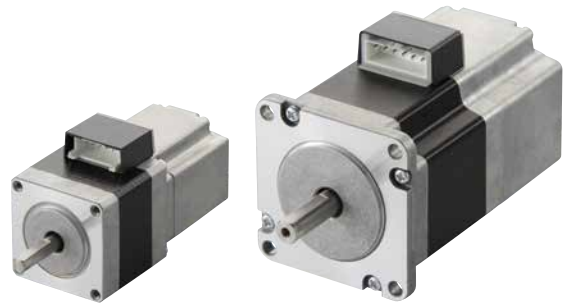


## High-Torque 2-Phase Stepper Motors

# PKP Series

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

These products have built-in power off activated electro-magnetic 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

##### ◇ Unipolar (6 lead wires)

Frame Size	Product Name
35 mm	<b>PKP233U12M-L</b> <b>PKP235U12M-L</b>
42 mm	<b>PKP243U09M-L</b> <b>PKP244U12M-L</b> <b>PKP245U12M-L</b> <b>PKP246U12M-L</b>
56.4 mm	<b>PKP264U20M-L</b> <b>PKP266U20M-L</b> <b>PKP268U20M-L</b>

##### ◇ Bipolar (4 lead wires)

Frame Size	Product Name
35 mm	<b>PKP233D15M-L</b> <b>PKP235D15M-L</b>
42 mm	<b>PKP243D15M-L</b> <b>PKP244D15M-L</b> <b>PKP245D15M-L</b> <b>PKP246D15M-L</b>
56.4 mm	<b>PKP264D28M-L</b> <b>PKP266D28M-L</b> <b>PKP268D28M-L</b>

#### High-Resolution Type with Electromagnetic Brake

##### ◇ Unipolar (6 lead wires)

Frame Size	Product Name
42 mm	<b>PKP243MU09M-L</b> <b>PKP244MU12M-L</b>
56.4 mm	<b>PKP264MU20M-L</b> <b>PKP266MU20M-L</b> <b>PKP268MU20M-L</b>

##### ◇ Bipolar (4 lead wires)

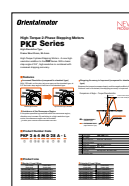
Frame Size	Product Name
42 mm	<b>PKP243MD15M-L</b> <b>PKP244MD15M-L</b>
56.4 mm	<b>PKP264MD28M-L</b> <b>PKP266MD28M-L</b> <b>PKP268MD28M-L</b>

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

# Standard Type with Electromagnetic Brake

## Frame Size 35 mm (Bipolar 4 lead wires)

### Specifications

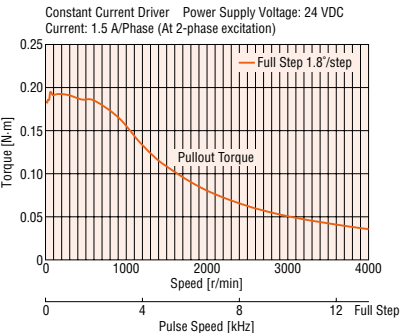
Product Name	Max. Holding Torque N·m	Rotor Inertia J: kg·m <sup>2</sup>	Rated Current A/Phase	Voltage V	Winding Resistance Ω/Phase	Basic Step Angle	Electromagnetic Brake Static Friction Torque N·m
PKP233D15M-L	0.2	$36 \times 10^{-7}$	1.5	2.43	1.62	1.8°	0.3
PKP235D15M-L	0.37	$62 \times 10^{-7}$		3.6	2.4		

Electromagnetic brake part specifications → Page 12

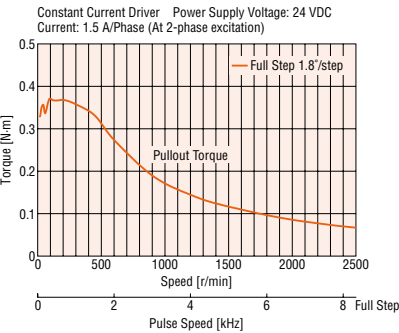
● A connection cable (0.6 m) is included in the product.

### Speed – Torque Characteristics fs: Max. starting frequency

PKP233D15M-L



PKP235D15M-L



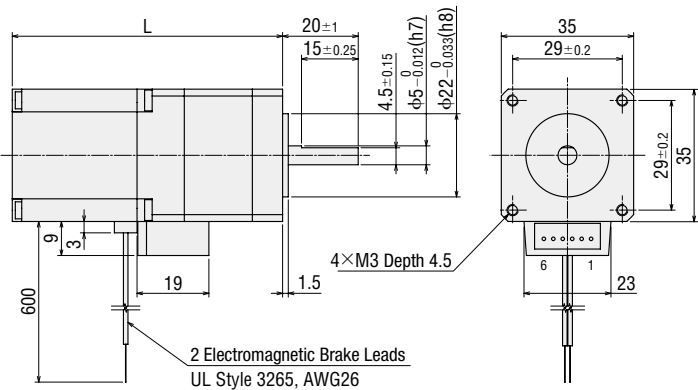
#### Note

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C max.

