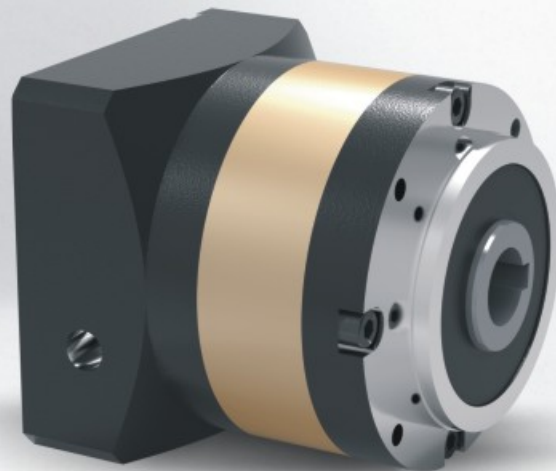


# KPLN

Powerful. High Precision. Reliable

▶ Servo Planetary Gearbox

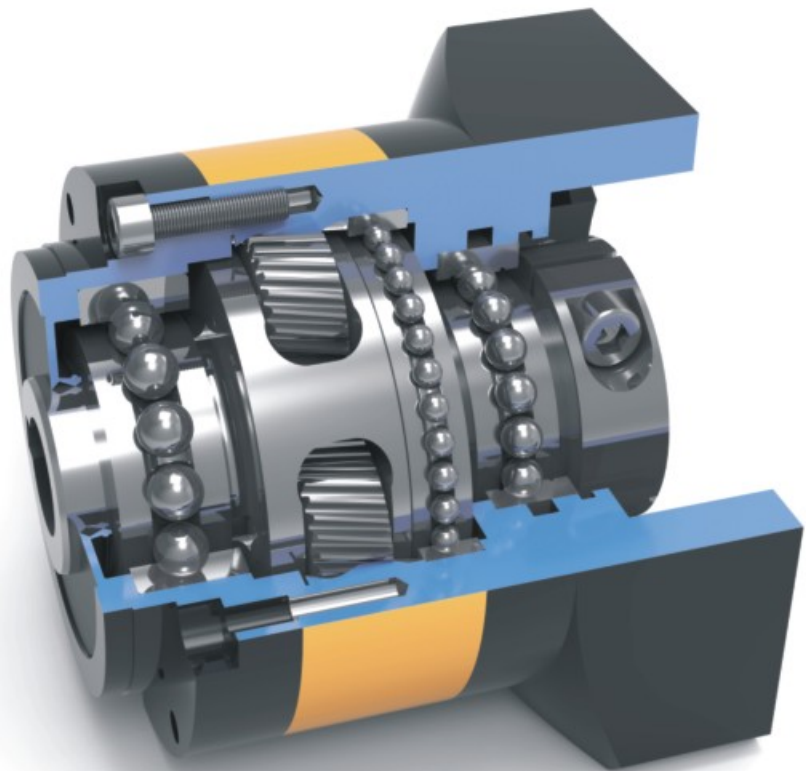
Advanced Gearbox Solution





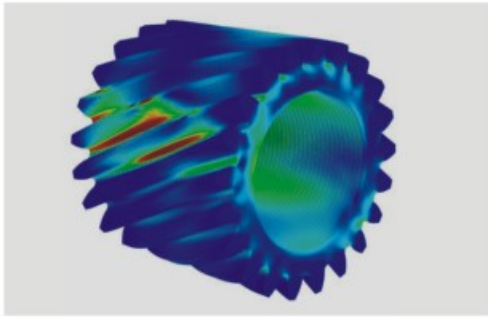
### Helical Gear System Technology

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.



