Oriental motor

NEW PRODUCTS

High-Torque 2-Phase Stepper Motors

PKP Series
with PLE Gearhead

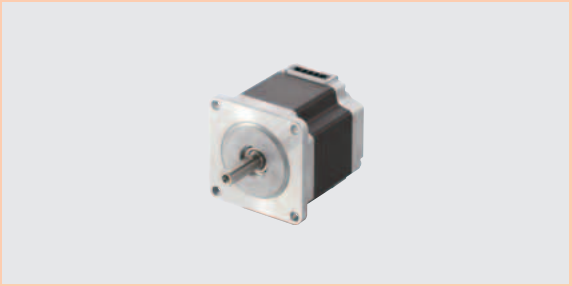
- High-Torque Combination Bipolar 2-phase Stepper Motors with Neugart Planetary Gearheads
- Short Delivery Time

NEUGART Planetary Gearheads

2-Phase Stepper Motors

PKP Series

● For detailed information about regulations and standards, please refer to the Oriental Motor website.



These products are high-torque 2-phase stepper motors. A wide variety of products are available to meet your design specifications.

- Standard Type with a Resolution of 200 Steps per Revolution (Basic step angle: 1.8°/step)
- Bipolar (4 lead wires)
- Encoder Types are Available
- Many Motor Current Models are Available

See Full Product Details Online
www.orientalmotor.com

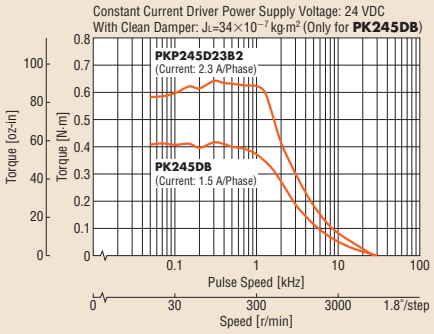
● Manual ● Specifications ● Dimensions
● CAD ● Characteristics ● Connection and Operation

Features

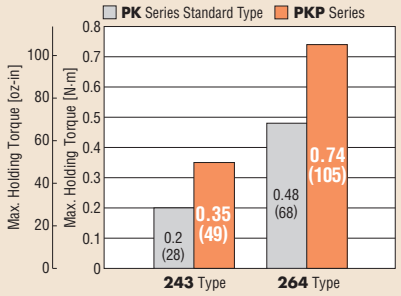
Increased Torque over the Entire Speed Range from Low to High

After revising the magnetic and structure design of the **PKP** Series, it produces much more torque than the standard **PK** Series motors of the same size. In addition, torque can be increased in the high-speed range by using high current motors.

Comparison of Speed – Torque Characteristics of the Same Size Motors



Comparison of Maximum Holding Torque

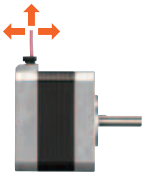


High current is possible due to the revised motor winding design and the highly efficient design of the drive circuit that can be combined. Increased torque over the entire speed range from low to high is achieved.

Compact and Flat Connector

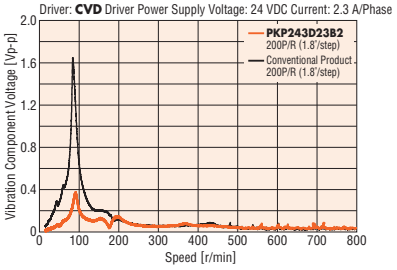
The **PKP** Series uses a compact and flat connector, which shortens the length of the connector's overhang. In addition, the degree of freedom for the cable outlet direction has been increased, because the outlet direction points upward.

● Because the connector is provided for some products only, refer to dimensions of each model for details.



Lower Vibration

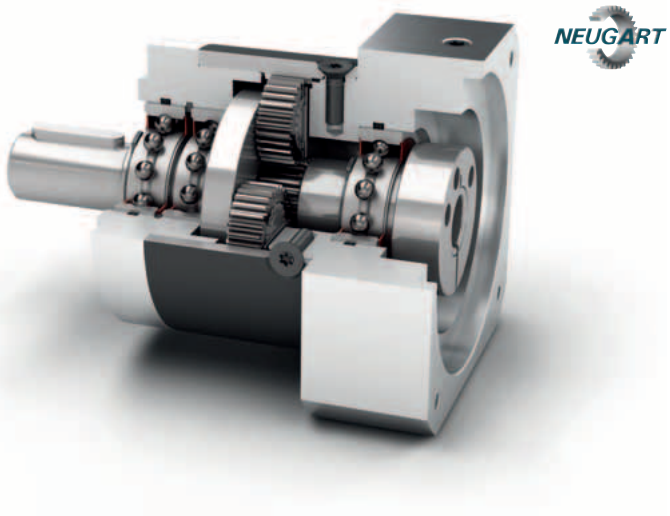
Revising the magnetic design has achieved lower vibration compared to conventional products.



Features of the **PLE** Planetary Gearhead

The **PLE** Series from Neugart is notably light, extremely powerful, yet suitable for complex production cycles due to its low-friction bearing design and optimized lubrication.

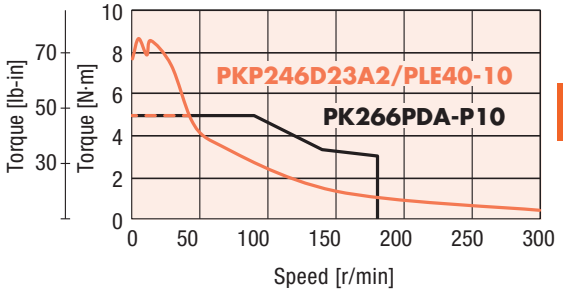
- **Light & Powerful**
  The **PLE** excels with its above-average weight to torque ratio, and it is 25% lighter than comparable conventional gearheads.
- **Efficient and Reliable**
  With the innovative design, low backlash with high output torque is achieved.
- **Low Heat Generation**
  Low-friction bearing design and optimized lubrication allows for continuous operation without sacrificing performance

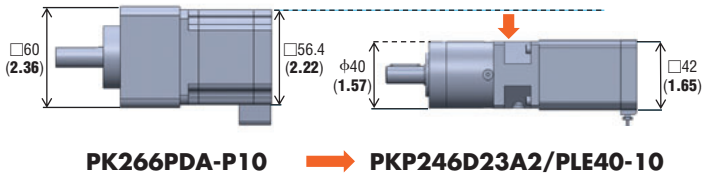


Downsizing is Possible!

Use a **PKP** Series motor with **PLE** gearhead in place of a standard motor from the **PK** series motor with **PL** gearhead with the equivalent torque in order to downsize motors.

●Comparison of Torque Characteristics of **PKP246D23A2-PLE40-10** and **PK266PDA-P10**





Product Line Equipped with Encoder

●**With Encoder**

(Provided for standard type)

Encoder Specifications ➜ Page 25

●Main Specifications

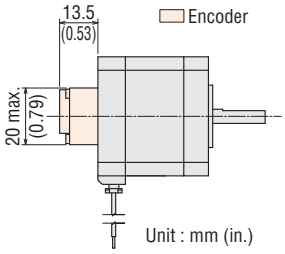
Type	Standard Type	High-Resolution Type
Resolution	200 P/R, 400 P/R	400 P/R
Output Signal	A Phase, B Phase, Z Phase (3ch)	

◇**Motor Position Detection is Possible**

Monitoring the current position and detecting positional errors is possible. For example, comparing the command position and current position enables you to check the normal operation of the motor.

◇**Equipped with a Compact Encoder**

●When frame size is 42 mm (1.65 in.)

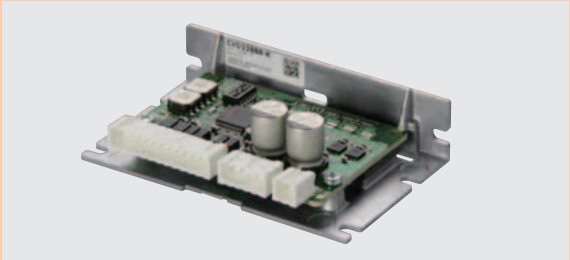


◇**High Reliability with Line Driver Output Circuit Type**

Noise resistance is improved by differential output, and the wiring distance can be longer than with the voltage output type.

Bipolar Driver for 2-Phase Stepper Motors

● For detailed information about regulations and standards, please refer to the Oriental Motor website.



● This is a DC power supply input driver for bipolar 2-phase stepper motors.
● Using this microstepping driver reduces vibration and noise.

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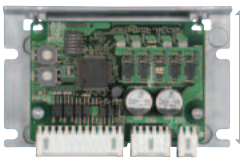
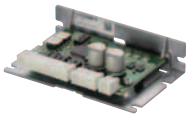
● Manual ● Specifications ● Dimensions
● CAD ● Characteristics ● Connection and Operation

Features and Types

● Bipolar Driver

Driver Type		External View	Introduction	Driver Installation Direction
● Bipolar Driver for 2-Phase Stepper Motors ● Driver for 5-Phase Stepper Motors  52.5 mm (2.07 in.) 24.5 mm (0.96 in.) 85 mm (3.35 in.) ・ Mass 20 g (0.71 oz.)～70 g (2.47 oz.) (The value differs according to the driver type.) ● The driver cannot be shared by both a 2-Phase stepper motors and 5-Phase stepper motors. Each must use its respective dedicated driver.	Right Angle Type with Installation Plate	The connector points outward. 	・ Compact and lightweight driver with full-time microstepping. ・ Using the smooth drive function reduces the vibration and noise more than conventional products. ・ The driver is equipped with a protective function that enables you to find driver errors early. ・ Run current can be easily set with the digital switch.	・ Horizontal installation ・ Vertical installation
	Without Installation Plate	The connector points upward. 		

● See back cover for details.

● Additional Product Line

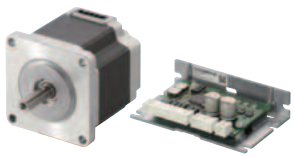
◇Bipolar CVD-S Type for 2-Phase Stepper Motors

This is a compact board mounting type driver.
• I/O Setting Type
• SPI communications Type
For details, please contact the nearest Oriental Motor sales office.

◇**CVK** Series **SC** Type Driver (Used with 5-phase Stepper Motors)

This driver allows the stepper motors to operate like a speed control motor. It can be operated easily by using the forward and reverse inputs only.

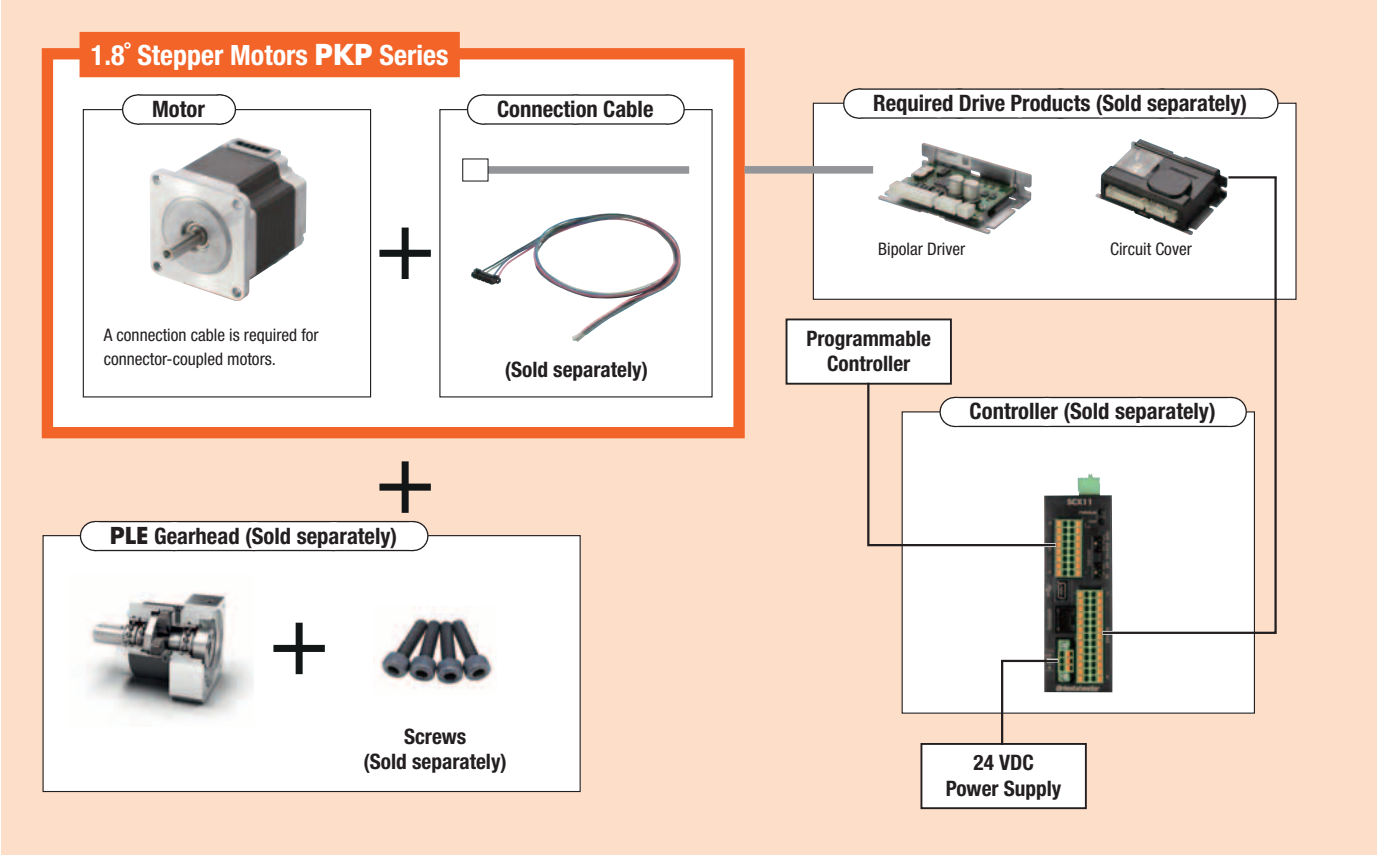
● No Pulse Generator Required
● Available for Setting in Two Speeds
● Compact and High-Torque
● Enhanced Repeatability of the Stop Position
● Possible to Hold the Load at Standstill
● 100% Duty cycle



For details, please contact the nearest Oriental Motor sales office or visit our website.

System Configuration

These accessories allow the 1.8° Stepper Motor **PKP** Series to be used for various operations.
An example of a system configuration with the **SCX11** controller is shown below.



