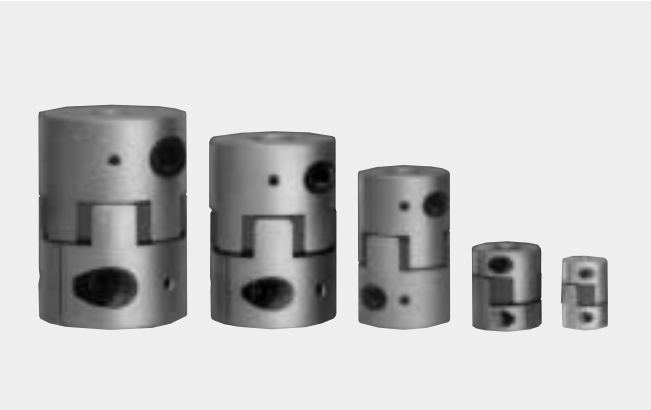
ORIENTAL MOTOR GENERAL CATALOG

A

Accessories

■ FLEXIBLE COUPLING



Features

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

● Selecting a Flexible Coupling

Once you have decided on a motor and the shaft diameter of the equipment to be connected to it, select the proper flexible coupling to use. Oriental Motor's flexible couplings are available in external diameter sizes that provide the strength required for the motor torque.

Example **MCL 30 F06 F06**

Inner Diameter d1 — **Inner Diameter d2**

When the motor is a **4GN□KA** (shaft outer diameter of .375inch) and the shaft diameter of the equipment to be connected to the motor is .375inch, use an **MCL30F06F06**.

● Product Number Code

MCL 40 F08 F10

Inner Diameter d2
06: ϕ 6mm~**18**: ϕ 25mm
F03: 3/16 inch~**F12**: 3/4 inch

Inner Diameter d1
06: ϕ 6mm~**18**: ϕ 18mm
F03: 3/16 inch~**F12**: 3/4 inch

Outer Diameter of Coupling
20: .787DIA. (ϕ 20mm)~**65**: 2.56DIA. (ϕ 65mm)

Flexible Coupling

Coupling Type	Shaft Diameter			Gearhead Model*		Connected Device Shaft Diameter						
						F03	F04	F05	F06	F08	F10	F12
		inch	mm.	Regular Load	Shock Load	3/16inch	1/4inch	5/16inch	3/8inch	1/2inch	5/8inch	3/4inch
						ϕ4.763mm	ϕ6.350mm	ϕ7.938mm	ϕ9.525mm	ϕ12.70mm	ϕ15.875mm	ϕ19.050mm
MCL20	F03	3/16	4.763	OGN□KA	OGN□KA	◎	◎	◎	◎			
	06	0.236	6			◎	◎	◎	◎			
	F04	1/4	6.350	2GB□KA	2GB□KA	◎	◎	◎	◎			
	F05	5/16	7.938	2GN□KA		◎	◎	◎	◎			
	08	0.315	8				◎	◎	◎			
MCL30	F05	5/16	7.938	4GB□KA	2GN□KA, 4GB□KA		◎	◎	◎	◎		
	08	0.315	8				◎	◎	◎	◎		
	F06	3/8	9.525	3GN□KA, 4GN□KA, 5GN□RAA	3GN□KA			◎	◎	◎		
	10	0.394	10	FPW425_-□_				◎	◎	◎		
	12	0.472	12	FPW540_-□_					◎	◎		
	F08	1/2	12.70	5GN□KA					◎	◎		
MCL40	F06	3/8	9.525		4GN□KA, 5GN□RAA					◎	◎	
	10	0.394	10		FPW425_-□_			◎	◎	◎		
	12	0.472	12		FPW540_-□_				◎	◎	◎	
	F08	1/2	12.70		5GN□KA, 5GC□KA					◎	◎	
	14	0.5512	14						◎	◎	◎	
	15	0.591	15	FPW560_-□_							◎	
	F10	5/8	15.875	5GU□KA , 5GU□RAA							◎	
MCL55	15	0.591	15		FPW560_-□_						◎	◎
	F10	5/8	15.875		5GU□KA, 5GU□RAA, 5GCH□KA						◎	◎
	18	0.7087	18	FBL575, 5120_-□, HBL560, 5100N-□ FPW690_-□_ BHI62_-□	FBL575, 5120_-□ HBL560, 5100N-□						◎	◎
MCL65	15	0.591	15								◎	◎
	18	0.7087	18		FPW690_-□_ BHI62_-□						◎	◎

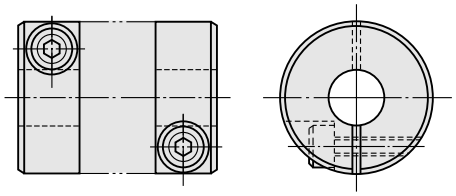
* It is also available for round shaft motors.

● 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.

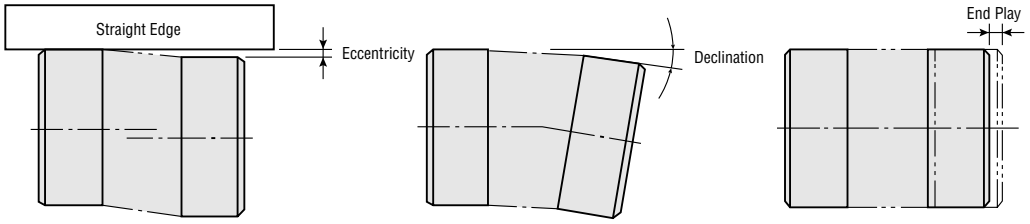


Type		*MCL20	MCL30	MCL40	MCL55	MCL65
Tightening Torque	lb-in	8.7	21.7	104	217	434
	(N•m)	(1)	(2.5)	(12)	(25)	(50)
Tightening Torque of key press screw	lb-in	6.1	14.8	14.8	14.8	34.7
	(N•m)	(0.7)	(1.7)	(1.7)	(1.7)	(4)

*MCL20 type uses a set screw.

■ Alignment Adjustment

Flexible couplings tolerate misalignment of the axis center and transfer rotational angle and torque, but produce vibration when the permissible value for misalignment is exceeded. This can dramatically shorten the coupling's service life.
Misalignment of the axis center includes eccentricity (parallel error of both centers), declination (angular error of both centers) and end play (shaft movement in the axial direction). To keep misalignment to within the permissible value, always check and adjust the alignment. To increase the service life of the coupling, we recommend keeping misalignment to below 1/3 of the permissible value.



