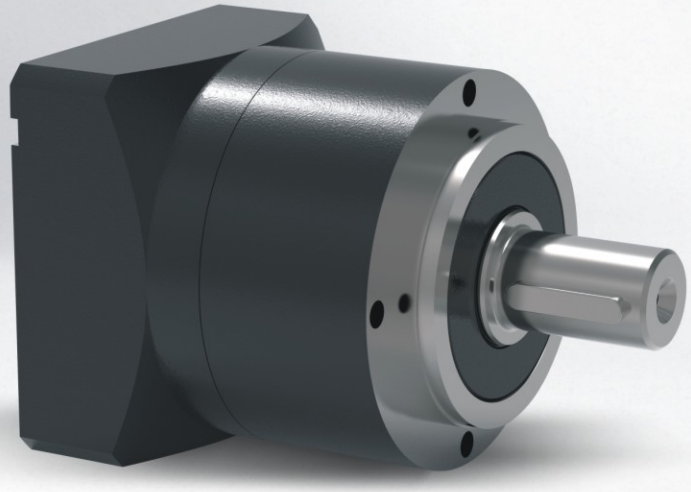
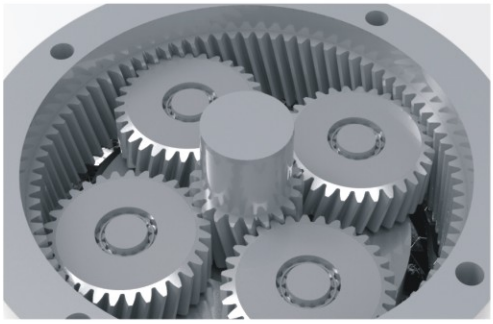
XA