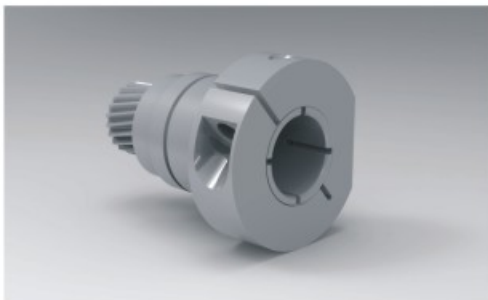
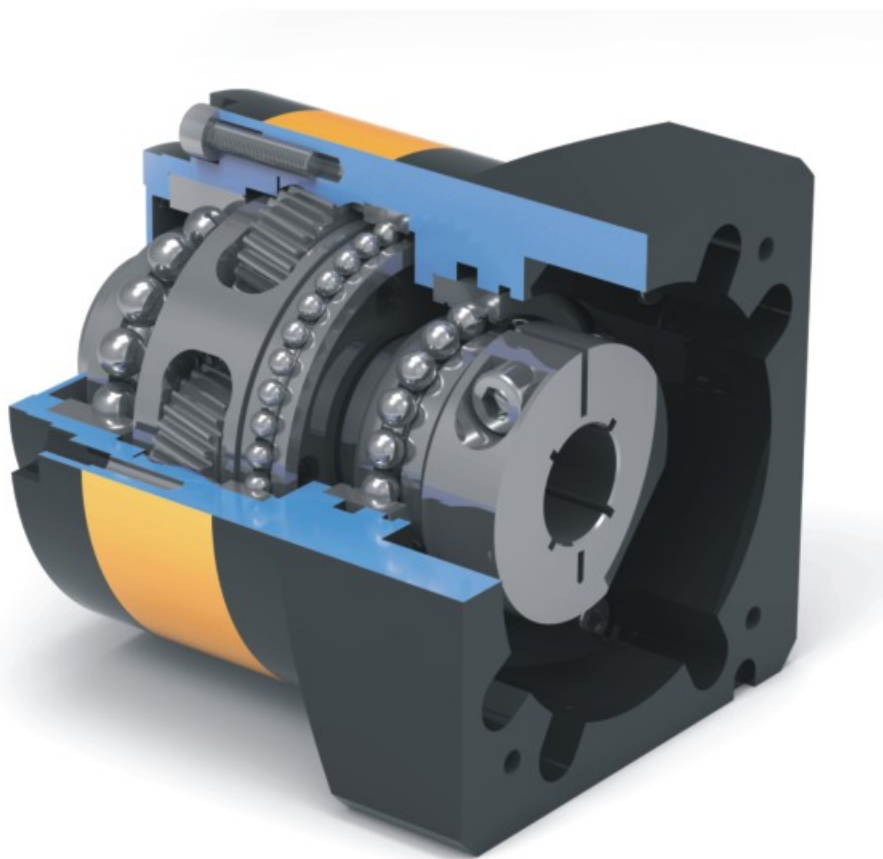
### Master CageSpindle Planetary Carrier

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.



