RAYSHINE
GROUP

CERTIFICATE

TQCSI ISO 9001 Quality Certified

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RAYSHINE
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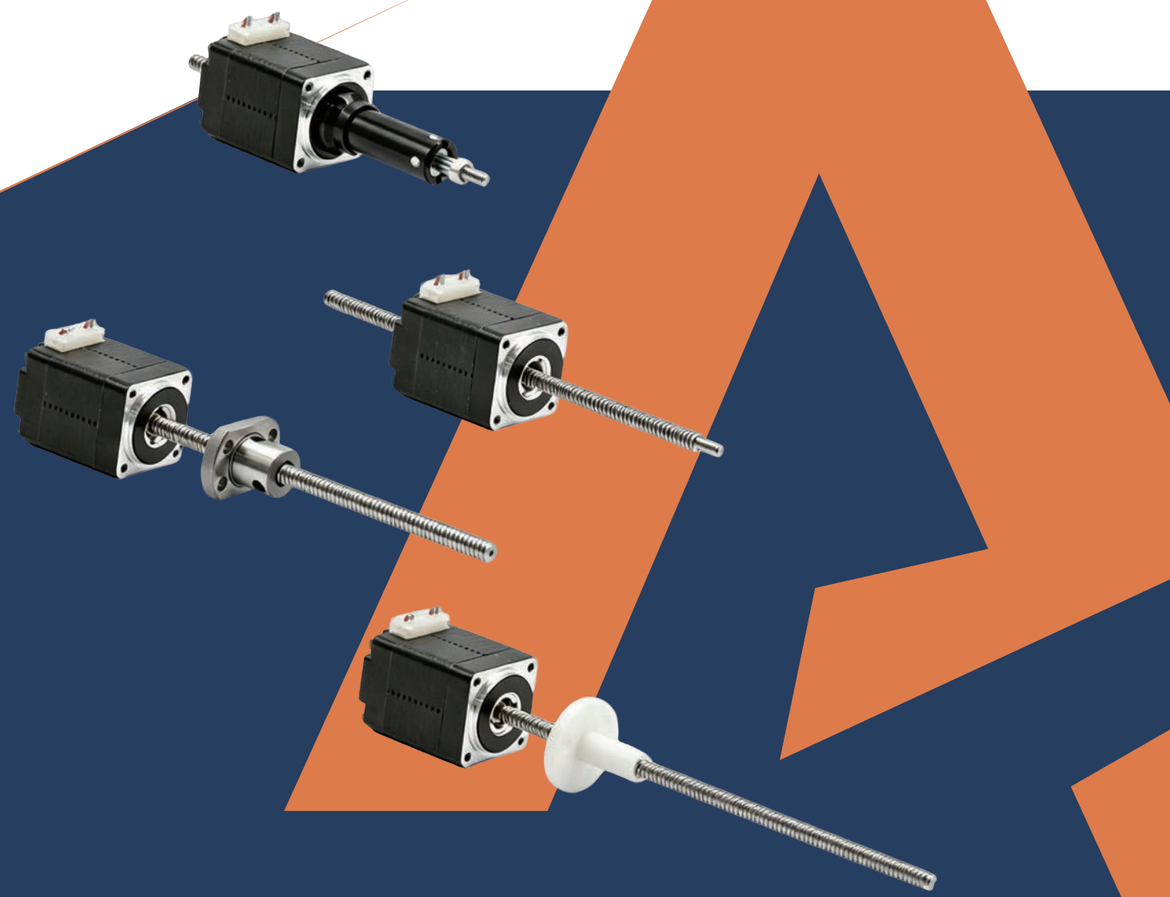
Hybrid Stepper
Linear Actuator



GENERAL CATALOG

Table 1: Stepper Linear Actuator Model Designation

part	①	②	③	④	⑤	⑥	⑦	⑧	⑨
Specifications	Motor Serial Number	Drive Type	Step Angle	Body Length	Rated Current	Lead code	Screw Length / Stroke	Optional Accessories	Derivative Code
Part Number	42	E	2	040	200	LO	050	A	-01
Descriptions	42:End Cover Dimension (Edge Length /Diameter)	E: External N:Non-Captive C:Captive	2: 2-phase 1.8° 3: 3-phase 1.2° 4: 2-phase 0.9°	40:40mm Body Length	200: Rated Current : 2.0A	Refer to Table 3	Refer to Note 1	Refer to Table 5	-01

Note 1: **External:** Distance from actuator mounting face to screw end.

Non-Captive: Total screw length.

Three-digit number starting from hundreds place, decimal omitted (e.g., 96.85 → 096).

Actual dimensions refer to outline drawings.

Captive: Actuator stroke.Three-digit number starting from tens place, one decimal retained (e.g., 50.8 → 508).

Table 2: Stepper Ball Screw Linear Actuator Model Designation

part	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩
Specifications	Motor Serial Number	Drive Type	Step Angle	Body Length	Rated Current	Screw Type	Lead	Screw Length / Stroke	Optional Accessories	Derivative Code
Part Number	42	E	2	040	200	BS	04	050	A	-01
Descriptions	42:End Cover Dimension (Edge Length /Diameter)	E: External N:Non-Captive	2: 2-phase 1.8° 3: 3-phase 1.2° 4: 2-phase 0.9°	40:40mm Body Length	200: Rated Current : 2.0A	BS: Ball Screw	Refer to Note 4	Refer to Table 1	Refer to Table 6	-01

Note 1: **External:** Distance from actuator mounting face to screw end.

Non-Captive: Total screw length.

Three-digit number starting from hundreds place, decimal omitted (e.g., 96.85 → 096).

Actual dimensions refer to outline drawings.

Table 3: Shaft Diameter and Lead Specifications for Stepper Linear Actuator

Lead Code	1.8° Motor Step Angle	Motor Dimensions							
		20	28		35/42		57/60	86	
		Screw Shaft Diameter							
		Φ3.5	Φ4.76	Φ5.54	Φ6.35	Φ8	Φ9.525	Φ10	Φ 15.875
AL	0.001588		0.3175						
AA	0.003048	0.6096			0.6096				
A0	0.003175		0.635				0.635		
B0	0.006096	1.2192			1.2192				
D0	0.00635		1.27		1.27		1.27		
F0	0.0079375				1.5875		1.5875		
H0	0.010583						2.1167		
J0	0.012192			2.4384	2.4384				
K0	0.0127		2.54		2.54		2.54		2.54
L0	0.015875				3.175		3.175		3.175
P0	0.021167						4.2333		
Q0	0.024384			4.8768	4.8768				
R0	0.0254		5.08		5.08		5.08		5.08
S0	0.03175				6.35		6.35		6.35
U0	0.042333				8.4667				
V0	0.047625						9.525		
W0	0.048768				9.7536		9.7536		
X0	0.0508		10.16				10.16		
Y0	0.0635				12.7		12.7		12.7
Z0	0.127				25.4		25.4		25.4
AF	0.001524	0.3048							
AB	0.005	1			1				
G0	0.01	2				2		2	
M0	0.02	4				4			
T0	0.04	8				8			

Table 4: Stepper Ball Screw Linear Actuator Shaft Diameter and Lead Table

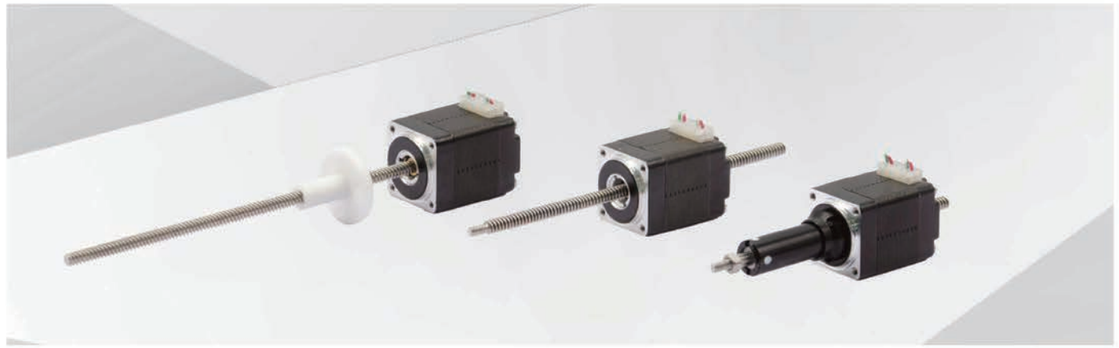
Lead Code	1.8° Motor Step Angle	Motor Dimensions						
		20	28	35/42		57/60		86
		Screw Shaft Diameter						
		Φ4	Φ6	Φ6	Φ8	Φ10	Φ12	Φ16
1	0.005	✓	✓	✓	✓			
2	0.01	✓	✓	✓	✓	✓	✓	✓
2.5	0.0125				✓			
4	0.02					✓	✓	
5	0.025				✓		✓	✓
6	0.03		✓	✓				
8	0.04				✓			
10	0.05				✓		✓	✓
12	0.06				✓			
16	0.08							✓
20	0.1							✓

Table 5: Stepper Linear Actuator Accessories Part Numbers

No	Optional Accessory Part Numbers	Optional Accessories List
1	X	Standard Flange Nut
2	A	Anti-Backlash Nut
3	B	Custom Nut
4	C	Encoder
5	D	Brake
6	p	Handwheel
7	E	Brake + Encoder
8	F	Anti-Backlash Nut + Brake
9	G	Anti-Backlash Nut + Encoder
10	H	Anti-Backlash Nut + Handwheel
11	J	Anti-Backlash Nut + Brake + Encoder
12	K	Custom Nut + Brake
13	L	Custom Nut + Encoder
14	M	Custom Nut + Handwheel
15	N	Custom Nut + Brake + Encoder
16	Q	No Nut
17	O	Driver+Wire

Table 6: Stepper Ball Screw Linear Actuator Accessories Part Numbers

No	Optional Accessory Part Numbers	Optional Accessories List
1	X	No Accessories
2	A	-
3	B	-
4	C	Encoder
5	D	Brake
6	P	Handwheel
7	E	Brake + Encoder



■ Double-Stack Stepper Motor

Electrical Parameters

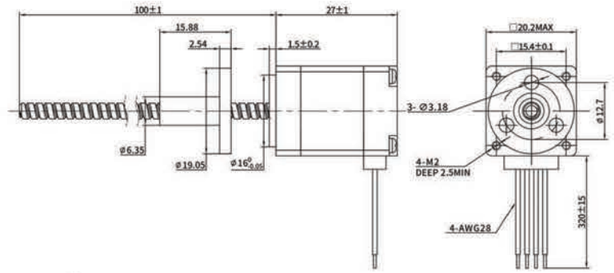
20-Series Hybrid Stepper Linear Actuator (1.8° Step Angle)			
Motor Type	External		20E2028
	Non-Captive		20N2028
	Captive		20C2028
Wiring		Bipolar	
Rated Voltage	2.5VDC	5VDC	7.5VDC
Rated Current	0.5A	0.24A	0.16A
Resistance/Phase	5.1Ω	20.4Ω	45.9Ω
Inductance/Phase	1.0mH	3.88mH	11.7mH
Power Input		2.45W	
Temperature Rise		75°C	
Insulation Class		B-Class (F-Class optional)	
Weight		43g	
Insulation Resistance		50MΩ	

Common Lead Screws and Leads

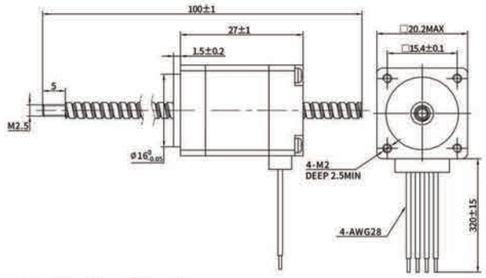
Screw Diameter(mm)	Lead(mm)	Lead code	Step Length (mm)
Φ3.5	0.3048	AF	0.001524
Φ3.5	0.6096	AA	0.003048
Φ3.5	1	AB	0.005
Φ3.5	1.2192	B0	0.006096
Φ3.5	2	G0	0.01
Φ3.5	4	M0	0.02
Φ3.5	8	T0	0.04

