



## High Precision Planetary Gearheads for Servo motors

# **SPIFH** Series

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

# SPIFH Series

## Specifications

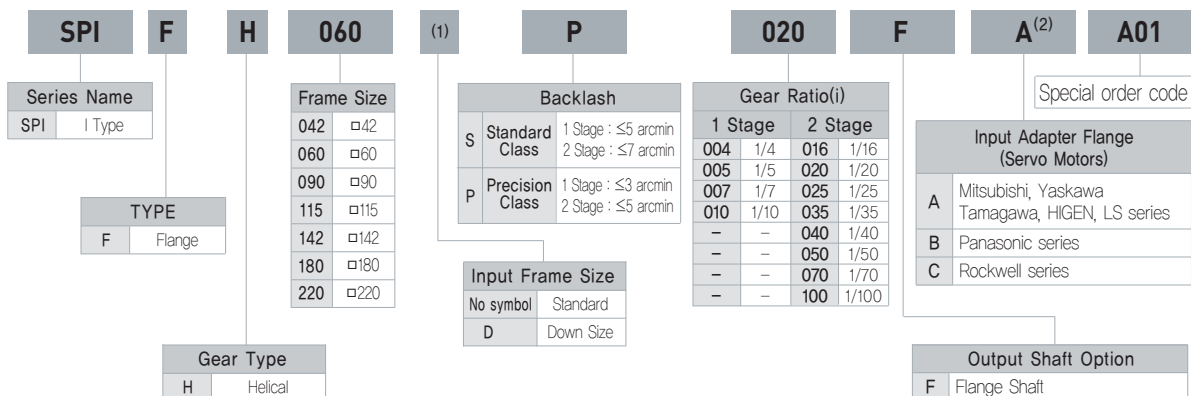
Description	Unit	Stage	Ratio (1)	Model No.													
				SPIFH 042	SPIFH 060	SPIFH 060D	SPIFH 090	SPIFH 090D	SPIFH 115	SPIFH 115D	SPIFH 142	SPIFH 142D	SPIFH 180	SPIFH 180D	SPIFH 220	SPIFH 220D	
Nominal Output torque $T_{2N}$ (2)	Nm	1	4	16	36	—	107	—	215	—	540	—	950	—	1,600	—	
			5	19	43	—	120	—	250	—	590	—	1,200	—	2,080	—	
			7	15	40	—	100	—	213	—	530	—	980	—	1,960	—	
			10	11	30	—	94	—	215	—	420	—	790	—	1,395	—	
		2	16	16	36	36	107	107	215	215	—	540	—	950	—	1,600	—
			20	16	36	36	107	107	215	215	—	540	—	950	—	1,600	—
			25	19	43	43	120	120	250	250	—	590	—	1,200	—	2,080	—
			35	19	43	43	120	120	250	250	—	590	—	1,200	—	2,080	—
			40	19	43	43	120	120	250	250	—	590	—	950	—	2,080	—
			50	19	43	43	120	120	250	250	—	590	—	1,200	—	2,080	—
70	15	40	40	100	100	213	213	—	530	—	980	—	1,960	—			
	100	11	30	30	94	94	215	215	—	420	—	790	—	1,395	—		
Max Acceleration torque $T_{2B}$	Nm	1,2	4~100	3 times of Nominal Output torque													
Nominal Input speed $n_1$	rpm	1,2	4~100	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000		
Max. Input speed $N_i$	rpm	1,2	4~100	6,000	6,000	6,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000		
Backlash (Standard class)	arcmin	1	4~10	≤ 5	≤ 5	—	≤ 5	—	≤ 5	—	≤ 5	—	≤ 5	—	≤ 5		
		2	16~100	≤ 7	≤ 7	≤ 7	≤ 7	≤ 7	≤ 7	≤ 7	≤ 7	—	≤ 7	—	≤ 7		
Backlash (Precision Class)	arcmin	1	4~10	≤ 3	≤ 3	—	≤ 3	—	≤ 3	—	≤ 3	—	≤ 3	—	≤ 3		
		2	16~100	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	—	≤ 5	—	≤ 5			
Torsional Rigidity	Nm/arcmin	1,2	4~100	2	3	3	12	12	23	23	38	38	110	110	210	210	
Max. Bending moment $M_{max}$ (2)	N	1,2	4~100	41	123	123	241	241	417	417	247	247	719	719	1,188	1,188	
Max. Axial load $F_a$ max (2)	N	1,2	4~100	1,050	2,140	2,140	2,750	2,750	5,230	5,230	6,370	6,370	9,880	9,880	12,830	12,830	
Service life (2)	hr	1,2	4~100	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	
Noise level (3)	dB(A)	1,2	4~100	≤ 56	≤ 58	≤ 58	≤ 60	≤ 60	≤ 63	≤ 63	≤ 65	≤ 65	≤ 67	≤ 67	≤ 70	≤ 70	
Weight	kg	1	4~10	0.7	1.4	—	4.0	—	8.5	—	18.1	—	48.1	—	85.4	—	
		2	16~100	0.9	1.9	1.5	5.5	4.4	12.3	9.6	—	24.2	—	56.2	—	107.2	
Mass Moments of Inertia (4)	kg cm <sup>2</sup>	1	4~10	0.04	0.15	—	0.8	—	2.8	—	11.9	—	23.5	—	54	—	
		2	16~100	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	4~100	-10 ~ +90													
Lubrication	—	1,2	4~100	High temperature & Extreme pressure Lubricant													
Mounting position	—	1,2	4~100	All directions													
Efficiency $\eta$	%	1	4~10	≥ 97													
		2	16~100	≥ 94													
Degree of protection	—	1,2	4~100	IP 65													

