

SB

SBL

SBT

SD

SDL

SDD



SB 1-Stage

■ Performance

Parameter \ Model No.	Sym	Unit	Ratio	44	62	90	120	142	180	220
Rated Output Torque (Nominal output torque)	T_{2N}	Nm	3	19	59	165	335	625	1,206	2,030
			4	16	51	146	300	555	1,069	1,804
			5	16	48	160	333	618	1,189	2,010
			6	15	45	151	311	583	1,118	1,911
			7	15	45	149	309	573	1,108	1,870
			8	14	43	143	298	553	1,070	1,824
			9	13	44	145	278	516	993	1,694
			10	14	43	141	294	549	1,059	1,779
Max. Acceleration Torque	T_{2B}	Nm	3 ~ 10	1.8 Times of Rated Output Torque						
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	3,000	3,000	3,000	3,000	3,000	2,000
Max. Input Speed	n_{1B}	rpm	3 ~ 10	6,000	6,000	6,000	5,000	5,000	4,000	3,000
Backlash Ps		arcmin	3 ~ 10	-	-	≤ 1	≤ 1	≤ 1	≤ 1	≤ 1
Backlash P0		arcmin	3 ~ 10	≤ 3	≤ 3	≤ 3	≤ 3	≤ 3	≤ 3	≤ 3
Backlash P1		arcmin	3 ~ 10	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5
Backlash P2		arcmin	3 ~ 10	≤ 7	≤ 7	≤ 7	≤ 7	≤ 7	≤ 7	≤ 7
Torsional Rigidity		Nm/arcmin	3 ~ 10	3	6	14	27	60	140	240
Max. Radial Force	F_{2rB}	N	3 ~ 10	380	1,180	3,200	6,800	9,300	15,600	51,000
Max. Axial Force	F_{2aB}	N	3 ~ 10	190	590	1,600	3,400	4,650	7,800	25,500
Service Life	L_H	hr	3 ~ 10	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
Efficiency	η	%	3 ~ 10	≥ 97						
Operating Temperature		°C	3 ~ 10	- 25° C ~ + 90° C						
Lubrication			3 ~ 10	Synthetic Grease						
Protection Class			3 ~ 10	IP65						
Mounting Position			3 ~ 10	Any						
Noise Level		dB	3 ~ 10	≤ 56	≤ 58	≤ 60	≤ 63	≤ 65	≤ 67	≤ 70
Weight $\pm 3\%$		Kg	3 ~ 10	0.6	1.28	3.6	8	14.3	28.3	42.5

■ Mass Moments of Inertia (kg.cm²)

Ratio	44	62	90	120	142	180	220
3	0.03	0.16	0.61	3.25	9.21	28.98	59.61
4	0.03	0.14	0.48	2.74	7.54	23.67	54.37
5	0.03	0.13	0.47	2.71	7.42	23.29	53.27
6	0.03	0.13	0.45	2.65	7.25	22.75	51.72
7	0.03	0.13	0.45	2.62	7.14	22.48	50.97
8	0.03	0.13	0.44	2.58	7.07	22.59	50.84
9	0.03	0.13	0.44	2.57	7.04	22.53	50.63
10	0.03	0.13	0.44	2.57	7.03	22.51	50.56

SERVOBOX Planetary Reducers

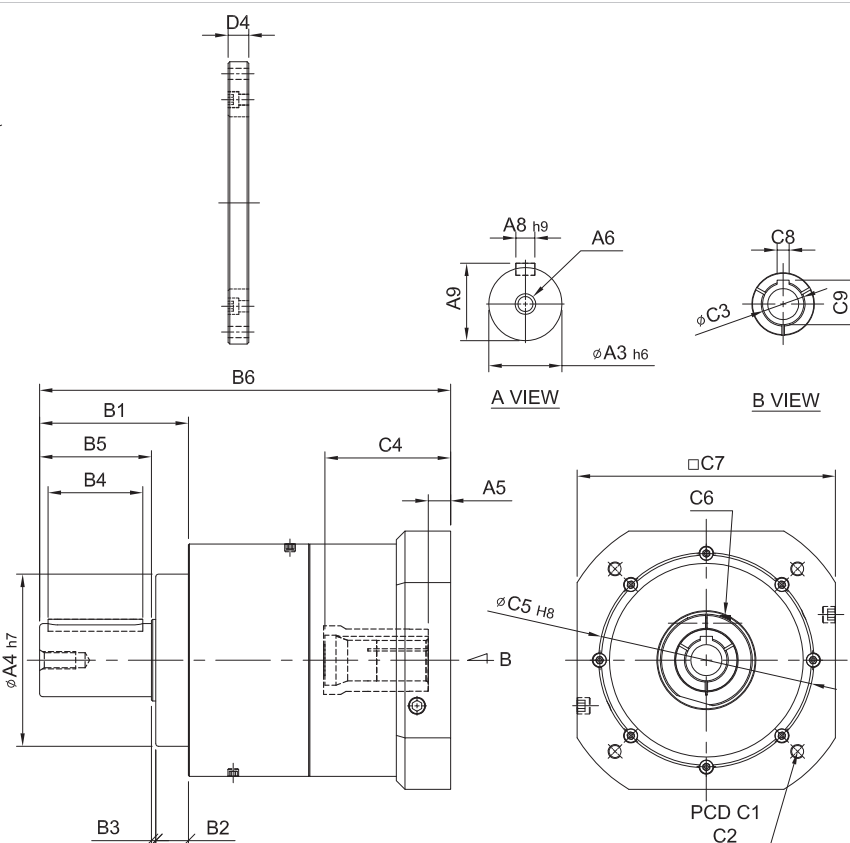
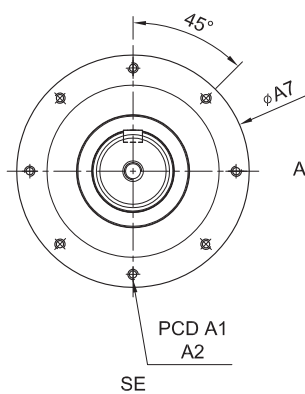
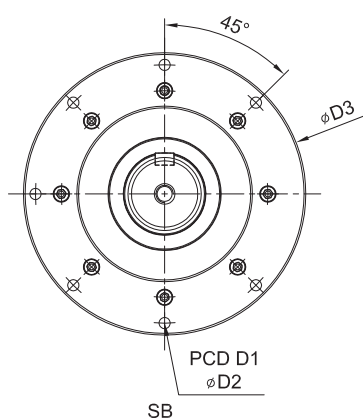
Series:

1-Stage

RATIO : 3, 4, 5, 7, 10

SB

SE



unit: mm

	Model		
	Code	270	330
A	A1	240	300
	A2	M12 x P1.75	M16 x P2.0
	A3	85	100
	A4	200	250
	A5	26, 23	26, 23
	A6	M20 x P2.5	M24 x P3.0
	A7	270	336
	A8	22	28
	A9	90	106
B	B1	173	187
	B2	38	42
	B3	5	5
	B4	110	120
	B5	130	140
	B6	474.5, 477.5, 488	512, 515

unit: mm

	Model		
	Code	270	330
C	C1	265, 300, 350	265, 300, 350
	C2	M12, M16, M18	M12, M16, M18
	C3	48, 55, 60, 65, 70	55, 60, 65, 75
	C4	143, 149	143, 146
	C5	230, 250, 300	230, 250, 300
	C6	M12 x P1.75	M12 x P1.75
	C7	280, 300, 330	280, 300, 330
	C8	14, 16, 18, 20	16, 18, 20
	C9	51.8, 59.3, 64.4, 74.8	59.3, 64.4, 69.4, 80
D	D1	300	380
	D2	13	17
	D3	328	416
	D4	24	28



SB/SE 1-Stage (Large Frame)

