DINGS'

DINGS' Electrical & Mechanical Co., Ltd

Hybrid Stepper Motors



WHO IS DINGS'?

DINGS' is a premier supplier of rotary and linear step motors. Based in the greater Shanghai, China area, we manufacture quality lead screw and step motor systems used to solve motion applications in industries from medical, lab automation, packaging, electronic assembly, and other special machines throughout the world.

Our value proposition is a QUALITY product at very COMPETITIVE PRICING.

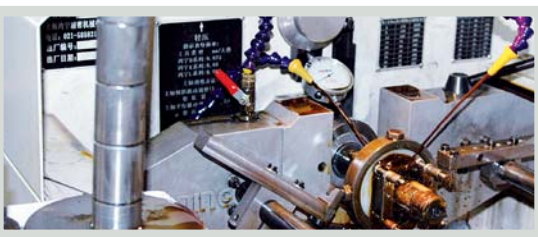
We have company representation in the United States, Canada and Europe.

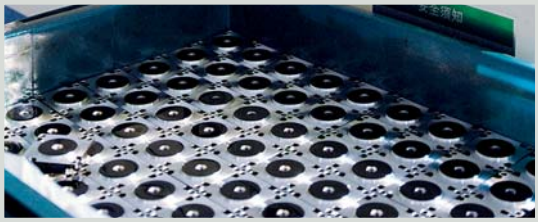
Please view our website at
www.dingsmotion.com
for the latest information on new products.

Contact our local Distributor and the Technical Support as noted on the back of this catalog.

Shanghai Skyline



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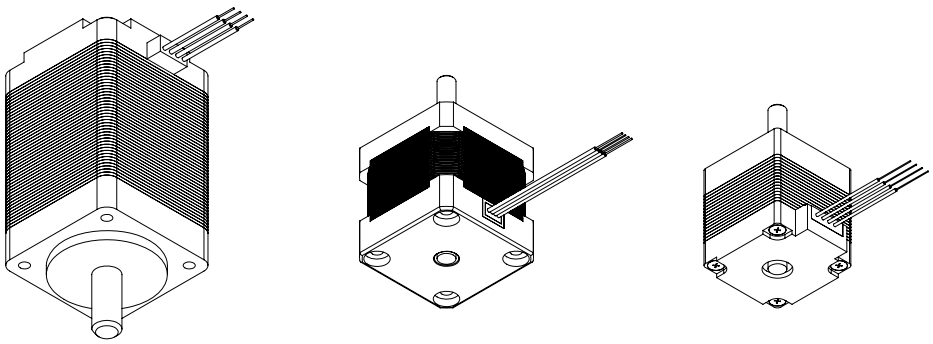
TECHNOLOGY OVERVIEW

Hybrid Step Motors combine the best characteristics of variable reluctance and permanent magnet step motors. Because they exhibit high static and dynamic torque and run at very high step rates, Hybrid Step Motors are used in a wide variety of industrial applications.

Hybrid Step Motors are highly precise, digitally controlled motors that are able to provide years of reliable operation. The operation of the motor is controlled through electrical pulses. The direction of current flowing through the windings of the motor is switched with each pulse. The electrical pulse is converted into shaft rotation in steps of a fixed angle. Together with the driver, it constitutes an open loop system, which is cost effective and simple to construct.

Hybrid Step Motors, as a result of the way they are constructed, are inherently lower cost than servo motors. Step motor systems do not require tuning, allow for greater inertia mismatch and have a very high torque density. This torque is 100% available immediately upon startup which can be very advantageous when doing short quick moves or when coupled with high inertia loads. Because step motors are synchronous motors with a high pole count, they are able to run smoothly at extremely slow speeds with little torque ripple. These precise, highly reliable motors are applied in thousands of applications in industries such as medical, lab automation, electronic assembly, and packaging. Popular for decades, these systems will continue to be a popular choice among design engineers.



BIPOLAR VS UNIPOLAR STEP MOTORS

All motors in this catalog are Bipolar. Bipolar motors have a single winding per phase. The current in the winding needs to be reversed in order to reverse a magnetic pole. Therefore, the driving circuit is more complicated and typically utilizes an H-bridge arrangement. Because windings are better utilized, they are more powerful than a Unipolar motor of the same size. A Unipolar motor has twice the amount of copper wire in the same space, but only half is used at any point in time, hence it is 50% efficient.

BI-POLAR CHOPPER DRIVE

Bipolar chopper drives are by far the most widely used drivers for industrial applications. Although they are tqpically more expensive to design, they offer high performance and high efficiency.
They also use a four transistor bridge with recirculating diodes and a sense resistor that maintains a feedback voltage proportional to the motor current. The motor performance curves in this catalog were developed using a Bi-polar chopper drive.

PULL-OUT TORQUE

Measured by accelerating the motor to the desired speed and then increasing the torque loading until the motor stalls or missed steps. This measurement is taken across a wide range of speeds and the results are used to generate the dynamic speed / torque curve. This curve is affected by drive voltage and drive current. **All performance curves in this catalog are generated using this method.**

MOTOR ACCURACY

Approximately ± 3 arc minutes (0.05 degree)
This error does not accumulate from step to step. When a standard 1.8 degree step motor travels one step is will go 1.8 degree ± .05 degree. If the same motor travels one million steps, it will travel 1, 800,000 degrees ± .05 degree. The error does not accumulate.

PHASE INDUCTANCE (MH)

Step motors are rated with a varying degree of inductance. A high inductance motor will provide a greater amount of torque at low speeds and lower torque at higher speeds.

PHASE RESISTANCE (OHMS)

The motor's terminal resistance value specified at the the hot winding, which is the motor's maximum rated temperature.

HOLDING TORQUE

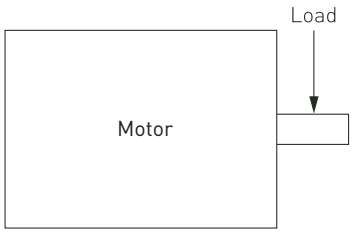
The maximum torque that can be externally applied to the stepper motor shaft without causing continous rotation when one or more phases of the motor are energized.

DETENT TORQUE

The torque required to rotate the motor's output shaft with no current applied to the windings.

RADIAL LOAD

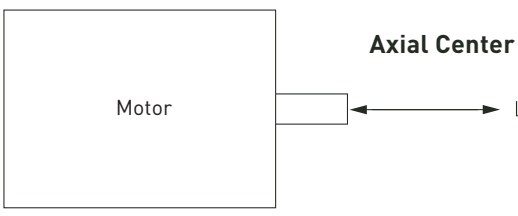
A load exerted perpendicular to the motor shaft (should be minimized).



Radial Loading (Avoid or Minimize)

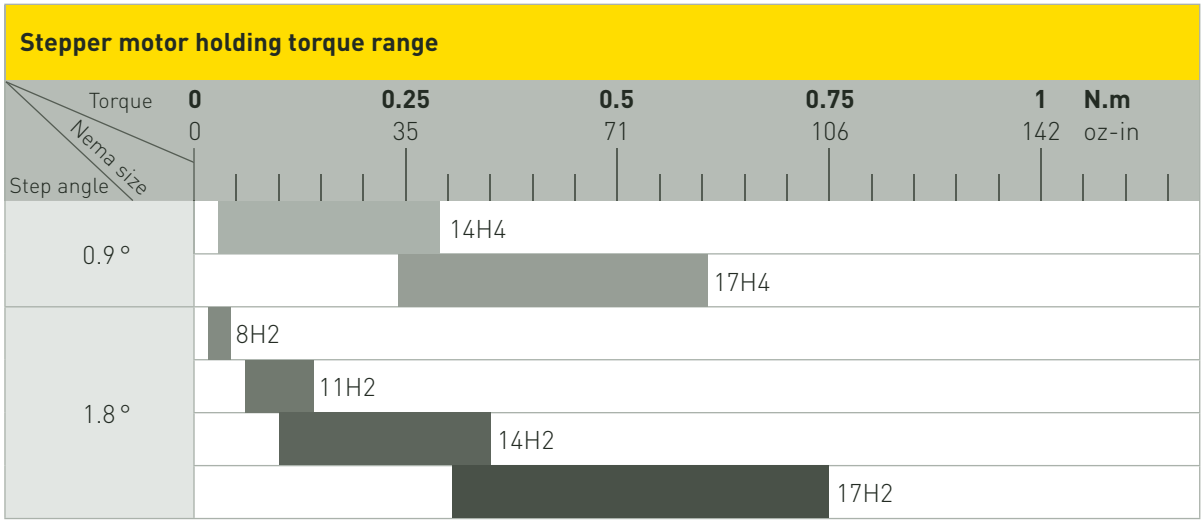
AXIAL LOAD

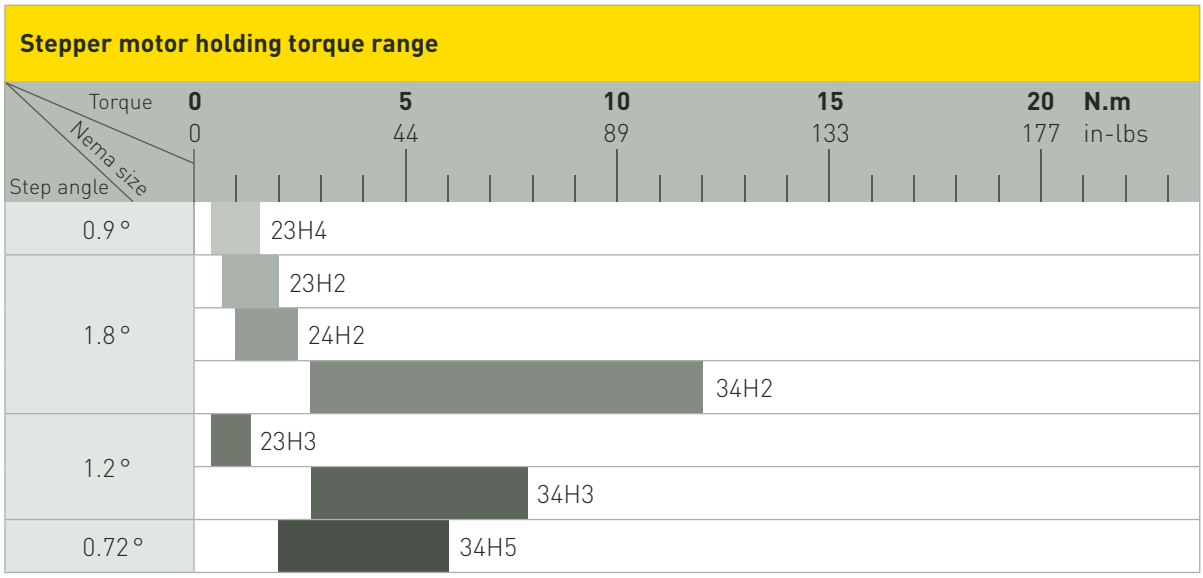
A load exerted at the center line of the motor shaft (Avoid or Minimize).



