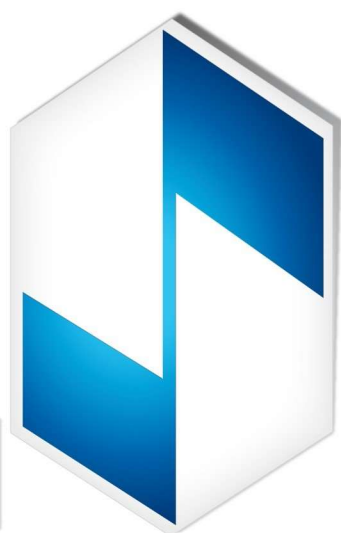


SANGALLI SERVOMOTORI



Precision Planetary Gearboxes

Advanced Gearbox Solution

INDEX

PLANETARY GEARBOX

SPL Series



STANDARD PRECISION GEARBOX

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SVL Series



STANDARD PRECISION GEARBOX 90°

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Gearbox	Nominal output torque	Backlash	Bearing load	Protection class	Running noise	Input speeds	Torsional stiffness	Wide range of ratios
SPL								
SVL								

Technical details across the all range			
Operating Noise Level	L	dB(A)	< 6x
Efficiency at Full loading	η	%	9x
Operating Temperature		°C	-25 to +90
Lubrication			Syntetic Lubrification Grease
Mouting Position			Any Direction
Protection Class			IP 65
Service lifetime	Ln	h	20,000 (Continuous Operation)

SPL Series

Standard Precision Gearbox



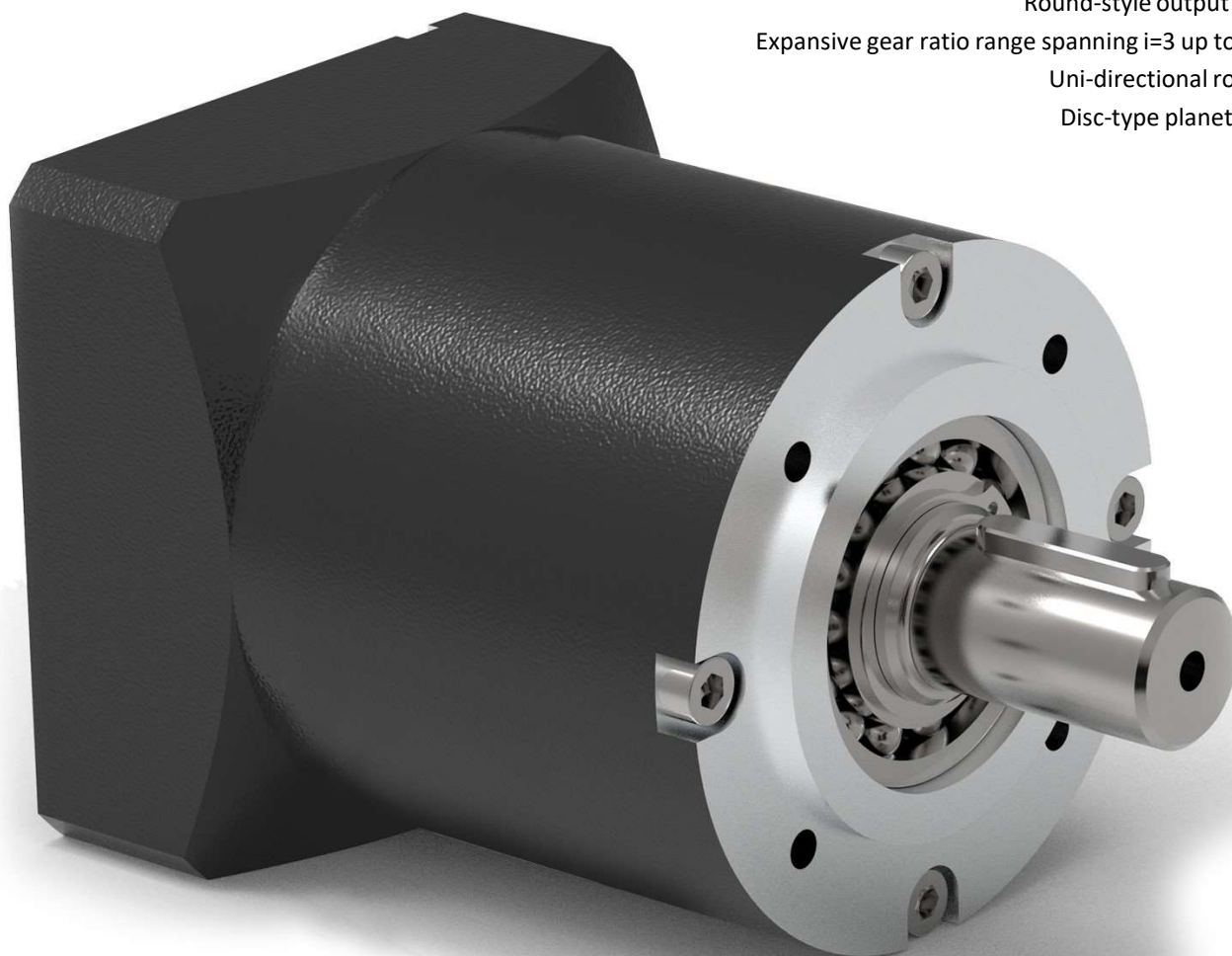
**SANGALLI
SERVOMOTORI**

SPL is our highly successful high precision gearbox series

The SPL is our super value gearbox option with an unequalled price-to-performance level. Boasting an exceptionally lightweight yet incredibly robust design, this unit is ideally suited to handle even the most demanding production environments, thanks to its innovative low-friction bearing system and optimized lubrication. Quite simply, a high-performance powerhouse offered at a compelling and consumer-friendly price point.

Key Features:

Economy Series,
Coaxial gearbox configuration,
Spur gear train,
Low-friction deep groove ball bearings,
Round-style output flange,
Expansive gear ratio range spanning $i=3$ up to $i=512$,
Uni-directional rotation,
Disc-type planet carrier

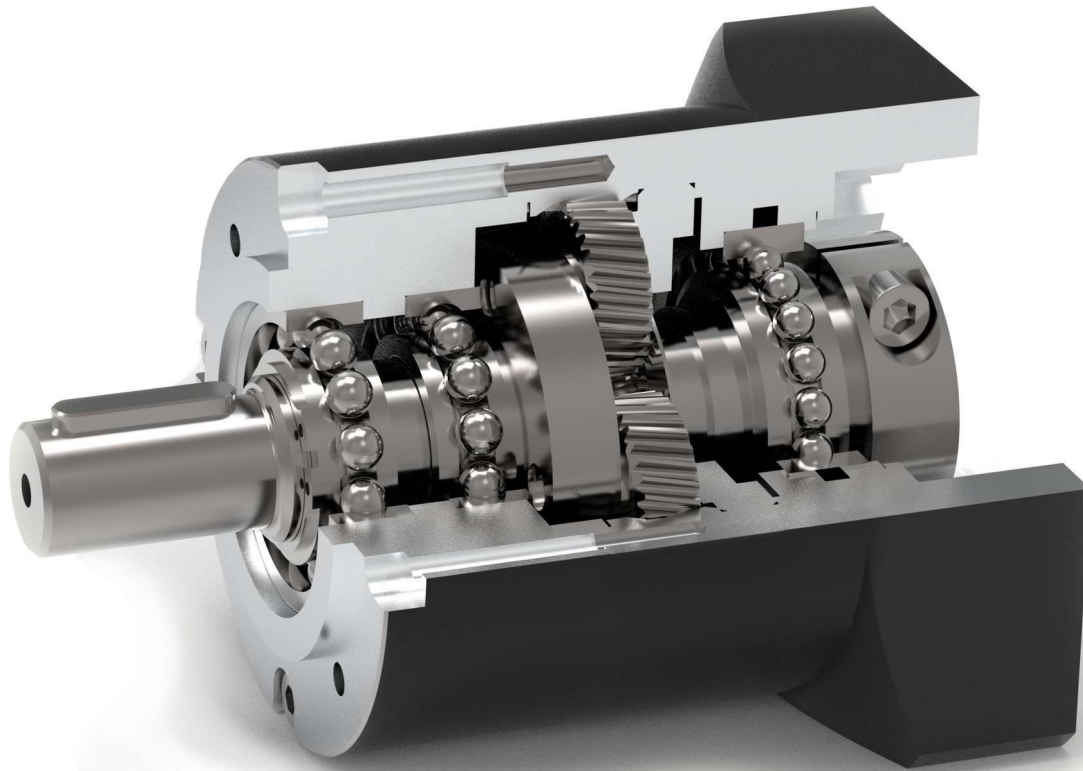


SPL Series

Standard Precision Gearbox



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Helical Gear System Technology

Thanks to the tooth to tooth compact ratio more than 60%.