Motor Outline Dimension Drawing

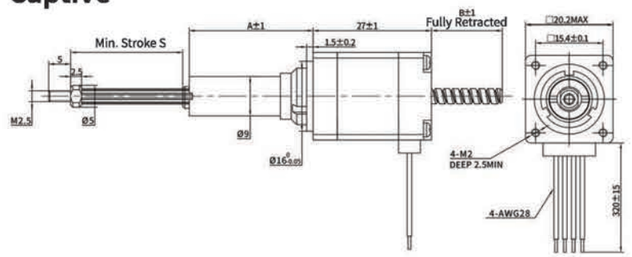
External



Non-Captive



Captive

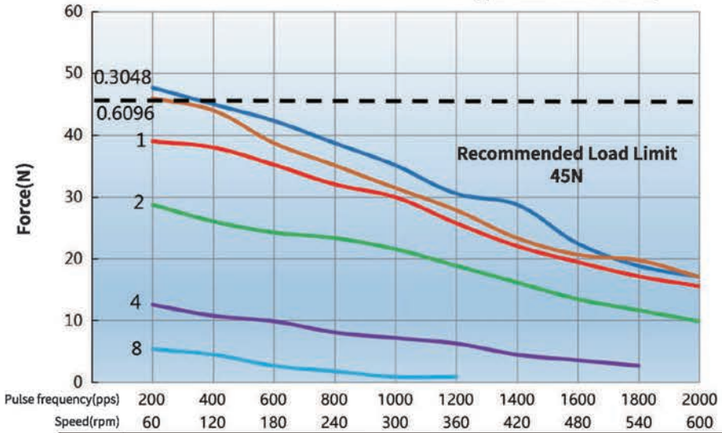


Stroke Specifications

Stroke(mm)	Dimension A(mm)	Dimension B(mm)
9	11.11	0.6
12.7	14.81	4.3
19.1	21.21	10.7
25.4	27.51	17
31.8	33.91	23.4
38.1	40.21	29.7
50.8	52.91	42.4

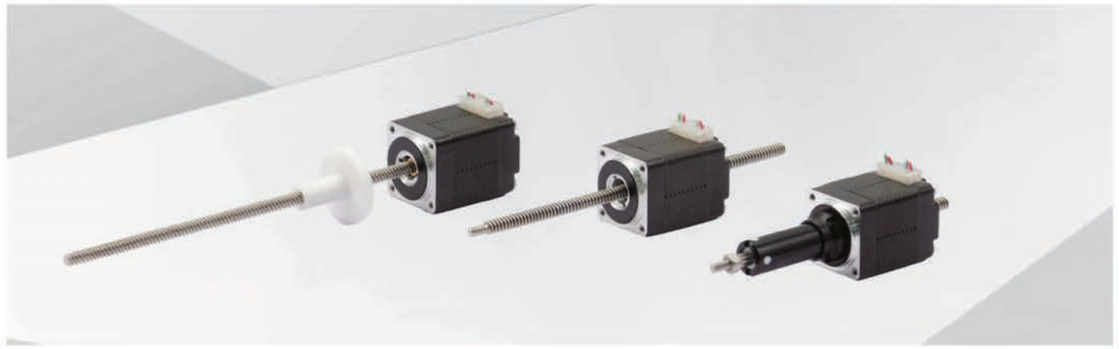
Linear Velocity vs. Force Curve

Series 20 (28mm Body)
Pulse Frequency vs. Force Curve
(φ3.5mm Lead Screw)



Lead(mm)	Linear Velocity mm/s									
0.3048	0.3048	0.6096	0.9144	1.2192	1.524	1.8288	2.1336	2.4384	2.7432	3.048
0.6096	0.6096	1.2192	1.8288	2.4384	3.048	3.6576	4.2672	4.8768	5.4864	6.096
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
4	4	8	12	16	20	24	28	32	36	40
8	8	16	24	32	40	48	56	64	72	80

✻**Test Conditions:** Constant Current Chopper Drive, Zero Acceleration, 2x Microstepping, Drive Voltage 24V



■ Double-Stack Stepper Motor

Electrical Parameters

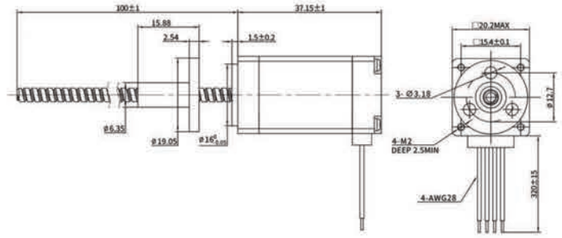
20-Series Hybrid Stepper Linear Actuator (1.8° Step Angle)			
Motor Type	External		20E2038
	Non-Captive		20N2038
	Captive		20C2038
Wiring		Bipolar	
Rated Voltage	2.5V	5V	7.5V
Rated Current	1.32A	0.65A	0.43A
Resistance/Phase	1.9Ω	7.7Ω	17.3Ω
Inductance/Phase	0.75mH	3mH	16mH
Power Input		6.5W	
Temperature Rise		75°C	
Insulation Class		B-Class (F-Class optional)	
Weight		68g	
Insulation Resistance		50MΩ	

Common Lead Screws and Leads

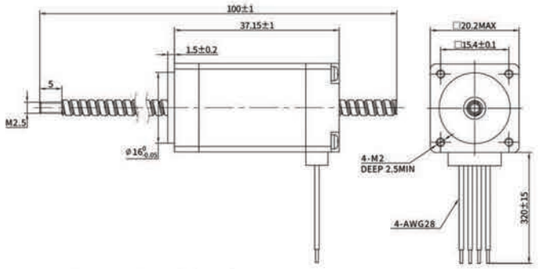
Screw Diameter(mm)	Lead(mm)	Lead code	Step Length (mm)
Φ3.5	0.3	AF	0.0015
Φ3.5	0.6096	AA	0.003048
Φ3.5	1	AB	0.005
Φ3.5	1.2192	B0	0.006096
Φ3.5	2	G0	0.01
Φ3.5	4	M0	0.02
Φ3.5	8	T0	0.04

Motor Outline Dimension Drawing

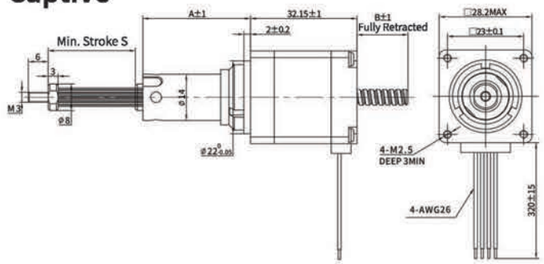
External



Non-Captive



Captive

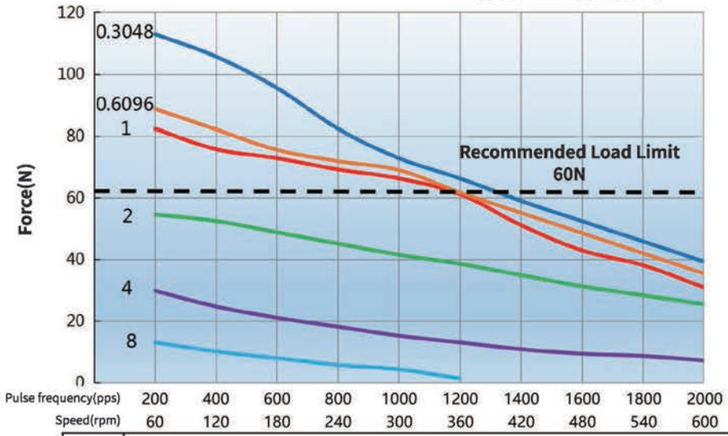


Stroke Specifications

Stroke(mm)	Dimension A(mm)	Dimension B(mm)
9	11.11	0
12.7	14.81	0
19.1	21.21	0.7
25.4	27.51	7
31.8	33.91	13.4
38.1	40.21	19.7
50.8	52.91	32.4

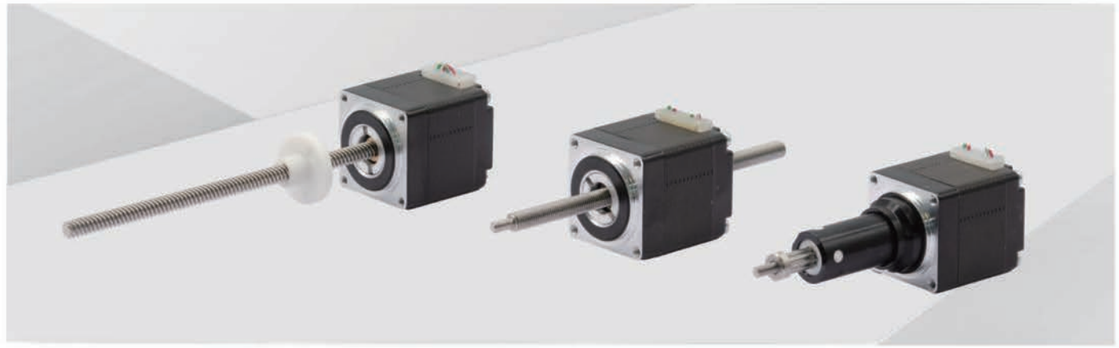
Linear Velocity vs. Force Curve

Series 20 (38mm Body)
Pulse Frequency vs. Force Curve
(Φ3.5mm Lead Screw)



Lead(mm)	Linear Velocity mm/s									
0.3048	0.3048	0.6096	0.9144	1.2192	1.524	1.8288	2.1336	2.4384	2.7432	3.048
0.6096	0.6096	1.2192	1.8288	2.4384	3.048	3.6576	4.2672	4.8768	5.4864	6.096
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
4	4	8	12	16	20	24	28	32	36	40
8	8	16	24	32	40	48	56	64	72	80

✱**Test Conditions:** Constant Current Chopper Drive, Zero Acceleration, 2x Microstepping, Drive Voltage 24V



■ Single-Stack Stepper Motor

Electrical Parameters

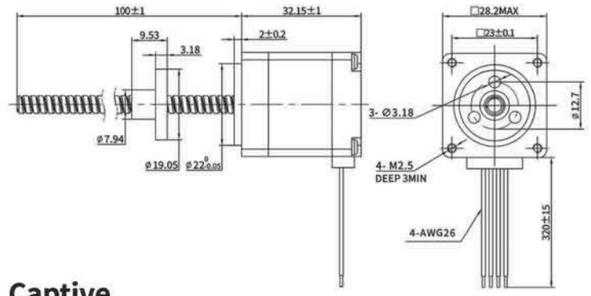
28-Series Hybrid Stepper Linear Actuator (1.8° Step Angle)			
Motor Type	External		28E2033
	Non-Captive		28N2033
	Captive		28C2033
Wiring		Bipolar	
Rated Voltage	2.1VDC	5VDC	12VDC
Rated Current	1A	0.42A	0.18A
Resistance/Phase	2.1Ω	11.9Ω	45.9Ω
Inductance/Phase	1.55mH	8.5mH	50.3mH
Power Input		4.2W	
Temperature Rise		75°C	
Insulation Class		B-Class(F-Class Optional)	
Weight		120g	
Insulation Resistance		50MΩ	

Common Lead Screws and Leads

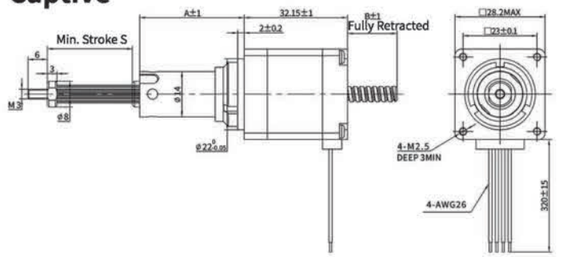
Screw Diameter(mm)	Lead(mm)	Lead code	Step Length (mm)
Φ4.76	0.635	A0	0.003175
Φ4.76	1.27	D0	0.00635
Φ4.76	2.54	AB	0.0127
Φ4.76	5.08	G0	0.0254
Φ4.76	10.16	M0	0.0508

Motor Outline Dimension Drawing

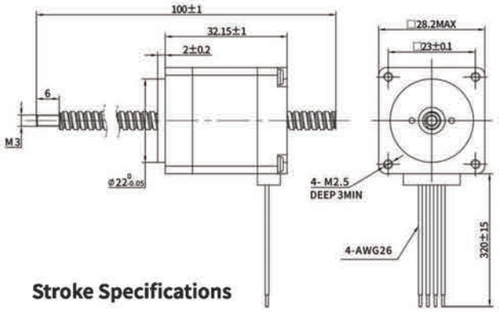
External



Captive



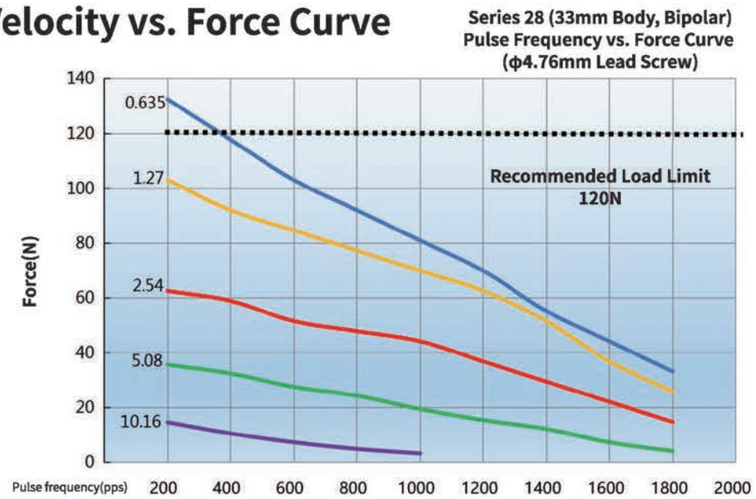
Non-Captive



Stroke Specifications

Stroke(mm)	Dimension A(mm)	Dimension B(mm)
12.7	20.47	1.68
19.1	26.87	8.03
25.4	33.17	14.38
31.8	39.57	20.73
38.1	45.87	27.08
50.8	58.57	39.78
63.5	71.27	52.48

