

Closed Loop <i>Q572P</i>		Motor & Driver Packages		5-Phase Full/Half		2-Phase Stepping Motors		Driver		Controllers		Low-Speed Synchronous Motors					
AS	AS PLUS	AS PLUS	ASC	ASC	RK	CRK II	CSK	PMC	UMK	CSK	PK/PV	PK	UI2120G	EMP401	EMP402	SG8030J	SMK
AC Input	DC Input	DC Input	DC Input	DC Input	AC Input	DC Input	DC Input	DC Input	AC Input	DC Input	without Encoder	with Encoder	with Indexer				



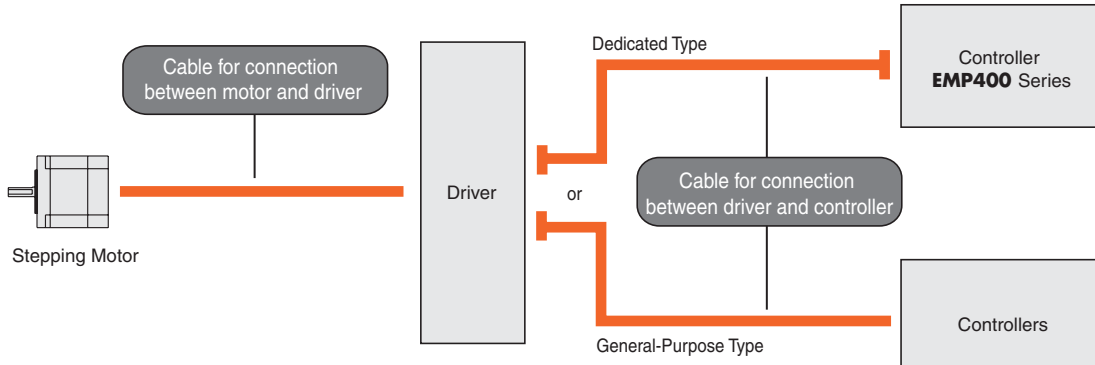
Accessories

Cables	C-284
Flexible Couplings	C-288
Clean Dampers	C-293
Mounting Brackets for Stepping Motors	C-295
DIN Rail Mounting Plate	C-298

Cables

Extension cables provide convenient connection between a motor, driver and controller.

Type of Cables



For Connection between a Motor and Driver

These cables are available to extend the distance between the motor and the driver for ***α*STEP** and **RK** Series.

Cable Name	Page		Applicable Series
Extension Cable	C-286	3	RK Series
Extension Cable	C-286	4	<i>α</i>STEP
Flexible Cable	C-286	5	<i>α</i>STEP
Motor Cable	C-287	6	PK Series Standard P Type

For Connection between a Driver and Controller

These cables are available to extend the connection between the driver and controller. There are both dedicated cables for connection between the **EMP400** and the ***α*STEP** or **RK** Series, as well as general purpose cables for the ***α*STEP** and **RK** Series.

Cable Name	Page		Applicable Series
Driver Cable	C-285	1	<i>α</i>STEP
			RK Series
General-Purpose Type	C-285	2	<i>α</i>STEP
			RK Series
			UI2120G

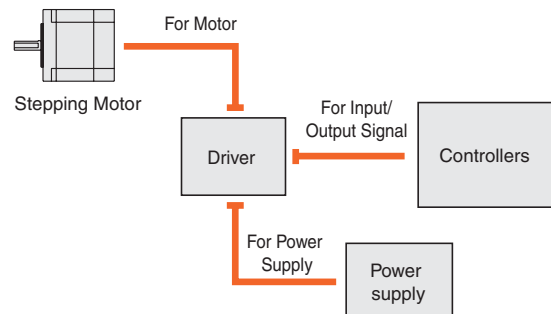
Cable set for DC input stepping motor & driver package

As an option for DC input drivers, lead wires with connectors are available.

Crimping is not necessary, and the connection with the motor, power supply, input/output signal is also easy.

Cable Name	Page		Applicable Series
Optional Cables	C-287	7	5-phase PMC Series

The optional cable includes three cables (for motor, power supply and input/output signal).



Driver Cables

These cables are convenient for connecting **α STEP** and **RK** series drivers to controllers. General-Purpose Type and Dedicated Type (equipped with the connector for the **EMP** series controller) are available.

1 Dedicated Type



One end of the cable is a half-pitch connector that snaps into the driver for **α STEP** and **RK** series. The other end of the cable is equipped with the connector for the **EMP400** series controller.

Note:

Note that as the length of the pulse signal line increases, the maximum transmission frequency decrease. (→Technical Reference Page F-36)

● Product Line

◆ For α STEP

Model	Applicable Series	Length L ft. (m)
CC01EMP4	AS, ASC Series	3.3 (1)
CC02EMP4		6.6 (2)

Note:

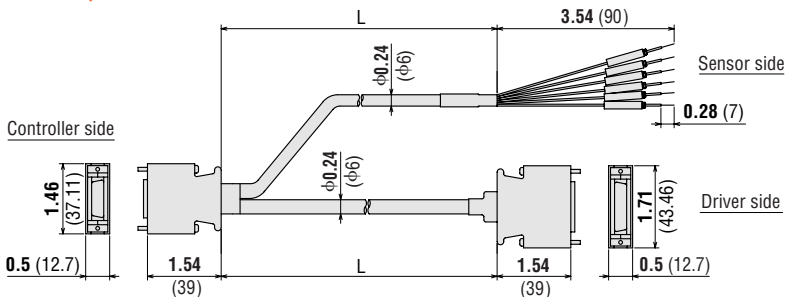
● The alarm clear signal of the AS and ASC series cannot be used with the EMP400 series controller.

● For RK Series

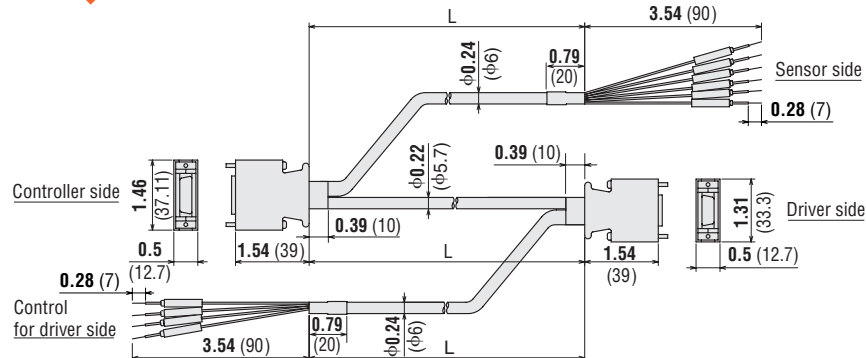
Model	Length L ft. (m)
CC01EMP5	3.3 (1)
CC02EMP5	6.6 (2)

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

◆ For α STEP



◆ For RK Series



2 General-Purpose Type



This is a ribbon cable equipped with, at one end of the cable, the half-pitch connector that snaps into the driver for **α STEP**, **RK** series and **UI2120G**.

Note:

Note that as the length of the pulse signal line increases, the maximum transmission frequency decrease. (→Technical Reference Page F-36)

● Install a connector that matches the controller you are using to the other end of the cable.

