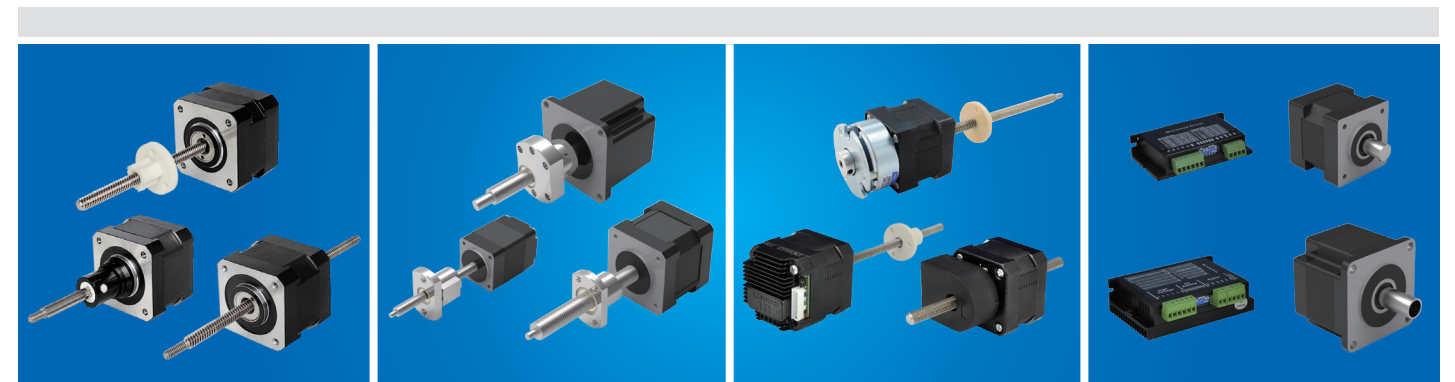


WHEELER™

Linear Motion



LINEAR MOTION CATALOG AND DESIGN GUIDE

WHEELER™
Linear Motion

Changzhou Wheeler Motor Co.,LTD

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Company introduction

Changzhou Wheeler Linear Motors Co., Ltd is located in New District, Changzhou, Jiangsu, China. The company is devoting to custom linear motion solution, providing a broad range of sophisticated, cost-effective, application-specific motion control products including stepper motor-based linear actuator, stepper motor, lead screws, drive and spline shafts.

We believe that Wheeler towards global vision and constant innovation is to establish win-win relationship with society, environment, clients, shareholders and employees, meanwhile assume more social responsibility.

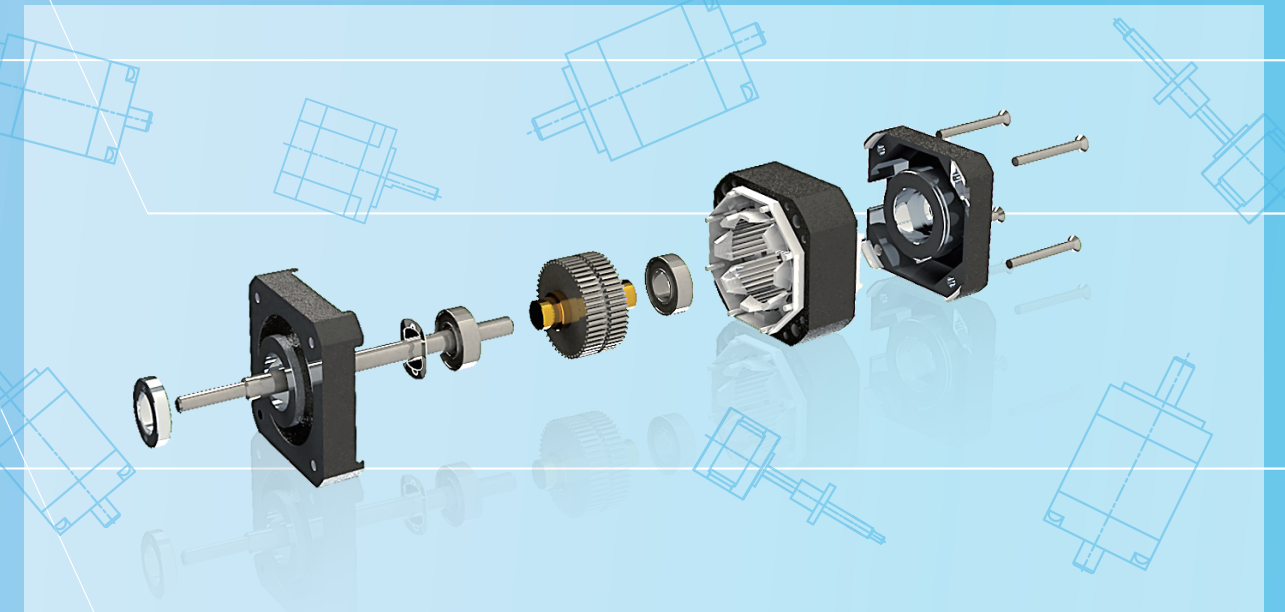
Wheeler brand stepper motor linear actuators are widely used in medical, analytical instruments, automation, new energy fields and so on. We not only provide standard product, but specialize in customized designs to solve complex engineering problems requiring precision linear motion.

We have put a great deal of time and effort into R&D, manufacturing, quality control, sales and customer service, which is a guarantee that we have effective commitment to end customers.

It's Wheeler that ensures your design as much more precise as possible.



Why choose Linear Stepper Motor?

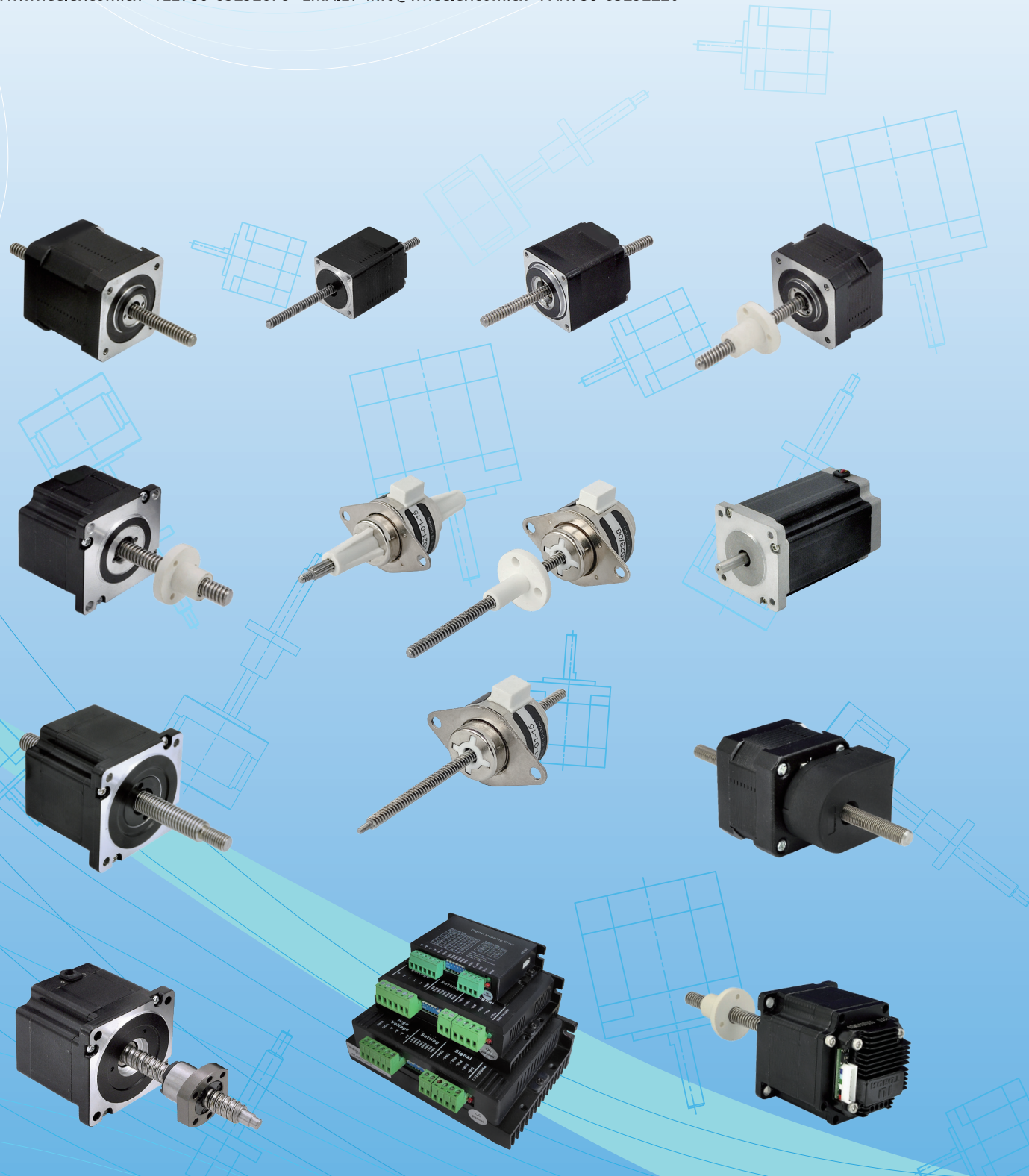


Linear Stepper Motor Application

- Medical
- Instrument
- Communication
- Automation
- Robotics
- New energy
- 3D Printing

Linear Stepper motor

- Captive
- External
- Non-captive



Identifying Part Numbers for Hybrid Linear Actuators

42 C A 4 A - 2.33 - 001 - 302 - E
 1 2 3 4 5 6 7 8 9

1. Series Number

Code	21	28	35	42	57	34
Motor Series	21000	28000	35000	42000	57000	86000

2. Type

C=Captive linear Actuator
 E=External Linear Actuator
 N=Non-captive Linear Actuator
 T=Special Linear Actuator

3. Step Angle

A=1.8 Degree
 B=0.9 Degree
 C=1.8 degree double stack actuator
 D=0.9 degree double stack actuator

4. The Number Of Leads

4= bipolar (4 leads)
 6= Unipolar (6 leads)

5. The travel per step

All the travel per step is available from detailed product

6. Voltage

05= Operating Voltage 5VDC
 12= Operating Voltage 12VDC

7. Custom part numbers or serial numbers

001=Unique number for each customer, please contact Wheeler Sales Engineer for detailed serial number

8. Captive linear Actuator travel code (Externally driven and through shaft motors are blank)

Code	301	302	303	304	305	306	307	308
Stroke(mm)	9	12.7	19.05	25.4	31.8	38.1	50.8	63.5

9. Special remarks

A= Anti-backlash nut
 B= Ball screw Actuator
 C= Copper nut
 E= Encoder
 S= Special uses(brakes, custom nuts, special requirements, etc)

Example :

Wheeler Part Number 42CA4A-2.33-001-302-E
 Description 42000 series linear stepper actuator
 Captive linear actuator
 1.8 degree single stack actuator
 4 leads
 'A' Lead : 1.5875mm (0.0625") lead
 Operating Voltage 2.33VDC
 Serial number 001
 Captive linear actuator stroke 12.7mm (0.5")
 Encoder

Wheeler Part Number 21EA4AC-2.5-001-A
 Description 21000 series linear stepper actuator
 External Linear actuator
 1.8 degree single stack actuator
 4 leads
 'AC' Lead : 2mm (0.0787") lead
 Operating Voltage 2.5VDC
 Serial number 001
 Anti-backlash nut