### 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.



### 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.

KPLN Series Servo Planetary Gearbox

## 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**

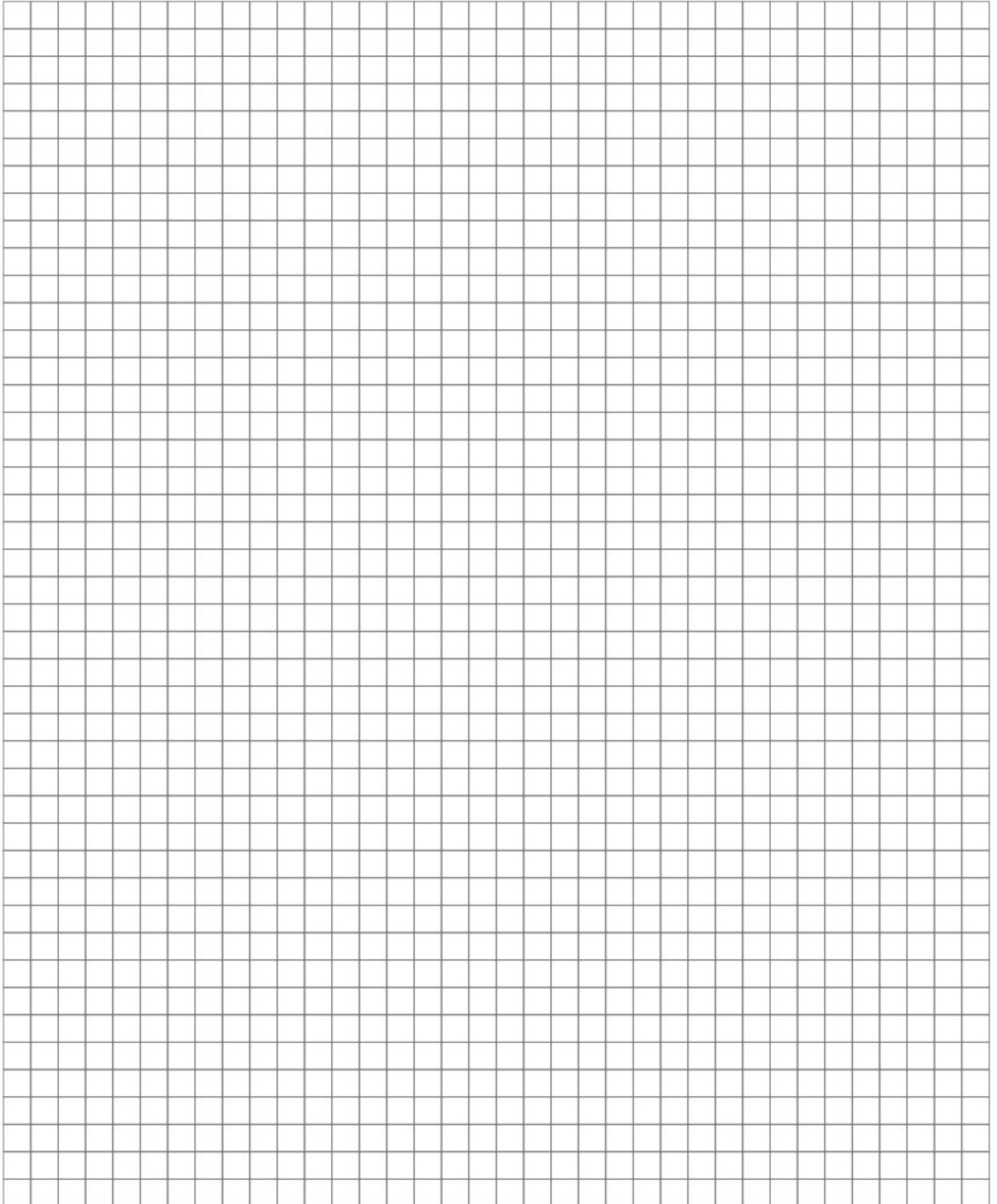
Gearbox Precision



#### **Servo Motor**

Motor Manufacturer and model

Technical Memo



KPLN Series Servo Planetary Gearbox

**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	$T_{2Max}$	Nm	60	63	63	60	57	54	42	42
		in.lb	531	558	558	531	504	478	372	372
Maximum Acceleration Torque	$T_{2a}$	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	$j_i$	arcmin	≤ 6							
Torsional Rigidity	$C_{121}$	Nm/arcmin	2.7-3							
		in.lb/arcmin	23.90-26.55							
Maximum Radial Load	$F_{2AMax}$	N	770							
		lb <sub>f</sub>	173							
Maximum Axial Load	$F_{2CMMax}$	N	380							
		lb <sub>f</sub>	85							
Max. Tilting Moment	$M_{2AMMax}$	Nm	13							
		in.lb	115.06							
Mass Moment of Inertia	$j_i$	kgcm <sup>2</sup>	0.031	0.022	0.019	0.017	0.017	0.017	0.017	0.017
Operating Noise Level	$L_{pA}$	dB(A)	< 56							
Efficiency at Full loading	$\eta$	%	97							
Operating Temperature		°C	-25 to +90							
		F	-13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	$L_h$	h	20,000(Continuous Operation)							
Weight	$m$	kg	0.5							
		lb <sub>m</sub>	11							

## KPLN050 2-stage

		2-stage																
Ratio	i		12	15	16	20	25	30	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	20	20	21	21	21	20	21	21	21	21	20	18	18	14	14	
		in.lb	177	177	186	186	186	177	186	186	186	186	177	159	159	124	124	
Emergency Stop Torque	$T_{2Max}$	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	$j_i$	arcmin	≤ 8															
Torsional Rigidity	$C_{121}$	Nm/arcmin	2.8-3															
		in.lb/arcmin	24.78-26.55															
Maximum Radial Load	$F_{2AMax}$	N	770															
		lb <sub>f</sub>	173															
Maximum Axial Load	$F_{2CMMax}$	N	380															
		lb <sub>f</sub>	85															
Max. Tilting Moment	$M_{2CMMax}$	Nm	13															
		in.lb	115.06															
Mass Moment of Inertia	$j_i$	kgcm <sup>2</sup>	0.029	0.027	0.022	0.019	0.017	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	
Operating Noise Level	$L_{pA}$	dB(A)	< 56															
Efficiency at Full loading	$\eta$	%	95															
Operating Temperature		°C	-25 to +90															
		F	-13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	$L_n$	h	20,000(Continuous Operation)															
Weight	$m$	kg	0.8															
		lb <sub>m</sub>	1.8															

KPLN Series Servo Planetary Gearbox

**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	$T_{290t}$	Nm	138	156	165	150	150	135	126	126
		in.lb	1221	1381	1460	1328	1328	1195	1115	1115
Maximum Acceleration Torque	$T_{22}$	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	$j_i$	arcmin	≤ 6							
Torsional Rigidity	$C_{121}$	Nm/arcmin	6.5-7							
		in.lb/arcmin	57.53-61.95							
Maximum Radial Load	$F_{2AMax}$	N	1500							
		lb <sub>f</sub>	337							
Maximum Axial Load	$F_{2CMMax}$	N	760							
		lb <sub>f</sub>	171							
Max. Tilting Moment	$M_{20MMax}$	Nm	40							
		in.lb	354.03							
Mass Moment of Inertia	$j_i$	kgcm <sup>2</sup>	0.16	0.14	0.13	0.13	0.13	0.13	0.13	0.13
Operating Noise Level	$L_{pA}$	dB(A)	< 58							
Efficiency at Full loading	$\eta$	%	97							
Operating Temperature		°C	-25 to +90							
		F	-13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	$L_h$	h	20,000(Continuous Operation)							
Weight	$m$	kg	1.3							
		lb <sub>m</sub>	2.9							



