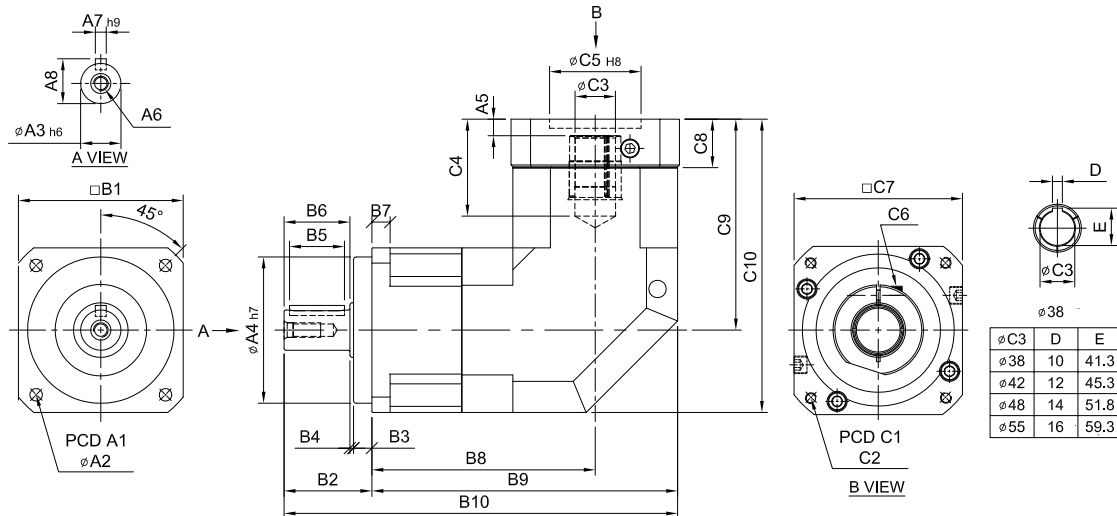


# SERVOBOX Planetary Reducers

## MODEL : SBL

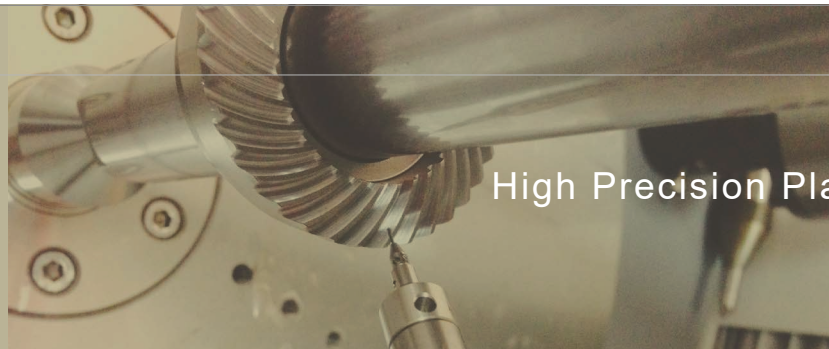
1-Stage

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
<b>A</b>							
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
<b>B</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
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
<b>C</b>							
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

Model No.		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	$n_{iN}$	rpm	3 ~ 20	3,000	3,000	3,000	3,000	3,000	3,000	2,000
Max. Input Speed	$n_{iB}$	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	$\eta$	%	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.cm<sup>2</sup>)