Diameter and Pitch List

Step Code	Step	Lead	21000 Series	28000 Series	35000 Series		42000 Series			57000 Series	86000 Series	
			mm	mm	φ3.5	φ4.76	φ5.54	φ6.35	φ5.54	φ6.35	φ8	φ9.53
U	0.001524	0.3048	●									
N	0.003048	0.6096	●		●		●					
7	0.003175	0.635		●						●		
P	0.00396875	0.79375				●		●				
AB	0.005	1	●			●		●				
K	0.006096	1.2192	●		●		●					
9	0.00635	1.27		●						●		
A	0.0079375	1.5875				●		●		●		
AC	0.01	2	●							●		
S	0.010584	2.1168								●		
J	0.012192	2.4384	●		●		●					
3	0.0127	2.54		●		●		●		●	●	
B	0.015875	3.175				●		●				
AD	0.02	4	●							●		
T	0.021166	4.2332								●		
Q	0.024384	4.8768			●		●					
1	0.0254	5.08		●						●		
C	0.03175	6.35				●		●		●	●	
AE	0.04	8	●							●		
R	0.048768	9.7536			●		●					
MJ	0.047625	9.525								●		
AG	0.05	10								●		
2	0.0508	10.16		●						●		
Y	0.0635	12.7				●		●		●	●	
MD	0.075	15								●		
Z	0.127	25.4				●		●		●	●	

Note: Various screw strokes are available to accommodate any customer requirement

21000 SERIES SIZE 8 LINEAR STEPPER ACTUATOR



Size8:21mm Hybrid Linear Stepper Motor(1.8°Step Angle)											
Captive	Non-captive	External Lin.	Wiring	Rated voltage	Rated current	Resistance /phase	Inductance /phase	Power consumption	Temperature rise	Weight	Insulation resistance
21CA4(X)-V	21NA4(X)-V	21EA4(X)-V	Bipolar	2.5V	0.49A	5.1Ω	1.5mH	2.45W	75°C	43g	20MΩ
				5V	0.24A	20.4Ω	5mH				
				7.5V	0.16A	45.9Ω	11.7mH				

Code	Leadscrew Thread Dimension		
	Diameter	Step	Lead
U	9/64	0.00006	0.012
N	9/64	0.00012	0.024
K	9/64	0.00024	0.048
J	9/64	0.00048	0.096

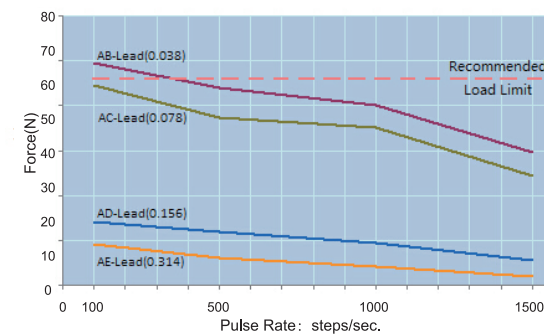
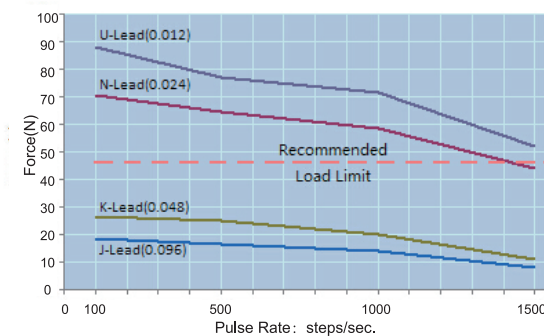
(Units:Inches)

Code	Leadscrew Thread Dimension		
	Diameter	Step	Lead
AB	9/64	0.00019	0.038
AC	9/64	0.00039	0.078
AD	9/64	0.00078	0.156
AE	9/64	0.00157	0.314

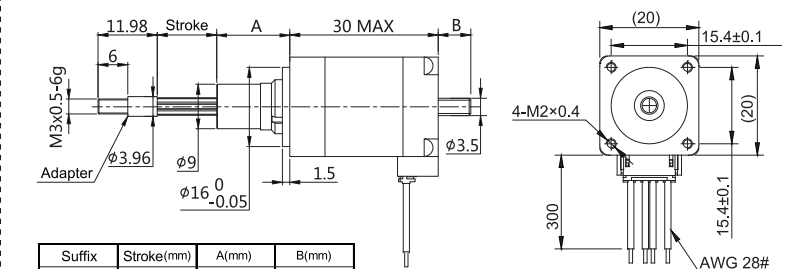
(Units:Inches)

Force vs. Pulse Rate

Chopper drive : motor 2.5V and power supply 24V

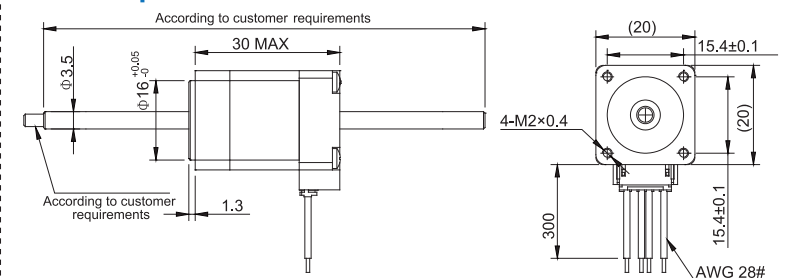


Captive

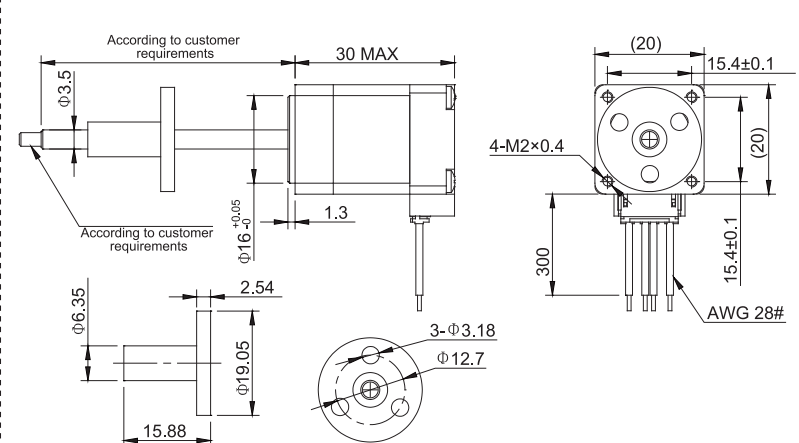


Suffix	Stroke(mm)	A(mm)	B(mm)
301	9	11.1	1.58
302	12.7	14.81	5.28
303	19.1	21.16	11.63
304	25.4	27.51	17.98
305	31.8	33.86	24.33
306	38.1	40.21	30.68

Non-Captive



External Linear



21000 SERIES SIZE 8
DOUBLE STACK HYBRID
LINEAR STEPPER
ACTUATOR



Size8:21mm Double Stack Hybrid Linear Stepper Motor(1.8°Step Angle)											
Captive	Non-captive	External Lin.	Wiring	Rated voltage	Rated current	Resistance /phase	Inductance /phase	Power consumption	Temperature rise	Weight	Insulation resistance
21CC4(X)-V	21NC4(X)-V	21EC4(X)-V	Bipolar	2.5V	1.32A	1.9Ω	1.91mH	6.5W	75°C	78g	20MΩ
				5V	0.65A	7.7Ω	7.02mH				
				7.5V	0.43A	17.3Ω	15.95mH				

Code	Leadscrew Thread Dimension		
	Diameter	Step	Lead
U	9/64	0.00006	0.012
N	9/64	0.00012	0.024
K	9/64	0.00024	0.048
J	9/64	0.00048	0.096

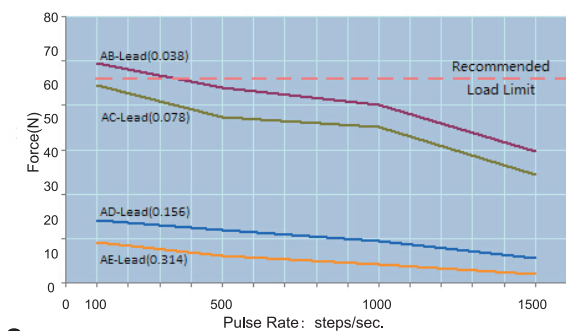
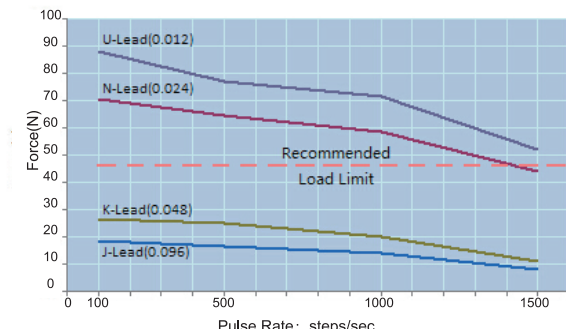
(Units:Inches)

Code	Leadscrew Thread Dimension		
	Diameter	Step	Lead
AB	9/64	0.00019	0.038
AC	9/64	0.00039	0.078
AD	9/64	0.00078	0.156
AE	9/64	0.00157	0.314

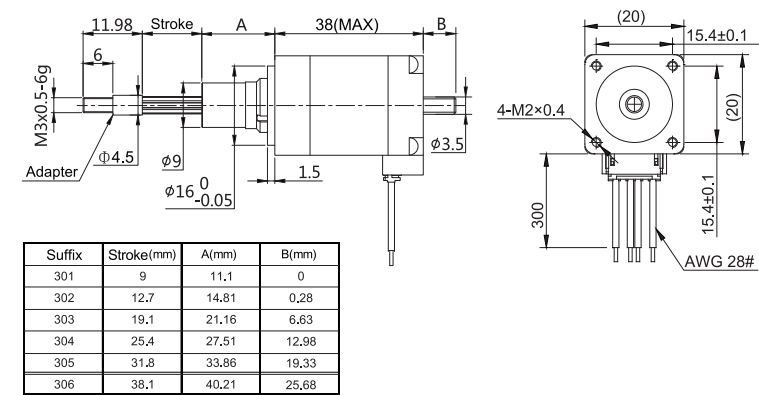
(Units:Inches)

Force vs.Pulse Rate

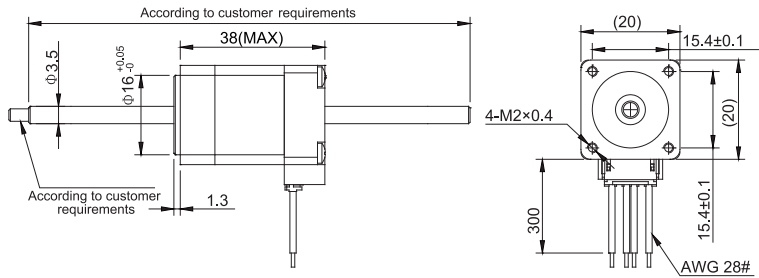
Chopper drive : motor 2.5V and power supply 24V