## KPLN070 2-stage

		2-stage																	
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100	
Nominal Output Torque		Nm	56	50	52	55	55	46	52	55	55	55	55	50	45	45	42	42	
		in.lb	496	443	460	487	487	407	460	487	487	487	487	487	443	398	398	372	372
Emergency Stop Torque	$T_{2Max}$	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	$j_i$	arcmin	≤ 8																
Torsional Rigidity	$C_{121}$	Nm/arcmin	6.6-7																
		in.lb/arcmin	58.41-61.95																
Maximum Radial Load	$F_{2AMax}$	N	1500																
		lb <sub>r</sub>	337																
Maximum Axial Load	$F_{2OMax}$	N	760																
		lb <sub>r</sub>	171																
Max. Tilting Moment	$M_{2OMax}$	Nm	40																
		in.lb	354.03																
Mass Moment of Inertia	$j_i$	kgcm <sup>2</sup>	0.127	0.124	0.12	0.075	0.075	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.075	0.064	0.064	0.064
Operating Noise Level	$L_{pA}$	dB(A)	< 58																
Efficiency at Full loading	$\eta$	%	95																
Operating Temperature		°C	-25 to +90																
		F	-13 to +194																
Lubrication			Synthetic Lubrication Grease																
Mouting Position			Any Directions																
Protection Class			IP 65																
Service lifetime	$L_n$	h	20,000(Continuous Operation)																
Weight	$m$	kg	1.5																
		lb <sub>m</sub>	3.3																

KPLN Series Servo Planetary Gearbox

**KPLN090 1-stage**

			1-stage							
Ratio	i		3	4	5	6	7	8	9	10
Nominal Output Torque		Nm	125	145	155	145	135	115	105	105
		in.lb	1106	1283	1372	1283	1195	1018	929	929
Emergency Stop Torque	$T_{290t}$	Nm	375	435	465	435	405	345	315	315
		in.lb	3319	3850	4116	3850	3585	3053	2788	2788
Maximum Acceleration Torque	$T_{2a}$	Nm	225	261	279	261	243	207	189	189
		in.lb	1991	2310	2469	2310	2151	1832	1673	1673
Maximum Torque	$T_{2a}$	Nm	250	290	310	290	270	230	210	210
		in.lb	2213	2567	2744	2567	2390	2036	1859	1859
Permitted Average Input Speed	$n_{1N}$	rpm	3000							
Maximum Input Speed	$n_{1Max}$	rpm	6000							
Mean No Load Running Torque	$T_{012}$	Nm	0.38	0.36	0.31	0.29	0.25	0.25	0.25	0.25
		in.lb	3.36	3.19	2.74	2.57	2.21	2.21	2.21	2.21
Maximum Torsional Backlash	$j_i$	arcmin	≤ 6							
Torsional Rigidity	$C_{121}$	Nm/arcmin	12-14							
		in.lb/arcmin	106.21-123.91							
Maximum Radial Load	$F_{2AMax}$	N	3200							
		lb <sub>f</sub>	719							
Maximum Axial Load	$F_{2CMax}$	N	1600							
		lb <sub>f</sub>	360							
Max. Tilting Moment	$M_{2OMax}$	Nm	200							
		in.lb	1760							
Mass Moment of Inertia	$j_i$	kgcm <sup>2</sup>	0.61	0.48	0.47	0.47	0.47	0.45	0.44	0.44
Operating Noise Level	$L_{pA}$	dB(A)	< 60							
Efficiency at Full loading	$\eta$	%	97							
Operating Temperature		°C	-25 to +90							
		F	-13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	$L_h$	h	20,000(Continuous Operation)							
Weight	$m$	kg	3.1							
		lb <sub>m</sub>	6.8							