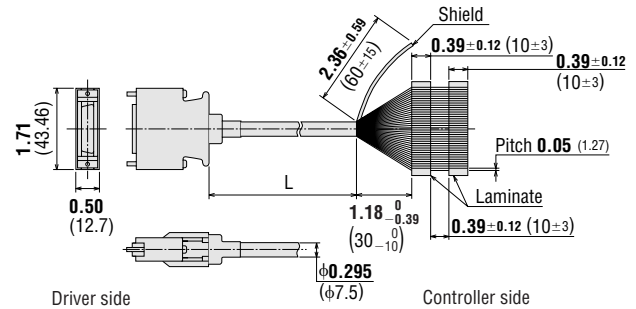
● Product Line

Model	Applicable Series	Length L ft. (m)
CC36D1-1	αSTEP	3.3 (1)
CC36D2-1		6.6 (2)
CC20D1-1	αSTEP AS PLUS	3.3 (1)
CC20D2-1	RK Series	6.6 (2)
	UI2120G	

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

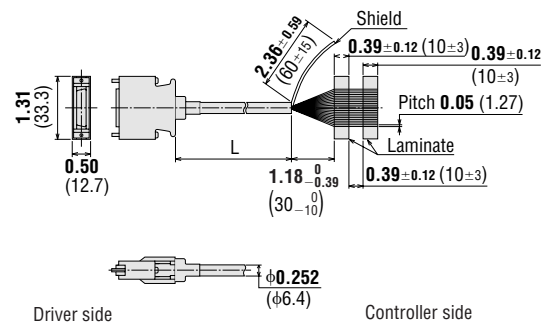
◆ For α STEP

Conductor: AWG28



◆ For α STEP (AS PLUS), RK Series and UI2120G

Conductor: AWG28



Introduction

AS

AS PLUS

ASC

RK

CRK II

CSK

PMC

UMK

CSK

PK/PV

PK

UI2120G

EMP401

EMP402

SG8030J

SMK

Accessories

Before Using a Stepping Motor

2-Phase Stepping Motors

2-Phase Full/Half

AC Input

DC Input

Encoder

without Encoder

with Encoder

Driver with Indexer

Controllers

Low-Speed Synchronous Motors

Accessories

Before Using a Stepping Motor

3 Extension Cable (For RK Series)



These extension cables are used between **RK** series motors and dedicated drivers. They come in three lengths: 16.4 feet (5 m), 32.8 feet (10 m), and 65.6 feet (20 m).

Model	Length L ft. (m)	Conductors
CC05PK5	16.4 (5)	5
CC10PK5	32.8 (10)	
CC20PK5	65.6 (20)	

- Conductor size: AWG22
- Finished outer diameter: ϕ 0.28 inch (ϕ 7.2mm)
- Cable rating: 221°F (105°C)
- Outer casing: oil-resistant, heat-resistant, non-migrating vinyl

Note:

These extension cables are only for the **RK** Series. Do not use them on other stepping motor & driver packages.

4 Extension Cable (For α STEP)



These extension cables are convenient when using the α STEP stepping motor and driver more than 1.31 feet (0.4 m) apart from each other. It's not necessary when the following products are used where the distance

between the driver and the motor is 1.31 ft. (0.4 m) or less.

- **AS, AS PLUS, ASC** Series w/o electromagnetic brake
- **AS, AS PLUS, ASC** Series electromagnetic brake type [Motor Frame Size: 1.65 inch (42 mm)]

● Product Line

◆ For Standard

Model	Length L feet (m)
CC01AIP	3.3 (1)
CC02AIP	6.6 (2)
CC03AIP	9.8 (3)
CC05AIP	16.4 (5)
CC07AIP	23 (7)
CC10AIP	32.8 (10)
CC15AIP	49.2 (15)*
CC20AIP	65.6 (20)*

◆ For with Electromagnetic Brake

Model	Length L feet (m)
CC01AIPM	3.3 (1)
CC02AIPM	6.6 (2)
CC03AIPM	9.8 (3)
CC05AIPM	16.4 (5)
CC07AIPM	23 (7)
CC10AIPM	32.8 (10)
CC15AIPM	49.2 (15)*
CC20AIPM	65.6 (20)*

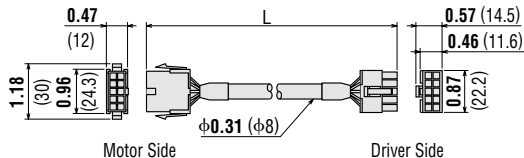
Note:

- Electromagnetic Brake models must use an extension cable for an Electromagnetic Brake. But motor frame size \square 1.65 in. (\square 42 mm) model can use a standard extension cable for the Electromagnetic Brake.

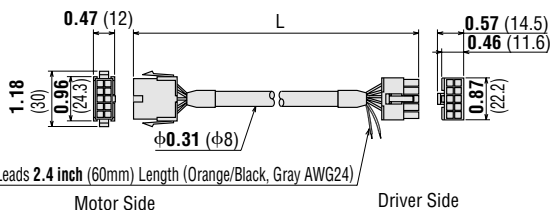
* **ASC** Series can not use extension cable with 49.2 ft. (15 m), 65.6 ft. (20 m) length.

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

For Standard



For with Electromagnetic Brake



5 Flexible Cable (For α STEP)



This flexible cable is used between α STEP motors and dedicated drivers. We recommend this cable when the motor is installed on a moving section and the cable is repeatedly bent and extended.

It is not necessary when the following products are used where the distance between the driver and the motor is 1.31 ft. (0.4 m) or less.

- **AS** Series, **AS PLUS**, **ASC** Series w/o electromagnetic brake
- **AS** Series, **AS PLUS**, **ASC** Series electromagnetic brake type [Motor Frame Size: 1.65 inch (42 mm)]

● Product Line

◆ For Standard

Model	Length L feet (m)
CC01SAR	3.3 (1)
CC02SAR	6.6 (2)
CC03SAR	9.8 (3)
CC05SAR	16.4 (5)
CC07SAR	23 (7)
CC10SAR	32.8 (10)

◆ For with Electromagnetic Brake

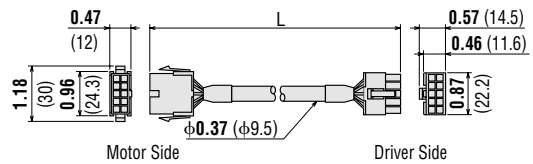
Model	Length L feet (m)
CC01SARM2	3.3 (1)
CC02SARM2	6.6 (2)
CC03SARM2	9.8 (3)
CC05SARM2	16.4 (5)
CC07SARM2	23 (7)
CC10SARM2	32.8 (10)

Note:

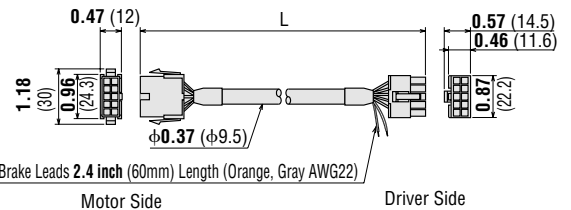
- Electromagnetic Brake models must use an extension cable for an Electromagnetic Brake. But motor frame size \square 1.65 in. (\square 42 mm) model can use a standard extension cable for the Electromagnetic Brake.

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

For Standard



For with Electromagnetic Brake



- When only the extension between motor and driver is needed, use an extension cable.

6 Motor Cables



As an option, lead wires with connectors are available. A 2 ft. (0.6 m) lead wire connector is included with the motor and driver packages.

Product Line

Model	Package	Motor only	Length ft. (m)
LC5N06A	CFK513P □	PK513P □	2 (0.6)
LC5N10A			3.3 (1)
LC2U06A	—	PK22 □ P	2 (0.6)
LC2U10A			PK223-SG □
LC2U06B	—	PK23 □ P	2 (0.6)
LC2U10B			PK24 □ P

Communication Cable



Model: **FC04W5**

Use this 16.4 ft. (5 m) communication cable to connect the **αSTEP AS PLUS** driver to a PC. (DSUB9F to RJ 11 cable)

7 Optional Cables



As an option for DC input drivers, lead wires with a connector are available.