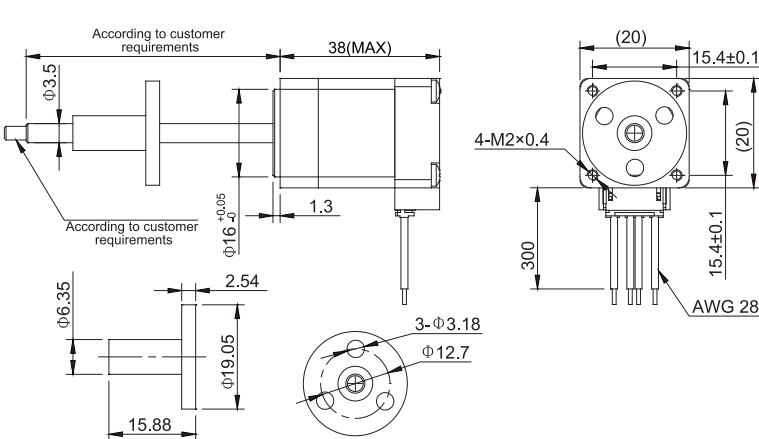
Captive



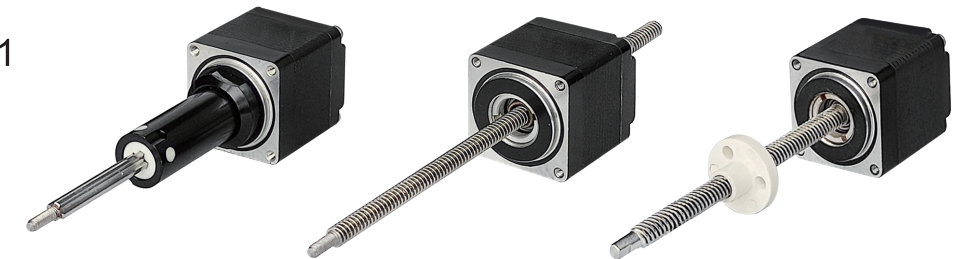
Non-Captive



External Linear



28000 SERIES SIZE 11
LINEAR STEPPER
ACTUATOR



Size11:28mm Hybrid Linear Stepper Motor(1.8°Step Angle)											
Captive	Non-captive	External Lin.	Wiring	Rated voltage	Rated current	Resistance /phase	Inductance /phase	Power consumption	Temperature rise	Weight	Insulation resistance
28CA4(X)-V	28NA4(X)-V	28EA4(X)-V	Bipolar	2.1V	1A	2.1Ω	1.5mH	4.2W	75°C	119g	20MΩ
				5V	0.42A	11.9Ω	6.7mH				
				12V	0.18A	68.6Ω	39mH				

Code	Leadscrew Thread Dimension		
	Diameter	Step	Lead
7	3/16	0.000125	0.026
9	3/16	0.0025	0.5

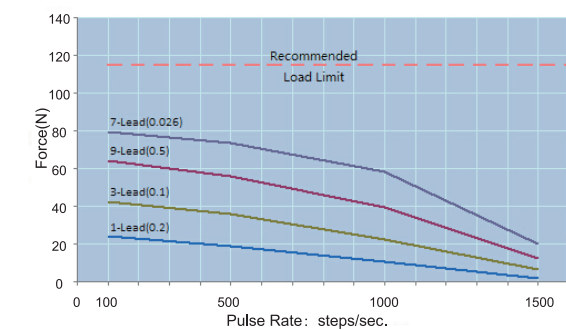
(Units:Inches)

Code	Leadscrew Thread Dimension		
	Diameter	Step	Lead
3	3/16	0.0005	0.1
1	3/16	0.001	0.2

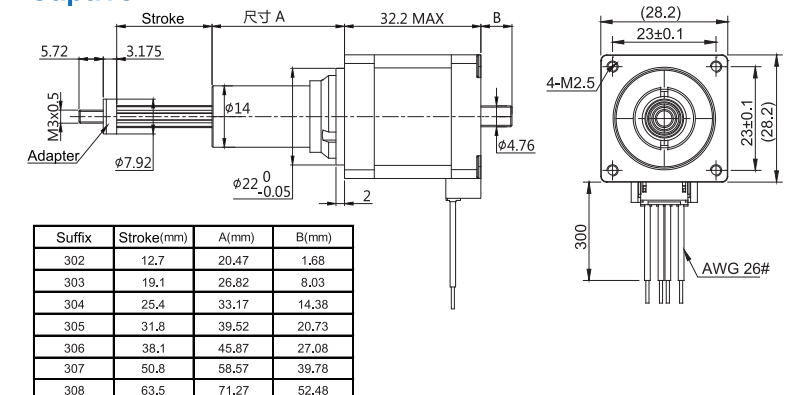
(Units:Inches)

Force vs.Pulse Rate

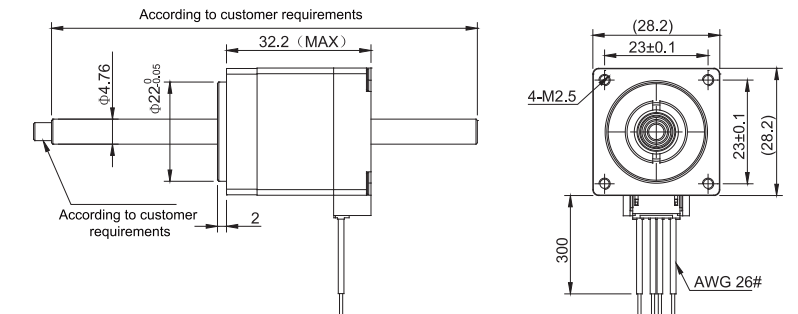
Chopper drive : motor 2.1V and power supply 24V



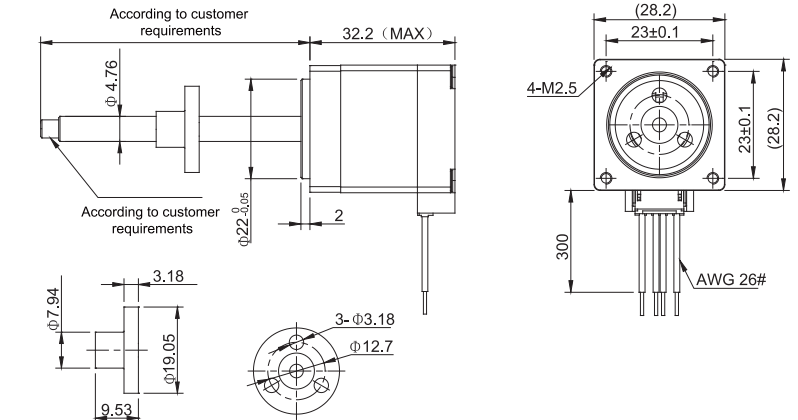
Captive



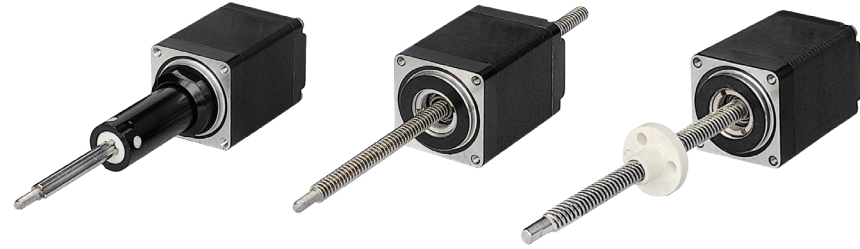
Non-Captive



External Linear



28000 SERIES SIZE 11
DOUBLE STACK HYBRID
LINEAR STEPPER
ACTUATOR



Size11:28mm Double Stack Hybrid Linear Stepper Motor(1.8°Step Angle)											
Captive	Non-captive	External Lin.	Wiring	Rated voltage	Rated current	Resistance /phase	Inductance /phase	Power consumption	Temperature rise	Weight	Insulation resistance
28CC4(X)-V	28NC4(X)-V	28EC4(X)-V	Bipolar	2.1V	1.9A	1.1Ω	1.1mH	7.5W	75°C	180g	20MΩ
				5V	0.75A	6.7Ω	5.8mH				
				12V	0.35A	34.8Ω	35.6mH				

Code	Leadscrew Thread Dimension		
	Diameter	Step	Lead
7	3/16	0.00013	0.026
9	3/16	0.0025	0.5

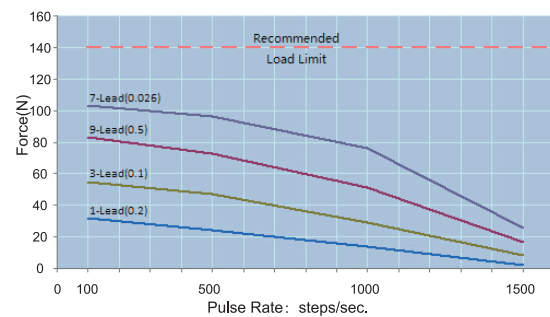
(Units:Inches)

Code	Leadscrew Thread Dimension		
	Diameter	Step	Lead
3	3/16	0.0005	0.1
1	3/16	0.001	0.2

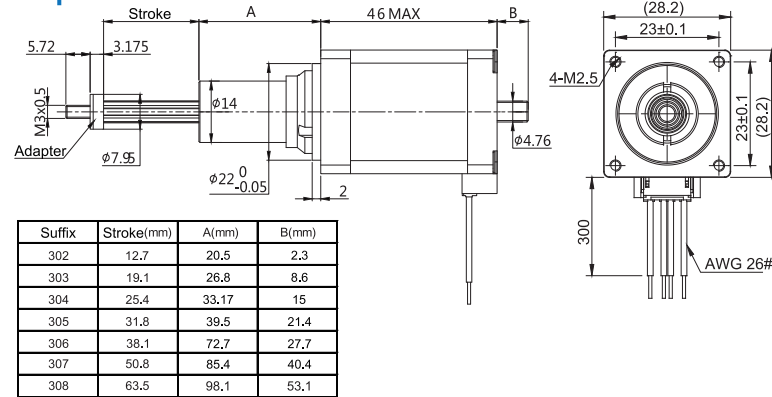
(Units:Inches)

Force vs.Pulse Rate

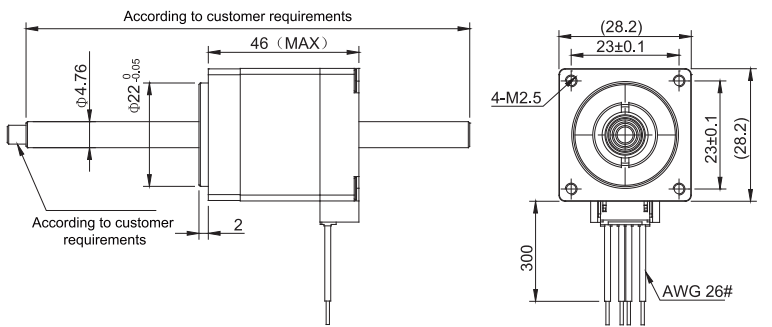
Chopper drive : motor 2.1V and power supply 24V



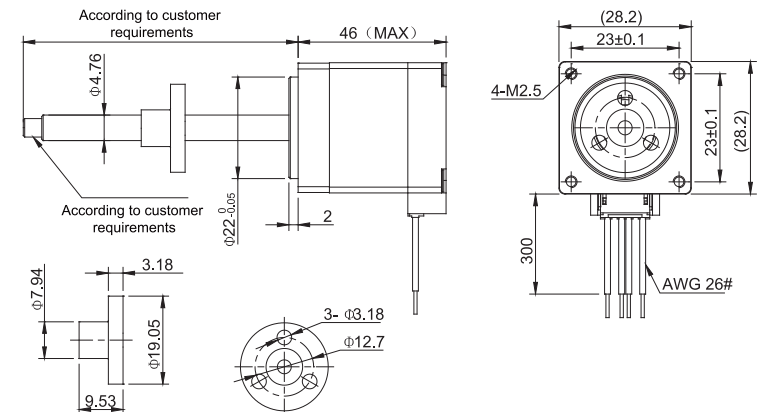
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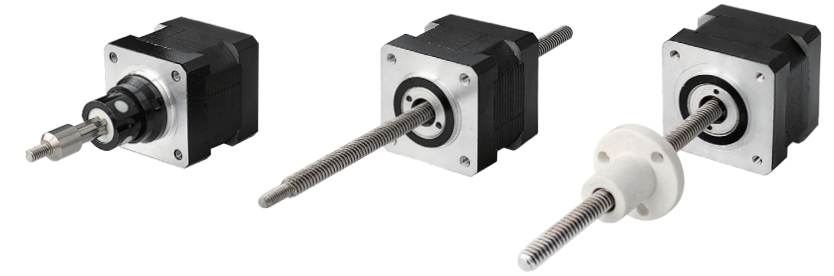
Non-Captive