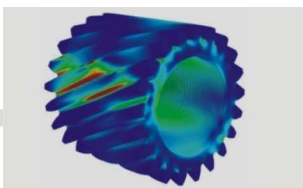
The helical gearing and full needle bearing bring the benefits including higher torque capacity, smooth and lower noise running, decreased backlash and higher efficiency.



The Powerful Cantilever Planetary Carrier

The powerful cantilever planetary carrier provide great mechanical support for planetary gears, thus the complete gearbox can reach high level stability.

Synthetic grease lubrication allows maintenance free for gearbox whole service life.



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 damping 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.

SPL040 1-stage

1-stage									
Ratio	i		3	4	5	7	8	9	10
Nominal Output Torque	T_{2N}	Nm	13	17	17	—	12	—	—
Emergency Stop Torque	T_{2STOP}	Nm	26	34	34	—	24	—	—
Maximum Acceleration Torque	T_{2ACC}	Nm	23.4	30.6	30.6	—	21.6	—	—
Maximum Torque	T_{2MAX}	Nm	26	34	34	—	24	—	—
Permitted Average Input Speed	N_{1N}	rpm	4000						
Maximum Input Speed	N_{1MAX}	rpm	8000						
Mean No Load Running Torque	T_{1NL}	Nm	0.022	0.019	0.017	—	0.017	—	—
Maximum Torsional Backlash	j_t	arcmin	≤ 12						
Torsional Rigidity	C_g	Nm/arcmin	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Maximum Radial Load	F_r	N	385						
Maximum Axial Load	F_a	N	250						
Max. Tilting Moment	M_k	Nm	30						
Mass Moment of Inertia	J_1	kgcm ²	0.031	0.022	0.019	—	0.017	—	—
Weight	m_G	kg	0.4						

SPL040 2-stage

2-stage										
Ratio	i		12	15	16	20	25	32	40	64
Nominal Output Torque	T _{2N}	Nm	16	16	16	17	17	17	17	13
Emergency Stop Torque	T _{2STOP}	Nm	32	32	32	34	34	34	34	26
Maximum Acceleration Torque	T _{2ACC}	Nm	28.8	28.8	28.8	30.6	30.6	30.6	30.6	23.4
Maximum Torque	T _{2MAX}	Nm	32	32	32	34	34	34	34	26
Permitted Average Input Speed	N _{1N}	rpm	4000							
Maximum Input Speed	N _{1MAX}	rpm	8000							
Mean No Load Running Torque	T _{1NL}	Nm	0.019	0.017	0.019	0.017	0.017	0.017	0.017	0.017
Maximum Torsional Backlash	j _t	arcmin	≤ 15							
Torsional Rigidity	C _g	Nm/arcmin	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Maximum Radial Load	F _r	N	385							
Maximum Axial Load	F _a	N	250							
Max. Tilting Moment	M _k	Nm	30							
Mass Moment of Inertia	J ₁	kgcm ²	0.031	0.029	0.023	0.022	0.019	0.019	0.017	0.016
Weight	m _G	kg	0.5							



SPL040 3-stage

3-stage										
Ratio	i		80	100	125	160	200	256	320	512
Nominal Output Torque	T_{2N}	Nm	17	17	17	17	17	17	17	13
Emergency Stop Torque	T_{2STOP}	Nm	34	34	34	34	34	34	34	26
Maximum Acceleration Torque	T_{2ACC}	Nm	30.6	30.6	30.6	30.6	30.6	30.6	30.6	23.4
Maximum Torque	T_{2MAX}	Nm	34	34	34	34	34	34	34	26
Permitted Average Input Speed	N_{1N}	rpm	4000							
Maximum Input Speed	N_{1MAX}	rpm	8000							
Mean No Load Running Torque	T_{1NL}	Nm	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017
Maximum Torsional Backlash	j_t	arcmin	≤ 17							
Torsional Rigidity	C_B	Nm/arcmin	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Maximum Radial Load	F_r	N	385							
Maximum Axial Load	F_a	N	250							
Max. Tilting Moment	M_k	Nm	30							
Mass Moment of Inertia	J_1	kgcm ²	0.029	0.019	0.019	0.029	0.016	0.016	0.016	0.016
Weight	m_G	kg	0.6							



SPL060 1-stage

1-stage									
Ratio	i		3	4	5	7	8	9	10
Nominal Output Torque	T_{2N}	Nm	28	36	37	37	32	30	25
Emergency Stop Torque	T_{2STOP}	Nm	56	72	74	74	64	60	50
Maximum Acceleration Torque	T_{2ACC}	Nm	50.4	64.8	66.6	66.6	57.6	54	45
Maximum Torque	T_{2MAX}	Nm	56	72	74	74	64	60	50
Permitted Average Input Speed	N_{1N}	rpm	4000						
Maximum Input Speed	N_{1MAX}	rpm	6000						
Mean No Load Running Torque	T_{1NL}	Nm	0.24	0.2	0.17	0.15	0.15	0.15	0.15
Maximum Torsional Backlash	j_t	arcmin	≤ 8						
Torsional Rigidity	C_g	Nm/arcmin	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Maximum Radial Load	F_r	N	430						
Maximum Axial Load	F_a	N	320						
Max. Tilting Moment	M_k	Nm	80						
Mass Moment of Inertia	J_1	kgcm ²	0.135	0.093	0.078	0.069	0.065	0.065	0.65
Weight	m_G	kg	1						

SPL060 2-stage

2-stage										
Ratio	i		12	15	16	20	25	32	40	64
Nominal Output Torque	T _{2N}	Nm	30	31	42	42	42	42	42	33
Emergency Stop Torque	T _{2STOP}	Nm	60	62	84	84	84	84	84	66
Maximum Acceleration Torque	T _{2ACC}	Nm	54	55.8	75.6	75.6	75.6	75.6	75.6	59.4
Maximum Torque	T _{2MAX}	Nm	60	62	84	84	84	84	84	66
Permitted Average Input Speed	N _{1N}	rpm	4000							
Maximum Input Speed	N _{1MAX}	rpm	6000							
Mean No Load Running Torque	T _{1NL}	Nm	0.2	0.17	0.2	0.17	0.17	0.15	0.15	0.15
Maximum Torsional Backlash	j _t	arcmin	≤ 10							
Torsional Rigidity	C _g	Nm/arcmin	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Maximum Radial Load	F _r	N	430							
Maximum Axial Load	F _a	N	320							
Max. Tilting Moment	M _k	Nm	80							
Mass Moment of Inertia	J ₁	kgcm ²	0.105	0.095	0.088	0.075	0.075	0.064	0.064	0.064
Weight	m _G	kg	1.2							



SPL060 3-stage

-stage										
Ratio	i		80	100	125	160	200	256	320	512
Nominal Output Torque	T_{2N}	Nm	42	42	42	42	42	42	42	33
Emergency Stop Torque	T_{2STOP}	Nm	84	84	84	84	84	84	84	66
Maximum Acceleration Torque	T_{2ACC}	Nm	75.6	75.6	75.6	75.6	75.6	75.6	75.6	59.4
Maximum Torque	T_{2MAX}	Nm	84	84	84	84	84	84	84	66
Permitted Average Input Speed	N_{1N}	rpm	4000							
Maximum Input Speed	N_{1MAX}	rpm	6000							
Mean No Load Running Torque	T_{1NL}	Nm	0.17	0.17	0.17	0.15	0.15	0.15	0.15	0.15
Maximum Torsional Backlash	j_t	arcmin	≤ 12							
Torsional Rigidity	C_g	Nm/arcmin	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Maximum Radial Load	F_r	N	430							
Maximum Axial Load	F_a	N	320							
Max. Tilting Moment	M_k	Nm	80							
Mass Moment of Inertia	J_1	kgcm ²	0.075	0.064	0.064	0.064	0.064	0.064	0.064	0.064
Weight	m_G	kg	1.4							

