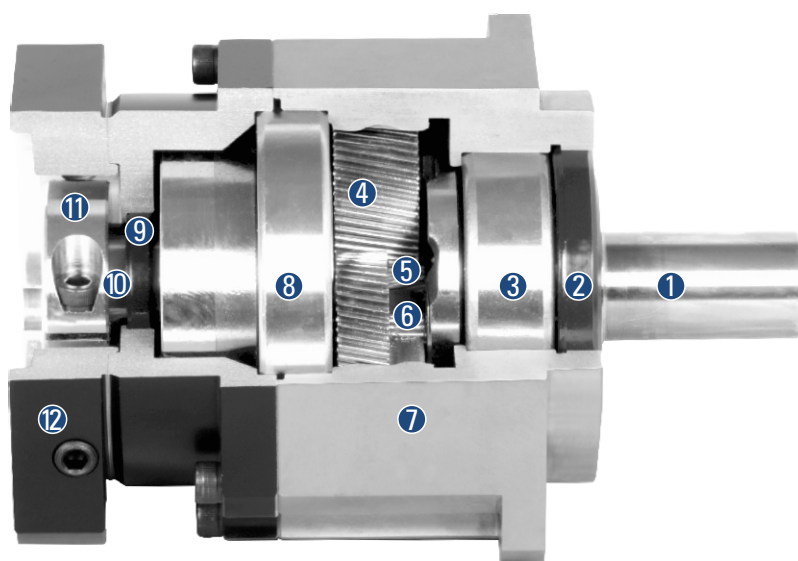


SB SERIES GEARBOX

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 ①	SB ②	20 ③	() ④	(S1) ⑤	- 750 ⑥	⑦
① Gearbox frame size: 090						
② Gearbox series code: SB						
③ Gear ratio: 20, (See P02)						
④ Precision (See P02) Precision type P1,high prcision 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						

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									
Rated Input Speed n_{1N}	rpm	1,2	3~100									
Rated Input Speed n_{1B}	rpm	1,2	3~100									
Super Precision Backlash P0	arcmin	1	3~10									
		2	15~100									
Precision Backlash P1	arcmin	1	3~10									
		2	15~100									
Standard Backlash P2	arcmin	1	3~10									
		2	15~100									
Torsional Stiffness	Nm/arcmin	1,2	3~100									
Allowable Radial Force F_{2RB} ³	N	1,2	3~100									
Allowable Axial Force F_{2AB} ³	N	1,2	3~100									
Service Life	hr	1,2	3~100									
Efficiency η	%	1	3~10									
		2	15~100									
Weight	Kg	1	3~10									
		2	15~100									
Operating Temperature	°C	1,2	3~100									
Lubrication		1,2	3~100									
Protection Class		1,2	3~100									
Mounting Position		1,2	3~100									
Noise Level at 1m Distance ($n_1=3000$ rpm, No Load)	dB(A)	1,2	3~100									

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·cm ²	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 ($i = N_g/N_{out}$)

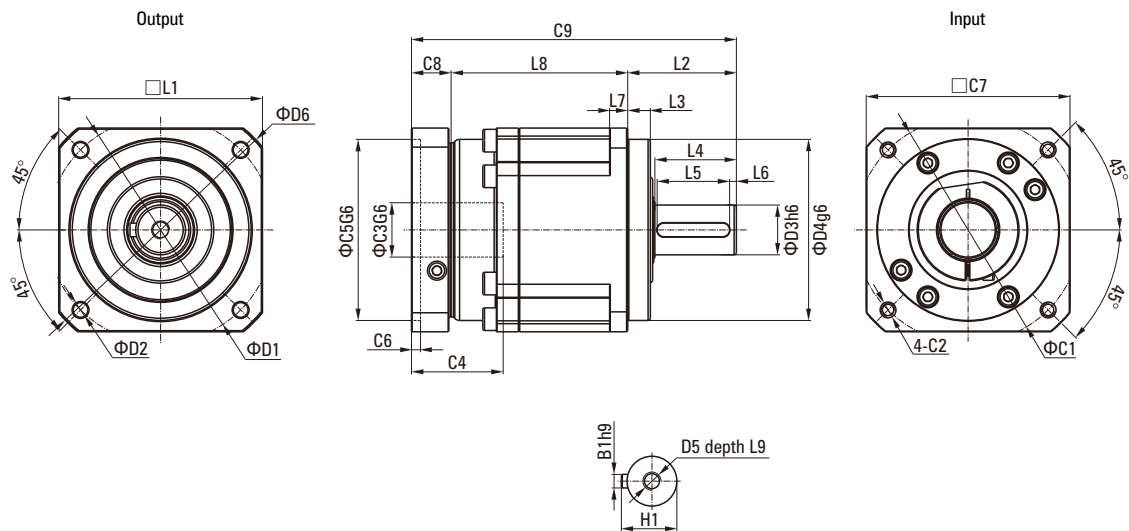
2. Maximum acceleration torque $T_{2B} = 60\%$ of T_{2NOT}

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 $i=3\sim10$)

Dimensional Drawing



Dimensional Table

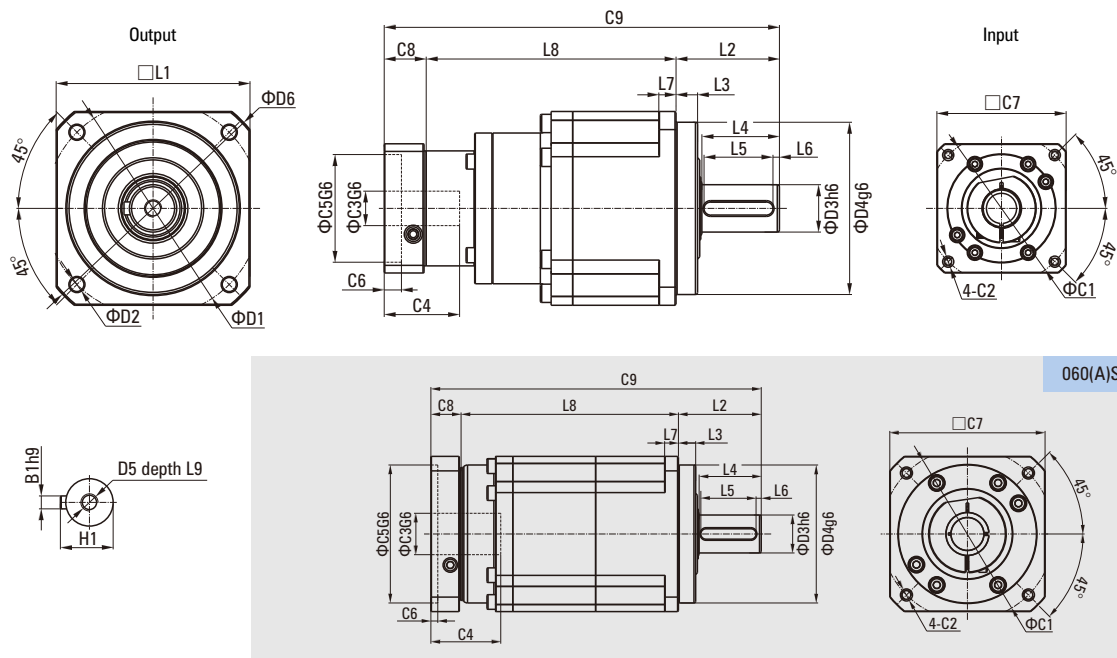
Unit: mm

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 _{h8}	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.

DIMENSIONS (TWO STAGE, REDUCTION RATIO $i=15\sim100$)

Dimensional Drawing



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