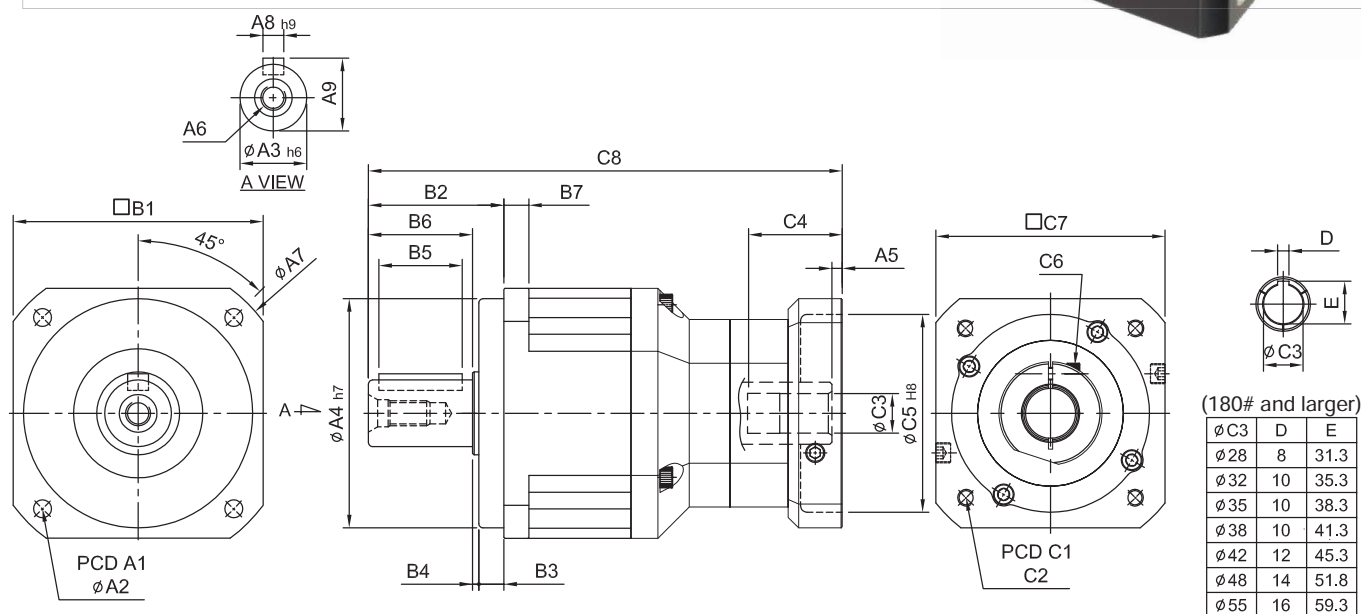
■ Performance

Parameter \ Model No.	Sym	Unit	Ratio	270	330
Rated Output Torque (Nominal output torque)	T_{2N}	Nm	3	4,770	8,790
			4	4,730	8,730
			5	4,680	8,660
			7	4,570	8,520
			10	4,420	8,310
Max. Acceleration Torque	T_{2B}	Nm	3 ~ 10	1.8 Times of Rated Output Torque	
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	2,000	2,000
Max. Input Speed	n_{1B}	rpm	3 ~ 10	3,000	3,000
Backlash Ps		arcmin	3 ~ 10	≤ 1	≤ 1
Backlash P0		arcmin	3 ~ 10	≤ 3	≤ 3
Backlash P1		arcmin	3 ~ 10	≤ 5	≤ 5
Backlash P2		arcmin	3 ~ 10	≤ 7	≤ 7
Torsional Rigidity		Nm/arcmin	3 ~ 10	510	980
Max. Radial Force	F_{2rB}	N	3 ~ 10	107,100	224,910
Max. Axial Force	F_{2aB}	N	3 ~ 10	53,550	112,455
Service Life	L_H	hr	3 ~ 10	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)	
Efficiency	η	%	3 ~ 10	≥ 97	
Operating Temperature		°C	3 ~ 10	- 25° C ~ + 90° C	
Lubrication			3 ~ 10	Synthetic Grease	
Protection Class			3 ~ 10	IP65	
Mounting Position			3 ~ 10	Any	
Noise Level		dB	3 ~ 10	≤ 72	≤ 74
Weight $\pm 3\%$		Kg	3 ~ 10	SB : 97, SE : 87.5	SB : 190, SE : 172

■ Mass Moments of Inertia (kg.cm²)

Ratio	270	330
3	122.20	252.96
4	111.46	230.72
5	109.20	226.05
7	104.49	216.29
10	103.65	214.55

RATIO : 15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100



	Model	Unit: mm					
	Code	62	90	120	142	180	220
A	A1	70	100	130	165	215	250
	A2	5.5	6.8	9	11	13	17
	A3	16	22	32	40	55	75
	A4	50	80	110	130	160	180
	A5	5	6	9, 23.5	10, 20	10	11.5, 13.5
	A6	M5 x P0.8	M8 x P1.25	M10 X P1.5	M12 x P1.75	M14 x P2.0	M16 x P2.0
	A7	80	116	148	186	238	288
	A8	5	6	10	12	16	20
	A9	18	24.5	35	43	59	79.5
B	B1	62	90	120	142	180	220
	B2	36	48	65	92	106	139
	B3	7	10	12	15	20	30
	B4	1	2	3	3	4	5
	B5	20	30	40	65	70	90
	B6	28	36	50	74	82	104
	B7	8	10	12	15	16	20
C	C1	46, 60, 63	70, 75, 90	90, 100, 115, 145	115, 145, 165	145, 165, 215	200, 215, 265
	C2	M3, M4, M5	M4, M5, M6	M5, M6, M8, M10	M6, M8, M10	M8, M10, M12	M10, M12
	C3	8, 9, 11	11, 14, 16, 19	16, 19, 22, 24	22, 24, 28, 32	28, 32, 35, 38	35, 38, 42, 48, 55
	C4	26, 30.5	33.5, 41.5	59, 73.5	67, 77	84.5	114.5, 116.5
	C5	30, 40, 50	50, 60, 70	70, 80, 95, 110	70, 95, 110, 130	110, 130, 180	114.3, 180, 230
	C6	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5	M10 x P1.5
	C7	46, 55	64, 70, 80	92, 110, 130	122, 130, 150	146, 180, 190	182, 200, 250
	C8	139.5	172.5, 180.5	241, 255.5	298.5, 308.5	358.5	446.5



SB 2-Stage

■ Performance

Parameter \ Model No.	Sym	Unit	Ratio	62	90	120	142	180	220
Rated Output Torque (Nominal output torque)	T_{2N}	Nm	15	59	165	335	625	1,206	2,030
			20	51	146	300	555	1,069	1,804
			25	48	160	333	618	1,189	2,010
			30	45	151	311	583	1,118	1,911
			35	45	149	309	573	1,108	1,870
			40	43	143	298	553	1,070	1,824
			50	48	160	333	618	1,189	2,010
			60	45	151	311	583	1,118	1,911
			70	45	149	309	573	1,108	1,870
			80	43	143	298	553	1,070	1,824
			90	44	145	278	516	993	1,694
			100	43	141	294	549	1,059	1,779
Max. Acceleration Torque	T_{2B}	Nm	15 ~ 100	1.8 Times of Rated Output Torque					
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	3,000	3,000	3,000	3,000	2,000
Max. Input Speed	n_{1B}	rpm	15 ~ 100	6,000	6,000	5,000	5,000	4,000	3,000
Backlash Ps		arcmin	15 ~ 100	-	-	≤ 3	≤ 3	≤ 3	≤ 3
Backlash P0		arcmin	15 ~ 100	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5
Backlash P1		arcmin	15 ~ 100	≤ 7	≤ 7	≤ 7	≤ 7	≤ 7	≤ 7
Backlash P2		arcmin	15 ~ 100	≤ 9	≤ 9	≤ 9	≤ 9	≤ 9	≤ 9
Torsional Rigidity		Nm/arcmin	15 ~ 100	6	14	27	60	140	240
Max. Radial Force	F_{2rB}	N	15 ~ 100	1,180	3,200	6,800	9,300	15,600	51,000
Max. Axial Force	F_{2aB}	N	15 ~ 100	590	1,600	3,400	4,650	7,800	25,500
Service Life	L_H	hr	15 ~ 100	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)					
Efficiency	η	%	15 ~ 100	≥ 94					
Operating Temperature		°C	15 ~ 100	- 25° C ~ + 90° C					
Lubrication			15 ~ 100	Synthetic Grease					
Protection Class			15 ~ 100	IP65					
Mounting Position			15 ~ 100	Any					
Noise Level		dB	15 ~ 100	≤ 58	≤ 60	≤ 63	≤ 65	≤ 67	≤ 70
Weight ±3%		Kg	15 ~ 100	1.73	4.6	9.42	17.2	34.1	57.3