Linear Velocity vs. Force Curve



Lead(mm)	Linear Velocity mm/s									
0.635	0.635	1.27	1.905	2.54	3.175	3.81	4.445	5.08	5.715	11.43
1.27	1.27	2.54	3.81	5.08	6.35	7.62	8.89	10.16	11.43	22.86
2.54	2.54	5.08	7.62	10.16	12.7	15.24	17.78	20.32	22.86	45.72
5.08	5.08	10.16	15.24	20.32	25.4	30.48	35.56	40.64	45.72	91.44
10.16	10.16	20.32	30.48	40.64	50.8	60.96	71.12	81.28	91.44	182.88

∗**Test Conditions:** Constant Current Chopper Drive, Zero Acceleration, 2x Microstepping, Drive Voltage 24V

■ Double-Stack Stepper Motor

Electrical Parameters

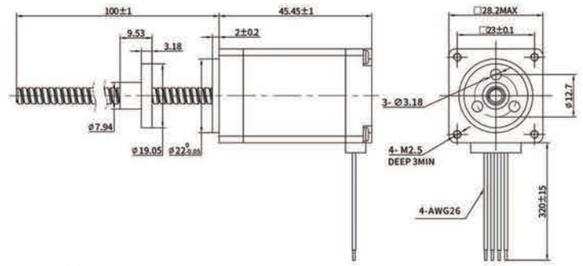
28-Series Hybrid Stepper Linear Actuator (1.8° Step Angle)			
Motor Type	External		28E2046
	Non-Captive		28N2046
	Captive		28C2046
Wiring		Bipolar	
Rated Voltage	2.5V	5V	12V
Rated Current	1.9A	0.75A	0.35A
Resistance/Phase	1.2Ω	6.7Ω	34.8Ω
Inductance/Phase	1.0mH	5.8mH	35.6mH
Power Input		7.5W	
Temperature Rise		75°C	
Insulation Class		B-Class (F-Class Optional)	
Weight		180g	
Insulation Resistance		50MΩ	

Common Lead Screws and Leads

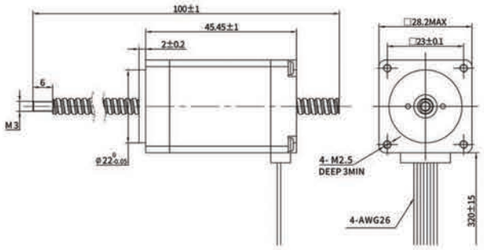
Screw Diameter(mm)	Lead(mm)	Lead code	Step Length (mm)
Φ4.76	0.635	A0	0.003175
Φ4.76	1.27	D0	0.00635
Φ4.76	2.54	AB	0.0127
Φ4.76	5.08	G0	0.0254
Φ4.76	10.16	M0	0.0508

Motor Outline Dimension Drawing

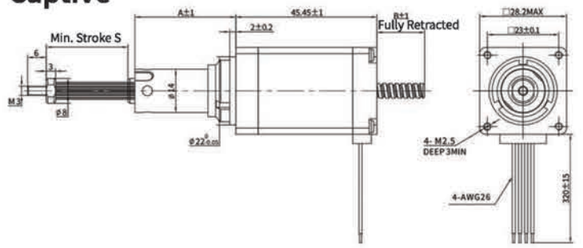
External



Non-Captive



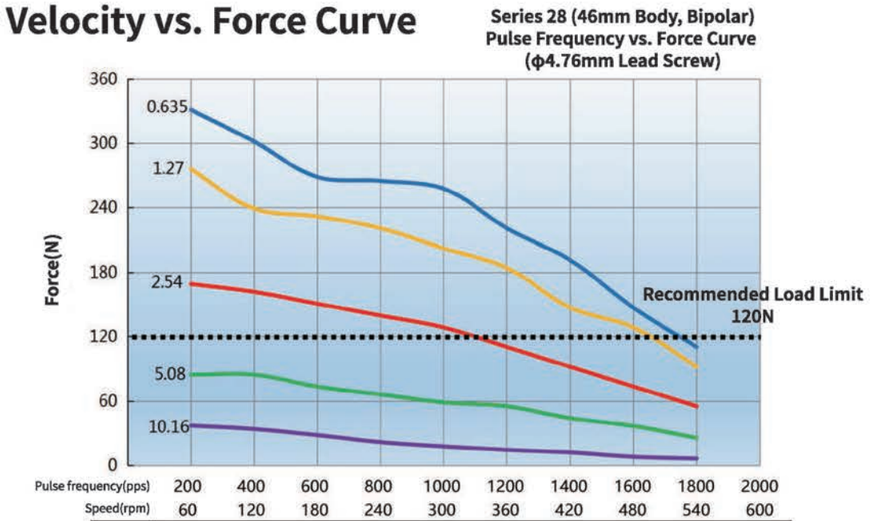
Captive



Stroke Specifications

Stroke(mm)	Dimension A(mm)	Dimension B(mm)
9	16.77	0
12.7	20.47	0
19.1	26.87	0
25.4	33.17	3.9
31.8	39.57	10.3
38.1	45.87	16.6
50.8	58.57	29.3

Linear Velocity vs. Force Curve



Lead(mm)	Linear Velocity mm/s									
0.635	0.635	1.27	1.905	2.54	3.175	3.81	4.445	5.08	5.715	11.43
1.27	1.27	2.54	3.81	5.08	6.35	7.62	8.89	10.16	11.43	22.86
2.54	2.54	5.08	7.62	10.16	12.7	15.24	17.78	20.32	22.86	45.72
5.08	5.08	10.16	15.24	20.32	25.4	30.48	35.56	40.64	45.72	91.44
10.16	10.16	20.32	30.48	40.64	50.8	60.96	71.12	81.28	91.44	182.88

✳**Test Conditions:** Constant Current Chopper Drive, Zero Acceleration, 2x Microstepping, Drive Voltage 24V

■ Single-Stack Stepper Motor

Electrical Parameters

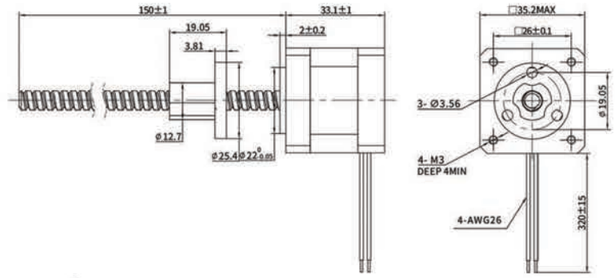
35-Series Hybrid Stepper Linear Actuator (1.8° Step Angle)			
Motor Type	External		35E2034
	Non-Captive		35N2034
	Captive		35C2034
Wiring		Bipolar	
Rated Voltage	2.33VDC	5VDC	12VDC
Rated Current	1.25A	0.57A	0.24A
Resistance/Phase	1.86Ω	8.8Ω	50.5Ω
Inductance/Phase	3.0mH	14mH	66mH
Power Input		5.7W	
Rotor inertia		16gcm2	
Temperature Rise		75°C	
Insulation Class		B-Class(F-Class Optional)	
Weight		162g	
Insulation Resistance		50MΩ	

Common Lead Screws and Leads

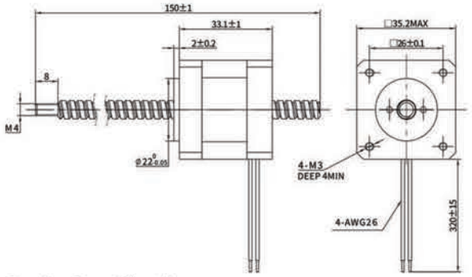
Screw Diameter(mm)	Lead(mm)	Lead code	Step Length (mm)	Screw Diameter(mm)	Lead(mm)	Lead code	Step Length (mm)
Φ6.35	0.6096	AA	0.003048	Φ6.35	6.35	S0	0.03175
Φ6.35	1.2192	B0	0.006096	Φ6.35	8.4667	U0	0.042333
Φ6.35	1.27	D0	0.00635	Φ6.35	9.7536	W0	0.048768
Φ6.35	1.5875	F0	0.0079375	Φ6.35	12.7	Y0	0.0635
Φ6.35	2.4384	J0	0.012192	Φ6.35	25.4	Z0	0.127
Φ6.35	2.54	K0	0.0127	Φ6.35	1	AB	0.005
Φ6.35	3.175	L0	0.015875	Φ8	2	G0	0.01
Φ6.35	4.8768	Q0	0.024384	Φ8	4	M0	0.02
Φ6.35	5.08	R0	0.0254	Φ8	8	T0	0.04

Motor Outline Dimension Drawing

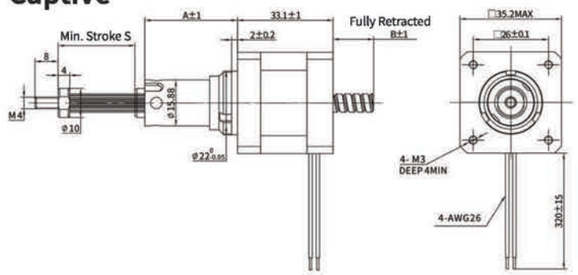
External



Non-Captive



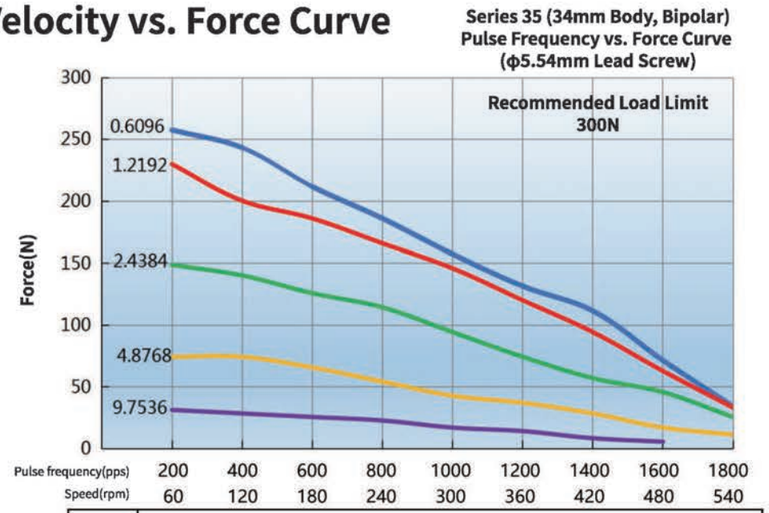
Captive



Stroke Specifications

Stroke(mm)	Dimension A(mm)	Dimension B(mm)
12.7	20.8	0.6
19.1	27.2	7
25.4	33.5	13.3
31.8	39.9	19.7
38.1	46.2	26
50.8	58.9	38.7
63.5	71.6	51.4

Linear Velocity vs. Force Curve



Lead(mm)	Linear Velocity mm/s								
0.6096	0.6096	1.2192	1.8288	2.4384	3.048	3.6576	4.2672	4.8768	5.4864
1.2192	1.2192	2.4384	3.6576	4.8768	6.096	7.3152	8.5344	9.7536	10.973
2.4384	2.4384	4.8768	7.3152	9.7536	12.192	14.63	17.069	19.507	21.946
4.8768	4.8768	9.7536	14.63	19.507	24.384	29.261	34.138	39.014	43.891
9.7536	9.7536	19.507	29.261	39.014	48.768	58.522	68.275	78.029	87.782

∗**Test Conditions:** Constant Current Chopper Drive, Zero Acceleration, 2x Microstepping, Drive Voltage 24V

■ Double-Stack Stepper Motor

Electrical Parameters

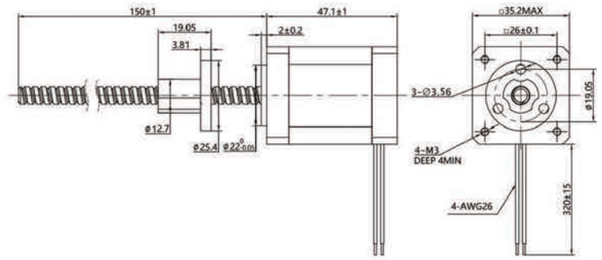
35-Series Hybrid Stepper Linear Motor (1.8° Step Angle)			
Motor Type	External		35E2048
	Non-Captive		35N2048
	Captive		35C2048
Wiring		Bipolar	
Rated Voltage	2.33VDC	5VDC	12VDC
Rated Current	2A	0.91A	0.38A
Resistance/Phase	1.2Ω	5.5Ω	31.6Ω
Inductance/Phase	1.95mH	7.63mH	65.1mH
Power Input		9.1W	
Rotor inertia		30gcm2	
Temperature Rise		75℃	
Insulation Class		B-Class(F-Class Optional)	
Weight		240g	
Insulation Resistance		50MΩ	

