

AJM SERIES

- ▶ Ironless technology
- ▶ Low cogging force
- ▶ Integrated with hall sensors
- ▶ High force and stiffness



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Introduction

Iron core AJM series linear motors provide compact size, high force density, and quick response.

F_{cn} (Continuous force) = 68.1N ~ 446.8N

F_{pk} (Peak force) = 214.7N ~ 1409.1N

Features

- ▶ Iron core technology and low cogging force
- ▶ High continuous and peak force
- ▶ Optional hall sensors
- ▶ High motor constant

Applications

Best suited for point-to-point motion with micron level positioning ; unlimited travel stroke with top speed of 5m/s or faster (stroke of 100m or longer).

Applications & Industries: high speed positioning systems for product handling in semiconductor, photovoltaic and lithium battery, glass and LCD applications, as well as industrial printing machines, laser processing machines with demanding precision and motion control requirements.

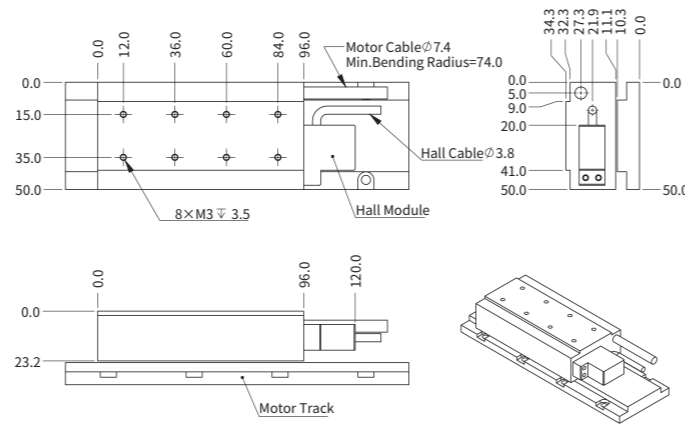
	Series	Coil Length (mm)	Continuous Force (F _{cn}) / PeakForce (F _{pk})								Unit: N
			100	150	200	250	300	400	500	...	
	AJM30-B2	96	● 68.1 / ■ 214.7								
	AJM30-B4	176	● 136.2 / ■ 429.4								
	AJM50-B2	96	● 117.0 / ■ 369.0								
	AJM50-B4	176	● 234.0 / ■ 738.1								
	AJM80-B2	96	● 174.5 / ■ 550.2								
	AJM80-B4	176	● 348.9 / ■ 1100.4								
	AJM100-B2	96	● 223.4 / ■ 704.5								
	AJM100-B4	176	● 446.8 / ■ 1409.1								

● No hall sensor.