■ Mass Moments of Inertia (kg.cm²)

Ratio	62	90	120	142	180	220
15	0.03	0.14	0.46	2.63	7.3	22.79
20	0.03	0.14	0.46	2.63	7.3	22.79
25	0.03	0.14	0.46	2.63	7.1	22.79
30	0.03	0.14	0.46	2.43	7.1	22.59
35	0.03	0.14	0.44	2.43	7.1	22.59
40	0.03	0.14	0.44	2.43	6.92	22.59
50	0.03	0.14	0.44	2.43	6.92	22.59
60	0.03	0.14	0.43	2.39	6.72	21.83
70	0.03	0.14	0.43	2.39	6.72	21.83
80	0.03	0.14	0.43	2.39	6.72	21.83
90	0.03	0.14	0.40	2.39	6.72	21.60
100	0.03	0.14	0.40	2.39	6.72	21.60

SERVOBOX Planetary Reducers

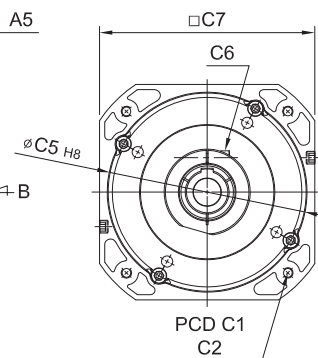
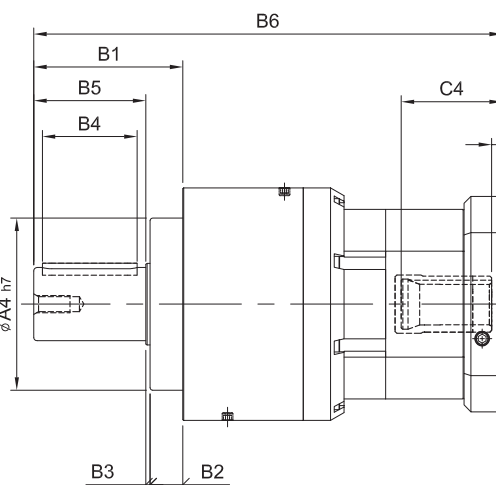
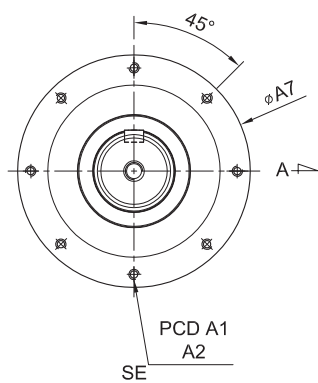
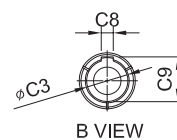
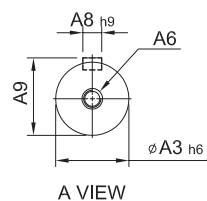
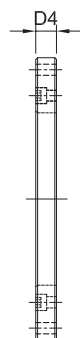
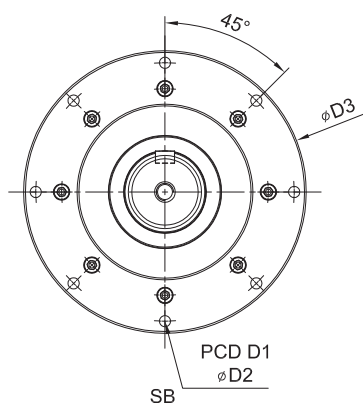
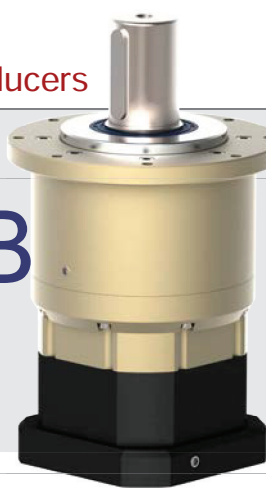
Series:

SB

SE

2-Stage

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



unit: mm

	Model Code	270	330
A	A1	240	300
	A2	M12 x P1.75	M16 x P2.0
	A3	85	100
	A4	200	250
	A5	12.5	26, 23
	A6	M20 x P2.5	M24 x P3.0
	A7	270	336
	A8	22	28
	A9	90	106
B	B1	173	187
	B2	38	42
	B3	5	5
	B4	110	120
	B5	130	140
	B6	544, 547	625, 632.5, 635.5

unit: mm

	Model Code	270	330
C	C1	200, 265, 300	265, 300, 350
	C2	M12, M16	M12, M16, M18
	C3	42, 48, 55	48, 55, 60, 65, 70
	C4	117.5, 120.5	146, 149
	C5	114.3, 230, 250	230, 250, 300
	C6	M10 x P1.5	M12 x P1.75
	C7	222, 250, 265	280, 300, 330
	C8	12, 14, 16	14, 16, 18, 20
	C9	45.3, 51.8, 59.3	51.8, 59.3, 64.4, 69.4, 74.8
D	D1	300	380
	D2	13	17
	D3	328	416
	D4	24	28



SB/SE 2-Stage (Large Frame)

■ Performance

Parameter \ Model No.	Sym	Unit	Ratio	270	330
Rated Output Torque (Nominal output torque)	T_{2N}	Nm	15	4,770	8,790
			20	4,730	8,730
			25	4,680	8,660
			30	4,620	8,610
			35	4,570	8,520
			40	4,520	8,440
			50	4,680	8,660
			70	4,570	8,520
			100	4,420	8,310
Max. Acceleration Torque	T_{2B}	Nm	15 ~ 100	1.8 Times of Rated Output Torque	
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	2,000	2,000
Max. Input Speed	n_{1B}	rpm	15 ~ 100	3,000	3,000
Backlash Ps		arcmin	15 ~ 100	≤ 3	≤ 3
Backlash P0		arcmin	15 ~ 100	≤ 5	≤ 5
Backlash P1		arcmin	15 ~ 100	≤ 7	≤ 7
Backlash P2		arcmin	15 ~ 100	≤ 9	≤ 9
Torsional Rigidity		Nm/arcmin	15 ~ 100	510	980
Max. Radial Force	F_{2rB}	N	15 ~ 100	107,100	224,910
Max. Axial Force	F_{2aB}	N	15 ~ 100	53,550	112,455
Service Life	L_H	hr	15 ~ 100	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)	
Efficiency	η	%	15 ~ 100	≥ 94	
Operating Temperature		°C	15 ~ 100	- 25° C ~ + 90° C	
Lubrication			15 ~ 100	Synthetic Grease	
Protection Class			15 ~ 100	IP65	
Mounting Position			15 ~ 100	Any	
Noise Level		dB	15 ~ 100	≤ 72	≤ 74
Weight $\pm 3\%$		Kg	15 ~ 100	SB : 137, SE : 127.5	SB : 186, SE : 176

■ Mass Moments of Inertia (kg.cm²)