Common Lead Screws and Leads

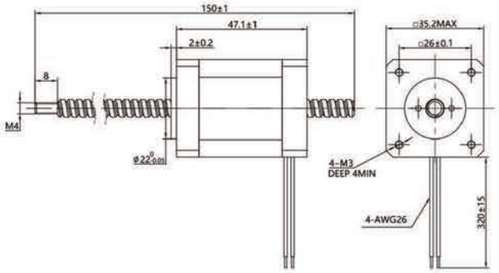
Screw Diameter(mm)	Lead(mm)	Lead code	Step Length (mm)	Screw Diameter(mm)	Lead(mm)	Lead code	Step Length (mm)
Φ6.35	0.6096	AA	0.003048	Φ6.35	6.35	S0	0.03175
Φ6.35	1.2192	B0	0.006096	Φ6.35	8.4667	U0	0.042333
Φ6.35	1.27	D0	0.00635	Φ6.35	9.7536	W0	0.048768
Φ6.35	1.5875	F0	0.0079375	Φ6.35	12.7	Y0	0.0635
Φ6.35	2.4384	J0	0.012192	Φ6.35	25.4	Z0	0.127
Φ6.35	2.54	K0	0.0127	Φ6.35	1	AB	0.005
Φ6.35	3.175	L0	0.015875	Φ8	2	G0	0.01
Φ6.35	4.8768	Q0	0.024384	Φ8	4	M0	0.02
Φ6.35	5.08	R0	0.0254	Φ8	8	T0	0.04

Motor Outline Dimension Drawing

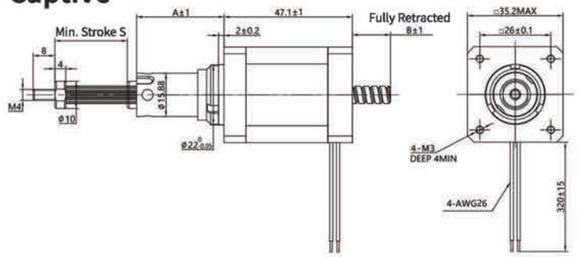
External



Non-Captive



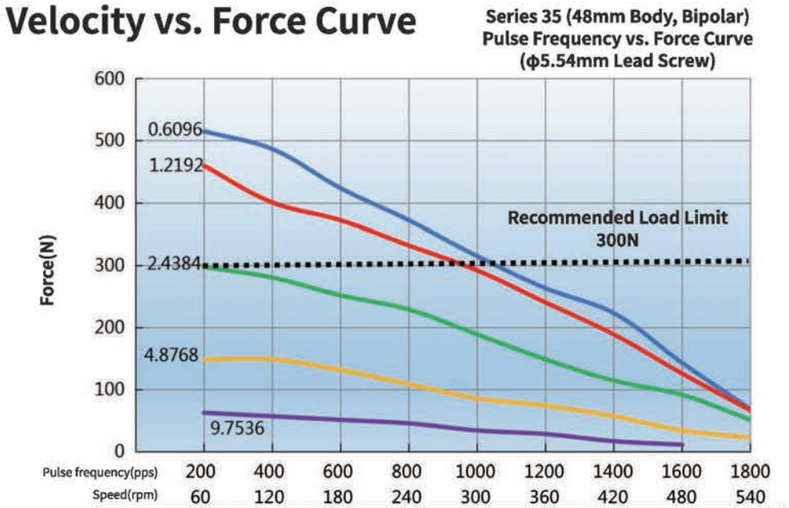
Captive



Stroke Specifications

Stroke(mm)	Dimension A(mm)	Dimension B(mm)
12.7	20.8	0
19.1	27.2	0
25.4	33.5	3.5
31.8	39.9	9.9
38.1	46.2	16.2
50.8	58.9	28.9
63.5	71.6	41.6

Linear Velocity vs. Force Curve



Lead(mm)	Linear Velocity mm/s								
0.6096	0.6096	1.2192	1.8288	2.4384	3.048	3.6576	4.2672	4.8768	5.4864
1.2192	1.2192	2.4384	3.6576	4.8768	6.096	7.3152	8.5344	9.7536	10.973
2.4384	2.4384	4.8768	7.3152	9.7536	12.192	14.63	17.069	19.507	21.946
4.8768	4.8768	9.7536	14.63	19.507	24.384	29.261	34.138	39.014	43.891
9.7536	9.7536	19.507	29.261	39.014	48.768	58.522	68.275	78.029	87.782

∗**Test Conditions:** Constant Current Chopper Drive, Zero Acceleration, 2x Microstepping, Drive Voltage 24V

■ Single-Stack Stepper Motor

Electrical Parameters

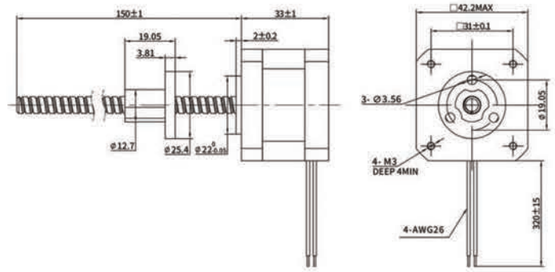
42-Series Hybrid Stepper Linear Motor (1.8° Step Angle)			
Motor Type	External		42E2034
	Non-Captive		42N2034
	Captive		42C2034
Wiring		Bipolar	
Rated Voltage	2.33VDC	5VDC	12VDC
Rated Current	1.5A	0.7A	0.29A
Resistance/Phase	1.56Ω	7.2Ω	41.5Ω
Inductance/Phase	1.9mH	9.5mH	54.0mH
Power Input		7W	
Rotor inertia		37gcm2	
Temperature Rise		75°C	
Insulation Class		B-Class(F-Class Optional)	
Weight		240g	
Insulation Resistance		50MΩ	

Common Lead Screws and Leads

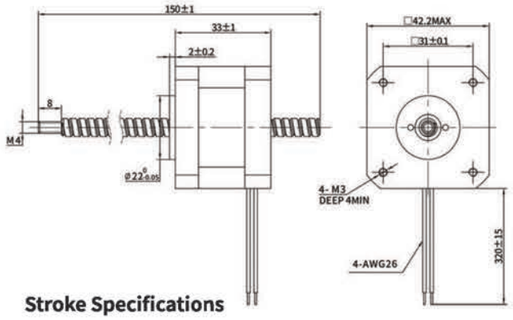
Screw Diameter(mm)	Lead(mm)	Lead code	Step Length (mm)	Screw Diameter(mm)	Lead(mm)	Lead code	Step Length (mm)
Φ6.35	0.6096	AA	0.003048	Φ6.35	6.35	S0	0.03175
Φ6.35	1.2192	B0	0.006096	Φ6.35	8.4667	U0	0.042333
Φ6.35	1.27	D0	0.00635	Φ6.35	9.7536	W0	0.048768
Φ6.35	1.5875	F0	0.0079375	Φ6.35	12.7	Y0	0.0635
Φ6.35	2.4384	J0	0.012192	Φ6.35	25.4	Z0	0.127
Φ6.35	2.54	K0	0.0127	Φ6.35	1	AB	0.005
Φ6.35	3.175	L0	0.015875	Φ8	2	G0	0.01
Φ6.35	4.8768	Q0	0.024384	Φ8	4	M0	0.02
Φ6.35	5.08	R0	0.0254	Φ8	8	T0	0.04

Motor Outline Dimension Drawing

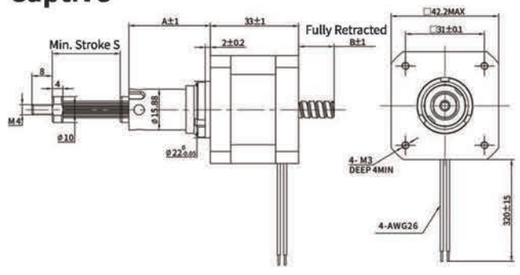
External



Non-Captive



Captive

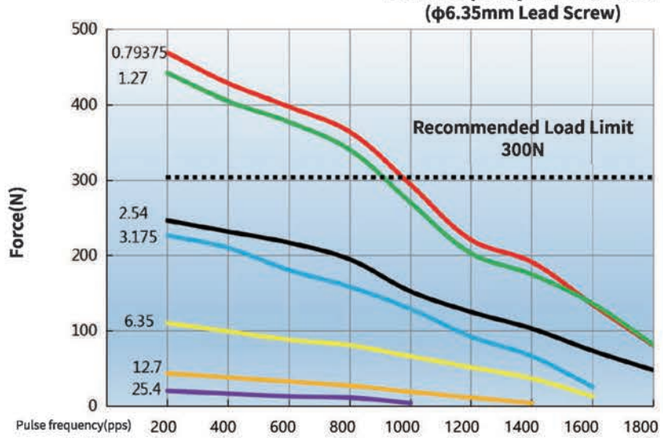


Stroke Specifications

Stroke(mm)	Dimension A(mm)	Dimension B(mm)
12.7	19.8	2.3
19.1	26.2	8.7
25.4	32.5	15
31.8	38.9	21.4
38.1	45.2	27.7
50.8	57.9	40.4
63.5	70.6	53.1

Linear Velocity vs. Force Curve

Series 42 (34mm Body, Bipolar)
Pulse Frequency vs. ForceCurve
(ϕ6.35mm Lead Screw)



Lead(mm)	Linear Velocity mm/s								
0.7938	0.7938	1.5875	2.3813	3.175	3.9688	4.7625	5.5563	6.35	7.1438
1.27	1.27	2.54	3.81	5.08	6.35	7.62	8.89	10.16	11.43
3.175	3.175	6.35	9.525	12.7	15.875	19.05	22.225	25.4	28.575
6.35	6.35	12.7	19.05	25.4	31.75	38.1	44.45	50.8	57.15
12.7	12.7	25.4	38.1	50.8	63.5	76.2	88.9	101.6	114.3
25.4	25.4	50.8	76.2	101.6	127	152.4	177.8	203.2	228.6

***Test Conditions:** Constant Current Chopper Drive, Zero Acceleration, 2x Microstepping, Drive Voltage 24V DC

■ Double-Stack Stepper Motor

Electrical Parameters

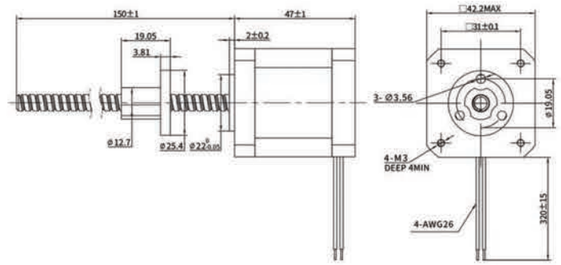
42-Series Hybrid Stepper Linear Actuator (1.8° Step Angle)			
Motor Type	External		42E2048
	Non-Captive		42N2048
	Captive		42C2048
Wiring		Bipolar	
Rated Voltage	2.33VDC	5VDC	12VDC
Rated Current	2.6A	1.3A	0.55A
Resistance/Phase	0.85Ω	3.8Ω	21.9Ω
Inductance/Phase	1.1mH	7.8mH	45.1mH
Power Input		10.4W	
Rotor inertia		78gcm2	
Temperature Rise		75°C	
Insulation Class		B-Class(F-Class Optional)	
Weight		352g	
Insulation Resistance		50MΩ	

Common Lead Screws and Leads

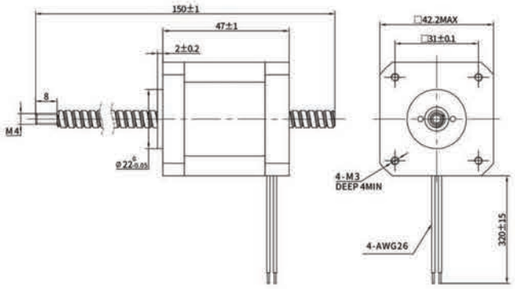
Screw Diameter(mm)	Lead(mm)	Lead code	Step Length (mm)	Screw Diameter(mm)	Lead(mm)	Lead code	Step Length (mm)
Φ6.35	0.6096	AA	0.003048	Φ6.35	6.35	S0	0.03175
Φ6.35	1.2192	B0	0.006096	Φ6.35	8.4667	U0	0.042333
Φ6.35	1.27	D0	0.00635	Φ6.35	9.7536	W0	0.048768
Φ6.35	1.5875	F0	0.0079375	Φ6.35	12.7	Y0	0.0635
Φ6.35	2.4384	J0	0.012192	Φ6.35	25.4	Z0	0.127
Φ6.35	2.54	K0	0.0127	Φ6.35	1	AB	0.005
Φ6.35	3.175	L0	0.015875	Φ8	2	G0	0.01
Φ6.35	4.8768	Q0	0.024384	Φ8	4	M0	0.02
Φ6.35	5.08	R0	0.0254	Φ8	8	T0	0.04

