SB/SBR/SE/SER/SD/SDR SERIES
HIGH PRECISION PLANETARY GEAR BOX

SEI
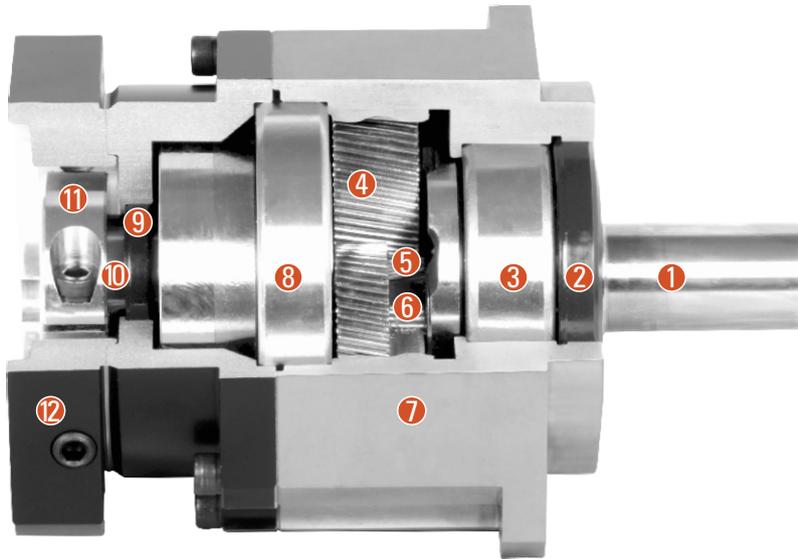
SB SERIES

SBR SERIES

SE SERIES

SER SERIES

SD SERIES

SDR SERIES

SB SERIES GEARBOX

■ Sectional View

① Output shaft
② Oil seal
③ Output shaft front bearing
④ Planetary gear
⑤ Solar wheel
⑥ Full needle bearing
⑦ Front cover
⑧ Output shaft rear bearing
⑨ Oil seal
⑩ Coupling
⑪ Lock ring
⑫ Rear cover

■ Type and Model Number Explanation

SB Reducers					Servo Motor	
090	SB	20	( )	(S1)	- 750	☐
①	②	③	④	⑤	⑥	⑦

①	Gearbox frame size: 090 (See P04)
②	Gearbox series code: SB
③	Gear ratio: 20, (See P04)
④	Precision (See P04) Precision type P1,high pricision type P0 Output shaft load is ±5% of allowable output torque
⑤	Input shaft type S1: Locking with locking ring (Omission) (Can be used regardless whether the motor has a keyway, but "D" type is not applicable) S2: Locking with keyway (Input shaft with key) A: Other adapters (Please contact our company)
⑥	Applicable servo motor power (W)
⑦	Servo motor model

SB SERIES

SBR SERIES

SE SERIES

SER SERIES

SD SERIES

SDR SERIES

P04

PRODUCT SPECIFICATIONS

■ Reducer Performance Data

Specifications		Node Number	Reduction Ratio	042SB	060SB	060(A)SB	090SB	090(A)SB	115SB	142SB	180SB	220SB
Rated Output Torque T_{2N}	Nm	1	3	-	55	-	130	-	208	342	588	1140
			4	19	50	-	140	-	290	542	1050	1700
			5	22	60	-	160	-	330	650	1200	2000
			6	20	55	-	150	-	310	600	1100	1900
			7	19	50	-	140	-	300	550	1100	1800
			8	17	45	-	120	-	260	500	1000	1600
			9	14	40	-	100	-	230	450	900	1500
			10	14	40	-	100	-	230	450	900	1500
		2	15	-	55	55	130	130	208	342	588	1140
			20	19	50	50	140	140	290	542	1050	1700
			25	22	60	60	160	160	330	650	1200	2000
			30	20	55	55	150	150	310	600	1100	1900
			35	19	50	50	140	140	300	550	1100	1800
			40	17	45	45	120	120	260	500	1000	1600
			45	14	40	40	100	100	230	450	900	1500
			50	22	60	60	160	160	330	650	1200	2000
			60	20	55	55	150	150	310	600	1100	1900
			70	19	50	50	140	140	300	550	1100	1800
			80	17	45	45	120	120	260	500	1000	1600
			90	14	40	40	100	100	230	450	900	1500
			100	14	40	40	100	100	230	450	900	1500
Emergency Stop Torque T_{2NOT} [2]	Nm	1,2	3~100	3 Times of Output Rated Torque								
Rated Input Speed n_{1N}	rpm	1,2	3~100	3000	3000	3000	3000	3000	3000	3000	3000	2000
Rated Input Speed n_{1B}	rpm	1,2	3~100	6000	6000	6000	6000	6000	6000	6000	6000	4000
Super Precision Backlash PO	arcmin	1	3~10	-	-	-	-	-	≤1	≤1	≤1	≤1
		2	15~100	-	-	-	-	-	≤3	≤3	≤3	≤3
Precision Backlash P1	arcmin	1	3~10	≤3	≤3	-	≤3	-	≤3	≤3	≤3	≤3
		2	15~100	≤5	-	≤5	≤5	≤5	≤5	≤5	≤5	≤5
Standard Backlash P2	arcmin	1	3~10	≤5	≤5	-	≤5	-	≤5	≤5	≤5	≤5
		2	15~100	≤7	-	≤7	≤7	≤7	≤7	≤7	≤7	≤7
Torsional Stiffness	Nm/arcmin	1,2	3~100	2	7	7	14	14	25	50	145	225
Allowable Radial Force F_{2rB} [3]	N	1,2	3~100	780	1530	1530	3250	3250	6700	9400	14500	50000
Allowable Axial Force F_{2aB} [3]	N	1,2	3~100	390	765	765	1625	1625	3350	4700	7250	25000
Service Life	hr	1,2	3~100	20000*								
Efficiency η	%	1	3~10	≥97%								
		2	15~100	≥94%								
Weight	Kg	1	3~10	0.6	1.3	-	3.7	-	7.8	14.5	29	48
		2	15~100	0.8	1.5	1.9	4.1	5.3	9	17.5	33	60
Operating Temperature	℃	1,2	3~100	-10℃~+90℃								
Lubrication		1,2	3~100	Synthetic Lubricating Grease								
Protection Class		1,2	3~100	IP65								
Mounting Position		1,2	3~100	Any Direction								
Noise Level at 1m Distance (n_1=3000rpm, No Load)	dB(A)	1,2	3~100	≤56	≤58	≤60	≤60	≤63	≤63	≤65	≤67	≤70

■ Moment of Inertia of The Reducer

| Specifications		Node Number	Reduction Ratio	042SB	060SB	060(A)SB	090SB	090(A)SB	115SB	142SB	180SB	220SB
Moment Of Inertia J_1	Kg·cm²	1	3	-	0.16	-	0.61	-	3.25	9.21	28.98	69.61
			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
		2	15	-	0.03	0.13	0.13	0.47	0.47	2.71	7.42	23.29
			20	0.03	0.03	0.13	0.13	0.47	0.47	2.71	7.42	23.29
			25	0.03	0.03	0.13	0.13	0.47	0.47	2.71	7.42	23.29
			30	0.03	0.03	0.13	0.13	0.47	0.47	2.71	7.42	23.29
			35	0.03	0.03	0.13	0.13	0.47	0.47	2.71	7.42	23.29
			40	0.03	0.03	0.13	0.13	0.47	0.47	2.71	7.42	23.29
			45	0.03	0.03	0.13	0.13	0.47	0.47	2.71	7.42	23.29
			50	0.03	0.03	0.13	0.13	0.44	0.44	2.57	7.03	22.51
			60	0.03	0.03	0.13	0.13	0.44	0.44	2.57	7.03	22.51
			70	0.03	0.03	0.13	0.13	0.44	0.44	2.57	7.03	22.51
			80	0.03	0.03	0.13	0.13	0.44	0.44	2.57	7.03	22.51
			90	0.03	0.03	0.13	0.13	0.44	0.44	2.57	7.03	22.51
			100	0.03	0.03	0.13	0.13	0.44	0.44	2.57	7.03	22.51

1.Gear ratio($i=N_{in}/N_{out}$)   2.Maximum acceleration torque $T_{2B}=60\%$ of T_{2NOT} 3.When the output speed is 100rpm, it will act on the central position of the output shaft.
*Continuous operation, service life is 10000hrs

SB SERIES

SBR SERIES

SE SERIES

SER SERIES

SD SERIES

SDR SERIES

DIMENSIONS (SINGLE STAGE, REDUCTION RATIO i＝3∼10)

