

Standard AC Motors

# Accessories

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Introduction

Induction Motors

Reversible Motors

Electro-magnetic Brake Motors

V Series

Clutch & Brake Motors

Synchronous Motors

Low-Speed Synchronous Motors

Watertight, Dust-Resistant Motors

Torque Motors

Right-Angle Gearheads

Linear Heads

Brake Pack

Accessories

Installation

## Accessories

# Motor/Gearhead Mounting Brackets RoHS

Dedicated mounting brackets for attaching and securing a motor and gearhead. They are a high-strength type, which can be used with high powered motors and gearheads. These brackets come with tapped holes. To mount the motor and gearhead, simply fasten with the screws provided to the gearhead. To mount the motor alone, mounting screws must be purchased separately.



Please note that these mounting brackets cannot be used with the following products:

- **GC, GCH** pinion gearheads
- Right-angle gearheads (**RH** type, **RAA** type)
- Right-angle shaft type (**BH** Series, **BHF** Series)
- Watertight, dust-resistant motors
- Hollow shaft flat gearhead (**GFS2G**□**FR**, **GFS4G**□**FR**, **GFS5G**□**FR**)

## ■ For Motor Frame Size: □42 mm (□1.65 in.)

### ● Model: **SOLOU04**

Mass: 85 g (3.0 oz.) Material: Aluminum alloy

**DXF** A320U

#### ◇ Applicable Products

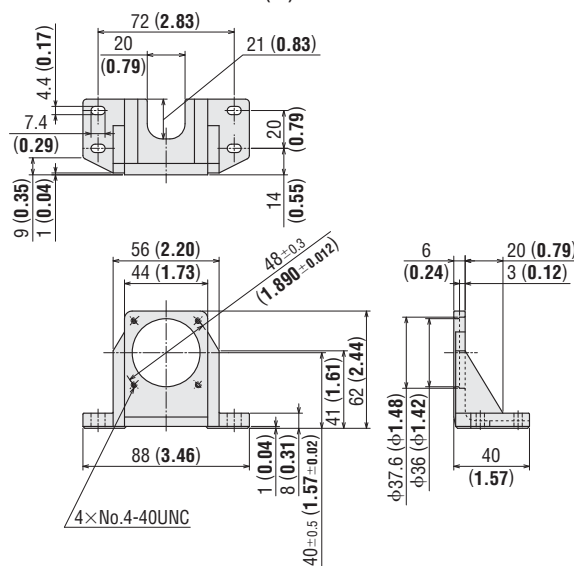
##### ● **SOLOU04**

**OGN**□**KA**

**BLH** Series Round shaft type

For round shaft type motors with a frame size 42 mm (1.65 in.)

#### ● Dimensions Unit = mm (in.)



### ● Model: **SOLOB**

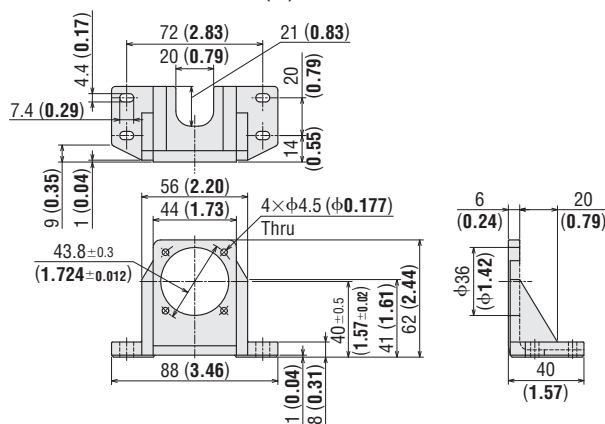
Mass: 85 g (3.0 oz.) Material: Aluminum alloy

**DXF** B267

#### ◇ Applicable Products

**BLH** Series Geared motor

#### ● Dimensions Unit = mm (in.)



**For Motor Frame Size: □60 mm (□2.36 in.)**

● **Model: SOL2U08, SOL2M4**

Mass: 135 g (4.8 oz.) Material: Aluminum alloy

**DXF** A321U (**SOL2U08**)  
A321 (**SOL2M4**)

◇ **Applicable Products**

● **SOL2U08**  
**2GN□SA**

For round shaft type motors with a frame size 60 mm (2.36 in.)

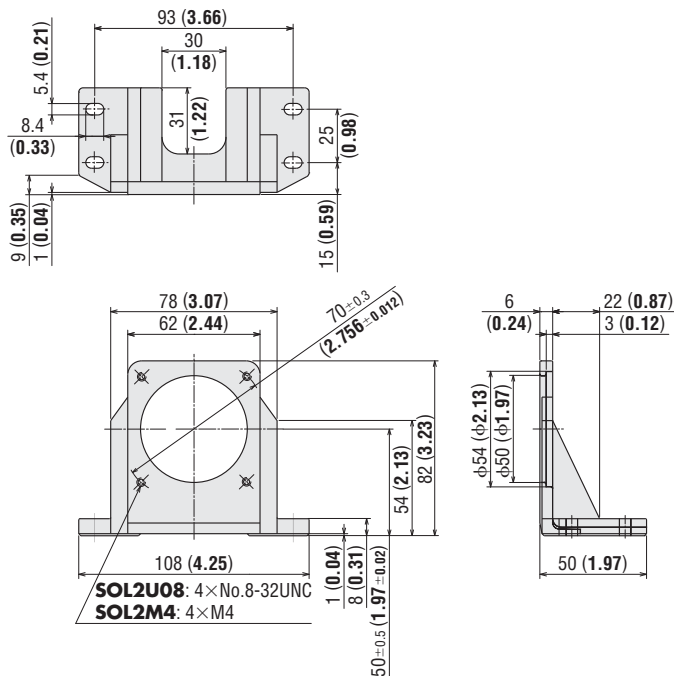
● **SOL2M4**

Decimal Gearhead (**2GN10XS**)

Use this mounting bracket when using a decimal gearhead with the **2GN□SA** gearhead.

- V Series
- BX** Series
- BLF** Series
- BLU** Series
- BLH** Series

● **Dimensions** Unit = mm (in.)



**For Motor Frame Size: □70 mm (□2.76 in.)**

● **Model: SOL3U10, SOL3M5, SOL3M6**

Mass: 175 g (6.2 oz.) Material: Aluminum alloy

**DXF** A322U (**SOL3U10**)  
A322 (**SOL3M5**)  
A323 (**SOL3M6**)

◇ **Applicable Products**

● **SOL3U10**  
**3GN□SA**

For round shaft type motors with a frame size 70 mm (2.76 in.)

● **SOL3M5**

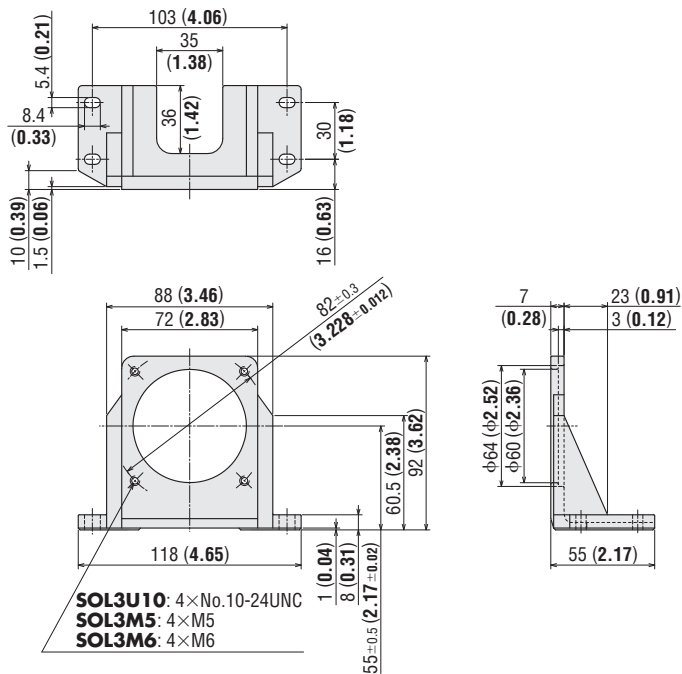
Decimal Gearhead (**3GN10XS**)

Use this mounting bracket when using a decimal gearhead with the **3GN□SA** gearhead.

● **SOL3M6**

V Series

● **Dimensions** Unit = mm (in.)



## For Motor Frame Size: 80 mm (3.15 in.)

### Model: SOL4U10, SOL4M5, SOL4M6

Mass: 210 g (7.4 oz.) Material: Aluminum alloy

**DXF** A236U (SOL4U10)  
A236 (SOL4M5)  
A237 (SOL4M6)

#### Applicable Products

##### SOL4U10

##### 4GN SA

For round shaft type motors with a frame size 80 mm (3.15 in.)

##### SOL4M5

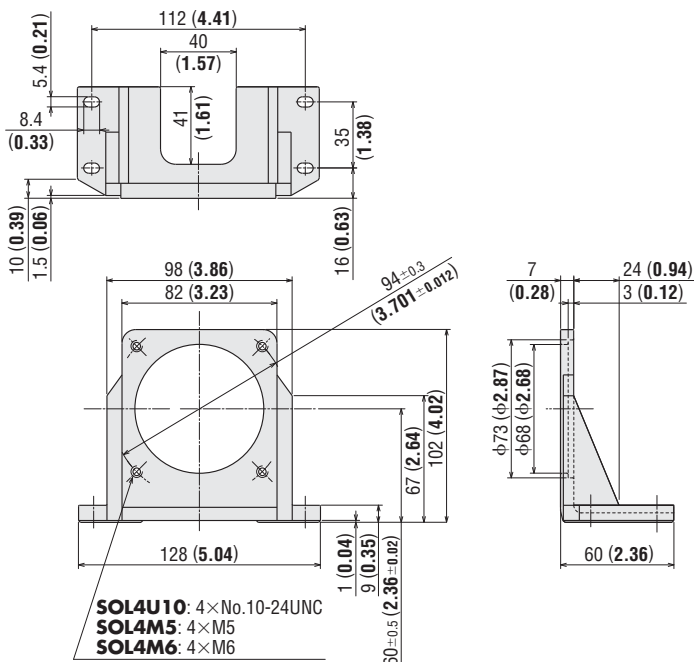
##### Decimal Gearhead (4GN10XS)

Use this mounting bracket when using a decimal gearhead with the 4GN SA gearhead.