NOTE:

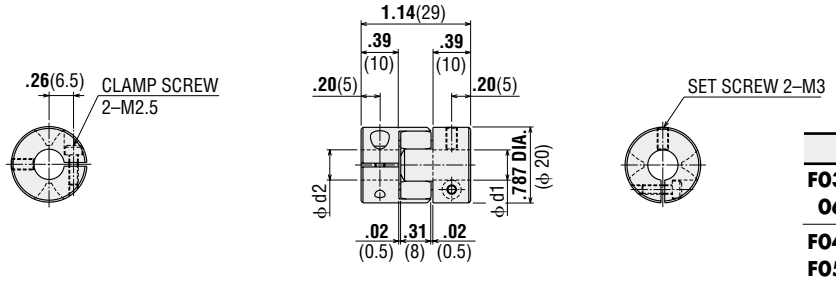
1. Misalignment or excessive torque beyond the permissible values will deform the coupling and shorten its service life.
2. If you hear a strange metallic noise from the coupling while it is running, stop the motor immediately and check for misalignment, shaft interference, loose screws, or the like.
3. When load fluctuates substantially, paint adhesive over the screws or switch to a larger coupling diameter. This helps prevent coupling screws from coming loose.
4. When using couplings that have no key grooves, as on the **MCL20**, **MCL30**, **MCL40** and **MCL55** fasten clamping screws before fastening set screws.
5. Only use the screws specified by Oriental Motor. Other screws may damage the couplings.
6. Using couplings at speeds beyond their maximum rated speed can damage couplings and harm other equipment. Never operate beyond the maximum rated speed.
7. 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 coupling as soon as the protective cover is opened.
8. 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 the devices main power supply is off before performing installation work.

● Specifications

Model	Dimensions						Average Torque lb.in (N.m)	Mass oz (kg)	Moment of Inertia lb-in^2 (kg-m^2)	Permissible Eccentricity inch (mm)	Permissible Declination degrees	Permissible End Play inch (mm)
	Outer Diameter inch (mm)	Length inch (mm)	Bore Diameter d1 inch	(mm)	Bore Diameter d2 inch	(mm)						
MCL20F03F03	0.787 (ϕ20)	1.14 (29)	.1875	(4.763)	.1875	(4.763)	43 (5)	0.671 (19×10^{-3})	3.4×10^{-3} (1.0×10^{-6})	5.9×10^{-3} 0.15	1.0	+0.0315 0 (+0.8 0)
MCL20F03F04					.250	(6.35)						
MCL20F03F05					.3125	(7.938)						
MCL2006F03			.2362	(6)	.1875	(4.763)						
MCL2006F04					.250	(6.35)						
MCL2006F05					.3125	(7.938)						
MCL20F04F04			.250	(6.35)	.250	(6.35)						
MCL20F04F05					.3125	(7.938)						
MCL20F05F05			.3125	(7.938)	.3125	(7.938)						
MCL2008F04			.3150	(8)	.250	(6.35)						
MCL2008F05					.3125	(7.938)						
MCL30F04F05	1.18 (ϕ30)	1.71 (43.5)	.250	(6.35)	.3125	(7.938)	107 (12.5)	2.33 (66×10^{-3})	28.4×10^{-3} (8.3×10^{-6})			+0.0394 0 (+1.0 0)
MCL30F05F05			.3125	(7.938)	.3125	(7.938)						
MCL30F05F06					.3750	(9.525)						
MCL3008F06			.3150	(8)	.3750	(9.525)						
MCL30F06F06			.3750	(9.525)	.3750	(9.525)						
MCL30F06F08					.500	(12.7)						
MCL3010F05			.3937	(10)	.3125	(7.938)						
MCL3010F06					.3750	(9.525)						
MCL3010F08					.500	(12.7)						
MCL3012F06			.4724	(12)	.3750	(9.525)						
MCL3012F08					.500	(12.7)						
MCL30F08F08			.500	(12.7)	.500	(12.7)						
MCL40F05F06	1.57 (ϕ40)	2.52 (64)	.3125	(7.938)	.3750	(9.525)	213 (25)	5.30 (150×10^{-3})	123×10^{-3} (36×10^{-6})	7.9×10^{-3} (0.2)	1.0	+0.0472 0 (+1.2 0)
MCL40F06F06			.3750	(9.525)	.3750	(9.525)						
MCL40F06F08					.500	(12.7)						
MCL4010F05			.3937	(10)	.3125	(7.938)						
MCL4010F06					.3750	(9.525)						
MCL4010F08					.500	(12.7)						
MCL4012F06			.4724	(12)	.3750	(9.525)						
MCL4012F08					.500	(12.7)						
MCL4012F10					.625	(15.875)						
MCL40F08F08			.500	(12.7)	.500	(12.7)						
MCL40F08F10					.625	(15.875)						
MCL4014F06			.5512	(14)	.3750	(9.525)						
MCL4014F08					.500	(12.7)						
MCL4014F10					.625	(15.875)						
MCL4015F08			.5906	(15)	.500	(12.7)						
MCL4015F10					.625	(15.875)						
MCL40F10F10			.625	(15.875)	.625	(15.875)						
MCL5515F08	2.17 (ϕ55)	2.99 (76)	.5906	(15)	.500	(12.7)	512 (60)	12.4 (350×10^{-3})	547×10^{-3} (160×10^{-6})			+0.0551 0 (+1.4 0)
MCL5515F10					.625	(15.875)						
MCL5515F12					.750	(19.05)						
MCL55F10F10			.625	(15.875)	.625	(15.875)						
MCL55F10F12					.750	(19.05)						
MCL5518F10			.7087	(18)	.625	(15.875)						
MCL5518F12					.750	(19.05)						+0.0591 0 (+1.5 0)
MCL6518F10	2.56 (ϕ65)	3.44 (87.5)	.7087	(18)	.625	(15.875)	1365 (160)	20.1 (570×10^{-3})	1264×10^{-3} (370×10^{-6})			
MCL6518F12					.750	(19.05)						

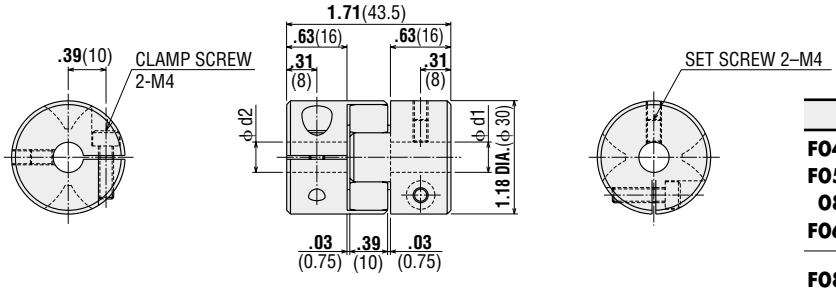
● Dimensions Unit = **inch** (mm)

