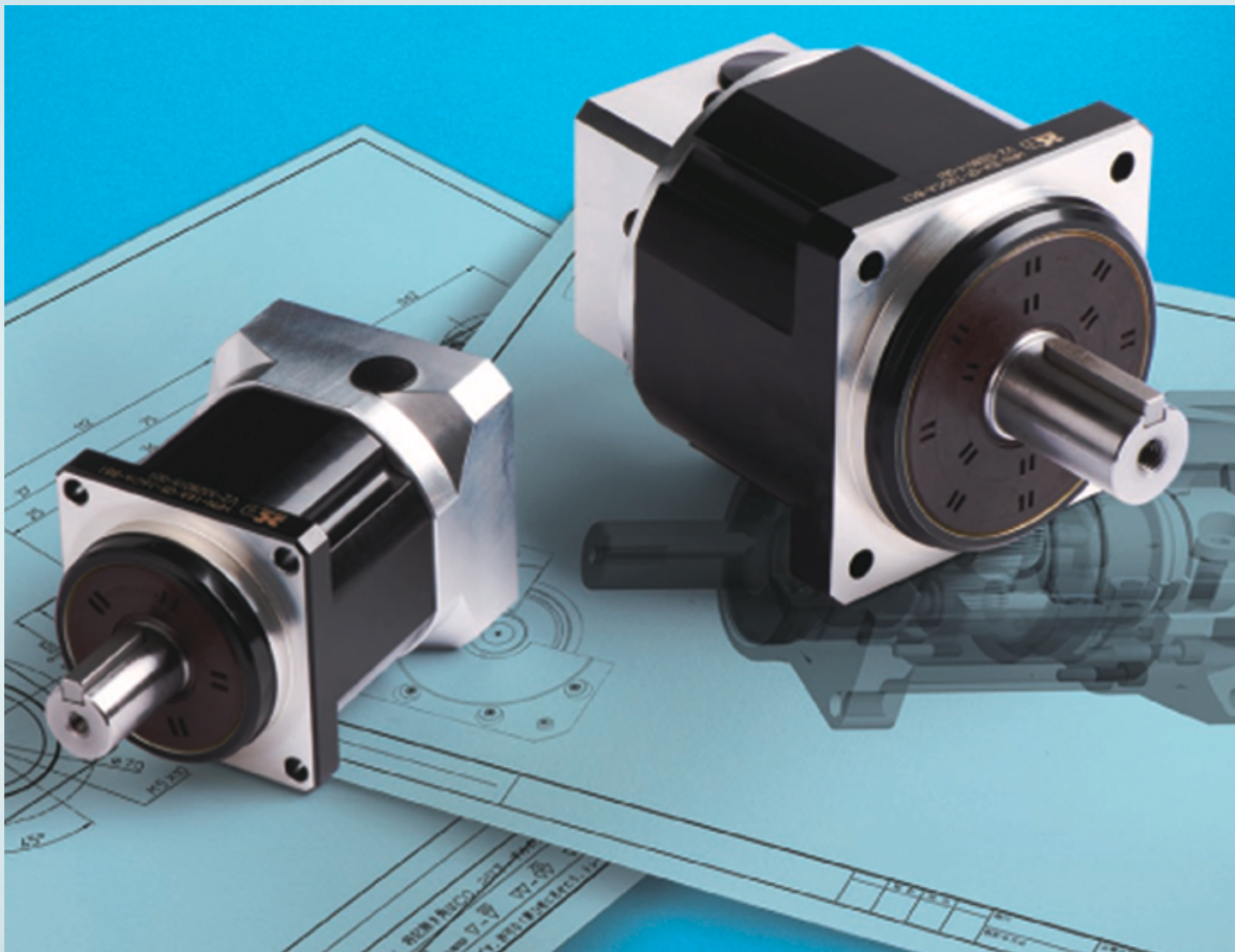


# Harmonic Planetary<sup>®</sup>

High Performance Gearheads for Servomotors

**HPN Series Precision Planetary Gearheads**  
**Affordable Precision**



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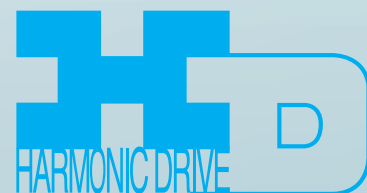
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# HPN Series Precision Planetary Gearheads

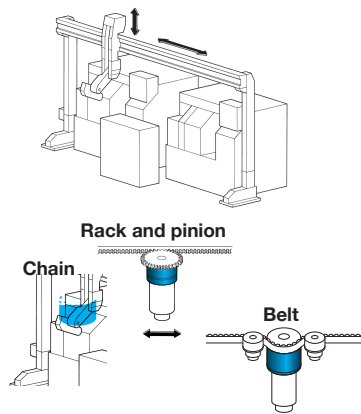
## Affordable Precision

The HPN precision planetary gearhead delivers both precision and value. The compact and light weight design incorporates helical gears for quiet performance and long life. These gearheads are available with short leadtimes and are designed to couple to any servo motor using our Quick-Connect coupling.

