IAI
Quality and Innovation

# Direct Drive Motor

## First Step Guide　Ninth Edition

Thank you for purchasing our product.
Make sure to read the Safety Guide and detailed Instruction Manual as well as this First Step Guide to ensure correct use.
This Instruction Manual is original.

⚠ Warning : Read the instruction manual carefully and follow the instruction manual when handling this equipment.
Please downloaded the user's manual from our website.
You can download it free of change. User registration is required for first time users.
URL:www.iai-robot.co.jp/data_dl/CAD_MANUAL/
Keep a printout of the introduction manual near the equipment in which this product is installed so that it can be checked at all times, or display it on your computer, tablet terminal, etc. so that you can check it immediately.
If you need a bound copy of the instruction manual, order it from the nearest sales office listed in the First Step Guide or at the end of the instruction manual. It will be provided for a fee.


- Using or copying all or part of this Instruction Manual without permission is prohibited.
- The company names, names of products and trademarks of each company shown in the sentences are registered trademarks.


## Product Check

This product is comprised of the following parts if it is of standard configuration.
If you find any fault in the contained model or any missing parts, contact us or our distributor.

1. Parts (Options are excluded.)

| No. | Part Name | Model number | Quantity | Remarks |
|---|---|---|---|---|
| 1 | Actuator Main Body | Refer to "How to read the model No." and "How to read the model" | 1 | |
| Accessories | | | | |
| 2 | Motor Robot Cables (Note 1) | CB-X-MA□□□(Standard Type)<br>CB-XMC-MA□□□(High-Torque Type) | 1 | |
| 3 | Encoder Robot Cables | CB-X3-PA□□□ | 1 | |
| 4 | Safety Guide | M0194 | 1 | |

Note 1　Package might be separately provided in some cases depending on the cable length of your order.

2. How to read the model No.

Model →
Serial Number →
**DD-T18S-AI-200-360-T2-S-A0**
**SERIAL No.200090266 MADE IN JAPAN**

3. How to read the model

3.1　DD/DDCR/DDW

**DD - T18S - AI - 200 - 360 - T2 - S - A0 - ****

Series Name
DD　: Standard Type
DDCR : Cleanroom Type
DDW　: Dustproof/Splash Proof Type

<Type>
T18S　: Standard opening diameter slim type Standard type (17bit encoder)
T18P　: Standard opening diameter slim type High resolution type (20bit encoder)
H18S　: Standard opening diameter high torque type Standard type (17bit encoder)
H18P　: Standard opening diameter high torque type High resolution type (20bit encoder)
LT18S　: Large opening diameter slim type Standard type (17bit encoder)
LT18P　: Large opening diameter slim type High resolution type (20bit encoder)
LH18S　: Large opening diameter High Torque Type Standard type (17bit encoder)
LH18P　: Large opening diameter high torque type High resolution type (20bit encoder)
T18CS　: Standard opening diameter slim flangeless type Standard type (17bit encoder)
T18CP　: Standard opening diameter slim flangeless type High resolution type (20bit encoder)
H18CS　: Standard opening diameter high torque flangeless type Standard type (17bit encoder)
H18CP　: Standard opening diameter high torque flangeless type High resolution type (20bit encoder)
LT18CS : Large opening diameter slim flangeless type Standard type (17bit encoder)
LT18CP : Large opening diameter slim flangeless type High resolution type (20bit encoder)
LH18CS(A) : Large opening diameter high torque flangeless type Standard type (17bit encoder)
LH18CP(A) : Large opening diameter high torque flangeless type High resolution type (20bit encoder)

Only these two types applicable for DDW (Dustproof/Splash Proof Type)
LH18CSA / LH18CPA are only with DDW

Identification for IAI use only (Note1)

<Option>
(Dutproof/Splash Proof Type only)
A0 : Cables to Bottom Ejection
A1 : Cables to Side Ejection

<Cable Length>
N　:　None
S　:　3m
M　:　5m
X□□　:　Length specification

<Applicable Controller>
T2　: XSEL-P/Q/R/S/RA/SA SCON-CA
* 20-bit encoder is applicable only to SCON-CA.

<Stroke>
360 : 360 degrees

<Motor Output>
200 : Applicable for 200W motor
600 : Applicable for 600W motor

<Encoder Type>
AI　: Index absolute type
AM　: Multi-rotation absolute type

[Refer to the catalog or Instruction Manual (ME0310) for specification details.]
Note 1　This may be marked for the purpose of IAI.
(It is not an ID to describe the model code.)

