

Direct Motor Drive Ball Screws Linear Actuator External type



It's a Compact Linear Actuator (External type) series, what we call MoBo. The MoBo is the combined product that Stepping Motor is directly mounted onto Ball Screw Shaft, and eliminated Coupling accordingly.

In KSS, we always pursue the downsizing of our products that is the mission of the Miniature Ball Screw manufacturer. MoBo (Direct Motor Drive Ball Screws) is one of our representative product, which combines a Motor Shaft and a Ball Screw. MoBo is the combined product that can achieve shortening the longitudinal dimension by eliminating the Coupling. Since KSS launched the first version of MoBo in 2001, we continued to add various type of MoBo on our line-up and provides the variety of choices to our customer. This time KSS integrated all of our MoBo line-up into one catalogue to offer better understanding for the customer. Now KSS will continue to meet the demand of the customer as much as possible, and will develop a better product in the future, thanking you in advance.



Linear Actuator External type

MoBo is called External type Linear Actuator world-widely, but our product (MoBo) is Ball Screw type integrated with Motor. KSS has a lot of variation for External type Linear Actuator, such as Rolled Ball screw type, Precision Ball Screw type and so on.



MoBo series can offer many variety of choices, based on its combination of Stepping Motor type (2-phase or 5-phase) and Ball Screw type. Please refer to Table F-1 and Table F-2. In addition, we can provide Resin Lead Screw type as customized product, which helps you cost saving. Please ask KSS representative if necessary.

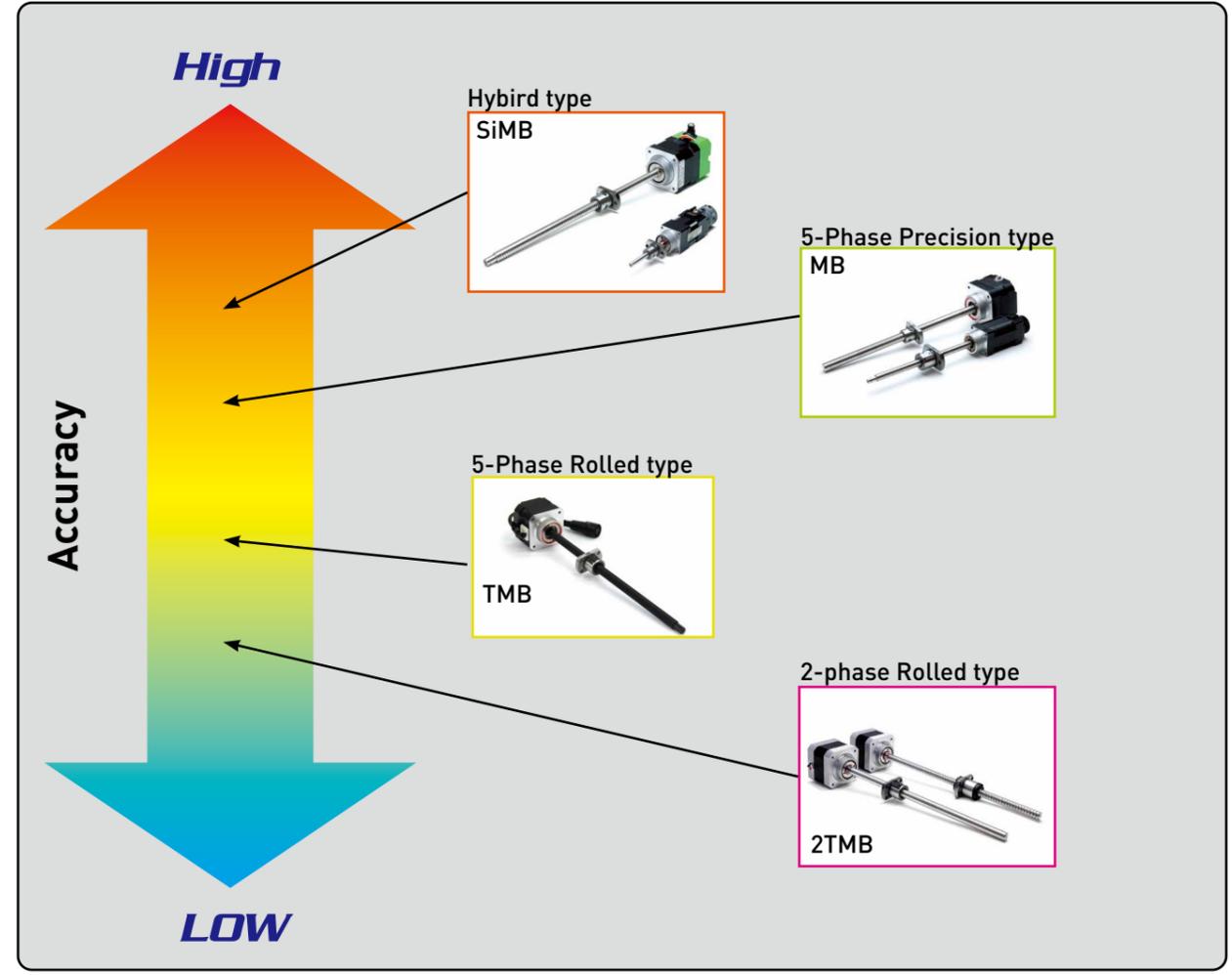
F-1 ; Table F-1 ; Combination of Ball Screw and Stepping Motor

