Stepping Motors

Stepping Motor and Driver Packages

DC Input

DC Input **CRK** Series

DC Input **RBK** Series

DC Input **CMK** Series

RoHS RoHS-Compliant

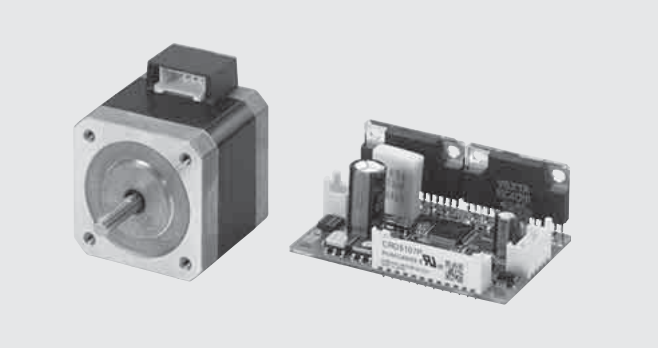
5-Phase Stepping Motor and Driver Package

CRK Series

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

The **CRK** Series is a motor and driver package combining a high-performance, 5-phase stepping motor with a compact, low-vibration microstep driver offering the Smooth Drive Function. Four frame sizes of 20 mm (0.79 in.), 28 mm (0.10 in.), 42 mm (1.65 in.) and 60 mm (2.36 in.) are available, as well as various geared motor units.

● List of safety standard approved products (Model, Standards, File No., Certification Body)
➜ Page G-11



Features

●Newly Designed Motors

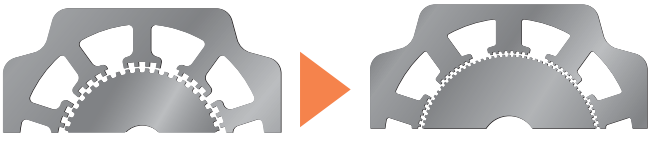
◇High-Resolution Motor

• Improved Stopping Accuracy

The positioning accuracy of a stepping motor is affected by the friction of the load.
The high-resolution type achieves high accuracy and reliability based on Oriental Motor's latest precision machining technology. The motor resolution is increased to double the level of a standard model to reduce the displacement angle against load torque, thereby achieve high positioning accuracy. Vibration is also reduced.

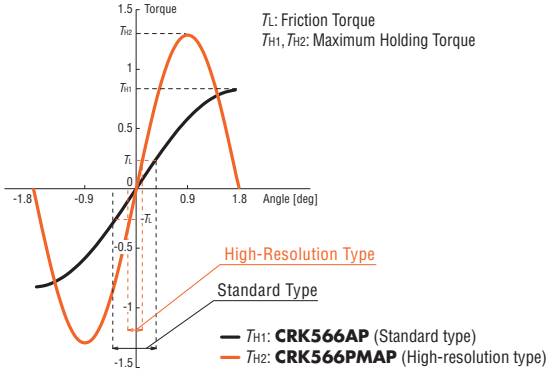
Standard type: 50 teeth
Resolution: 500 steps per rotation
= 0.72°/step

High-resolution type: 100 teeth
Resolution: 1000 steps per rotation
= 0.36°/step



Resolution is increased!

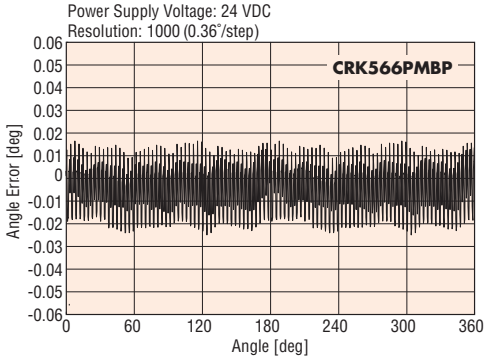
Comparison of Angle – Torque Characteristics



• Stop Position Accuracy of 2 Arc Minutes (No load)

The high-resolution type is designed with a stop position accuracy of 2 arc minutes (0.034°) [standard type: 3 arc minutes (0.05°)]. The reduced error helps improve the positioning accuracy of your equipment.

Static Angle Characteristics



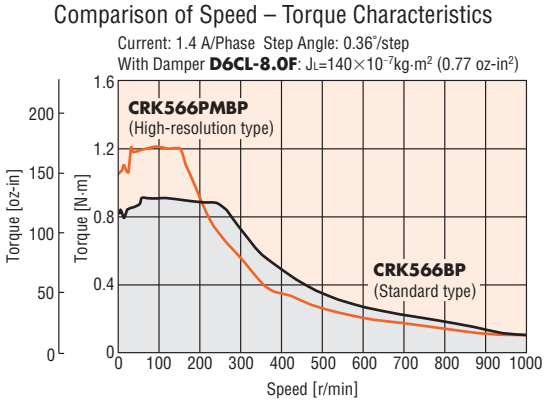
◇High-Torque Motor

The high-resolution type and high-torque type adopt a newly designed high-torque motor that widens the range of applications.

- The smaller motor allows for compact equipment design.
- The motor current is reduced to suppress heat generation.

Example: Avoidance of temperature rise in precision equipment or machinery

Comparison of Speed – Torque Characteristics



◇Adopting a Connector Coupling Method

The high-resolution type and high-torque type are connected using a connector — a convenient method.

- Desired cable length and type can be selected.
- Maintenance is simpler.
- Motor lead wire/connector assembly [0.6 m (2 ft.)] is included with the motor and driver package.

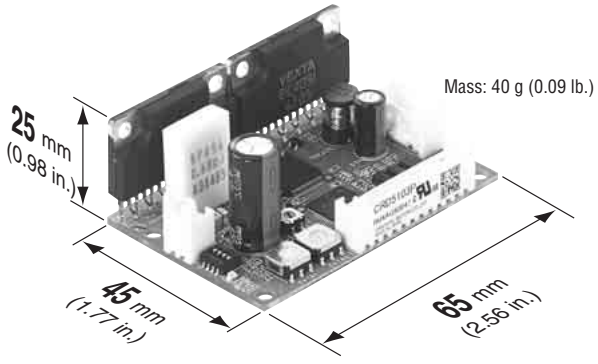
●Wide Range of Motor Variations

The **CRK** Series offers models of the high-resolution type, high-torque type and standard type, as well as various geared types. You can find a product meeting your specific torque, resolution or other needs from a wide range of specifications.

●Compact, Lightweight Microstep Driver

The driver in the **CRK** Series achieves microstepping performance in a compact, lightweight body.
A new IC allows the driver to provide various functions, including the following:

- Smooth Drive Function
- 1-pulse/2-pulse input mode switching
- 25 preset step angles
- Power LED
- Photocoupler input
- Connector with lock (by MOLEX)



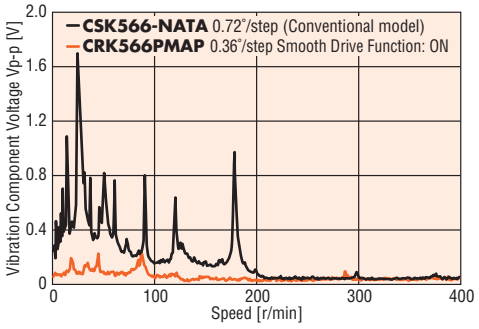
◇Lower Vibration and Noise Achieved by Microstepping

The basic step angle of the motor can be divided into a maximum of 250 microstep angles without using any mechanical element such as a reduction gear.
As a result, vibration and noise are further reduced.

◇Smooth Drive Function for Enhanced Ease of Use

The Smooth Drive Function automatically controls operations via microstepping at the same travel amount and speed used in the full-step mode, without requiring the operator to change the pulse input settings.
This function is particularly useful when the system is operated in the full-step or half-step mode.

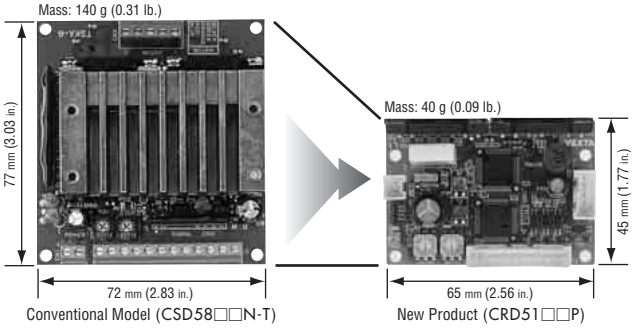
Comparison of Vibration Characteristics



◇Compact Size

The compact, lightweight driver in the **CRK** Series is approximately 47% smaller than a conventional full-step driver.

Comparison of Driver Size and Mass



●Conforming to Major Safety Standards

The **CRK** Series is UL-recognized and CSA-certified.
It also bears the CE Mark as a proof of conformance to the EMC Directives.
Safe operation is ensured anywhere in the world.

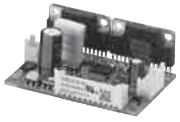
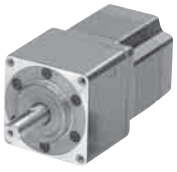
●RoHS RoHS-Compliant

The **CRK** Series conforms to the RoHS Directive that prohibits the use of six chemical substances including lead and cadmium.

● Details of RoHS Directive ➜ Page G-38

Wide Variety

The **CRK** Series comes in four frame sizes of 20 to 60 mm (0.79 to 2.36 in.), as well as three geared types.

Type		Features	□20 mm (□0.79 in.)	□28 mm (□1.10 in.)	□42 mm (□1.65 in.)	□60 mm (□2.36 in.)	Driver
High-Resolution Type		A high-torque motor offering higher positioning accuracy with the basic step angle set to 0.36°/step, or half the basic step angle of the standard type.					
High-Torque Type		A high-torque motor generating high torque of approx. 1.3 to 1.5 times the level achieved by the standard type.					
Standard Type		The basic model in the **CRK** Series offering an optimal balance of torque, low vibration and low noise.					
Low Backlash	**TH** Geared Type	A geared motor achieving both low backlash and low cost.					
Non-Backlash	**PN** Geared Type	A high-accuracy geared motor achieving a backlash of 3 arc minutes or less. It also provides high strength and wide gear ratios.					
	Harmonic Geared Type	A high-accuracy, backlash-free geared motor adopting a newly developed harmonic gear. It ensures high strength in a compact body.					

Characteristics Comparison for Geared Motors

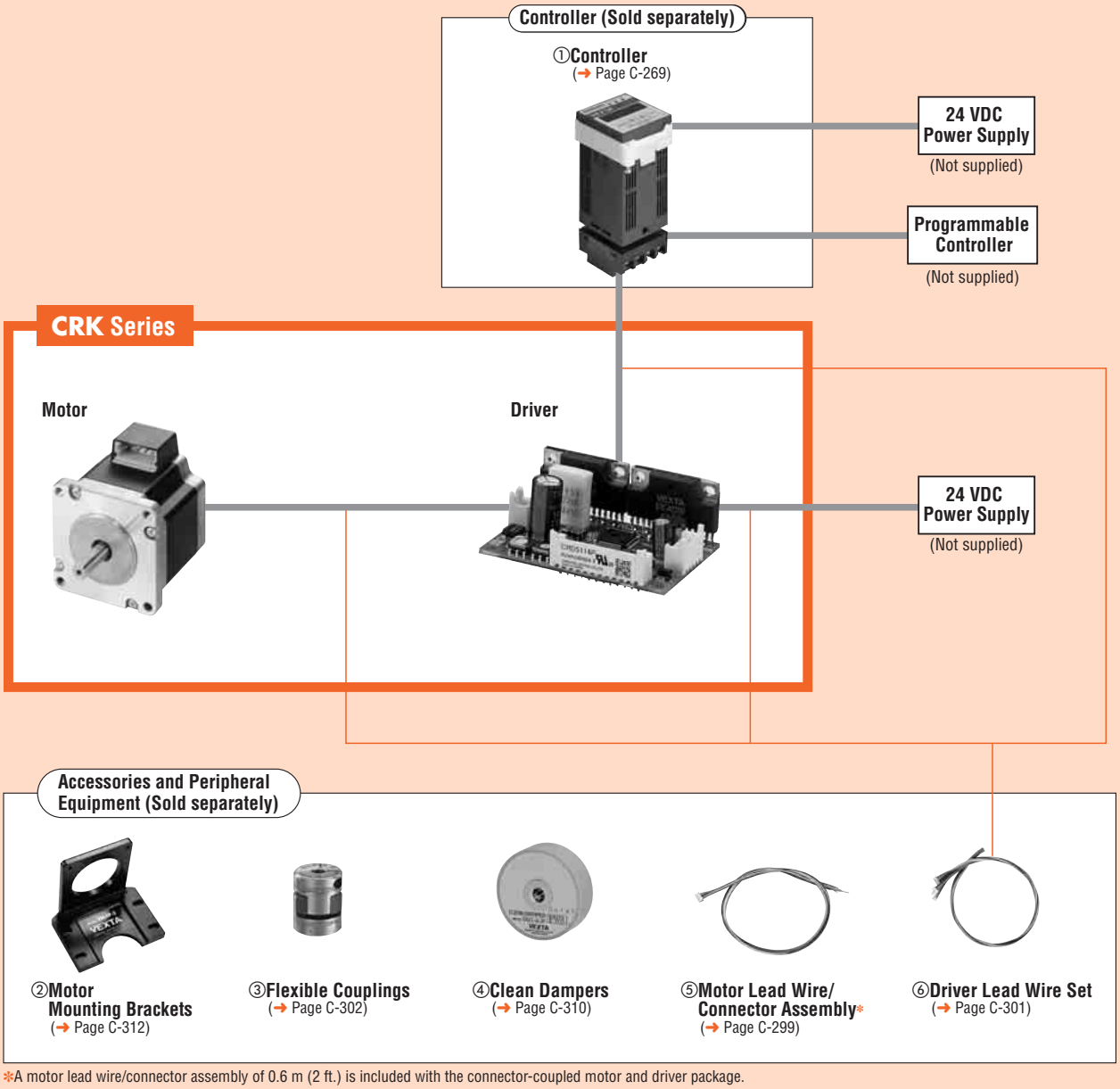
	Geared Type	Features	Permissible Torque/ Maximum Torque [N·m (lb-in)]	Backlash [arc min]	Basic Resolution [deg/step]	Output Shaft Speed [r/min]
Low Backlash	 **TH Geared** (Parallel shaft)	· A wide variety of low gear ratios for high-speed operation · Gear ratios: 3.6:1, 7.2:1, 10:1, 20:1, 30:1	4 (35)	60	0.024	500
Non-Backlash	 **PN Geared** (Planetary gear)	· High speed (low gear ratios), high accuracy positioning · High permissible/maximum torque · A wide variety of gear ratios for selecting the desired step angle · Centered output shaft · Gear ratios: 5:1, 7.2:1, 10:1, 25:1, 36:1, 50:1	Permissible Torque 8 (70) Maximum Torque 20 (177)	3	0.0144	600
	 **Harmonic Geared** (Harmonic drive)	· High accuracy positioning · High permissible/maximum torque · High gear ratios, high resolution · Centered output shaft · Gear ratios: 50:1, 100:1	Permissible Torque 8 (70) Maximum Torque 28 (240)	0	0.0072	70

Note:

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

System Configuration

An example of a system configuration with the **SG8030J** controller.



*A motor lead wire/connector assembly of 0.6 m (2 ft.) is included with the connector-coupled motor and driver package.

