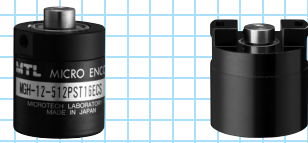


# MGH series

[Square Wave/Incremental]

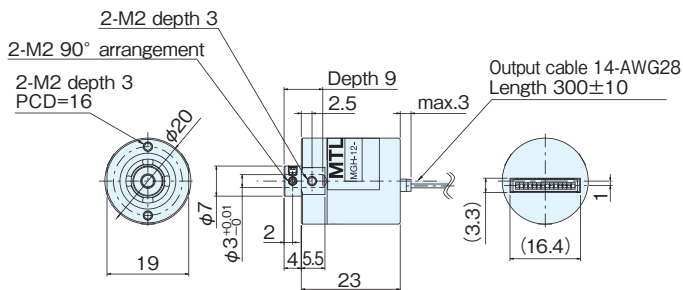
NEW



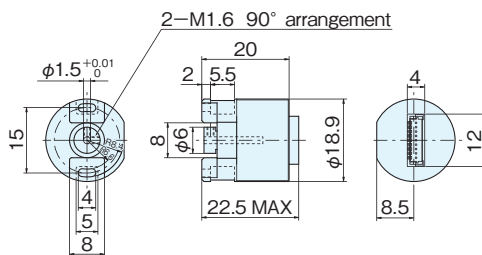
MGH-12, MGH-14

## Outside dimensions

### MGH-12



### MGH-14



## Specifications

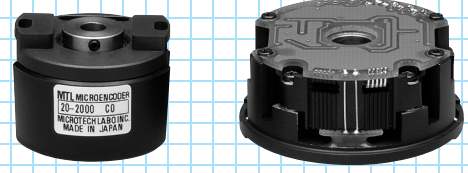
Type name	MGH-12-512ST□ECS (2-4-8-16)	MGH-14-□-C□ Pulse number CS signal ●No entry=nil ●CS=available
Supply voltage	DC+5V±10%	
Current consumption	150mA or less (under no load)	40mA or less (under no load)
Detection system	Incremental	
Output pulse number (Standard) [Pulse number/rotation]	512×2 512×4 512×8 512×16	100 128 200 250 256 300
Output phase	A, B, Z, U, V, W phase A, B, Z, U, V, W phase	A, B, Z, U, V, W phase
Output form	Square wave Line driver output	Square wave Open collector output
Output capacity	V <sub>H</sub> =2.5V or more V <sub>L</sub> =0.5V or less I <sub>O</sub> =±20mA or less	Sink current 20mA or less, residual voltage 0.5V or less (at 10mA)
Maximum response frequency (response pulse number)	50kHz×(by multiplication)	100kHz
Starting torque	1×10 <sup>-3</sup> N·m(10gf·cm) or less	—
Allowable load of shaft(electrical)	Radial	1.9N(200gf)
	Thrust	1.9N(200gf)
Output phase difference	A, B phase difference 90°±45° (T/4±T/8) Z phase T±T/2 With CS signal (U, V, W) 4 poles, 60° phase difference 3 signals	
Waveform rise/fall time	1 μs or less	2 μs or less
Maximum allowable revolutions (mechanical)	6,000r/min	
Working ambient temperature/ humidity	-10°C~70°C RH35%~90% no dewing	0°C~60°C RH35%~90% no dewing
Storing ambient temperature	-20°C~80°C	
Vibration resistance	Durability 55Hz, double amplitude 1.5mm 2 hours each in X, Y, and Z directions	
Impact resistance	Durability 500m/s <sup>2</sup> (about 50G) 3 times each in X, Y, and Z directions	
Cable	Vinyl wire 14-AWG30 length300mm±10mm	Connector
Mass	50g (include a cable)	10g

## Allowable change amount of fitting shaft

MGH-14	Pulse number	100~200	250~300	—
Allowable eccentricity	Radial	±0.02mm		±0.01mm
	Thrust	±0.1mm	±0.05mm	±0.02mm

# MGH series

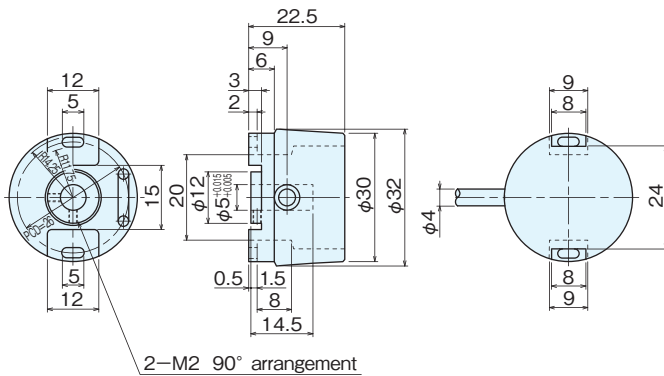
[Square Wave/Incremental]