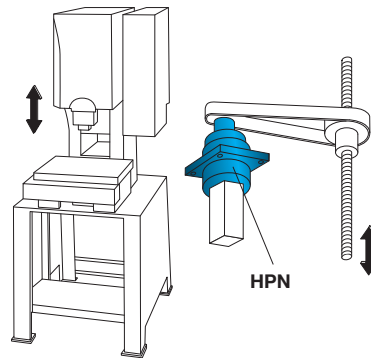
This new series of gears carry the reputation for quality and reliability for which Harmonic Drive™ products are known throughout the world. HPN gearheads are suitable for use in a wide range of applications for automation, medical and packaging equipment as well as machine tools and robots.

### Application Examples

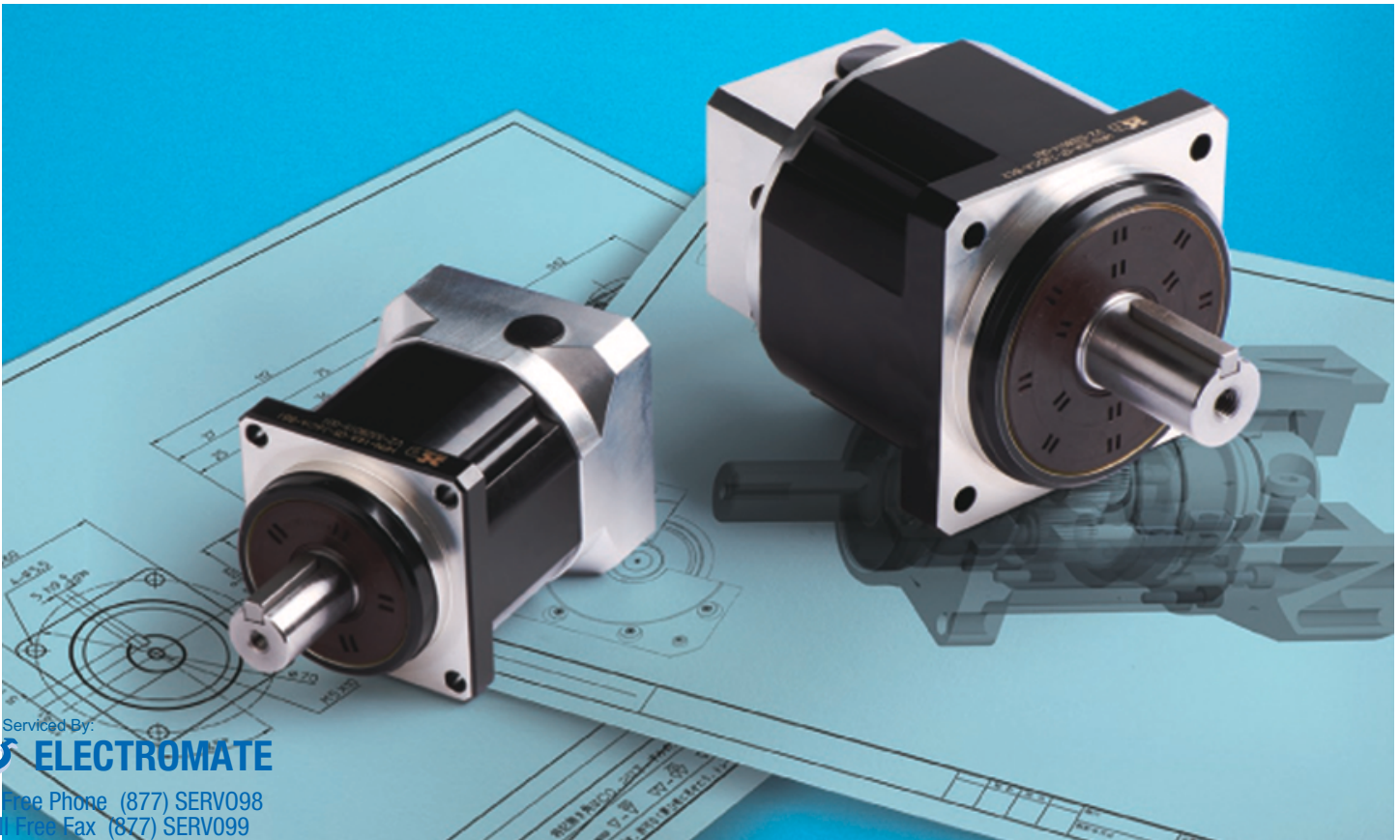
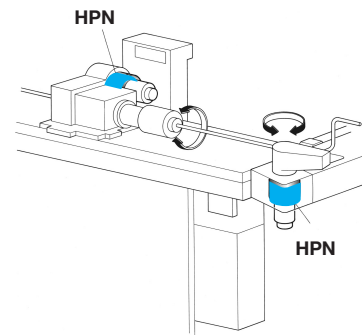
Machine Tool Gantry Robot



