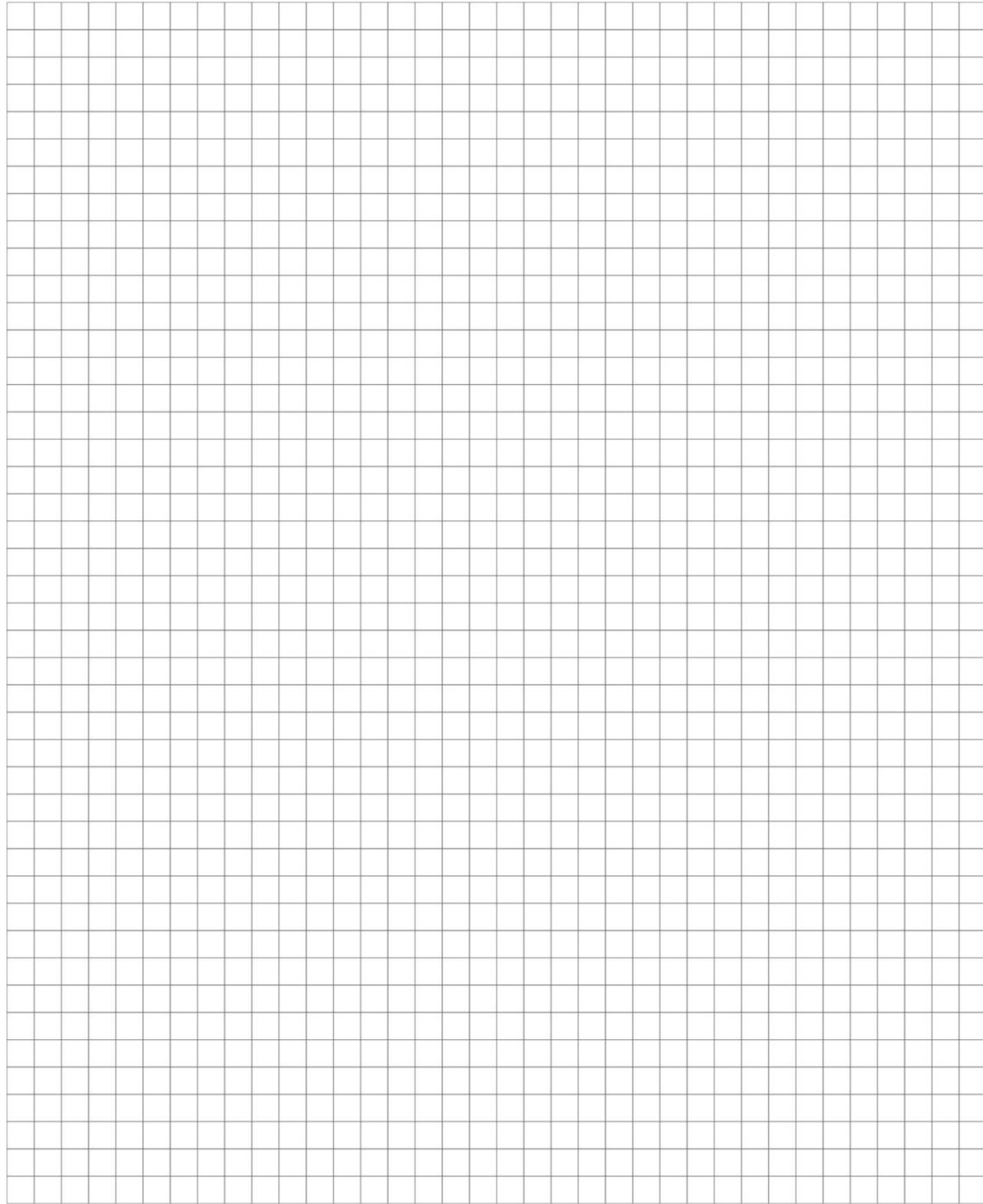


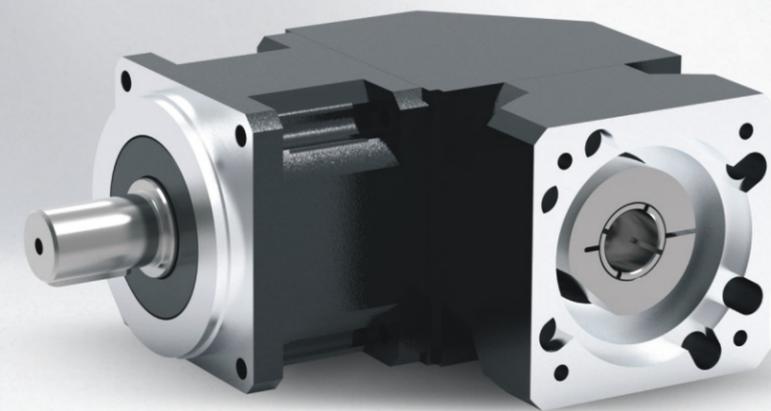
Technical Memo



# KVX-B

Powerful. High Precision. Reliable

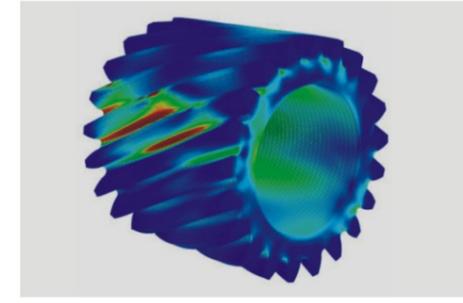
- ▶ Servo Planetary Gearbox