##### SOL4M6

V Series, BX Series, BLF Series, BLU Series, BLH Series

#### Dimensions Unit = mm (in.)



## For Motor Frame Size: 90 mm (3.54 in.)

### Model: SOL5UA, SOL5M6, SOL5M8

Mass: 270 g (9.5 oz.) Material: Aluminum alloy

**DXF** A238U (SOL5UA)  
A238 (SOL5M6)  
A239 (SOL5M8)

#### Applicable Products

##### SOL5UA

##### 5GN SA

##### 5GE SA

##### 5GU KA

For round shaft type motors with a frame size 90 mm (3.54 in.)

##### SOL5M6

##### Decimal Gearheads

##### 5GN10XS

##### 5GE10XS

##### 5GU10XKB

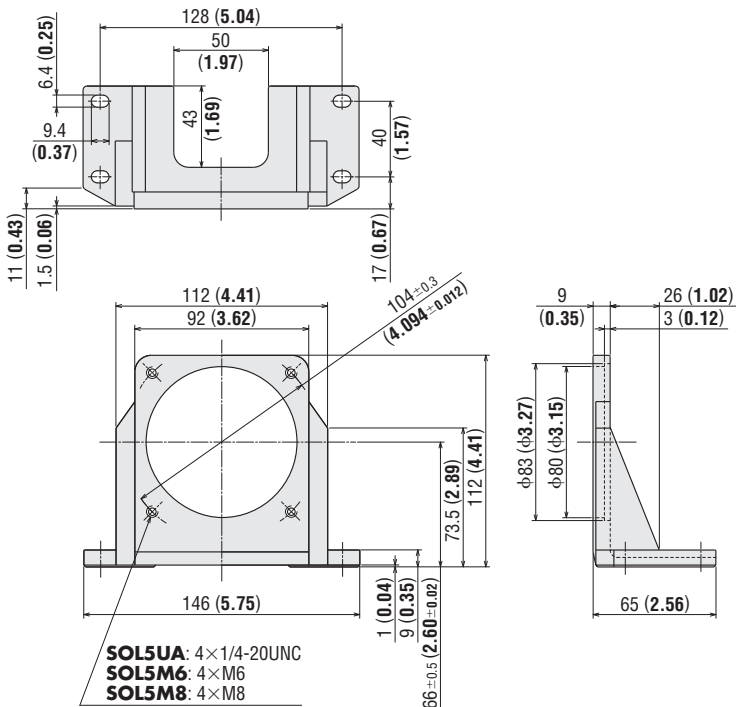
Use this mounting bracket when using a decimal gearhead with the 5GN SA, 5GE SA, and 5GU KA gearheads.

##### SOL5M8

V Series, BX Series, BLF Series, BLU Series,

FBLI Series, BLH Series

#### Dimensions Unit = mm (in.)



■ For Motor Frame Size: □104 mm (□4.09 in.)

● Model: **SOL6M8**

Mass: 430 g (15.2 oz.) Material: Aluminum alloy

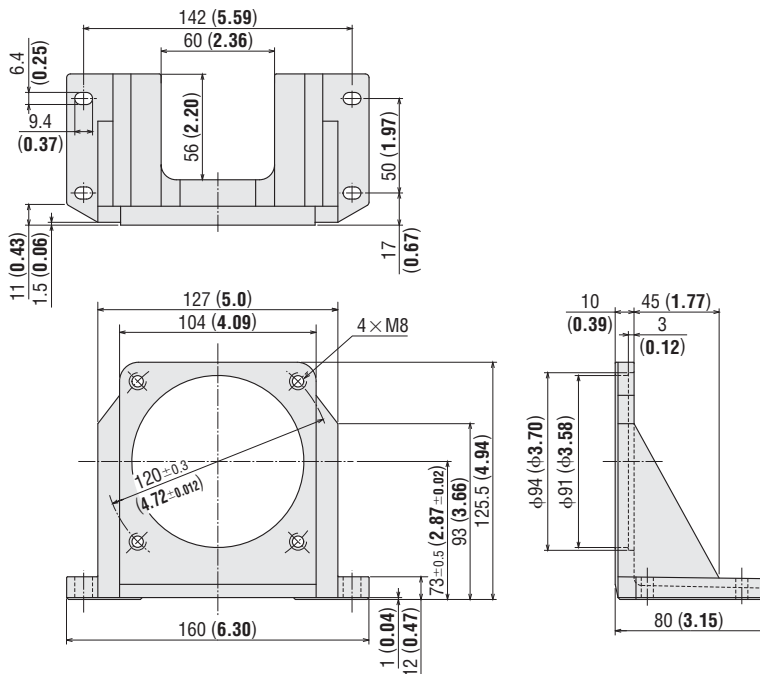
DXF A240

◇ Applicable Products

- BH** Series
- BX** Series
- BLF** Series
- BHF** Series

For round shaft type motors with a frame size 104 mm (4.09 in.)

● Dimensions Unit = mm (in.)



# Torque Arm RoHS

The torque arm serves as an anti-rotation guide for the gearhead when a right-angle hollow shaft type gearhead is used in a shaft-mounted fashion (with the gearhead mounted on the shaft of a connected device).

When using it as a shaft-mounted gearhead, be sure to use a torque arm and secure the gearhead to the device.



● Model: **SOT6**

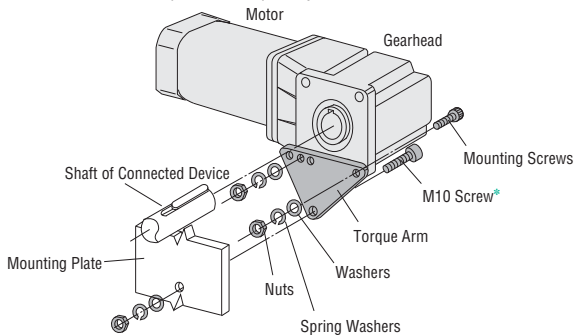
◇ Applicable Product

- BH** Series Right-Angle Gearhead/Hollow Shaft
- BHF** Series Right-Angle Gearhead/Hollow Shaft
- 5GE**□RH Gearhead
- 5GU**□RH Gearhead

● Mounting Method

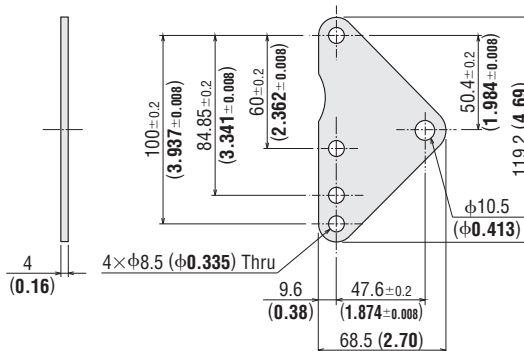
When mounting on a device, secure the torque arm firmly using an M10 screw.

\*M10 screws must be purchased separately.



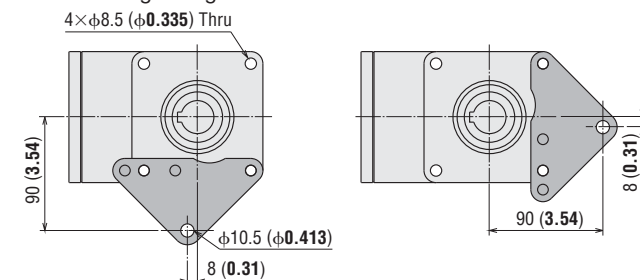
● Dimensions Unit = mm (in.)

Mass: 145 g (5.1 oz.)



● Panel Cutout Unit = mm (in.)

- BH** Series Right-Angle Gearhead/Hollow Shaft
- BHF** Series Right-Angle Gearhead/Hollow Shaft



# Flexible Couplings RoHS

These products are clamp type couplings to connect a motor or gearhead shaft to the shaft of the equipment. Once the motor or gearhead is determined, the proper coupling can be selected.

## Features

- Couplings come with shaft holes and have standardized combinations for different diameter shaft holes.
- Characteristics are the same for clockwise and counterclockwise rotation.
- Oil-resistant and electrically insulated
- Aluminum alloy construction (Material of sleeve: Polyurethan)
- The driven shaft is not damaged, since shafts are joined by clamping.
- Easy installation due to a separated hub and sleeve design

## Selecting a Flexible Coupling

Once you decide on a motor or gearhead and the shaft diameter of the equipment to be connected, you can select the proper flexible coupling to use. **MCL** couplings are available in several external diameters that provide the strength required for the torque of the motor or gearhead.

### Example **MCL 30 F06 F06**

Inner Diameter d1      Inner Diameter d2

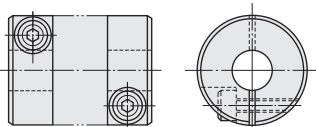
- For uniform load, when the gearhead is **4GN□SA** (shaft outer diameter of  $\phi 3/8$  in.) and the shaft diameter of the equipment to be connected is  $\phi 3/8$  in., use **MCL30F06F06**.
- For impact-applied use, when the gearhead is **4GN□SA** (shaft outer diameter of  $\phi 3/8$  in.) and the shaft diameter of the equipment to be connected is  $\phi 3/8$  in., use **MCL40F06F06**.