Type	Ball Screw type		Stepping Motor		Additional Function
	Precision Ball Screw	Rolled Ball Screw	2-phase	5-phase	
MB Precision type	○ JIS C3			○	
TMB Rolled type		○ JIS Ct7		○	
2TMB 2-phase Rolled type		○ JIS Ct7 equivalent	○		
SiMB Hybrid type	○ JIS C3 /C5		○		Encoder / Memory chip

F-2 ; Table F-2 ; Combination of Shaft Nominal dia. & Lead

Shaft Nominal dia.	Lead	0.5	1.0	2	4	5	6	12
	4	MB	MB TMB SiMB					
5					TMB			
6		MB TMB	MB TMB				TMB	
8		MB TMB 2TMB SiMB	MB TMB 2TMB SiMB			TMB 2TMB SiMB		TMB 2TMB

The MoBo series provides various types of combination for Screw & Motor ranging from high precision to multipurpose type depending on the customer requirement.



[Precision Ball Screw type (MB)]



MoBo

This series is high performance, high accurate positioning drive unit with Precision Ball Screw and 5-phase Stepping Motor. C3 class Precision Ball Screws are adopted for this series.

[Rolled Ball Screw type (TMB)]



Rolled MoBo

This series is all-round performance drive unit with Rolled Ball Screw and 5-Phase Stepping Motor. Ct7 class Rolled Ball Screws are built in this series.

[2-phase Motor & Rolled Ball Screw type (2TMB)]



2-phase Rolled MoBo

Ct7 class Rolled Ball Screw is installed into 2-phase Stepping Motor. This type can achieve low cost and multiuse for various fields.

[Hybrid type (SiMB)]



Si- MoBo

This series have high accurate positioning, ultra smooth drive, and closed loop operation by using Precision Ball Screw with C3 accuracy and Si-servo Motor.

[Others]

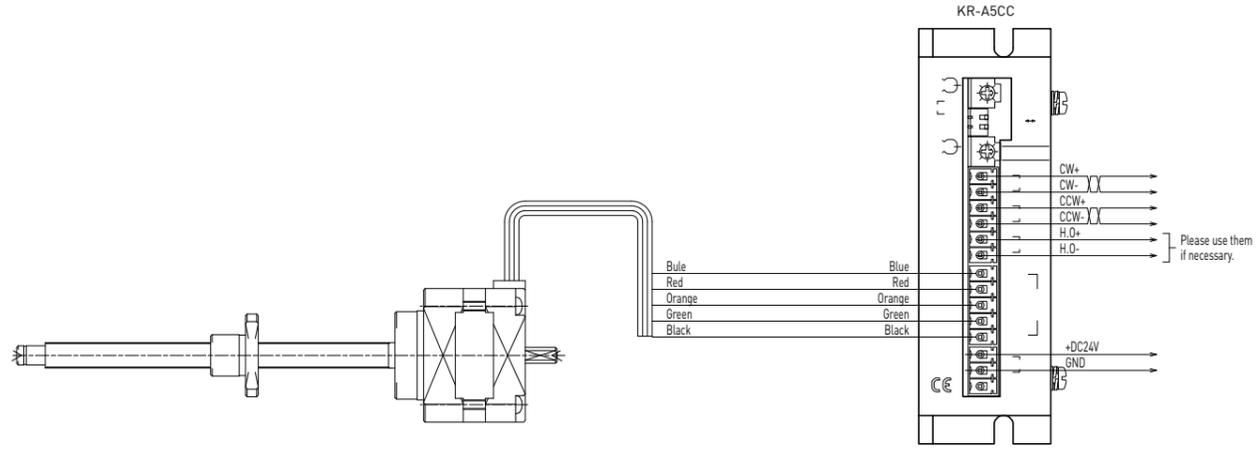


· We can provide Resin Lead Screw type as customized product, which has high cost performance.

