

Standard AC Motors

Accessories

Overview,
Product
Series

Constant
Speed
Motors

Induction
Motors

Reversible
Motors

Electromagnetic
Brake Motors

Low-Speed
Synchronous
Motors

Torque
Motors

Watertight,
Dust-
Resistant
Motors

Gearheads

Parallel
Shaft
Gearheads

Right-
Angle
Gearheads

Linear
Heads

Brake Pack

Accessories

Accessories

Installation

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Overview of Accessories

Accessories necessary for installing products and performing operation are available.

Motor and Gearhead Mounting Brackets

→ Page A-219



These are high-strength type installation brackets for motors and gearheads.

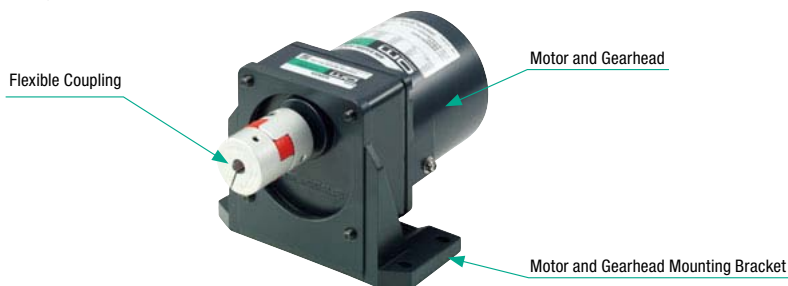
● Installation Example

Flexible Couplings

→ Page A-222



A clamp type coupling for connecting the motor/gearhead shaft with the driven shaft. Machined holes corresponding to shaft diameter sizes make it possible to provide various hole diameter sizes as standard specifications.



In addition, convenient accessories are available.

Torque Arm

→ Page A-221



Capacitor Caps

→ Page A-227



External Torque Potentiometer

→ Page A-227



Watertight Power Relay Box

→ Page A-227



Watertight Connection Cables

→ Page A-228



CR Circuit for Surge Suppression

→ Page A-228



Dogs

→ Page A-228



Motor and Gearhead Mounting Brackets RoHS

Overview,
Product
Series

These dedicated mounting brackets for mounting motors and gearheads are the high-strength type that can be used with high power motors and gearheads. These installation brackets come with tapped holes. To install the motor and gearhead, simply fasten the screws provided with the gearhead. To install the motor alone, installation screws must be purchased separately.



Product Line

Material: Aluminum Alloy Surface Treatment: Painting

Standard AC Motors

Select the pinion shaft type based on the gearhead to be attached.

Product Name	Applicable Product		
	Standard AC Motors		
	Gearhead	Gearhead Motor Combination Type	Round Shaft Type
SOLOA	—	SMKOA	—
SOL0M3	0GN□K	—	OIK, ORK
SOL2M4	2GN□KF	—	2IK, 2RK, TM203
SOL3M5	3GN□KF	—	3IK, 3RK, TM306
SOL4M5	4GN□KF	—	4IK, 4RK, TM410
SOL5M6	5GN□KF 5GE□KBF	—	5IK, 5RK, TM520
SOL6M8	—	BHI62-□	BHI62-A

Speed Control Motors

Select the pinion shaft type based on the gearhead to be attached.

Product Name	Applicable Product			
	AC Speed Control Motors		Brushless Motors	
	Gearhead	Round Shaft Type	Combination Type	Round Shaft Type
SOL0B	—	—	BLH015-□	—
SOL0M3	—	—	—	BLH015-A
SOL2M4	2GN□KF	US206, 2IK6RA, 2RK6RA	BLE23□S BX230-□S BLH230-□	BLE23A AXU210-A BX230-A BLH230-A
SOL3M5	3GN□KF	US315, 3IK15RA, 3RK15RA	—	—
SOL4M5	4GN□KF	US425, 4IK25RA, 4RK25RA	—	—
SOL4M6	—	—	BLE46□S BX460-□S BLH450-□	BLE46A AXU425-A BX460-A BLH450-A
SOL5M6	5GN□KF 5GU□KB	US540, US560, US590 5IK40RA, 5RK40RA	—	—
SOL5M8	5GU□KBH	—	BLE512□S BX5120-□S BLH5100-□	BLE512A AXU540-A AXU590-A BX5120-A BLH5100-A
SOL6M8	—	—	BX6200-□S BX6400-□S	BX6200-A BX6400-A

Note

Not available for the following products.

- **5GU□K**
- Right-Angle Gearhead (**RH** Type, **RA** Type)
- Right-Angle Shaft Types (**BH** Series)
- **FPW** Series
- Hollow Shaft Flat Gearhead (**GFS2G□FR**, **GFS4G□FR**, **GFS5G□FR**)

- A number indicating the gear ratio is specified in the box □ in the product name.
- The names of the applicable products are described with text by which the series name can be identified.