●Example of System Configuration

1.8° Stepper Motors PKP Series				PLE Gearhead			
Motor		Connection Cable		Gearhead		Screws	
PKP264D28A2		LC2B06E		PLE60-10B		P00028	

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

Product Number

Motor

PKP Series

◇Standard Type

PKP 2 6 4 D 28 A A 2

① ② ③ ④ ⑥ ⑦ ⑧ ⑨ ⑩

①	Series Name	**PKP**: **PKP** Series
②	**2**: 2-Phase	
③	Motor Frame Size	**4**: 42 mm (1.65 in.) **6**: 56.4 mm (2.22 in.) **9**: 85 mm (3.35 in.)
④	Motor Case Length	
⑤	Motor Type	Blank: Standard Type
⑥	Number of Lead Wires	**D**: 4 Leads
⑦	Motor Winding Specifications	
⑧	Configuration	**A**: Single Shaft **B**: Double Shaft
⑨	Output Shaft Diameter	**A**: Imperial Blank: Metric
⑩	Reference Number	

◇Standard Type with Encoder

PKP 2 4 3 D 15 A 2 - R2F L

① ② ③ ④ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

①	Series Name	**PKP**: **PKP** Series
②	**2**: 2-Phase	
③	Motor Frame Size	**1**: 20 mm (0.79 in.) **2**: 28 mm (1.10 in.) **3**: 35 mm (1.38 in.) **4**: 42 mm (1.65 in.) **6**: 56.4 mm (2.22 in.)
④	Motor Case Length	
⑤	Motor Type	Blank: Standard Type
⑥	Number of Lead Wires	**D**: 4 Leads **U**: 5 or 6 Leads
⑦	Motor Winding Specifications	
⑧	Configuration	**A**: Single Shaft
⑨	Reference Number	
⑩	Encoder Resolution	**R2E**: 200 P/R **R2F**: 400 P/R
⑪	Encoder Output Circuit Type	**L**: Line Driver Output*

*A voltage output type of encoder output circuit is also available. For details, please contact your nearest Oriental Motor sales office.

PLE Gearhead

PLE 40 - 5 B

① ② ③ ④

①	Gear Type:	**PLE**: **PLE** Series
②	Gear Size:	**40**: 42 mm (1.65 in.), **60**: 56.4 mm (2.22 in.) **80**: 85 mm (3.35 in.)
③	Gear Ratio:	5:1, 10:1, 20:1, 40:1
④	Input Coupling:	D: **D** Inch, **B** Metric

Connection cable

◇Connection Cable for Motor

LC 2 B 06 A

① ② ③ ④ ⑤

①	Cables	**LC**: Connector Leads
②	**2**: 2-Phase	
③	Cable Type	**B**: Bipolar **U**: Unipolar
④	Cable Length	**06**: 0.6 m (2 ft.) **10**: 1 m (3.3 ft.)
⑤	Reference Number	

◇Connection Cable for Encoder

LC E 08 A - 006

① ② ③ ④ ⑤

①	Cables	**LC**: Connector Leads
②	Cable Type	**E**: Encoder
③	Applicable Models	**05**: Voltage Output **08**: Line Driver Output
④	Reference Number	
⑤	Cable Length	**006**: 0.6 m (2 ft.)

Screws

P000 27

① ②

①	Screw Set:	**PLE**: **PLE** Series
②	Screw Length	**27**: 42 mm (1.65 in.), **28**: 56.4 mm (2.22 in.) **29**: 85 mm (3.35 in.)

Product Line

A connector-coupled motor requires a connection cable.
Motors and connection cables must be ordered separately.

Motor

◇Standard Type, Standard Type with Encoder

•Bipolar

Product Name (Single Shaft)	Product Name (Double Shaft)
PKP243D15A2	**PKP243D15B2**
PKP243D23A2	**PKP243D23B2**
PKP244D08A2	**PKP244D08B2**
PKP244D15A2	**PKP244D15B2**
PKP244D23A2	**PKP244D23B2**
PKP245D08A2	**PKP245D08B2**
PKP245D15A2	**PKP245D15B2**
PKP245D23A2	**PKP245D23B2**
PKP246D15A2	**PKP246D15B2**
PKP246D23A2	**PKP246D23B2**
PKP264D14A2	**PKP264D14B2**
PKP264D28A2	**PKP264D28B2**
PKP264D42A2	**PKP264D42B2**
PKP266D14A2	**PKP266D14B2**
PKP266D28A2	**PKP266D28B2**
PKP266D42A2	**PKP266D42B2**
PKP268D14A2	**PKP268D14B2**
PKP268D28A2	**PKP268D28B2**
PKP268D42A2	**PKP268D42B2**
PKP296D45A	**PKP296D45B**
PKP296D63A	**PKP296D63B**
PKP299D45A	**PKP299D45B**
PKP299D63A	**PKP299D63B**
PKP2913D45A	**PKP2913D45B**
PKP2913D56A	**PKP2913D56B**

•Bipolar with Encoder

Product Name (Voltage)	Product Name (Line Driver)
PKP243D15A2-R2E	**PKP243D15A2-R2EL**
PKP243D15A2-R2F	**PKP243D15A2-R2FL**
PKP243D23A2-R2E	**PKP243D23A2-R2EL**
PKP243D23A2-R2F	**PKP243D23A2-R2FL**
PKP244D15A2-R2E	**PKP244D15A2-R2EL**
PKP244D15A2-R2F	**PKP244D15A2-R2FL**
PKP244D23A2-R2E	**PKP244D23A2-R2EL**
PKP244D23A2-R2F	**PKP244D23A2-R2FL**
PKP245D15A2-R2E	**PKP245D15A2-R2EL**
PKP245D15A2-R2F	**PKP245D15A2-R2FL**
PKP245D23A2-R2E	**PKP245D23A2-R2EL**
PKP245D23A2-R2F	**PKP245D23A2-R2FL**
PKP246D15A2-R2E	**PKP246D15A2-R2EL**
PKP246D15A2-R2F	**PKP246D15A2-R2FL**
PKP246D23A2-R2E	**PKP246D23A2-R2EL**
PKP246D23A2-R2F	**PKP246D23A2-R2FL**
PKP264D14A2-R2E	**PKP264D14A2-R2EL**
PKP264D14A2-R2F	**PKP264D14A2-R2FL**
PKP264D28A2-R2E	**PKP264D28A2-R2EL**
PKP264D28A2-R2F	**PKP264D28A2-R2FL**
PKP264D42A2-R2E	**PKP264D42A2-R2EL**
PKP264D42A2-R2F	**PKP264D42A2-R2FL**
PKP266D14A2-R2E	**PKP266D14A2-R2EL**
PKP266D14A2-R2F	**PKP266D14A2-R2FL**
PKP266D28A2-R2E	**PKP266D28A2-R2EL**
PKP266D28A2-R2F	**PKP266D28A2-R2FL**
PKP266D42A2-R2E	**PKP266D42A2-R2EL**
PKP266D42A2-R2F	**PKP266D42A2-R2FL**
PKP268D14A2-R2E	**PKP268D14A2-R2EL**
PKP268D14A2-R2F	**PKP268D14A2-R2FL**
PKP268D28A2-R2E	**PKP268D28A2-R2EL**
PKP268D28A2-R2F	**PKP268D28A2-R2FL**
PKP268D42A2-R2E	**PKP268D42A2-R2EL**
PKP268D42A2-R2F	**PKP268D42A2-R2FL**

✻All **PKP26**_type encoder motors come with 8 mm output shaft.
See drawings for details, page 18.

Connection Cable

◇Motor Cable (For bipolar)

Product Name	Length m (ft.)
LC2B06A	0.6 (2)
LC2B06B	0.6 (2)
LC2B06C	0.6 (2)
LC2B06E	0.6 (2)

◇Encoder Cable

Product Name	Length m (ft.)
LCE05A-006	0.6 (2)
LCE08A-006	0.6 (2)

PLE Gearhead

◇Metric (motor shaft)

Product Name
PLE40-5B
PLE40-10B
PLE40-20B
PLE40-40B
PLE60-5B
PLE60-10B
PLE60-20B
PLE60-40B
PLE80-5B
PLE80-10B
PLE80-20B
PLE80-40B

◇Inch (motor shaft)

Product Name
–
–
–
–
PLE60-5D
PLE60-10D
PLE60-20D
PLE60-40D
PLE80-5D
PLE80-10D
PLE80-20D
PLE80-40D

Screws

Product Name
P00027
P00028
P00029

Standard Type
Standard Type with Encoder

Frame Size 42 mm (1.65 in.) Bipolar 4 Lead Wires

Specifications

Product Name	Maximum Holding Torque N·m (oz-in)	Rotor Inertia J: kg·m² (oz-in²)	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP243D15□2	0.35 (49)	36×10^{-7} (0.197)	1.5	2.7	1.8	3.3	1.8°	**CVD215BR-K**
PKP243D23□2			2.3	1.8	0.78	1.4		**CVD223FBR-K**
PKP244D15□2	0.48 (68)	54×10^{-7} (0.3)	1.5	3.2	2.1	4.4		**CVD215BR-K**
PKP244D23□2			2.3	2.1	0.93	1.9		**CVD223FBR-K**
PKP245D15□2	0.66 (93)	73×10^{-7} (0.4)	1.5	3.3	2.2	5.3		**CVD215BR-K**
PKP245D23□2			2.3	2.3	1	2.2		**CVD223FBR-K**
PKP246D15□2	0.99 (140)	110×10^{-7} (0.6)	1.5	4.4	2.9	7.9		**CVD215BR-K**
PKP246D23□2			2.3	3.2	1.4	3.3		**CVD223FBR-K**
PKP243D15A2-R2□■	0.35 (49)	36×10^{-7} (0.2)	1.5	2.7	1.8	3.3		**CVD215BR-K**
PKP243D23A2-R2□■			2.3	1.8	0.78	1.4		**CVD223FBR-K**
PKP244D15A2-R2□■	0.48 (68)	54×10^{-7} (0.3)	1.5	3.2	2.1	4.4		**CVD215BR-K**
PKP244D23A2-R2□■			2.3	2.1	0.93	1.9		**CVD223FBR-K**
PKP245D15A2-R2□■	0.66 (93)	73×10^{-7} (0.4)	1.5	3.3	2.2	5.3		**CVD215BR-K**
PKP245D23A2-R2□■			2.3	2.3	1	2.2		**CVD223FBR-K**
PKP246D15A2-R2□■	0.99 (140)	110×10^{-7} (0.6)	1.5	4.4	2.9	7.9		**CVD215BR-K**
PKP246D23A2-R2□■			2.3	3.2	1.4	3.3		**CVD223FBR-K**

- The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).
  The box □ in the product name indicates the encoder resolution **E** (200 P/R) or **F** (400 P/R).
  The box ■ in the product name indicates the encoder output circuit type **L** (line driver output). The voltage output type will have no " ■ " in the product name.
- See page 25 for encoder specifications.

PLE40 Gearhead Specifications for Metric Motor Shaft

Gear Head Product Name	Base Motor	Gear Ratio	Holding Torque N·m (lb-in)	Basic Step Angle deg/step	Permissible Torque N·m (lb-in)	Maximum Torque N·m (lb-in)	Backlash arcmin	Speed Range 0～ (r/min)
PLE40-5B	**PKP243D15[][]**	5	1.57 (14)	0.36	✻	✻	15	500
PLE40-10B	**PKP243D15[][]**	10	3.15 (28)	0.18	✻	✻		250
PLE40-20B	**PKP243D15[][]**	20	6.3 (56)	0.09	✻	✻	19	125
PLE40-40B	**PKP243D15[][]**	40	12.6 (112)	0.045	✻	✻		62.5
PLE40-5B	**PKP243D23[][]**	5	1.575 (14)	0.36	✻	✻	15	600
PLE40-10B	**PKP243D23[][]**	10	3.15 (28)	0.18	✻	✻		300
PLE40-20B	**PKP243D23[][]**	20	6.3 (56)	0.09	✻	✻	19	150
PLE40-40B	**PKP243D23[][]**	40	12.6 (112)	0.045	✻	✻		75
PLE40-5B	**PKP244D15[][]**	5	2.16 (19)	0.36	✻	✻	15	400
PLE40-10B	**PKP244D15[][]**	10	4.32 (38)	0.18	✻	✻		200
PLE40-20B	**PKP244D15[][]**	20	8.64 (76)	0.09	✻	✻	19	100
PLE40-40B	**PKP244D15[][]**	40	17.28 (153)	0.045	✻	✻		50
PLE40-5B	**PKP244D23[][]**	5	2.16 (19)	0.36	✻	✻	15	500
PLE40-10B	**PKP244D23[][]**	10	4.32 (38)	0.18	✻	✻		250
PLE40-20B	**PKP244D23[][]**	20	8.64 (76)	0.09	✻	✻	19	125
PLE40-40B	**PKP244D23[][]**	40	17.28 (163)	0.045	✻	✻		62.5
PLE40-5B	**PKP245D15[][]**	5	2.97 (26)	0.36	✻	✻	15	300
PLE40-10B	**PKP245D15[][]**	10	5 (44)	0.18	5 (44)	✻		150
PLE40-20B	**PKP245D15[][]**	20	11.88 (105)	0.09	✻	✻	19	75
PLE40-40B	**PKP245D15[][]**	40	18 (159)	0.045	18 (159)	✻		37.5
PLE40-5B	**PKP245D23[][]**	5	2.97 (26)	0.36	✻	✻	15	400
PLE40-10B	**PKP245D23[][]**	10	5 (44)	0.18	5 (44)	✻		200
PLE40-20B	**PKP245D23[][]**	20	11.88 (105)	0.09	✻	✻	19	100
PLE40-40B	**PKP245D23[][]**	40	18 (159)	0.045	18(159)	✻		50
PLE40-5B	**PKP246D15[][]**	5	4.455 (39)	0.36	✻	✻	15	200
PLE40-10B	**PKP246D15[][]**	10	5 (44)	0.18	5 (44)	8 (71)		100
PLE40-20B	**PKP246D15[][]**	20	17.82 (158)	0.09	✻	✻	19	50
PLE40-40B	**PKP246D15[][]**	40	18 (159)	0.045	18 (159)	29 (257)		25
PLE40-5B	**PKP246D23[][]**	5	4.455 (39)	0.36	✻	✻	15	300
PLE40-10B	**PKP246D23[][]**	10	5 (44)	0.18	5 (44)	8 (71)		150
PLE40-20B	**PKP246D23[][]**	20	17.82 (158)	0.09	✻	✻	19	75
PLE40-40B	**PKP246D23[][]**	40	18 (159)	0.045	18 (159)	29 (257)		37.5