SPL080 1-stage

1-stage									
Ratio	i		3	4	5	7	8	9	10
Nominal Output Torque	T_{2N}	Nm	75	90	95	82	80	78	65
Emergency Stop Torque	T_{2STOP}	Nm	150	180	190	164	160	156	130
Maximum Acceleration Torque	T_{2ACC}	Nm	135	162	171	147.6	144	140.4	117
Maximum Torque	T_{2MAX}	Nm	150	180	190	164	160	156	130
Permitted Average Input Speed	N_{1N}	rpm	3000						
Maximum Input Speed	N_{1MAX}	rpm	6000						
Mean No Load Running Torque	T_{1NL}	Nm	0.38	0.36	0.31	0.25	0.25	0.25	0.25
Maximum Torsional Backlash	j_t	arcmin	≤ 8						
Torsional Rigidity	C_g	Nm/arcmin	4	4	4	4	4	4	4
Maximum Radial Load	F_r	N	640						
Maximum Axial Load	F_a	N	420						
Max. Tilting Moment	M_k	Nm	200						
Mass Moment of Inertia	J_1	kgcm ²	0.770	0.520	0.450	0.400	0.390	0.390	0.390
Weight	m_G	kg	2						

SPL080 2-stage

2-stage										
Ratio	i		12	15	16	20	25	32	40	64
Nominal Output Torque	T _{2N}	Nm	80	90	90	90	90	90	90	80
Emergency Stop Torque	T _{2STOP}	Nm	160	180	180	180	180	180	180	160
Maximum Acceleration Torque	T _{2ACC}	Nm	144	162	162	162	162	162	162	144
Maximum Torque	T _{2MAX}	Nm	160	180	180	180	180	180	180	160
Permitted Average Input Speed	N _{1N}	rpm	3000							
Maximum Input Speed	N _{1MAX}	rpm	6000							
Mean No Load Running Torque	T _{1NL}	Nm	0.36	0.31	0.36	0.31	0.31	0.25	0.25	0.25
Maximum Torsional Backlash	j _t	arcmin	≤ 10							
Torsional Rigidity	C _g	Nm/arcmin	4	4	4	4	4	4	4	4
Maximum Radial Load	F _r	N	640							
Maximum Axial Load	F _a	N	420							
Max. Tilting Moment	M _k	Nm	200							
Mass Moment of Inertia	J ₁	kgcm ²	0.670	0.510	0.500	0.440	0.440	0.390	0.390	0.39
Weight	m _G	kg	2.8							



SPL080 3-stage

3-stage										
Ratio	i		80	100	125	160	200	256	320	512
Nominal Output Torque	T_{2N}	Nm	95	95	95	95	95	95	95	82
Emergency Stop Torque	T_{2STOP}	Nm	190	190	190	190	190	190	190	164
Maximum Acceleration Torque	T_{2ACC}	Nm	171	171	171	171	171	171	171	147.6
Maximum Torque	T_{2MAX}	Nm	190	190	190	190	190	190	190	164
Permitted Average Input Speed	N_{1N}	rpm	3000							
Maximum Input Speed	N_{1MAX}	rpm	6000							
Mean No Load Running Torque	T_{1NL}	Nm	0.31	0.31	0.31	0.25	0.25	0.25	0.25	0.25
Maximum Torsional Backlash	j_t	arcmin	≤ 12							
Torsional Rigidity	C_g	Nm/arcmin	4	4	4	4	4	4	4	4
Maximum Radial Load	F_r	N	640							
Maximum Axial Load	F_a	N	420							
Max. Tilting Moment	M_k	Nm	200							
Mass Moment of Inertia	J_1	kgcm ²	0.500	0.440	0.700	0.390	0.390	0.390	0.390	0.390
Weight	m_G	kg	3.5							

SPL120 1-stage

1-stage									
Ratio	i		3	4	5	7	8	9	10
Nominal Output Torque	T_{2N}	Nm	190	240	245	235	210	200	196
Emergency Stop Torque	T_{2STOP}	Nm	380	480	490	470	420	400	392
Maximum Acceleration Torque	T_{2ACC}	Nm	342	432	441	423	378	360	352.8
Maximum Torque	T_{2MAX}	Nm	380	480	490	470	420	400	392
Permitted Average Input Speed	N_{1N}	rpm	3000						
Maximum Input Speed	N_{1MAX}	rpm	6000						
Mean No Load Running Torque	T_{1NL}	Nm	1	0.95	0.85	0.78	0.78	0.78	0.78
Maximum Torsional Backlash	j_t	arcmin	≤ 8						
Torsional Rigidity	C_g	Nm/arcmin	10	10	10	10	10	10	10
Maximum Radial Load	F_r	N	2070						
Maximum Axial Load	F_a	N	970						
Max. Tilting Moment	M_k	Nm	400						
Mass Moment of Inertia	J_1	kgcm ²	2.630	1.790	1.530	1.400	1.320	1.320	1.320
Weight	m_G	kg	6.5						

SPL120 2-stage

2-stage										
Ratio	i		12	15	16	20	25	32	40	64
Nominal Output Torque	T _{2N}	Nm	210	210	220	230	255	255	250	210
Emergency Stop Torque	T _{2STOP}	Nm	420	420	440	460	510	510	500	420
Maximum Acceleration Torque	T _{2ACC}	Nm	378	378	396	414	459	459	450	378
Maximum Torque	T _{2MAX}	Nm	420	420	440	460	510	510	500	420
Permitted Average Input Speed	N _{1N}	rpm	3000							
Maximum Input Speed	N _{1MAX}	rpm	6000							
Mean No Load Running Torque	T _{1NL}	Nm	0.95	0.85	0.95	0.85	0.85	0.78	0.78	0.78
Maximum Torsional Backlash	j _t	arcmin	≤ 10							
Torsional Rigidity	C _g	Nm/arcmin	10	10	10	10	10	10	10	10
Maximum Radial Load	F _r	N	2070							
Maximum Axial Load	F _a	N	970							
Max. Tilting Moment	M _k	Nm	400							
Mass Moment of Inertia	J ₁	kgcm ²	1.630	1.670	1.750	1.530	1.490	1.320	1.320	1.320
Weight	m _G	kg	9.5							



SPL120 3-stage

3-stage										
Ratio	i		80	100	125	160	200	256	320	512
Nominal Output Torque	T_{2N}	Nm	255	255	255	255	255	255	255	210
Emergency Stop Torque	T_{2STOP}	Nm	510	510	510	510	510	510	510	420
Maximum Acceleration Torque	T_{2ACC}	Nm	459	459	459	459	459	459	459	378
Maximum Torque	T_{2MAX}	Nm	510	510	510	510	510	510	510	420
Permitted Average Input Speed	N_{1N}	rpm	3000							
Maximum Input Speed	N_{1MAX}	rpm	6000							
Mean No Load Running Torque	T_{1NL}	Nm	0.85	0.85	0.85	0.78	0.78	0.78	0.78	0.78
Maximum Torsional Backlash	j_t	arcmin	≤ 12							
Torsional Rigidity	C_g	Nm/arcmin	10	10	10	10	10	10	10	10
Maximum Radial Load	F_r	N	2070							
Maximum Axial Load	F_a	N	970							
Max. Tilting Moment	M_k	Nm	400							
Mass Moment of Inertia	J_1	kgcm ²	1.530	1.490	2.570	1.300	1.300	1.300	1.300	1.300
Weight	m_G	kg	11							

SPL160 1-stage

1-stage									
Ratio	i		3	4	5	7	8	9	10
Nominal Output Torque	T_{2N}	Nm	440	544	585	480	450	415	400
Emergency Stop Torque	T_{2STOP}	Nm	880	1088	1170	960	900	830	800
Maximum Acceleration Torque	T_{2ACC}	Nm	792	979.2	1053	864	810	747	720
Maximum Torque	T_{2MAX}	Nm	880	1088	1170	960	900	830	800
Permitted Average Input Speed	N_{1N}	rpm	3000						
Maximum Input Speed	N_{1MAX}	rpm	6000						
Mean No Load Running Torque	T_{1NL}	Nm	2.55	2.45	2.3	2.2	2.2	2.2	2.2
Maximum Torsional Backlash	j_t	arcmin	≤ 8						
Torsional Rigidity	C_g	Nm/arcmin	28.7	28.7	28.7	28.7	28.7	28.7	28.7
Maximum Radial Load	F_r	N	7300						
Maximum Axial Load	F_a	N	6400						
Max. Tilting Moment	M_k	Nm	850						
Mass Moment of Inertia	J_1	kgcm ²	12.100	7.750	6.000	5.100	3.740	3.620	3.620
Weight	m_G	kg	15.5						