■ Dimensional Drawing

Output

Input
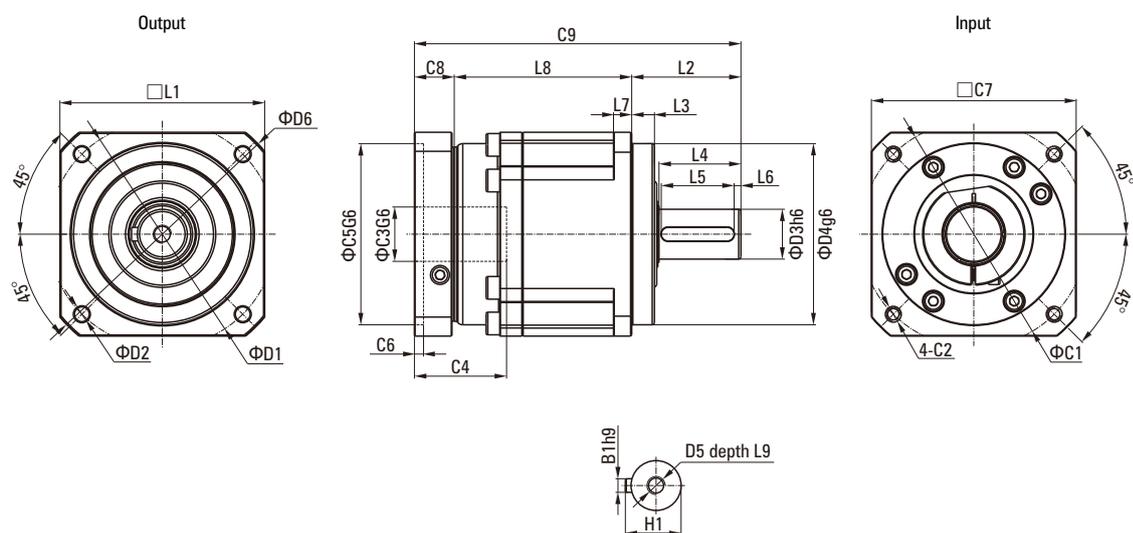
■ Dimensional Table

Unit: mm

Size	042SB	060SB	090SB	115SB	142SB	180SB	220SB
D1	50	70	100	130	165	215	250
D2	3.4	5.5	6.6	9	11	13	17
D3 h6	13	16	22	32	40	55	75
D4 g6	35	50	80	110	130	160	180
D5	M4×0.7P	M5×0.8P	M8×1.25P	M12×1.75P	M16×2P	M20×2.5P	M20×2.5P
D6	56	80	116	152	185	240	292
L1	42	60	90	115	142	180	220
L2	26	37	48	65	97	105	138
L3	5.5	7	10	12	15	20	30
L4	1	28	35.5	51	79	82	105
L5	16	25	32	40	70	70	90
L6	2	2	2	5	4	6	7
L7	4	6	8	10	15	20	25
L8	31	65.5	78	101.5	119.5	154	163.5
L9	4.8	12.5	19	28	36	42	42
C1	46	70	100	130	165	215	235
C2	M4×0.7P	M5×0.8P	M6×1P	M8×1.25P	M10×1.5P	M12×1.75P	M12×1.75P
C3	*≤11/≤12	*≤14/≤16	≤19/≤24	≤32	≤35/≤38	≤42/≤48	≤55
C4	25	35	40.5	51	60	85	116
C5 G6	30	50	80	110	130	180	200
C6	3.5	8	4	5	6	6	6
C7	42	60	90	115	142	190	220
C8	29.5	19.5	17.5	20	22.5	29	63
C9	114	122	143.5	186.5	239	288	364.5
B1 h9	5	5	6	10	12	16	20
H1	15	18	24.5	35	43	59	79.5

*060SB 5,10 Reduction ratio provides C3≤16 to choose from.

SB SERIES

SBR SERIES

SE SERIES

SER SERIES

SD SERIES

SDR SERIES

P06

DIMENSIONS (TWO STAGE, REDUCTION RATIO i＝15～100)

■ Dimensional Drawing

Output

Input

060AZB/090AZB
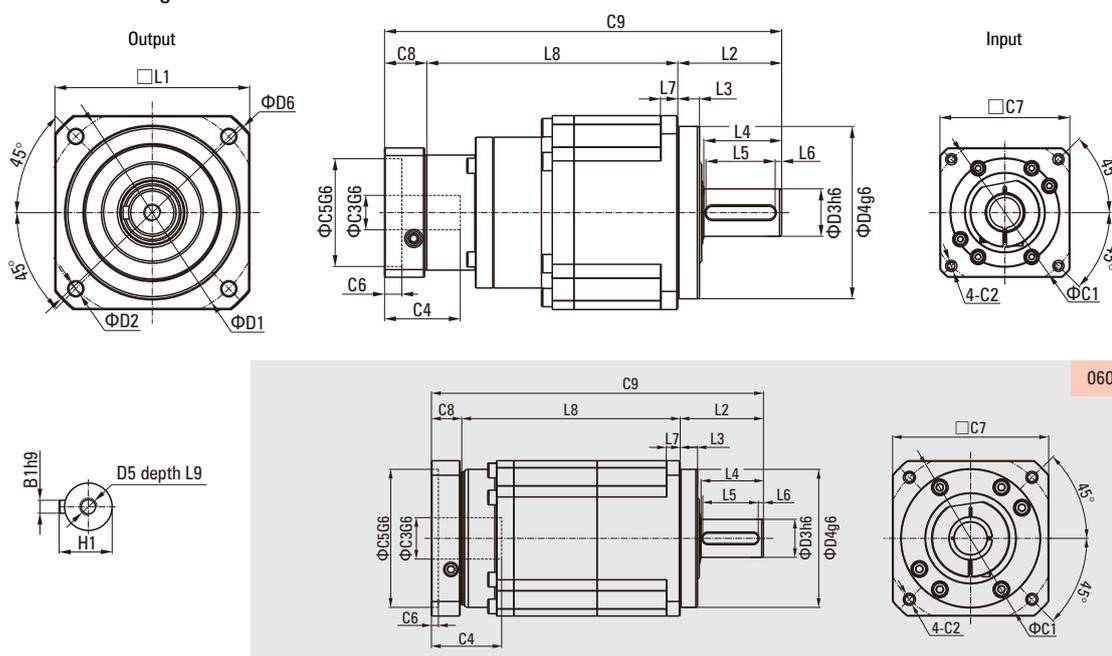
■ Dimensional Table

Unit: mm

Size	042SB	060(A)SB	090SB	090(A)SB	115SB	142SB	180SB	220SB
D1	50	70	100		130	165	215	250
D2	3.4	5.5	6.6		9	11	13	17
D3 h6	13	16	22		32	40	55	75
D4 g6	35	50	80		110	130	160	180
D5	M4×0.7P	M5×0.8P	M8×1.25P		M12×1.75P	M16×2P	M20×2.5P	M20×2.5P
D6	56	80	116		152	185	240	292
L1	42	60	90		115	142	180	220
L2	26	37	48		65	97	105	138
L3	5.5	7	10		12	15	20	30
L4	1	28	36		51	79	82	105
L5	16	25	32		40	70	70	90
L6	2	2	3		5	4	6	7
L7	4	6	8		10	15	20	25
L8	58.5	102.5	116	126	143	169.5	207.5	246
L9	10	12.5	19		28	36	42	42
C1	46	70	70	100	100	130	165	215
C2	M4×0.7P	M5×0.8P	M5×0.8P	M6×1P	M6×1P	M8×1.25P	M10×1.5P	M12×1.75P
C3	≤11/≤12	≤14/≤16	≤14/≤15.875/≤16	≤19/≤24	≤19/≤24	≤32	≤35/≤38	≤42/≤48
C4	25	35	35	40.5	40	50	60	85
C5 G6	30	50	50	80	80	110	130	180
C6	3.5	8	8	4	4	5	6	6
C7	42	60	60	90	90	115	142	190
C8	29.5	19.5	19.5	17.5	17.5	12.5	22.5	29
C9	114	159	183.5	191.5	225.5	283.5	335	409
B1 h9	5	5	6		10	12	16	20
H1	15	18	24.5		35	43	59	79.5

SB SERIES
SBR SERIES
SE SERIES
SER SERIES
SD SERIES
SDR SERIES
P07

SBR SERIES GEARBOX - PRODUCT SPECIFICATIONS

■ Sectional View

① Output shaft
② Oil seal
③ Output shaft front bearing
④ Planetary gear
⑤ Solar wheel
⑥ Front cover
⑦ Output shaft rear bearing
⑧ Adjusting nut
⑨ Double row angular contact bearing
⑩ Output bevel gear
⑪ Right angle box
⑫ Input bevel gear
⑬ Lock nut
⑭ Input coupling
⑮ Locking device
⑯ Rear cover
⑰ Rear cover gasket

■ Reducer Performance Data

Specifications			Node Number	Reduction Ratio	060SBR	090SBR	115SBR	142SBR	180SBR	220SBR
Rated Output Torque T_{2N}	Nm		1	3	36	90	195	342	588	1140
				4	48	120	260	520	1040	1680
				5	60	150	325	650	1200	2000
				6	55	150	310	600	1100	1900
				7	50	140	300	550	1100	1800
				8	45	120	260	500	1000	1600
				9	40	100	230	450	900	1500
				10	40	100	230	450	900	1500
				14	42	140	300	550	1100	1800
				20	40	100	230	450	900	1500
			2	25	-	150	325	650	1200	2000
				30	-	150	310	600	1100	1900
				35	-	140	300	550	1100	1800
				40	-	120	260	500	1000	1600
				45	-	100	230	450	900	1500
				50	-	100	230	650	1200	2000
				60	-	150	310	600	1100	1900
				70	-	140	300	550	1100	1800
				80	-	120	260	500	1000	1600
				90	-	100	230	450	900	1500
				100	-	100	230	450	900	1500
				120	-	150	310	600	1100	1900
				140	-	140	300	550	1100	1800
				160	-	120	260	550	1000	1600
				180	-	100	230	450	900	1500
				200	-	100	230	450	900	1500
Emergency Stop Torque T_{2NOT}^{2}	Nm		1,2	3~200	3 Times of Output Rated Torque					
Rated Input Speed n_{1N}	rpm		1,2	3~200	3000	3000	3000	3000	3000	2000
Rated Input Speed n_{1B}	rpm		1,2	3~200	6000	6000	6000	6000	6000	4000
Super Precision Backlash P0	arcmin		1	3~20	-	≤2	≤2	≤2	≤2	≤2
			2	25~200	-	≤4	≤4	≤4	≤4	≤4
Precision Backlash P1	arcmin		1	3~20	≤4	≤4	≤4	≤4	≤4	≤4
			2	25~200	-	≤7	≤7	≤7	≤7	≤7
Standard Backlash P2	arcmin		1	3~20	≤6	≤6	≤6	≤6	≤6	≤6
			2	25~200	-	≤9	≤9	≤9	≤9	≤9
Torsional Stiffness	Nm/arcmin		1,2	3~200	7	14	25	50	145	145
Allowable Radial Force F_{2xB}^{3}	N		1,2	3~200	1530	3250	6700	9400	14500	50000
Allowable Axial Force F_{2aB}^{3}	N		1,2	3~200	765	1625	3350	4700	7250	25000
Service Life	hr		1,2	3~200	20000*					
Efficiency η	%		1	3~20	≥97%					
			2	25~200	≥94%					
Weight	Kg		1	3~20	2.1	6.4	13	24.5	51	51
			2	25~200	-	7.8	14.2	27.5	54	95
Operating Temperature	℃		1,2	3~200	-10℃~+90℃					
Lubrication			1,2	3~200	Synthetic Lubricating Grease					
Protection Class			1,2	3~200	IP65					
Mounting Position			1,2	3~200	Any Direction					
Noise Level at 1m Distance (n_1=3000rpm, No Load)	dB(A)		1,2	3~200	≤63	≤65	≤68	≤70	≤72	≤72