## Mounting on a Shaft

The **MCL** couplings are clamp type for mounting the flexible coupling to the shaft.

### Clamp Type

Clamp type couplings use the binding force of the screw to compress the axis hole diameter and thereby fasten the coupling to the shaft. This does not damage the shaft and is easy to mount and remove. The following table shows the screw tightening torque. And, the use of a torque wrench is recommended for tightening.



Type		<b>MCL20*</b>	<b>MCL30</b>	<b>MCL40</b>	<b>MCL55</b>	<b>MCL65</b>
Tightening torque	N·m	1	2.5	12	25	50
	(lb·in)	(8.8)	(22)	(106)	(220)	(440)
Tightening torque of key press screw*	N·m	0.7	1.7	1.7	1.7	4
	(lb·in)	(6.1)	(15)	(15)	(15)	(35)

\*The screws for holding shaft flat are used for **GN** gearheads.



## Product Number Code

### **MCL 40 F08 F10**

①      ②      ③      ④

①	Flexible Coupling	
②	Outer Diameter of Coupling	<b>20</b> : $\phi 20$ mm ( $\phi 0.79$ in.)~ <b>65</b> : $\phi 65$ mm ( $\phi 2.56$ in.)
③	Inner Diameter d1 (Small Inner Diameter)	<b>06</b> : $\phi 6$ mm ( $\phi 0.2362$ in.)~ <b>25</b> : $\phi 25$ mm ( $\phi 0.9843$ in.) <b>F03</b> : 4.762 mm (3/16 in.)~ <b>F12</b> : 19.05 mm (3/4 in.)
④	Inner Diameter d2 (Large Inner Diameter)	<b>06</b> : $\phi 6$ mm ( $\phi 0.2362$ in.)~ <b>25</b> : $\phi 25$ mm ( $\phi 0.9843$ in.) <b>F03</b> : 4.762 mm (3/16 in.)~ <b>F12</b> : 19.05 mm (3/4 in.)

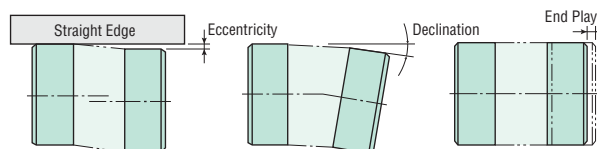
● Details of applicable products → Page A-293

## Alignment Adjustment

Flexible couplings tolerate misalignment of the axis center and transfer rotation angle and torque, but produce vibration when the permissible value for misalignment is exceeded. This can dramatically shorten the life of coupling. Be sure to adjust the alignment.

Misalignment of the axis center includes eccentricity (parallel error of both centers), declination (angle error of both centers) and end play (shaft movement in the axial direction). To keep misalignment within the permissible value, always check and adjust the alignment.

To increase the life of the coupling, we recommend keeping misalignment to below 1/3 of the permissible value.



### Notes:

- Misalignment or excessive torque beyond the permissible values will deform the coupling and shorten its life.
- If you hear a strange metallic noise from the coupling while operating, stop the motor immediately and check for misalignment, shaft interference, loose screws or the like.
- When the load fluctuates substantially, paint adhesive over the screws or switch to a larger coupling diameter. This helps to prevent coupling screws from coming loose.
- When using couplings that have no key slot, as on the **MCL20**, **MCL30**, etc., fasten clamping screws before fastening set screws.
- Only use the screws specified by Oriental Motor. Other screws may damage the couplings.
- Do not bring fingers or hands into contact with an operating coupling as injury may result. Always use protective covers to prevent accidents. Also, install safety systems that stop motor rotation as soon as the protective cover is opened.
- Always be sure the power is off during installation. Should the drive unit accidentally start running, injury can occur by being drawn into the device. Always check that main power supply of the device is off before installation.

## Applicable Products

Couplings are also available for round shaft motors, if a shaft diameter matches.

Coupling Type	Shaft Diameter		Gearhead Model		Connected Device Shaft Diameter										
	mm	in.	Uniform Load	Shock Load	F03	F04	F05	F06	F08	F10	F12	20	22	25	
					4.762 mm 3/16 in.	6.350 mm 1/4 in.	7.937 mm 5/16 in.	9.525 mm 3/8 in.	12.7 mm 1/2 in.	15.875 mm 5/8 in.	19.05 mm 3/4 in.	20 mm 0.7874 in.	22 mm 0.8661 in.	25 mm 0.9843 in.	
MCL20	F03	4.762	3/16	0GN□SA	0GN□SA										
	06	6	0.2362	BLH015K-□	BLH015K-□	○	○	○							
	F04	6.350	1/4			○	○	○							
	F05	7.937	5/16	2GN□SA		○	○	○							
	08	8	0.3150				○	○							
MCL30	F04	6.350	1/4					○							
	F05	7.937	5/16		2GN□SA			○	○	○					
	08	8	0.3150					○	○	○					
	F06	9.525	3/8	3GN□SA, 4GN□SA 4GN□RAA, 5GN□RAA	3GN□SA			○	○	○					
	10	10	0.3937	VHI206□2-□, VHR206□2-□, VHR206□2M-□, BX230□M-□S, BX230□M-□S, BLF230□-□, BLU220□-□, BLH230KC-□, VSI206□2-□, VSR206□2-□				○	○	○					
MCL40	12	12	0.4724	VHI315□2-□, VHR315□2-□, VHR315□2M-□, VSI315□2-□, VSR315□2-□				○	○	○					
	F08	12.7	1/2	5GN□SA				○	○						
	F05	7.937	5/16					○							
	F06	9.525	3/8		4GN□SA, 4GN□RAA, 5GN□RAA			○	○	○					
	10	10	0.3937					○	○	○					
MCL55	12	12	0.4724		VHI315□2-□, VHR315□2-□, VHR315□2M-□, VSI315□2-□, VSR315□2-□			○	○	○					
	F08	12.7	1/2		5GN□SA, 5GC□KA			○	○	○					
	14	14	0.5512					○	○	○					
	15	15	0.5906	VHI425□2-□, VHR425□2-□, VHR425□2M-□, VHI425S2M-□, BX460□-□S, BX460□M-□S, BLF460□-□, BLU440□-□, BLH450KC-□, VSI425□2-□, VSR425□2-□				○	○	○					
	F10	15.875	5/8		5GE□SA, 5GU□SA, 5GE□RAA, 5GU□RAA			○	○						
MCL65	15	15	0.5906		VHI425□2-□, VHR425□2-□, VHR425□2M-□, VHI425S2M-□, BX460□-□S, BX460□M-□S, BLF460□-□, BLU440□-□, BLH450KC-□, VSI425□2-□, VSR425□2-□			○	○	○					
	F10	15.875	5/8		5GE□SA, 5GU□SA, 5GE□RAA, 5GU□RAA, 5GCH□KA			○	○						
	18	18	0.7087	VHI540□2-□, VHR540□2-□, VHR540□2M-□, VHI540S2M-□, VHI560□2-□, VHR560□2-□, VHR560□2M-□, VHI560S2M-□, VHI590□2-□, VHR590□2-□, VHR590□2M-□, VHI590S2M-□, BX5120□-□S, BX5120□M-□S, BLF5120□-□, BLU590□-□, FBL575□W-□, FBL5120□W-□, BLH5100KC-□, VSI540□2-□, VSR540□2-□, VSI560□-□, VSR560□-□, VSI590□-□, VSR590□-□				○	○						
				BHI62□-□, BHI62□T-□, BHI62□MT-□, BHF62□T-□, BHF62□MT-□							○	○			
	F12	19.05	3/4								○				
MCL65	18	18	0.7087	BX6200□-□S, BX6200□M-□S, BX6400S-□S, BX6400SM-□S, BLF6200□-□, BLF6400S-□	BHI62□-□, BHI62□T-□, BHI62□MT-□, BHF62□T-□, BHF62□MT-□					○	○				
	22	22	0.8661	BHI62□-□RA, BHI62□T-□RA, BHI62□MT-□RA, BHF62□T-□RA, BHF62□MT-□RA								○	○	○	

● Enter the power supply voltage (A, C, F, E or S) in the box (□) within the model name. ● Enter the capacitor model U or E in the under bar (□) within the model name.  
● Enter the gear ratio in the box (□) within the model name.

