lb	2310	2310	2469	2469	2469	2469	2469	2469	2310	1460	1460	1336	1336
Maximum Torque	T_{2e}	*Nm*	290	290	310	310	310	310	310	310	290	270	230	210	210
		in.lb	2567	2567	2744	2744	2744	2744	2744	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	0.46	0.46	0.44	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
		in.lb	4.07	4.07	4.07	3.89	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54
Standard Backlash P1	j_t	arcmin	≤9												
Reduced Low Backlash P0	j_t	arcmin	≤7												
Ultra Low Backlash PU	j_t	arcmin	≤5												
Torsional Rigidity	C_{t21}	*Nm/arcmin*	35												
		in.lb/arcmin	309.77												
Maximum Radial Load	F_{2AMax}	*N*	4500												
		lb_f	1012												
Maximum Axial Load	F_{2AMax}	*N*	3500												
		lb_f	787												
Max. Tilting Moment	M_{2KMax}	*Nm*	228												
		in.lb	2018												
Mass Moment of Inertia	j_1	$kgcm^2$	0.44	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)	< 65												
Efficiency at Full loading	η	%	93												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	6.8												
		lb_m	14.99												

KVH120 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	7966	8497	7966	7700	6771	5841	5841
Maximum Acceleration Torque	T_{2B}	*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*	1.25	1.15	1.11	1.08	1.08	1.08	1.08
		in.lb	11.06	10.18	9.82	9.56	9.56	9.56	9.56
Standard Backlash P1	j_t	arcmin	≤7						
Reduced Low Backlash P0	j_t	arcmin	≤5						
Ultra Low Backlash PU	j_t	arcmin	≤3						
Torsional Rigidity	C_{t21}	*Nm/arcmin*	90						
		in.lb/arcmin	796.56						
Maximum Radial Load	F_{2AMax}	*N*	7800						
		lb_f	1753						
Maximum Axial Load	F_{2AMax}	*N*	6000						
		lb_f	1349						
Max. Tilting Moment	M_{2KMax}	*Nm*	450						
		in.lb	3983						
Mass Moment of Inertia	j_1	$kgcm^2$	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	η	%	95						
Operating Temperature		℃	−25 to +90						
		F	−13 to +194						
Lubrication			Synthetic Lubrication Grease						
Mouting Position			Any Directions						
Protection Class			IP 65						
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
Weight	*m*	kg	20						
		lb_m	44.09						

KVH120 2-stage

			2-stage											
Ratio	i		16	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	300	300	320	320	320	320	320	320	300	290	255	220	220
		in.lb	2655	2655	2832	2832	2832	2832	2832	2832	2655	2567	2257	1947	1947
Emergency Stop Torque	T_{2Not}	*Nm*	900	900	960	960	960	960	960	960	900	612	765	660	660
		in.lb	7966	7966	8497	8497	8497	8497	8497	8497	7966	5417	6771	5841	5841
Maximum Acceleration Torque	T_{2B}	*Nm*	540	540	576	576	576	576	576	576	540	367	459	396	396
		in.lb	4779	4779	5098	5098	5098	5098	5098	5098	4779	3248	4062	3505	3505
Maximum Torque	T_{2a}	*Nm*	600	600	640	640	640	640	640	640	600	580	510	440	440
		in.lb	5310	5310	5664	5664	5664	5664	5664	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*	1.15	1.15	1.15	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08
		in.lb	10.18	10.18	10.18	9.56	9.56	9.56	9.56	9.56	9.56	9.56	9.56	9.56	9.56
Standard Backlash P1	j_t	arcmin	≤9												
Reduced Low Backlash P0	j_t	arcmin	≤7												
Ultra Low Backlash PU	j_t	arcmin	≤5												
Torsional Rigidity	C_{t21}	*Nm/arcmin*	90												
		in.lb/arcmin	796.56												
Maximum Radial Load	F_{2AMax}	*N*	7800												
		lb_f	1753												
Maximum Axial Load	F_{2AMax}	*N*	6000												
		lb_f	1349												
Max. Tilting Moment	M_{2KMax}	*Nm*	450												
		in.lb	3983												
Mass Moment of Inertia	j_1	$kgcm^2$	1.5	1.5	1.49	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)	< 68												
Efficiency at Full loading	η	%	93												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	28.8												
		lb_m	63.49												