No.	Product Name	Overview	Page
①	Controller	This controller outputs pulse commands that determine the rotation amount and rotating speed.	C-269
②	Motor Mounting Brackets	Dedicated mounting bracket for the motor.	C-312
③	Flexible Couplings	Coupling that connects the motor shaft to the driven shaft.	C-302
④	Clean Dampers	Dedicated damper for suppressing stepping motor vibration.	C-310
⑤	Motor Lead Wire/Connector Assembly	Lead wire with a connector crimped for connector-coupled motors [0.6 m, 1 m (2 ft., 3.3 ft.)].	C-299
⑥	Driver Lead Wire Set	Cables for connecting the driver and motor, DC power supply or host controller [0.6 m (2 ft.)] (**LCS04SD5**).	C-301

●Example of System Configuration

CRK Series		(Sold separately) Controller	Motor Mounting Bracket	Flexible Coupling	Clean Damper	Driver Lead Wire Set [0.6 m (2 ft.)]
CRK566PMBP	+	SG8030J-U	PAL2P-5A	MCS300808	D6CL-8.0F	LCS04SD5

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

Product Number Code

High-Resolution Type/High-Torque Type/Standard Type

CRK 5 4 4 P M A P

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①	Series	**CRK**: **CRK** Series
②	**5**: 5-Phase	
③	Motor Frame Size	**1**: 20 mm (0.79 in.) **2**: 28 mm (1.10 in.) **4**: 42 mm (1.65 in.) **6**: 60 mm (2.36 in.)
④	Motor Case Length	
⑤	Motor Type	
⑥	Resolution	Blank: Standard (0.72°/step) **M**: High-Resolution (0.36°/step)
⑦	Motor Shaft Type	**A**: Single Shaft **B**: Double Shaft
⑧	Signal I/O Mode of Driver	**P**: Photocoupler

Geared Type

CRK 5 2 3 P A P - N 7.2

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①	Series	**CRK**: **CRK** Series
②	**5**: 5-Phase	
③	Motor Frame Size	**1**: 20 mm (0.79 in.) **2**: 28 mm (1.10 in.) **4**: 42 mm (1.65 in.) **6**: 60 mm (2.36 in.)
④	Motor Case Length	
⑤	Motor Type	
⑥	Motor Shaft Type	**A**: Single Shaft **B**: Double Shaft
⑦	Signal I/O Mode of Driver	**P**: Photocoupler
⑧	Gearhead Type	**T**: **TH** Geared Type **N**: **PN** Geared Type **H**: Harmonic Geared Type
⑨	Gear Ratio	

Product Line

High-Resolution Type

Model (Single shaft)	Model (Double shaft)
CRK523PMAP	**CRK523PMBP**
CRK524PMAP	**CRK524PMBP**
CRK525PMAP	**CRK525PMBP**
CRK544PMAP	**CRK544PMBP**
CRK546PMAP	**CRK546PMBP**
CRK564PMAP	**CRK564PMBP**
CRK566PMAP	**CRK566PMBP**
CRK569PMAP	**CRK569PMBP**

High-Torque Type

Model (Single shaft)	Model (Double shaft)
CRK513PAP	**CRK513PBP**
CRK523PAP	**CRK523PBP**
CRK525PAP	**CRK525PBP**
CRK544PAP	**CRK544PBP**
CRK546PAP	**CRK546PBP**

Standard Type

Model (Single shaft)	Model (Double shaft)
CRK543AP	**CRK543BP**
CRK544AP	**CRK544BP**
CRK545AP	**CRK545BP**
CRK564AP	**CRK564BP**
CRK566AP	**CRK566BP**
CRK569AP	**CRK569BP**

The following items are included in each product.
Motor, Parallel Key*1, Driver, Driver Connector, Motor Lead Wire/Connector Assembly*2, Operating Manual
*1 Only for the products with a key slot on the output shaft
*2 Only for connector-coupled motor

TH Geared Type

Model (Single shaft)	Model (Double shaft)
CRK523PAP-T7.2	**CRK523PBP-T7.2**
CRK523PAP-T10	**CRK523PBP-T10**
CRK523PAP-T20	**CRK523PBP-T20**
CRK523PAP-T30	**CRK523PBP-T30**
CRK543AP-T3.6	**CRK543BP-T3.6**
CRK543AP-T7.2	**CRK543BP-T7.2**
CRK543AP-T10	**CRK543BP-T10**
CRK543AP-T20	**CRK543BP-T20**
CRK543AP-T30	**CRK543BP-T30**
CRK564AP-T3.6	**CRK564BP-T3.6**
CRK564AP-T7.2	**CRK564BP-T7.2**
CRK564AP-T10	**CRK564BP-T10**
CRK564AP-T20	**CRK564BP-T20**
CRK564AP-T30	**CRK564BP-T30**

PN Geared Type

Model (Single shaft)	Model (Double shaft)
CRK523PAP-N5	**CRK523PBP-N5**
CRK523PAP-N7.2	**CRK523PBP-N7.2**
CRK523PAP-N10	**CRK523PBP-N10**
CRK544AP-N5	**CRK544BP-N5**
CRK544AP-N7.2	**CRK544BP-N7.2**
CRK544AP-N10	**CRK544BP-N10**
CRK566AP-N5	**CRK566BP-N5**
CRK566AP-N7.2	**CRK566BP-N7.2**
CRK566AP-N10	**CRK566BP-N10**
CRK564AP-N25	**CRK564BP-N25**
CRK564AP-N36	**CRK564BP-N36**
CRK564AP-N50	**CRK564BP-N50**

Harmonic Geared Type

Model (Single shaft)	Model (Double shaft)
CRK513PAP-H50	**CRK513PBP-H50**
CRK513PAP-H100	**CRK513PBP-H100**
CRK543AP-H50	**CRK543BP-H50**
CRK543AP-H100	**CRK543BP-H100**
CRK564AP-H50	**CRK564BP-H50**
CRK564AP-H100	**CRK564BP-H100**

High-Resolution Type Motor Frame Size 28 mm (1.10 in.), 42 mm (1.65 in.)

Specifications RoHS

Model		CRK523PMAP*	CRK524PMAP*	CRK525PMAP*	CRK544PMAP*	CRK546PMAP*
	Double Shaft	CRK523PMBP*	CRK524PMBP*	CRK525PMBP*	CRK544PMBP*	CRK546PMBP*
Maximum Holding Torque	N·m (oz-in)	0.042 (5.9)	0.061 (8.6)	0.09 (12.7)	0.24 (34)	0.42 (59)
Rotor Inertia J	kg·m^2 (oz-in^2)	9×10^{-7} (0.049)	13×10^{-7} (0.071)	19×10^{-7} (0.104)	60×10^{-7} (0.33)	121×10^{-7} (0.66)
Rated Current	A/Phase	0.35			0.75	
Basic Step Angle		0.36°				
Power Source		24 VDC±10% 0.7 A			24 VDC±10% 1.4 A	
Excitation Mode		Microstep				
Mass	Motor kg (lb.)	0.11 (0.24)	0.15 (0.33)	0.2 (0.44)	0.3 (0.66)	0.5 (1.1)
	Driver kg (lb.)	0.04 (0.09)				
Dimension No.	Motor	2			3	
	Driver	16				

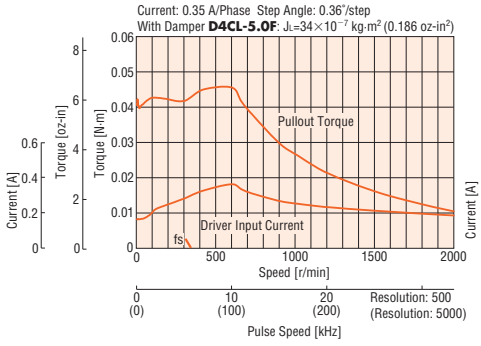
How to read specifications table ➜ Page C-11

*Motor lead wire/connector assembly [0.6 m (2 ft.)] is included with the connector-coupled motor and driver package.

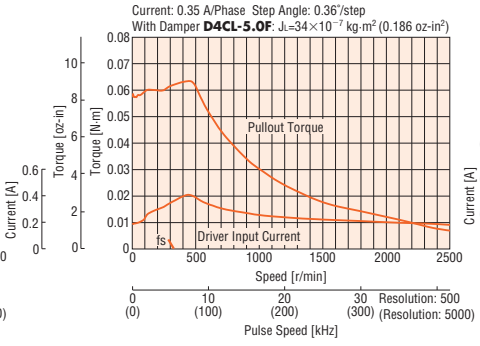
Speed – Torque Characteristics

How to read speed – torque characteristics ➜ Page C-12

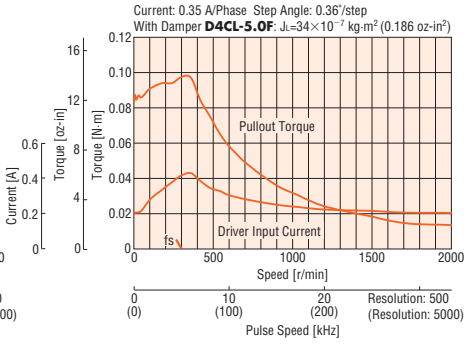
CRK523PMAP/CRK523PMBP



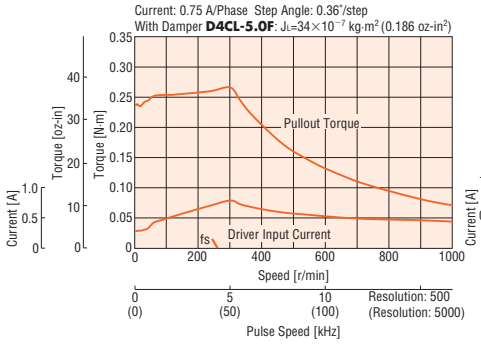
CRK524PMAP/CRK524PMBP



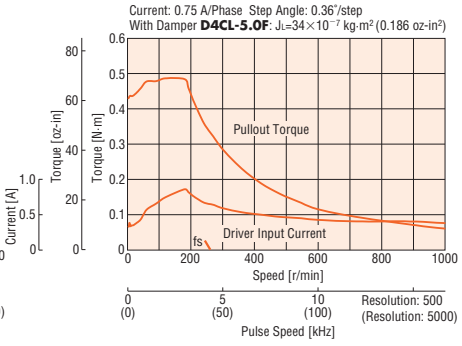
CRK525PMAP/CRK525PMBP



CRK544PMAP/CRK544PMBP



CRK546PMAP/CRK546PMBP



- The pulse input circuit responds to approximately 500 kHz with a pulse duty of 50%.

Notes:

- Pay attention to heat dissipation from 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 insulation Class A.]
- The driver's automatic current cutback function at motor standstill reduces maximum holding torque by approximately 50%.

High-Resolution Type Motor Frame Size 60 mm (2.36 in.)

Specifications RoHS

Model		CRK564PMAP* / CRK564PMBP*	CRK566PMAP* / CRK566PMBP*	CRK569PMAP* / CRK569PMBP*
Maximum Holding Torque	N·m (oz-in)	0.78 (110)	1.3 (184)	2.3 (320)
Rotor Inertia J	kg·m² (oz-in²)	310×10⁻⁷ (1.7)	490×10⁻⁷ (2.7)	970×10⁻⁷ (5.3)
Rated Current	A/Phase	1.4		
Basic Step Angle		0.36°		
Power Source		24 VDC±10% 2.5 A		
Excitation Mode		Microstep		
Mass	Motor kg (lb.)	0.65 (1.43)	0.87 (1.91)	1.5 (3.3)
	Driver kg (lb.)	0.04 (0.09)		
Dimension No.	Motor	4		
	Driver	16		

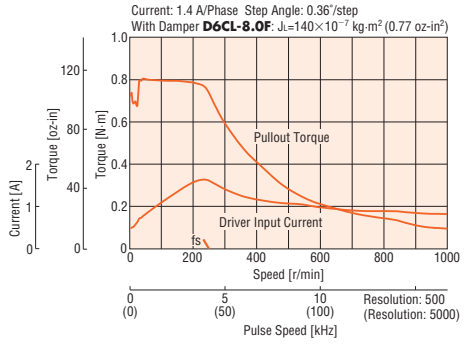
How to read specifications table ➜ Page C-11

*Motor lead wire/connector assembly [0.6 m (2 ft.)] is included with the connector-coupled motor and driver package.

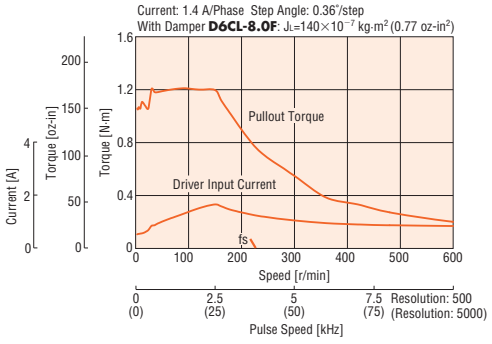
Speed – Torque Characteristics

How to read speed – torque characteristics ➜ Page C-12

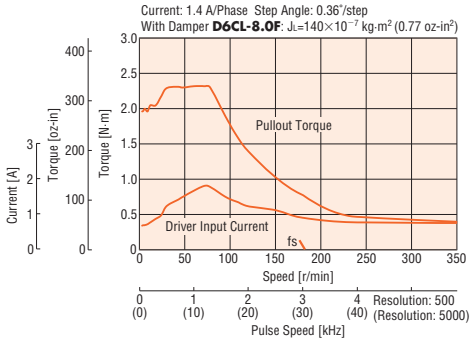
CRK564PMAP/CRK564PMBP



CRK566PMAP/CRK566PMBP



CRK569PMAP/CRK569PMBP



- The pulse input circuit responds to approximately 500 kHz with a pulse duty of 50%.

Notes:

- Pay attention to heat dissipation from 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 insulation Class A.]
- The driver's automatic current cutback function at motor standstill reduces maximum holding torque by approximately 50%.

High-Torque Type Motor Frame Size 20 mm (0.79 in.), 28 mm (1.10 in.)

Specifications RoHS

Model		CRK513PAP* / CRK513PBP*	CRK523PAP* / CRK523PBP*	CRK525PAP* / CRK525PBP*
Maximum Holding Torque	N·m (oz-in)	0.0231 (3.2)	0.048 (6.8)	0.078 (11)
Rotor Inertia J	kg·m² (oz-in²)	3.1×10^{-7} (0.0170)	9×10^{-7} (0.049)	18×10^{-7} (0.098)
Rated Current	A/Phase	0.35		
Basic Step Angle		0.72°		
Power Source		24 VDC±10% 0.7 A		
Excitation Mode		Microstep		
Mass	Motor kg (lb.)	0.05 (0.11)	0.11 (0.24)	0.2 (0.44)
	Driver kg (lb.)	0.04 (0.09)		
Dimension No.	Motor	1	2	
	Driver	16		

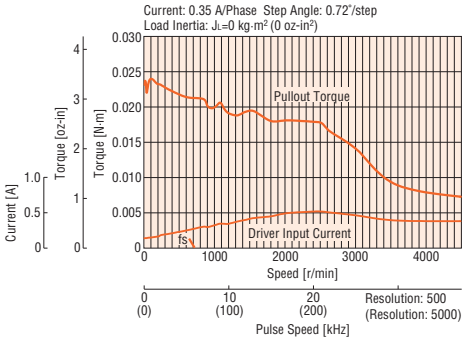
How to read specifications table ➜ Page C-11

*Motor lead wire/connector assembly [0.6 m (2 ft.)] is included with the connector-coupled motor and driver package.

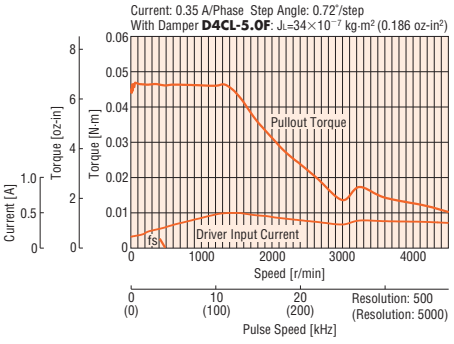
Speed – Torque Characteristics

How to read speed – torque characteristics ➜ Page C-12

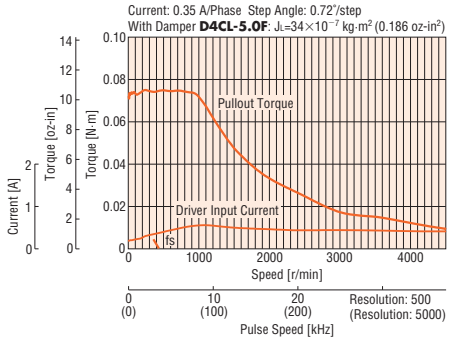
CRK513PAP/CRK513PBP



CRK523PAP/CRK523PBP



CRK525PAP/CRK525PBP



- The pulse input circuit responds to approximately 500 kHz with a pulse duty of 50%.

Notes:

- Pay attention to heat dissipation from 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 insulation Class A.]
- The driver's automatic current cutback function at motor standstill reduces maximum holding torque by approximately 50%.

Standard/High-Torque Type Motor Frame Size 42 mm (1.65 in.)

Specifications RoHS

Model		CRK543AP / CRK543BP	CRK544AP / CRK544BP	CRK545AP / CRK545BP	CRK544PAP* / CRK544PBP*	CRK546PAP* / CRK546PBP*
Maximum Holding Torque	N·m (oz-in)	0.13 (18.4)	0.18 (25)	0.24 (34)	0.24 (34)	0.42 (59)
Rotor Inertia J	kg·m² (oz-in²)	35×10^{-7} (0.191)	54×10^{-7} (0.3)	68×10^{-7} (0.37)	57×10^{-7} (0.31)	114×10^{-7} (0.62)
Rated Current	A/Phase	0.75				
Basic Step Angle		0.72°				
Power Source		24 VDC±10% 1.4 A				
Excitation Mode		Microstep				
Mass	Motor kg (lb.)	0.21 (0.46)	0.27 (0.59)	0.35 (0.77)	0.3 (0.66)	0.5 (1.1)
	Driver kg (lb.)	0.04 (0.09)				
Dimension No.	Motor	5			3	
	Driver	16				

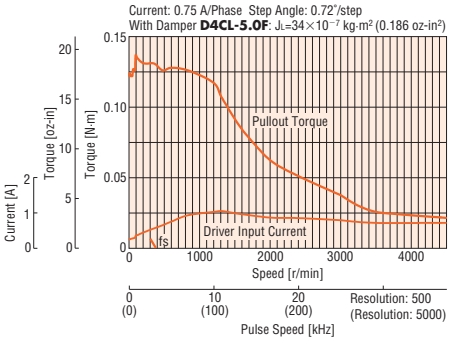
How to read specifications table ➜ Page C-11

*Motor lead wire/connector assembly [0.6 m (2 ft.)] is included with the connector-coupled motor and driver package.