✻Torque does not reach the permissible output of the PLE Gearhead

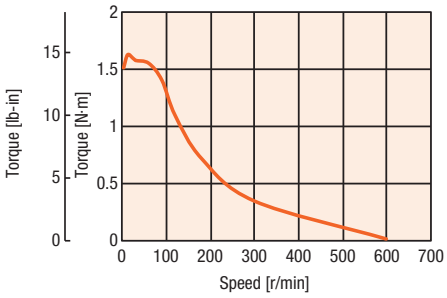
- Use screw set **P00027** (sold separately) to attach Motor and Gearhead

Speed – Torque Characteristics (Reference Values)

◇PKP243D15/PLE40

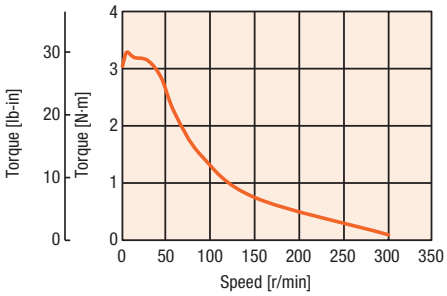
PKP243D15 *Gear Ratio 5*

Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 1.5 A/Phase



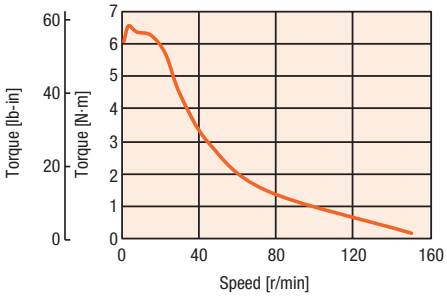
PKP243D15 *Gear Ratio 10*

Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 1.5 A/Phase



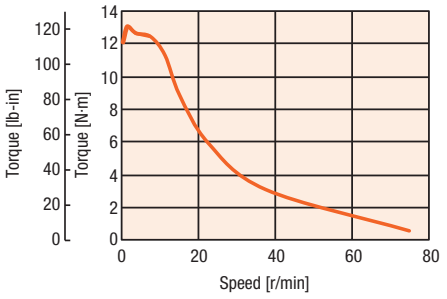
PKP243D15 *Gear Ratio 20*

Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 1.5 A/Phase



PKP243D15 *Gear Ratio 40*

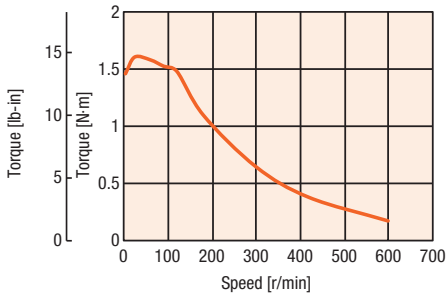
Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 1.5 A/Phase



◇PKP243D23/PLE40

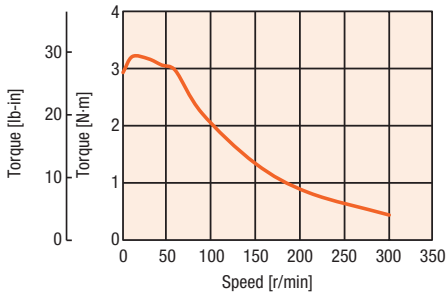
PKP243D23 *Gear Ratio 5*

Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 2.3 A/Phase



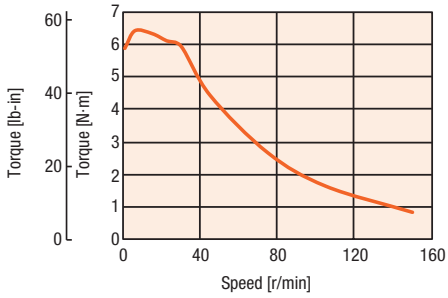
PKP243D23 *Gear Ratio 10*

Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 2.3 A/Phase



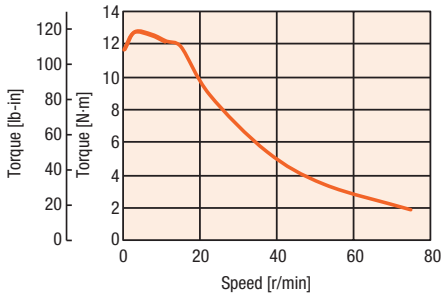
PKP243D23 *Gear Ratio 20*

Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 2.3 A/Phase



PKP243D23 *Gear Ratio 40*

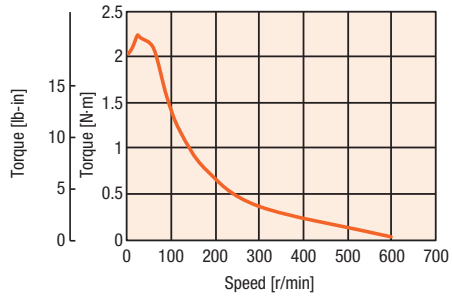
Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 2.3 A/Phase



◇PKP244D15/PLE40

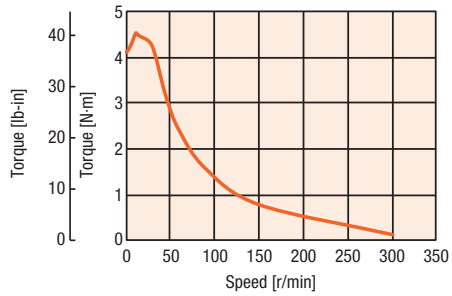
PKP244D15 *Gear Ratio 5*

Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 1.5 A/Phase



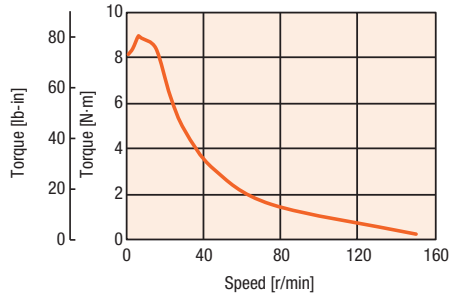
PKP244D15 *Gear Ratio 10*

Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 1.5 A/Phase



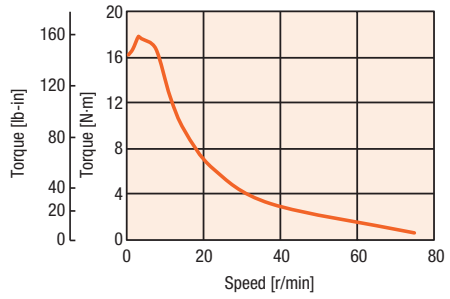
PKP244D15 *Gear Ratio 20*

Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 1.5 A/Phase



PKP244D15 *Gear Ratio 40*

Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 1.5 A/Phase

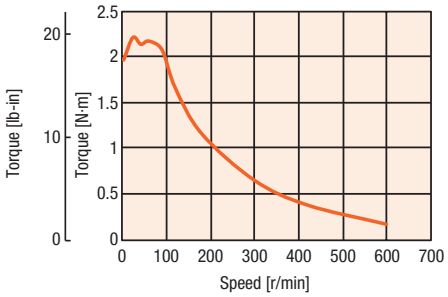


- Data for the speed-torque characteristics is based on Oriental Motor's internal conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C (212°F) or less. In case of product with encoder, be sure to keep the motor case temperature at 85°C (185°F) max. to protect the encoder.

◇PKP244D23/PLE40

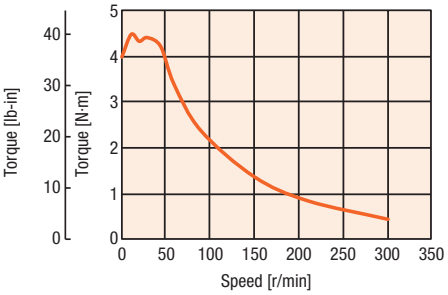
PKP244D23 *Gear Ratio 5*

Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 2.3 A/Phase



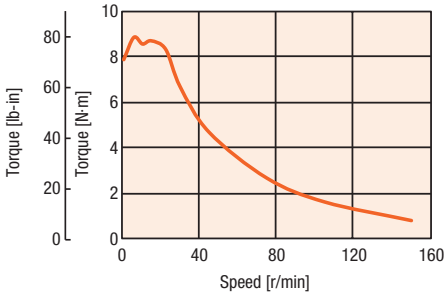
PKP244D23 *Gear Ratio 10*

Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 2.3 A/Phase



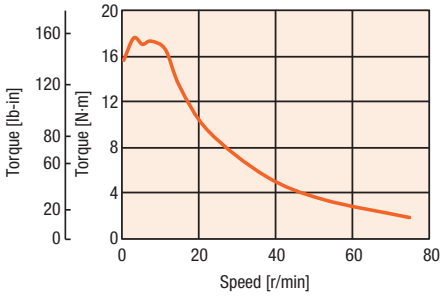
PKP244D23 *Gear Ratio 20*

Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 2.3 A/Phase



PKP244D23 *Gear Ratio 40*

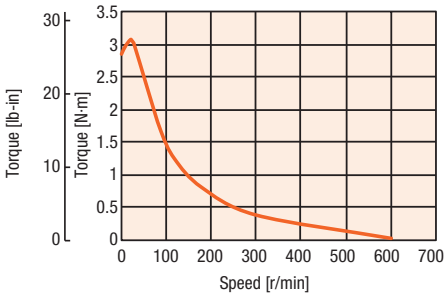
Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 2.3 A/Phase



◇PKP245D15/PLE40

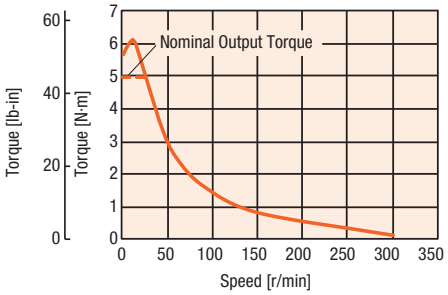
PKP245D15 *Gear Ratio 5*

Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 1.5 A/Phase



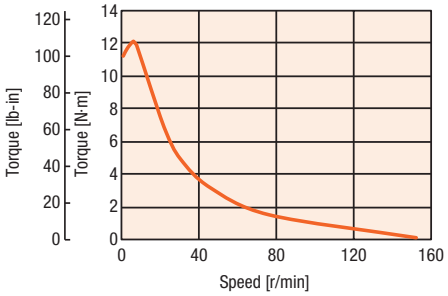
PKP245D15 *Gear Ratio 10*

Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 1.5 A/Phase



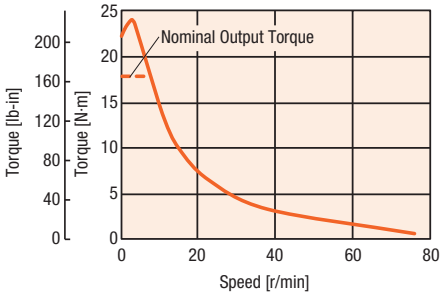
PKP245D15 *Gear Ratio 20*

Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 1.5 A/Phase



PKP245D15 *Gear Ratio 40*

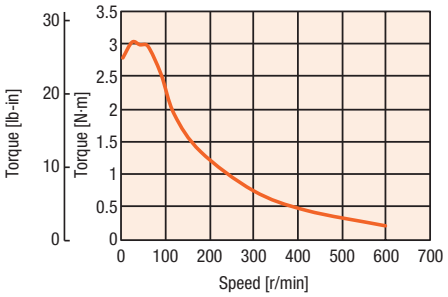
Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 1.5 A/Phase



◇PKP245D23/PLE40

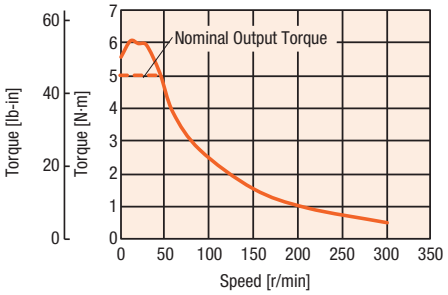
PKP245D23 *Gear Ratio 5*

Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 2.3 A/Phase



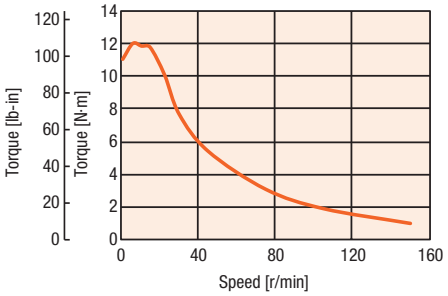
PKP245D23 *Gear Ratio 10*

Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 2.3 A/Phase



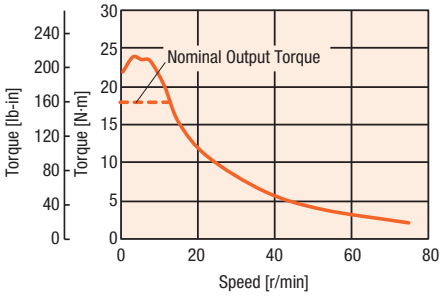
PKP245D23 *Gear Ratio 20*

Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 2.3 A/Phase



PKP245D23 *Gear Ratio 40*

Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 2.3 A/Phase

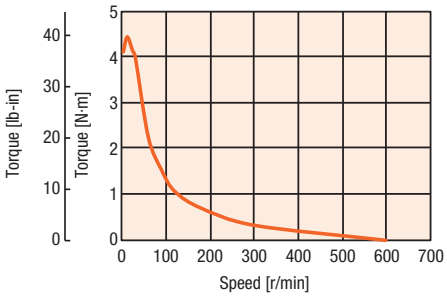


- Data for the speed-torque characteristics is based on Oriental Motor's internal conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C (212°F) or less. In case of product with encoder, be sure to keep the motor case temperature at 85°C (185°F) max. to protect the encoder.