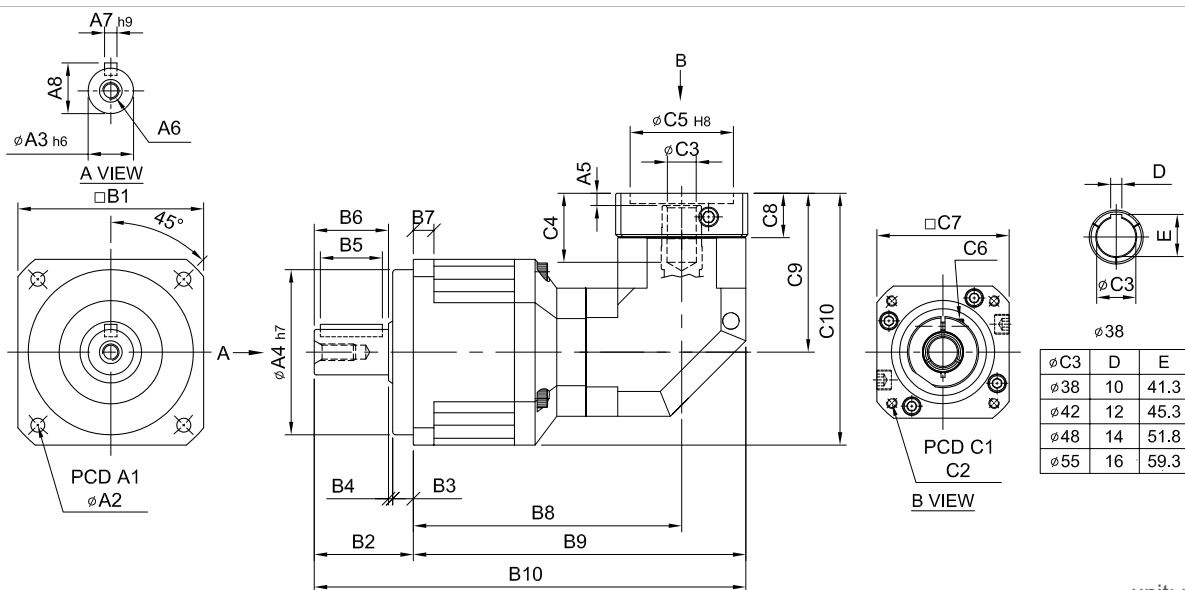
Ratio	44	62	90	120	142	180	220
3	0.09	0.36	2.28	6.85	23.5	68.2	135
4	0.09	0.36	2.28	6.85	23.5	68.2	135
5	0.09	0.36	2.28	6.85	23.5	68.2	135
6	0.09	0.36	2.28	6.85	23.5	68.2	135
7	0.09	0.36	2.28	6.85	23.5	68.2	135
8	0.09	0.36	2.28	6.85	23.5	68.2	135
9	0.09	0.36	2.28	6.85	23.5	68.2	135
10	0.09	0.36	2.28	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

# SERVOBOX Planetary Reducers

## MODEL : SBL

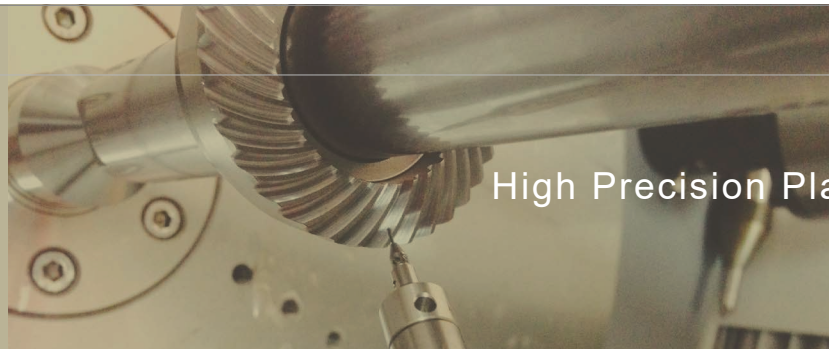
2-Stage

RATIO : 15, 20, 25, 30, 35, 40, 50, 60, 70,  
80, 90, 100, 120, 140, 160, 180, 200



unit: mm

Model Code	62	90	120	142	180	220
<b>A</b>						
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	6	6	9 · 23.5	10 · 20	8	12.5 · 14.5
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	5	6	10	12	16	20
A8	18	24.5	35	43	59	79.5
<b>B</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
B8	110.5	130	181.6	214.5	249.5	313.6
B9	132.5	161	266.6	274.5	320.5	403.6
B10	168.5	209	291.6	366.5	426.5	542.6
<b>C</b>						
C1	46 · 60 · 63	70 · 75 · 90	90 · 110 · 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 · 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
C4	27	33.5 · 42	53 · 58 · 67.5	67 · 77	84	117 · 119
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	16	21.5	26.5 · 41	35.5 · 45.5	35.5	45.5 · 47.5
C9	61	77 · 85	115.3 · 129.8	141 · 151	165.7	235 · 237
C10	92	122 · 130	175.3 · 189.8	212 · 222	255.7	345 · 347