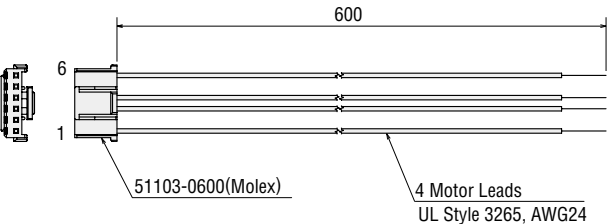
### Dimensions (Unit = mm)

Product Name	Motor Product Name	L	Mass kg	CAD
PKP233D15M-L	PKP233D15M	71	0.285	B1134
PKP235D15M-L	PKP235D15M	86	0.39	B1135

● Applicable Connector (Molex)  
Connector Housing: 51103-0600  
Contact: 50351-8100  
Crimp Tool: 57295-5000



● Included  
Connection Cable  
Product Name: **LC2B06B**



# Standard Type with Electromagnetic Brake

## Frame Size 35 mm (Unipolar 6 lead wires)

### Specifications

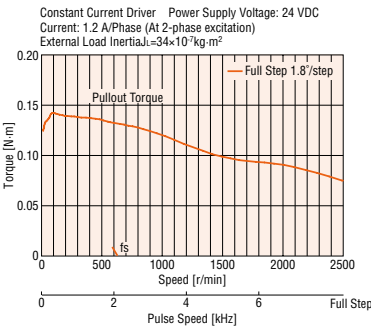
Product Name	Max. Holding Torque N·m	Rotor Inertia J: kg·m <sup>2</sup>	Rated Current A-Phase	Voltage V	Winding Resistance Ω/Phase	Basic Step Angle	Electromagnetic Brake Static Friction Torque N·m
PKP233U12M-L	0.16	$36 \times 10^{-7}$	1.2	3.24	2.7	1.8°	0.3
PKP235U12M-L	0.3	$62 \times 10^{-7}$		4.08	3.4		

Electromagnetic brake part specifications → Page 12

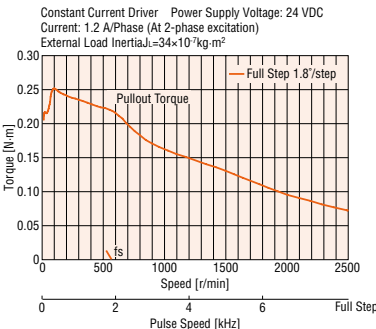
● A connection cable (0.6 m) is included in the product.

### Speed – Torque Characteristics fs: Max. starting frequency

PKP233U12M-L



PKP235U12M-L



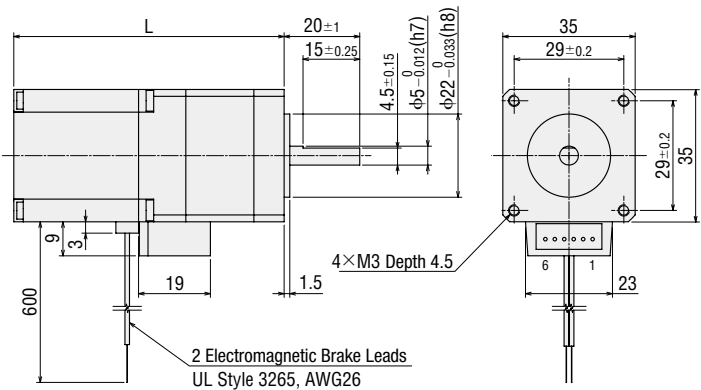
#### Note

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C max.

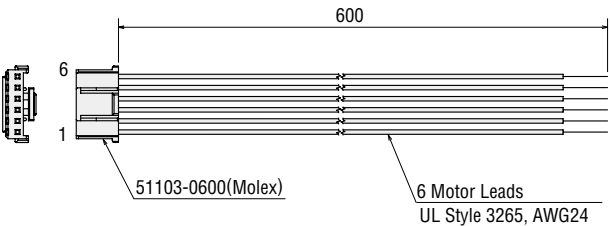
### Dimensions (Unit = mm)

Product Name	Motor Product Name	L	Mass kg	CAD
PKP233U12M-L	PKP233U12M	71	0.285	B1134
PKP235U12M-L	PKP235U12M	86	0.39	B1135

● Applicable Connector (Molex)  
Connector Housing: 51103-0600  
Contact: 50351-8100  
Crimp Tool: 57295-5000



● Included  
Connection Cable  
Product Name: **LC2U06B**



# Standard Type with Electromagnetic Brake

## Frame Size 42 mm (Bipolar 4 lead wires)

### Specifications

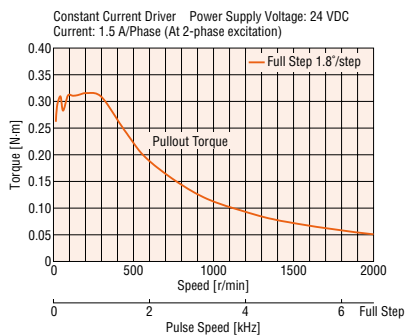
Product Name	Max. Holding Torque N·m	Rotor Inertia J: kg·m <sup>2</sup>	Rated Current A-Phase	Voltage V	Winding Resistance Ω/Phase	Basic Step Angle	Electromagnetic Brake Static Friction Torque N·m
PKP243D15M-L	0.35	$48 \times 10^{-7}$	1.5	2.85	1.9	1.8°	0.3
PKP244D15M-L	0.48	$69 \times 10^{-7}$		3.9	2.6		
PKP245D15M-L	0.58	$95 \times 10^{-7}$		3.6	2.4		
PKP246D15M-L	0.93	$126 \times 10^{-7}$		5.8	3.87		

Electromagnetic brake part specifications → Page 12

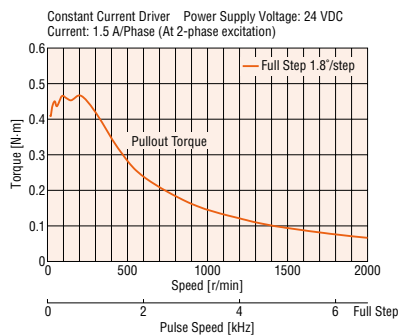
● A connection cable (0.6 m) is included in the product.