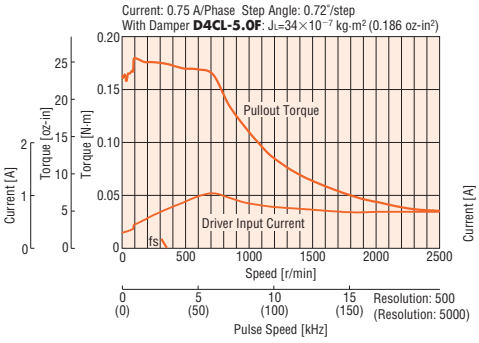
Speed – Torque Characteristics

How to read speed – torque characteristics ➜ Page C-12

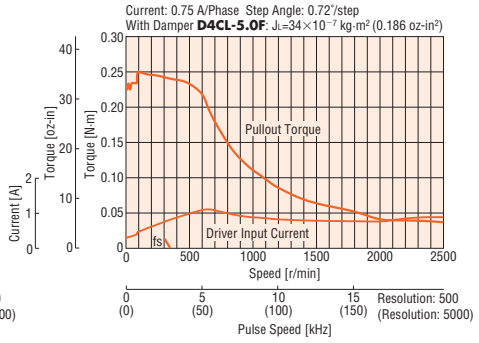
CRK543AP/CRK543BP



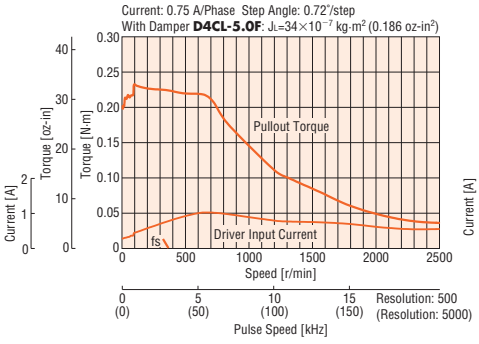
CRK544AP/CRK544BP



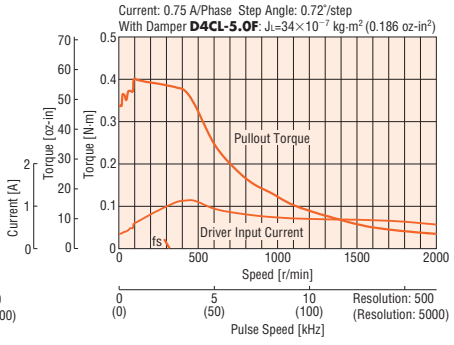
CRK545AP/CRK545BP



CRK544PAP/CRK544PBP



CRK546PAP/CRK546PBP



- The pulse input circuit responds to approximately 500 kHz with a pulse duty of 50%.

Notes:

- Pay attention to heat dissipation from 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 insulation Class A.]
- The driver's automatic current cutback function at motor standstill reduces maximum holding torque by approximately 50%.

Standard Type Motor Frame Size 60 mm (2.36 in.)

Specifications RoHS

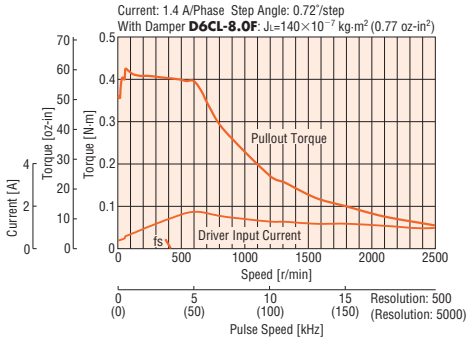
Model		CRK564AP / CRK564BP	CRK566AP / CRK566BP	CRK569AP / CRK569BP
Maximum Holding Torque	N·m (oz-in)	0.42 (59)	0.83 (117)	1.66 (230)
Rotor Inertia J	kg·m² (oz-in²)	175×10⁻⁷ (0.96)	280×10⁻⁷ (1.53)	560×10⁻⁷ (3.1)
Rated Current	A/Phase	1.4		
Basic Step Angle		0.72°		
Power Source		24 VDC±10% 2.5 A		
Excitation Mode		Microstep		
Mass	Motor kg (lb.)	0.6 (1.32)	0.8 (1.76)	1.3 (2.9)
	Driver kg (lb.)	0.04 (0.09)		
Dimension No.	Motor	6		
	Driver	16		

How to read specifications table ➜ Page C-11

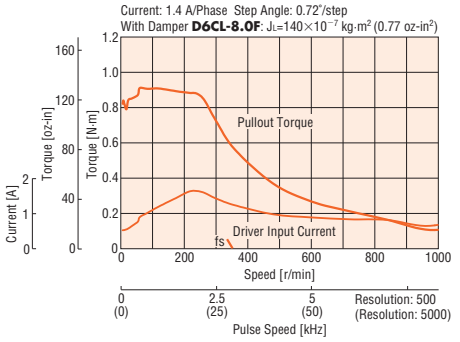
Speed – Torque Characteristics

How to read speed – torque characteristics ➜ Page C-12

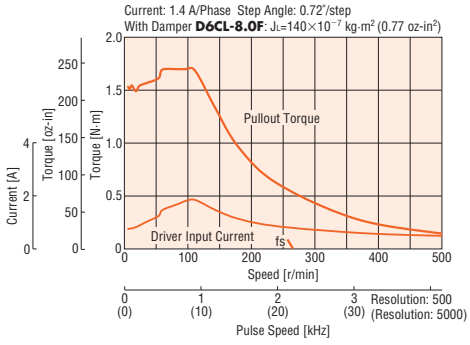
CRK564AP/CRK564BP



CRK566AP/CRK566BP



CRK569AP/CRK569BP



- The pulse input circuit responds to approximately 500 kHz with a pulse duty of 50%.

Notes:

- Pay attention to heat dissipation from 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 insulation Class A.]
- The driver's automatic current cutback function at motor standstill reduces maximum holding torque by approximately 50%.

TH Geared Type Motor Frame Size 28 mm (1.10 in.)

Specifications RoHS

Model		CRK523PAP-T7.2* / CRK523PBP-T7.2*	CRK523PAP-T10* / CRK523PBP-T10*	CRK523PAP-T20* / CRK523PBP-T20*	CRK523PAP-T30* / CRK523PBP-T30*
Maximum Holding Torque	N·m (oz-in)	0.2 (28)	0.3 (42)	0.4 (56)	0.5 (71)
Rotor Inertia J	kg·m² (oz-in²)	9×10^{-7} (0.049)			
Rated Current	A/Phase	0.35			
Basic Step Angle		0.1°	0.072°	0.036°	0.024°
Gear Ratio		7.2 : 1	10 : 1	20 : 1	30 : 1
Permissible Torque	N·m (oz-in)	0.2 (28)	0.3 (42)	0.4 (56)	0.5 (71)
Backlash	arc minute (degrees)	60 (1°)			
Permissible Speed Range	r/min	0~416	0~300	0~150	0~100
Power Source		24 VDC±10% 0.7 A			
Excitation Mode		Microstep			
Mass	Motor kg (lb.)	0.17 (0.37)			
	Driver kg (lb.)	0.04 (0.09)			
Dimension No.	Motor	7			
	Driver	16			

How to read specifications table ➜ Page C-11

*Motor lead wire/connector assembly [0.6 m (2 ft.)] is included with the connector-coupled motor and driver package.

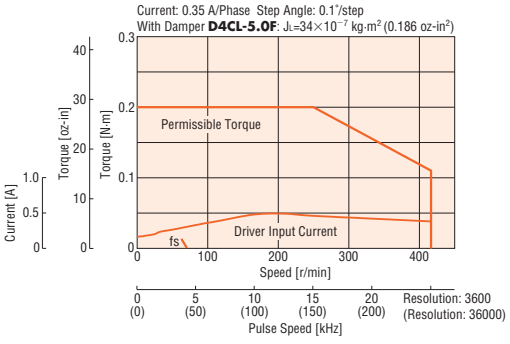
Note:

- Direction of rotation of the motor and that of the gear output shaft are the opposite for the gear ratios 7.2:1 and 10:1. It is the same for 20:1 and 30:1 gear ratios.

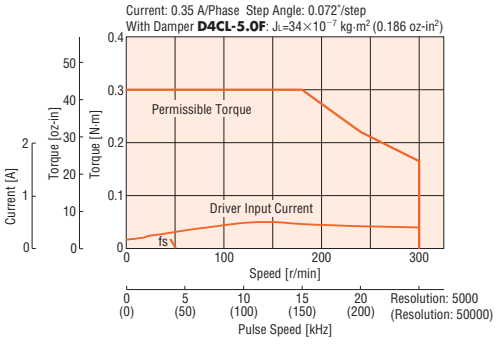
Speed – Torque Characteristics

How to read speed – torque characteristics ➜ Page C-12

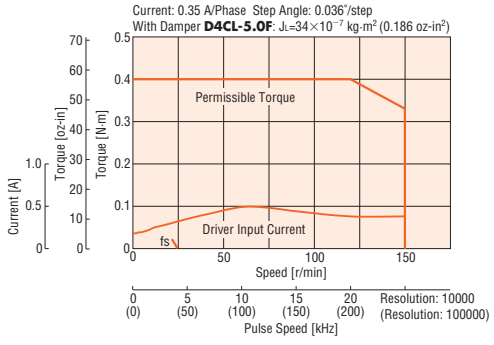
CRK523PAP-T7.2/CRK523PBP-T7.2



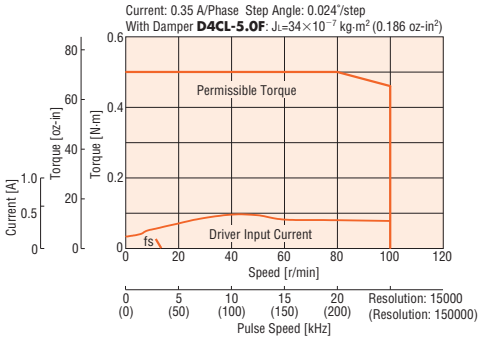
CRK523PAP-T10/CRK523PBP-T10



CRK523PAP-T20/CRK523PBP-T20



CRK523PAP-T30/CRK523PBP-T30



- The pulse input circuit responds to approximately 500 kHz with a pulse duty of 50%.

Notes:

- Pay attention to heat dissipation from 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 insulation Class A.]
- The driver's automatic current cutback function at motor standstill reduces maximum holding torque by approximately 50%.

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

Specifications RoHS

Model		CRK543AP-T3.6 / CRK543BP-T3.6	CRK543AP-T7.2 / CRK543BP-T7.2	CRK543AP-T10 / CRK543BP-T10	CRK543AP-T20 / CRK543BP-T20	CRK543AP-T30 / CRK543BP-T30
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·m² (oz-in²)	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 : 1	7.2 : 1	10 : 1	20 : 1	30 : 1
Permissible Torque	N·m (lb-in)	0.35 (3)	0.7 (6.1)	1 (8.8)	1.5 (13.2)	
Backlash	arc minute (degrees)	45 (0.75°)	25 (0.417°)		15 (0.25°)	
Permissible Speed Range	r/min	0～500	0～250	0～180	0～90	0～60
Power Source		24 VDC±10% 1.4 A				
Excitation Mode		Microstep				
Mass	Motor kg (lb.)	0.35 (0.77)				
	Driver kg (lb.)	0.04 (0.09)				
Dimension No.	Motor	8				
	Driver	16				

How to read specifications table ➜ Page C-11

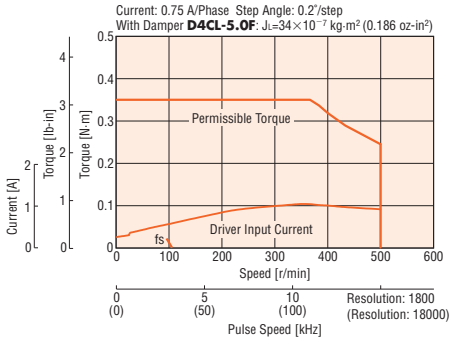
Note:

- Direction of rotation of the motor and that of the gear output shaft are the same for the gear ratios 3.6:1, 7.2:1 and 10:1. It is the opposite for 20:1 and 30:1 gear ratios.

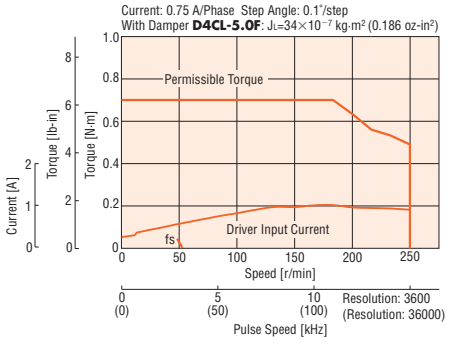
Speed – Torque Characteristics

How to read speed – torque characteristics ➜ Page C-12

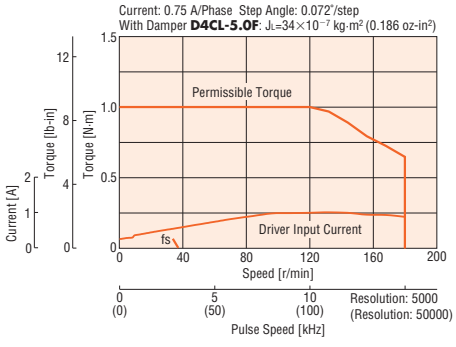
CRK543AP-T3.6/CRK543BP-T3.6



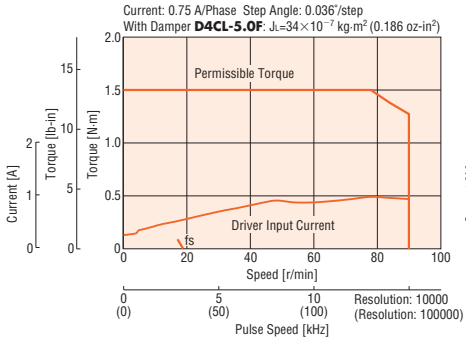
CRK543AP-T7.2/CRK543BP-T7.2



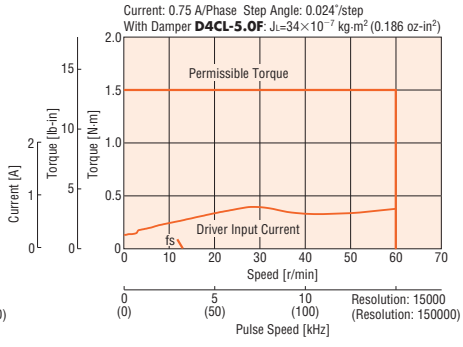
CRK543AP-T10/CRK543BP-T10



CRK543AP-T20/CRK543BP-T20



CRK543AP-T30/CRK543BP-T30



- The pulse input circuit responds to approximately 500 kHz with a pulse duty of 50%.

Notes:

- Pay attention to heat dissipation from 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 insulation Class A.]
- The driver's automatic current cutback function at motor standstill reduces maximum holding torque by approximately 50%.

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

Specifications RoHS

Model		CRK564AP-T3.6 / CRK564BP-T3.6	CRK564AP-T7.2 / CRK564BP-T7.2	CRK564AP-T10 / CRK564BP-T10	CRK564AP-T20 / CRK564BP-T20	CRK564AP-T30 / CRK564BP-T30
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 : 1	7.2 : 1	10 : 1	20 : 1	30 : 1
Permissible Torque	N·m (lb-in)	1.25 (11)	2.5 (22)	3 (26)	3.5 (30)	4 (35)
Backlash	arc minute (degrees)	35 (0.584°)	15 (0.25°)		10 (0.167°)	
Permissible Speed Range	r/min	0～500	0～250	0～180	0～90	0～60
Power Source		24 VDC±10% 2.5 A				
Excitation Mode		Microstep				
Mass	Motor kg (lb.)	0.95 (2.1)				
	Driver kg (lb.)	0.04 (0.09)				
Dimension No.	Motor	9				
	Driver	16				

How to read specifications table ➜ Page C-11

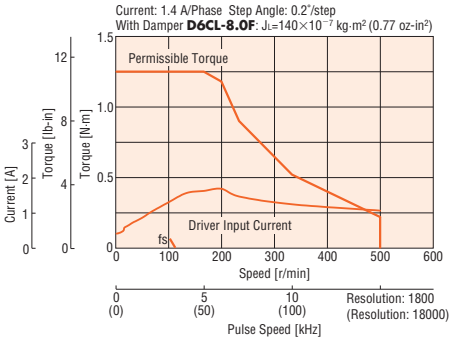
Note:

- Direction of rotation of the motor and that of the gear output shaft are the same for the gear ratios 3.6:1, 7.2:1 and 10:1. It is the opposite for 20:1 and 30:1 gear ratios.

