

# Hollow Shaft Motor



Rotary unit for optical parts

## Hollow Shaft Motor

### Summary

- Coreless type hollow motor, can rotate from super low speed to high speed.
- Design and manufacture the mounting flange as being able to put on the optical components.
- High precision jitter accuracy is realized with PLL (phase) control driver.
- Can correspond various sensor · sensorless. (Supply dedicated driver)

### Feature

- As mechanism of the motor, flat type for thin type, cylindrical type for high speed specification, Can selected with your application.
- Supply including attachment of light source and optical parts.
- Depend optical parts, the rotor shape can be changed. (from one article to customize)
- Can be mounted on the tip of the robot by making it smaller and lighter.
- Built-in (direct attachment) of optical encoder, realized high precision and high resolution positioning. (1 second or less)
- Adopting the digital servo driver, can be easily controlled from the PC, and possible connect with.
- For motor without encoder, holl sensors, prepare sensorless driver. (However, about 1500 rpm or more)
- Sensorless driver specification, improvement of reducing the number of lines.

### Application

Laser measuring instrument, laser processing machine (cutting, welding, drilling, microfabrication etc.), spectrometer, distance measuring device (LIDAR), medical measurement etc.

### Motor model format

HM
C
AA
BB
H
E18
—
XXX

|
|
|
|
|
|
|
|

1
2
3
4
5
6
7

Mark	No	Classification	Description
1	HM	HM	Hollow Motor Type (Hollow Shaft)
2	C	C	Cylinder
		F	Flatness
		I	Iron core
3	AA	Value	Optical size · Hollow diameter[mm]
4	BB	Value	Motor length[mm] Flange, shaft length including cover

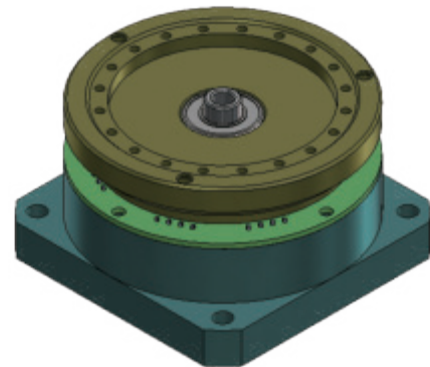
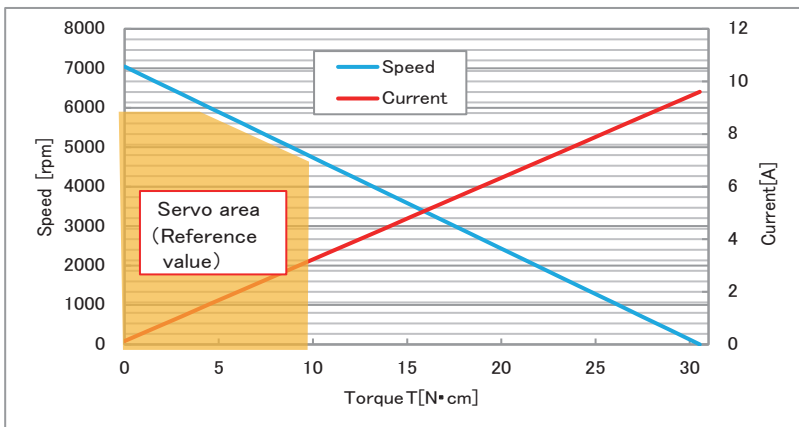
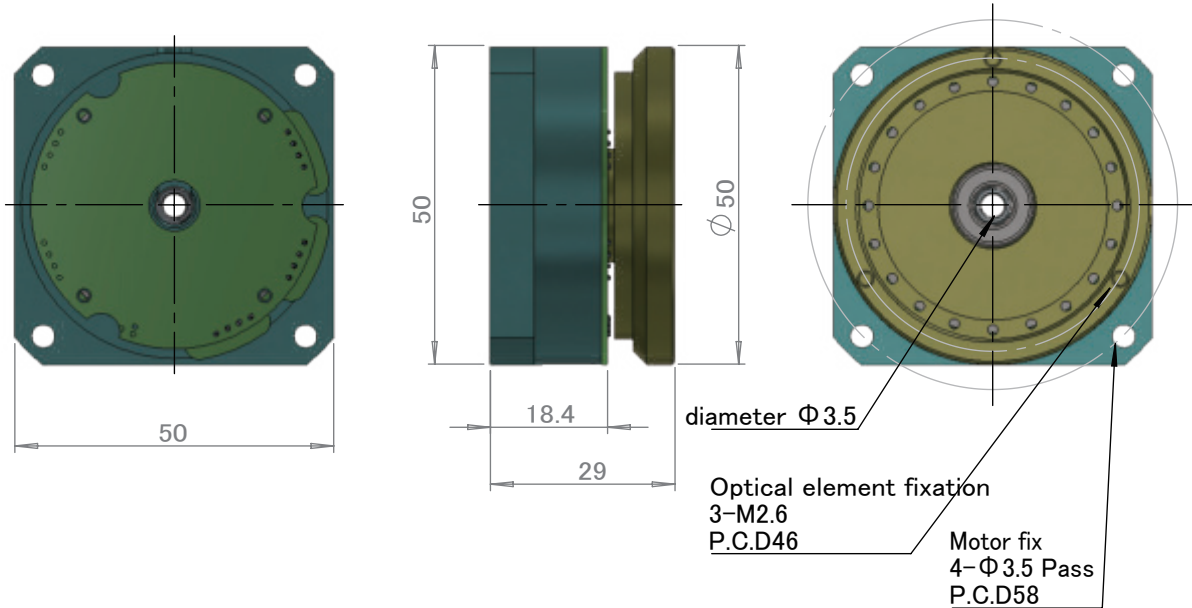
Mark	No	Classification	Description
5	H	L	Slow speed Speed[rpm]
		M	Medium speed 1000~6000
		H	high speed 5000~
6	E	E * *	Encoder Sensor type
		F * *	FG sensor 12pls F12
		Z1	PG output 1pls Z1
7	XXX	Value	Rotor Shape customize, serial No.(001~999)