External Linear



35000 SERIES SIZE 14
LINEAR STEPPER
ACTUATOR



Size11:28mm Hybrid Linear Stepper Motor(1.8°Step Angle)											
Captive	Non-captive	External Lin.	Wiring	Rated voltage	Rated current	Resistance /phase	Inductance /phase	Power consumption	Temperature rise	Weight	Insulation resistance
35CA4(X)-V	35NA4(X)-V	35EA4(X)-V	Bipolar	2.33V	1.25A	1.86Ω	2.8mH	5.7W	75°C	162g	20MΩ
				5V	0.57A	8.8Ω	13mH				
				12V	0.24A	50.5Ω	60mH				

Code	Leadscrew Thread Dimension		
	Diameter	Step	Lead
N	7/32	0.00012	0.024
J	7/32	0.00048	0.096
Q	7/32	0.00096	0.192
R	7/32	0.00192	0.384

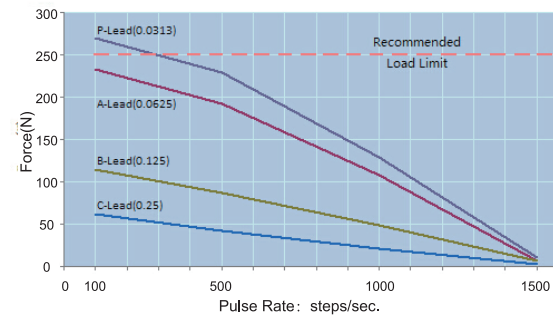
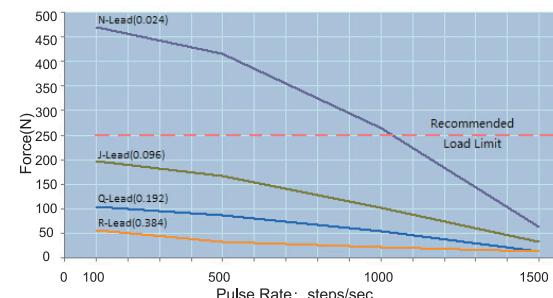
(Units:Inches)

Code	Leadscrew Thread Dimension		
	Diameter	Step	Lead
P	1/4	0.00015625	0.03125
A	1/4	0.0003125	0.0625
B	1/4	0.000625	0.125
C	1/4	0.00125	0.25

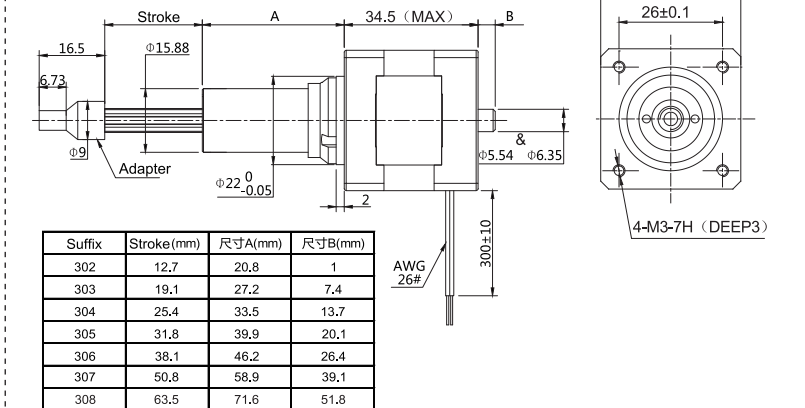
(Units:Inches)

Force vs.Pulse Rate

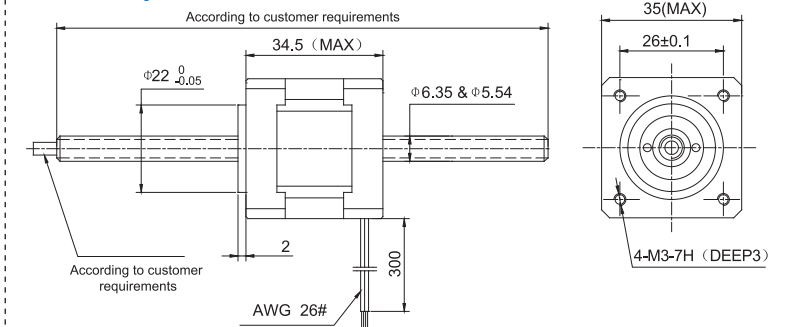
Chopper drive : motor 2.33V and power supply 24V



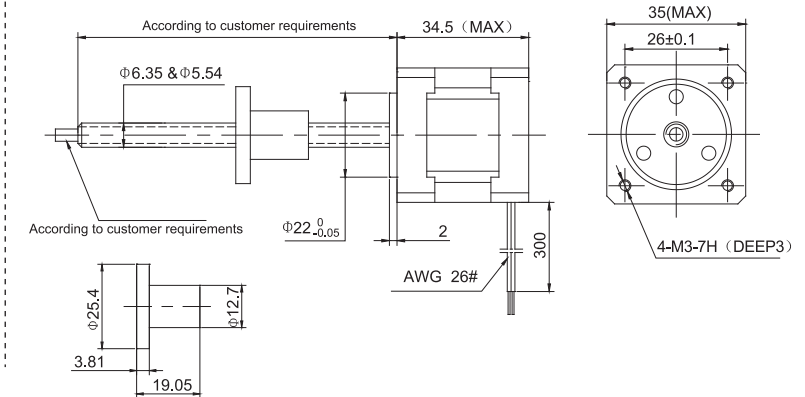
Captive



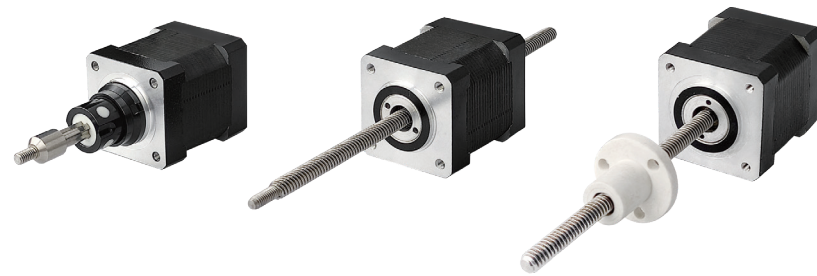
Non-Captive



External Linear



**35000 SERIES SIZE 14
DOUBLE STACK HYBRID
LINEAR STEPPER
ACTUATOR**



Size11:28mm Double Stack Hybrid Linear Stepper Motor(1.8°Step Angle)											
Captive	Non-captive	External Lin.	Wiring	Rated voltage	Rated current	Resistance /phase	Inductance /phase	Power consumption	Temperature rise	Weight	Insulation resistance
35CC4(X)-V	35NC4(X)-V	35EC4(X)-V	Bipolar	2.33V	2A	1.2Ω	1.95mH	9.1W	75°C	240g	20MΩ
				5V	0.91A	5.5Ω	7.63mH				
				12V	0.38A	31.6Ω	65.1mH				

Code	Leadscrew Thread Dimension		
	Diameter	Step	Lead
N	7/32	0.00012	0.024
J	7/32	0.00048	0.096
Q	7/32	0.00096	0.192
R	7/32	0.00192	0.384

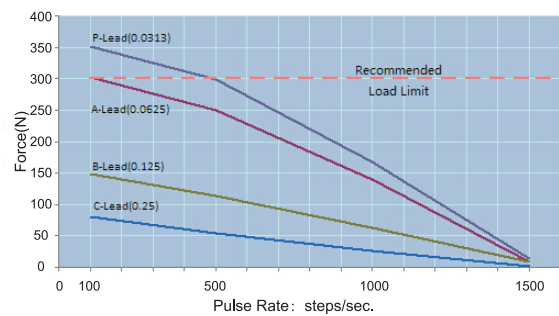
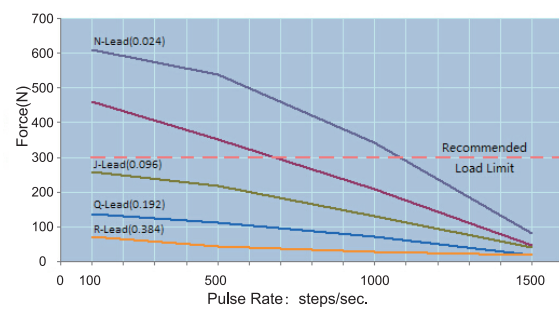
(Units:Inches)

Code	Leadscrew Thread Dimension		
	Diameter	Step	Lead
P	1/4	0.00015625	0.03125
A	1/4	0.0003125	0.0625
B	1/4	0.000625	0.125
C	1/4	0.00125	0.25

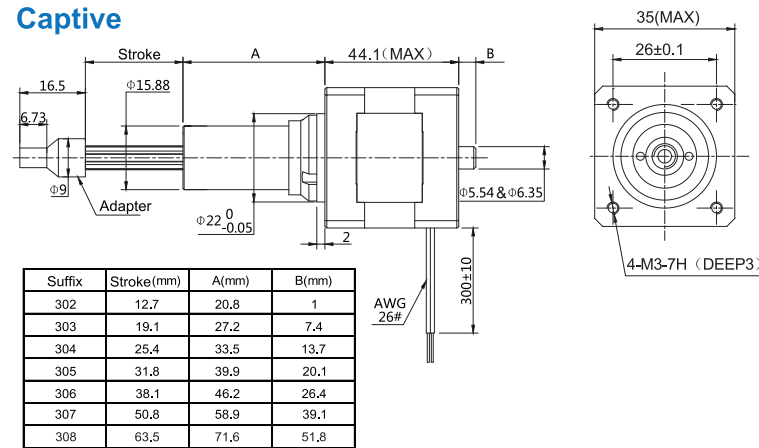
(Units:Inches)

Force vs.Pulse Rate

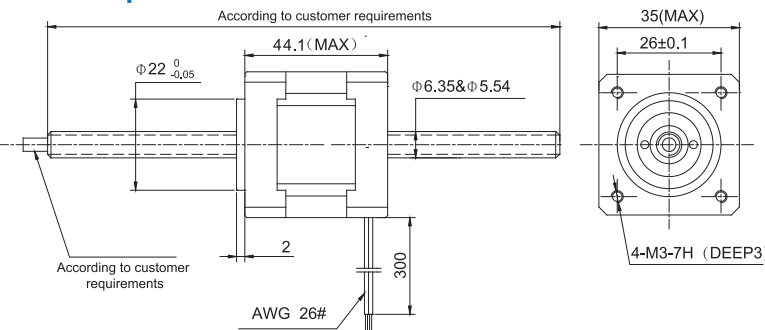
Chopper drive : motor 2.33V and power supply 24V