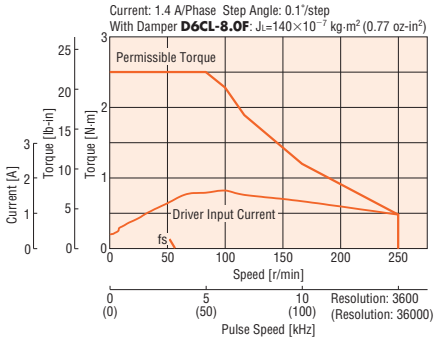
Speed – Torque Characteristics

How to read speed – torque characteristics ➜ Page C-12

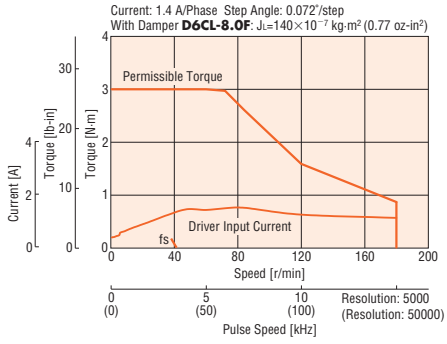
CRK564AP-T3.6/CRK564BP-T3.6



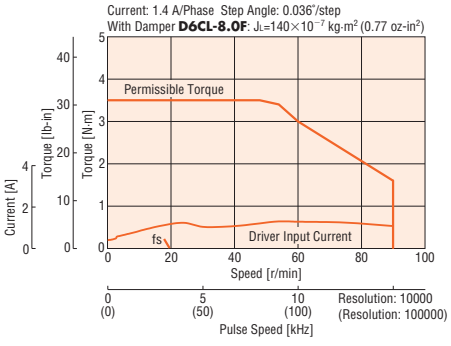
CRK564AP-T7.2/CRK564BP-T7.2



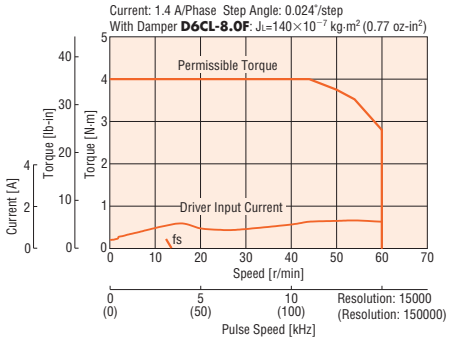
CRK564AP-T10/CRK564BP-T10



CRK564AP-T20/CRK564BP-T20



CRK564AP-T30/CRK564BP-T30



- The pulse input circuit responds to approximately 500 kHz with a pulse duty of 50%.

Notes:

- Pay attention to heat dissipation from 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 insulation Class A.]
- The driver's automatic current cutback function at motor standstill reduces maximum holding torque by approximately 50%.

PN Geared Type Motor Frame Size 28 mm (1.10 in.), 42 mm (1.65 in.)

Specifications RoHS

Model		CRK523PAP-N5※1	CRK523PAP-N7.2※1	CRK523PAP-N10※1	CRK544AP-N5	CRK544AP-N7.2	CRK544AP-N10
	Double Shaft	CRK523PBP-N5※1	CRK523PBP-N7.2※1	CRK523PBP-N10※1	CRK544BP-N5	CRK544BP-N7.2	CRK544BP-N10
Maximum Holding Torque	N·m (CRK523: oz-in/CRK544: lb-in)	0.2 (28)	0.3 (42)	0.4 (56)	0.8 (7)	1.2 (10.6)	1.5 (13.2)
Rotor Inertia J	kg·m² (oz-in²)	9×10⁻⁷ (0.049)			54×10⁻⁷ (0.3)		
Rated Current	A/Phase	0.35			0.75		
Basic Step Angle		0.144°	0.1°	0.072°	0.144°	0.1°	0.072°
Gear Ratio		5 : 1	7.2 : 1	10 : 1	5 : 1	7.2 : 1	10 : 1
Permissible Torque	N·m (CRK523: oz-in/CRK544: lb-in)	0.2 (28)	0.3 (42)	0.4 (56)	0.8 (7)	1.2 (10.6)	1.5 (13.2)
Maximum Torque※2	N·m (CRK523: oz-in/CRK544: lb-in)	0.5 (71)			1.5 (13.2)	2 (17.7)	
Backlash	arc minute (degrees)	3 (0.05°)			2 (0.034°)		
Angular Transmission Error	arc minute (degrees)	6 (0.1°)					
Permissible Speed Range	r/min	0～600	0～416	0～300	0～600	0～416	0～300
Power Source		24 VDC±10% 0.7 A			24 VDC±10% 1.4 A		
Excitation Mode		Microstep					
Mass	Motor kg (lb.)	0.25 (0.55)			0.56 (1.23)		
	Driver kg (lb.)	0.04 (0.09)					
Dimension No.	Motor	10			11		
	Driver	16					

How to read specifications table ➜ Page C-11

※1 Motor lead wire/connector assembly [0.6 m (2 ft.)] is included with the connector-coupled motor and driver package.

※2 The value of maximum torque is for gear. For output torque for geared motor, see the speed – torque characteristics.

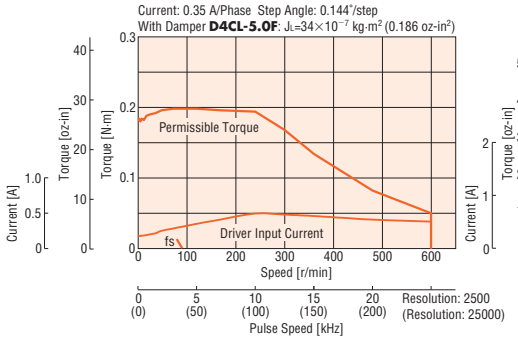
Note:

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

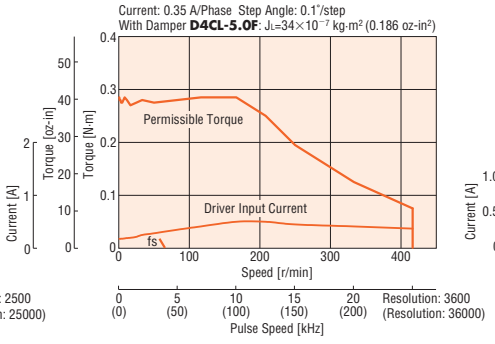
Speed – Torque Characteristics

How to read speed – torque characteristics ➜ Page C-12

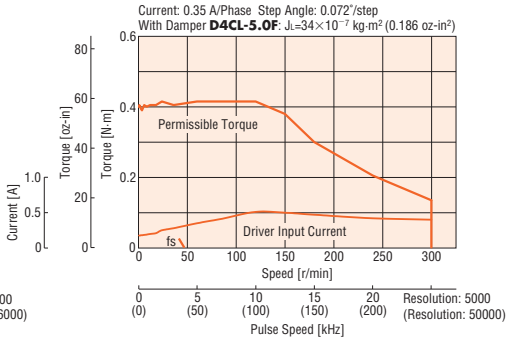
CRK523PAP-N5/CRK523PBP-N5



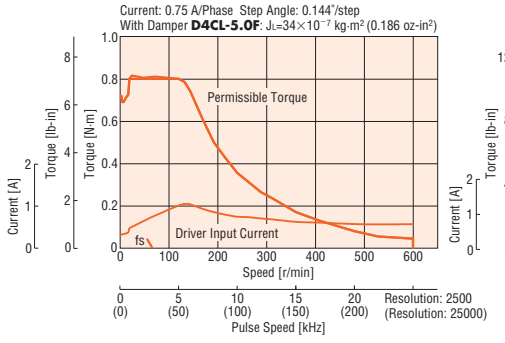
CRK523PAP-N7.2/CRK523PBP-N7.2



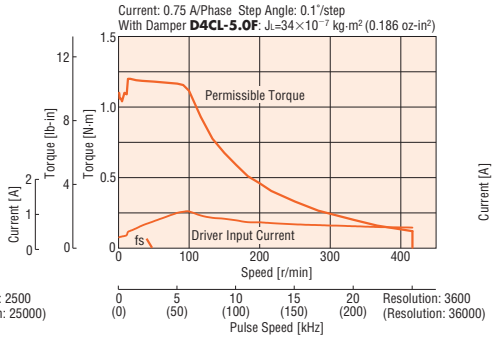
CRK523PAP-N10/CRK523PBP-N10



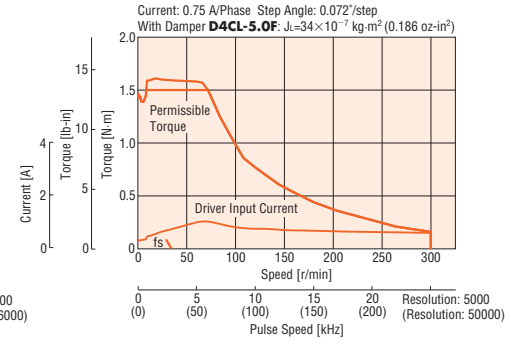
CRK544AP-N5/CRK544BP-N5



CRK544AP-N7.2/CRK544BP-N7.2



CRK544AP-N10/CRK544BP-N10



● The pulse input circuit responds to approximately 500 kHz with a pulse duty of 50%.

Notes:

● Pay attention to heat dissipation from 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 insulation Class A.]

● The driver's automatic current cutback function at motor standstill reduces maximum holding torque by approximately 50%.

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

Specifications RoHS

Model		CRK566AP-N5	CRK566AP-N7.2	CRK566AP-N10	CRK564AP-N25	CRK564AP-N36	CRK564AP-N50
	Double Shaft	CRK566BP-N5	CRK566BP-N7.2	CRK566BP-N10	CRK564BP-N25	CRK564BP-N36	CRK564BP-N50
Maximum Holding Torque	N·m (lb-in)	3.5 (30)	4 (35)	5 (44)	8 (70)		
Rotor Inertia J	kg·m² (oz-in²)	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 : 1	7.2 : 1	10 : 1	25 : 1	36 : 1	50 : 1
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)	
Backlash	arc minute (degrees)	2 (0.034°)			3 (0.05°)		
Angular Transmission Error	arc minute (degrees)	5 (0.084°)					
Permissible Speed Range	r/min	0～600	0～416	0～300	0～120	0～83	0～60
Power Source		24 VDC±10% 2.5 A					
Excitation Mode		Microstep					
Mass	Motor kg (lb.)	1.5 (3.3)					
	Driver kg (lb.)	0.04 (0.09)					
Dimension No.	Motor	12					
	Driver	16					

How to read specifications table ➜ Page C-11

*The value of maximum torque is for gear. For output torque for geared motor, see the speed – torque characteristics.

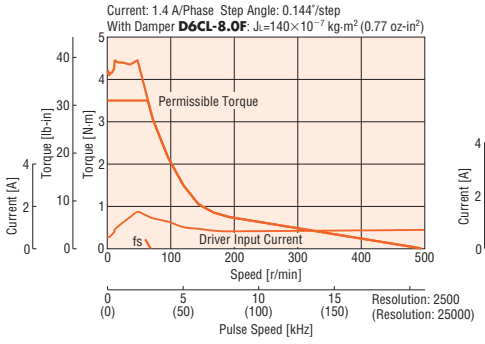
Note:

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

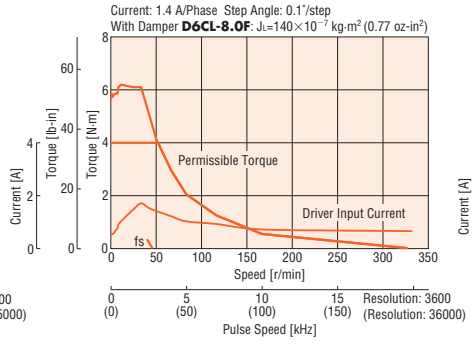
Speed – Torque Characteristics

How to read speed – torque characteristics ➜ Page C-12

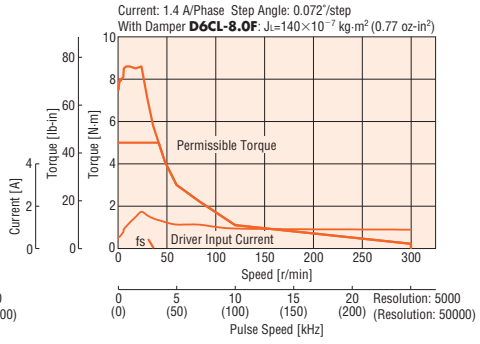
CRK566AP-N5/CRK566BP-N5



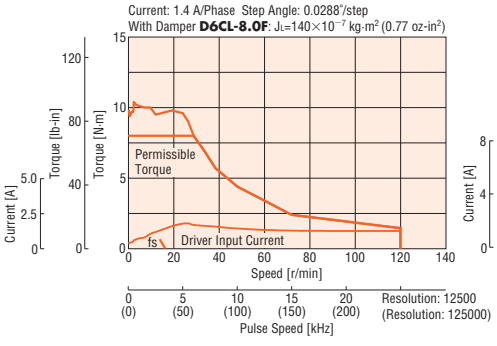
CRK566AP-N7.2/CRK566BP-N7.2



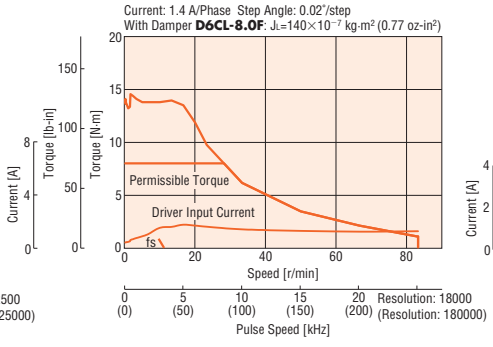
CRK566AP-N10/CRK566BP-N10



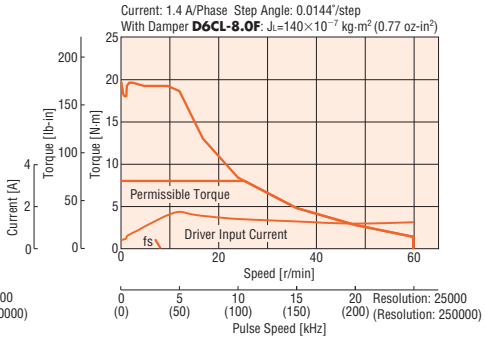
CRK564AP-N25/CRK564BP-N25



CRK564AP-N36/CRK564BP-N36



CRK564AP-N50/CRK564BP-N50



- The pulse input circuit responds to approximately 500 kHz with a pulse duty of 50%.

Notes:

- Pay attention to heat dissipation from 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 insulation Class A.]
- The driver's automatic current cutback function at motor standstill reduces maximum holding torque by approximately 50%.

Harmonic Geared Type Motor Frame Size 20 mm (0.79 in.), 42 mm (1.65 in.), 60 mm (2.36 in.)

Specifications RoHS

Model		CRK513PAP-H50※1	CRK513PAP-H100※1	CRK543AP-H50	CRK543AP-H100	CRK564AP-H50	CRK564AP-H100
	Double Shaft	CRK513PBP-H50※1	CRK513PBP-H100※1	CRK543BP-H50	CRK543BP-H100	CRK564BP-H50	CRK564BP-H100
Maximum Holding Torque	N·m (lb-in)	0.4 (3.5)	0.6 (5.3)	3.5 (30)	5 (44)	5.5 (48)	8 (70)
Rotor Inertia J	kg·m² (oz-in²)	3.1×10^{-7} (0.0170)		52×10^{-7} (0.28)		210×10^{-7} (1.15)	
Rated Current	A/Phase	0.35		0.75		1.4	
Basic Step Angle		0.0144°	0.0072°	0.0144°	0.0072°	0.0144°	0.0072°
Gear Ratio		50 : 1	100 : 1	50 : 1	100 : 1	50 : 1	100 : 1
Permissible Torque	N·m (lb-in)	0.4 (3.5)	0.6 (5.3)	3.5 (30)	5 (44)	5.5 (48)	8 (70)
Maximum Torque※2	N·m (lb-in)	0.9 (7.9)	1.4 (12.3)	8.3 (73)	11 (97)	18 (159)	28 (240)
Lost Motion (Load torque)	arc minute	2 max. (±0.02 N·m)	2 max. (±0.03 N·m)	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)
Permissible Speed Range	r/min	0～90	0～45	0～70	0～35	0～70	0～35
Power Source		24 VDC±10% 0.7 A		24 VDC±10% 1.4 A		24 VDC±10% 2.5 A	
Excitation Mode		Microstep					
Mass	Motor kg (lb.)	0.08 (0.2)		0.46 (1.01)		1.08 (2.4)	
	Driver kg (lb.)	0.04 (0.09)					
Dimension No.	Motor	13		14		15	
	Driver	16					

How to read specifications table ➜ Page C-11

※1 Motor lead wire/connector assembly [0.6 m (2 ft.)] is included with the connector-coupled motor and driver package.