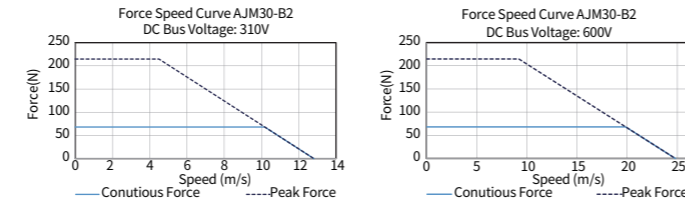
AJM30-B2

AJM30-B2			
Performance Parameters		Symbol	Unit
Continuous Force (NC) @100°C		F _{cn}	N
Peak Force		F _{pk}	N
Force Constant ±10%		K _f	N/Arms
Back EMF Constant ±10%		K _e	Vpeak/(m/s)
Motor Constant @25°C		K _m	N/Sqrt(W)
Resistance (L-L) 25°C ±10%		R ₂₅	Ω
Inductance (L-L) ±30%		L	mH
Electrical Time Constant		τ _e	ms
Continuous Current (NC) @100°C		I _{cn}	Arms
Peak Current		I _{pk}	Arms
Continuous Power Dissipation (NC) @100°C		P _{cn}	W
Max. Coil Temperature		t _{max}	°C
Thermal Dissipation Constant (NC)		K _{thn}	W/°C
Max. Bus Voltage		U _{bus}	Vdc
Magnetic Period		T _{MN}	mm
Attraction Force		F _a	N
Mechanical Parameters			
Coil Mass (NC)		m _{cn}	kg
Coil Length (NC)		L _{cn}	mm
Track Mass Per Meter		m _{track}	kg/m
Other Information			
Insulation Class		Class B (130°C)	
Protection Grade		IP00	
Compliance with Global Standards		Chinese RoHS, CE	
Ambient Temperature	Operation	0°C to 40°C (non-freezing)	
	Storage	-15°C to 70°C (non-freezing)	
Ambient Humidity	Operation	10%RH to 80%RH (non-condensing)	
	Storage	10%RH to 90%RH (non-condensing)	
Recommended Ambience		Indoor (no direct sunlight); No corrosive gas, inflammable gas, oil mist or dust.	

Dimension



Force-Speed Curve

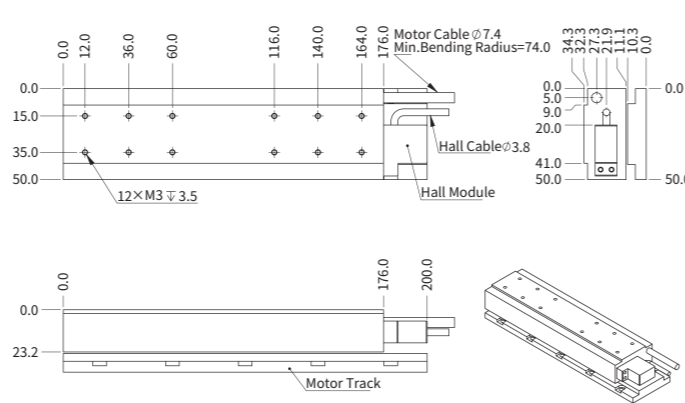


- Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment. Abbreviations: NC-Natural Cooling.
- Resistance is measured by DC current with standard 0.5 m cable.
- Inductance is measured by current frequency of 1 kHz.
- The contents of datasheet are subject to change without prior notice.

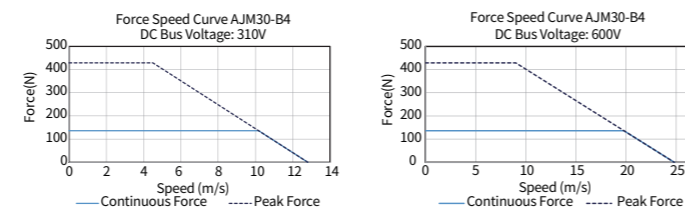
AJM30-B4

AJM30-B4			
Performance Parameters		Symbol	Unit
Continuous Force (NC) @100°C		F _{cn}	N
Peak Force		F _{pk}	N
Force Constant ±10%		K _f	N/Arms
Back EMF Constant ±10%		K _e	Vpeak/(m/s)
Motor Constant @25°C		K _m	N/Sqrt(W)
Resistance (L-L) 25°C ±10%		R ₂₅	Ω
Inductance (L-L) ±30%		L	mH
Electrical Time Constant		τ _e	ms
Continuous Current (NC) @100°C		I _{cn}	Arms
Peak Current		I _{pk}	Arms
Continuous Power Dissipation (NC) @100°C		P _{cn}	W
Max. Coil Temperature		t _{max}	°C
Thermal Dissipation Constant (NC)		K _{thn}	W/°C
Max. Bus Voltage		U _{bus}	Vdc
Magnetic Period		T _{MN}	mm
Attraction Force		F _a	N
Mechanical Parameters			
Coil Mass (NC)		m _{cn}	kg
Coil Length (NC)		L _{cn}	mm
Track Mass Per Meter		m _{track}	kg/m
Other Information			
Insulation Class		Class B (130°C)	
Protection Grade		IP00	
Compliance with Global Standards		Chinese RoHS, CE	
Ambient Temperature	Operation	0°C to 40°C (non-freezing)	
	Storage	-15°C to 70°C (non-freezing)	
Ambient Humidity	Operation	10%RH to 80%RH (non-condensing)	
	Storage	10%RH to 90%RH (non-condensing)	
Recommended Ambience		Indoor (no direct sunlight); No corrosive gas, inflammable gas, oil mist or dust.	