### Standard product list

Motor model number	Motor mechanism	Hollow diameter[mm]	Outer Diameter[mm]	Length[mm]	Speed[rpm]	Page
HMF0429ME10	Flatness	4	50	29	6,600	2
HMF0931HF12		9	55	31	12,000	3
HMF2240ME20		22	82	40	3,600	4
HMC2473HZ1	Cylinder	24	98	73	14,000	5
HMC2659HZ1		26	73	59	14,000	6
HMC2850HE18		28	75	50	9,000	7

- ※ We recommend installing holder (optical parts, etc.) and adjusting the balance if over thousand rpm.)  
(Balance correction will be require cost)
- ※ We propose and select the suitable driver (phase · accumulation pulse, analog etc) according to customer's application.
- ※ Possible to change shape of the motor shaft and incorporate the optical parts directly into a compact shape.
- ※ We change the bearing into air bearing as the large diameter, and guarantee the high rotation accuracy  
(Non-Repeatable Run-out).

## HMF0429(L,M,H) E10 Type (Flat type: medium to high speed type)



- Weight: 130g
- Load: 50g

### Motor Specification

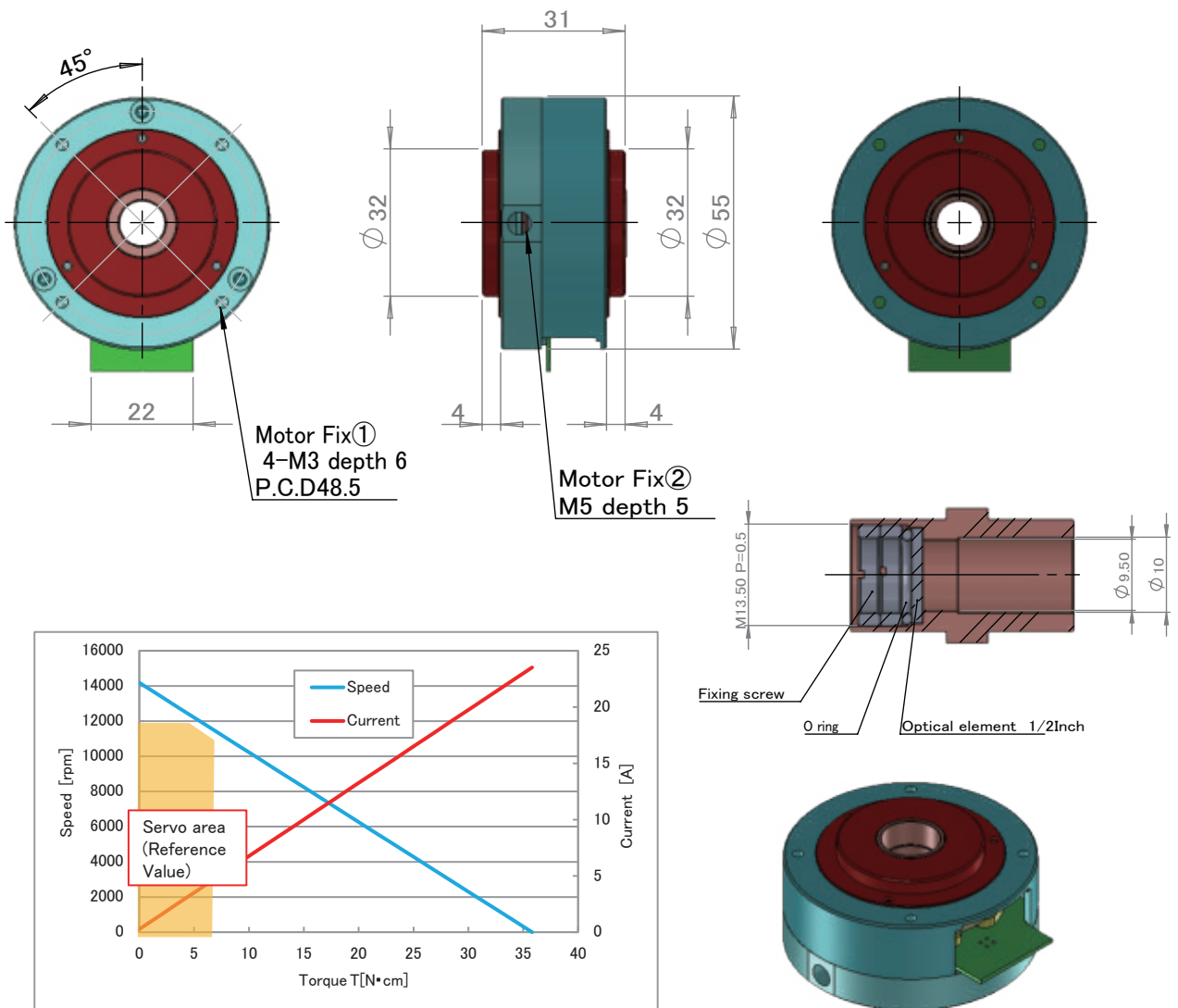
	Multiplier			
	× 1	× 4	× 20	× 200
モータ型番	HMF0429HE10	HMF0429ME10	HMF0429LE10	HMF0429LE10
Resolution[CPR]	1,080	4,320	21,600	216,000
Resolution[deg/pls]	0.33	0.083	0.017	0.0017
MAX Speed[rpm]	6,600	6,600	5,500	550
Torque constant[N·cm/A]	1.6			
Power Supply	DC24V (Reference : 6,000rpm、0.3A)			