KVH160 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	14604	17259	16197	14338	13542	11683	11683
Maximum Acceleration Torque	T_{2B}	*Nm*	990	1170	1098	972	918	792	792
		in.lb	8762	10355	9718	8603	8125	7010	7010
Maximum Torque	T_{2a}	*Nm*	1100	1300	1220	1080	1020	880	880
		in.lb	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	2.9	2.8	2.8	2.8	2.8	2.8
		in.lb	26.55	25.67	24.78	24.78	24.78	24.78	24.78
Standard Backlash P1	j_t	arcmin	≤7						
Reduced Low Backlash P0	j_t	arcmin	≤5						
Ultra Low Backlash PU	j_t	arcmin	≤3						
Torsional Rigidity	C_{t21}	*Nm/arcmin*	205						
		in.lb/arcmin	1814.39						
Maximum Radial Load	F_{2AMax}	*N*	12000						
		lb_f	2697.60						
Maximum Axial Load	F_{2GMax}	*N*	10000						
		lb_f	2248.00						
Max. Tilting Moment	M_{2KMax}	*Nm*	1012						
		in.lb	8957						
Mass Moment of Inertia	j_1	$kgcm^2$	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	η	%	95						
Operating Temperature		℃	−25 to +90						
		F	−13 to +194						
Lubrication			Synthetic Lubrication Grease						
Mouting Position			Any Directions						
Protection Class			IP 65						
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
Weight	*m*	kg	26						
		lb_m	57.32						

KVH160 2-stage

			2-stage											
Ratio	i		16	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	550	550	650	650	650	650	650	650	610	540	510	440	440
		in.lb	4868	4868	5753	5753	5753	5753	5753	5753	5399	4779	4514	3894	3894
Emergency Stop Torque	T_{2Not}	*Nm*	1650	1650	1950	1950	1950	1950	1950	1950	1830	1620	1530	1320	1320
		in.lb	14604	14604	17259	17259	17259	17259	17259	17259	16197	14338	13542	11683	11683
Maximum Acceleration Torque	T_{2B}	*Nm*	990	990	1170	1170	1170	1170	1170	1170	1098	972	918	792	792
		in.lb	8762	8762	10355	10355	10355	10355	10355	10355	9718	8603	8125	7010	7010
Maximum Torque	T_{2a}	*Nm*	1100	1100	1300	1300	1300	1300	1300	1300	1220	1080	1020	880	880
		in.lb	9736	9736	11506	11506	11506	11506	11506	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	3	3	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
		in.lb	26.55	26.55	26.55	25.67	25.67	25.67	25.67	25.67	25.67	25.67	25.67	25.67	25.67
Standard Backlash P1	j_t	arcmin	≤9												
Reduced Low Backlash P0	j_t	arcmin	≤7												
Ultra Low Backlash PU	j_t	arcmin	≤5												
Torsional Rigidity	C_{t21}	*Nm/arcmin*	205												
		in.lb/arcmin	1814.39												
Maximum Radial Load	F_{2AMax}	*N*	12000												
		lb_f	2697.6												
Maximum Axial Load	F_{2GMax}	*N*	10000												
		lb_f	2248												
Max. Tilting Moment	M_{2KMax}	*Nm*	1012												
		in.lb	8957												
Mass Moment of Inertia	j_1	$kgcm^2$	6.65	6.65	5.81	6.34	5.36	4.08	5.36	4.08	7.4	7.5	7.4	7.4	7.3
Operating Noise Level	L_{PA}	dB(A)	< 70												
Efficiency at Full loading	η	%	93												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	31												
		lb_m	68.34												