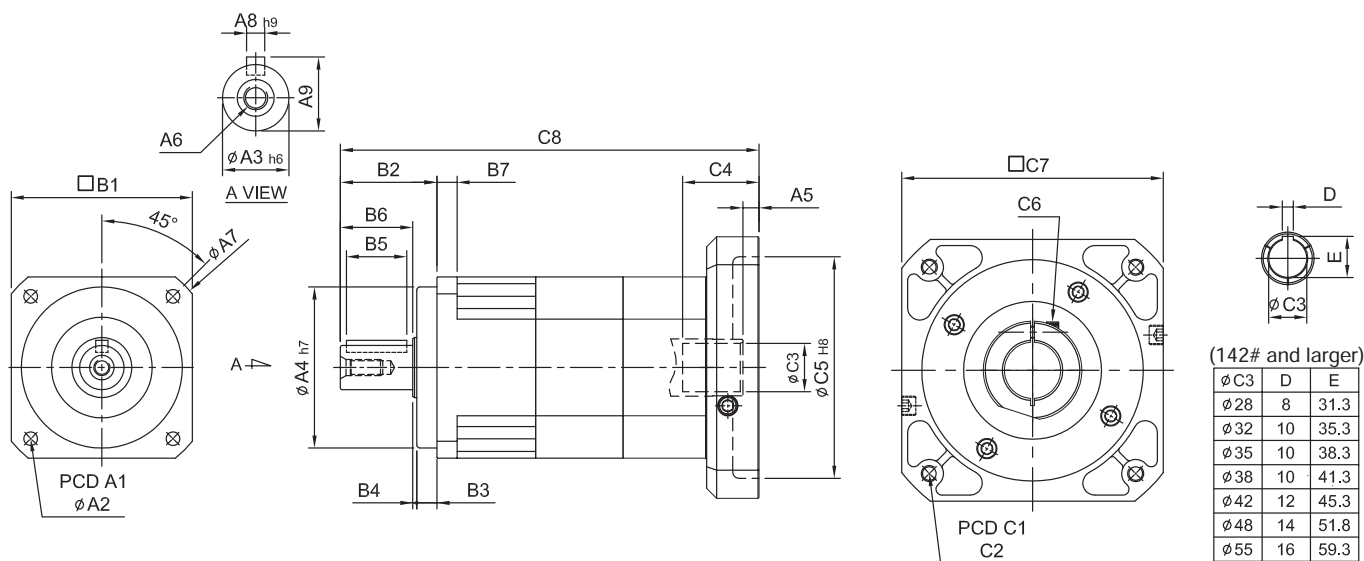
Ratio	270	330
15	63.81	185.05
20	63.81	185.05
25	63.81	185.05
30	63.25	183.43
35	63.25	183.43
40	63.25	183.43
50	63.25	183.43
70	61.12	177.26
100	60.48	175.39

SERVOBOX Planetary Reducers

SB-A Series

2-Stage

RATIO : 15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100



unit: mm

	Model Code	44A	62A	90A	120A	142A	180A	220A
		A1	A2	A3	A4	A5	A6	A7
A	A1	50	70	100	130	165	215	250
	A2	4.5	5.5	6.8	9	11	13	17
	A3	13	16	22	32	40	55	75
	A4	35	50	80	110	130	160	180
	A5	5	6	9, 23.5	10, 20	10	11.5, 13.5	12.5, 14.5
	A6	M4 x P0.7	M5 x P0.8	M8 x P1.25	M10 x P1.5	M12 x P1.75	M14 x P2.0	M16 x P2.0
	A7	58	80	116	148	186	238	288
	A8	5	5	6	10	12	16	20
	A9	15	18	24.5	35	43	59	79.5
B	B1	44	62	90	120	142	180	220
	B2	26	36	48	65	92	106	139
	B3	5	7	10	12	15	20	30
	B4	1	1	2	3	3	4	5
	B5	15	20	30	40	65	70	90
	B6	20	28	36	50	74	82	104
	B7	5	8	10	12	15	16	20
C	C1	46, 60, 63	70, 75, 90	90, 100, 115, 145	115, 145, 165	145, 165, 215	200, 215, 265	200, 265, 300
	C2	M3, M4, M5	M4, M5, M6	M5, M6, M8	M6, M8, M10	M8, M10, M12	M10, M12	M12, M16
	C3	8, 9, 11	11, 14, 16, 19	16, 19, 22, 24	22, 24, 28, 32	28, 32, 35, 38	35, 38, 42, 48, 55	38, 42, 48, 55
	C4	26, 30.5	33.5	59, 73.5	67, 77	84.5	114.5, 116.5	117.5, 119.5
	C5	30, 40, 50	50, 60, 70	70, 80, 95, 110	95, 110, 130	110, 130, 180	114.3, 180, 230	114.3, 230, 250
	C6	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.5	M10 x P1.5	M10 x P1.5	M10 x P1.5
	C7	46, 55	64, 70, 80	92, 110, 130	122, 130, 150	146, 150, 190	182, 200, 250	222, 250, 265
	C8	121	148.8	208, 222.5	261, 271	327	404.5	460.5



SB-A 2-Stage

■ Performance

Parameter \ Model No.	Sym	Unit	Ratio	44A	62A	90A	120A	142A	180A	220A
Output Torque (Nominal output torque)	T_{2N}	Nm	15	19	59	165	335	625	1,206	2,030
			20	16	51	146	300	555	1,069	1,804
			25	16	48	160	333	618	1,189	2,010
			30	15	45	151	311	583	1,118	1,911
			35	15	45	149	309	573	1,108	1,870
			40	14	43	143	298	553	1,070	1,824
			50	16	48	160	333	618	1,189	2,010
			60	15	45	151	311	583	1,118	1,911
			70	15	45	149	309	573	1,108	1,870
			80	14	43	143	298	553	1,070	1,824
			90	13	44	145	278	516	993	1,694
			100	14	43	141	294	549	1,059	1,779
Max. Acceleration Torque	T_{2B}	Nm	15 ~ 100	1.8 Times of Rated Output Torque						
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	3,000	3,000	3,000	3,000	3,000	2,000
Max. Input Speed	n_{1B}	rpm	15 ~ 100	6,000	6,000	6,000	5,000	5,000	4,000	3,000
Backlash Ps		arcmin	15 ~ 100	-	-	-	≤ 3	≤ 3	≤ 3	≤ 3
Backlash P0		arcmin	15 ~ 100	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5
Backlash P1		arcmin	15 ~ 100	≤ 7	≤ 7	≤ 7	≤ 7	≤ 7	≤ 7	≤ 7
Backlash P2		arcmin	15 ~ 100	≤ 9	≤ 9	≤ 9	≤ 9	≤ 9	≤ 9	≤ 9
Torsional Rigidity		Nm/arcmin	15 ~ 100	3	6	14	27	60	140	240
Max. Radial Force	F_{2rB}	N	15 ~ 100	380	1,180	3,200	6,800	9,300	15,600	51,000
Max. Axial Force	F_{2aB}	N	15 ~ 100	190	590	1,600	3,400	4,650	7,800	25,500
Service Life	L_H	hr	15 ~ 100	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
Efficiency	η	%	15 ~ 100	≥ 94						
Operating Temperature		°C	15 ~ 100	- 25° C ~ + 90° C						
Lubrication			15 ~ 100	Synthetic Grease						
Protection Class			15 ~ 100	IP65						
Mounting Position			15 ~ 100	Any						
Noise Level		dB	15 ~ 100	≤ 56	≤ 58	≤ 60	≤ 63	≤ 65	≤ 67	≤ 70
Weight ±3%		Kg	15 ~ 100	0.6	2	5.5	11	21	42	59

■ Mass Moments of Inertia (kg.cm²)

Ratio	44A	62A	90A	120A	142A	180A	220A
15	0.03	0.14	0.46	2.63	7.30	22.79	56.98
20	0.03	0.14	0.46	2.63	7.30	22.79	56.98
25	0.03	0.14	0.46	2.63	7.10	22.79	56.98
30	0.03	0.14	0.46	2.43	7.10	22.59	56.48
35	0.03	0.14	0.44	2.43	7.10	22.59	56.48
40	0.03	0.14	0.44	2.43	6.92	22.59	56.48
50	0.03	0.14	0.44	2.43	6.92	22.59	56.48
60	0.03	0.14	0.43	2.39	6.72	21.83	54.58
70	0.03	0.14	0.43	2.39	6.72	21.83	54.58
80	0.03	0.14	0.43	2.39	6.72	21.83	54.58
90	0.03	0.14	0.40	2.39	6.72	21.60	54.00
100	0.03	0.14	0.43	2.39	6.72	21.83	54.58