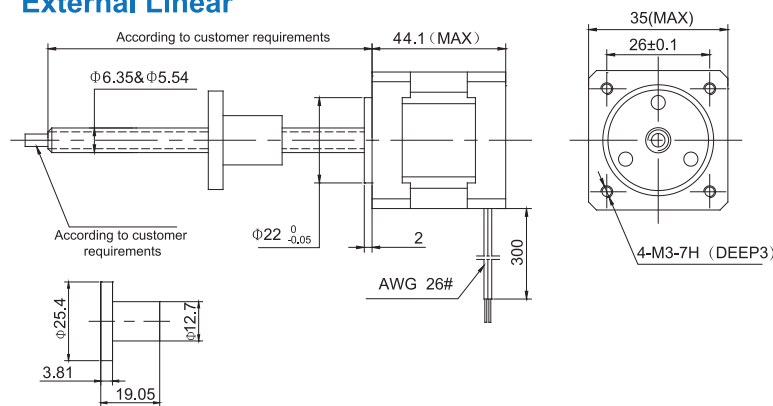
Captive



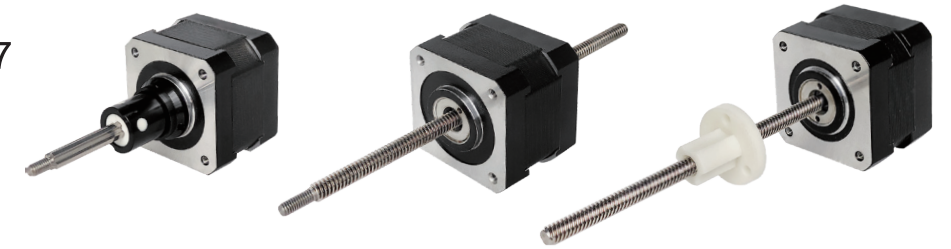
Non-Captive



External Linear



**42000 SERIES SIZE 17
LINEAR STEPPER
ACTUATOR**



Size17:42mm Hybrid Linear Stepper Motor(1.8°Step Angle)											
Captive	Non-captive	External Lin.	Wiring	Rated voltage	Rated current	Resistance /phase	Inductance /phase	Power consumption	Temperature rise	Weight	Insulation resistance
42CA4(X)-V	42NA4(X)-V	42EA4(X)-V	Bipolar	2.33V	1.5A	1.56Ω	1.9mH	7W	75°C	241g	20MΩ
				5V	0.7A	7.2Ω	10.6mH				
				12V	0.29A	41.5Ω	73.3mH				

Code	Leadscrew Thread Dimension		
	Diameter	Step	Lead
N	7/32	0.00012	0.024
J	7/32	0.00048	0.096
Q	7/32	0.00096	0.192
R	7/32	0.00192	0.384

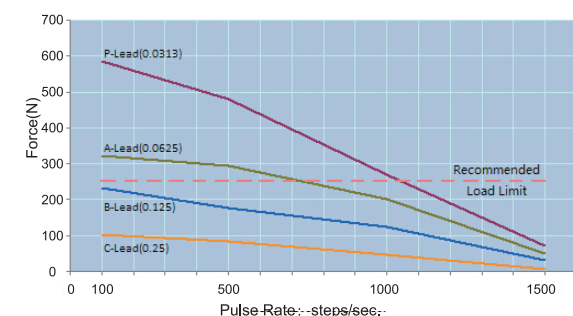
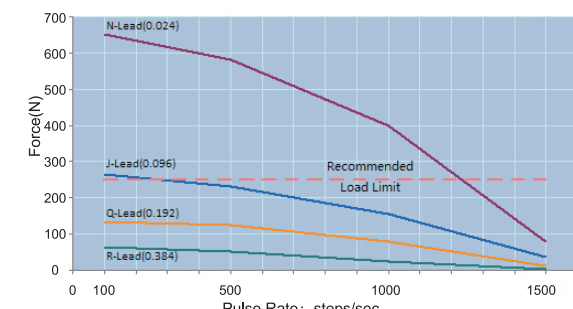
(Units:Inches)

Code	Leadscrew Thread Dimension		
	Diameter	Step	Lead
P	1/4	0.00015625	0.03125
A	1/4	0.0003125	0.0625
B	1/4	0.000625	0.125
C	1/4	0.00125	0.25

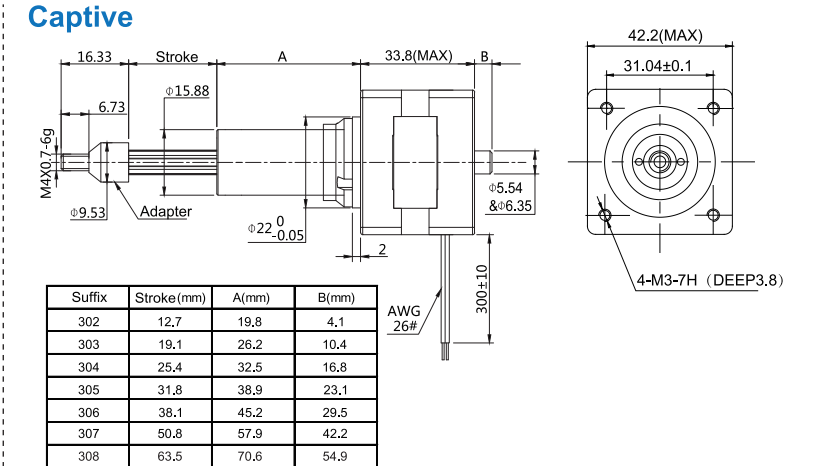
(Units:Inches)

Force vs.Pulse Rate

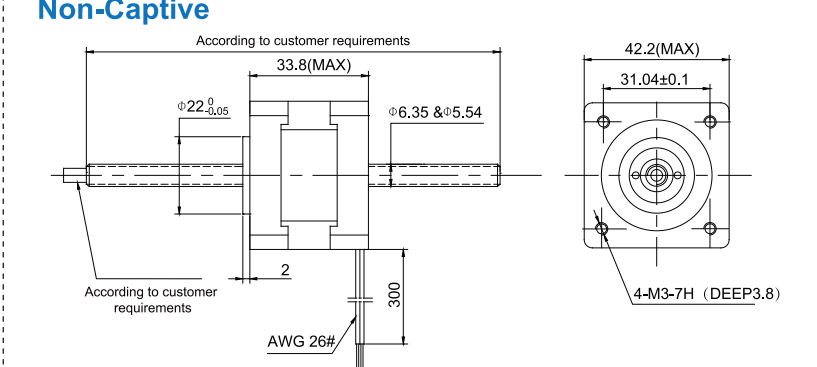
Chopper drive : motor 2.33V and power supply 24V



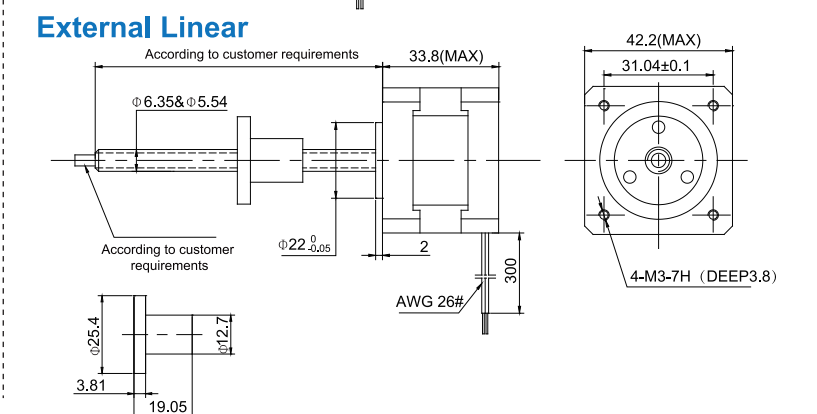
Captive



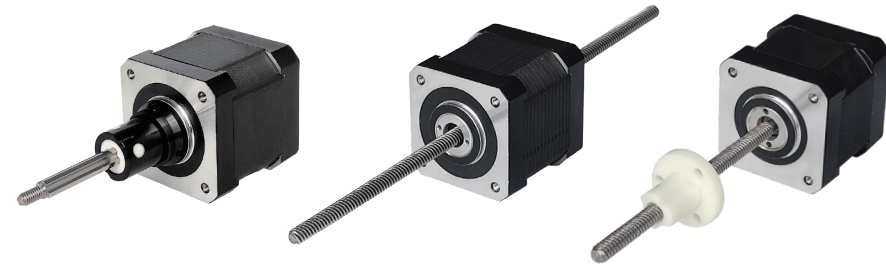
Non-Captive



External Linear



**42000 SERIES SIZE 17
DOUBLE STACK HYBRID
LINEAR STEPPER
ACTUATOR**



Size11:28mm Double Stack Hybrid Linear Stepper Motor(1.8°Step Angle)											
Captive	Non-captive	External Lin.	Wiring	Rated voltage	Rated current	Resistance /phase	Inductance /phase	Power consumption	Temperature rise	Weight	Insulation resistance
42CC4(X)-V	42NC4(X)-V	42EC4(X)-V	Bipolar	2.33V	2.6A	0.9Ω	1.9mH	14W	75°C	352g	20MΩ
				5V	1.3A	3.8Ω	10.6mH				
				12V	0.55A	21.9Ω	73.3mH				

Code	Leadscrew Thread Dimension		
	Diameter	Step	Lead
N	7/32	0.00012	0.024
J	7/32	0.00048	0.096
Q	7/32	0.00096	0.192
R	7/32	0.00192	0.384

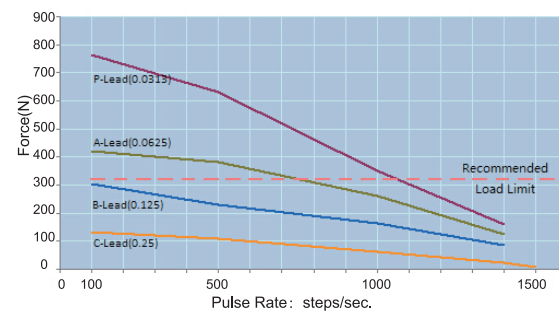
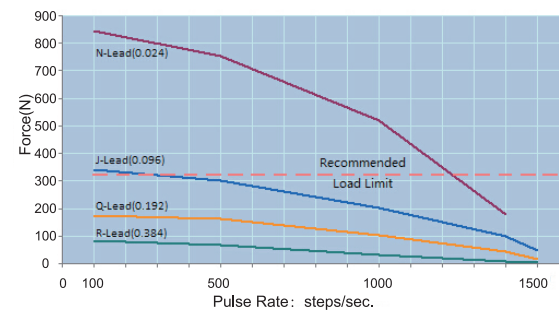
(Units:Inches)

Code	Leadscrew Thread Dimension		
	Diameter	Step	Lead
P	1/4	0.00015625	0.03125
A	1/4	0.0003125	0.0625
B	1/4	0.000625	0.125
C	1/4	0.00125	0.25

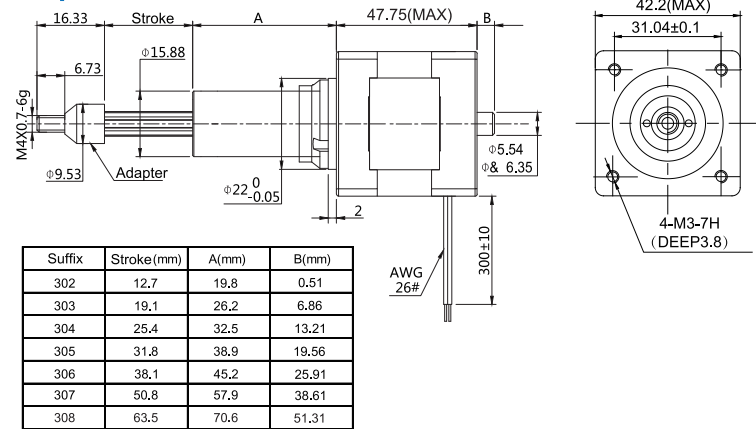
(Units:Inches)