### <Feature>

- Motors used for **LIDAR application**.
- Integrated **analog driver**(Variable speed with voltage).
- Adopte compact optical encoder,output by free multiplication.

# Hollow Shaft Motor

HMF0931(M,H) F12 Type (Flat type: High speed type)



## Motor Specification

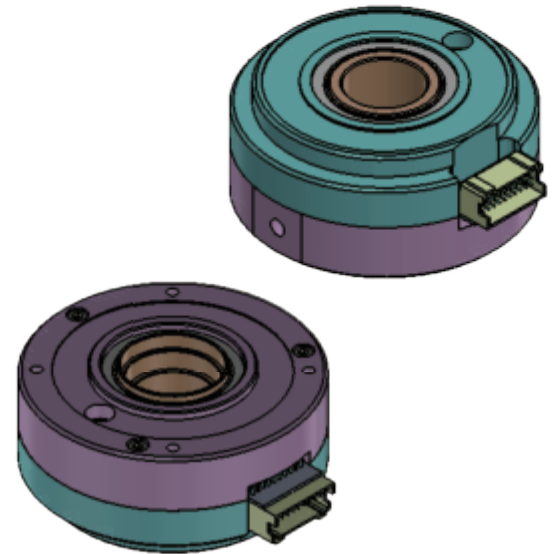
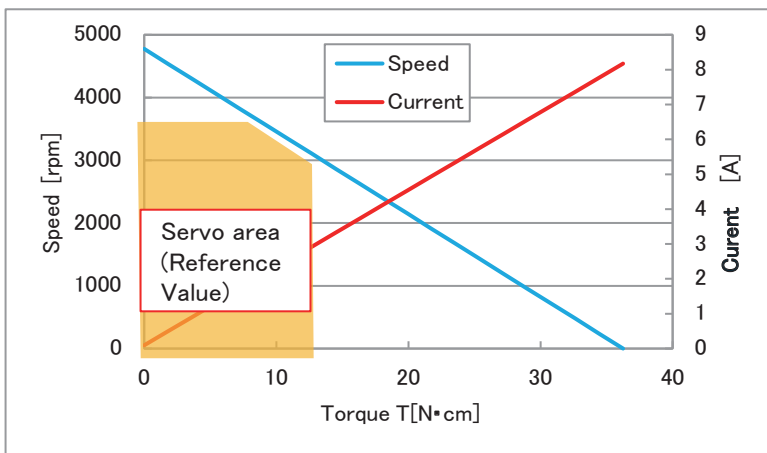
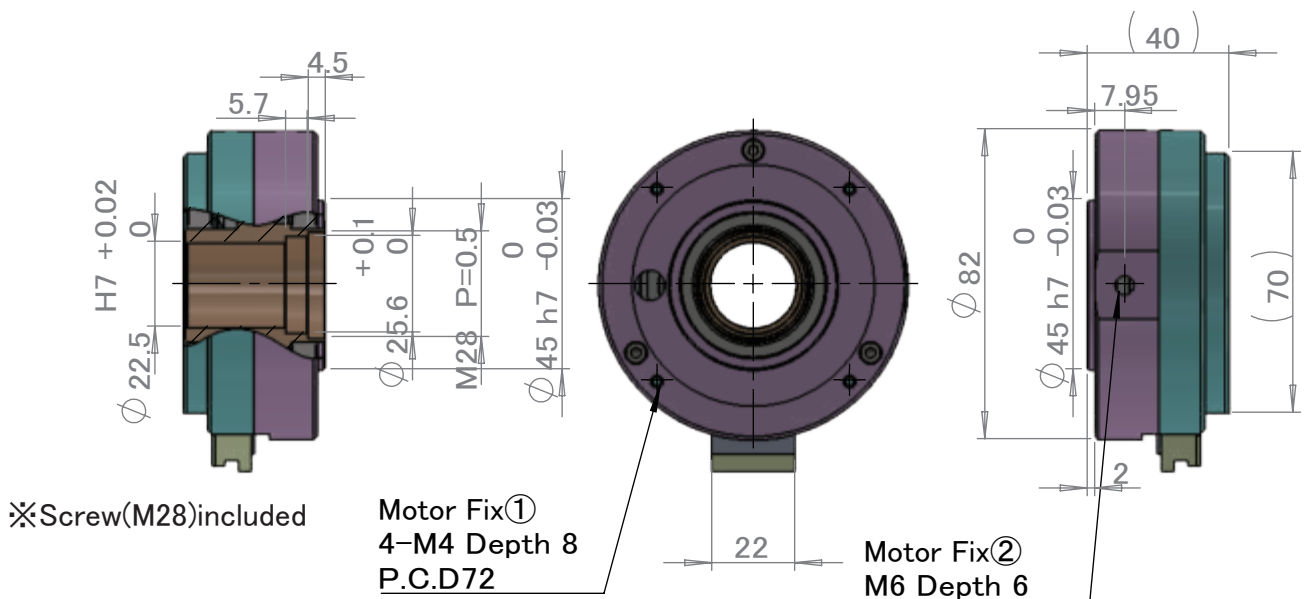
	Medium speed ↔ High speed
Motor Type	HMF0931MF12      HMF0931HF12
MAX Speed[rpm]	6,000      12,000
Torque constant[N*cm/A]	2.4      1.2
FG output[pls/r]	12
Power supply	DC24V (Reference 6,000rpm、0.3A)