- Advanced Gearbox Solution





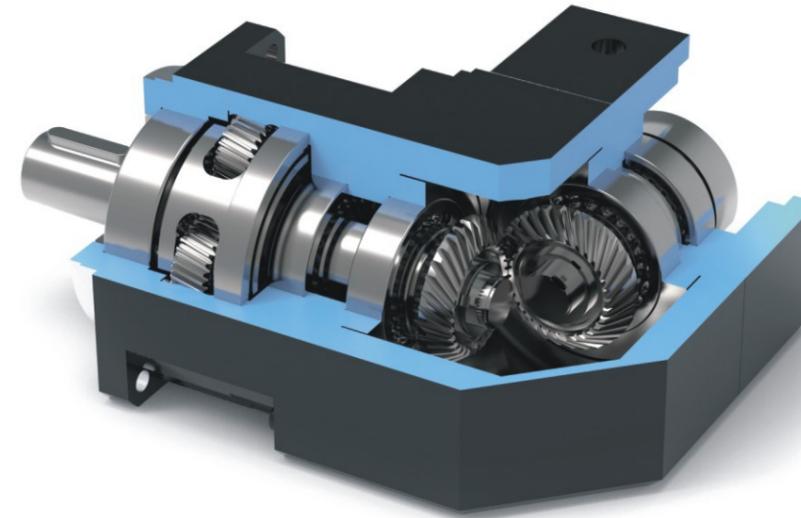
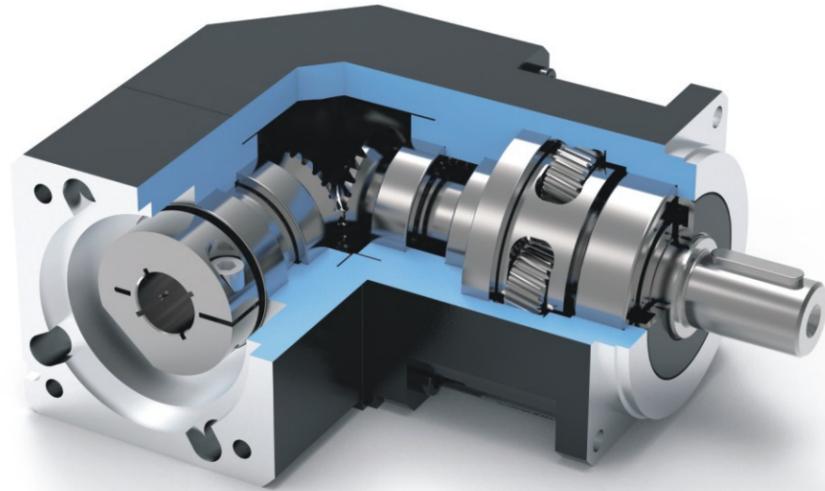
**Helical Gear System Technology**

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.