Powerful. High Precision. Reliable

- Servo Planetary Gearbox

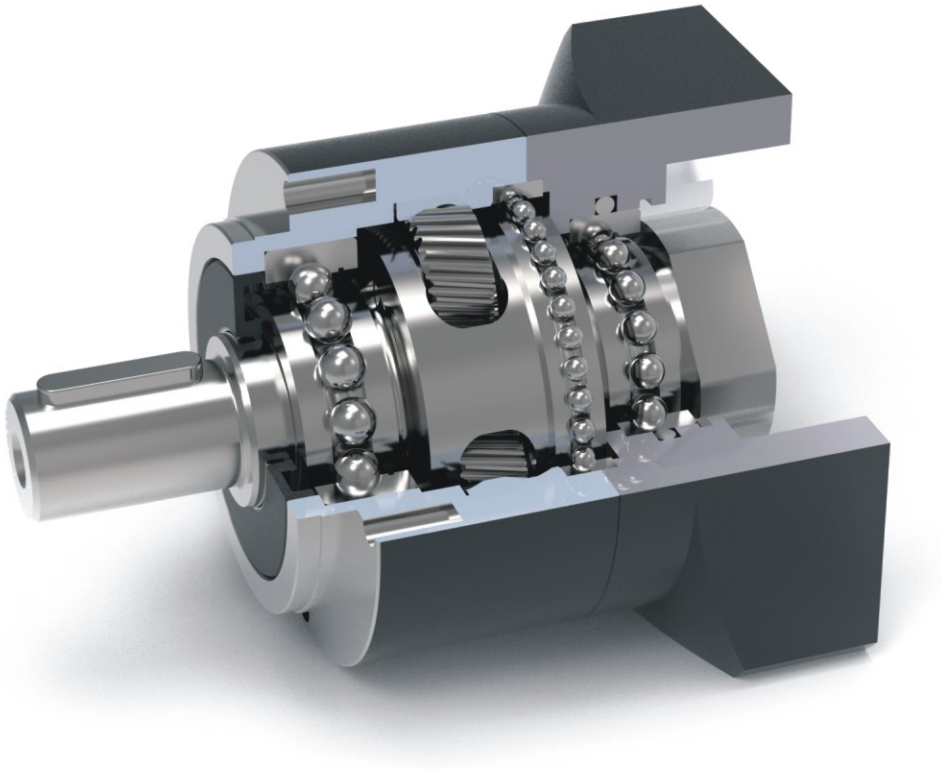
Advanced Gearbox Solution





Helical Gear System Technology

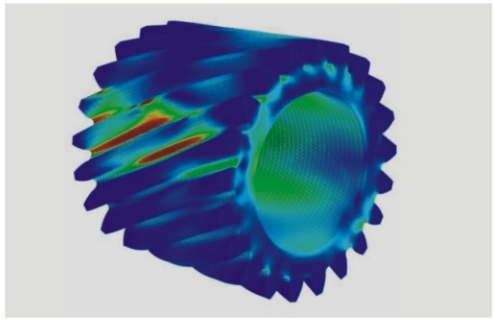
Thanks to the tooth to tooth compact ratio more than 60%.The helical gearing and full needle bearing bring the benefits including higher torque capacity, smooth and lower noise running, decreased backlash and higher efficiency. Integrated housing engineering with super skiving gearing tooling craft.





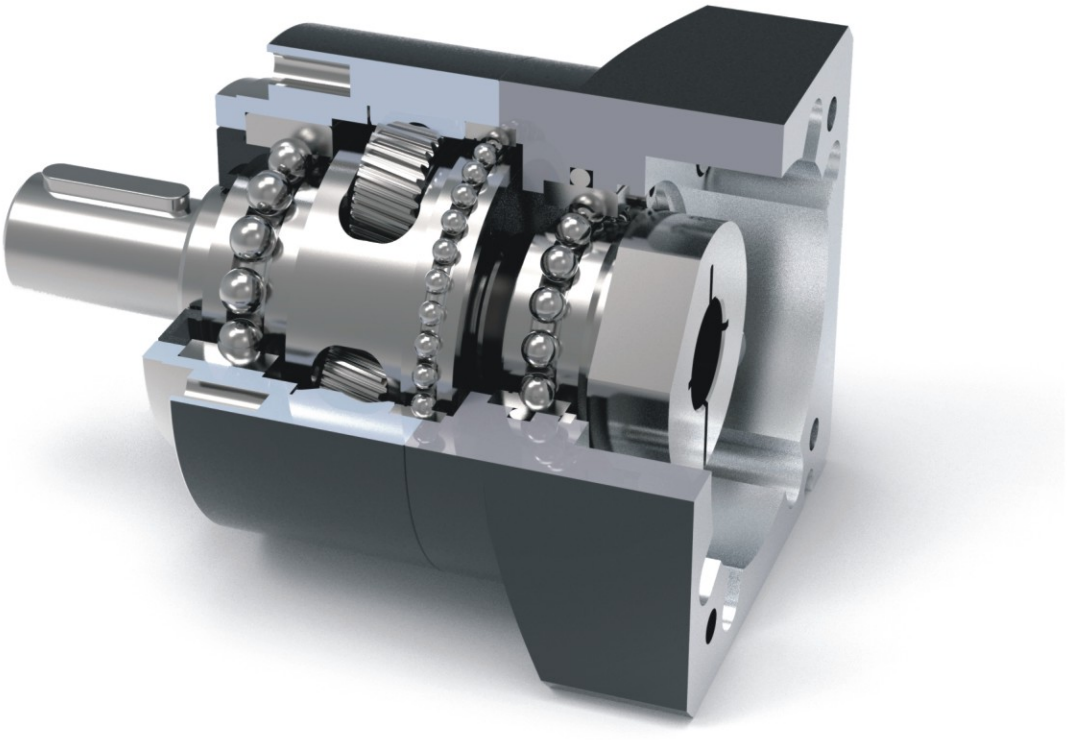
Master CageSpindle Planetary Carrier

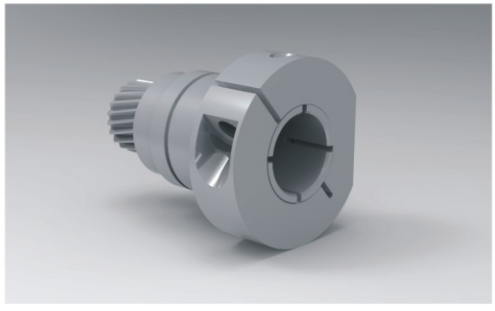
The patented Master CageSpindle integrated planetary carrier support planetary gearbox to increase constructional strength running stability and rigidity significantly. Synthetic grease lubrication allows maintenance free for gearbox whole service life.



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.