## KPLN090 2-stage

		2-stage																
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100
Nominal Output Torque		Nm	125	125	145	145	155	125	145	155	155	155	155	145	115	115	105	105
		in.lb	1106	1106	1283	1283	1372	1106	1283	1372	1372	1372	1372	1283	1018	1018	929	929
Emergency Stop Torque	$T_{2Max}$	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
Maximum Torsional Backlash	$j_i$	arcmin	≤ 8															
Torsional Rigidity	$C_{21}$	Nm/arcmin	13-14															
		in.lb/arcmin	115.06-123.91															
Maximum Radial Load	$F_{2AMax}$	N	3200															
		lb <sub>r</sub>	719															
Maximum Axial Load	$F_{2OMax}$	N	1600															
		lb <sub>r</sub>	360															
Max. Tilting Moment	$M_{2OMax}$	Nm	145															
		in.lb	1283.35															
Mass Moment of Inertia	$j_i$	kgcm <sup>2</sup>	0.44	0.44	0.43	0.44	0.44	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39
Operating Noise Level	$L_{PA}$	dB(A)	< 60															
Efficiency at Full loading	$\eta$	%	95															
Operating Temperature		°C	-25 to +90															
		F	-13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	$L_n$	h	20,000(Continuous Operation)															
Weight	$m$	kg	4.2															
		lb <sub>m</sub>	9.3															

KPLN Series Servo Planetary Gearbox

**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	$T_{290t}$	Nm	630	900	960	900	870	765	660	660
		in.lb	5576	7966	8497	7966	7700	6771	5841	5841
Maximum Acceleration Torque	$T_{22t}$	Nm	378	540	576	540	522	459	396	396
		in.lb	3346	4779	5098	4779	4620	4062	3505	3505
Maximum Torque	$T_{2t}$	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	$C_{121}$	Nm/arcmin	22-26							
		in.lb/arcmin	194.72-230.12							
Maximum Radial Load	$F_{2AMax}$	N	6700							
		lb <sub>f</sub>	1506							
Maximum Axial Load	$F_{2CMMax}$	N	3300							
		lb <sub>f</sub>	742							
Max. Tilting Moment	$M_{20Max}$	Nm	320							
		in.lb	2832.22							
Mass Moment of Inertia	$j_i$	kgcm <sup>2</sup>	3.25	2.74	2.71	2.62	2.62	2.62	2.62	2.57
Operating Noise Level	$L_{pA}$	dB(A)	< 63							
Efficiency at Full loading	$\eta$	%	97							
Operating Temperature		°C	-25 to +90							
		F	-13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	$L_h$	h	20,000(Continuous Operation)							
Weight	$m$	kg	5.1							
		lb <sub>m</sub>	11.2							

## KPLN120 2-stage

		2-stage																
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100
Nominal Output Torque		Nm	310	310	300	300	320	210	305	320	320	320	320	300	255	255	220	220
		in.lb	2744	2744	2655	2655	2832	1859	2699	2832	2832	2832	2832	2655	2257	2257	1947	1947
Emergency Stop Torque	$T_{2Max}$	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	$j_i$	arcmin	≤ 8															
Torsional Rigidity	$C_{21}$	Nm/arcmin	23-26															
		in.lb/arcmin	203.57-230.12															
Maximum Radial Load	$F_{2AMax}$	N	6700															
		lb <sub>f</sub>	1506															
Maximum Axial Load	$F_{2OMax}$	N	3300															
		lb <sub>f</sub>	742															
Max. Tilting Moment	$M_{2OMax}$	Nm	320															
		in.lb	2832.22															
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	2.56	2.58	1.75	1.5	1.49	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.5	1.3	1.3	1.3
Operating Noise Level	$L_{PA}$	dB(A)	< 63															
Efficiency at Full loading	$\eta$	%	95															
Operating Temperature		°C	-25 to +90															
		F	-13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	$L_n$	h	20,000(Continuous Operation)															
Weight	$m$	kg	7.5															
		lb <sub>m</sub>	16.5															

KPLN Series Servo Planetary Gearbox

**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	$T_{2Max}$	Nm	1350	1650	1950	1830	1620	1530	1320	1320
		in.lb	11948	14604	17259	16197	14338	13542	11683	11683
Maximum Acceleration Torque	$T_{2a}$	Nm	810	990	1170	1098	972	918	792	792
		in.lb	7169	8762	10355	9718	8603	8125	7010	7010
Maximum Torque	$T_{2a}$	Nm	900	1100	1300	1220	1080	1020	880	880
		in.lb	7966	9736	11506	10798	9559	9028	7789	7789
Permitted Average Input Speed	$n_{1N}$	rpm	3000							
Maximum Input Speed	$n_{1Max}$	rpm	6000							
Mean No Load Running Torque	$T_{012}$	Nm	2.55	2.45	2.3	2.2	2.2	2.2	2.2	2.2
		in.lb	22.57	21.68	20.36	19.47	19.47	19.47	19.47	19.47
Maximum Torsional Backlash	$j_i$	arcmin	≤ 6							
Torsional Rigidity	$C_{121}$	Nm/arcmin	45-52							
		in.lb/arcmin	398.28-460.24							
Maximum Radial Load	$F_{2AMax}$	N	9600							
		lb <sub>f</sub>	2158							
Maximum Axial Load	$F_{2CMMax}$	N	4800							
		lb <sub>f</sub>	1079							
Max. Tilting Moment	$M_{2AMMax}$	Nm	540							
		in.lb	4779.38							
Mass Moment of Inertia	$j_i$	kgcm <sup>2</sup>	12.31	7.54	7.42	7.25	7.25	7.14	7.14	7.14
Operating Noise Level	$L_{pA}$	dB(A)	< 65							
Efficiency at Full loading	$\eta$	%	97							
Operating Temperature		°C	-25 to +90							
		F	-13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	$L_h$	h	20,000(Continuous Operation)							
Weight	$m$	kg	19							
		lb <sub>m</sub>	41.8							