SPIFH

(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( $K_a$ ) = 1, Continuous operation( $S_1$ ≒15,000hrs), (3) Noise level : A measurement 1m away from the gear head, 3000 input rpm and at all 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  $-10^{\circ}\text{C} \sim 40^{\circ}\text{C}$  of ambient temperature.

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

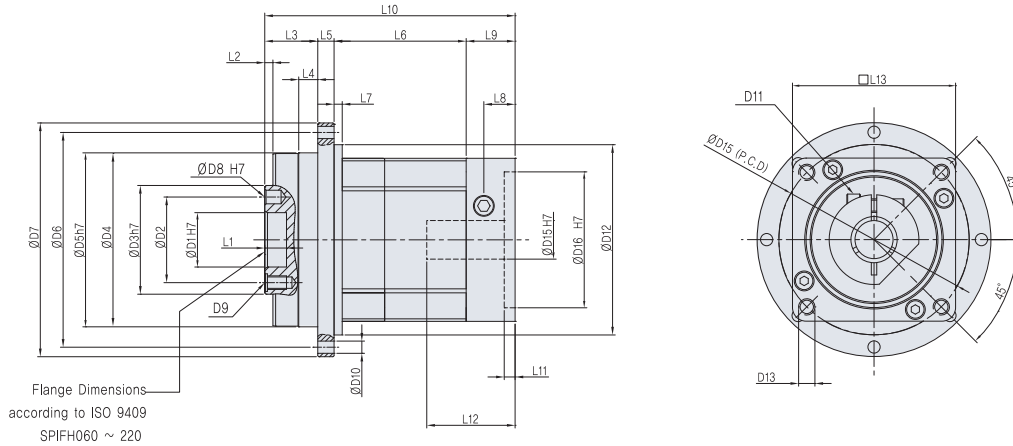
## Coding System



(1) The input frame of down size depends on customer's request.  
 (2) 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) = 1/4 ~ 1/10)



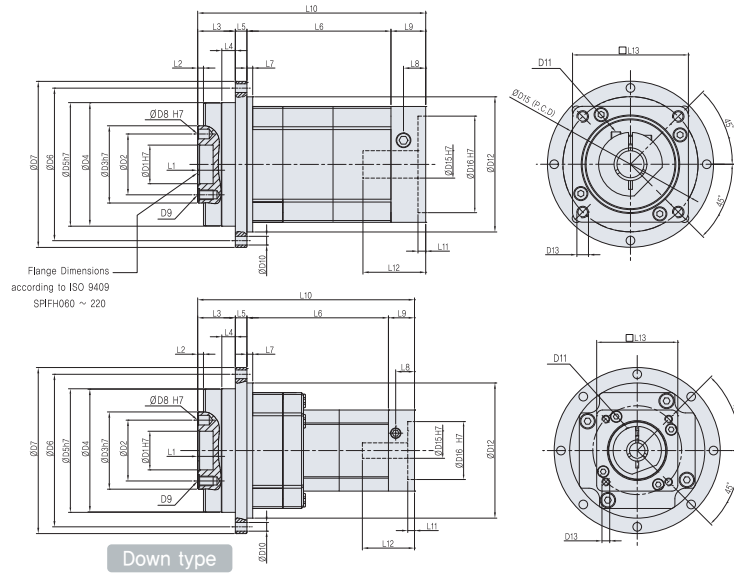
(Unit : mm)