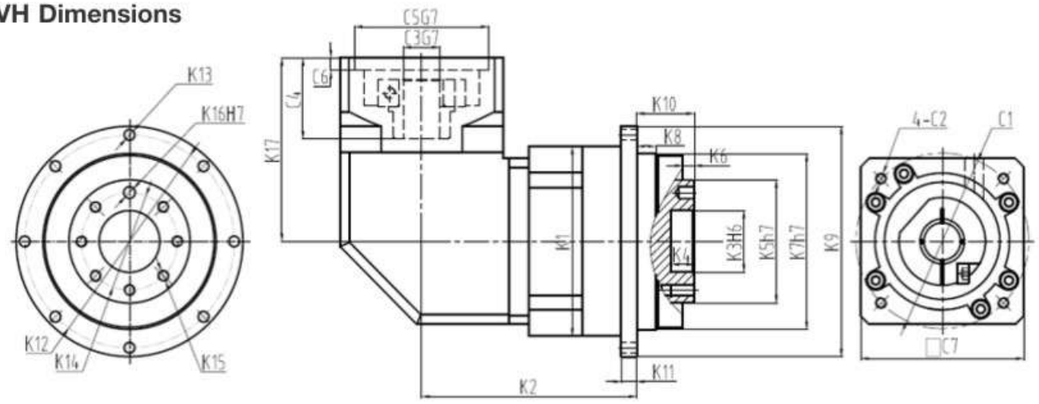
KVH205 1-stage

			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	10621	8851	8851	8851	8054	8054
Emergency Stop Torque	T_{2Not}	*Nm*	3750	3600	3000	3000	3000	2730	2730
		in.lb	33190	31863	26552	26552	26552	24162	24162
Maximum Acceleration Torque	T_{2B}	*Nm*	2250	2160	1800	1800	1800	1638	1638
		in.lb	19914	19118	15931	15931	15931	14497	14497
Maximum Torque	T_{2a}	*Nm*	2500	2400	2000	2000	2000	1820	1820
		in.lb	22127	21242	17701	17701	17701	16108	16108
Permitted Average Input Speed	n_{1N}	*rpm*	2000						
Maximum Input Speed	n_{1Max}	*rpm*	4000						
Mean No Load Running Torque	T_{012}	*Nm*	3.9	3.8	3.6	3.6	3.6	3.6	3.6
		in.lb	34.52	33.63	31.86	31.86	31.86	31.86	31.86
Standard Backlash P1	j_t	arcmin	≤7						
Reduced Low Backlash P0	j_t	arcmin	≤5						
Ultra Low Backlash PU	j_t	arcmin	≤3						
Torsional Rigidity	C_{t21}	*Nm/arcmin*	560						
		in.lb/arcmin	4956.39						
Maximum Radial Load	F_{2AMax}	*N*	18000						
		lb$_f$	4046						
Maximum Axial Load	F_{2GMax}	*N*	15000						
		lb$_f$	3372						
Max. Tilting Moment	M_{2KMax}	*Nm*	2050						
		in.lb	18144						
Mass Moment of Inertia	j_1	kgcm^2	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	η	%	95						
Operating Temperature		℃	−25 to +90						
		F	−13 to +194						
Lubrication			Synthetic Lubrication Grease						
Mouting Position			Any Directions						
Protection Class			IP 65						
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
Weight	*m*	kg	41						
		lb$_m$	90.39						

