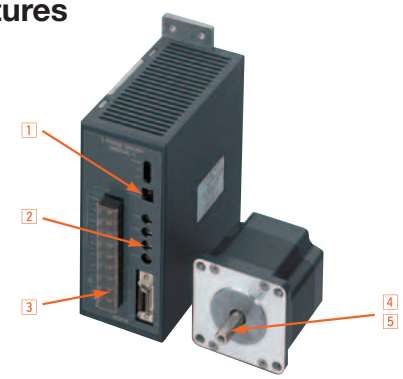
RK Series

●Additional Information●
Technical reference ➜ Page G-1
Safety standards ➜ Page H-2

This is the basic model for positioning operation. It improves the response and reduces vibrations at the same time, making the stepping motor easier to use. The **RK** Series offers various types including a standard type, a terminal box type, and four geared types. Three frame sizes of 42 mm (1.65 in.), 60 mm (2.36 in.) and 85 mm (3.35 in.) [90 mm (3.54 in.)] are available. The wide-ranging motor variations and affordable price make the **RK** Series a perfect solution for your various applications.

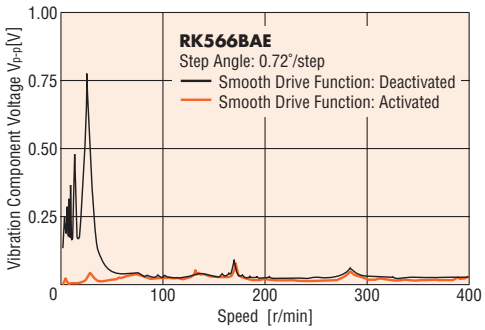
●For detailed product safety standard information including standards, file number and certification body, please visit www.orientalmotor.com.

Features

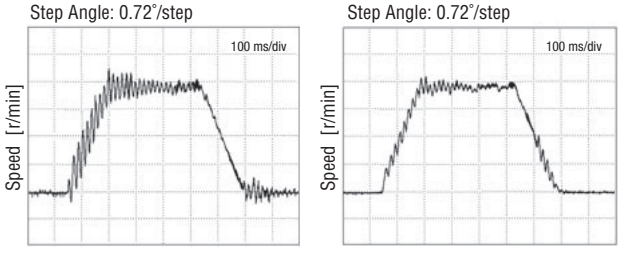


1 Smooth Drive Function

The smooth drive function ensures low-vibration and low-noise operation at low speeds by internally executing microstepping within the driver, working independent of the input pulse frequency of your controller.



The smooth drive function of the **RK** Series improves rotor settling time performance.



Conventional Model　　**RK** (Smooth drive: ON)

2 Microstep Drive System

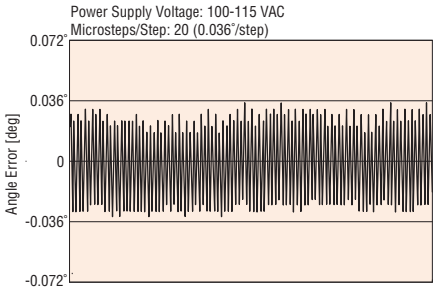
The motor's basic step angle is divided by a maximum of 250 without the use of a reduction mechanism or other mechanical means. 16 resolution levels are available to set the desired resolution. This enables fine positioning and the further reduction of vibration and noise. A motion sequence of "low-speed transfer → high-speed return" can easily be performed without the need for changing from a microstep pulse frequency to a full step pulse frequency. The **RK** Series can also be used in full-step operation.

3 100-115 VAC, 200-230 VAC Power Supply Variation

The **RK** Series can be used with most common power supplies available around the world.
They also comply with the major safety standards, ensuring safe operation.

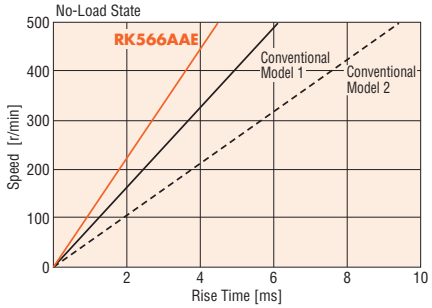
4 Improved Angle Accuracy

Angle accuracy may worsen with microstep drivers, due to the effect of poor current control. However, the drivers used in the **RK** Series are designed to ensure that the motor operates at maximum accuracy.



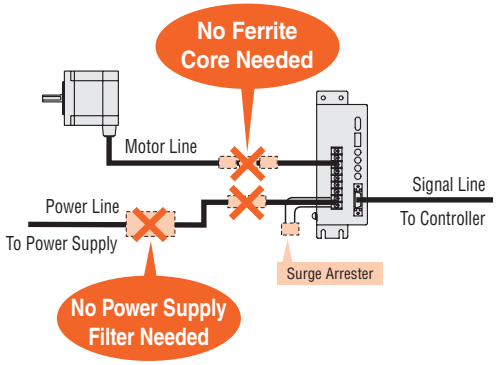
5 Improved Response

The **RK** Series, with its high starting frequency, shortens the machine cycle without affecting acceleration/deceleration rates. This produces a significant savings in time for an operation in which the same cycle is repeated thousands of times each day.



●Safe Operation in Major Countries around the World. Compliance with Safety Standards

The **RK** Series is recognized by the UL/CSA Standards and conforms to the EN Standards. (With the **RK54**□ type, only the driver conforms to the CSA Standards.) The CE Marking certifies compliance with the EMC Directive and Low Voltage Directive. The **RK** Series conforms to the EMC Directive with the addition of only a surge arrester. The **RK** Series doesn't require an external ferrite core or filter in the motor line or power line.



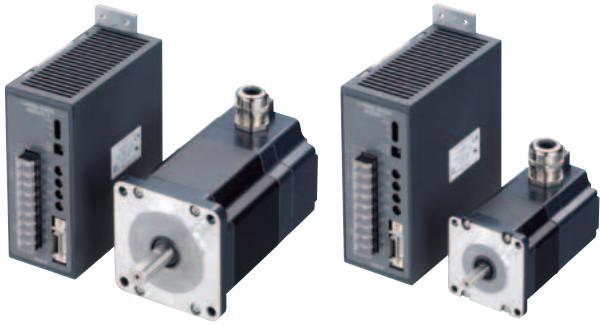
●Protective Earth Terminal

[Excluding motors with a frame size of 42 mm (1.65 in.)]

●Extended Bearing Life

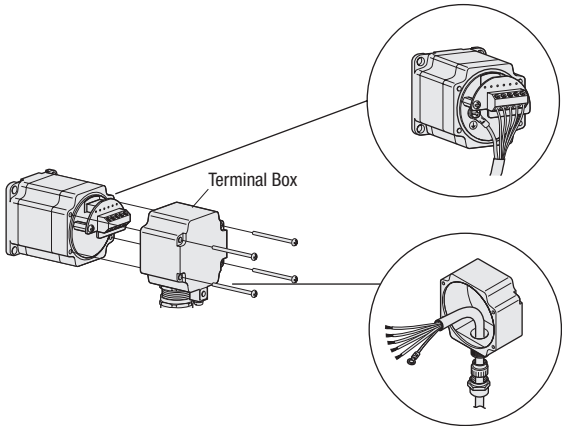
The life of a motor is affected by its bearing. The **RK** Series achieves approximately twice the life of a conventional motor by adopting a modified bearing. [Available only with the standard type with a frame size of 60 mm (2.36 in.) or 85 mm (3.35 in.).]

●The Terminal Box Type Motor Conforms to the IP65 Standard for Ingress Protection against Dust and Water. (Excluding shaft penetration)



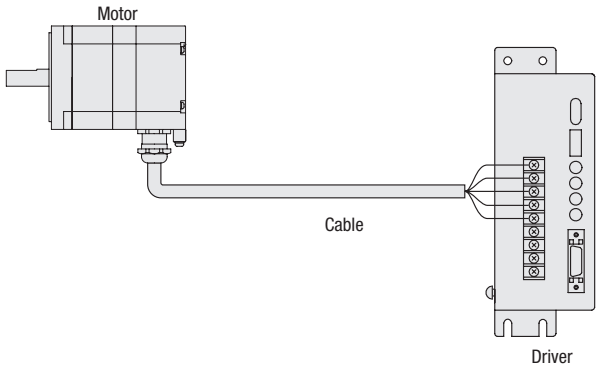
◇Terminal-Block Connection Design

The motor can be wired directly from its terminal block.



◇No Motor/Driver Relay

Since the motor cable can be connected directly with the driver terminals, there is no need for wire connection or soldering on a relay terminal block.



●Encoder Option Available

500 pulse/rev, 3 channel, TTL.
Motor rotations can be detected by taking in encoder output signals into a programmable controller (not supplied).

RK Series Lineup

Characteristics Comparison for Motors and Geared Motors

Motor Type / Geared Type	Features	Permissible Torque Maximum Torque [N·m (lb-in)]	Backlash [arc min (degrees)]	Basic Resolution [deg/step]	Output Shaft Speed [r/min]
Step Angle 0.72° Standard Type 	· Basic model of the **RK** Series	Maximum Holding Torque 6.3	—	0.72	4000
Step Angle 0.72° Standard Type Terminal Box 	· The industrial connector type motor offering IP65 ingress protection against dust and water.	Maximum Holding Torque 6.3	—	0.72	4000
Low backlash — **TH Geared Type** (Parallel shaft) 	· A wide variety of low gear ratios, high-speed operations · Gear ratios: 3.6, 7.2, 10, 20, 30	12	45 (0.75)	0.024	500
Low backlash — **PS Geared Type** (Planetary) 	· High permissible/maximum torque · A wide variety of gear ratios for selecting the desired step angle (resolution) · Centered output shaft · Gear ratios: 5, 7.2, 10, 25, 36, 50	Permissible Torque 37 / Maximum Torque 60	25 (0.42)	0.0144	600
Non-backlash — **PN Geared Type** (Planetary) 	· High speed (low gear ratio), high accuracy positioning · High permissible/maximum torque · A wide variety of gear ratios for selecting the desired step angle (resolution) · Centered output shaft · Gear ratios: 5, 7.2, 10, 25, 36, 50	Permissible Torque 37 / Maximum Torque 60	3 (0.05)	0.0144	600
Non-backlash — **Harmonic Geared Type** (Harmonic drive) 	· High accuracy positioning · High permissible/maximum torque · High gear ratios, high resolution · Centered output shaft · Gear ratios: 50, 100	Permissible Torque 37 / Maximum Torque 55	0	0.0072	70

Note

● The values shown above must be used as reference. These values vary depending on the frame size and gear ratio.

● RK Series offers various motor frame sizes in accordance with the motor type and power supply voltage, as shown below.

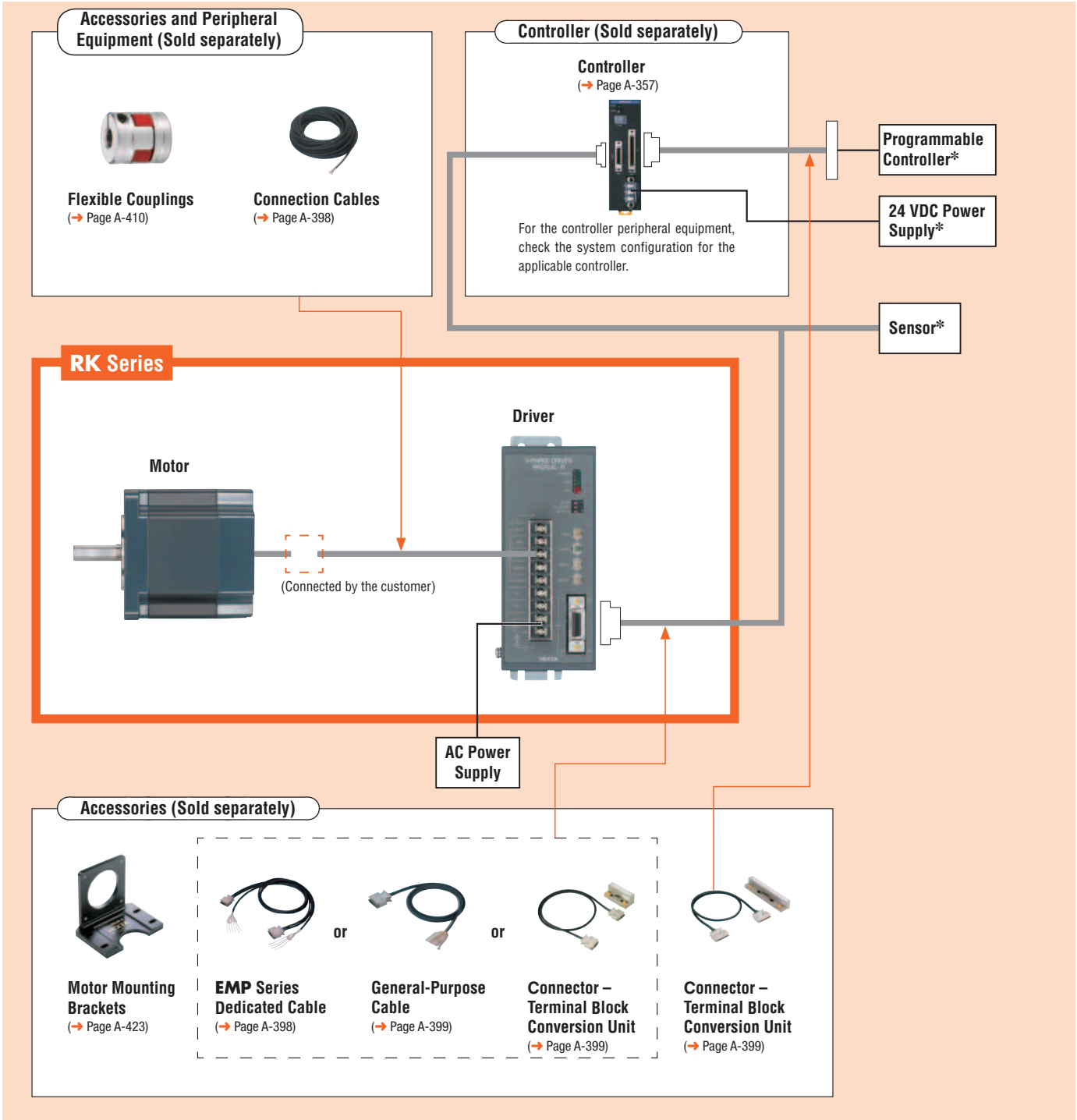
[□42 (□1.65): indicates a motor frame size of 42 mm (1.65 in.).]

	Power Supply Voltage	Step Angle 0.72° Standard Type*	Step Angle 0.72° Standard Type Terminal Box	**TH** Geared Type*	**PS** Geared Type*	**PN** Geared Type	Harmonic Geared Type*
AC Input Type **RK** Series 	Single-Phase 100-115 VAC	□42 (□1.65) □60 (□2.36) □85 (□3.35)	□60 (□2.36) □85 (□3.35)	□42 (□1.65) □60 (□2.36) □90 (□3.54)	□42 (□1.65) □60 (□2.36) □90 (□3.54)	□42 (□1.65) □60 (□2.36) □90 (□3.54)	□42 (□1.65) □60 (□2.36) □90 (□3.54)
	Single-Phase 200-230 VAC	□60 (□2.36) □85 (□3.35)	□60 (□2.36) □85 (□3.35)	□60 (□2.36) □90 (□3.54)	□60 (□2.36) □90 (□3.54)	□60 (□2.36) □90 (□3.54)	□60 (□2.36) □90 (□3.54)

✻Motor with an encoder is also available.

System Configuration

An example of a single-axis system configuration with the **EMP400** Series controller.



●Example of System Configuration

RK Series	+	Sold Separately					
		Controller	Connection Cable [5 m (16.4 ft.)]	Motor Mounting Bracket	Flexible Coupling	Connection Cable EMP Series Dedicated Type [1 m (3.3 ft.)]	Connector – Terminal Block Conversion Unit [1 m (3.3 ft.)]
RK564AAE		EMP401-1	CC05PK5	PAL2P-5A	MCS200808	CC01EMP5	CC50T1

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

*Not supplied

Product Number Code

Step Angle 0.72° Standard Type

RK 5 9 13 A A T

① ② ③ ④ ⑤ ⑥ ⑦

Geared Type

RK 5 6 6 B A E - N 5

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①	Series	**RK**: **RK** Series
②	**5**: 5-Phase	
③	Motor Frame Size	**4**: 42 mm (1.65 in.) **6**: 60 mm (2.36 in.) **9**: 85 mm (3.35 in.) [90 mm (3.54 in.) sq. for geared type]
④	Motor Case Length	
⑤	Motor Shaft Type	**A**: Single Shaft **B**: Double Shaft
⑥	Power Supply Voltage	**A**: Single-Phase 100-115 VAC **C**: Single-Phase 200-230 VAC
⑦	Motor Classification	
⑧	Gearhead Type	**T**: **TH** Geared Type **PS**: **PS** Geared Type **N**: **PN** Geared Type **H**: Harmonic Geared Type
⑨	Gear Ratio	

Step Angle 0.72° Standard Type with Encoder

RK 5 6 4 A C E - R 2 7

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

Geared Type with Encoder

RK 5 6 4 A C E R 2 7 T 10

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫

①	Series	**RK**: **RK** Series
②	**5**: 5-Phase	
③	Motor Frame Size	**4**: 42 mm (1.65 in.) **6**: 60 mm (2.36 in.) **9**: 85 mm (3.35 in.) [90 mm (3.54 in.) sq. for geared type]
④	Motor Case Length	
⑤	Motor Shaft Type	**A**: Single Shaft
⑥	Power Supply Voltage	**A**: Single-Phase 100-115 VAC **C**: Single-Phase 200-230 VAC
⑦	Motor Classification	
⑧	Encoder Version	
⑨	Encoder Output	**2**: 3-Channel A, B, Index
⑩	Encoder Resolution	**7**: 500 P/R
⑪	Gearhead Type	**T**: **TH** Geared Type **PS**: **PS** Geared Type **H**: Harmonic Geared Type
⑫	Gear Ratio	

Product Line

Step Angle 0.72° Standard Type

Power Supply Voltage	Model (Single shaft)	Model (Double shaft)
Single-Phase 100-115 VAC	**RK543AA**	**RK543BA**
	RK544AA	**RK544BA**
	RK545AA	**RK545BA**
	RK564AAE	**RK564BAE**
	RK566AAE	**RK566BAE**
	RK569AAE	**RK569BAE**
	RK596AAE	**RK596BAE**
	RK599AAE	**RK599BAE**
	RK5913AAE	**RK5913BAE**
Single-Phase 200-230 VAC	**RK564ACE**	**RK564BCE**
	RK566ACE	**RK566BCE**
	RK569ACE	**RK569BCE**
	RK596ACE	**RK596BCE**
	RK599ACE	**RK599BCE**
	RK5913ACE	**RK5913BCE**

Step Angle 0.72° Standard Type with Encoder

Power Supply Voltage	Model
Single-Phase 100-115 VAC	**RK543AA-R27**
	RK544AA-R27
	RK545AA-R27
	RK564AAE-R27
	RK566AAE-R27
	RK569AAE-R27
	RK596AAE-R27
	RK599AAE-R27
	RK5913AAE-R27
Single-Phase 200-230 VAC	**RK564ACE-R27**
	RK566ACE-R27
	RK569ACE-R27
	RK596ACE-R27
	RK599ACE-R27
	RK5913ACE-R27

Step Angle 0.72° Standard Type Terminal Box

Power Supply Voltage	Model
Single-Phase 100-115 VAC	**RK564AAT**
	RK566AAT
	RK569AAT
	RK596AAT
	RK599AAT
	RK5913AAT
Single-Phase 200-230 VAC	**RK564ACT**
	RK566ACT
	RK569ACT
	RK596ACT
	RK599ACT
	RK5913ACT

The following items are included in each product.
Motor, Parallel Key*1, Driver, Connector for Input/Output Signal, Encoder Cable*2, Operating Manual
*1 Only for the products with a key slot on the output shaft
*2 Only for the products with an encoder

●TH Geared Type

Power Supply Voltage	Model (Single shaft)	Model (Double shaft)
Single-Phase 100-115 VAC	RK543AA-T3.6	RK543BA-T3.6
	RK543AA-T7.2	RK543BA-T7.2
	RK543AA-T10	RK543BA-T10
	RK543AA-T20	RK543BA-T20
	RK543AA-T30	RK543BA-T30
	RK564AAE-T3.6	RK564BAE-T3.6
	RK564AAE-T7.2	RK564BAE-T7.2
	RK564AAE-T10	RK564BAE-T10
	RK564AAE-T20	RK564BAE-T20
	RK564AAE-T30	RK564BAE-T30
	RK596AAE-T3.6	RK596BAE-T3.6
	RK596AAE-T7.2	RK596BAE-T7.2
	RK596AAE-T10	RK596BAE-T10
	RK596AAE-T20	RK596BAE-T20
	RK596AAE-T30	RK596BAE-T30
Single-Phase 200-230 VAC	RK564ACE-T3.6	RK564BCE-T3.6
	RK564ACE-T7.2	RK564BCE-T7.2
	RK564ACE-T10	RK564BCE-T10
	RK564ACE-T20	RK564BCE-T20
	RK564ACE-T30	RK564BCE-T30
	RK596ACE-T3.6	RK596BCE-T3.6
	RK596ACE-T7.2	RK596BCE-T7.2
	RK596ACE-T10	RK596BCE-T10
	RK596ACE-T20	RK596BCE-T20
	RK596ACE-T30	RK596BCE-T30

●TH Geared Type with Encoder

Power Supply Voltage	Model
Single-Phase 100-115 VAC	RK543AAR27T3.6
	RK543AAR27T7.2
	RK543AAR27T10
	RK543AAR27T20
	RK543AAR27T30
	RK564AAER27T3.6
	RK564AAER27T7.2
	RK564AAER27T10
	RK564AAER27T20
	RK564AAER27T30
	RK596AAER27T3.6
	RK596AAER27T7.2
	RK596AAER27T10
	RK596AAER27T20
	RK596AAER27T30
Single-Phase 200-230 VAC	RK564ACER27T3.6
	RK564ACER27T7.2
	RK564ACER27T10
	RK564ACER27T20
	RK564ACER27T30
	RK596ACER27T3.6
	RK596ACER27T7.2
	RK596ACER27T10
	RK596ACER27T20
	RK596ACER27T30