SPL160 2-stage

2-stage										
Ratio	i		12	15	16	20	25	32	40	64
Nominal Output Torque	T _{2N}	Nm	450	450	450	564	608	608	608	450
Emergency Stop Torque	T _{2STOP}	Nm	900	900	900	1128	1216	1216	1216	900
Maximum Acceleration Torque	T _{2ACC}	Nm	810	810	810	1015.2	1094.4	1094.4	1094.4	810
Maximum Torque	T _{2MAX}	Nm	900	900	900	1128	1216	1216	1216	900
Permitted Average Input Speed	N _{1N}	rpm	3000							
Maximum Input Speed	N _{1MAX}	rpm	6000							
Mean No Load Running Torque	T _{1NL}	Nm	2.45	2.3	2.45	2.3	2.3	2.2	2.2	2.2
Maximum Torsional Backlash	j _t	arcmin	≤ 10							
Torsional Rigidity	C _g	Nm/arcmin	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7
Maximum Radial Load	F _r	N	7300							
Maximum Axial Load	F _a	N	6400							
Max. Tilting Moment	M _k	Nm	850							
Mass Moment of Inertia	J ₁	kgcm ²	10.100	8.100	7.470	6.650	5.810	6.340	5.360	4.080
Weight	m _G	kg	28							



SPL160 3-stage

3-stage										
Ratio	i		80	100	125	160	200	256	320	512
Nominal Output Torque	T_{2N}	Nm	580	580	580	580	608	608	580	450
Emergency Stop Torque	T_{2STOP}	Nm	1160	1160	1160	1160	1216	1216	1160	900
Maximum Acceleration Torque	T_{2ACC}	Nm	1044	1044	1044	1044	1094.4	1094.4	1044	810
Maximum Torque	T_{2MAX}	Nm	1160	1160	1160	1160	1216	1216	1160	900
Permitted Average Input Speed	N_{1N}	rpm	3000							
Maximum Input Speed	N_{1MAX}	rpm	6000							
Mean No Load Running Torque	T_{1NL}	Nm	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2
Maximum Torsional Backlash	j_t	arcmin	≤ 12							
Torsional Rigidity	C_g	Nm/arcmin	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7
Maximum Radial Load	F_r	N	7300							
Maximum Axial Load	F_a	N	6400							
Max. Tilting Moment	M_k	Nm	850							
Mass Moment of Inertia	J_1	kgcm ²	7.400	7.300	7.300	6.500	6.500	6.500	6.500	6.500
Weight	m_G	kg	30.5							



SPL205 1-stage

1-stage									
Ratio	i		3	4	5	7	8	9	10
Nominal Output Torque	T_{2N}	Nm	600	1050	1000	800	800	710	710
Emergency Stop Torque	T_{2STOP}	Nm	1200	2100	2000	1600	1600	1420	1420
Maximum Acceleration Torque	T_{2ACC}	Nm	1080	1890	1800	1440	1440	1278	1278
Maximum Torque	T_{2MAX}	Nm	1200	2100	2000	1600	1600	1420	1420
Permitted Average Input Speed	N_{1N}	rpm	2000						
Maximum Input Speed	N_{1MAX}	rpm	4000						
Mean No Load Running Torque	T_{1NL}	Nm	3.5	3.3	3.15	3	3	3	3
Maximum Torsional Backlash	j_t	arcmin	≤ 8						
Torsional Rigidity	C_g	Nm/arcmin	120	120	120	120	120	120	120
Maximum Radial Load	F_r	N	12000						
Maximum Axial Load	F_a	N	6800						
Max. Tilting Moment	M_k	Nm	1280						
Mass Moment of Inertia	J_1	kgcm ²	28.980	23.670	22.750	22.480	22.590	22.590	22.550
Weight	m_G	kg	31						

SPL205 2-stage

2-stage										
Ratio	i		12	15	16	20	25	32	40	64
Nominal Output Torque	T _{2N}	Nm	650	650	800	1000	1000	1050	1000	800
Emergency Stop Torque	T _{2STOP}	Nm	1300	1300	1600	2000	2000	2100	2000	1600
Maximum Acceleration Torque	T _{2ACC}	Nm	1170	1170	1440	1800	1800	1890	1800	1440
Maximum Torque	T _{2MAX}	Nm	1300	1300	1600	2000	2000	2100	2000	1600
Permitted Average Input Speed	N _{1N}	rpm	2000							
Maximum Input Speed	N _{1MAX}	rpm	4000							
Mean No Load Running Torque	T _{1NL}	Nm	2.45	2.3	2.45	2.3	2.3	2.2	2.2	2.2
Maximum Torsional Backlash	j _t	arcmin	≤ 10							
Torsional Rigidity	C _g	Nm/arcmin	120	120	120	120	120	120	120	120
Maximum Radial Load	F _r	N	12000							
Maximum Axial Load	F _a	N	6800							
Max. Tilting Moment	M _k	Nm	1280							
Mass Moment of Inertia	J ₁	kgcm ²	18.980	16.980	7.540	7.420	7.540	7.140	7.140	7.540
Weight	m _G	kg	39							



SPL205 3-stage

3-stage										
Ratio	i		80	100	125	160	200	256	320	512
Nominal Output Torque	T_{2N}	Nm	1000	1000	1000	1000	1000	1000	1000	800
Emergency Stop Torque	T_{2STOP}	Nm	2000	2000	2000	2000	2000	2000	2000	1600
Maximum Acceleration Torque	T_{2ACC}	Nm	1800	1800	1800	1800	1800	1800	1800	1440
Maximum Torque	T_{2MAX}	Nm	2000	2000	2000	2000	2000	2000	2000	1600
Permitted Average Input Speed	N_{1N}	rpm	2000							
Maximum Input Speed	N_{1MAX}	rpm	4000							
Mean No Load Running Torque	T_{1NL}	Nm	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2
Maximum Torsional Backlash	j_t	arcmin	≤ 12							
Torsional Rigidity	C_g	Nm/arcmin	120	120	120	120	120	120	120	120
Maximum Radial Load	F_r	N	12000							
Maximum Axial Load	F_a	N	6800							
Max. Tilting Moment	M_k	Nm	1280							
Mass Moment of Inertia	J_1	kgcm ²	7.540	7.420	7.420	7.140	7.140	7.140	7.140	7.140
Weight	m_G	kg	48							

SPL235 1-stage

1-stage									
Ratio	i		3	4	5	7	8	9	10
Nominal Output Torque	T_{2N}	Nm	1000	1600	1850	1550	1350	1300	1300
Emergency Stop Torque	T_{2STOP}	Nm	2000	3200	3700	3100	2700	2600	2600
Maximum Acceleration Torque	T_{2ACC}	Nm	1800	2880	3330	2790	2430	2340	2340
Maximum Torque	T_{2MAX}	Nm	2000	3200	3700	3100	2700	2600	2600
Permitted Average Input Speed	N_{1N}	rpm	1500						
Maximum Input Speed	N_{1MAX}	rpm	3000						
Mean No Load Running Torque	T_{1NL}	Nm	5.2	5	4.85	4.67	4.67	4.67	4.67
Maximum Torsional Backlash	j_t	arcmin	≤ 8						
Torsional Rigidity	C_g	Nm/arcmin	200	200	200	200	200	200	200
Maximum Radial Load	F_r	N	14000						
Maximum Axial Load	F_a	N	7800						
Max. Tilting Moment	M_k	Nm	2350						
Mass Moment of Inertia	J_1	kgcm ²	69.610	54.370	53.270	50.840	50.840	50.840	50.560
Weight	m_G	kg	53						