SB SERIES

SBR SERIES

SE SERIES

SER SERIES

SD SERIES

SDR SERIES

P08

Moment Of Inertia Of The Reducer

Specifications		Node Number	Reduction Ratio	060SBR	090SBR	115SBR	142SBR	180SBR	220SBR
Moment Of Inertia J_1	Kg·cm²	1	3~10	0.35	2.25	6.84	23.4	68.9	68.9
			14	0.07	1.87	6.25	21.8	65.6	65.6
			20	0.07	1.87	6.25	21.8	65.6	65.6
		2	25~100	-	0.35	6.25	21.8	65.6	65.6
			120~200	-	0.31	6.25	21.8	65.6	65.6

1.Gear ratio(i＝N_{in}/N_{out})　　2.Maximum acceleration torque T_{2B}＝60% of T_{2NOT}　　3.When the output speed is 100rpm, it will act on the central position of the output shaft.
*Continuous operation, service life is 10000hrs

DIMENSIONS (SINGLE STAGE, REDUCTION RATIO i＝3～20)
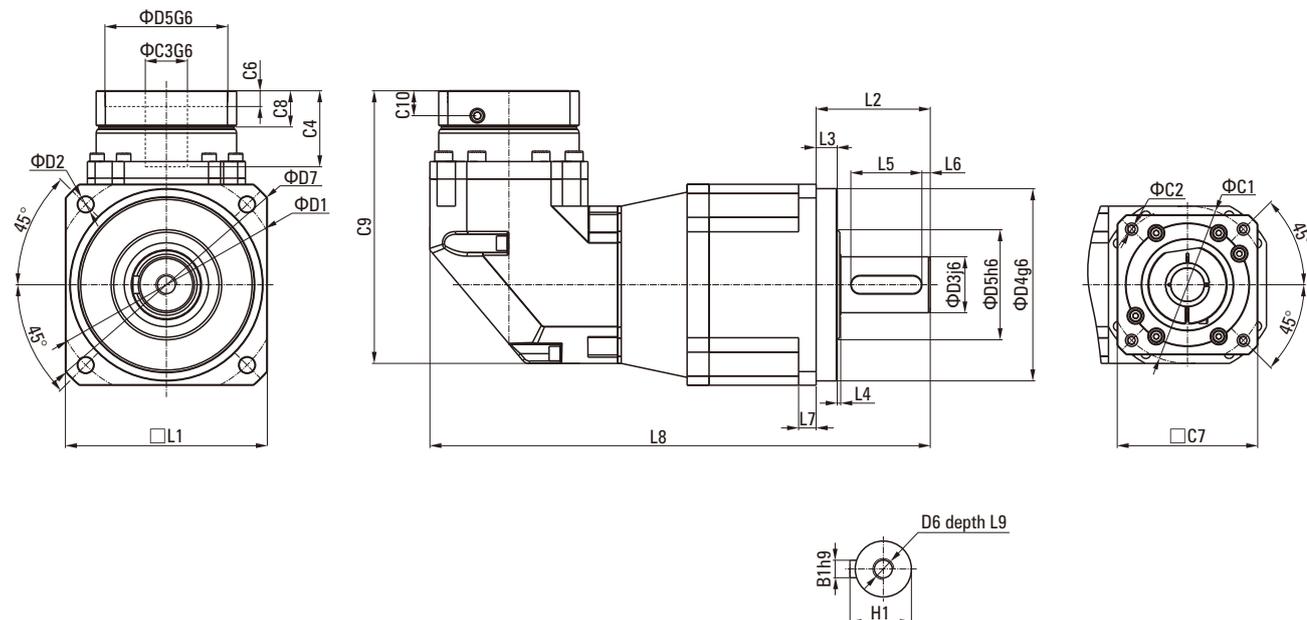
Dimensional Drawing
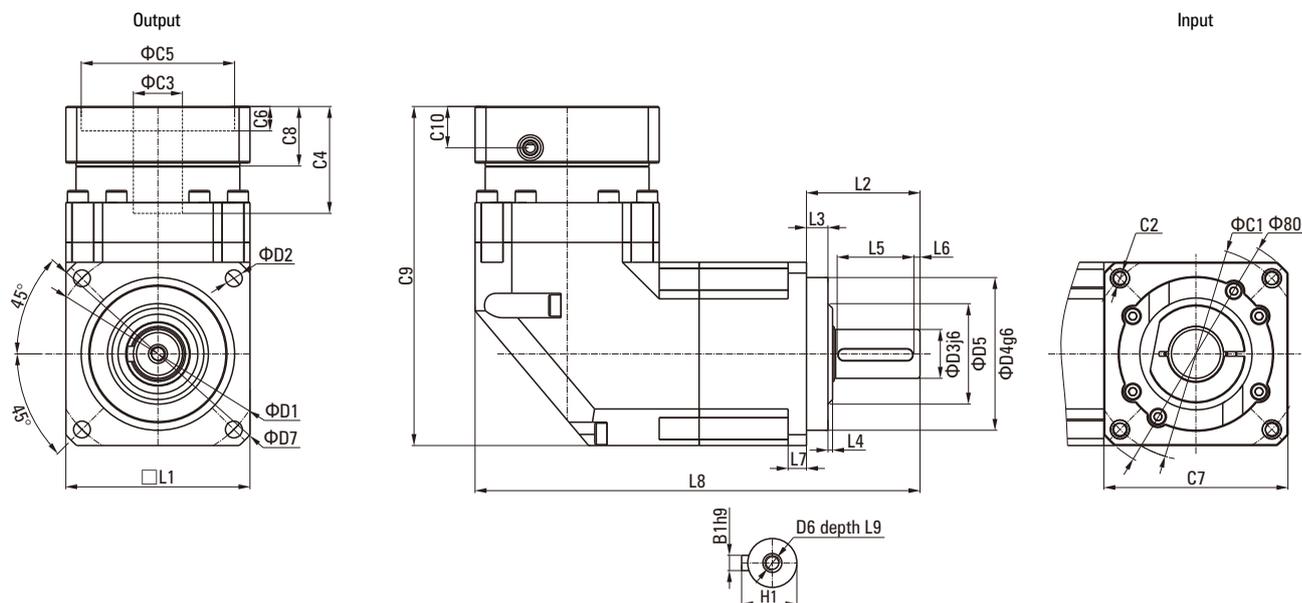
Dimensional Table

Unit: mm

Size	060SBR	090SBR	115SBR	142SBR	180SBR
D1	70	100	130	165	215
D2	5.5	6.6	9	11	13
D3 h6	16	22	32	40	55
D4 g6	50	80	110	130	160
D5	45	65	95	75	95
D6	M5×0.8P	M8×1.25P	M12×1.75P	M16×2P	M20×2.5P
D7	80	116	152	185	240
L1	60	90	115	142	180
L2	37	48	65	97	105
L3	7	10	12	15	20
L4	1.5	1.5	2	3	3
L5	25	32	40	63	70
L6	2	3	5	5	6
L7	6	8	10	12	15
L8	145	203	259	333	394
L9	12.5	19	28	36	42
C1⁴	70	100	130	165	215
C2⁴	M5×0.8P	M6×1P	M8×1.25P	M10×1.5P	M12×1.75P
C3⁴	*≤14/≤16	≤19/≤24	≤32	≤38	≤48
C4⁴	30	40	50	60	85
C5⁴ G6	50	80	110	130	180
C6⁴	8	4	5	6	6
C7⁴	60	90	115	142	190
C8⁴	19	17	19.5	22.5	29
C9⁴	111.5	152.5	191.5	235.5	303.5
C10⁴	13.5	10.75	13	15	20.75
B1 h9	5	6	10	12	16
H1	18	24.5	35	43	59

*070SBR　5,10 Reduction ratio provides C3≤16 to choose from.

SB SERIES

SBR SERIES

SE SERIES

SER SERIES

SD SERIES

SDR SERIES

P09

DIMENSIONS (TWO STAGE, REDUCTION RATIO i＝25〜200)

■ Dimensional Drawing

■ Dimensional Table

Unit: mm

Size	060(A)SBR	090SBR	115SBR	142SBR	180SBR	180SBR
D1	70	100	130	165	215	250
D2	5.5	6.6	9	11	13	17
D3 h6	16	22	32	40	55	75
D4 g6	50	80	110	130	160	180
D5	45	65	95	75	95	115
D6	M5×0.8P	M8×1.25P	M12×1.75P	M16×2P	M20×2.5P	M20×2.5P
D7	80	116	152	185	240	292
L1	60	90	115	142	180	220
L2	37	48	65	97	105	138
L3	7	10	12	15	20	30
L4	1.5	1.5	2	3	3	3
L5	25	32	40	63	70	90
L6	2	3	5	5	6	7
L7	6	8	10	12	15	20
L8	170	206.5	285	365	394	521
L9	12.5	19	28	36	42	42
C1	70	70	100	130	165	215
C2	M5×0.8P	M5×0.8P	M6×1P	M8×1.25P	M10×1.5P	M12×1.75P
C3 g6	≤14/≤16	≤14/≤16	≤19/≤24	≤32	≤38	≤48
C4	34	34	40	50	60	85
C5 g6	50	50	80	110	130	180
C6	8	8	4	5	6	6
C7	60	60	90	115	142	190
C8	19	19	17	19.5	22.5	29
C9	111	126.5	165	205	254.5	323.5
C10	13.5	13.5	10.75	13	15	20.75
B1 h9	5	6	10	12	16	20
H1	18	24.5	35	43	59	79.5

*070SBR 5,10 Reduction ratio provides C3≤16 to choose from.