Motor Outline Dimension Drawing

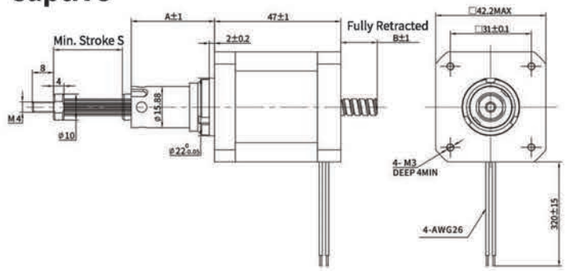
External



Non-Captive



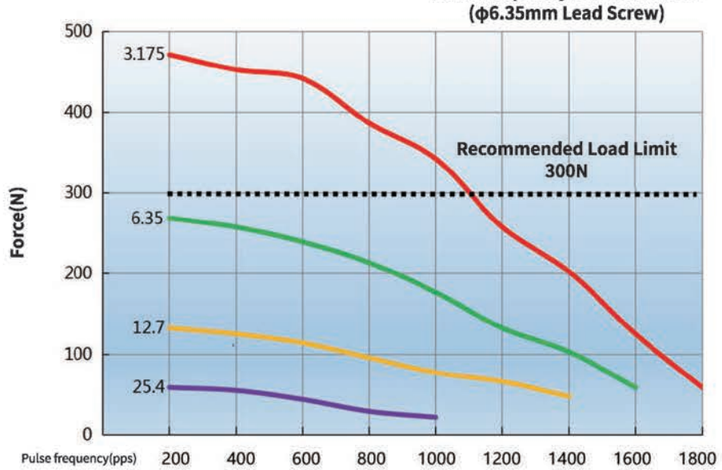
Captive



Stroke Specifications

Stroke(mm)	Dimension A(mm)	Dimension B(mm)
12.7	19.8	0
19.1	26.2	0
25.4	32.5	1
31.8	38.9	7.4
38.1	45.2	13.7
50.8	57.9	26.4
63.5	70.6	39.1

Linear Velocity vs. Force Curve



Lead(mm)	Linear Velocity mm/s								
3.175	3.175	6.35	9.525	12.7	15.875	19.05	22.225	25.4	28.575
6.35	6.35	12.7	19.05	25.4	31.75	38.1	44.45	50.8	57.15
12.7	12.7	25.4	38.1	50.8	63.5	76.2	88.9	101.6	114.3
25.4	25.4	50.8	76.2	101.6	127	152.4	177.8	203.2	228.6

✱**Test Conditions:** constant current drive, no acceleration,2 microsteps,drive voltage 40 V.

■ Single-Stack Stepper Motor

Electrical Parameters

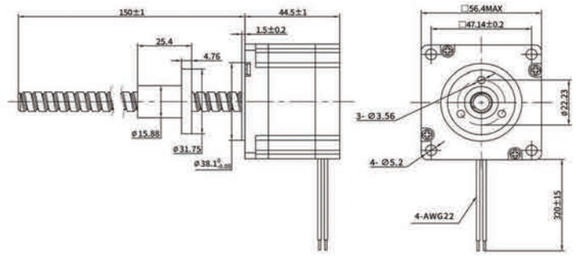
57-Series Hybrid Stepper Linear Actuator (1.8° Step Angle)			
Motor Type	External		57E2045
	Non-Captive		57N2045
	Captive		57C2045
Wiring		Bipolar	
Rated Voltage	3.25VDC	5VDC	12VDC
Rated Current	2.0A	1.3A	0.55A
Resistance/Phase	1.6Ω	3.8Ω	22Ω
Inductance/Phase	3.5mH	15.5mH	58mH
Power Input		13W	
Rotor inertia		166gcm2	
Temperature Rise		75°C	
Insulation Class		B-Class(F-Class Optional)	
Weight		511g	
Insulation Resistance		50MΩ	

Common Lead Screws and Leads

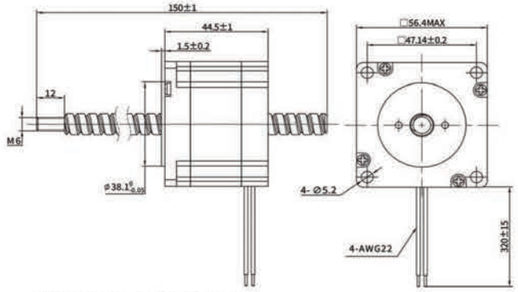
Screw Diameter(mm)	Lead(mm)	Lead code	Step Length (mm)	Screw Diameter(mm)	Lead(mm)	Lead code	Step Length (mm)
Φ9.525	0.635	AA	0.003175	Φ9.525	6.35	S0	0.03175
Φ9.525	1.27	D0	0.00635	Φ9.525	9.525	V0	0.047625
Φ9.525	1.5875	F0	0.0079375	Φ9.525	9.7536	W0	0.048768
Φ9.525	2.1167	F0	0.0079375	Φ9.525	10.16	X0	0.0508
Φ9.525	2.54	K0	0.0127	Φ9.525	12.7	Y0	0.0635
Φ9.525	3.175	L0	0.015875	Φ9.525	25.4	Z0	0.127
Φ9.525	4.2333	P0	0.021167	Φ10	2	G0	0.01
Φ9.525	5.08	R0	0.0254				

Motor Outline Dimension Drawing

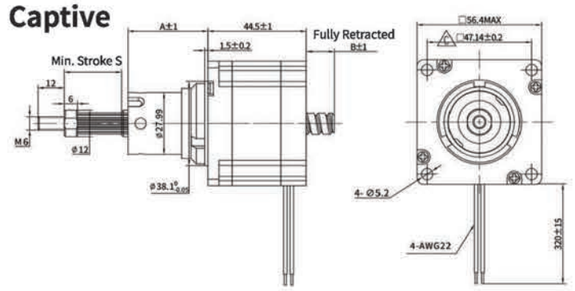
External



Non-Captive



Captive

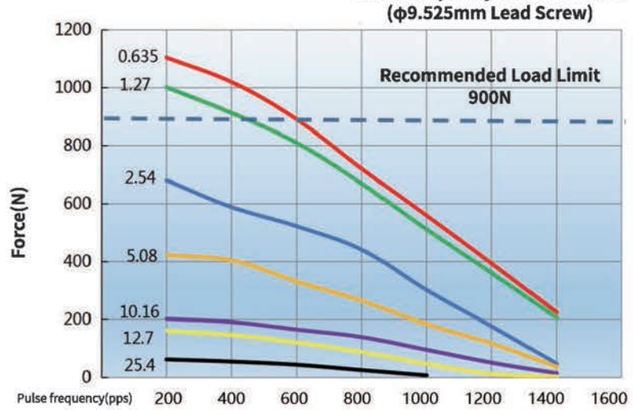


Stroke Specifications

Stroke(mm)	Dimension A(mm)	Dimension B(mm)
12.7	25.7	0.6
19.1	32.1	7.9
25.4	38.4	14.2
31.8	44.8	20.6
38.1	51.1	26.9
50.8	63.8	39.6
63.5	76.5	52.3

Linear Velocity vs. Force Curve

Series 57 (45mm Body, Bipolar)
Pulse Frequency vs. Force Curve
(ϕ9.525mm Lead Screw)



Lead(mm)	Linear Velocity mm/s							
0.635	0.635	1.27	1.905	2.54	3.175	3.81	4.445	5.08
1.27	1.27	2.54	3.81	5.08	6.35	7.62	8.89	10.16
2.54	2.54	5.08	7.62	10.16	12.7	15.24	17.78	20.32
5.08	5.08	10.16	15.24	20.32	25.4	30.48	35.56	40.64
10.16	10.16	20.32	30.48	40.64	50.8	60.96	71.12	81.28
12.7	12.7	25.4	38.1	50.8	63.5	76.2	88.9	101.6
25.4	25.4	50.8	76.2	101.6	127	152.4	177.8	203.2

∗**Test Conditions:** Constant current chopper drive, no acceleration, 2 microsteps, drive voltage 40V.

■ Double-Stack Stepper Motor

Electrical Parameters

57-Series Hybrid Stepper Linear Actuator (1.8° Step Angle)			
Motor Type	External		57E2065
	Non-Captive		57N2065
	Captive		57C2065
Wiring		Bipolar	
Rated Voltage	3.25VDC	5VDC	12VDC
Rated Current	3.3A	2.2A	0.9A
Resistance/Phase	0.98Ω	2.31Ω	13.33Ω
Inductance/Phase	3.2mH	7.6mH	35mH
Power Input		25W	
Rotor inertia		332gcm2	
Temperature Rise		75°C	
Insulation Class		B-Class(F-Class Optional)	
Weight		958g	
Insulation Resistance		50MΩ	

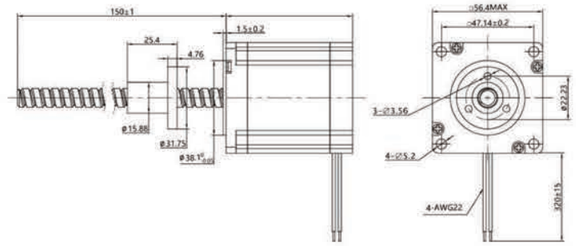
Common Lead Screws and Leads

Screw Diameter(mm)	Lead(mm)	Lead code	Step Length (mm)
Φ9.525	0.635	AA	0.003175
Φ9.525	1.27	D0	0.00635
Φ9.525	1.5875	F0	0.0079375
Φ9.525	2.1167	F0	0.0079375
Φ9.525	2.54	K0	0.0127
Φ9.525	3.175	L0	0.015875
Φ9.525	4.2333	P0	0.021167
Φ9.525	5.08	R0	0.0254

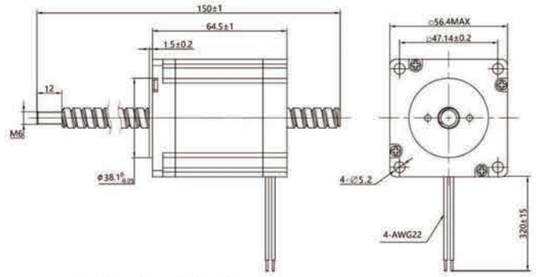
Screw Diameter(mm)	Lead(mm)	Lead code	Step Length (mm)
Φ9.525	6.35	S0	0.03175
Φ9.525	9.525	V0	0.047625
Φ9.525	9.7536	W0	0.048768
Φ9.525	10.16	X0	0.0508
Φ9.525	12.7	Y0	0.0635
Φ9.525	25.4	Z0	0.127
Φ10	2	G0	0.01

Motor Outline Dimension Drawing

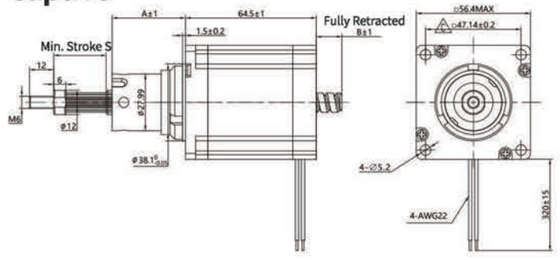
External



Non-Captive



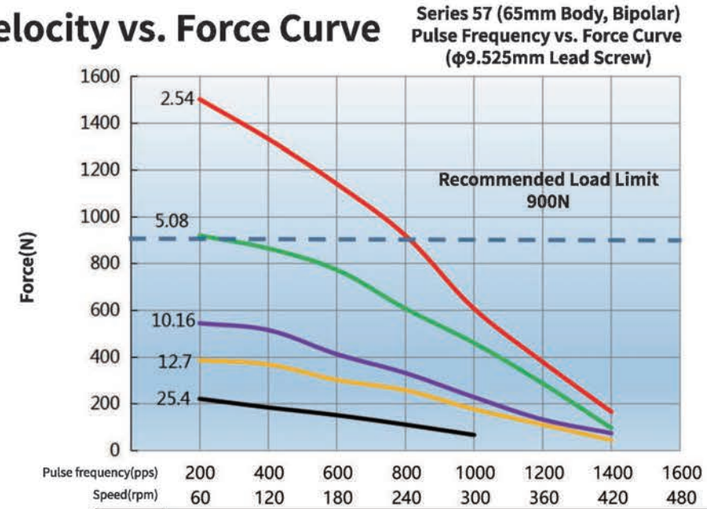
Captive



Stroke Specifications

Stroke(mm)	Dimension A(mm)	Dimension B(mm)
12.7	25.7	0
19.1	32.1	0
25.4	38.4	0
31.8	44.8	6.6
38.1	51.1	12.9
50.8	63.8	25.6
63.5	76.5	38.3

Linear Velocity vs. Force Curve



Lead(mm)	Linear Velocity mm/s							
2.54	2.54	5.08	7.62	10.16	12.7	15.24	17.78	20.32
5.08	5.08	10.16	15.24	20.32	25.4	30.48	35.56	40.64
10.16	10.16	20.32	30.48	40.64	50.8	60.96	71.12	81.28
12.7	12.7	25.4	38.1	50.8	63.5	76.2	88.9	101.6
25.4	25.4	50.8	76.2	101.6	127	152.4	177.8	203.2

∗**Test Conditions:** Constant current chopper drive, no acceleration, 2 microsteps, drive voltage 40V.