Axial Center Loading (Avoid or Minimize)

Nema Frame size and holding torque range





Phase Selection Overview

Nema	8	11	14	17	23	34
Size / Phases	20 mm	28 mm	35 mm	42 mm	57 mm	86 mm
2-Phases	•	•	••	••	••	•
3-Phases					•	•
5-Phases						•

Note:

A. •• 0.9 ° step angle is also available

B. 2-phase motor basic angle is 1.8°

C. 3-phase motor basic angle is 1.2°

D. 5-phase motor basic angle is 0.72°

General Specifications

Insulation class		Class B 130 °C
Insulation resistance		100 Ω minimum under normal temperature and humidity, when measured by a 500 VDC megger
Insulation voltage		Sufficient to withstand 1. Okv, 60 Hz applied between the motor coils and casing for 1 minute, under normal temperature and humidity
Temperature	Ambient Temperature	-10 °C ~ +50 °C
	Ambient Humidity	85% or less
	Gas Medium	No corrosive gas and dust, should not directly contact water and oils
Step Accuracy		± 0.05°
Shaft Runout		0.05 mm (T.I.R.) at top of output shaft
Axial Play		0.025 mm Max at 1.12 1b. (5N)
Radial Play		0.075 mm Max at 2.2 1b. (10N)
IP Rating		IP43

APPLICATION CONSIDERATIONS

In order to select the right motor, several factors should be considered:

1. How much torque is required?
2. What is the desired step angle? (resolution)
3. What is the speed requirement at rated torque? (RPM)
4. Detent or holding torque requirements
5. Physical size restrictions?
6. What type of driver (amplifier) are you using?
7. Environmental considerations?

ENVIRONMENTAL CONSIDERATIONS

DINGS' linear motion systems are designed to operate in dry and non-corrosive environments. Operating the motor in dirty, corrosive, or extremely high temperature environments will significantly reduce product life and may void warranty.

Using the Product Selection System along with the associated Nema motor frame size pages in the next sections, you will then be able to drill down to specific part numbers for your step motor choice.

Product Selection Overview

1. NEMA MOTOR SIZE

Based on Standards Established by the National Electrical Manufacture' Association (NEMA).
The size of motor is established by overall dimension of motor flange.
For example, a NEMA 23 motor measures approximately 2.3 inches square at the mounting flange.

2. HYBRID STEP MOTOR

The Hybrid Step motor is the most widely used and combines the principles of the permanent magnet and the variable reluctance motors.

3. NUMBER OF MOTOR ELECTRICAL PHASES

2, 3 or 5 phase. 2-phase is the most common.
The potential advantages offered by a 5-phase motor are higher resolution, lower acoustic noise, lower operational resonance, and lower detent torque.
The 3-phase motor offers a middle course between the 2-phase and 5-phase step motor.

4. STEP ANGLE

Step angle of the motor is defined as the angle traversed by the one motor one full step.
For example, a 1.8° step angle would have 200 full steps per revolution.
360 / 1.8 = 200

5. MOTOR LENGTH

Determined by the # of rotor cups or stacks.
Added stacks and length = more torque, but at a tradeoff.
Depends on the application; for example, a longer motor has higher slow speed torque but at the expense of quick response and higher speeds. Rotor inertia also increases with longer motors.

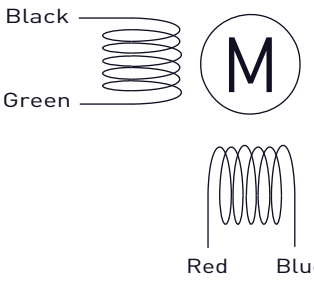
6. RATED CURRENT / PHASE

The higher the current / phase the more performance. The motor driver (amplifier) may also determine which current to choose.

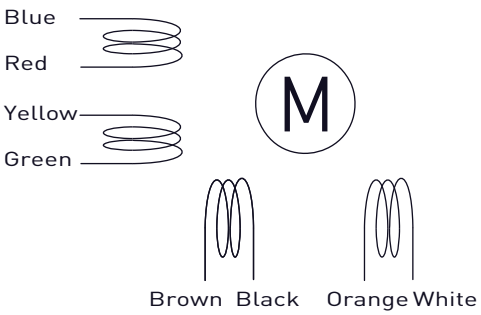
7. NUMBER OF LEAD WIRES

Step motors typically come with 4, 6, or 8 wire leads. With bipolar driver, there are 4 connections to a motor. Wiring up a 4 lead motor is straightforward. When using motors with 8 leads, the coils can either be connected in series or parallel.

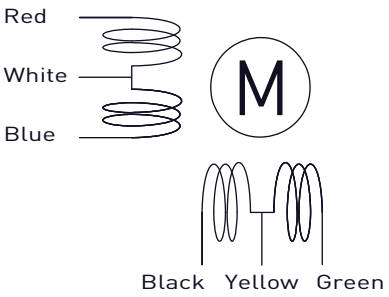
LEAD WIRE CONFIGURATION



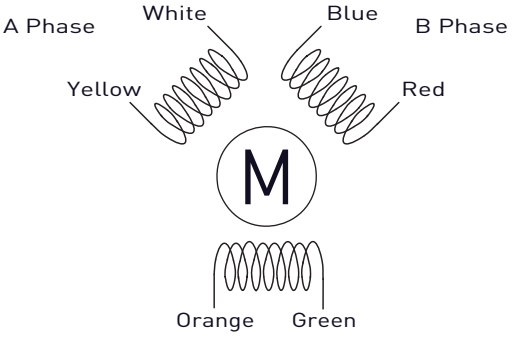
2 Phases 4 Lead Wires



2 Phases 8 Lead Wires

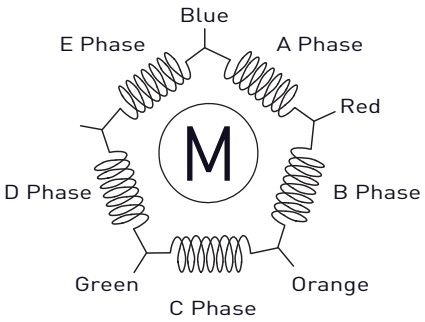


2 Phases 6 Lead Wires



C Phase

3 Phases 6 Lead Wires



5 Phases

A series connection provides a higher inductance and therefore greater performance as low speeds.
A parallel connection will lower the inductance but increase the torque as faster speeds.

A six wire stepper motor with windings in series

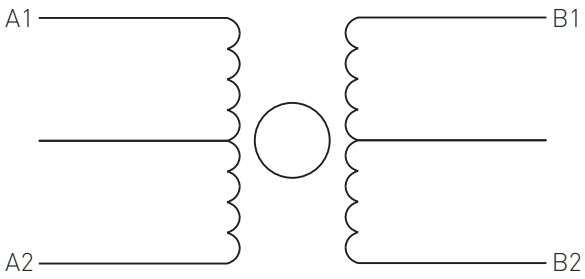


Figure 1

An eight wire stepper motor with windings in series

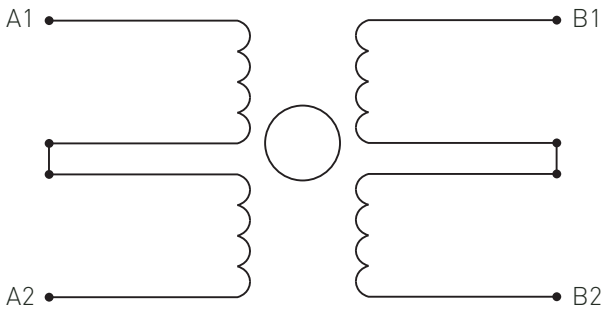


Figure 2

An eight wire stepper motor with windings in parallel

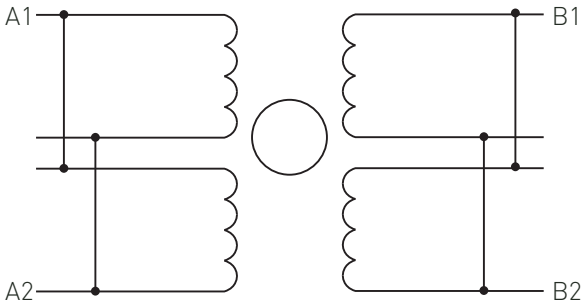


Figure 3

8. SHAFT CONFIGURATION

Single or Double
If an encoder or brake need to be mounted, a double shaft (rear) will be required

9. ENCODER OPTION

If it necessary to confirm position attained back to the motion controller, an encoder will be required.
The resolution (or line count) of the encoder will be dependent on the application.