KVX-B Series Servo Planetary Gearbox

KVX-B Series Servo Planetary Gearbox



**Master CageSpindle Planetary Carrier**

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



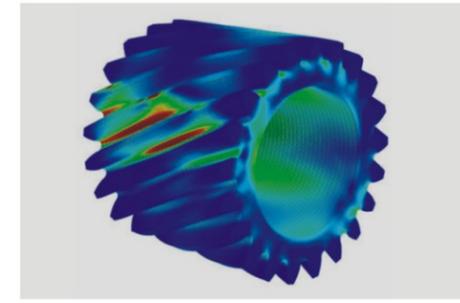
**Dynamic Balance Clamping and Sealing System**

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



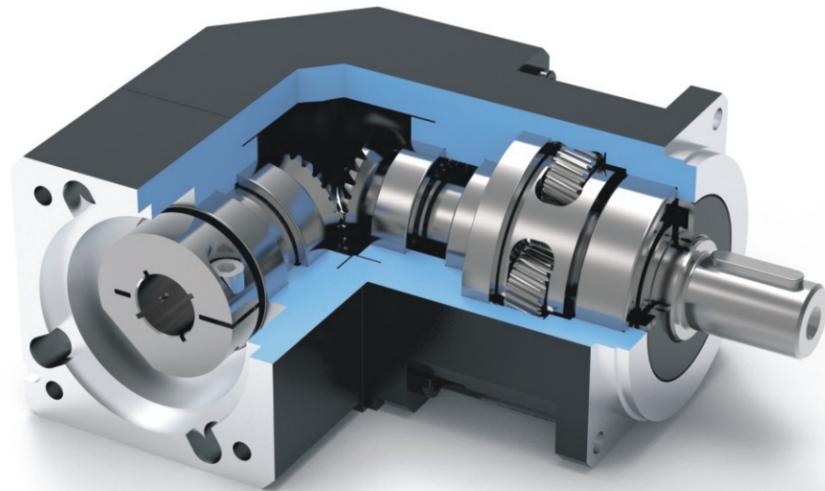
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**Dynamic Balance Clamping and Sealing System**

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.





**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	$j_1$	arcmin	≤7								
Reduced Low Backlash P0	$j_1$	arcmin	≤5								
Ultra Low Backlash PU	$j_1$	arcmin	≤3								
Torsional Rigidity	$C_{121}$	Nm/arcmin	7								
		in.lb/arcmin	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	$M_{2KMax}$	Nm	90								
		in.lb	797								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.160	0.140	0.130	0.130	0.130	0.130	0.130	0.130	
Operating Noise Level	$L_{PA}$	dB(A)	< 63								
Efficiency at Full loading	$\eta$	%	95								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_h$	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)								
Weight	$m$	kg	2.2								
		lb <sub>m</sub>	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	$j_1$	arcmin	≤9													
Reduced Low Backlash P0	$j_1$	arcmin	≤7													
Ultra Low Backlash PU	$j_1$	arcmin	≤5													
Torsional Rigidity	$C_{121}$	Nm/arcmin	7													
		in.lb/arcmin	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	$M_{2KMax}$	Nm	90													
		in.lb	797													
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.075	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)	< 63													
Efficiency at Full loading	$\eta$	%	93													
Operating Temperature		°C	-25 to +90													
		F	-13 to +194													
Lubrication			Synthetic Lubrication Grease													
Mouting Position			Any Directions													
Protection Class			IP 65													
Service lifetime	$L_h$	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)													
Weight	$m$	kg	2.4													
		lb <sub>m</sub>	5.28													