Crimping is not necessary, and the connection with the motor, power supply, input/output signal is also easy. The optional cable includes

three cables (for motor, power supply and input/output signal).

Product Line

Model	Applicable Series	Applicable Driver	Length ft. (m)
LC501PMC	PMC Series	PMD03CA	2 (0.6)

Introduction

AS

AS PLUS

ASC

ASC

RK

CRK II

CSK

PMC

UMK

CSK

PK/PV

PK

UI2120G

EMP401

EMP402

SG8030J

SMK

Accessories

Before Using a Stepping Motor

Motor & Driver Packages

5-Phase Microstep

5-Phase Full/Half

2-Phase Full/Half

2-Phase Full/Half without Encoder

2-Phase Full/Half with Encoder

Driver with Indexer

Controllers

Low-Speed Synchronous Motors

Accessories

Before Using a Stepping Motor

Flexible Couplings

MC Motor Couplings



Selecting an MC Coupling

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

All motor shaft diameters of stepping motor units are available with the exception of geared models.

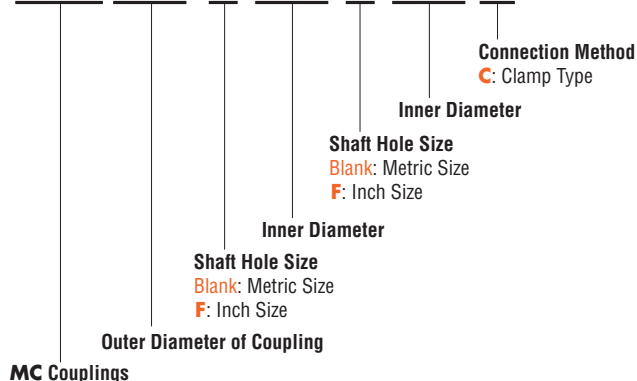
There are three broad categories for the shaft diameter on the equipment to be connected based on the motor shaft diameter (except for some clamp types).

Features

- No backlash.
- Plate springs formed of slits reliably absorb eccentricity, declination and end play.
- Torsional rigidity is high, responsiveness excellent.
- Characteristics are the same in forward and reverse.
- Maintenance free (excellent resistance to oil and chemicals).
- Aluminum alloy construction.
- Standardized shaft hole sizes for motor shafts and driven shafts of different diameters.

Product Number Code

MC 25 F 04 F 04 C



Examples **MC 25 08 F 04 C**

Internal Diameter

Internal Diameter

- ① When the motor is a **RK566AA** [outer diameter of shaft: 0.315 inch (8 mm) and the shaft diameter of the equipment to be connected to the motor is 0.25 inch (6.35 mm)] use **MC2508F04C**.
- ② When the motor is a **RK5913AA** [outer diameter of shaft: 0.5512 inch (14 mm)] and the shaft diameter of the equipment to be connected to the motor is 0.5 inch (12.7 mm)] use **MC5014F08C**.

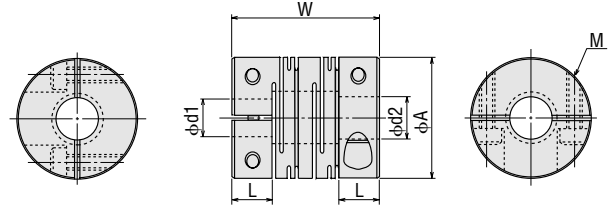
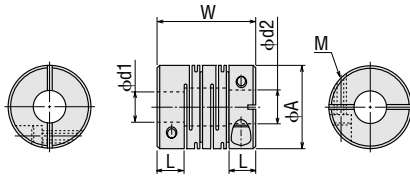
MC coupling can be selected using with motor sizing calculation result (→Page F-2). Select a coupling which has rated torque bigger than motor required torque. In this way, smaller coupling may be able to use.

Type	Shaft Diameter in. (mm)	αSTEP	5-Phase Stepping Motors	2-Phase Stepping Motor Package	2-Phase Stepping Motors	Low-Speed Synchronous Motors	Driven Shaft Diameter in. (mm)							
							0.1875 (4.763)	0.25 (6.35)	0.3125 (7.938)	0.375 (9.525)	0.5 (12.7)	0.625 (15.875)		
MC12	φ0.1969 (φ5)	—	RK543, CFK53□, CFK543, CSK543, PMC3□	UMK243, CSK243	PK22□P	SMK014	○							
MC16	φ0.1969 (φ5)	AS46A(M), ASC34AK, ASC36AK, ASC46A(M)K	RK544, RK545, CFK544, CFK545, CSK544, CSK545	UMK244, CSK244	PK233P, PK243		○	○						
MC20	φ0.1969 (φ5)	—	—	UMK245, CSK245	PK235P, PK244, PK245	—	○	○	○					
MC25	φ0.25 (φ6.35)	—	—	UMK264, CSK264 UMK266, CSK266	PK264	SMK237		○	○	○				
	φ0.312 (φ7.937)	—	CFK564, CFK566 CSK564, CSK566	—	—	—		○						
MC32	φ0.315 (φ8)	—	RK564, RK566	—	—	—		○	○	○				
	φ0.25 (φ6.35)	—	—	UMK268, CSK268	PK266, PK268 PV264, PV266	—		○	○	○				
MC40	φ0.312 (φ7.937)	—	CFK569, CSK569	—	—	—		○						
	φ0.315 (φ8)	AS66A(M), AS69A(M) ASC66A(M)K	RK569	—	—	—		○	○	○				
MC50	φ0.5 (φ12.7)	—	CFK596, CFK599, CSK596, CSK599	UMK296, UMK299, CSK296, CSK299	PK296	SMK5100 SMK5160					○	○	○	
	φ0.5512 (φ14)	AS98A(M), AS911A	RK596, RK599	—	—	—					○	○	○	
MC50	φ0.5 (φ12.7)	—	CFK5913, CSK5913	UMK2913, CSK2913	PK299, PK2913	—						○	○	
	φ0.5512 (φ14)	—	RK5913	—	—	—						○	○	

Dimensions Unit = inch (mm)