MCL20



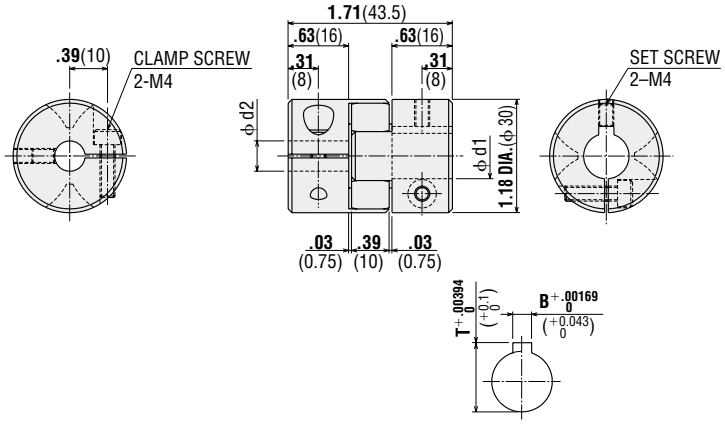
BORE (ϕd1,ϕd2)	TOLERANCE
F03: **.1875DIA.**(ϕ4.763) **06**: **.2362DIA.**(ϕ6)	**+.00071** **0** (+0.018 0)
F04: **.2500DIA.**(ϕ6.35) **F05**: **.3125DIA.**(ϕ7.938) **08**: **.3150DIA.**(ϕ8)	**+.00087** **0** (+0.022 0)

MCL30



BORE (ϕd1,ϕd2)	TOLERANCE
F04: **.2500DIA.**(ϕ6.350) **F05**: **.3125DIA.**(ϕ7.938) **08**: **.3150DIA.**(ϕ8) **F06**: **.3750DIA.**(ϕ9.525)	**+.00087** **0** (+0.022 0)
F08: **0.500DIA.**(ϕ12.7)	**+.00106** **0** (+0.027 0)

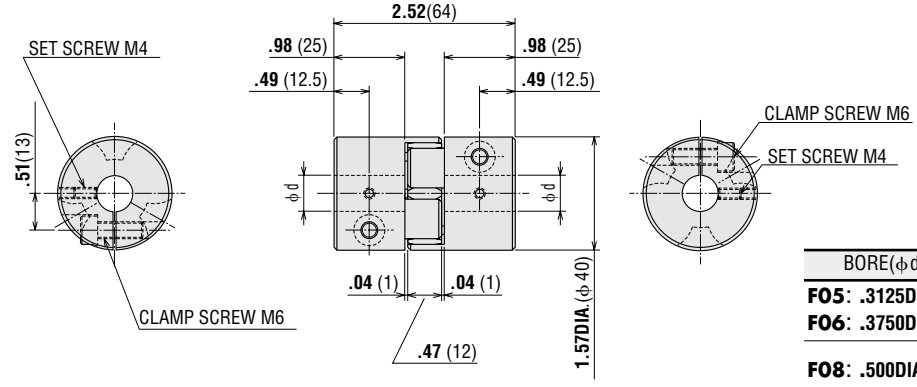
MCL3010F05
MCL3010F06
MCL3010F08
MCL3012F06
MCL3012F08



BORE (ϕd1)	TOLERANCE	WIDTH:B	LENGTH:T
10: **.3937DIA.**(ϕ10)	**+.00087** **0** (+0.022 0)	**.1575** (4)	.4645 (11.8)
12: **.4724DIA.**(ϕ12)	**+.00106** **0** (+0.027 0)		.5433 (13.8)

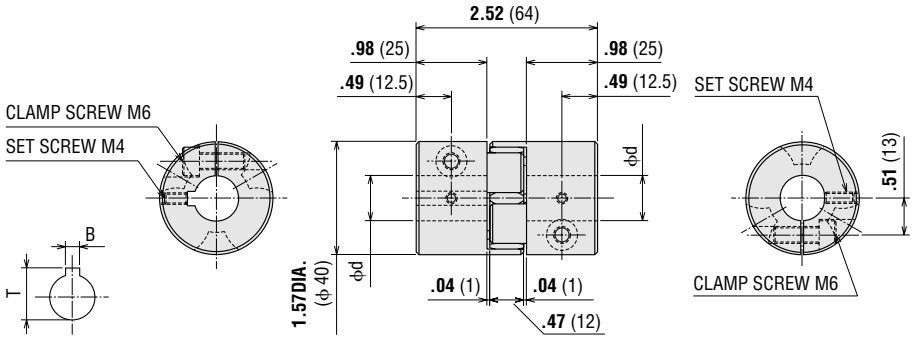
BORE (ϕd2)	TOLERANCE
F05: **.3125DIA.**(ϕ7.938) **F06**: **.3750DIA.**(ϕ9.525)	**+.00087** **0** (+0.022 0)
F08: **.500DIA.**(ϕ12.7)	**+.00106** **0** (+0.027 0)

MCL40F05F06
MCL40F06F06
MCL40F06F08
MCL40F08F08



BORE(ϕd1,ϕd2)	TOLERANCE
F05: **.3125DIA.**(ϕ7.938) **F06**: **.3750DIA.**(ϕ9.525)	**+.00087** **0** (+0.022 0)
F08: **.500DIA.**(ϕ12.7)	**+.00106** **0** (+0.027 0)

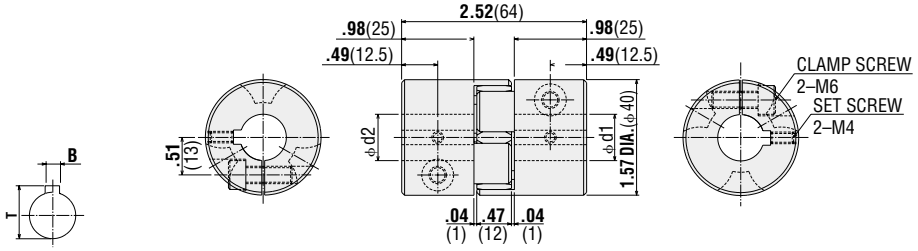
MCL4010F05
MCL4010F06
MCL4010F08
MCL4012F06
MCL4012F08
MCL40F08F10
MCL4014F06
MCL4014F08
MCL4015F08



BORE (ϕd1)	TOLERANCE	WIDTH: B	TOLERANCE	LENGTH: T	TOLERANCE
10: **.3937DIA.** (ϕ10)	**+.00087** **0** (+0.022 0)	**.1575** (4)	**+.00169** **0** (+0.043 0)	**.4645** (11.8)	**+.00394** **0** (+0.1 0)
12: **.4724DIA.** (ϕ12)	**+.00106** **0** (+0.027 0)			**.5433** (13.8)	
14: **.5512DIA.** (ϕ14)				**.6417** (16.3)	
15: **.5906DIA.** (ϕ15)		**.1969** (5)		**.6811** (17.3)	
F10: **.6250DIA.** (ϕ15.875)		**.1875** (4.763)	**+.0020** **0** (+0.051 0)	**.7090** (18.009)	**+.010** **0** (+0.254 0)