◇PKP246D15/PLE40

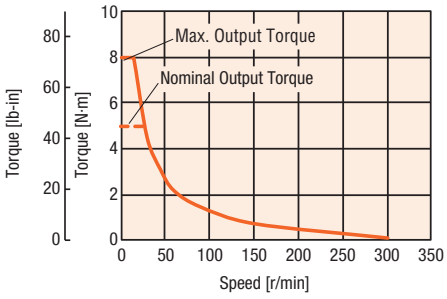
PKP246D15 *Gear Ratio 5*

Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 1.5 A/Phase



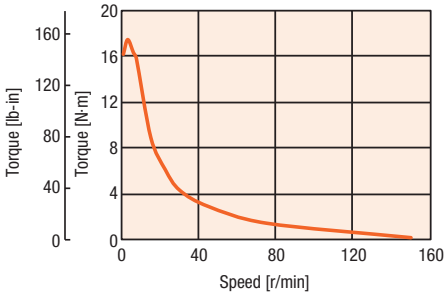
PKP246D15 *Gear Ratio 10*

Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 1.5 A/Phase



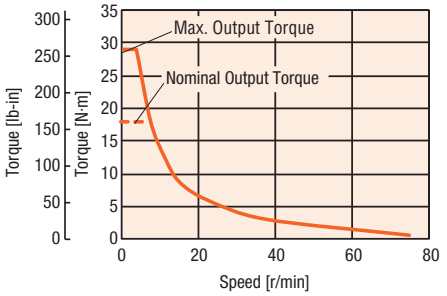
PKP246D15 *Gear Ratio 20*

Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 1.5 A/Phase



PKP246D15 *Gear Ratio 40*

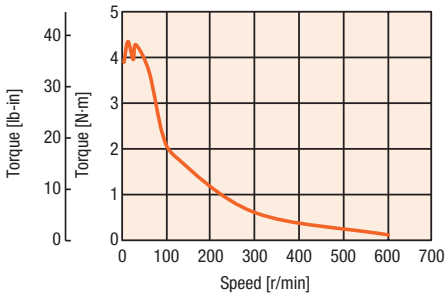
Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 1.5 A/Phase



◇PKP246D23/PLE40

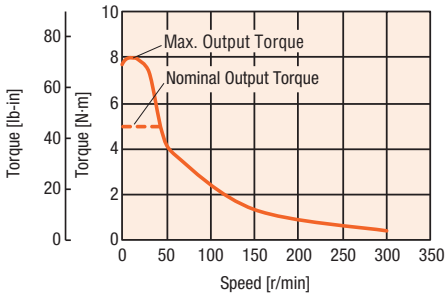
PKP246D23 *Gear Ratio 5*

Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 2.3 A/Phase



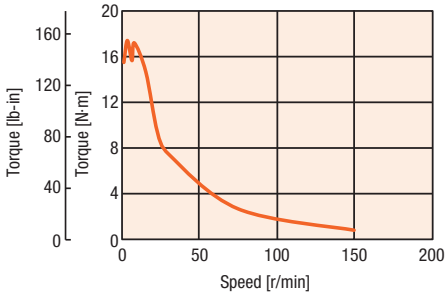
PKP246D23 *Gear Ratio 10*

Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 2.3 A/Phase



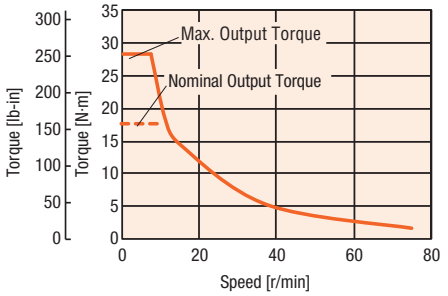
PKP246D23 *Gear Ratio 20*

Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 2.3 A/Phase



PKP246D23 *Gear Ratio 40*

Driver: **CVD223FBR-K**, Power Supply Voltage: 24 VDC, Current: 2.3 A/Phase



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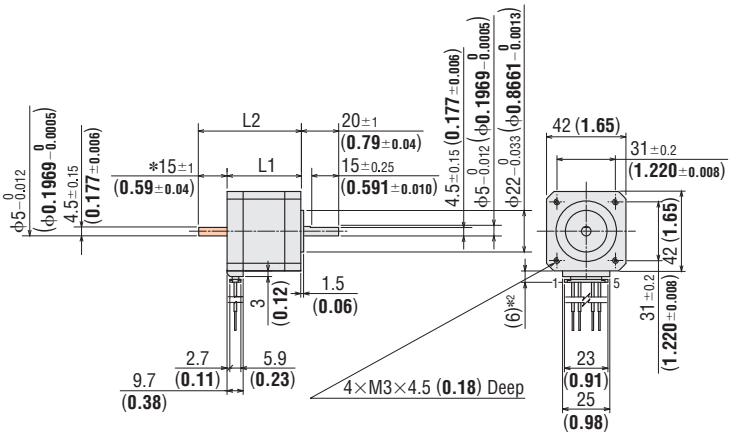
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C (212°F) or less. In case of product with encoder, be sure to keep the motor case temperature at 85°C (185°F) max. to protect the encoder.

Dimensions Unit = mm (in.)

Standard Type

2D & 3D CAD

Product Name	L1	L2	Mass kg (lb.)	CAD
PKP243D08A2	33 (1.30)	–	0.23 (0.51)	B1260
PKP243D08B2		48 (1.89)		
PKP243D15A2		–		
PKP243D15B2		48 (1.89)		
PKP243D23A2		–		
PKP243D23B2		48 (1.89)		
PKP244D08A2	39 (1.54)	–	0.3 (0.66)	B1261
PKP244D08B2		54 (2.13)		
PKP244D15A2		–		
PKP244D15B2		54 (2.13)		
PKP244D23A2		–		
PKP244D23B2		54 (2.13)		
PKP245D08A2	47 (1.85)	–	0.37 (0.82)	B1262
PKP245D08B2		62 (2.44)		
PKP245D15A2		–		
PKP245D15B2		62 (2.44)		
PKP245D23A2		–		
PKP245D23B2		62 (2.44)		
PKP246D15A2	59 (2.32)	–	0.5 (1.1)	B1263
PKP246D15B2		74 (2.91)		
PKP246D23A2		–		
PKP246D23B2		74 (2.91)		



*1 The length of the shaft flat on the double shaft model is 15±0.25 (0.591±0.010).

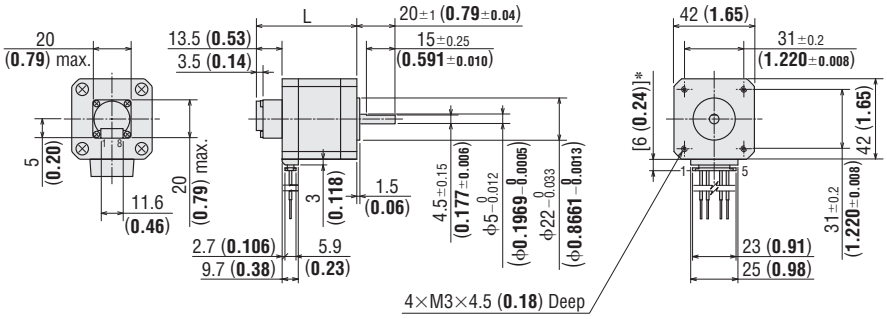
*2 With connection cable

● These dimensions are for double shaft motors.
For single shaft motors, ignore the shaded ▭ areas.

Standard Type with Encoder

2D & 3D CAD

Product Name	L	Mass kg (lb.)	CAD
PKP243D15A2-R2E■	46.5 (1.83)	0.24 (0.53)	B1321
PKP243D15A2-R2F■			
PKP243D23A2-R2E■			
PKP243D23A2-R2F■			
PKP244D15A2-R2E■	52.5 (2.07)	0.31 (0.68)	B1322
PKP244D15A2-R2F■			
PKP244D23A2-R2E■			
PKP244D23A2-R2F■			
PKP245D15A2-R2E■	60.5 (2.38)	0.38 (0.84)	B1323
PKP245D15A2-R2F■			
PKP245D23A2-R2E■			
PKP245D23A2-R2F■			
PKP246D15A2-R2E■	72.5 (2.85)	0.51 (1.12)	B1324
PKP246D15A2-R2F■			
PKP246D23A2-R2E■			
PKP246D23A2-R2F■			



*With connection cable

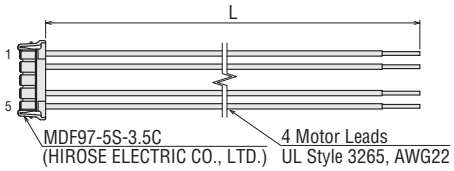
● Applicable Connector

	Motor (HIROSE ELECTRIC CO., LTD.)	Encoder (Molex)
Connector Housing	MDF97-5S-3.5C	51021-0800
Contact	MDF97-22SC	50079-8100
Crimp Tool	HT801/MDF97-22S	57067-3000

Connection Cable (Sold separately)

◇Connection Cable for Motor

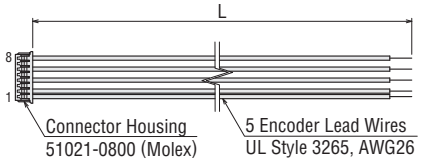
Product Name	Length L m (ft.)
LC2B06E	0.6 (2)



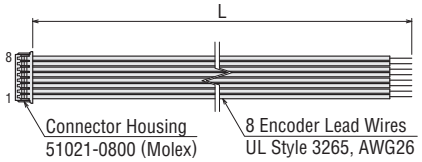
◇Encoder Connection Cable (Sold Separately)

Product Name	Applicable Encoder	Length L m (ft.)
LCE05A-006	Voltage Output	0.6 (2)
LCE08A-006	Line Driver Output	0.6 (2)

◇Voltage Output



◇Line Driver Output



Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A①

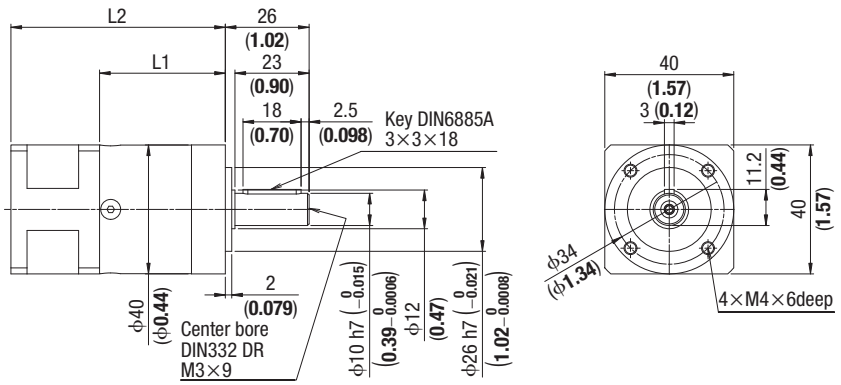
● Refer to page 25 for inner wiring diagram of motor.

Dimensions for Gearhead Unit = mm (in.)

PLE40 Gearhead mm (in.) 3D CAD

Ratio	L1	L2	Mass kg (lb.)
5, 10	39 (2.05)	66.5 (2.6)	0.35 (0.77)
20, 40	52 (1.54)	79.5 (3.13)	0.45 (0.99)

- Use screw set **P00027** (sold separately) to attach Motor and Gearhead.



Standard Type
Standard Type with Encoder

Frame Size 56.4 mm (2.22 in.) Bipolar 4 Lead Wires

Specifications

Product Name	Maximum Holding Torque N·m (oz-in)	Rotor Inertia J: kg·m² (oz-in²)	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP264D14□2	0.74 (105)	140×10^{-7} (0.77)	1.4	2.9	2.1	6	1.8°	**CVD228BR-K**
PKP264D28□2			2.8	1.6	0.57	1.5		
PKP264D42□2			4.2	1	0.24	0.65		**CVD242BR-K**
PKP266D14□2	1.4 (198)	270×10^{-7} (1.48)	1.4	4.6	3.3	12		**CVD228BR-K**
PKP266D28□2			2.8	2.4	0.86	2.9		
PKP266D42□2			4.2	1.6	0.38	1.3		**CVD242BR-K**
PKP264D14A2-R2□■	0.74 (105)	140×10^{-7} (0.77)	1.4	2.9	2.1	6		**CVD228BR-K**
PKP264D28A2-R2□■			2.8	1.6	0.57	1.5		
PKP264D42A2-R2□■			4.2	1	0.24	0.65		**CVD242BR-K**
PKP266D14A2-R2□■	1.4 (198)	270×10^{-7} (1.48)	1.4	4.6	3.3	12		**CVD228BR-K**
PKP266D28A2-R2□■			2.8	2.4	0.86	2.9		
PKP266D42A2-R2□■			4.2	1.6	0.38	1.3		**CVD242BR-K**
PKP268D14A2-R2□■	2.5 (350)	500×10^{-7} (2.7)	1.4	6.6	4.7	18		**CVD228BR-K**
PKP268D28A2-R2□■			2.8	3.4	1.2	4.6		
PKP268D42A2-R2□■			4.2	2.2	0.53	2		**CVD242BR-K**

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).
The box □ in the product name indicates the encoder resolution **E** (200 P/R) or **F** (400 P/R).
The box ■ in the product name indicates the encoder output circuit type **L** (line driver output). The voltage output type will have no " ■ " in the product name.
● See page 25 for encoder specifications.