Power Press



Pipe Bending Machine



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## 1. Ordering Code

**HPN - 14 A - 05 - J6 AA-AB1**

Model Name	Model No.	Design Revision	Reduction Ratio	Output Shaft Options	Input Configuration
HPN	11,14, 20,32,40	A	4,5,7,10, 13,21,31	J 6 : With a key and center tapped hole J 8 : Smooth shaft with center tapped hole	This code represents the motor mounting configuration. (This code differs depending on the motor to be used. Please contact an applications engineer at Harmonic Drive for the mounting codes of motors not listed in the matching table.)

Speak with an applications engineer or check our website for specifications

## 2. Performance

Size	Number of Stages	Reduction Ratio	Backlash	Noise *
			arc-min	dB
11	1	4	5 or less	56 or less
		5		
		7		
		10		
	2	16	7 or less	
		20		
30				
14	1	3	5 or less	58 or less
		4		
		5		
		7		
		10		
	2	13	7 or less	
		21		
		31		
20	1	3	5 or less	60 or less
		4		
		5		
		7		
		10		
	2	13	7 or less	
		21		
31				
32	1	3	5 or less	63 or less
		4		
		5		
		7		
		10		
	2	13	7 or less	
		21		
31				
40	1	3	5 or less	65 or less
		4		
		5		
		7		
		10		
	2	13	7 or less	
		21		
		31		

\* The above noise values are reference values.

### 3. Rating Table

Please contact an applications engineer with any questions about the specifications, comparisons to other manufacturers products or any other topic.

Size	Number of Stages	Reduction Ratio	Rated Torque <sup>(1)</sup>	Repeated Peak Torque <sup>(2)</sup>	Momentary Peak Torque <sup>(3)</sup>	Rated Input Speed <sup>(4)</sup>	Maximum Input Speed <sup>(5)</sup>	Allowable Radial Load <sup>(6)</sup>	Allowable Axial Load <sup>(7)</sup>
			Nm	Nm	Nm	rpm	rpm	N	N
11	1	4	14	14	40	3,000	10,000	240	280
		5	14	16	40	3,000	10,000	260	320
		7	11	11	40	3,000	10,000	280	360
		10	9	9	40	3,000	10,000	320	420
	2	16	18	24	40	3,000	10,000	360	460
		20	22	24	40	3,000	10,000	400	560
30		25	26	40	3,000	10,000	480	640	
14	1	3	22	25	89	3,000	6,000	380	340
		4	28	50	110	3,000	6,000	420	380
		5	29	50	107	3,000	6,000	450	410
		7	30	37	100	3,000	6,000	510	480
		10	18	18	79	3,000	6,000	570	580
	2	13	30	43	106	3,000	6,000	630	630
		21	30	50	99	3,000	6,000	740	780
		31	30	38	101	3,000	6,000	840	900
20	1	3	51	74	226	3,000	6,000	830	900
		4	80	130	256	3,000	6,000	920	1,100
		5	80	149	256	3,000	6,000	1,000	1,200
		7	80	113	256	3,000	6,000	1,100	1,400
		10	54	54	216	3,000	6,000	1,230	1,600
	2	13	80	130	256	3,000	6,000	1,350	1,850
		21	80	147	256	3,000	6,000	1,600	2,100
		31	80	113	256	3,000	6,000	1,800	2,200
32	1	3	153	254	625	3,000	6,000	1,800	2,000
		4	198	376	625	3,000	6,000	1,900	2,300
		5	200	376	625	3,000	6,000	2,000	2,500
		7	200	376	625	3,000	6,000	2,300	2,900
		10	185	185	625	3,000	6,000	2,600	3,200
	2	13	200	376	625	3,000	6,000	2,900	3,600
		21	200	376	625	3,000	6,000	3,400	3,800
		31	200	376	625	3,000	6,000	3,900	3,800
40	1	3	440	752	1,137	3,000	6,000	2,800	2,700
		4	460	752	1,265	3,000	6,000	3,100	3,000
		5	480	752	1,265	3,000	6,000	3,400	3,300
		7	510	752	829	3,000	6,000	3,800	3,800
		10	480	509	829	3,000	6,000	4,200	4,200
	2	13	530	752	823	3,000	6,000	4,500	4,500
		21	620	752	1,029	3,000	6,000	5,000	5,000
		31	700	752	1,097	3,000	6,000	5,500	5,400

