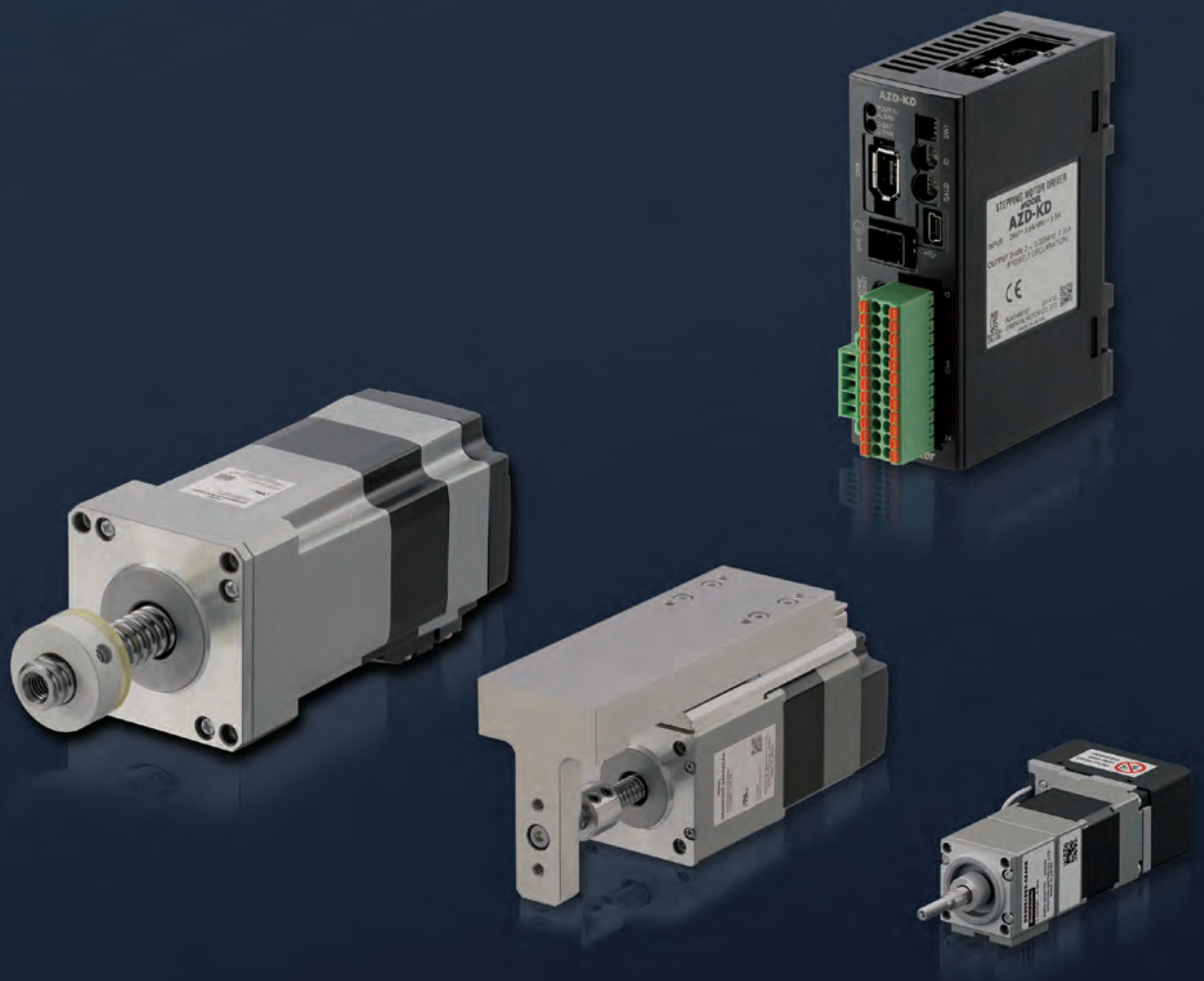
Oriental motor

Compact Linear Actuators

αSTEP AZ Series Equipped

DR Series
DRS2 Series

Battery-less Absolute Sensor Equipped.
Delivers Advanced High Precision Positioning More Compactly.



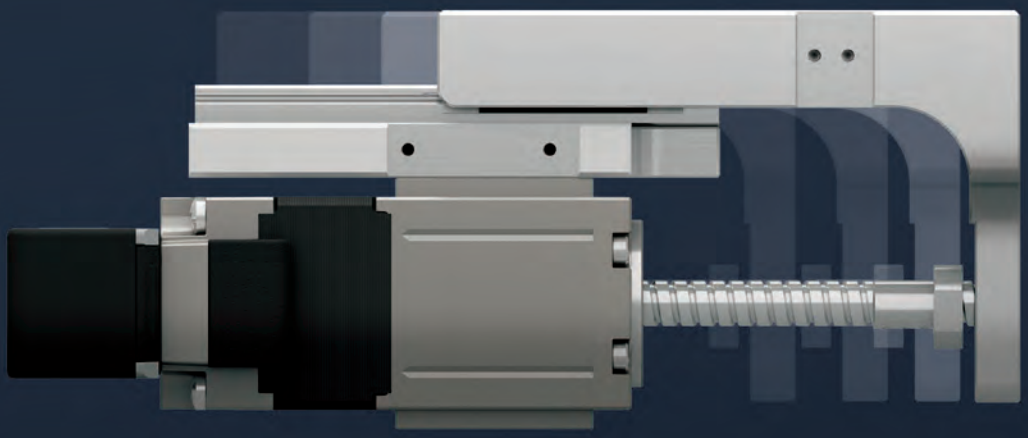
High positioning accuracy ideal for fine-feed operation

Repetitive Positioning Accuracy

Precision Ball Screw: ±0.003 mm

Rolled Ball Screw: ±0.01 mm

Minimum Traveling Amount (Factory setting) 0.001 mm



Compact linear actuator with integrated αSTEP and ball screw

Compact Linear Actuators αSTEP **AZ Series** Equipped

DR Series

Frame size: 20 mm, 28 mm

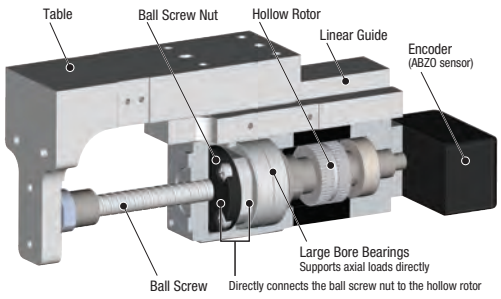
DRS2 Series

Frame size: 42 mm, 60 mm

Integrated αSTEP and Ball Screw Structure

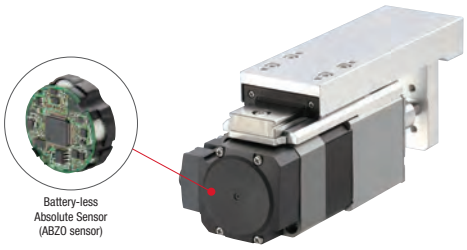
The high-precision αSTEP and ball screw* are combined for high-precision positioning.
No coupling or other connecting parts are used. The hollow rotor and ball screw nut are integrated for reduced backlash caused by part rigidity or combinations.

*Two types of driving ball screws are available: Precision and rolled.



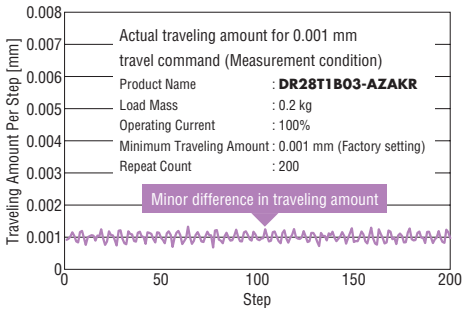
The driving motor is equipped with αSTEP**AZ** Series.

- Built-in battery-less absolute sensor constantly monitors motor position information with no external sensor required
- High reliability with closed loop control
- Reduced motor heat and energy saving due to high efficiency



●Allows for Reliable Fine-feed Operation

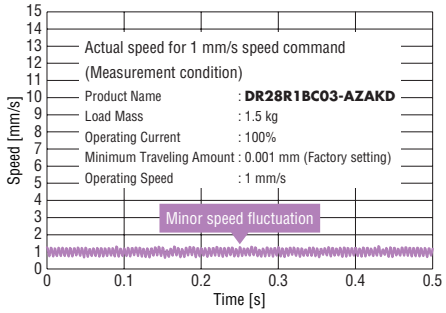
The product is equipped with α_{STEP}, allowing it to reliably and repeatedly perform fine operations one step at a time. It is ideal for use in finely adjusting camera or lenses.



●Smooth Operation at Low Speed

The micro-step drive and smooth driving functions* suppress vibration at a low speed and allow for smooth movement.
It is ideal for use as a drive shaft to reliably supply solution from a syringe.

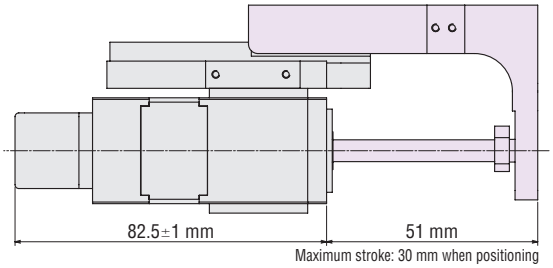
*A type of control in which micro-step driving is performed automatically at the same traveling amount and speed as during a full step, without having to change the pulse input setting.



Helps to Reduce the Size and Weight of Equipment

The compact body with integrated α_{STEP} and ball screw can help reduce the size and required space of equipment.
Reduced weight at the end of equipment can improve design flexibility.

Product Name: **DR28T1B03-AZAKL**



Maximum stroke: 30 mm when positioning

The ▭ shaded areas are moving parts.

●Frame Size 20 mm (**DR** Series)

DR20R1B02-AZAKR

Mass: 0.12 kg

●Frame Size 42 mm (**DRS2** Series)

DRSM42-04A2AZAK

Mass: 0.68 kg

●Frame Size 28 mm (**DR** Series)

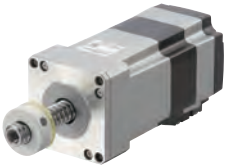
DR28R1B03-AZAKR

Mass: 0.23 kg

●Frame Size 60 mm (**DRS2** Series)

DRSM60-05A4AZAK

Mass: 1.6 kg



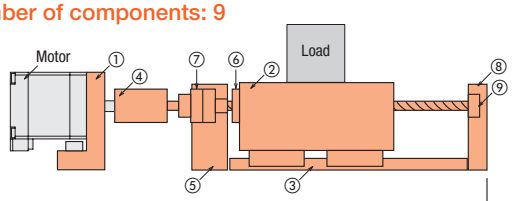
Reduced Startup Time

●The Compact Body Houses the Entire Linear Motion

There is no need to self-make parts, so the time required for designing devices, selecting parts, assembly, and adjusting installation accuracy can be reduced, which can streamline equipment startup.

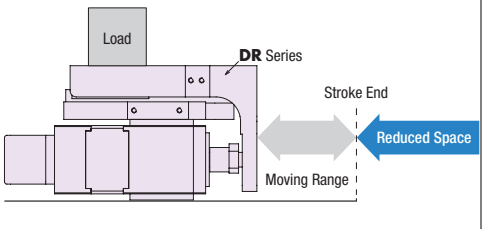
◇Custom

Number of components: 9



◇Using **DR** Series Table Type

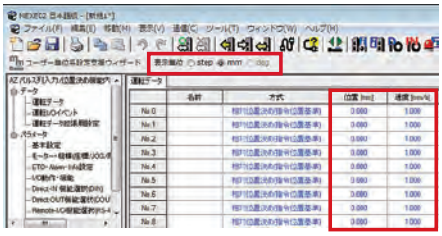
Number of components: 0



[Parts used] ①Installation plate ②Transportation table ③Linear guide ④Coupling ⑤Fixed side block ⑥Ball screw ⑦Fixed side bearing ⑧Supported side block ⑨Supported side bearing

●Parameters Set for Operation

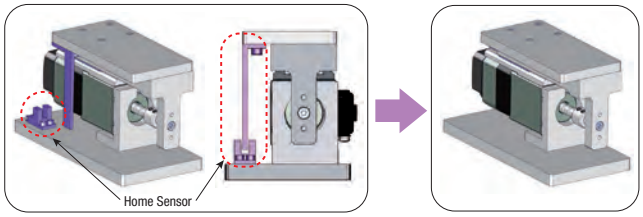
The ABZO sensor is shipped with mechanical parameters such as lead and stroke already set. It can be set in mm units after purchase, which can help reduce equipment startup time.



●No Home Sensor Required

Position information is managed mechanically by the ABZO sensor, so a home sensor, limit sensor, or other external sensor is not required.
This can help avoid routine maintenance trouble when using an external sensor.

Application Example



Lineup

●Frame Size 20 mm, 28 mm (**DR** Series)

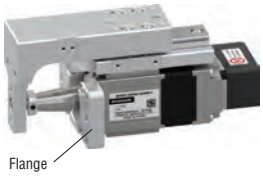
Type	Frame Size	Stroke	Ball Screw		Cable Drawing Direction	Installation Plate	Connection Cable
			Type	Lead			
Table Type  This includes a highly rigid guide that can be used to secure the load to the cylinder. Directly installing the load is easy.	20 mm	25 mm	Precision/ Precision with cover	1 mm	Downward/ Right/Left	None With Flange With Foot	 For Motor/Encoder 0.5 - 20 m
	28 mm	30 mm	Rolled/Rolled with cover	1 mm			
			Precision/ Precision with cover	1 mm / 2.5 mm			
Rod Type  Compact shape with no guide allows for direct incorporation with equipment. It can also be used as a compact thrust force shaft on the load transportation guide of the equipment.	20 mm	25 mm	Precision/ Precision with cover	1 mm	Upward/ Downward/ Right/Left	None	
	28 mm	30 mm	Rolled/Rolled with cover	1 mm		None With Foot	
			Precision/ Precision with cover	1 mm / 2.5 mm			

◇Ball Screw with Cover

Products with ball screw covers for simple dust protection are available.

◇With Installation Plate

Products with installation plates are available. There are two types available. One type uses a flange for installation from the rear, while the other uses a foot for installation from the top.



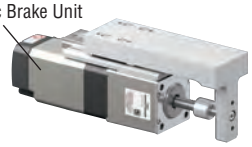
●Frame Size 42 mm, 60 mm (**DRS2** Series)

Type	Frame Size	Stroke	Ball Screw Type	Ball Screw Lead	Cable Drawing Direction	Electromagnetic Brake	Price Range	Connection Cable Set
Type With Guide  This includes a highly rigid guide that can be used to secure the load to the cylinder. Directly installing the load is easy.	42 mm	40 mm	Rolled	2 mm/ 8 mm	Right/Left	None/ With Electromagnetic Brake		● Without Electromagnetic Brake  For Motor  For Encoder
			Precision	2 mm				
Type Without Guide  Compact shape with no guide allows for direct incorporation with equipment. It can also be used as a compact thrust force shaft on the load transportation guide of the equipment.	42 mm	40 mm	Rolled	2 mm/ 8 mm	–	None/ With Electromagnetic Brake		● With Electromagnetic Brake  For Motor  For Encoder  For Electromagnetic Brake 0.5 - 20m
			Precision	2 mm				
	60 mm	50 mm	Rolled	4 mm				

◇With Electromagnetic Brake

The stop position is held when the power is OFF. This prevents the load from dropping during maintenance, even when installed vertically.

Electromagnetic Brake Unit



●Driver DC Power Supply Input

	*α*STEP **AZ** Series					
	Built-in Controller Type	Pulse Input Type with RS-485 Communication	Pulse Input Type	Network-compatible Driver	mini Driver	Network-compatible Multi Axis Driver
Driver Type				 PROFINET EtherNet/IP EtherCAT	 RS-485 Communication **Modbus** (RTU) **Modbus** (TCP, UDP) PROFINET EtherNet/IP EtherCAT	 SSCNETIII/H MECHATROLINK EtherCAT
Power Supply Input	24 VDC/48 VDC					

● Driver and connection cable product names and prices ➜ Page 56

For detailed information on other drivers, see the Oriental Motor website.

Selection

●Frame Size 20 mm, 28 mm (**DR** Series)

Type	Frame Size [mm]	Dynamic Permissible Moment [Nm]			Stroke [mm]	Ball Screw Type	Accuracy	
		M_P	M_Y	M_R			Repetitive Positioning Accuracy [mm]	Lost Motion [mm]
Table Type 	20	0.1	0.05	0.15	25	Precision	±0.003 [±0.01]*	0.02 or less
	28	0.3	0.24	1.5	30	Rolled	±0.01	0.05 or less
						Precision	±0.003 [±0.005]*	0.02 or less
Rod Type 	20	–			25	Precision	±0.003	0.02 or less
	28				30	Rolled	±0.01	0.05 or less
						Precision	±0.003	0.02 or less

*Specifications will vary according to conditions. For details, check the specifications for the product.

●Frame Size 42 mm, 60 mm (**DRS2** Series)

Type	Frame Size [mm]	Dynamic Permissible Moment [Nm]			Stroke [mm]	Ball Screw Type	Accuracy	
		M_P	M_Y	M_R			Repetitive Positioning Accuracy [mm]	Lost Motion [mm]
Type With Guide 	42	1.3	1.0	2.5	40	Rolled	±0.01 [±0.02]*	0.05 or less
						Precision	±0.003 [±0.005]*	0.02 or less
Type Without Guide 	42	–			40	Rolled	±0.01	0.05 or less
						Precision	±0.003	0.02 or less
	60				50	Rolled	±0.01	0.05 or less

*Specifications will vary according to conditions. For details, check the specifications for the product.

Lead [mm]	Speed [mm/s]	Thrust [N]	Transportable Mass [kg]	
			Horizontal	Vertical
1	20	15	0.5	1
1	40	40	4	4
1	40	40	4	4
2.5	100	20	4	2
1	20	15	1.5	1.5
1	40	40	4	4
1	40	40	4	4
2.5	100	20	4	2

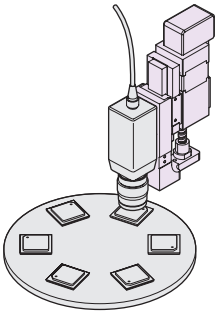
Lead [mm]	Speed [mm/s]	Thrust [N]	Transportable Mass [kg]	
			Horizontal	Vertical
2	50	200	10	10
8	200	50	5	5
2	50	200	10	10
2	50	200	40	20
8	200	50	10	5
2	50	200	40	20
4	50	500	50	50

Applications

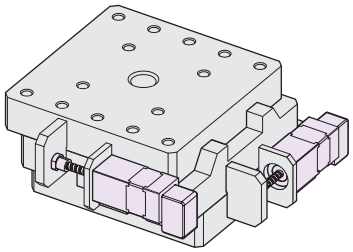
●DR Series

Table Type/Rod Type

Focusing a CCD Camera



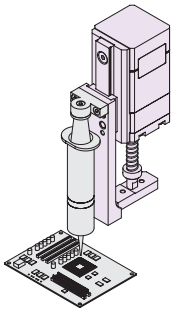
X-Y Stage Driving



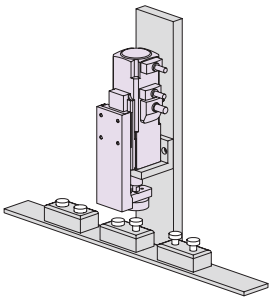
●DRS2 Series

Type With Guide

Dispenser Driving

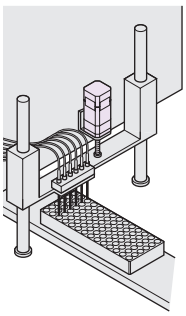


Pin Start-pushing



Type Without Guide

Automatic Dispensing for Micro-plate



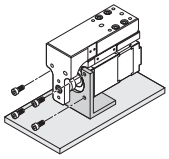
Installation Examples

●DR Series

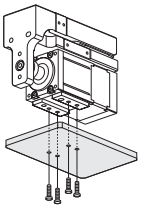
Table Type/Rod Type

There are two types of installation: Front installation and side installation.

•Front Installation



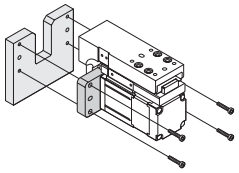
•Side Installation



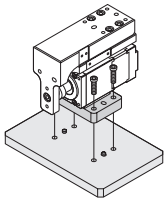
●Table type is shown in the diagrams.

Products with installation plates (Flange*, foot*) can be installed using a flange (From the rear) or a foot (From the top).
* Material: Aluminum Surface treatment: None

•Installation Using Flange
(Excluding rod type)



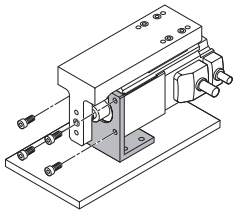
•Installation Using Foot
(Excluding **DR20** rod type)



●DRS2 Series

Type With Guide/Type Without Guide

Front installation is used here.

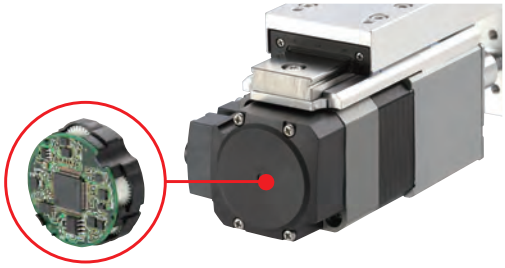


●The type with guide is shown in the figure.

●For details on installation, refer to the Operating Manual.

αSTEP AZ Series Equipped Absolute System for Simple Home Position Setting and Return

Oriental Motor has developed the ABZO sensor, a compact mechanical multi-turn absolute sensor (Patented). It can help improve productivity and reduce costs.



Battery-less
Absolute Sensor
(ABZO sensor)

No External Sensor Required

The absolute system eliminates the need for a home sensor, limit sensor, or other external sensor.

High-speed Return-to-home

The return to home without using an external sensor is possible, enabling the return-to-home position at a high speed regardless of the sensor sensitivity. This leads to reduction in the machine cycle time.

Cost Reduction

The sensor cost and the wiring cost can be reduced, lowering the total cost of the system.

Wire-saving

Wire saving allows the equipment to be designed more flexibly.