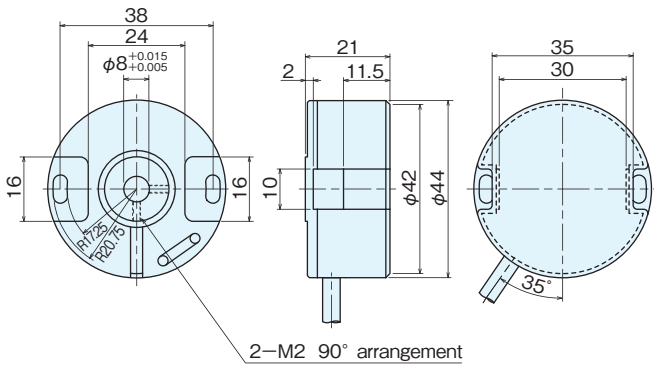
MGH-20, MGH-30

## Outside dimensions

MGH-20



MGH-30



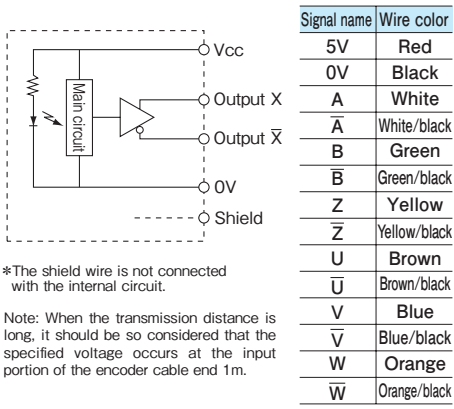
## Specifications

Type name	MGH-20-□-E□	MGH-30-□-E□		
Item	Pulse number CS signal ●No entry=nil ●CS=available	Pulse number CS signal ●No entry=nil ●CS=available		
Supply voltage	DC+5V±10%			
Current consumption	60mA or less (under no load)			
Detection system	Incremental			
Output pulse number (Standard) (Pulse number/rotation)	40 50 60 100 125 200 250	600 800 1,000 ※1,000 1,200	450 500 60 100 200 300 360 400	1,024 ※1,024 1,200 1,500 1,800 2,000 ※2,000 1,000 ※1,000
Output phase	A, $\bar{A}$ , B, $\bar{B}$ , Z, Z phase*with CS signal U, $\bar{U}$ , V, $\bar{V}$ , W, $\bar{W}$ phase			
Output form	Square wave Line driver output			
Output capacity	$V_{OL}=0.5V_{max}$ $V_{OH}=2.5V_{min}$ $I_o=\pm 20mA$			
Maximum response frequency (response pulse number)	150kHz			
Output phase difference	A, B phase difference $90^\circ \pm 45^\circ$ (T/4±T/8) Z phase T±T/2 With CS signal (U, V, W) 4 poles, 60° phase difference 3 signals			
Waveform rise/fall time	2μs or less			
Maximum allowable revolutions (mechanical)	6,000r/min			
Working ambient temperature/ humidity	-10°C~80°C RH35%~90% no dewing			
Storing ambient temperature	-20°C~80°C			
Vibration resistance	Durability 55Hz, double amplitude 1.5mm 2 hours each in X, Y, and Z directions			
Impact resistance	Durability 500m/s <sup>2</sup> (about 50G) 3 times each in X, Y, and Z directions			
Cable	Outside diameter φ4.2 (φ6.8) 8-core(19-core) vinyl wire Insulated shield cable length 1m (length 0.5m)			
Mass	60g	100g		

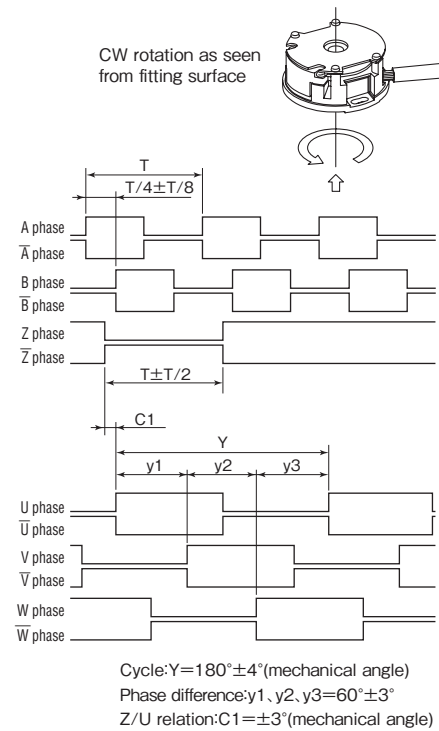
## Allowable change amount of fitting shaft