Force vs.Pulse Rate

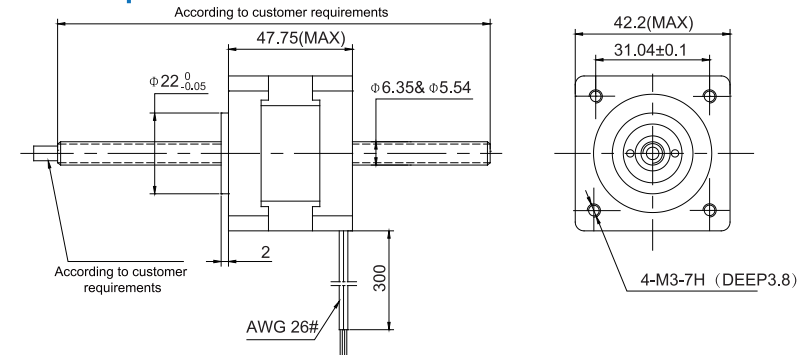
Chopper drive : motor 2.33V and power supply 24V



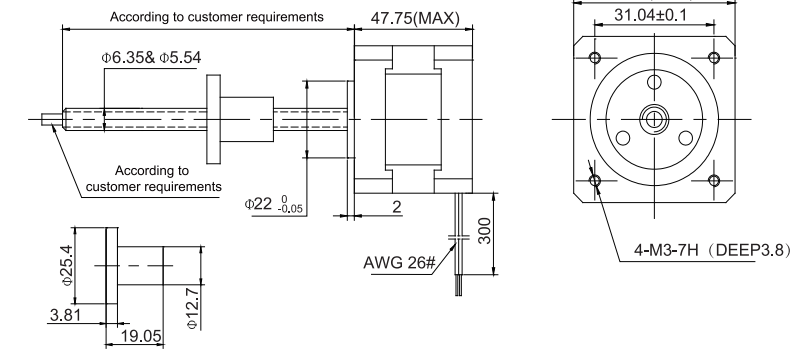
Captive



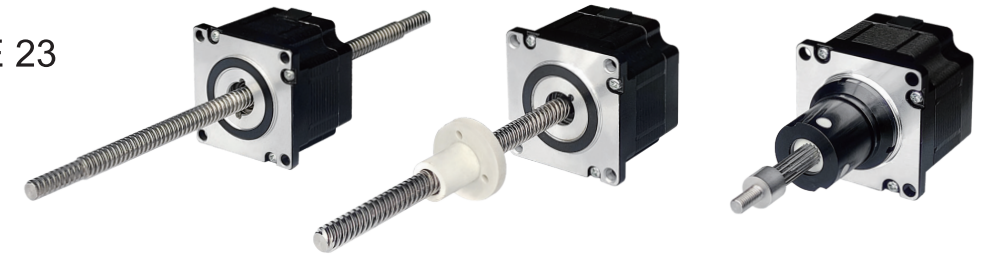
Non-Captive



External Linear



**57000 SERIES SIZE 23
LINEAR STEPPER
ACTUATOR**



Size11:28mm Hybrid Linear Stepper Motor(1.8°Step Angle)											
Captive	Non-captive	External Lin.	Wiring	Rated voltage	Rated current	Resistance /phase	Inductance /phase	Power consumption	Temperature rise	Weight	Insulation resistance
57CA4(X)-V	57NA4(X)-V	57EA4(X)-V	Bipolar	3.25V	2A	1.63Ω	3.5mH	13W	75°C	511g	20MΩ
				5V	1.3A	3.85Ω	10.5mH				
				12V	0.54A	22.2Ω	47mH				

Code	Leadscrew Thread Dimension		
	Diameter	Step	Lead
A	3/8	0.0003125	0.0625
T	3/8	0.0008333	0.16666
S	3/8	0.0004167	0.08334

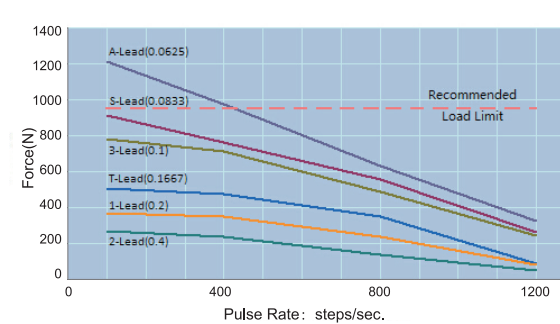
(Units:Inches)

Code	Leadscrew Thread Dimension		
	Diameter	Step	Lead
3	3/8	0.0005	0.1
1	3/8	0.001	0.2
2	3/8	0.002	0.4

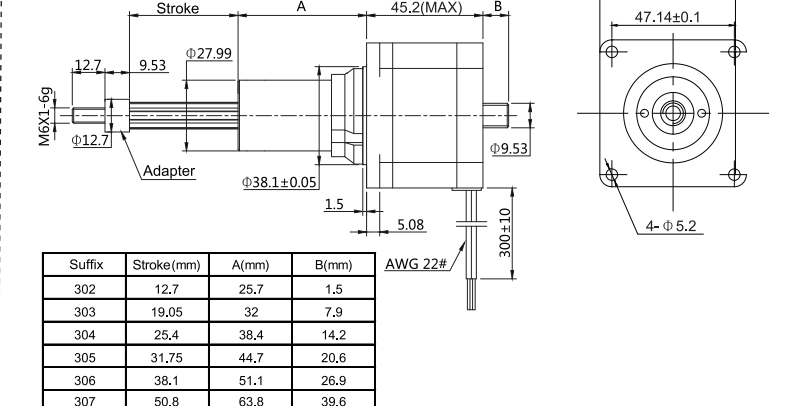
(Units:Inches)

Force vs.Pulse Rate

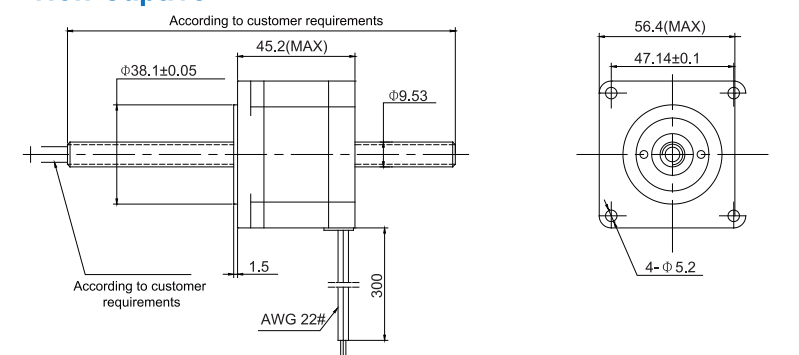
Chopper drive : motor 3.25V and power supply 24V



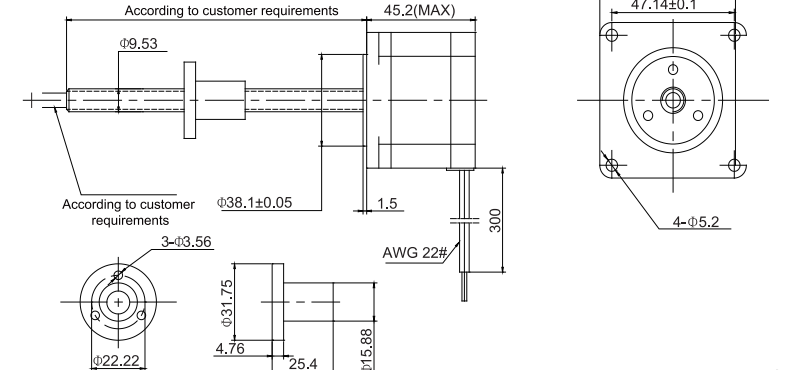
Captive



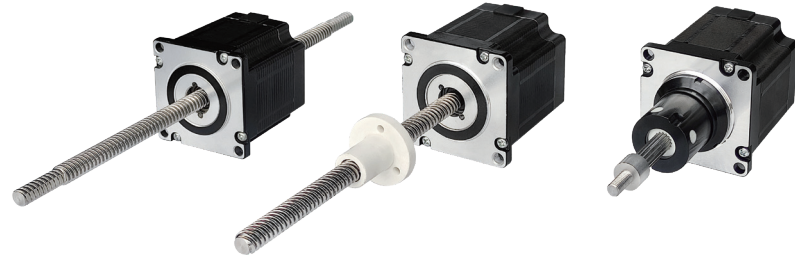
Non-Captive



External Linear



**57000 SERIES SIZE 23
DOUBLE STACK HYBRID
LINEAR STEPPER
ACTUATOR**



Size23:57mm Double Stack Hybrid Linear Stepper Motor(1.8°Step Angle)											
Captive	Non-captive	External Lin.	Wiring	Rated voltage	Rated current	Resistance /phase	Inductance /phase	Power consumption	Temperature rise	Weight	Insulation resistance
57CC4(X)-V	57NC4(X)-V	57EC4(X)-V	Bipolar	3.25V	3.32A	0.98Ω	3.2mH	25W	75°C	958g	20MΩ
				5V	2.16A	2.31Ω	6.9mH				
				12V	0.9A	13.33Ω	35mH				

Code	Leadscrew Thread Dimension		
	Diameter	Step	Lead
A	3/8	0.0003125	0.0625
T	3/8	0.0008333	0.16666
S	3/8	0.0004167	0.08334

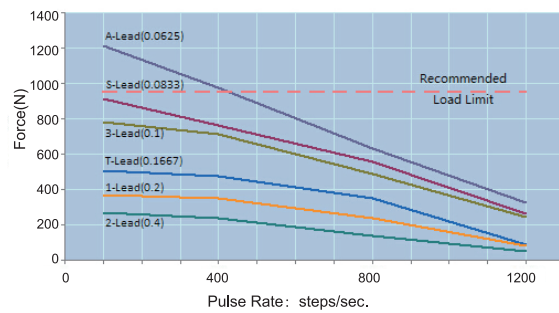
(Units:Inches)

Code	Leadscrew Thread Dimension		
	Diameter	Step	Lead
3	3/8	0.0005	0.1
1	3/8	0.001	0.2
2	3/8	0.002	0.4

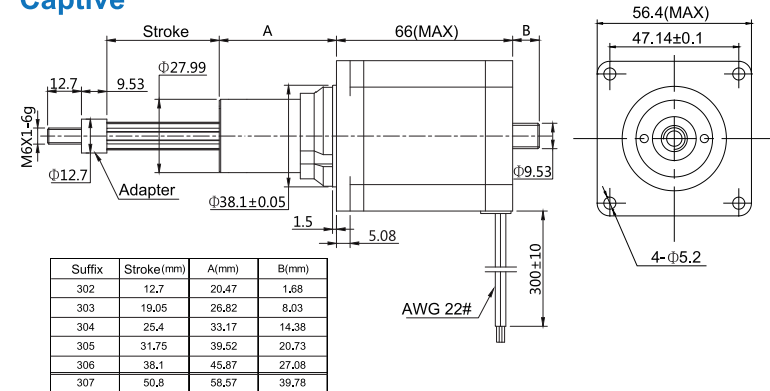
(Units:Inches)