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Right-
Angle
Gearheads

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Accessories

Installation

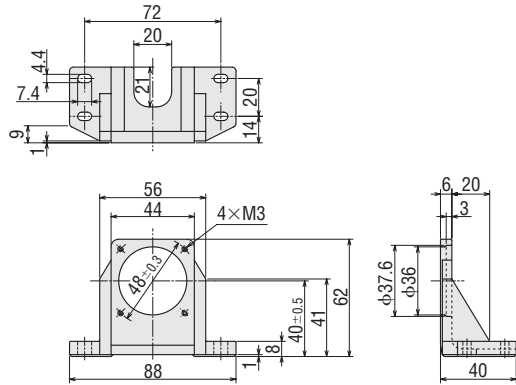
● Dimensions (Unit mm)

Mounting Bracket

SOL0M3

Mass: 85 g

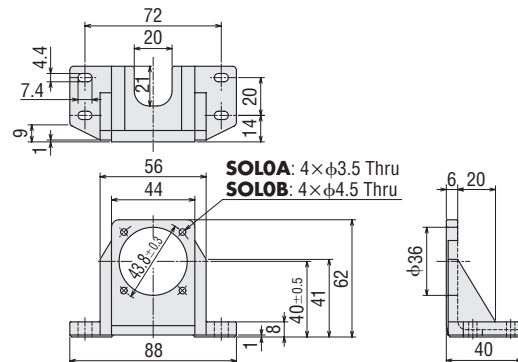
CAD A320



SOL0A, SOL0B

Mass: 85 g

CAD B266 (SOL0A)
B267 (SOL0B)