### Speed – Torque Characteristics $f_s$ : Max. starting frequency

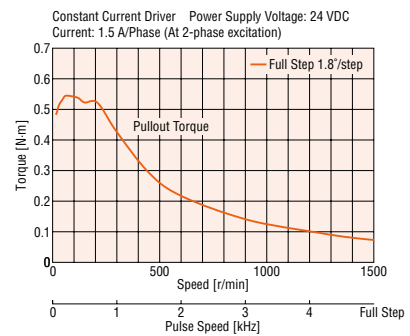
#### PKP243D15M-L



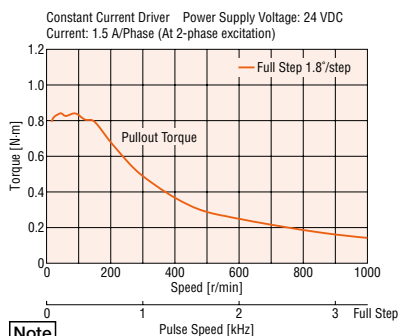
#### PKP244D15M-L



#### PKP245D15M-L



#### PKP246D15M-L



#### Note

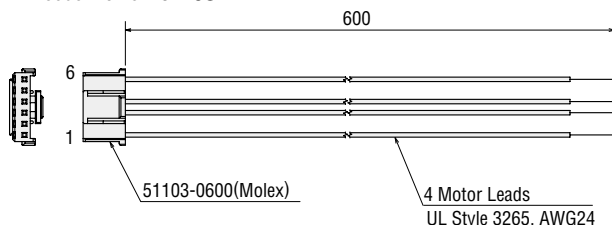
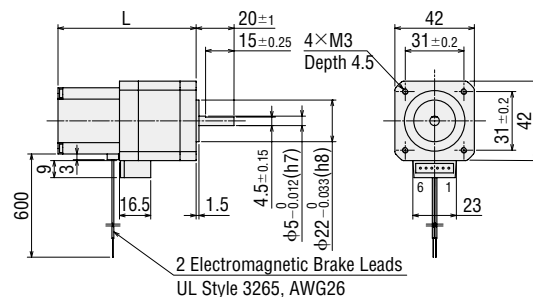
● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C max.

### Dimensions (Unit = mm)

Product Name	Motor Product Name	L	Mass kg	CAD
PKP243D15M-L	PKP243D15M	67	0.36	B1136
PKP244D15M-L	PKP244D15M	73	0.41	B1137
PKP245D15M-L	PKP245D15M	81	0.5	B1138
PKP246D15M-L	PKP246D15M	93	0.61	B1139

● Applicable Connector (Molex)  
Connector Housing: 51103-0600  
Contact: 50351-8100  
Crimp Tool: 57295-5000

● Included  
Connection Cable  
Product Name: **LC2B06B**



# Standard Type with Electromagnetic Brake

## Frame Size 42 mm (Unipolar 6 lead wires)

### Specifications

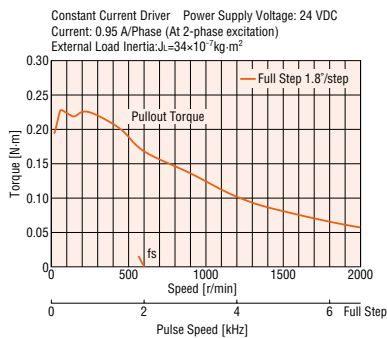
Product Name	Max. Holding Torque N·m	Rotor Inertia J: kg·m <sup>2</sup>	Rated Current A-Phase	Voltage V	Winding Resistance Ω/Phase	Basic Step Angle	Electromagnetic Brake Static Friction Torque N·m
<b>PKP243U09M-L</b>	0.25	$48 \times 10^{-7}$	0.95	4.47	4.7	1.8°	0.3
<b>PKP244U12M-L</b>	0.39	$69 \times 10^{-7}$	1.2	4.8	4		
<b>PKP245U12M-L</b>	0.45	$95 \times 10^{-7}$		4.56	3.8		
<b>PKP246U12M-L</b>	0.75	$126 \times 10^{-7}$		7.2	6		

Electromagnetic brake part specifications → Page 12

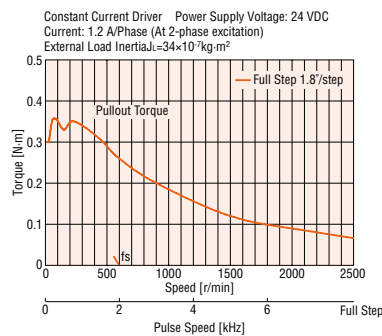
● A connection cable (0.6 m) is included in the product.