●PS Geared Type

Power Supply Voltage	Model (Single shaft)	Model (Double shaft)
Single-Phase 100-115 VAC	RK545AA-PS5	RK545BA-PS5
	RK545AA-PS7	RK545BA-PS7
	RK545AA-PS10	RK545BA-PS10
	RK543AA-PS25	RK543BA-PS25
	RK543AA-PS36	RK543BA-PS36
	RK543AA-PS50	RK543BA-PS50
	RK566AAE-PS5	RK566BAE-PS5
	RK566AAE-PS7	RK566BAE-PS7
	RK566AAE-PS10	RK566BAE-PS10
	RK564AAE-PS25	RK564BAE-PS25
	RK564AAE-PS36	RK564BAE-PS36
	RK564AAE-PS50	RK564BAE-PS50
	RK599AAE-PS5	RK599BAE-PS5
	RK599AAE-PS7	RK599BAE-PS7
	RK599AAE-PS10	RK599BAE-PS10
	RK596AAE-PS25	RK596BAE-PS25
	RK596AAE-PS36	RK596BAE-PS36
	RK596AAE-PS50	RK596BAE-PS50
Single-Phase 200-230 VAC	RK566ACE-PS5	RK566BCE-PS5
	RK566ACE-PS7	RK566BCE-PS7
	RK566ACE-PS10	RK566BCE-PS10
	RK564ACE-PS25	RK564BCE-PS25
	RK564ACE-PS36	RK564BCE-PS36
	RK564ACE-PS50	RK564BCE-PS50
	RK599ACE-PS5	RK599BCE-PS5
	RK599ACE-PS7	RK599BCE-PS7
	RK599ACE-PS10	RK599BCE-PS10
	RK596ACE-PS25	RK596BCE-PS25
	RK596ACE-PS36	RK596BCE-PS36
	RK596ACE-PS50	RK596BCE-PS50

●PS Geared Type with Encoder

Power Supply Voltage	Model
Single-Phase 100-115 VAC	RK545AAR27PS5
	RK545AAR27PS7
	RK545AAR27PS10
	RK543AAR27PS25
	RK543AAR27PS36
	RK543AAR27PS50
	RK566AAER27PS5
	RK566AAER27PS7
	RK566AAER27PS10
	RK564AAER27PS25
	RK564AAER27PS36
	RK564AAER27PS50
	RK599AAER27PS5
	RK599AAER27PS7
	RK599AAER27PS10
	RK596AAER27PS25
	RK596AAER27PS36
	RK596AAER27PS50
Single-Phase 200-230 VAC	RK566ACER27PS5
	RK566ACER27PS7
	RK566ACER27PS10
	RK564ACER27PS25
	RK564ACER27PS36
	RK564ACER27PS50
	RK599ACER27PS5
	RK599ACER27PS7
	RK599ACER27PS10
	RK596ACER27PS25
	RK596ACER27PS36
	RK596ACER27PS50

●PN Geared Type

Power Supply Voltage	Model (Single shaft)	Model (Double shaft)
Single-Phase 100-115 VAC	RK544AA-N5	RK544BA-N5
	RK544AA-N7.2	RK544BA-N7.2
	RK544AA-N10	RK544BA-N10
	RK566AAE-N5	RK566BAE-N5
	RK566AAE-N7.2	RK566BAE-N7.2
	RK566AAE-N10	RK566BAE-N10
	RK564AAE-N25	RK564BAE-N25
	RK564AAE-N36	RK564BAE-N36
	RK564AAE-N50	RK564BAE-N50
	RK599AAE-N5	RK599BAE-N5
	RK599AAE-N7.2	RK599BAE-N7.2
	RK599AAE-N10	RK599BAE-N10
	RK596AAE-N25	RK596BAE-N25
	RK596AAE-N36	RK596BAE-N36
	RK596AAE-N50	RK596BAE-N50
Single-Phase 200-230 VAC	RK566ACE-N5	RK566BCE-N5
	RK566ACE-N7.2	RK566BCE-N7.2
	RK566ACE-N10	RK566BCE-N10
	RK564ACE-N25	RK564BCE-N25
	RK564ACE-N36	RK564BCE-N36
	RK564ACE-N50	RK564BCE-N50
	RK599ACE-N5	RK599BCE-N5
	RK599ACE-N7.2	RK599BCE-N7.2
	RK599ACE-N10	RK599BCE-N10
	RK596ACE-N25	RK596BCE-N25
	RK596ACE-N36	RK596BCE-N36
	RK596ACE-N50	RK596BCE-N50

●Harmonic Geared Type

Power Supply Voltage	Model (Single shaft)	Model (Double shaft)
Single-Phase 100-115 VAC	RK543AA-H50	RK543BA-H50
	RK543AA-H100	RK543BA-H100
	RK564AAE-H50	RK564BAE-H50
	RK564AAE-H100	RK564BAE-H100
	RK596AAE-H50	RK596BAE-H50
	RK596AAE-H100	RK596BAE-H100
Single-Phase 200-230 VAC	RK564ACE-H50	RK564BCE-H50
	RK564ACE-H100	RK564BCE-H100
	RK596ACE-H50	RK596BCE-H50
	RK596ACE-H100	RK596BCE-H100

●Harmonic Geared Type with Encoder

Power Supply Voltage	Model
Single-Phase 100-115 VAC	RK543AAR27H50
	RK543AAR27H100
	RK564AAER27H50
	RK564AAER27H100
	RK596AAER27H50
	RK596AAER27H100
Single-Phase 200-230 VAC	RK564ACER27H50
	RK564ACER27H100
	RK596ACER27H50
	RK596ACER27H100

Step Angle 0.72° Motor Frame Size 42 mm (1.65 in.)

Standard Type

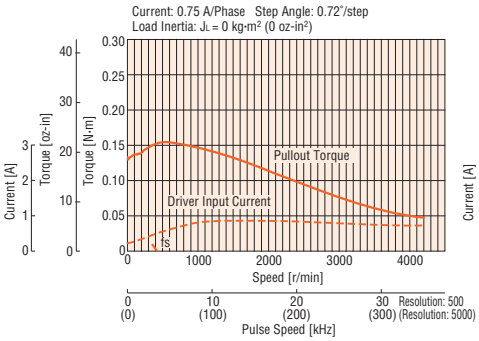
Specifications RoHS

● With the **RK54**□ type, only the driver conforms to the CSA Standards.

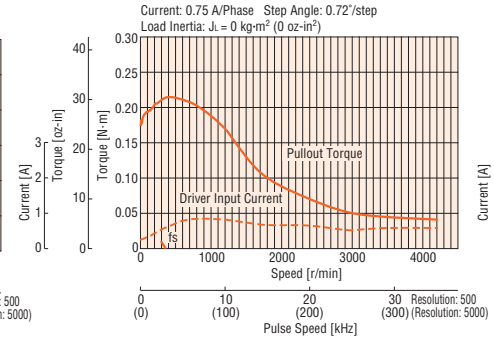
Model	Single-Phase 100-115 VAC				
		Single Shaft	**RK543AA**	**RK544AA**	**RK545AA**
		Double Shaft	**RK543BA**	**RK544BA**	**RK545BA**
		With Encoder	**RK543AA-R27**	**RK544AA-R27**	**RK545AA-R27**
Maximum Holding Torque		N·m (oz-in)	0.13 (18.4)	0.18 (25)	0.24 (34)
Holding Torque at Motor Standstill	Power ON	N·m (oz-in)	0.065 (9.2)	0.09 (12.7)	0.12 (17.0)
Rotor Inertia		J: kg·m^2 (oz-in^2)	35×10^{-7} (0.191)	54×10^{-7} (0.3)	68×10^{-7} (0.37)
Rated Current		A/Phase	0.75		
Basic Step Angle			0.72°		
Power Source			Single-Phase 100-115 VAC±15% 50/60 Hz 1 A		
Excitation Mode			Microstep		

Speed – Torque Characteristics

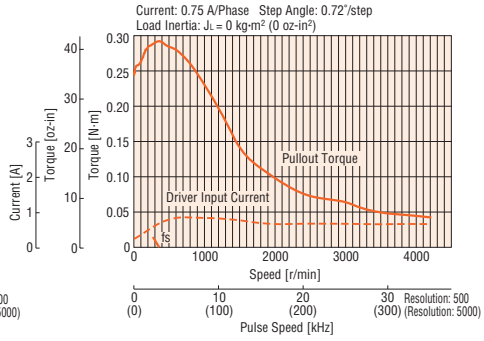
RK543



RK544



RK545



● The pulse input circuit responds to approximately 200 kHz with a pulse duty of 50%.

Note

● Pay attention to heat dissipation from the motor as there will be a considerable amount of heat under certain conditions. Be sure to keep the temperature of the motor case under 100°C (212°F). [Under 75°C (167°F) is required to comply with UL or CSA Standards as the motor is recognized as thermal class 105 (A).]

Step Angle 0.72° Motor Frame Size 60 mm (2.36 in.), 85 mm (3.35 in.)

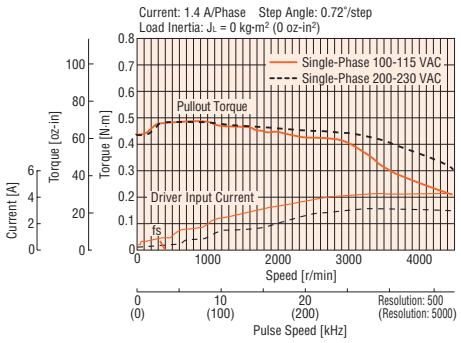
Standard Type

Specifications RoHS

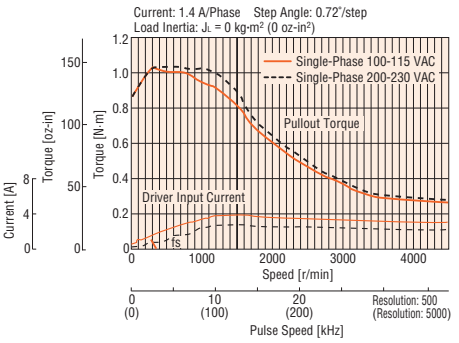
Model			RK564AAE	RK566AAE	RK569AAE	RK596AAE	RK599AAE	RK5913AAE
	Single-Phase 100-115 VAC	Single Shaft	RK564AAE	RK566AAE	RK569AAE	RK596AAE	RK599AAE	RK5913AAE
		Double Shaft	RK564BAE	RK566BAE	RK569BAE	RK596BAE	RK599BAE	RK5913BAE
		With Encoder	RK564AAE-R27	RK566AAE-R27	RK569AAE-R27	RK596AAE-R27	RK599AAE-R27	RK5913AAE-R27
	Single-Phase 200-230 VAC	Single Shaft	RK564ACE	RK566ACE	RK569ACE	RK596ACE	RK599ACE	RK5913ACE
		Double Shaft	RK564BCE	RK566BCE	RK569BCE	RK596BCE	RK599BCE	RK5913BCE
		With Encoder	RK564ACE-R27	RK566ACE-R27	RK569ACE-R27	RK596ACE-R27	RK599ACE-R27	RK5913ACE-R27
Maximum Holding Torque		N·m (oz-in)	0.42 (59)	0.83 (117)	1.66 (230)	2.1 (290)	4.1 (580)	6.3 (890)
Holding Torque at Motor Standstill	Power ON	N·m (oz-in)	0.21 (29)	0.41 (58)	0.83 (117)	1.05 (149)	2.05 (290)	3.15 (440)
Rotor Inertia		J: kg·m^2 (oz-in^2)	175×10^{-7} (0.96)	280×10^{-7} (1.53)	560×10^{-7} (3.1)	1400×10^{-7} (7.7)	2700×10^{-7} (14.8)	4000×10^{-7} (22)
Rated Current		A/Phase	1.4					
Basic Step Angle			0.72°					
Power Source			Single-Phase 100-115 VAC±15% 50/60 Hz 4.5 A Single-Phase 200-230 VAC $^{+10\%}_{-15\%}$ 50/60 Hz 3.5 A					
Excitation Mode			Microstep					

Speed – Torque Characteristics

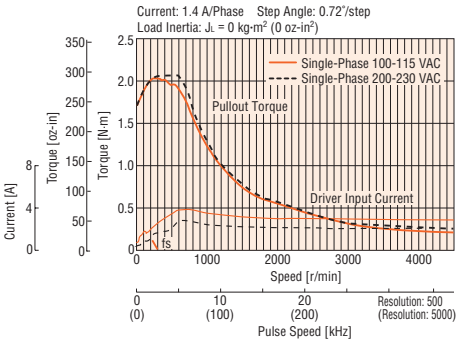
RK564



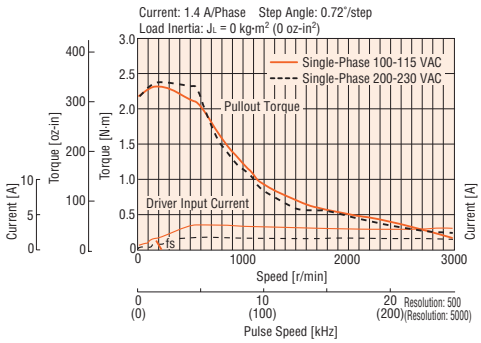
RK566



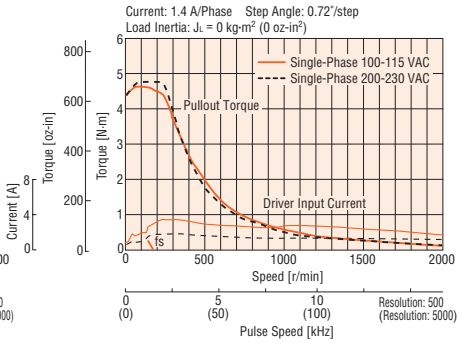
RK569



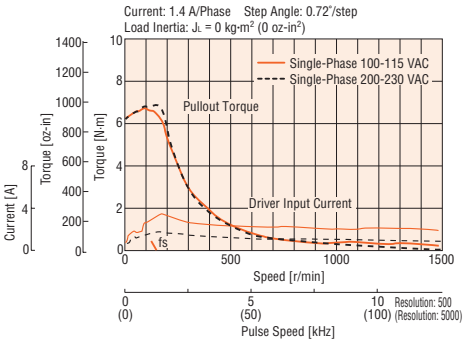
RK596



RK599



RK5913



- The pulse input circuit responds to approximately 200 kHz with a pulse duty of 50%.

Note

- Pay attention to heat dissipation from the motor as there will be a considerable amount of heat under certain conditions. Be sure to keep the temperature of the motor case under 100°C (212°F). [Under 75°C (167°F) is required to comply with UL or CSA Standards as the motor is recognized as thermal class 105 (A).]

Step Angle 0.72° Motor Frame Size 60 mm (2.36 in.), 85 mm (3.35 in.)

Standard Type Terminal Box

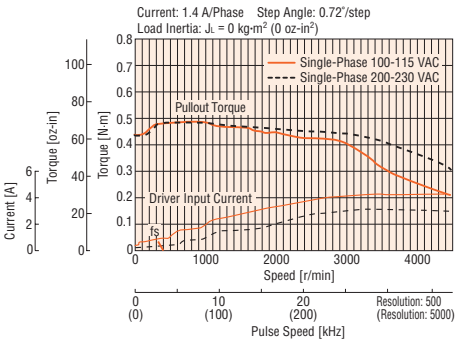
Specifications RoHS

Model	Single-Phase 100-115 VAC	RK564AAT	RK566AAT	RK569AAT	RK596AAT	RK599AAT	RK5913AAT
	Single-Phase 200-230 VAC	RK564ACT	RK566ACT	RK569ACT	RK596ACT	RK599ACT	RK5913ACT
Maximum Holding Torque	N·m (oz-in)	0.42 (59)	0.83 (117)	1.66 (230)	2.1 (290)	4.1 (580)	6.3 (890)
Holding Torque at Motor Standstill (Power ON)	N·m (oz-in)	0.21 (29)	0.41 (58)	0.83 (117)	1.05 (149)	2.05 (290)	3.15 (440)
Rotor Inertia	J: kg·m² (oz-in²)	175×10⁻⁷ (0.96)	280×10⁻⁷ (1.53)	560×10⁻⁷ (3.1)	1400×10⁻⁷ (7.7)	2700×10⁻⁷ (14.8)	4000×10⁻⁷ (22)
Rated Current	A/Phase	1.4					
Basic Step Angle		0.72°					
Power Source		Single-Phase 100-115 VAC±15% 50/60 Hz 4.5 A Single-Phase 200-230 VAC +10% −15% 50/60 Hz 3.5 A					
Excitation Mode		Microstep					
Degree of Protection		Motor: IP65* Driver: IP10					

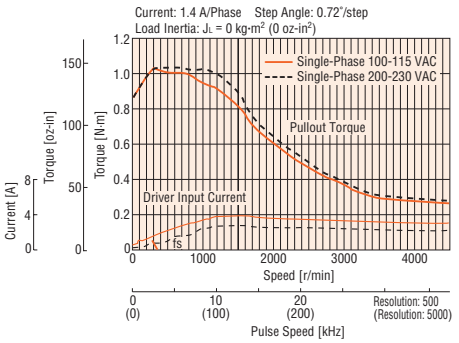
*Excluding the gap between the shaft and the flange

Speed – Torque Characteristics

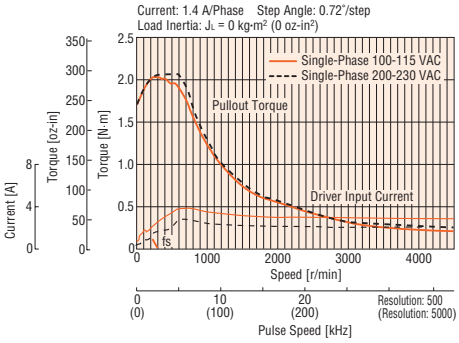
RK564



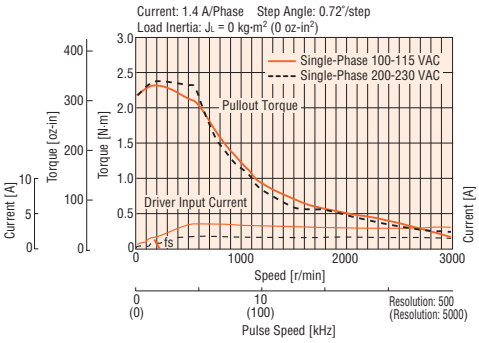
RK566



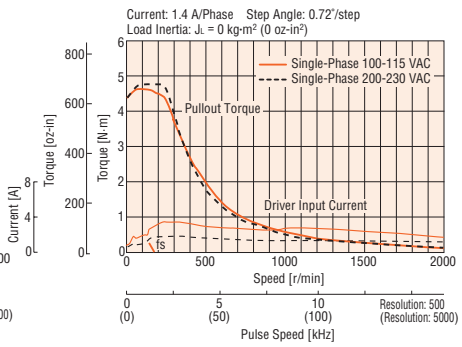
RK569



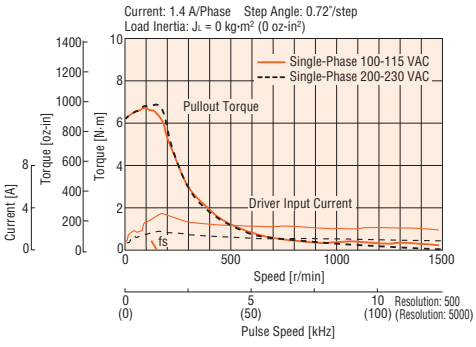
RK596



RK599



RK5913



- The pulse input circuit responds to approximately 200 kHz with a pulse duty of 50%.

Note

- Pay attention to heat dissipation from the motor as there will be a considerable amount of heat under certain conditions. Be sure to keep the temperature of the motor case under 100°C (212°F). [Under 75°C (167°F) is required to comply with UL or CSA Standards as the motor is recognized as thermal class 105 (A).]

TH Geared Type Motor Frame Size 42 mm (1.65 in.)

Specifications RoHS

●With the **RK543** type, only the driver conforms to the CSA Standards.

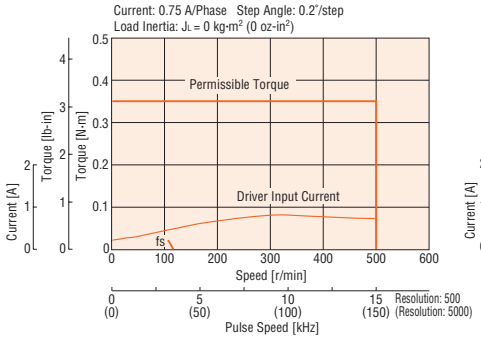
Model	Single-Phase 100-115 VAC						
		Single Shaft	**RK543AA-T3.6**	**RK543AA-T7.2**	**RK543AA-T10**	**RK543AA-T20**	**RK543AA-T30**
		Double Shaft	**RK543BA-T3.6**	**RK543BA-T7.2**	**RK543BA-T10**	**RK543BA-T20**	**RK543BA-T30**
		With Encoder	**RK543AAR27T3.6**	**RK543AAR27T7.2**	**RK543AAR27T10**	**RK543AAR27T20**	**RK543AAR27T30**
Maximum Holding Torque		N·m (lb-in)	0.35 (3)	0.7 (6.1)	1 (8.8)	1.5 (13.2)	
Rotor Inertia		J: kg·m^2 (oz-in^2)	35×10^{-7} (0.191)				
Rated Current		A/Phase	0.75				
Basic Step Angle			0.2°	0.1°	0.072°	0.036°	0.024°
Gear Ratio			3.6	7.2	10	20	30
Permissible Torque		N·m (lb-in)	0.35 (3)	0.7 (6.1)	1 (8.8)	15 (13.2)	
Holding Torque at Motor Standstill	Power ON	N·m (lb-in)	0.23 (2)	0.46 (4)	0.65 (5.7)	1.3 (11.5)	1.5 (13.2)
Backlash		arc min (degrees)	45 (0.75)	25 (0.42)		15 (0.25)	
Permissible Speed Range		r/min	0~500	0~250	0~180	0~90	0~60
Power Source			Single-Phase 100-115 VAC±15% 50/60 Hz 1 A				
Excitation Mode			Microstep				

Note

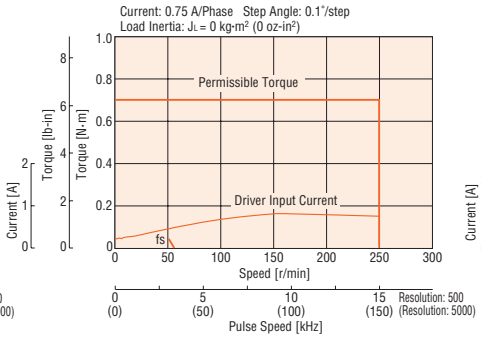
●Direction of rotation of the motor and that of the gear output shaft are the same for the gear ratios 3.6, 7.2 and 10. It is opposite for 20 and 30 gear ratios.