KVH205 2-stage

			2-stage											
Ratio	i		16	20	25	30	35	40	45	50	60	70	80	90	100
Nominal Output Torque		Nm	1250	1250	1200	1200	1200	1200	1200	1200	1000	1000	1000	910	910
		in.lb	11063	11063	10621	10621	10621	10621	10621	10621	8851	8851	8851	8054	8054
Emergency Stop Torque	T_{2Not}	*Nm*	3750	3750	3600	3600	3600	3600	3600	3600	3000	3000	3000	2730	2730
		in.lb	33190	33190	31863	31863	31863	31863	31863	31863	26552	26552	26552	24162	24162
Maximum Acceleration Torque	T_{2B}	*Nm*	2250	2250	2160	2160	2160	2160	2160	2160	1800	1800	1800	1638	1638
		in.lb	19914	19914	19118	19118	19118	19118	19118	19118	15931	15931	15931	14497	14497
Maximum Torque	T_{2a}	*Nm*	2500	2500	2400	2400	2400	2400	2400	2400	2000	2000	2000	1820	1820
		in.lb	22127	22127	21242	21242	21242	21242	21242	21242	17701	17701	17701	16108	16108
Permitted Average Input Speed	n_{1N}	*rpm*	2000												
Maximum Input Speed	n_{1Max}	*rpm*	4000												
Mean No Load Running Torque	T_{012}	*Nm*	2.9	2.9	2.9	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
		in.lb	25.67	25.67	25.67	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78
Standard Backlash P1	j_t	arcmin	≤9												
Reduced Low Backlash P0	j_t	arcmin	≤7												
Ultra Low Backlash PU	j_t	arcmin	≤5												
Torsional Rigidity	C_{t21}	*Nm/arcmin*	560												
		in.lb/arcmin	4956.39												
Maximum Radial Load	F_{2AMax}	*N*	18000												
		lb$_f$	4046.4												
Maximum Axial Load	F_{2GMax}	*N*	15000												
		lb$_f$	3372												
Max. Tilting Moment	M_{2KMax}	*Nm*	2050												
		in.lb	18144												
Mass Moment of Inertia	j_1	kgcm^2	7.42	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)	< 72												
Efficiency at Full loading	η	%	93												
Operating Temperature		℃	−25 to +90												
		F	−13 to +194												
Lubrication			Synthetic Lubrication Grease												
Mouting Position			Any Directions												
Protection Class			IP 65												
Service lifetime	L_h	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)												
Weight	*m*	kg	49												
		lb$_m$	108.03												

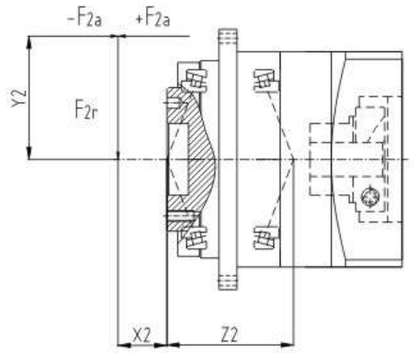
KVH Dimensions



Model	KVH070		KVH090		KVH120		KVH160		KVH205	
Stage	1	2	1	2	1	2	1	2	1	2
K1	Φ70		Φ97		Φ120		Φ160		Φ210	
K2	83.5	107.5	111.9	133.7	135.2	177	166.5	227.5	198	249.5
K3	Φ20		31.5		40		50		80	
K4	8		12		12		12		22.5	
K5	Φ40		Φ63		Φ80		Φ100		Φ160	
K6	3		6		6		6		6	
K7	Φ64		Φ90		Φ110		Φ140		Φ200	
K8	7		10		10		14.6		15	
K9	Φ86		Φ118		Φ145		Φ179		Φ247	
K10	19.5		30		29		38		56	
K11	5		8		10		10		112	
K12	Φ79		Φ109		Φ135		Φ168		Φ233	
K13	8-Φ4.5		8-Φ5.5		8-Φ5.5		12-Φ6.6		12-Φ9	
K14	Φ31.5		Φ50		Φ63		Φ80		Φ125	
K15	7-M5X8		7-M6X12		11-M6X15		11-M8X18		11-M10X17	
K16	Φ5X6		Φ6X7		Φ6X7		Φ8X8		Φ10X10	
K17	82.5		94		140		169		169	
C1	Φ70		Φ90		Φ145		Φ200		Φ200	
C2	M5X12		M6X15		M8X20		M12X25		M12X25	
C3	Φ14		Φ19		Φ24		Φ35		Φ35	
C4	32.1		41.6		61.3		82		82	
C5	Φ50		Φ70		Φ110		Φ114.3		Φ114.3	
C6	6.5		6.5		8		8		8	
C7	65		85		120		175		175	