PLE60 Gearhead Specifications for Metric Motor Shaft[1]

Gear Head Product Name[1]	Base Motor	Gear Ratio	Holding Torque N·m (lb-in)	Basic Step Angle deg/step	Permissible Torque N·m (lb-in)	Maximum Torque N·m (lb-in)	Backlash arcmin	Speed Range 0～ (r/min)
PLE60-5B	**PKP264D14[][]**	5	3.33 (29)	0.36	*	*	10	200
PLE60-10B	**PKP264D14[][]**	10	6.66 (60)	0.18	*	*		100
PLE60-20B	**PKP264D14[][]**	20	13.32 (118)	0.09	*	*	12	50
PLE60-40B	**PKP264D14[][]**	40	26.64 (236)	0.045	*	*		25
PLE60-5B	**PKP264D28[][]**	5	3.33 (29)	0.36	*	*	10	500
PLE60-10B	**PKP264D28[][]**	10	6.66 (59)	0.18	*	*		250
PLE60-20B	**PKP264D28[][]**	20	13.32 (118)	0.09	*	*	12	125
PLE60-40B	**PKP264D28[][]**	40	26.64 (236)	0.045	*	*		62.5
PLE60-5B	**PKP264D42[][]**	5	3.33 (29)	0.36	*	*	10	600
PLE60-10B	**PKP264D42[][]**	10	6.66 (59)	0.18	*	*		300
PLE60-20B	**PKP264D42[][]**	20	13.32 (118)	0.09	*	*	12	150
PLE60-40B	**PKP264D42[][]**	40	26.64 (236)	0.045	*	*		75
PLE60-5B	**PKP266D14[][]**	5	6.3 (56)	0.36	*	*	10	160
PLE60-10B	**PKP266D14[][]**	10	12.6 (112)	0.18	*	*		80
PLE60-20B	**PKP266D14[][]**	20	25.2 (223)	0.09	*	*	12	40
PLE60-40B	**PKP266D14[][]**	40	40 (354)	0.045	40 (354)	*		20
PLE60-5B	**PKP266D28[][]**	5	6.3 (56)	0.36	*	*	10	300
PLE60-10B	**PKP266D28[][]**	10	12.6 (112)	0.18	*	*		150
PLE60-20B	**PKP266D28[][]**	20	25.2 (223)	0.09	*	*	12	75
PLE60-40B	**PKP266D28[][]**	40	40 (354)	0.045	40 (354)	*		37.5
PLE60-5B	**PKP266D42[][]**	5	6.3 (56)	0.36	*	*	10	500
PLE60-10B	**PKP266D42[][]**	10	12.6 (112)	0.18	*	*		250
PLE60-20B	**PKP266D42[][]**	20	25.2 (223)	0.09	*	*	12	125
PLE60-40B	**PKP266D42[][]**	40	40 (354)	0.045	40 (354)	*		62.5
PLE60-5B	**PKP268D14[][]**	5	11.25 (100)	0.36	*	*	10	60
PLE60-10B	**PKP268D14[][]**	10	15 (133)	0.18	15 (133)	*		30
PLE60-20B	**PKP268D14[][]**	20	44 (389)	0.09	44 (389)	*	12	15
PLE60-40B	**PKP268D14[][]**	40	40 (354)	0.045	40 (354)	*		7.5
PLE60-5B	**PKP268D28[][]**	5	11.25 (100)	0.36	*	*	10	180
PLE60-10B	**PKP268D28[][]**	10	15 (133)	0.18	15 (133)	*		90
PLE60-20B	**PKP268D28[][]**	20	44 (389)	0.09	44 (389)	*	12	45
PLE60-40B	**PKP268D28[][]**	40	40 (354)	0.045	40 (354)	64 (566)		22.5
PLE60-5B	**PKP268D42[][]**	5	11.25 (100)	0.36	*	*	10	240
PLE60-10B	**PKP268D42[][]**	10	15 (133)	0.18	15 (133)	*		120
PLE60-20B	**PKP268D42[][]**	20	44 (389)	0.09	44 (389)	*	12	60
PLE60-40B	**PKP268D42[][]**	40	40 (354)	0.045	40 (354)	64 (566)		30

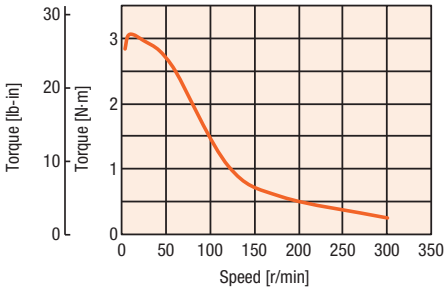
1. Gear Head for Inch Shaft (0.2500) 1/2" shaft. Select **PLE60-□D**. Same specifications apply.
*Torque does not reach the permissible output of the PLE Gear head
● Use screw set **P00028** (sold separately) to attach Motor and Gearhead

Speed – Torque Characteristics (Reference Values)

◇PKP264D14/PLE60

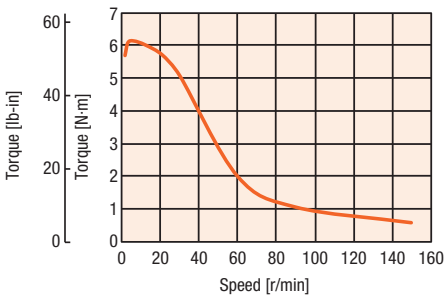
PKP264D14 *Gear Ratio 5*

Driver: **CVD228BR-K**, Power Supply Voltage: 24 VDC, Current: 1.4 A/Phase



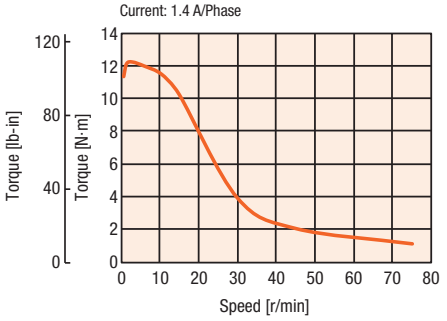
PKP264D14 *Gear Ratio 10*

Driver: **CVD228BR-K**, Power Supply Voltage: 24 VDC, Current: 1.4 A/Phase



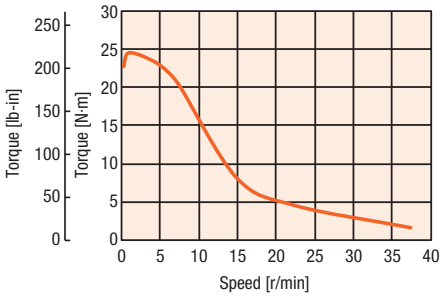
PKP264D14 *Gear Ratio 20*

Driver: **CVD228BR-K**, Power Supply Voltage: 24 VDC, Current: 1.4 A/Phase



PKP264D14 *Gear Ratio 40*

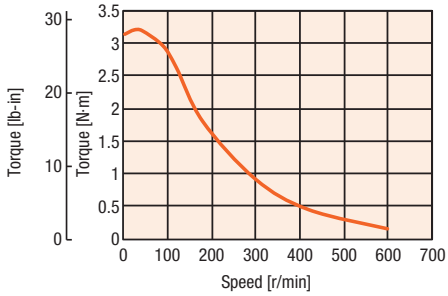
Driver: **CVD228BR-K**, Power Supply Voltage: 24 VDC, Current: 1.4 A/Phase



◇PKP264D28/PLE60

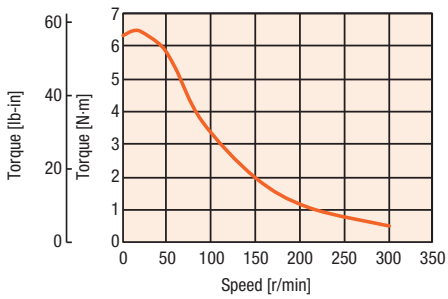
PKP264D28 *Gear Ratio 5*

Driver: **CVD228BR-K**, Power Supply Voltage: 24 VDC, Current: 2.8 A/Phase



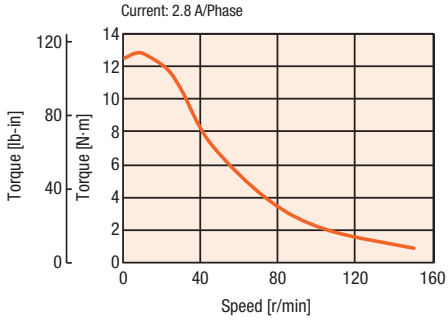
PKP264D28 *Gear Ratio 10*

Driver: **CVD228BR-K**, Power Supply Voltage: 24 VDC, Current: 2.8 A/Phase



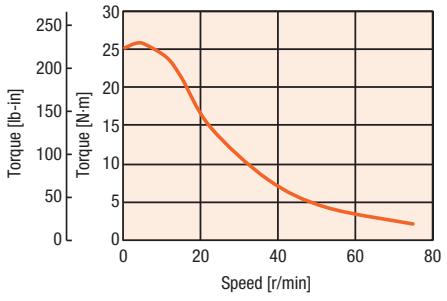
PKP264D28 *Gear Ratio 20*

Driver: **CVD228BR-K**, Power Supply Voltage: 24 VDC, Current: 2.8 A/Phase



PKP264D28 *Gear Ratio 40*

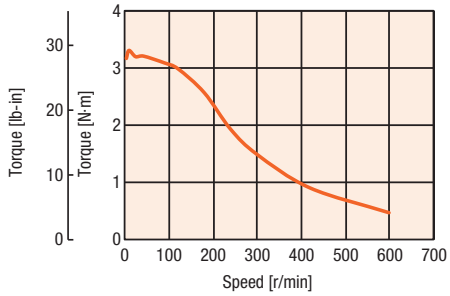
Driver: **CVD228BR-K**, Power Supply Voltage: 24 VDC, Current: 2.8 A/Phase



◇PKP264D42/PLE60

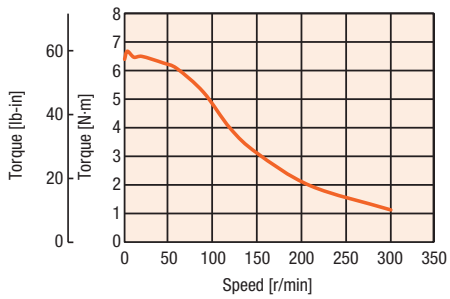
PKP264D42 *Gear Ratio 5*

Driver: **CVD242BR-K**, Power Supply Voltage: 24 VDC, Current: 4.2 A/Phase



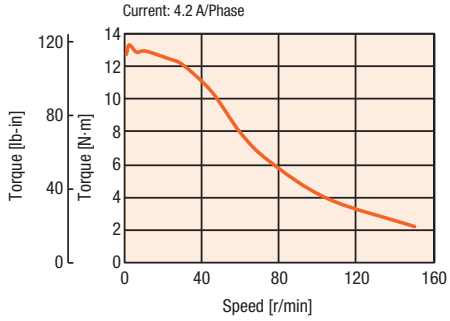
PKP264D42 *Gear Ratio 10*

Driver: **CVD242BR-K**, Power Supply Voltage: 24 VDC, Current: 4.2 A/Phase



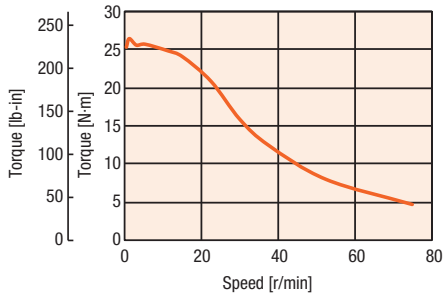
PKP264D42 *Gear Ratio 20*

Driver: **CVD242BR-K**, Power Supply Voltage: 24 VDC, Current: 4.2 A/Phase



PKP264D42 *Gear Ratio 40*

Driver: **CVD242BR-K**, Power Supply Voltage: 24 VDC, Current: 4.2 A/Phase

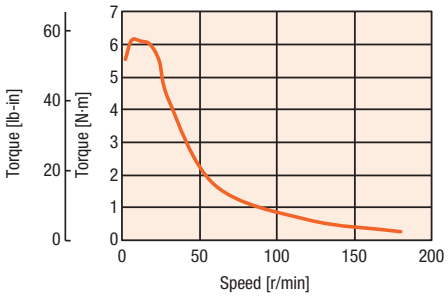


- Data for the speed-torque characteristics is based on Oriental Motor's internal conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C (212°F) or less. In case of product with encoder, be sure to keep the motor case temperature at 85°C (185°F) max. to protect the encoder.

◇PKP266D14/PLE60

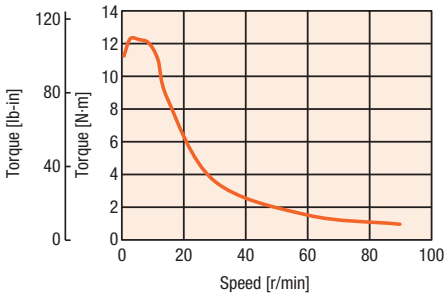
PKP266D14 *Gear Ratio 5*

Driver: **CVD228BR-K**, Power Supply Voltage: 24 VDC,
Current: 1.4 A/Phase



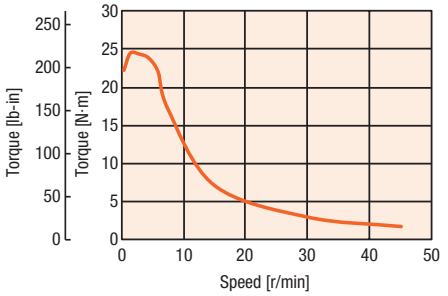
PKP266D14 *Gear Ratio 10*

Driver: **CVD228BR-K**, Power Supply Voltage: 24 VDC,
Current: 1.4 A/Phase



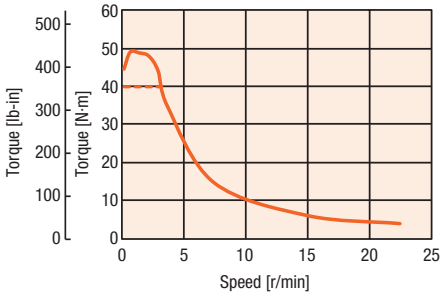
PKP266D14 *Gear Ratio 20*

Driver: **CVD228BR-K**, Power Supply Voltage: 24 VDC,
Current: 1.4 A/Phase



PKP266D14 *Gear Ratio 40*

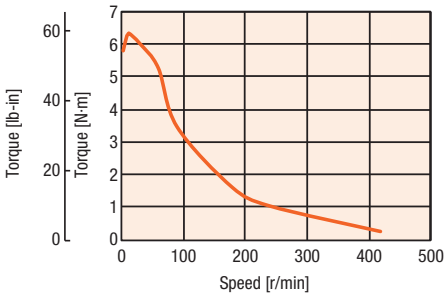
Driver: **CVD228BR-K**, Power Supply Voltage: 24 VDC,
Current: 1.4 A/Phase



◇PKP266D28/PLE60

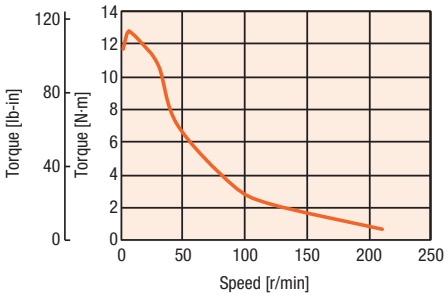
PKP266D28 *Gear Ratio 5*

Driver: **CVD228BR-K**, Power Supply Voltage: 24 VDC,
Current: 2.8 A/Phase



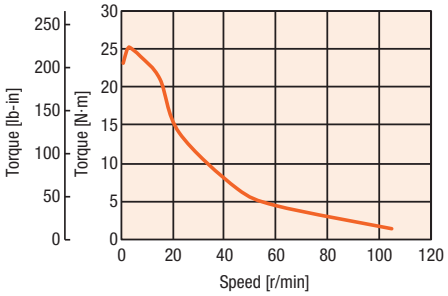
PKP266D28 *Gear Ratio 10*

Driver: **CVD228BR-K**, Power Supply Voltage: 24 VDC,
Current: 2.8 A/Phase



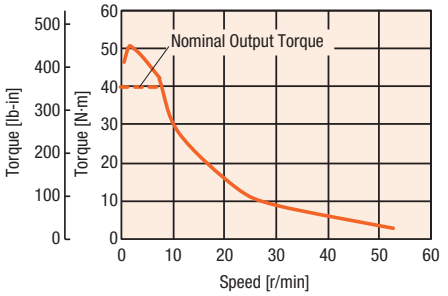
PKP266D28 *Gear Ratio 20*

Driver: **CVD228BR-K**, Power Supply Voltage: 24 VDC,
Current: 2.8 A/Phase



PKP266D28 *Gear Ratio 40*

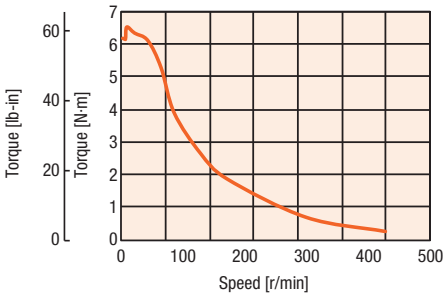
Driver: **CVD228BR-K**, Power Supply Voltage: 24 VDC,
Current: 2.8 A/Phase