■ Single-Stack Stepper Motor

Electrical Parameters

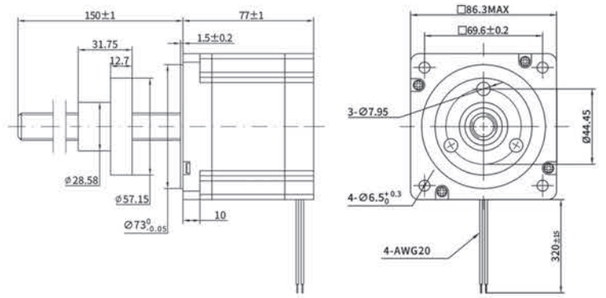
86-Series Hybrid Stepper Linear Actuator (1.8° Step Angle)			
Motor Type	External		86E2078
	Non-Captive		86N2078
	Captive		86C2078
Wiring		Bipolar	
Rated Voltage	2.85VDC	5VDC	12VDC
Rated Current	5.47A	3.12A	1.3A
Resistance/Phase	0.52Ω	1.6Ω	9.23Ω
Inductance/Phase	2.86mH	8.8mH	51mH
Power Input		31.2W	
Rotor Inertia		1760gcm2	
Temperature Rise		75°C	
Insulation Class		B-Class (F-Class Optional)	
Weight		2.3Kg	
Insulation Resistance		50MΩ	

Common Lead Screws and Leads

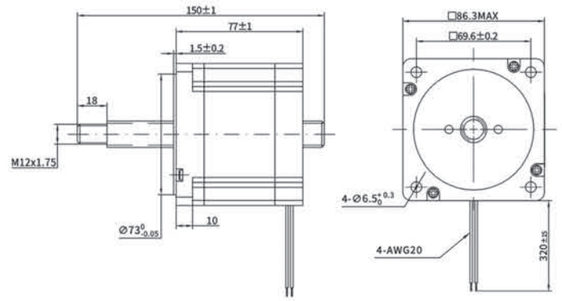
Screw Diameter(mm)	Lead(mm)	Lead code	Step Length (mm)
Φ15.875	2.54	K0	0.0127
Φ15.875	3.175	L0	0.0254
Φ15.875	5.08	R0	0.0079375
Φ15.875	6.35	S0	0.03175
Φ15.875	12.7	Y0	0.0635
Φ15.875	25.4	Z0	0.127

Motor Outline Dimension Drawing

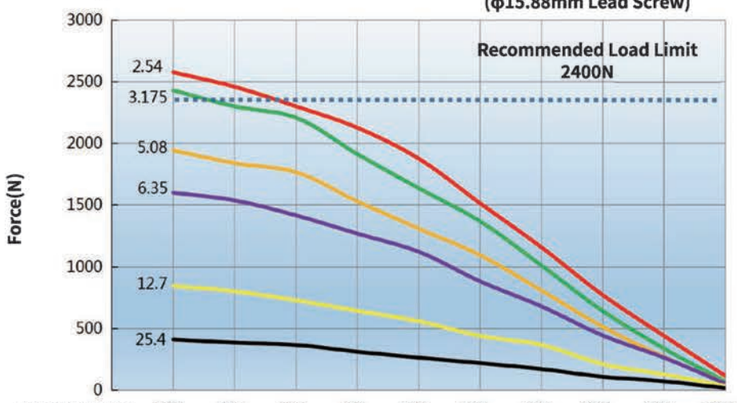
External



Non-Captive



Linear Velocity vs. Force Curve



Lead(mm)		Linear Velocity mm/s								
2.54	1.27	2.54	3.81	5.08	6.35	7.62	8.89	10.16	11.43	12.7
3.175	1.5875	3.175	4.7625	6.35	7.9375	9.525	11.113	12.7	14.288	15.875
5.08	2.54	5.08	7.62	10.16	12.7	15.24	17.78	20.32	22.86	25.4
6.35	3.175	6.35	9.525	12.7	15.875	19.05	22.225	25.4	28.575	31.75
12.7	6.35	12.7	19.05	25.4	31.75	38.1	44.45	50.8	57.15	63.5
25.4	12.7	25.4	38.1	50.8	63.5	76.2	88.9	101.6	114.3	127

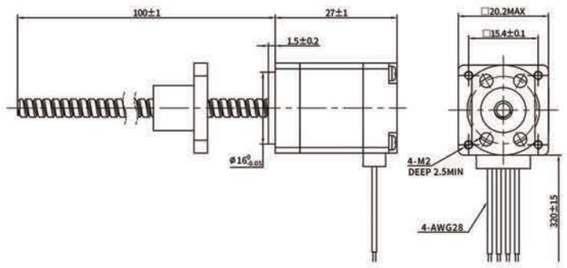
∗**Test Conditions:** Constant current chopper drive, no acceleration, 2 microsteps, drive voltage 40V.

■ Single-Stack Stepper Motor

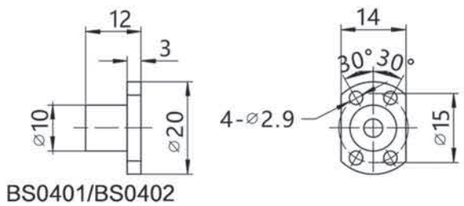
Electrical Parameters

20-Series Stepper Ball Screw Actuator (1.8° Step Angle)			
Wiring		Bipolar	
Rated Voltage	2.5VDC	5VDC	7.5VDC
Current/Phase	1.32A	0.65A	0.43A
Resistance/Phase	1.9Ω	7.7Ω	17.3Ω
Inductance/Phase	0.75mH	3mH	16mH
Power Input		6.5W	
Temperature Rise		75°C	
Insulation Class		B-Class (F-Class Optional)	
Insulation Resistance		50MΩ	

Motor Outline Dimension Drawing



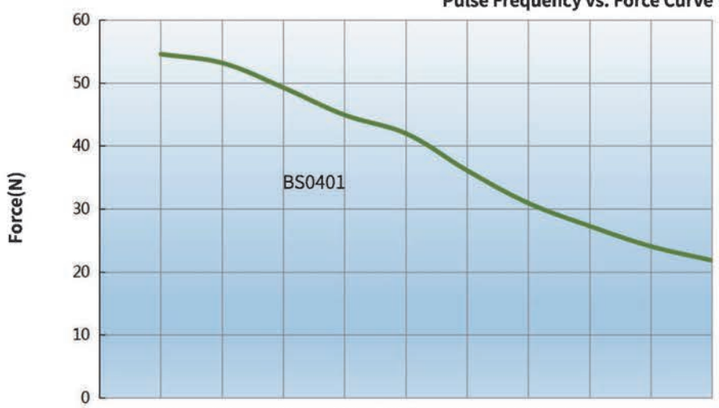
Nut Dimension Drawing



BS0401/BS0402

Linear Velocity vs. Force Curve

Series 20 (28mm Body, Bipolar)
Pulse Frequency vs. Force Curve



Pulse frequency(pps)	200	400	600	800	1000	1200	1400	1600	1800	2000
Speed(rpm)	60	120	180	240	300	360	420	480	540	600

Lead(mm)	Linear Velocity mm/s									
1	1	2	3	4	5	6	7	8	9	10

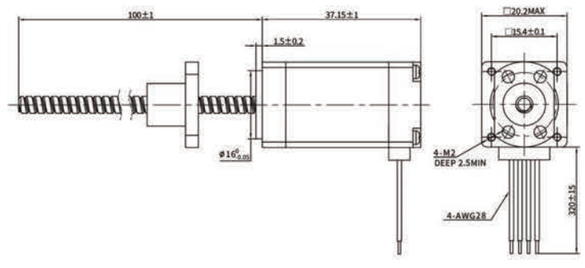
∗**Test Conditions:** Constant current chopper drive, no acceleration, 2 microsteps, drive voltage 40V.

■ Double-Stack Stepper Motor

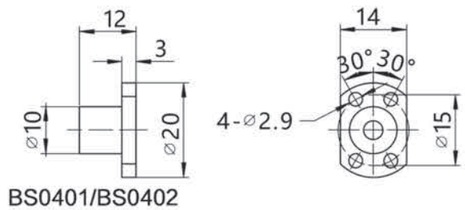
Electrical Parameters

20-Series Stepper Ball Screw Actuator (1.8° Step Angle)			
Wiring		Bipolar	
Rated Voltage	2.5VDC	5VDC	7.5VDC
Current/Phase	1.32A	0.65A	0.43A
Resistance/Phase	1.9Ω	7.7Ω	17.3Ω
Inductance/Phase	0.75mH	3mH	16mH
Power Input		6.5W	
Temperature Rise		75°C	
Insulation Class		B-Class (F-Class Optional)	
Insulation Resistance		50MΩ	

Motor Outline Dimension Drawing



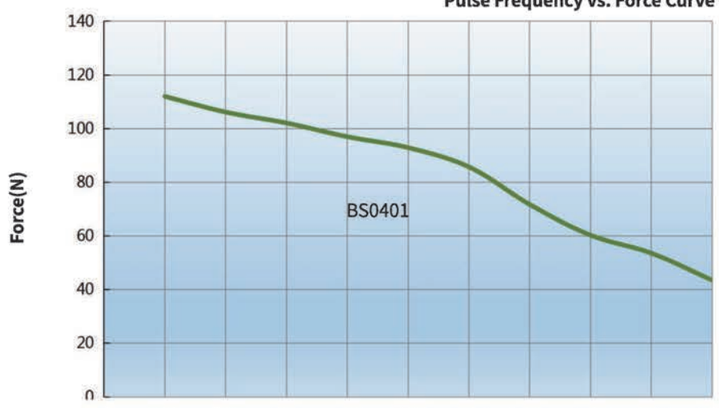
Nut Dimension Drawing



BS0401/BS0402

Linear Velocity vs. Force Curve

Series 20 (38mm Body, Bipolar)
Pulse Frequency vs. Force Curve



Pulse frequency(pps)	200	400	600	800	1000	1200	1400	1600	1800	2000
Speed(rpm)	60	120	180	240	300	360	420	480	540	600

Lead(mm)	Linear Velocity mm/s									
1	1	2	3	4	5	6	7	8	9	10

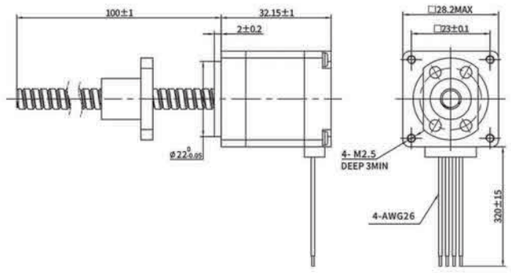
∗**Test Conditions:** constant current drive, no acceleration, 2 subdivisions, drive voltage 24V.

■ Single-Stack Stepper Motor

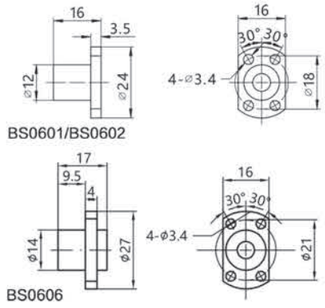
Electrical Parameters

42-Series Stepper Ball Screw Actuator (1.8° Step Angle)			
Wiring		Bipolar	
Rated Voltage	2.1VDC	5VDC	12VDC
Current/Phase	1.0A	0.42A	0.18A
Resistance/Phase	2.1Ω	11.9Ω	66Ω
Inductance/Phase	1.5mH	8.5mH	50.3mH
Power Input		4.2W	
Temperature Rise		75°C	
Insulation Class		B-Class (F-Class Optional)	
Insulation Resistance		50MΩ	

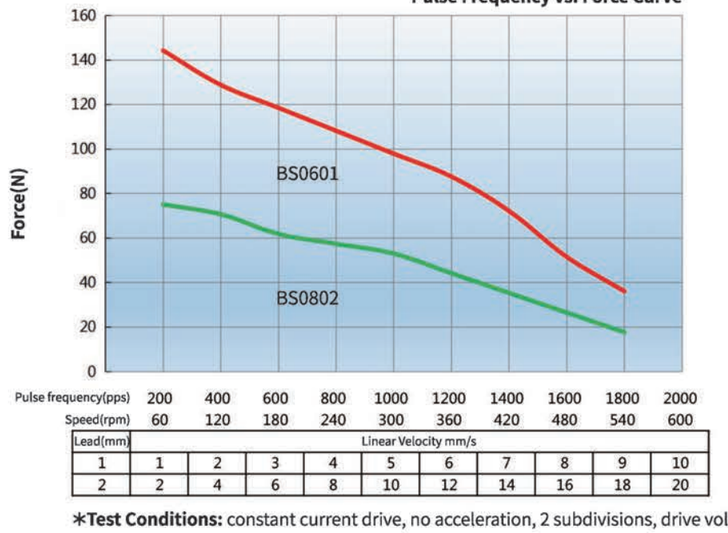
Motor Outline Dimension Drawing



Nut Dimension Drawing



Linear Velocity vs. Force Curve



Pulse frequency(pps)	200	400	600	800	1000	1200	1400	1600	1800	2000
Speed(rpm)	60	120	180	240	300	360	420	480	540	600

Lead(mm)	Linear Velocity mm/s									
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20

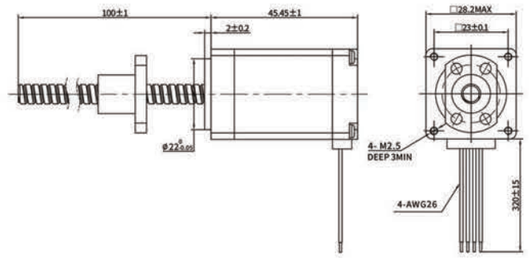
✻**Test Conditions:** constant current drive, no acceleration, 2 subdivisions, drive voltage 24V.