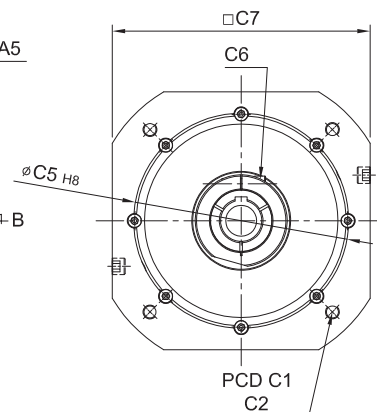
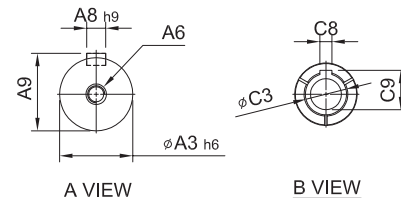
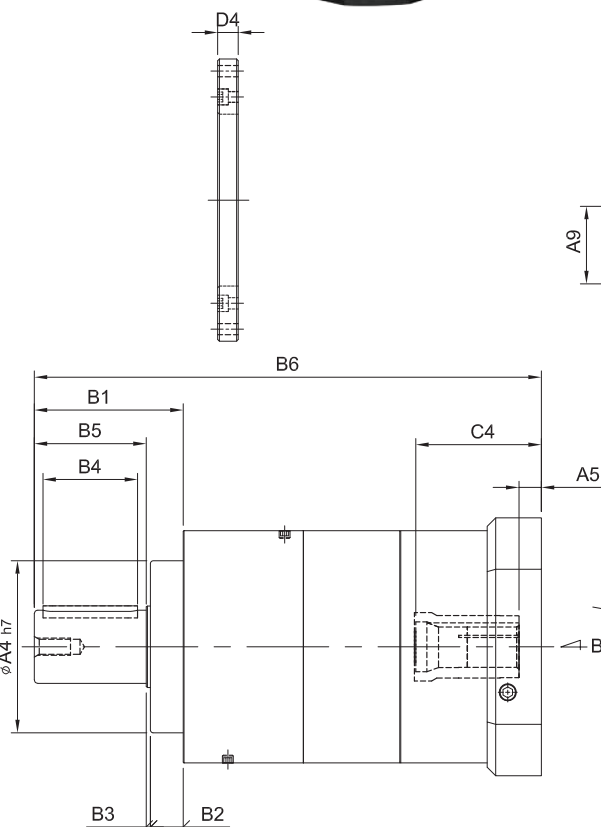
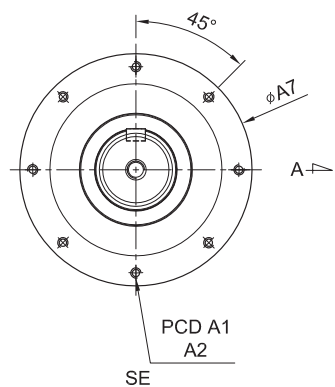
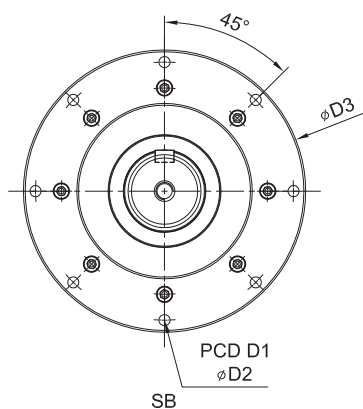
SERVOBOX Planetary Reducers

Series:

SB-A SE-A

2-Stage

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



unit: mm

A	Model	270A
	Code	
	A1	240
	A2	M12 x P1.75
	A3	85
	A4	200
	A5	26, 23
	A6	M20 x P2.5
	A7	270
	A8	22
B	A9	90
	B1	173
	B2	38
	B3	5
	B4	110
	B5	130
	B6	586.5, 589.5

unit: mm

C	Model	270A
	Code	
	C1	265, 300, 350
	C2	M12, M16, M18
	C3	48, 55, 60
	C4	143, 146, 149
	C5	230, 250, 300
	C6	M12 x P1.75
	C7	280, 300, 330
	C8	14, 16, 18
D	C9	51.8, 59.3, 64.4
	D1	300
	D2	13
	D3	328
	D4	24



SB-A/SE-A 2-Stage (Large Frame)

■ Performance

Parameter \ Model No.	Sym	Unit	Ratio	270A
Rated Output Torque (Nominal output torque)	T_{2N}	Nm	15	4,770
			20	4,730
			25	4,680
			30	4,770
			35	4,570
			40	4,770
			50	4,680
			70	4,570
			100	4,220
Max. Acceleration Torque	T_{2B}	Nm	15 ~ 100	1.8 Times of Rated Output Torque
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	2,000
Max. Input Speed	n_{1B}	rpm	15 ~ 100	3,000
Backlash Ps		arcmin	15 ~ 100	≤ 3
Backlash P0		arcmin	15 ~ 100	≤ 5
Backlash P1		arcmin	15 ~ 100	≤ 7
Backlash P2		arcmin	15 ~ 100	≤ 9
Torsional Rigidity		Nm/arcmin	15 ~ 100	510
Max. Radial Force	F_{2rB}	N	15 ~ 100	107,100
Max. Axial Force	F_{2aB}	N	15 ~ 100	53,550
Service Life	L_H	hr	15 ~ 100	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)
Efficiency	η	%	15 ~ 100	≥ 94
Operating Temperature		°C	15 ~ 100	- 25° C ~ + 90° C
Lubrication			15 ~ 100	Synthetic Grease
Protection Class			15 ~ 100	IP65
Mounting Position			15 ~ 100	Any
Noise Level		dB	15 ~ 100	≤ 72
Weight $\pm 3\%$		Kg	15 ~ 100	SB : 146, SE : 136.5

■ Mass Moments of Inertia (kg.cm²)

Ratio	270A
15	65.74
20	65.74
25	65.74
30	64.86
35	64.86
40	64.86
50	64.86
70	62.62
100	61.17

SERVOBOX Planetary Reducers

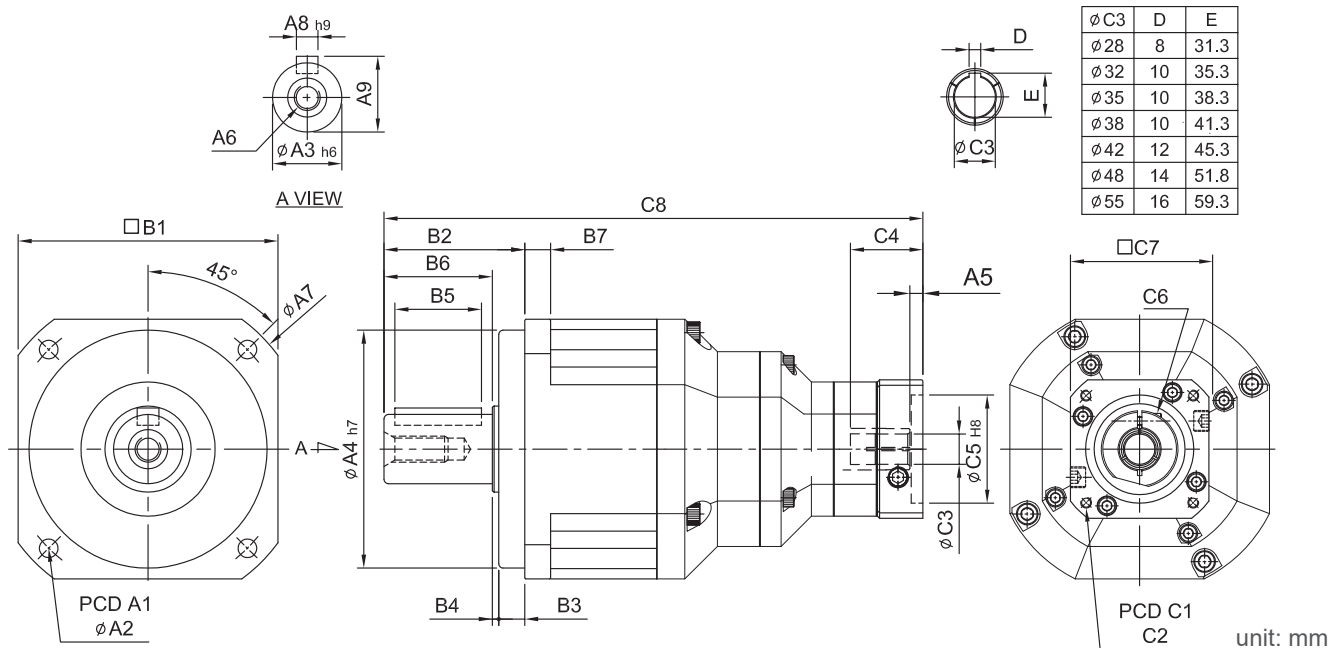
SB Series

3-Stage

RATIO : 125, 150, 175, 200, 250, 300, 350,
400, 450, 500, 600, 700, 800, 900, 1000



(220#)