◇PKP266D42/PLE60

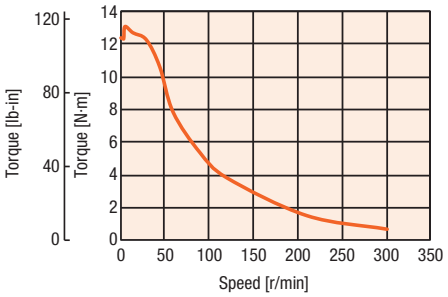
PKP266D42 *Gear Ratio 5*

Driver: **CVD242BR-K**, Power Supply Voltage: 24 VDC,
Current: 4.2 A/Phase



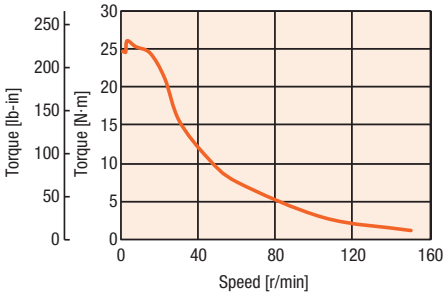
PKP266D42 *Gear Ratio 10*

Driver: **CVD242BR-K**, Power Supply Voltage: 24 VDC,
Current: 4.2 A/Phase



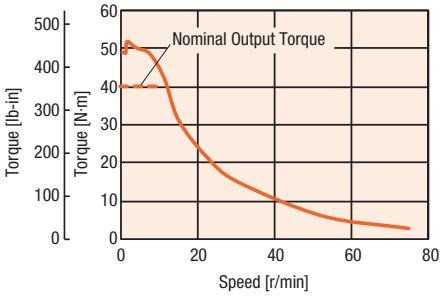
PKP266D42 *Gear Ratio 20*

Driver: **CVD242BR-K**, Power Supply Voltage: 24 VDC,
Current: 4.2 A/Phase



PKP266D42 *Gear Ratio 40*

Driver: **CVD242BR-K**, Power Supply Voltage: 24 VDC,
Current: 4.2 A/Phase

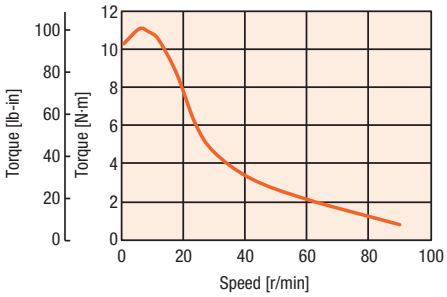


- Data for the speed-torque characteristics is based on Oriental Motor's internal conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C (212°F) or less.
  In case of product with encoder, be sure to keep the motor case temperature at 85°C (185°F) max. to protect the encoder.

◇PKP268D14/PLE60

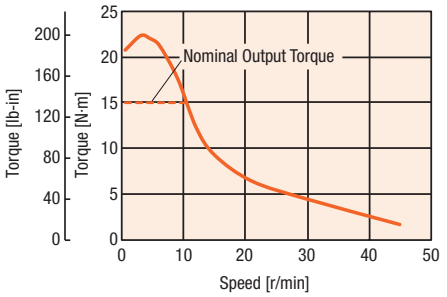
PKP268D14 *Gear Ratio 5*

Driver: **CVD228BR-K**, Power Supply Voltage: 24 VDC, Current: 1.4 A/Phase



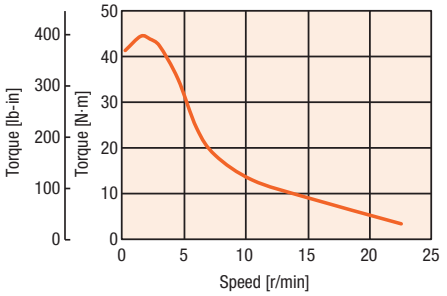
PKP268D14 *Gear Ratio 10*

Driver: **CVD228BR-K**, Power Supply Voltage: 24 VDC, Current: 1.4 A/Phase



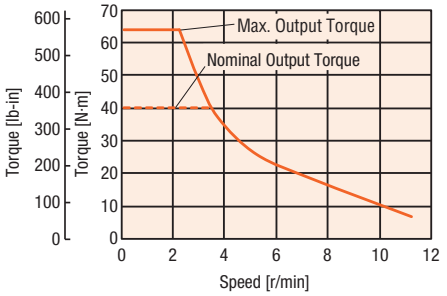
PKP268D14 *Gear Ratio 20*

Driver: **CVD228BR-K**, Power Supply Voltage: 24 VDC, Current: 1.4 A/Phase



PKP268D14 *Gear Ratio 40*

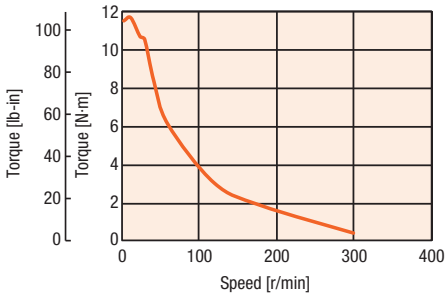
Driver: **CVD228BR-K**, Power Supply Voltage: 24 VDC, Current: 1.4 A/Phase



◇PKP268D28/PLE60

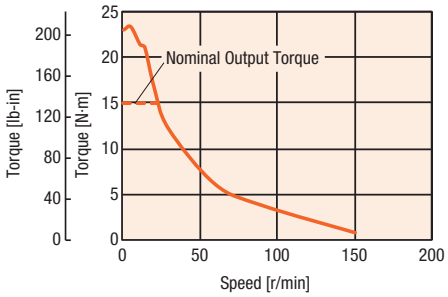
PKP268D28 *Gear Ratio 5*

Driver: **CVD228BR-K**, Power Supply Voltage: 24 VDC, Current: 2.8 A/Phase



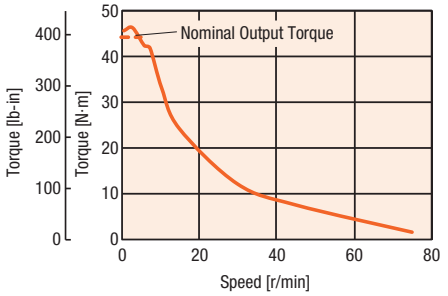
PKP268D28 *Gear Ratio 10*

Driver: **CVD228BR-K**, Power Supply Voltage: 24 VDC, Current: 2.8 A/Phase



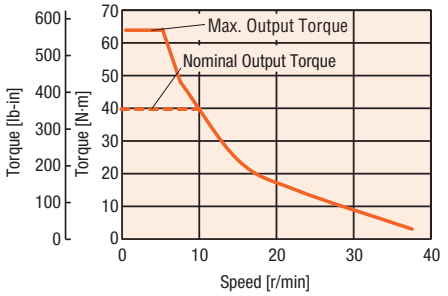
PKP268D28 *Gear Ratio 20*

Driver: **CVD228BR-K**, Power Supply Voltage: 24 VDC, Current: 2.8 A/Phase



PKP268D28 *Gear Ratio 40*

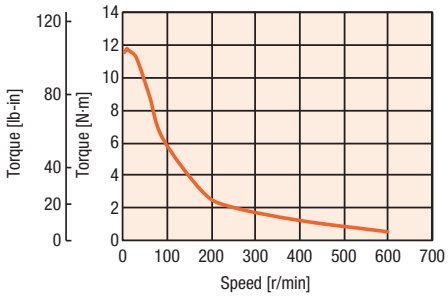
Driver: **CVD228BR-K**, Power Supply Voltage: 24 VDC, Current: 2.8 A/Phase



◇PKP268D42/PLE60

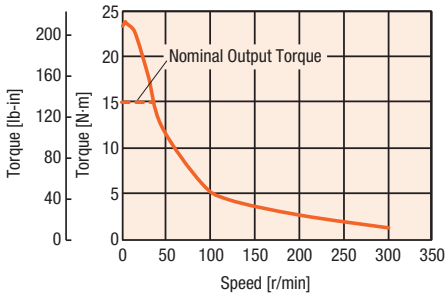
PKP268D42 *Gear Ratio 5*

Driver: **CVD242BR-K**, Power Supply Voltage: 24 VDC, Current: 4.2 A/Phase



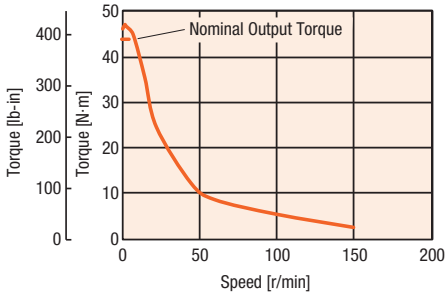
PKP268D42 *Gear Ratio 10*

Driver: **CVD242BR-K**, Power Supply Voltage: 24 VDC, Current: 4.2 A/Phase



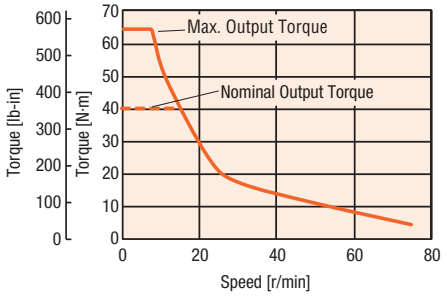
PKP268D42 *Gear Ratio 20*

Driver: **CVD242BR-K**, Power Supply Voltage: 24 VDC, Current: 4.2 A/Phase



PKP268D42 *Gear Ratio 40*

Driver: **CVD242BR-K**, Power Supply Voltage: 24 VDC, Current: 4.2 A/Phase

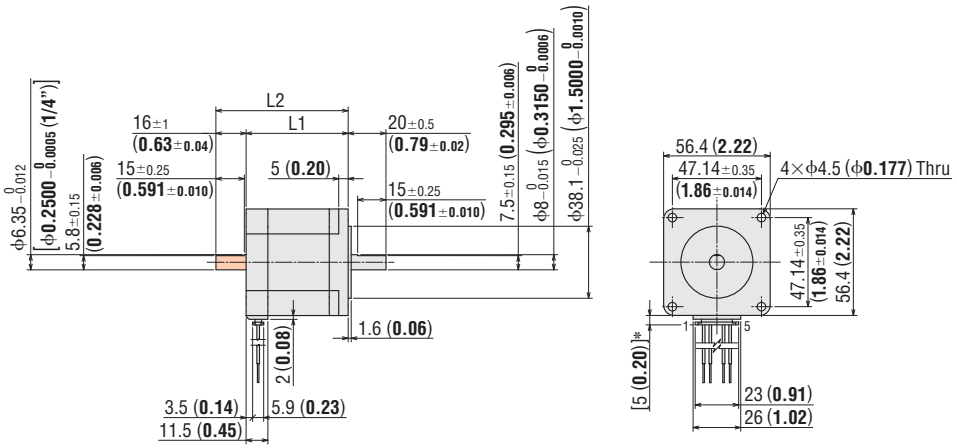


- Data for the speed-torque characteristics is based on Oriental Motor's internal conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C (212°F) or less. In case of product with encoder, be sure to keep the motor case temperature at 85°C (185°F) max. to protect the encoder.

Dimensions Unit = mm (in.)

Standard Type

Product Name	L1	L2	Mass kg (lb.)
PKP264D14A2	39 (1.54)	–	0.45 (0.99)
PKP264D14B2		55 (2.17)	
PKP264D28A2		–	
PKP264D28B2		55 (2.17)	
PKP264D42A2		–	
PKP264D42B2		55 (2.17)	
PKP266D14A2	54 (2.13)	–	0.7 (1.54)
PKP266D14B2		70 (2.76)	
PKP266D28A2		–	
PKP266D28B2		70 (2.76)	
PKP266D42A2		–	
PKP266D42B2		70 (2.76)	



*With connection cable

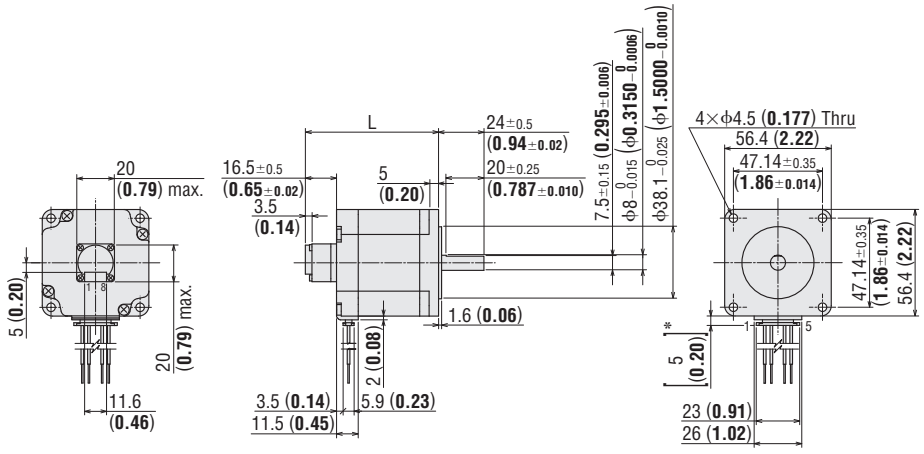
- These dimensions are for double shaft motors.
- For single shaft motors, ignore the shaded areas.