SB SERIES

SBR SERIES

SE SERIES

SER SERIES

SD SERIES

SDR SERIES

P10

SE SERIES GEARBOX

■ Sectional View
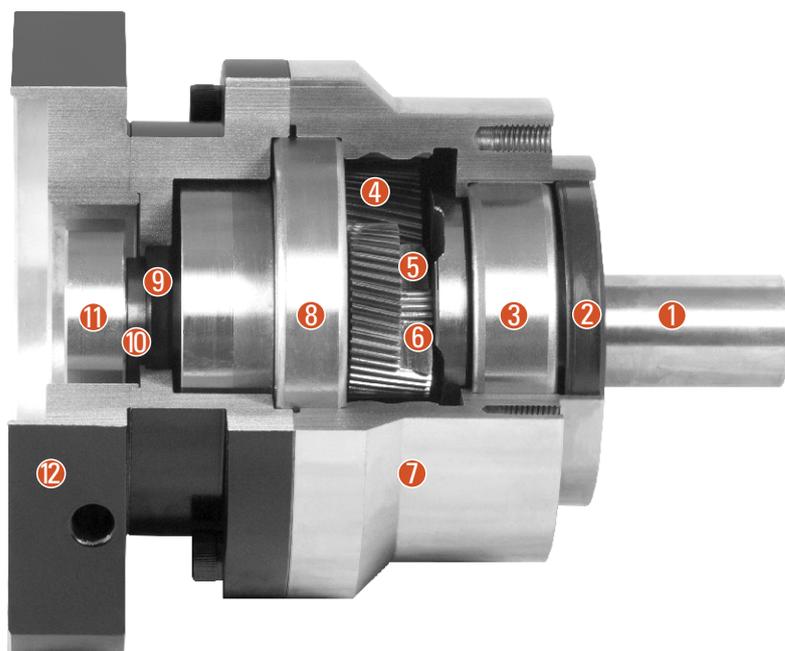
① Output shaft
② Oil seal
③ Output shaft front bearing
④ Planetary gear
⑤ Solar wheel
⑥ Full needle bearing
⑦ Front cover
⑧ Output shaft rear bearing
⑨ Oil seal
⑩ Coupling
⑪ Lock ring
⑫ Rear cover

■ Type and Model Number

SE Reducers					Servo Motor	
090	SE	20	( )	(S1)	- 750	☐
①	②	③	④	⑤	⑥	⑦

①	Gearbox frame size: 090 (See P10)
②	Gearbox series code: ZE
③	Gear Ratio: 20 (See P10)
④	Precision (See P10) Standard type P2 (Omission), precision type P1, high precision type P0 Precision (Output shaft load is ±5% of allowable output torque)
⑤	Input shaft type S1: Locking with locking ring (Omission) 　　(Can be used regardless whether the motor has a keyway, but "D" type is not applicable) S2: Locking with keyway (Input shaft with key) A: Other adapters (Please contact our company)
⑥	Applicable servo motor power (W)
⑦	Servo motor model

SB SERIES

SBR SERIES

SE SERIES

SER SERIES

SD SERIES

SDR SERIES

P11

PRODUCT SPECIFICATIONS

■ Reducer Performance Data

Specifications		Node Number	Reduction Ratio	050SE	070SE	090SE	120SE	155SE	205SE	235SE
Rated Output Torque T_{2N}	Nm	1	3	-	55	130	208	342	588	1140
			4	19	50	140	290	542	1050	1700
			5	22	60	160	330	650	1200	2000
			6	20	55	150	310	600	1100	1900
			7	19	50	140	300	550	1100	1800
			8	17	45	120	260	500	1000	1600
			9	14	40	100	230	450	900	1500
			10	14	40	100	230	450	900	1500
		2	15	-	55	130	208	342	588	1140
			20	19	50	140	290	542	1050	1700
			25	22	60	160	330	650	1200	2000
			30	20	55	150	310	600	1100	1900
			35	19	50	140	300	550	1100	1800
			40	17	45	120	260	500	1000	1600
			45	14	40	100	230	450	900	1500
			50	22	60	160	330	650	1200	2000
			60	20	55	150	310	600	1100	1900
			70	19	50	140	300	550	1100	1800
			80	17	45	120	260	500	1000	1600
			90	14	40	100	230	450	900	1500
			100	14	40	100	230	450	900	1500
Emergency Stop Torque T_{2NOT} [2]	Nm	1,2	3~100	3 Times of Output Rated Torque						
Rated Input Speed n_{1N}	rpm	1,2	3~100	3000	3000	3000	3000	3000	3000	3000
Rated Input Speed n_{1B}	rpm	1,2	3~100	6000	6000	6000	6000	6000	6000	4000
Super Precision Backlash P0	arcmin	1	3~10	-	-	-	≤1	≤1	≤1	≤1
		2	15~100	-	-	-	≤3	≤3	≤3	≤3
Precision Backlash P1	arcmin	1	3~10	≤3	≤3	≤3	≤3	≤3	≤3	≤3
		2	15~100	≤5	≤5	≤5	≤5	≤5	≤5	≤5
Standard Backlash P2	arcmin	1	3~10	≤5	≤5	≤5	≤5	≤5	≤5	≤5
		2	15~100	≤7	≤7	≤7	≤7	≤7	≤7	≤7
Torsional Stiffness	Nm/arcmin	1,2	3~100	3	7	14	25	50	145	225
Allowable Radial Force F_{2rB} [3]	N	1,2	3~100	702	1377	2985	6100	8460	13050	8700
Allowable Axial Force F_{2aB} [3]	N	1,2	3~100	390	765	1625	3350	4700	7250	18000
Service Life	hr	1,2	3~100	20000*						
Efficiency η	%	1	3~10	≥97%						
		2	15~100	≥94%						
Weight	Kg	1	3~10	0.6	1.4	3.3	6.9	13	31	53
		2	15~100	0.9	1.6	4.7	8.7	17	35	66
Operating Temperature	℃	1,2	3~100	-10℃~+90℃						
Lubrication		1,2	3~100	Synthetic Lubricating Grease						
Protection Class		1,2	3~100	IP65						
Mounting Position		1,2	3~100	Any Direction						
Noise Level at 1m Distance (n_1=3000rpm, No Load)	dB(A)	1,2	3~100	≤56	≤58	≤60	≤63	≤65	≤67	≤70

■ Moment of Inertia of The Reducer

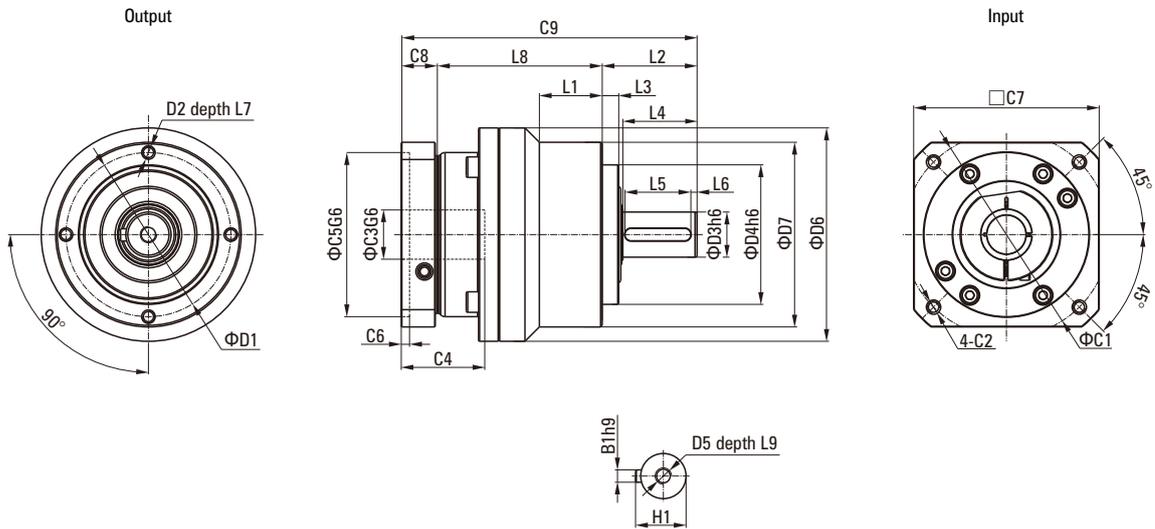| Specifications		Node Number	Reduction Ratio	050SE	070SE	090SE	120SE	155SE	205SE	235SE
Moment Of Inertia J_1	Kg·cm²	1	3	-	0.16	0.61	3.25	9.21	28.98	69.61
			4	0.03	0.14	0.48	2.74	7.54	23.67	54.37
			5	0.03	0.13	0.47	2.71	7.42	23.29	53.27
			6	0.03	0.13	0.45	2.65	7.25	22.75	51.72
			7	0.03	0.13	0.45	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
		2	15	-	0.03	0.13	0.47	2.71	7.42	23.29
			20	0.03	0.03	0.13	0.47	2.71	7.42	23.29
			25	0.03	0.03	0.13	0.47	2.71	7.42	23.29
			30	0.03	0.03	0.13	0.47	2.71	7.42	23.29
			35	0.03	0.03	0.13	0.47	2.71	7.42	23.29
			40	0.03	0.03	0.13	0.47	2.71	7.42	23.29
			45	0.03	0.03	0.13	0.47	2.71	7.42	23.29
			50	0.03	0.03	0.13	0.44	2.57	7.03	22.51
			60	0.03	0.03	0.13	0.44	2.57	7.03	22.51
			70	0.03	0.03	0.13	0.44	2.57	7.03	22.51
			80	0.03	0.03	0.13	0.44	2.57	7.03	22.51
			90	0.03	0.03	0.13	0.44	2.57	7.03	22.51
			100	0.03	0.03	0.13	0.44	2.57	7.03	22.51

