

HarmonicPlanetary® High-performance Gear Heads for Servo Motors

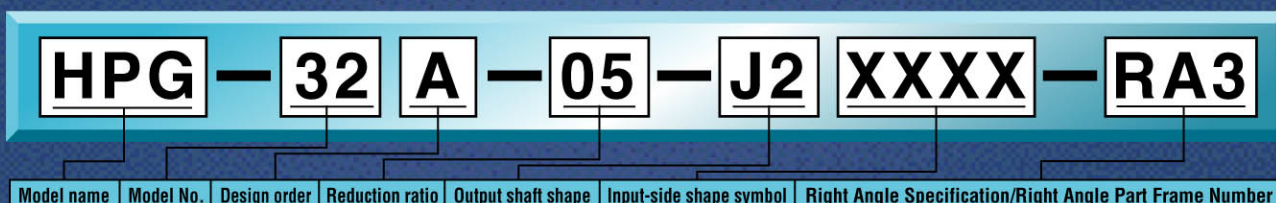
## HPG-RA Right Angle Type



**The HPG-RA Right Angle Type** is now added to HarmonicPlanetary, planetary reduction gears for high-precision, high-stiffness servomotors, providing a wider range of variations.

### Right Angle Type Specifications

#### MODEL



#### Rating Table (Provisional Value)

Model	Reduction rate	Output torque ※1		Average load torque ※2		Peak torque ※3 on start/stop		Instantaneous ※4 Max. torque		Input speed		Weight ※7	
		N m	kgfm	N m	kgfm	N m	kgfm	N m	kgfm	Permissible max. r/min ※5	Permissible ave. r/min ※6	Shaft output kgf	Flange output kgf
32	5	66	6.7	150	15	150	15.3	650	66	6000	1500	12	11
	11	88	9.0	170	17	300	31						
	15	92	9.4	170	17								
	21	98	10.0	170	17								
50	5	170	17	340	35	400	41	1850	189	4500	RA3:1500 RA5:1300	RA3:21 RA5:27	RA3:18 RA5:24
	11	200	20	400	41	850	87					RA3:22	RA3:19
	15	230	24	450	46							RA5:28	RA5:25
	21	260	27	500	51								
	33	270	28	500	51								
	45	270	28	500	51								
65	5	400	41	400	41	400	41	4500	460	3000	1300	56	46
	12	600	61	960	98	960	98					60	50
	15	730	75	1200	122	1200	122						
	20	800	81	1500	153	1600	163						
	25	850	87	1500	153	2000	204						

- ※1 Output torque set based on the life of LB10 = 20000 hours when input speed is 3000 rpm, which is the rated rotational speed of ordinary servo motors. Use it as a guide for steady operation. Models 50 and 65 are set at 2000 rpm as the rated speed.
- ※2 A maximum tolerance of average load torque calculated based on a load torque pattern (page 24). A life of 2000 hours or more is a criterion when operated at an input speed of 2000 rpm.
- ※3 Maximum tolerance of torque applied on start and stop in operation cycles.
- ※4 Maximum tolerances for shock torque in an emergency stop and for external shock torque. Always operate within these ranges. Calculate permissible frequency in model selection and check whether or not they meet operating conditions.
- ※5 Maximum permissible input speed in operation modes other than continuous operation.
- ※6 It provides a guide for permissible average input speed for continuous operation and operation pattern, although the values may vary depending on the operating environment and operating conditions. Limitation is provided in terms of heat generated in the reduction gears.
- ※7 The values include an input shaft coupling, motor flange and other parts.
- ※ The symbols RA3 and RA5 in the Input Speed and Weight columns indicate the size of the orthogonal axis part.

#### Medium Capacity Matching Table

For intermediate capacity servomotors, it can be connected to motors with the following capacities by using combinations of HPG-32, 50, and 65.