Torque Arm

Couplings

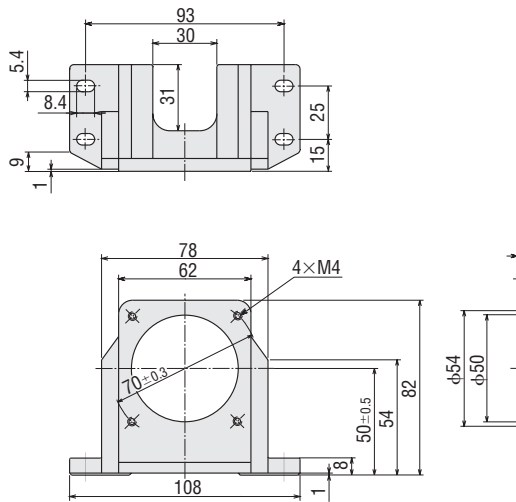
Capacitor Caps

External Torque Potentiometer

SOL2M4

Mass: 135 g

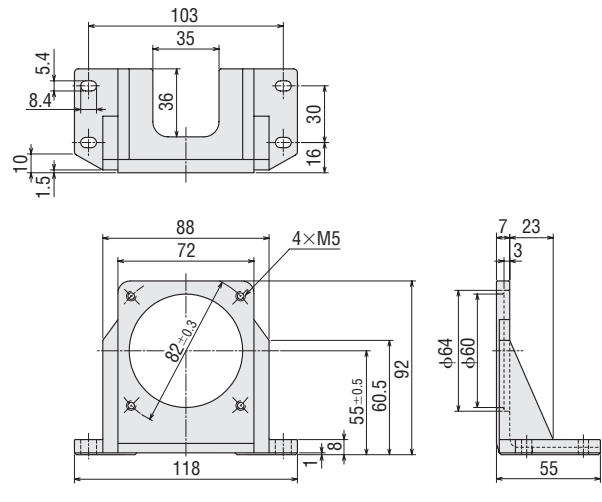
CAD A321



SOL3M5

Mass: 175 g

CAD A322



Power Relay Box

Connection Cables

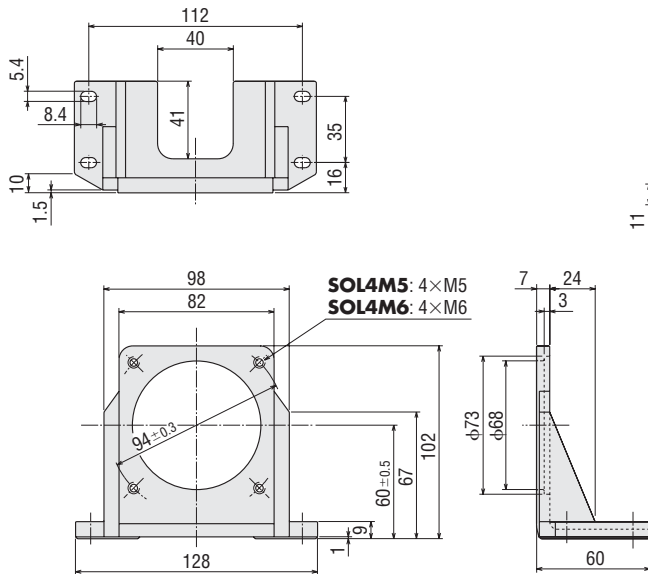
CR Circuit for Surge Suppression

Dogs

SOL4M5, SOL4M6

Mass: 210 g

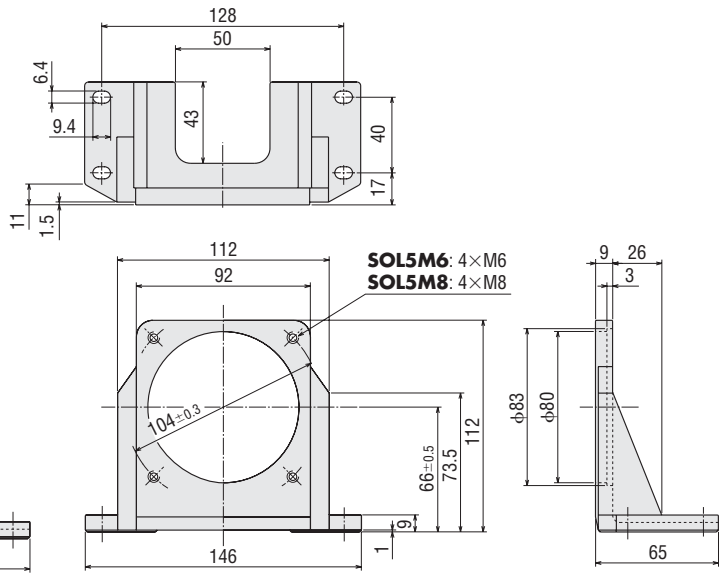
CAD A236 (SOL4M5)
A237 (SOL4M6)



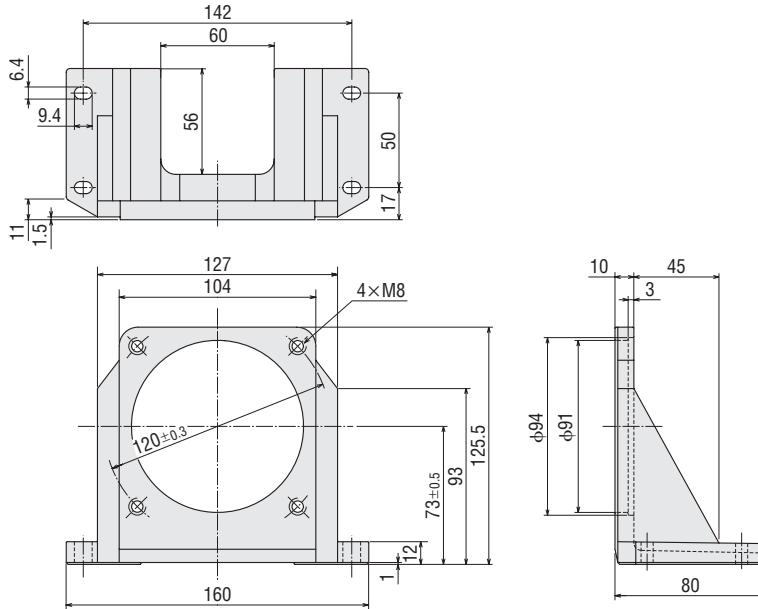
SOL5M6, SOL5M8

Mass: 270 g

CAD A238 (SOL5M6)
A239 (SOL5M8)



SOL6M8
Mass: 430 g
CAD A240



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Torque Arm RoHS

A torque arm acts as an anti-spin mechanism when a right-angle shaft, hollow shaft type gearhead is installed to prevent gearheads from rotating due to reactive force from shafts being driven.

Product Line

Material: SPCC Surface Treatment: Painting

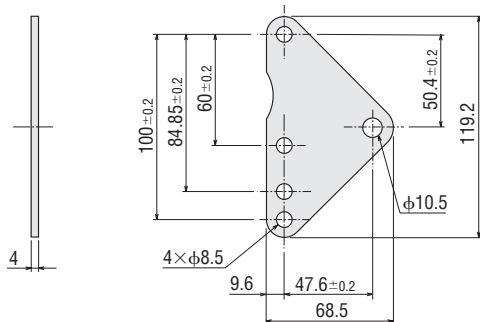
Product Name	Applicable Product	
	Gearhead	Combination Type
SOT6	5GE□RH 5GU□RH	BH Series Right-Angle Shaft and Hollow Shaft Type

● A number indicating the gear ratio is specified in the box □ in the product name.



Dimensions (Unit mm)

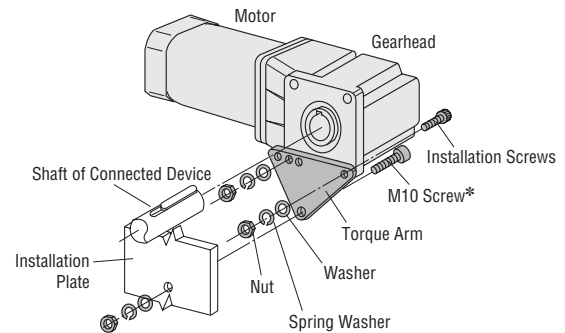
Mass: 145 g



Installation Methods

When installing on equipment, fix the torque arm firmly using an M10 screw.