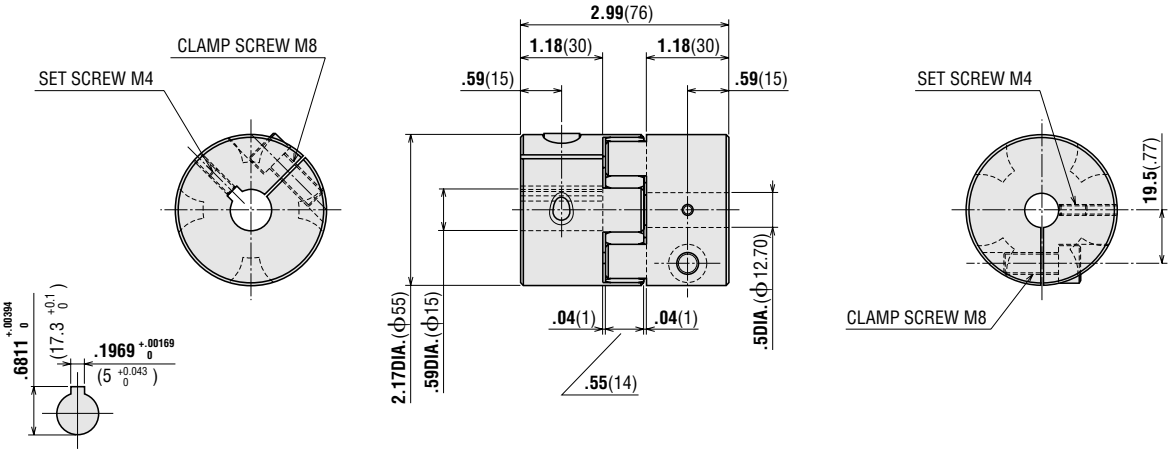
BORE (ϕd2)	TOLERANCE
F05: **.3125DIA.**(ϕ7.938)	**+.00087** **0** (+0.022 0)
F06: **.3750DIA.**(ϕ9.525)	
F08: **.500DIA.**(ϕ12.7)	**+.00106** **0** (+0.027 0)

MCL4012F10
MCL4014F10
MCL4015F10
MCL40F10F10

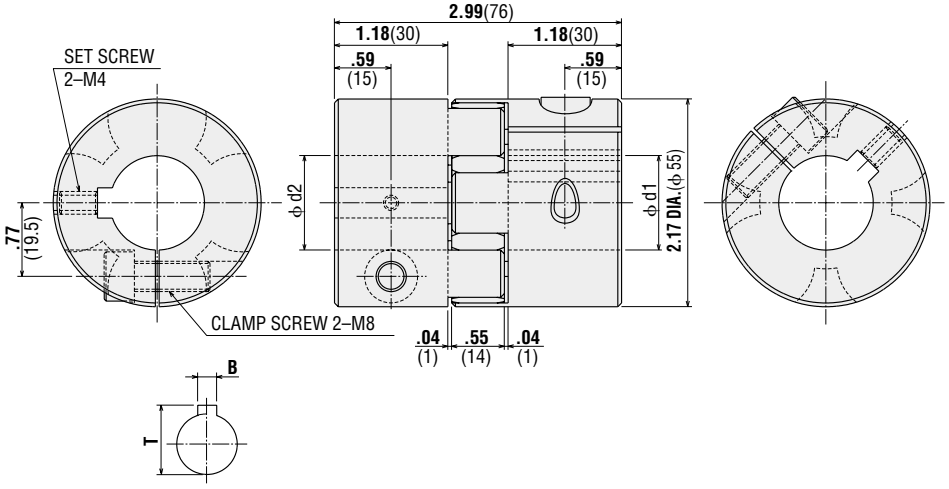


BORE (ϕd1)	TOLERANCE	WIDTH: B	TOLERANCE	LENGTH: T	TOLERANCE
10: **.3937DIA.** (ϕ10)	**+.00087** **0** (+0.022 0)	**.1575** (4)	**+.00169** **0** (+0.043 0)	**.4645** (11.8)	**+.00394** **0** (+0.1 0)
12: **.4724DIA.** (ϕ12)	**+.00106** **0** (+0.027 0)			**.5433** (13.8)	
14: **.5512DIA.** (ϕ14)		**.1969** (5)		**.6417** (16.3)	
15: **.5906DIA.** (ϕ15)				**.6811** (17.3)	
F10: **.6250DIA.** (ϕ15.875)		**.1875** (4.763)	**+.0020** **0** (+0.051 0)	**.7090** (18.009)	**+.010** **0** (+0.254 0)

MCL5515F08

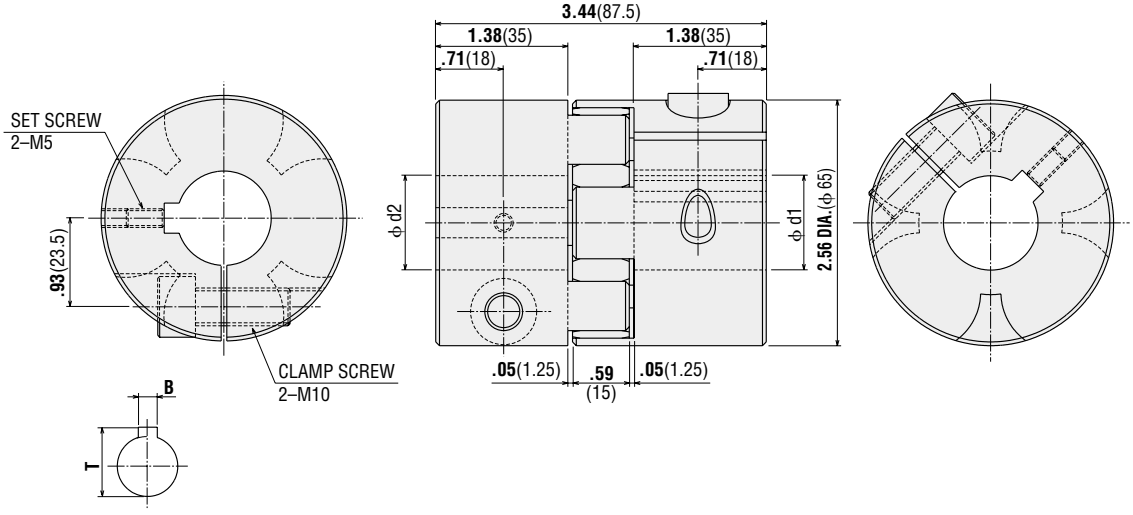


MCL55



BORE (ϕd1,ϕd2)	WIDTH: B	TOLERANCE	LENGTH: T	TOLERANCE
15: **.5906DIA.** (ϕ15)	**.1969** (5)	**+.00169** **0** (+0.043 0)	**.6811** (17.3)	**+.00394** **0** (+0.1 0)
18: **.7087DIA.** (ϕ18)	**.2362** (6)	**+.00205** **0** (+0.052 0)	**.8189** (20.8)	**+.00394** **0** (+0.1 0)
F10: **.6250DIA.** (ϕ15.875)	**.1875** (4.763)	**+.002** **0** (+0.051 0)	**.7090** (18.009)	**+.01** **0** (+0.254 0)
F12: **.7500DIA.** (ϕ19.050)	**.1875** (4.763)	**+.002** **0** (+0.051 0)	**.8370** (21.260)	**+.01** **0** (+0.254 0)

