

High-Torque 2-Phase Stepper Motors

## PKP Series

Standard Type and High-Resolution Type  
with Encoder and Electromagnetic Brake



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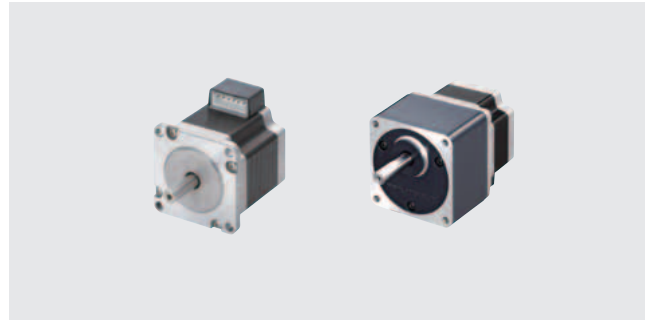
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# 2-Phase Stepping Motors High-Torque PKP Series

● Connection Information  
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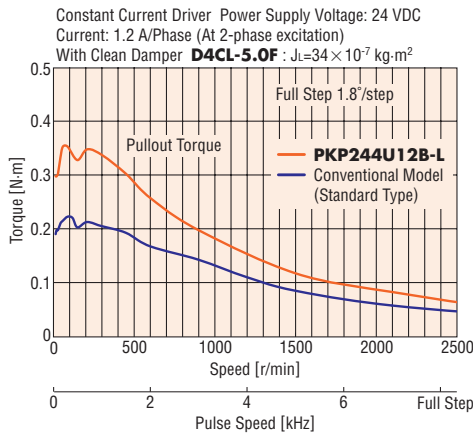
High-torque **PKP** Series offers a standard type with a resolution of 200 steps per revolution (1.8°/step) and a geared type (high torque, higher resolution). The dedicated driver is required separately to operate the motor.



## Features

### ● High-Torque Design

**PKP** Series generating high torque of approximately 1.2 to 1.7 times (maximum holding torque) the **PK** Series standard type of same size.



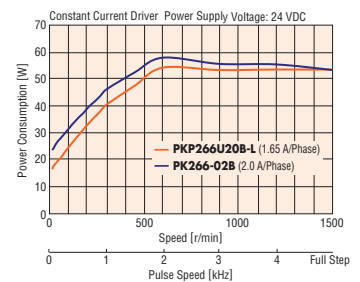
## The Advantages of Using a High Torque Motor

### ● Lower Power Consumption and Lower Heat Generation

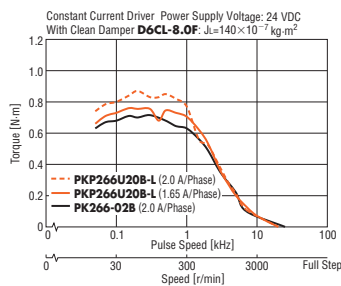
If the running current of a **PKP** Series motor is decreased and the motor is operated at the same torque as the **PK** Series standard type, current consumption and temperature rise can be reduced.

#### Power consumption can be reduced

Comparison of driver power consumption when low-speed torque is tailored to the **PK** Series standard type



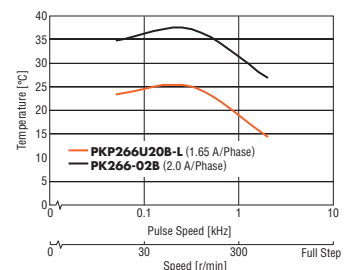
### Characteristics of Decreased Running Current in **PKP** Series Motors



Power consumption reduced by **20%** (at low speed)

#### Temperature rise can be reduced

Comparison of motor surface temperature rise when low-speed torque is tailored to the **PK** Series standard type