(1) The torque that will have a 20,000 hour life at the rated input speed.

(2) The maximum torque during acceleration and deceleration.

(3) The instantaneous maximum torque in an emergency stop. (Maximum of 1000 emergency stops)

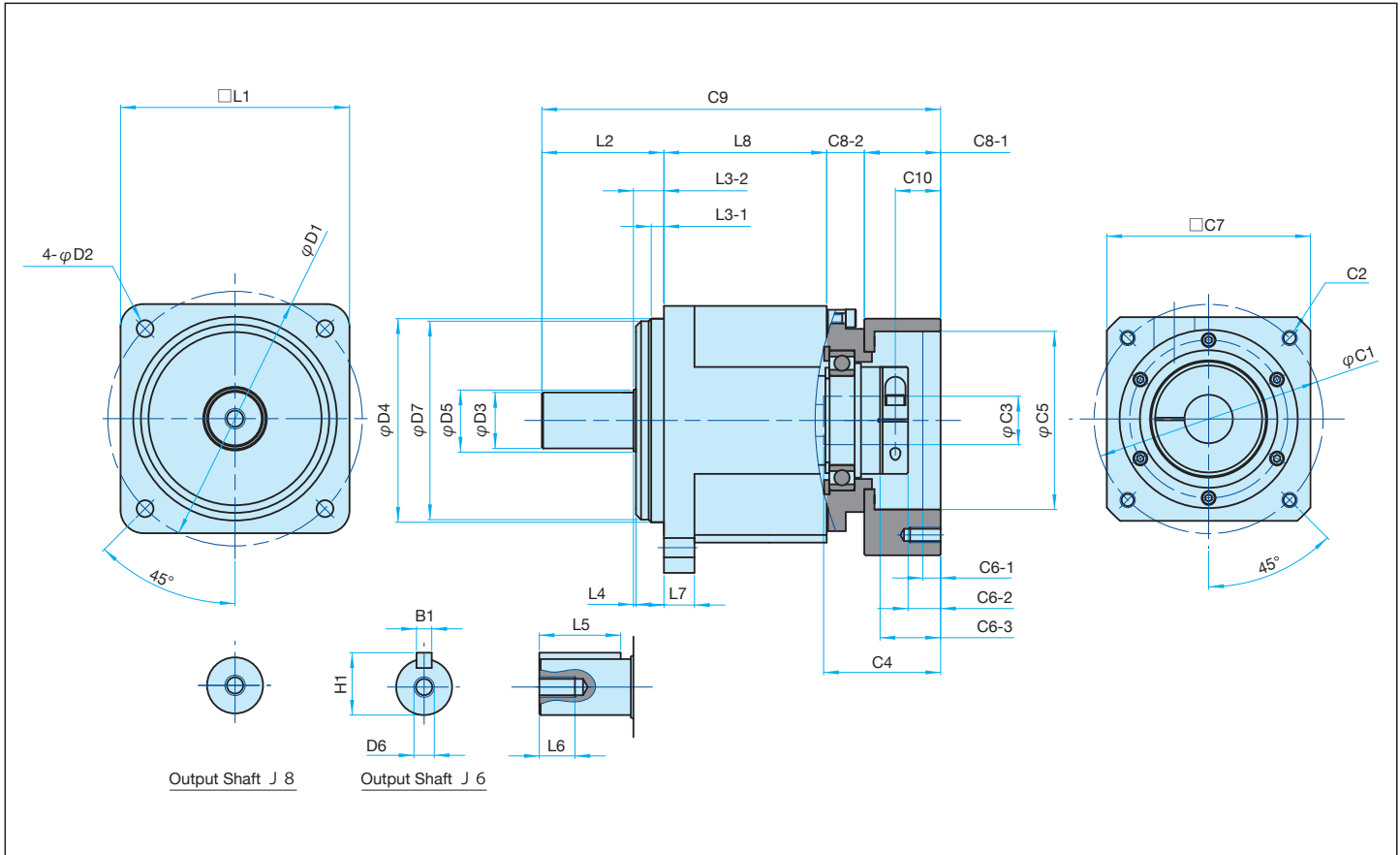
(4) The maximum average input speed.