- Introduction
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## Specifications

Model	Dimensions				Nominal Torque N-m (lb-in)	Mass g (oz.)	Moment of Inertia: J $\times 10^{-4}$ kg-m <sup>2</sup> (oz-in <sup>2</sup> )	Permissible Eccentricity mm (in.)	Permissible Declination deg	Permissible End Play mm (in.)			
	Outer Diameter mm (in.)	Length mm (in.)	Shaft Hole Diameter mm (in.)								Shaft Hole Diameter mm (in.)		
<b>MCL20F03F03</b>	φ20 (φ0.79)	29 (1.14)	4.762 (0.1875)	(0.1875)	4.762	(0.1875)	5 (44)	19 (0.67)	0.01 (0.055)	0.15 (5.9×10 <sup>-3</sup> )			
<b>MCL20F03F04</b>					6.35	(0.2500)							
<b>MCL20F03F05</b>					7.937	(0.3125)							
<b>MCL2006F03</b>			6 (0.2362)	(0.2362)	4.762	(0.1875)							
<b>MCL2006F04</b>					6.35	(0.2500)							
<b>MCL2006F05</b>					7.937	(0.3125)							
<b>MCL20F04F04</b>			6.35 (0.2500)	(0.2500)	6.35 (0.2500)	(0.2500)						6.35	(0.2500)
<b>MCL20F04F05</b>												7.937	(0.3125)
<b>MCL20F05F05</b>												7.937	(0.3125)
<b>MCL2008F04</b>			8 (0.3150)	(0.3150)	6.35 (0.2500)	(0.2500)						6.35	(0.2500)
<b>MCL2008F05</b>	7.937	(0.3125)											
<b>MCL30F04F05</b>	φ30 (φ1.18)	43.5 (1.71)	6.35 (0.2500)	(0.2500)	6.35	(0.2500)	12.5 (110)	66 (2.3)	0.083 (0.45)	1.0			
<b>MCL30F05F05</b>					7.937	(0.3125)							
<b>MCL30F05F06</b>			8 (0.3150)	(0.3150)	7.937 (0.3125)	(0.3125)						9.525	(0.3750)
<b>MCL3008F04</b>												6.35	(0.2500)
<b>MCL3008F05</b>												7.937	(0.3125)
<b>MCL3008F06</b>			9.525 (0.3750)	(0.3750)	9.525 (0.3750)	(0.3750)						9.525	(0.3750)
<b>MCL30F06F06</b>												12.7	(0.5000)
<b>MCL30F06F08</b>			10 (0.3937)	(0.3937)	7.937 (0.3125)	(0.3125)						7.937	(0.3125)
<b>MCL3010F05</b>												9.525	(0.3750)
<b>MCL3010F06</b>			12 (0.4724)	(0.4724)	9.525 (0.3750)	(0.3750)						9.525	(0.3750)
<b>MCL3010F08</b>												12.7	(0.5000)
<b>MCL3012F05</b>			12.7 (0.5000)	(0.5000)	12.7 (0.5000)	(0.5000)						7.937	(0.3125)
<b>MCL3012F06</b>												9.525	(0.3750)
<b>MCL3012F08</b>			12.7 (0.5000)	(0.5000)	12.7 (0.5000)	(0.5000)						12.7	(0.5000)
<b>MCL30F08F08</b>	12.7	(0.5000)											
<b>MCL40F05F06</b>	φ40 (φ1.57)	64 (2.52)	7.937 (0.3125)	(0.3125)	7.937	(0.3125)	25.0 (220)	150 (5.3)	0.36 (1.97)	0.2 (7.9×10 <sup>-3</sup> )			
<b>MCL40F06F06</b>					9.525	(0.3750)							
<b>MCL40F06F08</b>			10 (0.3937)	(0.3937)	7.937 (0.3125)	(0.3125)						9.525	(0.3750)
<b>MCL4010F05</b>												12.7	(0.5000)
<b>MCL4010F06</b>												9.525	(0.3750)
<b>MCL4010F08</b>			12 (0.4724)	(0.4724)	12.7 (0.5000)	(0.5000)						12.7	(0.5000)
<b>MCL4012F06</b>												15.875	(0.6250)
<b>MCL4012F08</b>			12.7 (0.5000)	(0.5000)	12.7 (0.5000)	(0.5000)						12.7	(0.5000)
<b>MCL4012F10</b>												15.875	(0.6250)
<b>MCL40F08F08</b>			14 (0.5512)	(0.5512)	9.525 (0.3750)	(0.3750)						9.525	(0.3750)
<b>MCL4014F06</b>												12.7	(0.5000)
<b>MCL4014F08</b>			15 (0.5906)	(0.5906)	12.7 (0.5000)	(0.5000)						15.875	(0.6250)
<b>MCL4014F10</b>												9.525	(0.3750)
<b>MCL4015F06</b>			15.875 (0.6250)	(0.6250)	15.875 (0.6250)	(0.6250)						12.7	(0.5000)
<b>MCL4015F08</b>												15.875	(0.6250)
<b>MCL4015F10</b>			12.7 (0.5000)	(0.5000)	15.875 (0.6250)	(0.6250)						15.875	(0.6250)
<b>MCL40F10F10</b>												15.875	(0.6250)
<b>MCL5515F08</b>			φ55 (φ2.17)	76 (2.99)	15 (0.5906)	(0.5906)						12.7	(0.5000)
<b>MCL5515F10</b>	15.875	(0.6250)											
<b>MCL5515F12</b>	19.05	(0.7500)											
<b>MCL55F10F10</b>	18 (0.7087)	(0.7087)			15.875 (0.6250)	(0.6250)	15.875	(0.6250)					
<b>MCL55F10F12</b>							19.05	(0.7500)					
<b>MCL5518F10</b>	18 (0.7087)	(0.7087)	15.875 (0.6250)	(0.6250)	15.875	(0.6250)							
<b>MCL5518F12</b>					19.05	(0.7500)							
<b>MCL6518F10</b>	φ65 (φ2.56)	87.5 (3.44)	18 (0.7087)	(0.7087)	15.875	(0.6250)	160 (1410)	570 (20)	3.7 (20)	1.0			
<b>MCL6518F12</b>					19.05	(0.7500)							
<b>MCL652022</b>			20 (0.7874)	(0.7874)	22 (0.8661)	(0.8661)						22	(0.8661)
<b>MCL652222</b>												22	(0.8661)
<b>MCL652225</b>	22	(0.8661)	25	(0.9843)									

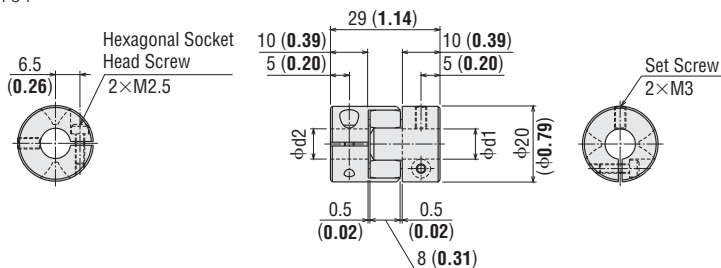
● The specifications above are the values when combined with Oriental Motor's motor and gearhead.



**Dimensions** Unit = mm (in.)

**MCL20 Type**

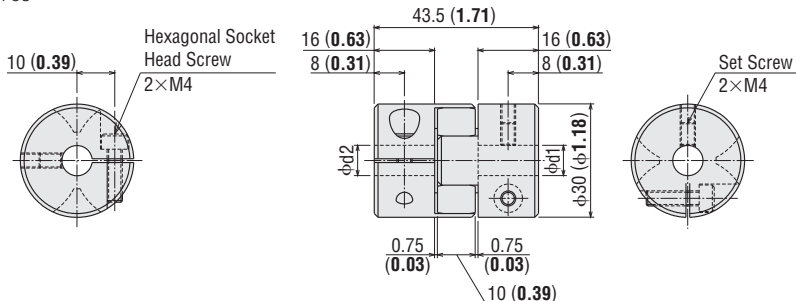
**DXF** A704



Shaft Hole Diameter [ $\phi d1$ , $\phi d2$ ]	Tolerance
<b>F03:</b> $\phi 4.762$ ( $\phi 0.1875$ ) <b>O6:</b> $\phi 6$ ( $\phi 0.2362$ )	+0.018 0 ( +0.0007 0 )
<b>F04:</b> $\phi 6.35$ ( $\phi 0.2500$ ) <b>F05:</b> $\phi 7.937$ ( $\phi 0.3125$ ) <b>O8:</b> $\phi 8$ ( $\phi 0.3150$ )	+0.022 0 ( +0.0009 0 )

**MCL30 Type**

**DXF** A705



Shaft Hole Diameter [ $\phi d1$ , $\phi d2$ ]	Tolerance
<b>F04:</b> $\phi 6.35$ ( $\phi 0.2500$ ) <b>F05:</b> $\phi 7.937$ ( $\phi 0.3125$ ) <b>O8:</b> $\phi 8$ ( $\phi 0.3150$ ) <b>F06:</b> $\phi 9.525$ ( $\phi 0.3750$ )	+0.022 0 ( +0.0009 0 )
<b>F08:</b> $\phi 12.7$ ( $\phi 0.5000$ )	+0.027 0 ( +0.0011 0 )

**MCL3010F05**

**MCL3010F06**

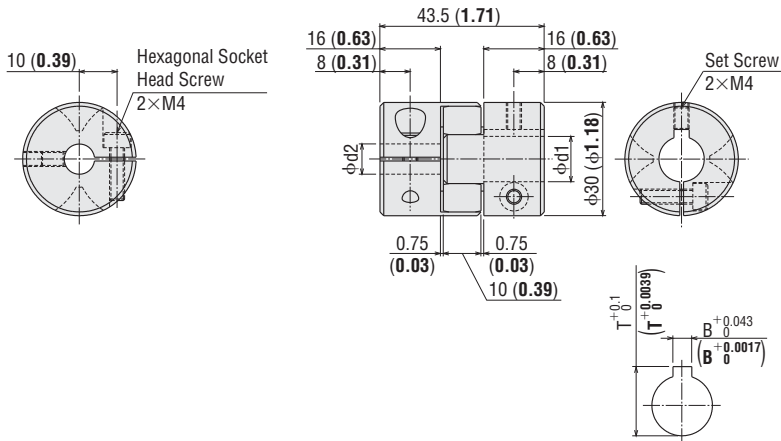
**MCL3010F08**

**MCL3012F05**

**MCL3012F06**

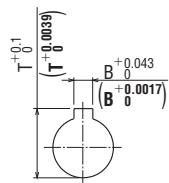
**MCL3012F08**

**DXF** A705



Shaft Hole Diameter [ $\phi d1$ ]	Tolerance	Key Slot Width B	Key Slot Length T
<b>10:</b> $\phi 10$ ( $\phi 0.3937$ )	+0.022 0 ( +0.0009 0 )	4 (0.1575)	11.8 (0.465)
<b>12:</b> $\phi 12$ ( $\phi 0.4724$ )	+0.027 0 ( +0.0011 0 )		13.8 (0.543)

