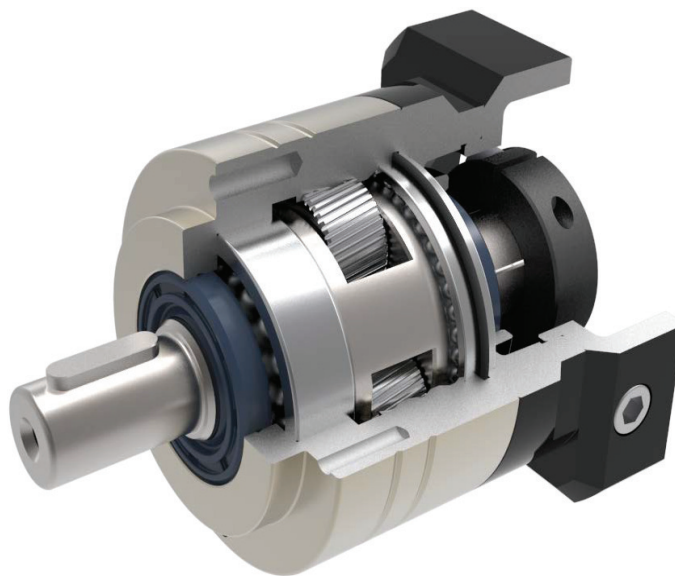




SERVOBOX Planetary Reducers

SA Series



SA Series Model Code

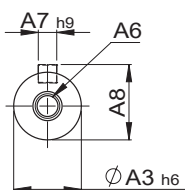
SA	090	—	010		—	P1	MOTOR
Series	Model	Ratio		Output Shaft Keyway		Backlash Class	Motor Designation
SA	050	1-Stage 003, 004, 005, 007, 010		☐ Blank: Standard (Keyed Output Shaft) N: Solid Output Shaft (No Keyway)		1-Stage $P_s \leq 1$ $P_0 \leq 3$ $P_1 \leq 5$ $P_2 \leq 7$ 2-Stage $P_s \leq 3$ $P_0 \leq 5$ $P_1 \leq 7$ $P_2 \leq 9$	Motor Brand & Model No.
	070						
	090						
	120						
	160						

SERVOBOX Planetary Reducers

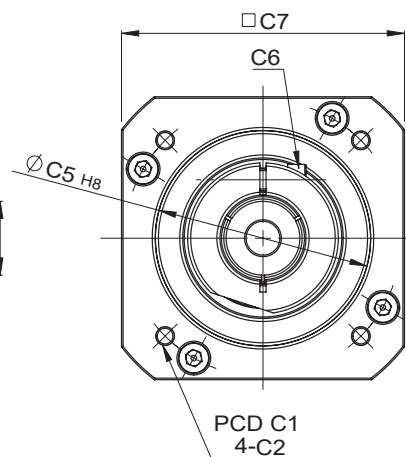
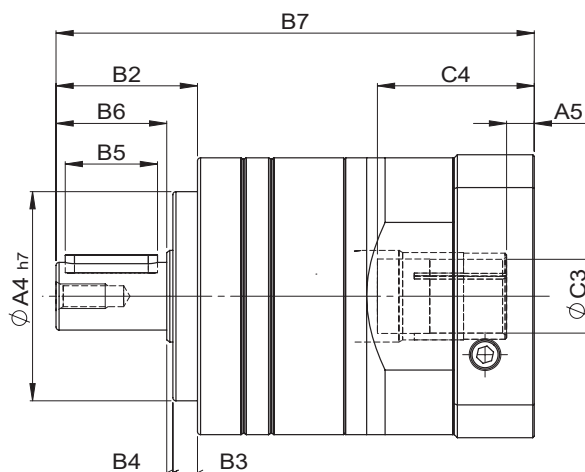
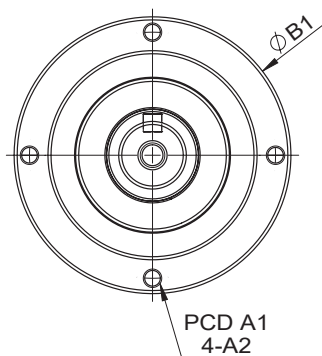
SA Series