## KPLN160 2-stage

		2-stage																
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100
Nominal Output Torque		Nm	500	500	550	650	650	450	550	650	550	650	650	610	510	510	440	440
		in.lb	4425	4425	4868	5753	5753	3983	4868	5753	4868	5753	5753	5399	4514	4514	3894	3894
Emergency Stop Torque	$T_{2Max}$	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
Maximum Torsional Backlash	$j_i$	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 <sub>f</sub>	2158															
Maximum Axial Load	$F_{2CMMax}$	N	4800															
		lb <sub>f</sub>	1079															
Max. Tilting Moment	$M_{2CMMax}$	Nm	540															
		in.lb	4779.38															
Mass Moment of Inertia	$j_i$	kgcm <sup>2</sup>	12.35	12.35	7.47	6.65	5.81	6.34	6.34	5.36	4.08	5.36	4.08	7.40	7.50	7.40	7.40	7.40
Operating Noise Level	$L_{PA}$	dB(A)	< 65															
Efficiency at Full loading	$\eta$	%	95															
Operating Temperature		°C	-25 to +90															
		F	-13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	$L_n$	h	20,000(Continuous Operation)															
Weight	$m$	kg	24															
		lb <sub>m</sub>	52.8															

KPLN Series Servo Planetary Gearbox

### 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	$T_{290t}$	Nm	1950	3750	3600	3000	3000	3000	2730	2730
		in.lb	17259	33190	31863	26552	26552	26552	24162	24162
Maximum Acceleration Torque	$T_{22}$	Nm	1170	2250	2160	1800	1800	1800	1638	1638
		in.lb	10355	19914	19118	15931	15931	15931	14497	14497
Maximum Torque	$T_{2a}$	Nm	1300	2500	2400	2000	2000	2000	1820	1820
		in.lb	11506	22127	21242	17701	17701	17701	16108	16108
Permitted Average Input Speed	$n_{1N}$	rpm	3000							
Maximum Input Speed	$n_{1Max}$	rpm	4000							
Mean No Load Running Torque	$T_{012}$	Nm	3.5	3.3	3.15	3	3	3	3	3
		in.lb	30.98	29.21	27.88	26.55	26.55	26.55	26.55	26.55
Maximum Torsional Backlash	$j_t$	arcmin	≤ 6							
Torsional Rigidity	$C_{121}$	Nm/arcmin	120-138							
		in.lb/arcmin	1062.08-1221.40							
Maximum Radial Load	$F_{2AMax}$	N	14000							
		lb <sub>f</sub>	3147							
Maximum Axial Load	$F_{2CMMax}$	N	7000							
		lb <sub>f</sub>	1574							
Max. Tilting Moment	$M_{20MMax}$	Nm	1270							
		in.lb	11240.39							
Mass Moment of Inertia	$j_i$	kgcm <sup>2</sup>	28.98	23.67	22.75	22.48	22.48	22.59	22.59	22.55
Operating Noise Level	$L_{pA}$	dB(A)	< 67							
Efficiency at Full loading	$\eta$	%	97							
Operating Temperature		°C	-25 to +90							
		F	-13 to +194							
Lubrication			Synthetic Lubrication Grease							
Mouting Position			Any Directions							
Protection Class			IP 65							
Service lifetime	$L_h$	h	20,000(Continuous Operation)							
Weight	$m$	kg	30							
		lb <sub>m</sub>	66							