Force vs.Pulse Rate

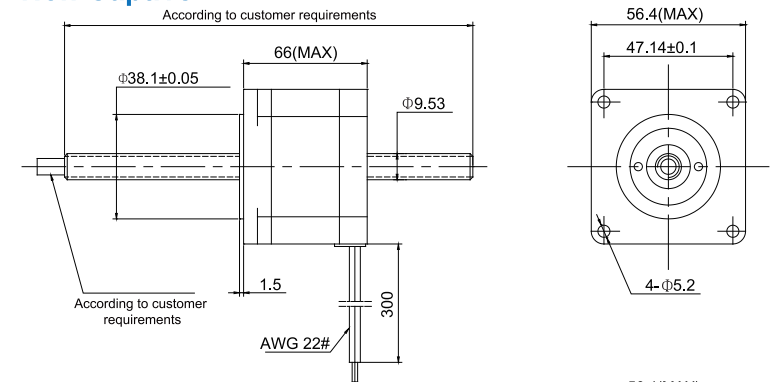
Chopper drive : motor 3.25V and power supply 24V



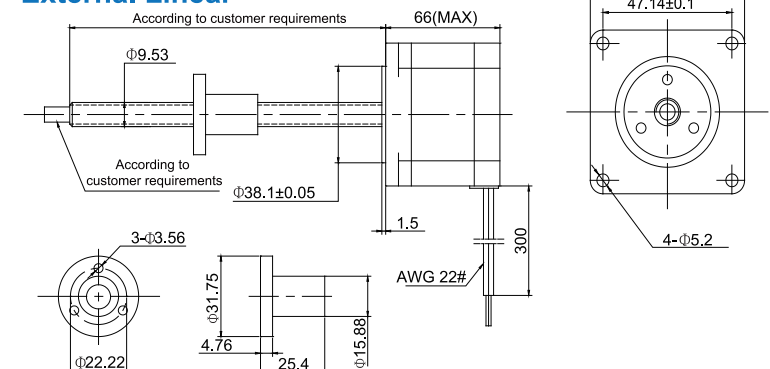
Captive



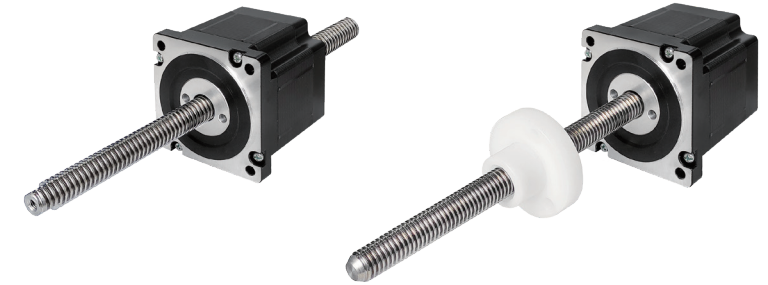
Non-Captive



External Linear



**86000 SERIES SIZE 34
LINEAR STEPPER
ACTUATOR**



Size11:28mm Hybrid Linear Stepper Motor(1.8°Step Angle)										
Non-captive	External Lin.	Wiring	Rated voltage	Rated current	Resistance /phase	Inductance /phase	Power consumption	Temperature rise	Weight	Insulation resistance
86NA4(X)-V	86EA4(X)-V	Bipolar	2.85V	5.47A	0.52Ω	2.86mH	31.2W	75°C	2.3kg	20MΩ
			5V	3.12A	1.6Ω	8.8mH				
			12V	1.3A	9.23Ω	51mH				

Code	Leadscrew Thread Dimension		
	Diameter	Step	Lead
3	5/8	0.0005	0.1
B	5/8	0.000625	0.125

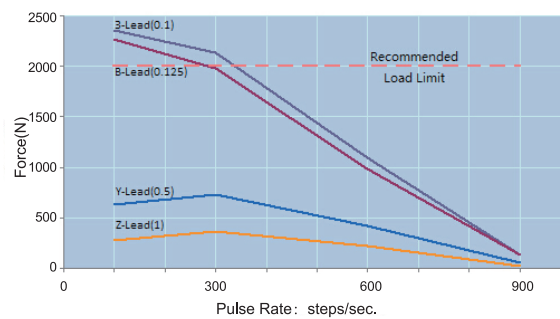
(Units:Inches)

Code	Leadscrew Thread Dimension		
	Diameter	Step	Lead
Y	5/8	0.0025	0.5
Z	5/8	0.005	1

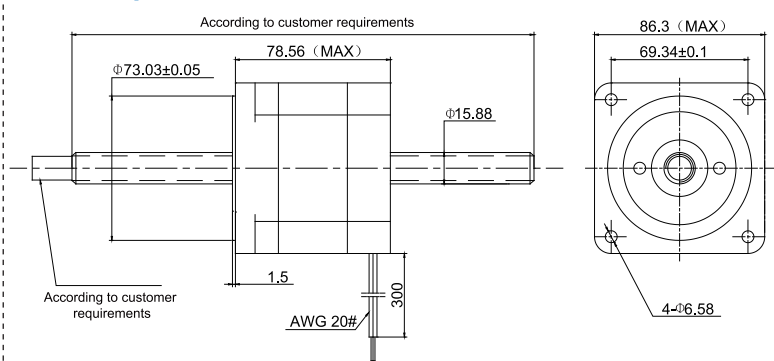
(Units:Inches)

Force vs.Pulse Rate

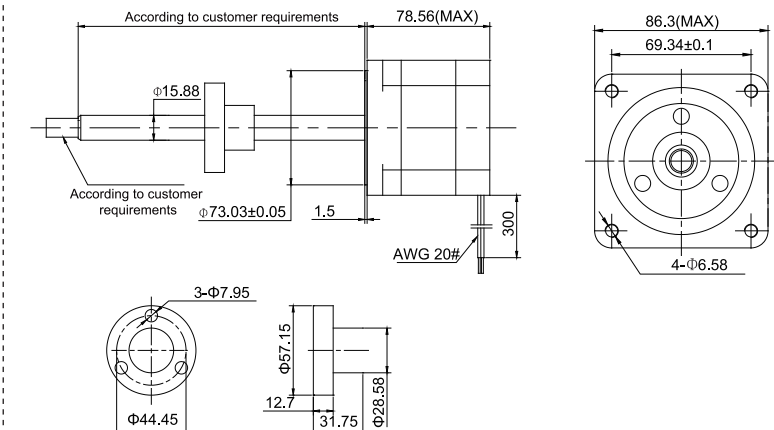
Chopper drive : motor 5V and power supply 24V