MC12-C, MC16-C, MC20-C, MC25-C, MC32-C

MC40-C, MC50-C



Specifications

Model	Dimensions						Rated Torque oz-in (N-m)	Weight oz. (g)	Inertia oz-in ² (kg-m ²)	Static Torsion Spring Constant lb-in/rad (N-m/rad)	Permissible Eccentricity in. (mm)	Permissible Declination degrees	Permissible End Play in. (mm)
	Outer Diameter φA in.(mm)	Length W in.(mm)	Shaft Hole Diameter d1 in. (mm)	Shaft Hole Diameter d2 in. (mm)	L in.(mm)	Screw Used M							
MC1205F03C	0.472 (12)	0.73 (18.5)	φ0.1969 ^{+0.0007} ₀ (φ5 ^{+0.018} ₀)	φ0.1875 ^{+0.0007} ₀ (φ4.763 ^{+0.018} ₀)	0.2 (5)	M2	28 (0.2)	0.14 (4)	0.0055 (1×10 ⁻⁷)	280 (32)	0.0039 (0.1)	2	±0.011 (±0.3)
MC1605F03C	0.63 (16)	0.91 (23)	φ0.1969 ^{+0.0007} ₀ (φ5 ^{+0.018} ₀)	φ0.1875 ^{+0.0007} ₀ (φ4.763 ^{+0.018} ₀)	0.26 (6.5)	M2.5	42 (0.3)	0.32 (9)	0.022 (4×10 ⁻⁷)	390 (45)	0.0039 (0.1)	2	±0.015 (±0.4)
MC1605F04C				φ0.2500 ^{+0.0009} ₀ (φ6.35 ^{+0.022} ₀)									
MC2005F03C	0.79 (20)	1.02 (26)	φ0.1969 ^{+0.0007} ₀ (φ5 ^{+0.018} ₀)	φ0.1875 ^{+0.0007} ₀ (φ4.763 ^{+0.018} ₀)	0.3 (7.5)	M2.5	71 (0.5)	0.67 (19)	0.06 (11×10 ⁻⁷)	750 (85)	0.0039 (0.1)	2	±0.015 (±0.4)
MC2005F04C				φ0.2500 ^{+0.0009} ₀ (φ6.35 ^{+0.022} ₀)									
MC2005F05C				φ0.3125 ^{+0.0009} ₀ (φ7.938 ^{+0.022} ₀)									
MC2008F04C				φ0.2500 ^{+0.0009} ₀ (φ6.35 ^{+0.022} ₀)									
MC2008F05C				φ0.3125 ^{+0.0009} ₀ (φ7.938 ^{+0.022} ₀)									
MC2008F06C				φ0.3150 ^{+0.0009} ₀ (φ8 ^{+0.022} ₀)									
MC25F04F04C	0.98 (25)	1.22 (31)	φ0.2500 ^{+0.0009} ₀ (φ6.35 ^{+0.022} ₀)	φ0.2500 ^{+0.0009} ₀ (φ6.35 ^{+0.022} ₀)	0.33 (8.5)	M3	142 (1)	1.2 (34)	0.175 (32×10 ⁻⁷)	2000 (230)	0.0059 (0.15)	2	±0.019 (±0.5)
MC25F04F05C				φ0.3125 ^{+0.0009} ₀ (φ7.938 ^{+0.022} ₀)									
MC25F04F06C				φ0.3750 ^{+0.0009} ₀ (φ9.525 ^{+0.022} ₀)									
MC2508F04C				φ0.2500 ^{+0.0009} ₀ (φ6.35 ^{+0.022} ₀)									
MC2508F05C				φ0.3125 ^{+0.0009} ₀ (φ7.938 ^{+0.022} ₀)									
MC2508F06C				φ0.3750 ^{+0.0009} ₀ (φ9.525 ^{+0.022} ₀)									
MC32F04F04C	1.26 (32)	1.61 (41)	φ0.2500 ^{+0.0009} ₀ (φ6.35 ^{+0.022} ₀)	φ0.2500 ^{+0.0009} ₀ (φ6.35 ^{+0.022} ₀)	0.47 (12)	M4	280 (2)	2.6 (75)	0.66 (120×10 ⁻⁷)	3100 (360)	0.0059 (0.15)	2	±0.019 (±0.5)
MC32F04F05C				φ0.3125 ^{+0.0009} ₀ (φ7.938 ^{+0.022} ₀)									
MC32F04F06C				φ0.3750 ^{+0.0009} ₀ (φ9.525 ^{+0.022} ₀)									
MC3208F04C				φ0.2500 ^{+0.0009} ₀ (φ6.35 ^{+0.022} ₀)									
MC3208F05C				φ0.3125 ^{+0.0009} ₀ (φ7.938 ^{+0.022} ₀)									
MC3208F06C				φ0.3750 ^{+0.0009} ₀ (φ9.525 ^{+0.022} ₀)									
MC40F08F06C	1.57 (40)	2.2 (56)	φ0.5000 ^{+0.0011} ₀ (φ12.7 ^{+0.027} ₀)	φ0.3750 ^{+0.0009} ₀ (φ9.525 ^{+0.022} ₀)	0.59 (15)	M5	710 (5)	5.6 (160)	2.2 (400×10 ⁻⁷)	6700 (760)	0.0078 (0.2)	2	±0.019 (±0.5)
MC40F08F08C				φ0.5000 ^{+0.0011} ₀ (φ12.7 ^{+0.027} ₀)									
MC40F08F10C				φ0.6250 ^{+0.0011} ₀ (φ15.875 ^{+0.027} ₀)									
MC4014F06C				φ0.3750 ^{+0.0009} ₀ (φ9.525 ^{+0.022} ₀)									
MC4014F08C				φ0.5000 ^{+0.0011} ₀ (φ12.7 ^{+0.027} ₀)									
MC4014F10C				φ0.6250 ^{+0.0011} ₀ (φ15.875 ^{+0.027} ₀)									
MC50F08F08C	1.97 (50)	2.8 (71)	φ0.5000 ^{+0.0011} ₀ (φ12.7 ^{+0.027} ₀)	φ0.5000 ^{+0.0011} ₀ (φ12.7 ^{+0.027} ₀)	0.71 (18)	M6	1420 (10)	12 (330)	6.6 (1200×10 ⁻⁷)	26000 (3000)	0.0078 (0.2)	2	±0.019 (±0.5)
MC50F08F10C				φ0.6250 ^{+0.0011} ₀ (φ15.875 ^{+0.027} ₀)									
MC5014F08C				φ0.5000 ^{+0.0011} ₀ (φ12.7 ^{+0.027} ₀)									
MC5014F10C				φ0.6250 ^{+0.0011} ₀ (φ15.875 ^{+0.027} ₀)									

MCL Geared Motor Couplings



Selecting an MCL Coupling

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

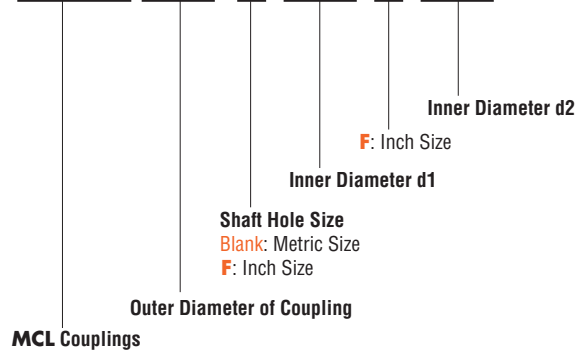
These flexible couplings are clamp types and connect geared stepping motors to other shafts. Select the coupling to match the motor.

Features

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

Product Number Code

MCL 40 F 06 F 08



Examples

MCL 30 F 05 F 06

Internal Diameter d1 Internal Diameter d2

When the motor is **CSK264ATA-SG3.6** [outer diameter of shaft: 0.3125 inch (7.938 mm)] and the axis diameter of the equipment to be connected to the motor is 0.375 inch (9.525 mm), use **MCL30F05F06**.