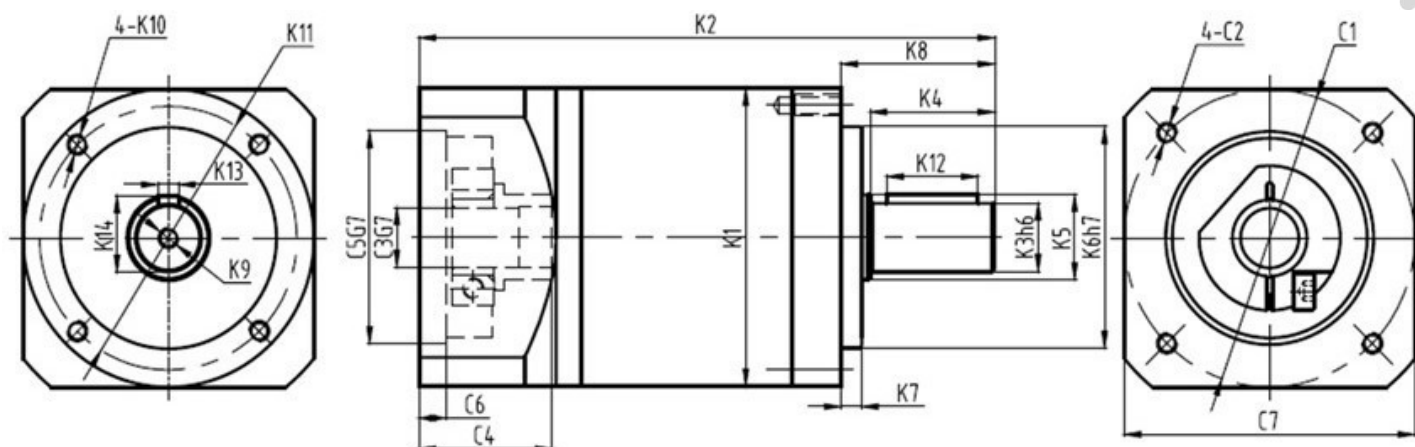
SPL235 2-stage

2-stage										
Ratio	i		12	15	16	20	25	32	40	64
Nominal Output Torque	T _{2N}	Nm	1000	1000	1100	1850	1850	1800	1850	1350
Emergency Stop Torque	T _{2STOP}	Nm	2000	2000	2200	3700	3700	3600	3700	2700
Maximum Acceleration Torque	T _{2ACC}	Nm	1800	1800	1980	3330	3330	3240	3330	2430
Maximum Torque	T _{2MAX}	Nm	2000	2000	2200	3700	3700	3600	3700	2700
Permitted Average Input Speed	N _{1N}	rpm	1500							
Maximum Input Speed	N _{1MAX}	rpm	3000							
Mean No Load Running Torque	T _{1NL}	Nm	3.3	3.15	3.3	3.15	3.15	3	3	3
Maximum Torsional Backlash	j _t	arcmin	≤ 10							
Torsional Rigidity	C _g	Nm/arcmin	200	200	200	200	200	200	200	200
Maximum Radial Load	F _r	N	14000							
Maximum Axial Load	F _a	N	7800							
Max. Tilting Moment	M _k	Nm	2350							
Mass Moment of Inertia	J ₁	kgcm ²	59.610	48.610	23.670	22.750	22.750	22.590	22.590	22.590
Weight	m _G	kg	66							



SPL235 3-stage

3-stage										
Ratio	i		80	100	125	160	200	256	320	512
Nominal Output Torque	T_{2N}	Nm	1850	1850	1850	1850	1850	1850	1850	1350
Emergency Stop Torque	T_{2STOP}	Nm	3700	3700	3700	3700	3700	3700	3700	2700
Maximum Acceleration Torque	T_{2ACC}	Nm	3330	3330	3330	3330	3330	3330	3330	2430
Maximum Torque	T_{2MAX}	Nm	3700	3700	3700	3700	3700	3700	3700	2700
Permitted Average Input Speed	N_{1N}	rpm	1500							
Maximum Input Speed	N_{1MAX}	rpm	3000							
Mean No Load Running Torque	T_{1NL}	Nm	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2
Maximum Torsional Backlash	j_t	arcmin	≤ 12							
Torsional Rigidity	C_g	Nm/arcmin	200	200	200	200	200	200	200	200
Maximum Radial Load	F_r	N	14000							
Maximum Axial Load	F_a	N	7800							
Max. Tilting Moment	M_k	Nm	2350							
Mass Moment of Inertia	J_1	kgcm ²	22.750	22.590	22.750	22.750	22.750	22.750	22.750	22.590
Weight	m_G	kg	75							



Model	SPL040			SPL060			SPL080			SPL120			SPL160			SPL205			SPL235		
Stage	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
K1	40			60			80			115.5			160			205			235		
K2	88.8	101.8	113.8	116.4	132	147.5	147	169	191	198.5	233.5	268.5	275.5	336.5	356	288	348	409	357.5	402	462
K3	10			14			20			25			40			55			75		
K4	23			30			36			50			80			82			105		
K5	12			17			25			35			50			60			85		
K6	26			40			60			80			130			160			180		
K7	2			3			3			4			5			15			30		
K8	26			35			40			55			87			105			138		
K9	M3X9			M5X12			M6X16			M10X26			M12X25			M20X40			M20X40		
K10	M4X6			M5X8			M6X15			M10X20			M12X25			M12X20			M16X28		
K11	34			52			70			100			145			184			210		
K12	16			22			28			40			70			70			90		
K13	3			5			6			8			12			16			20		
K14	11.2			16			22.5			28			43			59			79.5		
C1	46			70			90			145			200	145		215	200		235	215	200
C2	M4X10			M5X12			M6X15			M8X20			M12X25	M8X20		M12X25	M12X25		M12X25	M12X25	M12X25
C3	8			14			19			24			35	24		42	35		55	42	35
C4	26.1			31.5			41.6			56.5			82	61.3		82.5	82		115.5	82.5	82
C5	30			50			70			110			114.3	110		180	114.3		200	180	114.3
C6	6			6.5			6.5			8			8	6.5		8	8		8	8	8
C7	45			60			80			120			175	120		190	175		220	190	175

SVL Series

Standard Precision Gearbox - 90°



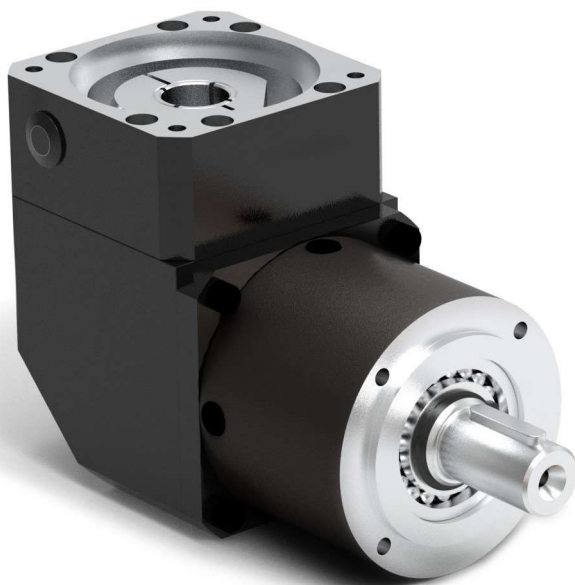
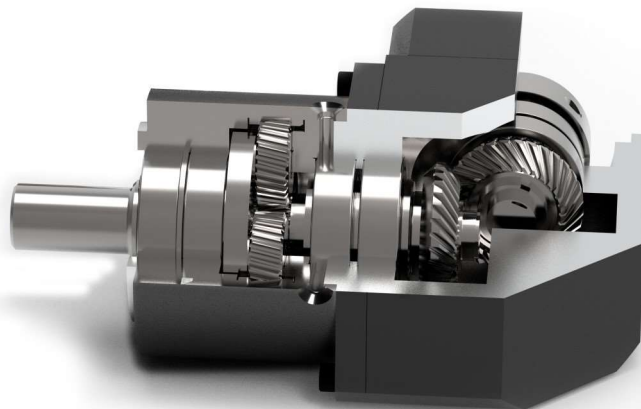
**SANGALLI
SERVOMOTORI**

SVL is our highly successful high precision gearbox 90° series

The SVL consistently delivers the benefits of the Economy line.

With its compact yet robust design, it is ideally tailored for dynamic systems with multiple axes.

Our right-angle gearbox is lubricated for its entire lifespan, effortless to install, and delivers an unparalleled balance between price and performance.



Key Features

Economy Line,
Right-angle gearbox,
Spur gear mechanism,
Bevel gear in a right-angle configuration,
Low-friction deep groove ball bearings,
Circular output flange,
Wide range of high gear ratios from $i=3$ to $i=512$,
Bidirectional rotation capability,
Planetary carrier designed in a disc format



Helical Gear System Technology

Thanks to the tooth to tooth compact ratio more than 60%.

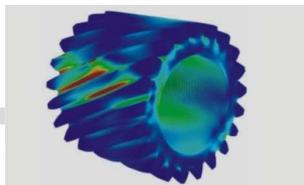
The helical gearing and full needle bearing bring the benefits including higher torque capacity, smooth and lower noise running, decreased backlash and higher efficiency.



The Powerful Cantilever Planetary Carrier

The powerful cantilever planetary carrier provide great mechanical support for planetary gears, thus the complete gearbox can reach high level stability.

Synthetic grease lubrication allows maintenance free for gearbox whole service life.



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 damping 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.