■ Double-Stack Stepper Motor

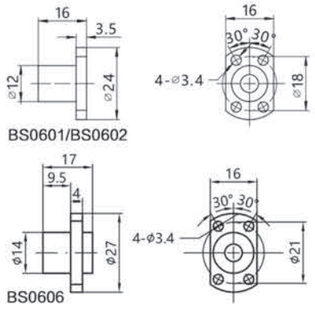
Electrical Parameters

28-Series Stepper Ball Screw Actuator (1.8° Step Angle)			
Wiring		Bipolar	
Rated Voltage	2.1VDC	5VDC	12VDC
Current/Phase	1.9A	0.75A	0.35A
Resistance/Phase	1.2Ω	6.7Ω	34.8Ω
Inductance/Phase	1.0mH	5.8mH	35.6mH
Power Input		7.5W	
Temperature Rise		75°C	
Insulation Class		B-Class (F-Class Optional)	
Insulation Resistance		50MΩ	

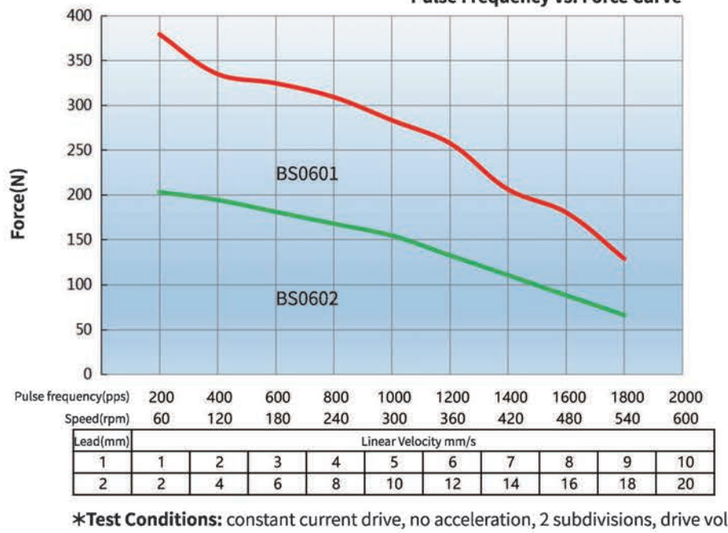
Motor Outline Dimension Drawing



Nut Dimension Drawing



Linear Velocity vs. Force Curve



Pulse frequency(pps)	200	400	600	800	1000	1200	1400	1600	1800	2000
Speed(rpm)	60	120	180	240	300	360	420	480	540	600

Lead(mm)	Linear Velocity mm/s									
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20

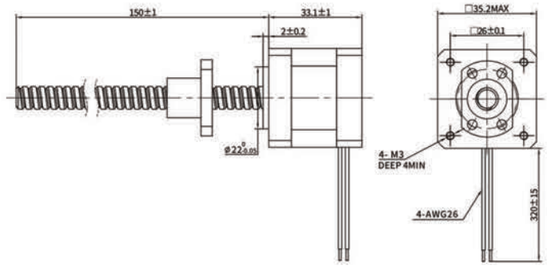
✻**Test Conditions:** constant current drive, no acceleration, 2 subdivisions, drive voltage 24V.

■ Single-Stack Stepper Motor

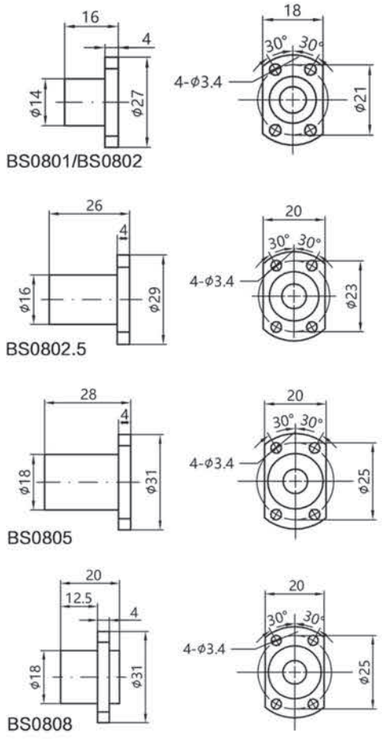
Electrical Parameters

35-Series Stepper Ball Screw Actuator (1.8° Step Angle)			
Wiring		Bipolar	
Rated Voltage	2.33VDC	5VDC	12VDC
Current/Phase	1.25A	0.57A	0.24A
Resistance/Phase	1.86Ω	8.8Ω	50.5Ω
Inductance/Phase	3mH	14mH	66mH
Power Input		5.7W	
Temperature Rise		75°C	
Insulation Class		B-Class (F-Class Optional)	
Insulation Resistance		50MΩ	

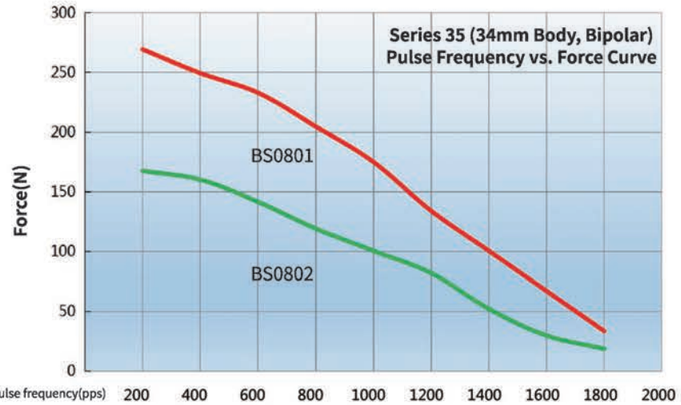
Motor Outline Dimension Drawing



Nut Dimension Drawing



Linear Velocity vs. Force Curve



Pulse frequency(pps)	200	400	600	800	1000	1200	1400	1600	1800	2000
Speed(rpm)	60	120	180	240	300	360	420	480	540	600

Lead(mm)	Linear Velocity mm/s									
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20

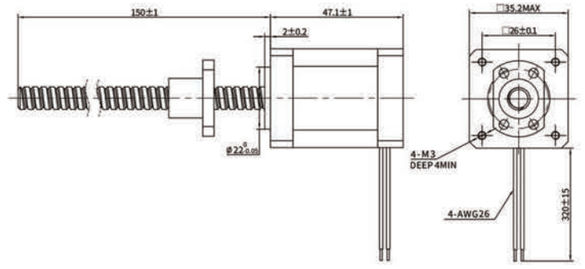
✶**Test Conditions:** constant current drive, no acceleration, 2 subdivisions, drive voltage 40V.

■ Double-Stack Stepper Motor

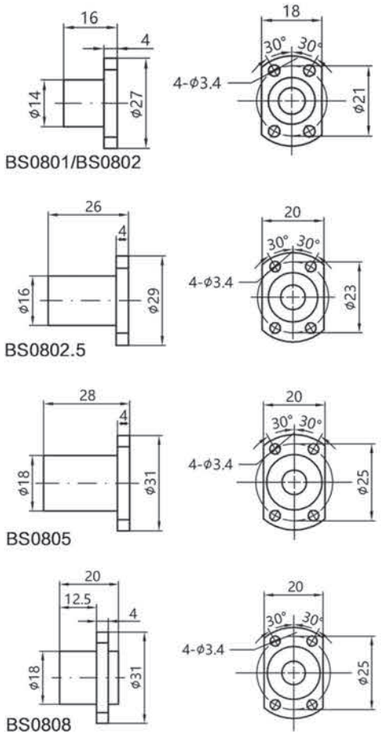
Electrical Parameters

35-Series Stepper Ball Screw Actuator (1.8° Step Angle)			
Wiring		Bipolar	
Rated Voltage	2.33VDC	5VDC	12VDC
Current/Phase	2A	0.91A	0.38A
Resistance/Phase	1.2Ω	5.5Ω	31.6Ω
Inductance/Phase	1.95mH	7.63mH	65.1mH
Power Input		9.1W	
Temperature Rise		75°C	
Insulation Class		B-Class (F-Class Optional)	
Insulation Resistance		50MΩ	

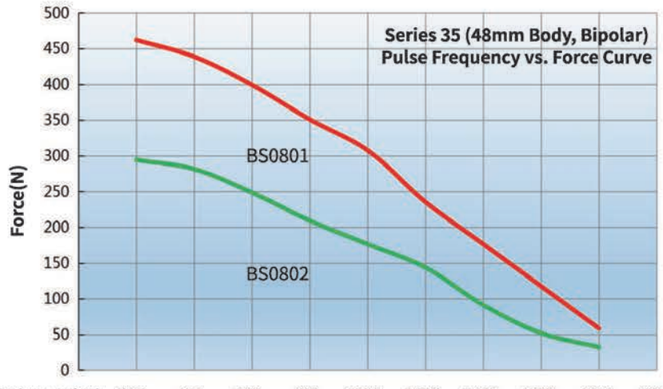
Motor Outline Dimension Drawing



Nut Dimension Drawing



Linear Velocity vs. Force Curve



Pulse frequency(pps)	200	400	600	800	1000	1200	1400	1600	1800	2000
Speed(rpm)	60	120	180	240	300	360	420	480	540	600

Lead(mm)	Linear Velocity mm/s									
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20

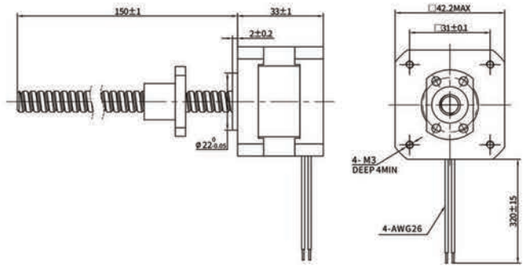
✶**Test Conditions:** constant current drive, no acceleration, 2 subdivisions, drive voltage 40V.

■ Single-Stack Stepper Motor

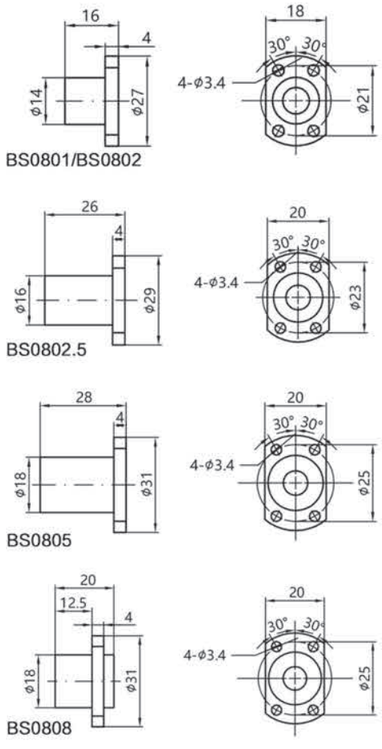
Electrical Parameters

42-Series Stepper Ball Screw Actuator (1.8° Step Angle)			
Wiring		Bipolar	
Rated Voltage	2.33VDC	5VDC	12VDC
Current/Phase	1.5A	0.7A	0.29A
Resistance/Phase	1.56Ω	7.2Ω	41.5Ω
Inductance/Phase	1.9mH	9.5mH	54.0mH
Power Input		10.4W	
Temperature Rise		75°C	
Insulation Class		B-Class (F-Class Optional)	
Insulation Resistance		50MΩ	

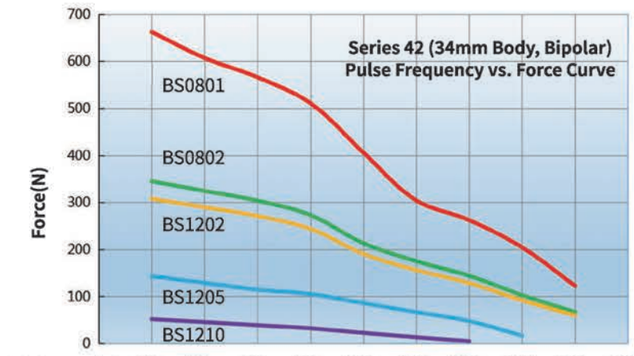
Motor Outline Dimension Drawing



Nut Dimension Drawing



Linear Velocity vs. Force Curve



Pulse frequency(pps)	200	400	600	800	1000	1200	1400	1600	1800	2000
Speed(rpm)	60	120	180	240	300	360	420	480	540	600

Lead(mm)	Linear Velocity mm/s									
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
5	5	10	15	20	25	30	35	40	45	50
10	10	20	30	40	50	60	70	80	90	100

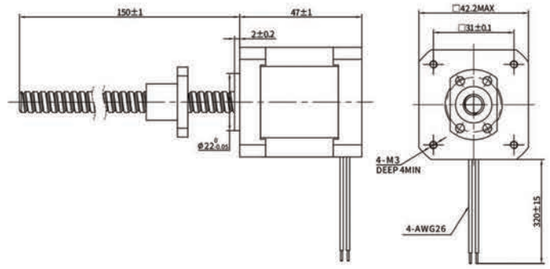
***Test Conditions:** constant current drive, no acceleration, 2 subdivisions, drive voltage 40V.