● Connection diagrams

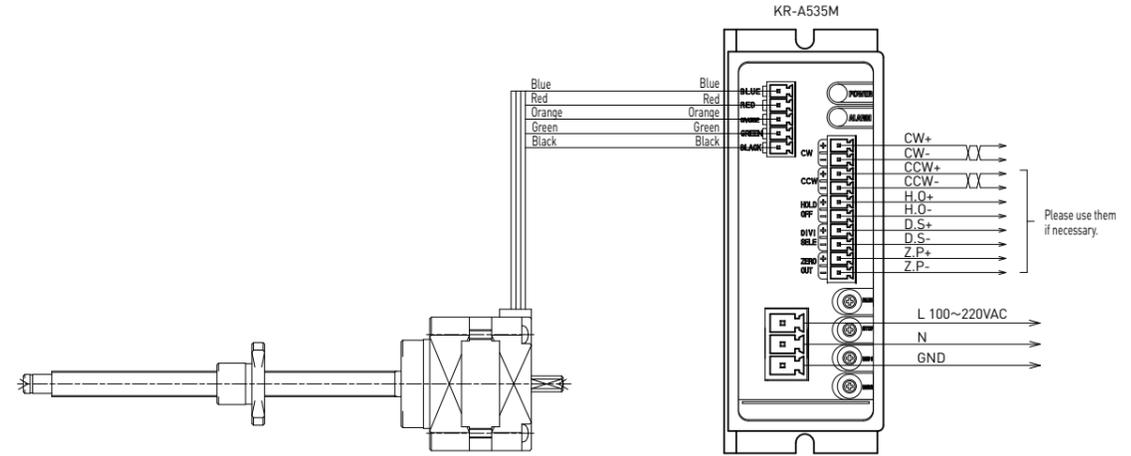
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■ Applicable MoBo series
Precision Ball Screw type (MB)
Rolled Ball Screw type (TMB)



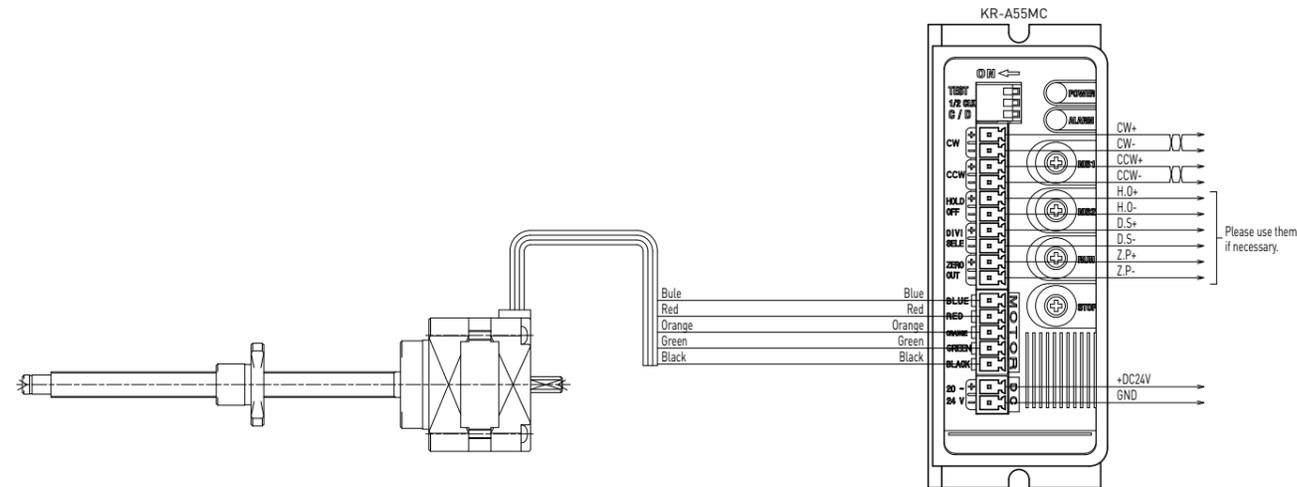
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■ Applicable MoBo series
Precision Ball Screw type (MB)
Rolled Ball Screw type (TMB)