**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	$j_i$	arcmin	≤7								
Reduced Low Backlash P0	$j_i$	arcmin	≤5								
Ultra Low Backlash PU	$j_i$	arcmin	≤3								
Torsional Rigidity	$C_{121}$	Nm/arcmin	7								
		in.lb/arcmin	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	$M_{2KMax}$	Nm	90								
		in.lb	797								
Mass Moment of Inertia	$j_i$	kgcm <sup>2</sup>	0.160	0.140	0.130	0.130	0.130	0.130	0.130	0.130	
Operating Noise Level	$L_{PA}$	dB(A)	< 63								
Efficiency at Full loading	$\eta$	%	95								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_h$	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)								
Weight	$m$	kg	2.2								
		lb <sub>m</sub>	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	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	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	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	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	$j_i$	arcmin	≤9													
Reduced Low Backlash P0	$j_i$	arcmin	≤7													
Ultra Low Backlash PU	$j_i$	arcmin	≤5													
Torsional Rigidity	$C_{121}$	Nm/arcmin	7													
		in.lb/arcmin	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	$M_{2KMax}$	Nm	90													
		in.lb	797													
Mass Moment of Inertia	$j_i$	kgcm <sup>2</sup>	0.075	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)	< 63													
Efficiency at Full loading	$\eta$	%	93													
Operating Temperature		°C	-25 to +90													
		F	-13 to +194													
Lubrication			Synthetic Lubrication Grease													
Mouting Position			Any Directions													
Protection Class			IP 65													
Service lifetime	$L_h$	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)													
Weight	$m$	kg	2.4													
		lb <sub>m</sub>	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	$T_{2a}$	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	$j_i$	arcmin	≤7								
Reduced Low Backlash P0	$j_i$	arcmin	≤5								
Ultra Low Backlash PU	$j_i$	arcmin	≤3								
Torsional Rigidity	$C_{121}$	Nm/arcmin	14								
		in.lb/arcmin	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	$M_{2KMax}$	Nm	214								
		in.lb	1894								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	0.61	0.48	0.47	0.47	0.47	0.45	0.44	0.44	
Operating Noise Level	$L_{PA}$	dB(A)	< 65								
Efficiency at Full loading	$\eta$	%	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	$L_h$	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)								
Weight	$m$	kg	5.3								
		lb <sub>m</sub>	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	$T_{2a}$	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	$j_i$	arcmin	≤9													
Reduced Low Backlash P0	$j_i$	arcmin	≤7													
Ultra Low Backlash PU	$j_i$	arcmin	≤5													
Torsional Rigidity	$C_{121}$	Nm/arcmin	14													
		in.lb/arcmin	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	$M_{2KMax}$	Nm	214													
		in.lb	1894													
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	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	$\eta$	%	93													
Operating Temperature		°C	-25 to +90													
		F	-13 to +194													
Lubrication			Synthetic Lubrication Grease													
Mouting Position			Any Directions													
Protection Class			IP 65													
Service lifetime	$L_h$	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)													
Weight	$m$	kg	7													
		lb <sub>m</sub>	14.3													

**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	$T_{2a}$	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	$j_i$	arcmin	≤7								
Reduced Low Backlash P0	$j_i$	arcmin	≤5								
Ultra Low Backlash PU	$j_i$	arcmin	≤3								
Torsional Rigidity	$C_{121}$	Nm/arcmin	14								
		in.lb/arcmin	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	$M_{2KMax}$	Nm	214								
		in.lb	1894								
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)	< 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	$L_h$	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)								
Weight	$m$	kg	5.3								
		lb <sub>m</sub>	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	$T_{2a}$	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	$j_i$	arcmin	≤9													
Reduced Low Backlash P0	$j_i$	arcmin	≤7													
Ultra Low Backlash PU	$j_i$	arcmin	≤5													
Torsional Rigidity	$C_{121}$	Nm/arcmin	14													
		in.lb/arcmin	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	$M_{2KMax}$	Nm	214													
		in.lb	1894													
Mass Moment of Inertia	$j_i$	kgcm <sup>2</sup>	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	$\eta$	%	93													
Operating Temperature		°C	-25 to +90													
		F	-13 to +194													
Lubrication			Synthetic Lubrication Grease													
Mouting Position			Any Directions													
Protection Class			IP 65													
Service lifetime	$L_h$	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)													
Weight	$m$	kg	7													
		lb <sub>m</sub>	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	$j_1$	arcmin	≤7								
Reduced Low Backlash P0	$j_1$	arcmin	≤5								
Ultra Low Backlash PU	$j_1$	arcmin	≤3								
Torsional Rigidity	$C_{121}$	Nm/arcmin	26								
		in.lb/arcmin	230.12								
Maximum Radial Load	$F_{2AMax}$	N	6700								
		lb <sub>r</sub>	1506								
Maximum Axial Load	$F_{2OMax}$	N	3300								
		lb <sub>r</sub>	742								
Max. Tilting Moment	$M_{2KMax}$	Nm	603								
		in.lb	5337								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	3.25	2.74	2.71	2.71	2.62	2.62	2.62	2.57	
Operating Noise Level	$L_{PA}$	dB(A)	< 68								
Efficiency at Full loading	$\eta$	%	95								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_h$	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)								
Weight	$m$	kg	9								
		lb <sub>m</sub>	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	$j_1$	arcmin	≤9													
Reduced Low Backlash P0	$j_1$	arcmin	≤7													
Ultra Low Backlash PU	$j_1$	arcmin	≤5													
Torsional Rigidity	$C_{121}$	Nm/arcmin	26													
		in.lb/arcmin	230.12													
Maximum Radial Load	$F_{2AMax}$	N	6700													
		lb <sub>r</sub>	1506													
Maximum Axial Load	$F_{2OMax}$	N	3300													
		lb <sub>r</sub>	742													
Max. Tilting Moment	$M_{2KMax}$	Nm	603													
		in.lb	5337													
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	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	$\eta$	%	93													
Operating Temperature		°C	-25 to +90													
		F	-13 to +194													
Lubrication			Synthetic Lubrication Grease													
Mouting Position			Any Directions													
Protection Class			IP 65													
Service lifetime	$L_h$	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)													
Weight	$m$	kg	13													
		lb <sub>m</sub>	28.6													