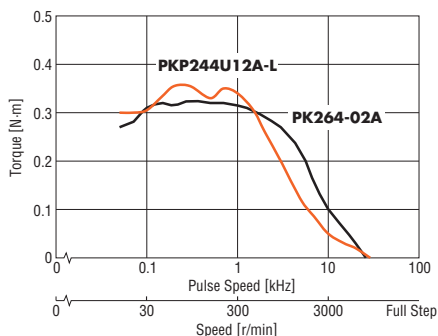


Temperature increases of **10°C** and more are suppressed

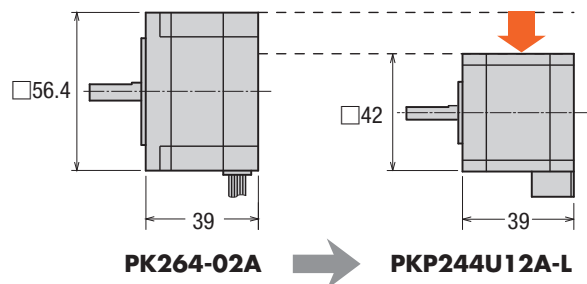
## Downsizing of Your Motor

By using a **PKP** Series motor, which has the same torque as the **PK** Series standard type, the motor can be downsized.

Comparison of Speed-Torque Characteristics between **PKP244U12A-L** and **PK264-02A**



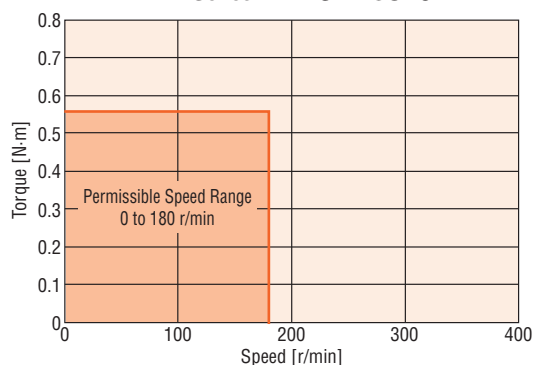
The motor can be downsized, even if the torque is the same!



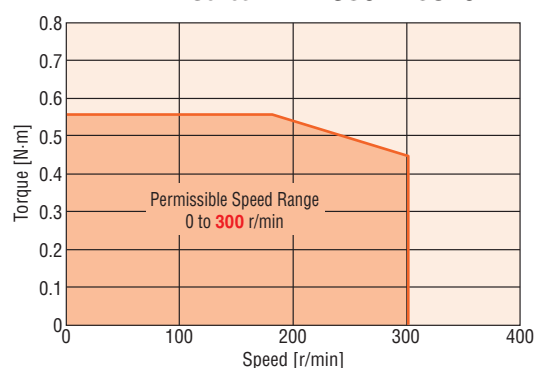
## SH Geared Type

This geared type is effective for reducing speed, increasing torque, higher resolution and low vibration. The **PK** Series has a broader permissible speed range than the **SH** geared type, and is also easier to use.

**PK Series PK243A1-SG10**



**PKP Series PKP243U09A-SG10**



## Motor Lineup

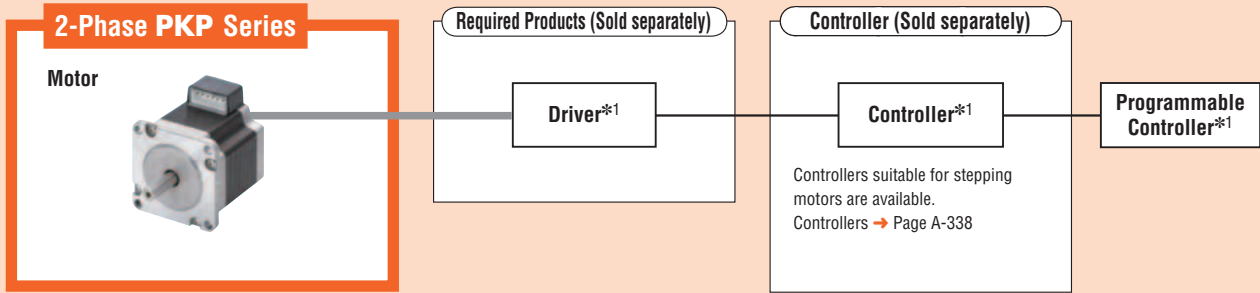
Bipolar and unipolar models are available for all types.