Speed – Torque Characteristics

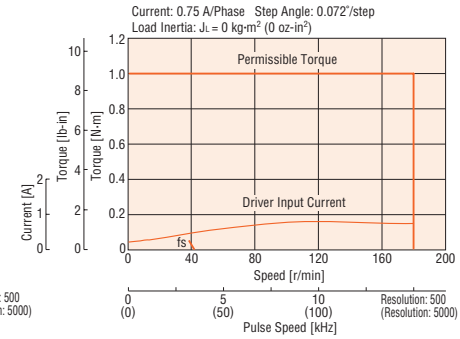
RK543 Gear Ratio 3.6



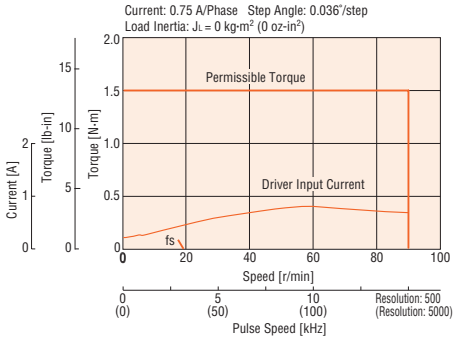
RK543 Gear Ratio 7.2



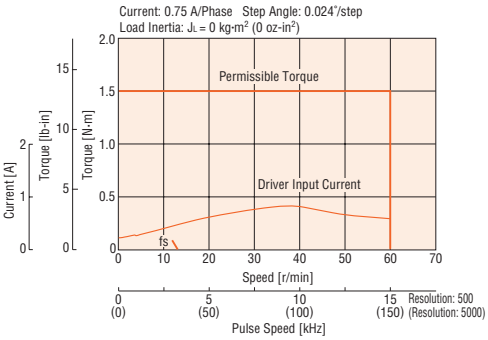
RK543 Gear Ratio 10



RK543 Gear Ratio 20



RK543 Gear Ratio 30



●The pulse input circuit responds to approximately 200 kHz with a pulse duty of 50%.

Note

●Pay attention to heat dissipation from the motor as there will be a considerable amount of heat under certain conditions. Be sure to keep the temperature of the motor case under 100°C (212°F). [Under 75°C (167°F) is required to comply with UL or CSA Standards as the motor is recognized as thermal class 105 (A).]

TH Geared Type Motor Frame Size 60 mm (2.36 in.)

Specifications RoHS

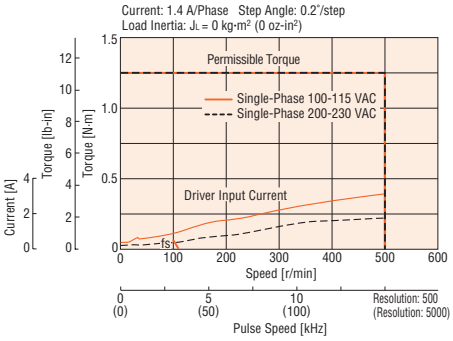
Model							
	Single-Phase 100-115 VAC	Single Shaft	RK564AAE-T3.6	RK564AAE-T7.2	RK564AAE-T10	RK564AAE-T20	RK564AAE-T30
		Double Shaft	RK564BAE-T3.6	RK564BAE-T7.2	RK564BAE-T10	RK564BAE-T20	RK564BAE-T30
		With Encoder	RK564AAER27T3.6	RK564AAER27T7.2	RK564AAER27T10	RK564AAER27T20	RK564AAER27T30
	Single-Phase 200-230 VAC	Single Shaft	RK564ACE-T3.6	RK564ACE-T7.2	RK564ACE-T10	RK564ACE-T20	RK564ACE-T30
		Double Shaft	RK564BCE-T3.6	RK564BCE-T7.2	RK564BCE-T10	RK564BCE-T20	RK564BCE-T30
		With Encoder	RK564ACER27T3.6	RK564ACER27T7.2	RK564ACER27T10	RK564ACER27T20	RK564ACER27T30
Maximum Holding Torque		N·m (lb-in)	1.25 (11)	2.5 (22)	3 (26)	3.5 (30)	4 (35)
Rotor Inertia		J: kg·m² (oz-in²)	175×10⁻⁷ (0.96)				
Rated Current		A/Phase	1.4				
Basic Step Angle			0.2°	0.1°	0.072°	0.036°	0.024°
Gear Ratio			3.6	7.2	10	20	30
Permissible Torque		N·m (lb-in)	1.25 (11)	2.5 (22)	3 (26)	3.5 (30)	4 (35)
Holding Torque at Motor Standstill	Power ON	N·m (lb-in)	0.75 (6.6)	1.5 (13.2)	2.1 (18.5)	3.5 (30)	4 (35)
Backlash		arc min (degrees)	35 (0.59)	15 (0.25)		10 (0.17)	
Permissible Speed Range		r/min	0~500	0~250	0~180	0~90	0~60
Power Source			Single-Phase 100-115 VAC±15% 50/60 Hz 4.5 A Single-Phase 200-230 VAC $^{+10\%}_{-15\%}$ 50/60 Hz 3.5 A				
Excitation Mode			Microstep				

Note

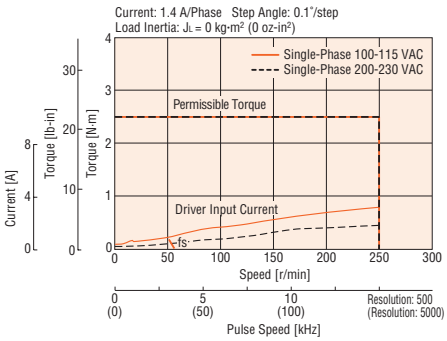
- Direction of rotation of the motor and that of the gear output shaft are the same for the gear ratios 3.6, 7.2 and 10. It is opposite for 20 and 30 gear ratios.

Speed – Torque Characteristics

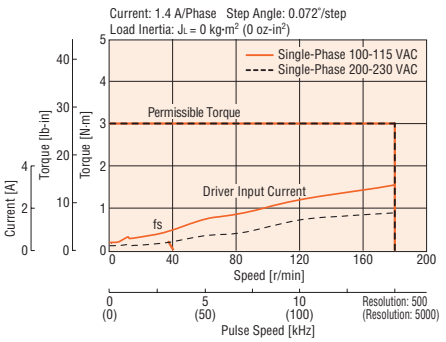
RK564 Gear Ratio **3.6**



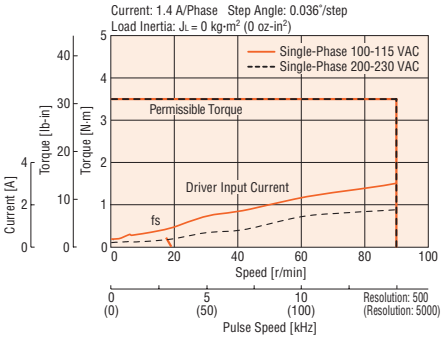
RK564 Gear Ratio **7.2**



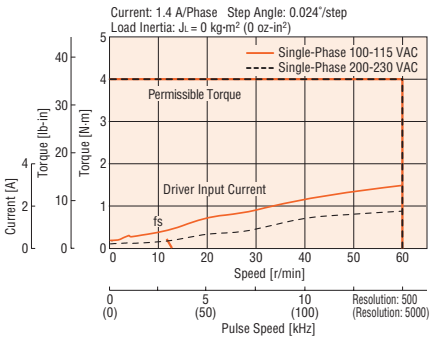
RK564 Gear Ratio **10**



RK564 Gear Ratio **20**



RK564 Gear Ratio **30**



- The pulse input circuit responds to approximately 200 kHz with a pulse duty of 50%.

Note

- Pay attention to heat dissipation from the motor as there will be a considerable amount of heat under certain conditions. Be sure to keep the temperature of the motor case under 100°C (212°F). [Under 75°C (167°F) is required to comply with UL or CSA Standards as the motor is recognized as thermal class 105 (A).]

TH Geared Type Motor Frame Size 90 mm (3.54 in.)

Specifications RoHS

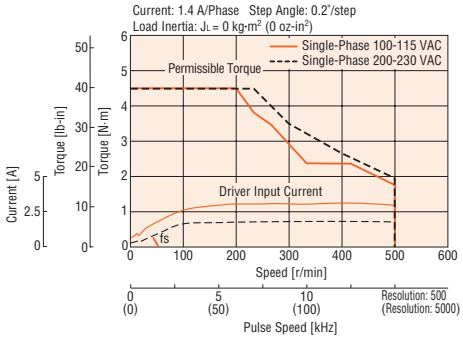
Model							
	Single-Phase 100-115 VAC	Single Shaft	RK596AAE-T3.6	RK596AAE-T7.2	RK596AAE-T10	RK596AAE-T20	RK596AAE-T30
		Double Shaft	RK596BAE-T3.6	RK596BAE-T7.2	RK596BAE-T10	RK596BAE-T20	RK596BAE-T30
		With Encoder	RK596AAER27T3.6	RK596AAER27T7.2	RK596AAER27T10	RK596AAER27T20	RK596AAER27T30
	Single-Phase 200-230 VAC	Single Shaft	RK596ACE-T3.6	RK596ACE-T7.2	RK596ACE-T10	RK596ACE-T20	RK596ACE-T30
		Double Shaft	RK596BCE-T3.6	RK596BCE-T7.2	RK596BCE-T10	RK596BCE-T20	RK596BCE-T30
		With Encoder	RK596ACER27T3.6	RK596ACER27T7.2	RK596ACER27T10	RK596ACER27T20	RK596ACER27T30
Maximum Holding Torque		N·m (lb-in)	4.5 (39)	9 (79)		12 (106)	
Rotor Inertia		J: kg·m² (oz-in²)	1400×10⁻⁷ (7.7)				
Rated Current		A/Phase	1.4				
Basic Step Angle			0.2°	0.1°	0.072°	0.036°	0.024°
Gear Ratio			3.6	7.2	10	20	30
Permissible Torque		N·m (lb-in)	4.5 (39)	9 (79)		12 (106)	
Holding Torque at Motor Standstill	Power ON	N·m (lb-in)	3.7 (32)	7.5 (66)	9 (79)	12 (106)	
Backlash		arc min (degrees)	25 (0.42)	15 (0.25)		10 (0.17)	
Permissible Speed Range		r/min	0~500	0~250	0~180	0~90	0~60
Power Source			Single-Phase 100-115 VAC±15% 50/60 Hz 4.5 A Single-Phase 200-230 VAC $^{+10\%}_{-15\%}$ 50/60 Hz 3.5 A				
Excitation Mode			Microstep				

Note

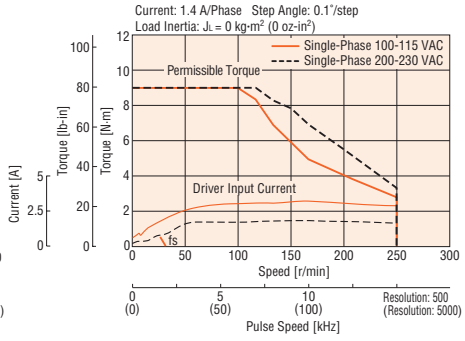
- Direction of rotation of the motor and that of the gear output shaft are the same for the gear ratios 3.6, 7.2 and 10. It is opposite for 20 and 30 gear ratios.

Speed – Torque Characteristics

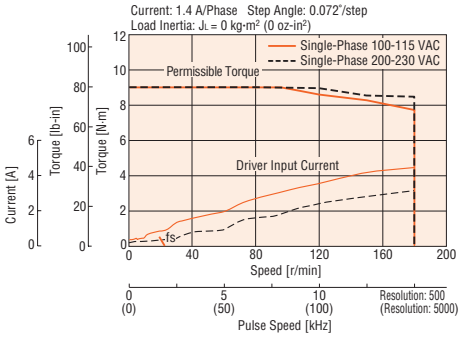
RK596 Gear Ratio 3.6



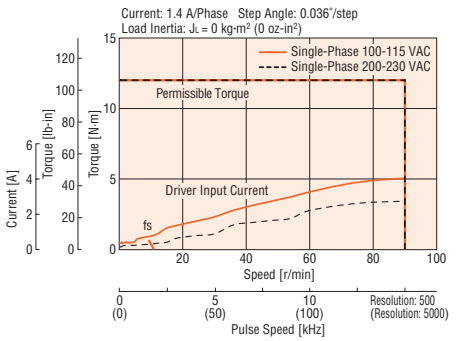
RK596 Gear Ratio 7.2



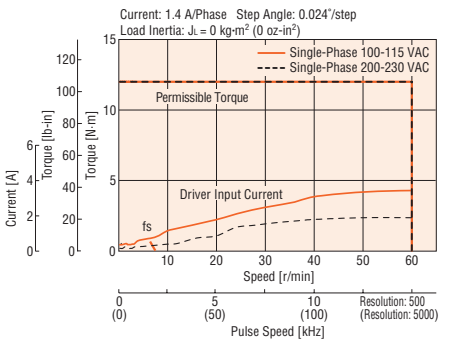
RK596 Gear Ratio 10



RK596 Gear Ratio 20



RK596 Gear Ratio 30



- The pulse input circuit responds to approximately 200 kHz with a pulse duty of 50%.

Note

- Pay attention to heat dissipation from the motor as there will be a considerable amount of heat under certain conditions. Be sure to keep the temperature of the motor case under 100°C (212°F). [Under 75°C (167°F) is required to comply with UL or CSA Standards as the motor is recognized as thermal class 105 (A).]

PS Geared Type Motor Frame Size 42 mm (1.65 in.)

Specifications RoHS

● With the **RK54**□ type, only the driver conforms to the CSA Standards.

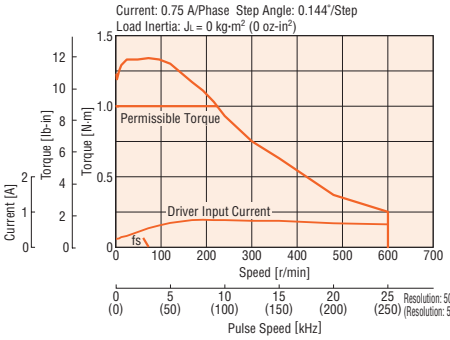
Model	Single-Phase 100-115 VAC						
		Single Shaft	RK545AA-PS5	RK545AA-PS7	RK545AA-PS10	RK543AA-PS25	RK543AA-PS36	RK543AA-PS50
		Double Shaft	RK545BA-PS5	RK545BA-PS7	RK545BA-PS10	RK543BA-PS25	RK543BA-PS36	RK543BA-PS50
		With Encoder	RK545AAR27PS5	RK545AAR27PS7	RK545AAR27PS10	RK543AAR27PS25	RK543AAR27PS36	RK543AAR27PS50
Maximum Holding Torque		N·m (lb-in)	1 (8.8)	1.5 (13.2)		2.5 (22)	3 (26)	
Rotor Inertia		J: kg·m² (oz-in²)	68×10^{-7} (0.37)			35×10^{-7} (0.191)		
Rated Current		A/Phase	0.75					
Basic Step Angle			0.144°	0.1°	0.072°	0.0288°	0.02°	0.0144°
Gear Ratio			5	7.2	10	25	36	50
Permissible Torque		N·m (lb-in)	1 (8.8)	1.5 (13.2)		2.5 (22)	3 (26)	
Maximum Torque		N·m (lb-in)	1.5 (13.2)	2 (17.7)		6 (53)		
Holding Torque at Motor Standstill	Power ON	N·m (lb-in)	0.6 (5.3)	0.86 (7.6)	1.2 (10.6)	1.6 (14.1)	2.3 (20)	3 (26)
Backlash		arc min (degrees)	25 (0.42)					
Permissible Speed Range		r/min	0~600	0~416	0~300	0~120	0~83	0~60
Power Source			Single-Phase 100-115 VAC±15% 50/60 Hz 1 A					
Excitation Mode			Microstep					

Note

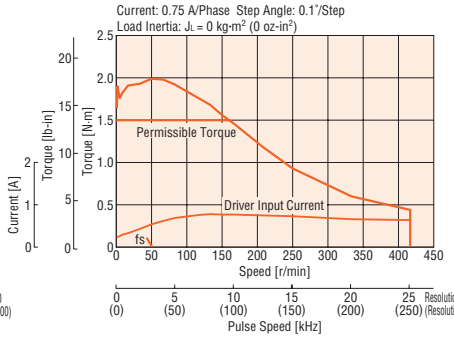
● Direction of rotation of the motor shaft and that of the gear output shaft are the same.

Speed – Torque Characteristics

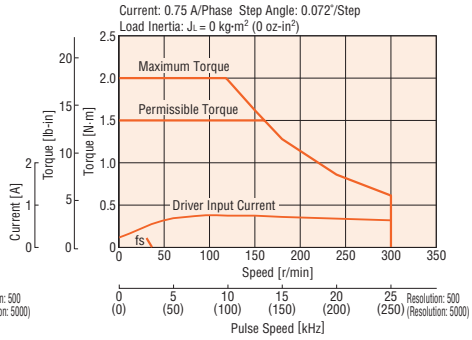
RK545 Gear Ratio **5**



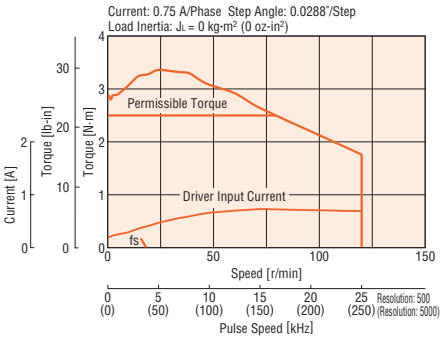
RK545 Gear Ratio **7.2**



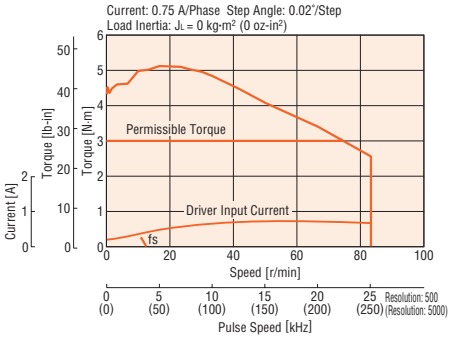
RK545 Gear Ratio **10**



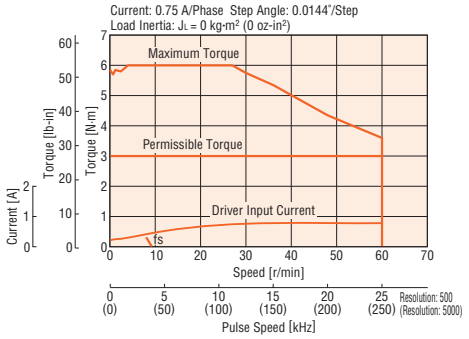
RK543 Gear Ratio **25**



RK543 Gear Ratio **36**



RK543 Gear Ratio **50**



● The pulse input circuit responds to approximately 200 kHz with a pulse duty of 50%.

Note

● Pay attention to heat dissipation from the motor as there will be a considerable amount of heat under certain conditions. Be sure to keep the temperature of the motor case under 100°C (212°F). [Under 75°C (167°F) is required to comply with UL or CSA Standards as the motor is recognized as thermal class 105 (A).]

PS Geared Type Motor Frame Size 60 mm (2.36 in.)

Specifications RoHS

Model							
Single-Phase 100-115 VAC	Single Shaft	RK566AAE-PS5	RK566AAE-PS7	RK566AAE-PS10	RK564AAE-PS25	RK564AAE-PS36	RK564AAE-PS50
	Double Shaft	RK566BAE-PS5	RK566BAE-PS7	RK566BAE-PS10	RK564BAE-PS25	RK564BAE-PS36	RK564BAE-PS50
	With Encoder	RK566AAER27PS5	RK566AAER27PS7	RK566AAER27PS10	RK564AAER27PS25	RK564AAER27PS36	RK564AAER27PS50
Single-Phase 200-230 VAC	Single Shaft	RK566ACE-PS5	RK566ACE-PS7	RK566ACE-PS10	RK564ACE-PS25	RK564ACE-PS36	RK564ACE-PS50
	Double Shaft	RK566BCE-PS5	RK566BCE-PS7	RK566BCE-PS10	RK564BCE-PS25	RK564BCE-PS36	RK564BCE-PS50
	With Encoder	RK566ACER27PS5	RK566ACER27PS7	RK566ACER27PS10	RK564ACER27PS25	RK564ACER27PS36	RK564ACER27PS50

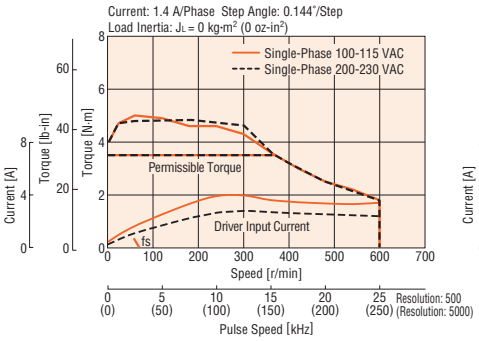
Maximum Holding Torque		N·m (lb-in)	3.5 (30)	4 (35)	5 (44)	8 (70)	
Rotor Inertia		J: kg·m^2 (oz-in^2)	280×10^{-7} (1.53)			175×10^{-7} (0.96)	
Rated Current		A/Phase	1.4				
Basic Step Angle			0.144°	0.1°	0.072°	0.0288°	0.02°	0.0144°
Gear Ratio			5	7.2	10	25	36	50
Permissible Torque		N·m (lb-in)	3.5 (30)	4 (35)	5 (44)	8 (70)	
Maximum Torque		N·m (lb-in)	7 (61)	9 (79)	11 (97)	16 (141)	20 (177)	
Holding Torque at Motor Standstill	Power ON	N·m (lb-in)	2 (17.7)	2.9 (25)	4.1 (36)	5.2 (46)	7.5 (66)	8 (70)
Backlash		arc min (degrees)	15 (0.25)				
Permissible Speed Range		r/min	0~600	0~416	0~300	0~120	0~83	0~60
Power Source			Single-Phase 100-115 VAC±15% 50/60 Hz 4.5 A Single-Phase 200-230 VAC $^{+10\%}_{-15\%}$ 50/60 Hz 3.5 A					
Excitation Mode			Microstep					

Note

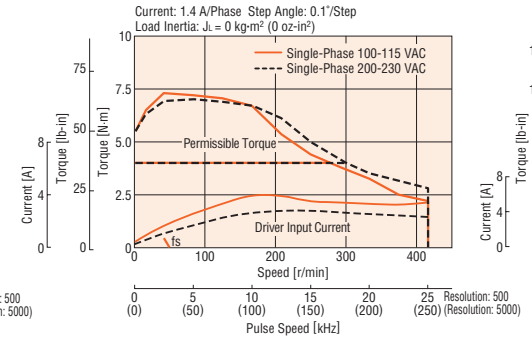
- Direction of rotation of the motor shaft and that of the gear output shaft are the same.