**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	$j_i$	arcmin	≤7								
Reduced Low Backlash P0	$j_i$	arcmin	≤5								
Ultra Low Backlash PU	$j_i$	arcmin	≤3								
Torsional Rigidity	$C_{121}$	Nm/arcmin	26								
		in.lb/arcmin	230.12								
Maximum Radial Load	$F_{2AMax}$	N	6700								
		lb <sub>r</sub>	1506								
Maximum Axial Load	$F_{2OMax}$	N	3300								
		lb <sub>a</sub>	742								
Max. Tilting Moment	$M_{2KMax}$	Nm	603								
		in.lb	5337								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	3.25	2.74	2.71	2.71	2.62	2.62	2.62	2.57	
Operating Noise Level	$L_{PA}$	dB(A)	< 68								
Efficiency at Full loading	$\eta$	%	95								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_h$	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)								
Weight	$m$	kg	9								
		lb <sub>m</sub>	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	$j_i$	arcmin	≤9													
Reduced Low Backlash P0	$j_i$	arcmin	≤7													
Ultra Low Backlash PU	$j_i$	arcmin	≤5													
Torsional Rigidity	$C_{121}$	Nm/arcmin	26													
		in.lb/arcmin	230.12													
Maximum Radial Load	$F_{2AMax}$	N	6700													
		lb <sub>r</sub>	1506													
Maximum Axial Load	$F_{2OMax}$	N	3300													
		lb <sub>a</sub>	742													
Max. Tilting Moment	$M_{2KMax}$	Nm	603													
		in.lb	5337													
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	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	$\eta$	%	93													
Operating Temperature		°C	-25 to +90													
		F	-13 to +194													
Lubrication			Synthetic Lubrication Grease													
Mouting Position			Any Directions													
Protection Class			IP 65													
Service lifetime	$L_h$	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)													
Weight	$m$	kg	13													
		lb <sub>m</sub>	28.6													

**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	$T_{2a}$	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	$j_i$	arcmin	≤7								
Reduced Low Backlash P0	$j_i$	arcmin	≤5								
Ultra Low Backlash PU	$j_i$	arcmin	≤3								
Torsional Rigidity	$C_{121}$	Nm/arcmin	52								
		in.lb/arcmin	460.24								
Maximum Radial Load	$F_{2AMax}$	N	9600								
		lb <sub>r</sub>	2158								
Maximum Axial Load	$F_{2OMax}$	N	4800								
		lb <sub>r</sub>	1079								
Max. Tilting Moment	$M_{2KMax}$	Nm	1275								
		in.lb	11285								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	12.31	7.54	7.42	7.42	7.25	7.14	7.14	7.14	
Operating Noise Level	$L_{PA}$	dB(A)	< 70								
Efficiency at Full loading	$\eta$	%	95								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_n$	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)								
Weight	$m$	kg	26								
		lb <sub>m</sub>	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	$T_{2a}$	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	$j_i$	arcmin	≤9													
Reduced Low Backlash P0	$j_i$	arcmin	≤7													
Ultra Low Backlash PU	$j_i$	arcmin	≤5													
Torsional Rigidity	$C_{121}$	Nm/arcmin	52													
		in.lb/arcmin	460.24													
Maximum Radial Load	$F_{2AMax}$	N	9600													
		lb <sub>r</sub>	2158													
Maximum Axial Load	$F_{2OMax}$	N	4800													
		lb <sub>r</sub>	1079													
Max. Tilting Moment	$M_{2KMax}$	Nm	1275													
		in.lb	11285													
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	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	$\eta$	%	93													
Operating Temperature		°C	-25 to +90													
		F	-13 to +194													
Lubrication			Synthetic Lubrication Grease													
Mouting Position			Any Directions													
Protection Class			IP 65													
Service lifetime	$L_n$	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)													
Weight	$m$	kg	31													
		lb <sub>m</sub>	68.2													