	Motor Frame Size				
	20 mm	28 mm	35 mm	42 mm	56.4/60 mm
Standard Type					
<b>SH</b> Geared Type					


## System Configuration

These accessories enable 2-phase **PKP** Series products to be used for various operations.


\*1 Not supplied




**Accessories (Sold separately)**




① **Motor Mounting Brackets**  
(→ Page A-369)



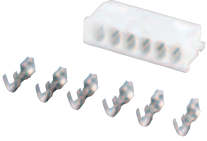
② **Flexible Couplings**  
(→ Page A-359)



③ **Clean Dampers**  
(→ Page A-375)



④ **Connection Cables\*2**  
(→ Page A-358)



⑤ **Motor Connector Sets**  
(→ Page A-358)

\*2 A connection cable (0.6 m) is included with products that have product names ending in "L."

Number	Name	Overview
①	Motor Mounting Brackets	Dedicated mounting bracket for the motor.
②	Flexible Couplings	Coupling that connects the motor shaft to the driven shaft.
③	Clean Dampers	Dedicated damper for suppressing stepping motor vibration.
④	Connection Cables	Lead wire with a connector crimped for connector-coupled motors (0.6 m, 1 m).
⑤	Motor Connector Sets	Set of connector housings and contacts for use with connector-coupled motors (30 units).

### System Configuration Example

2-Phase PKP Series	+	Sold Separately		
		Motors Mounting Bracket <b>PAL2P-2</b>	Flexible Coupling <b>MCS200808</b>	Clean Damper <b>D6CL-8.0F</b>
<b>PKP264D28B-L</b>				

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

## Product Number Code

### Standard Type

**PKP 2 6 4 D 28 A - L**

①    ②    ③    ④    ⑤    ⑥    ⑦    ⑧

①	Series Name	<b>PKP: PKP Series</b>
②	2-Phase	
③	Motor Frame Size	<b>1:</b> 20 mm <b>2:</b> 28 mm <b>3:</b> 35 mm <b>4:</b> 42 mm <b>6:</b> 56.4 mm
④	Motor Case Length	
⑤	Number of Lead Wires	<b>D:</b> 4 <b>U:</b> 5 or 6
⑥	Winding Specifications	
⑦	Motor Shaft Type	<b>A:</b> Single Shaft <b>B:</b> Double Shaft
⑧	Connection Cable	<b>L:</b> Included (0.6 m)

### SH Geared Type

**PKP 2 4 3 U 09 B - SG 18 - L**

①    ②    ③    ④    ⑤    ⑥    ⑦    ⑧    ⑨    ⑩

①	Series Name	<b>PKP: PKP Series</b>
②	2-Phase	
③	Motor Frame Size	<b>2:</b> 28 mm <b>4:</b> 42 mm <b>6:</b> 60 mm
④	Motor Case Length	
⑤	Number of Lead Wires	<b>D:</b> 4 <b>U:</b> 6
⑥	Winding Specifications	
⑦	Motor Shaft Type	<b>A:</b> Single Shaft <b>B:</b> Double Shaft
⑧	Gearhead Type	<b>SG: SH Geared Type</b>
⑨	Gear Ratio	
⑩	Connection Cable	<b>L:</b> Included (0.6 m)