## High Precision Planetary Reducer

Model No.		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
			120	45	151	311	583	1,118	1,911
			140	45	149	309	573	1,108	1,870
			160	43	143	298	553	1,070	1,824
180	44	145	278	516	993	1,694			
200	43	141	294	549	1,059	1,779			
Max. Acceleration Torque	$T_{2B}$	Nm	15 ~ 200	1.8 Times of Rated Output Torque					
Max. Output Torque Emergency Stop Torque	$T_{2NOT}$	Nm	15 ~ 200	3 Times of Rated Output Torque					
Rated Input Speed	$n_{1N}$	rpm	15 ~ 200	3,000	3,000	3,000	3,000	3,000	2,000
Max. Input Speed	$n_{1B}$	rpm	15 ~ 200	6,000	6,000	5,000	5,000	4,000	4,000
Backlash P <sub>s</sub>		arcmin	15 ~ 200	-	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4
Backlash P <sub>0</sub>		arcmin	15 ~ 200	≤ 7	≤ 7	≤ 7	≤ 7	≤ 7	≤ 7
Backlash P <sub>1</sub>		arcmin	15 ~ 200	≤ 9	≤ 9	≤ 9	≤ 9	≤ 9	≤ 9
Backlash P <sub>2</sub>		arcmin	15 ~ 200	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12
Torsional Rigidity		Nm/arcmin	15 ~ 200	6	14	27	60	140	240
Max. Radial Force	$F_{2rB}$	N	15 ~ 200	1,180	3,200	6,800	9,300	15,600	51,000
Max. Axial Force	$F_{2aB}$	N	15 ~ 200	590	1,600	3,400	4,650	7,800	25,500
Service Life	$L_H$	hr	15 ~ 200	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)					
Efficiency	$\eta$	%	15 ~ 200	≥ 92%					
Operating Temperature		°C	15 ~ 200	- 25° C ~ + 90° C					
Lubrication			15 ~ 200	Synthetic Grease					
Protection Class			15 ~ 200	IP65					
Mounting Position			15 ~ 200	Any					
Noise Level		dB	15 ~ 200	≤ 68	≤ 70	≤ 72	≤ 74	≤ 76	≤ 78
Weight ±3%		Kg	15 ~ 200	2	5.5	12.5	23.2	44.4	79.5