Not Affected by External Sensor Malfunctions

There is no need to worry about a malfunctioning or failed external sensor, or wire disconnection.

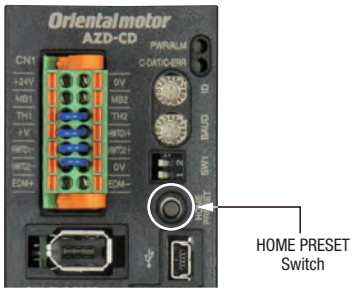
Accuracy Improvement in Return-to-home

Returning to the home position is possible regardless of variation in the sensing of the home sensor, improving the accuracy of the home position.
The return-to-home accuracy is the same as the repetitive positioning accuracy.

- If there is no limit sensor attached, you can use the software limit of the driver to prevent the threshold from being exceeding.

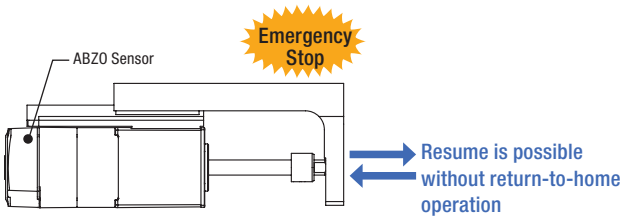
Simple Home Position Setting

A home position can be easily set by pressing the switch on the driver, and the ABZO sensor saves it. You can also use the support software (**MEXE02**) or external input signals to set a home position.



Home Return Not Required

Position information is kept even if power is shut down during positioning operation. When a built-in controller type recovers from an emergency stop of the production line or from a power failure, it can resume positioning operations without returning to the home position.



Battery-less

With a mechanical sensor, no battery is required. Position information is managed mechanically by the ABZO sensor, so this information can be retained even if the power is turned off or the cable between the motor and driver is disconnected.

Less Maintenance Work

Do not require of battery replacement, able to reduce the maintenance work and costs.

Desired Installation of the Driver

There is no need of space for battery replacement, thus the driver can be installed in any location, and more flexible in layout design for the control panel or other devices.

Overseas Transportation Trouble-free

Since batteries discharge by themselves, care must be taken when transported over a long period of time for international or long-distance shipment. The ABZO sensor does not require a battery, and there is no time limit for retaining the positioning information. In addition, there is no need to consider the regulations applied to battery export.

Position Retained Even if Cable Between Motor and Driver is Disconnected

Position information is retained within the ABZO sensor.

Enhanced Pushing Features

You can Easily Change the Push Force and Time

The **DR** Series and **DRS2** Series simply switches to pushing after completing positioning. In addition, you can easily change the push force and time.

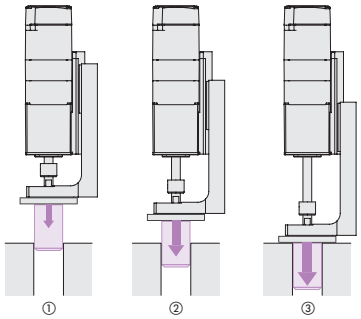
Note

Do not perform push-motion operations using a **DR** Series lead 1 mm cylinder.

A TLC signal may be output prior to completing a push-motion operation, which can prevent the push-motion operation from completing normally.

ADVANTAGE

- You can set the push force and time for each operation data No., allowing you to select data No. to change them easily.
- You can set a slow push-in stage for accurate positioning using a reduced force and a quick push-in stage using increased force.

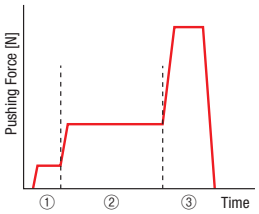


① Start pushing. Use limited force to push in.

② Gradually increase force to push in.

③ Further increase force to finish pushing in.

<Push Force and Push Time>

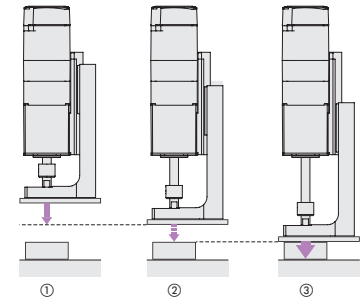


Low Speed Pushing Possible

You can set to approach the load at high speed and then reduce the speed immediately before touching it and push at a lower speed.

ADVANTAGE

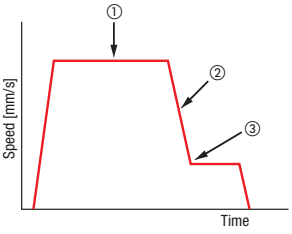
- Since almost no impact occurs when pushing, no cushioning mechanism is required to absorb the impact.
- High-speed approach immediately before pushing reduces the tact time of the equipment.



① Approach the load at high speed.

② Reduce the speed immediately before touching the load and then push at a low speed.

③ After touching, start the pushing operation.

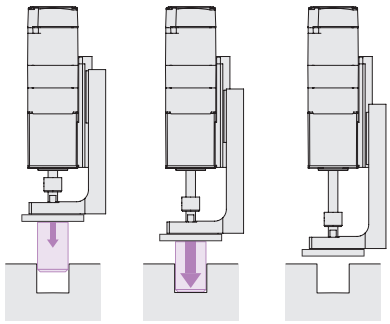


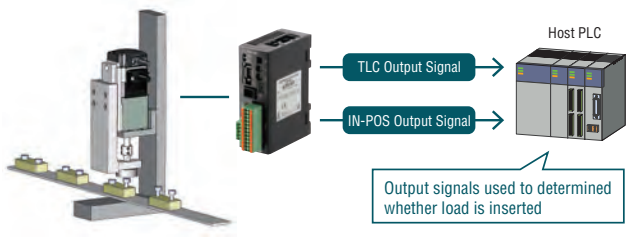
Pushing also Possible with Pulse Input Type

Setting the T-MODE input allows pushing even with pulse input type without overload alarms.
This is useful when performing pulse control and push-motion operations are required.

●Capable of Detecting if a Load has not been Inserted, without any External Sensor Required

Output signals (TLC output, IN-POS output) from the driver can be used to check for the load.



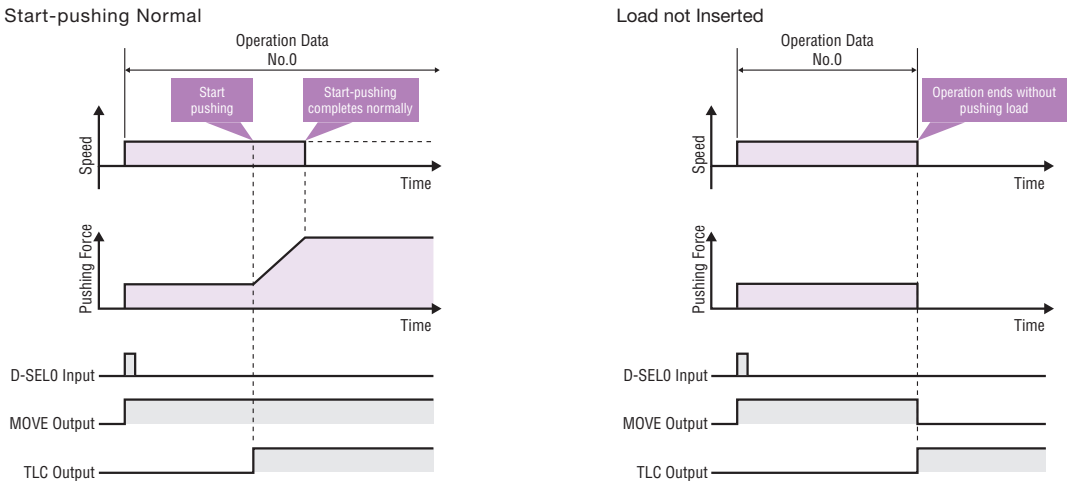


IN-POS Output: Output when the positioning operation is complete.
TLC Output: Output during push-motion operation, when the output torque reaches the set torque limit value.

Example using driver with **AZ** Series "Built-in Controller Type"

Allows for driver I/O signals to be set easily.
The **MEXE02** support software can be used to easily set operation data and parameter settings.

Operation/Timing Chart



Operation Data

	Name	Method	Position [mm]	Speed [mm/s]	Operating Current [%]
No.0	Start-pushing	Absolute positioning push-motion	30	5	30

●Program Simply by Copying Simple Sequence

Example applications are explained using simple sequences and functions of the **AZ** Series.
More detailed/practical usage methods are explained simply and clearly.
For details, see the Oriental Motor website.

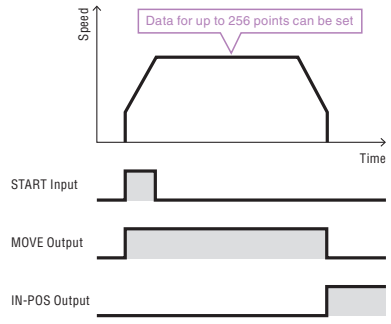
Various Operation Patterns and I/O Signals

(For built-in controller type drivers.)

Operating data is set in the driver, and is then selected and run from the host.
Operation data can also be combined, or separate operation data can be selected by turning an internal signal ON or OFF.

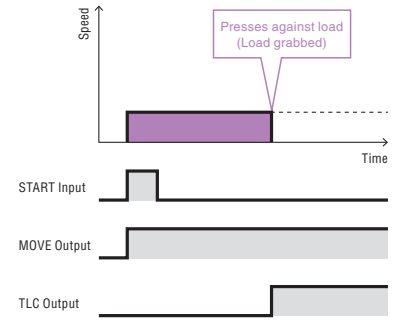
Operation Patterns

Position SD Operation



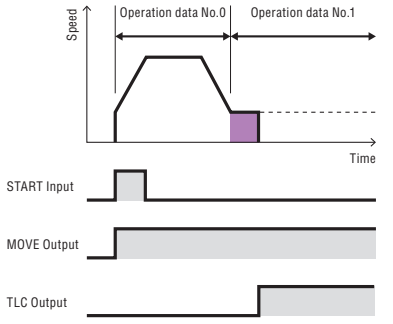
Operation data such as the motor operating speed and position (Traveling amount) is set in operation data to drive a trapezoid from the current position to the target position.

Push-motion Positioning SD Operation



Operation data such as the motor operating speed and position (Traveling amount) is set in operation data to perform an automatic startup operation from the current position to the target position. The TLC signal can be used as a push-motion operation completion signal, in order to determine whether the load is pressed against during operation.

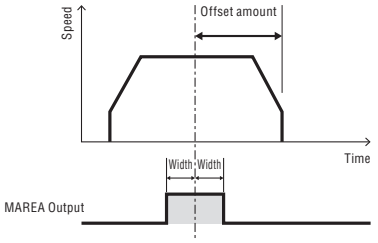
Shape Connection Operation



Switches to operation data number set in "Binding destination" without stopping operation.

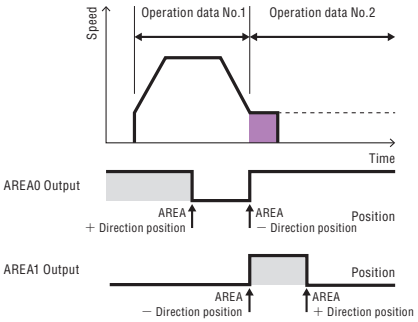
Output Signals

MAREA Output



When the motor is in the set area, MAREA output turns ON. The reference and offset amount/width can be set for the range in which a signal is output.

AREA Output



When the motor is in an area set for operation data, AREA output turns ON. For detailed settings, refer to "AREA range specification system" in the Operating Manual.

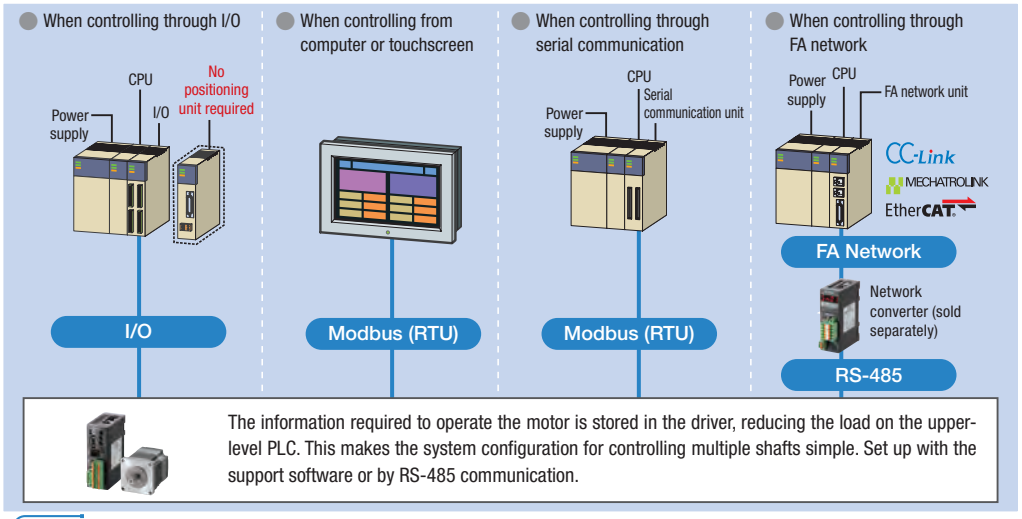
	Assignment	Signal Name	Function
Input Signals	1	FREE	Shuts off motor current and stops excitation. If an electromagnetic brake is attached, it will release the electromagnetic brake.
	2	C-ON	Starts motor excitation.
	21	T-MODE	Disables the overload alarm.
	22	CRNT-LMT	Applies a current limit.
	23	SPD-LMT	Applies a speed limit.
	33	SSTART	Performs stored data operation. For manual forward feed operations, performs a binding destination operation.
	40 - 47	D-SEL0 - D-SEL7	Performs a direct positioning operation.
Output Signals	134	MOVE	Output when the motor is operating.
	138	IN-POS	Output when the positioning operation is complete.
	140	TLC	Output when the output torque reaches the upper limit.
	141	VA	Output when the operating speed reaches the target speed.
	144	HOME-END	Output when a high-speed return-to-home operation or return-to-home operation completes, and when position preset is performed.
	159	MAREA	Output when the motor is within the area set in operation data.
	160 - 167	AREA0 - AREA7	Output when the motor is within the area.

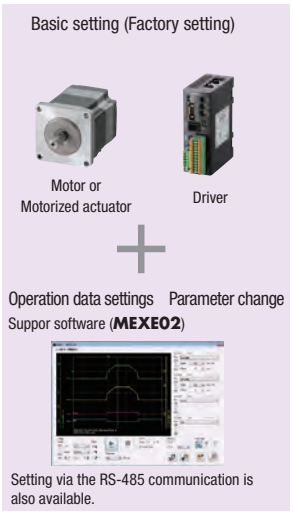
Drivers Selectable According to the Host System

Drivers can be selected according to the host system.

●Built-in Controller Type FLEX

Set the operating data in the driver, and the operating data is selected and executed from the host system. Host system connection and control is performed through I/O, Modbus (RTU), RS-485 communication, or FA network. The use of a network converter (sold separately) allows control via CC-Link communication, MECHATROLINK communication, or EtherCAT communication.

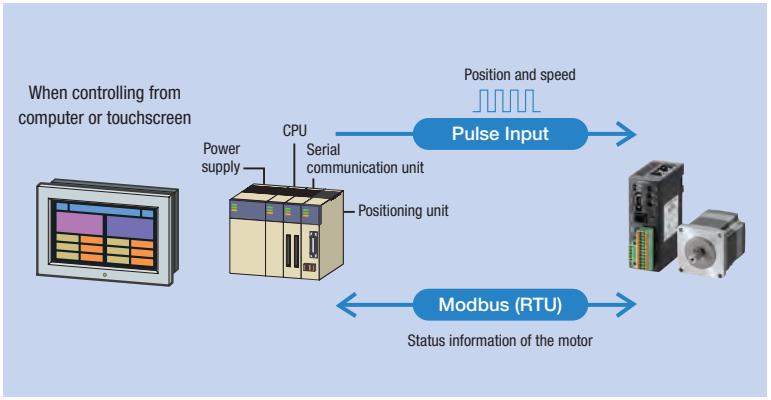


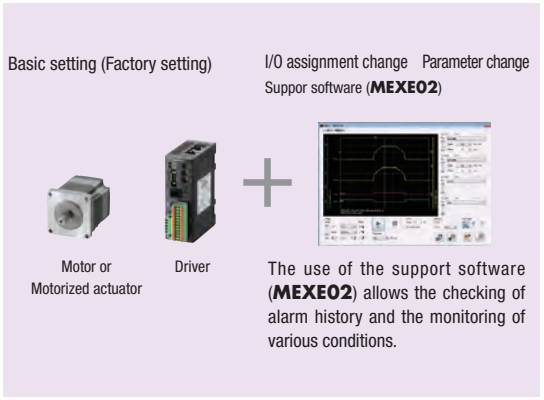


FLEX is a general term of the products that support I/O control, Modbus (RTU) control, and FA network control via a network converter.

●Pulse Input Type with RS-485 Communication

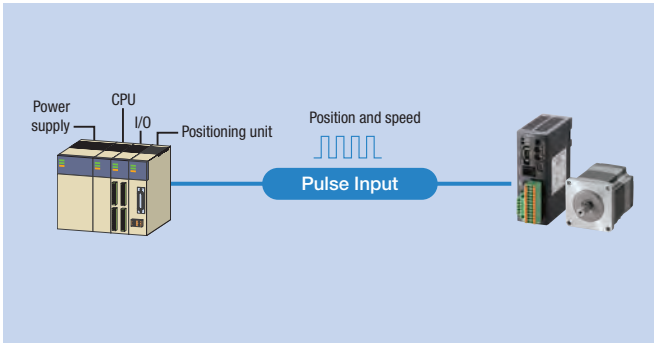
This type executes operation by inputting pulses to the driver. The motor is controlled from the positioning unit (Pulse oscillator) provided by the customer. The use of RS-485 communication allows the monitoring of status information (Position, speed, torque, alarms, temperature, etc.) of the motor.

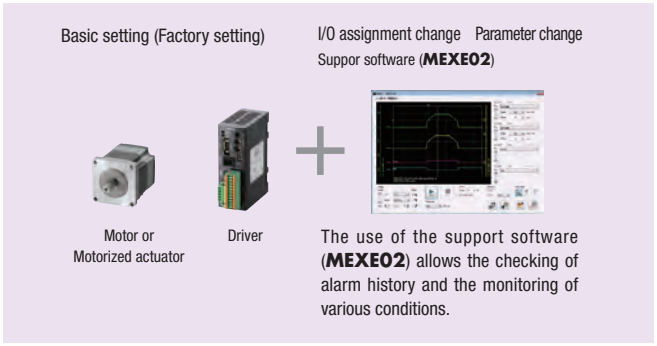




●Pulse Input Type

This type executes operation by inputting pulses to the driver. The motor is controlled from the positioning unit (Pulse oscillator) provided by the customer. The use of the support software (**MEXE02**) allows the checking of alarm history and the monitoring of various conditions.

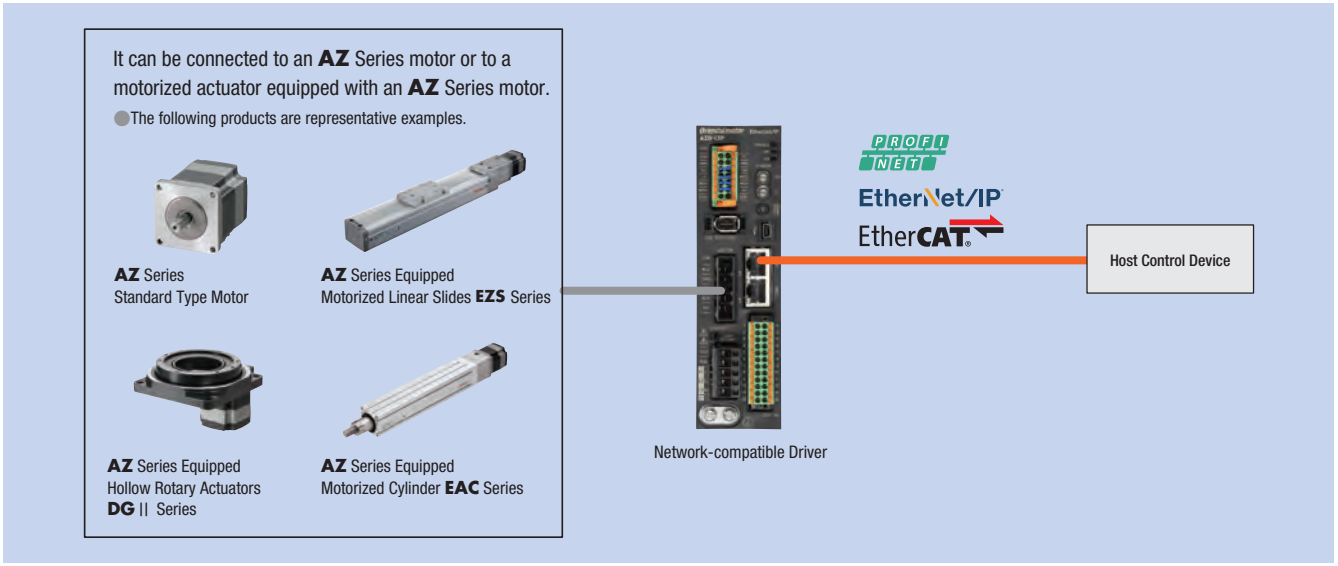




●The support software (**MEXE02**) can be downloaded from the Oriental Motor website.