### <Feature>

- Hollow shaft motor with **measures against grease scattering** during high speed rotation.
- High speed rotation with low current, low vibration, low noise.
- Built-in **half-inch optical element** realizes thin type.
- Mounted on optical surface plate with side M6 screw hole.
- **Low jitter** is guaranteed with a dedicated driver for PLL(phase)control.

# Hollow Shaft Motor

## HMF2240(L,M) E20 Type (Flat type: Low to medium speed type)



- Weight : 400g
- Load : 70g

### Motor Specification

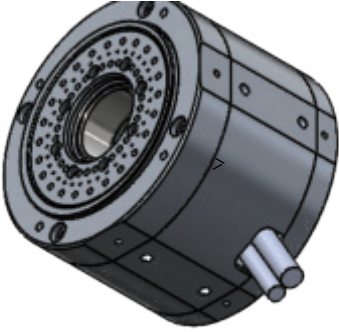
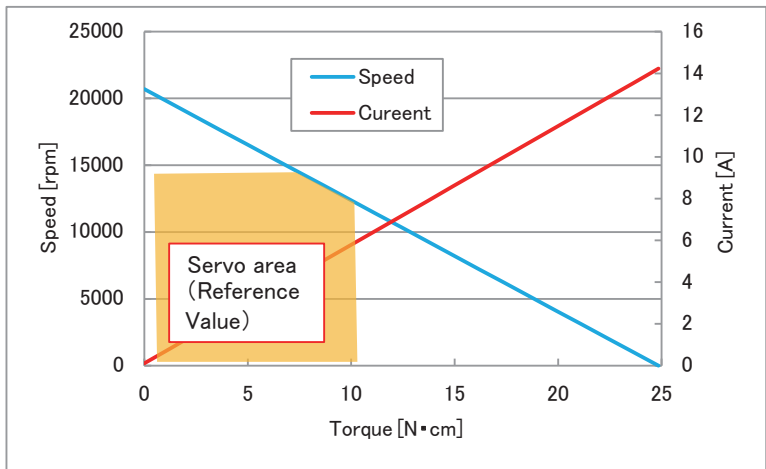
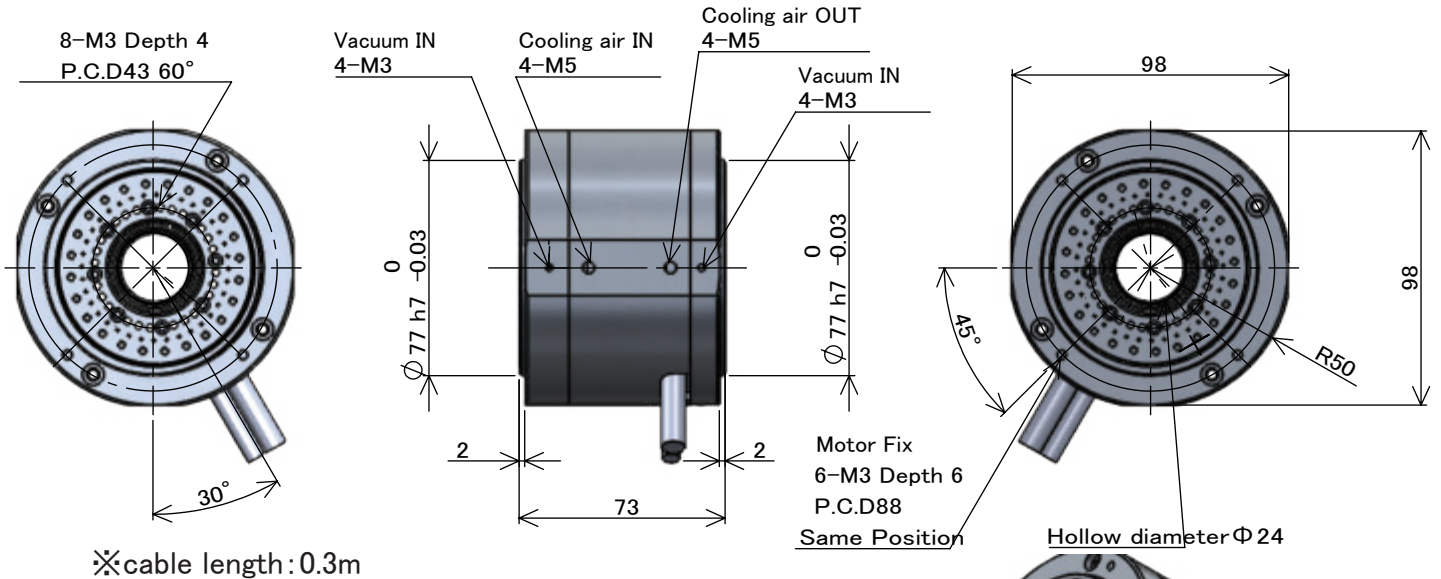
	Multiplier			
	× 1	× 4	× 20	× 200
Motor Type	HMF2240ME20			HMF2240LE20
Resolution[CPR]	2,000	8,000	40,000	400,000
Resolution[deg/pls]	0.18	0.045	0.009	0.0009
MAX Speed[rpm]	3,600	3,600	3,000	300
Torque constant[N·cm/A]	1.6			
Power supply	24V (Reference : 3,000rpm, 0.8A)			