※2 The value of maximum torque is for gear. For output torque for geared motor, see the speed – torque characteristics.

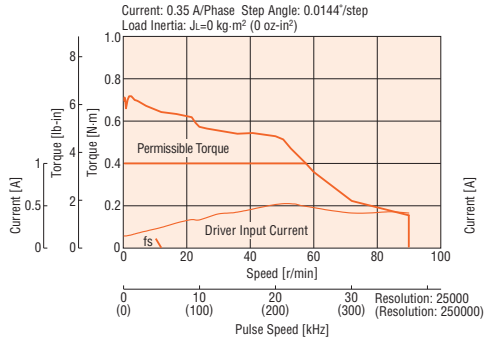
Notes:

- 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.

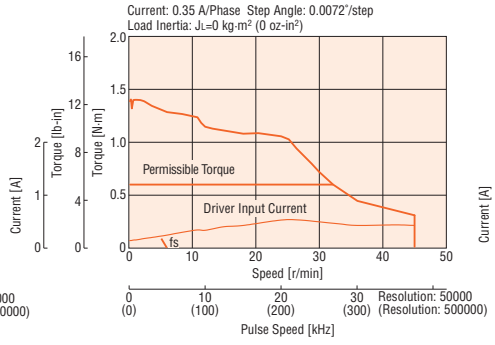
Speed – Torque Characteristics

How to read speed – torque characteristics ➜ Page C-12

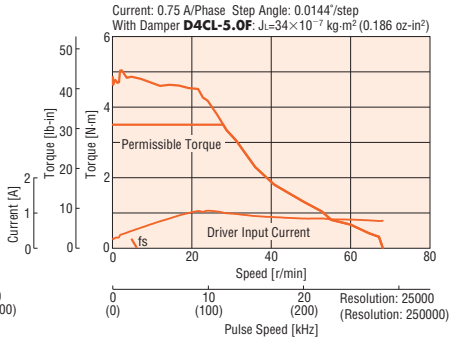
CRK513AP-H50/CRK513BP-H50



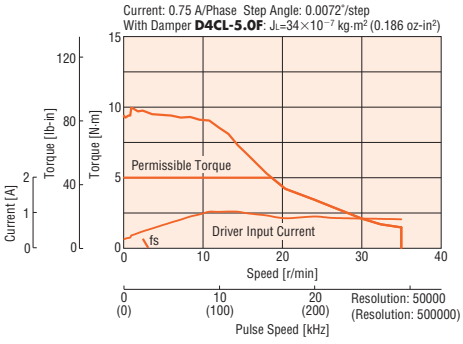
CRK513AP-H100/CRK513BP-H100



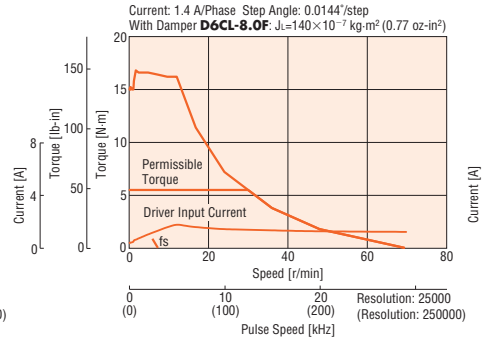
CRK543AP-H50/CRK543BP-H50



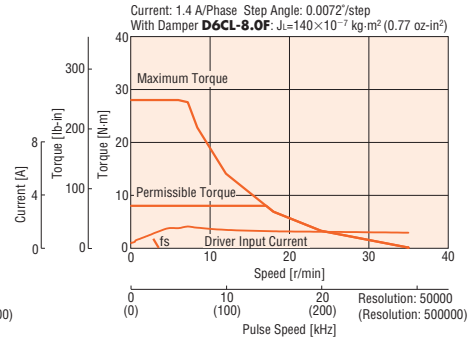
CRK543AP-H100/CRK543BP-H100



CRK564AP-H50/CRK564BP-H50



CRK564AP-H100/CRK564BP-H100



- The pulse input circuit responds to approximately 500 kHz with a pulse duty of 50%.

Notes:

- Pay attention to heat dissipation from 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 insulation Class A.]
- In order to prevent degradation of the gear grease in harmonic gear, keep the temperature of the gear case under 70°C (158°F).
- The driver's automatic current cutback function at motor standstill reduces maximum holding torque by approximately 50%.

Driver Specifications

Input Signals	Input Mode	Photocoupler input, Input resistance: 220 Ω, Input current: 7～20 mA Photocoupler ON: +4.5～5.25 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: 1 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: 500 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: 1 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: 500 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
	Automatic Current Cutback Release Signal	When in the "photocoupler ON" state, the automatic current cutback function will not be activated even after the motor stops. When in the "photocoupler OFF" state, the automatic current cutback function will be activated after the motor stops (after approx. 100 msec).
Output Signal	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. ●High-Resolution Type 0.36°/step [Microsteps/step: 1 (Resolution: 500)]: Signal is output every 10 pulses. 0.036°/step [Microsteps/step: 10 (Resolution: 5000)]: Signal is output every 100 pulses.
Functions		Automatic current cutback, Step angle select, Pulse input mode switch, Smooth drive, All windings off, Excitation timing
Cooling Method		Natural ventilation

General Specifications

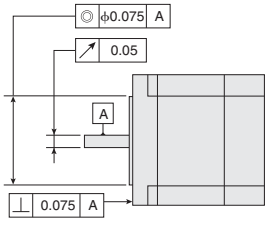
Item		Motor	Driver
Insulation Class		Class B [130°C (266°F)][Recognized as Class A 105°C (221°F) by UL Standards]	–
Insulation Resistance		100 MΩ or more when 500 VDC megger is applied between the windings and the case under normal ambient temperature and humidity.	–
Dielectric Strength		Sufficient to withstand 1.5 kVAC* at 50 Hz or 60 Hz applied between the windings and the case for 1 minute under normal ambient temperature and humidity. *1.0 kVAC for **CRK54**□ 0.5 kVAC for **CRK513P**, **CRK52**□**PM**, **CRK52**□**P**, **CRK54**□**PM**, **CRK54**□**P**	–
Operating Environment	Ambient Temperature	−10～+50°C (+14～+122°F) (non-freezing): High-resolution type, High-torque type, Standard type, **TH**, **PN** geared type 0～+40°C (+32～+104°F) (non-freezing): Harmonic geared type	0～+40°C (+32～+104°F) (non-freezing)
	Ambient Humidity	85% or less (non-condensing)	
	Atmosphere	No corrosive gases, dust, water or oil	
Temperature Rise		Temperature rise of the windings are 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°), **CRK513P**: ±10 arc minutes (±0.17°) High-resolution type: ±2 arc minutes (±0.034°)	–
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.

Permissible Overhung Load and Permissible Thrust Load

Unit = N (lb.)

Type	Model	Permissible Overhung Load					Permissible Thrust Load
		Distance from Shaft End					
		0 mm (0 in.)	5 mm (0.2 in.)	10 mm (0.39 in.)	15 mm (0.59 in.)	20 mm (0.79 in.)	
High-Resolution Type High-Torque Type Standard Type	**CRK513P□P**	12 (2.7)	15 (3.3)	–	–	–	The permissible thrust load shall be no greater than the motor mass.
	CRK523PM□P **CRK524PM□P** **CRK525PM□P** **CRK523P□P** **CRK525P□P**	25 (5.6)	34 (7.6)	52 (11.7)	–	–	
	CRK544PM□P **CRK546PM□P** **CRK544P□P** **CRK546P□P** **CRK543□P** **CRK544□P** **CRK545□P**	20 (4.5)	25 (5.6)	34 (7.6)	52 (11.7)	–	
	CRK564PM□P **CRK566PM□P** **CRK569PM□P**	90 (20)	100 (22)	130 (29)	180 (40)	270 (60)	
	CRK564□P **CRK566□P** **CRK569□P**	63 (14.1)	75 (16.8)	95 (21)	130 (29)	190 (42)	
TH Geared Type	**CRK523P□P-T7.2** **CRK523P□P-T10** **CRK523P□P-T20** **CRK523P□P-T30**	15 (3.3)	17 (3.8)	20 (4.5)	23 (5.1)	–	10 (2.2)
	CRK543□P-T3.6 **CRK543□P-T7.2** **CRK543□P-T10** **CRK543□P-T20** **CRK543□P-T30**	10 (2.2)	14 (3.1)	20 (4.5)	30 (6.7)	–	15 (3.3)
	CRK564□P-T3.6 **CRK564□P-T7.2** **CRK564□P-T10** **CRK564□P-T20** **CRK564□P-T30**	70 (15.7)	80 (18)	100 (22)	120 (27)	150 (33)	40 (9)
PN Geared Type	**CRK523P□P-N5** **CRK523P□P-N7.2** **CRK523P□P-N10**	45 (10.1)	60 (13.5)	80 (18)	100 (22)	–	20 (4.5)
	CRK544□P-N5 **CRK544□P-N7.2** **CRK544□P-N10**	100 (22)	120 (27)	150 (33)	190 (42)	–	100 (22)
	CRK566□P-N5	200 (45)	220 (49)	250 (56)	280 (63)	320 (72)	100 (22)
	CRK566□P-N7.2 **CRK566□P-N10**	250 (56)	270 (60)	300 (67)	340 (76)	390 (87)	100 (22)
	CRK564□P-N25 **CRK564□P-N36** **CRK564□P-N50**	330 (74)	360 (81)	400 (90)	450 (101)	520 (117)	100 (22)
Harmonic Geared Type	**CRK513P□P-H50** **CRK513P□P-H100**	50 (11)	75 (16.8)	–	–	–	60 (13.5)
	CRK543□P-H50 **CRK543□P-H100**	180 (40)	220 (49)	270 (60)	360 (81)	510 (114)	220 (49)
	CRK564□P-H50 **CRK564□P-H100**	320 (72)	370 (83)	440 (99)	550 (123)	720 (162)	450 (101)

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

Dimensions Unit = mm (in.)

Motor

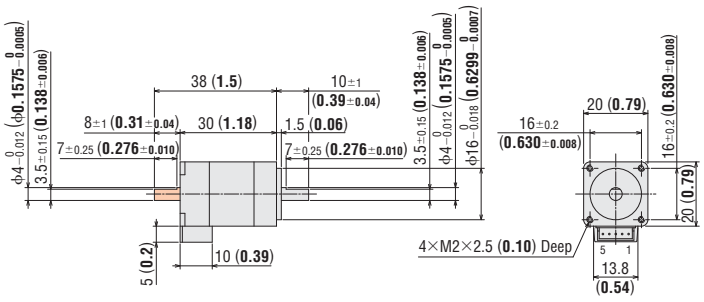
◇High-Torque Type

1 □20 mm (□0.79 in.)

Model	Motor Model	Mass kg (lb.)	DXF
CRK513PAP	PK513PA	0.05 (0.11)	B316
CRK513PBP	PK513PB		

Motor lead wire/connector assembly of 0.6 m (2 ft.) is included with the package.
UL Style 3265, AWG24
If you are purchasing only a motor for maintenance purpose, etc., motor lead wire/connector assembly and connector will not be supplied. They must be purchased separately. ➜ Page C-299

● Applicable Connector
Connector housing: 51065-0500 (MOLEX)
Contact: 50212-8100 (MOLEX)
Crimp tool: 57176-5000 (MOLEX)



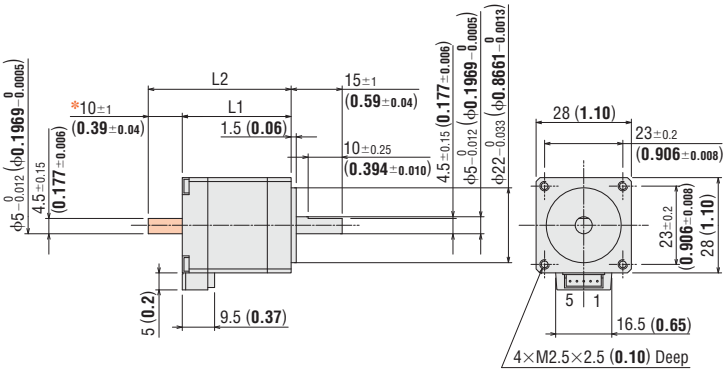
◇High-Resolution Type, High-Torque Type

2 □28 mm (□1.10 in.)

Model	Motor Model	L1	L2	Mass kg (lb.)	DXF
CRK523P□AP	PK523P□A	32 (1.26)	–	0.11 (0.24)	B359
CRK523P□BP	PK523P□B		42 (1.65)		
CRK524PMAP	PK524PMA	40 (1.57)	–	0.15 (0.33)	B372
CRK524PMBP	PK524PMB		50 (1.97)		
CRK525P□AP	PK525P□A	51.5 (2.03)	–	0.2 (0.44)	B360
CRK525P□BP	PK525P□B		61.5 (2.42)		

● Enter **M** in the box (□) within the model name in the case of high-resolution type.
Motor lead wire/connector assembly of 0.6 m (2 ft.) is included with the package.
UL Style 3265, AWG24
If you are purchasing only a motor for maintenance purpose, etc., motor lead wire/connector assembly and connector will not be supplied. They must be purchased separately. ➜ Page C-299

● Applicable Connector
Connector housing: 51065-0500 (MOLEX)
Contact: 50212-8100 (MOLEX)
Crimp tool: 57176-5000 (MOLEX)



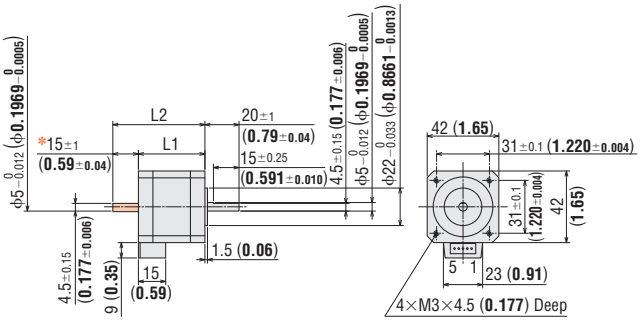
✻ The length of machining on the double shaft model is 10±0.25 (0.394±0.010).

3 □42 mm (□1.65 in.)

Model	Motor Model	L1	L2	Mass kg (lb.)	DXF
CRK544P□AP	PK544P□A	39 (1.54)	–	0.3 (0.66)	B337
CRK544P□BP	PK544P□B		54 (2.13)		
CRK546P□AP	PK546P□A	59 (2.32)	–	0.5 (1.1)	B338
CRK546P□BP	PK546P□B		74 (2.91)		

● Enter **M** in the box (□) within the model name in the case of high-resolution type.
Motor lead wire/connector assembly of 0.6 m (2 ft.) is included with the package.
UL Style 3265, AWG22
If you are purchasing only a motor for maintenance purpose, etc., motor lead wire/connector assembly and connector will not be supplied. They must be purchased separately. ➜ Page C-299

● Applicable Connector
Connector housing: 51103-0500 (MOLEX)
Contact: 50351-8100 (MOLEX)
Crimp tool: 57295-5000 (MOLEX)



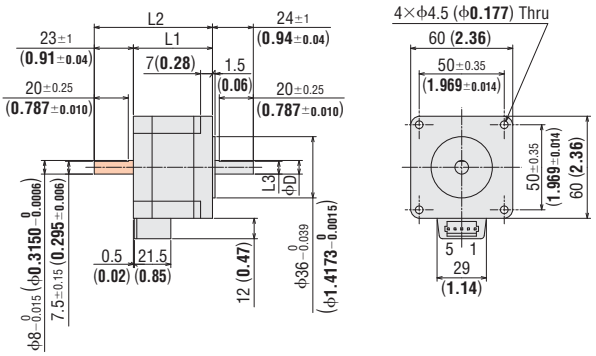
✻ The length of machining on the double shaft model is 15±0.25 (0.591±0.010).

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

◇High-Resolution Type

4 □60 mm (□2.36 in.)