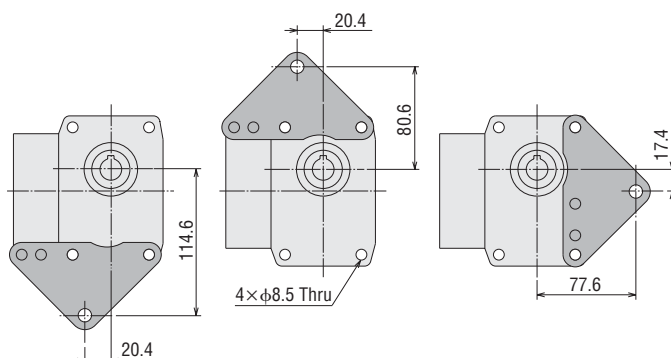
*M10 screws are not included. Please provide separately.



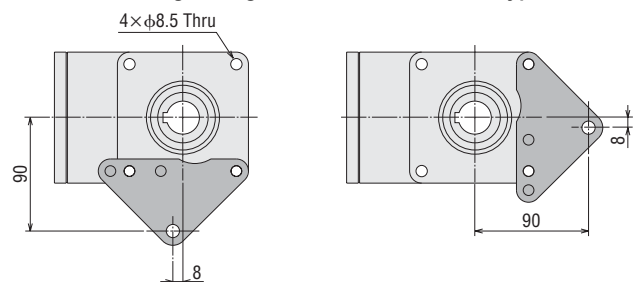
Installation Hole Dimensions (Unit mm)

Torque arm installation holes are processed with the dimensions shown in the figure below.

◇ **5GE□RH, 5GU□RH**



◇ **BH Series Right-Angle Shaft, Hollow Shaft Type**



Mounting Bracket

Flexible Couplings RoHS

Torque Arm

These are clamp type couplings for connecting the motor and gearhead shaft with the driven shaft. Once the motor and gearhead are determined, the coupling can be selected.

Couplings

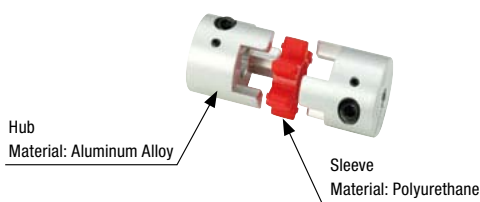


Capacitor Caps

MCL Couplings

Features

- Can be used with high torque.
- Large value for permissible eccentricity.
- The structure features a separated hub and sleeve, so workability during installation is improved.



External Torque Potentiometer

Power Relay Box

Connection Cables

CR Circuit for Surge Suppression

Dogs

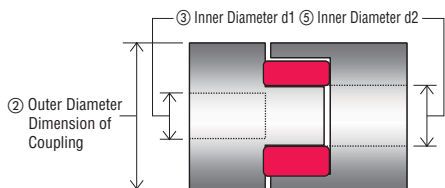
Product Number Code

MCL 40 12 15

- ① ② ③ ④ ⑤

①	Flexible Coupling
②	Outer Diameter Dimension of Coupling 20 : φ20 mm to 65 : φ65 mm
③	Inner Diameter d1 (Smaller inner diameter) 05 : φ5 mm to 25 : φ25 mm
④	For the MCL5518 type only, some of them include a K depending on the key slot width.
⑤	Inner Diameter d2 (Larger inner diameter) 05 : φ5 mm to 25 : φ25 mm

- For inner diameter d1, the smaller of the motor shaft diameter or the driven shaft diameter is entered.
- For inner diameter d2, the larger of the motor shaft diameter or the driven shaft diameter is entered.



Product Line

Product Name
MCL20 <input type="checkbox"/>
MCL30 <input type="checkbox"/>
MCL40 <input type="checkbox"/>
MCL55 <input type="checkbox"/>
MCL65 <input type="checkbox"/>

- A number indicating the coupling inner diameter is entered where the box is located within the product name.

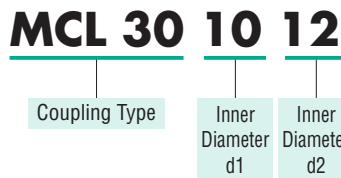
Selecting an MCL Coupling

Once you have decided on a motor, gearhead and the driven shaft diameter, determine the necessary coupling to use.

The coupling selection process is explained using the conditions below.

- Condition
 - Gearhead Model: **4GN□KF** (Shaft diameter φ10 mm)
 - Applicable Driven Shaft Diameter: φ12 mm
 - Uniform Load*
- Selection Procedure
 1. Select a coupling appropriate for the **4GN□KF** type with a uniform load from the coupling selection table on the following page.
Coupling Type: **MCL30**
 2. From the coupling selection table, find a product from the **MCL30** type that is compatible with a shaft diameter of φ10 mm and an applicable driven shaft diameter of φ12 mm.
 3. In the coupling product name, smaller inner diameters come before larger ones, the coupling product name is as follows:

· Applicable Coupling Model



- *Uniform load and impact load are the two types of load conditions.
- Uniform Load: When a uniform load is applied such as with a conveyor etc.
- Shock Load: When shock-inducing loads are applied from frequent starting and stopping