### <Feature>

- **Realized thin type** of incorporating reflective optical encoder inside
- **One inch optical element** can be mounted inside case with **thickness of 40mm**.
- Mounted on optical surface plate with side M6 screw hole.
- High precision position by combining with a **digital servo driver**.

# Howllo Shaft Motor

HMC2473(M,H) Z1 Type (Cylinder type: High speed type)



- Weight : About 1.5kg
- Load : 150g

## Motor Specification

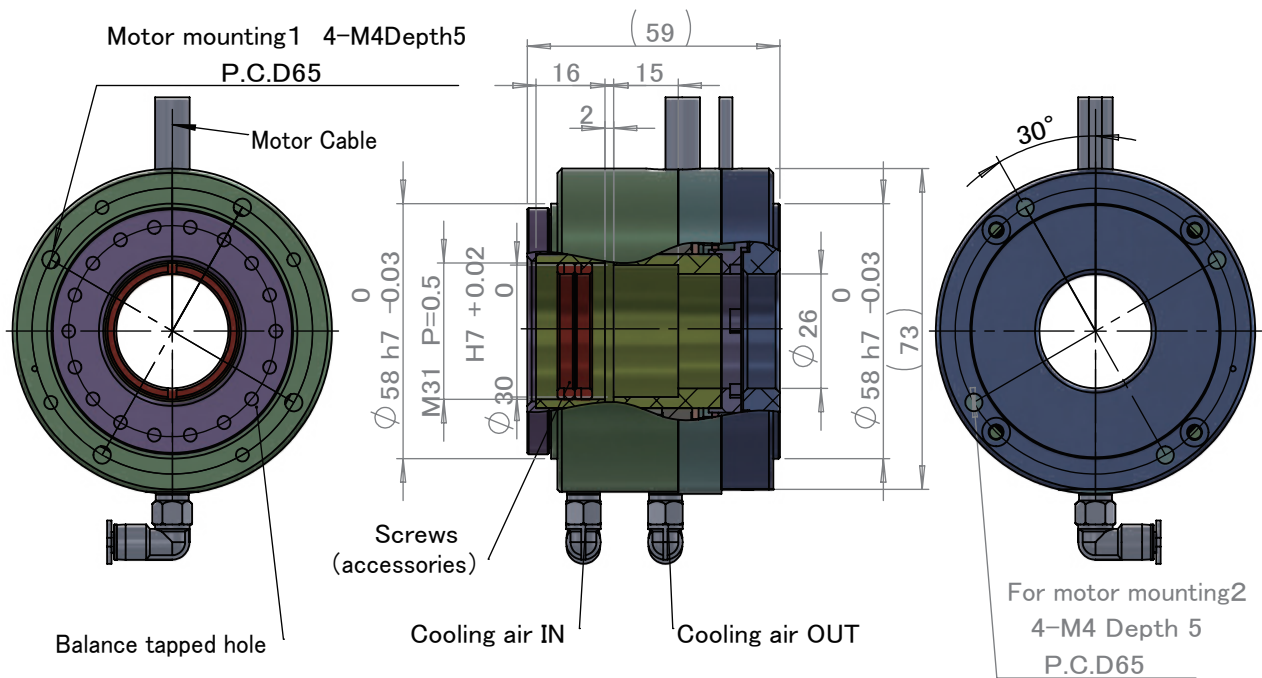
	Medium speed ↔	High speed
Motor Model	HMC2473MZ1	HMC2473HZ1
MAX Speed[rpm]	6,000	14,000
Torque constant[N · cm/A]	2.4	1.8
PG output [pls/r]	1	
Power supply	DC24~48V (Reference : 14,000rpm、3A)	