MCL65



BORE (ϕd1,ϕd2)	WIDTH: B	TOLERANCE	LENGTH: T	TOLERANCE
18: **.7087DIA.** (ϕ18)	**.2362** (6)	**+.00205** **0** (+0.052 0)	**.8189** (20.8)	**+.00394** **0** (+0.1 0)
F10: **.6250DIA.** (ϕ15.875)	**.1875** (4.763)	**+.002** **0** (+0.051 0)	**.7090** (18.009)	**+.01** **0** (+0.254 0)
F12: **.7500DIA.** (ϕ19.050)	**.1875** (4.763)	**+.002** **0** (+0.051 0)	**.8370** (21.260)	**+.01** **0** (+0.254 0)

Motor Mounting Brackets

Five kinds of mounting brackets for motors and gearheads are available as shown below. These brackets come with tapped holes. To mount the motor and gearhead, simply fasten with the screws provided with gearhead.

Please note that these mounting brackets cannot be used with the right-angle gearheads and flange mounting (**5GC□KA** and **5GCH□KA**) .

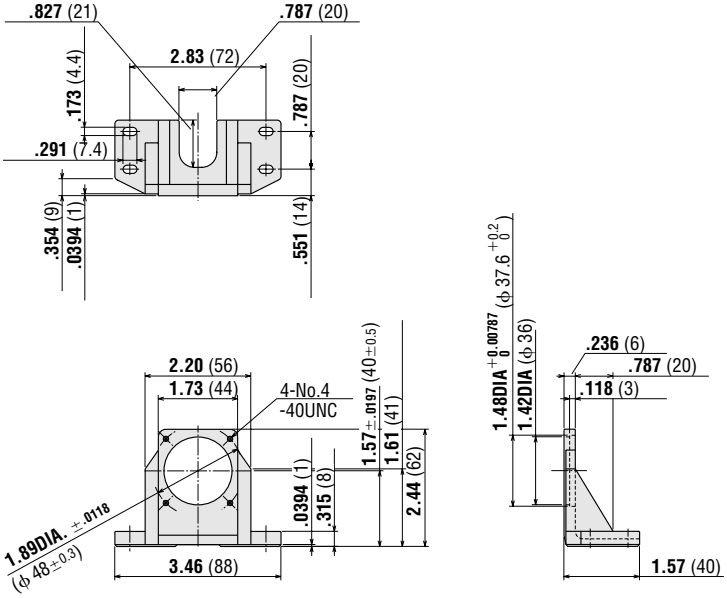
Dimensions Scale 1/4 Unit = inch (mm)

For 1.65 in. sq. (42mm sq.)

Model: **SOL0U04**
Weight: 2.8oz(80g) Material: Aluminium

Compatible Motor and Gearhead

- **0GN□KA**
- 1.65 in sq.(42mm sq.) frame size motors

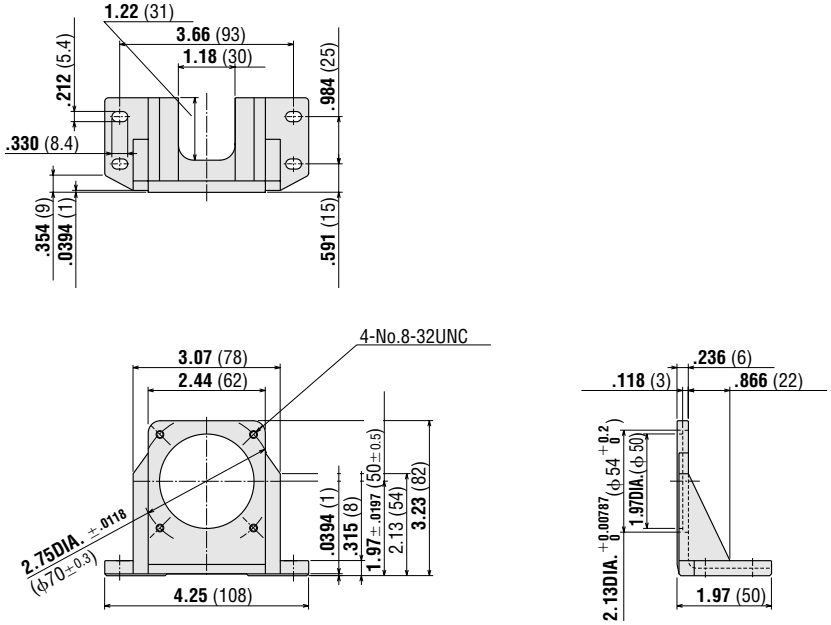


For 2.36 in. sq. (60mm sq.)

Model: **SOL2Uϕ8**
Weight: 4.2oz(120g) Material: Aluminium

Compatible Motor and Gearhead

- **2GN□KA**
- 2.36 in sq.(60mm sq.) frame size motors

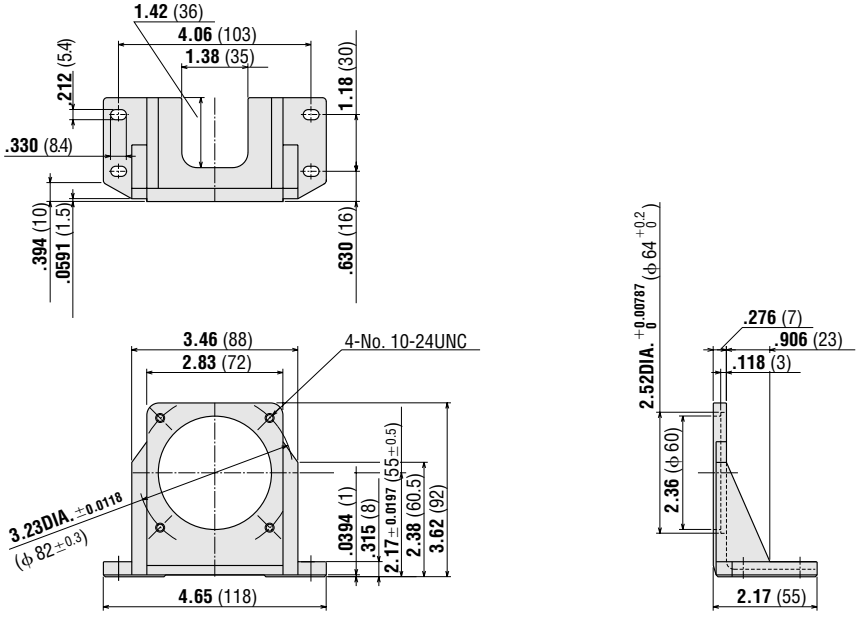


For 2.76 in. sq. (70mm sq.)