### ■ Mass Moments of Inertia (kg.cm<sup>2</sup>)

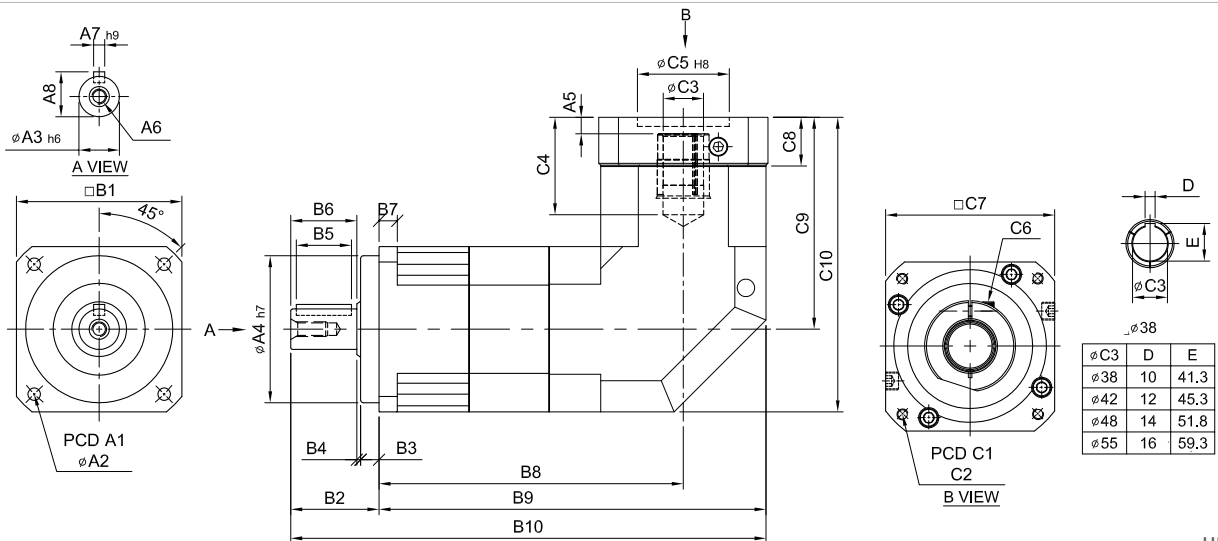
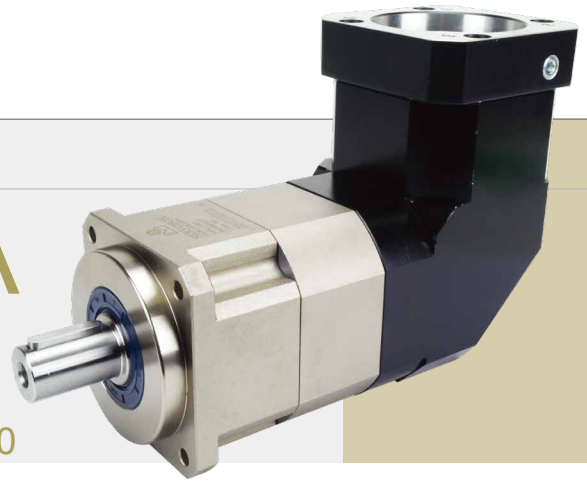
Ratio	62	90	120	142	180	220
15	0.09	0.36	2.28	6.85	26.2	70.1
20	0.09	0.36	2.28	6.85	26.2	70.1
25	0.09	0.36	2.28	6.85	23.1	68.2
30	0.09	0.36	2.28	6.85	23.1	68.2
35	0.09	0.36	2.28	6.85	23.1	68.2
40	0.09	0.36	2.28	6.85	23.1	68.2
50	0.09	0.36	2.28	6.85	23.1	68.2
60	0.09	0.36	2.28	6.85	23.1	68.2
70	0.09	0.36	2.28	6.85	23.1	68.2
80	0.09	0.36	2.28	6.85	23.1	68.2
90	0.09	0.36	2.28	6.85	23.1	68.2
100	0.09	0.36	2.28	6.85	23.1	68.2
120	0.03	0.10	1.88	6.20	21.2	65.1
140	0.03	0.10	1.88	6.20	21.2	65.1
160	0.03	0.10	1.88	6.20	21.2	65.1
180	0.03	0.10	1.88	6.20	21.2	65.1
200	0.03	0.10	1.88	6.20	21.2	65.1

# SERVOBOX Planetary Reducers

## MODEL : SBL-A

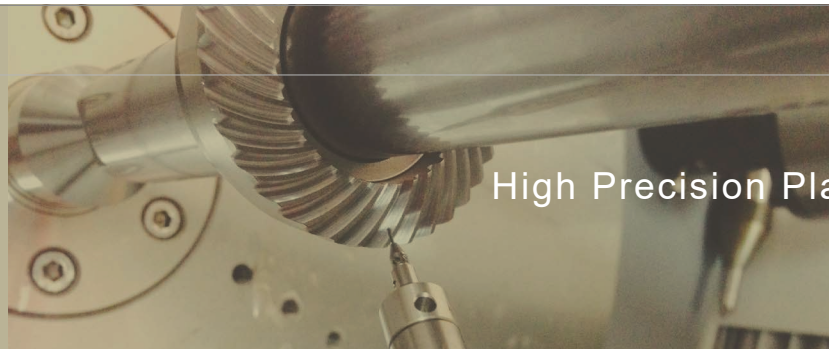
2-Stage

RATIO : 15, 20, 25, 30, 35, 40, 50, 60, 70,  
80, 90, 100, 120, 140, 160, 180, 200



unit: mm

Model Code	44A	62A	90A	120A	142A	180A	220A
<b>A</b>							
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
<b>B</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
B8	102	118.3	165.6	204	232	304.6	324.6
B9	124	149.3	210.6	264	303	394.6	434.6
B10	150	185.3	258.6	329	395	500.6	573.6
<b>C</b>							
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	220 · 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	115.3 · 129.8	141 · 151	165.7	235 · 237	235 · 237
C10	83	108	160.3 · 174.8	201 · 211	236.7	325 · 327	345 · 347