### <特長>

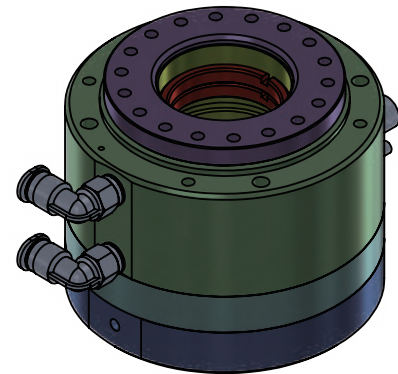
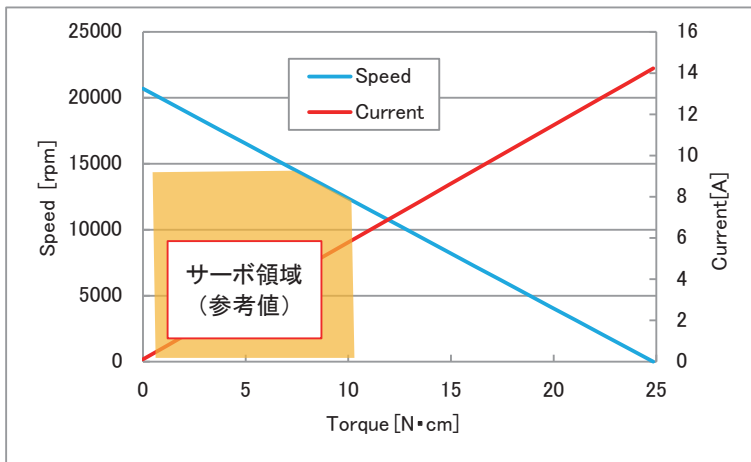
- Supply beam rotator with **two wedge prisms**.
- The phase of wedge prism can be varied in **increments of 10°**
- **Measures against scattering of grease** · With cooling mechanism.
- Ideal for **laser welding applications** at high speed rotation.
- The rotational position can be detected with 1 pulse per cycle (PG output).
- Constant speed is secured by combining **sensorless driver** with PLL (phase).

# Hollow Shaft Motor

HMC2659(M,H) Z1 Type (Cylinder type: High speed type)