Model: **SOL3U10**
Weight: 5.6oz(160g) Material: Aluminium

Compatible Motor and Gearhead

- **3GN□KA**
- 2.76 in sq.(70mm sq.) frame size motors

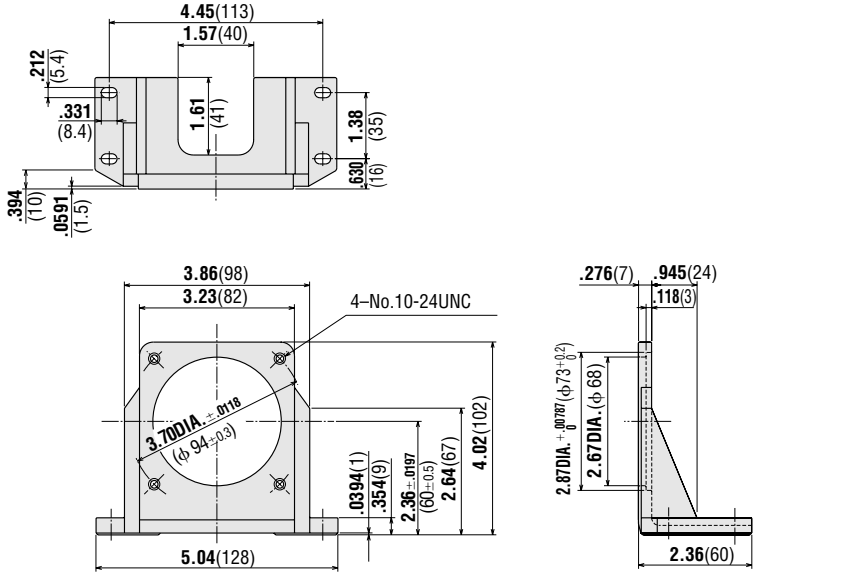


For 3.15 in. sq. (80mm sq.)

Model: **SOL4U10**
Weight: 7.1oz(200g) Material: Aluminium

Compatible Motor and Gearhead

- **4GN□KA**
- 3.15 in sq.(80mm sq.) frame size motors

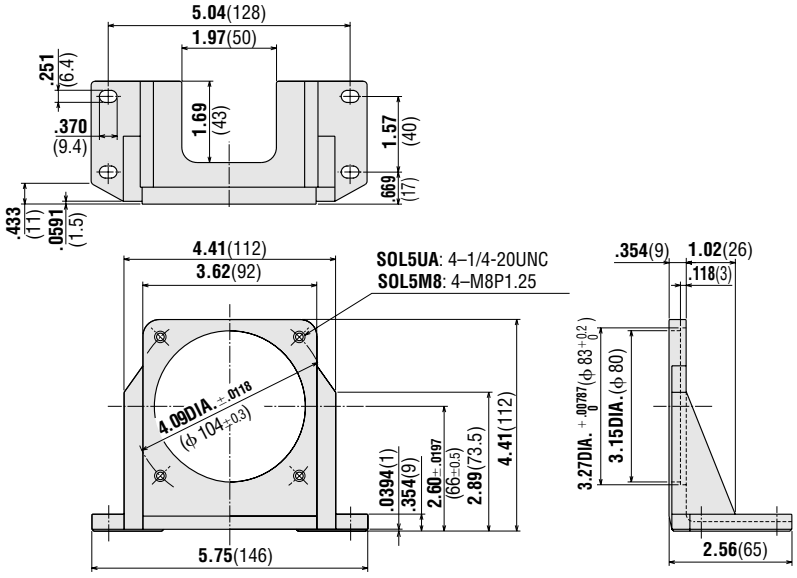


For 3.54 in. sq. (90mm sq.)

Model: **SOL5UA**
SOL5M8
Weight: 9.5oz(270g) Material: Aluminium

Compatible Motor and Gearhead

- **SOL5UA**
- **5GN□KA**
- **5GU□KA**
- 3.54 in sq.(90mm sq.) frame size motors
- **SOL5M8**
- **FBLⅡ** Series

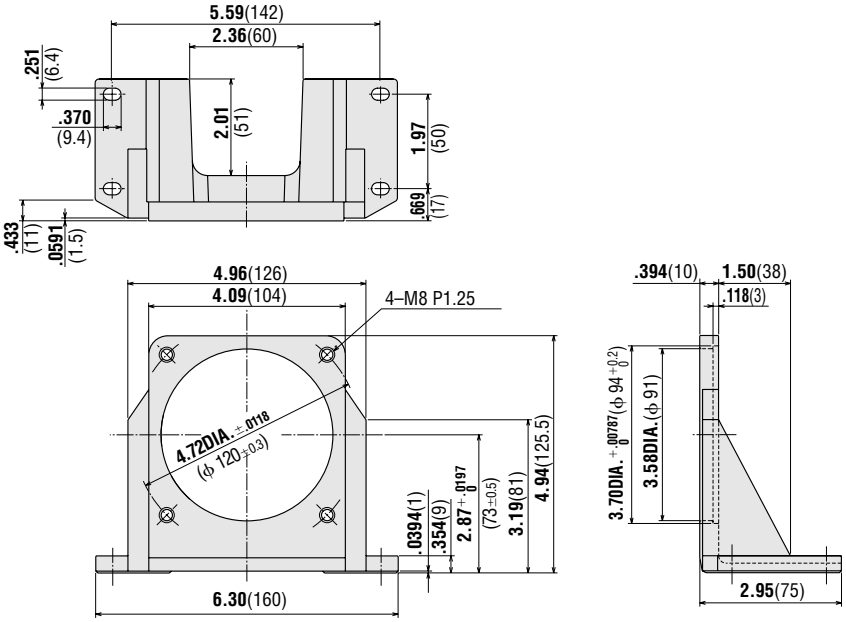


For 4.09 in. sq. (104mm sq.)

Model: **SOL6M8**
Weight: 13.4oz(380g) Material: Aluminium

Compatible Motor and Gearhead

- **BH**Series
- 4.09 in sq.(104mm sq.) frame size motors



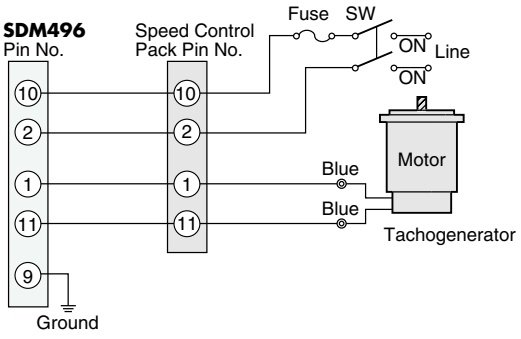
External Speed Indicator

To check the speed of speed control motors, connect the speed indicator.