SVL060 1-stage

1-stage									
Ratio	i		3	4	5	7	8	9	10
Nominal Output Torque	T_{2N}	Nm	28	36	37	37	32	30	25
Emergency Stop Torque	T_{2STOP}	Nm	56	72	74	74	64	60	50
Maximum Acceleration Torque	T_{2ACC}	Nm	50.4	64.8	66.6	66.6	57.6	54	45
Maximum Torque	T_{2MAX}	Nm	56	72	74	74	64	60	50
Permitted Average Input Speed	N_{1N}	rpm	4000						
Maximum Input Speed	N_{1MAX}	rpm	6000						
Mean No Load Running Torque	T_{1NL}	Nm	0.24	0.2	0.17	0.15	0.15	0.15	0.15
Maximum Torsional Backlash	j_t	arcmin	≤ 10						
Torsional Rigidity	C_g	Nm/arcmin	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Maximum Radial Load	F_r	N	430						
Maximum Axial Load	F_a	N	320						
Max. Tilting Moment	M_k	Nm	80						
Mass Moment of Inertia	J_1	kgcm ²	0.135	0.093	0.078	0.069	0.065	0.065	0.065
Weight	m_G	kg	2.3						

SVL060 2-stage

2-stage										
Ratio	i		12	15	16	20	25	32	40	64
Nominal Output Torque	T _{2N}	Nm	30	31	42	42	42	42	42	33
Emergency Stop Torque	T _{2STOP}	Nm	60	62	84	84	84	84	84	66
Maximum Acceleration Torque	T _{2ACC}	Nm	54	55.8	75.6	75.6	75.6	75.6	75.6	59.4
Maximum Torque	T _{2MAX}	Nm	60	62	84	84	84	84	84	66
Permitted Average Input Speed	N _{1N}	rpm	4000							
Maximum Input Speed	N _{1MAX}	rpm	6000							
Mean No Load Running Torque	T _{1NL}	Nm	0.2	0.17	0.2	0.17	0.17	0.15	0.15	0.15
Maximum Torsional Backlash	j _t	arcmin	≤ 12							
Torsional Rigidity	C _g	Nm/arcmin	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Maximum Radial Load	F _r	N	430							
Maximum Axial Load	F _a	N	320							
Max. Tilting Moment	M _k	Nm	80							
Mass Moment of Inertia	J ₁	kgcm ²	0.105	0.095	0.088	0.075	0.075	0.064	0.064	0.064
Weight	m _G	kg	2.8							



SVL060 3-stage

3-stage										
Ratio	i		80	100	125	160	200	256	320	512
Nominal Output Torque	T_{2N}	Nm	42	42	42	42	42	42	42	33
Emergency Stop Torque	T_{2STOP}	Nm	84	84	84	84	84	84	84	66
Maximum Acceleration Torque	T_{2ACC}	Nm	75.6	75.6	75.6	75.6	75.6	75.6	75.6	59.4
Maximum Torque	T_{2MAX}	Nm	84	84	84	84	84	84	84	66
Permitted Average Input Speed	N_{1N}	rpm	4000							
Maximum Input Speed	N_{1MAX}	rpm	6000							
Mean No Load Running Torque	T_{1NL}	Nm	0.17	0.17	0.17	0.15	0.15	0.15	0.15	0.15
Maximum Torsional Backlash	j_t	arcmin	≤ 15							
Torsional Rigidity	C_g	Nm/arcmin	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Maximum Radial Load	F_r	N	430							
Maximum Axial Load	F_a	N	320							
Max. Tilting Moment	M_k	Nm	80							
Mass Moment of Inertia	J_1	kgcm ²	0.075	0.064	0.064	0.064	0.064	0.064	0.064	0.064
Weight	m_G	kg	3.4							



SVL080 1-stage

1-stage									
Ratio	i		3	4	5	7	8	9	10
Nominal Output Torque	T_{2N}	Nm	75	90	95	82	80	78	65
Emergency Stop Torque	T_{2STOP}	Nm	150	180	190	164	160	156	130
Maximum Acceleration Torque	T_{2ACC}	Nm	135	162	171	147.6	144	140.4	117
Maximum Torque	T_{2MAX}	Nm	150	180	190	164	160	156	130
Permitted Average Input Speed	N_{1N}	rpm	3000						
Maximum Input Speed	N_{1MAX}	rpm	6000						
Mean No Load Running Torque	T_{1NL}	Nm	0.38	0.36	0.31	0.25	0.25	0.25	0.25
Maximum Torsional Backlash	j_t	arcmin	≤ 10						
Torsional Rigidity	C_g	Nm/arcmin	4	4	4	4	4	4	4
Maximum Radial Load	F_r	N	640						
Maximum Axial Load	F_a	N	420						
Max. Tilting Moment	M_k	Nm	200						
Mass Moment of Inertia	J_1	kgcm ²	0.770	0.520	0.450	0.400	0.390	0.390	0.390
Weight	m_G	kg	5.4						

SVL080 2-stage

2-stage										
Ratio	i		12	15	16	20	25	32	40	64
Nominal Output Torque	T _{2N}	Nm	80	90	90	90	90	90	90	80
Emergency Stop Torque	T _{2STOP}	Nm	160	180	180	180	180	180	180	160
Maximum Acceleration Torque	T _{2ACC}	Nm	144	162	162	162	162	162	162	144
Maximum Torque	T _{2MAX}	Nm	160	180	180	180	180	180	180	160
Permitted Average Input Speed	N _{1N}	rpm	3000							
Maximum Input Speed	N _{1MAX}	rpm	6000							
Mean No Load Running Torque	T _{1NL}	Nm	0.36	0.31	0.36	0.31	0.31	0.25	0.25	0.25
Maximum Torsional Backlash	j _t	arcmin	≤ 12							
Torsional Rigidity	C _g	Nm/arcmin	4	4	4	4	4	4	4	4
Maximum Radial Load	F _r	N	640							
Maximum Axial Load	F _a	N	420							
Max. Tilting Moment	M _k	Nm	200							
Mass Moment of Inertia	J ₁	kgcm ²	0.670	0.510	0.500	0.440	0.440	0.390	0.390	0.39
Weight	m _G	kg	6.8							



SVL080 3-stage

3-stage										
Ratio	i		80	100	125	160	200	256	320	512
Nominal Output Torque	T_{2N}	Nm	95	95	95	95	95	95	95	82
Emergency Stop Torque	T_{2STOP}	Nm	190	190	190	190	190	190	190	164
Maximum Acceleration Torque	T_{2ACC}	Nm	171	171	171	171	171	171	171	147.6
Maximum Torque	T_{2MAX}	Nm	190	190	190	190	190	190	190	164
Permitted Average Input Speed	N_{1N}	rpm	3000							
Maximum Input Speed	N_{1MAX}	rpm	6000							
Mean No Load Running Torque	T_{1NL}	Nm	0.31	0.31	0.31	0.25	0.25	0.25	0.25	0.25
Maximum Torsional Backlash	j_t	arcmin	≤ 15							
Torsional Rigidity	C_g	Nm/arcmin	4	4	4	4	4	4	4	4
Maximum Radial Load	F_r	N	640							
Maximum Axial Load	F_a	N	420							
Max. Tilting Moment	M_k	Nm	200							
Mass Moment of Inertia	J_1	kgcm ²	0.500	0.440	0.700	0.390	0.390	0.390	0.390	0.390
Weight	m_G	kg	8							

SVL120 1-stage

1-stage									
Ratio	i		3	4	5	7	8	9	10
Nominal Output Torque	T_{2N}	Nm	190	240	245	235	210	200	196
Emergency Stop Torque	T_{2STOP}	Nm	380	480	490	470	420	400	392
Maximum Acceleration Torque	T_{2ACC}	Nm	342	432	441	423	378	360	352.8
Maximum Torque	T_{2MAX}	Nm	380	480	490	470	420	400	392
Permitted Average Input Speed	N_{1N}	rpm	3000						
Maximum Input Speed	N_{1MAX}	rpm	6000						
Mean No Load Running Torque	T_{1NL}	Nm	1	0.95	0.85	0.78	0.78	0.78	0.78
Maximum Torsional Backlash	j_t	arcmin	≤ 10						
Torsional Rigidity	C_g	Nm/arcmin	10	10	10	10	10	10	10
Maximum Radial Load	F_r	N	2070						
Maximum Axial Load	F_a	N	970						
Max. Tilting Moment	M_k	Nm	400						
Mass Moment of Inertia	J_1	kgcm ²	2.630	1.790	1.530	1.400	1.320	1.320	1.320
Weight	m_G	kg	12						