MGH-20	Pulse number	100~200	250~600	800~1,200
MGH-30	Pulse number	100~300	360~1,024	1,200~2,000
Allowable eccentricity	Radial	±0.02mm		±0.01mm
	Thrust	±0.1mm	±0.05mm	±0.02mm

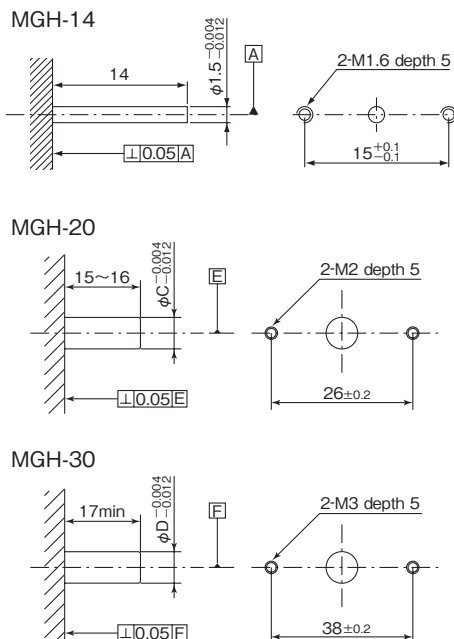
## Output circuit diagram



## Output waveforms



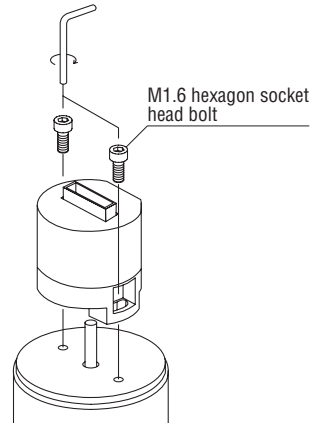
## Fitting shaft dimensions



## Assembling image of MGH series

### MGH-14

1. Fix the encoder to the base of rotating shaft.

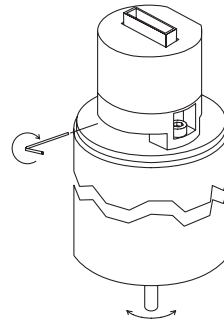


- **Tools to be used**  
 0.71mm hexagon wrench  
 1.5mm hexagon wrench

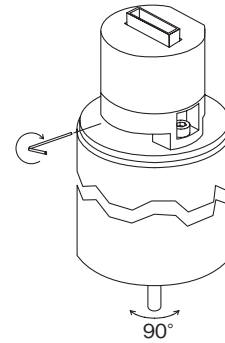
- **Attachment**  
 Helix stopping screw (M1.6) 2pcs

2. Phase U, output of moter rises at the same moment with of encoder.

3-1. Search for a screw by turning the rotating shaft and fix it.

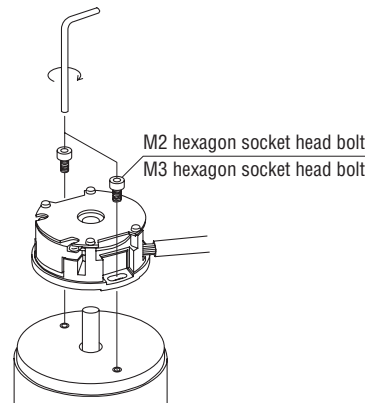


3-2. Turn the shaft 90° right or left and fix the other screw.



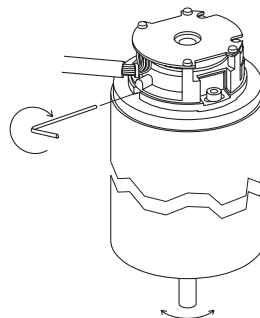
### MGH-20, 30

1. Fix the encoder to the base of rotating shaft.



- **Tools to be used**  
 0.89mm hexagon wrench  
 1.5mm hexagon wrench (MGH-20)  
 2.5mm hexagon wrench (MGH-30)

2-1. Search for a screw by turning the rotating shaft and fix it.



2-2. Turn the shaft 90° right or left and fix the other screw.