(5) The instantaneous maximum input speed.

(6) The load at which the output bearing will have 20,000 hour life at the rated input speed. (Axial load = 0 and radial load point is in the center of the output shaft.)

(7) The load at which the output bearing life will be 20,000 hours at the rated input speed. (Radial load = 0 and axial load point is in the center of the output shaft.)

### 4. Dimensions (Common for both single-stage and double-stage)

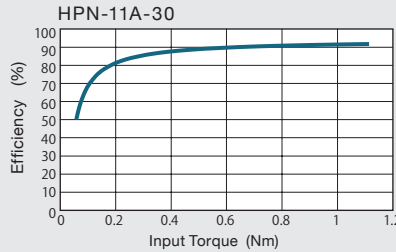
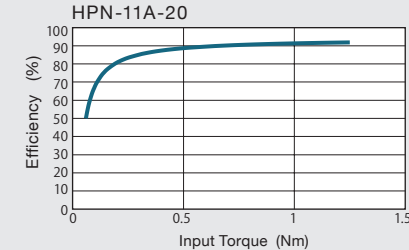
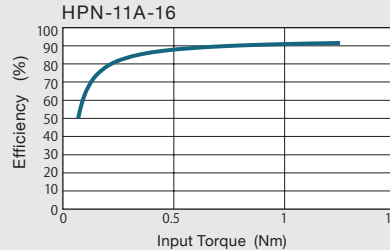
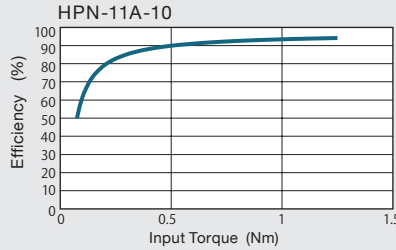
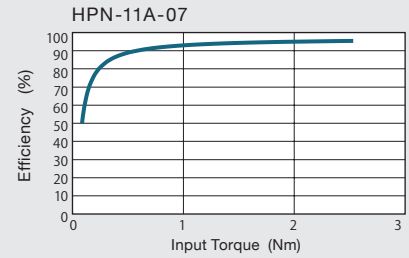
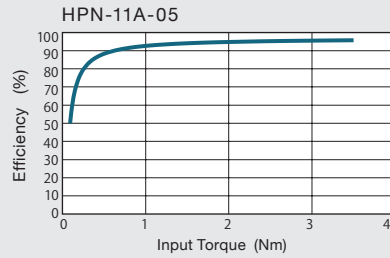
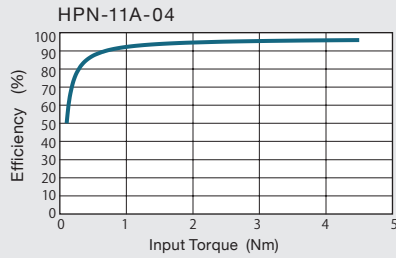


Symbol	#11	#14	#20	#32	#40
D1	50	70	100	130	165
D2	3.4	5.5	6.6	9	11
D3	13h7	16h7	22h7	32h7	40h7
D4	35h7	50h7	80h7	110h7	130h7
D6	M4	M5	M8	M12	M16
D7	None	49	78	107	128
L1	42	60	90	115	142
L2	26	37	48	65	97
L3-1	2.5	5	5	5	5
L3-2	4	12	12	19	18
L5	18	23	32	44	70
L6	8	10	14	20	28
L7	9	8	12	20	35
L8	56	44	64	78.5	161