- Applicable Connector

	Motor (HIROSE ELECTRIC CO.,LTD.)
Connector Housing	MDF97-5S-3.5C
Contact	MDF97-22SC
Cimpring Tool	HT801/MDF97-22S

Standard Type with Encoder

Product Name	L	Mass kg (lb.)
PKP264D14A2-R2□■	55.5 (2.19)	0.45 (0.99)
PKP264D28A2-R2□■		
PKP264D42A2-R2□■		
PKP266D14A2-R2□■	70.5 (2.78)	0.7 (1.54)
PKP266D28A2-R2□■		
PKP266D42A2-R2□■		
PKP268D14A2-R2□■	92.5 (3.64)	1.1 (2.4)
PKP268D28A2-R2□■		
PKP268D42A2-R2□■		



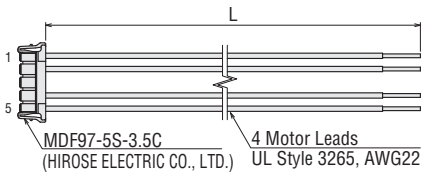
*With connection cable

- Applicable Connector

	Motor (HIROSE ELECTRIC CO.,LTD.)	Encoder (Molex)
Connector Housing	MDF97-5S-3.5C	51021-0800
Contact	MDF97-22SC	50079-8100
Crimping Tool	HT801/MDF97-22S	57067-3000

Motor Connection Cable (Sold Separately)

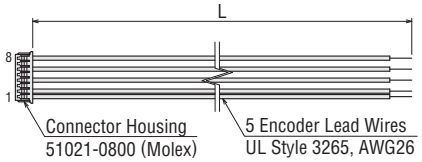
Product Name	Length L m (ft.)
LC2B06E	0.6 (2)



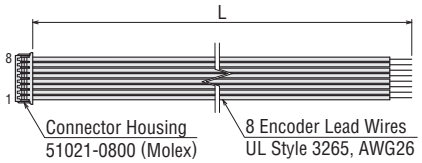
Encoder Connection Cable (Sold Separately)

Product Name	Applicable Encoder	Length L m (ft.)
LCE05A-006	Voltage Output	0.6 (2)
LCE08A-006	Line Driver Output	0.6 (2)

◇Voltage Output



◇Line Driver Output



Inner Wiring Diagram of Motor

Wiring Diagram No.: A①

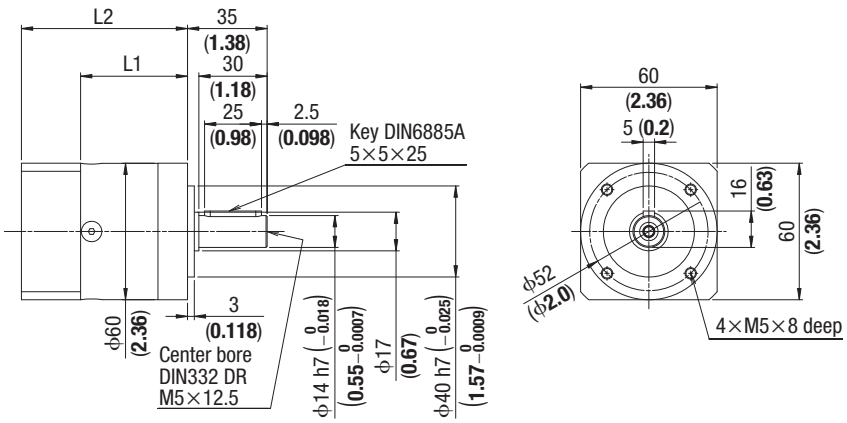
- Refer to page 25 for inner wiring diagram of motor.

Dimensions for Gearhead Unit = mm (in.)

PLE60 Gearhead mm (in.) 3D CAD

Ratio	L1	L2	Mass kg (lb.)
5, 10	47 (1.85)	73 (2.9)	0.9
20, 40	59.5 (2.3)	85.5 (3.4)	1.1

● Use screw set **P00028** (sold separately) to attach Motor and Gearhead.



Standard Type

Frame Size 85 mm (3.35 in.) Bipolar 4 Lead Wires

Specifications

Product Name	Maximum Holding Torque N·m (lb-in)	Rotor Inertia J: kg·m² (oz-in²)	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP296D45□	3.3 (29)	1100×10^{-7} (6)	4.5	1.9	0.42	3.1	1.8°	**CVD245BR-K**
PKP296D63□			6.3	1.4	0.23	1.6		–
PKP299D45□	6.4 (56)	2200×10^{-7} (12)	4.5	2.7	0.6	5.4		**CVD245BR-K**
PKP299D63□			6.3	2	0.32	2.6		–
PKP2913D45□	9.5 (84)	3400×10^{-7} (18.6)	4.5	3.5	0.78	6.9		**CVD245BR-K**
PKP2913D56□			5.6	2.6	0.47	4.4		–

●The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

PLE80 Gearhead Specifications for Metric Motor Shaft[1]

Gear Head Product Name[1]	Base Motor	Gear Ratio	Holding Torque N·m (lb-in)	Basic Step Angle deg/step	Permissible Torque N·m (lb-in)	Maximum Torque N·m (lb-in)	Backlash arcmin	Speed Range 0～ (r/min)
PLE80-5B	**PKP296D45[][]**	5	14.85 (131)	0.36	✻	✻	7	200
PLE80-10B	**PKP296D45[][]**	10	29.7 (263)	0.18	✻	✻		100
PLE80-20B	**PKP296D45[][]**	20	59.4 (526)	0.09	✻	✻	9	50
PLE80-40B	**PKP296D45[][]**	40	110 (974)	0.045	110 (974)	✻		25
PLE80-5B	**PKP296D63[][]**	5	14.85 (131)	0.36	✻	✻	7	800
PLE80-10B	**PKP296D63[][]**	10	29.7 (263)	0.18	✻	✻		400
PLE80-20B	**PKP296D63[][]**	20	59.4 (526)	0.09	✻	✻	9	200
PLE80-40B	**PKP296D63[][]**	40	110 (974)	0.045	110 (974)	✻		100
PLE80-5B	**PKP299D45[][]**	5	28.8 (255)	0.36	✻	✻	7	100
PLE80-10B	**PKP299D45[][]**	10	38 (336)	0.18	38 (336)	✻		50
PLE80-20B	**PKP299D45[][]**	20	115.2 (1020)	0.09	✻	✻	9	25
PLE80-40B	**PKP299D45[][]**	40	110 (974)	0.045	110 (974)	176 (1558)		12.5
PLE80-5B	**PKP299D63[][]**	5	28.8 (255)	0.36	✻	✻	7	400
PLE80-10B	**PKP299D63[][]**	10	38 (336)	0.18	38 (336)	✻		200
PLE80-20B	**PKP299D63[][]**	20	115.2 (1920)	0.09	✻	✻	9	100
PLE80-40B	**PKP299D63[][]**	40	110 (974)	0.045	110 (974)	176 (1558)		50
PLE80-5B	**PKP2913D45[][]**	5	42.75 (378)	0.36	✻	✻	7	80
PLE80-10B	**PKP2913D45[][]**	10	38 (336)	0.18	38 (336)	61 (540)		40
PLE80-20B	**PKP2913D45[][]**	20	120 (1062)	0.09	120 (1062)	✻	9	20
PLE80-40B	**PKP2913D45[][]**	40	110 (974)	0.045	110 (974)	176 (1558)		10
PLE80-5B	**PKP2913D56[][]**	5	42.75 (378)	0.36	✻	✻	7	300
PLE80-10B	**PKP2913D56[][]**	10	38 (336)	0.18	38 (336)	61 (540)		150
PLE80-20B	**PKP2913D56[][]**	20	120 (1062)	0.09	120 (1062)	✻	9	75
PLE80-40B	**PKP2913D56[][]**	40	110 (974)	0.045	110 (974)	176 (1558)		37.5

1. Gear Head for Inch Shaft (0.5000) 1/2" shaft. Select **PLE80-□D**. Same specifications apply.

✻Torque does not reach the permissible output of the PLE Gear head

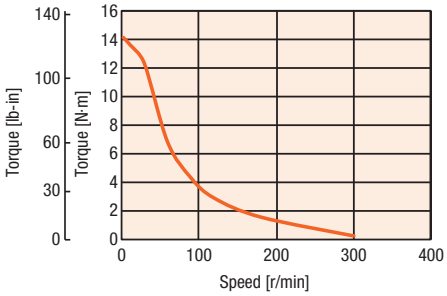
●Use screw set **P00029** (sold separately) to attach Motor and Gearhead

Speed – Torque Characteristics (Reference Values)

◇PKP296D45/PLE80

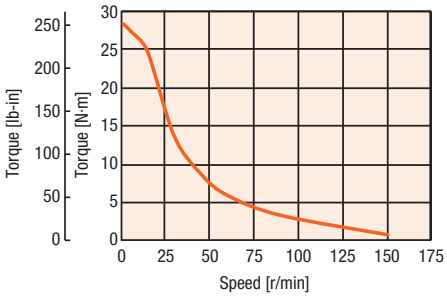
PKP296D45 *Gear Ratio 5*

Driver: **CVD245BR-K**, Power Supply Voltage: 24 VDC, Current: 4.5 A/Phase



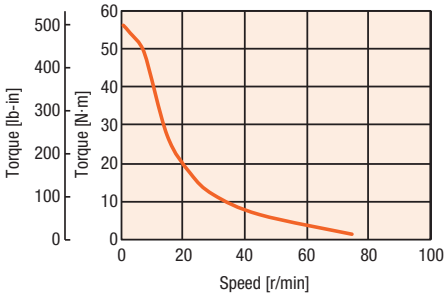
PKP296D45 *Gear Ratio 10*

Driver: **CVD245BR-K**, Power Supply Voltage: 24 VDC, Current: 4.5 A/Phase



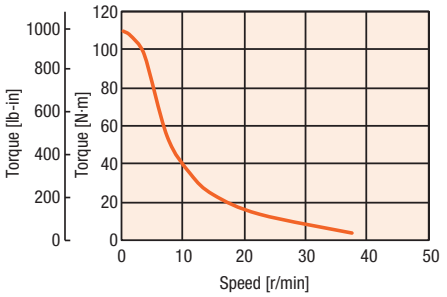
PKP296D45 *Gear Ratio 20*

Driver: **CVD245BR-K**, Power Supply Voltage: 24 VDC, Current: 4.5 A/Phase



PKP296D45 *Gear Ratio 40*

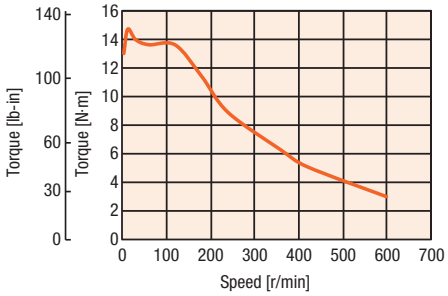
Driver: **CVD245BR-K**, Power Supply Voltage: 24 VDC, Current: 4.5 A/Phase



◇PKP296D63/PLE80

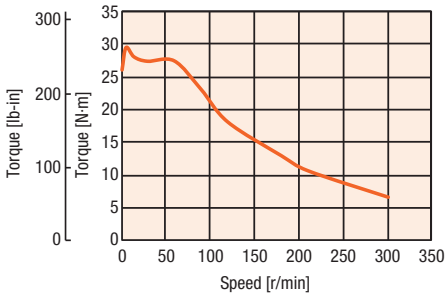
PKP296D63 *Gear Ratio 5*

Constant Current Driver, Power Supply Voltage: 80 VDC, Current: 6.3 A/Phase



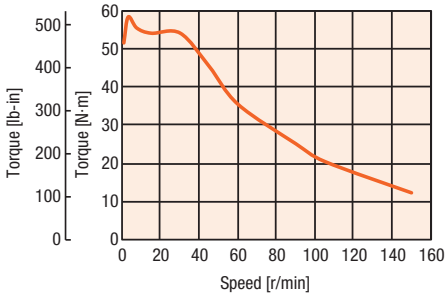
PKP296D63 *Gear Ratio 10*

Constant Current Driver, Power Supply Voltage: 80 VDC, Current: 6.3 A/Phase



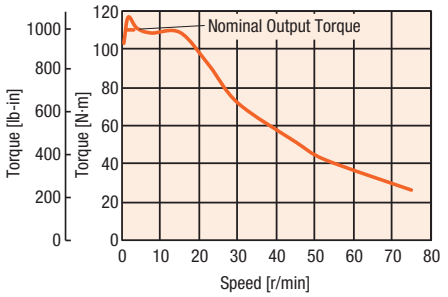
PKP296D63 *Gear Ratio 20*

Constant Current Driver, Power Supply Voltage: 80 VDC, Current: 6.3 A/Phase



PKP296D63 *Gear Ratio 40*

Constant Current Driver, Power Supply Voltage: 80 VDC, Current: 6.3 A/Phase

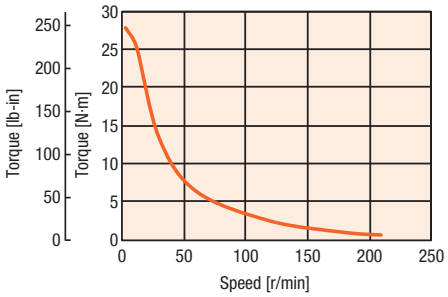


- Data for the speed-torque characteristics is based on Oriental Motor's internal conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C (212°F) or less. In case of product with encoder, be sure to keep the motor case temperature at 85°C (185°F) max. to protect the encoder.