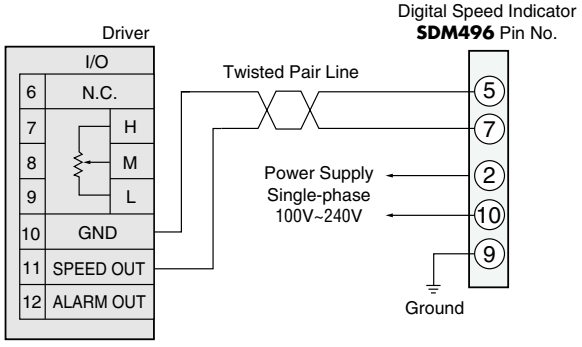
Model: **SDM496** (Single-Phase 100～240VAC)
This digital speed indicator, displays a speed at the output shaft of the motor or gearhead.

Applicable Motor: **FBLⅡ** series, **HBL** series, **US** series
Component type (**SS21-UL**)

●Example of Connection with SS21UL Component Type

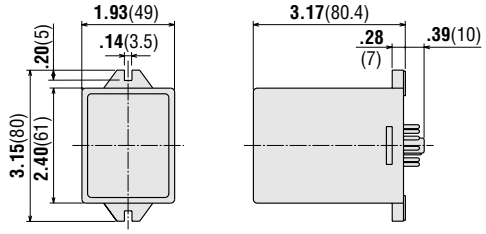


●Example of Connection with FBLⅡ Series

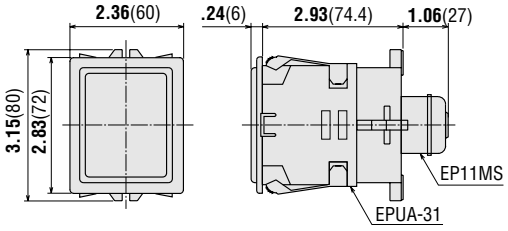


See page [A-163] for connection with unit type speed control motor.

●Dimensions Scale 1/4, Unit = inch (mm) Weight: 7.1 oz. (200 g)



●Dimensions with Adapter Attached Scale 1/4, Unit = inch (mm)

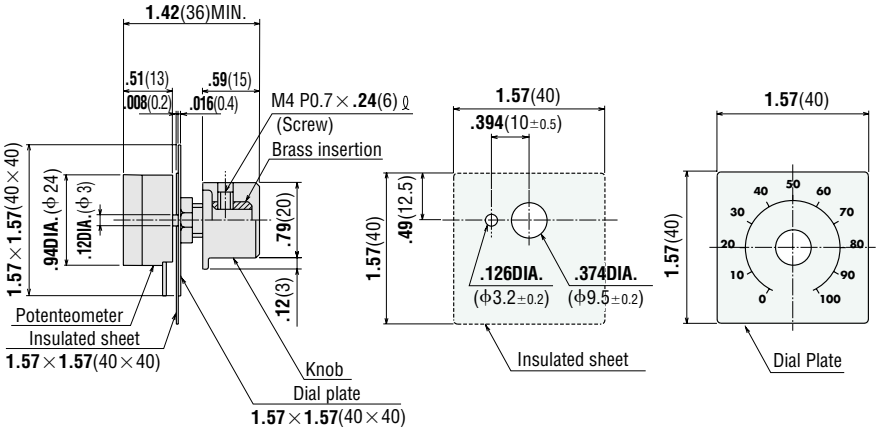


●Optional Parts: A flush mounting adapter **EPUA-31** and round shape socket **EP11MS** are provided with the speed indicator.

External Speed Potentiometers

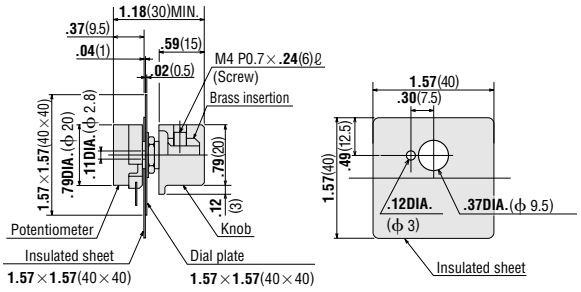
Model : **PAVR-20KY**
(20kΩ · 1/4W)

●Dimensions Scale 1:2, Unit = inch (mm) Weight: 1.2 oz. (35 g)



Model: **PAVR-20KZ**

●Dimensions Scale 1:2, Unit = inch (mm) Weight: 1.2 oz. (35 g)

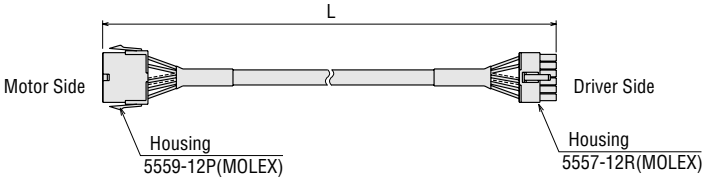


■ Extension Cables

● For FBLⅡSeries

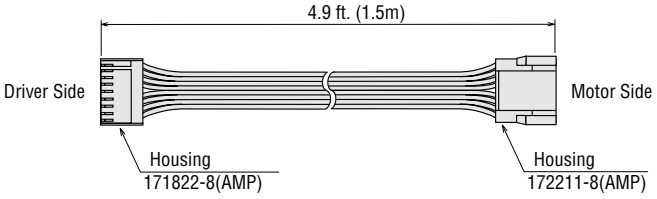
Model	Length: ft.(m)
CC01FBL	3.3 (1)
CC02FBL	6.6 (2)
CC03FBL	9.8 (3)
CC05FBL	16.4 (5)
CC07FBL	23.0 (7)
CC10FBL	32.8 (10)

Maximum extension length is 34.4 ft (10.5m).