SVL120 2-stage

2-stage										
Ratio	i		12	15	16	20	25	32	40	64
Nominal Output Torque	T _{2N}	Nm	210	210	220	230	255	255	250	210
Emergency Stop Torque	T _{2STOP}	Nm	420	420	440	460	510	510	500	420
Maximum Accelleration Torque	T _{2ACC}	Nm	378	378	396	414	459	459	450	378
Maximum Torque	T _{2MAX}	Nm	420	420	440	460	510	510	500	420
Permitted Average Input Speed	N _{1N}	rpm	3000							
Maximum Input Speed	N _{1MAX}	rpm	6000							
Mean No Load Running Torque	T _{1NL}	Nm	0.95	0.85	0.95	0.85	0.85	0.78	0.78	0.78
Maximum Torsional Backlash	j _t	arcmin	≤ 12							
Torsional Rigidity	c _g	Nm/arcmin	10	10	10	10	10	10	10	10
Maximum Radial Load	F _r	N	2070							
Maximum Axial Load	F _a	N	970							
Max. Tilting Moment	M _k	Nm	400							
Mass Moment of Inertia	J ₁	kgcm ²	1.630	1.670	1.750	1.530	1.490	1.320	1.320	1.320
Weight	m _G	kg	15							



SVL120 3-stage

3-stage										
Ratio	i		80	100	125	160	200	256	320	512
Nominal Output Torque	T_{2N}	Nm	255	255	255	255	255	255	255	210
Emergency Stop Torque	T_{2STOP}	Nm	510	510	510	510	510	510	510	420
Maximum Acceleration Torque	T_{2ACC}	Nm	459	459	459	459	459	459	459	378
Maximum Torque	T_{2MAX}	Nm	510	510	510	510	510	510	510	420
Permitted Average Input Speed	N_{1N}	rpm	3000							
Maximum Input Speed	N_{1MAX}	rpm	6000							
Mean No Load Running Torque	T_{1NL}	Nm	0.85	0.85	0.85	0.78	0.78	0.78	0.78	0.78
Maximum Torsional Backlash	j_t	arcmin	≤ 15							
Torsional Rigidity	C_g	Nm/arcmin	10	10	10	10	10	10	10	10
Maximum Radial Load	F_r	N	2070							
Maximum Axial Load	F_a	N	970							
Max. Tilting Moment	M_k	Nm	400							
Mass Moment of Inertia	J_1	kgcm ²	1.530	1.490	2.570	1.300	1.300	1.300	1.300	1.300
Weight	m_G	kg	18							



SVL160 1-stage

1-stage									
Ratio	i		3	4	5	7	8	9	10
Nominal Output Torque	T_{2N}	Nm	440	544	585	480	450	415	400
Emergency Stop Torque	T_{2STOP}	Nm	880	1088	1170	960	900	830	800
Maximum Acceleration Torque	T_{2ACC}	Nm	792	979.2	1053	864	810	747	720
Maximum Torque	T_{2MAX}	Nm	880	1088	1170	960	900	830	800
Permitted Average Input Speed	N_{1N}	rpm	3000						
Maximum Input Speed	N_{1MAX}	rpm	6000						
Mean No Load Running Torque	T_{1NL}	Nm	2.55	2.45	2.3	2.2	2.2	2.2	2.2
Maximum Torsional Backlash	j_t	arcmin	≤ 10						
Torsional Rigidity	C_g	Nm/arcmin	28.7	28.7	28.7	28.7	28.7	28.7	28.7
Maximum Radial Load	F_r	N	7300						
Maximum Axial Load	F_a	N	6400						
Max. Tilting Moment	M_k	Nm	850						
Mass Moment of Inertia	J_1	kgcm ²	12.100	7.750	6.000	5.100	3.740	3.620	3.620
Weight	m_G	kg	23						

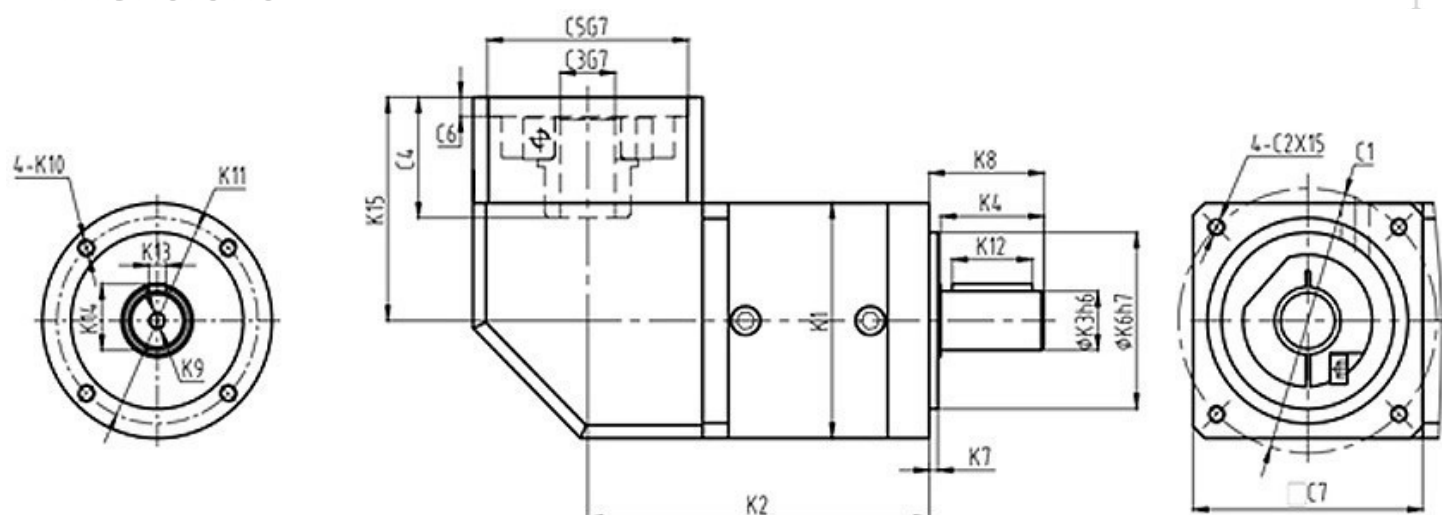
SVL160 2-stage

2-stage										
Ratio	i		12	15	16	20	25	32	40	64
Nominal Output Torque	T _{2N}	Nm	450	450	450	564	608	608	608	450
Emergency Stop Torque	T _{2STOP}	Nm	900	900	900	1128	1216	1216	1216	900
Maximum Acceleration Torque	T _{2ACC}	Nm	810	810	810	1015.2	1094.4	1094.4	1094.4	810
Maximum Torque	T _{2MAX}	Nm	900	900	900	1128	1216	1216	1216	900
Permitted Average Input Speed	N _{1N}	rpm	3000							
Maximum Input Speed	N _{1MAX}	rpm	6000							
Mean No Load Running Torque	T _{1NL}	Nm	2.45	2.3	2.45	2.3	2.3	2.2	2.2	2.2
Maximum Torsional Backlash	j _t	arcmin	≤ 12							
Torsional Rigidity	C _g	Nm/arcmin	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7
Maximum Radial Load	F _r	N	7300							
Maximum Axial Load	F _a	N	6400							
Max. Tilting Moment	M _k	Nm	850							
Mass Moment of Inertia	J ₁	kgcm ²	10.100	8.100	7.470	6.650	5.810	6.340	5.360	4.080
Weight	m _G	kg	31							