※Cable length : 0.3m



•Weight : 580g  
•Load : 50g

## Motor Specification

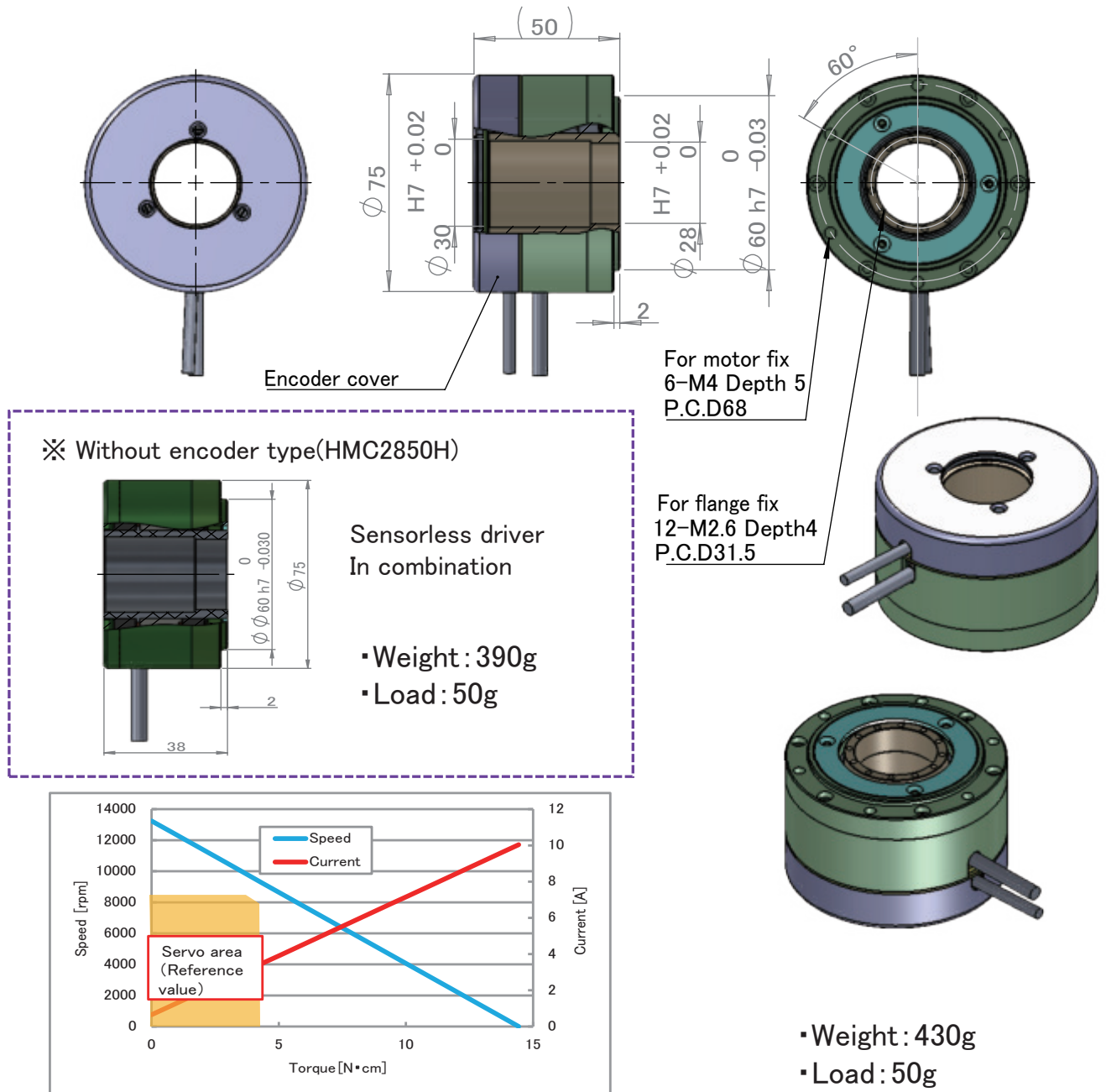
	Medium speed ↔	High Speed
Motor Type	HMC2659MZ1	HMC2659HZ1
MAX Speed[rpm]	6,000	14,000
Torque constant[N·cm/A]	2.4	1.8
PG output [pls/r]	1	
Power Supply	DC24~48V (Reference : 14,000rpm、3A)	

### <Feature>

- 1 inch optical element can be mounted inside the cabine.
- Flange type hollow diameter  $\Phi 30$  possible. (option)
- Measures against scattering of grease · With air cooling mechanism.
- The rotational position can be detected with 1 pulse per cycle output (PG output).

# Hollow Shaft Motor

## HMC2850(M,H) E18 Type (Cylindrical, medium to high speed type)



### Motor Specification

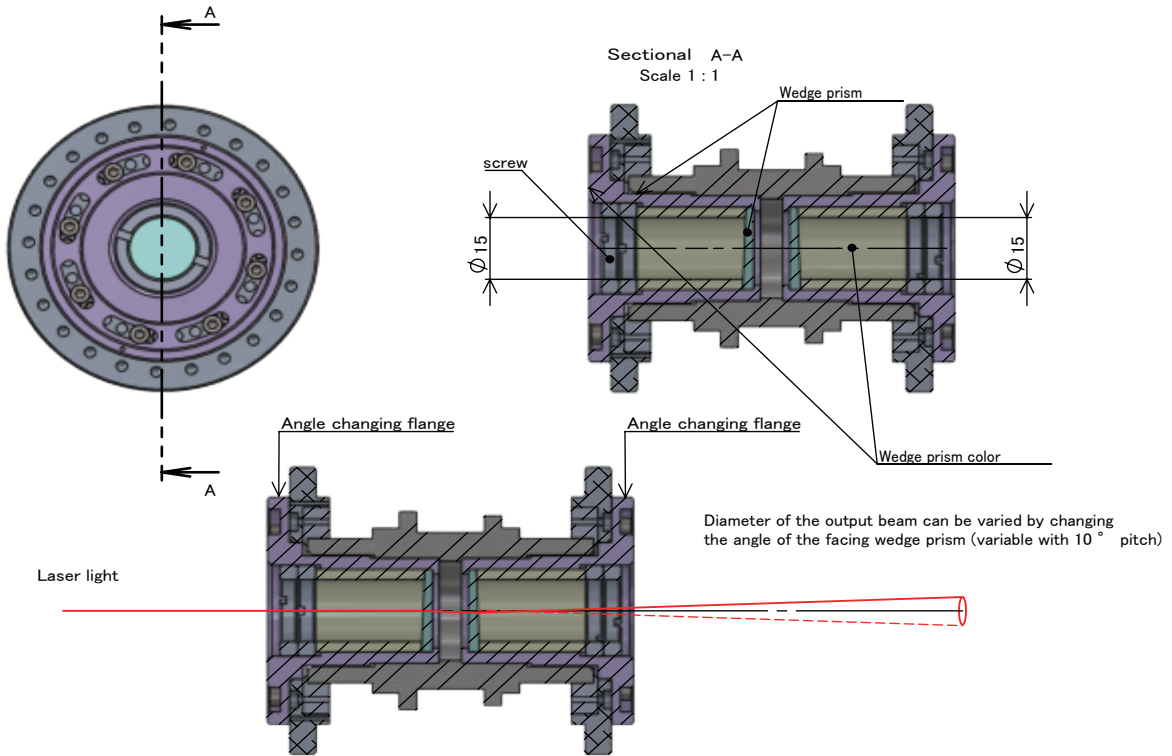
	Medium speed ↔	High speed	Without sensor
Motor Type	HMC2850ME18	HMC2850HE18	HMC2850H
MAX Speed[rpm]	4,000	9,000	14,000
Torque constant[N·cm/A]	3.5	1.5	1.2
Resolution[CPR]	1,800		—
Power supply	DC24~36V (Reference: 9,000rpm, 2A / 14,000rpm, 3A)		