3.2　DDA/DDACR

**DDA - LT18CS - AI - 200 - 360 - T2 - S - A0 - ****

Series Name
DDA　: Standard Type
DDACR : Cleanroom Type

<Type>
LT18CS(A) : Large opening diameter slim type Standard type (17bit encoder)
LT18CP(A) : Large opening diameter slim type High resolution type (20bit encoder)
LH18CS(A) : Large opening diameter high torque type Standard type (17bit encoder)
LH18CP(A) : Large opening diameter high torque type High resolution type (20bit encoder)

<Encoder Type>
AI　: Index absolute type
AM　: Multi-rotation absolute type

<Motor Output>
200 : Applicable for 200W motor
600 : Applicable for 600W motor

Identification for IAI use only (Note1)

<Option>
(Dutproof/Splash Proof Type only)
A0 : Cables to Bottom Ejection
A1 : Cables to Side Ejection
B　: Brake (Note2)
FL : Flange Bracket

<Cable Length>
N　:　None
S　:　3m
M　:　5m
X□□　:　Length specification

<Applicable Controller>
T2　: XSEL-P/Q/R/S/RA/SA SCON-CA/CB
* 20-bit encoder is applicable only to SCON-CA.

<Stroke>
360 : 360 degrees

[Refer to the catalog or Instruction Manual (ME3756) for specification details.]
Note 1　This may be marked for the purpose of IAI.
(It is not an ID to describe the model code.)
Note 2　Brake Option (B) is available to select only for DDA Standard Type.

⚠ Caution:
The encoder to equip should differ depending if there is "A" or not at the end of DDW, DDA and DDACR types.
In order to replace it with a different encoder type, it may require to update the version of a controller. Consult with IAI.

## Precautions in Handling

1. Handling of the Packed Product
   - Do not damage or drop. The package is not applied with any special treatment that enables it to resist an impact caused by a drop or crash.
   - An operator should never attempt to carry a heavy package on their own. Also, use an appropriate way for transportation.
   - If the shipping box is to be left standing, it should be in a horizontal position. Follow the instruction if there is any for the packaging condition.
   - Do not step or sit on the package.
   - Do not put any load that may cause a deformation or breakage of the package.
2. Handling after Unpackaged
   - Do not carry the actuator by holding the cable, or do not move it by pulling the cable.
   - Hold the body base when transporting the actuator.
   - Do not hit or drop the product while carrying.
   - Do not give any excessive force to any of the sections in the actuator.
   - Do not hold the hollowed area.

## Installation Environment, Storage Environment

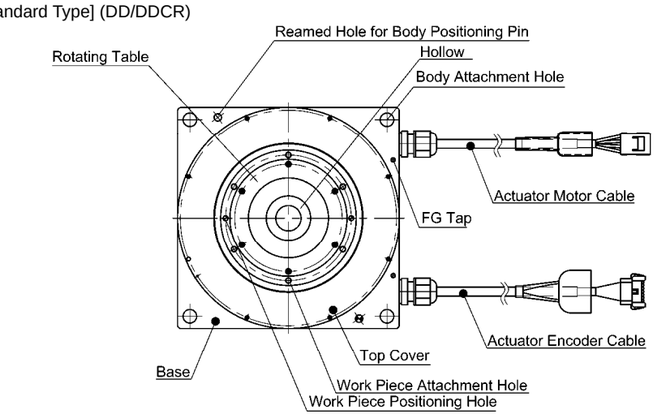
1. Installation Environment
Do not use this product in the following environments.
Also make sure to keep enough work space necessary for maintenance.
   - Location exposed to radiant heat from a huge heat source such as the heat treatment
   - Location where the surrounding air temperature exceeds the range of 0 to 40°C
   - Location where condensation occurs due to abrupt temperature changes
   - Location where relative humidity smaller than 20% or larger than 85%RH
   - Location exposed to direct sunlight
   - Location exposed to corrosive gases or combustible gases
   - Location exposed to significant amount of dust, salt or iron powder (Outside of an ordinary assembly plant)
   - Location where water, oil (includes oil mist and cutting fluid) or a chemical is splashed
   - Location where the product main body receives vibration or hit impact
   - Place where altitude exceeds 2000m

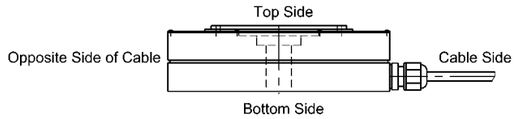
When using the product in any of the locations specified below, provide a sufficient shield.
   - Place subject to electrostatic noise
   - Location where exposed to the influence of strong electric or magnetic field
   - Location where exposed to the influence of ultraviolet or radiant rays

2　Storage・Preservation Environment
   - The storage and preservation environment should comply with the same standards as those for the installation environment. In particular, when the machine is to be stored for a long time, pay close attention to environmental conditions so that no dew condensation forms.
   - Unless specially specified, moisture absorbency protection is not included in the package when the machine is delivered. In the case that the machine is to be stored and preserved in an environment where dew condensation is anticipated, take the condensation preventive measures from outside of the entire package, or directly after opening the package.
   - For storage and preservation temperature, the machine withstands temperatures up to 60°C for a short time, but in the case of the storage and preservation period of 1 month or more, control the temperature to 50°C or less.
   - Storage and preservation should be performed in the horizontal condition. In the case it is stored in the packaged condition, follow the orientation instruction if any displayed on the package.