1.Gear ratio($i=N_{in}/N_{out}$)   2.Maximum acceleration torque T_{2B}=60% of T_{2NOT} 3.When the output speed is 100rpm, it will act on the central position of the output shaft.
*Continuous operation, service life is 10000hrs

SB SERIES

SBR SERIES

SE SERIES

SER SERIES

SD SERIES

SDR SERIES

P12

DIMENSIONS (SINGLE STAGE, REDUCTION RATIO i＝3～10)

■ Dimensional Drawing

Output

D2 depth L7

ΦD1

90°

C9

C8

L8

L2

L1

L3

L4

L5

L6

ΦC5G6

ΦC3G6

ΦD3h6

ΦD4h6

ΦD7

ΦD6

C6

C4

Input

□C7

45°

45°

4-C2

ΦC1

B1h9

D5 depth L9

H1

■ Dimensional Table

Unit: mm

Size	050SE	070SE	090SE	120SE	155SE	205SE
D1	44	62	80	108	140	184
D2	M5×0.7P	M5×0.8P	M6×1P	M8×1.25P	M10×1.5P	M12×1.75P
D3 h6	12	16	22	32	40	55
D4 g6	35	52	68	90	120	160
D5	M4×0.7P	M5×0.8P	M8×1.25P	M12×1.75P	M16×2P	M20×2.5P
D6	53	70	104	130	162	205
D7	50	70	90	120	155	205
L1	-	-	31.5	36	50	-
L2	24.5	36	46	70	97	100
L3	4	6	8	17	15	15
L4	1	28	36	51	79	82
L5	14	25	32	40	70	70
L6	2	2	3	5	4	6
L7	8	10	12	16	20	22
L8	47	66.5	80	96.5	119.5	154
L9	4.5	12.5	19	28	36	42
C1	10	70	100	130	165	215
C2	M4×0.7P	M5×0.8P	M6×1P	M8×1.25P	M10×1.5P	M12×1.75P
C3	*≤11/≤12	*≤14/≤16	≤19/≤24	≤32	≤35/≤38	≤42/≤48
C4	30	35	40.5	51	60	85
C5 G6	30	50	80	110	130	180
C6	3.5	8	4	5	6	6
C7	48	60	90	115	142	190
C8	19.5	19.5	17.5	20	22.5	29
C9	91	117	143.5	186.5	239	288
B1 h9	4	5	6	10	12	16
H1	14	18	24.5	35	43	59

*070SE　5,10 Reduction ratio provides C3≤16 to choose from.

# DIMENSIONS (TWO STAGE, REDUCTION RATIO i=15～100)
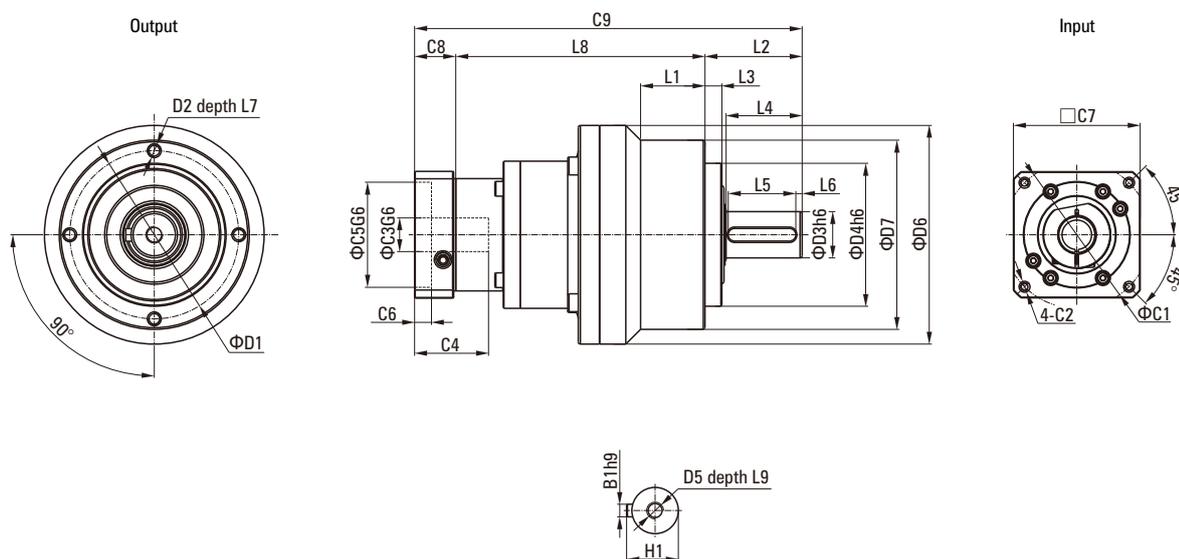
SB SERIES

SBR SERIES

SE SERIES

SER SERIES

SD SERIES

SDR SERIES

P13

■ Dimensional Drawing

Output

Input

D2 depth L7

ΦD1

D5 depth L9

■ Dimensional Table

Unit: mm

Size	050SE	070SE	090SE	120SE	155SE	205SE
D1	44	62	80	108	140	184
D2	M4×0.7P	M5×0.8P	M6×1P	M8×1.25P	M10×1.5P	M12×1.75P
D3 h6	12	16	22	32	40	55
D4 g6	35	52	68	90	120	160
D5	M4×0.7P	M5×0.8P	M8×1.25P	M12×1.75P	M16×2P	M20×2.5P
D6	53	70	104	130	162	205
D7	50	70	90	120	155	205
L1	-	-	31.5	36	50	-
L2	24.5	36	46	70	97	100
L3	4	6.5	8	17	15	15
L4	1	1	36	51	79	82
L5	14	25	32	40	63	70
L6	2	2	3	5	5	6
L7	8	10	12	16	20	22
L8	74	87.8	118	138	169.5	207.5
L9	4.5	4.8	19	28	36	42
C1	46	46	70	100	130	165
C2	M4×0.7P	M4×0.7P	M5×0.8P	M6×1P	M8×1.25P	M10×1.5P
C3	≤11/≤12	≤11/≤12	≤14/≤15.875/≤16	≤19/≤24	≤32	≤35/≤38
C4	30	30	35	40.5	50	60
C5 G6	30	30	50	80	110	130
C6	3.5	3.5	8	4	5	6
C7	48	48	60	90	115	142
C8	19.5	19.5	19.5	17.5	12.5	22.5
C9	118	143	183.5	225.5	283.5	335
B1 h9	4	5	6	10	12	16
H1	14	18	24.5	35	43	59

SB SERIES
SBR SERIES
SE SERIES
SER SERIES
SD SERIES
SDR SERIES
P14
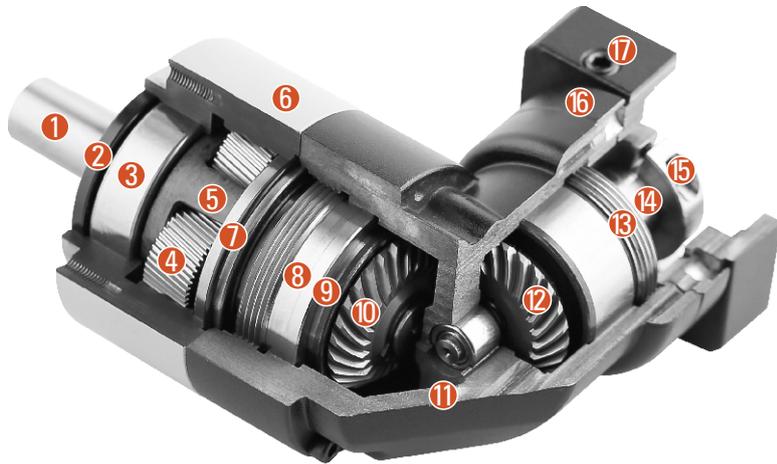
SER SERIES GEARBOX - PRODUCT SPECIFICATIONS

■ Sectional View

① Output shaft
② Oil seal
③ Output shaft front bearing
④ Planetary gear
⑤ Solar wheel
⑥ Front cover
⑦ Output shaft rear bearing
⑧ Adjusting nut
⑨ Double row angular contact bearing
⑩ Output bevel gear
⑪ Right angle box
⑫ Input bevel gear
⑬ Lock nut
⑭ Input coupling
⑮ Locking device
⑯ Rear cover
⑰ Rear cover gasket

■ Reducer Performance Data

Specifications		Node Number	Reduction Ratio	070SER	090SER	120SER	155SER
Rated Output Torque T_{2N}	Nm	1	3	36	90	195	342
			4	48	120	260	520
			5	60	150	325	650
			6	55	150	310	600
			7	50	140	300	550
			8	45	120	260	500
			9	40	100	230	450
			10	40	100	230	450
			14	42	140	300	550
			20	40	100	230	450
		2	25	-	150	325	650
			30	-	150	310	600
			35	-	140	300	550
			40	-	120	260	500
			45	-	100	230	450
			50	-	100	230	650
			60	-	150	310	600
			70	-	140	300	550
			80	-	120	260	500
			90	-	100	230	450
			100	-	100	230	450
			120	-	150	310	600
			140	-	140	300	550
			160	-	120	260	550
			180	-	100	230	450
			200	-	100	230	450
Emergency Stop Torque T_{2NOT} [2]	Nm	1,2	3~200	3 Times of Output Rated Torque			
Rated Input Speed n_{1N}	rpm	1,2	3~200	3000	3000	3000	3000
Rated Input Speed n_{1B}	rpm	1,2	3~200	6000	6000	6000	6000
Super Precision Backlash P0	arcmin	1	3~20	-	≤2	≤2	≤2
		2	25~200	-	≤4	≤4	≤4
Precision Backlash P1	arcmin	1	3~20	≤4	≤4	≤4	≤4
		2	25~200	-	≤7	≤7	≤7
Standard Backlash P2	arcmin	1	3~20	≤6	≤6	≤6	≤6
		2	25~200	-	≤9	≤9	≤9
Torsional Stiffness	Nm/arcmin	1,2	3~200	7	14	25	50
Allowable Radial Force F_{2aB} [3]	N	1,2	3~200	1530	3250	6700	9400
Allowable Axial Force F_{2aB} [3]	N	1,2	3~200	765	1625	3350	4700
Service Life	hr	1,2	3~200	20000*			
Efficiency η	%	1	3~20	≥97%			
		2	25~200	≥94%			
Weight	Kg	1	3~20	2.1	6.4	13	24.5
		2	25~200	-	7.8	14.2	27.5
Operating Temperature	℃	1,2	3~200	-10℃~+90℃			
Lubrication		1,2	3~200	Synthetic Lubricating Grease			
Protection Class		1,2	3~200	IP65			
Mounting Position		1,2	3~200	Any Direction			
Noise Level at 1m Distance (n_1=3000rpm, No Load)	dB(A)	1,2	3~200	≤63	≤65	≤68	≤70