Speed – Torque Characteristics

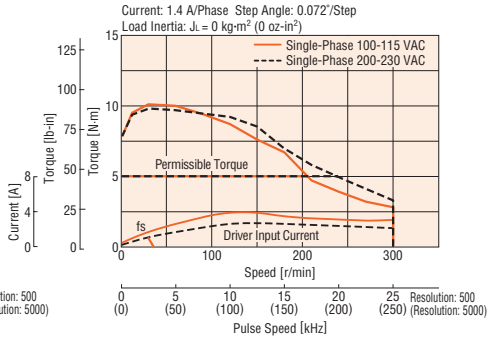
RK566 Gear Ratio **5**



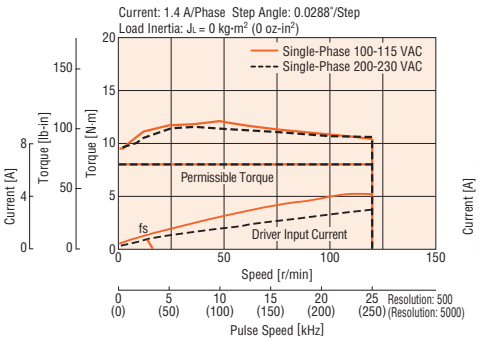
RK566 Gear Ratio **7.2**



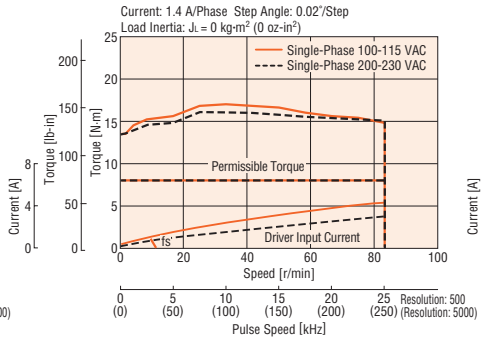
RK566 Gear Ratio **10**



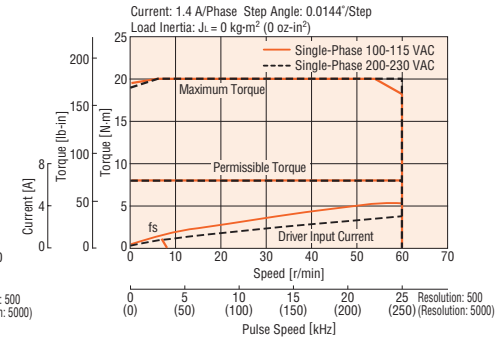
RK564 Gear Ratio **25**



RK564 Gear Ratio **36**



RK564 Gear Ratio **50**



- The pulse input circuit responds to approximately 200 kHz with a pulse duty of 50%.

Note

- Pay attention to heat dissipation from the motor as there will be a considerable amount of heat under certain conditions. Be sure to keep the temperature of the motor case under 100°C (212°F). [Under 75°C (167°F) is required to comply with UL or CSA Standards as the motor is recognized as thermal class 105 (A).]

PS Geared Type Motor Frame Size 90 mm (3.54 in.)

Specifications RoHS

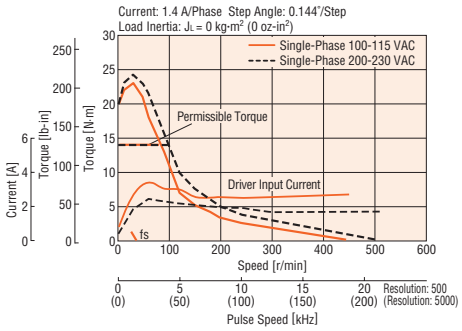
Model								
	Single-Phase 100-115 VAC	Single Shaft	RK599AAE-PS5	RK599AAE-PS7	RK599AAE-PS10	RK596AAE-PS25	RK596AAE-PS36	RK596AAE-PS50
		Double Shaft	RK599BAE-PS5	RK599BAE-PS7	RK599BAE-PS10	RK596BAE-PS25	RK596BAE-PS36	RK596BAE-PS50
		With Encoder	RK599AAER27PS5	RK599AAER27PS7	RK599AAER27PS10	RK596AAER27PS25	RK596AAER27PS36	RK596AAER27PS50
	Single-Phase 200-230 VAC	Single Shaft	RK599ACE-PS5	RK599ACE-PS7	RK599ACE-PS10	RK596ACE-PS25	RK596ACE-PS36	RK596ACE-PS50
		Double Shaft	RK599BCE-PS5	RK599BCE-PS7	RK599BCE-PS10	RK596BCE-PS25	RK596BCE-PS36	RK596BCE-PS50
		With Encoder	RK599ACER27PS5	RK599ACER27PS7	RK599ACER27PS10	RK596ACER27PS25	RK596ACER27PS36	RK596ACER27PS50
Maximum Holding Torque		N·m (lb-in)	14 (123)	20 (177)		37 (320)		
Rotor Inertia		J: kg·m^2 (oz-in^2)	2700×10^{-7} (14.8)			1400×10^{-7} (7.7)		
Rated Current		A/Phase	1.4					
Basic Step Angle			0.144°	0.1°	0.072°	0.0288°	0.02°	0.0144°
Gear Ratio			5	7.2	10	25	36	50
Permissible Torque		N·m (lb-in)	14 (123)	20 (177)		37 (320)		
Maximum Torque		N·m (lb-in)	28 (240)	35 (300)		56 (490)	60 (530)	
Holding Torque at Motor Standstill	Power ON	N·m (lb-in)	10 (88)	14 (123)	20 (177)	26 (230)	37 (320)	
Backlash		arc min (degrees)	15 (0.25)					
Permissible Speed Range		r/min	0~600	0~416	0~300	0~120	0~83	0~60
Power Source			Single-Phase 100-115 VAC±15% 50/60 Hz 4.5 A Single-Phase 200-230 VAC $^{+10\%}_{-15\%}$ 50/60 Hz 3.5 A					
Excitation Mode			Microstep					

Note

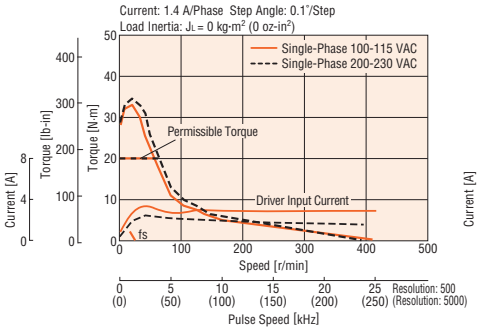
● Direction of rotation of the motor shaft and that of the gear output shaft are the same.

Speed – Torque Characteristics

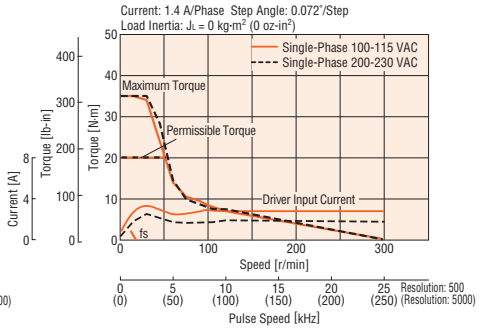
RK599 Gear Ratio **5**



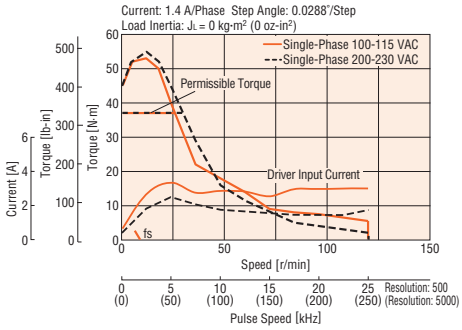
RK599 Gear Ratio **7.2**



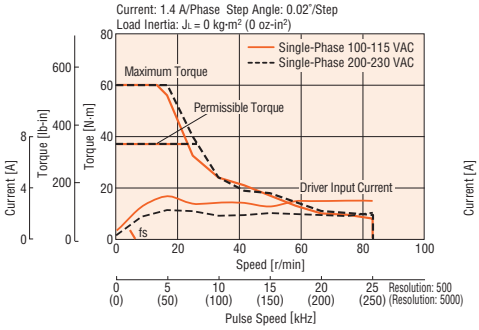
RK599 Gear Ratio **10**



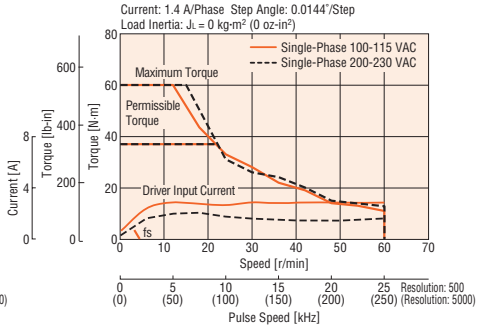
RK596 Gear Ratio **25**



RK596 Gear Ratio **36**



RK596 Gear Ratio **50**



● The pulse input circuit responds to approximately 200 kHz with a pulse duty of 50%.

Note

● Pay attention to heat dissipation from the motor as there will be a considerable amount of heat under certain conditions. Be sure to keep the temperature of the motor case under 100°C (212°F). [Under 75°C (167°F) is required to comply with UL or CSA Standards as the motor is recognized as thermal class 105 (A).]

PN Geared Type Motor Frame Size 42 mm (1.65 in.)

Specifications RoHS

cULus CE ●With the **RK544** type, only the driver conforms to the CSA Standards.

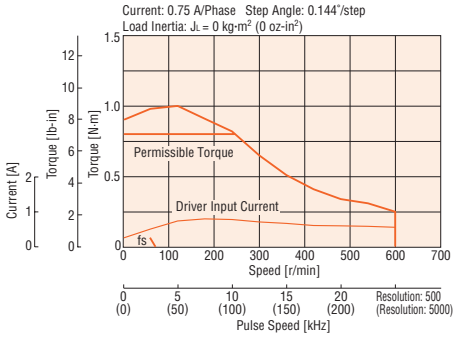
Model	Single-Phase 100-115 VAC	Single Shaft / Double Shaft	RK544AA-N5 / RK544BA-N5	RK544AA-N7.2 / RK544BA-N7.2	RK544AA-N10 / RK544BA-N10
Maximum Holding Torque		N·m (lb-in)	0.8 (7)	1.2 (10.6)	1.5 (13.2)
Rotor Inertia		J: kg·m^2 (oz-in^2)	54×10^{-7} (0.30)		
Rated Current		A/Phase	0.75		
Basic Step Angle			0.144°	0.1°	0.072°
Gear Ratio			5	7.2	10
Permissible Torque		N·m (lb-in)	0.8 (7)	1.2 (10.6)	1.5 (13.2)
Maximum Torque		N·m (lb-in)	1.5 (13.2)	2 (17.7)	2 (17.7)
Holding Torque at Motor Standstill	Power ON	N·m (lb-in)	0.45 (3.9)	0.64 (5.6)	0.9 (7.9)
Backlash		arc min (degrees)	2 (0.034)		
Permissible Speed Range		r/min	0~600	0~416	0~300
Power Source			Single-Phase 100-115 VAC±15% 50/60 Hz 1 A		
Excitation Mode			Microstep		

Note

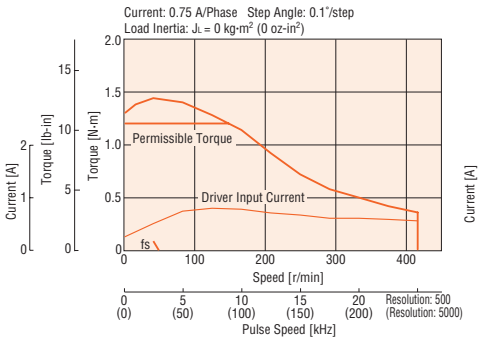
● Direction of rotation of the motor shaft and that of the gear output shaft are the same.

Speed – Torque Characteristics

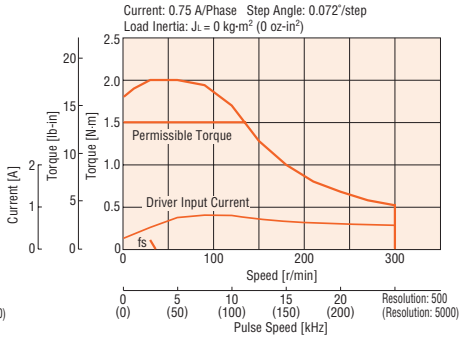
RK544 Gear Ratio **5**



RK544 Gear Ratio **7.2**



RK544 Gear Ratio **10**



● The pulse input circuit responds to approximately 200 kHz with a pulse duty of 50%.

Note

● Pay attention to heat dissipation from the motor as there will be a considerable amount of heat under certain conditions. Be sure to keep the temperature of the motor case under 100°C (212°F). [Under 75°C (167°F) is required to comply with UL or CSA Standards as the motor is recognized as thermal class 105 (A).]

PN Geared Type Motor Frame Size 60 mm (2.36 in.)

Specifications RoHS

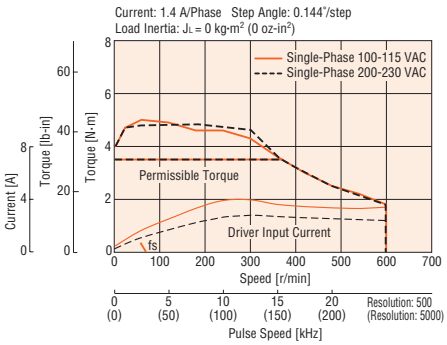
Model			RK566AAE-N5	RK566AAE-N7.2	RK566AAE-N10	RK564AAE-N25	RK564AAE-N36	RK564AAE-N50
	Single-Phase 100-115 VAC	Single Shaft	RK566AAE-N5	RK566AAE-N7.2	RK566AAE-N10	RK564AAE-N25	RK564AAE-N36	RK564AAE-N50
		Double Shaft	RK566BAE-N5	RK566BAE-N7.2	RK566BAE-N10	RK564BAE-N25	RK564BAE-N36	RK564BAE-N50
	Single-Phase 200-230 VAC	Single Shaft	RK566ACE-N5	RK566ACE-N7.2	RK566ACE-N10	RK564ACE-N25	RK564ACE-N36	RK564ACE-N50
		Double Shaft	RK566BCE-N5	RK566BCE-N7.2	RK566BCE-N10	RK564BCE-N25	RK564BCE-N36	RK564BCE-N50
Maximum Holding Torque		N·m (lb-in)	3.5 (30)	4 (35)	5 (44)	8 (70)		
Rotor Inertia		J: kg·m^2 (oz-in^2)	280×10^{-7} (1.53)			175×10^{-7} (0.96)		
Rated Current		A/Phase	1.4					
Basic Step Angle			0.144°	0.1°	0.072°	0.0288°	0.02°	0.0144°
Gear Ratio			5	7.2	10	25	36	50
Permissible Torque		N·m (lb-in)	3.5 (30)	4 (35)	5 (44)	8 (70)		
Maximum Torque		N·m (lb-in)	7 (61)	9 (79)	11 (97)	16 (141)	20 (177)	
Holding Torque at Motor Standstill	Power ON	N·m (lb-in)	2 (17.7)	2.9 (25)	4.1 (36)	5.2 (46)	7.5 (66)	8 (70)
Backlash		arc min (degrees)	2 (0.034)			3 (0.05)		
Permissible Speed Range		r/min	0~600	0~416	0~300	0~120	0~83	0~60
Power Source			Single-Phase 100-115 VAC±15% 50/60 Hz 4.5 A Single-Phase 200-230 VAC $^{+10\%}_{-15\%}$ 50/60 Hz 3.5 A					
Excitation Mode			Microstep					

Note

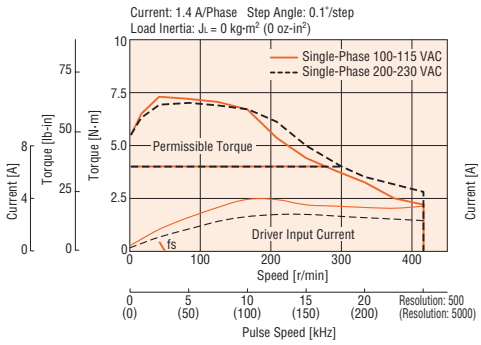
- Direction of rotation of the motor shaft and that of the gear output shaft are the same.

Speed – Torque Characteristics

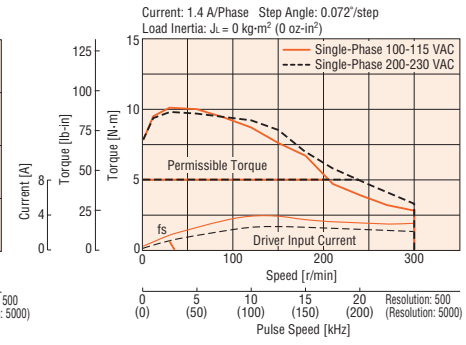
RK566 Gear Ratio **5**



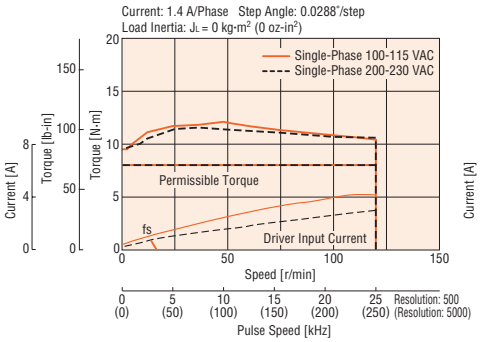
RK566 Gear Ratio **7.2**



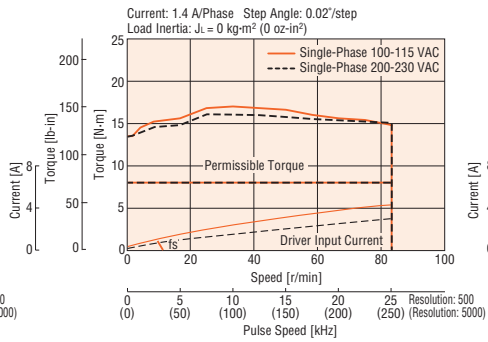
RK566 Gear Ratio **10**



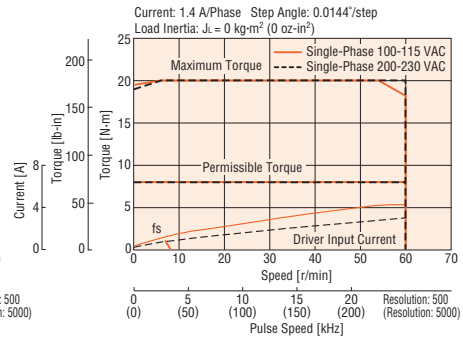
RK564 Gear Ratio **25**



RK564 Gear Ratio **36**



RK564 Gear Ratio **50**



- The pulse input circuit responds to approximately 200 kHz with a pulse duty of 50%.

Note

- Pay attention to heat dissipation from the motor as there will be a considerable amount of heat under certain conditions. Be sure to keep the temperature of the motor case under 100°C (212°F). [Under 75°C (167°F) is required to comply with UL or CSA Standards as the motor is recognized as thermal class 105 (A).]

PN Geared Type Motor Frame Size 90 mm (3.54 in.)

Specifications RoHS

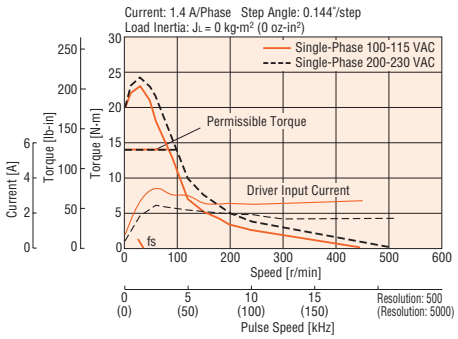
Model								
Single-Phase 100-115 VAC	Single Shaft	RK599AAE-N5	RK599AAE-N7.2	RK599AAE-N10	RK596AAE-N25	RK596AAE-N36	RK596AAE-N50
	Double Shaft	RK599BAE-N5	RK599BAE-N7.2	RK599BAE-N10	RK596BAE-N25	RK596BAE-N36	RK596BAE-N50
Single-Phase 200-230 VAC	Single Shaft	RK599ACE-N5	RK599ACE-N7.2	RK599ACE-N10	RK596ACE-N25	RK596ACE-N36	RK596ACE-N50
	Double Shaft	RK599BCE-N5	RK599BCE-N7.2	RK599BCE-N10	RK596BCE-N25	RK596BCE-N36	RK596BCE-N50
Maximum Holding Torque	N·m (lb-in)	14 (123)	20 (177)		37 (320)		
Rotor Inertia	J: kg·m² (oz-in²)	2700×10⁻⁷ (14.8)			1400×10⁻⁷ (7.7)		
Rated Current	A/Phase	1.4					
Basic Step Angle		0.144°	0.1°	0.072°	0.0288°	0.02°	0.0144°
Gear Ratio		5	7.2	10	25	36	50
Permissible Torque	N·m (lb-in)	14 (123)	20 (177)		37 (320)		
Maximum Torque	N·m (lb-in)	28 (240)	35 (300)		56 (490)	60 (530)	
Holding Torque at Motor Standstill (Power ON)	N·m (lb-in)	10 (88)	14 (123)	20 (177)	26 (230)	37 (320)	
Backlash	arc min (degrees)	2 (0.034)			3 (0.05)		
Permissible Speed Range	r/min	0~600	0~416	0~300	0~120	0~83	0~60
Power Source		Single-Phase 100-115 VAC±15% 50/60 Hz 4.5 A Single-Phase 200-230 VAC +10% −15% 50/60 Hz 3.5 A					
Excitation Mode		Microstep					

Note

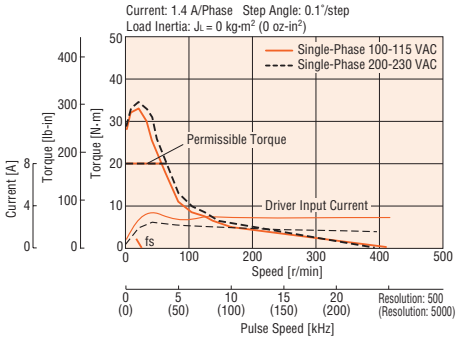
- Direction of rotation of the motor shaft and that of the gear output shaft are the same.

Speed – Torque Characteristics

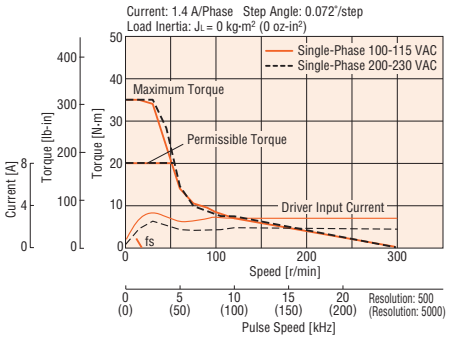
RK599 Gear Ratio 5



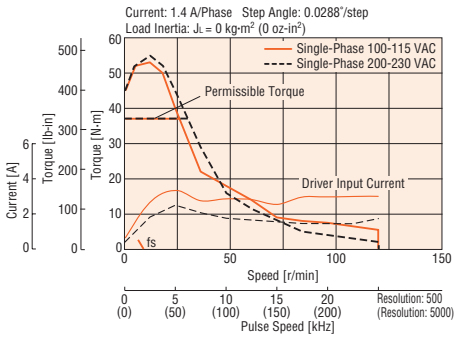
RK599 Gear Ratio 7.2



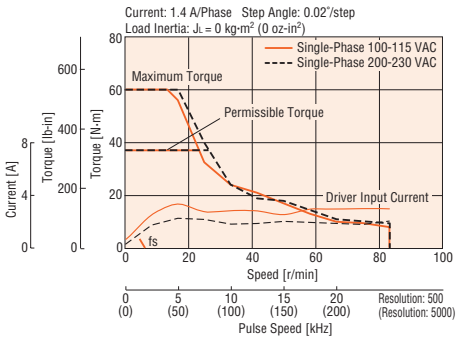
RK599 Gear Ratio 10



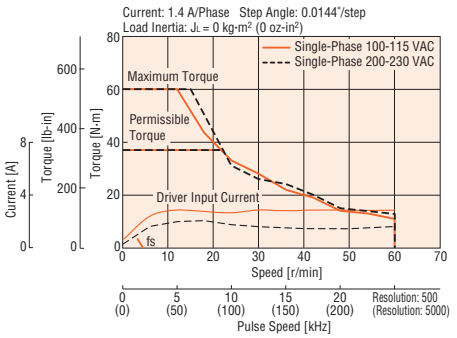
RK596 Gear Ratio 25



RK596 Gear Ratio 36



RK596 Gear Ratio 50



- The pulse input circuit responds to approximately 200 kHz with a pulse duty of 50%.