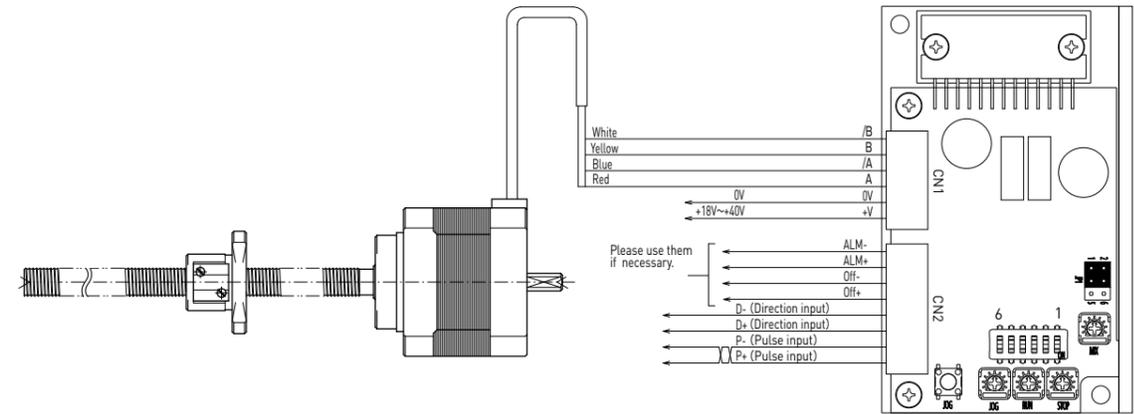
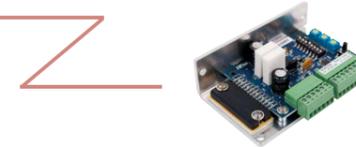
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■ Applicable MoBo series
Precision Ball Screw type (MB)
Rolled Ball Screw type (TMB)



[SD4030B2]

■ Applicable MoBo series
2-phase Rolled Ball Screw type (2TMB)



●Precaution of handling and operating

※Since MoBo series is the product which integrated the Motor Shaft and the Screw Shaft, repair is not possible, if either Motor or Ball Screw is damaged.

★Precaution for operating

1. Before use, please read instruction manuals and follow the precautions below.
2. Do not hit or drop the Shaft, do not apply Axial load or Radial load exceeding specifications, it may cause malfunction.
3. Before use, please check that the product has no defect, and product is the same as your order.
4. Do not disassemble each component, dust may get inside the product. It may deteriorate accuracy.
5. Please prevent contamination from dust or swarf. Dust or swarf may cause damage to Ball Screw, which lead to deteriorating the function.
6. Lubrication is required under the Ball Screw operation. Lubricant condition should be checked every 2 to 3 months. If Grease is contaminated, remove old Grease and replace with new one.
7. Do not use MoBo exceeding our specifications in Load or Speed.
8. Care must be taken not to apply Radial load or Moment load directly on Ball Screw.
This will lead to shorten the Ball Screw life remarkably. In addition, misalignment between Ball Screw and other components will lead to deterioration of function, such as accuracy, life and so on.
9. Allowing Ball Screw Nut to over-run may result in malfunctioning due to Balls escaping, damage to recirculation parts, and indentation on the raceways. Continued use in this state will lead to rapid wear and damage to recirculation parts. Therefore Ball Screw Nut must never be allowed to over-run.
If over-running occurs, contact KSS for an inspection with charge.
10. Acceleration & Deceleration rate should be followed by recommended number described in each series.
11. Do not hold the Motor lead wire. Motor lead wire is for fixation, do not use the Motor lead wire as movabilities.
12. Keep away from Magnetic memory device.
13. The Motor torque and speed characteristics may vary from the specifications, depending on the load conditions or Driver used. Please adjust as appropriate.
14. The Motor has a resonant point within the specifications. Please avoid the resonant point when in use.



★Precaution for safety

1. If abnormal odor, noise, smoke, overheating, or vibration occurs, stop operation immediately and turn the power off.
2. Do not use MoBo exceeding rated current.
3. The Motor may overheat depending on the load condition or Driver used.
Make sure that the Motor surface temperature does not exceed 80°C when in use.
4. Check the wire connection type, Drive system, and phase sequence.
Inappropriate connection leads to malfunction.
5. A ground connection must be used.
6. Do not bend, pull or pinch the Motor lead wire.
7. Do not touch moving parts during operation.
8. Disconnect from the Controller before performing dielectric withstanding voltage test of the Motor or megger test.
9. Please switch off the Driver, when inspection or maintenance.

★Operating environment

1. Operating environment should be 0~40°C in temperature and 20~80%RH in humidity.
Do not use MoBo under dew condensation, corrosive gas or inflammable gas environment.
2. Do not use MoBo under strong electric field, strong magnetic field.
3. Please prevent from swarf, oil mist, cutting fluid, water/moisture, salt spray, organic solvent and other contamination.
4. MoBo cannot be used under the vibration, impact, vacuum, and other special environment.