**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	$j_i$	arcmin	≤7								
Reduced Low Backlash P0	$j_i$	arcmin	≤5								
Ultra Low Backlash PU	$j_i$	arcmin	≤3								
Torsional Rigidity	$C_{121}$	Nm/arcmin	52								
		in.lb/arcmin	460.24								
Maximum Radial Load	$F_{2AMax}$	N	9600								
		lb <sub>r</sub>	2158								
Maximum Axial Load	$F_{2OMax}$	N	4800								
		lb <sub>r</sub>	1079								
Max. Tilting Moment	$M_{2KMax}$	Nm	1275								
		in.lb	11285								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	12.31	7.54	7.42	7.42	7.25	7.14	7.14	7.14	
Operating Noise Level	$L_{PA}$	dB(A)	< 70								
Efficiency at Full loading	$\eta$	%	95								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_h$	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)								
Weight	$m$	kg	26								
		lb <sub>m</sub>	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	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	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	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	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	$j_i$	arcmin	≤9													
Reduced Low Backlash P0	$j_i$	arcmin	≤7													
Ultra Low Backlash PU	$j_i$	arcmin	≤5													
Torsional Rigidity	$C_{121}$	Nm/arcmin	52													
		in.lb/arcmin	460.24													
Maximum Radial Load	$F_{2AMax}$	N	9600													
		lb <sub>r</sub>	2158													
Maximum Axial Load	$F_{2OMax}$	N	4800													
		lb <sub>r</sub>	1079													
Max. Tilting Moment	$M_{2KMax}$	Nm	1275													
		in.lb	11285													
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	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	$\eta$	%	93													
Operating Temperature		°C	-25 to +90													
		F	-13 to +194													
Lubrication			Synthetic Lubrication Grease													
Mouting Position			Any Directions													
Protection Class			IP 65													
Service lifetime	$L_h$	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)													
Weight	$m$	kg	31													
		lb <sub>m</sub>	68.2													

**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	$T_{2a}$	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	$j_i$	arcmin	≤7								
Reduced Low Backlash P0	$j_i$	arcmin	≤5								
Ultra Low Backlash PU	$j_i$	arcmin	≤3								
Torsional Rigidity	$C_{121}$	Nm/arcmin	138								
		in.lb/arcmin	1221.40								
Maximum Radial Load	$F_{2AMax}$	N	14000								
		lb <sub>r</sub>	3147								
Maximum Axial Load	$F_{2OMax}$	N	7000								
		lb <sub>r</sub>	1574								
Max. Tilting Moment	$M_{2KMax}$	Nm	2013								
		in.lb	17816								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	28.98	23.67	22.75	22.75	22.48	22.59	22.59	22.55	
Operating Noise Level	$L_{PA}$	dB(A)	< 72								
Efficiency at Full loading	$\eta$	%	95								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_h$	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)								
Weight	$m$	kg	41								
		lb <sub>m</sub>	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	10355	9736	9736	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	31066	29207	29207	28145	28145	
Maximum Acceleration Torque	$T_{2a}$	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	$j_i$	arcmin	≤9													
Reduced Low Backlash P0	$j_i$	arcmin	≤7													
Ultra Low Backlash PU	$j_i$	arcmin	≤5													
Torsional Rigidity	$C_{121}$	Nm/arcmin	138													
		in.lb/arcmin	1221.40													
Maximum Radial Load	$F_{2AMax}$	N	14000													
		lb <sub>r</sub>	3147													
Maximum Axial Load	$F_{2OMax}$	N	7000													
		lb <sub>r</sub>	1574													
Max. Tilting Moment	$M_{2KMax}$	Nm	2013													
		in.lb	17816													
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	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	$\eta$	%	93													
Operating Temperature		°C	-25 to +90													
		F	-13 to +194													
Lubrication			Synthetic Lubrication Grease													
Mouting Position			Any Directions													
Protection Class			IP 65													
Service lifetime	$L_h$	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)													
Weight	$m$	kg	49													
		lb <sub>m</sub>	107.8													

