



HIGH PRECISION PLANETARY GEARHEADS FOR SERVO MOTORS SPLFH Series

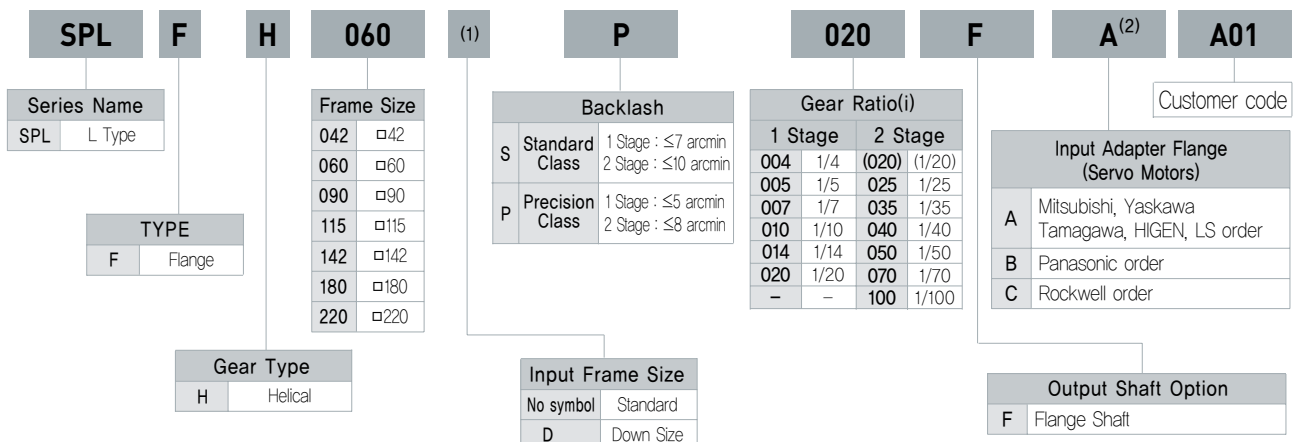
- ▶ Helical Gear
- ▶ Compact size
- ▶ High Precision, High Durability
- ▶ High Efficiency
- ▶ Easy Mount
- ▶ Protection grade IP65

Specifications

| Description | Unit | Stage | Ratio (1) | Model No. | | | | | | | | | | | | | |
|------------------------------------|--------------------|-------|-----------|---|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|---|
| | | | | SPLFH 042 | SPLFH 060 | SPLFH 060D | SPLFH 090 | SPLFH 090D | SPLFH 115 | SPLFH 115D | SPLFH 142 | SPLFH 142D | SPLFH 180 | SPLFH 180D | SPLFH 220 | SPLFH 220D | |
| Nominal Output torque T_{2N} (2) | Nm | 1 | 4 | 10 | 18 | - | 76 | - | 205 | - | 489 | - | 720 | - | 1,080 | - | |
| | | | 5 | 12.5 | 22.5 | - | 95 | - | 235 | - | 580 | - | 900 | - | 1,350 | - | |
| | | | 7 | 14 | 31.5 | - | 100 | - | 210 | - | 495 | - | 900 | - | 1,872 | - | |
| | | | 10 | 11 | 30 | - | 94 | - | 215 | - | 420 | - | 790 | - | 1,395 | - | |
| | | | 14 | - | 31.5 | - | 100 | - | 210 | - | 505 | - | 980 | - | 1,872 | - | |
| | | | 20 | - | 30 | - | 94 | - | 215 | - | 370 | - | 790 | - | 1,395 | - | |
| | | 2 | 20 | 16 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | | | 25 | 19 | 43 | 43 | 112 | 112 | 250 | 250 | - | 590 | - | 1,200 | - | 2,080 | - |
| | | | 35 | 19 | 43 | 43 | 112 | 112 | 250 | 250 | - | 590 | - | 1,200 | - | 2,080 | - |
| | | | 40 | 19 | 43 | 43 | 112 | 112 | 250 | 250 | - | 590 | - | 1,200 | - | 2,080 | - |
| | | | 50 | 19 | 43 | 43 | 112 | 112 | 250 | 250 | - | 590 | - | 1,200 | - | 2,080 | - |
| | | | 70 | 15 | 40 | 40 | 100 | 100 | 210 | 210 | - | 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 | 3,000 | |
| Max. Input speed N_1 | 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 | 5,000 | |
| Backlash (Standard class) | arcmin | 1 | 4~20 | ≤ 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 | 4~20 | ≤ 5 | ≤ 5 | - | ≤ 5 | - | ≤ 5 | - | ≤ 5 | - | ≤ 5 | - | ≤ 5 | - | |
| | | 2 | 25~100 | ≤ 8 | ≤ 8 | ≤ 8 | ≤ 8 | ≤ 8 | ≤ 8 | - | ≤ 8 | - | ≤ 8 | - | ≤ 8 | - | |
| 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) | Nm | 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 | ≤ 61 | ≤ 63 | ≤ 63 | ≤ 65 | ≤ 65 | ≤ 68 | ≤ 68 | ≤ 70 | ≤ 70 | ≤ 72 | ≤ 72 | ≤ 74 | ≤ 74 | |
| Weight | kg | 1 | 4~20 | 1.0 | 2.3 | - | 6.5 | - | 13.9 | - | 29 | - | 67.4 | - | 113 | - | |
| | | 2 | 25~100 | 1.2 | 2.8 | 2.4 | 8.0 | 6.9 | 17.7 | 15.1 | - | 26.6 | - | 61.2 | - | 113.5 | |
| Mass Moments of Inertia (4) | kg cm ² | 1 | 4~20 | 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 | 4~100 | -10 ~ +90 | | | | | | | | | | | | | |
| Lubrication | - | 1,2 | 4~100 | High temperature & Extreme pressure Lubricant | | | | | | | | | | | | | |
| Mounting position | - | 1,2 | 4~100 | All directions | | | | | | | | | | | | | |
| Efficiency η | % | 1 | 4~20 | ≥ 95 | | | | | | | | | | | | | |
| | | 2 | 25~100 | ≥ 92 | | | | | | | | | | | | | |
| Degree of protection | - | 1,2 | 4~100 | IP 65 | | | | | | | | | | | | | |