Dimension

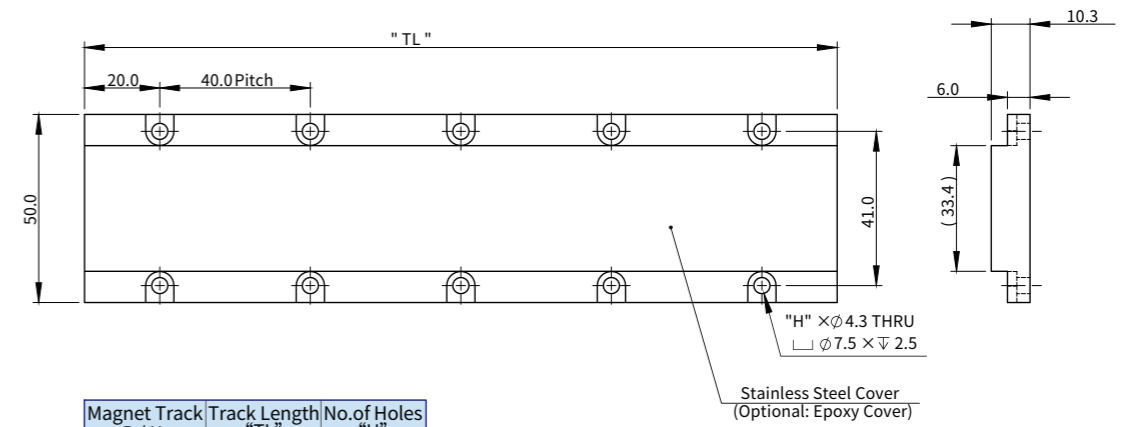


Force-Speed Curve



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AJM30 Track



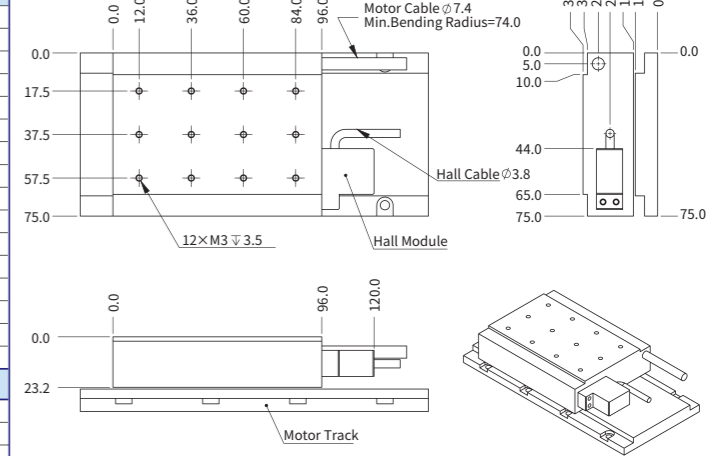
Magnet Track P/N:	Track Length "TL"	No. of Holes "H"
AJM30-TL80-S	80.0	4
AJM30-TL200-S	200.0	10
AJM30-TL400-S	400.0	20

For epoxy cover option, change "-S" to "-E". (e.g. AJM30-TL80-E)