Note

- Pay attention to heat dissipation from the motor as there will be a considerable amount of heat under certain conditions. Be sure to keep the temperature of the motor case under 100°C (212°F). [Under 75°C (167°F) is required to comply with UL or CSA Standards as the motor is recognized as thermal class 105 (A).]

Harmonic Geared Type Motor Frame Size 42 mm (1.65 in.), 60 mm (2.36 in.), 90 mm (3.54 in.)

Specifications RoHS

cULus CE ●With the **RK543** type, only the driver conforms to the CSA Standards.

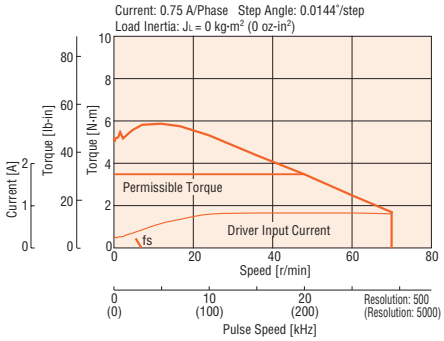
Model			RK543AA-H50	RK543AA-H100	RK564AAE-H50	RK564AAE-H100	RK596AAE-H50	RK596AAE-H100
	Single-Phase 100-115 VAC	Single Shaft	RK543AA-H50	RK543AA-H100	RK564AAE-H50	RK564AAE-H100	RK596AAE-H50	RK596AAE-H100
		Double Shaft	RK543BA-H50	RK543BA-H100	RK564BAE-H50	RK564BAE-H100	RK596BAE-H50	RK596BAE-H100
		With Encoder	RK543AAR27H50	RK543AAR27H100	RK564AAER27H50	RK564AAER27H100	RK596AAER27H50	RK596AAER27H100
	Single-Phase 200-230 VAC	Single Shaft	–	–	RK564ACE-H50	RK564ACE-H100	RK596ACE-H50	RK596ACE-H100
		Double Shaft	–	–	RK564BCE-H50	RK564BCE-H100	RK596BCE-H50	RK596BCE-H100
		With Encoder	–	–	RK564ACER27H50	RK564ACER27H100	RK596ACER27H50	RK596ACER27H100
Maximum Holding Torque		N·m (lb-in)	3.5 (30)	5 (44)	5.5 (48)	8 (70)	25 (220)	37 (320)
Rotor Inertia		J: kg·m² (oz-in²)	52×10^{-7} (0.28)		210×10^{-7} (1.15)		1600×10^{-7} (8.8)	
Rated Current		A/Phase	0.75		1.4			
Basic Step Angle			0.0144°	0.0072°	0.0144°	0.0072°	0.0144°	0.0072°
Gear Ratio			50	100	50	100	50	100
Permissible Torque		N·m (lb-in)	3.5 (30)	5 (44)	5.5 (48)	8 (70)	25 (220)	37 (320)
Maximum Torque		N·m (lb-in)	8.3 (73)	11 (97)	18 (158)	28 (240)	35 (300)	55 (480)
Holding Torque at Motor Standstill	Power ON	N·m (lb-in)	3.2 (28)	5 (44)	5.5 (48)	8 (70)	25 (220)	37 (320)
Lost Motion (Load Torque)		arc min (degrees)	1.5 max. (±0.16 N·m)	1.5 max. (±0.2 N·m)	0.7 max. (±0.28 N·m)	0.7 max. (±0.39 N·m)	1.5 max. (±1.2 N·m)	
Permissible Speed Range		r/min	0~70	0~35	0~70	0~35	0~70	0~35
Power Source			Single-Phase 100-115 VAC±15% 50/60 Hz 1 A		Single-Phase 100-115 VAC±15% 50/60 Hz 4.5 A Single-Phase 200-230 VAC $^{+10\%}_{-15\%}$ 50/60 Hz 3.5 A			
Excitation Mode			Microstep					

Notes

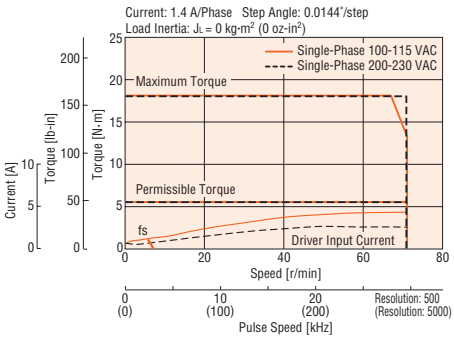
- The inertia represents a sum of the inertia of the harmonic gear converted to a motor shaft value, and the rotor inertia.
- Direction of rotation of the motor and that of the gear output shaft are the opposite.

Speed – Torque Characteristics

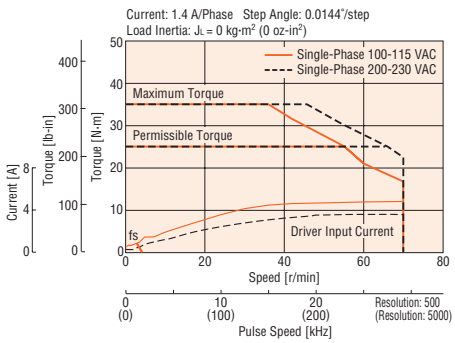
RK543 Gear Ratio 50



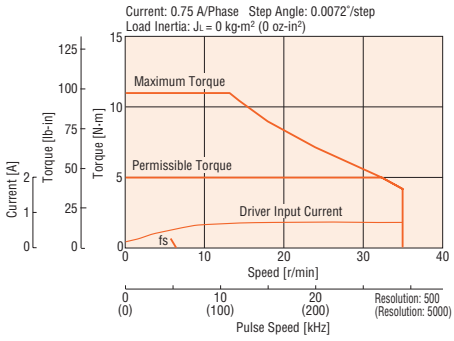
RK564 Gear Ratio 50



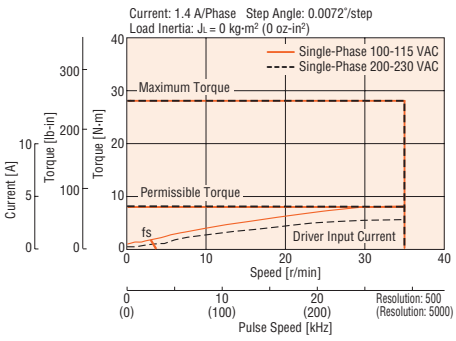
RK596 Gear Ratio 50



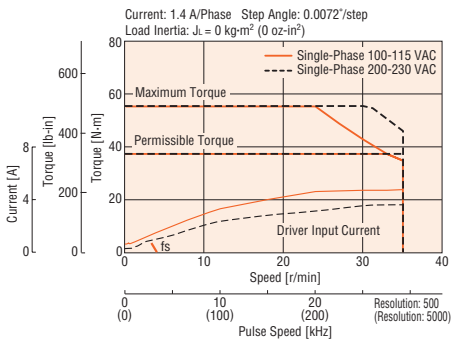
RK543 Gear Ratio 100



RK564 Gear Ratio 100



RK596 Gear Ratio 100



- The pulse input circuit responds to approximately 200 kHz with a pulse duty of 50%.

Notes

- Pay attention to heat dissipation from the motor as there will be a considerable amount of heat under certain conditions. Be sure to keep the temperature of the motor case under 100°C (212°F). [Under 75°C (167°F) is required to comply with UL or CSA Standards as the motor is recognized as thermal class 105 (A).]
- In order to prevent degradation of the gear grease in the harmonic gear, keep the temperature of the gear case under 70°C (158°F).

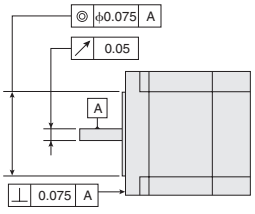
Driver Specifications

Input Signals	Input Mode	Photocoupler input, Input resistance: 220 Ω; Input current: 10~20 mA Photocoupler ON: +4.5~5 V, Photocoupler OFF: 0~+1 V (Voltage between terminals)
	Pulse Signal (CW Pulse Signal)	Operation command pulse signal (CW direction operation command pulse signal when in 2-pulse input mode), Negative logic pulse input Pulse width: 2.5 μs minimum, Pulse rise/fall: 2 μs maximum, Pulse duty: 50% and below Motor moves one step when the pulse input is switched from photocoupler ON to OFF. Maximum input pulse frequency: 200 kHz (When the pulse duty is 50%)
	Rotation Direction Signal (CCW Pulse Signal)	Rotation direction signal, Photocoupler ON: CW, Photocoupler OFF: CCW (CCW direction operation command pulse signal when in 2-pulse input mode), Negative logic pulse input Pulse width: 2.5 μs minimum, Pulse rise/fall: 2 μs maximum, Pulse duty: 50% and below Motor moves one step when the pulse input is switched from photocoupler ON to OFF. Maximum input pulse frequency: 200 kHz (When the pulse duty is 50%)
	All Windings Off Signal	When in the "photocoupler ON" state, the output current to the motor is cut off and the motor shaft can be rotated manually. When in the "photocoupler OFF" state, the current is supplied to the motor.
	Step Angle Select Signal	Step angle specified by DATA1 when photocoupler OFF Step angle specified by DATA2 when photocoupler ON
Output Signals	Output Mode	Photocoupler, Open-collector output External use condition: 24 VDC maximum, 10 mA maximum
	Excitation Timing Signal	The signal is output every time the excitation sequence returns to the initial stage "0." (Photocoupler: ON) 0.72°/step [Microsteps/step: 1 (Resolution: 500)]: Signal is output every 10 pulses. 0.072°/step [Microsteps/step: 10 (Resolution: 5000)]: Signal is output every 100 pulses.
	Overheat Signal	Output is turned off when the temperature of the driver heat sink rises to approximately 80°C (176°F) or above. (Photocoupler: OFF)
Functions		Automatic current cutback, Automatic current off, Step angle select, Pulse input mode switch, Smooth drive
Indicators (LED)		Power supply input, Excitation timing signal output, Overheat signal output
Cooling Method		Natural ventilation

General Specifications

Item		Motor	Driver
Thermal Class		130 (B) [Recognized as 105 (A) by UL Standards]	–
Insulation Resistance		100 MΩ or more when 500 VDC megger is applied between the windings and the case under normal ambient temperature and humidity.	100 MΩ or more when 500 VDC megger is applied between the following places under normal ambient temperature and humidity: · Power input terminal – Protective earth terminal · Motor output terminal – Protective earth terminal · Signal I/O terminals – Power input terminal · Signal I/O terminals – Motor output terminal
Dielectric Strength		Sufficient to withstand 1.5 kVAC (1.0 kVAC for **RK54**□), 50 Hz or 60 Hz applied between the windings and the case for 1 minute under normal temperature and humidity.	Sufficient to withstand the following for 1 minute under normal temperature and humidity: · Power input terminal – Protective earth terminal 1.5 kVAC 50 Hz or 60 Hz · Motor output terminal – Protective earth terminal 1.5 kVAC 50 Hz or 60 Hz · Signal I/O terminals – Power input terminal 1.8 kVAC 50 Hz or 60 Hz · Signal I/O terminals – Motor output terminal 1.8 kVAC 50 Hz or 60 Hz
Operating Environment	Ambient Temperature	−10~+50°C (+14~+122°F) (non-freezing): Step Angle 0.72° Standard type, **TH**, **PS**, **PN** geared type 0~+40°C (+32~+104°F) (non-freezing): Harmonic geared type	0~+50°C (+32~+122°F) (non-freezing)
	Ambient Humidity	85% or less (non-condensing)	
	Atmosphere	No corrosive gases, dust, water or oil (Terminal box type motor: No corrosive gases)	
Temperature Rise		Temperature rise of the windings is 80°C (144°F) or less measured by the resistance change method. (at rated current, at standstill, five phases energized)	–
Stop Position Accuracy*1		±3 arc minutes (±0.05°)	–
Shaft Runout		0.05 mm (0.002 in.) T.I.R.*4	–
Radial Play*2		0.025 mm (0.001 in.) maximum of 5 N (1.12 lb.)	–
Axial Play*3		0.075 mm (0.003 in.) maximum of 10 N (2.2 lb.)	–
Concentricity		0.075 mm (0.003 in.) T.I.R.*4	–
Perpendicularity		0.075 mm (0.003 in.) T.I.R.*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 (1.12 lb.) load is applied in the vertical direction to the tip of the motor's shaft.
*3 Axial Play: Displacement in shaft position in the axial direction, when a 10 N (2.2 lb.) load is applied to the motor's shaft in the axial direction.
*4 T.I.R. (Total Indicator Reading): The total dial gauge reading when the measurement section is rotated one revolution centered on the reference axis center.



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

Encoder Specifications

→ Page A-17

Permissible Overhung Load and Permissible Thrust Load

➜ Page A-15

Dimensions Unit = mm (in.)

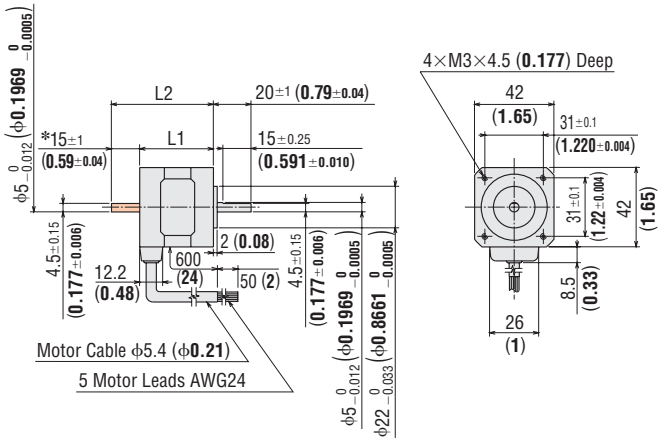
The dimensions of a motor with an encoder can be found on page A-19 or at www.orientalmotor.com.

Motor

◇Step Angle 0.72° Standard Type

Motor Frame Size 42 mm (1.65 in.)

Model	Motor Model	L1	L2	Mass kg (lb.)	DXF
RK543AA	PK543AW	33 (1.3)	–	0.25 (0.55)	B001
RK543BA	PK543BW		48 (1.89)		
RK544AA	PK544AW	39 (1.54)	–	0.3 (0.66)	B002
RK544BA	PK544BW		54 (2.13)		
RK545AA	PK545AW	47 (1.85)	–	0.4 (0.88)	B003
RK545BA	PK545BW		62 (2.44)		

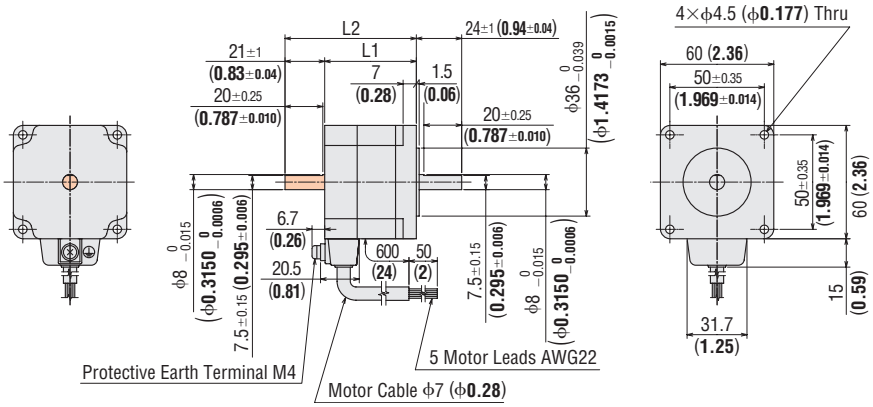


*The length of machining on the double shaft model is 15±0.25 (0.591±0.010).

Motor Frame Size 60 mm (2.36 in.)

Model	Motor Model	L1	L2	Mass kg (lb.)	DXF
RK564A□E	PK564AE	48.5 (1.91)	–	0.6 (1.3)	B382
RK564B□E	PK564BE		69.5 (2.74)		
RK566A□E	PK566AE	59.5 (2.34)	–	0.8 (1.8)	B383
RK566B□E	PK566BE		80.5 (3.17)		
RK569A□E	PK569AE	89 (3.50)	–	1.3 (2.9)	B384
RK569B□E	PK569BE		110 (4.33)		

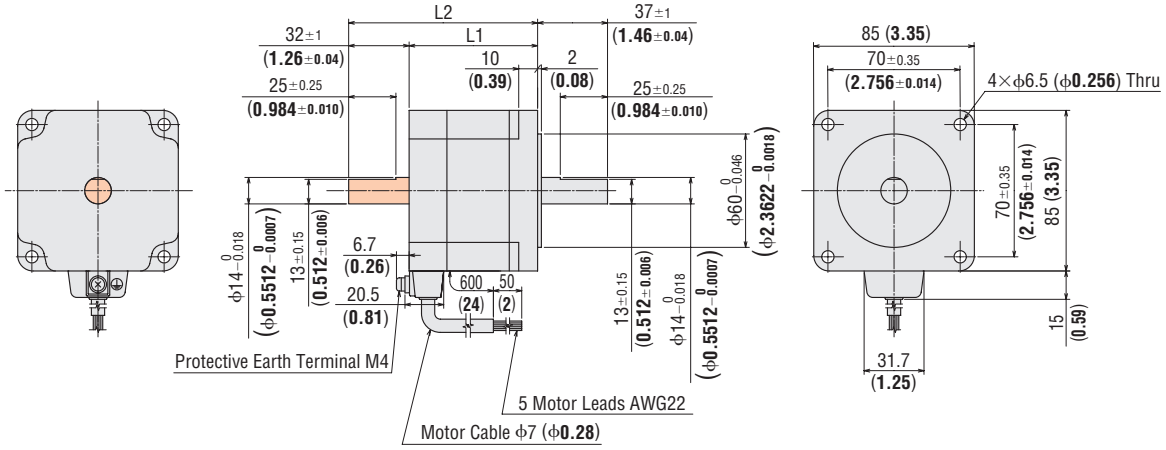
● Enter the power supply voltage (**A** or **C**) in the box (□) within the model name.



● These dimensions are for the double shaft models. For the single shaft models, ignore the orange (▭) areas.
● The dimensions of a motor with an encoder can be found on page A-19 or at www.orientalmotor.com.

Motor Frame Size 85 mm (3.35 in.)

Model	Motor Model	L1	L2	Mass kg (lb.)	DXF
RK596A□E	PK596AE	68 (2.68)	–	1.7 (3.7)	B385
RK596B□E	PK596BE		100 (3.94)		
RK599A□E	PK599AE	98 (3.86)	–	2.8 (6.2)	B386
RK599B□E	PK599BE		130 (5.12)		
RK5913A□E	PK5913AE	128 (5.04)	–	3.8 (8.4)	B387
RK5913B□E	PK5913BE		160 (6.30)		

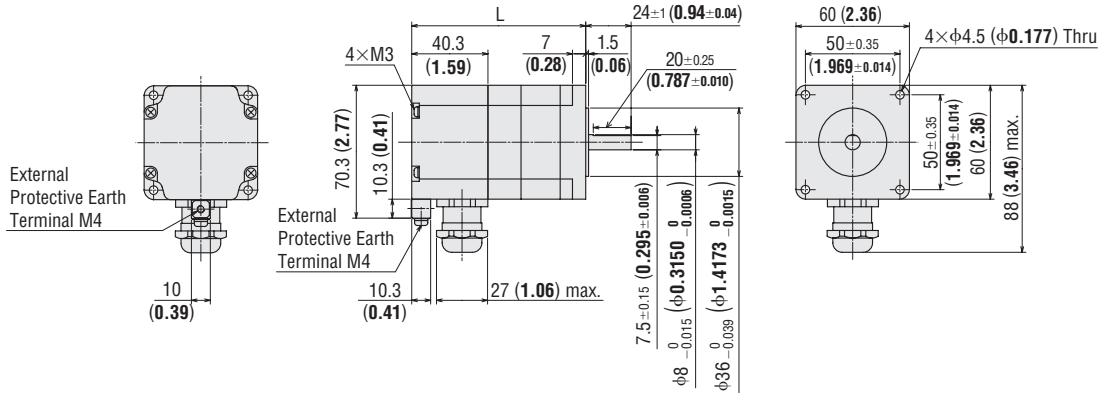


- These dimensions are for the double shaft models. For the single shaft models, ignore the orange ( ) areas.
- The dimensions of a motor with an encoder can be found on page A-19 or at www.orientalmotor.com.

◇Step Angle 0.72° Standard Type Terminal Box

Motor Frame Size 60 mm (2.36 in.)

Model	Motor Model	L	Mass kg (lb.)	DXF
RK564A□T	PK564AT	92 (3.62)	0.8 (1.8)	B366
RK566A□T	PK566AT	103 (4.06)	1.1 (2.4)	B367
RK569A□T	PK569AT	132.5 (5.22)	1.6 (3.5)	B368



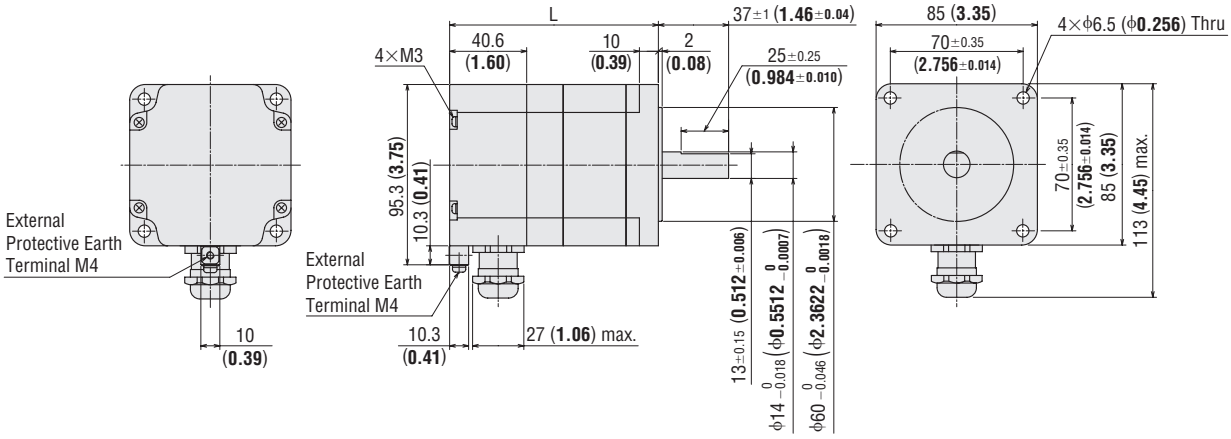
- Use cable (VCT) with a diameter of φ7~φ13 mm (φ0.28~φ0.51 in.). A connection cable is available as an accessory (sold separately). ➜ Page A-398

- Enter the power supply voltage (**A** or **C**) in the box (□) within the model name.