◇PKP299D45/PLE80

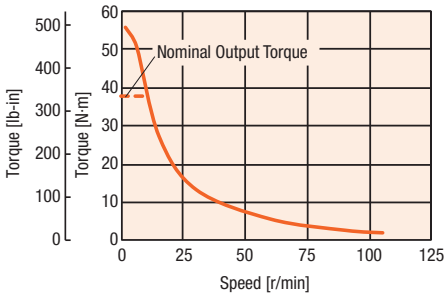
PKP299D45 *Gear Ratio 5*

Driver: **CVD245BR-K**, Power Supply Voltage: 24 VDC,
Current: 4.5 A/Phase



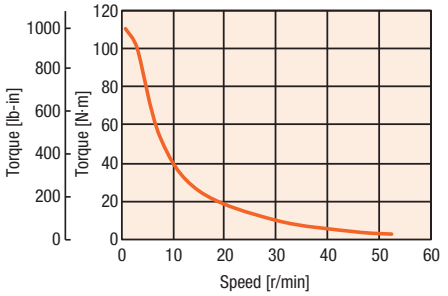
PKP299D45 *Gear Ratio 10*

Driver: **CVD245BR-K**, Power Supply Voltage: 24 VDC,
Current: 4.5 A/Phase



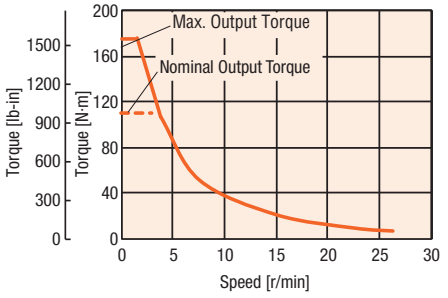
PKP299D45 *Gear Ratio 20*

Driver: **CVD245BR-K**, Power Supply Voltage: 24 VDC,
Current: 4.5 A/Phase



PKP299D45 *Gear Ratio 40*

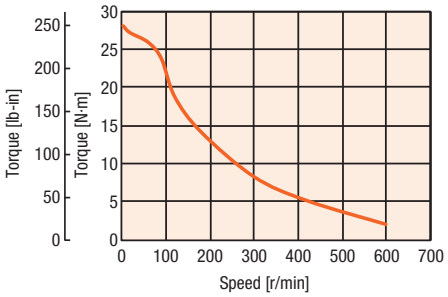
Driver: **CVD245BR-K**, Power Supply Voltage: 24 VDC,
Current: 4.5 A/Phase



◇PKP299D63/PLE80

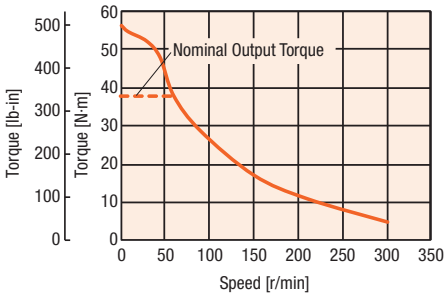
PKP299D63 *Gear Ratio 5*

Constant Current Driver, Power Supply Voltage: 80 VDC,
Current: 6.3 A/Phase



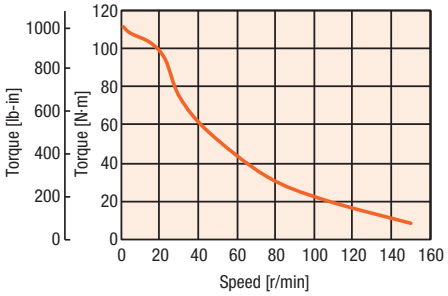
PKP299D63 *Gear Ratio 10*

Constant Current Driver, Power Supply Voltage: 80 VDC,
Current: 6.3 A/Phase



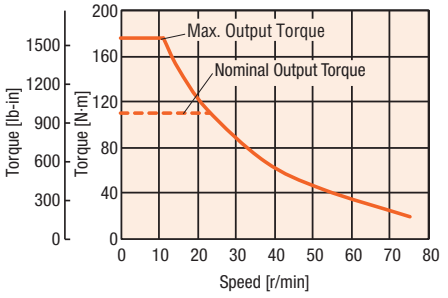
PKP299D63 *Gear Ratio 20*

Constant Current Driver, Power Supply Voltage: 80 VDC,
Current: 6.3 A/Phase



PKP299D63 *Gear Ratio 40*

Constant Current Driver, Power Supply Voltage: 80 VDC,
Current: 6.3 A/Phase



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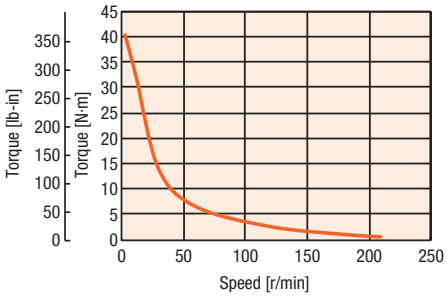
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C (212°F) or less. In case of product with encoder, be sure to keep the motor case temperature at 85°C (185°F) max. to protect the encoder.

◇PKP2913D45/PLE80

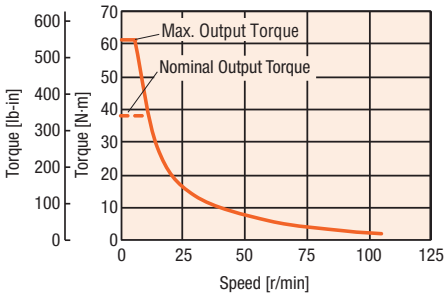
PKP2913D45 *Gear Ratio 5*

Driver: **CVD245BR-K**, Power Supply Voltage: 24 VDC,
Current: 4.5 A/Phase



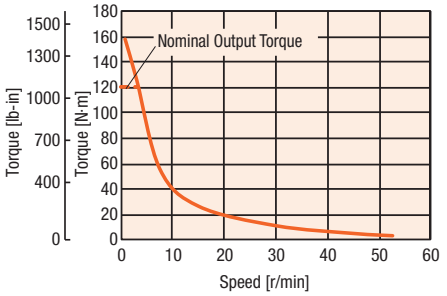
PKP2913D45 *Gear Ratio 10*

Driver: **CVD245BR-K**, Power Supply Voltage: 24 VDC,
Current: 4.5 A/Phase



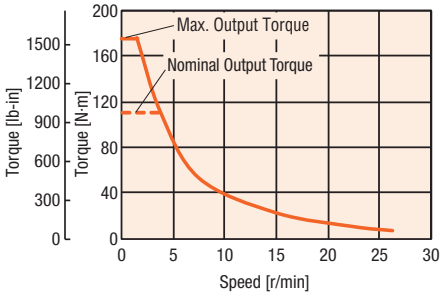
PKP2913D45 *Gear Ratio 20*

Driver: **CVD245BR-K**, Power Supply Voltage: 24 VDC,
Current: 4.5 A/Phase



PKP2913D45 *Gear Ratio 40*

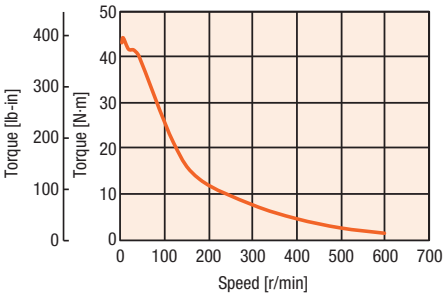
Driver: **CVD245BR-K**, Power Supply Voltage: 24 VDC,
Current: 4.5 A/Phase



◇PKP2913D56/PLE80

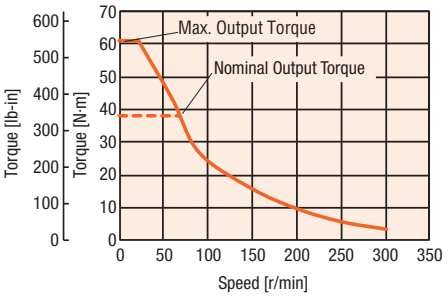
PKP2913D56 *Gear Ratio 5*

Constant Current Driver, Power Supply Voltage: 80 VDC,
Current: 5.6 A/Phase



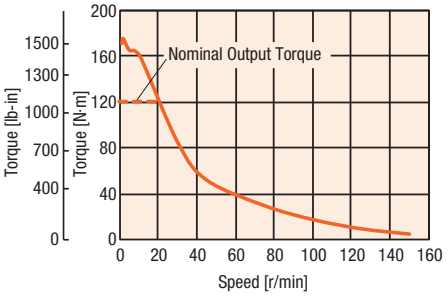
PKP2913D56 *Gear Ratio 10*

Constant Current Driver, Power Supply Voltage: 80 VDC,
Current: 5.6 A/Phase



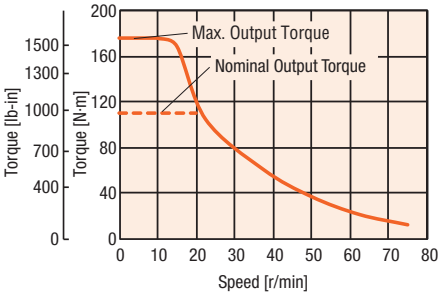
PKP2913D56 *Gear Ratio 20*

Constant Current Driver, Power Supply Voltage: 80 VDC,
Current: 5.6 A/Phase



PKP2913D56 *Gear Ratio 40*

Constant Current Driver, Power Supply Voltage: 80 VDC,
Current: 5.6 A/Phase

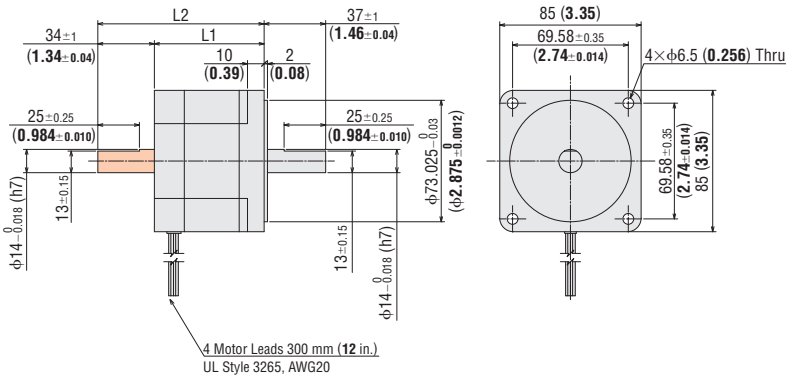


- Data for the speed-torque characteristics is based on Oriental Motor's internal conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C (212°F) or less. In case of product with encoder, be sure to keep the motor case temperature at 85°C (185°F) max. to protect the encoder.

Dimensions Unit = mm (in.)

Motor

Product Name	L1	L2	Mass kg (lb.)
PKP296D45A	66 (2.60)	–	1.8 (3.97)
PKP296D45B		100 (3.94)	
PKP296D63A		–	
PKP296D63B		100 (3.94)	
PKP299D45A	96 (3.78)	–	2.9 (6.39)
PKP299D45B		130 (5.12)	
PKP299D63A		–	
PKP299D63B		130 (5.12)	
PKP2913D45A	126 (4.96)	–	4 (8.82)
PKP2913D45B		160 (6.30)	
PKP2913D56A		–	
PKP2913D56B		160 (6.30)	



● These dimensions are for double shaft motors.
For single shaft motors, ignore the shaded areas.

Inner Wiring Diagram of Motor

Wiring Diagram No.: Model C⑤

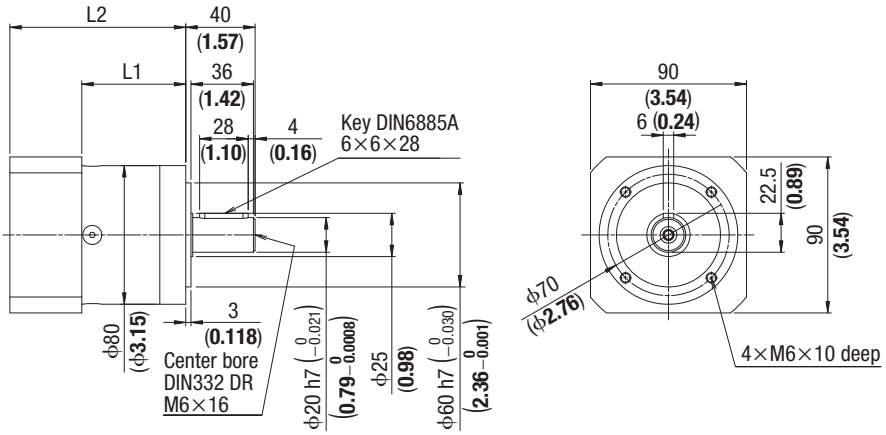
● Refer to page 25 for inner wiring diagram of motor.

Dimensions for Gearhead Unit = mm (in.)

PLE80 Gearhead mm (in.) 3D CAD

Ratio	L1	L2	Mass kg (lb.)
5, 10	60 (2.36)	101.5 (4.0)	2.2 (4.9)
20, 40	77.5 (3.05)	119 (4.7)	2.7 (6.0)

● Use screw set **P00029** (sold separately) to attach Motor and Gearhead.



Permissible Radial Load and Permissible Axial Load – PLE Gearhead

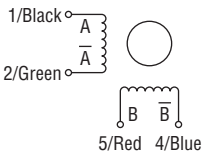
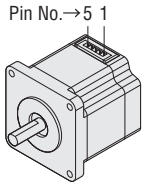
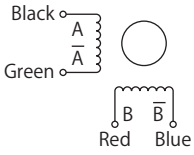
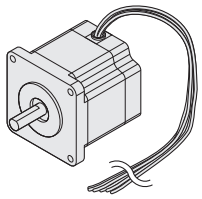
Permissible Load

	Permissible load			
	Radial @ center of shaft		Axial	
	N	lb	N	lb
PLE40	200	45	240	54
PLE60	700	157.5	800	180
PLE80	1250	281.25	1600	360

Backlash

	Gear Ratio	Backlash arcmin
PLE40	5	15
	10	15
	20	19
	40	19
PLE60	5	10
	10	10
	20	12
	40	12
PLE80	5	7
	10	7
	20	9
	40	9

Inner Wiring Diagram for Motor

Motor Model Type	Wiring Diagram/Pinout
Model A	① Bipolar 4 Lead Wires  ● The colors in the wiring diagram are the colors of the separately sold connection cables. -Pinout 
Model C	② Bipolar 4 Lead Wires  -Pinout  Motor lead wire colors: Blue, white, red, black, yellow, green

Encoder Specifications

Encoder Product Name	R2EL	R2FL	R2E	R2F
Resolution	200P/R	400P/R	200P/R	400P/R
Output Circuit Type	Line Driver Output*		Voltage Output	
Output Mode	Incremental			
Output Signal	A Phase, B Phase, and Z Phase (3ch)			
Power Supply Voltage	5 VDC±10%			
Current	30 mA max.		45 mA max.	

*26C31 or equivalent

Bipolar Driver (sold separately)

CVD Series

These are DC power supply input drivers for stepper motors. The microstep drive function offers superior performance and value and reduces vibration and noise. The driver is equipped with a protective function that enables you to find driver errors early. Running current can be easily set with the digital switch.

Product Number

CVD 2 23 F B R - K

① ② ③ ④ ⑤ ⑥ ⑦

①	Driver Type	
②	**2**: 1.8˚ Stepper Motor	
③	Rated Current	
④	Driver Identification	
⑤	Driver Configuration	**B**: With Installation Plate Blank: Without Installation Plate
⑥	Connector Configuration	**R**: Right Angle
⑦	Power Supply Input	**K**: DC Power Supply

● See page 4 for details.

Product Line

●Bipolar Driver for 1.8° Stepper Motor

◇Right Angle Type with Installation Plate

Product Name
CVD215BR-K
CVD223FBR-K
CVD228BR-K
CVD242BR-K
CVD245BR-K

●Included

Type	Connector for Driver Connection	Operating manual
Common to All Types	For CN1 (1 Piece) For CN2 (1 Piece) For CN3 (1 Piece)	1 set

● Driver connection cable sets are available (sold separately). See website for details.

Specifications are subject to change without notice. This catalog was published in June, 2024.

ORIENTAL MOTOR U.S.A. CORP.

Western Sales and Customer Service Center
Tel: (310) 715-3301
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