## KPLN205 2-stage

		2-stage																
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100
Nominal Output Torque		Nm	650	850	1250	1200	1200	650	1250	1200	1200	1200	1200	1000	1000	1000	910	910
		in.lb	5753	7523	11063	10621	10621	5753	11063	10621	10621	10621	10621	8851	8851	8851	8054	8054
Emergency Stop Torque	$T_{2Max}$	Nm	1950	2550	3750	3600	3600	1950	3750	3600	3600	3600	3600	3000	3000	3000	2730	2730
		in.lb	17259	22569	33190	31863	31863	17259	33190	31863	31863	31863	31863	26552	26552	26552	24162	24162
Maximum Acceleration Torque	$T_{2B}$	Nm	1170	1530	2250	2160	2160	1170	2250	2160	2160	2160	2160	1800	1800	1800	1638	1638
		in.lb	10355	13542	19914	19118	19118	10355	19914	19118	19118	19118	19118	15931	15931	15931	14497	14497
Maximum Torque	$T_{2a}$	Nm	1300	1700	2500	2400	2400	1300	2500	2400	2400	2400	2400	2000	2000	2000	1820	1820
		in.lb	11506	15046	22127	21242	21242	11506	22127	21242	21242	21242	21242	17701	17701	17701	16108	16108
Permitted Average Input Speed	$n_{1N}$	rpm	3000															
Maximum Input Speed	$n_{1Max}$	rpm	4000															
Mean No Load Running Torque	$T_{012}$	Nm	2.45	2.3	2.45	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
		in.lb	21.68	20.36	21.68	20.36	20.36	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47	19.47
Maximum Torsional Backlash	$j_i$	arcmin	≤ 8															
Torsional Rigidity	$C_{121}$	Nm/arcmin	125-138															
		in.lb/arcmin	1106.34-1221.40															
Maximum Radial Load	$F_{2AMax}$	N	14000															
		lb <sub>f</sub>	3147															
Maximum Axial Load	$F_{2OMax}$	N	7000															
		lb <sub>f</sub>	1574															
Max. Tilting Moment	$M_{2OMax}$	Nm	1270															
		in.lb	11240.39															
Mass Moment of Inertia	$j_i$	kgcm <sup>2</sup>	12.35	12.30	7.54	7.42	7.54	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14
Operating Noise Level	$L_{PA}$	dB(A)	< 67															
Efficiency at Full loading	$\eta$	%	95															
Operating Temperature		°C	-25 to +90															
		F	-13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	$L_n$	h	20,000(Continuous Operation)															
Weight	$m$	kg	38															
		lb <sub>m</sub>	83.6															

KPLN Series Servo Planetary Gearbox

**KPLN235 1-stage**

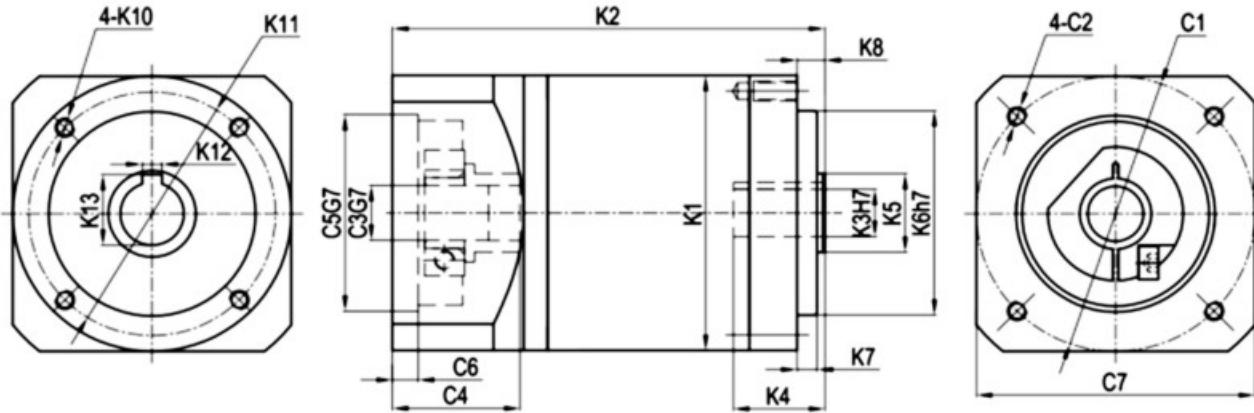
		1-stage									
Ratio	i		3	4	5	6	7	8	9	10	
Nominal Output Torque		Nm	1200	1800	2050	1850	1750	1550	1500	1500	
		in.lb	10621	15931	18144	16374	15489	13719	13276	13276	
Emergency Stop Torque	$T_{2Max}$	Nm	3600	5400	6150	5550	5250	4650	4500	4500	
		in.lb	31863	47794	54432	49121	46466	41156	39828	39828	
Maximum Acceleration Torque	$T_{2a}$	Nm	2160	3240	3690	3330	3150	2790	2700	2700	
		in.lb	19118	28676	32659	29473	27880	24693	23897	23897	
Maximum Torque	$T_{2a}$	Nm	2400	3600	4100	3700	3500	3100	3000	3000	
		in.lb	21242	31863	36288	32748	30977	27437	26552	26552	
Permitted Average Input Speed	$n_{1N}$	rpm	2000								
Maximum Input Speed	$n_{1Max}$	rpm	4000								
Mean No Load Running Torque	$T_{012}$	Nm	5.2	5	4.85	4.67	4.67	4.67	4.67	4.67	
		in.lb	46.02	44.25	42.93	41.33	41.33	41.33	41.33	41.33	
Maximum Torsional Backlash	$j_i$	arcmin	≤ 6								
Torsional Rigidity	$C_{121}$	Nm/arcmin	200–220								
		in.lb/arcmin	1770.14–1947.15								
Maximum Radial Load	$F_{2AMax}$	N	16000								
		lb <sub>f</sub>	3597								
Maximum Axial Load	$F_{2CMMax}$	N	8000								
		lb <sub>f</sub>	1798								
Max. Tilting Moment	$M_{2AMMax}$	Nm	2350								
		in.lb	20680								
Mass Moment of Inertia	$j_i$	kgcm <sup>2</sup>	69.61	54.37	53.27	50.84	50.84	50.84	50.84	50.56	
Operating Noise Level	$L_{pA}$	dB(A)	< 70								
Efficiency at Full loading	$\eta$	%	97								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_h$	h	20,000(Continuous Operation)								
Weight	$m$	kg	51								
		lb <sub>m</sub>	112.2								