Motor Frame Size 85 mm (3.35 in.)

Model	Motor Model	L	Mass kg (lb.)	DXF
RK596A□T	PK596AT	110 (4.33)	2.2 (4.8)	B369
RK599A□T	PK599AT	140 (5.51)	3.3 (7.3)	B370
RK5913A□T	PK5913AT	170 (6.69)	4.4 (9.7)	B371

● Enter the power supply voltage (**A** or **C**) in the box (□) within the model name.



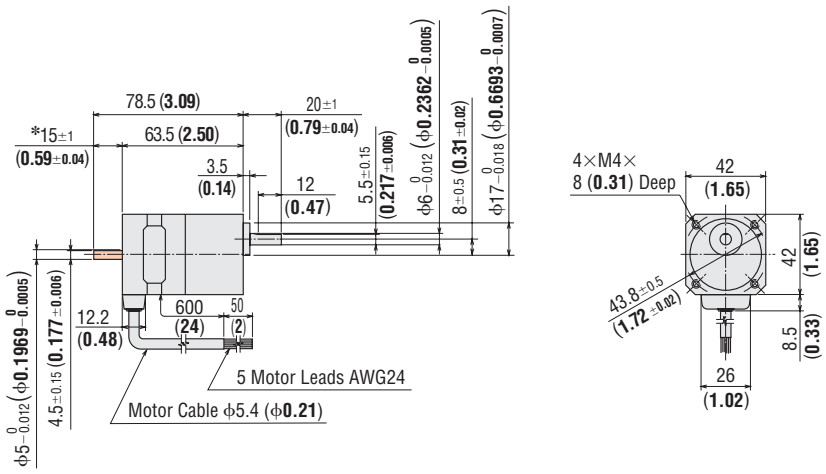
● Use cable (VCT) with a diameter of φ7~φ13 mm (φ0.28~φ0.51 in.). A connection cable is available as an accessory (sold separately). ➜ Page A-398

◇**TH** Geared Type

Motor Frame Size 42 mm (1.65 in.)

Model	Motor Model	Gear Ratio	Mass kg (lb.)	DXF
RK543AA-T□	PK543AW-T□	**3.6**, **7.2**, **10**, **20**, **30**	0.35 (0.77)	B183
RK543BA-T□	PK543BW-T□			

● Enter the gear ratio in the box (□) within the model name.

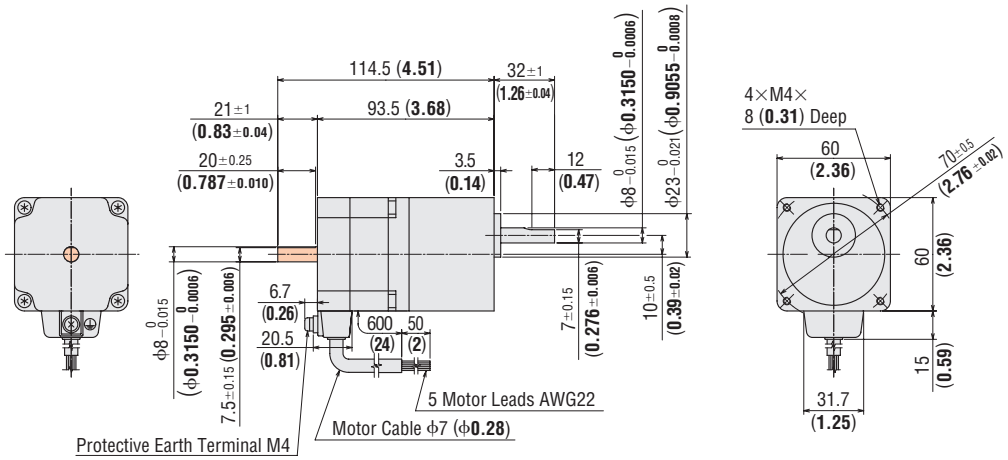


✻The length of machining on the double shaft model is 15±0.25 (0.591±0.010).

● These dimensions are for the double shaft models. For the single shaft models, ignore the orange (▭) areas.
● The dimensions of a motor with an encoder can be found on page A-19 or at www.orientalmotor.com.

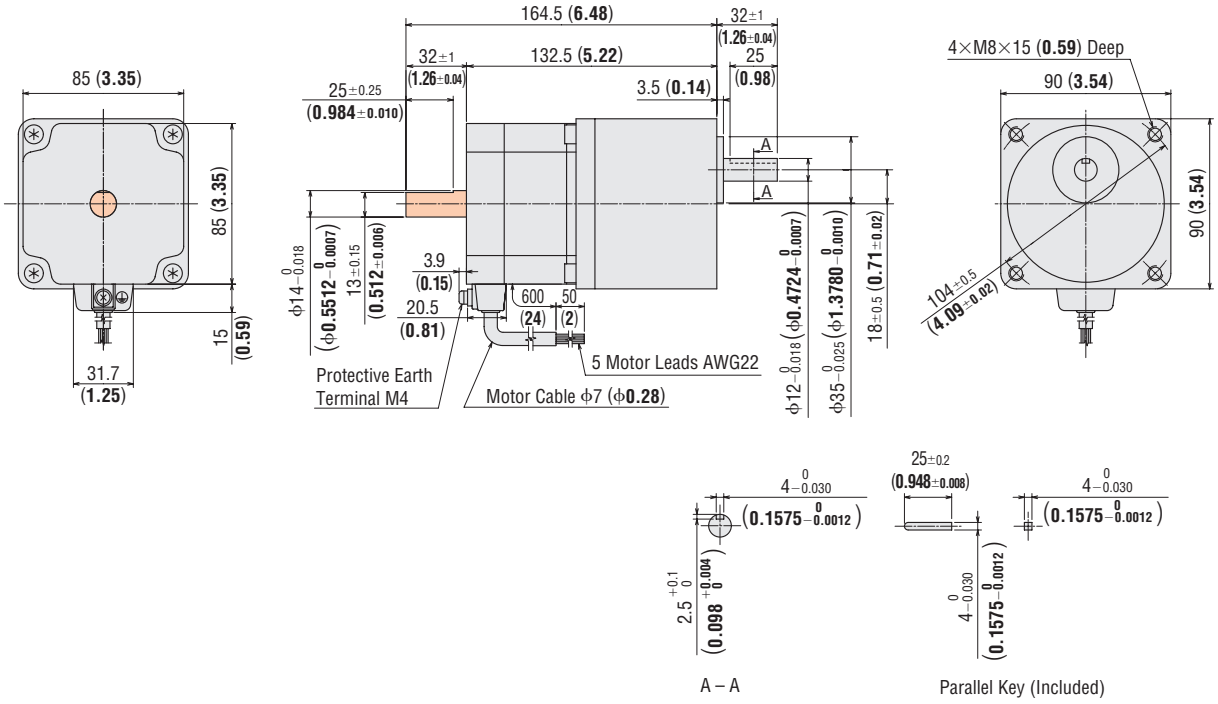
Motor Frame Size 60 mm (2.36 in.)

Model	Motor Model	Gear Ratio	Mass kg (lb.)	DXF
RK564A□E-T□	PK564AE-T□	**3.6**, **7.2**, **10**, **20**, **30**	0.95 (2.1)	B394
RK564B□E-T□	PK564BE-T□			



Motor Frame Size 90 mm (3.54 in.)

Model	Motor Model	Gear Ratio	Mass kg (lb.)	DXF
RK596A□E-T□	PK596AE-T□	**3.6**, **7.2**	2.85 (6.3)	B395
RK596A□E-T□	PK596AE1-T□	**10**, **20**, **30**		
RK596B□E-T□	PK596BE-T□	**3.6**, **7.2**		
RK596B□E-T□	PK596BE1-T□	**10**, **20**, **30**		

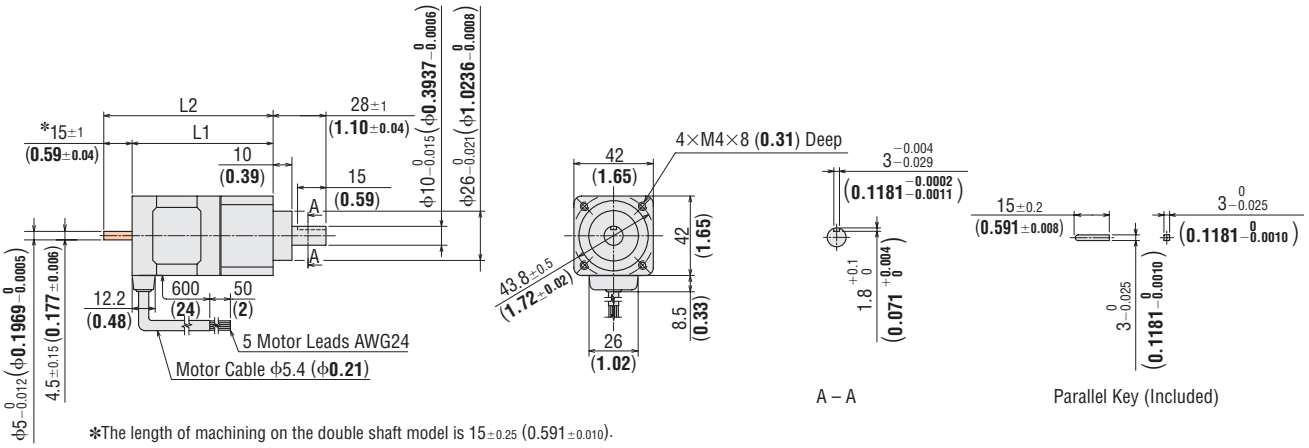


- Enter the power supply voltage (**A** or **C**) in the box (□) within the model name.
  Enter the gear ratio in the box (□) within the model name.
- These dimensions are for the double shaft models. For the single shaft models, ignore the orange (▭) areas.
- The dimensions of a motor with an encoder can be found on page A-19 or at www.orientalmotor.com.

◇PS Geared Type

Motor Frame Size 42 mm (1.65 in.)

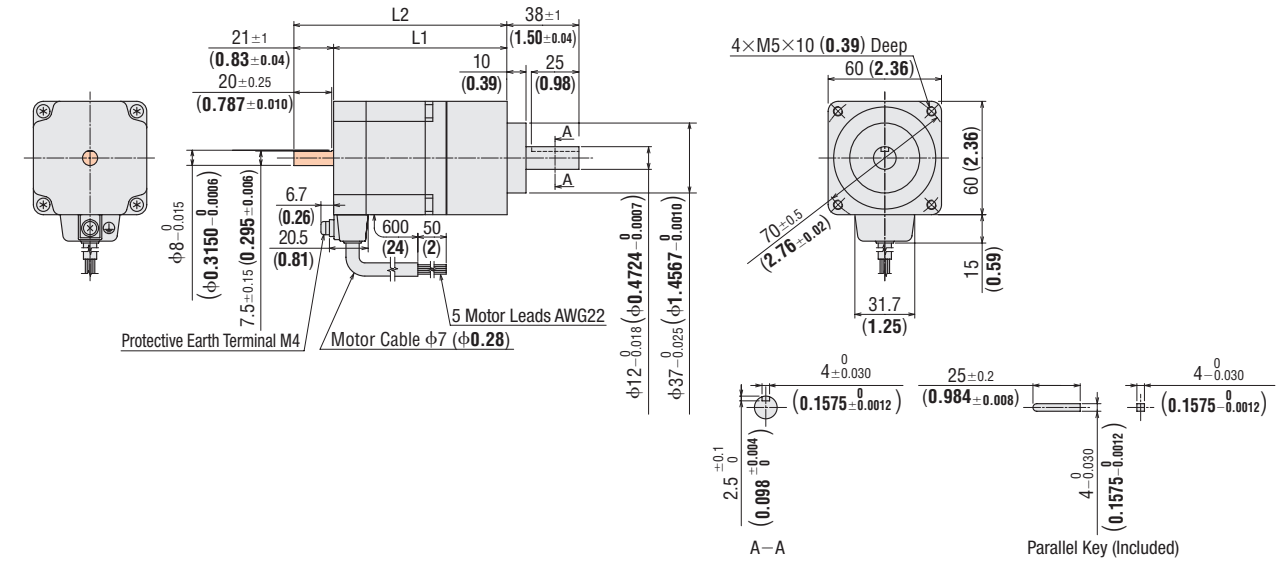
Model	Motor Model	Gear Ratio	L1	L2	Mass kg (lb.)	DXF
RK545AA-PS□	PK545AW-PS□	**5, 7.2, 10**	74.5 (2.93)	–	0.58 (1.28)	B678
RK545BA-PS□	PK545BW-PS□			89.5 (3.52)		
RK543AA-PS□	PK543AW-PS□	**25, 36, 50**	84 (3.31)	–	0.59 (1.30)	B679
RK543BA-PS□	PK543BW-PS□			99 (3.90)		



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

Motor Frame Size 60 mm (2.36 in.)

Model	Motor Model	Gear Ratio	L1	L2	Mass kg (lb.)	DXF
RK566A□E-PS□	PK566AE-PS□	**5, 7.2, 10**	91.5 (3.60)	–	1.3 (2.9)	B680
RK566B□E-PS□	PK566BE-PS□			112.5 (4.43)		
RK564A□E-PS□	PK564AE-PS□	**25, 36, 50**	101 (3.98)	–	1.4 (3.1)	B681
RK564B□E-PS□	PK564BE-PS□			122 (4.80)		

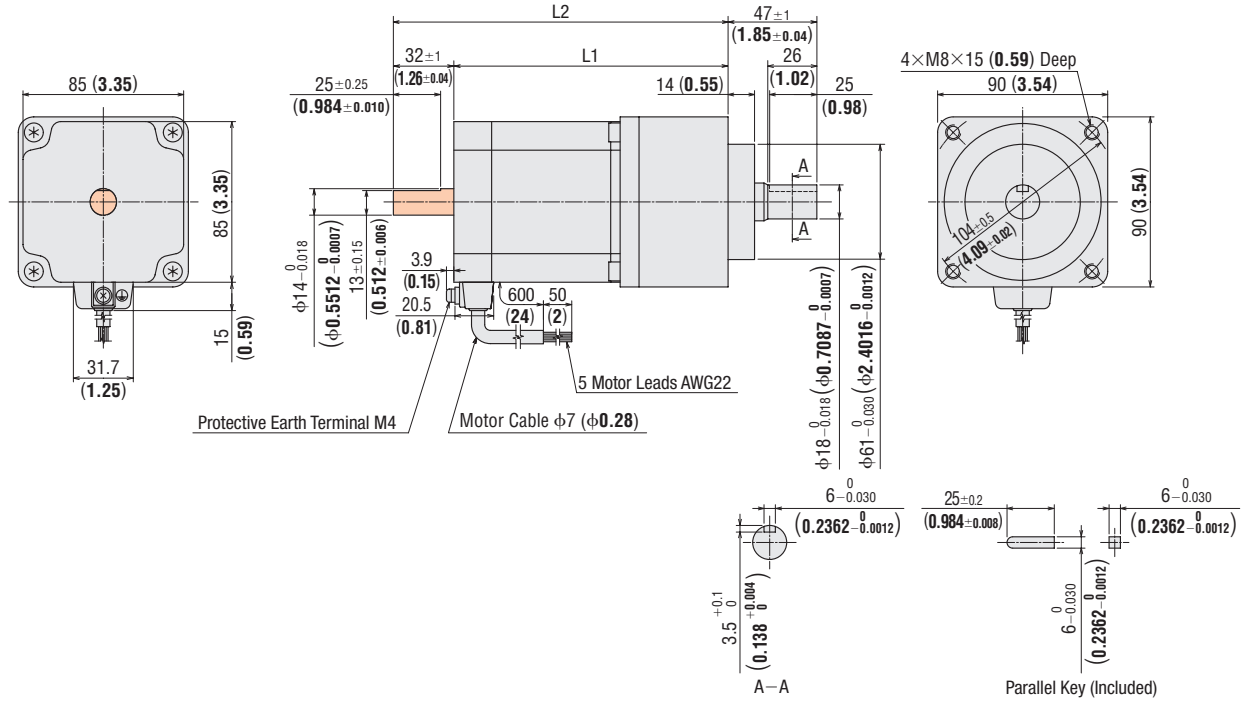


- Enter the power supply voltage (**A** or **C**) in the box (□) within the model name.
  A number indicating the gear ratio is entered where the box (□) is located within the model name.
- These dimensions are for the double shaft models. For the single shaft models, ignore the orange (▭) areas.
- The dimensions of a motor with an encoder can be found on page A-19 or at www.orientalmotor.com.

Motor Frame Size 90 mm (3.54 in.)

Model	Motor Model	Gear Ratio	L1	L2	Mass kg (lb.)	DXF
RK599A□E-PS□	PK599AE-PS□	**5, 7.2, 10**	145 (5.71)	–	4.4 (9.7)	B682
RK599B□E-PS□	PK599BE-PS□			177 (6.97)		
RK596A□E-PS□	PK596AE-PS□	**25, 36, 50**	142.5 (5.61)	–	4.2 (9.2)	B683
RK596B□E-PS□	PK596BE-PS□			174.5 (6.87)		

● Enter the power supply voltage (**A** or **C**) in the box (□) within the model name.
A number indicating the gear ratio is entered where the box (□) is located within the model name.



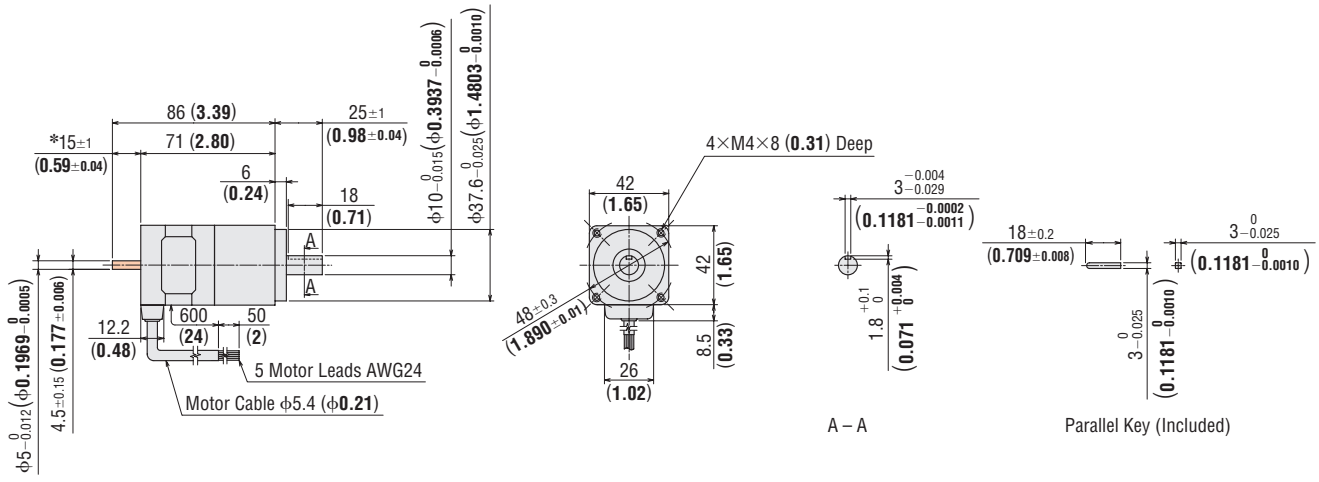
● The dimensions of a motor with an encoder can be found on page A-19 or at www.orientalmotor.com.

◇**PN** Geared Type

Motor Frame Size 42 mm (1.65 in.)

Model	Motor Model	Gear Ratio	Mass kg (lb.)	DXF
RK544AA-N□	PK544AW-N□	**5, 7.2, 10**	0.56 (1.23)	B312
RK544BA-N□	PK544BW-N□			

● Enter the gear ratio in the box (□) with in the model name.

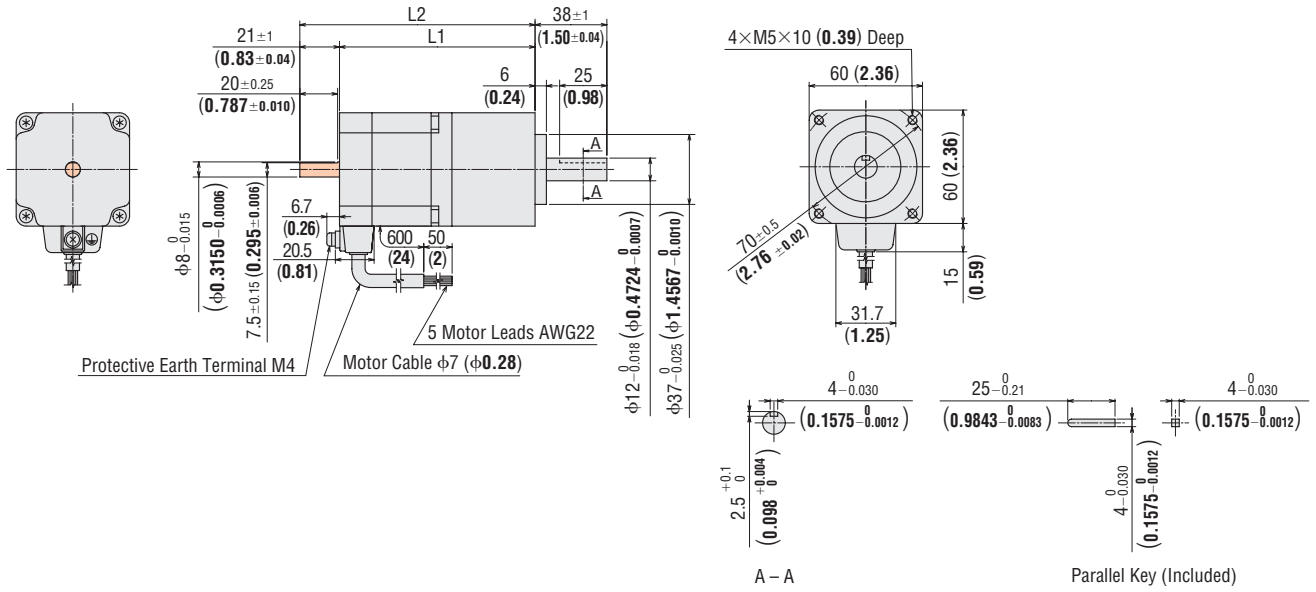


✻The length of machining on the double shaft model is 15±0.25 (0.591±0.010).