Coupling Selection Table

● Standard AC Motors, AC Speed Control Motors

◇ Gearhead, Combination Type

○: Uniform load ●: Compatible with uniform and shock load

Applicable Product		Coupling Type	Shaft Diameter mm		Applicable Driven Shaft Diameter mm													
Uniform Load	Shock Load				05 φ5	06 φ6	08 φ8	10 φ10	12 φ12	14 φ14	15 φ15	16 φ16	18 φ18	20 φ20	22 φ22	25 φ25		
0GN□K	0GN□K	MCL20	05	φ5	●	●	●											
2GN□KF	—		08	φ8	○	○	○											
—	2GN□KF	MCL30	08	φ8			●	●	●									
3GN□KF 4GN□KF, 4GN□RA	3GN□KF		10	φ10			●	●	●									
5GN□KF, 5GN□RA	—		12	φ12			○	○	○									
—	4GN□KF, 4GN□RA	MCL40	10	φ10				●	●	●	●	●						
—	5GN□KF, 5GN□RA		12	φ12					●	●	●	●	●					
5GE□KBF 5GU□KB, 5GU□K 5GE□RA, 5GU□RA	—	MCL40	15	φ15				○	○	○	○	○						
—	5GE□KBF 5GU□KB, 5GU□K 5GE□RA, 5GU□RA		MCL55	15	φ15									●	●	●	●	●
BHI62-□	—	MCL5518K	18	φ18									●	●	●	●	●	
5GU□KBH	5GU□KBH		18	φ18										●	●	●	●	●
—	BHI62-□	MCL65	18	φ18										●	●	●	●	
BHI62-□RA	BHI62-□RA		22	φ22												●	●	●

● The load classification in this table is a reference. Check the specifications values of each coupling for details.

● The **MCL5518K** type is a dedicated type for **5GU□KBH**.

● A number indicating the gear ratio is specified in the box □ in the product name.

● The names of the applicable products are described with text by which the series name and the output power can be identified.

◇ Round Shaft Type

Select a coupling with the same inner diameter size as the motor shaft diameter.

Refer to **MC** couplings for the low-speed synchronous motor **SMK** Series round shaft type, and refer to **MCS** couplings for the geared motor.

● Brushless Motors

◇ Geared Type, Combination Type

○: Uniform load ●: Compatible with uniform and shock load

Applicable Product		Coupling Type	Shaft Diameter mm		Applicable Driven Shaft Diameter mm													
Uniform Load	Shock Load				05 φ5	06 φ6	08 φ8	10 φ10	12 φ12	14 φ14	15 φ15	16 φ16	18 φ18	20 φ20	22 φ22	25 φ25		
BLH015	BLH015	MCL20	06	φ6	●	●	●											
BLE23 BX230 BLH230	BLE23 BX230 BLH230	MCL30	10	φ10			●	●	●									
BLE46 BX460 BLH450	—	MCL40	15	φ15				○	○	○	○	○						
—	BLE46 BX460 BLH450	MCL55	15	φ15									●	●	●	●	●	
BLE512 BX5120 BLH5100	BLE512 BX5120 BLH5100		18	φ18										●	●	●	●	●
BX6200, BX6400	BX6200, BX6400	MCL65	22	φ22												●	●	●

● The load classification in this table is a reference. Check the specifications values of each coupling for details.

● The names of the applicable products are described with text by which the series name and the output power can be identified.

◇ Round Shaft Type

Select a coupling with the same inner diameter size as the motor shaft diameter.

For the **BX** Series round shaft type, refer to **MCS** couplings.