### Speed – Torque Characteristics fs: Max. starting frequency

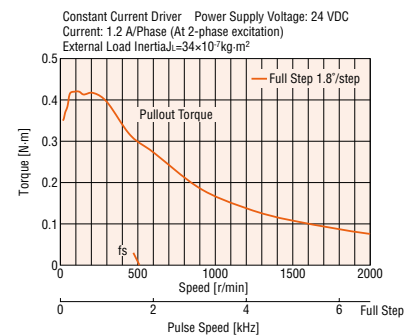
#### PKP243U09M-L



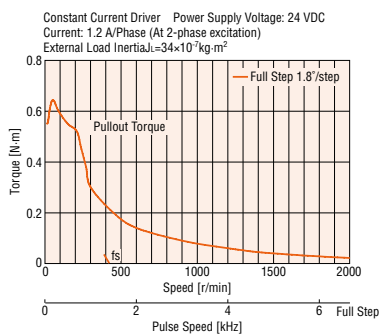
#### PKP244U12M-L



#### PKP245U12M-L



#### PKP246U12M-L



#### Note

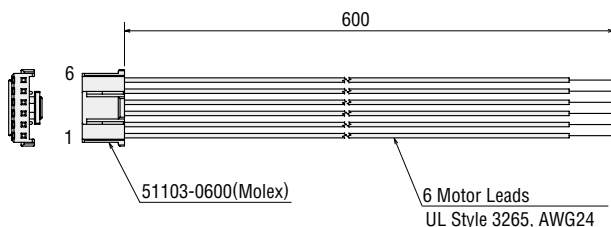
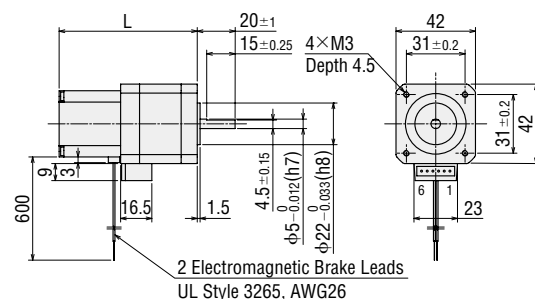
● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C max.

### Dimensions (Unit = mm)

Product Name	Motor Product Name	L	Mass kg	CAD
<b>PKP243U09M-L</b>	PKP243U09M	67	0.36	B1136
<b>PKP244U12M-L</b>	PKP244U12M	73	0.41	B1137
<b>PKP245U12M-L</b>	PKP245U12M	81	0.5	B1138
<b>PKP246U12M-L</b>	PKP246U12M	93	0.61	B1139

● Applicable Connector (Molex)  
Connector Housing: 51103-0600  
Contact: 50351-8100  
Crimp Tool: 57295-5000

● Included  
Connection Cable  
Product Name: **LC2U06B**



# Standard Type with Electromagnetic Brake

## Frame Size 56.4 mm (Bipolar 4 lead wires)

### Specifications

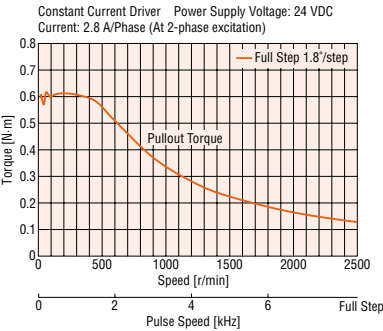
Product Name	Max. Holding Torque N·m	Rotor Inertia J: kg·m <sup>2</sup>	Rated Current A-Phase	Voltage V	Winding Resistance Ω/Phase	Basic Step Angle	Electromagnetic Brake Static Friction Torque N·m
PKP264D28M-L	0.6	$270 \times 10^{-7}$	2.8	2	0.73	1.8°	1.5
PKP266D28M-L	1.4	$440 \times 10^{-7}$		2.8	1		
PKP268D28M-L	2.3	$640 \times 10^{-7}$		3.4	1.23		

Electromagnetic brake part specifications → Page 12

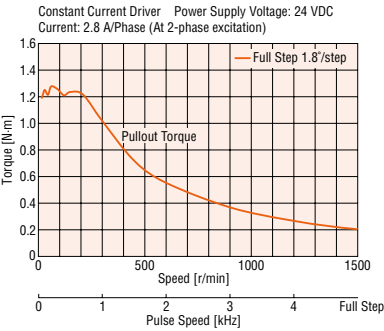
● A connection cable (0.6 m) is included in the product.

### Speed – Torque Characteristics fs: Max. starting frequency

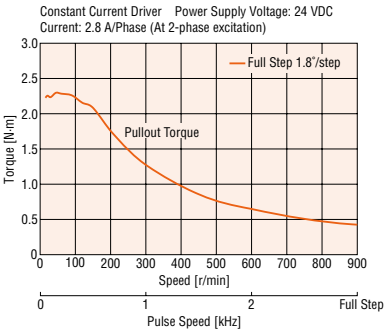
PKP264D28M-L



PKP266D28M-L



PKP268D28M-L



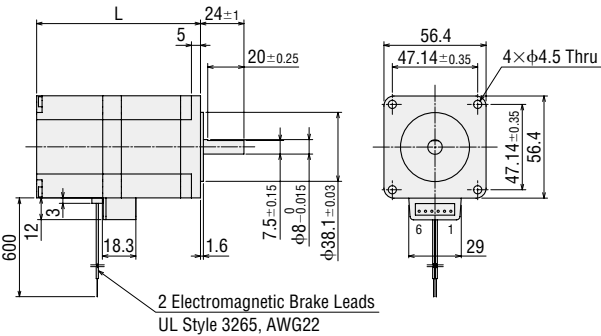
#### Note

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C max.

### Dimensions (Unit = mm)

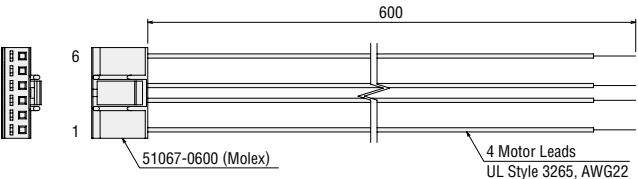
Product Name	Motor Product Name	L	Mass kg	CAD
PKP264D28M-L	PKP264D28M	75.5	0.76	B1140
PKP266D28M-L	PKP266D28M	90.5	1.03	B1141
PKP268D28M-L	PKP268D28M	112.5	1.4	B1142

● Applicable Connector (Molex)  
Connector Housing: 51067-0600  
Contact: 50217-9101  
Crimp Tool: 57189-5000  
57190-5000