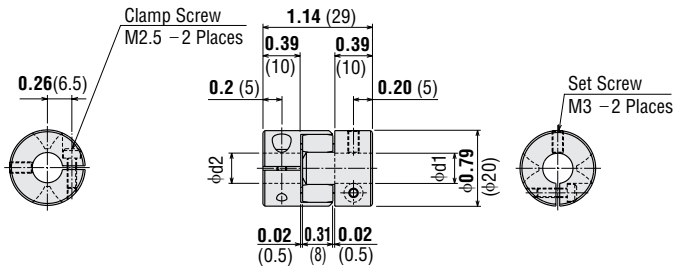
Type	Shaft Diameter in. (mm)	5-Phase Stepping Motors	2-Phase Stepping Motors	Low-Speed Synchronous Motor	Driven Shaft Diameter in. (mm)					
					0.1875 (4.763)	0.25 (6.35)	0.3125 (7.938)	0.375 (9.525)	0.5 (12.7)	0.625 (15.875)
MCL20	φ0.1968 (φ5)	PMC33-MG □	CSK243-SG □, PK223-SG □ PK243-SG □	SMK0A -□ A	○	○	○			
MCL30	φ0.25 (φ6.35)	—	—	SMK216-GN / 2GN □ KA			○			
	φ0.3125 (φ7.938)	—	CSK264-SG □ PK264-SG □	—				○	○	
MCL40	φ0.5 (φ12.7)	—	PK296-SG □	SMK550-GN / 5GN □ KA				○	○	○

Specifications

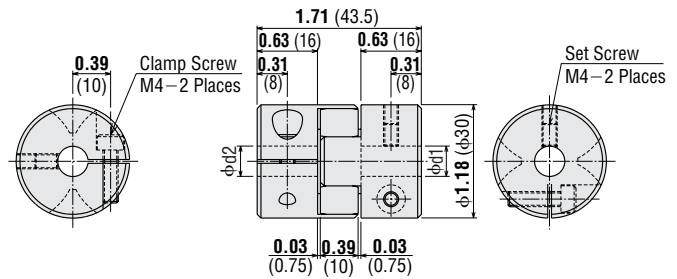
Model	Dimensions				Normal Torque	Weight	Inertia	Permissible Eccentricity	Permissible Declination	Permissible End Play
	Outer Diameter in. (mm)	Length in. (mm)	Axis Hole Diameter d1 in. (mm)	Axis Hole Diameter d2 in. (mm)						
MCL2005F03	0.79 (20)	1.14 (29)	$\phi 0.1969 \pm 0.0007$ ($\phi 5 \pm 0.018$)	$\phi 0.1875 \pm 0.0007$ ($\phi 4.763 \pm 0.018$)	44 (5.0)	0.67 (19)	0.055 (1.0×10^{-6})	0.0059 (0.15)	1°	+0.0315 0 (+0.8 0)
MCL2005F04				$\phi 0.2500 \pm 0.0009$ ($\phi 6.35 \pm 0.022$)						
MCL2005F05				$\phi 0.3125 \pm 0.0009$ ($\phi 7.938 \pm 0.022$)						
MCL30F04F05	1.18 (30)	1.71 (43.5)	$\phi 0.2500 \pm 0.0009$ ($\phi 6.35 \pm 0.022$)	$\phi 0.3125 \pm 0.0009$ ($\phi 7.938 \pm 0.022$)	110 (12.5)	2.3 (66)	0.45 (8.3×10^{-6})	0.0079 (0.2)	1°	+0.0394 0 (+1.0 0)
MCL30F05F05				$\phi 0.3125 \pm 0.0009$ ($\phi 7.938 \pm 0.022$)						
MCL30F05F06				$\phi 0.3750 \pm 0.0009$ ($\phi 9.525 \pm 0.022$)						
MCL40F06F08	1.57 (40)	2.52 (64)	$\phi 0.3750 \pm 0.0009$ ($\phi 9.525 \pm 0.022$)	$\phi 0.5000 \pm 0.0011$ ($\phi 12.7 \pm 0.027$)	220 (25.0)	5.3 (150)	1.97 (3.6×10^{-5})	0.0079 (0.2)	1°	+0.0472 0 (+1.2 0)
MCL40F08F08				$\phi 0.5000 \pm 0.0011$ ($\phi 12.7 \pm 0.027$)						
MCL40F08F10				$\phi 0.6250 \pm 0.0011$ ($\phi 15.875 \pm 0.027$)						

Dimensions Scale 1/2, Unit = inch (mm)

MCL20

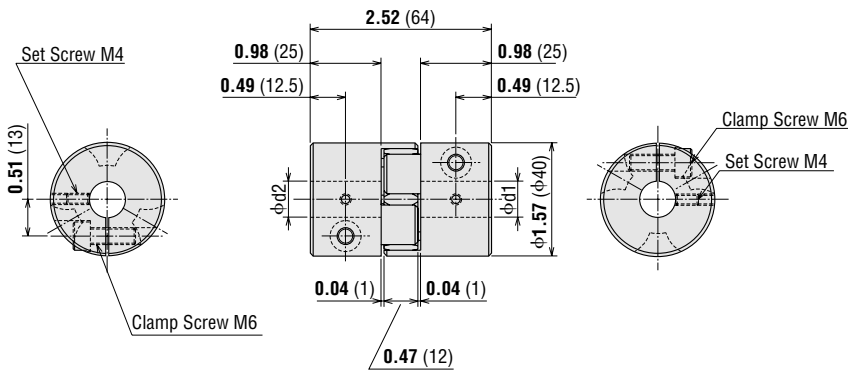


MCL30

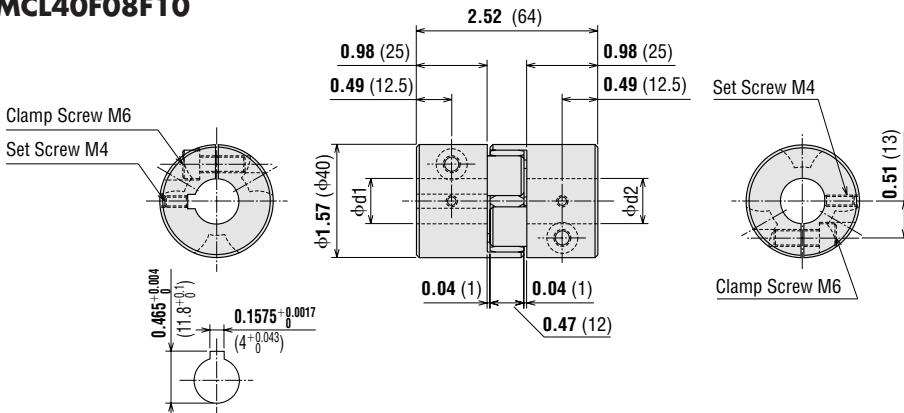


MCL40F06F08

MCL40F08F08



MCL40F08F10



Introduction

AS

AS PLUS

ASC

RK

CRK II

CSK

PMC

UMK

CSK

PK/PV

PK

UI2120G

EMP401

EMP402

SG8030J

SMK

Accessories

Before Using a Stepping Motor

2-Phase Stepping Motors

without Encoder

with Encoder

Driver

with Indeter

Controllers

Low-Speed Synchronous Motors

Accessories

Before Using a Stepping Motor

Accessories

Before Using a Stepping Motor

Accessories

Before Using a Stepping Motor

Accessories

Before Using a Stepping Motor

Accessories

Before Using a Stepping Motor

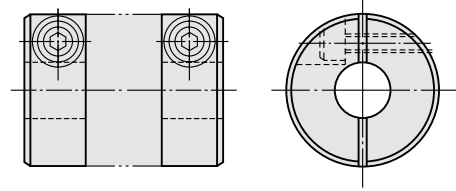
Accessories

Before Using a Stepping Motor

Accessories

■ Mounting to a Shaft

Clamp couplings use the binding force of the screw to compress the shaft 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 binding torque. We recommend use of a torque wrench to fasten the coupling.



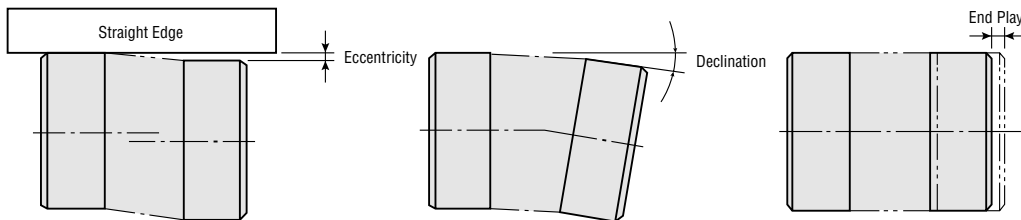
		MC12-C	MC16-C MC20-C MCL20	MC25-C	MC32-C MCL30	MC40-C	MC50-C	MCL40
Tightening Torque	oz-in (N·m)	71 (0.5)	142 (1)	210 (1.5)	350 (2.5)	560 (4)	1130 (8)	1700 (12)
Tightening Torque of key press screw for MCL coupling	oz-in (N·m)	—	99 (0.7)	—	280 (1.7)	—	—	2400 (17)

■ 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. This requires alignment adjustment.