Network-compatible Driver

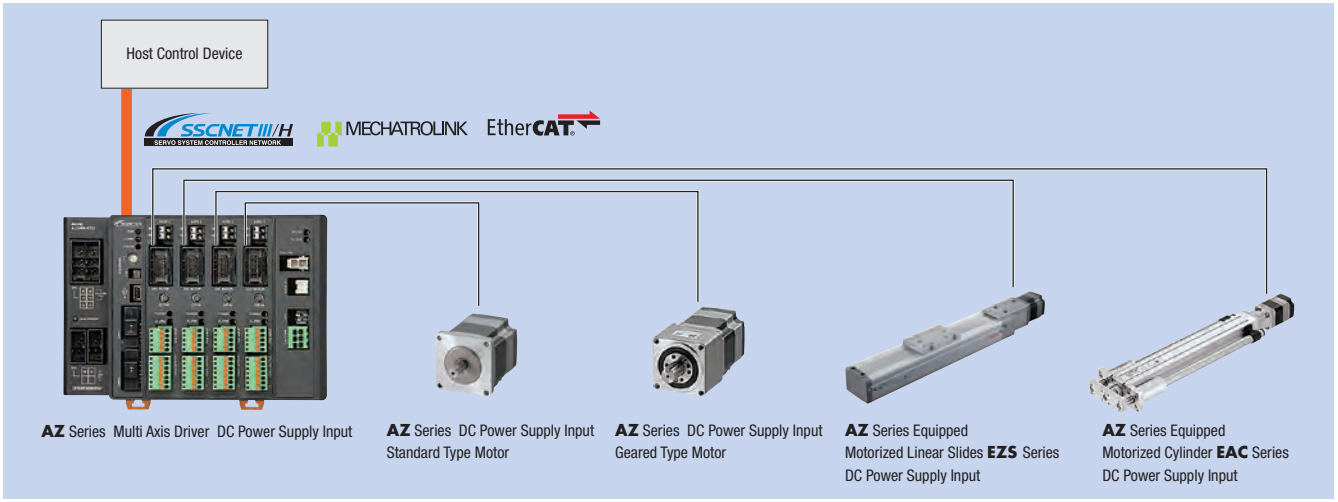
The driver can be controlled directly from the host control device via the FA network.



The connected driver is AC power supply input.

Network-compatible Multi Axis Driver

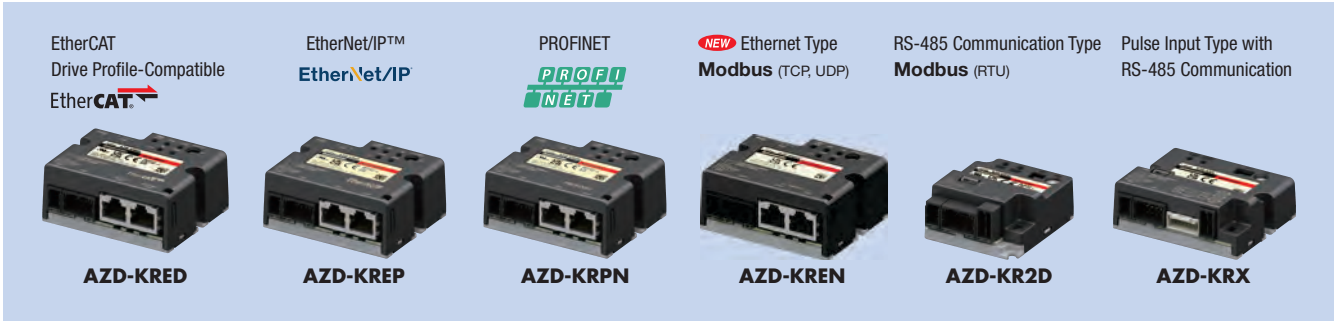
Multi axis driver that supports SSCNET III/H, MECHATROLINK-III and EtherCAT Drive Profile. The driver can be connected to a DC power supply motor of the **AZ** Series and to a actuator equipped with motor. 2-axis, 3-axis, and 4-axis connectable drivers are available.



The above motors and motorized actuators connected to the stepping motor are representative examples.

mini Driver

Compact design that allows for installation in narrow locations. These are compatible with the major industrial networks used around the globe. Pulse control is also possible.



Drive Easily with Support Software **MEXE02**

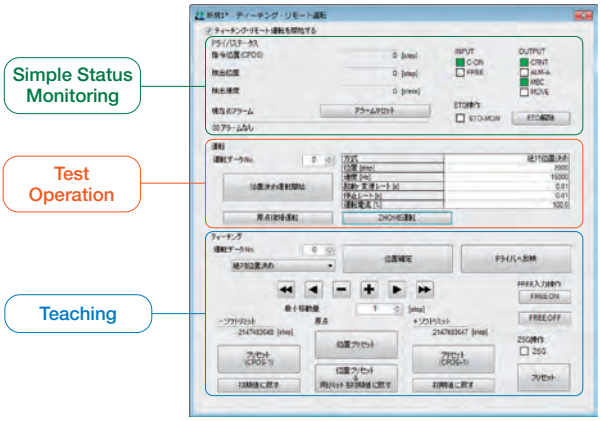
By using the support software, data settings, actual operation, and checks by the various monitor functions are also easily performed on the computer.

●Support Software **MEXE02**

The support software can be downloaded from the Oriental Motor website.

●Teaching/Remote Operation

From the support software, you can easily set a home position or drive the motor. You can use this function for teaching or trial operation before connecting to the host system.



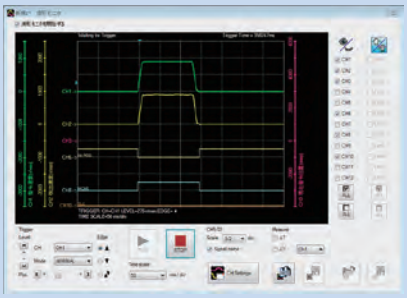
●I/O Monitoring

You can monitor input signals, and output forcibly output signals. Use function for wire connection with the host system or check network I/O operations.

Various Monitor Functions

●Waveform Monitoring

Similar to using an oscilloscope, the motor drive condition and output signal status can be checked. Use this during the startup of the device and when adjusting.

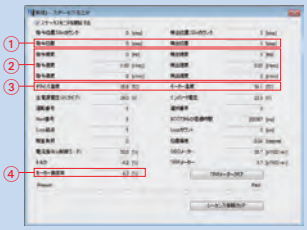


●Alarm Monitor

If an error occurs, you can check the error details, operation condition at the time of error occurrence, and measures to be taken.

●Status Monitoring

In addition to the speed, motor, temperature of the driver, and load factor, you can monitor other items including rotation amount accumulated from the start of use. Signals can be output for each item as needed, achieving efficient maintenance.



①The actual position is detected for the command position.
②The actual speed is detected for the command speed.
③The temperatures of the encoder of the motor and the inside of the driver are detected.
④This shows the current load factor to the output torque at the speed during rotation as 100%.

●Supporting multi-monitoring, the software allows you to perform remote operation or teaching while monitoring the operational status.

DR Series

System Configuration

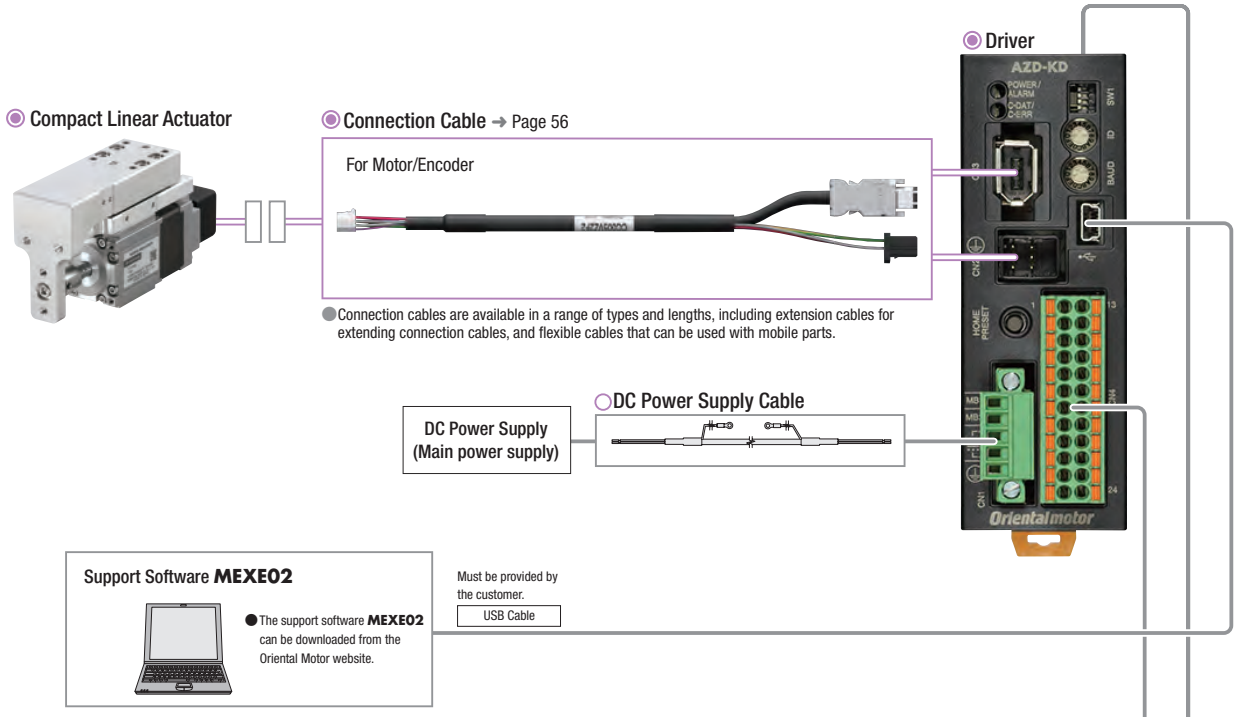
When a compact linear actuator is combined with a DC power supply input built-in controller type driver or a pulse input type driver with RS-485 communication

An example of a configuration using I/O control or RS-485 communication is shown below.

The compact linear actuator, driver, and connection cable or flexible connection cable are provided separately.

● For system configurations combined with other types of drivers, see the Oriental Motor website.

◉ Must be purchased
○ Purchase if required



Compact Linear Actuator		Driver		Cables	
				Connection Cable (1m)	I/O Signal Cable with Connector (1m)
DR28T1A03-AZAKD		AZD-KD		CC010VZ2F2	CC24D010C-1
◉		◉		◉	○

● The system configuration shown above is an example. Other combinations are available.

Note

● The motor/encoder cable from the motor cannot be connected directly to the driver. To connect the motor to the driver, use a connection cable.

Product Number Code

Compact Linear Actuator

DR 28 T 2.5 BC 03 - AZ A K R - P

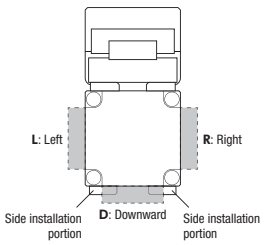
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

①	Series Name	**DR**: **DR** Series
②	Frame Size	**20**: 20 mm **28**: 28 mm
③	Shape	**T**: Table Type **R**: Rod Type
④	Lead	**1**: 1 mm **2.5**: 2.5 mm
⑤	Ball Screw Type	**A**: Rolled Ball Screw **AC**: Rolled Ball Screw With Cover **B**: Precision Ball Screw **BC**: Precision Ball Screw With Cover
⑥	Stroke	**02**: 25 mm **03**: 30 mm
⑦	Equipped Motor	**AZ**: **AZ** Series
⑧	Additional Function	**A**: None
⑨	Motor Specifications	**K**: DC Power Supply Input Specifications
⑩	Cable Drawing Direction*	**U**: Upward **D**: Downward **R**: Right **L** Left
⑪	Installation Plate	None: No Installation Plate **F**: With Flange **P**: With Foot

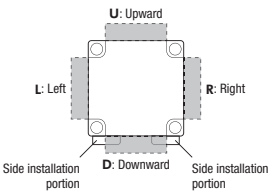
*The cable drawing directions indicate the following.

- Wide table type: Direction with the table facing upward and the motor to the front
- Other type: Direction with the side installation portion facing downward, looking from the side opposite the output shaft

Table Type



Rod Type



Product Line and Price

Compact Linear Actuator

◇Table Type

• Frame Size 20 mm
Precision Ball Screw

Lead [mm]	Installation Plate	Product Name
1	None	**DR20T1B02-AZAKD** **DR20T1B02-AZAKR** **DR20T1B02-AZAKL**
	With Flange	**DR20T1B02-AZAKD-F** **DR20T1B02-AZAKR-F** **DR20T1B02-AZAKL-F**
	With Foot	**DR20T1B02-AZAKD-P** **DR20T1B02-AZAKR-P** **DR20T1B02-AZAKL-P**

• Frame Size 20 mm
Precision Ball Screw With Cover

Lead [mm]	Installation Plate	Product Name
1	None	**DR20T1BC02-AZAKD** **DR20T1BC02-AZAKR** **DR20T1BC02-AZAKL**
	With Flange	**DR20T1BC02-AZAKD-F** **DR20T1BC02-AZAKR-F** **DR20T1BC02-AZAKL-F**
	With Foot	**DR20T1BC02-AZAKD-P** **DR20T1BC02-AZAKR-P** **DR20T1BC02-AZAKL-P**

• Frame Size 28 mm
Rolled Ball Screw

Lead [mm]	Installation Plate	Product Name
1	None	**DR28T1A03-AZAKD** **DR28T1A03-AZAKR** **DR28T1A03-AZAKL**
	With Flange	**DR28T1A03-AZAKD-F** **DR28T1A03-AZAKR-F** **DR28T1A03-AZAKL-F**
	With Foot	**DR28T1A03-AZAKD-P** **DR28T1A03-AZAKR-P** **DR28T1A03-AZAKL-P**

• Frame Size 28 mm
Rolled Ball Screw With Cover

Lead [mm]	Installation Plate	Product Name
1	None	**DR28T1AC03-AZAKD** **DR28T1AC03-AZAKR** **DR28T1AC03-AZAKL**
	With Flange	**DR28T1AC03-AZAKD-F** **DR28T1AC03-AZAKR-F** **DR28T1AC03-AZAKL-F**
	With Foot	**DR28T1AC03-AZAKD-P** **DR28T1AC03-AZAKR-P** **DR28T1AC03-AZAKL-P**

• Frame Size 28 mm
Precision Ball Screw

Lead [mm]	Installation Plate	Product Name
1	None	**DR28T1B03-AZAKD** **DR28T1B03-AZAKR** **DR28T1B03-AZAKL**
	With Flange	**DR28T1B03-AZAKD-F** **DR28T1B03-AZAKR-F** **DR28T1B03-AZAKL-F**
	With Foot	**DR28T1B03-AZAKD-P** **DR28T1B03-AZAKR-P** **DR28T1B03-AZAKL-P**
2.5	None	**DR28T2.5B03-AZAKD** **DR28T2.5B03-AZAKR** **DR28T2.5B03-AZAKL**
	With Flange	**DR28T2.5B03-AZAKD-F** **DR28T2.5B03-AZAKR-F** **DR28T2.5B03-AZAKL-F**
	With Foot	**DR28T2.5B03-AZAKD-P** **DR28T2.5B03-AZAKR-P** **DR28T2.5B03-AZAKL-P**

• Frame Size 28 mm
Precision Ball Screw With Cover

Lead [mm]	Installation Plate	Product Name
1	None	**DR28T1BC03-AZAKD** **DR28T1BC03-AZAKR** **DR28T1BC03-AZAKL**
	With Flange	**DR28T1BC03-AZAKD-F** **DR28T1BC03-AZAKR-F** **DR28T1BC03-AZAKL-F**
	With Foot	**DR28T1BC03-AZAKD-P** **DR28T1BC03-AZAKR-P** **DR28T1BC03-AZAKL-P**
2.5	None	**DR28T2.5BC03-AZAKD** **DR28T2.5BC03-AZAKR** **DR28T2.5BC03-AZAKL**
	With Flange	**DR28T2.5BC03-AZAKD-F** **DR28T2.5BC03-AZAKR-F** **DR28T2.5BC03-AZAKL-F**
	With Foot	**DR28T2.5BC03-AZAKD-P** **DR28T2.5BC03-AZAKR-P** **DR28T2.5BC03-AZAKL-P**

◇Rod Type

•Frame Size 20 mm
Precision Ball Screw

Lead [mm]	Installation Plate	Product Name
1	None	DR20R1B02-AZAKU DR20R1B02-AZAKD DR20R1B02-AZAKR DR20R1B02-AZAKL

•Frame Size 20 mm
Precision Ball Screw With Cover

Lead [mm]	Installation Plate	Product Name
1	None	DR20R1BC02-AZAKU DR20R1BC02-AZAKD DR20R1BC02-AZAKR DR20R1BC02-AZAKL

•Frame Size 28 mm
Rolled Ball Screw

Lead [mm]	Installation Plate	Product Name
1	None	DR28R1A03-AZAKU DR28R1A03-AZAKD DR28R1A03-AZAKR DR28R1A03-AZAKL
	With Foot	DR28R1A03-AZAKU-P DR28R1A03-AZAKD-P DR28R1A03-AZAKR-P DR28R1A03-AZAKL-P

•Frame Size 28 mm
Rolled Ball Screw With Cover

Lead [mm]	Installation Plate	Product Name
1	None	DR28R1AC03-AZAKU DR28R1AC03-AZAKD DR28R1AC03-AZAKR DR28R1AC03-AZAKL
	With Foot	DR28R1AC03-AZAKU-P DR28R1AC03-AZAKD-P DR28R1AC03-AZAKR-P DR28R1AC03-AZAKL-P

•Frame Size 28 mm
Precision Ball Screw

Lead [mm]	Installation Plate	Product Name
1	None	DR28R1B03-AZAKU DR28R1B03-AZAKD DR28R1B03-AZAKR DR28R1B03-AZAKL
	With Foot	DR28R1B03-AZAKU-P DR28R1B03-AZAKD-P DR28R1B03-AZAKR-P DR28R1B03-AZAKL-P
2.5	None	DR28R2.5B03-AZAKU DR28R2.5B03-AZAKD DR28R2.5B03-AZAKR DR28R2.5B03-AZAKL
	With Foot	DR28R2.5B03-AZAKU-P DR28R2.5B03-AZAKD-P DR28R2.5B03-AZAKR-P DR28R2.5B03-AZAKL-P

•Frame Size 28 mm
Precision Ball Screw With Cover

Lead [mm]	Installation Plate	Product Name
1	None	DR28R1BC03-AZAKU DR28R1BC03-AZAKD DR28R1BC03-AZAKR DR28R1BC03-AZAKL
	With Foot	DR28R1BC03-AZAKU-P DR28R1BC03-AZAKD-P DR28R1BC03-AZAKR-P DR28R1BC03-AZAKL-P
2.5	None	DR28R2.5BC03-AZAKU DR28R2.5BC03-AZAKD DR28R2.5BC03-AZAKR DR28R2.5BC03-AZAKL
	With Foot	DR28R2.5BC03-AZAKU-P DR28R2.5BC03-AZAKD-P DR28R2.5BC03-AZAKR-P DR28R2.5BC03-AZAKL-P

Drivers

Various drivers are available to be selected according to the host system.

➜ Refer to Page 56.

Connection Cables/Flexible Connection Cables

Use a flexible connection cable if the cable will be bent.

➜ Refer to Page 56.

Note

● The motor/encoder cable from the motor cannot be connected directly to the driver. To connect the motor to the driver, use a connection cable.

Accessories

Compact Linear Actuator

Type \ Accessories	Operating Manual
For All Types	1 set

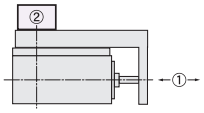
How to Read Specifications Table

For Compact Linear Actuator

	Actuator Product Name	Ball Screw		DR28T2.5B03-AZAK□-□
		Ball Screw With Cover		DR28T2.5BC03-AZAK□-□
①	Lead		mm	2.5
	Ball Screw Type			Precision
②	Repetitive Positioning Accuracy	① End	mm	±0.003
		② Top	mm	±0.005
③	Lost Motion		mm	0.02 or less
④	Minimum Traveling Amount		mm	0.001
⑤	Permissible Moment	Static Permissible Moment	Nm	MP: 0.30 MY: 0.24 MR: 1.5
		Dynamic Permissible Moment	Nm	
⑥	Transportable Mass	Horizontal	kg	4
		Vertical	kg	2
⑦	Thrust		N	20
⑧	Pushing Force		N	50
⑨	Holding Force		N	20
⑩	Stroke		mm	30
⑪	Maximum Speed		mm/s	100
⑫	Maximum Acceleration		m/s^2	0.5

①Lead
The distance the ball screw moves linearly in one motor rotation.

②Repetitive Positioning Accuracy
A value indicating the amount of error that is generated when positioning is performed repeatedly to the same position in the same direction.
(The repetitive positioning accuracy is measured at a constant temperature under a constant load).



The repetitive positioning accuracy is measured on the end for ① and the linear guide for ②.
Other items are common unless specified.

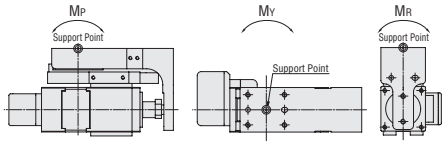
③Lost Motion
A value indicating the amount of error that is generated when positioning is performed to the same position in a different direction.
(The repetitive positioning accuracy is measured at a constant temperature under a constant load).

④Minimum Traveling Amount
The traveling amount for each step, set by default.

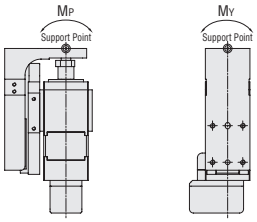
⑤Permissible Moment
When the load is placed in a position eccentric from the compact linear actuator guide, force making the guide rotate applies. In this case, it indicates the maximum force applied to the guide.
The dynamic permissible moment is the moment allowed during operation.
The static permissible moment is the moment allowed during static conditions.

●Table Type

Horizontal Direction

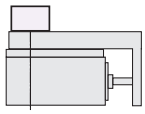


Vertical Direction



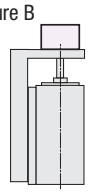
⑥Transportable Mass

Figure A



●Horizontal Direction (Figure A)
Maximum mass that can be moved under operating performance in the horizontal direction of the compact linear actuator.

Figure B



●Vertical Direction (Figure B)
Maximum mass that can be moved under operating performance in the vertical direction of the compact linear actuator.

⑦Thrust
The maximum force pushing the load during constant speed operation.

⑧Pushing Force
The maximum pressure applied to the load during the pushing operation.

⑨Holding Force
The maximum holding force when the motor is stopped, while power is supplied.

⑩Stroke
Maximum distance to transport or push/draw the load.

⑪Maximum Speed
The maximum speed at which the transportable mass can be transported.

⑫Maximum Acceleration
The maximum acceleration at which the transportable mass can be transported.