SB SERIES

SBR SERIES

SE SERIES

SER SERIES

SD SERIES

SDR SERIES

P15

■ Moment Of Inertia Of The Reducer

Specifications		Node Number	Reduction Ratio	060SBR	090SBR	115SBR	142SBR
Moment Of Inertia J_1	Kg·cm²	1	3~10	0.35	2.25	6.84	23.4
			14	0.07	1.87	6.25	21.8
			20	0.07	1.87	6.25	21.8
		2	25~100	0.09	0.35	2.25	6.84
			120~200	-	0.31	1.87	6.25

1.Gear ratio($i=N_{in}/N_{out}$)　　2.Maximum acceleration torque $T_{2B}=60\%$ of T_{2N0T}　　　3.When the output speed is 100rpm, it will act on the central position of the output shaft.
*Continuous operation, service life is 10000hrs

DIMENSIONS (SINGLE STAGE, REDUCTION RATIO i＝3～20)

■ Dimensional Drawing
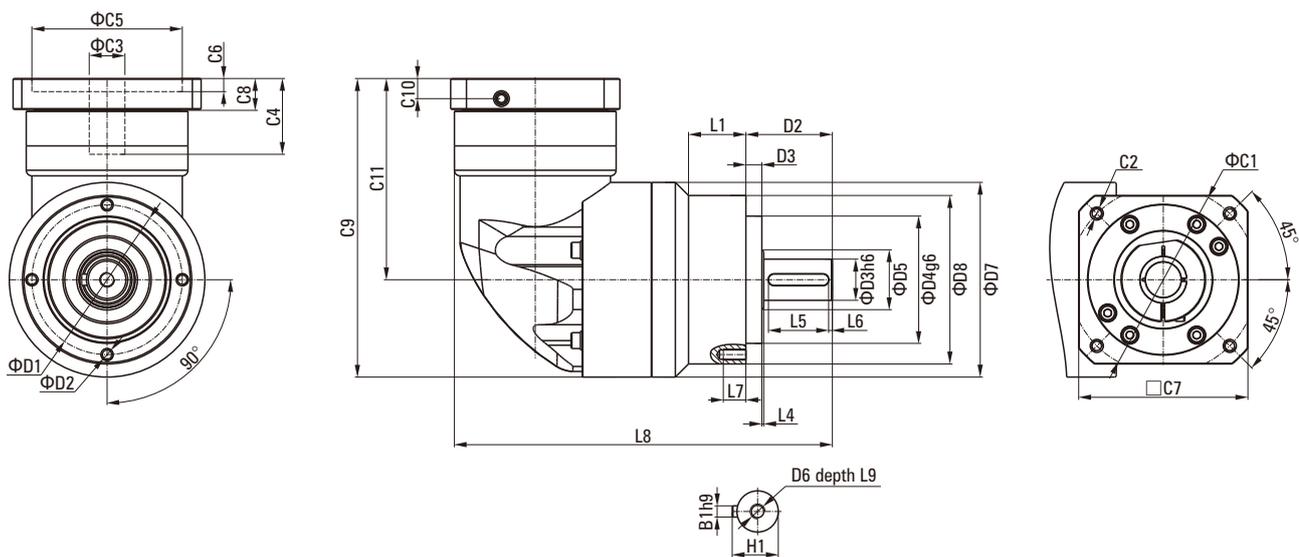
■ Dimensional Table

Unit: mm

Size	070SER	090SER	120SER	155SER
D1	62	80	108	140
D2	M5×0.8P	M6×1P	M8×1.25P	M10×1.5P
D3 h6	16	22	32	40
D4 g6	52	68	90	120
D5	22	30	40	75
D6	M5×0.8P	M8×1.25P	M12×1.75P	M16×2P
D7	70	104	130	162
D8	70	90	120	155
L1	-	33.5	38	50
L2	36	46	70	97
L3	6.5	8.5	17.5	15
L4	1	1	1.5	3
L5	25	32	40	63
L6	2	3	5	5
L7	10	12	16	20
L8	146	201	252	324.5
L9	12.5	19	28	36
C1	70	100	130	165
C2	M5×0.8P	M6×1P	M8×1.25P	M10×1.5P
C3	≤14/≤16	≤19/≤24	≤32	≤38
C4	34	40	50	60
C5	50	80	110	130
C6	8	4	5	6
C7	60	90	115	142
C8	19	17	19.5	22.5
C9	116.5	159.5	199	254.5
C10	13.5	10.75	13	15
C11	81.5	107.5	134	164.5
B1 h9	5	6	10	12
H1	18	24.5	35	43

*070SBR　5,10 Reduction ratio provides C3≤16 to choose from.

SB SERIES

SBR SERIES

SE SERIES

SER SERIES

SD SERIES

SDR SERIES

P16

DIMENSIONS (TWO STAGE, REDUCTION RATIO i＝25～200)

■ Dimensional Drawing

■ Dimensional Table

Unit: mm

Size	070SER	090SER	120SER	155SER
D1	62	80	108	140
D2	M5×0.8P	M6x1P	M8x1.25P	M10x1.5P
D3 h6	16	22	32	40
D4 g6	52	68	90	120
D5	22	30	40	75
D6	M5×0.8P	M8×1.25P	M12×1.75P	M16×2P
D7	70	104	130	162
D8	70	90	120	155
L1	-	33.5	38	50
L2	36	46	70	97
L3	6.5	8.5	17.5	15
L4	1	1	1.5	3
L5	25	32	40	63
L6	2	3	5	5
L7	10	12	16	20
L8	167.5	207.5	283	358
L9	12.5	19	28	36
C1	46	70	100	130
C2	M4×0.7P	M5×0.8P	M6×1P	M8×1.25P
C3	≤11/≤12	≤14/≤16	≤19/≤24	≤32
C4	30	34	40	50
C5	30	50	80	110
C6	3.5	8	4	5
C7	48	60	90	115
C8	19.5	19	17	19.5
C9	109	133.5	172.5	215
C10	13.5	10.75	13	15
C11	81.5	107.5	134	164.5
B1 h9	5	6	10	12
H1	18	24.5	35	43

*070SBR 5,10 Reduction ratio provides C3≤16 to choose from.

SD SERIES GEARBOX - PRODUCT SPECIFICATIONS

SB SERIES
SBR SERIES
SE SERIES
SER SERIES
SD SERIES
SDR SERIES
P17

■ Sectional View

① Output shaft
② Oil seal
③ Output shaft front bearing
④ Planetary gear
⑤ Flange inner tooth
⑥ Output shaft rear bearing
⑦ Lock nut
⑧ Rear cover
⑨ Solar wheel
⑩ Locking device
⑪ Rear cover gasket
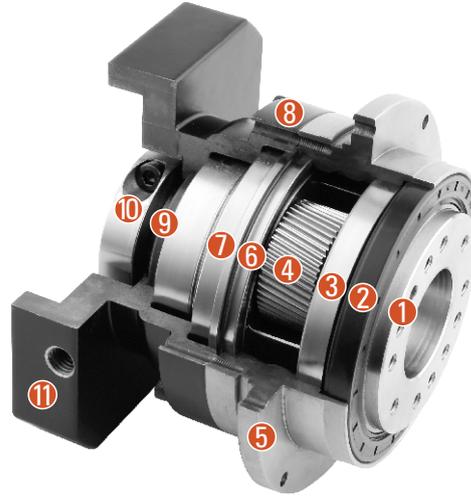
■ Reducer Performance Data

Specifications		Node Number	Reduction Ratio	SD064	SD090	SD110	SD140	SD200
Rated Output Torque T_{2N}	Nm	1	4	48	-	-	560	1100
			5	60	160	330	650	1200
			7	50	140	300	550	1100
			10	40	100	230	450	900
		2	20	48	-	-	560	1100
			25	60	160	330	650	1200
			35	50	140	300	550	1100
			40	48	130	270	560	1100
			50	60	160	330	650	1200
			70	50	140	300	550	1100
			100	40	100	230	450	900
Emergency Stop Torque T_{2NOT}[2]	Nm	1,2	4~100	3 Times of Output Rated Torque				
Rated Input Speed n_{1N}	rpm	1,2	4~100	3000	3000	3000	3000	3000
Rated Input Speed n_{1B}	rpm	1,2	4~100	6000	6000	6000	6000	6000
Super Precision Backlash PO	arcmin	1	4~10	-	≤1	≤1	≤1	≤1
		2	15~100	-	-	≤3	≤3	≤3
Precision Backlash P1	arcmin	1	4~10	≤3	≤3	≤3	≤3	≤3
		2	15~100	≤5	≤5	≤5	≤5	≤5
Standard Backlash P2	arcmin	1	4~10	≤5	≤5	≤5	≤5	≤5
		2	15~100	≤7	≤7	≤7	≤7	≤7
Torsional Stiffness	Nm/arcmin	1,2	4~100	13	31	82	151	440
Maximum bending moment M_{2KB}[3]	Nm	1,2	4~100	125	235	430	1300	3064
Allowable Radial Force F_{2rB}[3]	N	1,2	4~100	1050	2850	2990	10590	16660
Service Life	hr	1,2	4~100	20000*				
Efficiency η	%	1	4~10	≥97%				
		2	15~100	≥94%				
Weight	Kg	1	4~10	1.2	3.0	5.6	11.9	31.6
		2	15~100	1.6	3.7	7.3	15.9	36.9
Operating Temperature	℃	1,2	4~100	-10℃~+90℃				
Lubrication		1,2	4~100	Synthetic Lubricating Grease (NYOGEL 792D)				
Protection Class		1,2	4~100	IP65				
Mounting Position		1,2	4~100	Any Direction				
Noise Level at 1m Distance (n_1=3000rpm, No Load)	dB(A)	1,2	4~100	≤58	≤60	≤63	≤65	≤67