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 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.



Notes:

- When misalignment exceeds the permissible value or excessive torque is applied, the coupling's shape will deform, and service life is shortened.
- When the coupling emits a metallic sound during operation, stop operation immediately and ensure there is no misalignment, axis interference or loose screws.
- When load changes are large, paint the coupling set screw with an adhesive to prevent the coupling screw from loosening or substitute a coupling one size larger.

Clean Dampers

Mechanical dampers suppress stepping motor vibration and improve high-speed performance. An inertial body and silicon gel are hermetically sealed in a plastic case. This offers the following advantages over conventional magnetic dampers.

Features

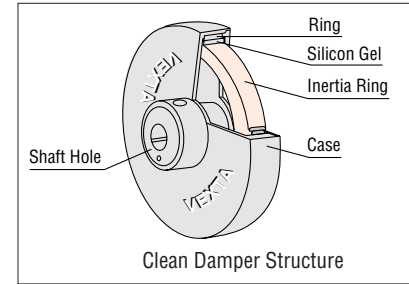
- Since there is no frictional dust as in conventional magnetic dampers, it can be used in environments where higher degrees of cleanness is needed.
- Excellent vibration absorption
- The doughnut-shaped internal inertia body and silicon gel absorb vibration. This feature enables a stable damping effect.
- High reliability
- It holds up well in harsh environments and changes little with age because the silicon gel and plastic case used are heat resistant.

Product Line

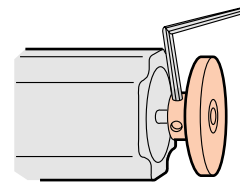
Model	Inertia oz-in ² (kg·m ²)	Weight lb. (g)	Compatible Motors	
			5-Phase	2-Phase
D4CL-5.0F	0.186 (34×10 ⁻⁷)	0.053 (24)	RK54□, RK54□-T, RK54□-N, RK54□-H CFK53□, CFK54□ CSK54□, CSK543-TG□ PMC3□, PMC33-MG□, PMC33-HG□	UMK24□, UMK24□M CSK24□, CSK24□M, CSK243-SG□ PK22□P PK23□P PK24□P PK24□, PK24□M PK223-SG□, PK243-SG□ UMK26□
D6CL-6.3F	0.77 (140×10 ⁻⁷)	0.14 (62)		UMK26□M CSK26□ CSK26□M CSK264-SG□ PK26□ PK26□M PK264-SG□ PV264, 266, 267
D6CL-8.0F	0.77 (140×10 ⁻⁷)	0.13 (61)	RK56□, RK56□-T, RK56□-N, RK56□-H CFK56□, CFK56□H	
D9CL-12.7F	4.8 (870×10 ⁻⁷)	0.23 (105)	CFK59□, CFK59□H CSK59□	CSK29□ PK29□, PK296-SG
D9CL-14F	4.8 (870×10 ⁻⁷)	0.23 (105)	RK59□ RK59□-T RK59□-N RK59□-H	

Ambient Temperature: -4°F~+176°F (-20°C~+80°C)

* Insert the motor case length into the □ of the model name. The character of **A**, **B** and **M** which show the shaft type and electromagnetic brake type are omitted.



Installation of the Clean Damper



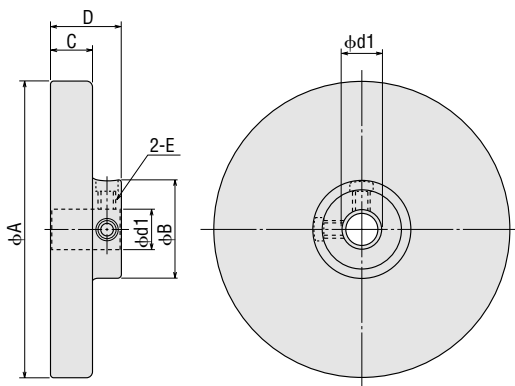
Point the mounting screws of the clean damper toward the motor case, fasten to the shaft and tighten the damper's mounting screws (2 places) with a hexagonal wrench to secure it to the shaft.

Notes:

- There are mounting screws with hexagonal holes in two damper locations, so tighten them both before running the motor.
- The damper rotates at the same speed as the motor shaft, so do not touch it while the motor is running.

Dimensions → page C-294

Dimensions Unit = inch (mm)



Model	d1	A	B	C	D	E
D4CL-5.0F	$0.1969 \begin{smallmatrix} +0.0007 \\ 0 \\ (5^{+0.018} \\ 0) \end{smallmatrix}$	$\phi 1.42 \pm 0.02$ ($\phi 36 \pm 0.5$)	$\phi 0.51 \pm 0.02$ ($\phi 13 \pm 0.5$)	0.354 ± 0.012 (9 ± 0.3)	0.591 ± 0.012 (15 ± 0.5)	M3 2 Places
D6CL-6.3F	$0.2500 \begin{smallmatrix} +0.0009 \\ 0 \\ (6.35^{+0.022} \\ 0) \end{smallmatrix}$	$\phi 1.75 \pm 0.02$ ($\phi 44.5 \pm 0.5$)	$\phi 0.79 \pm 0.02$ ($\phi 20 \pm 0.5$)	0.591 ± 0.012 (15 ± 0.3)	0.87 ± 0.02 (22 ± 0.5)	M4 2 Places
D6CL-8.0F	$0.3150 \begin{smallmatrix} +0.0009 \\ 0 \\ (8^{+0.022} \\ 0) \end{smallmatrix}$	$\phi 1.75 \pm 0.02$ ($\phi 44.5 \pm 0.5$)	$\phi 0.79 \pm 0.02$ ($\phi 20 \pm 0.5$)	0.591 ± 0.012 (15 ± 0.3)	0.87 ± 0.02 (22 ± 0.5)	M4 2 Places
D9CL-12.7F	$0.500 \begin{smallmatrix} +0.0011 \\ 0 \\ (12.7^{+0.027} \\ 0) \end{smallmatrix}$	$\phi 3.13 \pm 0.02$ ($\phi 79.5 \pm 0.5$)	$\phi 1.02 \pm 0.02$ ($\phi 26 \pm 0.5$)	0.433 ± 0.012 (11 ± 0.3)	0.75 ± 0.02 (19 ± 0.5)	M4 2 Places
D9CL-14F	$0.5512 \begin{smallmatrix} +0.0011 \\ 0 \\ (14^{+0.027} \\ 0) \end{smallmatrix}$	$\phi 3.13 \pm 0.02$ ($\phi 79.5 \pm 0.5$)	$\phi 1.02 \pm 0.02$ ($\phi 26 \pm 0.5$)	0.433 ± 0.012 (11 ± 0.3)	0.75 ± 0.02 (19 ± 0.5)	M4 2 Places

Mounting Brackets for Stepping Motors

Mounting brackets are convenient for installing maintaining proper alignment between the motor shaft and the load.



Product Line

There are 10 types of mounting brackets for stepping motors.