Model	Motor Model	L1	L2	L3	φD	Mass kg (lb.)	DXF
CRK564PMAP	PK564PMA	46.5 (1.83)	–	7.5±0.15 (0.295±0.006)	8 0 −0.015 (0.3150 0 −0.006)	0.65 (1.43)	B373
CRK564PMBP	PK564PMB		69.5 (2.74)				
CRK566PMAP	PK566PMA	56 (2.20)	–			0.87 (1.91)	B374
CRK566PMBP	PK566PMB		79 (3.11)				
CRK569PMAP	PK569PMA	87 (3.43)	–	9.5±0.15 (0.374±0.006)	10 0 −0.015 (0.3937 0 −0.006)	1.5 (3.3)	B375
CRK569PMBP	PK569PMB		110 (4.33)				



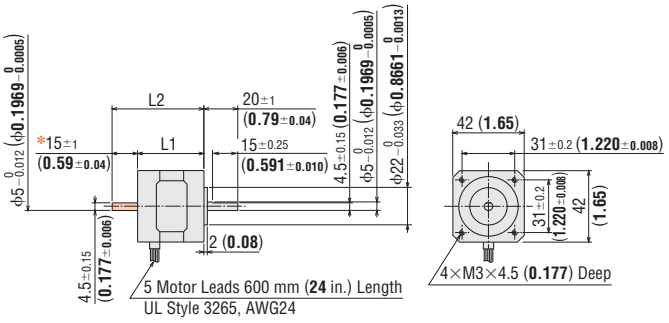
Motor lead wire/connector assembly of 0.6 m (2 ft.) is included with the package.
UL Style 3266, AWG22
If you are purchasing only a motor for maintenance purpose, etc., motor lead wire/connector assembly and connector will not be supplied. They must be purchased separately. ➜ Page C-299

● Applicable Connector
Connector housing: 51144-0500 (MOLEX)
Contact: 50539-8100 (MOLEX)
Crimp tool: 57189-5000 (MOLEX)

◇Standard Type

5 □42 mm (□1.65 in.)

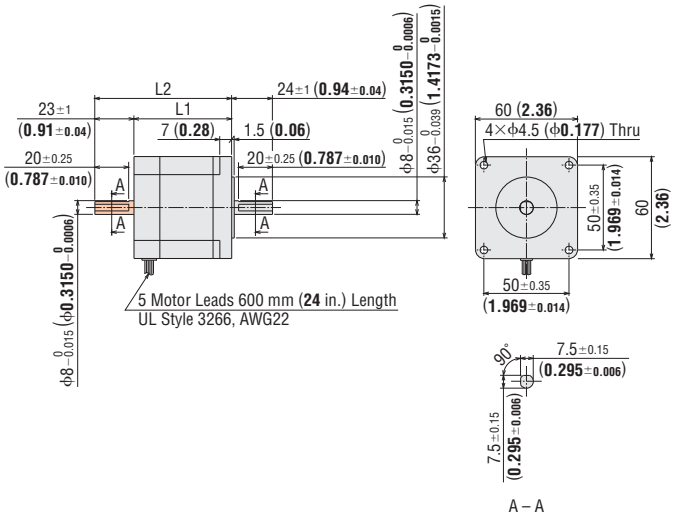
Model	Motor Model	L1	L2	Mass kg (lb.)	DXF
CRK543AP	PK543NAW	33 (1.30)	–	0.21 (0.46)	B068
CRK543BP	PK543NBW		48 (1.89)		
CRK544AP	PK544NAW	39 (1.54)	–	0.27 (0.59)	B069
CRK544BP	PK544NBW		54 (2.13)		
CRK545AP	PK545NAW	47 (1.85)	–	0.35 (0.77)	B070
CRK545BP	PK545NBW		62 (2.44)		



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

6 □60 mm (□2.36 in.)

Model	Motor Model	L1	L2	Mass kg (lb.)	DXF
CRK564AP	PK564NAW	46.5 (1.83)	–	0.6 (1.32)	B071
CRK564BP	PK564NBW		69.5 (2.74)		
CRK566AP	PK566NAW	57.5 (2.26)	–	0.8 (1.76)	B072
CRK566BP	PK566NBW		80.5 (3.17)		
CRK569AP	PK569NAW	87 (3.43)	–	1.3 (2.9)	B073
CRK569BP	PK569NBW		110 (4.33)		



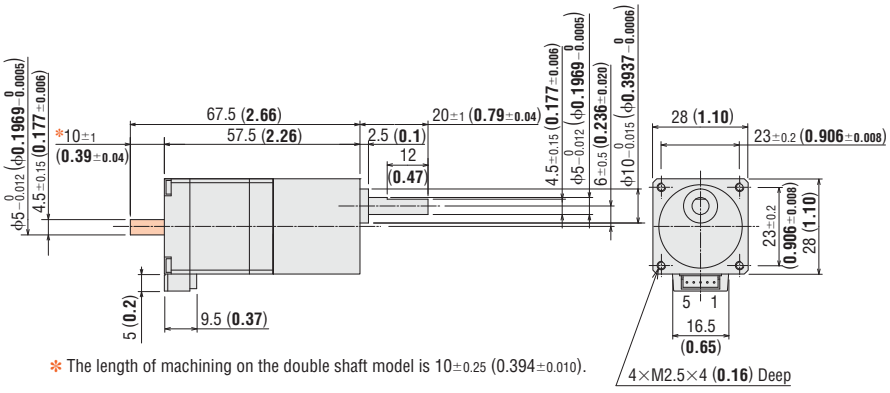
● These dimensions are for the double shaft models. For the single shaft models, ignore the orange (▭) areas.

◇TH Geared Type

7 □28 mm (□1.10 in.)

Model	Motor Model	Gear Ratio	Mass kg (lb.)	DXF
CRK523PAP-T□	PK523PA-T□	**7.2**, **10**, **20**, **30**	0.17 (0.37)	B361
CRK523PBP-T□	PK523PB-T□			

● Enter the gear ratio in the box (□) within the model name.
Motor lead wire/connector assembly of 0.6 m (2 ft.) is included with the package. UL Style 3265, AWG24
If you are purchasing only a motor for maintenance purpose, etc., motor lead wire/connector assembly and connector will not be supplied. They must be purchased separately. ➜ Page C-299
● Applicable Connector
Connector housing: 51065-0500 (MOLEX)
Contact: 50212-8100 (MOLEX)
Crimp tool: 57176-5000 (MOLEX)

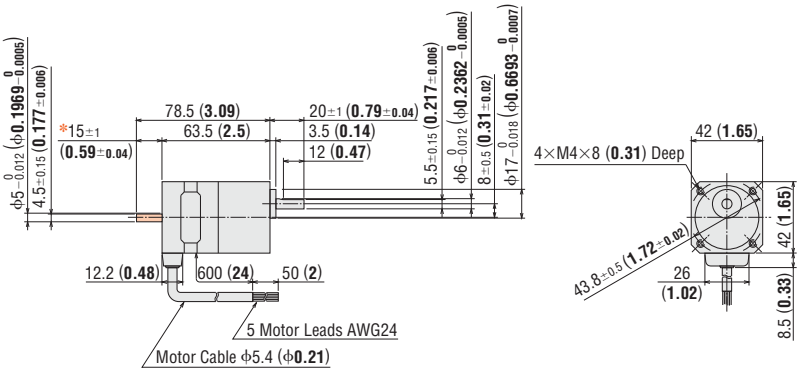


✻ The length of machining on the double shaft model is 10±0.25 (0.394±0.010).

8 □42 mm (□1.65 in.)

Model	Motor Model	Gear Ratio	Mass kg (lb.)	DXF
CRK543AP-T□	PK543AW-T□	**3.6**, **7.2**, **10**, **20**, **30**	0.35 (0.77)	B183
CRK543BP-T□	PK543BW-T□			

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

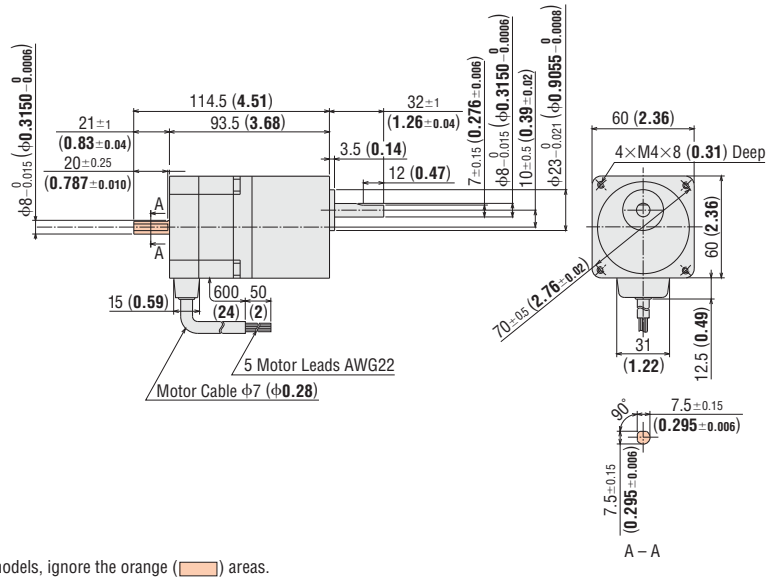


✻ The length of machining on the double shaft model is 15±0.25 (0.591±0.010).

9 □60 mm (□2.36 in.)

Model	Motor Model	Gear Ratio	Mass kg (lb.)	DXF
CRK564AP-T□	PK564AW-T□	**3.6**, **7.2**, **10**, **20**, **30**	0.95 (2.1)	B187
CRK564BP-T□	PK564BW-T□			

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



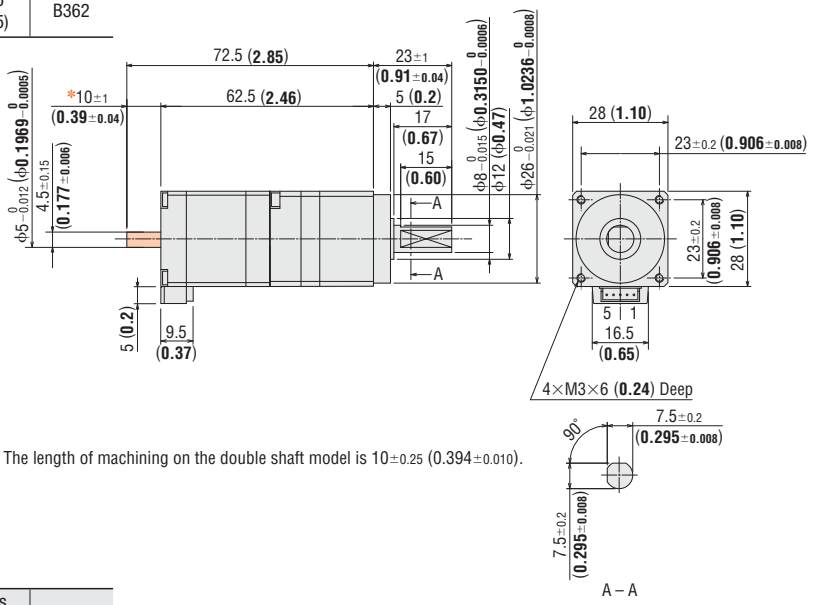
● These dimensions are for the double shaft models. For the single shaft models, ignore the orange (▭) areas.

◇PN Geared Type

10 □28 mm (□1.10 in.)

Model	Motor Model	Gear Ratio	Mass kg (lb.)	DXF
CRK523PAP-N□	PK523PA-N□	**5, 7.2, 10**	0.25 (0.55)	B362
CRK523PBP-N□	PK523PB-N□			

● Enter the gear ratio in the box (□) within the model name.
Motor lead wire/connector assembly of 0.6 m (2 ft.) is included with the package. UL Style 3265, AWG24
If you are purchasing only a motor for maintenance purpose, etc., motor lead wire/connector assembly and connector will not be supplied. They must be purchased separately. ➜ Page C-299
● Applicable Connector
Connector housing: 51065-0500 (MOLEX)
Contact: 50212-8100 (MOLEX)
Crimp tool: 57176-5000 (MOLEX)

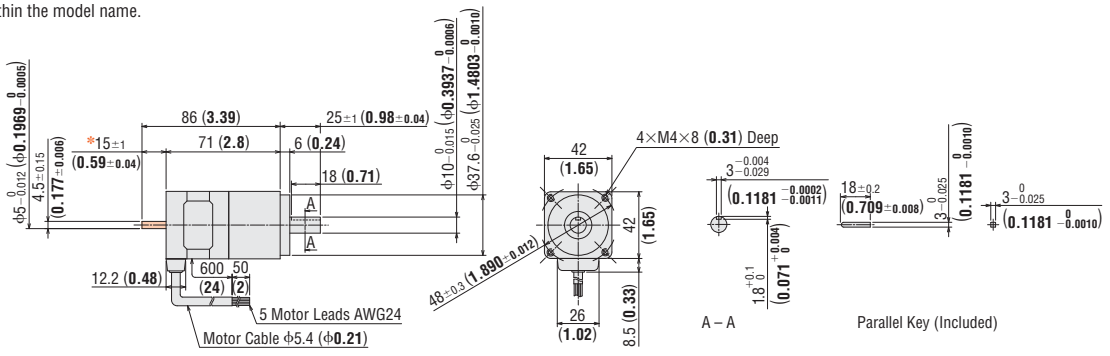


* The length of machining on the double shaft model is 10±0.25 (0.394±0.010).

11 □42 mm (□1.65 in.)

Model	Motor Model	Gear Ratio	Mass kg (lb.)	DXF
CRK544AP-N□	PK544AW-N□	**5, 7.2, 10**	0.56 (1.23)	B312
CRK544BP-N□	PK544BW-N□			

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

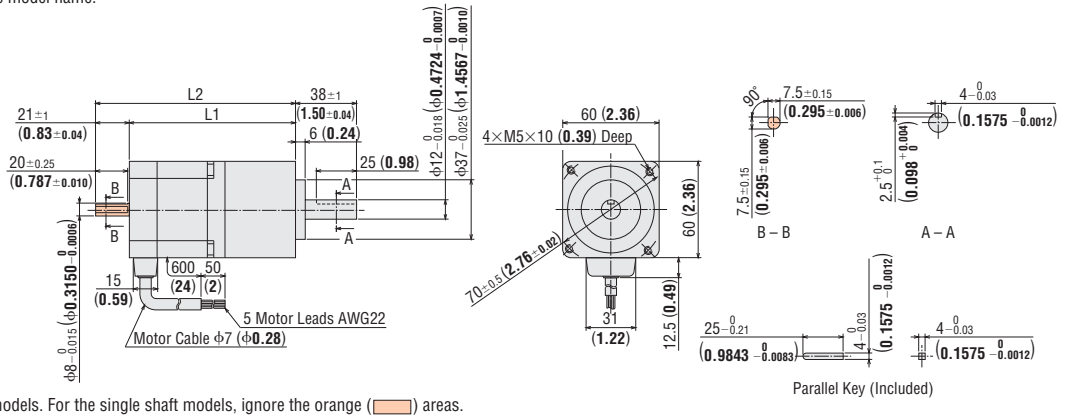


* The length of machining on the double shaft model is 15±0.25 (0.591±0.010).

12 □60 mm (□2.36 in.)

Model	Motor Model	Gear Ratio	L1	L2	Mass kg (lb.)	DXF
CRK566AP-N□	PK566AW-N□	**5, 7.2, 10**	103.5 (4.07)	–	1.5 (3.3)	B190
CRK566BP-N□	PK566BW-N□			124.5 (4.90)		
CRK564AP-N□	PK564AW-N□	**25, 36, 50**	108.5 (4.27)	–	1.5 (3.3)	B191
CRK564BP-N□	PK564BW-N□			129.5 (5.10)		

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



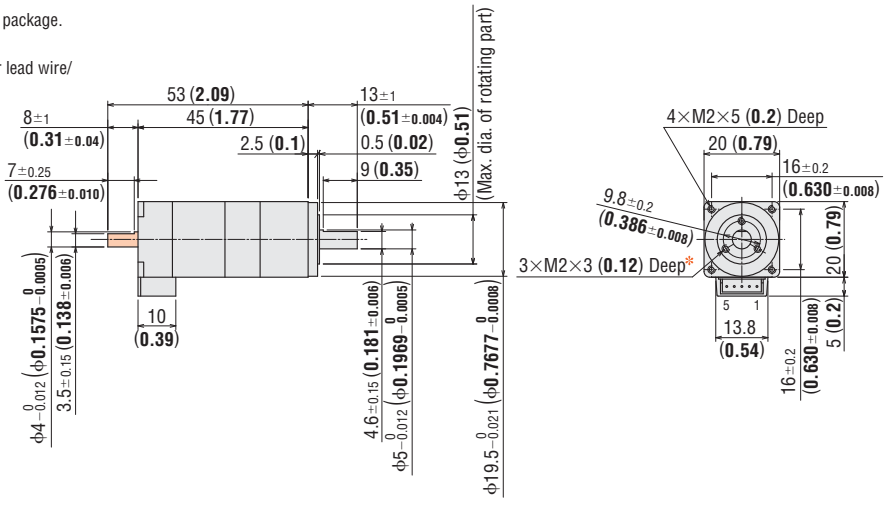
● These dimensions are for the double shaft models. For the single shaft models, ignore the orange (▭) areas.

◇Harmonic Geared Type

13 □20 mm (□0.79 in.)