A 1,000 line encoder, with quadrature, provides a 4,000 count resolution.

In addition, a single ended electrical connection or differential are available.
A differential encoder option is recommended for longer encoder cables and/or high noise environments.

10. CUSTOM CONFIGURATION

DINGS' can provide a custom configuration to your specification.
This can include special windings, connectors, wire leads, and mechanical modifications to both the front and rear shaft. Contact your local technical distributor fo quotation.

Product Selection System

17 H 2059-120-4 A-001

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

Options Defined

① **Nema Motor Size:**

Nema Code	8	11	14	17	23	24	34
Motor Size (mm)	20	28	35	42	57	60	86

② **Hybrid Step Motor**
Hybrid, rotating shaft

③ **Motor Phases / Step Angle**
2 = 2-Phase with 1.8 degree step angle
4 = 2-Phase with 0.9 degree step angle
3 = 3-Phase with 1.2 degree step angle
5 = 5-Phase with 0.72 degree step angle

1.8 degree = 200 full steps / rev
(all Nema frame sizes)

0.9 degree = 400 full steps / rev
(Nema 14, 17, and 23)

1.2 degree for 3-Phase
(Nema 23 and 34)

0.72 degree for 5-Phase
(Nema 34)

④ **Motor Length**
059 = 59 mm motor length
See specific motor specifications

⑤ **Rated Current / Phase**
120 = 1.2 Amps / Phase
See specific motor specifications

⑥ **Number of Lead Wires**
4 = Qty 4 Flying Leads
2 Phase choose 4, 6, or 8
3 Phase choose 6
5 Phase choose 5
Note: standard Leads are 304 mm (12 in) long, custom length available

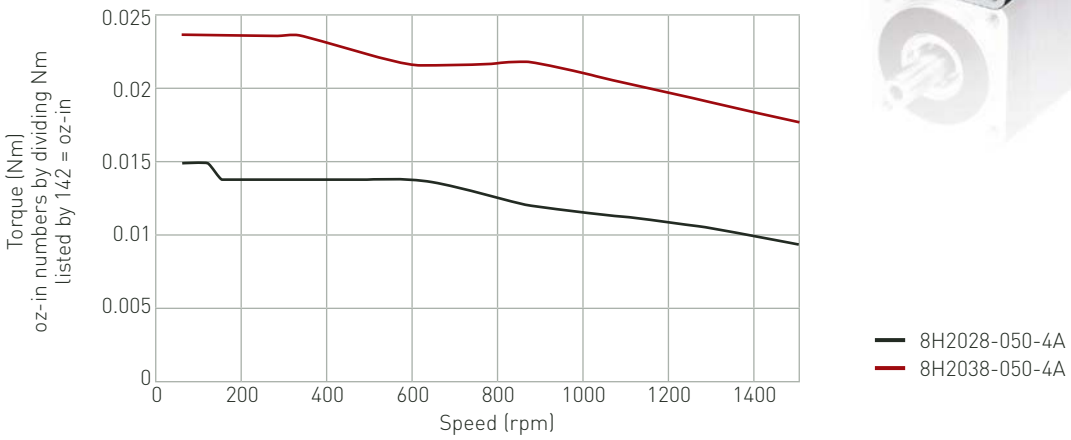
⑦ **Motor Shaft**
A = single shaft output
B = double shaft i.e. for encoder

⑧ **Configuration numbering**
Reserved for customer version (001 is default)

Example: 17H2059-120-4A-001
Hybrid Nema 17 Frame Motor
2-Phase 1.8 degree
59 mm motor length
1.2 Amp, single shaft output

SIZE 8H2 (20 mm) · 2 phase 1.8°
Hybrid Stepper Motor

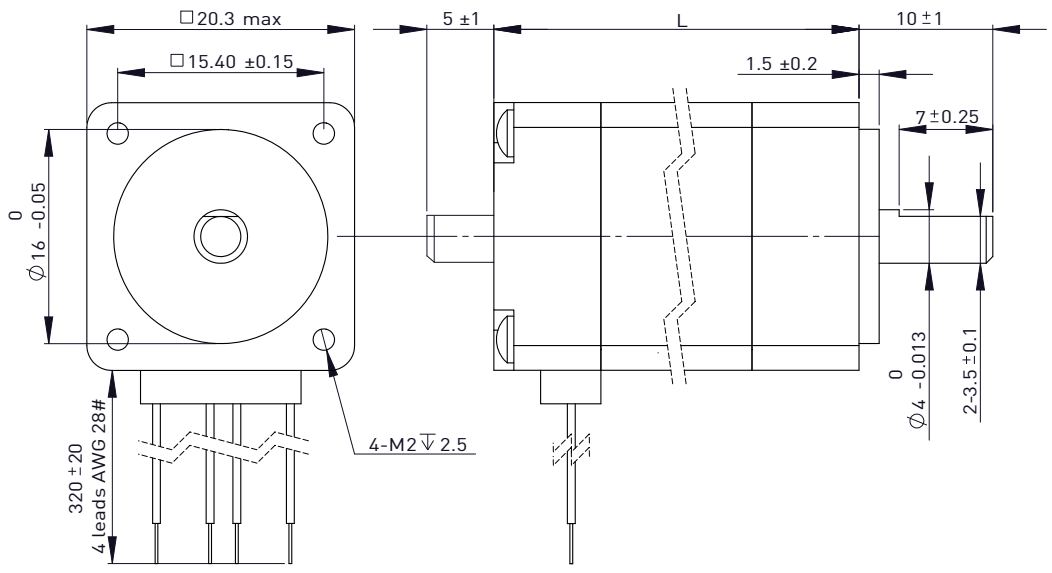
Pull out torque-speed curves 24 V DC Chopper driver, 2 phases



Specifications Please consult your authorized sales representative for custom specifications.

Model	Holding torque Nm	Current A/phase	Resi-stance (Ω)	Step angle	Rotor inertia gfcm²	Weight kg	Motor Length L (mm)	inductance mH
8H2028-050-4A	0.018	0.5	5.8	1.8°	2.5	0.05	28	2.0
8H2038-050-4A	0.03	0.5	6.0	1.8°	3.3	0.08	38	2.6

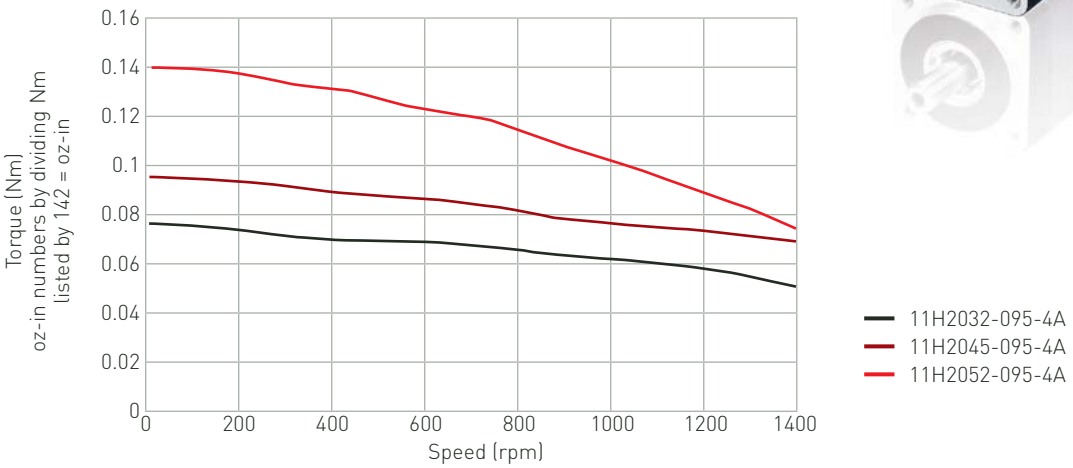
Dimension (mm) · Size 8H2 (20 mm) · 2 phase 1.8°:



Note: All drawings are First Angle Projection – ISO Standard

SIZE 11H2 (28 mm) · 2 phase 1.8°
Hybrid Stepper Motor

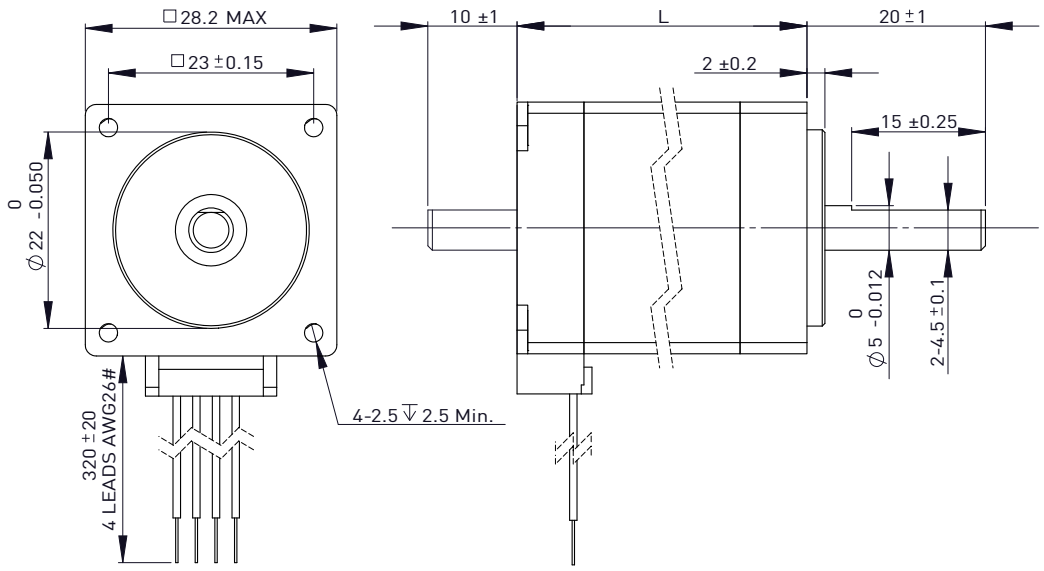
Pull out torque-speed curves 24 V DC Chopper driver, 2 phases



Specifications Please consult your authorized sales representative for custom specifications.