Shaft Hole Diameter [ $\phi d2$ ]	Tolerance
<b>F05:</b> $\phi 7.937$ ( $\phi 0.3125$ ) <b>F06:</b> $\phi 9.525$ ( $\phi 0.3750$ )	+0.022 0 ( +0.0009 0 )
<b>F08:</b> $\phi 12.7$ ( $\phi 0.5000$ )	+0.027 0 ( +0.0011 0 )



Key Slot

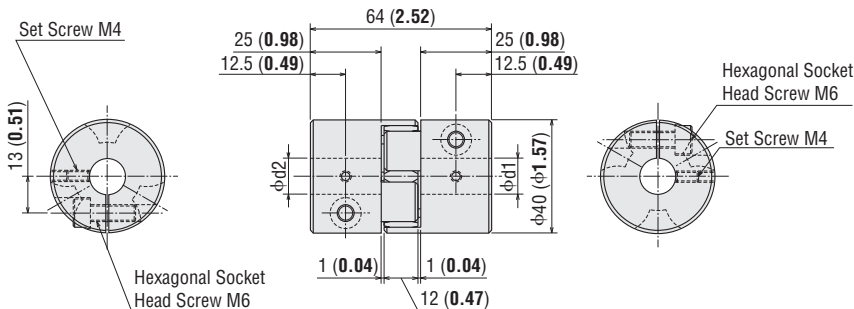
**MCL40F05F06**

**MCL40F06F06**

**MCL40F06F08**

**MCL40F08F08**

**DXF** A706



Shaft Hole Diameter [ $\phi d1$ , $\phi d2$ ]	Tolerance
<b>F05:</b> $\phi 7.937$ ( $\phi 0.3125$ ) <b>F06:</b> $\phi 9.525$ ( $\phi 0.3750$ )	+0.022 0 ( +0.0009 0 )
<b>F08:</b> $\phi 12.7$ ( $\phi 0.5000$ )	+0.027 0 ( +0.0011 0 )

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Reversible Motors

Electro-magnetic Brake Motors

V Series

Clutch & Brake Motors

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Low-Speed Synchronous Motors

Watertight, Dust-Resistant Motors

Torque Motors

Right-Angle Gearheads

Linear Heads

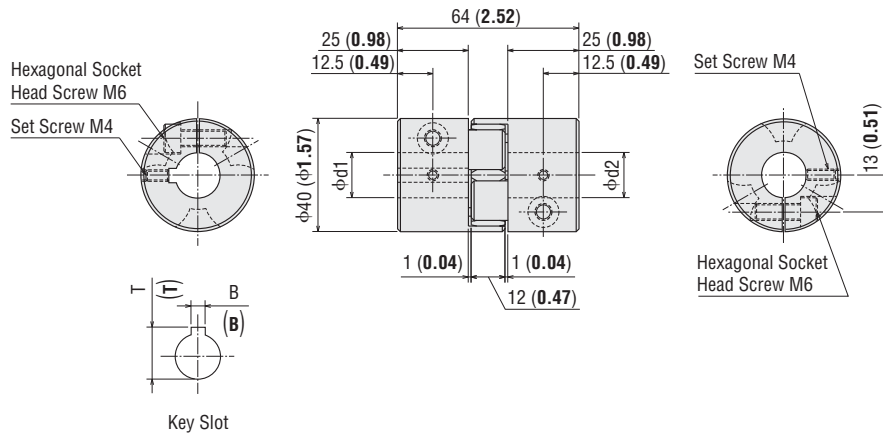
Brake Pack

Accessories

Installation

**MCL4010F05**  
**MCL4010F06**  
**MCL4010F08**  
**MCL4012F06**  
**MCL4012F08**  
**MCL40F08F10**  
**MCL4014F06**  
**MCL4014F08**  
**MCL4015F06**  
**MCL4015F08**

**DXF** A706

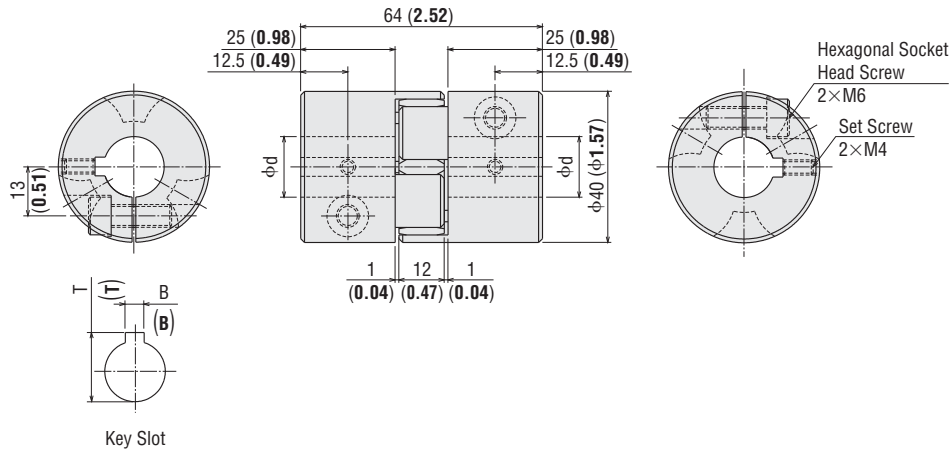


Shaft Hole Diameter [ $\phi d1$ ]	Tolerance	Key Slot Width B	Tolerance	Key Slot Length T	Tolerance
<b>10:</b> $\phi 10$ ( $\phi 0.3937$ )	$+0.022$ 0 ( $+0.0009$ 0)	4 (0.1575)	$+0.043$ 0 ( $+0.0017$ 0)	11.8 (0.465)	$+0.1$ 0 ( $+0.004$ 0)
<b>12:</b> $\phi 12$ ( $\phi 0.4724$ )	$+0.027$ 0 ( $+0.0011$ 0)			13.8 (0.543)	
<b>14:</b> $\phi 14$ ( $\phi 0.5512$ )		16.3 (0.642)			
<b>15:</b> $\phi 15$ ( $\phi 0.5906$ )		17.3 (0.681)			
<b>F10:</b> $\phi 15.875$ ( $\phi 0.6250$ )		4.763 (0.1875)	$+0.051$ 0 ( $+0.0020$ 0)	18.009 (0.709)	$+0.254$ 0 ( $+0.010$ 0)

Shaft Hole Diameter [ $\phi d2$ ]	Tolerance
<b>F05:</b> $\phi 7.937$ ( $\phi 0.3125$ )	$+0.022$ 0 ( $+0.0009$ 0)
<b>F06:</b> $\phi 9.525$ ( $\phi 0.3750$ )	
<b>F08:</b> $\phi 12.7$ ( $\phi 0.5000$ )	$+0.027$ 0 ( $+0.0011$ 0)

**MCL4012F10**  
**MCL4014F10**  
**MCL4015F10**  
**MCL40F10F10**

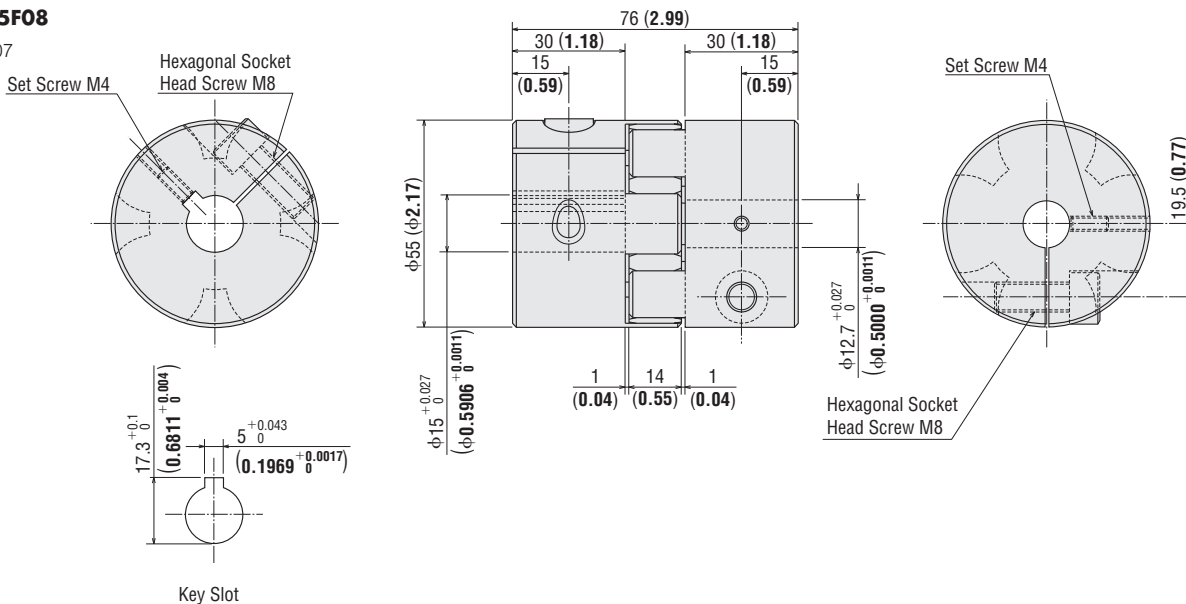
**DXF** A706



Shaft Hole Diameter ( $\phi d$ )	Tolerance	Key Slot Width B	Tolerance	Key Slot Length T	Tolerance
<b>10:</b> $\phi 10$ ( $\phi 0.3937$ )	$+0.022$ 0 ( $+0.0009$ 0)	4 (0.1575)	$+0.043$ 0 ( $+0.0017$ 0)	11.8 (0.465)	$+0.1$ 0 ( $+0.004$ 0)
<b>12:</b> $\phi 12$ ( $\phi 0.4724$ )	$+0.027$ 0 ( $+0.0011$ 0)			13.8 (0.543)	
<b>14:</b> $\phi 14$ ( $\phi 0.5512$ )		16.3 (0.642)			
<b>15:</b> $\phi 15$ ( $\phi 0.5906$ )		17.3 (0.681)			
<b>F10:</b> $\phi 15.875$ ( $\phi 0.6250$ )		4.763 (0.1875)	$+0.051$ 0 ( $+0.0020$ 0)	18.009 (0.709)	$+0.254$ 0 ( $+0.010$ 0)