## Product Line

### ● Standard Type (4 lead wires)

Product Name (Single shaft)	Product Name (Double shaft)
PKP213D05A	PKP213D05B
PKP214D06A	PKP214D06B
PKP223D15A-L	PKP223D15B-L
PKP224D15A-L	PKP224D15B-L
PKP225D15A-L	PKP225D15B-L
PKP233D15A-L	PKP233D15B-L
PKP235D15A-L	PKP235D15B-L
PKP243D15A-L	PKP243D15B-L
PKP244D15A-L	PKP244D15B-L
PKP245D15A-L	PKP245D15B-L
PKP246D15A-L	PKP246D15B-L
PKP264D28A-L	PKP264D28B-L
PKP266D28A-L	PKP266D28B-L
PKP268D28A-L	PKP268D28B-L

### ● Standard Type (5 or 6 lead wires)

Product Name (Single shaft)	Product Name (Double shaft)
PKP213U05A	PKP213U05B
PKP214U06A	PKP214U06B
PKP223U09A-L	PKP223U09B-L
PKP224U09A-L	PKP224U09B-L
PKP225U09A-L	PKP225U09B-L
PKP233U12A-L	PKP233U12B-L
PKP235U12A-L	PKP235U12B-L
PKP243U04A-L	PKP243U04B-L
PKP243U06B-L	PKP243U06B-L
PKP243U09A-L	PKP243U09B-L
PKP244U04A-L	PKP244U04B-L
PKP244U08A-L	PKP244U08B-L
PKP244U12A-L	PKP244U12B-L
PKP245U05A-L	PKP245U05B-L
PKP245U08A-L	PKP245U08B-L
PKP245U12A-L	PKP245U12B-L
PKP246U12A-L	PKP246U12B-L
PKP264U10A-L	PKP264U10B-L
PKP264U20A-L	PKP264U20B-L
PKP264U30A-L	PKP264U30B-L
PKP266U10A-L	PKP266U10B-L
PKP266U20A-L	PKP266U20B-L
PKP266U30A-L	PKP266U30B-L
PKP268U10A-L	PKP268U10B-L
PKP268U20A-L	PKP268U20B-L
PKP268U30A-L	PKP268U30B-L

### ● SH Geared Type (4 lead wires)

Product Name (Single shaft)	Product Name (Double shaft)
PKP223D15A-SG7.2-L	PKP223D15B-SG7.2-L
PKP223D15A-SG9-L	PKP223D15B-SG9-L
PKP223D15A-SG10-L	PKP223D15B-SG10-L
PKP223D15A-SG18-L	PKP223D15B-SG18-L
PKP223D15A-SG36-L	PKP223D15B-SG36-L
PKP243D15A-SG3.6-L	PKP243D15B-SG3.6-L
PKP243D15A-SG7.2-L	PKP243D15B-SG7.2-L
PKP243D15A-SG9-L	PKP243D15B-SG9-L
PKP243D15A-SG10-L	PKP243D15B-SG10-L
PKP243D15A-SG18-L	PKP243D15B-SG18-L
PKP243D15A-SG36-L	PKP243D15B-SG36-L
PKP264D14A-SG3.6-L	PKP264D14B-SG3.6-L
PKP264D28A-SG3.6-L	PKP264D28B-SG3.6-L
PKP264D14A-SG7.2-L	PKP264D14B-SG7.2-L
PKP264D28A-SG7.2-L	PKP264D28B-SG7.2-L
PKP264D14A-SG9-L	PKP264D14B-SG9-L
PKP264D28A-SG9-L	PKP264D28B-SG9-L
PKP264D14A-SG10-L	PKP264D14B-SG10-L
PKP264D28A-SG10-L	PKP264D28B-SG10-L
PKP264D14A-SG18-L	PKP264D14B-SG18-L
PKP264D28A-SG18-L	PKP264D28B-SG18-L
PKP264D14A-SG36-L	PKP264D14B-SG36-L
PKP264D28A-SG36-L	PKP264D28B-SG36-L