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	$T_{2a}$	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	$j_1$	arcmin	≤7								
Reduced Low Backlash P0	$j_1$	arcmin	≤5								
Ultra Low Backlash PU	$j_1$	arcmin	≤3								
Torsional Rigidity	$C_{121}$	Nm/arcmin	138								
		in.lb/arcmin	1221.40								
Maximum Radial Load	$F_{2AMax}$	N	14000								
		lb <sub>r</sub>	3147								
Maximum Axial Load	$F_{2OMax}$	N	7000								
		lb <sub>r</sub>	1574								
Max. Tilting Moment	$M_{2KMax}$	Nm	2013								
		in.lb	17816								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	28.98	23.67	22.75	22.75	22.48	22.59	22.59	22.55	
Operating Noise Level	$L_{PA}$	dB(A)	< 72								
Efficiency at Full loading	$\eta$	%	95								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_h$	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)								
Weight	$m$	kg	41								
		lb <sub>m</sub>	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	10355	9736	9736	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	31066	29207	29207	28145	28145	
Maximum Acceleration Torque	$T_{2a}$	Nm	2196	2106	2106	2106	2106	2106	2106	2106	1980	1980	1908	1908		
		in.lb	19436	18640	18640	18640	18640	18640	18640	18640	17524	17524	16887	16887		
Maximum Torque	$T_{2a}$	Nm	2440	2340	2340	2340	2340	2340	2340	2340	2200	2200	2120	2120		
		in.lb	21596	20711	20711	20711	20711	20711	20711	20711	19472	19472	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	$j_1$	arcmin	≤9													
Reduced Low Backlash P0	$j_1$	arcmin	≤7													
Ultra Low Backlash PU	$j_1$	arcmin	≤5													
Torsional Rigidity	$C_{121}$	Nm/arcmin	138													
		in.lb/arcmin	1221.40													
Maximum Radial Load	$F_{2AMax}$	N	14000													
		lb <sub>r</sub>	3147													
Maximum Axial Load	$F_{2OMax}$	N	7000													
		lb <sub>r</sub>	1574													
Max. Tilting Moment	$M_{2KMax}$	Nm	2013													
		in.lb	17816													
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	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	$\eta$	%	93													
Operating Temperature		°C	-25 to +90													
		F	-13 to +194													
Lubrication			Synthetic Lubrication Grease													
Mouting Position			Any Directions													
Protection Class			IP 65													
Service lifetime	$L_h$	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)													
Weight	$m$	kg	49													
		lb <sub>m</sub>	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	$T_{2a}$	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	$j_i$	arcmin	≤7								
Reduced Low Backlash P0	$j_i$	arcmin	≤5								
Ultra Low Backlash PU	$j_i$	arcmin	≤3								
Torsional Rigidity	$C_{121}$	Nm/arcmin	220								
		in.lb/arcmin	1947.15								
Maximum Radial Load	$F_{2AMax}$	N	16000								
		lb <sub>r</sub>	3597								
Maximum Axial Load	$F_{2OMax}$	N	8000								
		lb <sub>r</sub>	1798								
Max. Tilting Moment	$M_{2KMax}$	Nm	2676								
		in.lb	23684								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	69.61	54.37	53.27	53.27	50.84	50.84	50.84	50.56	
Operating Noise Level	$L_{PA}$	dB(A)	< 75								
Efficiency at Full loading	$\eta$	%	95								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_h$	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)								
Weight	$m$	kg	68								
		lb <sub>m</sub>	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	17701	16816	16816	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	53104	50449	50449	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	31863	30269	30269	28676	28676	
Maximum Torque	$T_{2a}$	Nm	4100	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	
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	$j_i$	arcmin	≤9													
Reduced Low Backlash P0	$j_i$	arcmin	≤7													
Ultra Low Backlash PU	$j_i$	arcmin	≤5													
Torsional Rigidity	$C_{121}$	Nm/arcmin	220													
		in.lb/arcmin	1947.15													
Maximum Radial Load	$F_{2AMax}$	N	16000													
		lb <sub>r</sub>	3597													
Maximum Axial Load	$F_{2OMax}$	N	8000													
		lb <sub>r</sub>	1798													
Max. Tilting Moment	$M_{2KMax}$	Nm	2676													
		in.lb	23684													
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	22.75	22.75	22.75	22.59	22.59	22.59	22.59	22.59	22.59	22.59	22.75	22.75	22.59	
Operating Noise Level	$L_{PA}$	dB(A)	< 75													
Efficiency at Full loading	$\eta$	%	93													
Operating Temperature		°C	-25 to +90													
		F	-13 to +194													
Lubrication			Synthetic Lubrication Grease													
Mouting Position			Any Directions													
Protection Class			IP 65													
Service lifetime	$L_h$	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)													
Weight	$m$	kg	78													
		lb <sub>m</sub>	171.6													