Model	Holding torque Nm	Current A/phase	Resi-stance (Ω)	Step angle	Rotor inertia gfcm²	Weight kg	Motor Length L (mm)	inductance mH
11H2032-095-4A	0.07	0.95	3.2	1.8°	9	0.11	32	2.0
11H2045-095-4A	0.12	0.95	3.2	1.8°	13	0.14	45	2.7
11H2052-095-4A	0.14	0.95	3.2	1.8°	18	0.2	52	3.2

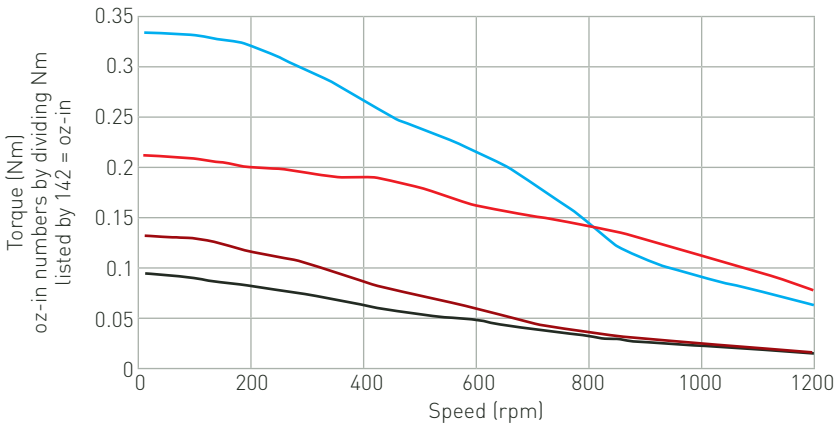
Dimension (mm) · Size 11H2 (28 mm) · 2 phase 1.8°:



Solid Works 3D models available

SIZE 14H2 (35 mm) · 2 phase 1.8°
Hybrid Stepper Motor

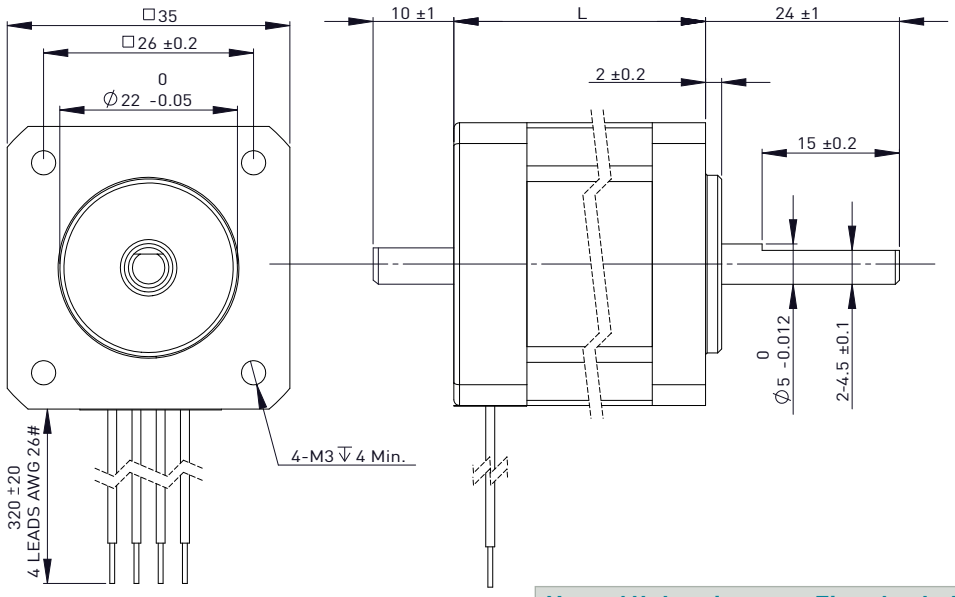
Pull out torque-speed curves 24 V DC Chopper driver, 2 phases



Specifications Please consult your authorized sales representative for custom specifications.

Model	Holding torque Nm	Current A/phase	Resi-stance (Ω)	Step angle	Rotor inertia gfcm²	Weight kg	Motor Length L (mm)	inductance mH
14H2020-040-4A	0.1	0.4	19.0	1.8°	11	0.1	20	19.0
14H2028-050-4A	0.16	0.5	14.0	1.8°	19	0.14	28	18.0
14H2037-120-4A	0.24	1.2	2.7	1.8°	28	0.18	37	3.8
14H2052-120-4A	0.35	1.2	3.3	1.8°	50	0.3	52	5.0

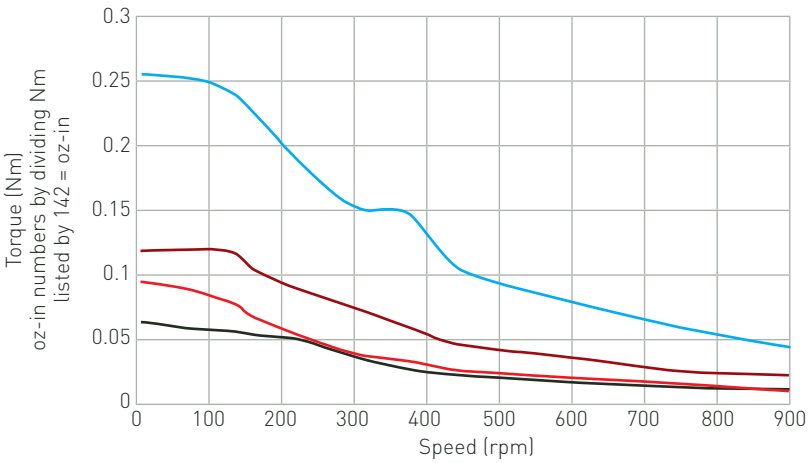
Dimension (mm) · Size 14H2 (35 mm) · 2 phase 1.8°:



Note: All drawings are First Angle Projection – ISO Standard

SIZE 14H4 (35 mm) · 2 phase 0.9°
Hybrid Stepper Motor

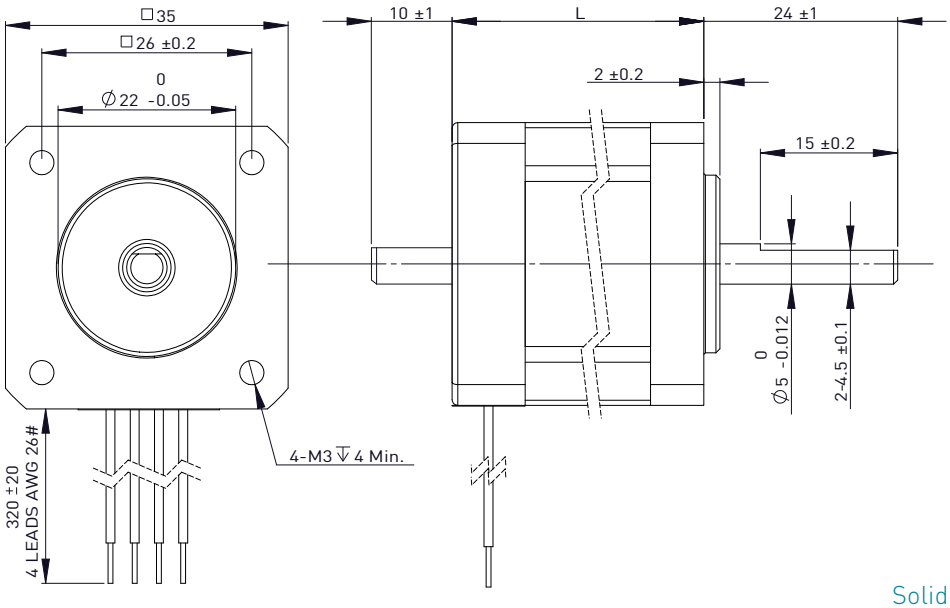
Pull out torque-speed curves 24 V DC Chopper driver, 2 phases



Specifications Please consult your authorized sales representative for custom specifications.