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Accessories

Installation

Specifications

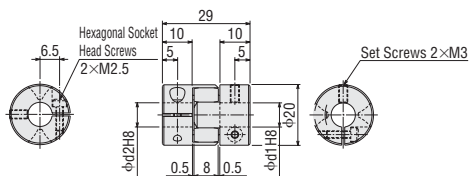
Coupling Type	Product Name	Dimensions				Normal Torque [N·m]	Mass [g]	Inertia J [$\times 10^{-4}$ kg·m ²]	Permissible Eccentricity [mm]	Permissible Declination [°]	End Play [mm]									
		Outer Diameter [mm]	Overall Length [mm]	Shaft Hole Diameter d1 [mm]	Shaft Hole Diameter d2 [mm]															
MCL20	MCL200505	φ20	29	5	5	5.0	19	0.01	0.15	1.0	+0.8 0									
	MCL200506			5	6															
	MCL200508			5	8															
	MCL200606			6	6															
	MCL200608			6	8															
	MCL200808			8	8															
MCL30	MCL300808	φ30	43.5	8	8	12.5	66	0.083	0.2	1.0	+1.0 0									
	MCL300810			8	10															
	MCL300812			8	12															
	MCL301010			10	10															
	MCL301012			10	12															
	MCL301212			12	12															
MCL40	MCL401010	φ40	64	10	10	25.0	150	0.36	0.2	1.0	+1.2 0									
	MCL401012			10	12															
	MCL401014			10	14															
	MCL401015			10	15															
	MCL401016			10	16															
	MCL401212			12	12															
	MCL401214			12	14															
	MCL401215			12	15															
	MCL401216			12	16															
	MCL401414			14	14															
	MCL401415			14	15															
	MCL401416			14	16															
	MCL401515			15	15															
	MCL401516			15	16															
MCL401616	16	16																		
MCL55	MCL551515	φ55	76	15	15	60.0	350	1.6	0.2	1.0	+1.4 0									
	MCL551516			15	16															
	MCL551518			15	18															
	MCL551520			15	20															
	MCL551525			15	25															
	MCL551616			16	16															
	MCL551618			16	18															
	MCL551620			16	20															
	MCL551625			16	25															
	MCL551818			18	18															
	MCL551820			18	20															
	MCL551825			18	25															
	MCL5518K			MCL5518K15	φ55							76	18	15	60.0	350	1.6	0.2	1.0	+1.4 0
				MCL5518K16									18	16						
MCL5518K18		18	18																	
MCL5518K20		18	20																	
MCL5518K25		18	25																	
MCL65	MCL651515	φ65	87.5	15	15	160	570	3.7	0.2	1.0	+1.5 0									
	MCL651516			15	16															
	MCL651518			15	18															
	MCL651520			15	20															
	MCL651525			15	25															
	MCL651616			16	16															
	MCL651618			16	18															
	MCL651620			16	20															
	MCL651625			16	25															
	MCL651818			18	18															
	MCL651820			18	20															
	MCL651825			18	25															
	MCL652022			20	22															
	MCL652222			22	22															
MCL652225	22	25																		

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

Dimensions (Unit mm)

MCL20 Type

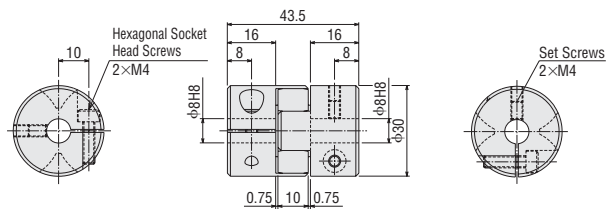
CAD A704



Shaft Hole Diameter (φd1, φd2)
φ5, φ6, φ8

MCL300808

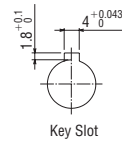
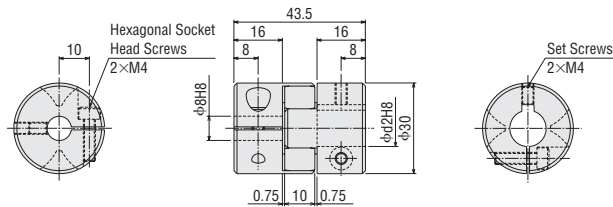
CAD A705



MCL300810

MCL300812

CAD A705



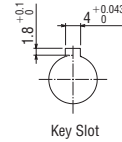
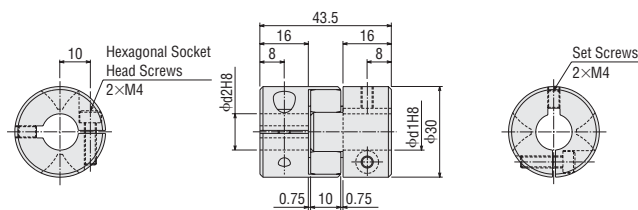
Shaft Hole Diameter ($\phi d2$)
 $\phi 10, \phi 12$

MCL301010

MCL301012

MCL301212

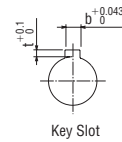
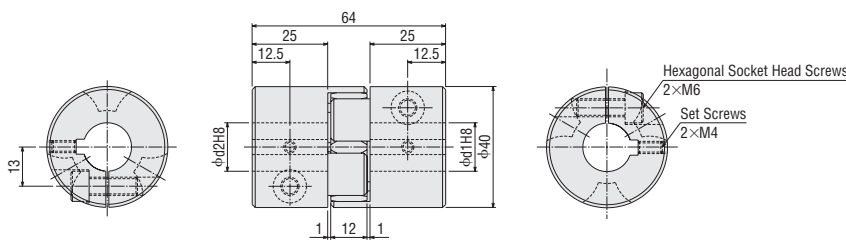
CAD A705



Shaft Hole Diameter ($\phi d1, \phi d2$)
 $\phi 10, \phi 12$

MCL40 Type

CAD A706

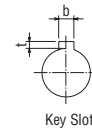
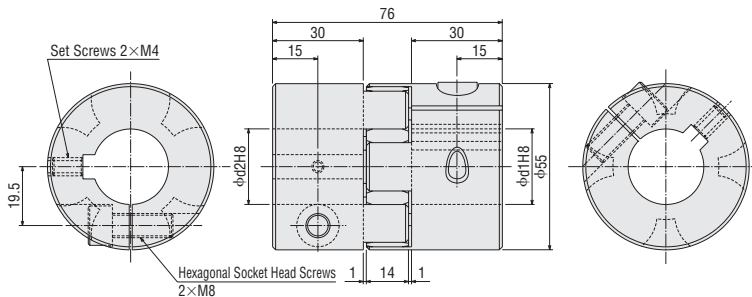