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

KVH Titling moment



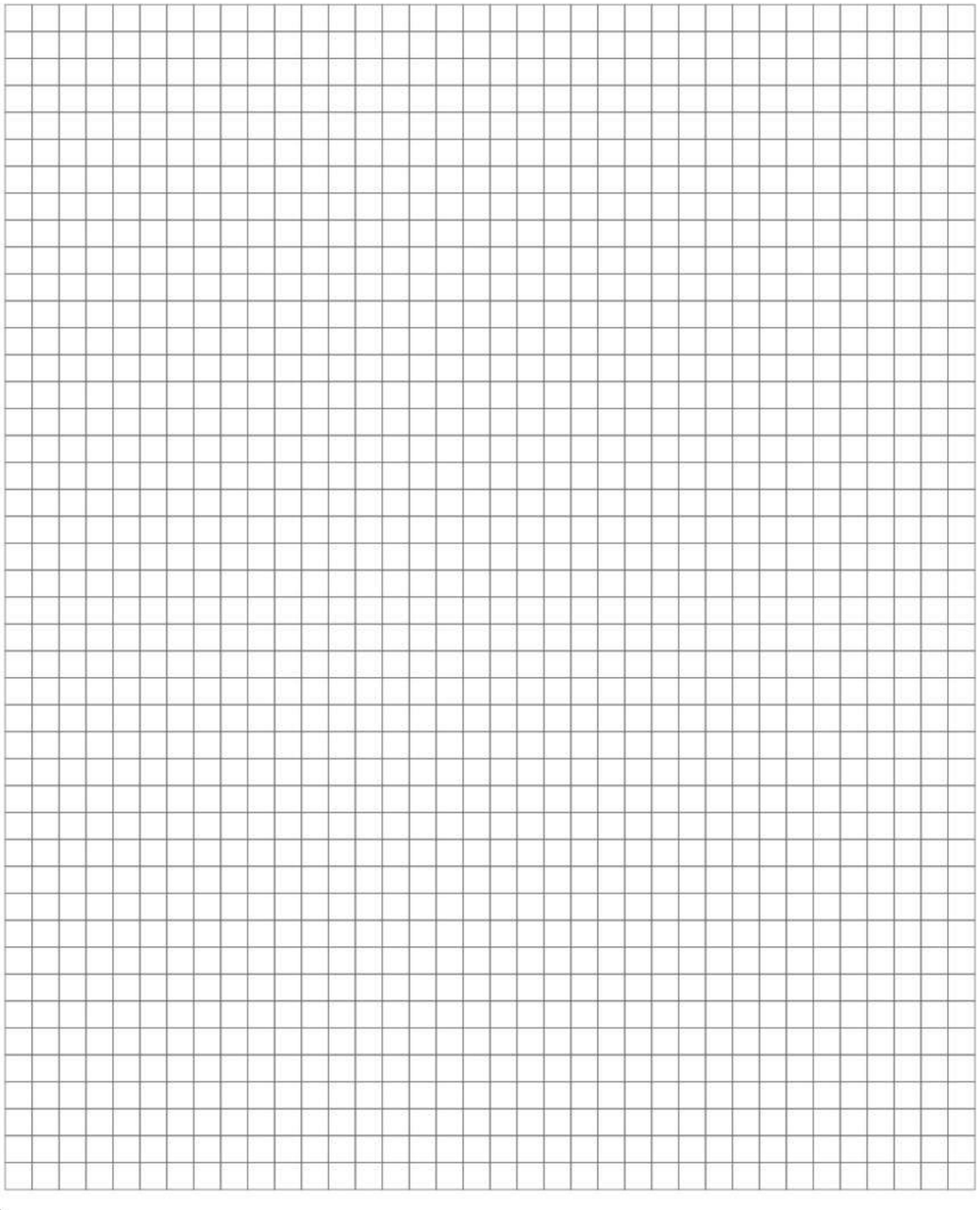
$$M_{2kb}=\frac{2\cdot F_{2a}\cdot y_2+F_{2rb}\cdot (x_2+Z_2)}{1000}$$