SVL160 3-stage

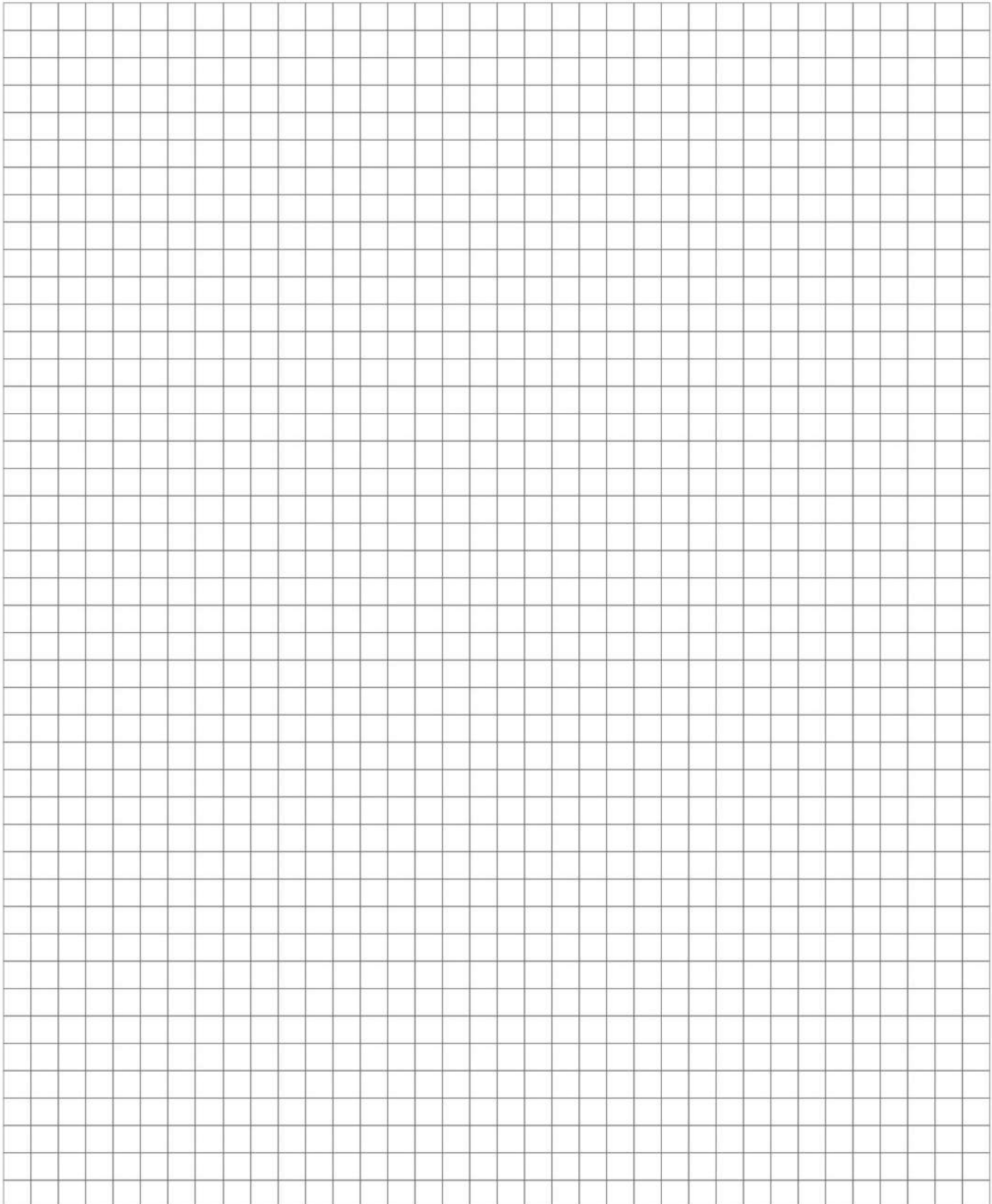
3-stage										
Ratio	i		80	100	125	160	200	256	320	512
Nominal Output Torque	T_{2N}	Nm	580	580	580	580	608	608	580	450
Emergency Stop Torque	T_{2STOP}	Nm	1160	1160	1160	1160	1216	1216	1160	900
Maximum Acceleration Torque	T_{2ACC}	Nm	1044	1044	1044	1044	1094.4	1094.4	1044	810
Maximum Torque	T_{2MAX}	Nm	1160	1160	1160	1160	1216	1216	1160	900
Permitted Average Input Speed	N_{1N}	rpm	3000							
Maximum Input Speed	N_{1MAX}	rpm	6000							
Mean No Load Running Torque	T_{1NL}	Nm	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2
Maximum Torsional Backlash	j_t	arcmin	≤ 15							
Torsional Rigidity	C_g	Nm/arcmin	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7
Maximum Radial Load	F_r	N	7300							
Maximum Axial Load	F_a	N	6400							
Max. Tilting Moment	M_k	Nm	850							
Mass Moment of Inertia	J_1	kgcm ²	7.400	7.300	7.300	6.500	6.500	6.500	6.500	6.500
Weight	m_G	kg	40							

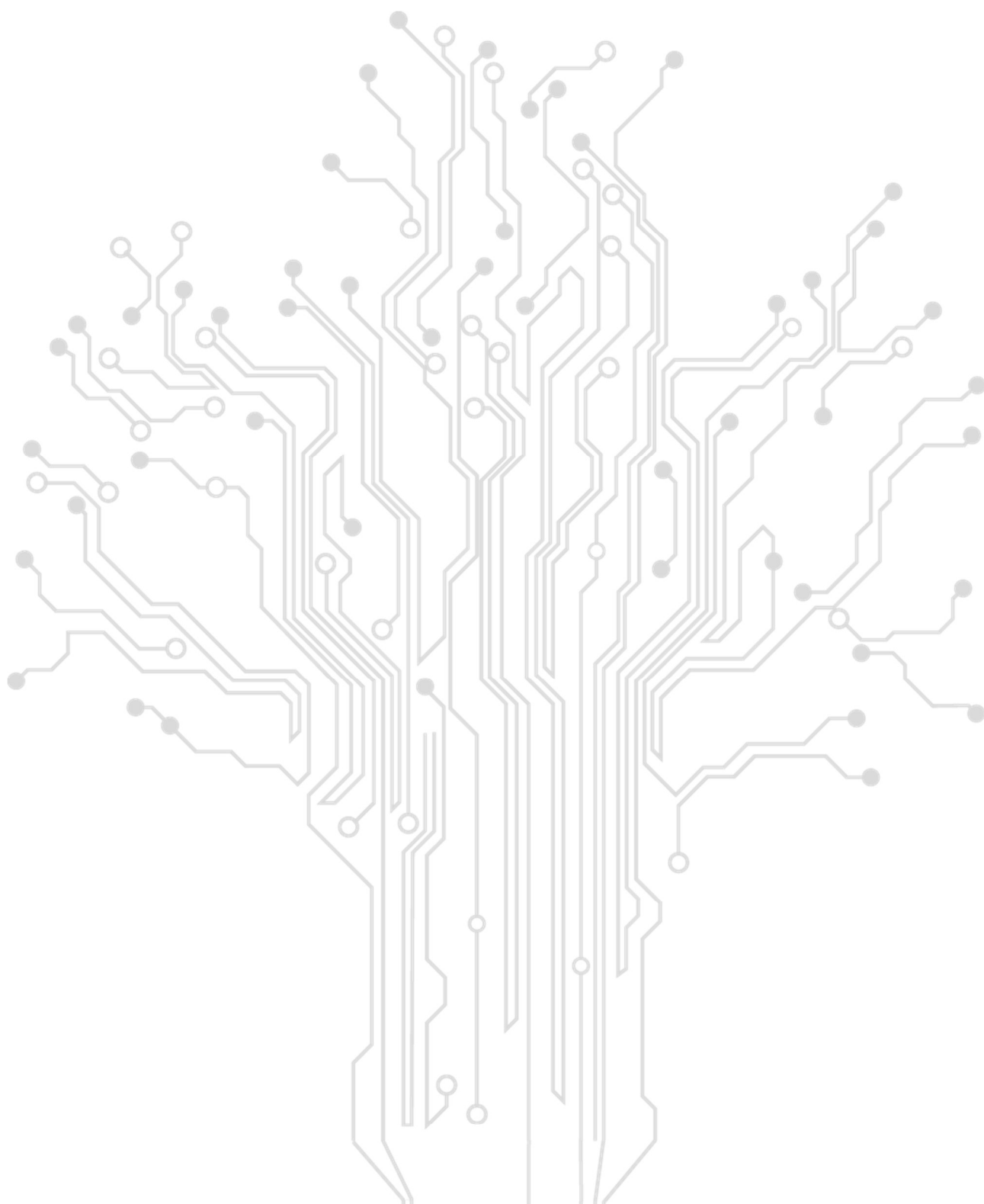


Model	SVL060			SVL080			SVL120			SVL160		
Stage	1	2	3	1	2	3	1	2	3	1	2	3
K1	60			80			120			160		
K2	116.4	132	147.5	147	169	191	198.5	233.5	268.5	275.5	336.5	356
K3	14			20			25			40		
K4	30			36			50			80		
K5	17			25			35			50		
K6	40			60			80			130		
K7	3			3			4			5		
K8	35			40			55			87		
K9	M5X12			M6X15			M10X26			M12X25		
K10	M5X8			M6X12			M10X20			M12X20		
K11	52			70			100			145		
K12	22			28			40			70		
K13	5			6			8			12		
K14	16			22.5			28			43	43	
C1	70			90			145			200	145	
C2	M5X12			M6X15			M8X20			M12X25	M8X20	
C3	14			19			24			35	24	
C4	32.1			41.6			56.3			82	61.3	
C5	50			70			110			114.3	110	
C6	6.5			6.5			8			8	6.5	
C7	70			80			120			175	120	



Technical Memo





SANGALLI SERVOMOTORI S.r.l.

Soggetta a direzione e coordinamento di ESAUTOMOTION SPA

Via Federico Rossi, 5 - 20900 - Monza (Mb) ITALY

WWW.SANGALLISERVOMOTORI.IT