Compact Linear Actuator Specifications

Table Type

◇Frame Size 20 mm

Actuator Product Name	Ball Screw		DR20T1B02-AZAK□-□
	Ball Screw With Cover		DR20T1BC02-AZAK□-□
Lead		mm	1
Ball Screw Type			Precision
Repetitive Positioning Accuracy	① End	mm	±0.003
	② Top	mm	±0.01
Lost Motion		mm	0.02 or less
Minimum Traveling Amount		mm	0.001
Permissible Moment*	Static Permissible Moment	Nm	MP: 0.1 MY: 0.05 MR: 0.15
	Dynamic Permissible Moment	Nm	
Transportable Mass	Horizontal	kg	0.5
	Vertical	kg	1
Thrust		N	15
Pushing Force		N	—
Holding Force		N	15
Stroke		mm	25
Maximum Speed		mm/s	20
Maximum Acceleration		m/s^2	0.2

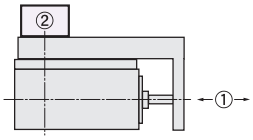
● The □ mark in the product name is replaced by **D** (Downward), **R** (Right), or **L** (Left) which shows the cable drawing direction.
The □ mark in the product name is replaced by **F** (With flange) or **P** (With foot) which indicates the installation plate.
If there is no installation plate, there will be no -□ mark in the product name.

*Set the load to the thrust or lower.

Note

● The maximum speed may decrease depending on the ambient temperature and motor cable length.

● Repetitive positioning accuracy



The repetitive positioning accuracy is measured on the end for ① and the linear guide for ②.

◇Frame Size 28 mm

Actuator Product Name	Ball Screw		DR28T1A03-AZAK□-□	DR28T1B03-AZAK□-□	DR28T2.5B03-AZAK□-□
	Ball Screw With Cover		DR28T1AC03-AZAK□-□	DR28T1BC03-AZAK□-□	DR28T2.5BC03-AZAK□-□
Lead		mm	1	1	2.5
Ball Screw Type			Rolled	Precision	
Repetitive Positioning Accuracy	① End	mm	±0.01	±0.003	
	② Top	mm	±0.01	±0.005	
Lost Motion		mm	0.05 or less	0.02 or less	
Minimum Traveling Amount		mm	0.001		
Permissible Moment*	Static Permissible Moment	N·m	MP: 0.30 MY: 0.24 MR: 1.5		
	Dynamic Permissible Moment	N·m			
Transportable Mass	Horizontal	kg	4		
	Vertical	kg	4		2
Thrust		N	40		20
Pushing Force		N	—		50
Holding Force		N	40		20
Stroke		mm	30		
Maximum Speed		mm/s	40		100
Maximum Acceleration		m/s^2	0.2		0.5

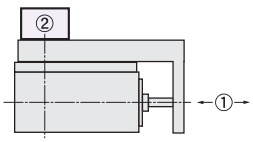
● The □ mark in the product name is replaced by **D** (Downward), **R** (Right), or **L** (Left) which shows the cable drawing direction.
The □ mark in the product name is replaced by **F** (With flange) or **P** (With foot) which indicates the installation plate.
If there is no installation plate, there will be no -□ mark in the product name.

*Set the load to the thrust or lower.

Note

● The maximum speed may decrease depending on the ambient temperature and motor cable length.

● Repetitive positioning accuracy



The repetitive positioning accuracy is measured on the end for ① and the linear guide for ②.

Rod Type

◇Frame Size 20 mm

Actuator Product Name	Ball Screw		DR20R1B02-AZAK□
	Ball Screw With Cover		DR20R1BC02-AZAK□
Lead		mm	1
Ball Screw Type			Precision
Repetitive Positioning Accuracy		mm	±0.003
Lost Motion		mm	0.02 or less
Minimum Traveling Amount		mm	0.001
Transportable Mass	Horizontal	kg	1.5
	Vertical	kg	1.5
Thrust		N	15
Pushing Force		N	–
Holding Force		N	15
Stroke		mm	25
Maximum Speed		mm/s	20
Maximum Acceleration		m/s^2	0.2

● The □ mark in the product name is replaced by **U** (Upward), **D** (Downward), **R** (Right), or **L** (Left) which shows the cable drawing direction.

Note

● The maximum speed may decrease depending on the ambient temperature and motor cable length.

◇Frame Size 28 mm

Actuator Product Name	Ball Screw		DR28R1A03-AZAK□-□	DR28R1B03-AZAK□-□	DR28R2.5B03-AZAK□-□
	Ball Screw With Cover		DR28R1AC03-AZAK□-□	DR28R1BC03-AZAK□-□	DR28R2.5BC03-AZAK□-□
Lead		mm	1	1	2.5
Ball Screw Type			Rolled	Precision	
Repetitive Positioning Accuracy		mm	±0.01	±0.003	
Lost Motion		mm	0.05 or less	0.02 or less	
Minimum Traveling Amount		mm	0.001		
Transportable Mass	Horizontal	kg	4		
	Vertical	kg	4		2
Thrust		N	40		20
Pushing Force		N	–		50
Holding Force		N	40		20
Stroke		mm	30		
Maximum Speed		mm/s	40		100
Maximum Acceleration		m/s^2	0.2		0.5

● The □ mark in the product name is replaced by **U** (Upward), **D** (Downward), **R** (Right), or **L** (Left) which shows the cable drawing direction.
The □ mark in the product name is replaced by **P** (With foot) which indicates the installation plate.
If there is no installation plate, there will be no **-**□ mark in the product name.

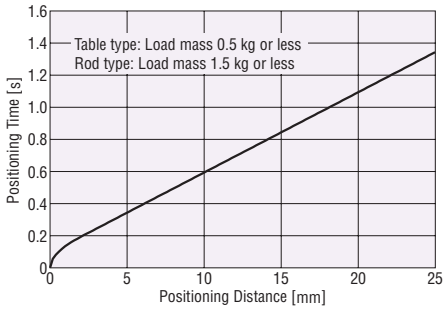
Note

● The maximum speed may decrease depending on the ambient temperature and motor cable length.

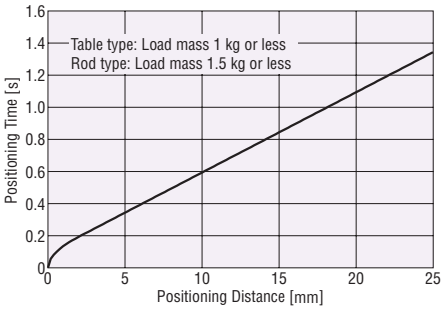
Positioning Distance – Positioning Time

Frame Size 20 mm

◇Horizontal Direction Installation

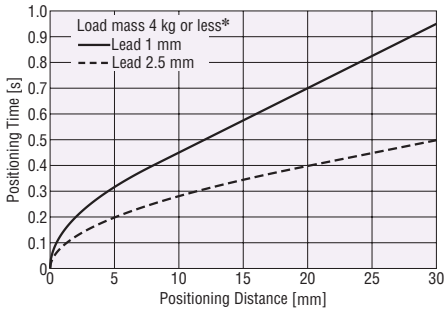


◇Vertical Direction Installation

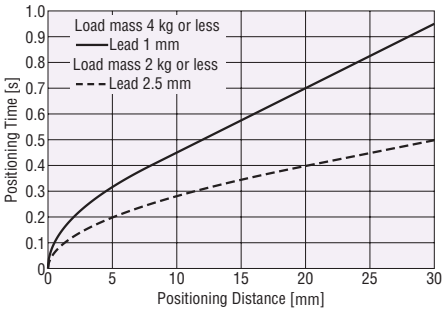


Frame Size 28 mm

◇Horizontal Direction Installation



◇Vertical Direction Installation



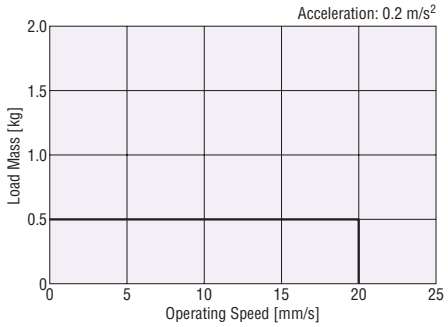
✻For the rod type with guide, the transportable mass will be 0.2 kg if a linear guide is not also used.

●The "Shortest Positioning Time Calculation" tool is available on the Oriental Motor website. It can be used to calculate the approximate positioning time based on the model and operation conditions.

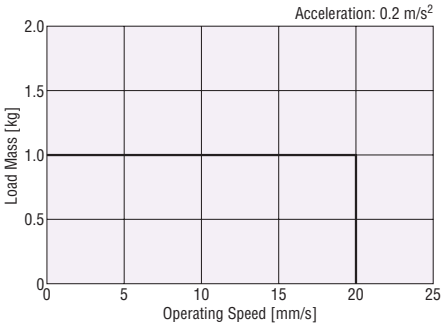
Operating Speed – Load Mass

Frame Size 20 mm Table Type

◇Horizontal Direction Installation

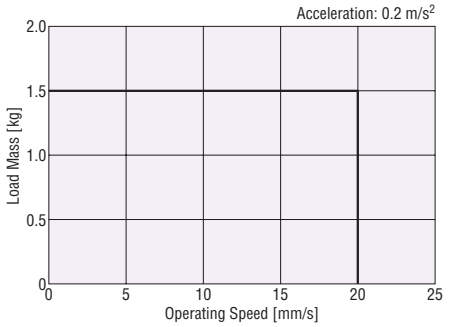


◇Vertical Direction Installation

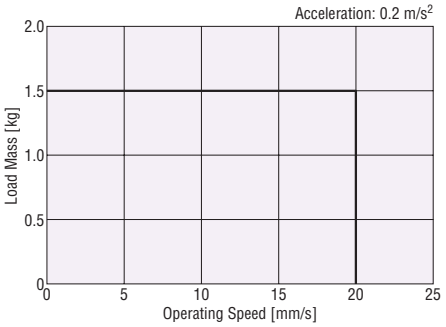


Frame Size 20 mm Rod Type

◇Horizontal Direction Installation

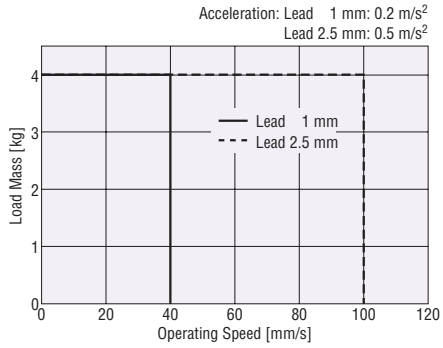


◇Vertical Direction Installation

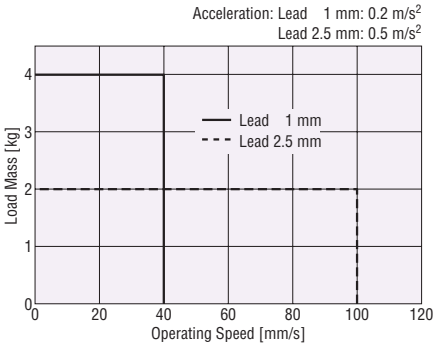


●Frame Size 28 mm Table Type, Rod Type

◇Horizontal Direction Installation

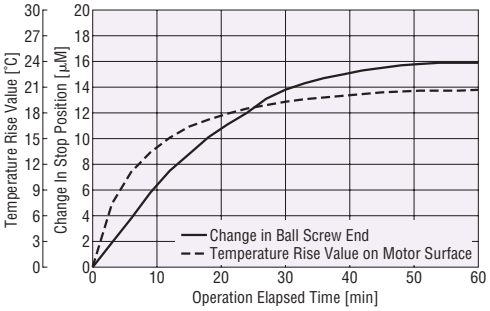


◇Vertical Direction Installation



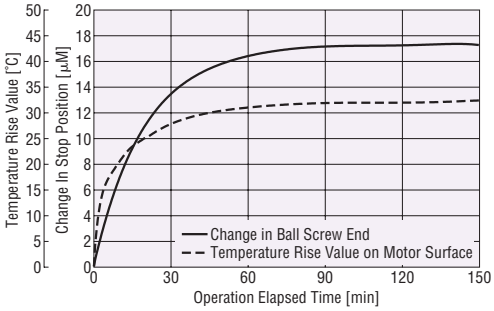
■Displacement in Position Due to Temperature Rise (Reference values)

●Frame Size 20 mm

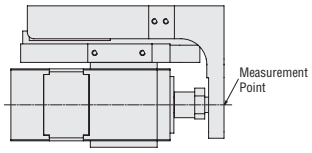


[Conditions]
Operation Duty: 80%
Operating Current Ratio: 100% (Factory setting)
Standstill Current Ratio: 50% (Factory setting)
Measurement Position: 25 mm from home position
Measurement Method: Laser displacement meter

●Frame Size 28 mm



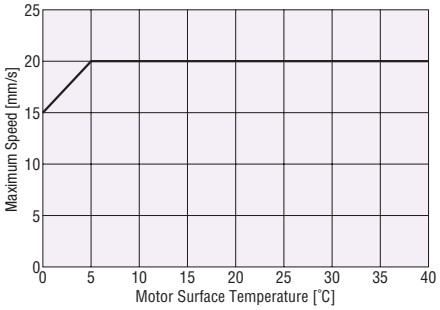
[Conditions]
Operation Duty: 90%
Operating Current Ratio: 100% (Factory setting)
Standstill Current Ratio: 50% (Factory setting)
Measurement Position: 30 mm from home position
Measurement Method: Laser displacement meter



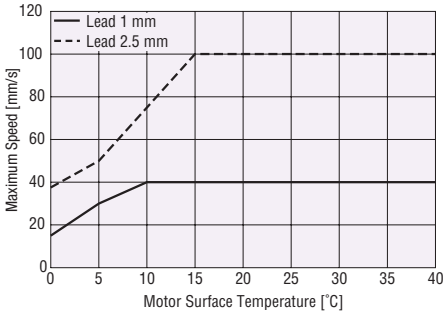
●**DR28** table type is used in the figure.

■Maximum Speed by Temperature (Reference values)

●Frame Size 20 mm

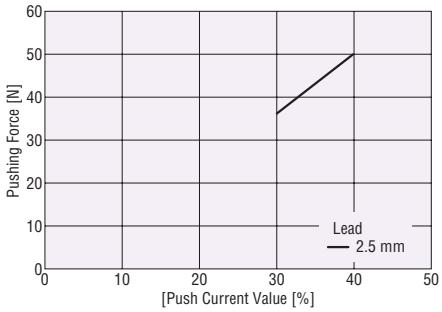


●Frame Size 28 mm



Actual Pushing Force Value

This section shows reference data of the push current values and the pushing force of the **DR28** lead 2.5 mm.
When using, check the actual pushing force.



- The above characteristic diagram shows representative values for pushing measurement results when **DR28** lead 2.5 mm is used horizontally.
- The relationship between the push current value and pushing force differs depending on the following conditions. Check with actual equipment.
  - •Installation conditions (Horizontal or vertical installation)
  - •Load conditions of the equipment
  - •Cable length
  - •Ambient temperature
- The upper limit of the push-motion operating speed is 6 mm/s.

Note

- Do not perform push-motion operations using a **DR** Series lead 1 mm cylinder.
  TLC output may be output prior to completing a push-motion operation, which can prevent the push-motion operation from completing normally.

General Specifications

Heat-resistant Class		130 (B)
Insulation Resistance		The measured value is 100 MΩ or more when a 500 VDC megger is applied between the following locations: •Case – Motor windings
Dielectric Strength Voltage		No abnormality is found with the following application for 1 minute: •Case – Motor windings 0.5 kVAC 50 Hz or 60 Hz
Operating Environment (In operation)	Ambient Temperature	0 - +40°C (Non-freezing)*
	Ambient Humidity	85% or less (Non-condensing)
	Atmosphere	Use in an area without corrosive gases and dust. The product should not be exposed to water, oil or other liquids.

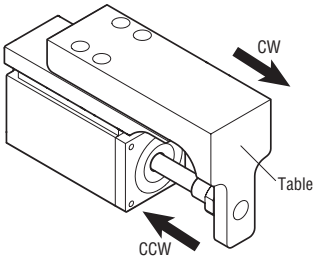
* Under the Oriental Motor's measurement conditions

Note

- When measuring insulation resistance or performing a dielectric strength voltage test, be sure to disconnect the motor from the driver beforehand.
  Also, do not conduct these tests on the ABZO sensor section of the motor.

Traveling Direction

The traveling direction of the moving part is set by default as follows:



- Table type is shown in the figure.

Dimensions (Unit: mm)

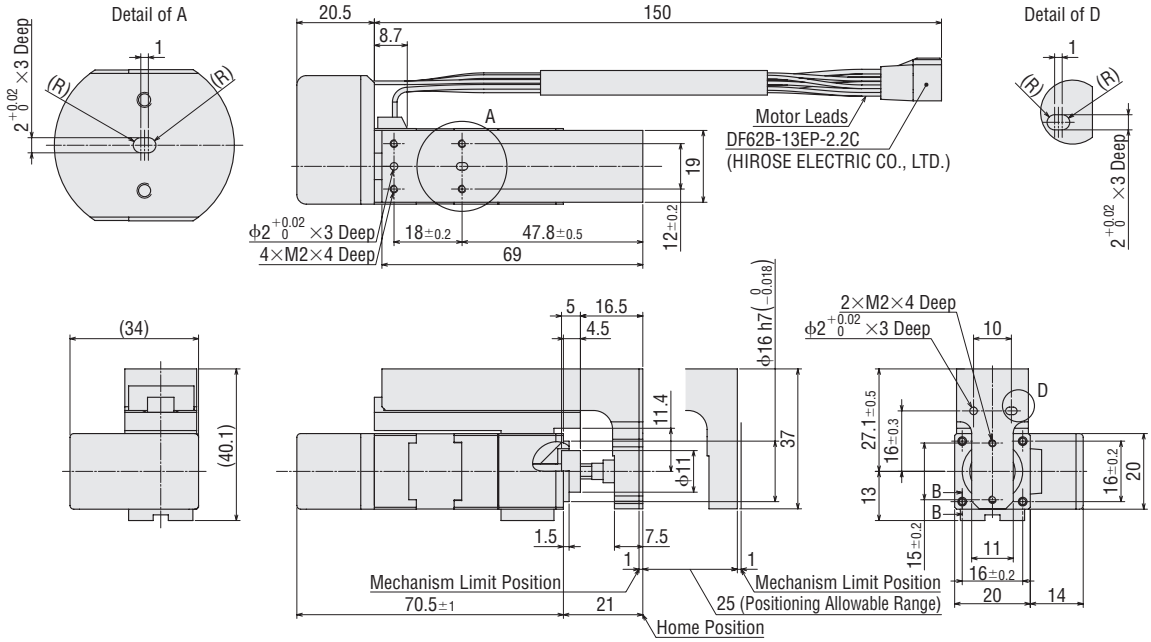
Table Type

◇Frame Size 20 mm

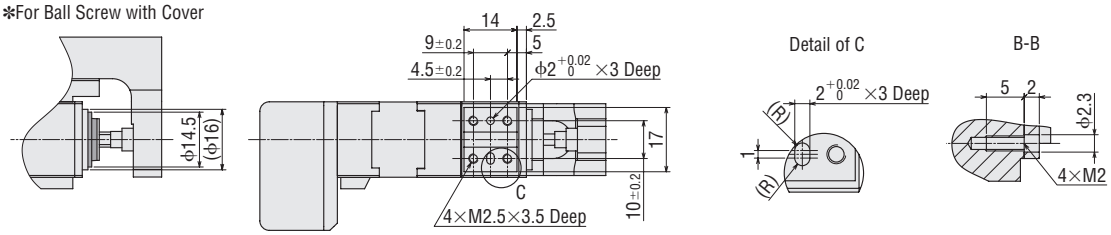
2D & 3D CAD

Installation Plate	Product Name	Mass [kg]	CAD		
			Cable Drawing Direction		
			Downward	Right	Left
None	**DR20T1B02-AZAK□**	0.18	D7905D	D7905R	D7905L
	DR20T1BC02-AZAK□		D7907D	D7907R	D7907L
With Flange	**DR20T1B02-AZAK□-F**		D7905D_F	D7905R_F	D7905L_F
	DR20T1BC02-AZAK□-F		D7907D_F	D7907R_F	D7907L_F
With Foot	**DR20T1B02-AZAK□-P**		D7905D_P	D7905R_P	D7905L_P
	DR20T1BC02-AZAK□-P		D7907D_P	D7907R_P	D7907L_P

● The □ mark in the product name is replaced by **D** (Downward), **R** (Right), or **L** (Left) which shows the cable drawing direction.

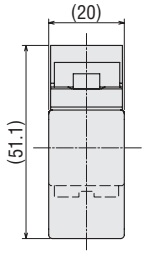
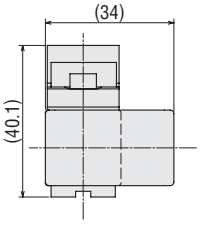
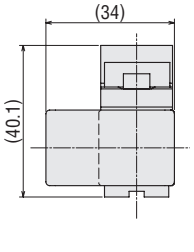


✻For Ball Screw with Cover

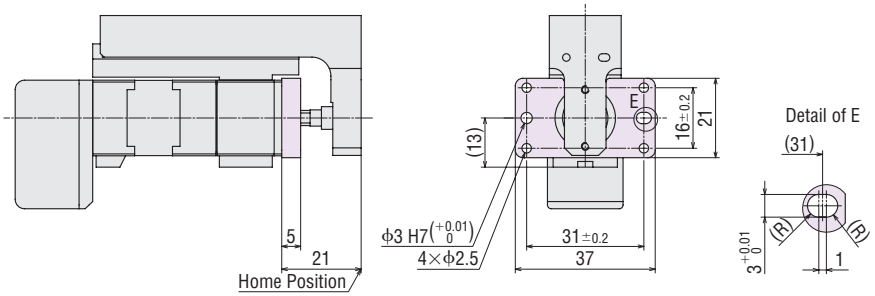


● The ▭ part is the ball screw cover.

