

HIGH PRECISION PLANETARY GEARHEADS FOR SERVO MOTORS

SPLH Series

- ▶ Helical Gear
- ▶ Compact size
- ▶ High Precision, High Durability
- ▶ High Efficiency
- ▶ Easy Mount
- ▶ Protection grade IP65

SPLH Series

Specifications

Description	Unit	Stage	Ratio ⁽¹⁾	Model No.												
				SPLH 042	SPLH 060	SPLH 060D	SPLH 090	SPLH 090D	SPLH 115	SPLH 115D	SPLH 142	SPLH 142D	SPLH 180	SPLH 180D	SPLH 220	SPLH 220D
Nominal Output torque T_{2N} ⁽²⁾	Nm	1	3	7.5	13.5	-	78	-	171	-	333	-	540	-	810	-
			4	10	18	-	107	-	215	-	489	-	720	-	1,080	-
			5	12.5	22.5	-	120	-	250	-	580	-	900	-	1,350	-
			6	15	27	-	107	-	215	-	530	-	1,100	-	1,630	-
			7	15	31.5	-	100	-	213	-	495	-	980	-	1,960	-
			8	10	36	-	106	-	220	-	420	-	870	-	1,700	-
			9	14	35	-	93	-	160	-	390	-	710	-	1,560	-
			10	11	30	-	94	-	215	-	370	-	790	-	1,395	-
			14	-	31.5	-	100	-	213	-	495	-	980	-	1,960	-
			20	-	30	-	94	-	215	-	370	-	790	-	1,395	-
		2	15	16	-	-	-	-	-	-	-	-	-	-	-	-
			20	16	-	-	-	-	-	-	-	-	-	-	-	-
			25	19	43	43	120	120	250	250	-	580	-	1,200	-	2,080
			30	19	43	43	120	120	250	250	-	580	-	1,200	-	2,080
			35	19	43	43	120	120	250	250	-	580	-	1,200	-	2,080
			40	19	43	43	120	120	250	250	-	580	-	1,200	-	2,080
			45	19	43	43	120	120	250	250	-	580	-	1,200	-	2,080
			50	19	43	43	120	120	250	250	-	580	-	1,200	-	2,080
			60	15	43	43	107	107	215	215	-	530	-	1,100	-	1,630
			70	15	40	40	100	100	213	213	-	495	-	980	-	1,960
80	10	43	43	106	106	220	220	-	420	-	870	-	1,700			
90	14	35	35	93	93	160	160	-	390	-	710	-	1,560			
100	11	30	30	94	94	215	215	-	370	-	790	-	1,395			
Max Acceleration torque T_{2B}	Nm	1,2	3~100	3 times of Nominal Output torque												
Nominal Input speed n_1	rpm	1,2	3~100	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Max. Input speed N_1	rpm	1,2	3~100	6,000	6,000	6,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
Backlash (Standard class)	arcmin	1	3~20	≤ 7	≤ 7	-	≤ 7	-	≤ 7	-	≤ 7	-	≤ 7	-	≤ 7	-
		2	25~100	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	-	≤ 10	-	≤ 10	-	≤ 10
Backlash (Precision Class)	arcmin	1	3~20	≤ 5	≤ 5	-	≤ 5	-	≤ 5	-	≤ 5	-	≤ 5	-	≤ 5	-
		2	25~100	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8	-	≤ 8	-	≤ 8	-	≤ 8
Torsional Rigidity	Nm/arcmin	1,2	3~100	2	3	3	12	12	23	23	38	38	110	110	210	210
Max. Radial load F_r max ⁽²⁾	N	1,2	3~100	400	1,100	1,100	2,400	2,400	4,000	4,000	8,000	8,000	13,000	13,000	18,600	18,600
Max. Axial load F_a max ⁽²⁾	N	1,2	3~100	300	600	600	1,800	1,800	2,500	2,500	3,000	3,000	6,000	6,000	11,300	11,300
Service life ⁽²⁾	hr	1,2	3~100	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Noise level ⁽³⁾	dB(A)	1,2	3~100	≤ 61	≤ 63	≤ 63	≤ 65	≤ 65	≤ 68	≤ 68	≤ 70	≤ 70	≤ 72	≤ 72	≤ 74	≤ 74
Weight	kg	1	3~20	0.9	2	-	5.7	-	12.9	-	22	-	46.4	-	77	-
		2	25~100	1.1	2.4	2	7	5.9	16.7	14.1	-	24.8	-	50	-	88.2
Mass Moments of Inertia ⁽⁴⁾	kg cm ²	1	3~20	0.04	0.15	-	0.8	-	2.8	-	11.9	-	23.5	-	54	-
		2	25~100	0.03	0.07	0.07	0.5	0.5	1.5	1.5	-	5.1	-	8.03	-	23.5
Operating Temp. ⁽⁵⁾	°C	1,2	3~100	-10 ~ +90												
Lubrication	-	1,2	3~100	High temperature & Extreme pressure Lubricant												
Mounting position	-	1,2	3~100	All directions												
Efficiency η	%	1	3~20	≥ 95												
		2	15~100	≥ 92												
Degree of protection	-	1,2	3~100	IP 65												