Shaft Hole Diameter ($\phi d1, \phi d2$)	Key Slot Width b	Key Slot Length t
$\phi 10, \phi 12$	4	1.8
$\phi 14, \phi 15, \phi 16$	5	2.3

MCL55 Type

MCL5518K Type

CAD A707



MCL55 Type

Shaft Hole Diameter ($\phi d1, \phi d2$)	Key Slot Width b	Key Slot Length t
$\phi 15, \phi 16$	$5^{+0.043}_0$	$2.3^{+0.1}_0$
$\phi 18, \phi 20$	$6^{+0.052}_0$	$2.8^{+0.1}_0$
$\phi 25$	$8^{+0.052}_0$	$3.3^{+0.2}_0$

MCL5518K Type

Shaft Hole Diameter ($\phi d1$)	Key Slot Width b	Key Slot Length t
$\phi 18$	$5^{+0.043}_0$	$2.3^{+0.1}_0$

Shaft Hole Diameter ($\phi d2$)	Key Slot Width b	Key Slot Length t
$\phi 15, \phi 16$	$5^{+0.043}_0$	$2.3^{+0.1}_0$
$\phi 18, \phi 20$	$6^{+0.052}_0$	$2.8^{+0.1}_0$
$\phi 25$	$8^{+0.052}_0$	$3.3^{+0.2}_0$

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Linear
Heads

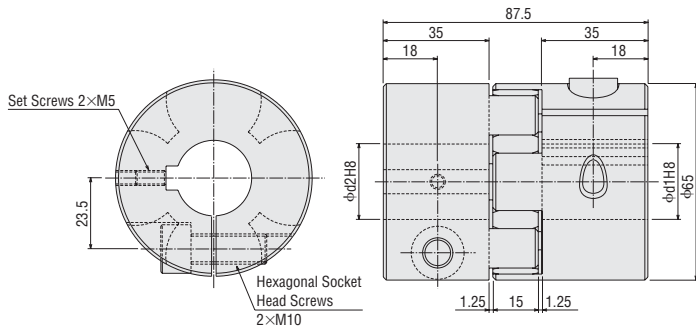
Brake Pack

Accessories

Installation

MCL65 Type

CAD A708



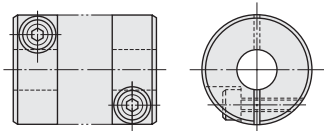
Shaft Hole Diameter (φd1, φd2)	Key Slot Width b	Key Slot Length t
φ15, φ16	5 ^{+0.043} ₀	2.3 ^{+0.1} ₀
φ18, φ20, φ22	6 ^{+0.052} ₀	2.8 ^{+0.1} ₀
φ25	8 ^{+0.052} ₀	3.3 ^{+0.2} ₀

Installing to a Shaft

MCL couplings are clamp type couplings.

Clamp Type

Clamp type couplings use the tightening 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 install and remove. The following table shows the screw tightening torque. For tightening we recommend you use a torque wrench.



Type	MCL20*	MCL30	MCL40	MCL55	MCL65
Tightening Torque [N·m]	1	2.5	12	25	50
Tightening Torque of Key Press Screw [N·m]	0.7	1.7	1.7	1.7	4

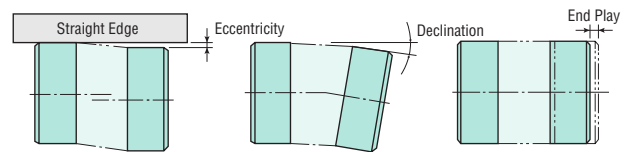
*The MCL20 type are flat press screws.

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 coupling's service life. This requires alignment adjustment.

Misalignment of the axis center includes eccentricity (parallel error of both axis centers), declination (angle error of both axis 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 at a maximum of 1/3 of the permissible value.



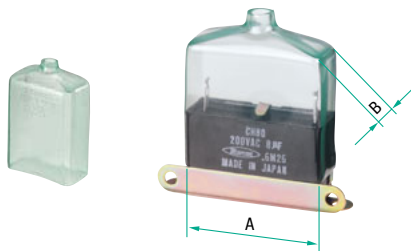
Note

- When misalignment exceeds the permissible value or excessive torque is applied, the coupling's shape will deform, and service life will be 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 the load change is large, apply an adhesive to the coupling set screw to prevent it from loosening or substitute a coupling with an outer diameter that is one size larger.
- When using couplings such as the MCL20 and MCL30 type that have no key slot, fasten set screws after fastening clamping screws.
- Only use the screws specified by Oriental Motor. Other screws may damage the couplings.
- Do not place fingers or hands in contact with an operating coupling as injury may result. Always use protective covers to prevent accidents. Also, install a safety mechanism that stops motor and coupling rotation as soon as the protective cover is opened.
- Always ensure the power is off during installation. Should the drive unit accidentally start running, injury can occur when one is drawn into the equipment. Always check that the main power supply of the equipment is off before installation.