### ● SH Geared Type (6 lead wires)

Product Name (Single shaft)	Product Name (Double shaft)
PKP223U09A-SG7.2-L	PKP223U09B-SG7.2-L
PKP223U09A-SG9-L	PKP223U09B-SG9-L
PKP223U09A-SG10-L	PKP223U09B-SG10-L
PKP223U09A-SG18-L	PKP223U09B-SG18-L
PKP223U09A-SG36-L	PKP223U09B-SG36-L
PKP243U09A-SG3.6-L	PKP243U09B-SG3.6-L
PKP243U09A-SG7.2-L	PKP243U09B-SG7.2-L
PKP243U09A-SG9-L	PKP243U09B-SG9-L
PKP243U09A-SG10-L	PKP243U09B-SG10-L
PKP243U09A-SG18-L	PKP243U09B-SG18-L
PKP243U09A-SG36-L	PKP243U09B-SG36-L
PKP264U10A-SG3.6-L	PKP264U10B-SG3.6-L
PKP264U20A-SG3.6-L	PKP264U20B-SG3.6-L
PKP264U10A-SG7.2-L	PKP264U10B-SG7.2-L
PKP264U20A-SG7.2-L	PKP264U20B-SG7.2-L
PKP264U10A-SG9-L	PKP264U10B-SG9-L
PKP264U20A-SG9-L	PKP264U20B-SG9-L
PKP264U10A-SG10-L	PKP264U10B-SG10-L
PKP264U20A-SG10-L	PKP264U20B-SG10-L
PKP264U10A-SG18-L	PKP264U10B-SG18-L
PKP264U20A-SG18-L	PKP264U20B-SG18-L
PKP264U10A-SG36-L	PKP264U10B-SG36-L
PKP264U20A-SG36-L	PKP264U20B-SG36-L

The following items are included in each product.  
 Motor, Connection Cable\*, Operating Manual  
 \*Only products that have product names that end in "L"

## High-Torque 2-Phase Stepper Motors

# PKP Series

Standard Type with Encoder

High-Resolution Type with Encoder

High-Torque 2-Phase Stepper Motors - A new encoder motor addition to the **PKP** Series. Encoder motors contribute to the improvement of equipment reliability.

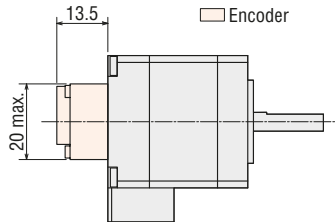


### Features

● **Motor Position Information Detection is Possible**  
Using an encoder motor makes it possible to monitor current position and detect positional errors. For example, normal operation of the motor can be confirmed by comparing the current position and the command position.

● **Small Encoder**  
Comes with a small encoder that is suitable for compact equipment.

● Frame size of 35 mm



● **High Reliability Thanks to Line Driver Output**  
Line driver output is employed for the output circuit. Anti-noise capability is excellent thanks to a differential output, making it possible to dramatically increase the wiring distance compared to voltage output.

- Main encoder specifications
  - Output circuit type: Line driver output
  - Resolution: 200 P/R (standard type), 400 P/R (high-resolution type)
  - Output signal: A-phase, B-phase, Z-phase (3ch)

### Product Lineup

● : Models available  
-- : No models available

Type	Wiring	Frame Size			
		20 mm	35 mm	42 mm	56.4 mm
<b>Standard Type</b> Basic step angle: 1.8° Encoder resolution: 200 P/R	Unipolar	●	●	●	●
	Bipolar	●	●	●	●
<b>High-Resolution Type</b> Basic step angle: 0.9° Encoder resolution: 400 P/R	Unipolar	--	--	●	●
	Bipolar	--	--	●	●