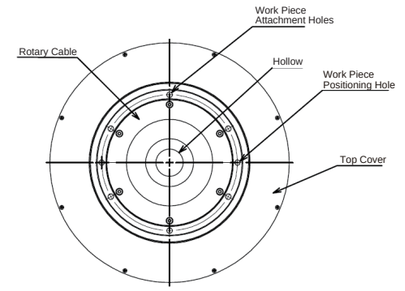
## Names of the Parts

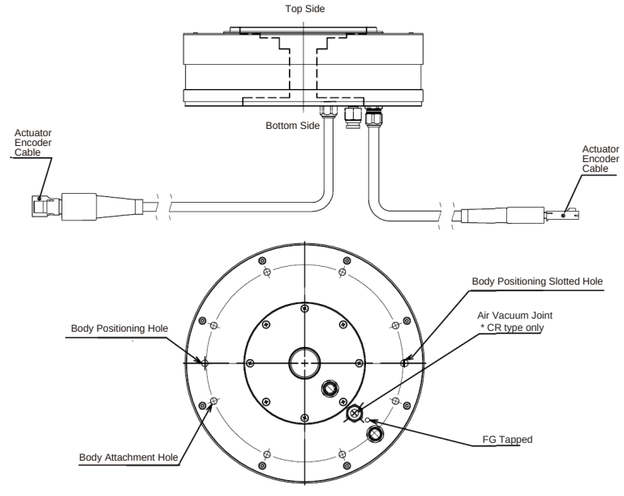
[Standard Type] (DD/DDCR)



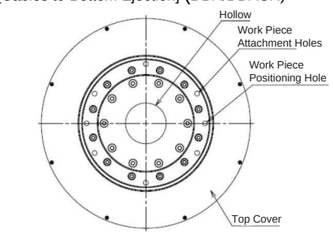

[Flangeless Type] (DD/DDCR)

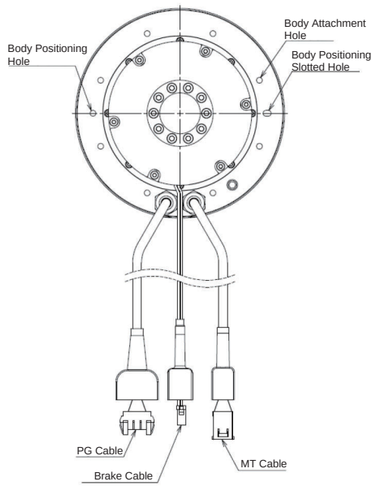


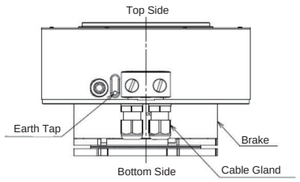




Please refer to the Catalog or the Instruction Manual (ME0310) for the external dimensions, dimensions and profile.

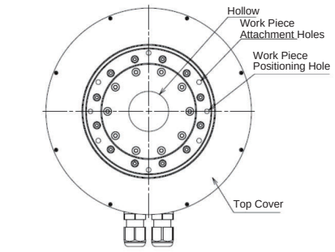
[Cables to Bottom Ejection] (DDA/DDACR)

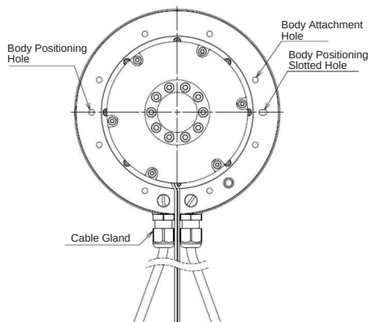


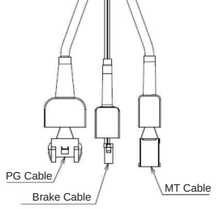

[Cables to Side Ejection] (DDA/DDACR)










Please refer to the Catalog or the Instruction Manual (ME3756) for the external dimensions, dimensions and profile.