KVH	050	070	090	120	160	205	255
Z2[mm]	40.5	32.136	50.6	57.7	84.37	113.9	135.22
M_{2kb}	28	80	228	450	1012	2050	6085

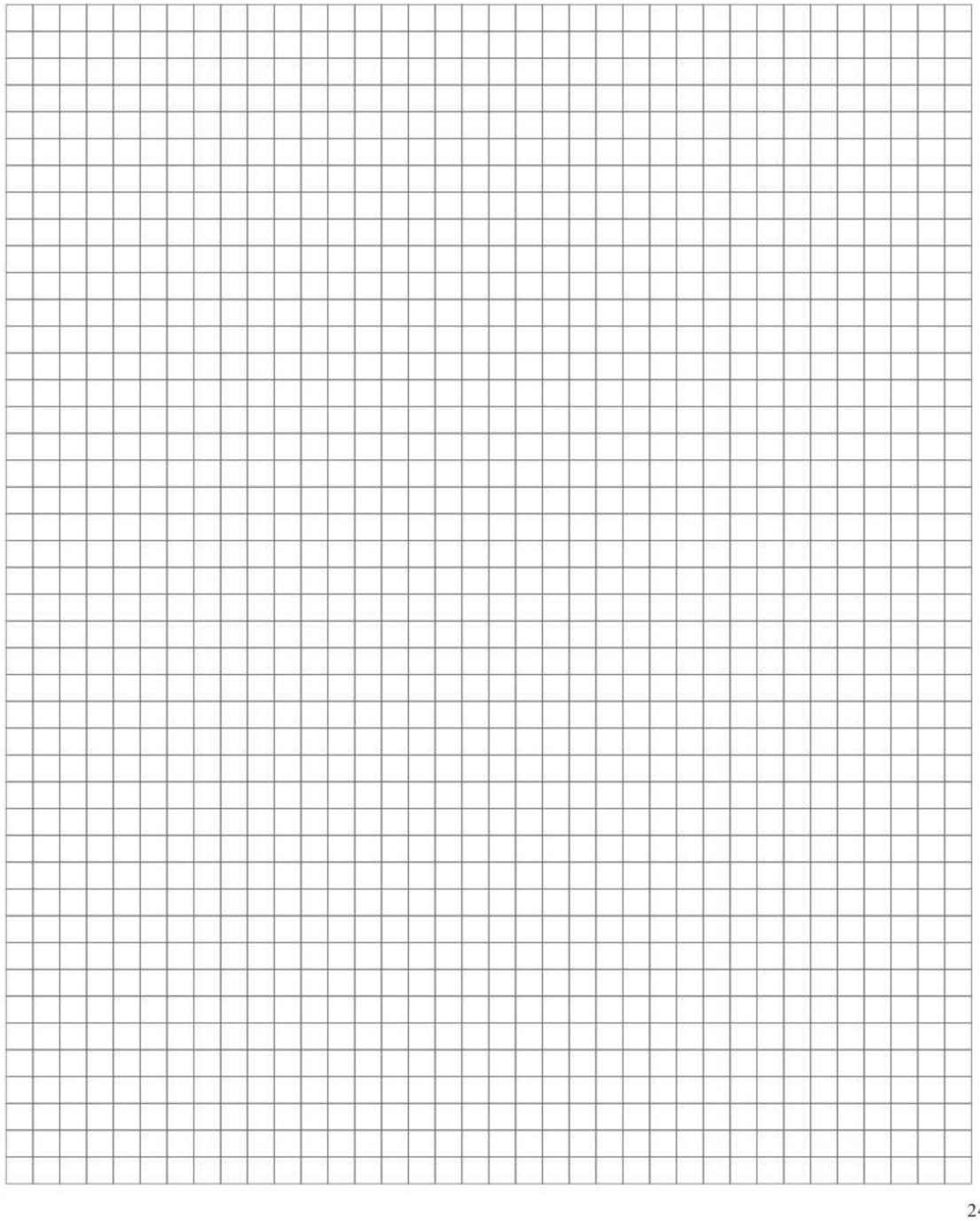
Technical Memo

Technical Memo

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.

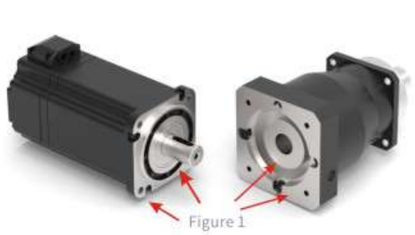


Figure 1



Figure 2

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.



Figure 3



Figure 4

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.



Figure 5



Figure 6

Table 1

	Product Modello	KPE050 XA050 KPLF-B050 KPX-B045 KPH050/KVH050	KPE070/KVE070 KPLN070 XA070/XAR070 KPLF-B070 KPX-B065/KVX-B065 KPH070/KVH070 KPG070/KVG070	KPE090/KVE090 KPLN090 XA090/XAR090 KPLF-B090 KPX-B085/KVX-B085 KPH090/KVH090 KPG090/KVG090	KPE120/KVE120 KPLN120 XA120/XAR120 KPLF-B120 KPX-B115/KVX-B115 KPH120/KVH120 KPG120/KVG120	KPE160/KVE160 KPLN160 XA160/XAR160 KPLF-B160 KPX-B142/KVX-B142 KPH160/KVH160 KPG160/KVG160	KPE205/KVE205 KPLN205 XA205/XAR205 KPLF-B205 KPX-B180/KVX-B180 KPH205/KVH205 KPG205/KVG205 KPE235 KPLN235 XA235 KPLF-B235 KPX-B220/KVX-B220 KPH255
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.

Maintenance Instruction

Gearbox grease quality should be checked regularly during the application. Timely replacement for polluted or deteriorated grease is required.

Under normal circumstances, for gearbox in long-term continuous work, replacement for new grease should be made for every 20,000 running hours or every two years. The grease of intermittent operation gearbox should be checked before re-operation. Re-lubrication can be conducted by professional manufacturers. The re-lubrication intervals and amount should be decided according to the operation situation. If the old grease can not be completely removed, the amount of applied grease should be limited to avoid excessive lubrication. If re-lubrication interval is relatively long, it is recommended to replace all the grease, and the grease dosage is preferably 1/3 of the internal space. If the input speed is relatively low, the grease amount can be increased, but can not exceed 1/2 of the internal space.

The rotary part of the output shaft adopts lip seal ring (TC type). The seal replacement is generally based on the leakage condition of the grease. For intermittent operation gearbox, the seal should be checked before re-operation to determine whether or not there is necessity for replacement which can be made just by removing the seal seat.

During the operation, when the temperature rise of the oil exceeds 90℃ or when there is abnormal noise, please stop and check the reason. The operation is not allowed to continue before the problem is solved.

The user shall have reasonable regulations and rules for use and maintenance of the gearboxes. Issues found during the operation and inspection should be carefully recorded. The above provisions should be strictly followed.

Technical Memo