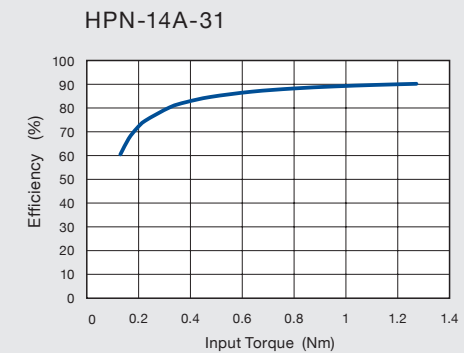
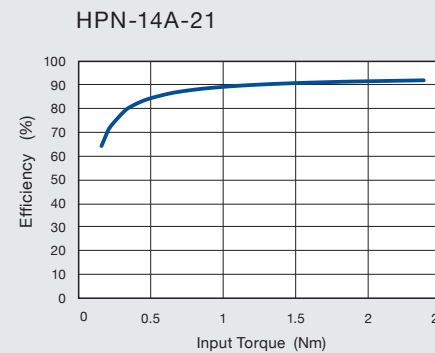
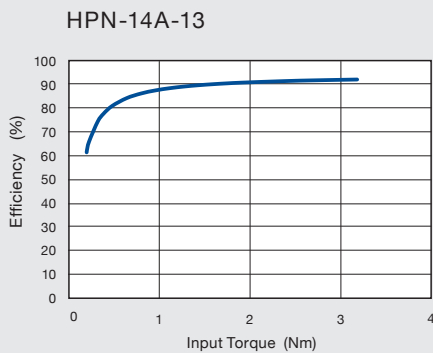
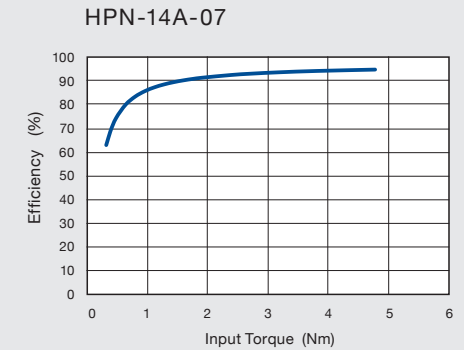
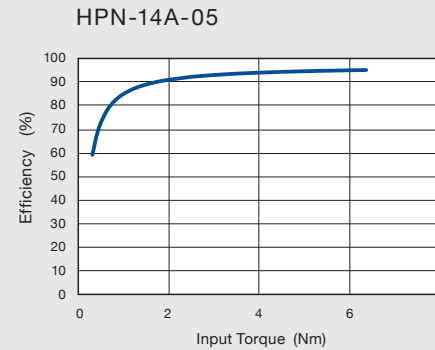
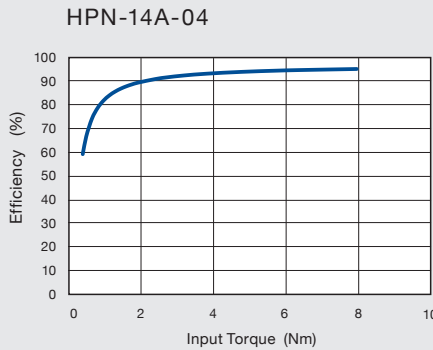
Symbol	#11	#14	#20	#32	#40
C1	Dimensions C1 through C10 vary depending on the motor to be used. Please contact the Sales Division for details.				
C2					
C3					
C4					
C5					
C6-1					
C6-2					
C6-3					
C7					
C8-1					
C8-2					
C9					
C10					
B1	5h9	5h9	6h9	10h9	12h9
H1	13	18	24.5	35	43

## 5. Efficiency

### HPN-11A



### HPN-14A



Efficiency measurement conditions

- Input speed: 3,000 rpm
- Ambient temperature: 25°C
- Efficiency values indicated in graphs are average values.

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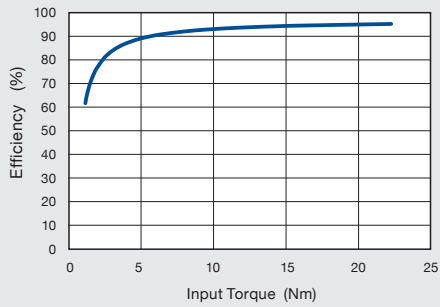
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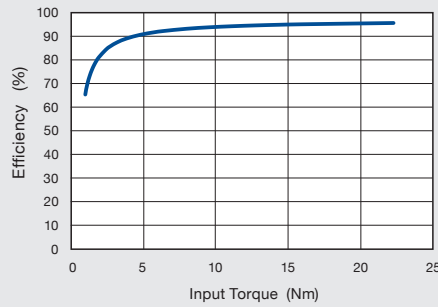
## 5. Efficiency