## Attachment

Refer to the Instruction Manual for the attachments of the actuator and loads.
[Precautions for Attachments]

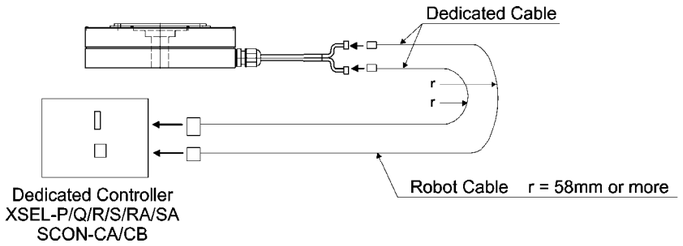
| No. | Item | Precautions |
|---|---|---|
| 1 | Installation | • The unit cannot be mounted vertical/horizontally oriented wall or on the ceiling. |
| 2 | Attachment Surface | • Install the unit on a surface that possesses a characteristic of heat radiation equivalent to an aluminum plate sized 400 × 400 × t10.<br>• The surface to mount the main unit should be a machined surface or a plane that possesses an equivalent accuracy and the flatness should be within 0.05mm/m.<br>• For the platform, ensure the structure that possesses enough stiffness to avoid vibration being generated.<br>• To have heat radiation performed well, make the bottom surface of the base fully touched to the attachment surface. |
| 3 | Bolts to be Used | • For the bolts to be used, a high-tensile bolt complying with ISO-10.9 or more is recommended.<br>• Make sure to have the following value for the effective length of engagement for the screws and female screws to be used for the attachment of the actuator.<br>When female screw is on steel → Thread length same as nominal diameter<br>When female screw is on aluminum → Thread length 2 times longer them nominal diameter |
| 4 | Tightening Torque | • Please follow the specification values stated in the Instruction Manual for the tightening torque.<br>Failure to do so may cause an operation problem. |
| 5 | Thrust Load, Load Moment Weight and Load Inertia | • Please follow the specification values stated in the Instruction Manual for the thrust load, the load moment weight and the load inertia. Failure to do so may cause abnormal vibration or noise, and also may remarkably shorten the product life. |

## Wiring

Use the dedicated connection cables provided by us for the connection between a controller and an actuator.

- In a use of the actuator with the dedicated connection cables not fixed, consider to ease the load to the dedicated connection cables by using the actuator in the range of the cable bends only with its weight or by using a stand-alone cable hose to gain a large radius bending.
- Do not attempt to cut and extend, shorten or rejoin the dedicated connection cables.
- Do not attempt to pull or bend the dedicated connection cables forcefully.
- The actuator cable and the actuator/encoder cable out of the motor unit are a fixed type cable. Fix the cable so it would not be bent repeatedly.

Contact us if you wish to have a change to the specifications of the dedicated cables.




Dedicated Cable

・Motor Cable CB-X-MA□□□ (Slim Type : T18/LT18)

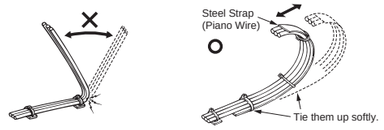
・Motor Cable CB-XMC-MA□□□ (High-Torque Type : H18/LH18)

・Encoder Cable CB-X3-PA□□□

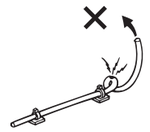
□□□ indicates the cable length
Example: 080＝8m

[Prohibited Items in the Cable Processing]

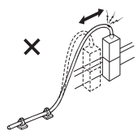
- Do not pull or bend forcibly the cable so as to give any extra load or tension to the cable.
- Do not process the cable to extend or shortening by means of cutting out, combination or connecting with another cable.
- Do not let the cable flex at a single point.



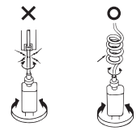

- Do not let the cable bend, kink or twist.



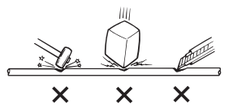
- Do not pull the cable with a strong force



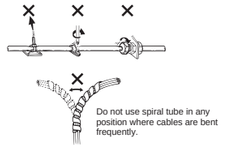
- Do not let the cable receive a turning force at a single point.



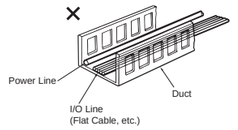
- Do not pinch, drop a heavy object onto or cut the cable.



- When fixing the cable, provide a moderate slack and do not tension it too tight.

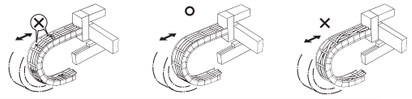



- Separate the I/O line, communication line and power line from each other.
  Do not store in the same duct.




Follow the instructions below when using a cable carrier.

- If there is an indication to the cable for the space factor in a cable carrier, refer to the wiring instruction given by the supplier when storing the cable in the cable carrier.
- Avoid the cables to get twined or twisted in the cable carrier, and also to have the cables move freely and do not tie them up. (Arrange the wiring so the cables are not to be pulled when bent.)
  Do not pile up cables. It may cause faster abrasion of the sheaths or cable breakage.



⚠ Note:

- When the cable is connected or disconnected, make sure to turn off the power to the controller. When the cable is connected or disconnected with the controller power turned ON, it might cause a malfunction of the actuator and result in a serious injury or damage to the machinery.
- When the connector connection is not correct, it would be dangerous because of a malfunction of the actuator. Make sure to confirm that the connector is connected correctly.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