■ Moment Of Inertia Of The Reducer

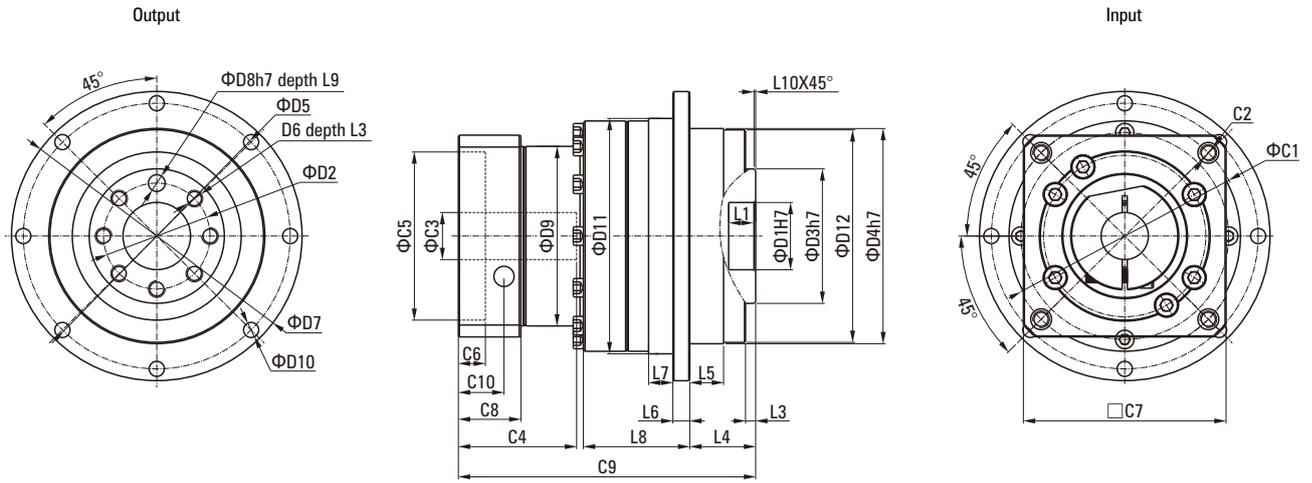| Specifications		Node Number	Reduction Ratio	SD064	SD090	SD110	SD140	SD200
Moment Of Inertia J_1	Kg·cm²	1	4	0.14	-	-	7.54	25.03
			5	0.13	0.47	2.71	7.42	23.29
			7	0.13	0.45	2.62	7.14	22.48
			10	0.13	0.44	2.57	7.03	22.51
		2	20	0.03	-	-	2.71	7.42
			25	0.03	0.13	0.47	2.71	7.42
			35	0.03	0.13	0.47	2.71	7.42
			40	0.03	0.13	0.44	2.57	7.03
			50	0.03	0.13	0.44	2.57	7.03
			70	0.03	0.13	0.44	2.57	7.03
			100	0.03	0.13	0.44	2.57	7.03

1.Gear ratio(i＝N_{in}/N_{out})   2.Maximum acceleration torque T_{2B}＝60% of T_{2NOT} 3.When the output speed is 100rpm, it will act on the central position of the output shaft.
*Continuous operation, service life is 10000hrs

SB SERIES

SBR SERIES

SE SERIES

SER SERIES

SD SERIES

SDR SERIES

P18

DIMENSIONS (SINGLE STAGE, REDUCTION RATIO i＝4〜10)

■ Dimensional Drawing

Output

Input

■ Dimensional Table

Unit: mm

Size	SD064	SD090	SD110	SD140	SD200
D1 H7	20	31.5	40	50	80
D2	31.5	50	63	80	125
D3 h7	40	63	80	100	160
D4 h7	64	90	110	140	200
D5	79	109	135	168	233
D6	7×M5×0.8P	7×M6×1P	11×M6×1P	11×M8×1.25P	11×M10×1.5P
D7	86	118	145	179	247
D8 H7	5	6	6	8	10
D9	55	77	90	113	138
D10	8×4.5	8×5.5	8×5.5	12×6.6	12×9
D11 h7	70	95	120	152	212
D12	63.2	89.2	109.2	139.2	199.2
L1	8	12	12	12	16
L2	8	13.5	13.5	17	22.5
L3	3	6	6	9	8
L4	19.5	30	29	38	50
L5	7	10	10	14.6	15
L6	4	7	8	10	12
L7	7.7	8	10	12	15
L8	28.5	27	37	62	69.5
L9	6	7	7	7	10
L10	0.5	1	1	1	1
C1[4]	70	100	130	165	215
C2[4]	M5×0.8P	M6×1P	M8×1.25P	M10×1.5P	M12×1.75P
C3[4]	*≤14/≤16	≤19/≤24	≤32	≤38	≤48
C4[4]	34	40	50	60	85
C5[4] G6	50	80	110	130	180
C6[4]	8	4	5	9	6
C7[4]	60	90	115	142	190
C8[4]	19	17	19.5	22.5	29
C9[4]	82.5	99.5	121.5	151	199.5
C10[4]	13.5	10.75	13	15	20.75
OD	66×2	90×3	110×3	145×3	200×5

*060SD 5,10 Reduction ratio provides C3≤16 to choose from.

SB SERIES

SBR SERIES

SE SERIES

SER SERIES

SD SERIES

SDR SERIES

P19

DIMENSIONS (TWO STAGE, REDUCTION RATIO i＝20～100)

■ Dimensional Drawing

Output 　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　輸入 Input

■ Dimensional Table

Unit: mm

Size	SD064	SD090	SD110	SD140	SD200
D1 H7	20	31.5	40	50	80
D2	31.5	50	63	80	125
D3 h7	40	63	80	100	160
D4 h7	64	90	110	140	200
D5	79	109	135	168	233
D6	7×M5×0.8P	7×M6×1P	11×M6×1P	11×M8×1.25P	11×M10×1.5P
D7	86	118	145	179	247
D8 H7	5	6	6	8	10
D9	45.5	53.4	77	102	125
D10	8×4.5	8×5.5	8×5.5	12×6.6	12×9
D11 h7	70	95	120	152	212
D12	63.2	89.2	109.2	139.2	199.2
L1	8	12	12	12	16
L2	8	13.5	13.5	17	22.5
L3	3	6	6	6	8
L4	19.5	30	29	38	50
L5	7	10	10	14.6	15
L6	4	7	8	10	12
L7	7.7	8	10	12	15
L8	65	60	87.5	110	132.5
L9	6	7	7	7	10
L10	0.5	1	1	1	1
C1 [5]	46	70	100	130	165
C2 [5]	M4×0.7P	M5×0.8P	M6×1P	M8×1.25P	M10×1.5P
C3 [5]	*≤11/≤12	≤14/≤15.875/≤16	≤19/≤24	≤32	≤38
C4 [5]	30	34	40	50	60
C5 [5] G6	30	50	80	110	130
C6 [5]	3.5	8	4	5	6
C7 [5]	48	60	90	115	142
C8 [5]	19.5	19	17	19.5	22.5
C9 [5]	108	134	160	204	248
C10 [5]	13.25	13.5	10.75	13	15
OD	66×2	90×3	110×3	145×3	200×5

*060SD 5,10 Reduction ratio provides C3≤16 to choose from.

SB SERIES

SBR SERIES

SE SERIES

SER SERIES

SD SERIES

SDR SERIES

P20

SDR SERIES GEARBOX - PRODUCT SPECIFICATIONS

■ Sectional View

① Output shaft
② Oil seal
③ Output shaft front bearing
④ Planetary gear
⑤ Front cover
⑥ Output shaft rear bearing
⑦ Solar wheel
⑧ Adjusting nut
⑨ Double row angular contact bearing
⑩ Output bevel gear
⑪ Right angle box
⑫ Input bevel gear
⑬ Lock nut
⑭ Input coupling
⑮ Locking device
⑯ Rear cover
⑰ Rear cover gasket