Model	Motor Model	Gear Ratio	Mass kg (lb.)	DXF
CRK513PAP-H□	PK513PA-H□S	**50**, **100**	0.08 (0.2)	B440
CRK513PBP-H□	PK513PB-H□S			

● Enter the gear ratio in the box (□) within the model name.
Motor lead wire/connector assembly of 0.6 m (2 ft.) is included with the package.
UL Style 3265, AWG24
If you are purchasing only a motor for maintenance purpose, etc., motor lead wire/connector assembly and connector will not be supplied.
They must be purchased separately. ➜ Page C-299
● Applicable Connector
Connector housing: 51065-0500 (MOLEX)
Contact: 50212-8100 (MOLEX)
Crimp tool: 57176-5000 (MOLEX)

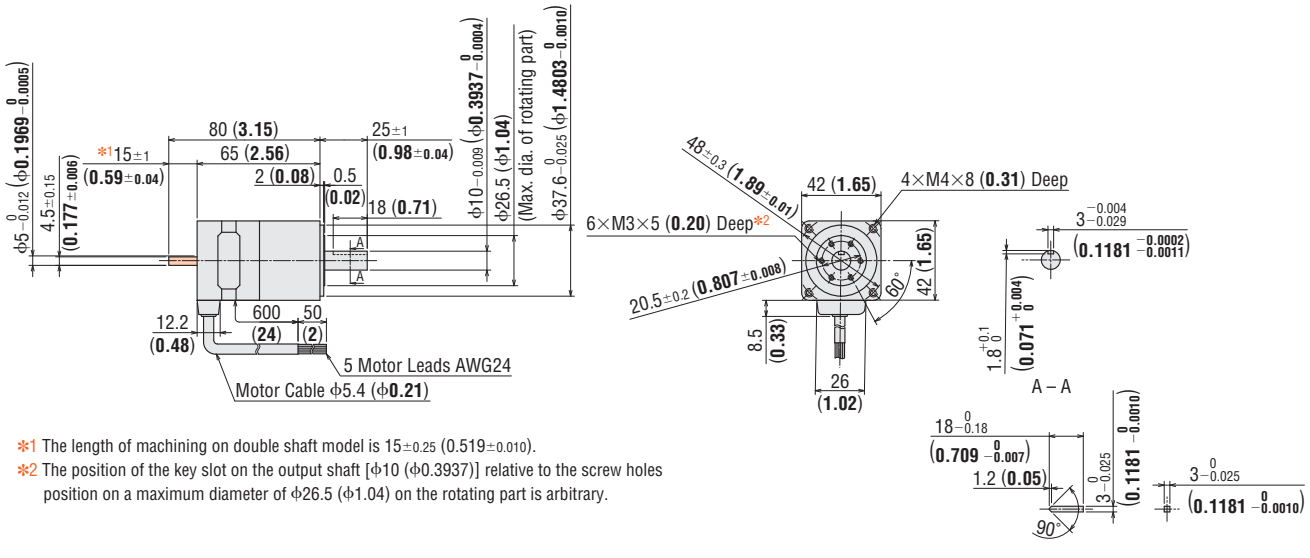


* The position of the machining on the output shaft [ϕ5 (ϕ0.1969)] relative to the screw holes position on a maximum diameter of ϕ13 (ϕ0.51) on the rotating part is arbitrary.

14 □42 mm (□1.65 in.)

Model	Motor Model	Gear Ratio	Mass kg (lb.)	DXF
CRK543AP-H□	PK543AW-H□S	**50**, **100**	0.46 (1.01)	B313
CRK543BP-H□	PK543BW-H□S			

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



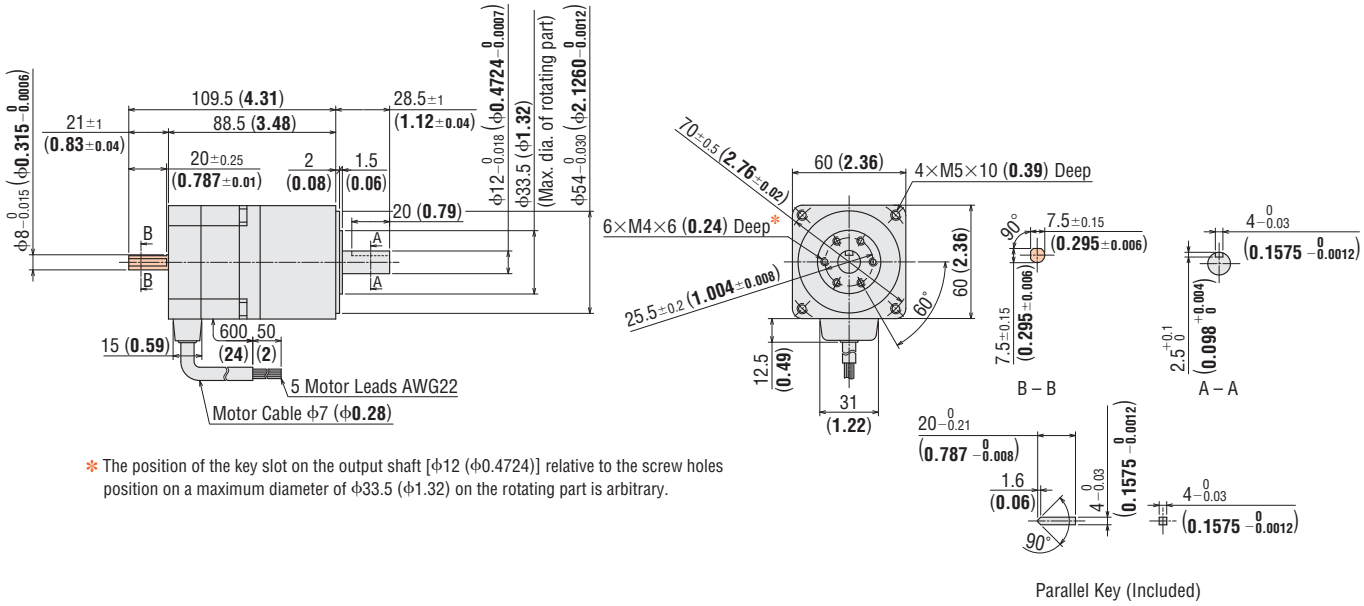
*1 The length of machining on double shaft model is 15±0.25 (0.519±0.010).
*2 The position of the key slot on the output shaft [ϕ10 (ϕ0.3937)] relative to the screw holes position on a maximum diameter of ϕ26.5 (ϕ1.04) on the rotating part is arbitrary.

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

15 □60 mm (□2.36 in.)

Model	Motor Model	Gear Ratio	Mass kg (lb.)	DXF
CRK564AP-H□	PK564AW-H□S	**50**, **100**	1.08 (2.4)	B314
CRK564BP-H□	PK564BW-H□S			

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



* 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.

Parallel Key (Included)

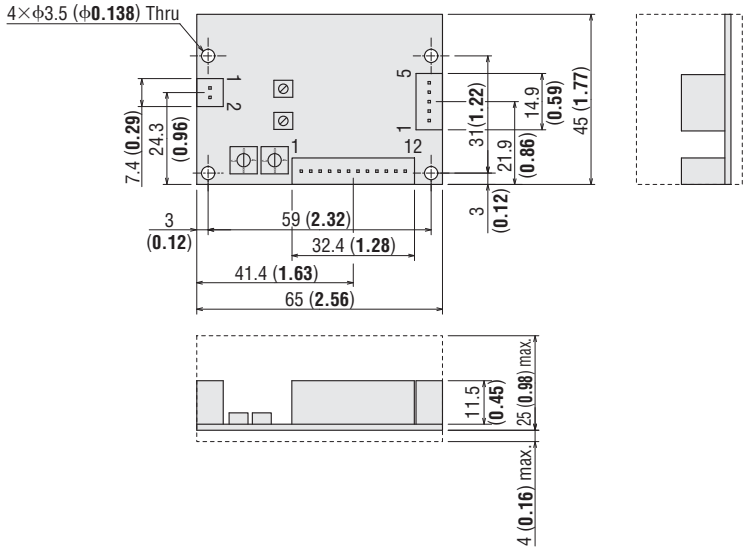
● These dimensions are for the double shaft models. For the single shaft models, ignore the orange (▭) areas.

● Driver

16 CRD5103P, CRD5107P, CRD5114P

Mass: 0.04 kg (0.09 lb.)

DXF B363



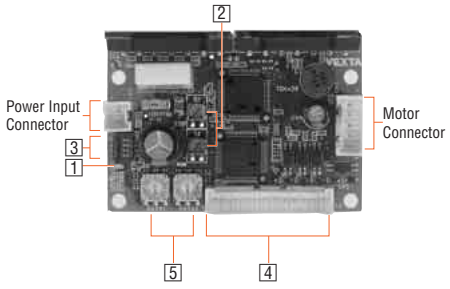
● Connector Housing (Included)
51103-0200 (MOLEX)
51103-1200 (MOLEX)
51103-0500 (MOLEX)
● Contact (Included)
50351-8100 (MOLEX)

Note:

● Use the included connector for power supply, signal and motor. When assembling the connectors, use the hand-operated crimp tool [57295-5000 (MOLEX)]. The crimp tool is not included with the package. It must be purchased separately.
Driver lead wire set crimped with connector is available (sold separately). ➜ Page C-301

Connection and Operation

Names and Functions of Driver Parts



1 Power Input Display

Color	Function	When Activated
Green	Power supply indication	Lights when power is on.

2 Current Adjustment Potentiometers

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

3 Function Select Switches

Indication	Switch Name	Function
1P/2P	Pulse input mode switch	Switches between 1-pulse input and 2-pulse input.
OFF/SD	Smooth drive function switch	Enables or disables the smooth drive function.
R2/R1	Resolution select switch	Switches the basic step angle between R1 and R2.

4 Input/Output Signals

Indication	Input/ Output	Pin No.	Signal Name	Function
CN2	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 can be rotated manually.
		6		
		7	Step angle select signal	Switches to step angle set in DATA1 and DATA2.
		8		
		9	Automatic current cutback release signal	This signal is used to disable the automatic current cutback function.
		10		
	Output	11	Excitation timing signal	Outputs signals when the excitation sequence is at STEP "0."
		12		

Description of input/output signals ➜ Page C-160

5 Step Angle Setting Switches

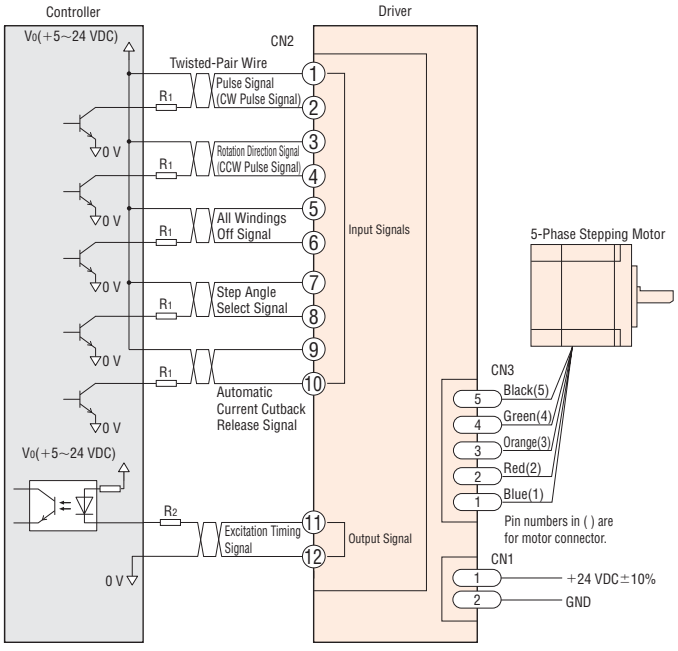
Indication	Switch Name	Function
DATA1 DATA2	Step angle setting switch	Each switch can be set to the desired resolution from the 16 resolution levels.

R1				R2			
DATA1 DATA2	Microsteps/ Step 1	Resolution 1	Step Angle 1	DATA1 DATA2	Microsteps/ Step 2	Resolution 2	Step Angle 2
0	1	500	0.72°	0	×2.5	200	1.8°
1	2	1000	0.36°	1	×1.25	400	0.9°
2	2.5	1250	0.288°	2	1.6	800	0.45°
3	4	2000	0.18°	3	2	1000	0.36°
4	5	2500	0.144°	4	3.2	1600	0.225°
5	8	4000	0.09°	5	4	2000	0.18°
6	10	5000	0.072°	6	6.4	3200	0.1125°
7	20	10000	0.036°	7	10	5000	0.072°
8	25	12500	0.0288°	8	12.8	6400	0.05625°
9	40	20000	0.018°	9	20	10000	0.036°
A	50	25000	0.0144°	A	25.6	12800	0.028125°
B	80	40000	0.009°	B	40	20000	0.018°
C	100	50000	0.0072°	C	50	25000	0.0144°
D	125	62500	0.00576°	D	51.2	25600	0.0140625°
E	200	100000	0.0036°	E	100	50000	0.0072°
F	250	125000	0.00288°	F	102.4	51200	0.00703125°

Notes:

- The step angle is calculated by dividing the basic step angle by the number of microstep. The above figures are based on a basic step angle of 0.72°.
- With the high-resolution type, the basic step angle and resolution are 0.36° and 1000 (microsteps/step 1), respectively.
- If you are using a geared type, the step angle divided by the gear ratio becomes the actual step angle.
- The number of microstep that can be switched by the "Step Angle Select" signal are limited to those selected in step angles 1 and 2.
- Do not change the "Step Angle Select" signal input or step angle setting switch while the motor is operating. It may cause the motor to misstep and stop.

Connection Diagram



Description of Input/Output Signals

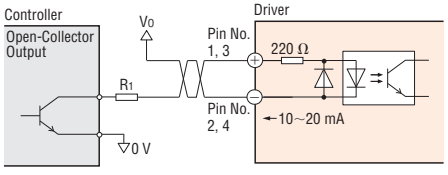
Indication of Input/Output Signal "ON""OFF"

Input (output) "ON" indicates that the current is sent into the photocoupler (transistor) inside the driver. Input (output) "OFF" indicates that the current is not sent into the photocoupler (transistor) inside the driver. The input/output remains "OFF" if nothing is connected.

Photocoupler: OFF | ON

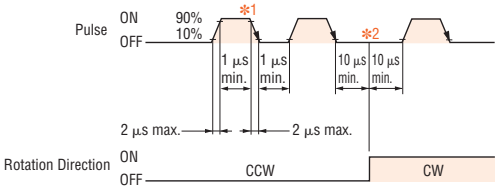
Pulse (CW) and Rotation Direction (CCW) Input Signal

◇Input Circuit and Sample Connection

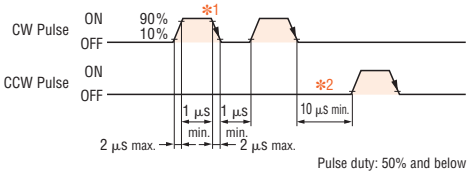


◇Pulse Waveform Characteristics

• 1-Pulse Input Mode



• 2-Pulse Input Mode



Pulse duty: 50% and below

*1 The shaded area indicates when the photocoupler diode is ON. The motor moves when the photocoupler state changes from ON to OFF.

*2 The minimum interval time when changing rotation direction is 20 µs (10 µs in 2-pulse input mode). This value varies greatly depending on the motor type and load inertia.

◇Input Signal Connection

Signals can be connected directly when 5 VDC is supplied. If the signals are used at a voltage exceeding 5 VDC, be sure to provide an external resistor to prevent the current exceeding 20 mA from flowing. Internal components will be damaged if a voltage exceeding 5 VDC is supplied directly without using an external resistor.

Example: If the voltage is 24 VDC, connect a resistor (R_1) of 1.5 to 2.2 kΩ and 0.5 W or more.

◇Output Signal Connection

Use output signals at 24 VDC or less and 10 mA or less.

If these specifications are exceeded, the internal components may be damaged.

Check the specification of the connected equipment.

When the current is above 10 mA, connect an external resistor R_2.

◇Power Supply

Use a power supply that can supply sufficient input current. When power supply capacity is insufficient, a decrease in motor output can cause the following malfunctions:

- Motor does not operate properly at high-speed
- Slow motor startup and stopping

◇Notes on Wiring

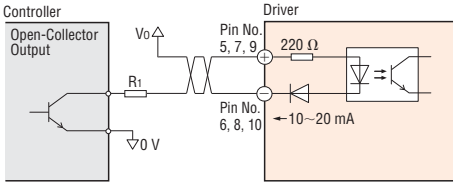
- Use twisted-pair wires of AWG24~22 and keep wiring as short as possible [within 2 m (6.6 ft.)].
- Note that as the length of the pulse signal line increases, the maximum transmission frequency decreases. Technical reference ➜ Page F-54
- Use wires of AWG22 or thicker for the power supply lines. When assembling the connector, use the hand-operated crimp tool or the crimped driver lead wire set (sold separately). The crimp tool is not provided with the package. It must be purchased separately.
- Provide a minimum distance of 2 cm (0.79 in.) between the signal lines and power lines (AC lines, motor lines and other large-current circuits).
  Do not run the signal lines in the same duct as power lines or bundle them with power lines.
- If noise generated by the motor lead wires causes a problem, insert ferrite cores in the motor lead wire.
- Incorrect connection of DC power input will lead to driver damage. Make sure that the polarity is correct before turning power on.