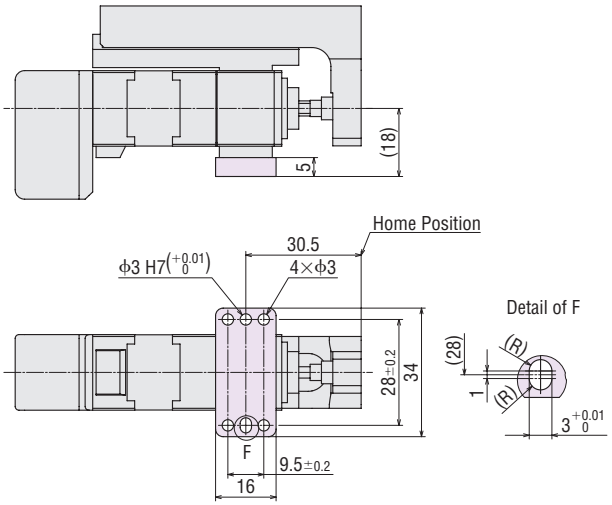
•Cable Drawing Direction

Downward	Right	Left
		

●Table Type With Flange



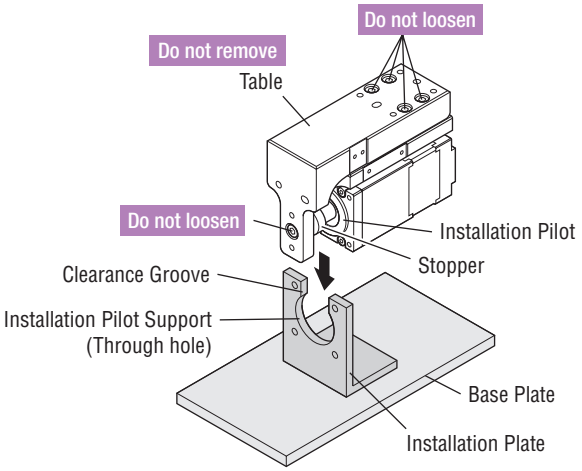
●Table Type With Foot

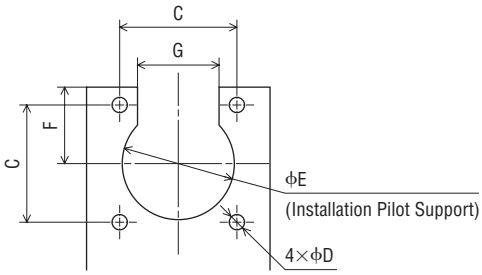


●The ▭ part is the installation plate.

●Dimensions for Installation Plate

When installing the table type using front installation, an installation plate will need to be provided by the customer.
Install a stopper (Ball screw cover) clearance groove in the installation pilot support (Through hole) on the installation plate.





Unit: mm

Product Name	C	ϕD	ϕE	F	G
DR20	16±0.1	ϕ2.3	ϕ16 +0.018 0 (H7)	11	11.5

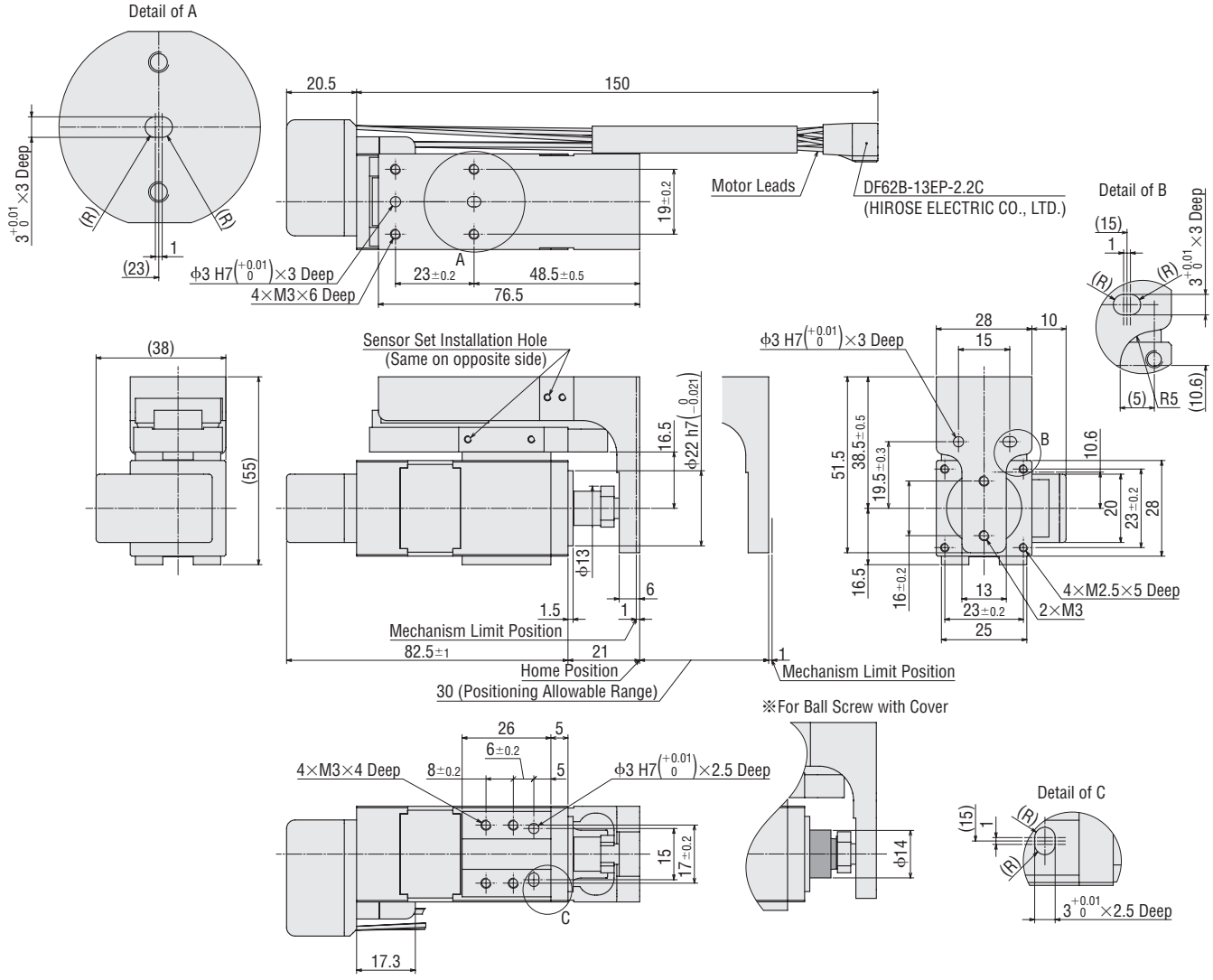
●For details on installation, refer to the Operating Manual.

◇Frame Size 28 mm

2D & 3D CAD

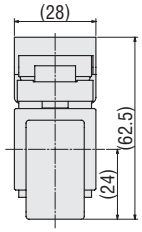
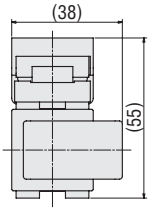
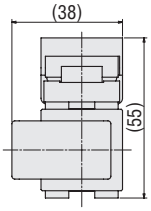
Installation Plate	Product Name	Mass [kg]	CAD		
			Cable Drawing Direction		
			Downward	Right	Left
None	**DR28T1□03-AZAK□**	0.39	D7751	D7752	D7753
	DR28T1□C03-AZAK□		D7754	D7755	D7756
	DR28T2.5B03-AZAK□		D7751	D7752	D7753
	DR28T2.5BC03-AZAK□		D7754	D7755	D7756
With Flange	**DR28T1□03-AZAK□-F**	0.42	D7763	D7764	D7765
	DR28T1□C03-AZAK□-F		D7766	D7767	D7768
	DR28T2.5B03-AZAK□-F		D7763	D7764	D7765
	DR28T2.5BC03-AZAK□-F		D7766	D7767	D7768
With Foot	**DR28T1□03-AZAK□-P**		D7757	D7758	D7759
	DR28T1□C03-AZAK□-P		D7760	D7761	D7762
	DR28T2.5B03-AZAK□-P		D7757	D7758	D7759
	DR28T2.5BC03-AZAK□-P		D7760	D7761	D7762

● The □ mark in the product name is replaced by **A** (Rolled ball screw) or **B** (Precision ball screw) which indicates the ball screw type.
The □ mark in the product name is replaced by **D** (Downward), **R** (Right), or **L** (Left) which shows the cable drawing direction.

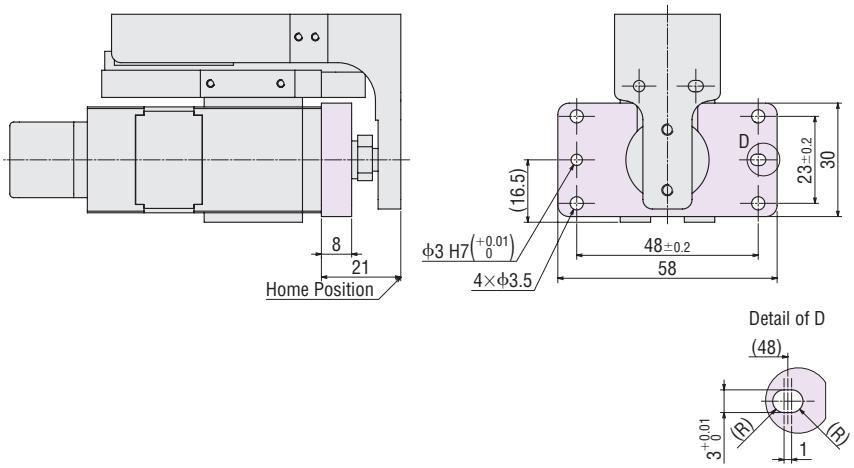


● The ▭ part is the ball screw cover.

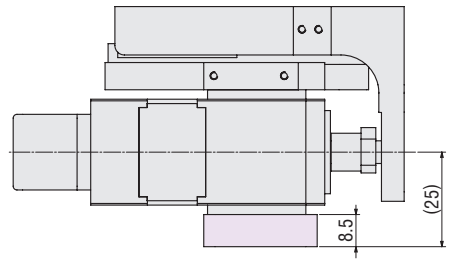
•Cable Drawing Direction

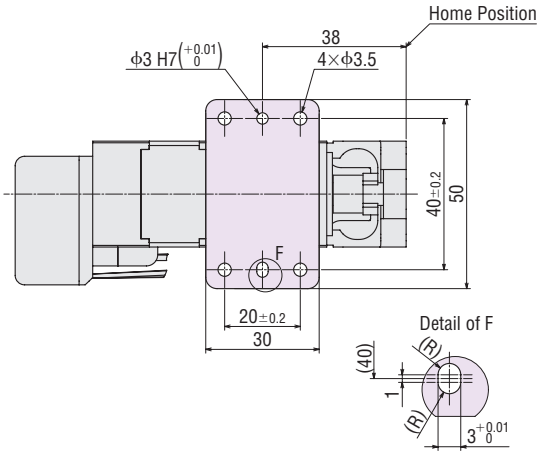
Downward	Right	Left
		

•Table Type With Flange



•Table Type With Foot

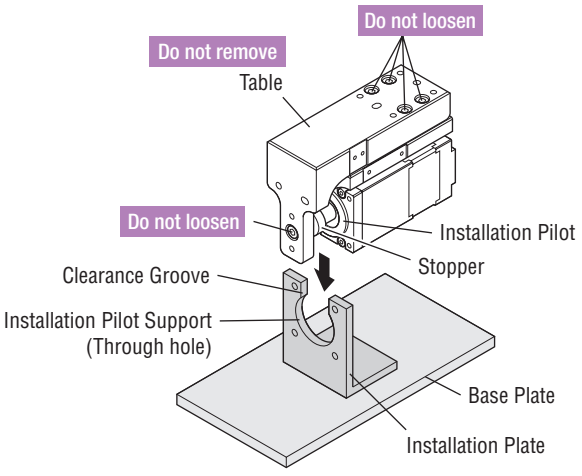


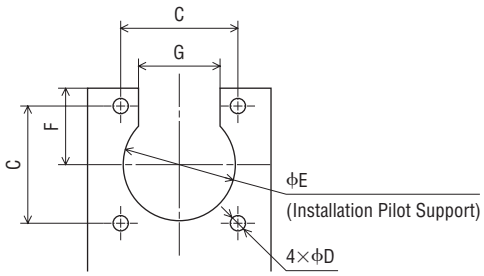


● The ▭ part is the installation plate.

●Dimensions for Installation Plate

When installing the table type using front installation, an installation plate will need to be provided by the customer.
Install a stopper (Ball screw cover) clearance groove in the installation pilot support (Through hole) on the installation plate.





Unit: mm

Product Name	C	ϕD	ϕE	F	G
DR28	23±0.1	ϕ3	ϕ22 +0.021 0 (H7)	15	16

● For details on installation, refer to the Operating Manual.

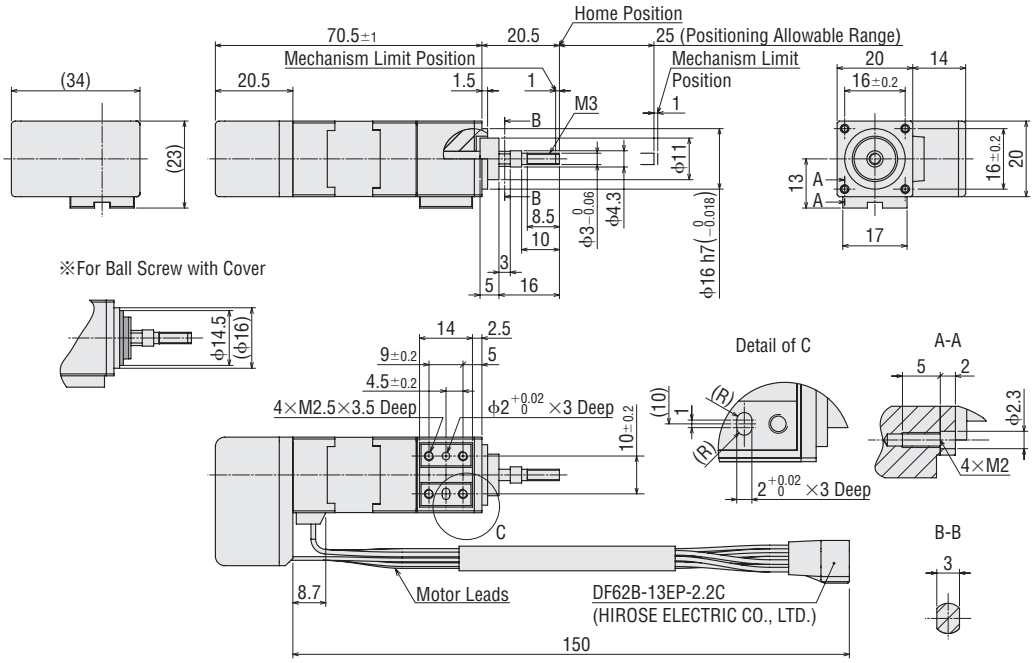
Rod Type

◇Frame Size 20 mm

2D & 3D CAD

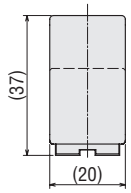
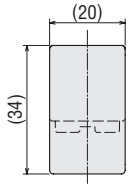
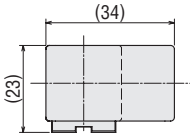
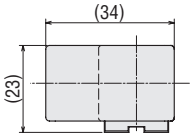
Installation Plate	Product Name	Mass [kg]	CAD			
			Cable Drawing Direction			
			Upward	Downward	Right	Left
None	**DR20R1B02-AZAK□**	0.12	D7904U	D7904D	D7904R	D7904L
	DR20R1BC02-AZAK□		D7906U	D7906D	D7906R	D7906L

● The □ mark in the product name is replaced by **U** (Upward), **D** (Downward), **R** (Right), or **L** (Left) which shows the cable drawing direction.



● The ▭ part is the ball screw cover.

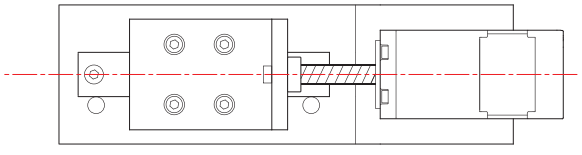
•Cable Drawing Direction

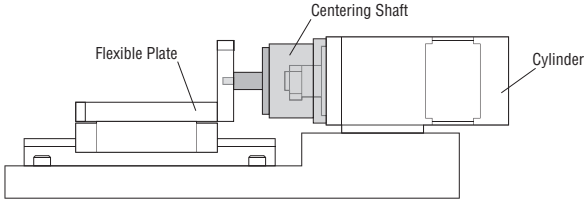
Upward	Downward	Right	Left
			

Rod Type Installation

◇Centering is Required for Installation

For the rod type, make sure to center align the shaft center of the ball screw with the direction of movement of the load. Manufacture a centering shaft based on the installation method.

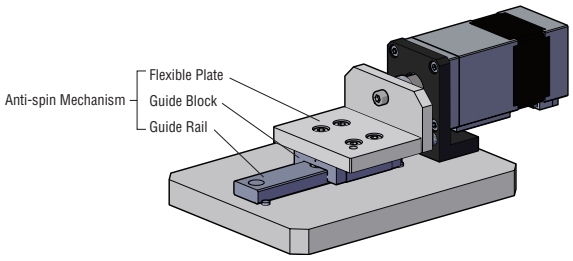




● For details on installation, refer to the Operating Manual.

◇Anti-spin Mechanism is Required for Operation

The rod type will idle if there is no anti-spin mechanism for the ball screw, preventing operation. Make sure to install an anti-spin mechanism such as a guide rail, flexible plate, etc.

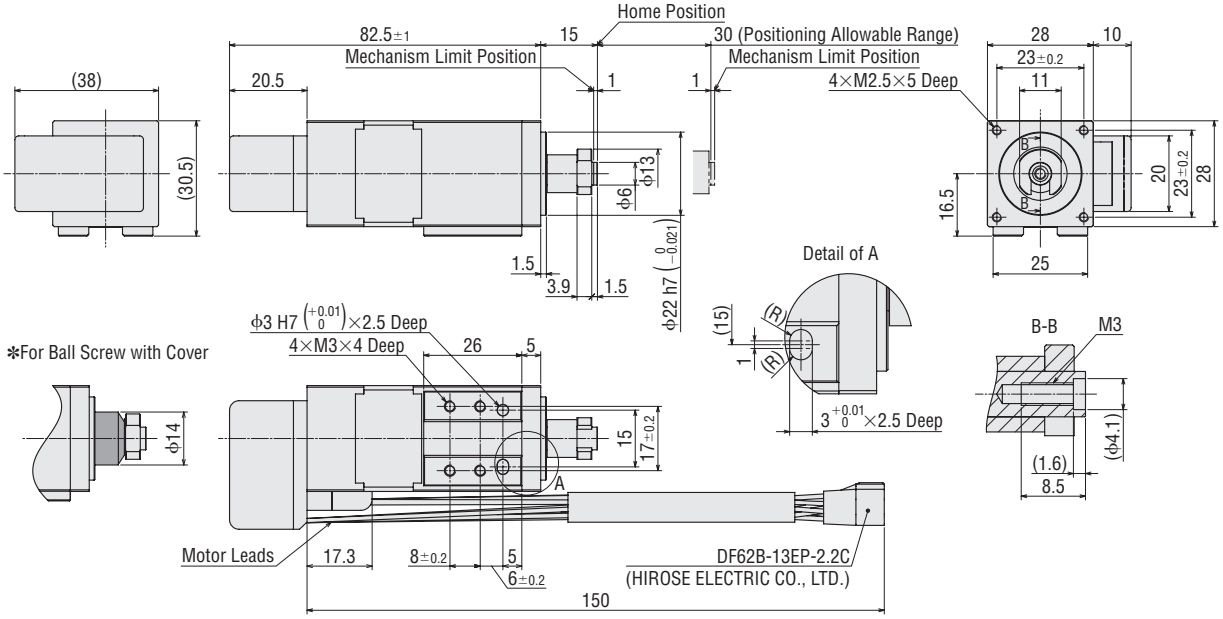


◇Frame Size 28 mm

2D & 3D CAD

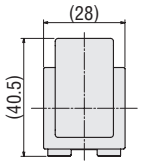
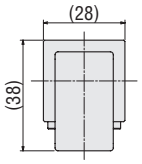
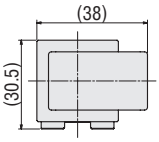
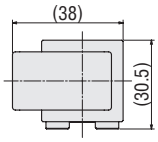
Installation Plate	Product Name	Mass [kg]	CAD			
			Cable Drawing Direction			
			Upward	Downward	Right	Left
None	**DR28R1□03-AZAK□**	0.23	D7686	D7687	D7685	D7684
	DR28R1□C03-AZAK□		D7682	D7683	D7681	D7680
	DR28R2.5B03-AZAK□		D7686	D7687	D7685	D7684
	DR28R2.5BC03-AZAK□		D7682	D7683	D7681	D7680
With Foot	**DR28R1□03-AZAK□-P**	0.26	D7707	D7708	D7709	D7710
	DR28R1□C03-AZAK□-P		D7711	D7712	D7713	D7714
	DR28R2.5B03-AZAK□-P		D7707	D7708	D7709	D7710
	DR28R2.5BC03-AZAK□-P		D7711	D7712	D7713	D7714

● The □ mark in the product name is replaced by **A** (Rolled ball screw) or **B** (Precision ball screw) which indicates the ball screw type.
● The □ mark in the product name is replaced by **U** (Upward), **D** (Downward), **R** (Right), or **L** (Left) which shows the cable drawing direction.

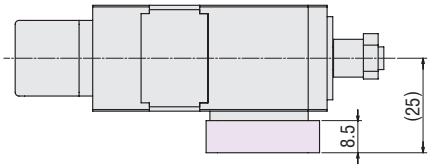


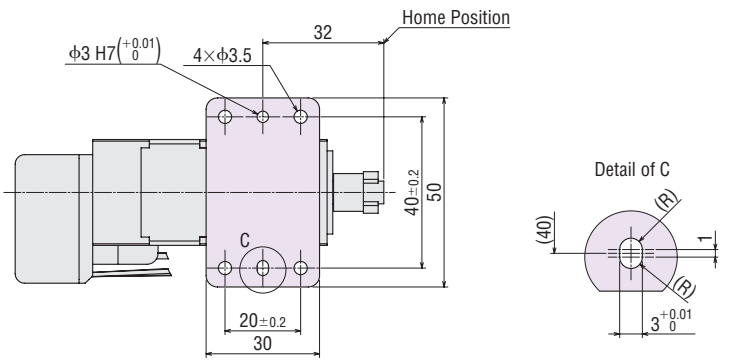
● The ▭ part is the ball screw cover.