1-Stage

RATIO : 3, 4, 5, 7, 10

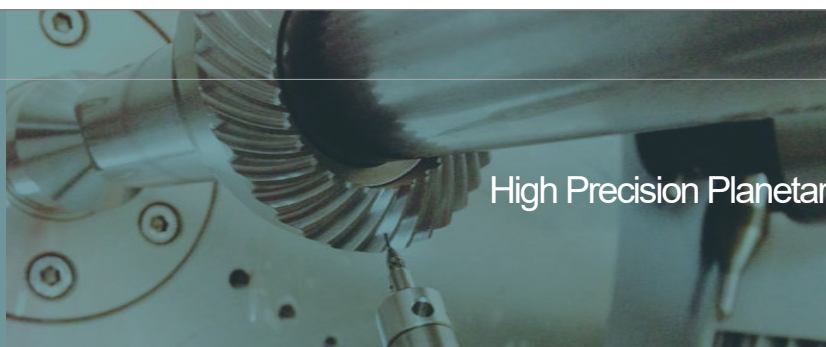


A VIEW



unit: mm

Model	50	70	90	120	160
A					
A1	44	62	80	108	140
A2	M4 x 0.7	M5 x 0.8	M6 x 1.0	M8 x 1.25	M10 x 1.5
A3	12	16	22	32	40
A4	35	52	68	90	120
A5	4.5	6	9, 23.5	10, 20	10
A6	M4 x 0.7	M5 x 0.8	M8 x 1.25	M12 x 1.75	M12 x 1.75
A7	4	5	6	10	12
A8	13.5	18	24.5	35	43
B					
B1	51	70	90	122	160
B2	25.5	36	46	70	88
B3	4	6.5	8	9	8
B4	1.5	1.5	2	3	2
B5	15	20	30	50	65
B6	20	28	36	58	78
B7	96.5	115	155.5, 170	211, 221	238.5
C					
C1	45, 46, 63, 70	70, 75, 90	90, 100, 115, 145	115, 145, 165	165
C2	M3, M4, M5	M5, M6	M6, M8	M6, M8, M10	M10
C3	11, 14	14, 19	19, 24	24, 28, 32	24, 28, 32
C4	32	33.5, 41	51, 65.5	67, 77	63
C5	30, 40, 50	50, 60, 70	70, 80, 95, 110	95, 110, 130	130
C6	M4 x 0.7	M5 x 0.8	M6 x 1.0	M8 x 1.25	M8 x 1.25
C7	46, 55, 60	70, 75, 80	92, 110, 130	122, 130, 150	150



High Precision Planetary Reducer

SA 1-Stage

■ Performance

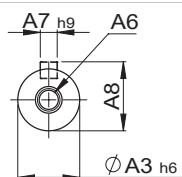
Parameter \ Model No.	Sym	Unit	Ratio	50	70	90	120	160
Rated Output Torque (Nominal Output Torque)	T_{2N}	Nm	3	17	54	-	-	625
			4	15	48	146	208	555
			5	14	45	155	333	618
			7	13	41	142	309	573
			10	12	40	136	294	549
Max. Acceleration Torque	T_{2N}	Nm	3~10	1.8 Times of Rated Output Torque				
Mass Moments of Inertia		kg.cm ²	3	0.03	0.15	-	-	9.21
			4	0.03	0.15	0.51	2.8	7.54
			5	0.03	0.13	0.45	2.71	7.42
			7	0.03	0.13	0.42	2.54	7.14
			10	0.03	0.13	0.42	2.51	7.03
Max. Output Torque Emergency Stop Torque	T_{2NOT}	Nm	3~10	3 Times of Rated Output Torque				
Rated Input Speed	n_{1N}	rpm	3~10	3,000				
Max. Input Speed	n_{1B}	rpm	3~10	6,000	6,000	6,000	5,000	5,000
Torsional Rigidity		Nm/arcmin	3~10	3	3	15	27	60
Max. Radial Force	F_{2rB}	N	3~10	320	800	4,150	8,760	9,300
Max. Axial Force	F_{2aB}	N	3~10	160	400	3,780	7,500	4,650
Service Life	L_H	hr	3~10	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)				
Efficiency	η	%	3~10	$\geq 97\%$				
Operating Temperature		°C	3~10	-25°C ~ +90°C				
Lubrication			3~10	Synthetic Grease				
Protection Class			3~10	IP 65				
Mounting Position			3~10	Any				
Noise Level		dB	3~10	≤ 58	≤ 58	≤ 60	≤ 63	≤ 65
Weight $\pm 2\%$		Kg	3~10	0.6	1.4	2.8	6.7	13.25