#### Included

Connection Cable  
Product Name: LC2B06C



# Standard Type with Electromagnetic Brake

## Frame Size 56.4 mm (Unipolar 6 lead wires)

### Specifications

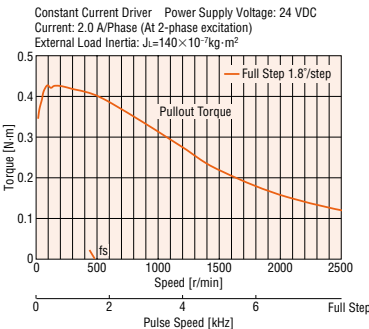
Product Name	Max. Holding Torque N·m	Rotor Inertia J: kg·m <sup>2</sup>	Rated Current A-Phase	Voltage V	Winding Resistance Ω/Phase	Basic Step Angle	Electromagnetic Brake Static Friction Torque N·m
PKP264U20M-L	0.51	$270 \times 10^{-7}$	2	2.9	1.45	1.8°	1.5
PKP266U20M-L	1.1	$440 \times 10^{-7}$		4	2		
PKP268U20M-L	1.75	$640 \times 10^{-7}$		4.9	2.45		

Electromagnetic brake part specifications → Page 12

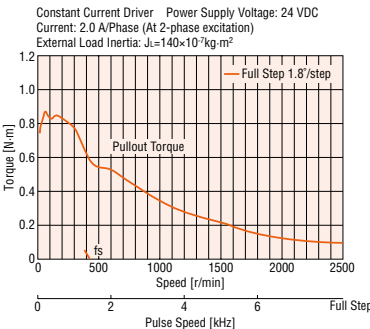
● A connection cable (0.6 m) is included in the product.

### Speed – Torque Characteristics fs: Max. starting frequency

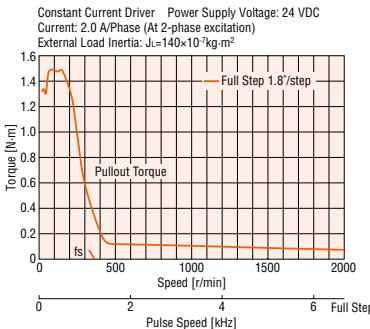
PKP264U20M-L



PKP266U20M-L



PKP268U20M-L



#### Note

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C max.

### Dimensions (Unit = mm)

Product Name	Motor Product Name	L	Mass kg	CAD
PKP264U20M-L	PKP264U20M	75.5	0.76	B1140
PKP266U20M-L	PKP266U20M	90.5	1.03	B1141
PKP268U20M-L	PKP268U20M	112.5	1.4	B1142

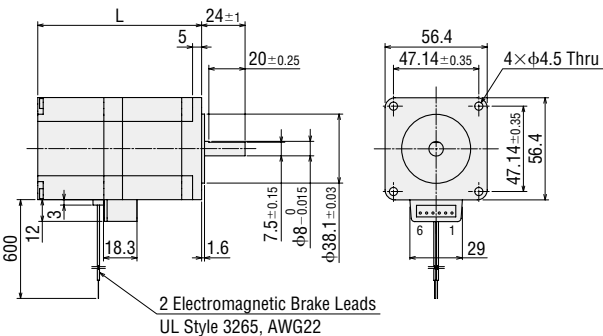
● Applicable Connector (Molex)

Connector Housing: 51067-0600

Contact: 50217-9101

Crimp Tool: 57189-5000

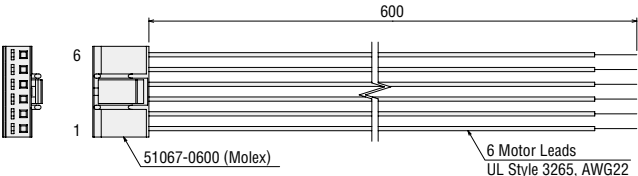
57190-5000



● Included

Connection Cable

Product Name: **LC2U06C**



# High-Resolution Type with Electromagnetic Brake

## Frame Size 42 mm (Bipolar 4 lead wires)

### Specifications

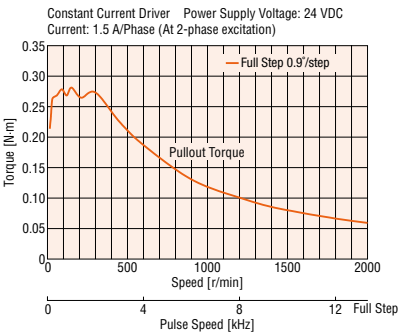
Product Name	Max. Holding Torque N·m	Rotor Inertia J: kg·m <sup>2</sup>	Rated Current A-Phase	Voltage V	Winding Resistance Ω/Phase	Basic Step Angle	Electromagnetic Brake Static Friction Torque N·m
PKP243MD15M-L	0.30	$48 \times 10^{-7}$	1.5	2.85	1.9	0.9°	0.3
PKP244MD15M-L	0.42	$69 \times 10^{-7}$		3.9	2.6		

Electromagnetic brake part specifications → Page 12

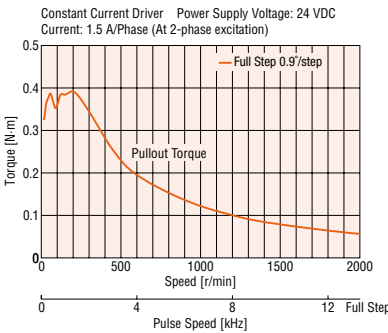
● A connection cable (0.6 m) is included in the product.

### Speed – Torque Characteristics fs: Max. starting frequency

#### PKP243MD15M-L



#### PKP244MD15M-L



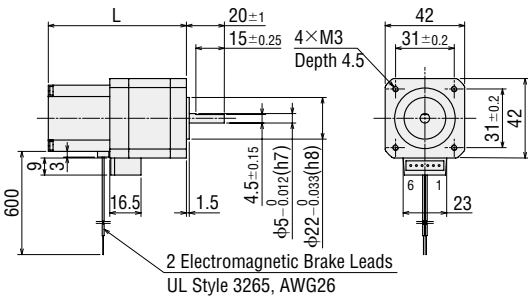
#### Note

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C max.