Dimension \ Model	SPIFH 042	SPIFH 060	SPIFH 090	SPIFH 115	SPIFH 142	SPIFH 180	SPIFH 220
D1 H7	12	20	31,5	40	50	80	100
D2	20	31,5	50	63	80	125	140
D3 h7	28	40	63	80	100	160	180
D4	46,5	63,5	89,4	109,4	138	198	253
D5 h7	47	64	90	110	140	200	255
D6	67	79	109	135	168	233	280
D7	72	86	118	145	179	247	300
D8 H7	3 DP4	5 DP6	6 DP7	6 DP7	8 DP7	10 DP10	12 DP10
D9	4 - M3 DP6,5	7 - M5 DP8	7 - M6 DP13,5	11 - M6 DP13,5	11 - M8 DP17	11 - M10 DP22,5	12 - M16 DP30,5
D10	8 - 3,4	8 - 4,5	8 - 5,5	8 - 5,5	12 - 6,6	12 - 9	16 - 13,5
D11	M3	M5	M5	M8	M8	M10	M12
D12	50	70	105	135	165	212	255
D13	A	M4 DP8	M5 DP12	M6 DP12	M8 DP20	M12 DP21	M12 DP21
	B	M3 DP6	M4 DP12	M5 DP12	-	-	-
	C	M4 DP8	M5 DP12	M6 DP12	-	-	-
D14	A	46	70	90	145	200	235
	B	45	70	90	-	-	-
	C	46	70	90	-	-	-
D15 H7	≤8	≤14	≤19	≤32	≤38	≤48	≤55
D16 H7	30	50	70	110	114,3	114,3	200
L1	4	8	12	12	12	16	20
L2	3	3	6	6	6	8	12
L3	19,5	19,5	30	29	38	50	66
L4	7	7	15	15	14,6	15	20
L5	4	6	7	8	9	12	18
L6	38,9	48,6	65,7	82,2	112,4	153,3	117
L7	1	3	3	3	-	-	-
L8	A, B	8,3	11,5	11,5	27,5	33,6	47
	C	11,8	16	16,5	-	-	-
L9	A, B	13,5	18	18	42	42,5	57
	C	17	22,5	23	-	-	-
L10	A, B	75,9	92,1	120,7	161,2	201,9	272,3
	C	79,4	96,6	125,7	-	-	-
L11	3,5	4	4	7	7	7	6
L12	A, B	27	32,5	42,5	67	84,1	109
	C	30,5	37	47,5	-	-	-
L13	42	60	90	130	180	180	220

- Note) 1. Specifications are subject to change without notice to improve product performances.  
 2. The values of D13 through D16 and L8 through L13 on the above table may vary by servo motor.  
 3. CAD files are available to download from website(www.spg.co.kr).

# SPIFH Series

## ■ Dimensions (2 Stage, Ratio(i) = 1/16 ~ 1/100)



(Unit : mm)

Dimension \ Model	SPIFH 042	SPIFH 060	SPIFH 060D	SPIFH 090	SPIFH 090D	SPIFH 115	SPIFH 115D	SPIFH 142D	SPIFH 180D	SPIFH 220D	
D1 H7	12	20	20	31,5	31,5	40	40	50	80	100	
D2	20	31,5	31,5	50	50	63	63	80	125	140	
D3 h7	28	40	40	63	63	80	80	100	160	180	
D4	46,5	63,5	63,5	89,4	89,4	109,4	109,4	138	198	253	
D5 h7	47	64	64	90	90	110	110	140	200	255	
D6	67	79	79	109	109	135	135	168	233	280	
D7	72	86	86	118	118	145	145	179	247	300	
D8 H7	3 DP 4	5 DP 6	5 DP 6	6 DP 7	6 DP 7	6 DP 7	6 DP 7	8 DP 7	10 DP 10	12 DP 10	
D9	4-M3 DP 6,5	7-M5 DP 8	7-M5 DP 8	7-M6 DP 13,5	7-M6 DP 13,5	11-M6 DP 13,5	11-M6 DP 13,5	11-M8 DP 17	11-M10 DP 22,5	12-M16 DP 30,5	
D10	8 - 3,4	8 - 4,5	8 - 4,5	8 - 5,5	8 - 5,5	8 - 5,5	8 - 5,5	12 - 6,6	12 - 9	16 - 13,5	
D11	M3	M5	M3	M5	M5	M8	M5	M8	M10	M12	
D12	50	70	70	105	105	135	135	165	212	255	
D13	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	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	-	M6 DP 12	-	-	-
D14	A	46	70	46	90	70	145	90	145	200	200
	B	45	70	45	90	70	-	90	-	-	-
	C	46	70	46	90	70	-	90	-	-	-
D15 H7	≤8	≤14	≤8	≤19	≤14	≤32	≤19	≤32	≤38	≤48	
D16 H7	30	50	30	70	50	110	70	110	114,3	114,3	
L1	4	8	8	12	12	12	12	12	16	20	
L2	3	3	3	6	6	6	6	6	8	12	
L3	19,5	19,5	19,5	30	30	29	29	38	50	66	
L4	7	7	7	15	15	15	15	15	16	20	
L5	4	6	6	7	7	8	8	9	12	18	
L6	63,9	74,6	73,3	103,7	99,2	132,2	128,9	154,9	203,7	256	
L7	1	3	3	3	3	3	3	-	-	-	
L8	A, B	8,3	11,5	8,3	11,5	11,5	27,5	11,5	27,5	33,6	47
	C	11,8	16	11,8	16,5	16	-	16,5	-	-	-
L9	A, B	13,5	18	13,5	18	18	42	18	42	42,5	57
	C	17	22,5	17	23	22,5	-	23	-	-	-
L10	A, B	100,9	118,1	112,3	158,7	154,2	211,2	183,9	243,9	308,2	396,5
	C	104,4	122,6	115,8	163,7	158,7	-	188,9	-	-	-
L11	3,5	4	3,5	4	4	7	4	7	7	7	
L12	A, B	27	32,5	27	42,5	32,5	67	42,5	67	84,1	109
	C	30,5	37	30,5	47,5	37	-	47,5	-	-	-
L13	42	60	42	90	60	130	90	130	180	180	

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