- (1) Ratio = N_{in} / N_{out} (2) Values were measured at the following conditions : 100 rpm at the output. Load coefficient(K_a) = 1. Continuous operation($S_1=15,000$ hrs). (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 $-10^{\circ}\text{C}\sim 40^{\circ}\text{C}$ of ambient temperature.
 ※ The data in the above table are representative values. Specifications are subject to change without notice to improve product performances.

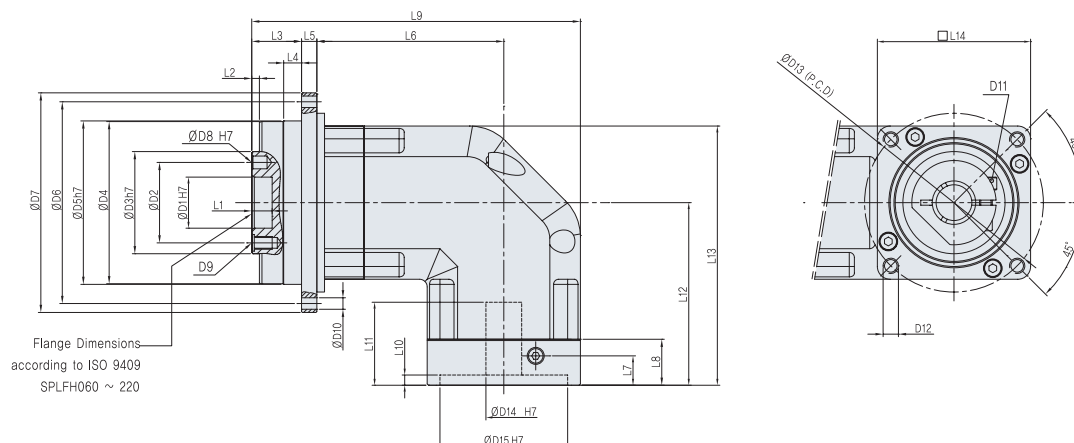
Coding System



- (1) The input 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) = 1/4 ~ 1/20)



(Unit : mm)

| Dimension \ Model | SPLFH 042 | SPLFH 060 | SPLFH 090 | SPLFH 115 | SPLFH 142 | SPLFH 180 | SPLFH 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 DP 4 | 5 DP 6 | 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-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 - 5,5 | 8 - 5,5 | 12 - 6,6 | 12 - 9 | 16 - 13,5 |
| D11 | M3 | M5 | M5 | M8 | M8 | M10 | M12 |
| D12 | A | M4 DP 8 | M5 DP 12 | M6 DP 12 | M8 DP 20 | M12 DP 21 | M12 DP 21 |
| | B | M3 DP 6 | M4 DP 12 | M5 DP 12 | - | - | - |
| | C | M4 DP 8 | M5 DP 12 | M6 DP 12 | - | - | - |
| D13 H7 | A | 46 | 70 | 90 | 145 | 200 | 235 |
| | B | 45 | 70 | 90 | - | - | - |
| | C | 46 | 70 | 90 | - | - | - |
| D14 H7 | ≤ 8 | ≤ 14 | ≤ 19 | ≤ 32 | ≤ 38 | ≤ 48 | ≤ 55 |
| D15 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 | 15 | 16 | 20 |
| L5 | 4 | 6 | 7 | 8 | 9 | 12 | 18 |
| L6 | 61 | 73,2 | 107,9 | 137 | 178 | 237 | 285 |
| L7 | A, B | 8,3 | 11,5 | 11,5 | 27,5 | 33,5 | 47 |
| | C | 11,8 | 16 | 16,5 | - | - | - |
| | A, B | 13,5 | 18 | 18 | 42 | 46 | 68,5 |
| L8 | C | 17 | 22,5 | 23 | - | - | - |
| | A, B, C | 105,5 | 128,7 | 189,9 | 231,5 | 315 | 389 |
| L9 | 479 | 479 | 479 | 479 | 479 | 479 | 479 |
| L10 | 3,5 | 4 | 4 | 7 | 7 | 7 | 7 |
| L11 | A, B | 27 | 35,5 | 42,5 | 73 | 84 | 109 |
| | C | 30,5 | 40 | 47,5 | - | - | - |
| L12 | A, B | 55,5 | 71,5 | 88,1 | 131,3 | 156 | 196 |
| | C | 59 | 76 | 93,1 | - | - | - |
| L13 | A, B | 76,5 | 101,5 | 113,1 | 188,8 | 227 | 286 |
| | C | 80 | 106 | 118,1 | - | - | - |
| L14 | 42 | 60 | 90 | 130 | 180 | 180 | 220 |