unit: mm

Model Code	90	120	142	180	220
A1	100	130	165	215	250
A2	6.8	9	11	13	17
A3	22	32	40	55	75
A4	80	110	130	160	180
A5	5	6	9, 23.5	10, 20	10
A6	M8 x P1.25	M10 x P1.5	M12 x P1.75	M14 x P2.0	M16 x P2.0
A7	116	148	186	238	288
A8	6	10	12	16	20
A9	24.5	35	43	59	79.5
B1	90	120	142	180	220
B2	48	65	92	106	139
B3	10	12	15	20	30
B4	2	3	3	4	5
B5	30	40	65	70	90
B6	36	50	74	82	104
B7	10	12	15	16	20
C1	46, 60, 63	70, 75, 90	90, 100, 115, 145	115, 145, 165	145, 165, 215
C2	M3, M4, M5	M4, M5, M6	M5, M6, M8	M6, M8, M10	M8, M10, M12
C3	8, 9, 11	11, 14, 16, 19	16, 19, 22, 24	22, 24, 28, 32	28, 32, 35, 38
C4	26, 30.5	33.5, 41.5	59, 73.5	67, 77	84.5
C5	30, 40, 50	50, 60, 70	70, 80, 95, 110	95, 110, 130	110, 130, 180
C6	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5
C7	46, 55	64, 70, 80	92, 110, 130	122, 130, 150	146, 150, 190
C8	197	249, 257	334.5, 349	396.5, 406.5	481.5



SB 3-Stage

■ Performance

Parameter \ Model No.	Sym	Unit	Ratio	90	120	142	180	220
Rated Output Torque (Nominal output torque)	T_{2N}	Nm	125	160	333	618	1,189	2,010
			150	165	335	583	1,206	2,030
			175	149	309	573	1,108	1,870
			200	146	300	555	1,069	1,804
			250	160	333	618	1,189	2,010
			300	151	311	583	1,118	1,911
			350	149	309	573	1,108	1,870
			400	143	298	553	1,070	1,824
			450	145	278	516	993	1,694
			500	160	333	618	1,189	2,010
			600	151	311	583	1,118	1,911
			700	149	309	573	1,108	1,870
			800	143	298	553	1,070	1,824
			900	145	278	516	993	1,694
			1000	141	294	549	1,059	1,779
Max. Acceleration Torque	T_{2B}	Nm	125 ~ 1000	1.8 Times of Rated Output Torque				
Max. Output Torque Emergency Stop Torque	T_{2NOT}	Nm	125 ~ 1000	3 Times of Rated Output Torque				
Rated Input Speed	n_{1N}	rpm	125 ~ 1000	3,000	3,000	3,000	3,000	2,000
Max. Input Speed	n_{1B}	rpm	125 ~ 1000	6,000	5,000	5,000	4,000	3,000
Backlash Ps		arcmin	125 ~ 1000	-	≤ 5	≤ 5	≤ 5	≤ 5
Backlash P0		arcmin	125 ~ 1000	≤ 7	≤ 7	≤ 7	≤ 7	≤ 7
Backlash P1		arcmin	125 ~ 1000	≤ 9	≤ 9	≤ 9	≤ 9	≤ 9
Backlash P2		arcmin	125 ~ 1000	≤ 11	≤ 11	≤ 11	≤ 11	≤ 11
Torsional Rigidity		Nm/arcmin	125 ~ 1000	14	27	60	140	240
Max. Radial Force	F_{2rB}	N	125 ~ 1000	3,200	6,800	9,300	15,600	51,000
Max. Axial Force	F_{2aB}	N	125 ~ 1000	1,600	3,400	4,650	7,800	25,500
Service Life	L_H	hr	125 ~ 1000	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)				
Efficiency	η	%	125 ~ 1000	≥ 90				
Operating Temperature		°C	125 ~ 1000	- 25° C ~ + 90° C				
Lubrication			125 ~ 1000	Synthetic Grease				
Protection Class			125 ~ 1000	IP65				
Mounting Position			125 ~ 1000	Any				
Noise Level		dB	125 ~ 1000	≤ 60	≤ 63	≤ 65	≤ 67	≤ 70
Weight ±3%		Kg	125 ~ 1000	5.2	10	18.1	35	63.7

■ Mass Moments of Inertia (kg.cm²)

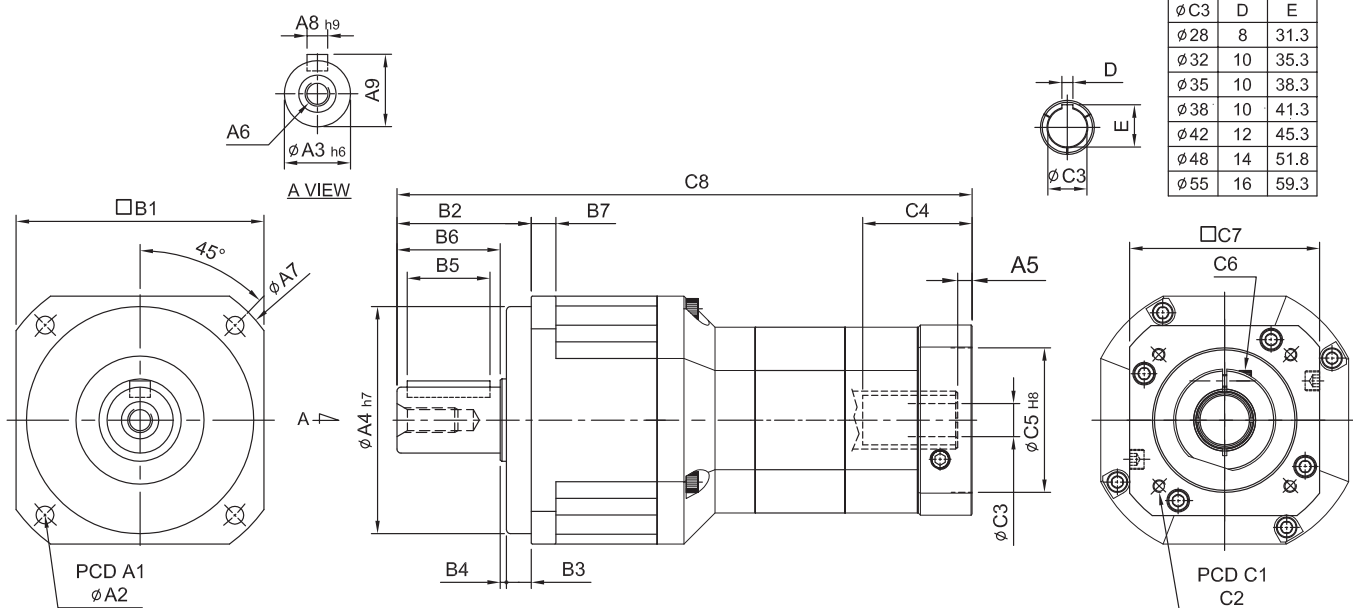
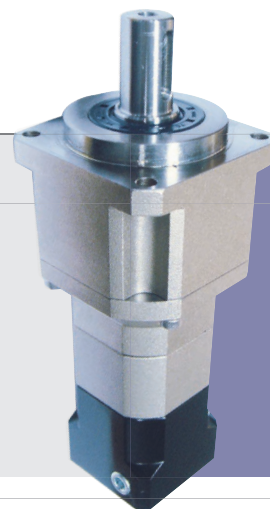
Ratio	90	120	142	180	220
125	0.01	0.04	0.71	1.42	3.29
150	0.01	0.04	0.51	0.92	2.15
175	0.01	0.04	0.40	0.83	1.26
200	0.01	0.04	0.21	0.65	0.98
250	0.01	0.04	0.11	0.52	0.82
300	0.01	0.04	0.09	0.21	0.82
350	0.01	0.04	0.09	0.21	0.82
400	0.01	0.04	0.09	0.21	0.82
450	0.01	0.04	0.09	0.21	0.51
500	0.01	0.04	0.08	0.12	0.51
600	0.01	0.04	0.08	0.12	0.25
700	0.01	0.04	0.08	0.12	0.25
800	0.01	0.04	0.08	0.12	0.25
900	0.01	0.04	0.08	0.12	0.25
1000	0.01	0.04	0.08	0.12	0.25