Model	Holding torque Nm	Current A/phase	Resi-stance (Ω)	Step angle	Rotor inertia gfcm²	Weight kg	Motor Length L (mm)	inductance mH
14H4020-040-4A	0.06	0.4	19.0	0.9°	11	0.1	20	24.0
14H4028-050-4A	0.12	0.5	13.0	0.9°	19	0.14	28	27.0
14H4037-120-4A	0.15	1.2	2.7	0.9°	28	0.18	37	6.5
14H4052-120-4A	0.28	1.2	3.3	0.9°	50	0.3	52	7.8

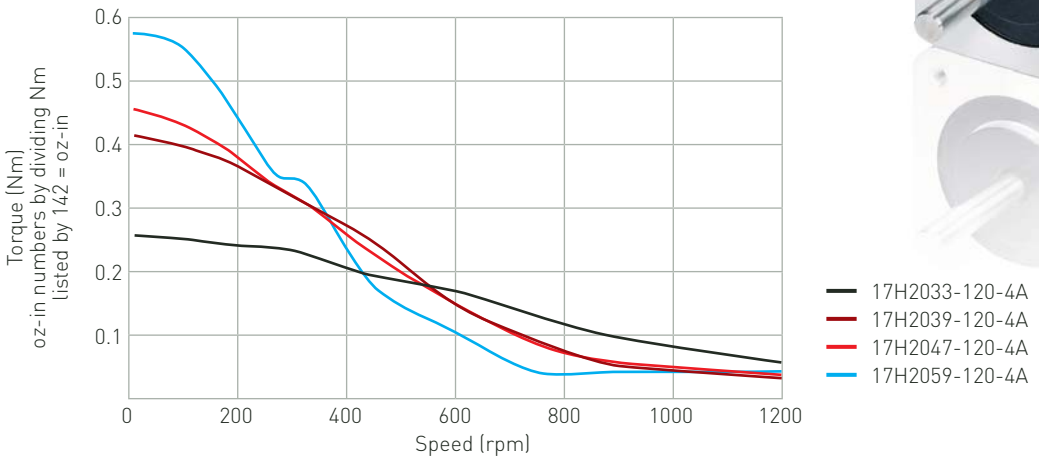
Dimension (mm) · Size 14H4 (35 mm) · 2 phase 0.9°:



Solid Works 3D models available

SIZE 17H2 (42 mm) · 2 phase 1.8°
Hybrid Stepper Motor

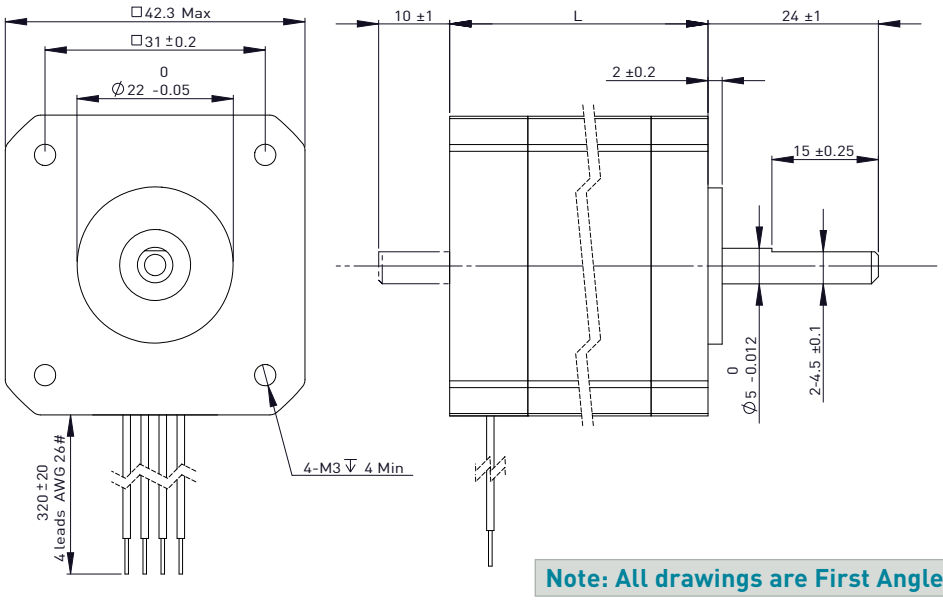
Pull out torque-speed curves 24 V DC Chopper driver, 2 phases



Specifications Please consult your authorized sales representative for custom specifications.

Model	Holding torque Nm	Current A/phase	Resi-stance (Ω)	Step angle	Rotor inertia gfcm²	Weight kg	Motor Length L (mm)	inductance mH
17H2033-120-4A	0.32	1.2	2.8	1.8°	35	0.22	33	4.2
17H2039-120-4A	0.48	1.2	3.2	1.8°	54	0.28	39	3.6
17H2047-120-4A	0.5	1.2	3.5	1.8°	77	0.35	47	6.0
17H2059-120-4A	0.75	1.2	6.0	1.8°	114	0.5	59	16.0

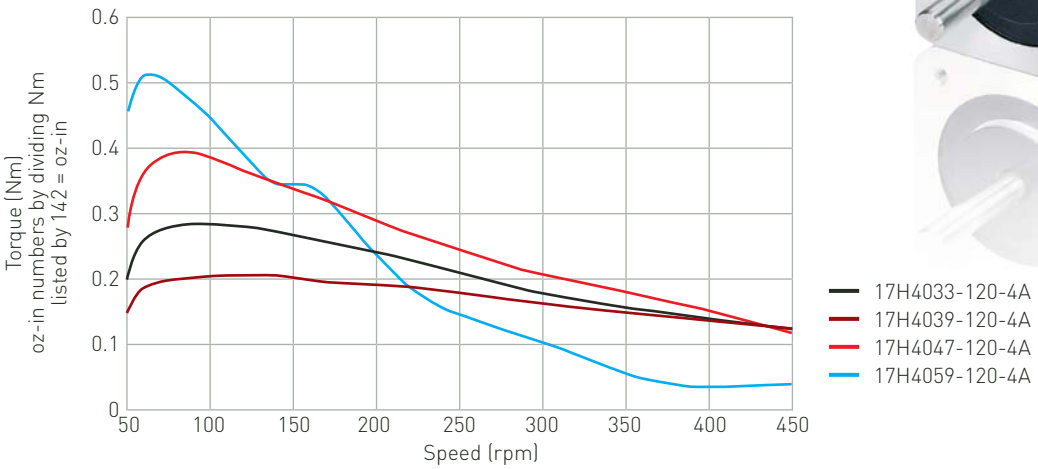
Dimension (mm) · Size 17H2 (42 mm) · 2 phase 1.8°:



Note: All drawings are First Angle Projection – ISO Standard

SIZE 17H4 (42 mm) · 2 phase 0.9°
Hybrid Stepper Motor

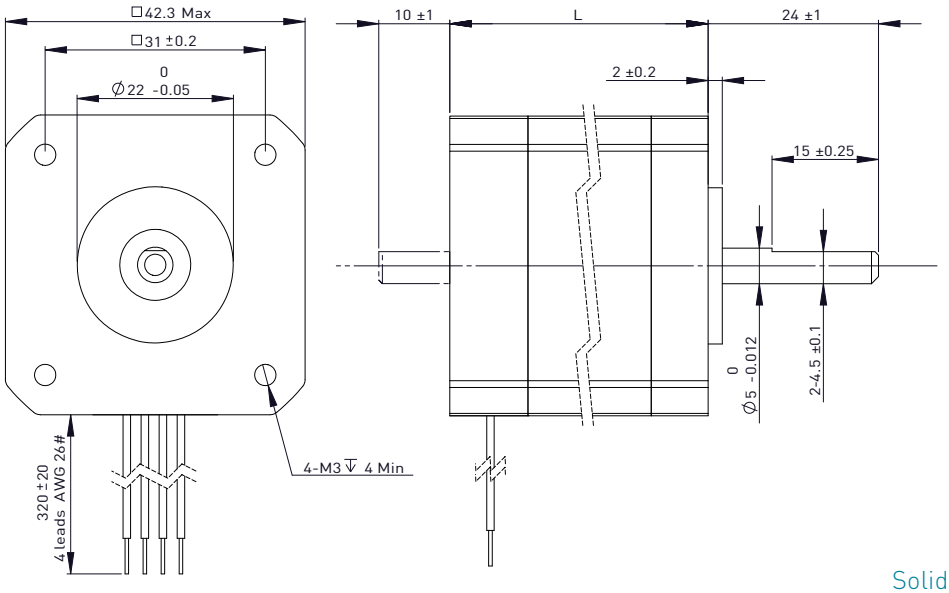
Pull out torque-speed curves 24 V DC Chopper driver, 2 phases



Specifications Please consult your authorized sales representative for custom specifications.

Model	Holding torque Nm	Current A/phase	Resi-stance (Ω)	Step angle	Rotor inertia gfcm²	Weight kg	Motor Length L (mm)	inductance mH
17H4033-120-4A	0.24	1.2	2.8	0.9°	35	0.22	33	6.0
17H4039-120-4A	0.34	1.2	3.1	0.9°	54	0.28	39	8.05
17H4047-120-4A	0.5	1.2	3.3	0.9°	77	0.35	47	9.4
17H4059-120-4A	0.6	1.2	3.4	0.9°	114	0.5	59	12.0

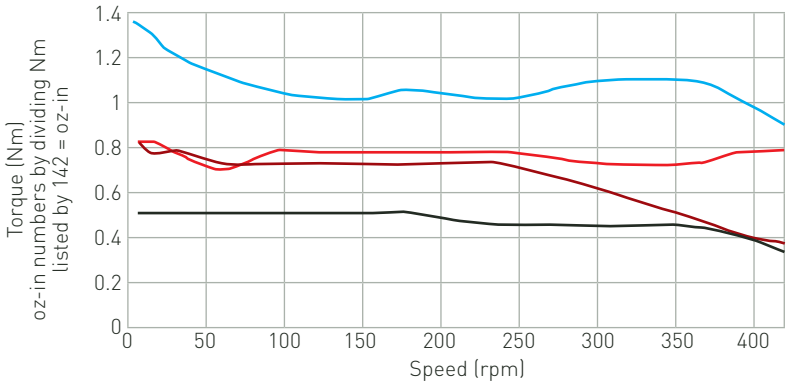
Dimension (mm) · Size 17H4 (42 mm) · 2 phase 0.9°:



Solid Works 3D models available

SIZE 23H2 (57 mm) · 2 phase 1.8°
Hybrid Stepper Motor

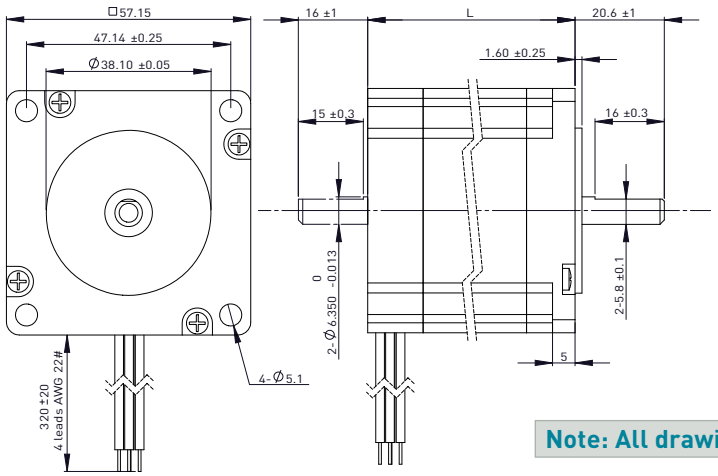
Pull out torque-speed curves 36 V DC Chopper driver, 2 phases



Specifications Please consult your authorized sales representative for custom specifications.