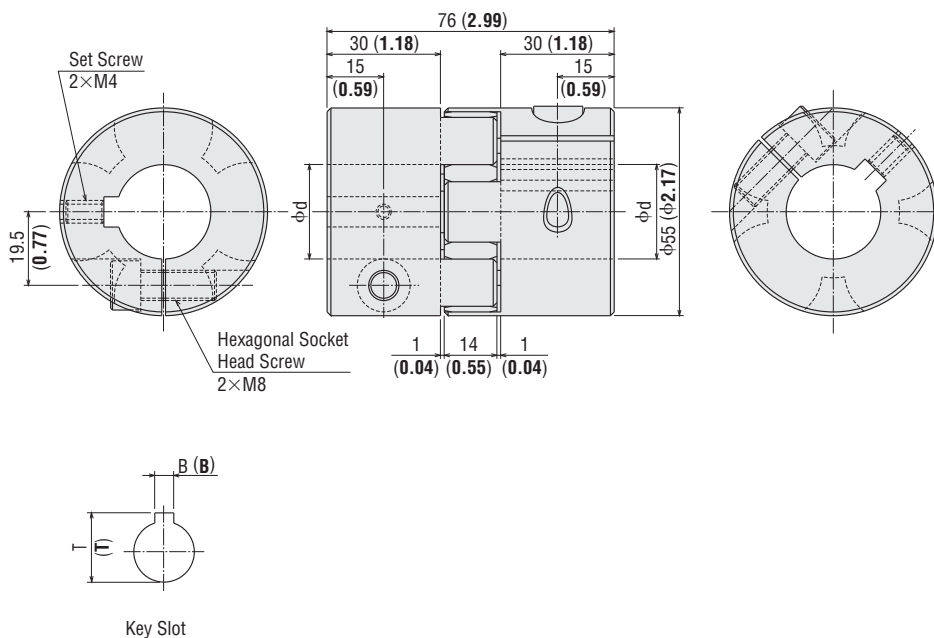
**MCL5515F08**

**DXF** A707



**MCL55 Type**

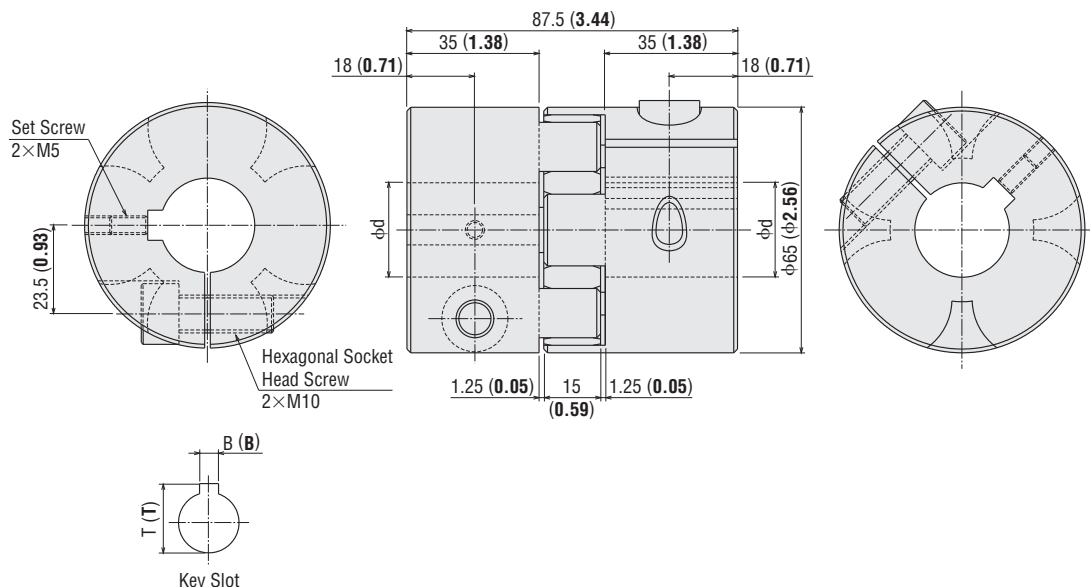
**DXF** A707



Shaft Hole Diameter ( $\phi d$ )	Tolerance	Key Slot Width B	Tolerance	Key Slot Length T	Tolerance
<b>15:</b> $\phi 15$ ( $\phi 0.5906$ )	$+0.027$ / $0$ ( $+0.0011$ / $0$ )	5 (0.1969)	$+0.043$ / $0$ ( $+0.0017$ / $0$ )	17.3 (0.681)	$+0.1$ / $0$ ( $+0.004$ / $0$ )
<b>18:</b> $\phi 18$ ( $\phi 0.7087$ )		6 (0.2362)	$+0.052$ / $0$ ( $+0.0020$ / $0$ )	20.8 (0.819)	
<b>F10:</b> $\phi 15.875$ ( $\phi 0.6250$ )	$+0.033$ / $0$ ( $+0.0013$ / $0$ )	4.763 (0.1875)	$+0.051$ / $0$ ( $+0.0020$ / $0$ )	18.009 (0.709)	$+0.254$ / $0$ ( $+0.010$ / $0$ )
<b>F12:</b> $\phi 19.050$ ( $\phi 0.7500$ )		4.763 (0.1875)		21.260 (0.837)	

**MCL65** Type

**DXF** A708



Shaft Hole Diameter ( $\phi d$ )	Tolerance	Key Slot Width B	Tolerance	Key Slot Length T	Tolerance
<b>18:</b> $\phi 18$ ( $\phi 0.7087$ )	$+0.027$ 0 ( $+0.0011$ 0)	6 (0.2362)	$+0.052$ 0 ( $+0.0020$ 0)	20.8 (0.819)	$+0.1$ 0 ( $+0.004$ 0)
<b>F10:</b> $\phi 15.875$ ( $\phi 0.6250$ )		4.763 (0.1875)		18.009 (0.709)	
<b>F12:</b> $\phi 19.05$ ( $\phi 0.7500$ )	$+0.033$ 0 ( $+0.0013$ 0)	4.763 (0.1875)	$+0.051$ 0 ( $+0.0020$ 0)	21.260 (0.837)	$+0.254$ 0 ( $+0.010$ 0)
<b>20:</b> $\phi 20$ ( $\phi 0.7874$ )		6 (0.2362)		22.8 (0.898)	
<b>22:</b> $\phi 22$ ( $\phi 0.8661$ )		8 (0.3150)		24.8 (0.976)	
<b>25:</b> $\phi 25$ ( $\phi 0.9843$ )				28.3 (1.114)	$+0.2$ 0 ( $+0.008$ 0)

# Motor Speed Indicator RoHS

To display or check the speed at the output shaft of the motor or gearhead, connect the speed indicator.

● **Model: SDM496**

Power supply voltage: Single-phase 100 VAC to 240 VAC



● **Included with SDM496**

To mount in a panel, a flush mounting adapter and round shape socket are provided with the speed indicator.

This product is a digital speed indicator that directly displays the speed at the output shaft of the motor or gearhead.

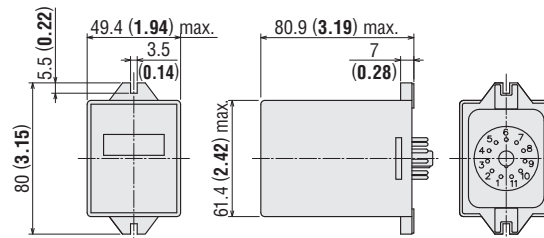
**SDM496** is not approved by any safety standards.

◇ **Applicable Products**

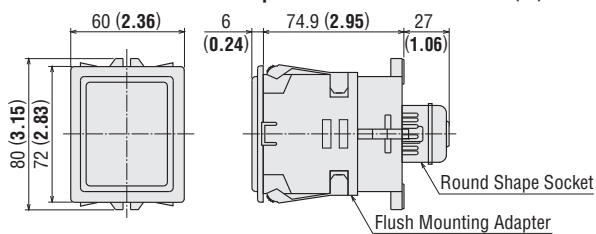
**BLU** Series, **FBLII** Series, **BLH** Series,  
**BHF** Series, **ES01/ES02**, **US** Series

● **Dimensions** Unit = mm (in.)

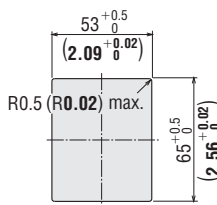
Mass: 200 g (7.1 oz.) **DXF** A100



● Dimensions with Adapter Attached Unit = mm (in.)