HPG-32A + RA3  
HPG-50A + RA3

Rated speed of the connected motor is 2000r/min:

Reduction ratio \ Motor Capacity (W)	5	11 (12)	15	21 (20)	(25)	33	45
1000	32	32	32	32		50	50
1500	32	32	32	50		50	50
2000	32	32	50	50		50	
2500	32	50	50	50			
3000	32	50	50	50			
3500	50	50	50	65	65		
4000	50	50	50	65	65		
4500	50	50	50	65	65		
5000	50	50	65	65	65		
7500	65	65	65	65	65		

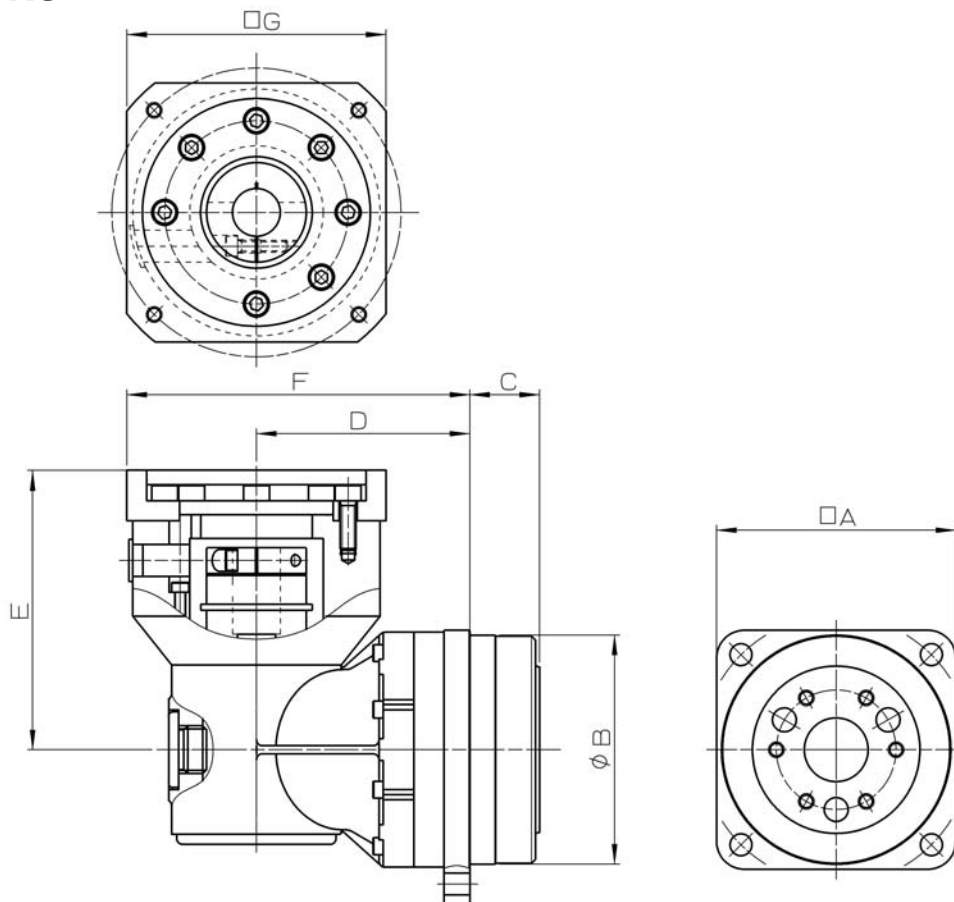
HPG-50A + RA5  
HPG-65A + RA5

Rated speed of the connected motor is 3000r/min:

Reduction ratio \ Motor Capacity (W)	5	11 (12)	15	21 (20)	(25)	33	45
1000							
1500	32	32	32	32		50	50
2000	32	32	32	50		50	50
2500	32	32	50	50		50	
3000	32	32	50	50		50	
3500	32	50	50	50			
4000	32	50	50	50			
4500	32	50	50	50			
5000	50	50	50	50			
7500	50	65	65	65	65		

※ The reduction ratios in ( ) are used for Model 65 only.

### ■ DIMENSIONS



Model	□A	φB	C	D	E <sup>Note 1)</sup>	F	□G
32	□120	φ11 5h7	35	107	140/175	172/197/217	130/180/220
50	□170	φ16 5h8	53	144	168/200	209/234/254	130/180/220
65	□230	φ22 0h8	57	226	168/200	291/316/336	130/180/220

Note 1: Left and right values in the column

Left: For installed motor shaft length of up to 81mm  
Right: For installed motor shaft length of up to 116mm

※ The F and □G dimensions vary depending on the dimension of the flange angle of the installed motor.  
For motors with a special flange angle, please contact us.



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