## Product Number Code

# PKP 2 4 3 M D 15 A - R2F L - L

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

①	Series	<b>PKP: PKP Series</b>
②	<b>2:</b> 2-Phase	
③	Motor Frame Size	<b>1:</b> 20 mm <b>3:</b> 35 mm <b>4:</b> 42 mm <b>6:</b> 56.4 mm
④	Motor Case Length	
⑤	Motor Type	Blank: Standard type <b>M:</b> High-resolution type
⑥	Number of Lead Wires	<b>D:</b> 4 <b>U:</b> 5 or 6
⑦	Winding Specification	
⑧	Motor Shaft Configuration	<b>A:</b> Single shaft
⑨	Encoder Resolution	<b>R2E:</b> 200 P/R <b>R2F:</b> 400 P/R
⑩	Encoder Output Circuit Type	<b>L:</b> Line driver output*
⑪	Connection Cable	

\*There are also voltage output types for the encoder output circuit. For details, please contact the nearest Oriental Motor sales office.

## Product Line and Prices

### Standard Type with Encoder

#### ◇ Unipolar (5 or 6 lead wires)

Product Name
<b>PKP213U05A-R2EL-L</b>
<b>PKP214U06A-R2EL-L</b>
<b>PKP233U12A-R2EL-L</b>
<b>PKP235U12A-R2EL-L</b>
<b>PKP243U09A-R2EL-L</b>
<b>PKP244U12A-R2EL-L</b>
<b>PKP245U12A-R2EL-L</b>
<b>PKP246U12A-R2EL-L</b>
<b>PKP264U20A-R2EL-L</b>
<b>PKP266U20A-R2EL-L</b>
<b>PKP268U20A-R2EL-L</b>

#### ◇ Bipolar (4 lead wires)

Product Name
<b>PKP213D05A-R2EL-L</b>
<b>PKP214D06A-R2EL-L</b>
<b>PKP233D15A-R2EL-L</b>
<b>PKP235D15A-R2EL-L</b>
<b>PKP243D15A-R2EL-L</b>
<b>PKP244D15A-R2EL-L</b>
<b>PKP245D15A-R2EL-L</b>
<b>PKP246D15A-R2EL-L</b>
<b>PKP264D28A-R2EL-L</b>
<b>PKP266D28A-R2EL-L</b>
<b>PKP268D28A-R2EL-L</b>

### High-Resolution Type with Encoder

#### ◇ Unipolar (6 lead wires)

Product Name
<b>PKP243MU09A-R2FL-L</b>
<b>PKP244MU12A-R2FL-L</b>
<b>PKP264MU20A-R2FL-L</b>
<b>PKP266MU20A-R2FL-L</b>
<b>PKP268MU20A-R2FL-L</b>

#### ◇ Bipolar (4 lead wires)

Product Name
<b>PKP243MD15A-R2FL-L</b>
<b>PKP244MD15A-R2FL-L</b>
<b>PKP264MD28A-R2FL-L</b>
<b>PKP266MD28A-R2FL-L</b>
<b>PKP268MD28A-R2FL-L</b>

Products include the following.

Motor, Motor Connection Cable\*, Encoder Connection Cable,  
Operating Manual

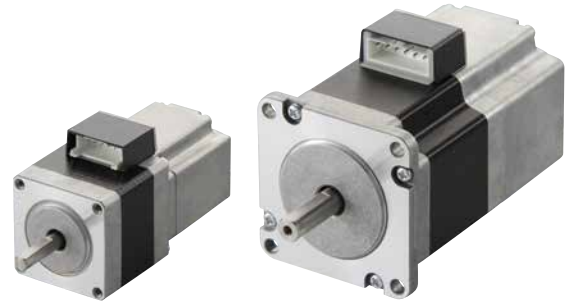
\*Excluding frame size of 20 mm.

## High-Torque 2-Phase Stepper Motors

# PKP Series

## Standard Type and High-Resolution Type with Electromagnetic Brake

These products have built-in power off activated electromagnetic brakes. When power is accidentally cut off due to a blackout or other unexpected events, the electromagnetic brake holds the load in position to prevent it from dropping or moving. Also, when the motor is at standstill, it is held by the electromagnetic brake, and it is possible to suppress the heat generated from the motor by turning off the motor current.