•Cable Drawing Direction

Upward	Downward	Right	Left
			

•Rod Type With Foot



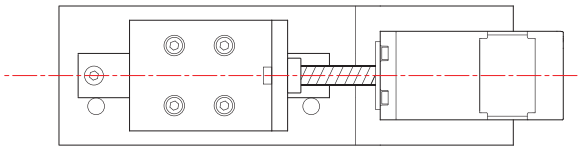


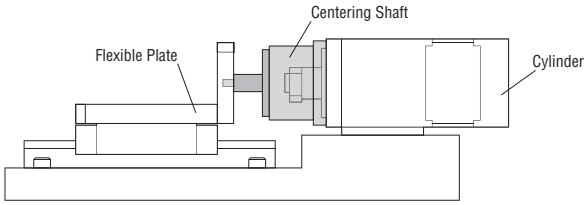
● The ▭ part is the installation plate.

●Rod Type Installation

◇Centering is Required for Installation

For the rod type, make sure to center align the shaft center of the ball screw with the direction of movement of the load. Manufacture a centering shaft based on the installation method.

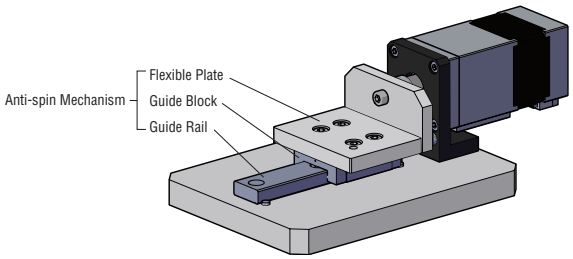




●For details on installation, refer to the Operating Manual.

◇Anti-spin Mechanism is Required for Operation

The rod type will idle if there is no anti-spin mechanism for the ball screw, preventing operation. Make sure to install an anti-spin mechanism such as a guide rail, flexible plate, etc.



DRS2 Series

System Configuration

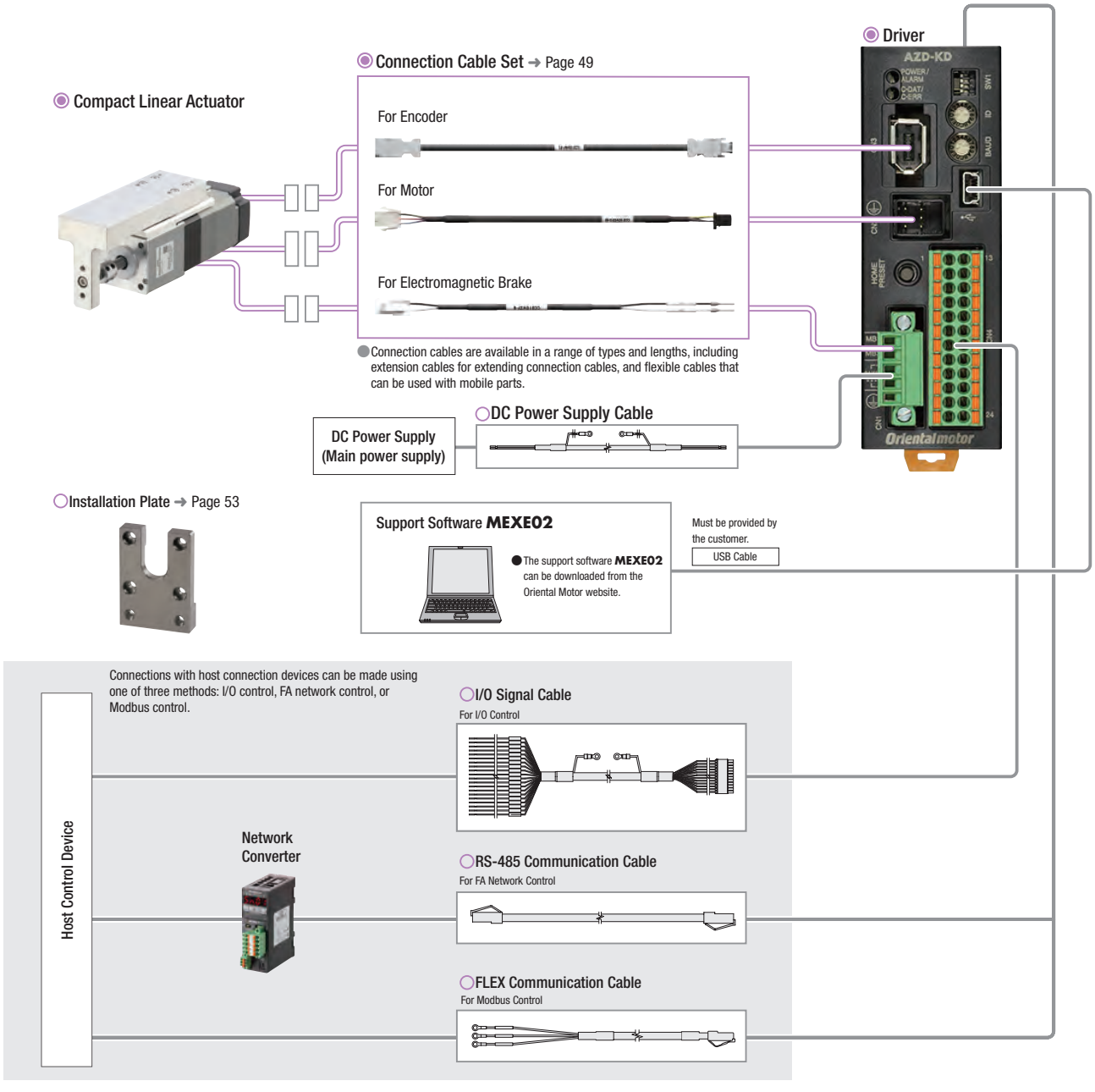
●When a compact linear actuator with electromagnetic brake is combined with a DC power supply input built-in controller type driver or a pulse input type driver with RS-485 communication

An example of a configuration using I/O control or RS-485 communication is shown below.

The compact linear actuator, driver, and connection cable set or flexible connection cable set are provided separately.

●For system configurations combined with other types of drivers, see the Oriental Motor website.

◉Must be purchased
○Purchase if required



Compact Linear Actuator		Driver		Cables	
				Connection Cable Set (1m)	I/O Signal Cable with Connector (1m)
DRSM42RG-04A2AZMK		**AZD-KD**		**CC010VZFB2**	**CC24D010C-1**
◉		◉		◉	○

●The system configuration shown above is an example. Other combinations are available.

Note

●The motor cable and electromagnetic brake cable from the motor cannot be directly connected to a driver. To connect the motor to the driver, use a connection cable.

Product Number Code

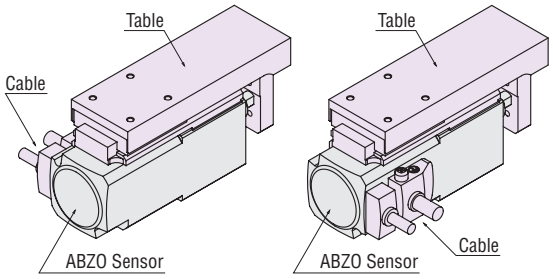
Compact Linear Actuator

DRSM 42 R G – 04 A 2 AZ M K

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

①	Series Name	**DRSM**: **DRS2** Series
②	Frame Size	**42**: 42 mm **60**: 60 mm
③	Cable Drawing Direction*	**R**: Right **L**: Left Blank: Type Without Guide
④	Shape	**G**: Type With Guide Blank: Type Without Guide
⑤	Stroke	**04**: 40 mm **05**: 50 mm
⑥	Ball Screw Type	**A**: Rolled Ball Screw **B**: Precision Ball Screw
⑦	Lead	**2**: 2 mm **4**: 4 mm **8**: 8 mm
⑧	Equipped Motor	**AZ**: **AZ** Series
⑨	Electromagnetic Brake	**A**: Without Electromagnetic Brake **M**: With Electromagnetic Brake
⑩	Motor Specifications	**K**: DC Power Supply Input Specifications

*Cable drawing direction specifications are for the type with guide only.
The direction is indicated with the table facing upward and looking from the encoder side (ABZO sensor side).



With Cable on the Left　　With Cable on the Right

Product Line

Compact Linear Actuator

◇Type With Guide

●Frame Size 42 mm
Rolled Ball Screw

With Electromagnetic Brake

Lead [mm]	Electromagnetic Brake	Product Name
2	Without Electromagnetic Brake	**DRSM42RG-04A2AZAK** **DRSM42LG-04A2AZAK**
	With Electromagnetic Brake	**DRSM42RG-04A2AZMK** **DRSM42LG-04A2AZMK**
8	Without Electromagnetic Brake	**DRSM42RG-04A8AZAK** **DRSM42LG-04A8AZAK**
	With Electromagnetic Brake	**DRSM42RG-04A8AZMK** **DRSM42LG-04A8AZMK**

●Frame Size 42 mm
Precision Ball Screw

With Electromagnetic Brake

Lead [mm]	Electromagnetic Brake	Product Name
2	Without Electromagnetic Brake	**DRSM42RG-04B2AZAK** **DRSM42LG-04B2AZAK**
	With Electromagnetic Brake	**DRSM42RG-04B2AZMK** **DRSM42LG-04B2AZMK**

◇Type Without Guide

●Frame Size 42 mm
Rolled Ball Screw

With Electromagnetic Brake

Lead [mm]	Electromagnetic Brake	Product Name
2	Without Electromagnetic Brake	**DRSM42-04A2AZAK**
	With Electromagnetic Brake	**DRSM42-04A2AZMK**
8	Without Electromagnetic Brake	**DRSM42-04A8AZAK**
	With Electromagnetic Brake	**DRSM42-04A8AZMK**

●Frame Size 42 mm
Precision Ball Screw

With Electromagnetic Brake

Lead [mm]	Electromagnetic Brake	Product Name
2	Without Electromagnetic Brake	**DRSM42-04B2AZAK**
	With Electromagnetic Brake	**DRSM42-04B2AZMK**

• Frame Size 60 mm
Rolled Ball Screw

With Electromagnetic Brake

Lead [mm]	Electromagnetic Brake	Product Name
4	Without Electromagnetic Brake	**DRSM60-05A4AZAK**
	With Electromagnetic Brake	**DRSM60-05A4AZMK**

Drivers

Various drivers are available to be selected according to the host system.

➜ Refer to Page 56.

Connection Cable Sets/Flexible Connection Cable Sets

Use a flexible connection cable set if the cable will be bent.

➜ Refer to Page 56.

Note

- The motor cable and electromagnetic brake cable from the motor cannot be directly connected to a driver. To connect the motor to the driver, use a connection cable.

Accessories

Compact Linear Actuator

Type \ Accessories	Operating Manual
For All Types	1 set

How to Read Specifications Table

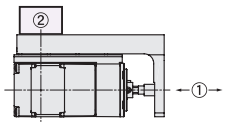
Compact Linear Actuator

Actuator Product Name	Cable Orientation: Right / Cable Orientation: Left		DRSM42RG-04A2AZAK / DRSM42LG-04A2AZAK	DRSM42RG-04A2AZMK / DRSM42LG-04A2AZMK	DRSM42RG-04A8AZAK / DRSM42LG-04A8AZAK	DRSM42RG-04A8AZMK / DRSM42LG-04A8AZMK
Lead		mm	2		8	
Electromagnetic Brake (Power off activated type)			Not provided	Provided	Not provided	Provided
Ball Screw Type			Rolled			
Repetitive Positioning Accuracy	① End	mm	±0.01			
	② Top	mm	±0.02			
Lost Motion		mm	0.05 or less			
Minimum Traveling Amount		mm	0.001			
Permissible Moment	Static Permissible Moment	Nm	MP: 1.3 MY: 1.0 MR: 2.5			
	Dynamic Permissible Moment	Nm	MP: 1.3 MY: 1.0 MR: 2.5			
Transportable Mass	Horizontal	kg	10	10	5	5
	Vertical	kg	–		–	
Thrust		N	~200		~50	
Pushing Force		N	400		100	
Holding Force		N	200	200	50	50
Stroke		mm	40			
Maximum Speed		mm/s	50		200	

①Lead
The distance the ball screw moves linearly in one motor rotation.

②Electromagnetic Brake (Power off activated type)
The product has types with and without an electromagnetic brake of power off activated type. Choose the type with electromagnetic brake for vertical drive.

③Repetitive Positioning Accuracy
A value indicating the amount of error that is generated when positioning is performed repeatedly to the same position in the same direction.
(The repetitive positioning accuracy is measured at a constant temperature under a constant load).



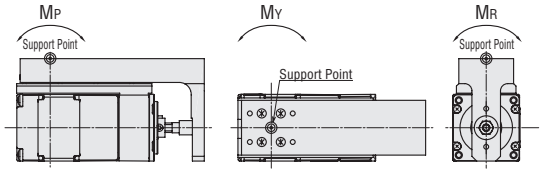
The repetitive positioning accuracy is measured on the end for ① and the linear guide for ②.
Other items are common unless specified.

④Lost Motion
A value indicating the amount of error that is generated when positioning is performed to the same position in a different direction.
(The repetitive positioning accuracy is measured at a constant temperature under a constant load).

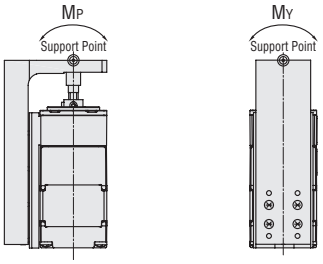
⑤Minimum Traveling Amount
The traveling amount for each step, set by default.

⑥Permissible Moment
When the load is placed in a position eccentric from the compact linear actuator guide, force making the guide rotate applies. In this case, it indicates the maximum force applied to the guide.
The dynamic permissible moment is the moment allowed during operation.
The static permissible moment is the moment allowed during static conditions.

• Horizontal Direction

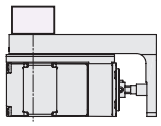


• Vertical Direction



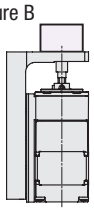
⑦Transportable Mass
• Horizontal Direction (Figure A)
Maximum mass that can be moved under operating performance in the horizontal direction of the compact linear actuator.

Figure A



• Vertical Direction (Figure B)
Maximum mass that can be moved under operating performance in the vertical direction of the compact linear actuator.

Figure B



⑧Thrust
The maximum force pushing the load during constant speed operation.

⑨Pushing Force
The maximum pressure applied to the load during the pushing operation.

⑩Holding Force
The maximum holding force when the motor is stopped or when the electromagnetic brake is operating, while power is supplied.

⑪Stroke
Maximum distance to transport or push/draw the load.

⑫Maximum Speed
Maximum speed to transport the load.

Compact Linear Actuator Specifications

Type With Guide

◇Frame Size 42 mm

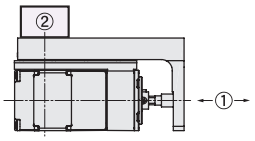
Actuator Product Name	Cable Orientation: Right	DRSM42RG-04A2AZAK	DRSM42RG-04A2AZMK	DRSM42RG-04A8AZAK	DRSM42RG-04A8AZMK	DRSM42RG-04B2AZAK	DRSM42RG-04B2AZMK
	Cable Orientation: Left	DRSM42LG-04A2AZAK	DRSM42LG-04A2AZMK	DRSM42LG-04A8AZAK	DRSM42LG-04A8AZMK	DRSM42LG-04B2AZAK	DRSM42LG-04B2AZMK
Lead mm		2		8		2	
Electromagnetic Brake (Power off activated type)		Not provided	Provided	Not provided	Provided	Not provided	Provided
Ball Screw Type		Rolled				Precision	
Repetitive Positioning Accuracy	① End mm	±0.01				±0.003	
	② Top mm	±0.02				±0.005	
Lost Motion mm		0.05 or less				0.02 or less	
Minimum Traveling Amount mm		0.001					
Permissible Moment*1	Static Permissible Moment Nm	MP: 1.3 MY: 1.0 MR: 2.5					
	Dynamic Permissible Moment Nm	MP: 1.3 MY: 1.0 MR: 2.5					
Transportable Mass	Horizontal kg	10	10	5	5	10	10
	Vertical kg	–		–		–	
Thrust N		~200		~50		~200	
Pushing Force N		400		100		400	
Holding Force N		200	200*2	50	50*2	200	200*2
Stroke mm		40					
Maximum Speed mm/s		50		200		50	

*1 Set the load to the thrust or lower.

*2 The electromagnetic brake holding force is the same value as the holding force.

Note

- The maximum speed may decrease depending on the ambient temperature and motor cable length.
- Repetitive positioning accuracy



The repetitive positioning accuracy is measured on the end for ① and the linear guide for ②.

Type Without Guide

◇Frame Size 42 mm

Actuator Product Name		DRSM42-04A2AZAK	DRSM42-04A2AZMK	DRSM42-04A8AZAK	DRSM42-04A8AZMK	DRSM42-04B2AZAK	DRSM42-04B2AZMK
Lead mm		2		8		2	
Electromagnetic Brake (Power off activated type)		Not provided	Provided	Not provided	Provided	Not provided	Provided
Ball Screw Type		Rolled				Precision	
Repetitive Positioning Accuracy mm		±0.01				±0.003	
Lost Motion mm		0.05 or less				0.02 or less	
Minimum Traveling Amount mm		0.001					
Transportable Mass	Horizontal kg	40	40	10	10	40	40
	Vertical kg	–	20	–	5	–	20
Thrust N		~200		~50		~200	
Pushing Force N		400		100		400	
Holding Force N		200	200*	50	50*	200	200*
Stroke mm		40					
Maximum Speed mm/s		50		200		50	

*The electromagnetic brake holding force is the same value as the holding force.

Note

- The maximum speed may decrease depending on the ambient temperature and motor cable length.

◇Frame Size 60 mm

Actuator Product Name		DRSM60-05A4AZAK	DRSM60-05A4AZMK
Lead mm		4	
Electromagnetic Brake (Power off activated type)		Not provided	Provided
Ball Screw Type		Rolled	
Repetitive Positioning Accuracy mm		±0.01	
Lost Motion mm		0.05 or less	
Minimum Traveling Amount mm		0.001	
Transportable Mass	Horizontal kg	50	50
	Vertical kg	–	50
Thrust N		~500	
Pushing Force N		500	
Holding Force N		500	500*
Stroke mm		50	
Maximum Speed mm/s		50	

*The electromagnetic brake holding force is the same value as the holding force.

Note

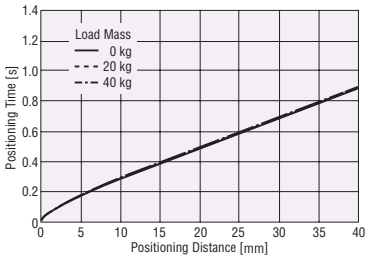
- The maximum speed may decrease depending on the ambient temperature and motor cable length.

Positioning Distance – Positioning Time

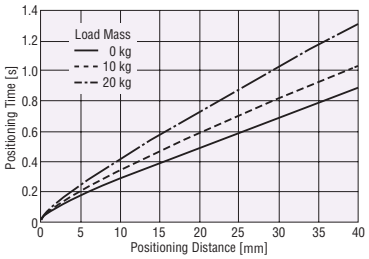
Frame Size 42 mm/Power Supply Voltage 24 VDC

◇Lead 2 mm

●Horizontal Direction Installation

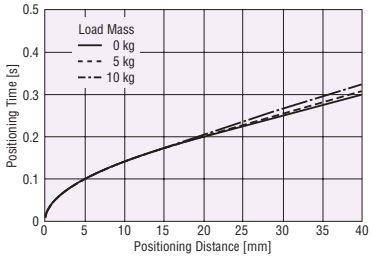


●Vertical Direction Installation

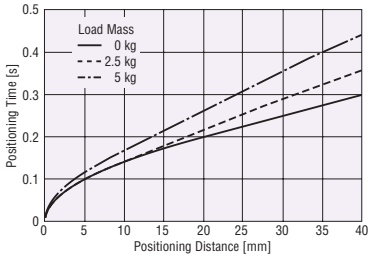


◇Lead 8 mm

●Horizontal Direction Installation



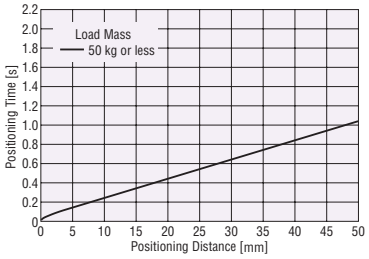
●Vertical Direction Installation



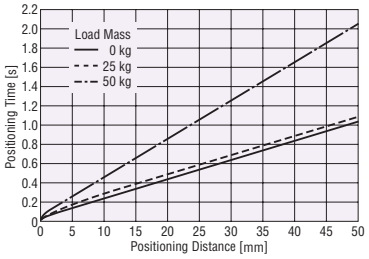
Frame Size 60 mm/Power Supply Voltage 24 VDC

◇Lead 4 mm

●Horizontal Direction Installation



●Vertical Direction Installation



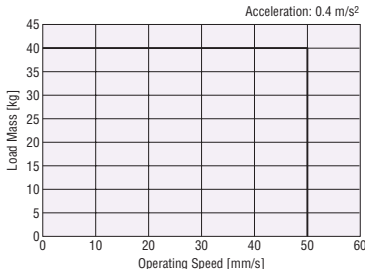
● The "Shortest Positioning Time Calculation" tool is available on the Oriental Motor website. It can be used to calculate the approximate positioning time based on the model and operation conditions.
● For characteristics for 48 VDC input, contact the nearest Oriental Motor sales office.