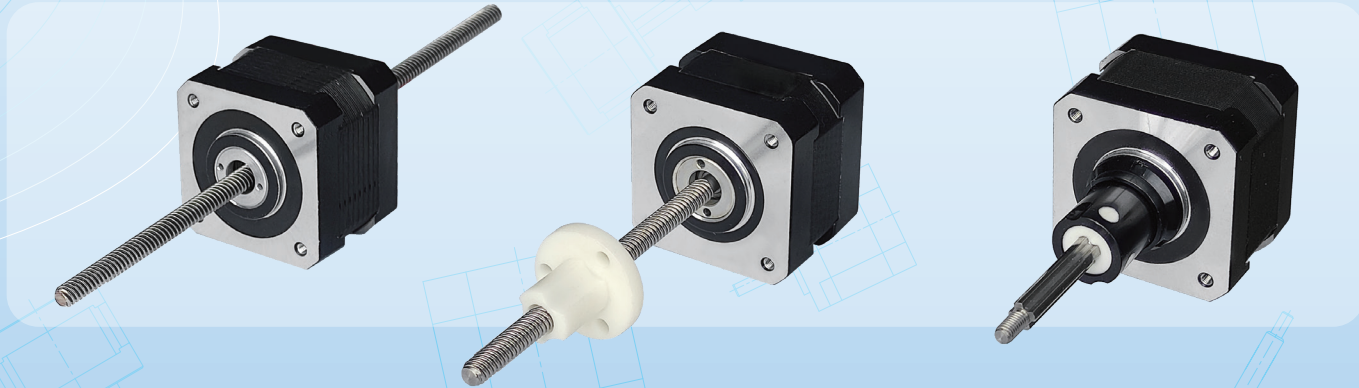
Non-Captive



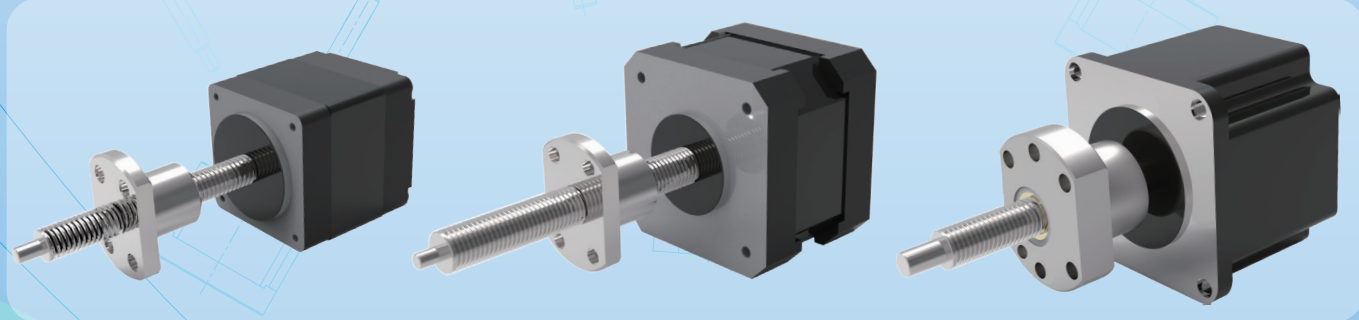
External Linear



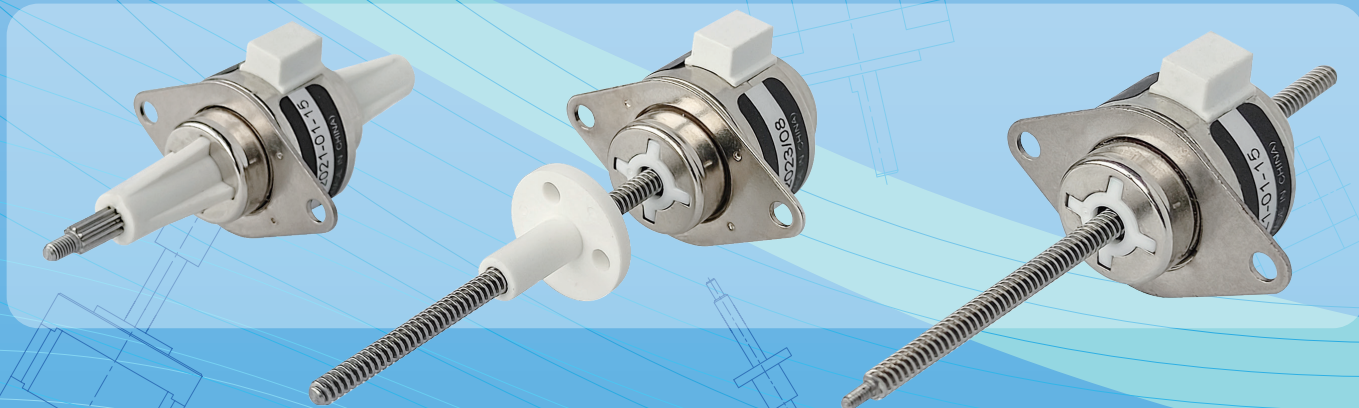
Linear stepper actuator



Ballscrew stepper actuator

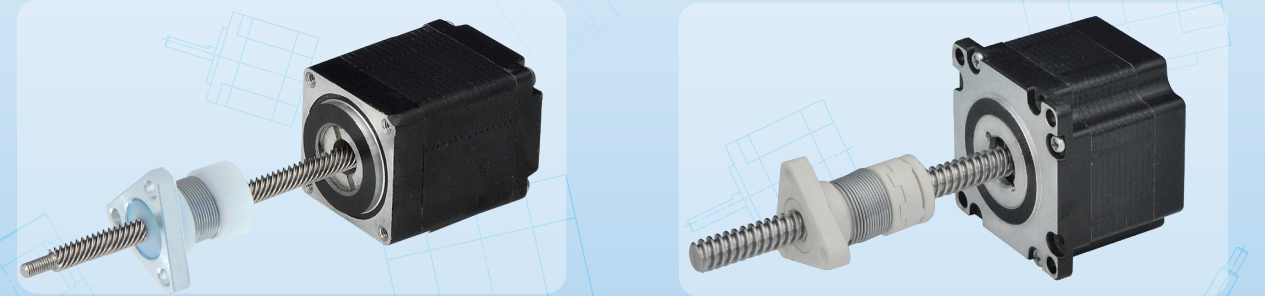


Can-stack stepper actuator

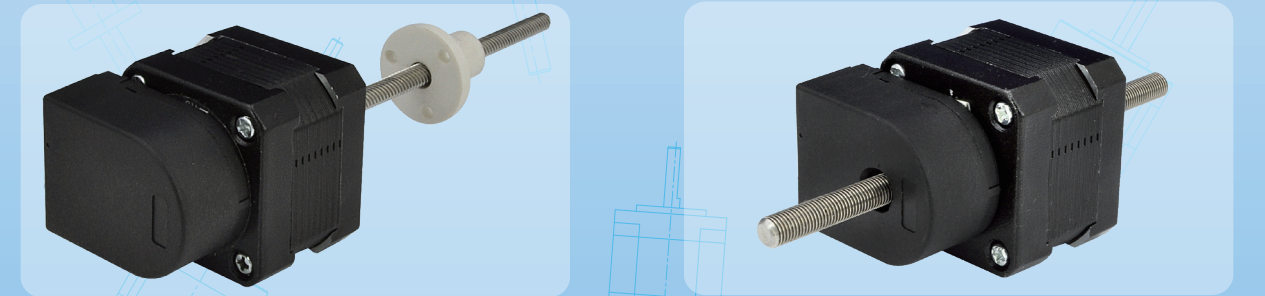


Customization

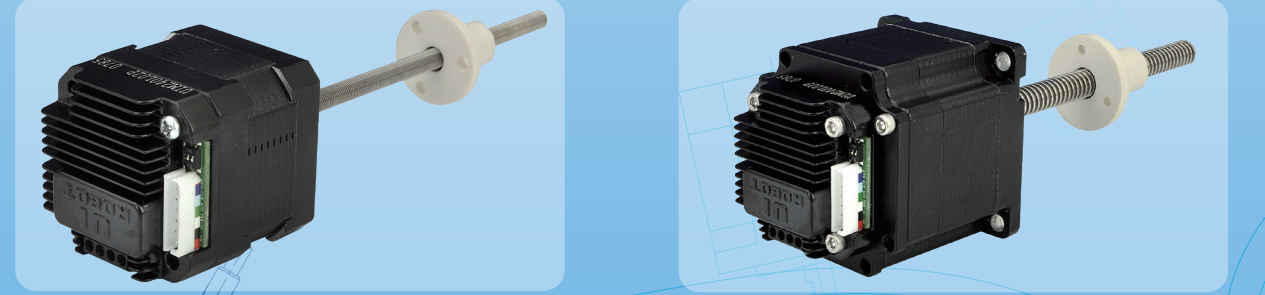
Linear stepper actuator & Anti-Backlash Nut



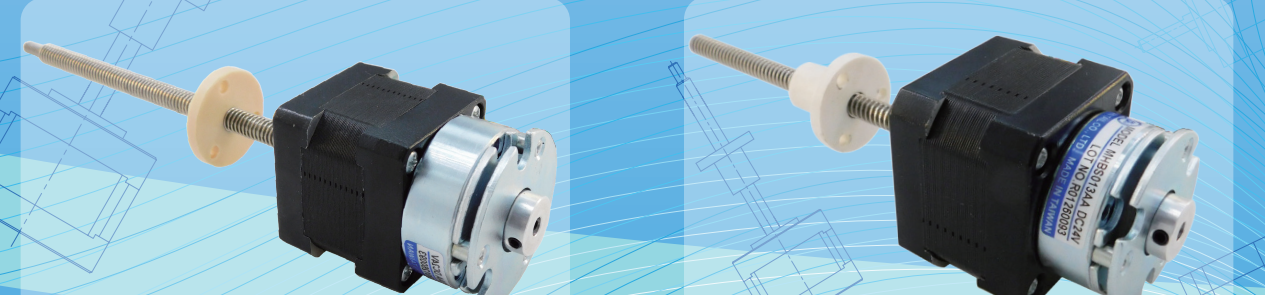
Linear stepper actuator & Encoder






Linear stepper actuator & Drive



Linear stepper actuator & Brake

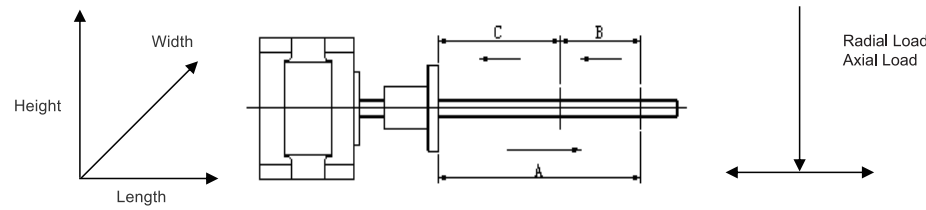


Linear Motor Application Sheet

Application Name					Motor Style		
Name					External Linear	Non-Captive	Customization
Company					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Address					  		
City	State	Country					
Phone	Post Code						
Email							

Application Requirements

English Units Metric Units



	Axial Load (Along Screw Axis)	Distance	Resolution	Movement Speed
Move A				
Move B				
Move C				

Market Requirements

Annual Volume _____ Target Cost _____ Time Frame _____ # Per System _____

Dimensional Constraints

Height _____ Width _____ Length _____ Other _____

Environmental Requirements

Low Normal High Other _____

Electrical Requirements

Unipolar Chopper Rated Voltage 12V
Bipolar L/R 24V

Other Requirements

Life _____ Connector _____ Encoder _____

Application Description

Required for motor driven load _____ N

Linear displacement speed per second motor _____ mm/s

Linear motor displacement precision _____ mm

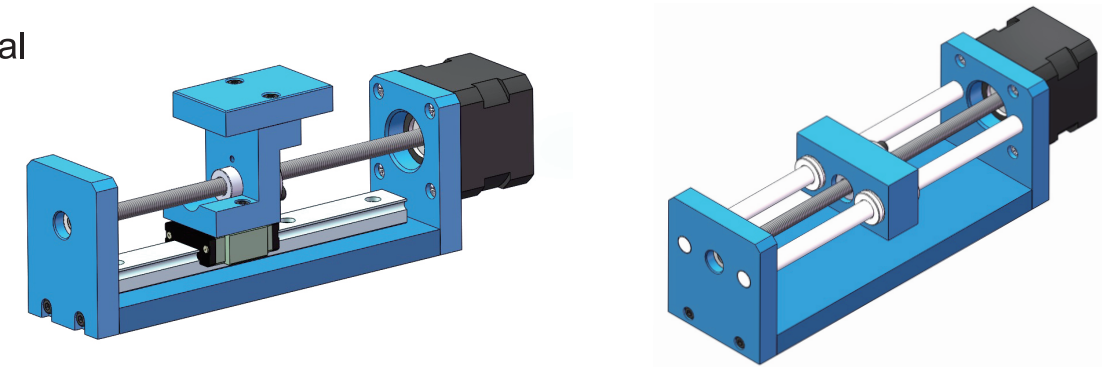
Linear displacement stroke motor _____ mm

Contact Us

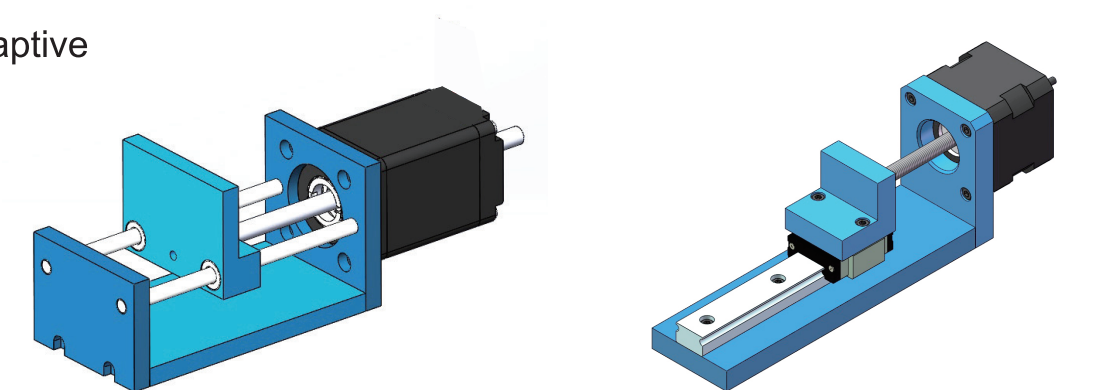
Web: www.wheeler.com.cn Tel: 86-519-83252878 Email: info@wheeler.com.cn Fax: 86-519-83252220

Typical Application

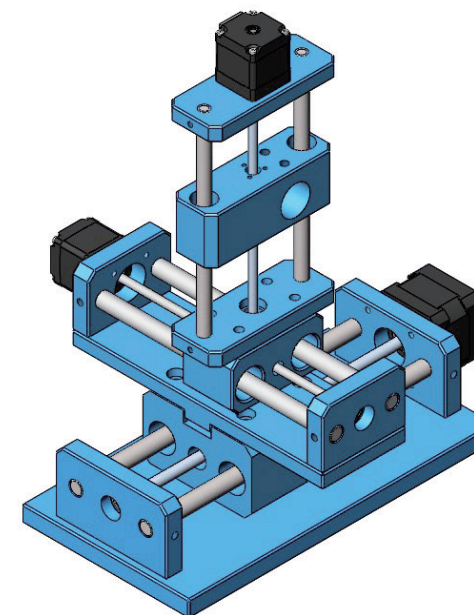
External



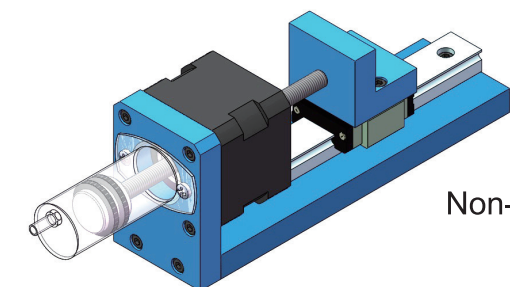
Non-captive



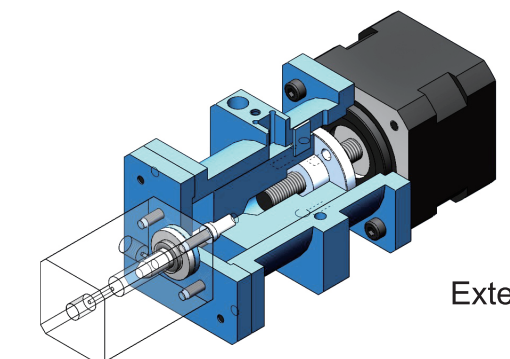
Triaxial



Injection Pump



Non-captive



External