Model	Holding torque Nm	Current A/phase	Resi-stance (Ω)	Step angle	Rotor inertia gfcm²	Weight kg	Motor Length L (mm)	inductance mH
23H2046-100-4A	0.7	1.0	4.5	1.8°	120	0.5	46	11.0
23H2046-200-4A	0.7	2.0	1.3	1.8°	120	0.5	46	2.8
23H2046-300-4A	0.7	3.0	0.58	1.8°	120	0.5	46	1.3
23H2055-100-4A	1.0	1.0	5.7	1.8°	200	0.7	55	20.0
23H2055-200-4A	1.0	2.0	1.6	1.8°	200	0.7	55	5.3
23H2055-300-4A	1.0	3.0	0.6	1.8°	200	0.7	55	2.0
23H2062-100-4A	1.2	1.0	7.0	1.8°	300	0.85	62	20.5
23H2062-200-4A	1.2	2.0	1.8	1.8°	300	0.85	62	5.5
23H2062-300-4A	1.2	3.0	0.8	1.8°	300	0.85	62	2.5
23H2080-200-4A	2.0	2.0	2.0	1.8°	480	1.15	80	9.0
23H2080-300-4A	2.0	3.0	1.0	1.8°	480	1.15	80	3.8
23H2080-400-4A	2.0	4.0	0.55	1.8°	480	1.15	80	2.3

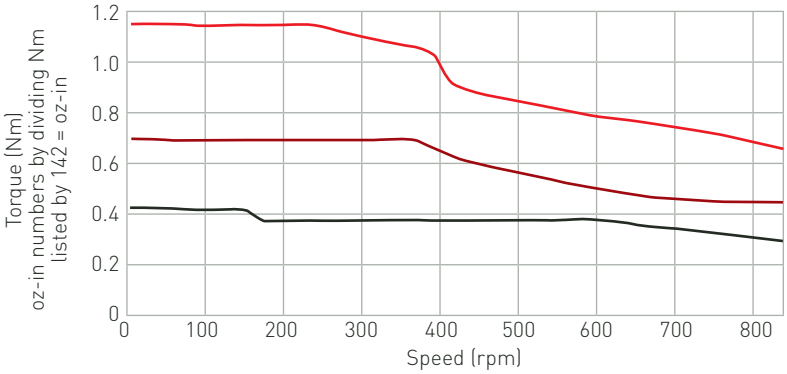
Dimension (mm) · Size 23H2 (57 mm) · 2 phase 1.8°:



Note: All drawings are First Angle Projection – ISO Standard

SIZE 23H4 (57 mm) · 2 phase 0.9°
Hybrid Stepper Motor

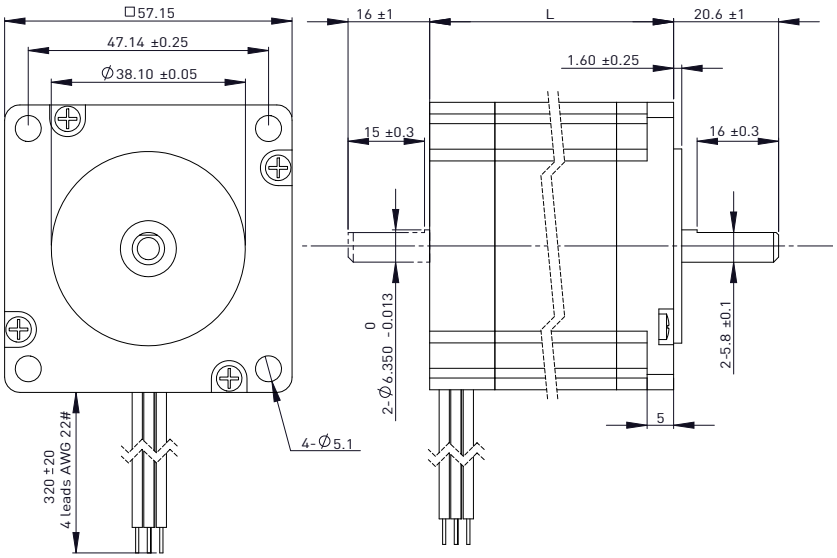
Pull out torque-speed curves 36 V DC Chopper driver, 2 phases



Specifications Please consult your authorized sales representative for custom specifications.

Model	Holding torque Nm	Current A/phase	Resi-stance (Ω)	Step angle	Rotor inertia gfcm²	Weight kg	Motor Length L (mm)	inductance mH
23H4042-100-4A	0.48	1.0	4.8	0.9°	120	0.5	42	12.6
23H4042-200-4A	0.48	2.0	1.3	0.9°	120	0.5	42	3.3
23H4042-300-4A	0.48	3.0	0.6	0.9°	120	0.5	42	1.6
23H4055-100-4A	0.96	1.0	10.0	0.9°	300	0.7	55	34.0
23H4055-200-4A	0.96	2.0	1.7	0.9°	300	0.7	55	8.0
23H4055-300-4A	0.96	3.0	0.8	0.9°	300	0.7	55	4.5
23H4076-100-4A	1.5	1.0	1.1	0.9°	480	1.15	76	50.0
23H4076-200-4A	1.5	2.0	2.4	0.9°	480	1.15	76	13.0
23H4076-300-4A	1.5	3.0	8.5	0.9°	480	1.15	76	6.1

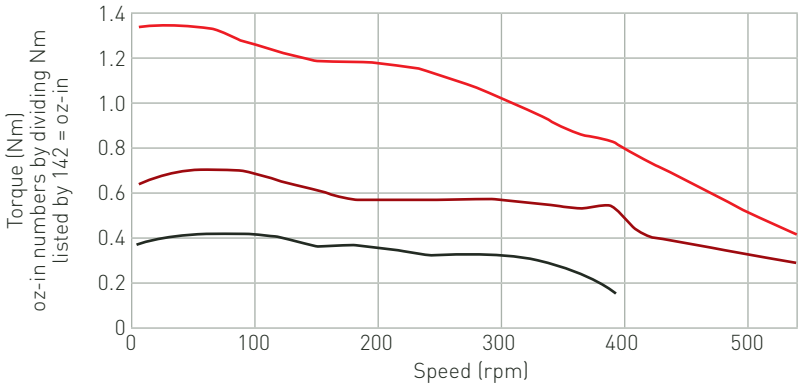
Dimension (mm) · Size 23H4 (57 mm) · 2 phase 0.9°:



Solid Works 3D models available

SIZE 23H3 (57 mm) · 3 phase 1.2°
Hybrid Stepper Motor

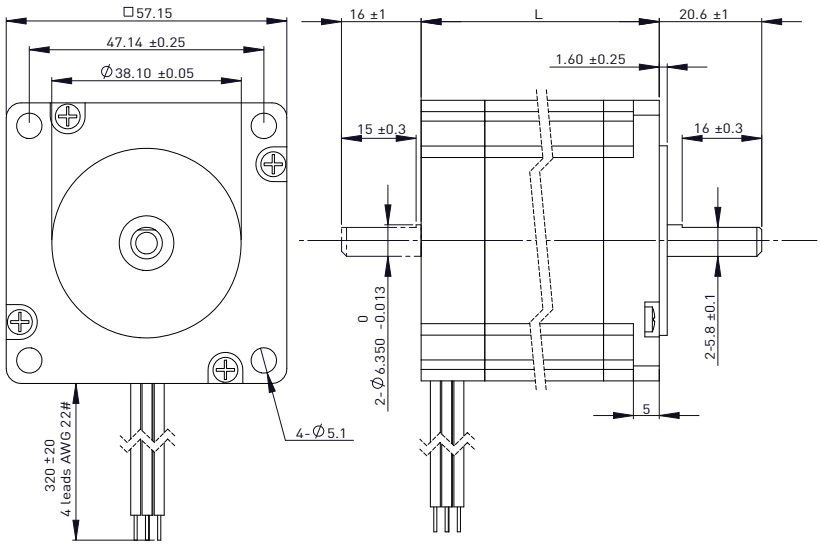
Pull out torque-speed curves 36 V DC Chopper driver, delta-connection



Specifications Please consult your authorized sales representative for custom specifications.