Operating Speed – Load Mass

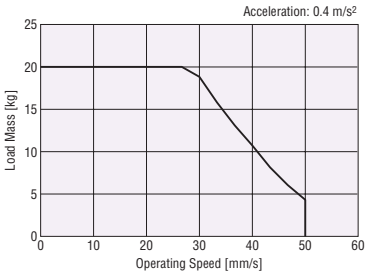
Frame Size 42 mm/Power Supply Voltage 24 VDC

◇Lead 2 mm

•Horizontal Direction Installation

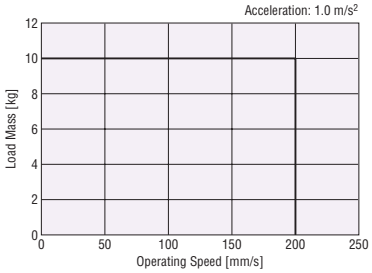


•Vertical Direction Installation

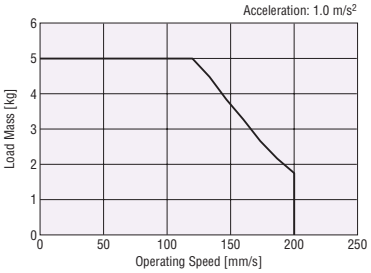


◇Lead 8 mm

•Horizontal Direction Installation



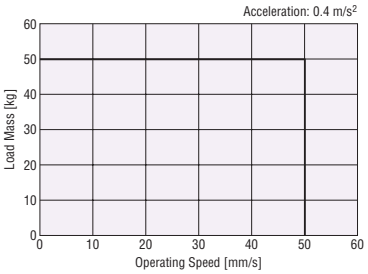
•Vertical Direction Installation



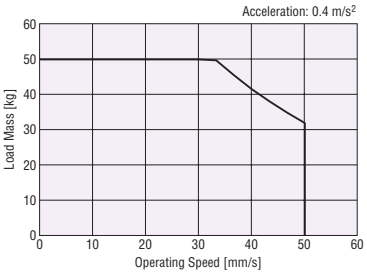
Frame Size 60 mm/Power Supply Voltage 24 VDC

◇Lead 4 mm

•Horizontal Direction Installation



•Vertical Direction Installation

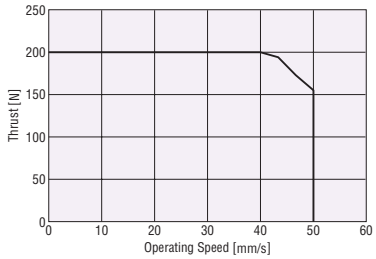


●For characteristics for 48 VDC input, contact the nearest Oriental Motor sales office.

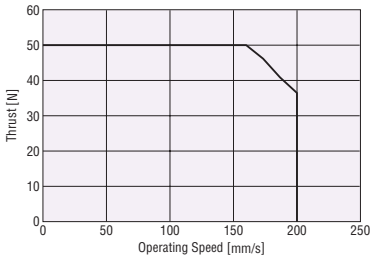
Operating Speed – Thrust

Frame Size 42 mm/Power Supply Voltage 24 VDC

◇Lead 2 mm

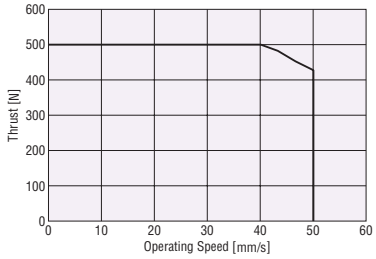


◇Lead 8 mm



Frame Size 60 mm/Power Supply Voltage 24 VDC

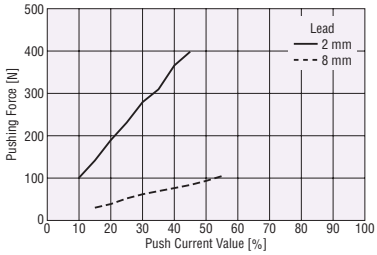
◇Lead 4 mm



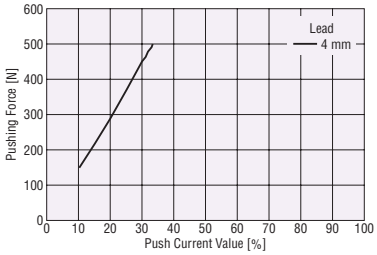
Actual Pushing Force Value

This section shows reference data of the push current values and the pushing force of the **DRS2** Series.
When using, check the actual pushing force.

Frame Size 42 mm



Frame Size 60 mm



- The characteristic diagrams above show the averages of measurement results of pushing during horizontal operation of the **DRS2** Series.
- The relationship between the push current value and pushing force differs depending on the following conditions. Check with actual equipment.
  - •Installation conditions (Horizontal or vertical installation)
  - •Load conditions of the equipment
  - •Cable length
  - •Ambient temperature
- The upper limit of the push-motion operating speed is 6 mm/s.

Electromagnetic Brake Specifications

Product Name		DRSM42	DRSM60
Type		Power off activated type	
Power Supply Voltage		24 VDC±5%*	
Power Supply Current	A	0.08	0.25
Brake Activate Time	ms	20	
Brake Release Time	ms	30	
Time Rating		Continuous	

*For the electromagnetic brake type, the 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

General Specifications

Heat-resistant Class		130 (B)
Insulation Resistance		The measured value is 100 MΩ or more when a 500 VDC megger is applied between the following locations: ・Case – Motor windings ・Case – Electromagnetic brake windings*1
Dielectric Strength Voltage		No abnormality is found with the following application for 1 minute: ・Case – Motor windings 1.0 kVAC 50 Hz or 60 Hz ・Case – Electromagnetic brake windings*1 1.0 kVAC 50 Hz or 60 Hz
Operating Environment (In operation)	Ambient Temperature	0 - +40°C (Non-freezing)*2
	Ambient Humidity	85% or less (Non-condensing)
	Atmosphere	Use in an area without corrosive gases and dust. The product should not be exposed to water, oil or other liquids.

*1 Electromagnetic brake type only

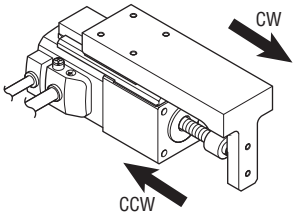
*2 Under the Oriental Motor's measurement conditions

Note

● When measuring insulation resistance or performing a dielectric strength voltage test, be sure to disconnect the motor from the driver beforehand. Also, do not conduct these tests on the ABZO sensor section of the motor.

Traveling Direction

The traveling direction of the moving part is set by default as follows:



● The type with guide is shown in the figure.

Dimensions (Unit: mm)

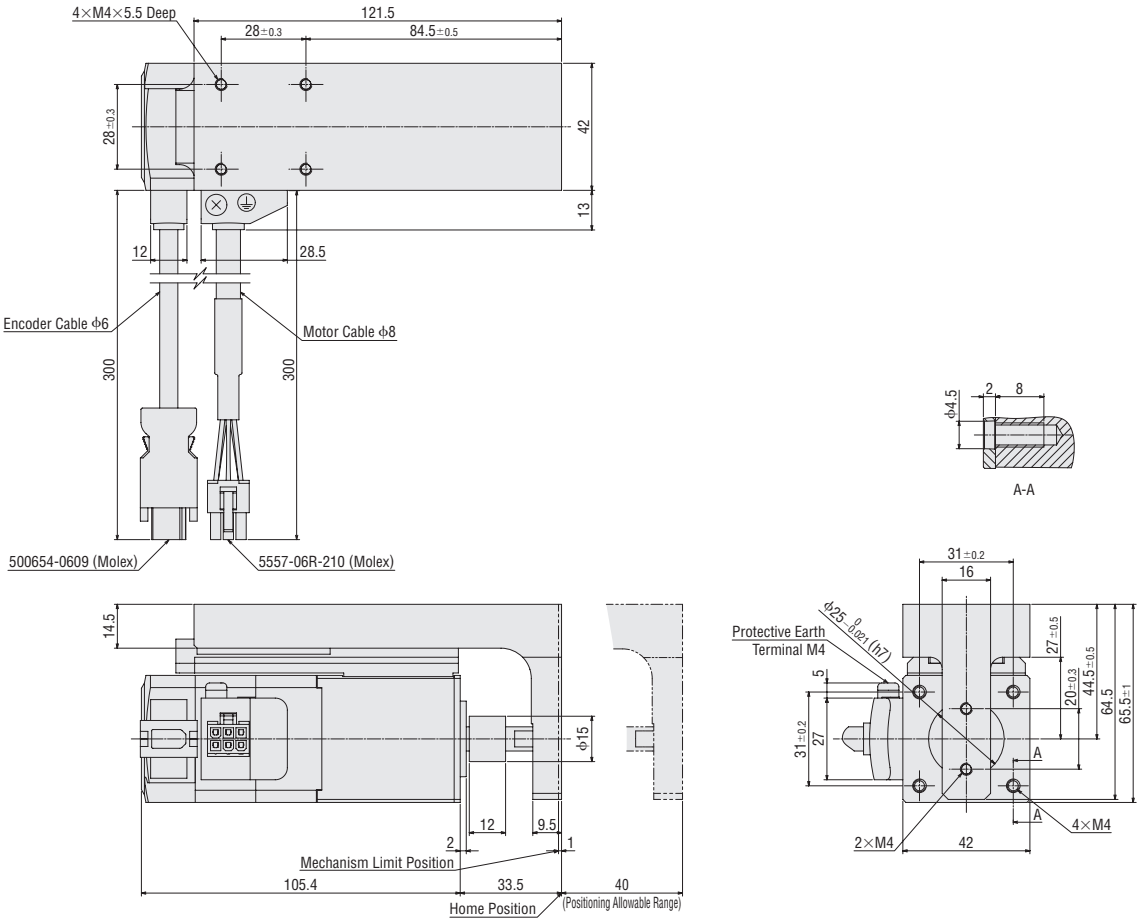
Type With Guide

◇Frame Size 42 mm

2D & 3D CAD

Product Name	Mass [kg]	CAD	
		Cable Drawing Direction	
		Right	Left
DRSM42□G-04A2AZAK **DRSM42□G-04B2AZAK** **DRSM42□G-04A8AZAK**	1.10	D7595	D7596

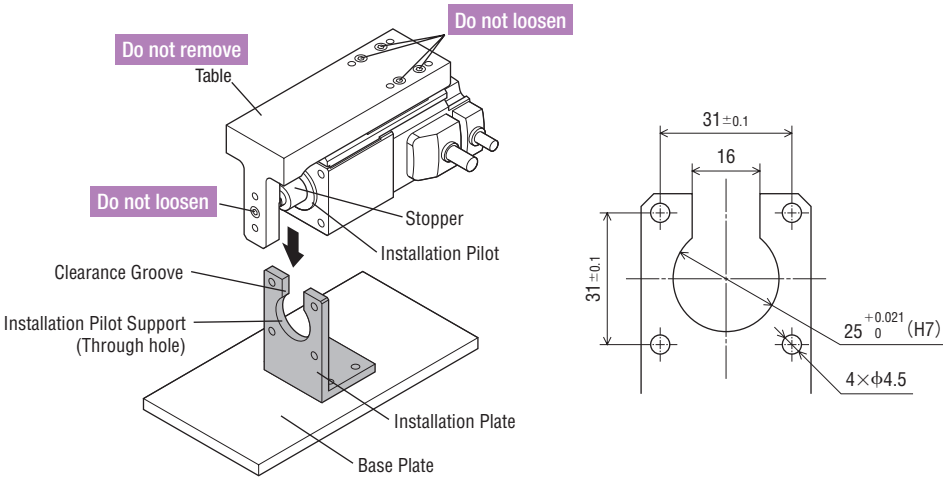
● The □ mark in the product name is replaced by **R** (Right) or **L** (Left) which shows the cable drawing direction.



● In the figure above, the dimensions are with the cable drawing direction to the right. For left direction dimensions, see the Oriental Motor website.

Dimensions for Installation Plate (Unit: mm)

When installing the type with guide, an installation plate will need to be provided by the customer.
Install a stopper (Ball screw) clearance groove in the installation pilot support (Through hole) on the installation plate.
An installation plate (sold separately) is also available as a peripheral equipment. ➜ Page 60



● For details on installation, refer to the Operating Manual.

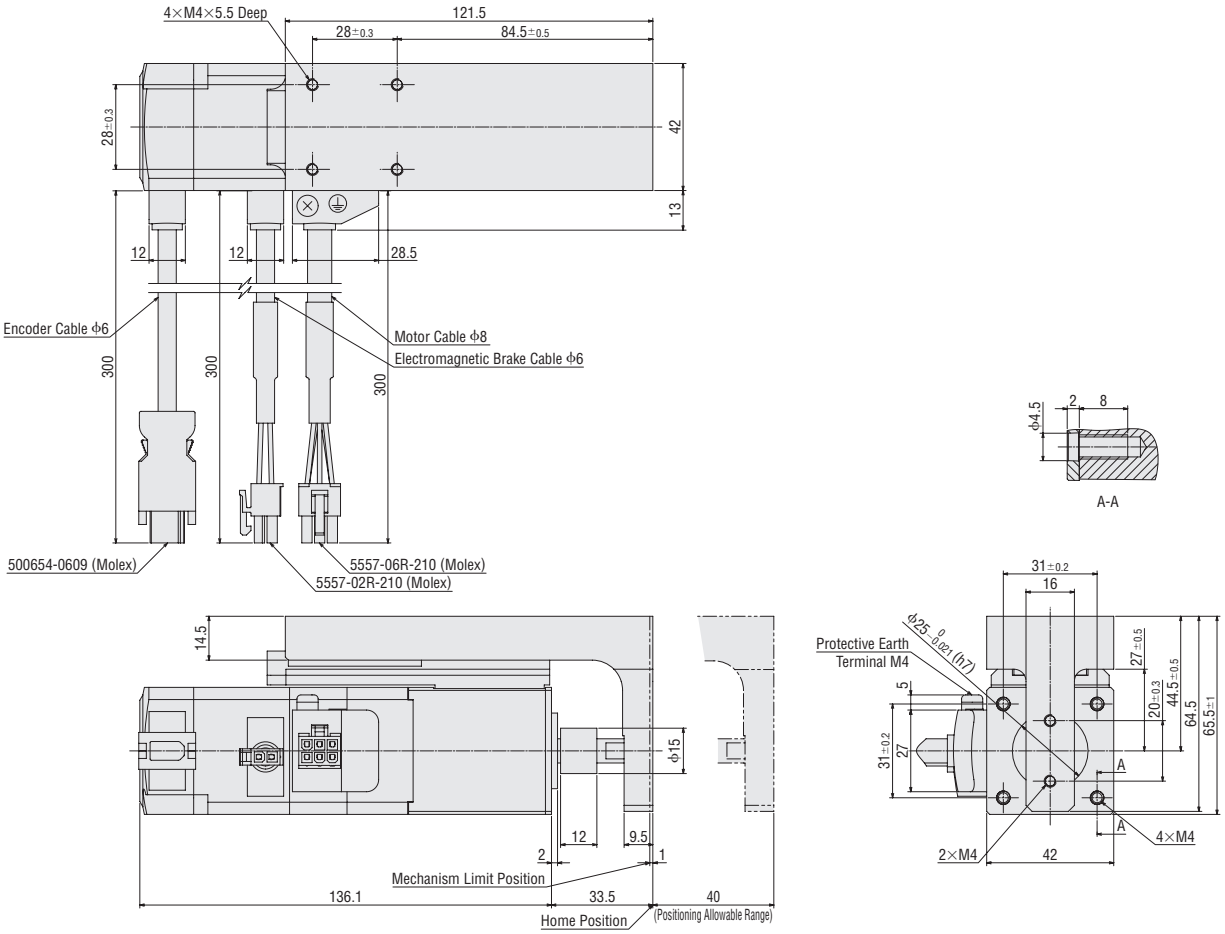
●Type With Guide　With Electromagnetic Brake

◇Frame Size 42 mm

2D & 3D CAD

Product Name	Mass [kg]	CAD	
		Cable Drawing Direction	
		Right	Left
DRSM42□G-04A2AZMK **DRSM42□G-04B2AZMK** **DRSM42□G-04A8AZMK**	1.30	D7598	D7599

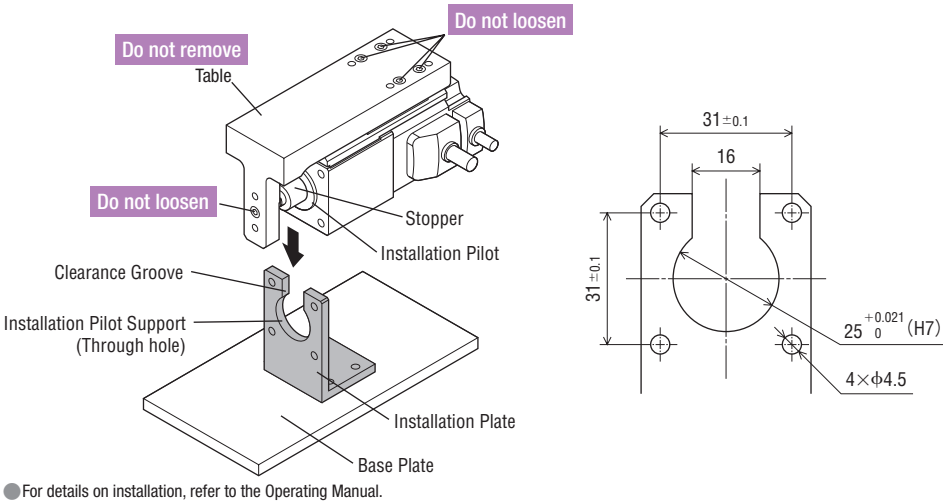
● The □ mark in the product name is replaced by **R** (Right) or **L** (Left) which shows the cable drawing direction.



● In the figure above, the dimensions are with the cable drawing direction to the right. For left direction dimensions, see the Oriental Motor website.

●Dimensions for Installation Plate (Unit: mm)

When installing the type with guide, an installation plate will need to be provided by the customer.
Install a stopper (Ball screw) clearance groove in the installation pilot support (Through hole) on the installation plate.
An installation plate (sold separately) is also available as a peripheral equipment. ➜ Page 60



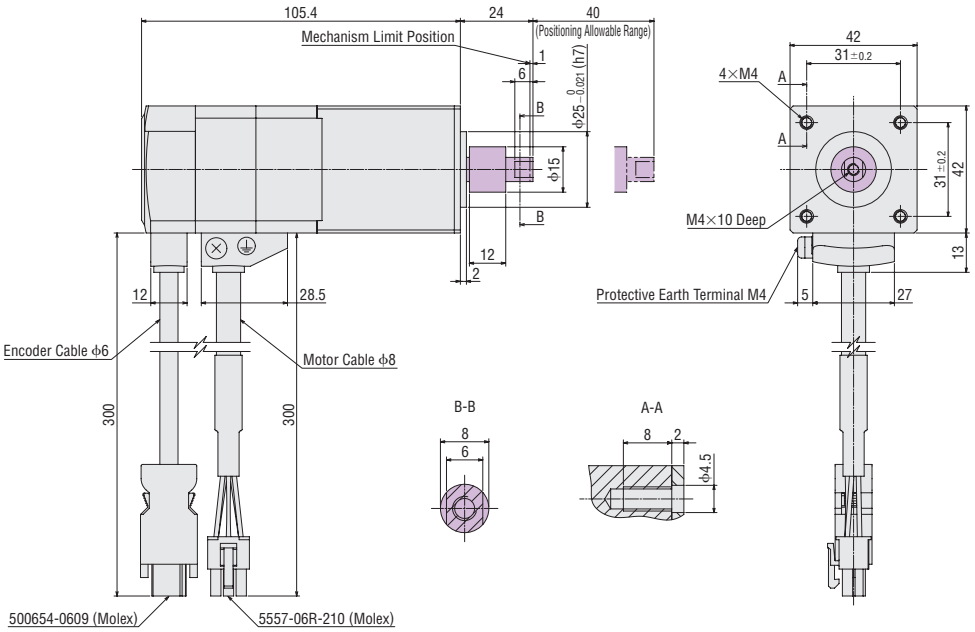
● For details on installation, refer to the Operating Manual.

●Type Without Guide

◇Frame Size 42 mm

2D & 3D CAD

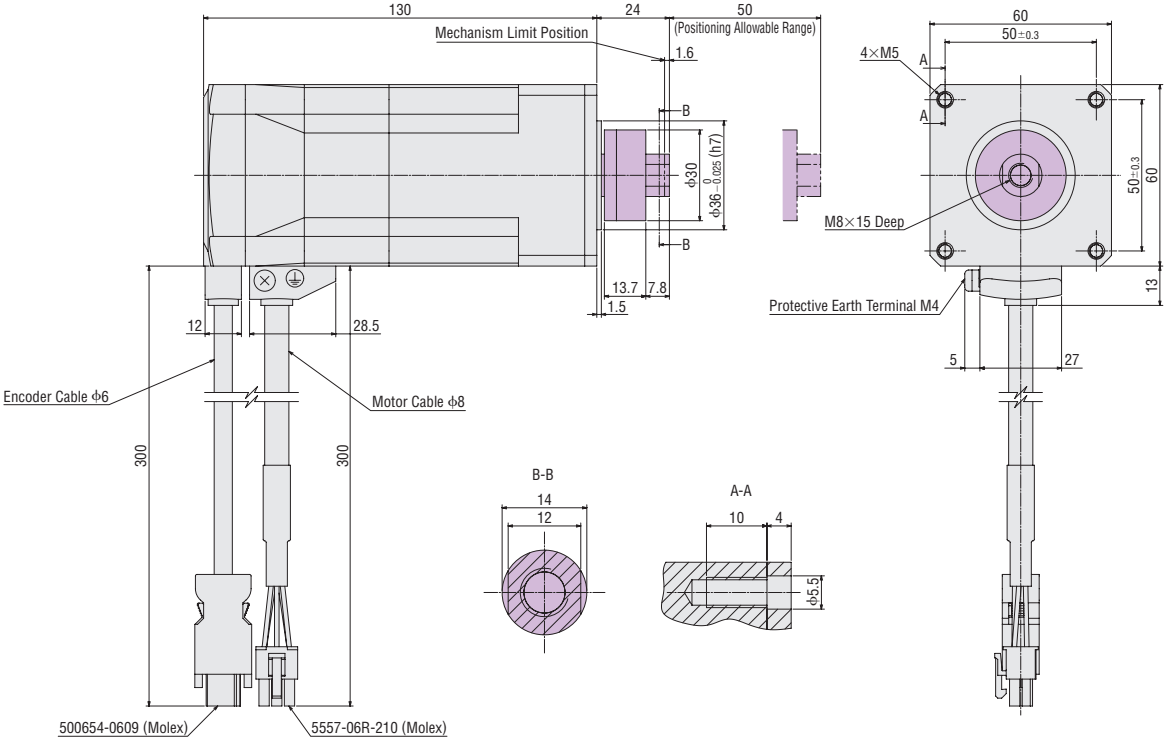
Product Name	Mass [kg]	CAD
DRSM42-04A2AZAK **DRSM42-04B2AZAK** **DRSM42-04A8AZAK**	0.68	D7594



◇Frame Size 60 mm

2D & 3D CAD

Product Name	Mass [kg]	CAD
DRSM60-05A4AZAK	1.6	D7638

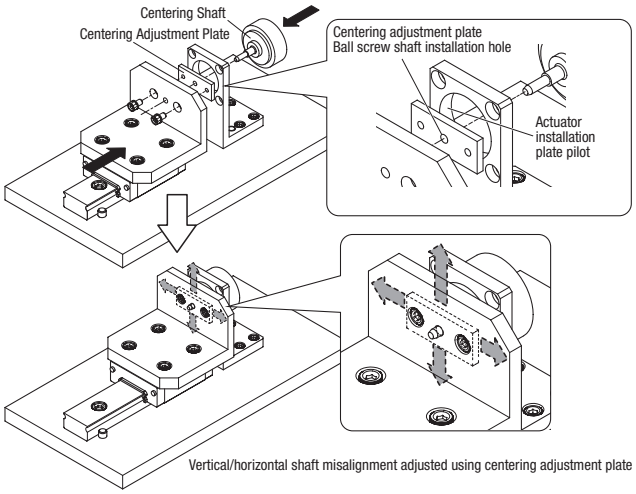


● The shaded areas are moving parts.