## KPLN235 2-stage

		2-stage																
Ratio	i		12	15	16	20	25	30	32	35	40	45	50	60	64	80	90	100
Nominal Output Torque		Nm	1200	1200	1800	2050	2050	1200	1800	2050	2050	2050	2050	1850	1550	1550	1500	1500
		in.lb	10621	10621	15931	18144	18144	10621	15931	18144	18144	18144	18144	16374	13719	13719	13276	13276
Emergency Stop Torque	$T_{2Max}$	Nm	3600	3600	5400	6150	6150	3600	5400	6150	6150	6150	6150	5550	4650	4650	4500	4500
		in.lb	31863	31863	47794	54432	54432	31863	47794	54432	54432	54432	54432	49121	41156	41156	39828	39828
Maximum Acceleration Torque	$T_{2B}$	Nm	2160	2160	3240	3690	3690	2160	3240	3690	3690	3690	3690	3330	2790	2790	2700	2700
		in.lb	19118	19118	28676	32659	32659	19118	28676	32659	32659	32659	32659	29473	24693	24693	23897	23897
Maximum Torque	$T_{2a}$	Nm	2400	2400	3600	4100	4100	2400	3600	4100	4100	4100	4100	3700	3100	3100	3000	3000
		in.lb	21242	21242	31863	36288	36288	21242	31863	36288	36288	36288	36288	32748	27437	27437	26552	26552
Permitted Average Input Speed	$n_{1N}$	rpm	2000															
Maximum Input Speed	$n_{1Max}$	rpm	4000															
Mean No Load Running Torque	$T_{012}$	Nm	3.3	3.15	3.3	3.15	3.15	3	3	3	3	3	3	3	3	3	3	3
		in.lb	29.21	27.88	29.21	27.88	27.88	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55	26.55
Maximum Torsional Backlash	$j_i$	arcmin	≤ 8															
Torsional Rigidity	$C_{121}$	Nm/arcmin	205-220															
		in.lb/arcmin	1814.39-1947.15															
Maximum Radial Load	$F_{2AMax}$	N	16000															
		lb <sub>f</sub>	3597															
Maximum Axial Load	$F_{2CMMax}$	N	8000															
		lb <sub>f</sub>	1798															
Max. Tilting Moment	$M_{2CMMax}$	Nm	2350															
		in.lb	20680															
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	28.98	28.92	23.67	22.75	22.75	22.59	22.59	22.59	22.59	22.59	22.59	22.59	22.59	22.59	22.59	22.59
Operating Noise Level	$L_{PA}$	dB(A)	< 70															
Efficiency at Full loading	$\eta$	%	95															
Operating Temperature		°C	-25 to +90															
		F	-13 to +194															
Lubrication			Synthetic Lubrication Grease															
Mouting Position			Any Directions															
Protection Class			IP 65															
Service lifetime	$L_n$	h	20,000(Continuous Operation)															
Weight	$m$	kg	64															
		lb <sub>m</sub>	140.8															

KPLN Series Servo Planetary Gearbox

**KPLN Dimensions**



KPLN Series Servo Planetary Gearbox

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

The dimensions modified as per the applied motor flanges.

You can get the specific gearbox drawing solution by KDP(Kofon Design Programme) on line from our website: [www.kofon-motion.com](http://www.kofon-motion.com)



Technical Memo