Model	Holding torque Nm	Current A/phase	Resi-stance (Ω)	Step angle	Rotor inertia gfcm²	Weight kg	Motor Length L (mm)
23H3046-520-6A	0.48	3.0	0.51	1.2°	120	0.5	46
23H3056-160-6A	0.85	0.95	5.9	1.2°	220	0.75	56
23H3056-580-6A	0.85	3.3	0.51	1.2°	220	0.75	56
23H3080-090-6A	1.4	0.52	29.0	1.2°	380	1.15	80
23H3080-190-6A	1.4	1.1	6.8	1.2°	380	1.15	80
23H3080-580-6A	1.4	3.3	0.8	1.2°	380	1.15	80

Dimension (mm) · Size 23H3 (57 mm) · 3 phase 1.2°:



Note: All drawings are First Angle Projection – ISO Standard

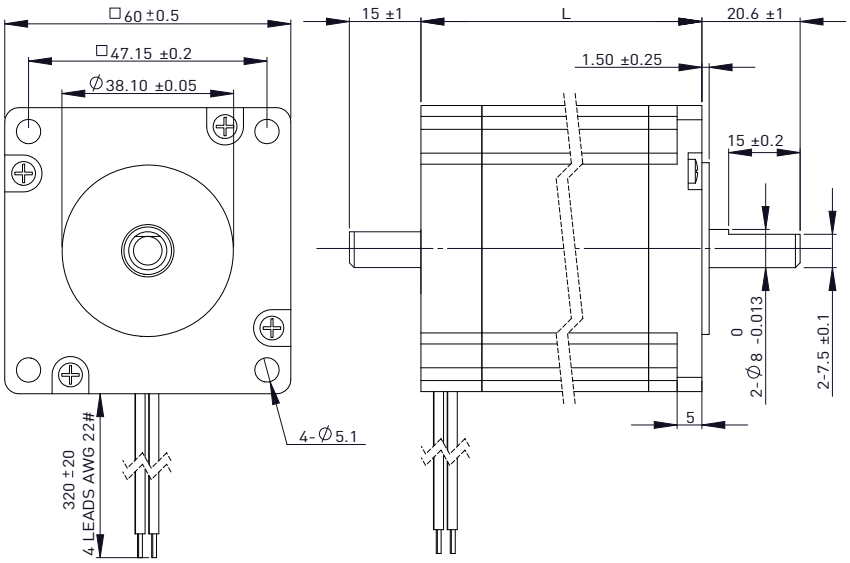
SIZE 24H2 (60 mm) · 2 phase 1.8°
Hybrid Stepper Motor

Contact your authorized sales representative for speed / torque information.

Specifications Please consult your authorized sales representative for custom specifications.

Model	Holding torque Nm	Current A/phase	Resi-stance (Ω)	Step angle	Rotor inertia gfcm²	Weight kg	Motor Length L (mm)
24H2048-100-4A	1.0	1.0	5.1	1.8°	130	0.6	48
24H2048-200-4A	1.0	2.0	1.3	1.8°	130	0.6	48
24H2048-400-4A	1.0	4.0	0.32	1.8°	130	0.6	48
24H2058-100-4A	1.4	1.0	5.8	1.8°	240	0.8	58
24H2058-200-4A	1.4	2.0	1.5	1.8°	240	0.8	58
24H2058-400-4A	1.4	4.0	0.36	1.8°	240	0.8	58
24H2070-100-4A	1.8	1.0	6.7	1.8°	350	1.0	70
24H2070-200-4A	1.8	2.0	1.7	1.8°	350	1.0	70
24H2070-400-4A	1.8	4.0	0.42	1.8°	350	1.0	70
24H2090-100-4A	2.4	1.0	8.0	1.8°	540	1.4	90
24H2090-200-4A	2.4	2.0	2.0	1.8°	540	1.4	90
24H2090-400-4A	2.4	4.0	0.5	1.8°	540	1.4	90

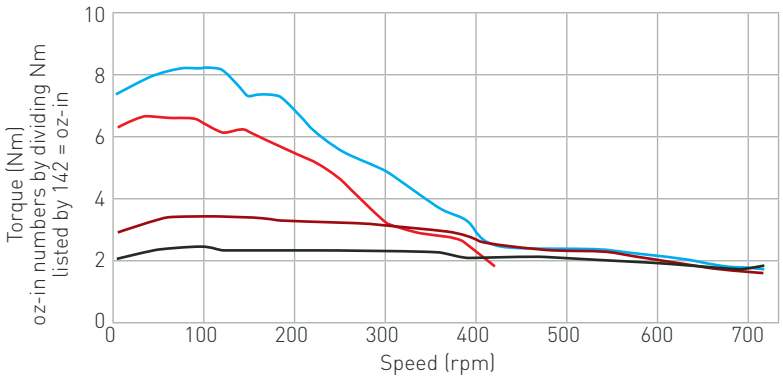
Dimension (mm) · Size 24H2 (60 mm) · 2 phase 1.8°:



Solid Works 3D models available

SIZE 34H2 (86 mm) · 2 phase 1.8°
Hybrid Stepper Motor

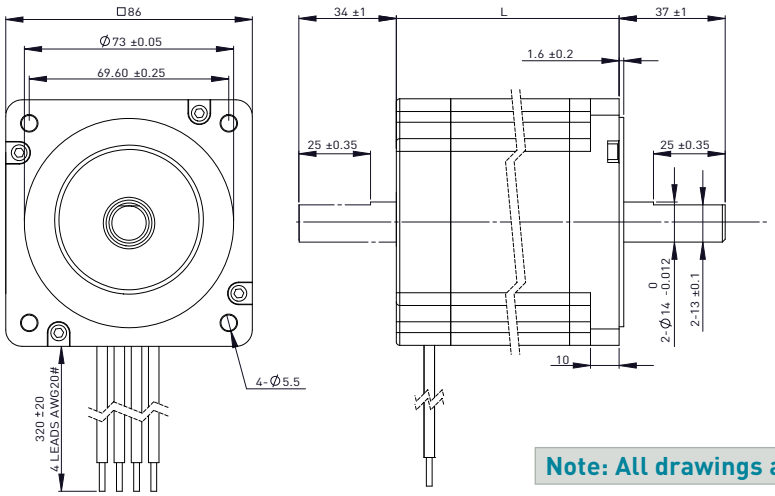
Pull out torque-speed curves 48 V DC Chopper driver, 2 phases



Specifications Please consult your authorized sales representative for custom specifications.

Model	Holding torque Nm	Current A/phase	Resi-stance (Ω)	Step angle	Rotor inertia gfcm²	Weight kg	Motor Length L (mm)	inductance mH
34H2060-300-4A	2.8	3.0	1.1	1.8°	1000	1.7	60	6.0
34H2060-450-4A	2.8	4.5	0.5	1.8°	1000	1.7	60	2.8
34H2060-600-4A	2.8	6.0	0.3	1.8°	1000	1.7	60	1.7
34H2080-300-4A	4.4	3.0	1.4	1.8°	1600	2.4	80	11.0
34H2080-450-4A	4.4	4.5	0.56	1.8°	1600	2.4	80	6.0
34H2080-600-4A	4.4	6.0	0.3	1.8°	1600	2.4	80	3.0
34H2120-300-4A	8.4	3.0	2.3	1.8°	3200	4.0	120	23.0
34H2120-450-4A	8.4	4.5	1.0	1.8°	3200	4.0	120	10.0
34H2120-600-4A	8.4	6.0	0.6	1.8°	3200	4.0	120	5.8
34H2160-400-4A	12.0	4.0	1.4	1.8°	4800	5.5	160	18.0
34H2160-600-4A	12.0	6.0	0.7	1.8°	4800	5.5	160	8.0
34H2160-800-4A	12.0	8.0	0.38	1.8°	4800	5.5	160	4.5

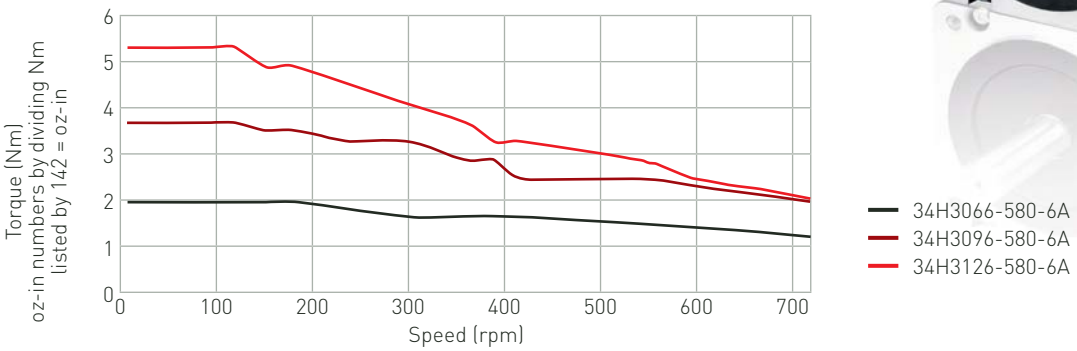
Dimension (mm) · Size 34H2 (86 mm) · 2 phase 1.8°:



Note: All drawings are First Angle Projection – ISO Standard

SIZE 34H3 (86 mm) · 3 phase 1.2°
Hybrid Stepper Motor

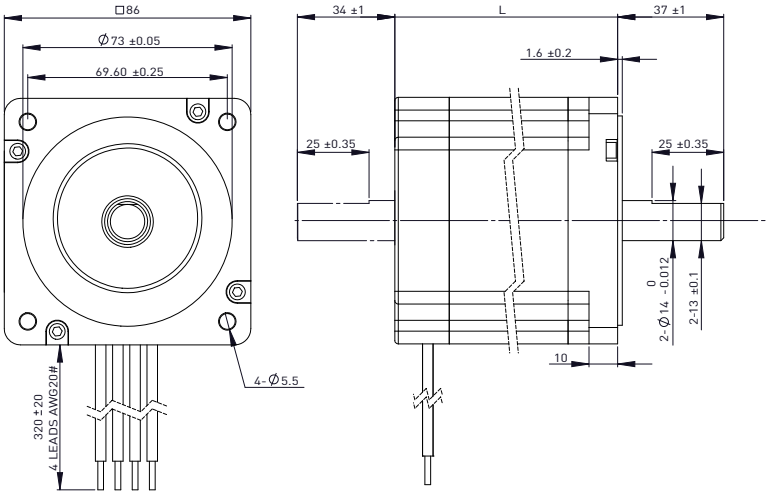
Pull out torque-speed curves 80 V AC Chopper driver, 5.5 A, delta-connection



Specifications Please consult your authorized sales representative for custom specifications.