SERVOBX Planetary Reducers

SB-A Series

3-Stage

RATIO : 125, 150, 175, 200, 250, 300, 350,
400, 450, 500, 600, 700, 800, 900, 1000



(180# and larger)

Ø C3	D	E
Ø 28	8	31.3
Ø 32	10	35.3
Ø 35	10	38.3
Ø 38	10	41.3
Ø 42	12	45.3
Ø 48	14	51.8
Ø 55	16	59.3

unit: mm

Model Code	62A	90A	120A	142A	180A	220A
A1	70	100	130	165	215	250
A2	5.5	6.8	9	11	13	17
A3	16	22	32	40	55	75
A4	50	80	110	130	160	180
A5	5	6	9, 23.5	10, 20	10	11.5, 13.5
A6	M5 x P0.8	M8 x P1.25	M10 x P1.5	M12 x P1.75	M14 x P2.0	M16 x P2.0
A7	80	116	148	186	238	288
A8	5	6	10	12	16	20
A9	18	24.5	35	43	59	79.5
B1	62	90	120	142	180	220
B2	36	48	65	92	106	139
B3	7	10	12	15	20	30
B4	1	2	3	3	4	5
B5	20	30	40	65	70	90
B6	28	36	50	74	82	104
B7	8	10	12	15	16	20
C1	46, 63, 60	70, 75, 90	90, 100, 115, 145	115, 145, 165	145, 165, 215	200, 215, 265
C2	M3, M4, M5	M4, M5, M6	M5, M6, M8	M6, M8, M10	M8, M10, M12	M10, M12
C3	8, 9, 11	11, 14, 16, 19	16, 19, 22, 24	22, 24, 28, 32	28, 32, 35, 38	35, 38, 42, 48, 55
C4	26, 30.5	33.5, 41.5	59, 73.5	67, 77	84.5	114.5, 116.5
C5	30, 40, 50	50, 60, 70	70, 80, 95, 110	95, 110, 130	110, 130, 180	114.3, 180, 230
C6	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5	M10 x P1.5
C7	46, 55	64, 70, 80	92, 110, 130	122, 130, 150	146, 150, 190	182, 200, 250
C8	165.5	206.3, 214.3	284.5, 299	354.5, 364.5	425	527.5



SB-A 3-Stage

■ Performance

Parameter \ Model No.	Sym	Unit	Ratio	62A	90A	120A	142A	180A	220A
Rated Output Torque (Nominal output torque)	T_{2N}	Nm	125	48	160	333	618	1,189	2,010
			150	59	165	335	583	1,206	2,030
			175	45	149	309	573	1,108	1,870
			200	51	146	300	555	1,069	1,804
			250	48	160	333	618	1,189	2,010
			300	45	151	311	583	1,118	1,911
			350	45	149	309	573	1,108	1,870
			400	43	143	298	553	1,070	1,824
			450	44	145	278	516	993	1,694
			500	48	160	333	618	1,189	2,010
			600	45	151	311	583	1,118	1,911
			700	45	149	309	573	1,108	1,870
			800	43	143	298	553	1,070	1,824
			900	44	145	278	516	993	1,694
			1000	43	141	294	549	1,059	1,779
Max. Acceleration Torque	T_{2B}	Nm	125 ~ 1000	1.8 Times of Rated Output Torque					
Max. Output Torque Emergency Stop Torque	T_{2NOT}	Nm	125 ~ 1000	3 Times of Rated Output Torque					
Rated Input Speed	n_{1N}	rpm	125 ~ 1000	3,000	3,000	3,000	3,000	3,000	2,000
Max. Input Speed	n_{1B}	rpm	125 ~ 1000	6,000	6,000	5,000	5,000	4,000	3,000
Backlash Ps		arcmin	125 ~ 1000	-	-	≤ 5	≤ 5	≤ 5	≤ 5
Backlash P0		arcmin	125 ~ 1000	≤ 7	≤ 7	≤ 7	≤ 7	≤ 7	≤ 7
Backlash P1		arcmin	125 ~ 1000	≤ 9	≤ 9	≤ 9	≤ 9	≤ 9	≤ 9
Backlash P2		arcmin	125 ~ 1000	≤ 11	≤ 11	≤ 11	≤ 11	≤ 11	≤ 11
Torsional Rigidity		Nm/arcmin	125 ~ 1000	6	14	27	60	140	240
Max. Radial Force	F_{2rB}	N	125 ~ 1000	1,180	3,200	6,800	9,300	15,600	51,000
Max. Axial Force	F_{2aB}	N	125 ~ 1000	590	1,600	3,400	4,650	7,800	25,500
Service Life	L_H	hr	125 ~ 1000	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)					
Efficiency	η	%	125 ~ 1000	≥ 90					
Operating Temperature		°C	125 ~ 1000	- 25° C ~ + 90° C					
Lubrication			125 ~ 1000	Synthetic Grease					
Protection Class			125 ~ 1000	IP65					
Mounting Position			125 ~ 1000	Any					
Noise Level		dB	125 ~ 1000	≤ 58	≤ 60	≤ 63	≤ 65	≤ 67	≤ 70
Weight $\pm 3\%$		Kg	125 ~ 1000	4	6.5	13	30	57	87

■ Mass Moments of Inertia (kg.cm²)