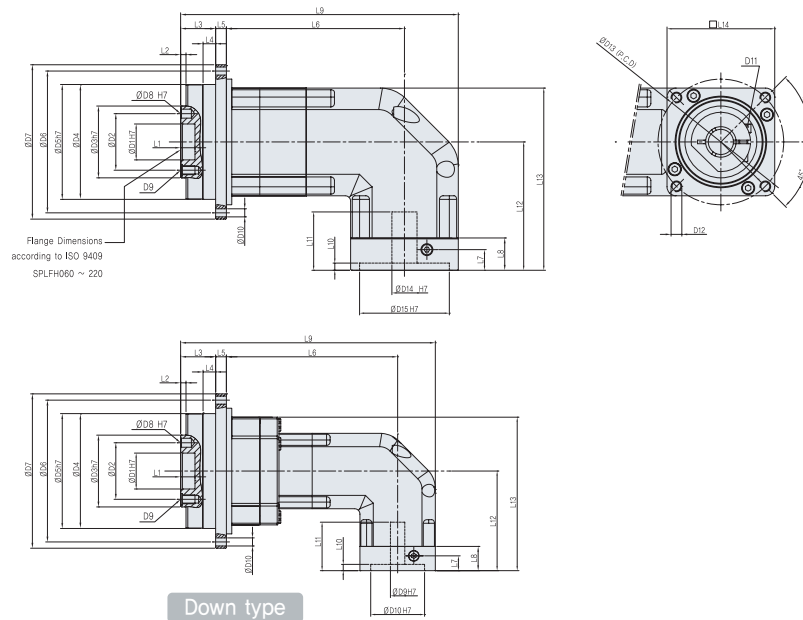
Note) 1. Specifications are subject to change without notice to improve product performances.

2. The values of D12 through D15 and L7 through L14 on the above table may vary by servo motor.

3. CAD files are available to download from website(www.spg.co.kr).

SPLFH Series

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



(Unit : mm)

| Dimension \ Model | SPLFH 042 | SPLFH 060 | SPLFH 060D | SPLFH 090 | SPLFH 090D | SPLFH 115 | SPLFH 115D | SPLFH 142D | SPLFH 180D | SPLFH 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 | M8 | M10 |
| D12 | 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 | - | M6 DP 12 | - | - |
| D13 H7 | A | 46 | 70 | 46 | 90 | 70 | 145 | 90 | 145 | 200 |
| | B | 45 | 70 | 45 | 90 | 70 | - | 90 | - | - |
| | C | 46 | 70 | 46 | 90 | 70 | - | 90 | - | - |
| D14 H7 | ≤ 8 | ≤ 14 | ≤ 8 | ≤ 19 | ≤ 14 | ≤ 32 | ≤ 19 | ≤ 32 | ≤ 38 | ≤ 48 |
| D15 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 | 86 | 99,2 | 95,4 | 145,9 | 123,8 | 187 | 171,1 | 209,7 | 269,3 | 339,3 |
| L7 | 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 | 16,5 | 16 | - | 16,5 | - | - |
| | A, B | 13,5 | 18 | 13,5 | 18 | 18 | 42 | 18 | 42 | 68,5 |
| L8 | C | 17 | 22,5 | 17 | 23 | 22,5 | - | 23 | - | - |
| | A, B, C | 130,5 | 154,7 | 141,9 | 227,9 | 190,8 | 281,5 | 253,1 | 321,7 | 421,3 |
| L9 | 3,5 | 4 | 3,5 | 4 | 4 | 7 | 4 | 7 | 7 | |
| 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 | - | - |
| | A, B | 55,5 | 71,5 | 55,5 | 88,1 | 71,5 | 131,3 | 88,1 | 131,3 | 156 |
| L11 | C | 59 | 76 | 59 | 93,1 | 76 | - | 93,1 | - | - |
| | A, B | 76,5 | 101,5 | 85,5 | 113,1 | 116,5 | 188,8 | 145,6 | 202,3 | 231 |
| L12 | C | 80 | 106 | 89 | 118,1 | 121 | - | 150,6 | - | - |
| | L13 | 42 | 60 | 42 | 90 | 60 | 130 | 90 | 130 | 180 |
| L14 | 42 | 60 | 42 | 90 | 60 | 130 | 90 | 130 | 180 | 180 |

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