■ Double-Stack Stepper Motor

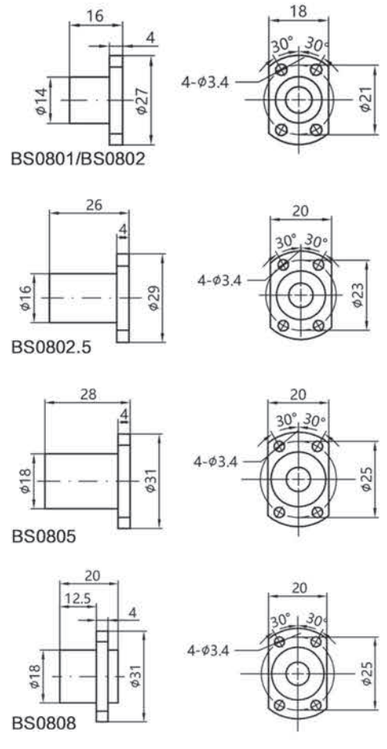
Electrical Parameters

42-Series Stepper Ball Screw Actuator (1.8° Step Angle)			
Wiring		Bipolar	
Rated Voltage	2.33VDC	5VDC	12VDC
Current/Phase	2.6A	1.3A	0.55A
Resistance/Phase	0.85Ω	3.8Ω	21.9Ω
Inductance/Phase	1.1mH	7.8mH	45.1mH
Power Input		10.4W	
Temperature Rise		75°C	
Insulation Class		B-Class (F-Class Optional)	
Insulation Resistance		50MΩ	

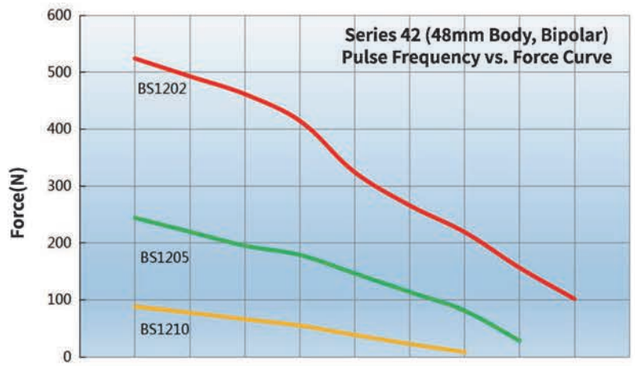
Motor Outline Dimension Drawing



Nut Dimension Drawing



Linear Velocity vs. Force Curve



Pulse frequency(pps)	200	400	600	800	1000	1200	1400	1600	1800	2000
Speed(rpm)	60	120	180	240	300	360	420	480	540	600

Lead(mm)	Linear Velocity mm/s									
2	2	4	6	8	10	12	14	16	18	20
5	5	10	15	20	25	30	35	40	45	50
10	10	20	30	40	50	60	70	80	90	100

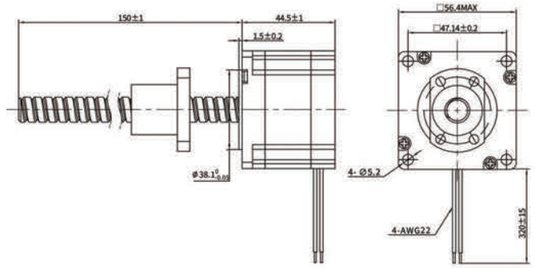
***Test Conditions:** constant current drive, no acceleration, 2 subdivisions, drive voltage 40V.

■ Single-Stack Stepper Motor

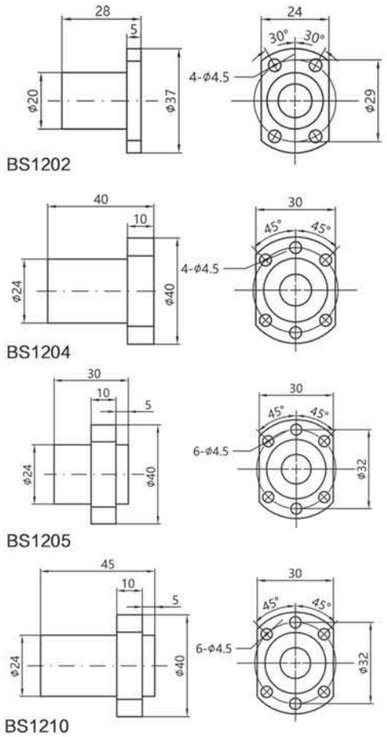
Electrical Parameters

57-Series Stepper Ball Screw Actuator (1.8° Step Angle)			
Wiring		Bipolar	
Rated Voltage	3.25VDC	5VDC	12VDC
Current/Phase	2.0A	1.3A	0.55A
Resistance/Phase	1.6Ω	3.8Ω	22Ω
Inductance/Phase	3.5mH	15.5mH	58mH
Power Input		13W	
Temperature Rise		75°C	
Insulation Class		B-Class (F-Class Optional)	
Insulation Resistance		50MΩ	

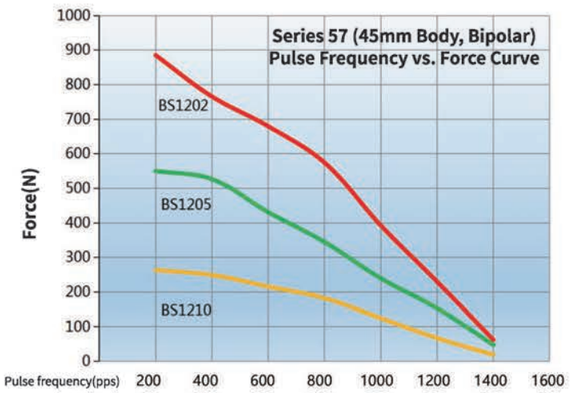
Motor Outline Dimension Drawing



Nut Dimension Drawing



Linear Velocity vs. Force Curve



Lead(mm)	Linear Velocity mm/s							
2	2	4	6	8	10	12	14	16
5	5	10	15	20	25	30	35	40
10	10	20	30	40	50	60	70	80

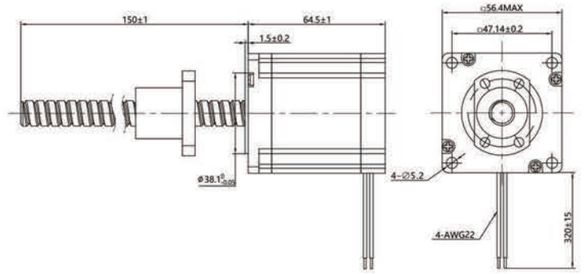
***Test Conditions:** constant current drive, no acceleration, 2 subdivisions, drive voltage 40V.

■ Double-Stack Stepper Motor

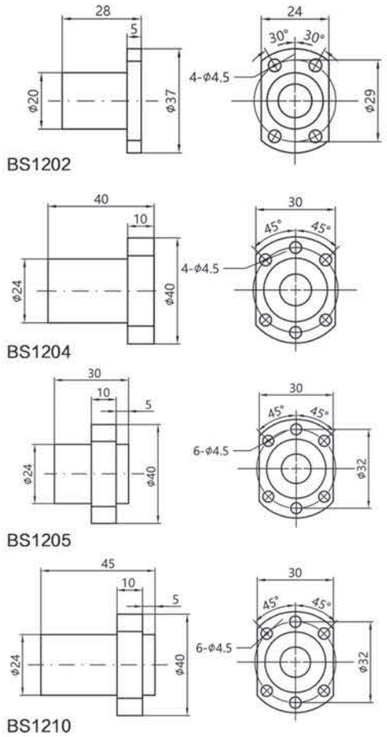
Electrical Parameters

57-Series Stepper Ball Screw Actuator (1.8° Step Angle)			
Wiring		Bipolar	
Rated Voltage	3.25VDC	5VDC	12VDC
Current/Phase	3.3A	2.2A	0.9A
Resistance/Phase	0.98Ω	2.31Ω	13.33Ω
Inductance/Phase	3.2mH	7.6mH	35mH
Power Input		25W	
Temperature Rise		75°C	
Insulation Class		B-Class (F-Class Optional)	
Insulation Resistance		50MΩ	

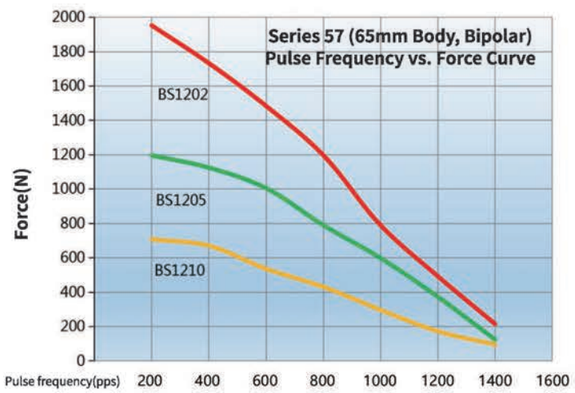
Motor Outline Dimension Drawing



Nut Dimension Drawing



Linear Velocity vs. Force Curve



Lead(mm)	Linear Velocity mm/s							
2	2	4	6	8	10	12	14	16
5	5	10	15	20	25	30	35	40
10	10	20	30	40	50	60	70	80

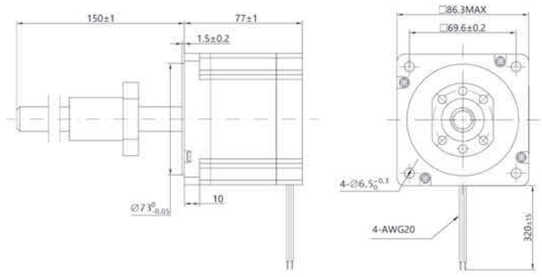
***Test Conditions:** constant current drive, no acceleration, 2 subdivisions, drive voltage 40V.

■ Single-Stack Stepper Motor

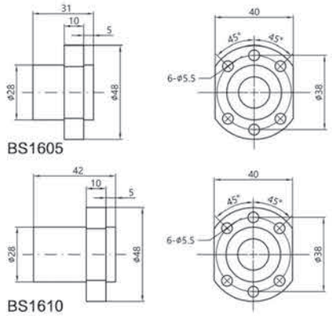
Electrical Parameters

86-Series Stepper Ball Screw Actuator (1.8° Step Angle)			
Wiring		Bipolar	
Rated Voltage	2.85VDC	5VDC	12VDC
Current/Phase	5.47A	3.12A	1.3A
Resistance/Phase	0.52Ω	1.6Ω	9.23Ω
Inductance/Phase	2.86mH	8.8mH	51mH
Power Input		31.2W	
Temperature Rise		75°C	
Insulation Class		B-Class (F-Class Optional)	
Insulation Resistance		50MΩ	

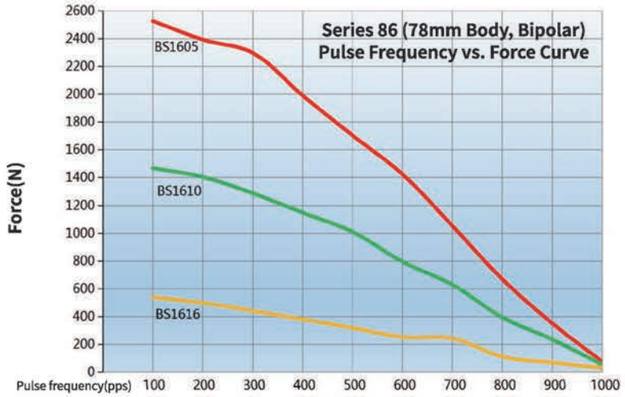
Motor Outline Dimension Drawing



Nut Dimension Drawing



Linear Velocity vs. Force Curve



Pulse frequency(pps)	100	200	300	400	500	600	700	800	900	1000
Speed(rpm)	30	60	90	120	150	180	210	240	270	300

Lead(mm)	Linear Velocity mm/s									
5	2.5	5	7.5	10	12.5	15	17.5	20	22.5	25
10	5	10	15	20	25	30	35	40	45	50
16	8	16	24	32	40	48	56	64	72	80

∗**Test Conditions:** constant current drive, no acceleration, 2 subdivisions, drive voltage 40V.