◇Pulse Signal Characteristics

- Keep the pulse signal at the "photocoupler OFF" state when no pulses are being input.
- In 1-pulse input mode, leave the pulse signal at rest ("photocoupler OFF") when changing rotation directions.
- In 2-pulse input mode, do not input a CW pulse and CCW pulse simultaneously.

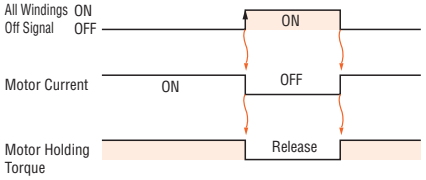
All Windings Off (A.W.OFF) Input Signal
Step Angle Select (C/S) Input Signal
Automatic Current Cutback Release (C.D.INH) Input Signal

◇Input Circuit and Sample Connection



◇All Windings Off (A.W.OFF) Input Signal

- Inputting this signal puts the motor in a non-excitation (free) state.
- This signal is used to move the motor shaft with external force or manual home position is desired. The photocoupler must be "OFF" when the motor is operating.



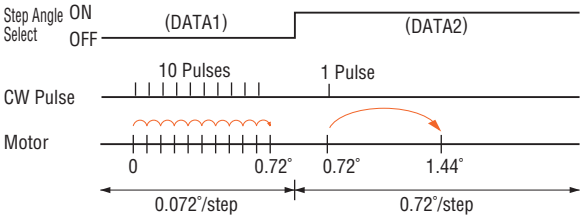
The shaded area indicates that the motor provides holding torque in proportion to standstill current set by STOP switch.

- Switching the "All Windings Off" signal from "photocoupler ON" to "photocoupler OFF" does not alter the excitation sequence. When the motor shaft is manually adjusted with the "All Windings Off" signal input, the shaft will shift up to ±3.6° (Geared type: ±3.6°/gear ratio) from the position set after the "All Windings Off" signal is released.

◇Step Angle Select (C/S) Input Signal

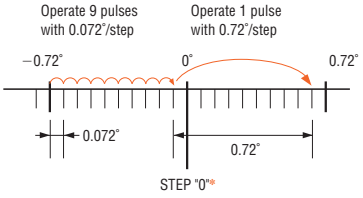
- You may select two step angles (resolutions) from 16 available step angles (resolutions) with the step angle setting switches DATA1 and DATA2.
- When the signal is at "photocoupler OFF," a step angle set by DATA1 is selected; at "photocoupler ON," DATA2 is selected.

Example: Changing the step angle from 0.072˚ to 0.72˚.



- Be sure to change step angle select inputs only when the pulse signals are at rest. Switching while moving may cause a positional error of the motor.
- When the step angle is changed by the "Step Angle Select" signal, the "Excitation Timing" signal output may become impossible for some combinations of step angles. When the "Excitation Timing" signal is used, adjust the number of pulses so that the motor can operate with angles that are multiples of 7.2˚.

Example:
After moving 9 pulses with 0.072˚/step setting, change the step angle to 0.72˚/step and move 1 pulse. In this case, "Excitation Timing" signal will not be output because the step "0" position is skipped.



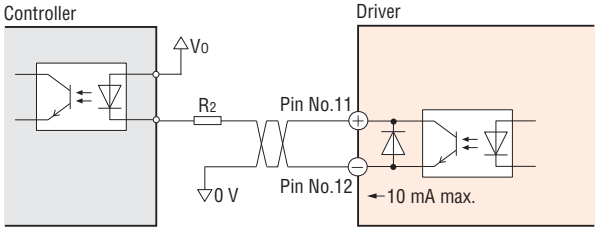
*"Excitation Timing" signal is only output at step "0" position.

◇Automatic Current Cutback Release (C.D.INH) Input Signal

- When this signal is in the "photocoupler ON" state, the automatic current cutback function is disabled. When this signal is in the "photocoupler OFF" state, the automatic current cutback function will be activated after the motor stops (after approximately 100 msec).
- The photocoupler must be "OFF" except when the running current is adjusted.

Excitation Timing (TIMING) Output Signal

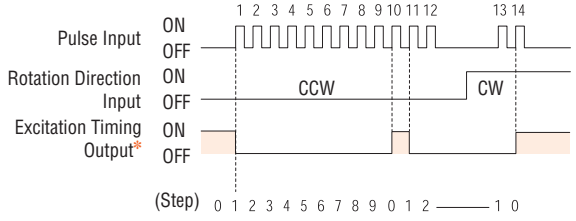
◇Output Circuit and Sample Connection



- The "Excitation Timing" signal is output to indicate when the motor excitation is in the initial stage (step "0" at power up).
- The "Excitation Timing" signal is output simultaneously with a pulse input each time the excitation sequence returns to step "0." The excitation sequence will complete one cycle for every 7.2˚ rotation of the motor output shaft.
  Microsteps/step 1: Signal is output once every 10 pulses.
  Microsteps/step 10: Signal is output once every 100 pulses.

Timing chart at 0.72˚/step (Microsteps/step 1)

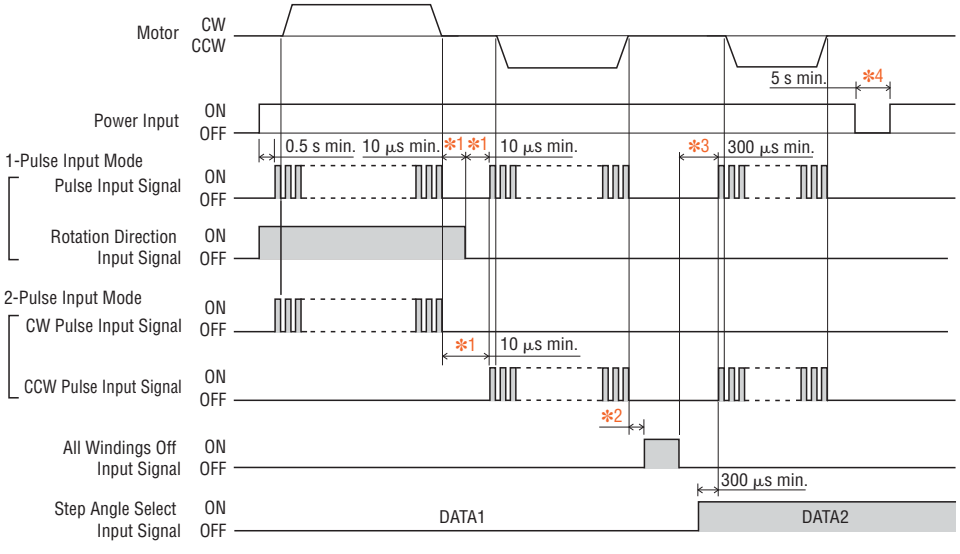
*When connected as shown in the sample connection, the signal will be "photocoupler ON" at step "0."



Note:

- When power is turned ON, the excitation sequence is reset to step "0" and the "Excitation Timing" signal is output.

●Timing Chart



The ▭ section indicates that the photocoupler diode is emitting light.

*1 The minimum switching time to change direction (1-pulse input mode), and switching time to change CW, CCW pulse (2-pulse input mode) 10 μs is shown as a response time of circuit. The motor may need more time than that.
*2 Depends on load inertia, load torque and starting frequency.
*3 Never input a pulse signal immediately after switching the "All Windings Off" signal to the "photocoupler OFF" state. The motor may not start.
*4 Wait at least 5 seconds before turning on the power again.

Adjusting the Current

●Adjusting the Motor Current

Use the "RUN" potentiometer to decrease the current and suppress the temperature rise in the motor/driver, or when there is sufficient motor torque and you want to suppress vibration by lowering the current.
Use the "STOP" potentiometer to readjust the current at motor standstill in relation to the holding-brake force of the motor.

Factory settings

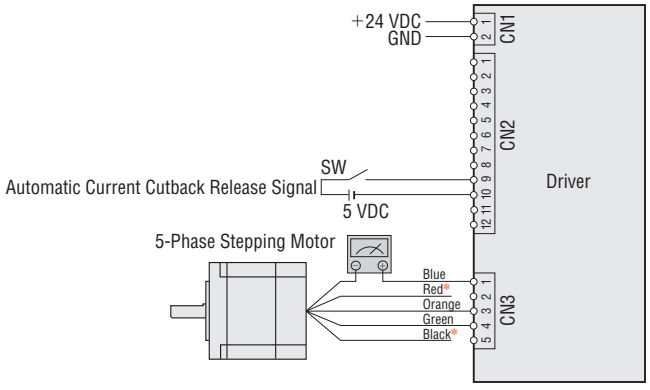
Running current: Rated current

Current at motor standstill: 50% of rated current

Follow the procedure below to adjust the motor current.

◇Connecting an Ammeter

Connect a DC ammeter as illustrated below.
Connect a DC ammeter in series to the blue motor lead wire and motor connector pin No. 1. Set all driver input signals to the "photocoupler OFF" state.
Disconnect the red motor lead wire from connector pin No. 2, and black motor lead wire from connector pin No. 5.



Note:

- Do not input pulse signals.

*Electric shock may result if the red and black motor lead wires contact each other. Insulate these motor lead wires to prevent electric shock.

◇Adjusting the Motor Running Current

To adjust the motor running current, follow the procedure below:

1. Set the automatic current cutback release signal to the "photocoupler ON" state. Keep other signals in the "photocoupler OFF" state.
2. Turn on the power to the driver.
3. Use the "RUN" potentiometer to adjust the motor running current.
4. When the power is turned on, the value measured by the ammeter represents the total current in two phases through the blue motor lead wire. The current for one phase is equivalent to one-half the ammeter value. (Example: To set the current to 1.0 A/phase, adjust the current level until the ammeter reads 2.0 A.)
5. When the running current has been adjusted, set the automatic current cutback release signal to the "photocoupler OFF" state.

Notes:

- Be sure to use the motor at the rated current or below.
- Adjusting the running current will also change the current at standstill.

◇Adjusting the Current at Motor Standstill

To adjust the current at motor standstill, follow the procedure below:

1. Set the automatic current cutback release signal to the "photocoupler OFF" state. Keep other signals in the "photocoupler OFF" state.
2. Turn on the power to the driver.
3. Use the "STOP" potentiometer to adjust the motor current at standstill.
4. When the power is turned on, the value measured by the ammeter represents the total current in two phases through the blue motor lead wire. The current for one phase is equivalent to one-half the ammeter value. (Example: To set the current to 0.5 A/phase, adjust the current level until the ammeter reads 1.0 A.)

$$\text{Holding Torque [N·m (oz-in)]} = \frac{\text{Maximum Holding Torque [N·m (oz-in)]} \times \text{Current at Standstill [A]}}{\text{Motor Rated Current [A]}}$$

Notes:

- Always set the running current first, turn off the driver power and turn it back on, and then set the current at standstill. Setting the running current after current at standstill may change the current setting at standstill.
- Setting the current at motor standstill too low may affect the starting of the motor or the position-holding action.

List of Motor and Driver Combinations

Model names for motor and driver combinations are shown below.

Type	Model	Motor Model	Driver Model
High-Resolution Type	**CRK523PMAP** **CRK523PMBP** **CRK524PMAP** **CRK524PMBP** **CRK525PMAP** **CRK525PMBP**	PK523PMA* PK523PMB* PK524PMA* PK524PMB* PK525PMA* PK525PMB*	CRD5103P
	CRK544PMAP **CRK544PMBP** **CRK546PMAP** **CRK546PMBP**	PK544PMA* PK544PMB* PK546PMA* PK546PMB*	CRD5107P
	CRK564PMAP **CRK564PMBP** **CRK566PMAP** **CRK566PMBP** **CRK569PMAP** **CRK569PMBP**	PK564PMA* PK564PMB* PK566PMA* PK566PMB* PK569PMA* PK569PMB*	CRD5114P
High-Torque Type	**CRK513PAP** **CRK513PBP**	PK513PA* PK513PB*	CRD5103P
	CRK523PAP **CRK523PBP** **CRK525PAP** **CRK525PBP**	PK523PA* PK523PB* PK525PA* PK525PB*	
	CRK544PAP **CRK544PBP** **CRK546PAP** **CRK546PBP**	PK544PA* PK544PB* PK546PA* PK546PB*	CRD5107P
Standard Type	**CRK543AP** **CRK543BP** **CRK544AP** **CRK544BP** **CRK545AP** **CRK545BP**	PK543NAW PK543NBW PK544NAW PK544NBW PK545NAW PK545NBW	
	CRK564AP **CRK564BP** **CRK566AP** **CRK566BP** **CRK569AP** **CRK569BP**	PK564NAW PK564NBW PK566NAW PK566NBW PK569NAW PK569NBW	CRD5114P
TH Geared Type	**CRK523PAP-T7.2** **CRK523PBP-T7.2** **CRK523PAP-T10** **CRK523PBP-T10** **CRK523PAP-T20** **CRK523PBP-T20** **CRK523PAP-T30** **CRK523PBP-T30**	PK523PA-T7.2* PK523PB-T7.2* PK523PA-T10* PK523PB-T10* PK523PA-T20* PK523PB-T20* PK523PA-T30* PK523PB-T30*	CRD5103P
	CRK543AP-T3.6 **CRK543BP-T3.6** **CRK543AP-T7.2** **CRK543BP-T7.2** **CRK543AP-T10** **CRK543BP-T10** **CRK543AP-T20** **CRK543BP-T20** **CRK543AP-T30** **CRK543BP-T30**	PK543AW-T3.6 PK543BW-T3.6 PK543AW-T7.2 PK543BW-T7.2 PK543AW-T10 PK543BW-T10 PK543AW-T20 PK543BW-T20 PK543AW-T30 PK543BW-T30	CRD5107P
	CRK564AP-T3.6 **CRK564BP-T3.6** **CRK564AP-T7.2** **CRK564BP-T7.2** **CRK564AP-T10** **CRK564BP-T10** **CRK564AP-T20** **CRK564BP-T20** **CRK564AP-T30** **CRK564BP-T30**	PK564AW-T3.6 PK564BW-T3.6 PK564AW-T7.2 PK564BW-T7.2 PK564AW-T10 PK564BW-T10 PK564AW-T20 PK564BW-T20 PK564AW-T30 PK564BW-T30	CRD5114P

Type	Model	Motor Model	Driver Model
PN Geared Type	**CRK523PAP-N5** **CRK523PBP-N5** **CRK523PAP-N7.2** **CRK523PBP-N7.2** **CRK523PAP-N10** **CRK523PBP-N10**	PK523PA-N5* PK523PB-N5* PK523PA-N7.2* PK523PB-N7.2* PK523PA-N10* PK523PB-N10*	CRD5103P
	CRK544AP-N5 **CRK544BP-N5** **CRK544AP-N7.2** **CRK544BP-N7.2** **CRK544AP-N10** **CRK544BP-N10**	PK544AW-N5 PK544BW-N5 PK544AW-N7.2 PK544BW-N7.2 PK544AW-N10 PK544BW-N10	CRD5107P
	CRK566AP-N5 **CRK566BP-N5** **CRK566AP-N7.2** **CRK566BP-N7.2** **CRK566AP-N10** **CRK566BP-N10** **CRK564AP-N25** **CRK564BP-N25** **CRK564AP-N36** **CRK564BP-N36** **CRK564AP-N50** **CRK564BP-N50**	PK566AW-N5 PK566BW-N5 PK566AW-N7.2 PK566BW-N7.2 PK566AW-N10 PK566BW-N10 PK564AW-N25 PK564BW-N25 PK564AW-N36 PK564BW-N36 PK564AW-N50 PK564BW-N50	CRD5114P
Harmonic Geared Type	**CRK513PAP-H50** **CRK513PBP-H50** **CRK513PAP-H100** **CRK513PBP-H100**	PK513PA-H50S* PK513PB-H50S* PK513PA-H100S* PK513PB-H100S*	CRD5103P
	CRK543AP-H50 **CRK543BP-H50** **CRK543AP-H100** **CRK543BP-H100**	PK543AW-H50S PK543BW-H50S PK543AW-H100S PK543BW-H100S	CRD5107P
	CRK564AP-H50 **CRK564BP-H50** **CRK564AP-H100** **CRK564BP-H100**	PK564AW-H50S PK564BW-H50S PK564AW-H100S PK564BW-H100S	CRD5114P

* If you are purchasing only a motor for maintenance purpose, etc., motor lead wire/connector assembly will not be supplied. They must be purchased separately. They are available as accessories.
Motor lead wire/connector assembly ➜ Page C-299