SERVOBOX Planetary Reducers

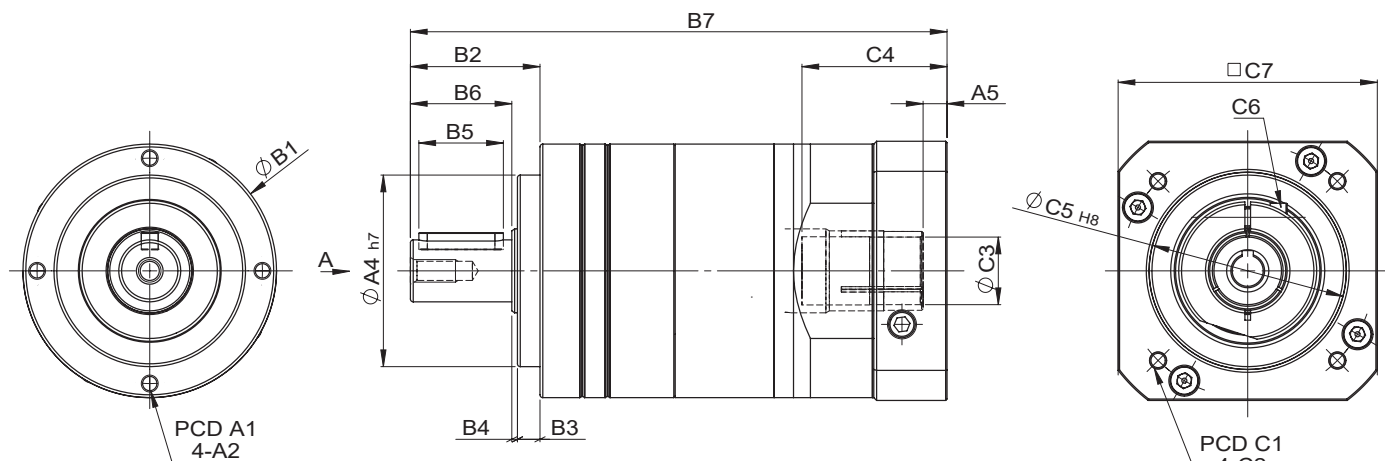
SA Series

2-Stage

RATIO : 15, 20, 25, 30, 35, 40, 50, 70, 100

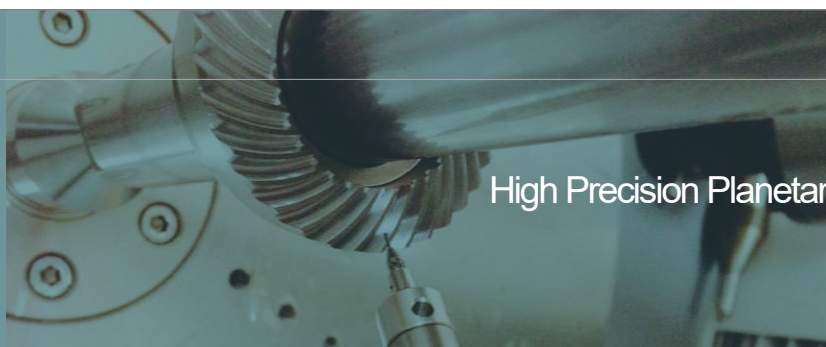


A VIEW



unit: mm

Model	50	70	90	120	160
A					
A1	44	62	80	108	140
A2	M4 x 0.7	M5 x 0.8	M6 x 1.0	M8 x 1.25	M10 x 1.5
A3	12	16	22	32	40
A4	35	52	68	90	120
A5	4.5	6	9, 23.5	10, 20	10
A6	M4 x 0.7	M5 x 0.8	M8 x 1.25	M12 x 1.75	M12 x 1.75
A7	4	5	6	10	12
A8	13.5	18	24.5	35	43
B					
B1	51	70	90	122	160
B2	25.5	36	46	70	88
B3	4	6.5	8	9	8
B4	1.5	1.5	2	3	2
B5	15	20	30	50	65
B6	20	28	36	58	78
B7	122.5	148.8	155.5, 170	257	298.5
C					
C1	45, 46, 63, 70	70, 75, 90	90, 100, 115, 145	115, 145, 165	115, 145, 165
C2	M3, M4, M5	M5, M6	M6, M8	M6, M8, M10	M6, M8, M10
C3	11, 14	14, 19	19, 24	24, 28, 32	24, 28, 32
C4	32	33.5, 41	51, 65.5	67, 77	67
C5	30, 40, 50	50, 60, 70	70, 80, 95, 110	95, 110, 130	95, 110, 130
C6	M4 x 0.7	M5 x 0.8	M6 x 1.0	M8 x 1.25	M8 x 1.25
C7	46, 55, 60	70, 75, 80	92, 110, 130	122, 130, 150	122, 130, 150



High Precision Planetary Reducer

SA 2-Stage

■ Performance

Parameter \ Model No.	Sym	Unit	Ratio	50	70	90	120	160
Rated Output Torque (Nominal Output Torque)	T_{2N}	Nm	15	17	54	-	-	625
			20	15	48	126	267	555
			25	14	45	158	296	618
			30	13	41	-	-	583