● For HBL Series

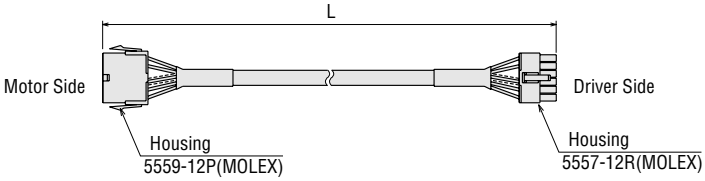
●Applicable Products: HBL210, **HBL425**, **HBL540** type
Model: **FC02HBL**
4.9ft (1.5m)
Maximum extension length is 6.6 ft. (2m)



●Applicable Products: HBL560, **HBL5100** type

Model	Length: ft. (m)
CC01FBL	3.3 (1)
CC02FBL	6.6 (2)
CC03FBL	9.8 (3)
CC05FBL	16.4 (5)

Maximum extension length is 18.8 ft. (5.5m)



For US Series

●**Applicable Products:**
US206, **US315**, **US425**, **US540**

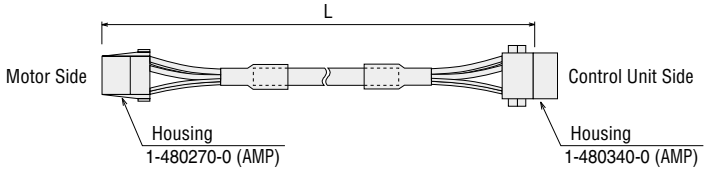
Model	Length: ft. (m)
CC01SS052	3.3 (1)
CC02SS052	6.6 (2)
CC03SS052	9.8 (3)
CC04SS052	13.1 (4)

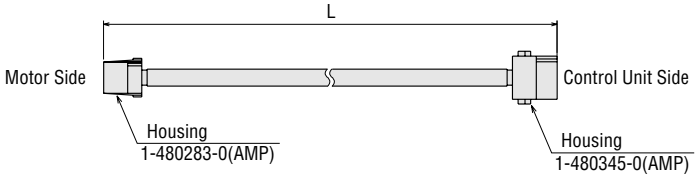
●**Applicable Products:**
US560, **US590**

Model	Length: ft. (m)
CC01SS2	3.3 (1)
CC02SS2	6.6 (2)
CC03SS2	9.8 (3)
CC04SS2	13.1 (4)

Maximum extension length is 15.0 ft. (4.75m)

Extension cable for connecting motor and control unit.
Two types are available, depending on the type of connector.





Din Rail Mounting Bracket

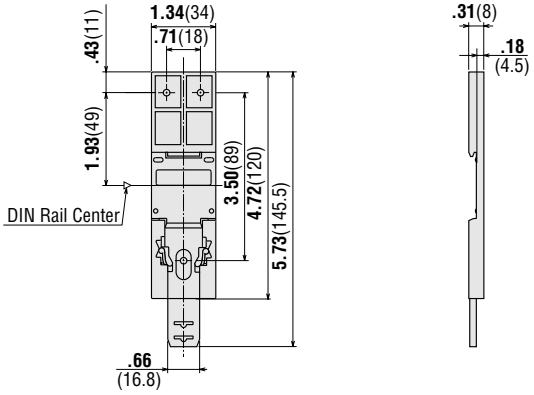
Use when installing the speed control pack and driver on DIN rails.

Model: **PADP01**

Applicable Products

●**FBLII** Series

●**Dimensions** Scale 1/4, Unit = inch (mm) Weight: 0.71oz (20g)

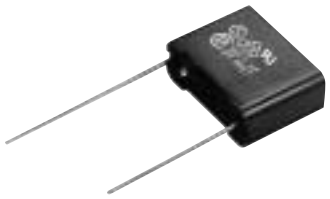


■ CR Circuit for Surge Suppression

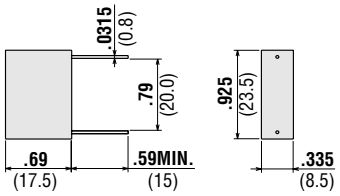
This product is used to protect the contacts of the relay and/or switch used to control the motor direction.

Model: **EPCR1201-2**

AC250V (120Ω 0.1μF)



●**Dimensions** Scale 1:1, Unit = inch (mm) Weight: 0.18oz (5g)

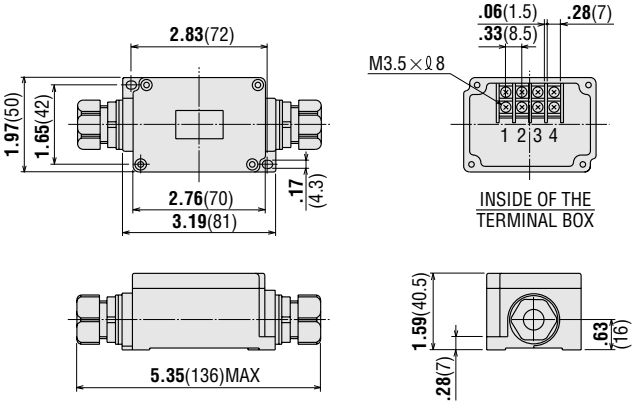


■ Power Relay Box

For use with the waterproof extension cable.

Model: **TB4-0608**

●**Dimensions** Unit = inch (mm) Weight: 5.3oz (150g)



Applicable Motors

●Cabtyre cable type:
FPW Series Induction type
BH Series

●Lead wire type:
Induction Motor
Reversible Motor
Torque Motor

Diameter of cable: .26DIA. (ϕ 6.5)～.33DIA. (ϕ 8.5)

●The relay box conforms to Protection Level IP65 when used with a waterproof extension cable on an FPW series induction motor.

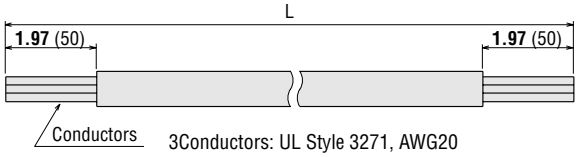
The screws for the cover on the sealed connector and relay box should be adjusted to the torque shown below.

Sealed connector	8.7～13.0 lb-in (1.0～1.5 N・m)
Cover of power relay box	4.7～5.7 lb-in (0.54～0.66 N・m)

■ Extension Cable for Splashproof Motors

Use with the relay box above.

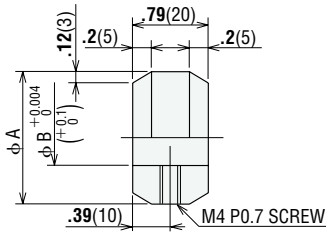
Conductors	Model	Length : ft. (m)
3	**CC05AC33P**	16.4(5)
	CC10AC33P	32.8 (10)
4	**CC05AC43P**	16.4(5)
	CC10AC43P	32.8 (10)



3Conductors: UL Style 3271, AWG20
4Conductors: UL Style 1015, AWG20×3
UL Style 1430, AWG20×1

Dog for Linear Head **LH** Series

Dimensions Scale 1/4, Unit = inch (mm)



Linear Head Model	Dog Model	A		B	
For **0L** type	**LXD0C**	.17	(18)	.31	(8)
For **2L** type	**LXD2C**	.94	(24)	.54	(13.8)
For **4L** type	**LXD4C**	1.18	(30)	.78	(19.8)
For **5L** type	**LXD5C**	1.38	(35)	.98	(24.8)