Capacitor Caps RoHS

Insulating cap for capacitor terminal section.

<Application Example>



Product Line



Product Name	Dimensions A×B (Unit mm)	Applicable Capacitor Product Name
CHC3312AUL	33.5×12.5	CH035B
CHC4821AUL	48×21	CH120

Use an item that is appropriate for the external dimensions (A × B).

Material: Polyvinyl chloride

This part is recognized by UL. UL File No. E56078

Note

Ten capacitor caps are included in one bag.

Please specify the number of packages when ordering.

External Torque Potentiometer RoHS

Product Line

Product Name
PAVR-20KZ

(20 kΩ, 1/4 W and with a linear resistance vs. angle curve)

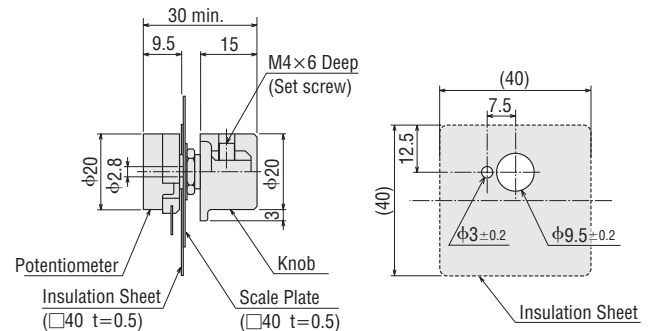


◇ Applicable Product
TM Series

Dimensions (Unit mm)

Mass: 20 g

CAD A714



Recommended installation plate thickness is 4.5 mm max.

Watertight Power Relay Box RoHS

Product Line

Product Name
TB4-0608



Applicable Cable Diameter: φ6.5~φ8.5

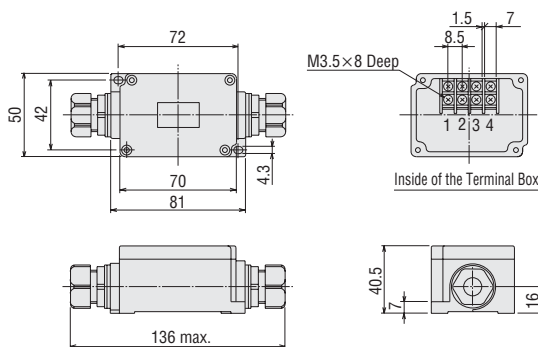
◇ Applicable Product

FPW Series
Watertight Connection Cables

Dimensions (Unit mm)

Mass: 150 g

CAD A241



- This product conforms to the IP65 degree of protection rating only when used with a watertight connection cable.
- This product can be used with other products such as the lead wire type. However, they are not watertight.

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

Cable Gland 1.0 to 1.5 N·m

Cover of Power Relay Box 0.54 to 0.66 N·m

Watertight Connection Cables RoHS

These cables are used with watertight power relay boxes. Cables of 5 m and 10 m are available.

Product Line

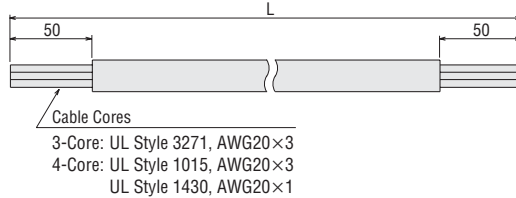
Number of Conductors	Product Name	Applicable Product	Length L (m)
3-core	CC05AC33P	BH Series	5
	CC10AC33P		10
4-core	CC05AC43P	BH Series	5
	CC10AC43P	FPW Series	10



Specifications

Cable Cores Construction: Refer to the dimension on the right
 Finished Outer Diameter: $\phi 7.8$
 Outer Sheath: Heat-resistant vinyl chloride

Dimensions (Unit mm)



CR Circuit for Surge Suppression RoHS

This is used to protect the contacts of the relay or switch used in the bi-directional circuit or the instantaneous stop circuit of a motor.

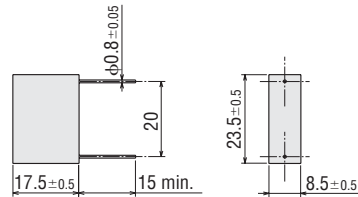
Product Line

Product Name
EPCR1201-2
250 VAC (120 Ω , 0.1 μ F)



Dimensions (Unit mm)

Mass: 5 g



Dogs RoHS

These dogs are for use with **LH** linear heads. During reciprocating movement, these are used to operate the limit switches.

Product Line

Product Name	Applicable Product
LXD0C	LH Linear Head 0L Type
LXD2C	LH Linear Head 2L Type
LXD4C	LH Linear Head 4L Type



Dimensions (Unit mm)

Product Name	A	B
LXD0C	18	8
LXD2C	24	13.8
LXD4C	30	19.8