(1) Ratio = N_{in} / N_{out} (2) Values were measured at the following conditions : 100 rpm at the output, Load applied to the middle of the output shaft, Load coefficient(Ka) = 1, Continuous operation(S1=10,000hrs). (3) Noise level : A measurement 1m away from the gear head, 3000 input rpm and at no load condition. (Background noise 21dB(A)) (4) Moment of inertia : A measurement at the input shaft and representatives from each ratio.(i=1/5) (5) Operating temperature : Surface temperature of gear case in -10°C~40°C of ambient temperature.

* The data in the above table are representative values. Specifications are subject to change without notice to improve product performances.

Coding System

SPL	H	060	(1)	P	020⁽²⁾	S[K]	A⁽³⁾	A01	
Series Name SPL L Type		Frame Size 042 □42 060 □60 090 □90 115 □115 142 □142 180 □180 220 □220	Backlash S Standard Class 1 Stage : ≤7 arcmin 2 Stage : ≤10 arcmin P Precision Class 1 Stage : ≤5 arcmin 2 Stage : ≤8 arcmin		Gear Ratio(i) 1단 2단 003 1/3 (015) (1/15) 004 1/4 (020) (1/20) 005 1/5 025 1/25 006 1/6 030 1/30 007 1/7 035 1/35 008 1/8 040 1/40 009 1/9 045 1/45 010 1/10 050 1/50 014 1/14 060 1/60 020 1/20 070 1/70 - - 080 1/80 - - 090 1/90 - - 100 1/100		Input Adapter Flange (Servo Motors) A Mitsubishi, Yaskawa, Tamagawa, HIGEN, LS order B Panasonic order C Rockwell order		
Gear Type H Helical		Input Frame Size No symbol Standard D Down Size	Output Shaft Option S Smooth Output Shaft K Output Shaft with Key						Customer code

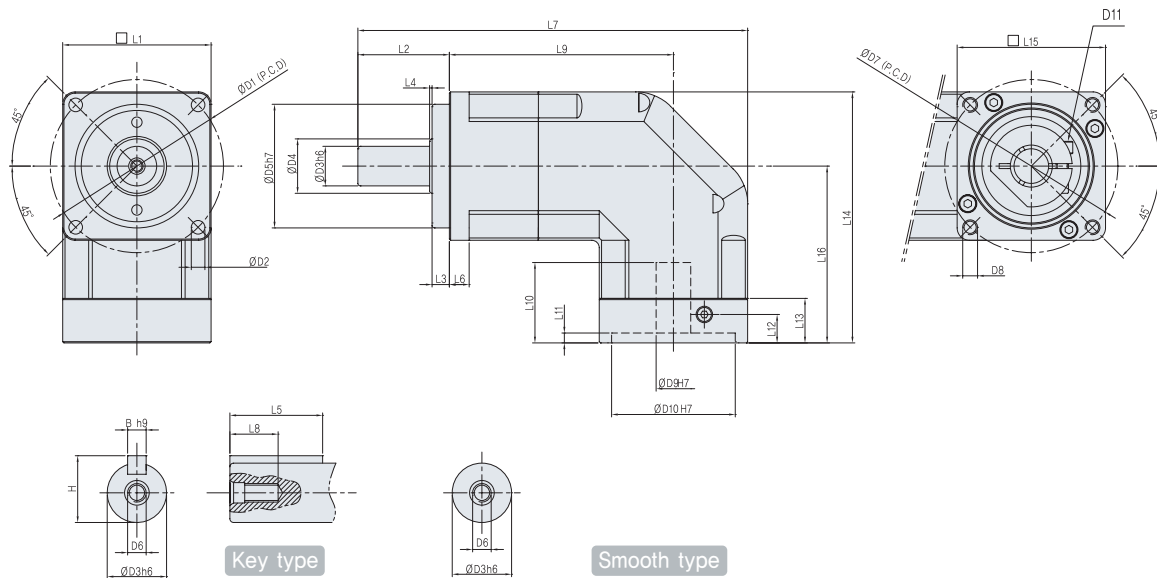
(1) The input flange of down size depends on customer's request.