- Standard Type, Standard P Type, High-Speed Type, High-Resolution Type, High Inertia Type (PV Series)

Material: Aluminum die cast

Mounting Bracket Models	Applicable Motor Type			
	α STEP	5-Phase Stepping Motors	2-Phase Stepping Motors	Low-Speed Synchronous Motors
PALOPA	—	CSK54 □ CFK54 □	UMK24 □, UMK24 □M CSK24 □, CSK24 □M PK24 □, PK24 □M	
PAFOP	AS46A, AS46M ASC46AK, ASC46MK	RK54 □	PK24 □P	SMK014A-A SMK014MA-A
PAL2P-5A	AS66A, AS69A AS66M, AS69M ASC66AK, ASC66MK	RK56 □ CSK56 □ CFK56 □, CFK56 □H	—	—
PAL2P-2	—	—	UMK26 □, UMK26 □M CSK26 □, CSK26 □M PK26 □, PK26 □M PV26 □	SMK237A-A
PAL4P-5A	AS98A, AS98M AS911A	RK59 □ CSK59 □, CFK59 □H	—	—
PAL4P-2	—	—	CSK29 □ PK29 □	SMK5100A-AA SMK5160A-AA

- Insert the motor case length in the □ of the model name.
The character of **A** and **B** which show the shaft type are omitted (except for Low Speed Synchronous Motor).
- The mounting bracket base is built with holes large enough to allow for alignment adjustments in the horizontal direction. (Adjustable range: Approximately 0.24 inch [6 mm])
- These mounting brackets can be perfectly fitted to the pilot of the stepping motors. (except for **PALOPA**)

Notes:

- These mounting brackets are for stepping motors only. They cannot be used with compact AC motors.
- They cannot be used with geared stepping motors.

Geared Type

Material: Aluminum die cast

Mounting Bracket Models	Applicable Motor Type			
	α STEP	5-Phase Stepping Motors	2-Phase Stepping Motors	SMK
SOLOA-A	—	—	CSK243-SG □ PK243-SG □	SMK0A -□
SOLOB-A	AS46-T □ ASC46-T □	RK543-T □ CSK543-T □	—	—
SOL2A-A	AS66-T □ ASC66-T □	RK564-T □ CSK564-T □	CSK264-SG □ PK264-SG □	—
SOL5B-A	AS98-T □	RK596-T □	PK296-SG □	—

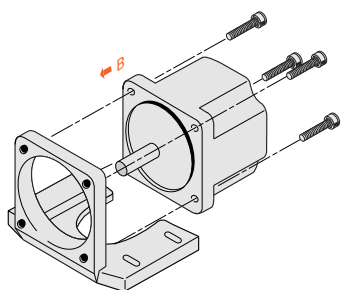
- Insert the gear ratio in the □ of the model name.
The character of **A** and **B** which show the shaft type and the length of the motor case are partly omitted.
- The mounting bracket base is built with holes large enough to allow for alignment adjustments in the horizontal direction.
- When mounting, use the screws included with the geared motor. (except for α STEP)

Note:

- These mounting brackets are for geared stepping motors only. They cannot be used with compact AC motors or stepping motors with gearheads.

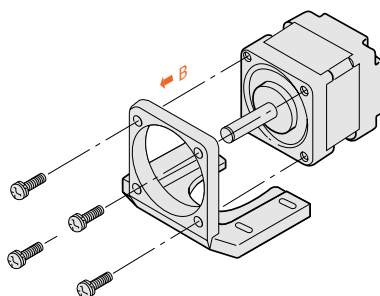
Mounting the Motor

1 PAL2P-□, PAL4P-□



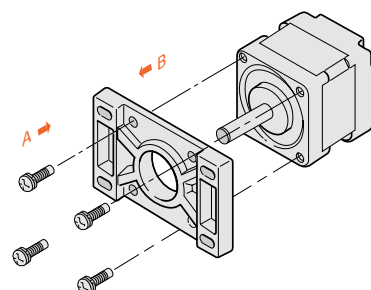
- Use the screws provided to secure the motor to the mounting bracket.
- Attach the motor from the direction shown by the arrow (B).

2 PALOPA SOLO□, SOL2□, SOL5□



- Use the screws provided to secure the motor to **PALOPA**.
- Attach the motor from the direction shown by the arrow (B).

3 PAFOP



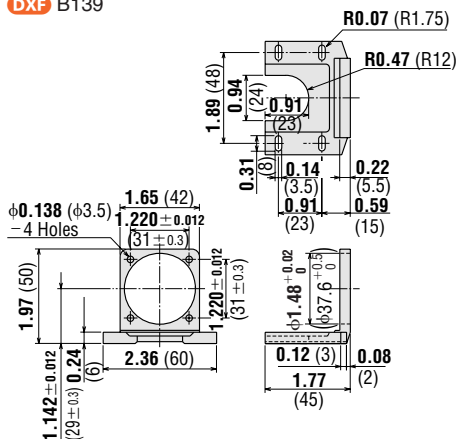
- Use the screws provided to secure the motor to **PAFOP**.
- Motor can be attached from either side (A, B).

Dimensions Unit = inch (mm)

PALOPA

Weight: 1.24 oz. (35 g)

DXP B139

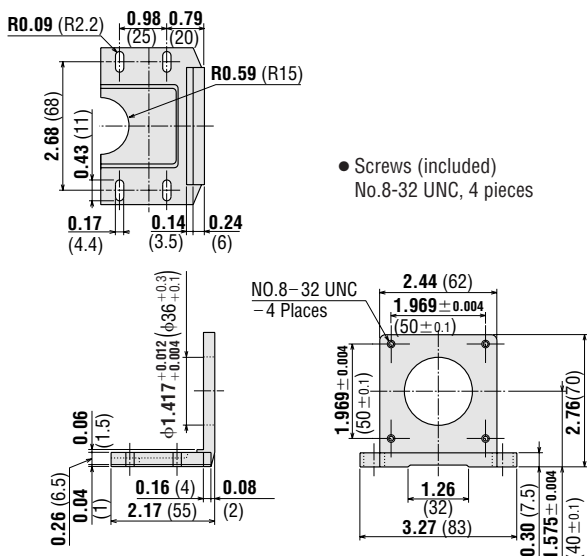


- Screws (included)
No.4-40 UNC, 4 pieces

PAL2P-5A

Weight: 3.9 oz. (110 g)

DXP B143

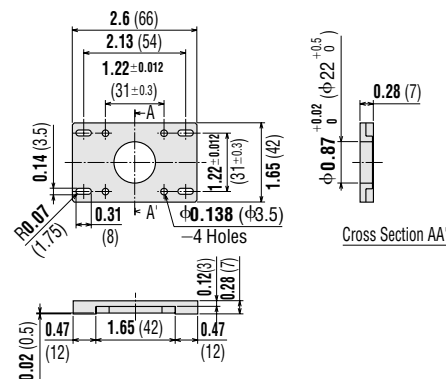


- Screws (included)
No.8-32 UNC, 4 pieces

PAFOP

Weight: 1.06 oz. (30 g)

DXP B140

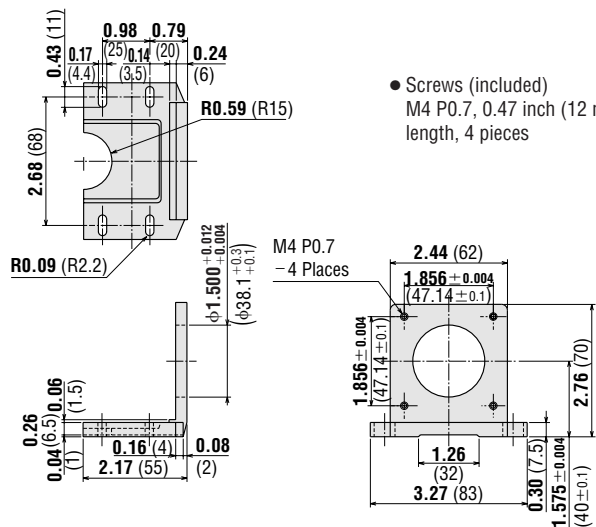


- Screws (included)
M3 P0.5, 0.28 inch (7 mm) length, 4 pieces

PAL2P-2

Weight: 3.9 oz. (110 g)