			35	13	41	128	275	573
			40	12	39	123	265	553
			50	14	45	138	296	618
			70	13	41	128	275	573
			100	12	40	121	262	549
Max. Acceleration Torque	T_{2B}	Nm	15~100	1.8 Times of Rated Output Torque				
Mass Moments of Inertia		kg.cm ²	15	0.03	0.13	-	-	2.63
			20	0.03	0.13	0.13	0.47	2.63
			25	0.03	0.13	0.13	0.47	2.63
			30	0.03	0.13	-	-	2.43
			35	0.03	0.13	0.13	0.47	2.43
			40	0.03	0.13	0.13	0.47	2.43
			50	0.03	0.13	0.13	0.44	2.43
			70	0.03	0.13	0.13	0.44	2.39
			100	0.03	0.13	0.13	0.44	2.39
Max. Output Torque Emergency Stop Torque	T_{2NOT}	Nm	15~100	3 Times of Rated Output Torque				
Rated Input Speed	n_{1N}	rpm	15~100	3,000				
Max. Input Speed	n_{1B}	rpm	15~100	6,000	6,000	6,000	5,000	5,000
Torsional Rigidity		Nm/arcmin	15~100	3	3	15	27	60
Max. Radial Force	F_{2rB}	N	15~100	320	800	4,150	8,760	9,300
Max. Axial Force	F_{2aB}	N	15~100	160	400	2,075	7,500	4,650
Service Life	L_H	hr	15~100	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)				
Efficiency	η	%	15~100	$\geq 94\%$				
Operating Temperature		°C	15~100	-25°C ~ +90°C				
Lubrication			15~100	Synthetic Grease				
Protection Class			15~100	IP 65				
Mounting Position			15~100	Any				
Noise Level		dB	15~100	≤ 60 dB	≤ 60 dB	≤ 63 dB	≤ 63 dB	≤ 65 dB
Weight $\pm 2\%$		Kg	15~100	1.05	2.2	4.48	9.84	18.5