### HPN-20A

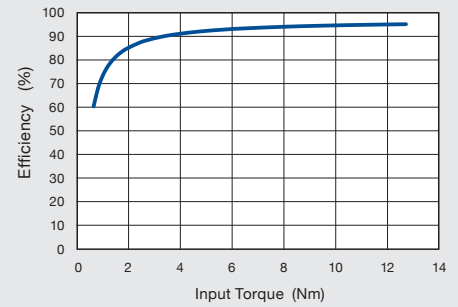
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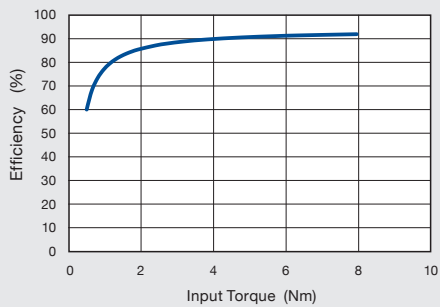
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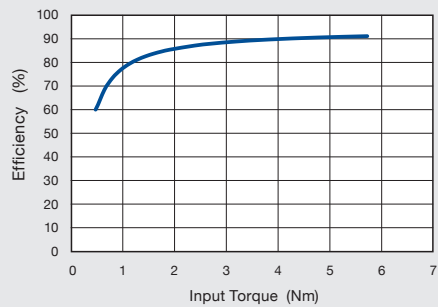
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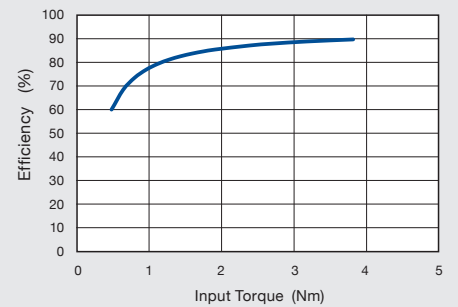
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HPN-20A-21

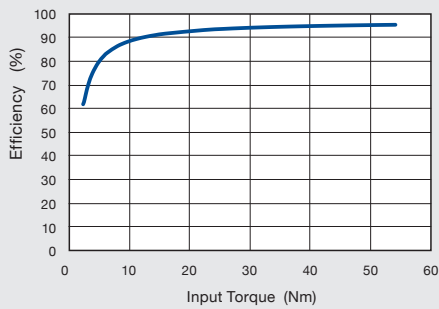


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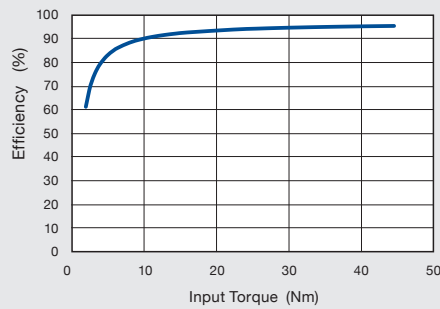


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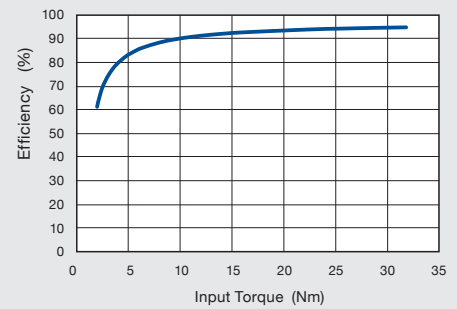
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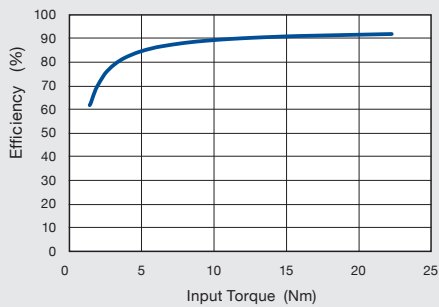
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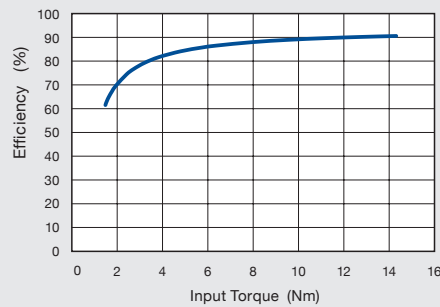
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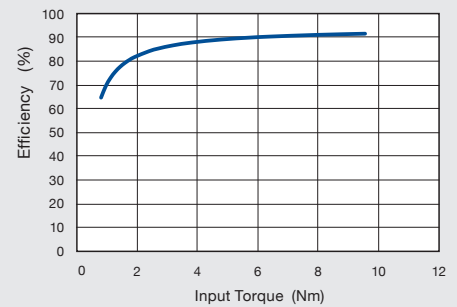
HPN-32A-13



HPN-32A-21



HPN-32A-31



Efficiency measurement conditions

- Input speed: 3,000 rpm
- Ambient temperature: 25°C
- Efficiency values indicated in graphs are average values.