### <Feature>

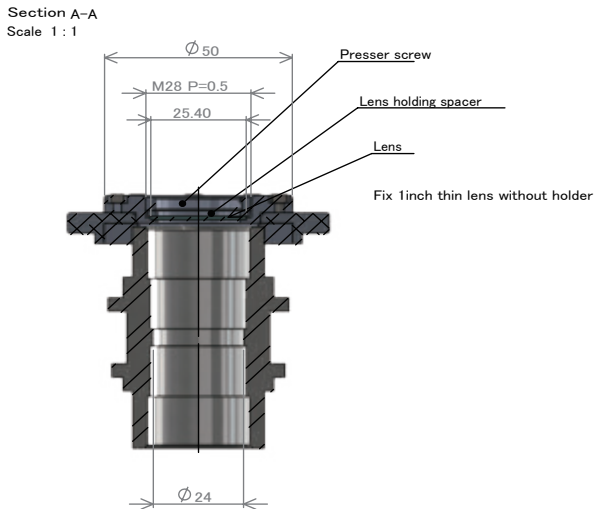
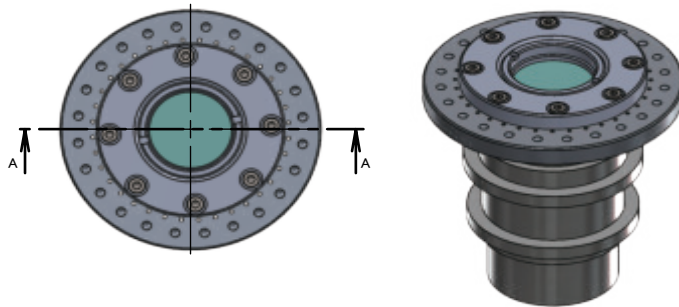
- By attaching one inch flange, **optical element can be mounted.**
- Allows mounting optical elements by changing rotor shape.(option)
- By adopting a high response frequency encoder, **high speed and high precision** are compatible.
- Digital servo driver prepared for **high positioning control.**

## Application of optical element mounting

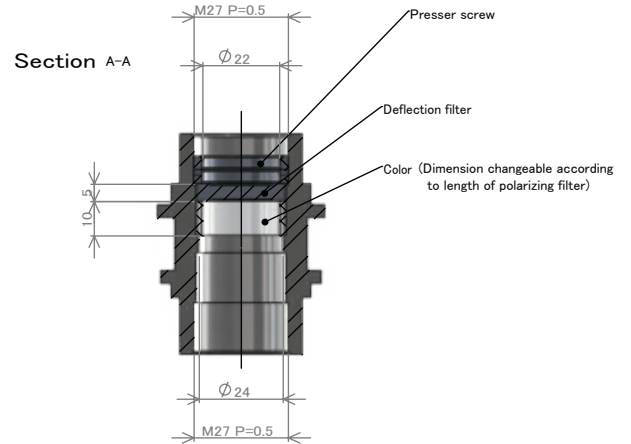
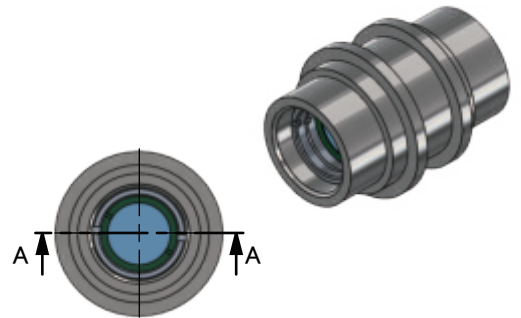
### 1. Application of wedge prism



### 2. Application of polarizing plate



### 3. Wavelength plate application



1-9-1 Maruyama, Isogo-ku, Yokohama, Kanagawa  
235-0011 JAPAN [Http://www.technohands.co.jp](http://www.technohands.co.jp)

Tel: +81-45-370-8010 Fax: +81-45-370-8015  
Email: [info@technohands.co.jp](mailto:info@technohands.co.jp)