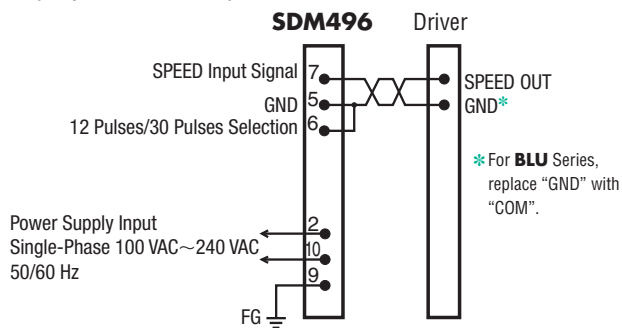


● Panel Cut-Out



● Example of Connection

◇ BLU Series, BLH Series (30 pulses/rotation)



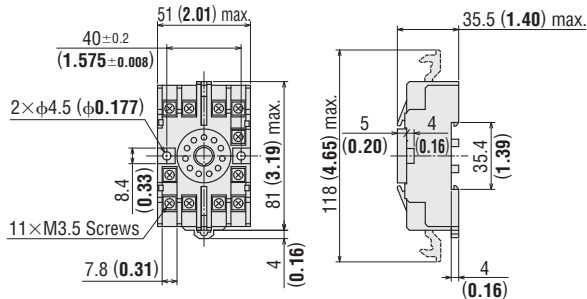
● Flush Mounting Socket for Mounting DIN Rail (RoHS)

This flush mounting socket is convenient for mounting the motor speed indicator to DIN rail with ease.

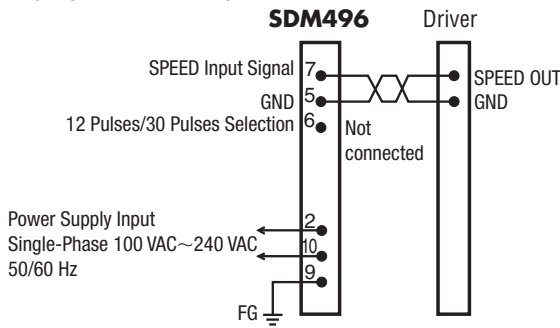
Model: EP11PF (Sold separately)

◇ Dimensions Unit = mm (in.)

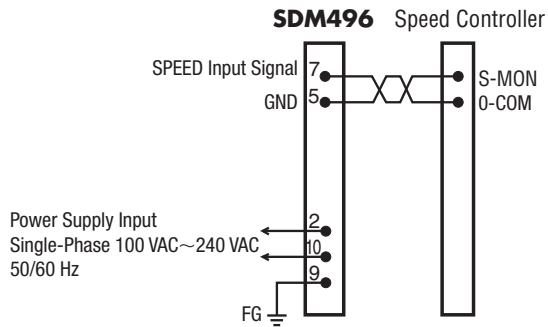
Mass: 75 g (2.6 oz.)



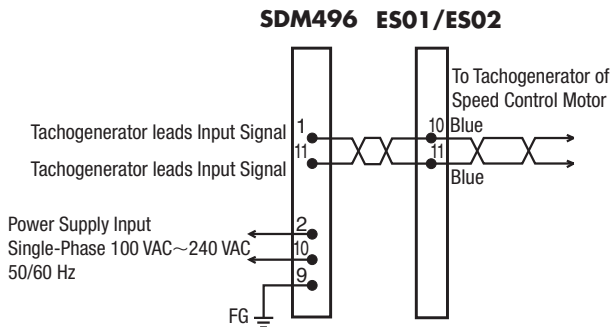
◇ FBLII Series (12 pulses/rotation)



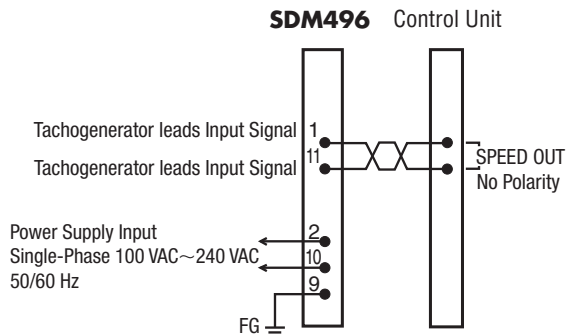
◇ BHF Series



◇ ES01/ES02



◇ US Series



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V Series

Clutch & Brake Motors

Synchronous Motors

Low-Speed Synchronous Motors

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Accessories

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# External Speed Potentiometer RoHS

## ● Model: PAVR-20KZ

(20 k $\Omega$  1/4 W, with a linear resistance vs. angle curve)



### ◇ Applicable Products

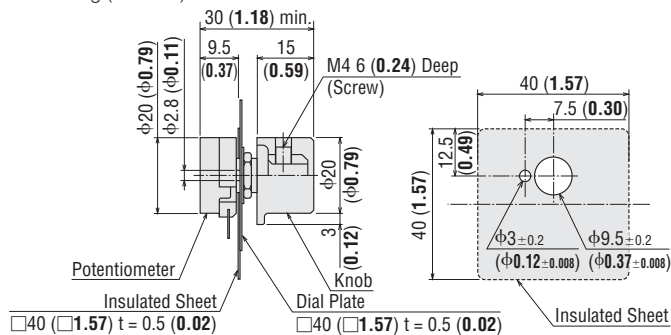
**BX** Series  
**BLF** Series  
**FBLII** Series  
**BLH** Series  
**BHF** Series  
**ES01/ES02**

### Note:

- One set of this external speed potentiometer is included.  
 External speed potentiometer is not included with **BLF** Series, **BLH** Series and **BHF** Series.  
 The external speed potentiometer is used for control involving multiple speed settings.

## ● Dimensions Unit = mm (in.)

Mass: 20 g (0.71 oz.)



Recommended thickness of a mounting plate is a maximum of 4.5 mm (0.18 in.).

# Watertight Power Relay Box RoHS

## ● Model: TB4-0608 (4-Terminal Type)



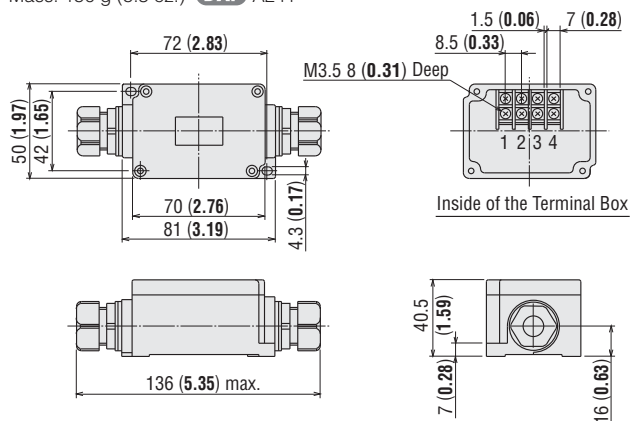
### ◇ Applicable Products

**FPW** Series  
**BH** Series

Applicable cable diameter:  $\phi 6.5 \sim \phi 8.5$  mm ( $\phi 0.26 \sim \phi 0.33$  in.)

## ● Dimensions Unit = mm (in.)

Mass: 150 g (5.3 oz.) **DXF** A241



- The power relay box conforms to IP65 only when used with a extension cable for watertight type for **FPW** Series.  
 (Does not conform to IP65 when used with **BH** Series.)

Screws for the sealed connector and the cover of power relay box should be adjusted to the torque shown below.

Sealed connector 1.0~1.5 N·m (8.8~13.2 lb-in)  
 Cover of power relay box 0.54~0.66 N·m (4.7~5.8 lb-in)

- This product can be used with lead wire type. However, they are not watertight. Also, note that lead wires cannot be fixed with the sealed connectors.

# Watertight Extension Cables RoHS

Use with the watertight power relay box. An extension of 5 m (16.4 ft.) and 10 m (32.8 ft.) is possible.

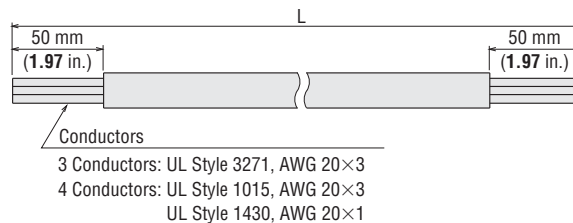
Conductors	Models	Applicable Product	Cable Length: L [m (ft.)]
3 Conductors	<b>CC05AC33P</b>	<b>BH Series</b>	5 (16.4)
	<b>CC10AC33P</b>		10 (32.8)
4 Conductors	<b>CC05AC43P</b>	<b>BH Series</b>	5 (16.4)
	<b>CC10AC43P</b>	<b>FPW Series</b>	10 (32.8)

## ● Specifications

Conductor construction: Refer to the dimension on the right

Finished outer diameter:  $\phi 7.8$  mm ( $\phi 0.31$  in.)

Outer casing: Heat-resistant vinyl chloride



# DIN Rail Mounting Plate RoHS

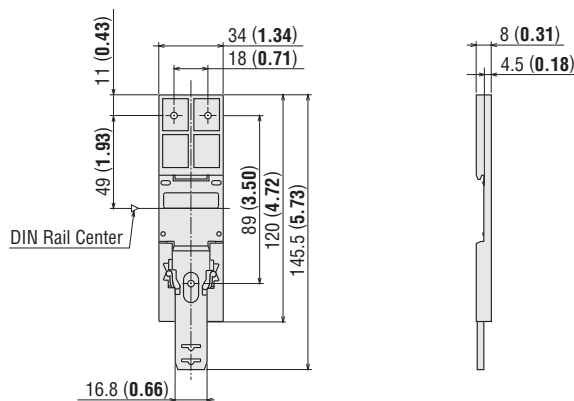
This mounting plate is convenient for installing the drivers and speed controllers on DIN rails with ease.

## ● Model: PADP01



## ● Dimensions Unit = mm (in.)

Mass: 20 g (0.71 oz.)