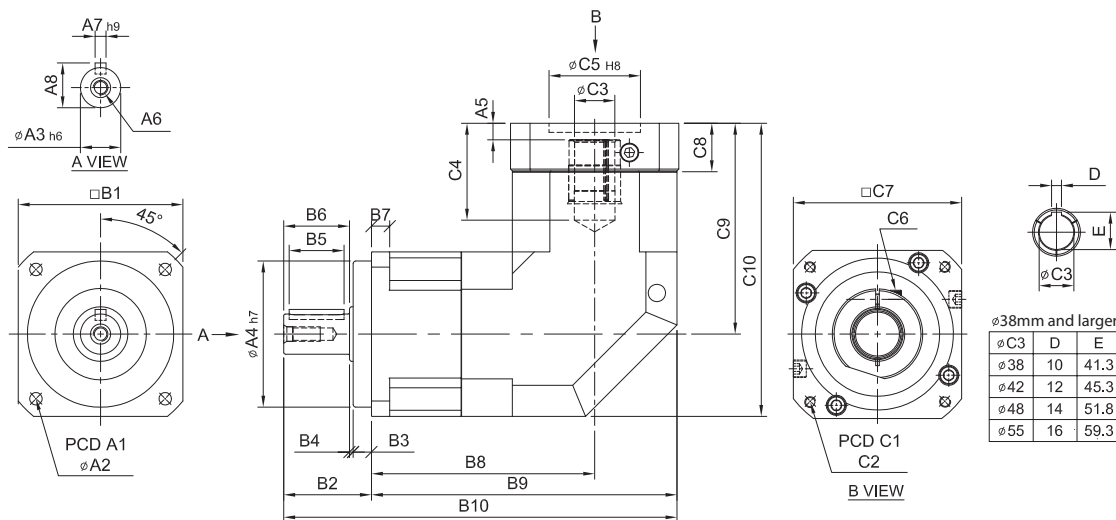
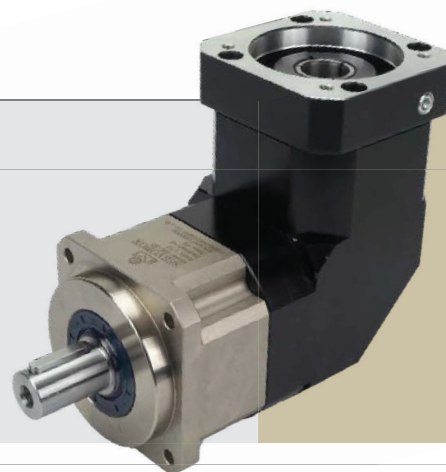
Ratio	62A	90A	120A	142A	180A	220A
125	0.01	0.01	0.04	0.71	1.42	3.29
150	0.01	0.01	0.04	0.51	0.92	2.15
175	0.01	0.01	0.04	0.40	0.83	1.26
200	0.01	0.01	0.04	0.21	0.65	0.98
250	0.01	0.01	0.04	0.11	0.52	0.82
300	0.01	0.01	0.04	0.09	0.21	0.82
350	0.01	0.01	0.04	0.09	0.21	0.82
400	0.01	0.01	0.04	0.09	0.21	0.82
450	0.01	0.01	0.04	0.09	0.21	0.51
500	0.01	0.01	0.04	0.08	0.12	0.51
600	0.01	0.01	0.04	0.08	0.12	0.25
700	0.01	0.01	0.04	0.08	0.12	0.25
800	0.01	0.01	0.04	0.08	0.12	0.25
900	0.01	0.01	0.04	0.08	0.12	0.25
1000	0.01	0.01	0.04	0.08	0.12	0.25

SERVOBX Planetary Reducers

SBL Series

1-Stage

RATIO : 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 16, 18, 20



unit: mm

Model Code	44	62	90	120	142	180	220
A1	50	70	100	130	165	215	250
A2	4.5	5.5	6.8	9	11	13	17
A3	13	16	22	32	40	55	75
A4	35	50	80	110	130	160	180
A5	6	6	9, 23.5	10, 20	10	12.5, 14.5	12.5, 14.5
A6	M4 x P0.7	M5 x P0.8	M8 x P1.25	M10 x P1.5	M12 x P1.75	M14 x P2.0	M16 x P2.0
A7	5	5	6	10	12	16	20
A8	15	18	24.5	35	43	59	79.5
B1	44	62	90	120	142	180	220
B2	26	36	48	65	92	106	139
B3	5	7	10	12	15	20	30
B4	1	1	2	3	3	4	5
B5	15	20	30	40	65	70	90
B6	20	28	36	50	74	82	104
B7	5	8	10	12	15	16	20
B8	76	84.5	122.1	148	165.5	223.6	231.6
B9	98	115.5	167.1	208	236.5	313.6	341.6
B10	124	151.5	215	273	328.5	419.6	480.6
C1	46, 60, 63	70, 75, 90	90, 110, 115, 145	115, 145, 165	145, 165, 215	200, 215, 265	200, 265, 300
C2	M3, M4, M5	M4, M5, M6	M5, M6, M8	M6, M8, M10	M8, M10, M12	M10, M12, M16	M12, M16
C3	8, 9, 11	11, 14, 16, 19	16, 19, 22, 24	24, 28, 32	28, 32, 35, 38	35, 38, 42, 48, 55	38, 42, 48, 55
C4	27	33.5, 42	53, 58, 67.5	67, 77	85	117, 119	117, 119
C5	30, 40, 50	50, 60, 70	70, 80, 95, 110	95, 110, 130	110, 130, 180	114.3, 180, 230	114.3, 230, 250
C6	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5	M10 x P1.5	M10 x P1.5
C7	46, 55	64, 70, 80	92, 110, 130	122, 130, 150	146, 150, 190	182, 200, 250	222, 250, 265
C8	16	21.5	26.5, 41	35.5, 45.5	35.5	45.5, 47.5	45.5, 47.5
C9	61	77, 85	115.3, 129.8	141, 151	165.7	235, 237	235
C10	83	108, 116	160.3, 174.8	201, 211	236.7	325, 327	345



High Precision Planetary Reducer

SBL 1-Stage

■ Performance

Parameter \ Model No.	Sym	Unit	Ratio	44	62	90	120	142	180	220
Rated Output Torque (Nominal output torque)	T_{2N}	Nm	3	19	59	165	335	625	1,206	2,030
			4	16	51	146	300	555	1,069	1,804
			5	16	48	160	333	618	1,189	2,010
			6	15	45	151	311	583	1,118	1,911
			7	15	45	149	309	573	1,108	1,870
			8	14	43	143	298	553	1,070	1,824
			9	13	44	145	278	516	993	1,694
			10	14	43	141	294	549	1,059	1,779
			12	15	45	151	311	583	1,118	1,911
			14	15	45	149	309	573	1,108	1,870
			16	14	43	143	298	553	1,070	1,824
			18	13	44	145	278	516	993	1,694
			20	14	43	141	294	549	1,059	1,779
Max. Acceleration Torque	T_{2B}	Nm	3 ~ 20	1.8 Times of Rated Output Torque						
Max. Output Torque Emergency Stop Torque	T_{2NOT}	Nm	3 ~ 20	3 Times of Rated Output Torque						
Rated Input Speed	n_{1N}	rpm	3 ~ 20	3,000	3,000	3,000	3,000	3,000	3,000	2,000
Max. Input Speed	n_{1B}	rpm	3 ~ 20	6,000	6,000	6,000	5,000	5,000	4,000	3,000
Backlash Ps		arcmin	3 ~ 20	-	-	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2
Backlash P0		arcmin	3 ~ 20	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4
Backlash P1		arcmin	3 ~ 20	≤ 6	≤ 6	≤ 6	≤ 6	≤ 6	≤ 6	≤ 6
Backlash P2		arcmin	3 ~ 20	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8
Torsional Rigidity		Nm/arcmin	3 ~ 20	3	6	14	27	60	140	240
Max. Radial Force	F_{2rB}	N	3 ~ 20	380	1,180	3,200	6,800	9,300	15,600	51,000
Max. Axial Force	F_{2aB}	N	3 ~ 20	190	590	1,600	3,400	4,650	7,800	25,500
Service Life	L_H	hr	3 ~ 20	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
Efficiency	η	%	3 ~ 20	≥ 95						
Operating Temperature		°C	3 ~ 20	- 25° C ~ + 90° C						
Lubrication			3 ~ 20	Synthetic Grease						
Protection Class			3 ~ 20	IP65						
Mounting Position			3 ~ 20	Any						
Noise Level		dB	3 ~ 20	≤ 65	≤ 68	≤ 70	≤ 72	≤ 74	≤ 76	≤ 78
Weight ±3%		Kg	3 ~ 20	1	2.3	6.6	13.2	22.3	50	75.2

■ Mass Moments of Inertia (kg.cm²)

Ratio	44	62	90	120	142	180	220
3	0.09	0.36	2.28	6.85	23.5	68.2	135
4	0.09	0.36	2.28	6.85	23.5	68.2	135
5	0.09	0.36	2.28	6.85	23.5	68.2	135
6	0.09	0.36	2.28	6.85	23.5	68.2	135
7	0.09	0.36	2.28	6.85	23.5	68.2	135
8	0.09	0.36	2.28	6.85	23.5	68.2	135
9	0.09	0.36	2.28	6.85	23.5	68.2	135
10	0.09	0.36	2.28	6.85	23.5	68.2	135
12	0.03	0.08	1.88	6.2	21.8	65.5	119.2
14	0.03	0.08	1.88	6.2	21.8	65.5	119.2
16	0.03	0.08	1.88	6.2	21.8	65.5	119.2
18	0.03	0.08	1.88	6.2	21.8	65.5	119.2
20	0.03	0.08	1.88	6.2	21.8	65.5	119.2