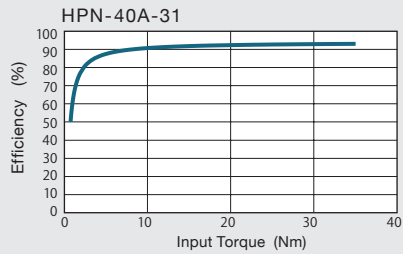
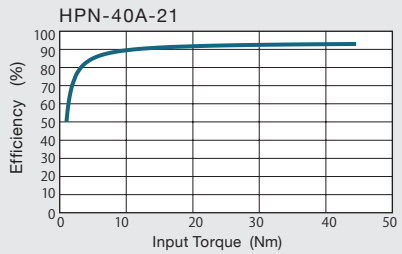
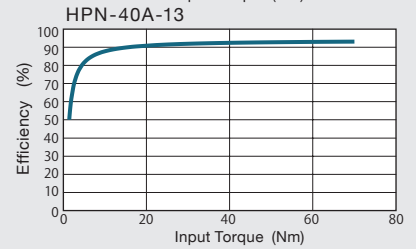
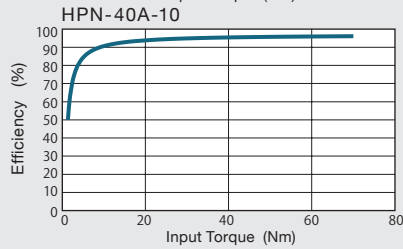
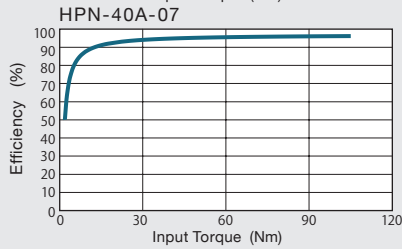
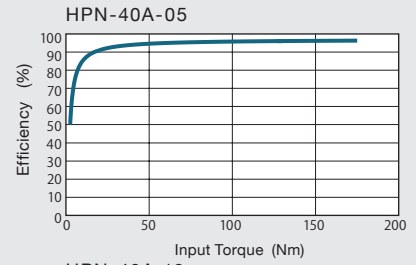
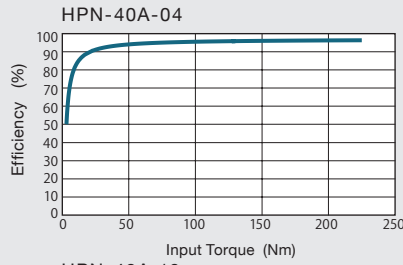
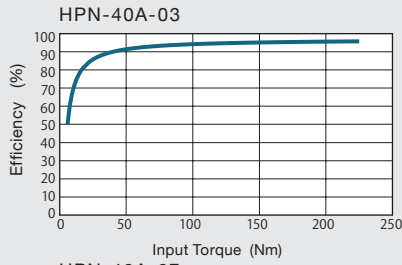
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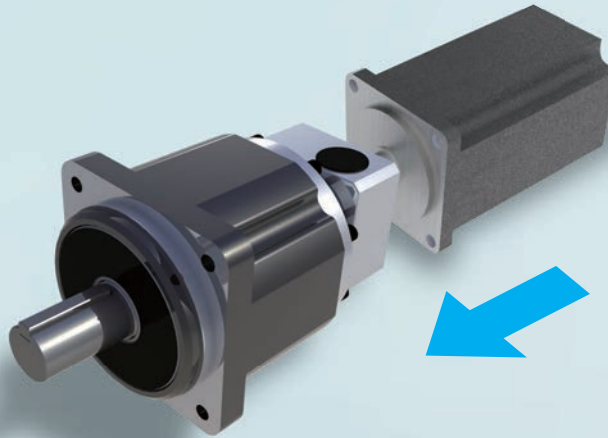
## 5. Efficiency

### HPN-40A



Efficiency measurement conditions

- Input speed: 3,000 rpm
- Ambient temperature: 25°C
- Efficiency values indicated in graphs are average values.



High-precision actuators can be created with a simple installation of a servomotor from the manufacturer of your choice!

Please speak with an application engineer to assist in ordering the proper gear for your motor.



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