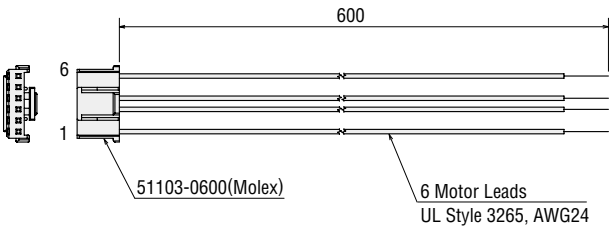
### Dimensions (Unit = mm)

Product Name	Motor Product Name	L	Mass kg	CAD
PKP243MD15M-L	PKP243MD15M	67	0.36	B1136
PKP244MD15M-L	PKP244MD15M	73	0.41	B1137

● Applicable Connector (Molex)  
Connector Housing: 51103-0600  
Contact: 50351-8100  
Crimp Tool: 57295-5000



● Included  
Connection Cable  
Product Name: **LC2B06B**





# High-Resolution Type with Electromagnetic Brake

## Frame Size 42 mm (Unipolar 6 lead wires)

### Specifications

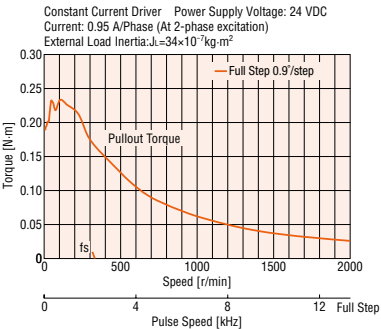
Product Name	Max. Holding Torque N·m	Rotor Inertia J: kg·m <sup>2</sup>	Rated Current A-Phase	Voltage V	Winding Resistance Ω/Phase	Basic Step Angle	Electromagnetic Brake Static Friction Torque N·m
PKP243MU09M-L	0.25	$48 \times 10^{-7}$	0.95	4.47	4.7	0.9°	0.3
PKP244MU12M-L	0.35	$69 \times 10^{-7}$	1.2	4.8	4		

Electromagnetic brake part specifications → Page 12

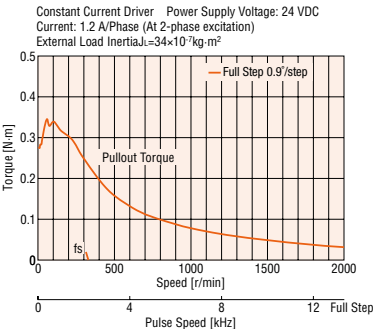
● A connection cable (0.6 m) is included in the product.

### Speed – Torque Characteristics fs: Max. starting frequency

PKP243MU09M-L



PKP244MU12M-L



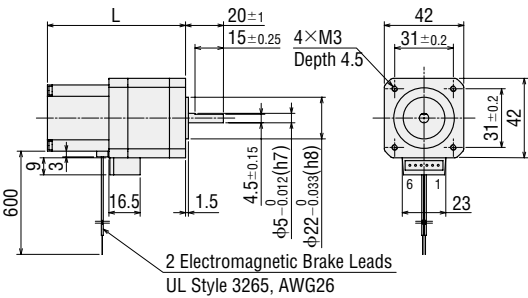
**Note**

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C max.

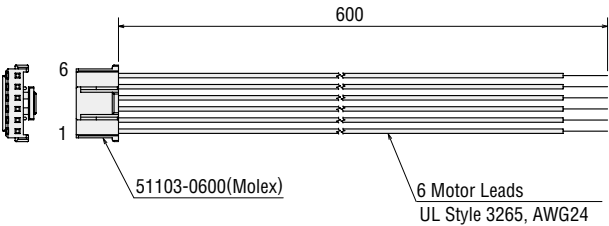
### Dimensions (Unit = mm)

Product Name	Motor Product Name	L	Mass kg	CAD
PKP243MU09M-L	PKP243MU09M	67	0.36	B1136
PKP244MU12M-L	PKP244MU12M	73	0.41	B1137

● Applicable Connector (Molex)  
Connector Housing: 51103-0600  
Contact: 50351-8100  
Crimp Tool: 57295-5000



● Included  
Connection Cable  
Product Name: **LC2U06B**



# High-Resolution Type with Electromagnetic Brake

## Frame Size 56.4 mm (Bipolar 4 lead wires)

### Specifications

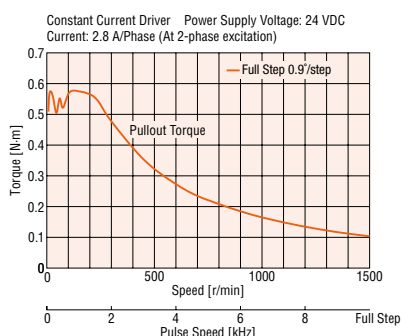
Product Name	Max. Holding Torque N·m	Rotor Inertia J: kg·m <sup>2</sup>	Rated Current A-Phase	Voltage V	Winding Resistance Ω/Phase	Basic Step Angle	Electromagnetic Brake Static Friction Torque N·m
PKP264MD28M-L	0.6	$270 \times 10^{-7}$	2.8	2	0.73	0.9°	1.5
PKP266MD28M-L	1.32	$440 \times 10^{-7}$		2.8	1		
PKP268MD28M-L	2.23	$640 \times 10^{-7}$		3.4	1.23		

Electromagnetic brake part specifications → Page 12

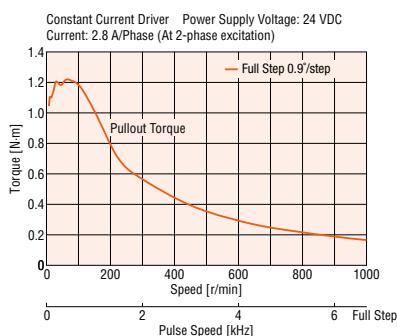
● A connection cable (0.6 m) is included in the product.