Power Off Activated Type with Electromagnetic Brake

Position Holding when Power Supply is Off or during a Blackout

### Product Number Code

**PKP 2 4 3 M D 15 M - L**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①	Series	<b>PKP: PKP Series</b>
②	<b>2:</b> 2-Phase	
③	Motor Frame Size	<b>3:</b> 35 mm <b>4:</b> 42 mm <b>6:</b> 56.4 mm
④	Motor Case Length	
⑤	Motor Type	Blank: Standard Type <b>M:</b> High-Resolution Type
⑥	Number of Lead Wires	<b>D:</b> 4 <b>U:</b> 6
⑦	Motor Winding Specification	
⑧	Motor Shaft Configuration	<b>M:</b> Electromagnetic Brake Type
⑨	Connection Cable	

### Product Line

#### Standard Type with Electromagnetic Brake

##### ◇ Bipolar (4 lead wires)

##### ◇ Unipolar (6 lead wires)

Frame Size	Product Name	Frame Size	Product Name
35 mm	<b>PKP233D15M-L</b>	35 mm	<b>PKP233U12M-L</b>
	<b>PKP235D15M-L</b>		<b>PKP235U12M-L</b>
42 mm	<b>PKP243D15M-L</b>	42 mm	<b>PKP243U09M-L</b>
	<b>PKP244D15M-L</b>		<b>PKP244U12M-L</b>
	<b>PKP245D15M-L</b>		<b>PKP245U12M-L</b>
	<b>PKP246D15M-L</b>		<b>PKP246U12M-L</b>
56.4 mm	<b>PKP264D28M-L</b>	56.4 mm	<b>PKP264U20M-L</b>
	<b>PKP266D28M-L</b>		<b>PKP266U20M-L</b>
	<b>PKP268D28M-L</b>		<b>PKP268U20M-L</b>

#### High-Resolution Type with Electromagnetic Brake

##### ◇ Bipolar (4 lead wires)

##### ◇ Unipolar (6 lead wires)

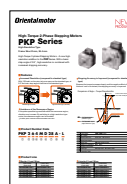
Frame Size	Product Name	Frame Size	Product Name
42 mm	<b>PKP243MD15M-L</b>	42 mm	<b>PKP243MU09M-L</b>
	<b>PKP244MD15M-L</b>		<b>PKP244MU12M-L</b>
56.4 mm	<b>PKP264MD28M-L</b>	56.4 mm	<b>PKP264MU20M-L</b>
	<b>PKP266MD28M-L</b>		<b>PKP266MU20M-L</b>
	<b>PKP268MD28M-L</b>		<b>PKP268MU20M-L</b>

Products include the following:  
Motor, Connection Cable, Surge Suppressor, Operating Manual

### PKP Series Lineup

Motor Product Line (Basic Step Angle)	Frame Size				
	20 mm	28 mm	35 mm	42 mm	56.4 mm /60 mm
Standard Type (1.8°)	○	○	○	○	○
	○	—	○	○	○
Equipped with Encoder	—	—	○	○	○
Electromagnetic Brake Type	—	—	<b>NEW</b>	<b>NEW</b>	<b>NEW</b>
High-Resolution Type (0.9°)	—	—	—	○	○
	—	—	—	○	○
Equipped with Encoder	—	—	—	○	○
Electromagnetic Brake Type	—	—	—	<b>NEW</b>	<b>NEW</b>
<b>SH</b> Geared Type (0.5°~0.05°)	—	○	—	○	○

● Catalogues are available featuring other products in the **PKP** Series that were not introduced here. For details, check the website or contact the customer support centre.  
<http://www.orientalmotor.eu>



High-Resolution Type



Standard/  
High-Resolution Type  
Equipped with Encoder