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

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_{t21}	*Nm/arcmin*	3							
		in.lb/arcmin	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*	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_{t21}	*Nm/arcmin*	3												
		in.lb/arcmin	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*	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_{t21}	*Nm/arcmin*	7							
		in.lb/arcmin	61.95							
Maximum Radial Load	F_{2AMax}	*N*	1500							
		lb_f	337							
Maximum Axial Load	F_{2QMax}	*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_{t21}	*Nm/arcmin*	7													
		in.lb/arcmin	61.95													
Maximum Radial Load	F_{2AMax}	*N*	1500													
		lb_f	337													
Maximum Axial Load	F_{2QMax}	*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_{t21}	*Nm/arcmin*	14							
		in.lb/arcmin	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*	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_{t21}	*Nm/arcmin*	14													
		in.lb/arcmin	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*	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_{t21}	*Nm/arcmin*	26							
		in.lb/arcmin	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*	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_{t21}	*Nm/arcmin*	26													
		in.lb/arcmin	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*	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_{t21}	*Nm/arcmin*	52							
		in.lb/arcmin	460.24							
Maximum Radial Load	F_{2AMax}	*N*	9600							
		lb_f	2158							
Maximum Axial Load	F_{2QMax}	*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_{t21}	*Nm/arcmin*	52													
		in.lb/arcmin	460.24													
Maximum Radial Load	F_{2AMax}	*N*	9600													
		lb$_f$	2158													
Maximum Axial Load	F_{2QMax}	*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_{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*	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_{2QMax}	*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_{2a}	*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_{2QMax}	*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													

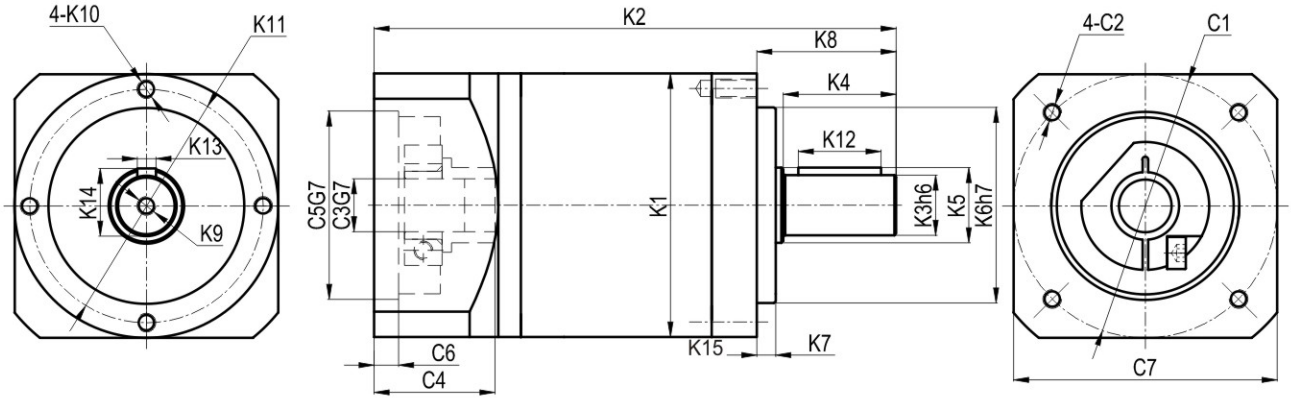
XA235 1-stage

			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_{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*	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_{2QMax}	*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_{2a}	*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_{2QMax}	*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													

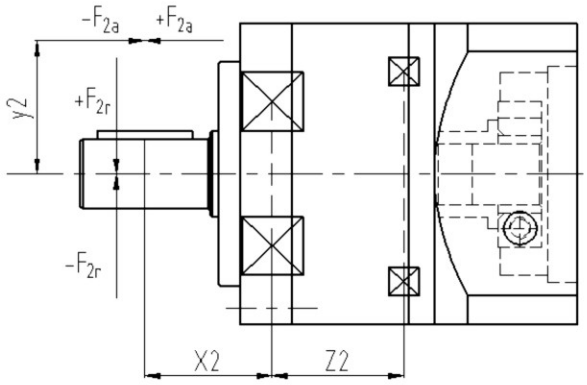
XA Dimensions



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