### Speed – Torque Characteristics fs: Max. starting frequency

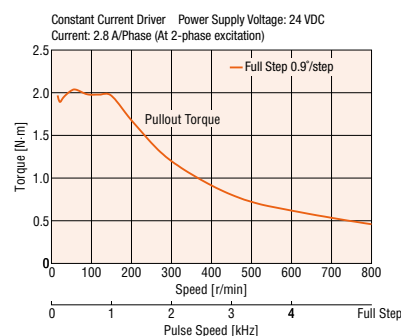
**PKP264MD28M-L**



**PKP266MD28M-L**



**PKP268MD28M-L**



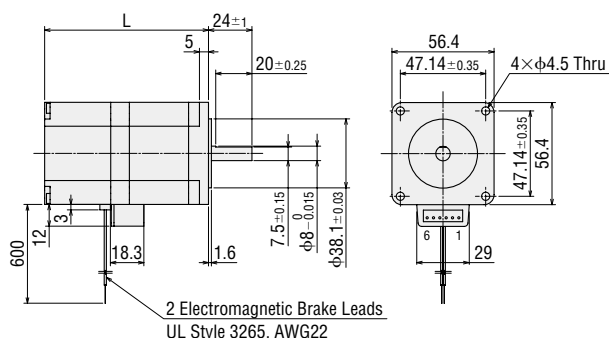
#### Note

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C max.

### Dimensions (Unit = mm)

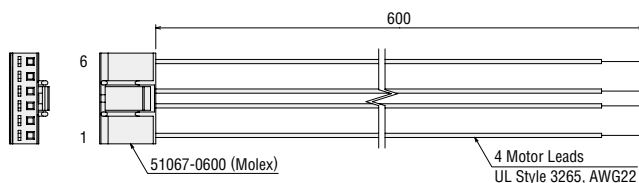
Product Name	Motor Product Name	L	Mass kg	CAD
PKP264MD28M-L	PKP264MD28M	75.5	0.76	B1140
PKP266MD28M-L	PKP266MD28M	90.5	1.03	B1141
PKP268MD28M-L	PKP268MD28M	112.5	1.4	B1142

● Applicable Connector (Molex)  
Connector Housing: 51067-0600  
Contact: 50217-9101  
Crimp Tool: 57189-5000  
57190-5000



● Included

Connection Cable  
Product Name: **LC2B06C**



# High-Resolution Type with Electromagnetic Brake

## Frame Size 56.4 mm (Unipolar 6 lead wires)

### Specifications

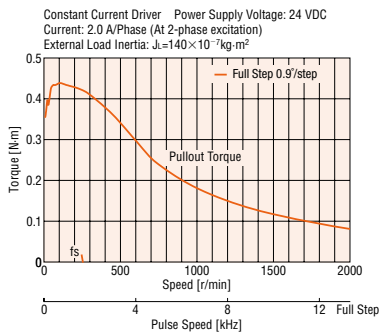
Product Name	Max. Holding Torque N·m	Rotor Inertia J: kg·m <sup>2</sup>	Rated Current A-Phase	Voltage V	Winding Resistance Ω/Phase	Basic Step Angle	Electromagnetic Brake Static Friction Torque N·m
<b>PKP264MU20M-L</b>	0.51	$270 \times 10^{-7}$	2	2.9	1.45	0.9°	1.5
<b>PKP266MU20M-L</b>	1.1	$440 \times 10^{-7}$		4	2		
<b>PKP268MU20M-L</b>	1.75	$640 \times 10^{-7}$		4.9	2.45		

Electromagnetic brake part specifications → Page 12

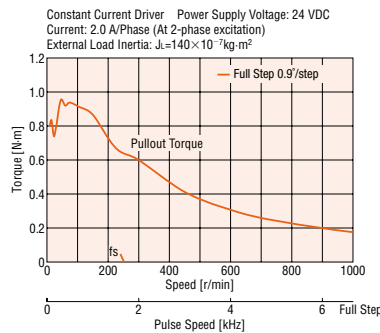
● A connection cable (0.6 m) is included in the product.

### Speed – Torque Characteristics fs: Max. starting frequency

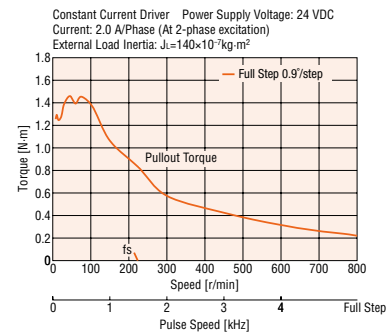
**PKP264MU20M-L**



**PKP266MU20M-L**



**PKP268MU20M-L**



#### Note

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C max.