●Type Without Guide Installation

◇Centering is Required for Installation

Manufacture a centering shaft and center align the shaft center of the ball screw with the direction of movement of the load.

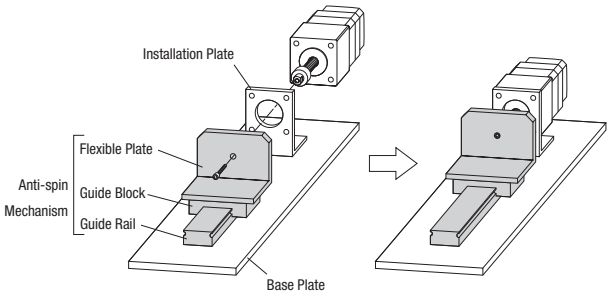


Vertical/horizontal shaft misalignment adjusted using centering adjustment plate

●For details on installation, refer to the Operating Manual.

◇Anti-spin Mechanism is Required for Operation

The type without guide will idle if there is no anti-spin mechanism for the ball screw, preventing operation. Make sure to install an anti-spin mechanism such as a guide rail, flexible plate, etc.

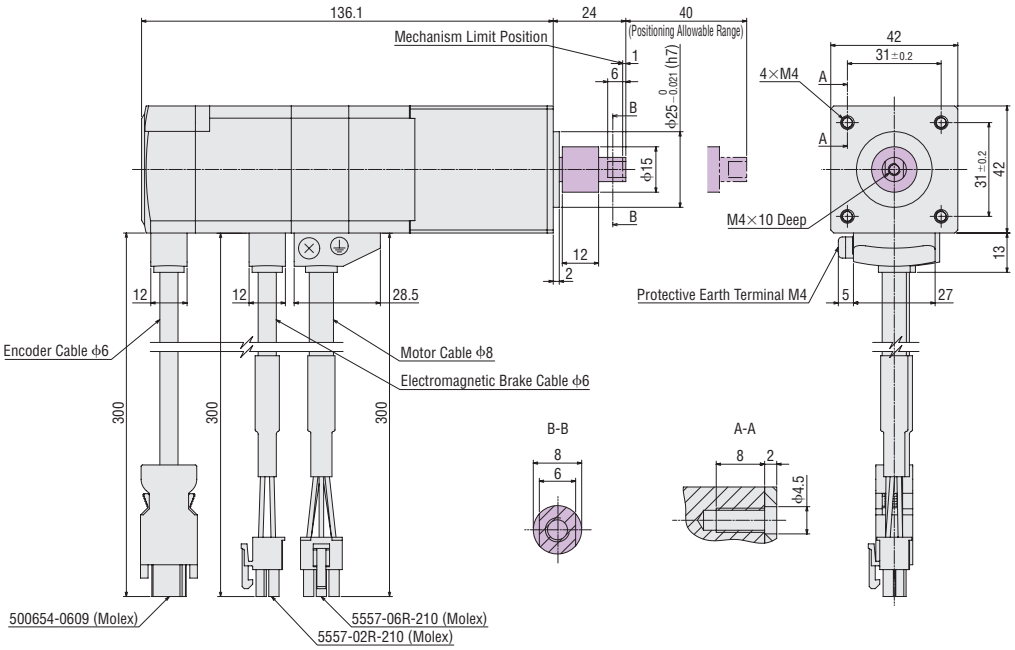


●Type Without Guide With Electromagnetic Brake

◇Frame Size 42 mm

2D & 3D CAD

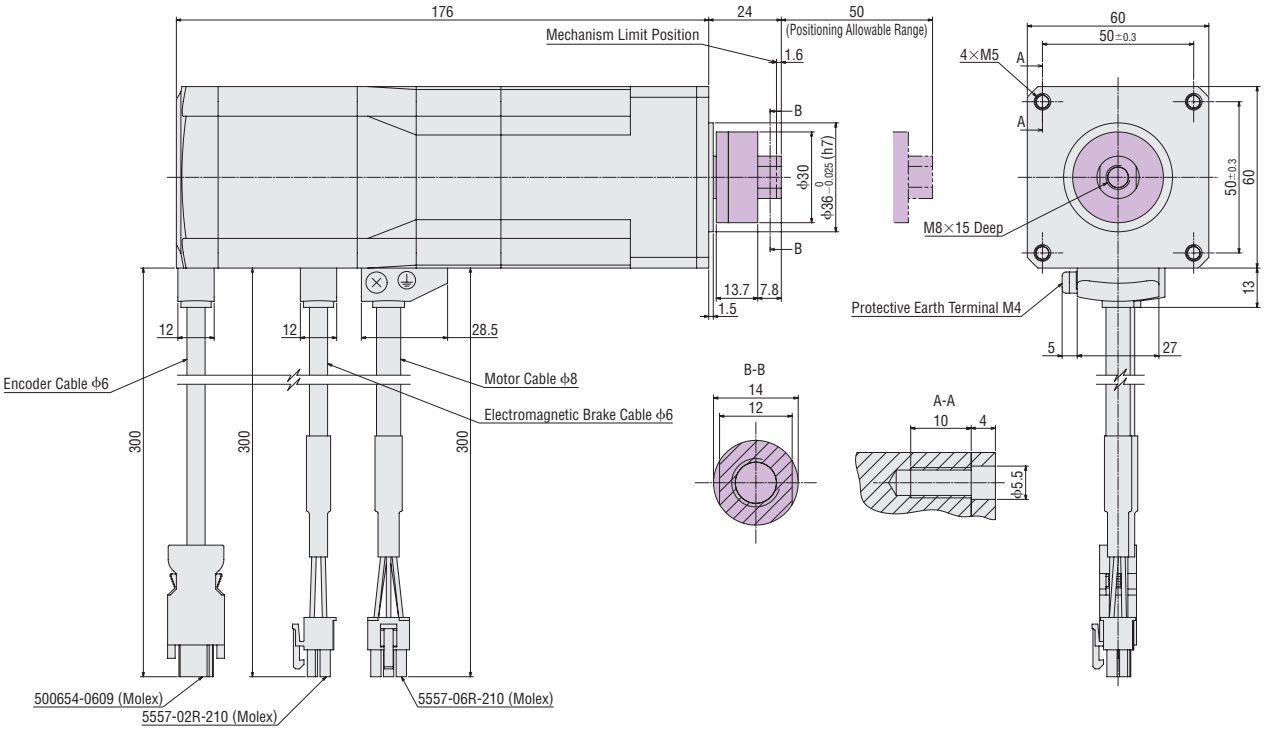
Product Name	Mass [kg]	CAD
DRSM42-04A2AZMK **DRSM42-04B2AZMK** **DRSM42-04A8AZMK**	0.85	D7597



◇Frame Size 60 mm

2D & 3D CAD

Product Name	Mass [kg]	CAD
DRSM60-05A4AZMK	2.0	D7639

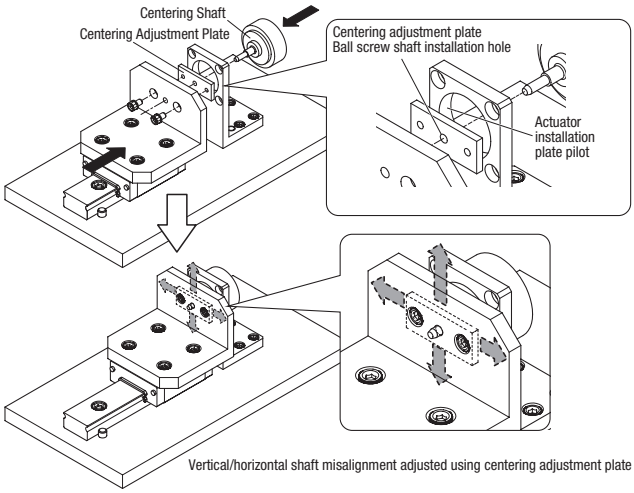


● The shaded areas are moving parts.

●Type Without Guide Installation

◇Centering is Required for Installation

Manufacture a centering shaft and center align the shaft center of the ball screw with the direction of movement of the load.

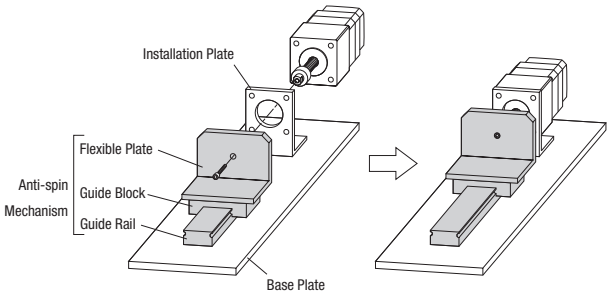


Vertical/horizontal shaft misalignment adjusted using centering adjustment plate

●For details on installation, refer to the Operating Manual.

◇Anti-spin Mechanism is Required for Operation

The type without guide will idle if there is no anti-spin mechanism for the ball screw, preventing operation. Make sure to install an anti-spin mechanism such as a guide rail, flexible plate, etc.



αSTEP AZ Series Driver Connection Cables

Product Line and Feature

αSTEP AZ Series Driver DC Power Supply Input

This can be selected according to the host system.

◇Built-in Controller Type (FLEX)

Positioning data is set in the driver (256 points). The use of a network converter (sold separately) allows the control of an FA network.

◇Pulse Input Type with RS-485 Communication

RS-485 communication allows the monitoring of the position, speed, alarm, and temperature of the motor.

◇Pulse Input Type

A positioning unit (Pulse oscillator) can be used to perform control.

◇Network-compatible Driver

EtherNet/IP EtherCAT PROFINET

This driver supports EtherNet/IP and EtherCAT Drive Profile. It allows for direct control from the network.

- For details of the products, refer to the **AZ** Series product catalog or the Oriental Motor website.
- (FLEX) FLEX is a general term of the products that support I/O control, Modbus (RTU) control, and FA network control via a network converter.

Product Number Code

Driver

AZD - K D

① ② ③

①	Driver Type	**AZD**: **AZ** Series Driver
②	Power Supply Input	**K**: 24 VDC/48 VDC
③	Type	**D**: Built-in Controller Type **X**: Pulse Input Type with RS-485 Communication Blank: Pulse Input Type **EP**: EtherNet/IP-compatible **ED**: EtherCAT Drive Profile-compatible

Connection Cable Set/Flexible Connection Cable Set

CC 050 V Z □ F B 2

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①		**CC**: Cable
②	Length	**005**: 0.5 m **010**: 1 m **015**: 1.5 m **020**: 2 m **025**: 2.5 m **030**: 3 m **040**: 4 m **050**: 5 m **070**: 7 m **100**: 10 m **150**: 15 m **200**: 20 m
③	Reference Number	
④	Applied Model	**Z**: For **AZ** Series
⑤	Reference Number	Blank: For Frame Size 42 mm, 60 mm **2**: For Frame Size 20 mm, 28 mm
⑥	Cable Type	**F**: Connection Cable Set **R**: Flexible Connection Cable Set
⑦	Description	Blank: Without Electromagnetic Brake **B**: With Electromagnetic Brake
⑧	Cable Specifications	**2**: DC Power Supply Input

The drivers and cables that can be used in combination with the actuator are the same as for αSTEP **AZ** Series.

A separate αSTEP **AZ** Series catalog is available. Refer also to the separate catalog when selecting products.

Product Line and Price

Drivers

◇Built-in Controller Type

Product Name
AZD-KD

◇Pulse Input Type with RS-485 Communication

Product Name
AZD-KX

◇Pulse Input Type

Product Name
AZD-K

◇EtherNet/IP-compatible

Product Name
AZD-KEP

◇EtherCAT Drive Profile-compatible

Product Name
AZD-KED

◇PROFINET Compatible

Product Name
AZD-KPN

Connection Cable Sets/Flexible Connection Cable Sets

Use a flexible connection cable if the cable will be bent.
The motor cable and electromagnetic brake cable from the motor cannot be directly connected to a driver.
To connect the motor to the driver, use a connection cable.

[**DR** Series For Frame Size 20 mm, 28 mm]

◇For Motors/Encoders

Type	Length [m]	Product Name
Connection Cable	0.5	**CC005VZ2F2**
	1	**CC010VZ2F2**
	1.5	**CC015VZ2F2**
	2	**CC020VZ2F2**
	2.5	**CC025VZ2F2**
	3	**CC030VZ2F2**
	4	**CC040VZ2F2**
	5	**CC050VZ2F2**
	7	**CC070VZ2F2**
	10	**CC100VZ2F2**
	15	**CC150VZ2F2**
	20	**CC200VZ2F2**

Type	Length [m]	Product Name
Flexible Connection Cable	0.5	**CC005VZ2R2**
	1	**CC010VZ2R2**
	1.5	**CC015VZ2R2**
	2	**CC020VZ2R2**
	2.5	**CC025VZ2R2**
	3	**CC030VZ2R2**
	4	**CC040VZ2R2**
	5	**CC050VZ2R2**
	7	**CC070VZ2R2**
	10	**CC100VZ2R2**
	15	**CC150VZ2R2**
	20	**CC200VZ2R2**

[**DRS2** Series For Frame Size 42 mm, 60 mm]

◇For Motors/Encoders

For Motor For Encoder

Type	Length [m]	Product Name
Connection Cable Set	0.5	**CC005VZF2**
	1	**CC010VZF2**
	1.5	**CC015VZF2**
	2	**CC020VZF2**
	2.5	**CC025VZF2**
	3	**CC030VZF2**
	4	**CC040VZF2**
	5	**CC050VZF2**
	7	**CC070VZF2**
	10	**CC100VZF2**
	15	**CC150VZF2**
	20	**CC200VZF2**
Flexible Connection Cable Set	0.5	**CC005VZR2**
	1	**CC010VZR2**
	1.5	**CC015VZR2**
	2	**CC020VZR2**
	2.5	**CC025VZR2**
	3	**CC030VZR2**
	4	**CC040VZR2**
	5	**CC050VZR2**
	7	**CC070VZR2**
	10	**CC100VZR2**
	15	**CC150VZR2**
	20	**CC200VZR2**

◇For Motors/Encoders/Electromagnetic Brakes

For Motor For Encoder For Electromagnetic Brake

Type	Length [m]	Product Name
Connection Cable Set	0.5	**CC005VZFB2**
	1	**CC010VZFB2**
	1.5	**CC015VZFB2**
	2	**CC020VZFB2**
	2.5	**CC025VZFB2**
	3	**CC030VZFB2**
	4	**CC040VZFB2**
	5	**CC050VZFB2**
	7	**CC070VZFB2**
	10	**CC100VZFB2**
	15	**CC150VZFB2**
	20	**CC200VZFB2**
Flexible Connection Cable Set	0.5	**CC005VZRB2**
	1	**CC010VZRB2**
	1.5	**CC015VZRB2**
	2	**CC020VZRB2**
	2.5	**CC025VZRB2**
	3	**CC030VZRB2**
	4	**CC040VZRB2**
	5	**CC050VZRB2**
	7	**CC070VZRB2**
	10	**CC100VZRB2**
	15	**CC150VZRB2**
	20	**CC200VZRB2**

Accessories

Drivers

Type \ Accessories	Connector
Built-in Controller Type Pulse Input Type with RS-485 Communication Pulse Input Type	For CN4 (1 pc.) For CN1 (1 pc.)
EtherNet/IP-compatible EtherCAT Drive Profile-compatible PROFINET-compatible	For CN4 (1 pc.) For CN1 (1 pc.) For CN7 (1 pc.)

Connection Cable Sets/Flexible Connection Cable Sets

Type \ Accessories	Operating Manual
Connection Cable Set	–
Flexible Connection Cable Set	1 set

Driver Specifications

Product Name			AZD-KD, AZD-KX, AZD-K	AZD-KEP, AZD-KED, AZD-KPN
Main Power Supply	Input Voltage	DR20	24 VDC±5%	
		DR28		
		DRSM42	•24 VDC±5%*1 •48 VDC±5%	•24 VDC±5% •48 VDC±5%
		DRSM60		
	Input Current	DR20	0.4 A	0.4 A
		DR28	1.4 A	1.3 A
		DRSM42	1.72 A (1.8 A)*2	1.5 A
		DRSM60	2.45 A (2.7 A)*2	2.2 A
Control Power Source	Input Voltage		–	24 VDC±5%*1
	Input Current		–	0.15 A (0.4 A)*3

*1 For the cylinder with electromagnetic brake type, the 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

*2 The values in the ( ) are those measured when a cylinder with electromagnetic brake is connected.

*3 The values in the ( ) are those measured when a cylinder with electromagnetic brake is connected. **DRSM42** is 0.23 A.

General Specifications

For All Drivers

Degree of Protection	IP10
Operating Environment	Ambient temperature: 0 - +50°C (Non-freezing) Humidity: 85% or less (Non-condensing) Altitude: Up to 1000 m above sea level Atmosphere: No corrosive gases or dust. The product should not be exposed to water or oil.
Storage Condition Transportation Environment	Ambient temperature: –25 - +70°C (Non-freezing) Humidity: 85% or less (Non-condensing) Altitude: Up to 3000 m above sea level Atmosphere: No corrosive gases or dust. The product should not be exposed to water or oil.
Insulation Resistance	The measured value is 100 MΩ or more when a 500 VDC megger is applied between the following locations: ・Protective earth terminal – Power supply terminal

Note

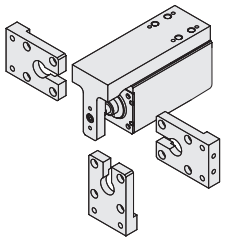
- When measuring insulation resistance or performing a dielectric strength voltage test, be sure to disconnect the motor from the driver beforehand. Also, do not conduct these tests on the ABZO sensor section of the motor.

Peripheral Equipment

Installation Plate (For DRS2 Series)

Dedicated mounting bracket for installing actuators.
Screws between the actuator and the installation plate are included.

● Installation screws for installing to the equipment must be provided by the customer.



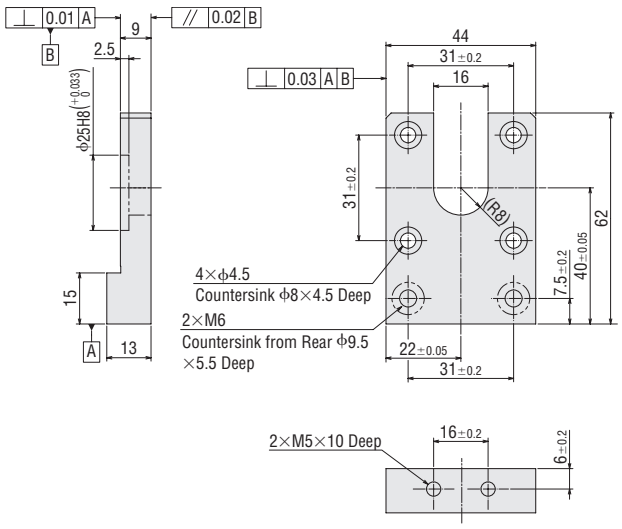
The plate can be installed from three directions.

Product Line and Price 2D & 3D CAD

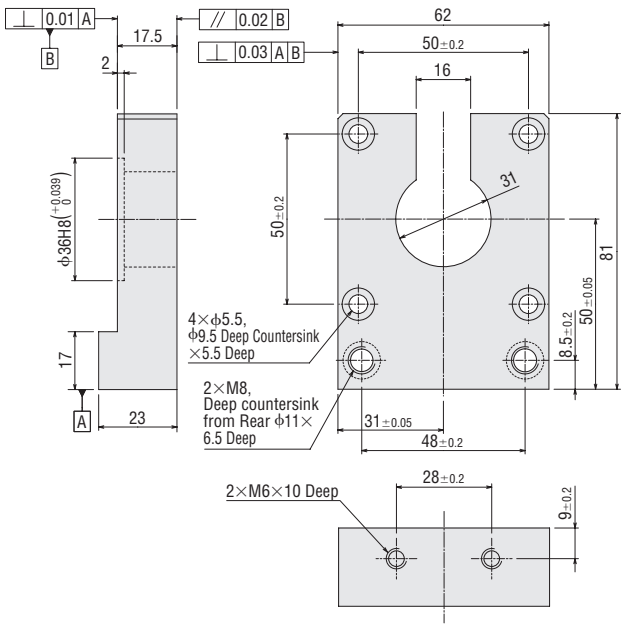
Product Name	Applicable Product	Mass [g]	CAD
PADRL-42	**DRSM42**	165	D466
PADRL-60	**DRSM60**	570	D2751

Dimensions (Unit: mm)

PADRL-42



PADRL-60



Oriental motor

These products are manufactured at plants certified with the international standards **ISO 9001** (for quality assurance) and **ISO 14001** for systems of environmental management).

Specifications are subject to change without notice. This catalogue was published in July 2024.

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