(2) Ratio 1/14 and 1/20 of 1 stage are custom-made specification.

(3) It is important for customers to verify mounting dimensions of a servo motor along with dimensions of gear head prior to placing purchase order.

Planetary Gearheads

■ Dimensions (1 Stage, Ratio(i) = 1/3 ~ 1/20)



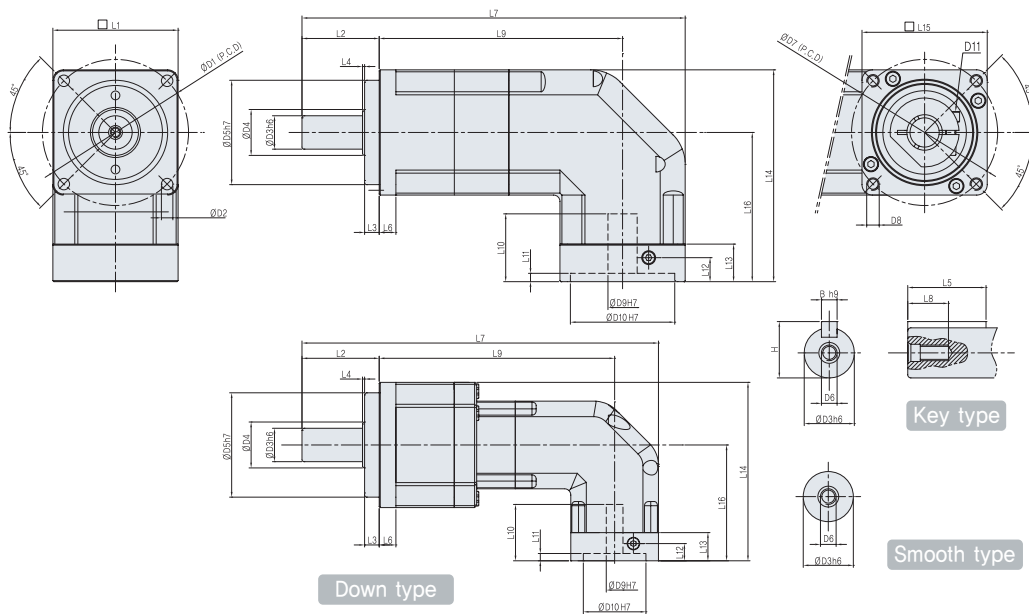
(Unit : mm)

Dimension \ Model	SPLH 042	SPLH 060	SPLH 090	SPLH 115	SPLH 142	SPLH 180	SPLH 220
D1	50	70	100	130	165	215	250
D2	3,4	5,5	6,5	9	11	13	17
D3 h6	13	16	22	32	40	55	75
D4	14,5	19,7	24,8	39,8	49,8	64,8	79,8
D5 h7	35	50	80	110	130	160	180
D6	M4xP0,7	M5xP0,8	M8xP1,25	M12xP1,75	M16xP2,0	M20xP2,5	M20xP2,5
D7	A	46	70	90	145	200	235
	B	45	70	90	-	-	-
	C	46	70	90	-	-	-
D8	A	M4 DP 8	M5 DP 12	M6 DP 12	M8 DP 20	M12 DP21	M12 DP21
	B	M3 DP 6	M4 DP 12	M5 DP 12	-	-	-
	C	M4 DP 8	M5 DP 12	M6 DP 12	-	-	-
D9 H7	≤ 8	≤ 14	≤ 19	≤ 32	≤ 38	≤ 48	≤ 55
D10 H7	30	50	70	110	114,3	114,3	200
D11	M3	M5	M5	M8	M8	M10	M12
L1	42	60	90	115	142	180	220
L2	24,5	37	46	65	97	105	138
L3	4	7	8	12	15	20	30
L4	1	1	1,5	2	2	2	3
L5	16	25	32	45	68	76	97
L6	7	8	10	14	12	15	20
L7	121,6	157,6	216,2	283,8	383	426	530
L8	13	13	19	28	36	42	42
L9	76,1	90,6	125,2	153,8	196	231	282
L10	A, B	27	35,5	42,5	73	84	116
	C	30,5	40	47,5	-	-	-
L11	3,5	4	4	7	7	7	7
L12	A, B	8,3	11,5	11,5	27,5	33,5	41
	C	11,8	16	16	-	-	-
L13	A, B	13,5	18	18	42	46	68,5
	C	17	22,5	23	-	-	-
L14	A, B	76,5	101,5	133,1	188,8	227	326,5
	C	80	106	138,1	-	-	-
L15	42	60	90	130	180	180	220
L16	A, B	55,5	71,5	88,1	131,3	156	216,5
	C	59	76	93,1	-	-	-
B h9	5	5	6	10	12	16	20
H	15	18	24,5	35	43	59	79,5