DXP B144

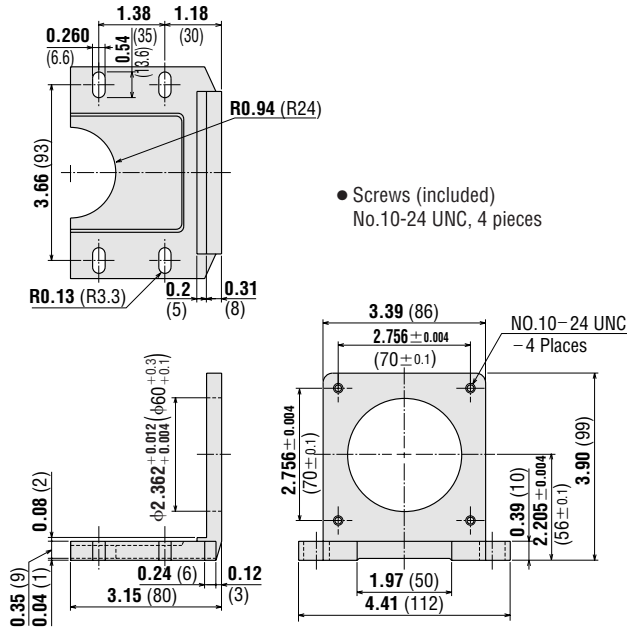


- Screws (included)
M4 P0.7, 0.47 inch (12 mm) length, 4 pieces

PAL4P-5A

Weight: 8.8 oz. (250 g)

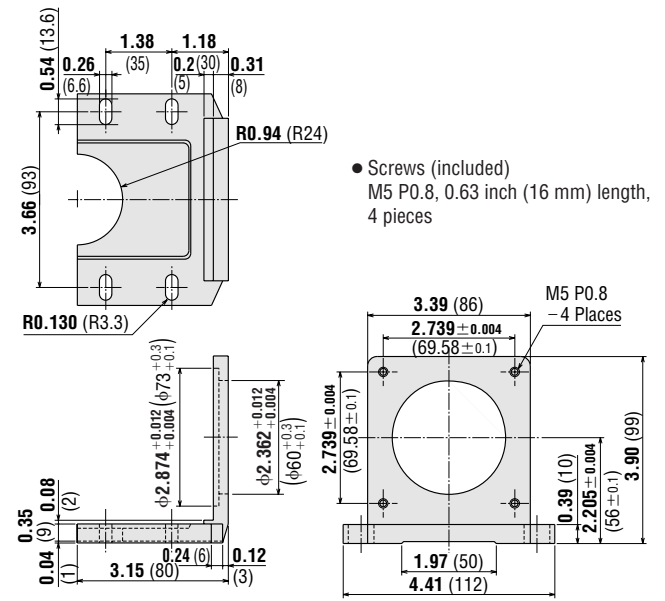
DXF B145



PAL4P-2

Weight: 8.8 oz. (250 g)

DXF B146



SOL0A-A

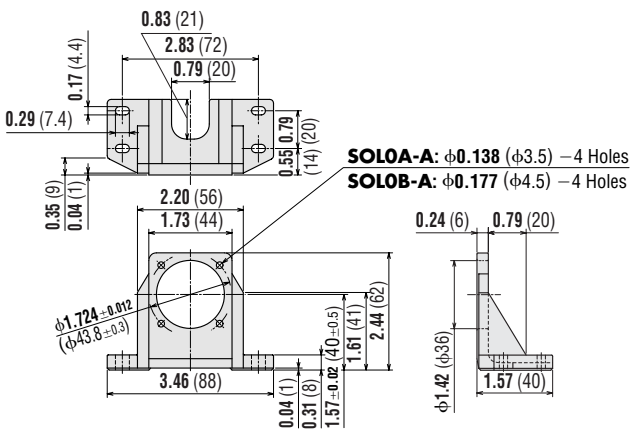
Weight: 2.8 oz. (80 g)

DXF B266

SOL0B-A

Weight: 2.8 oz. (80 g)

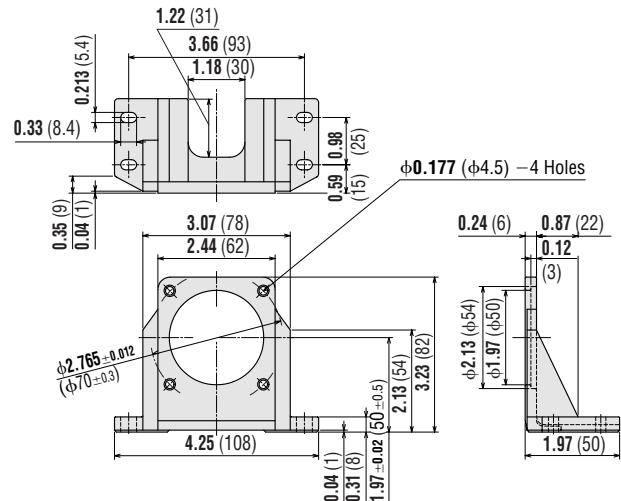
DXF B267



SOL2A-A

Weight: 4.2 oz. (120 g)

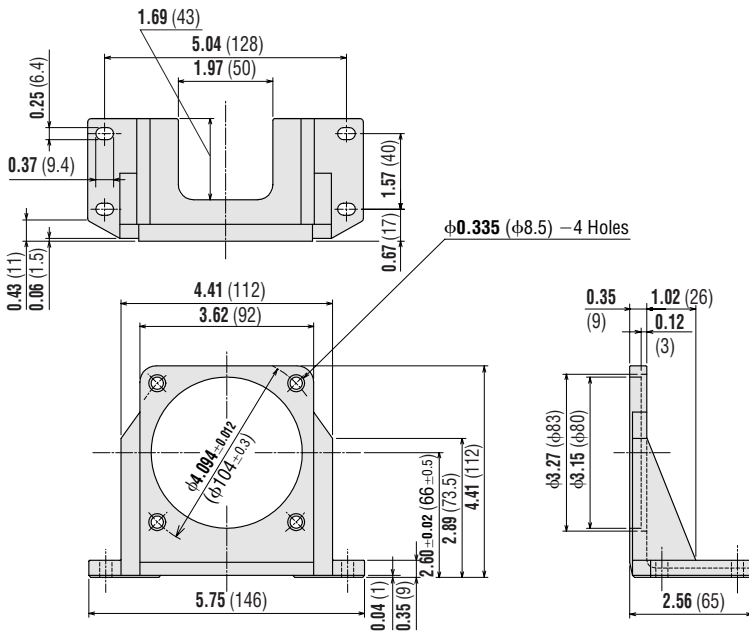
DXF B268



SOL5B-A

Weight: 9.5 oz. (270 g)

DXF B271



DIN Rail Mounting Plate

This installation plate is convenient for installing the driver on DIN rails with ease. The required installation screws come with this installation plate.

- Model: **PADP01**
Applicable Product: **αSTEP AS** Series driver

Dimensions Unit = inch (mm)

Weight: 0.71 oz. (20 g)

- Screws (included)
M3 P0.5, 0.31 inch (8 mm) length, 3 pieces