**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	$T_{2a}$	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	$j_i$	arcmin	≤7								
Reduced Low Backlash P0	$j_i$	arcmin	≤5								
Ultra Low Backlash PU	$j_i$	arcmin	≤3								
Torsional Rigidity	$C_{121}$	Nm/arcmin	220								
		in.lb/arcmin	1947.15								
Maximum Radial Load	$F_{2AMax}$	N	16000								
		lb <sub>r</sub>	3597								
Maximum Axial Load	$F_{2OMax}$	N	8000								
		lb <sub>r</sub>	1798								
Max. Tilting Moment	$M_{2KMax}$	Nm	2676								
		in.lb	23684								
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	69.61	54.37	53.27	53.27	50.84	50.84	50.84	50.56	
Operating Noise Level	$L_{PA}$	dB(A)	< 75								
Efficiency at Full loading	$\eta$	%	95								
Operating Temperature		°C	-25 to +90								
		F	-13 to +194								
Lubrication			Synthetic Lubrication Grease								
Mouting Position			Any Directions								
Protection Class			IP 65								
Service lifetime	$L_h$	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)								
Weight	$m$	kg	68								
		lb <sub>m</sub>	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	17701	16816	16816	15931	15931	
Emergency Stop Torque	$T_{2Not}$	Nm	6150	6000	6000	6000	6000	6000	6000	6000	5700	5700	5400	5400		
		in.lb	54432	53104	53104	53104	53104	53104	53104	53104	50449	50449	47794	47794		
Maximum Acceleration Torque	$T_{2B}$	Nm	3690	3600	3600	3600	3600	3600	3600	3600	3420	3420	3240	3240		
		in.lb	32659	31863	31863	31863	31863	31863	31863	31863	30269	30269	28676	28676		
Maximum Torque	$T_{2a}$	Nm	4100	4000	4000	4000	4000	4000	4000	4000	3800	3800	3600	3600		
		in.lb	36288	35403	35403	35403	35403	35403	35403	35403	33633	33633	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		
		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		
Standard Backlash P1	$j_i$	arcmin	≤9													
Reduced Low Backlash P0	$j_i$	arcmin	≤7													
Ultra Low Backlash PU	$j_i$	arcmin	≤5													
Torsional Rigidity	$C_{121}$	Nm/arcmin	220													
		in.lb/arcmin	1947.15													
Maximum Radial Load	$F_{2AMax}$	N	16000													
		lb <sub>r</sub>	3597													
Maximum Axial Load	$F_{2OMax}$	N	8000													
		lb <sub>r</sub>	1798													
Max. Tilting Moment	$M_{2KMax}$	Nm	2676													
		in.lb	23684													
Mass Moment of Inertia	$j_1$	kgcm <sup>2</sup>	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	$\eta$	%	93													
Operating Temperature		°C	-25 to +90													
		F	-13 to +194													
Lubrication			Synthetic Lubrication Grease													
Mouting Position			Any Directions													
Protection Class			IP 65													
Service lifetime	$L_h$	h	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)													
Weight	$m$	kg	78													
		lb <sub>m</sub>	171.6													