### Dimensions (Unit = mm)

Product Name	Motor Product Name	L	Mass kg	CAD
<b>PKP264MU20M-L</b>	PKP264MU20M	75.5	0.76	B1140
<b>PKP266MU20M-L</b>	PKP266MU20M	90.5	1.03	B1141
<b>PKP268MU20M-L</b>	PKP268MU20M	112.5	1.4	B1142

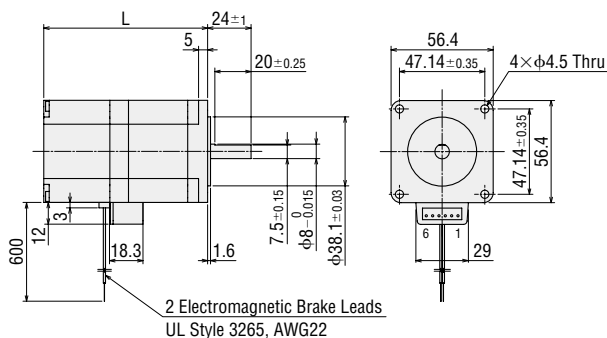
● Applicable Connector (Molex)

Connector Housing: 51067-0600

Contact: 50217-9101

Crimp Tool: 57189-5000

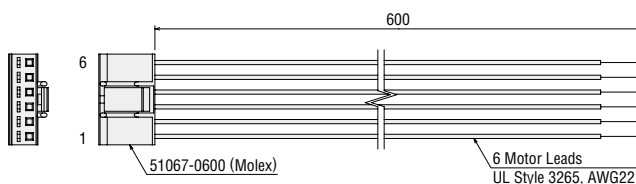
57190-5000



● Included

Connection Cable

Product Name: **LC2U06C**



## General Specifications

Specifications		Motor
Heat-Resistant Class		130 (B)
Insulation Resistance		The measured value is 100 MΩ or more when a 500 VDC megger is applied in the following places under normal ambient temperature and humidity: -Between the case and the motor winding -Between the case and the electromagnetic brake winding
Dielectric Strength		No abnormality is found when 50 Hz or 60 Hz and 1.0 kV is applied for 1 minute in the following places under normal ambient temperature and humidity: (0.5 kV for models with a frame size of 42 mm or less) -Between the case and the motor winding -Between the case and the electromagnetic brake winding
Operating Environment (In operation)	Ambient Temperature	-10~+50°C (non-freezing)
	Ambient Humidity	85% max. (non-condensing)
	Atmosphere	No corrosive gases or dust. The product should not be exposed to water, oil or other liquids.
Temperature Rise		Winding temperature rise is 80°C max. (measured by the resistance change method) at the rated current and 2-phases excitation, and at standstill. The following motors are with aluminum heat radiation plate. <b>PKP23</b> □: 115×115×5 mm <b>PKP24</b> □: 175×175×5 mm <b>PKP26</b> □: 250×250×10 mm
Stop Position Accuracy*1		±3 arc minutes (±0.05°)
Shaft Runout		0.05 T.I.R. (mm)*4
Radial Play*2		0.025 mm max. (Load 5 N)
Axial Play*3		0.075 mm max. (Load 10N)
Concentricity of Installation Pilot to the Shaft		0.075 T.I.R. (mm)*4
Perpendicularity of Installation Surface to the Shaft		0.075 T.I.R. (mm)*4

\*1 This value is for full step under no load. (The value changes with the size of the load.)

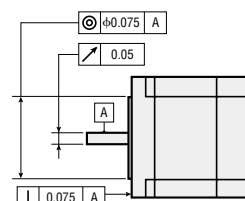
\*2 Radial Play: Displacement in shaft position in the radial direction when a 5 N load is applied in the vertical direction to the tip of the motor shaft.

\*3 Axial Play: Displacement in shaft position in the axial direction when a 10 N load is applied to the motor shaft in the axial direction.

\*4 T. I. R. (Total Indicator Reading): The total dial gauge reading when the measurement section is rotated once around the reference axis centre.

### Note

● Do not measure insulation resistance or perform the dielectric strength test while the motor and driver are connected.

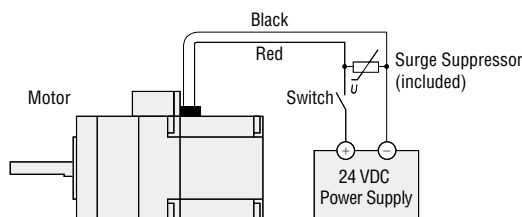


## Electromagnetic Brake Part Specifications

Product Name	PKP23 · PKP24		PKP26
Type	Power Off Activated Type		
Power Supply Voltage	24 VDC ± 5%		
Power Supply Current	A	0.07	0.23
Static Friction Torque	N·m	0.3	1.5
Brake Operating Time	ms	20	
Brake Release Time	ms	50	
Time Rating	Continuous		

● For product names, product name-identifying characters are used.

## Connecting the Electromagnetic Brake



## Permissible Radial Load and Permissible Axial Load

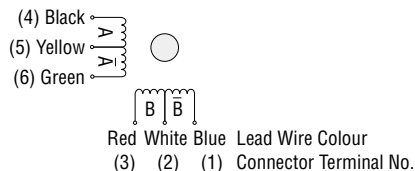
Unit = N

Type	Motor Frame Size	Product Name	Permissible Radial Load					Permissible Axial Load
			Distance from Shaft End mm					
			0	5	10	15	20	
Standard Type	35 mm	<b>PKP233, PKP235</b>	20	25	34	52	—	Motor's self-weight or less
High-Resolution Type	42 mm	<b>PKP243, PKP244, PKP245, PKP246</b>	20	25	34	52	—	
	56.4 mm	<b>PKP264, PKP266, PKP268</b>	61	73	90	110	160	

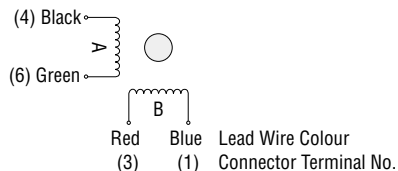
● For product names, product name-identifying characters are used.

## Inner Wiring Diagram of Motors

### Unipolar 6 Lead Wires



### Bipolar 4 Lead Wires



## Accessories

Accessories such as installation brackets and couplings are available.  
For details, please see the website.

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