● These dimensions are for the double shaft models. For the single shaft models, ignore the orange (▭) areas.

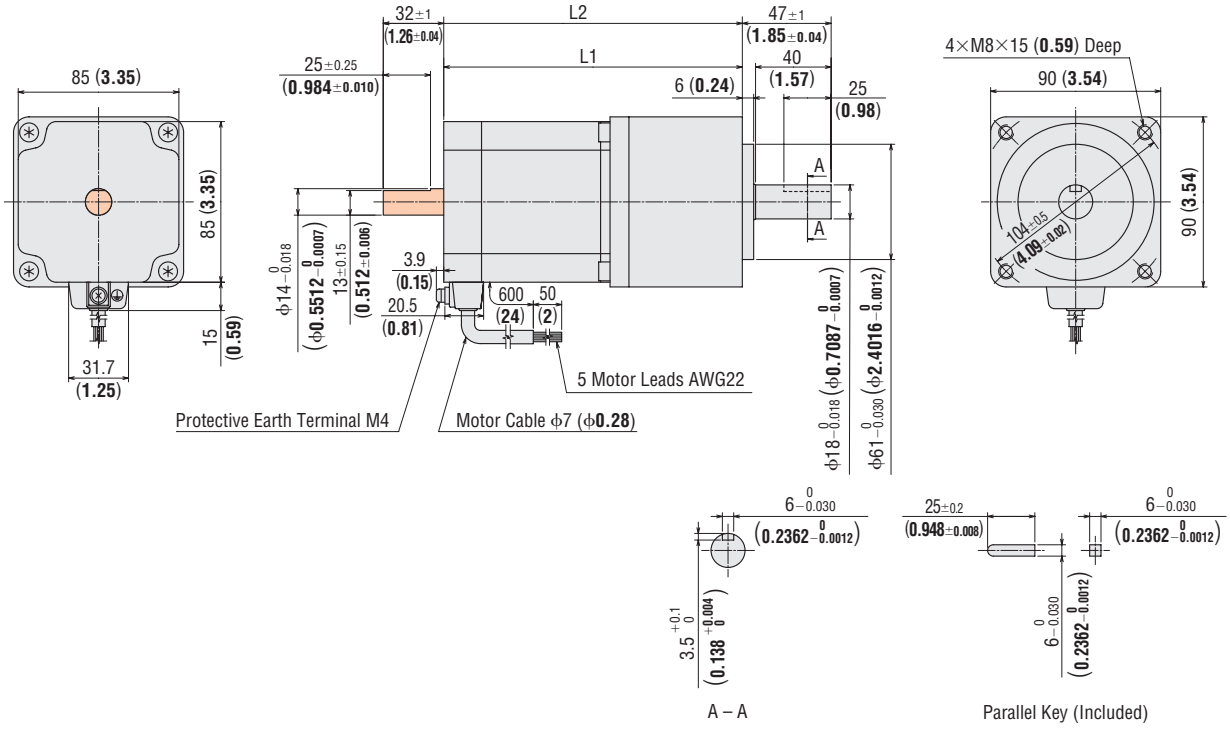
Motor Frame Size 60 mm (2.36 in.)

Model	Motor Model	Gear Ratio	L1	L2	Mass kg (lb.)	DXF
RK566A□E-N□	PK566AE-N□	**5, 7.2, 10**	103.5 (4.07)	–	1.5 (3.3)	B400
RK566B□E-N□	PK566BE-N□			124.5 (4.90)		
RK564A□E-N□	PK564AE-N□	**25, 36, 50**	108.5 (4.27)	–	1.5 (3.3)	B401
RK564B□E-N□	PK564BE-N□			129.5 (5.1)		



Motor Frame Size 90 mm (3.54 in.)

Model	Motor Model	Gear Ratio	L1	L2	Mass kg (lb.)	DXF
RK599A□E-N□	PK599AE-N□	**5, 7.2, 10**	158 (6.22)	–	5 (11)	B402
RK599B□E-N□	PK599BE-N□			190 (7.48)		
RK596A□E-N□	PK596AE-N□	**25, 36, 50**	151 (5.94)	–	4.7 (10.3)	B403
RK596B□E-N□	PK596BE-N□			183 (7.20)		

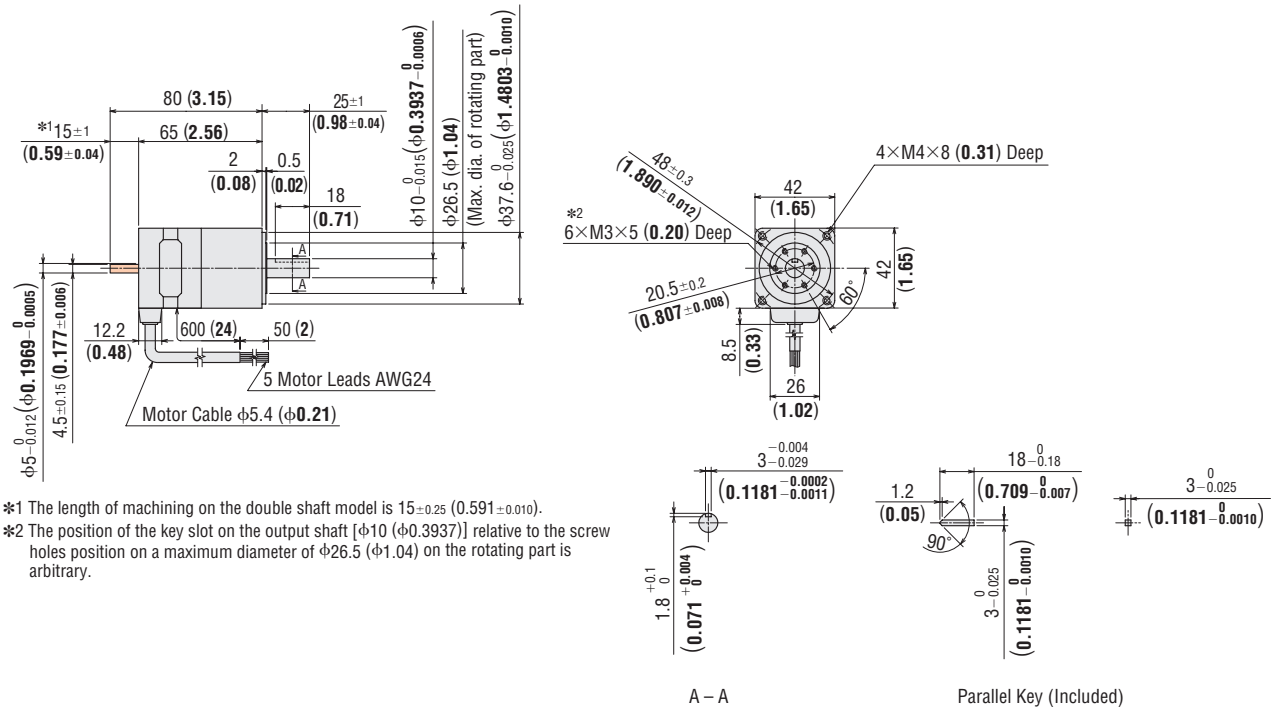


- Enter the power supply voltage (**A** or **C**) in the box (□) within the model name.
  Enter the gear ratio in the box (□) with in the model name.
- These dimensions are for the double shaft models. For the single shaft models, ignore the orange (▭) areas.
- The dimensions of a motor with an encoder can be found on page A-19 or at www.orientalmotor.com.

◇Harmonic Geared Type

Motor Frame Size 42 mm (1.65 in.)

Model	Motor Model	Gear Ratio	Mass kg (lb.)	DXF
RK543AA-H□	PK543AW-H□S	**50**, **100**	0.46 (1.01)	B313
RK543BA-H□	PK543BW-H□S			



A – A

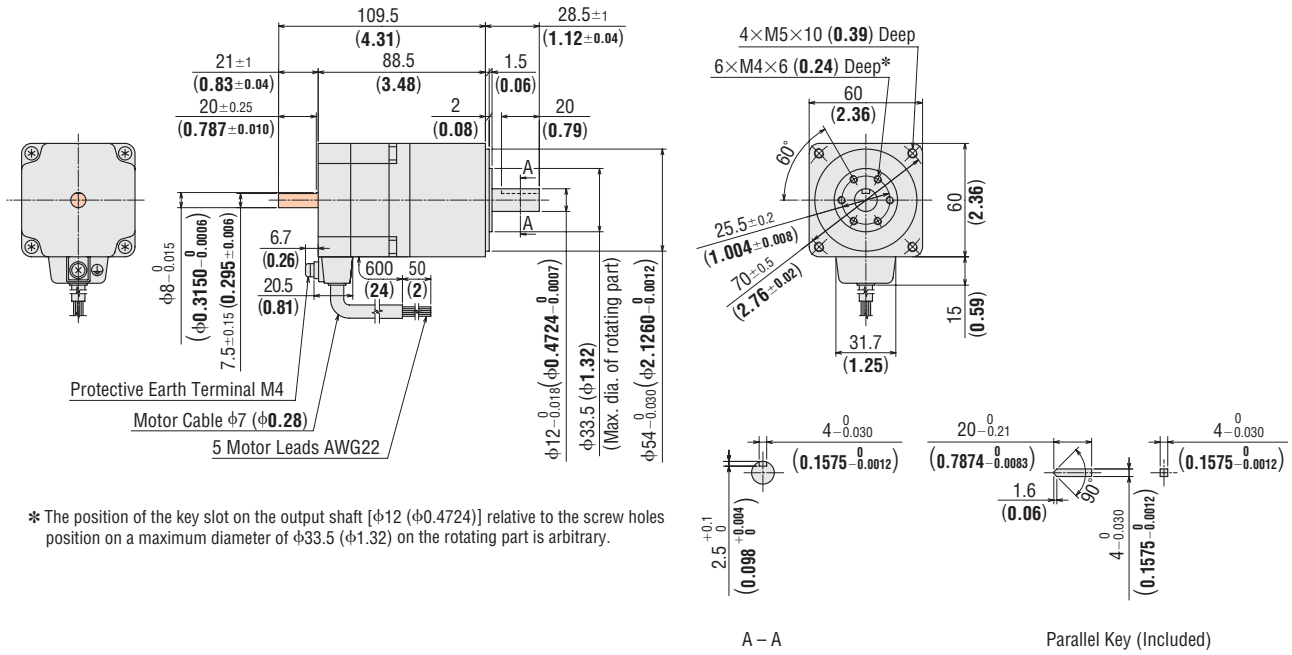
Parallel Key (Included)

*1 The length of machining on the double shaft model is 15±0.25 (0.591±0.010).
*2 The position of the key slot on the output shaft [Φ10 (Φ0.3937)] relative to the screw holes position on a maximum diameter of Φ26.5 (Φ1.04) on the rotating part is arbitrary.

Motor Frame Size 60 mm (2.36 in.)

Model	Motor Model	Gear Ratio	Mass kg (lb.)	DXF
RK564A□E-H□	PK564AE-H□S	**50**, **100**	1.08 (2.4)	B404
RK564B□E-H□	PK564BE-H□S			

● Enter the power supply voltage (**A** or **C**) in the box (□) within the model name.



A – A

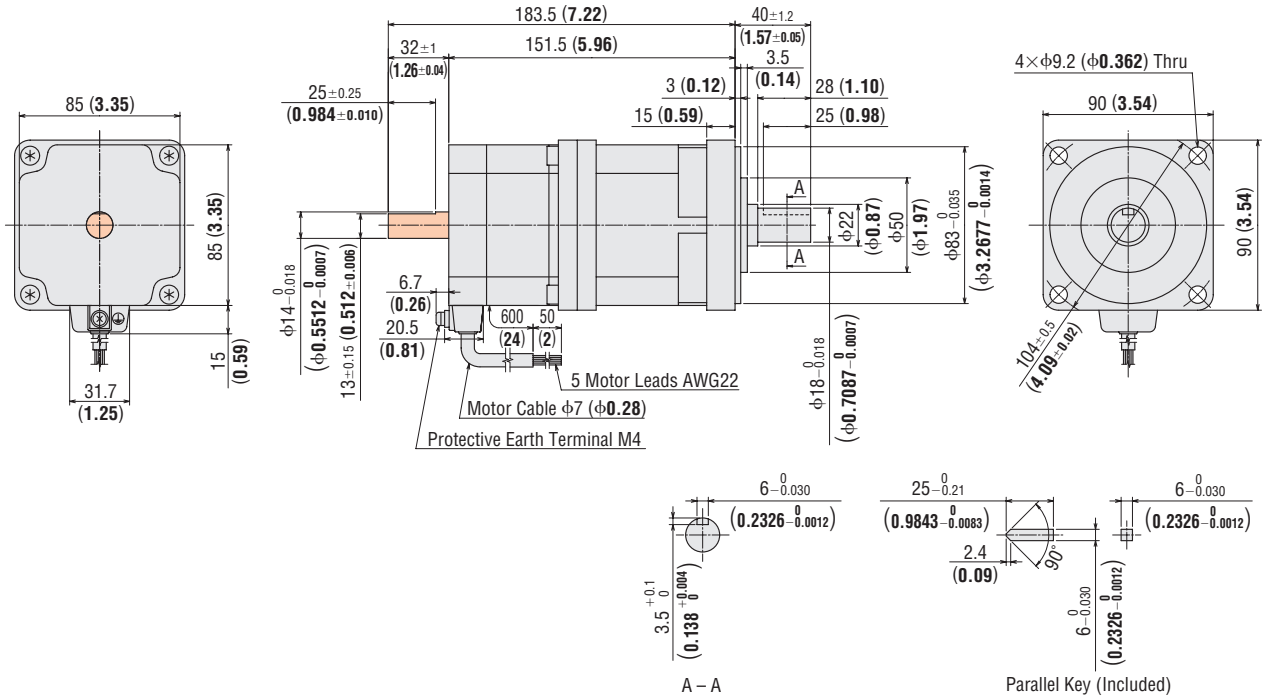
Parallel Key (Included)

* The position of the key slot on the output shaft [Φ12 (Φ0.4724)] relative to the screw holes position on a maximum diameter of Φ33.5 (Φ1.32) on the rotating part is arbitrary.

● Enter the gear ratio in the box (□) with in the model name.
● These dimensions are for the double shaft models. For the single shaft models, ignore the orange (▭) areas.
● The dimensions of a motor with an encoder can be found on page A-19 or at www.orientalmotor.com.

Motor Frame Size 90 mm (3.54 in.)

Model	Motor Model	Gear Ratio	Mass kg (lb.)	DXF
RK596A□E-H□	PK596AE1-H□	**50**, **100**	3.7 (8.1)	B405
RK596B□E-H□	PK596BE1-H□			



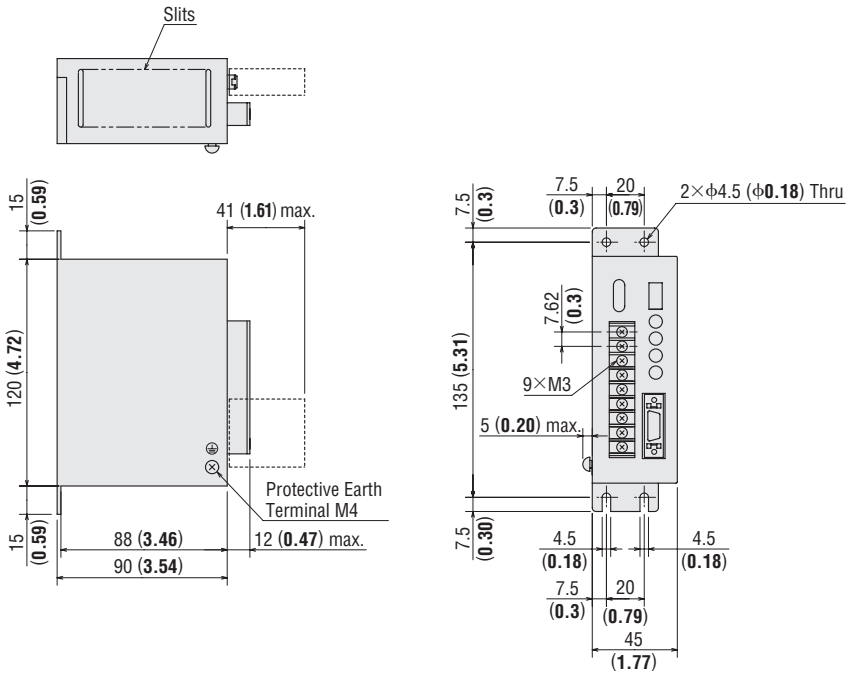
- Enter the power supply voltage (**A** or **C**) in the box (□) within the model name.
  Enter the gear ratio in the box (□) with in the model name.
- These dimensions are for the double shaft models. For the single shaft models, ignore the orange (▭) areas.
- The dimensions of a motor with an encoder can be found on page A-19 or at www.orientalmotor.com.

Driver

RKD507-A

Mass: 0.4 kg (0.88 lb.)

DXF B315

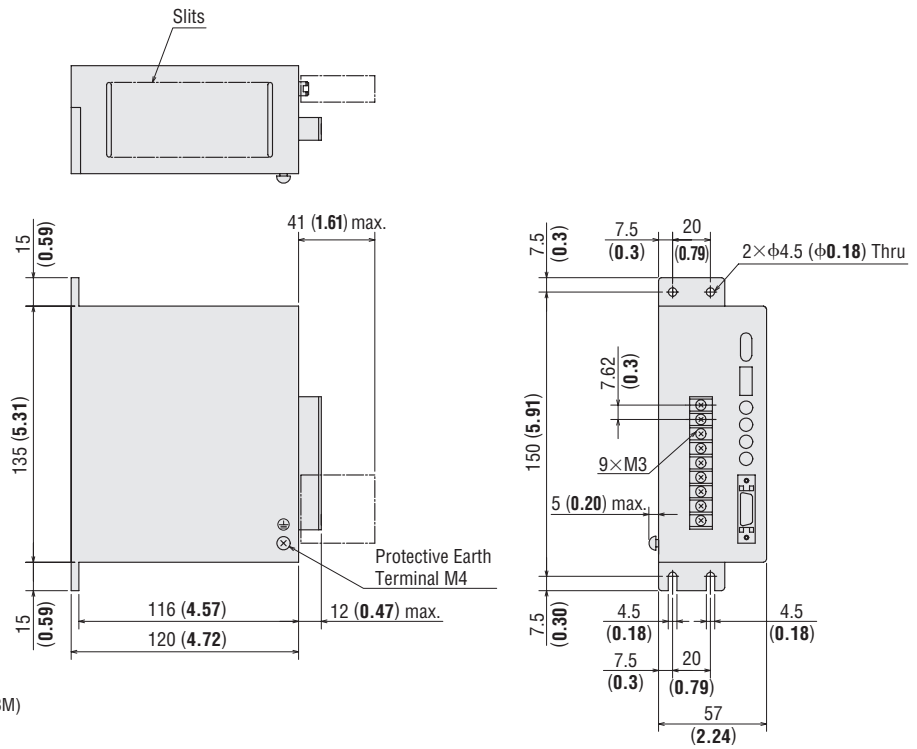


- Control I/O Connector (Included)
  Cover Assembly: 10320-52A0-008 (SUMITOMO 3M)
  Connector: 10120-3000PE (SUMITOMO 3M)

RKD514L-A, RKD514L-C
RKD514H-A, RKD514H-C

Mass: 0.85 kg (1.9 lb.)

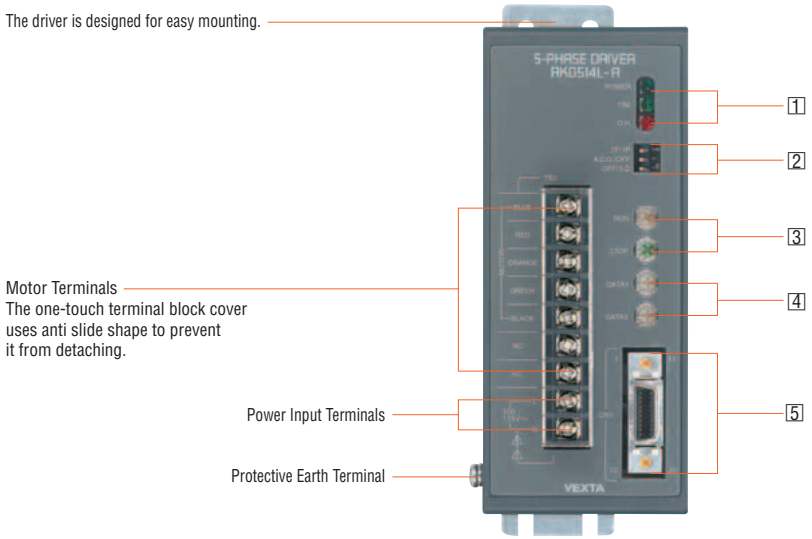
DXF B284



- Control I/O Connector (Included)
  Cover Assembly: 10320-52A0-008 (SUMITOMO 3M)
  Connector: 10120-3000PE (SUMITOMO 3M)

Connection and Operation

Names and Functions of Driver Parts



1 Signal Monitor Display

Indication	Color	Function
POWER	Green	Power supply indication
TIM.	Green	Excitation timing indication
O.H.	Red	Overheat indication

2 Function Select Switches

Indication	Switch Name	Function
2P/1P	Pulse input mode switch	Switches between 1-pulse input and 2-pulse input.
A.C.O./OFF	Automatic current off function switch	When the temperature of the driver heat sink rises above 80°C (176°F), this function automatically switches the motor current off. The function can be set or deactivated with this switch.
OFF/S.D.	Smooth drive function switch	Low vibration and low noise operation are available even in the low speed range without changing the step angle setting. The function can be set or deactivated with this switch.

3 Current Adjustment Switches

Indication	Switch Name	Function
RUN	Motor run current switch	For adjusting the motor running current.
STOP	Motor stop current switch	For adjusting the motor current at standstill.