Screws (Included)

M3 Length 8 mm (0.31 in.) ... 3 pieces

## ◇ Applicable Product

**BX Series**

**FBLII Series**

**BHF Series**

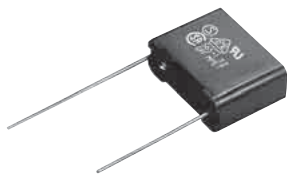


# CR Circuit for Surge Suppression RoHS

This product is used to protect the contacts of the relay or switch used in the forward/reverse circuit section or the instantaneous stop circuit section of a motor.

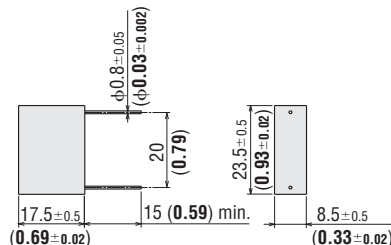
## ● Model: EPCR1201-2

250 VAC (120 Ω, 0.1 μF)



## ● Dimensions Unit = mm (in.)

Mass: 5 g (0.18 oz.)



# Regeneration Units RoHS

Use this unit if your application involves vertical movement or a large inertial load using an electromagnetic brake type motors.

## ● Model: EPRC-400P

## ● Model: RGB100



## ● Specifications

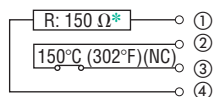
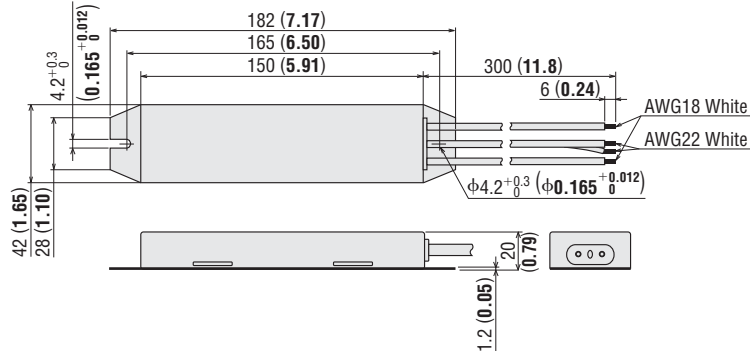
Item	EPRC-400P	RGB100
Applicable Product	<b>BX230, BX460, BX5120</b> BHF Series	<b>BX6200, BX6400</b>
Continuous Regeneration Capability*	100 W	100 W
Resistance Value	400 Ω	150 Ω
Thermostat Operating Temperature	Open: 150±7°C (302±13°F) Close: 145±12°C (293±22°F) (Normally closed)	Open: 150±7°C (302±13°F) Close: 145±12°C (293±22°F) (Normally closed)
Thermostat Electrical Rating	120 VAC 4 A 30 VDC 4 A (Minimum current 5 mA)	120 VAC 4 A 30 VDC 4 A (Minimum current 5 mA)

\* Install the regeneration unit in the place which has the same heat radiation capability as heat radiation plate (Material: Aluminum 350 mm×350 mm [13.8 in.×13.8 in.], 3 mm [0.12 in.] thick).

## ● Dimensions Unit = mm (in.)

Mass: 250 g (8.8 oz.)

DXF C194



①-④ : AWG18×2  
For regeneration current  
Connect to RG Terminal

②-③ : AWG22×2

**BX** Series ...Thermostat for signals

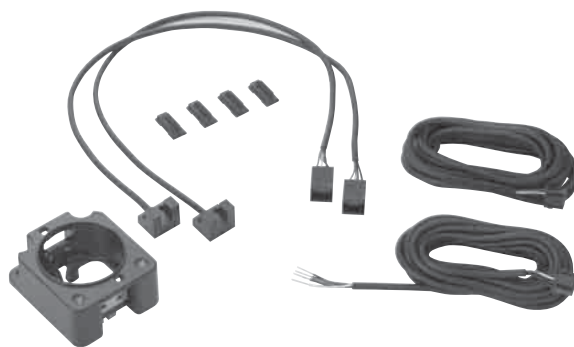
**BHF** Series ...Connect to I-COM and

TP terminal of speed controller

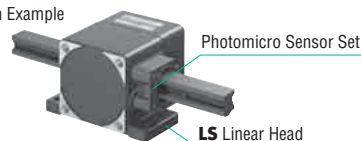
\* EPRC-400P = 400 Ω

# Photomicro Sensor Sets RoHS

These dedicated photomicro sensor sets can be installed easily on the **LS** linear heads. This sensor is used to implement reciprocating motion, return to home operation and detect the position of the rack. By installing a sensor on both sides of the rack, it is possible to detect two signals separately.



● Installation Example



## ● Product Line

Model	Applicable Products
<b>PARP-PS2</b>	<b>LS</b> Linear Head <b>2LS</b> □
<b>PARP-PS4</b>	<b>LS</b> Linear Head <b>4LS</b> □

The following items are included in each product  
 Two Photomicro Sensors, Four Shielding Plates, Sensor Mounting Bracket, Two Flexible Cables with Connector, Four M3 Screws

## ● Sensor Specifications

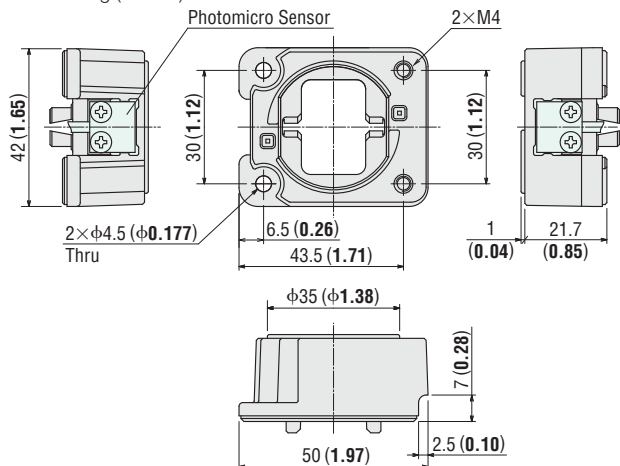
Model	EE-SX911-C1J-R (OMRON)
Power Supply	5~24 VDC ±10%, Ripple (P-P) 10% or less
Current Consumption	15 mA or less
Control Output	NPN open-collector output, 5~24 VDC 100 mA or less Residual voltage 1.0 V or less (at load current of 100 mA) 0.4 V or less (at load current of 5 mA)
Indicator Lamp	Detection display (red)
Sensor Logic	Normally open/Normally closed (switchable, depending on connection)

● Flexible Cable with Connector Model: EE-1016-R (OMRON) Length: 2 m (6.6 ft.)

## ● Dimensions Unit = mm (in.)

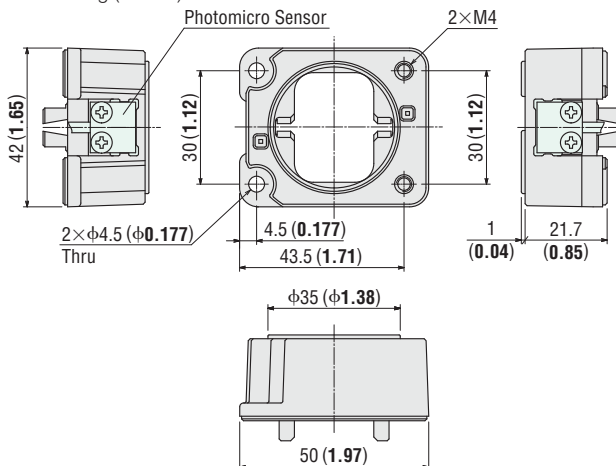
### PARP-PS2

Mass: 200 g (7.1 oz.)



### PARP-PS4

Mass: 200 g (7.1 oz.)

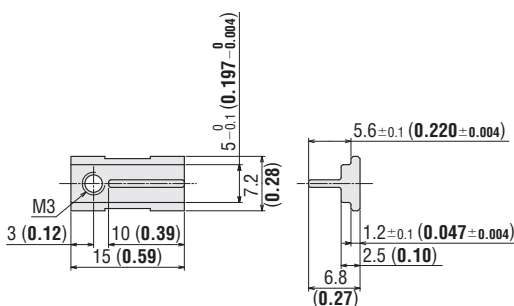


## ● Shielding Plate RoHS

Use extra shielding plates if the shielding plates included with the photomicro sensor set are not enough to implement the required multiple-point stop operation etc.

Model: **LXSP-4** (4 pieces included)

## ◇ Dimensions Unit = mm (in.)



# Limit Switch Set RoHS

These dedicated limit switches can be installed easily on the **LS** linear heads.

With the limit switches, reciprocating operation can be performed easily.

Each set consists of two limit switches, four dogs, limit-switch mounting bracket and cover.

● **Model: PARP-MS**

◇ **Applicable Product**

**LS** Linear Heads

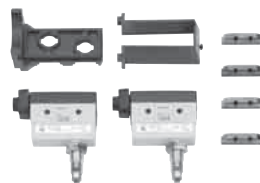
● **Specifications**

Rated Voltage	Motor Load	Inductive Load
125 VAC	2.5 A	10 A
250 VAC	1.4 A	10 A
125 VDC	0.05 A	0.05 A

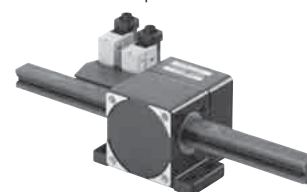
● Permissible operation frequency: 20 times/minute

● Life: At least 500000 times

● Mass: 200g (7.1 oz.)



● Installation Example



# Dog RoHS

Use extra dogs if the dogs included with the limit switch set are not enough to implement the required multiple-point stop operation etc.

● **Model: LXDT-4 (4 pieces included)**



◇ **Applicable Product**

**LS** Linear Heads

● **Dimensions** Unit = mm (in.)