Model	Holding torque Nm	Current A/phase	Resi-stance (Ω)	Step angle	Rotor inertia gfcm²	Weight kg	Motor Length L (mm)
34H3066-180-6A	2.6	1.0	8.3	1.2°	1100	1.7	66
34H3066-440-6A	2.6	2.5	1.4	1.2°	1100	1.7	66
34H3066-580-6A	2.6	3.3	0.83	1.2°	1100	1.7	66
34H3096-200-6A	5.4	1.1	10.3	1.2°	2200	2.8	96
34H3096-500-6A	5.4	3.0	1.74	1.2°	2200	2.8	96
34H3096-580-6A	5.4	3.3	1.3	1.2°	2200	2.8	96
34H3126-230-6A	7.6	1.3	11.2	1.2°	3300	3.8	126
34H3126-500-6A	7.6	3.0	2.4	1.2°	3300	3.8	126
34H3126-580-6A	7.6	3.3	1.8	1.2°	3300	3.8	126

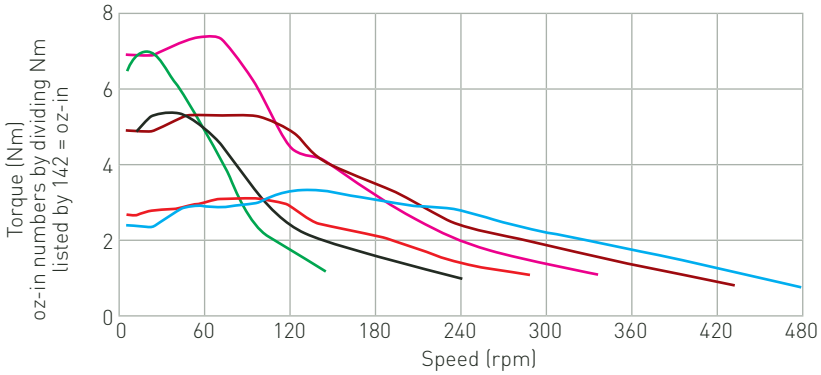
Dimension (mm) · Size 34H3 (86 mm) · 3 phase 1.2°:



Solid Works 3D models available

SIZE 34H5 (86 mm) · 5 phase 0.72°
Hybrid Stepper Motor

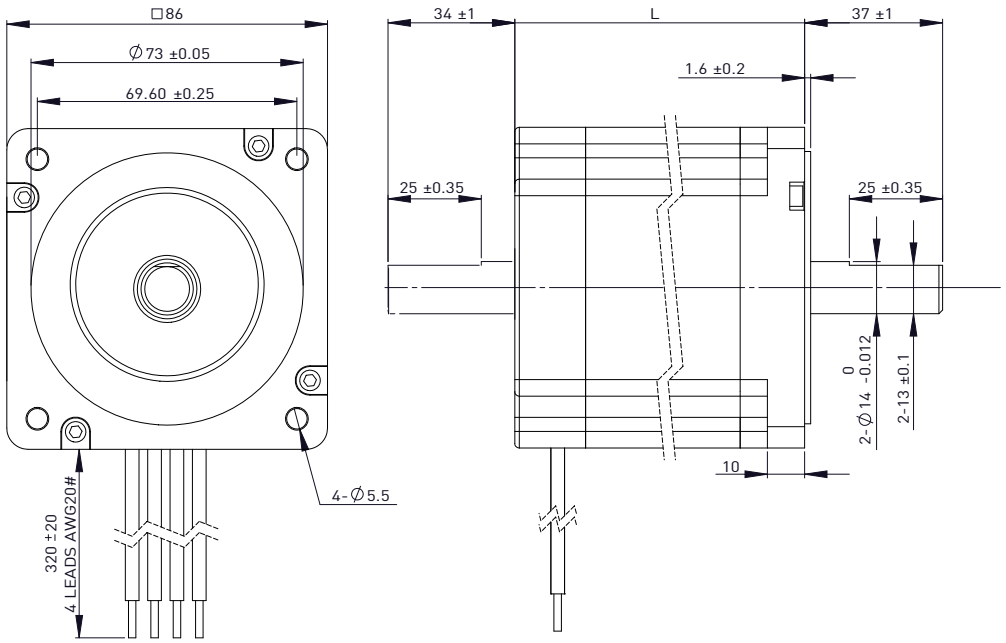
Pull out torque-speed curves 100 V AC Chopper driver



Specifications Please consult your authorized sales representative for custom specifications.

Model	Holding torque Nm	Current A/phase	Resi-stance (Ω)	Step angle	Rotor inertia gfcm²	Weight kg	Motor Length L (mm)
34H5066-140-5A	2	1.4	1.5	0.72°	1400	1.7	66
34H5066-280-5A	2	2.8	0.24	0.72°	1400	1.7	66
34H5096-140-5A	4	1.4	2.3	0.72°	2700	2.8	96
34H5096-280-5A	4	2.8	0.52	0.72°	2700	2.8	96
34H5126-140-5A	6	1.4	3.0	0.72°	4000	3.8	126
34H5126-280-5A	6	2.8	0.8	0.72°	4000	3.8	126

Dimension (mm) · Size 34H5 (86 mm) · 5 phase 0.72°:

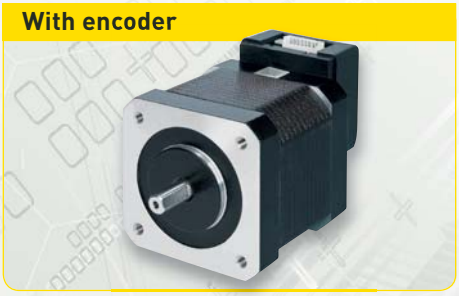


Custom Solutions

Driver

With gear head

With encoder



Custom Rear End Caps

With brake

With pully

IP64/68

Shaft options

WARRANTY

Twenty Four month limited warranty

Seller warrants its products dilivered hereunder to conform to stated specifications and to be free from defects in materials and workmanship. This warranty shall not apply to any product which shall have been improperly installed or subjected to misuse or neglect or which has been repaired or altered expect by seller's accredited representative, nor to any product which has been subjected to accident.

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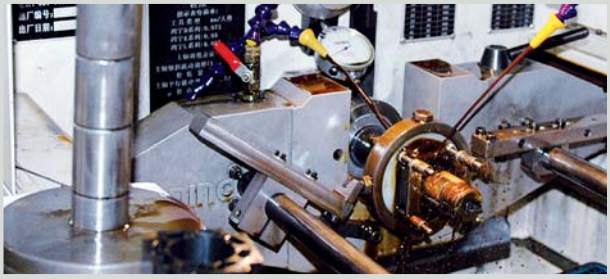


GLOSSARY

AMPLIFIER	Associated power electronics to drive the motor.
AXIAL LOAD	A load that is exerted at the center line of the motor shaft.
AXIAL PLAY	The shaft displacement axially, due to the reversal of an axial force.
BACK EMF	(Back Electromotive Force) A reversed bias generated by rotation of the magnetic field (rotor of the motor) across a stator's windings. Can damage drive electronics.
BIPOLAR DRIVE	Refers to a specific type of driver that is connected to a step motor configured for a 2-phase operation. The 4 electrical cycles required for operation are generated when the direction of current is reversed in each motor phase. A bipolar driver can be untilized with a 4, 6, or 8 lead motor.
CHOPPER DRIVE	Most common driver on the market. Uses a 4 transitor bridge with recirculating diodes and a sense resistor that maintains a feedback voltage proportional to motor current.
CLOCK	A pulse generator which controls the timing of switching circuits that control the speed of the step motor.
COMPLIANT COUPLING	Limited motion of one shaft without motion of a coupled shaft.
DAMPER	A device that attaches to the stepper motor shaft to absorb energy. May be useful in damping oscillations or preventing resonances.
DETENT TORQUE	The torque required to rotate the motor output shaft with no current applied on the windings.
HOLDING TORQUE	The torque required to rotate the motor output shaft while the windings are energized with a steady state DC current.
INERTIA	The measure of a body's resistance to acceleration or deceleration.
IP RATING	A rating that establishes the ability of the motor to withstand ingress of dirt particles or water.
PHASE INDUCTANCE	The impedance to flow of current relative to the voltage frequency. A mechanical equivalent would be the principle of inertia.
PHASE RESISTANCE	The impedance of flow of current due to the coil resistance, which remains essentially the same from standstill through maximum step frequency. A mechanical equivalent is friction.
PULL IN TORQUE	This is the measure of the torque produced by a stepper motor when it is operated without an acceleration state. At low speeds the stepper motor can synchronise itself with an applied step frequency, and this pull-in torque must overcome friction and inertia.
PULL OUT TORQUE	Measured by accelerating the motor to the desire speed and then increasing the torque loading until the motor stalls or misses steps.
PULSE RATE	The number of pules per second (pps) applied to the windings of the motor. This is determined by the frequency of pulses by the motor drive (amplifier).
RADIAL LOAD	A load exerted at 90 degrees or perpendicular to a screw.
RESOLUTION	Incremental rotary distance the motor's output shaft will move per input pulse.
RESONANCE	Vibration occuring when a system is a mechanical system is in an unstable range.
STEP ANGLE	The rotation of the rotor caused by each step, measured in degrees.
TORQUE TO INERTIA RATIO	Holding torque divided by rotor inertia
TOTAL INDICATED RUNOUT	A measurement of the amount of straightness of a shaft

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