4 Step Angle Setting Switches

Indication	Switch Name	Function
DATA1	Step angle setting switch	Each switch can be set to the desired resolution from the 16 resolution levels.
DATA2		

Step Angle Setting Switch (Common to DATA1 and DATA2)	Microsteps/step	Resolution	Step Angle
0	1	500	0.72°
1	2	1000	0.36°
2	2.5	1250	0.288°
3	4	2000	0.18°
4	5	2500	0.144°
5	8	4000	0.09°
6	10	5000	0.072°
7	20	10000	0.036°
8	25	12500	0.0288°
9	40	20000	0.018°
A	50	25000	0.0144°
B	80	40000	0.009°
C	100	50000	0.0072°
D	125	62500	0.00576°
E	200	100000	0.0036°
F	250	125000	0.00288°

◇Setting the Step Angles

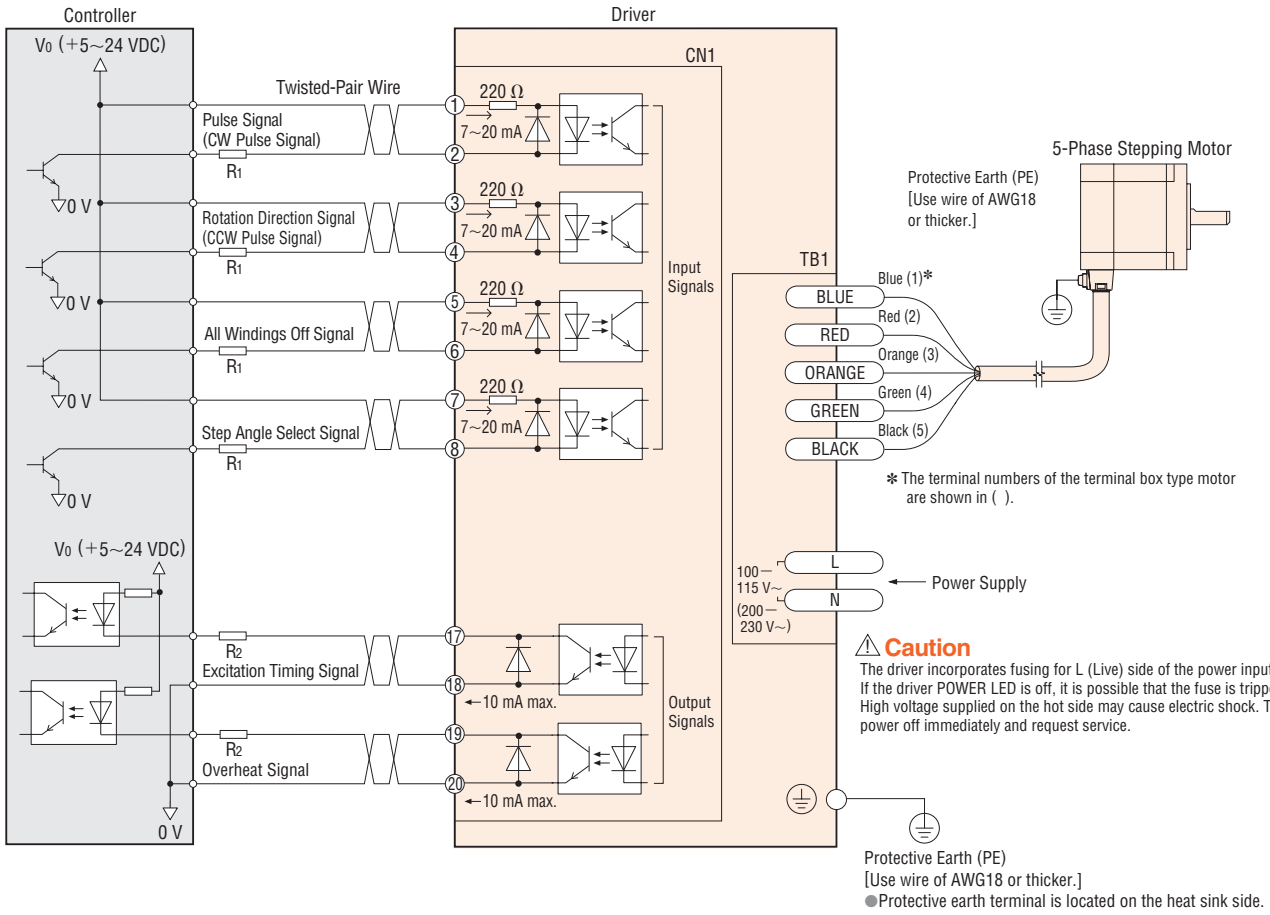
Selects and switches between the two step angle setting switches (DATA1 and DATA2).
Use the "Step Angle Select" signal to change the step angle.
Photocoupler OFF: Step angle (resolution) set by DATA1 is selected.
Photocoupler ON: Step angle (resolution) set by DATA2 is selected.

5 Input/Output Signals

Indication	Input/Output	Pin No.	Signal Name	Function
CN1	Input	1	Pulse signal (CW pulse signal)	Operation command pulse signal (The motor will rotate in the CW direction when in 2-pulse input mode.)
		2		
		3	Rotation direction signal (CCW pulse signal)	Rotation direction signal Photocoupler ON: CW, Photocoupler OFF: CCW (The motor will rotate in the CCW direction when in 2-pulse input mode.)
		4		
		5	All windings off signal	Cuts the output current to the motor and allows the motor shafts to be rotated manually.
		6		
		7	Step angle select signal	Switches to step angle set in DATA1 and DATA2.
		8		
	Output	17	Excitation timing signal	Outputs signals when the excitation sequence is at STEP "0."
		18		
		19	Overheat signal	When the temperature of the driver heat sink rises above 80°C (176°F), this function automatically turns the output signal off.
		20		

●Connection Diagram

◇Connection to Current Sink Output Circuit



Notes on Wiring

◇I/O Signal Connection

- Input Signal
  The external resistor is not needed when the voltage is 5 VDC. If voltage exceeding 5 VDC is applied, connect an appropriate external resistor R_1 so that the current becomes 7 to 20 mA.
  Example: When V_0 is 24 VDC, R_1: 1.5 to 2.2 kΩ 0.5 W or more
- Output Signal
  Check the specifications of all devices to be connected and if the current will exceed 10 mA, connect an external resistor R_2.
- Use a twisted-pair wire of AWG28 to 24.
- Since the maximum transmissible frequency drops as the pulse line becomes longer, keep the wiring length as short as possible (within 2 m).
  Technical reference ➜ Page G-44
- Provide a minimum distance of 100 mm between the I/O signal lines and power lines (power supply lines, motor lines and other large-current circuits).

◇Power Connection

- Use a thick wire of AWG22 or thicker.

◇Extension of Motor Cable

- Use a wire of AWG22 or thicker.

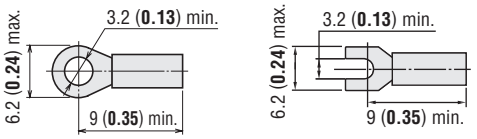
◇Ground Connection

- Use a wire of AWG18 or thicker.
- Connect the driver and controller to a ground at a single point.

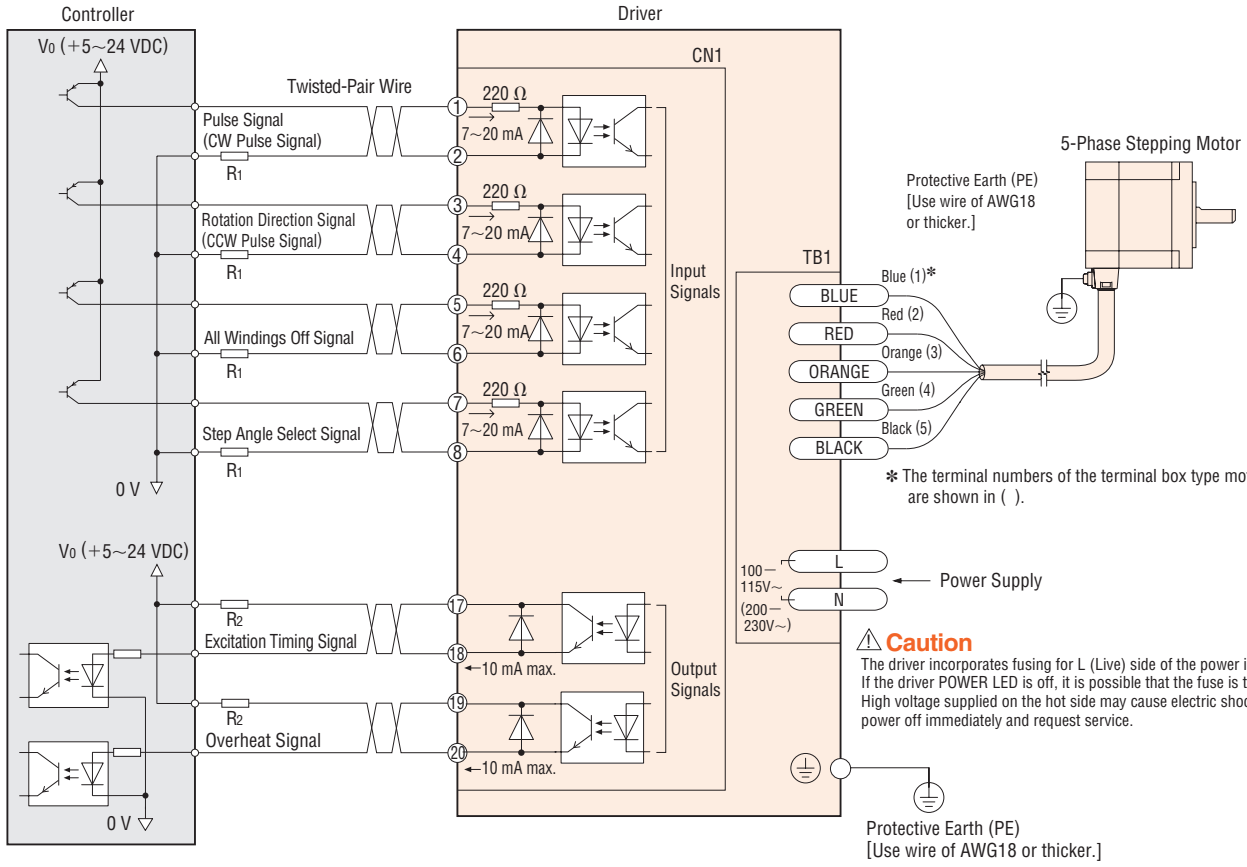
◇General

- If noise generated by the motor cable or power supply cable causes a problem with the specific wiring or layout, shield the cable or use ferrite cores.
- Applicable Crimp Terminals (Not included)

Unit = mm (in.)



◇Connection to Current Source Output Circuit



Notes on Wiring

◇I/O Signal Connection

- Input Signal
  The external resistor is not needed when the voltage is 5 VDC. If voltage exceeding 5 VDC is applied, connect an appropriate external resistor R_1 so that the current becomes 7 to 20 mA.
  Example: When V_0 is 24 VDC, R_1: 1.5 to 2.2 kΩ 0.5 W or more
- Output Signal
  Check the specifications of all devices to be connected and if the current will exceed 10 mA, connect an external resistor R_2.
- Use a twisted-pair wire of AWG28 to 24.
- Since the maximum transmissible frequency drops as the pulse line becomes longer, keep the wiring length as short as possible (within 2 m).
  Technical reference ➜ Page G-44
- Provide a minimum distance of 100 mm between the I/O signal lines and power lines (power supply lines, motor lines and other large-current circuits).

◇Power Connection

- Use a thick wire of AWG22 or thicker.

◇Extension of Motor Cable

- Use a wire of AWG22 or thicker.

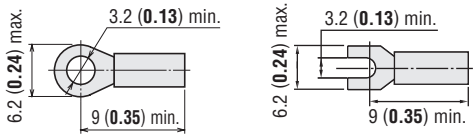
◇Ground Connection

- Use a wire of AWG18 or thicker.
- Connect the driver and controller to a ground at a single point.

◇General

- If noise generated by the motor cable or power supply cable causes a problem with the specific wiring or layout, shield the cable or use ferrite cores.
- Applicable Crimp Terminals (Not included)

Unit = mm (in.)



List of Motor and Driver Combinations

Model names for motor and driver combinations are shown below.

Without Encoder

Type	Model	Motor Model	Driver Model
Step Angle 0.72° Standard Type	**RK543□A** **RK544□A** **RK545□A**	PK543□W PK544□W PK545□W	RKD507-A
	RK564□AE **RK566□AE** **RK569□AE**	PK564□E PK566□E PK569□E	RKD514L-A
	RK596□AE **RK599□AE** **RK5913□AE**	PK596□E PK599□E PK5913□E	RKD514H-A
	RK564□CE **RK566□CE** **RK569□CE**	PK564□E PK566□E PK569□E	RKD514L-C
	RK596□CE **RK599□CE** **RK5913□CE**	PK596□E PK599□E PK5913□E	RKD514H-C
Step Angle 0.72° Standard Type Terminal Box	**RK564AAT** **RK566AAT** **RK569AAT**	PK564AT PK566AT PK569AT	RKD514L-A
	RK596AAT **RK599AAT** **RK5913AAT**	PK596AT PK599AT PK5913AT	RKD514H-A
	RK564ACT **RK566ACT** **RK569ACT**	PK564AT PK566AT PK569AT	RKD514L-C
	RK596ACT **RK599ACT** **RK5913ACT**	PK596AT PK599AT PK5913AT	RKD514H-C
TH Geared Type	**RK543□A-T3.6** **RK543□A-T7.2** **RK543□A-T10** **RK543□A-T20** **RK543□A-T30**	PK543□W-T3.6 PK543□W-T7.2 PK543□W-T10 PK543□W-T20 PK543□W-T30	RKD507-A
	RK564□AE-T3.6 **RK564□AE-T7.2** **RK564□AE-T10** **RK564□AE-T20** **RK564□AE-T30**	PK564□E-T3.6 PK564□E-T7.2 PK564□E-T10 PK564□E-T20 PK564□E-T30	RKD514L-A
	RK596□AE-T3.6 **RK596□AE-T7.2** **RK596□AE-T10** **RK596□AE-T20** **RK596□AE-T30**	PK596□E-T3.6 PK596□E-T7.2 PK596□E1-T10 PK596□E1-T20 PK596□E1-T30	RKD514H-A
	RK564□CE-T3.6 **RK564□CE-T7.2** **RK564□CE-T10** **RK564□CE-T20** **RK564□CE-T30**	PK564□E-T3.6 PK564□E-T7.2 PK564□E-T10 PK564□E-T20 PK564□E-T30	RKD514L-C
	RK596□CE-T3.6 **RK596□CE-T7.2** **RK596□CE-T10** **RK596□CE-T20** **RK596□CE-T30**	PK596□E-T3.6 PK596□E-T7.2 PK596□E1-T10 PK596□E1-T20 PK596□E1-T30	RKD514H-C

● Enter **A** (single shaft) or **B** (double shaft) in the box (□) within the model name.

Type	Model	Motor Model	Driver Model
PS Geared Type	**RK545□A-PS5** **RK545□A-PS7** **RK545□A-PS10** **RK543□A-PS25** **RK543□A-PS36** **RK543□A-PS50**	PK545□W-PS5 PK545□W-PS7 PK545□W-PS10 PK543□W-PS25 PK543□W-PS36 PK543□W-PS50	RKD507-A
	RK566□AE-PS5 **RK566□AE-PS7** **RK566□AE-PS10** **RK564□AE-PS25** **RK564□AE-PS36** **RK564□AE-PS50**	PK566□E-PS5 PK566□E-PS7 PK566□E-PS10 PK564□E-PS25 PK564□E-PS36 PK564□E-PS50	RKD514L-A
	RK599□AE-PS5 **RK599□AE-PS7** **RK599□AE-PS10** **RK596□AE-PS25** **RK596□AE-PS36** **RK596□AE-PS50**	PK599□E-PS5 PK599□E-PS7 PK599□E-PS10 PK596□E-PS25 PK596□E-PS36 PK596□E-PS50	RKD514H-A
	RK566□CE-PS5 **RK566□CE-PS7** **RK566□CE-PS10** **RK564□CE-PS25** **RK564□CE-PS36** **RK564□CE-PS50**	PK566□E-PS5 PK566□E-PS7 PK566□E-PS10 PK564□E-PS25 PK564□E-PS36 PK564□E-PS50	RKD514L-C
	RK599□CE-PS5 **RK599□CE-PS7** **RK599□CE-PS10** **RK596□CE-PS25** **RK596□CE-PS36** **RK596□CE-PS50**	PK599□E-PS5 PK599□E-PS7 PK599□E-PS10 PK596□E-PS25 PK596□E-PS36 PK596□E-PS50	RKD514H-C
PN Geared Type	**RK544□A-N5** **RK544□A-N7.2** **RK544□A-N10**	PK544□W-N5 PK544□W-N7.2 PK544□W-N10	RKD507-A
	RK566□AE-N5 **RK566□AE-N7.2** **RK566□AE-N10** **RK564□AE-N25** **RK564□AE-N36** **RK564□AE-N50**	PK566□E-N5 PK566□E-N7.2 PK566□E-N10 PK564□E-N25 PK564□E-N36 PK564□E-N50	RKD514L-A
	RK599□AE-N5 **RK599□AE-N7.2** **RK599□AE-N10** **RK596□AE-N25** **RK596□AE-N36** **RK596□AE-N50**	PK599□E-N5 PK599□E-N7.2 PK599□E-N10 PK596□E-N25 PK596□E-N36 PK596□E-N50	RKD514H-A
	RK566□CE-N5 **RK566□CE-N7.2** **RK566□CE-N10** **RK564□CE-N25** **RK564□CE-N36** **RK564□CE-N50**	PK566□E-N5 PK566□E-N7.2 PK566□E-N10 PK564□E-N25 PK564□E-N36 PK564□E-N50	RKD514L-C
	RK599□CE-N5 **RK599□CE-N7.2** **RK599□CE-N10** **RK596□CE-N25** **RK596□CE-N36** **RK596□CE-N50**	PK599□E-N5 PK599□E-N7.2 PK599□E-N10 PK596□E-N25 PK596□E-N36 PK596□E-N50	RKD514H-C
Harmonic Geared Type	**RK543□A-H50** **RK543□A-H100**	PK543□W-H50S PK543□W-H100S	RKD507-A
	RK564□AE-H50 **RK564□AE-H100**	PK564□E-H50S PK564□E-H100S	RKD514L-A
	RK596□AE-H50 **RK596□AE-H100**	PK596□E1-H50 PK596□E1-H100	RKD514H-A
	RK564□CE-H50 **RK564□CE-H100**	PK564□E-H50S PK564□E-H100S	RKD514L-C
	RK596□CE-H50 **RK596□CE-H100**	PK596□E1-H50 PK596□E1-H100	RKD514H-C

● Enter **A** (single shaft) or **B** (double shaft) in the box (□) within the model name.

With Encoder

Type	Model	Motor Model	Driver Model
Step Angle 0.72° Standard Type with Encoder	**RK543AA-R27** **RK544AA-R27** **RK545AA-R27**	PK543AW-R27 PK544AW-R27 PK545AW-R27	RKD507-A
	RK564AAE-R27 **RK566AAE-R27** **RK569AAE-R27**	PK564AE-R27 PK566AE-R27 PK569AE-R27	RKD514L-A
	RK596AAE-R27 **RK599AAE-R27** **RK5913AAE-R27**	PK596AE-R27 PK599AE-R27 PK5913AE-R27	RKD514H-A
	RK564ACE-R27 **RK566ACE-R27** **RK569ACE-R27**	PK564AE-R27 PK566AE-R27 PK569AE-R27	RKD514L-C
	RK596ACE-R27 **RK599ACE-R27** **RK5913ACE-R27**	PK596AE-R27 PK599AE-R27 PK5913AE-R27	RKD514H-C
TH Geared Type with Encoder	**RK543AAR27T3.6** **RK543AAR27T7.2** **RK543AAR27T10** **RK543AAR27T20** **RK543AAR27T30**	PK543AWR27T3.6 PK543AWR27T7.2 PK543AWR27T10 PK543AWR27T20 PK543AWR27T30	RKD507-A
	RK564AAER27T3.6 **RK564AAER27T7.2** **RK564AAER27T10** **RK564AAER27T20** **RK564AAER27T30**	PK564AER27T3.6 PK564AER27T7.2 PK564AER27T10 PK564AER27T20 PK564AER27T30	RKD514L-A
	RK596AAER27T3.6 **RK596AAER27T7.2** **RK596AAER27T10** **RK596AAER27T20** **RK596AAER27T30**	PK596AER27T3.6 PK596AER27T7.2 PK596AE1R27T10 PK596AE1R27T20 PK596AE1R27T30	RKD514H-A
	RK564ACER27T3.6 **RK564ACER27T7.2** **RK564ACER27T10** **RK564ACER27T20** **RK564ACER27T30**	PK564AER27T3.6 PK564AER27T7.2 PK564AER27T10 PK564AER27T20 PK564AER27T30	RKD514L-C
	RK596ACER27T3.6 **RK596ACER27T7.2** **RK596ACER27T10** **RK596ACER27T20** **RK596ACER27T30**	PK596AER27T3.6 PK596AER27T7.2 PK596AE1R27T10 PK596AE1R27T20 PK596AE1R27T30	RKD514H-C

Type	Model	Motor Model	Driver Model
PS Geared Type with Encoder	**RK545AAR27PS5** **RK545AAR27PS7** **RK545AAR27PS10** **RK543AAR27PS25** **RK543AAR27PS36** **RK543AAR27PS50**	PK545AWR27PS5 PK545AWR27PS7 PK545AWR27PS10 PK543AWR27PS25 PK543AWR27PS36 PK543AWR27PS50	RKD507-A
	RK566AAER27PS5 **RK566AAER27PS7** **RK566AAER27PS10** **RK564AAER27PS25** **RK564AAER27PS36** **RK564AAER27PS50**	PK566AER27PS5 PK566AER27PS7 PK566AER27PS10 PK564AER27PS25 PK564AER27PS36 PK564AER27PS50	RKD514L-A
	RK599AAER27PS5 **RK599AAER27PS7** **RK599AAER27PS10** **RK596AAER27PS25** **RK596AAER27PS36** **RK596AAER27PS50**	PK599AER27PS5 PK599AER27PS7 PK599AER27PS10 PK596AER27PS25 PK596AER27PS36 PK596AER27PS50	RKD514H-A
	RK566ACER27PS5 **RK566ACER27PS7** **RK566ACER27PS10** **RK564ACER27PS25** **RK564ACER27PS36** **RK564ACER27PS50**	PK566AER27PS5 PK566AER27PS7 PK566AER27PS10 PK564AER27PS25 PK564AER27PS36 PK564AER27PS50	RKD514L-C
	RK599ACER27PS5 **RK599ACER27PS7** **RK599ACER27PS10** **RK596ACER27PS25** **RK596ACER27PS36** **RK596ACER27PS50**	PK599AER27PS5 PK599AER27PS7 PK599AER27PS10 PK596AER27PS25 PK596AER27PS36 PK596AER27PS50	RKD514H-C
Harmonic Geared Type with Encoder	**RK543AAR27H50** **RK543AAR27H100**	PK543AWR27H50 PK543AWR27H100	RKD507-A
	RK564AAER27H50 **RK564AAER27H100**	PK564AER27H50 PK564AER27H100	RKD514L-A
	RK596AAER27H50 **RK596AAER27H100**	PK596AE1R27H50 PK596AE1R27H100	RKD514H-A
	RK564ACER27H50 **RK564ACER27H100**	PK564AER27H50 PK564AER27H100	RKD514L-C
	RK596ACER27H50 **RK596ACER27H100**	PK596AE1R27H50 PK596AE1R27H100	RKD514H-C