- Note) 1. Specifications are subject to change without notice to improve product performances.
 2. The values of D7 through D11 and L10 through L16 on the above table may vary by servo motor.
 3. CAD files are available to download from website(www.spg.co.kr).

SPLH Series

■ Dimensions (2 Stage, Ratio(i) = 1/25 ~ 1/100)



(Unit : mm)

Dimension \ Model	SPLH 042	SPLH 060	SPLH 060D	SPLH 090	SPLH 090D	SPLH 115	SPLH 115D	SPLH 142D	SPLH 180D	SPLH 220D
D1	50	70	70	100	100	130	130	165	215	250
D2	3,4	5,5	5,5	6,5	6,5	9	9	11	13	17
D3 h6	13	16	16	22	22	32	32	40	55	75
D4	14,5	19,7	19,7	24,8	24,8	39,8	39,8	49,8	64,8	79,8
D5 h7	35	50	50	80	80	110	110	130	160	180
D6	M4xP0,7	M5xP0,8	M5xP0,8	M8xP1,25	M8xP1,25	M12xP1,75	M12xP1,75	M16xP2,0	M20xP2,5	M20xP2,5
D7	A	46	70	46	90	70	145	90	145	200
	B	45	70	45	90	70	-	90	-	-
	C	46	70	46	90	70	-	90	-	-
D8	A	M4 DP 8	M5 DP 12	M4 DP 8	M6 DP 12	M5 DP 12	M8 DP 20	M6 DP 12	M8 DP 20	M12 DP 21
	B	M3 DP 6	M4 DP 12	M3 DP 6	M5 DP 12	M4 DP 12	-	M5 DP 12	-	-
	C	M4 DP 8	M5 DP 12	M4 DP 8	M6 DP 12	M5 DP 12	-	M5 DP 12	-	-
D9 H7	≤ 8	≤ 14	≤ 8	≤ 19	≤ 14	≤ 32	≤ 19	≤ 32	≤ 38	≤ 48
D10 H7	30	50	30	70	50	110	70	110	114,3	114,3
D11	M3	M5	M3	M5	M5	M8	M5	M8	M8	M10
L1	42	60	60	90	90	115	115	142	180	220
L2	24,5	37	37	46	46	65	65	97	105	138
L3	4	7	7	8	8	12	12	15	20	30
L4	1	1	1	1,5	1,5	2	2	2	2	3
L5	16	25	25	32	32	45	45	68	76	97
L6	7	8	8	10	10	14	14	12	15	20
L7	146,6	183,6	170,8	254,2	217,1	333,8	297,9	391,8	478,4	569
L8	13	13	13	19	19	28	28	36	42	42
L9	101,1	116,6	112,8	163,2	141,1	203,8	187,9	229,8	283,4	341
L10	A, B	27	35,5	27	42,5	35,5	73	42,5	73	84
	C	30,5	40	30,5	47,5	40	-	47,5	-	-
	L11	3,5	4	3,5	4	4	7	4	7	7
L12	A, B	8,3	11,5	8,3	11,5	11,5	27,5	11,5	27,5	33,5
	C	11,8	16	11,8	16	16	-	16,5	-	-
	L13	A, B	13,5	18	13,5	18	18	42	18	42
L14	C	17	22,5	17	23	22,5	-	23	-	-
	A, B	76,5	101,5	85,5	133,1	116,5	188,8	145,6	202,3	246
	C	80	106	89	138,1	121	-	150,6	-	-
L15	42	60	42	90	60	130	90	130	180	180
L16	A, B	55,5	71,5	55,5	88,1	71,5	131,3	88,1	131,3	156
	C	59	76	59	93,1	76	-	93,1	-	-
	B h9	5	5	5	6	6	10	10	12	16
H	15	18	18	24,5	24,5	35	35	43	59	79,5

- Note) 1. Specifications are subject to change without notice to improve product performances.
 2. The values of D7 through D11 and L10 through L16 on the above table may vary by servo motor.
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