■ Reducer Performance Data

Specifications		Node Number	Reduction Ratio	064SDR	090SDR	110SDR	140SDR	200SDR
Rated Output Torque T_{2N}	Nm	1	4	48	-	-	560	1100
			5	60	160	330	650	1200
			7	50	140	300	550	1100
			10	40	100	230	450	900
			14	42	140	300	550	1100
			20	40	100	230	450	900
		2	25	60	160	330	650	1200
			35	50	140	300	550	1100
			40	48	-	-	560	1100
			50	60	160	330	650	1200
			70	50	140	300	550	1100
			100	40	100	230	450	900
			140	-	140	300	550	1100
			200	-	100	230	450	900
Emergency Stop Torque T_{2NOT} [2]	Nm	1,2	3～200	3 Times of Output Rated Torque				
Rated Input Speed n_{1N}	rpm	1,2	3～200	3000	3000	3000	3000	3000
Rated Input Speed n_{1B}	rpm	1,2	3～200	6000	6000	6000	6000	6000
Super Precision Backlash P0	arcmin	1	3～20	-	≤2	≤2	≤2	≤2
		2	25～200	-	≤4	≤4	≤4	≤4
Precision Backlash P1	arcmin	1	3～20	≤4	≤4	≤4	≤4	≤4
		2	25～200	-	≤7	≤7	≤7	≤7
Standard Backlash P2	arcmin	1	3～20	≤6	≤6	≤6	≤6	≤6
		2	25～200	-	≤9	≤9	≤9	≤9
Torsional Stiffness	Nm/arcmin	1,2	3～200	13	31	82	151	440
Maximum bending moment M_{2KB} [3]	Nm	1,2	3～200	120	235	430	1300	3064
Allowable Axial Force F_{2aB} [3]	N	1,2	3～200	1050	2850	2990	10590	16660
Service Life	hr	1,2	3～200	20000*				
Efficiency η	%	1	3～20	≥95%				
		2	25～200	≥92%				
Weight	Kg	1	3～20	2.1	5.9	10.5	21.9	50.9
		2	25～200	1.9	4.5	9.8	20.1	45.4
Operating Temperature	℃	1,2	3～200	-10℃～+90℃				
Lubrication		1,2	3～200	Synthetic Lubricating Grease				
Protection Class		1,2	3～200	IP65				
Mounting Position		1,2	3～200	Any Direction				
Noise Level at 1m Distance (n_1=3000rpm, No Load)	dB(A)	1,2	3～200	≤63	≤65	≤68	≤70	≤72

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P21

减速机转动惯量 Moment Of Inertia Of The Reducer

Specifications		Node Number	Reduction Ratio	064SDR	090SDR	110SDR	140SDR	200SDR
Moment Of Inertia J_1	Kg·cm²	1	4~10	0.35	2.25	6.84	23.4	68.9
			14	0.07	1.87	6.25	21.8	65.6
			20	0.07	1.87	6.25	21.8	65.6
		2	25~100	0.09	0.35	2.25	6.84	23.4
			140~200	-	0.31	1.87	6.25	21.8

1.Gear ratio($i = N_{in}/N_{out}$)   2.Maximum acceleration torque $T_{2B} = 60\%$ of T_{2NOT} 3.When the output speed is 100rpm, it will act on the central position of the output shaft.
*Continuous operation, service life is 10000hrs

DIMENSIONS (SINGLE STAGE, REDUCTION RATIO i＝3～20)

Dimensional Drawing

Dimensional Table

Unit: mm

Size	064SDR	090SDR	110SDR	140SDR	200SDR
D1 h7	20	31.5	40	50	80
D2	31.5	50	63	80	125
D3 h7	40	63	80	100	160
D4 h7	54	80	110	140	200
D5	79	109	135	168	233
D6	7×M5×0.8P	7×M6×1P	11×M6×1P	11×M8×1.25P	11×M10×1.5P
D7	86	118	145	179	247
D8 H7	5	6	6	8	10
D10	8×4.5	8×5.5	8×5.5	12×6.6	12×9
D12	63.2	89.2	109.2	139.2	199.2
L1	8	12	12	12	16
L2	8	13.5	13.5	17	22.5
L3	3	6	6	6	8
L4	19.5	30	29	38	50
L5	7	10	10	14.6	15
L6	4	7	8	10	12
L8	126	172.5	201	263.5	334.5
L9	6	7	7	7	10
L10	0.5	1	1	1	1
C1	70	100	130	165	215
C2	M5×0.8P	M6×1P	M8×1.25P	M10×1.5P	M12×1.75P
C3	≤14/≤16	≤19/≤24	≤32	≤38	≤48
C4	34	40	50	60	85
C5	50	80	110	130	180
C6	8	4	5	6	6
C7	60	90	115	142	190
C8	19	17	19.5	22.5	29
C9	116.5	159.5	199	254.5	316
C10	13.5	10.75	13	15	20.75
C11	81.5	107.5	134	164.5	213.5

*070SBR 5,10 Reduction ratio provides C3≤16 to choose from.

SB SERIES

SBR SERIES

SE SERIES

SER SERIES

SD SERIES

SDR SERIES

P22

DIMENSIONS (TWO STAGE, REDUCTION RATIO i＝25～200)

■ Dimensional Drawing

■ Dimensional Table

Unit: mm

Size	064SDR	090SDR	110SDR	140SDR	200SDR
D1 h7	20	31.5	40	50	80
D2	31.5	50	63	80	125
D3 h7	40	63	80	100	160
D4 h7	54	80	110	140	200
D5	79	109	135	168	233
D6	7×M5×0.8P	7×M6×1P	11×M6×1P	11×M8×1.25P	11×M10×1.5P
D7	86	118	145	179	247
D8 H7	5	6	6	8	10
D10	8×4.5	8×5.5	8×5.5	12×6.6	12×9
D12	63.2	89.2	109.2	139.2	199.2
L1	8	12	12	12	16
L2	8	13.5	13.5	17	22.5
L3	3	6	6	6	8
L4	19.5	30	29	38	50
L5	7	10	10	14.6	15
L6	4	7	8	10	12
L8	132.5	163	217.5	269.5	333.5
L9	6	7	7	7	10
L10	0.5	1	1	1	1
C1	46	70	100	130	165
C2	M4×0.7P	M5×0.8P	M6×1P	M8×1.25P	M10×1.5P
C3	≤11/≤12	≤14/≤16	≤19/≤24	≤32	≤38
C4	30	34	40	50	60
C5	30	50	80	110	130
C6	3.5	8	4	5	6
C7	48	60	90	115	142
C8	19.5	19	17	19.5	22.5
C9	108.25	128.25	166.5	209	269.5
C10	13.25	13.5	10.75	13	15
C11	74	81.5	107.5	134	164.5

*070SBR　5,10 Reduction ratio provides C3≤16 to choose from.

ASSEMBLY

■ Assembly Procedure

If a customer personally assembles the servo motor and reducer please use the following tip. The reducer flange to which the servo motor is attached has different dimensions based on the motor specified .Therefore,assembly may be impossible for some motor.Make sure the correct motor is specified before ordering the reducer.

1.Spec. In Case Of Assembling A Motor Without Key

① Take off the rubber cap, turn the input shaft, and match the head of the bolt to the hole of the rubber cap. Make sure that the set bolt is loosened.
② Gradually put the motor shaft into the input shaft (Ensure that it is smoothly put in without iam.) Be careful not to be inserted with the motor tilted.
③ Attach the motor to the reducer and fasten the bolt with designated fastening torque. (See table 1)
④ Fasten the set bolt of the input shaft with designated fastening torque wrench, etc. (See table 2)
⑤ Puton a rubber cap. It is the end of assembling.

● SB/SE Series Schematic Diagram

● Table1

Motor Combination Bolt	Fastening Torque	
	(N·m)	(kgf·cm)
M3	1.0	10
M4	3.0	30
M5	5.8	60
M6	9.8	100
M8	19.6	200
M10	39.2	400
M12	68.6	700
M16	168	1650

● Table2

Combination Bolt	Fastening Torque	
	(N·m)	(kgf·cm)
M3	1.5	15
M4	3.5	35
M5	7.1	71
M6	12	120
M8	30	300
M10	60	612

You can assemble the motor with keyway like above when take off the key.
There is no risk of dislocation.
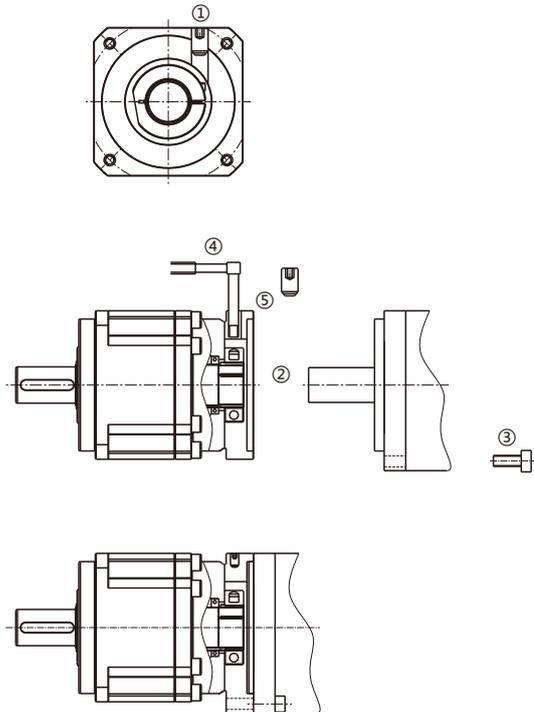
ASSEMBLY

◼ Peducer Assembly

Jointing with reducerIn case of jointing a reducer with the device, make sure that the combining side is plane without inconsistency, and when assemble reducer outo equipment, ensuring assembly surface smooth and without burr. (See table 3)

● Table 3

Reducer Combination Bolt	Fastening Torque	
	(N·m)	(kgf·cm)
M5	5.80	60
M6	9.80	100
M8	19.6	200
M10	39.2	400
M12	68.6	700
M16	16.8	1650

◼ Connection to the Output Shaft

Cautions:

1、 When assemble a coupling, pulley, etc. onto the output shaft,make sure that excessive axial load not be given to the output shaft.

2、 In case of strongly hitting the shaft with a hammer, the shaft inlet or the inside of the reducer may be damaged, therefore it shall be prohibited.

3、 If the shaft or key of a coupling assembled is loosed, it may cause carbonization, so be careful when assembling.

4、 For assembling of a coupling, fix the key with a set bolt.

5、 Please adjust shaft centre carefully in connecting.
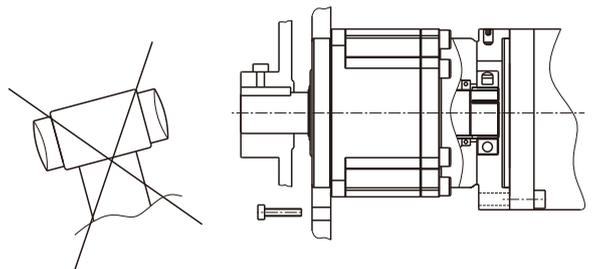
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