## High Precision Planetary Reducer

Model No.		Unit	Ratio	44A	62A	90A	120A	142A	180A	220A
Rated 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
			120	15	45	151	311	583	1,118	1,911
			140	15	45	149	309	573	1,108	1,870
			160	14	43	143	298	553	1,070	1,824
180	13	44	145	278	516	993	1,694			
200	14	43	141	294	549	1,059	1,779			
Max. Acceleration Torque	$T_{2B}$	Nm	15 ~ 200	1.8 Times of Rated Output Torque						
Max. Output Torque Emergency Stop Torque	$T_{2NOT}$	Nm	15 ~ 200	3 Times of Rated Output Torque						
Rated Input Speed	$n_{1N}$	rpm	15 ~ 200	3,000	3,000	3,000	3,000	3,000	3,000	2,000
Max. Input Speed	$n_{1B}$	rpm	15 ~ 200	6,000	6,000	6,000	5,000	5,000	4,000	3,000
Backlash P <sub>s</sub>		arcmin	15 ~ 200	-	-	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4
Backlash P <sub>0</sub>		arcmin	15 ~ 200	≤ 7	≤ 7	≤ 7	≤ 7	≤ 7	≤ 7	≤ 7
Backlash P <sub>1</sub>		arcmin	15 ~ 200	≤ 9	≤ 9	≤ 9	≤ 9	≤ 9	≤ 9	≤ 9
Backlash P <sub>2</sub>		arcmin	15 ~ 200	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12
Torsional Rigidity		Nm/arcmin	15 ~ 200	3	6	14	27	60	140	240
Max. Radial Force	$F_{2rB}$	N	15 ~ 200	380	1,180	3,200	6,800	9,300	15,600	51,000
Max. Axial Force	$F_{2aB}$	N	15 ~ 200	190	590	1,600	3,400	4,650	7,800	25,500
Service Life	$L_H$	hr	15 ~ 200	S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
Efficiency	$\eta$	%	15 ~ 200	≥ 92%						
Operating Temperature		°C	15 ~ 200	- 25° C ~ + 90° C						
Lubrication			15 ~ 200	Synthetic Grease						
Protection Class			15 ~ 200	IP65						
Mounting Position			15 ~ 200	Any						
Noise Level		dB	15 ~ 200	≤ 65	≤ 68	≤ 70	≤ 72	≤ 74	≤ 76	≤ 78
Weight ±3%		Kg	15 ~ 200	1.2	3	8.2	12.5	23.2	52.4	94.5

### ■ Mass Moments of Inertia (kg.cm<sup>2</sup>)

Ratio	44A	62A	90A	120A	142A	180A	220A
15	0.09	0.36	2.28	6.85	23.45	55.2	80.2
20	0.09	0.36	2.28	6.85	23.45	55.2	80.2
25	0.09	0.36	2.28	6.85	23.45	50.4	76.5
30	0.09	0.36	2.28	6.85	23.5	50.4	76.5
35	0.09	0.36	2.28	6.85	23.5	50.4	76.5
40	0.09	0.36	2.28	6.85	23.5	50.4	76.5
50	0.09	0.36	2.28	6.85	23.5	50.4	76.5
60	0.09	0.36	2.28	6.85	23.5	50.4	76.5
70	0.09	0.36	2.28	6.85	23.5	50.4	76.5
80	0.09	0.36	2.28	6.85	23.5	50.4	76.5
90	0.09	0.36	2.28	6.85	23.5	50.4	76.5
100	0.09	0.36	2.28	6.85	23.5	50.4	76.5
120	0.03	0.08	1.88	6.2	21.8	48.7	74.2
140	0.03	0.08	1.88	6.2	21.8	48.7	74.2
160	0.03	0.08	1.88	6.2	21.8	48.7	74.2
180	0.03	0.08	1.88	6.2	21.8	48.7	74.2
200	0.03	0.08	1.88	6.2	21.8	48.7	74.2