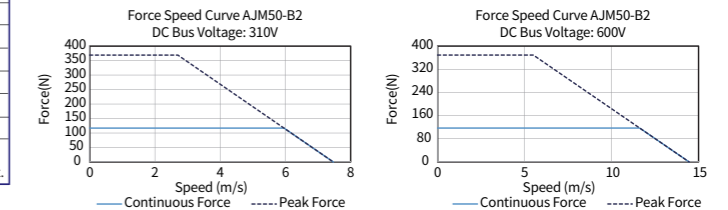
AJM50-B2

AJM50-B2			
Performance Parameters		Symbol	Unit
Continuous Force (NC) @100°C		F _{cn}	N
Peak Force		F _{pk}	N
Force Constant ±10%		K _f	N/Arms
Back EMF Constant ±10%		K _e	Vpeak/(m/s)
Motor Constant @25°C		K _m	N/Sqrt(W)
Resistance (L-L) 25°C ±10%		R ₂₅	Ω
Inductance (L-L) ±30%		L	mH
Electrical Time Constant		τ _e	ms
Continuous Current (NC) @100°C		I _{cn}	Arms
Peak Current		I _{pk}	Arms
Continuous Power Dissipation (NC) @100°C		P _{cn}	W
Max. Coil Temperature		t _{max}	°C
Thermal Dissipation Constant (NC)		K _{thn}	W/°C
Max. Bus Voltage		U _{bus}	Vdc
Magnetic Period		T _{MN}	mm
Attraction Force		F _a	N
Mechanical Parameters			
Coil Mass (NC)		m _{cn}	kg
Coil Length (NC)		L _{cn}	mm
Track Mass Per Meter		m _{track}	kg/m
Other Information			
Insulation Class		Class B (130°C)	
Protection Grade		IP00	
Compliance with Global Standards		Chinese RoHS, CE	
Ambient Temperature	Operation	0°C to 40°C (non-freezing)	
	Storage	-15°C to 70°C (non-freezing)	
Ambient Humidity	Operation	10%RH to 80%RH (non-condensing)	
	Storage	10%RH to 90%RH (non-condensing)	
Recommended Ambience		Indoor (no direct sunlight); No corrosive gas, inflammable gas, oil mist or dust.	

Dimension



Force-Speed Curve

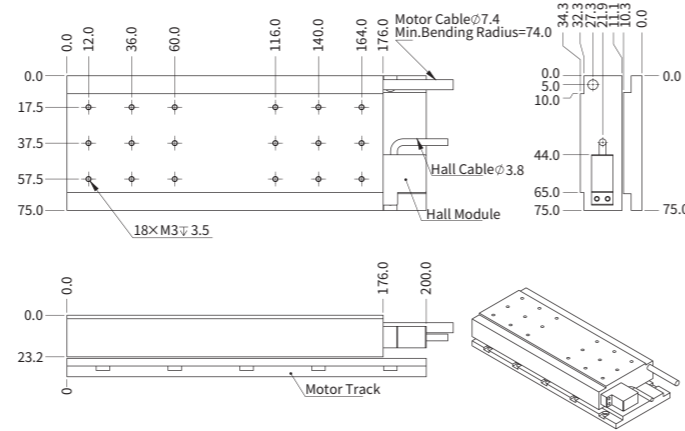


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- Resistance is measured by DC current with standard 0.5 m cable.
- Inductance is measured by current frequency of 1 kHz.
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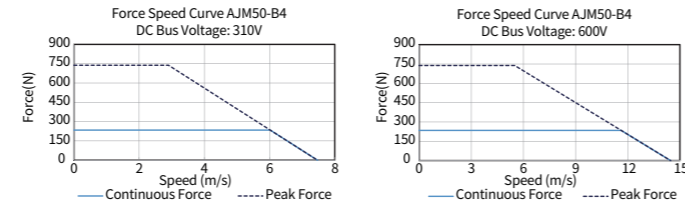
AJM50-B4

AJM50-B4			
Performance Parameters			
Continuous Force (NC) @100°C	F _{cn}	N	234.0
Peak Force	F _{pk}	N	738.1
Force Constant ±10%	K _f	N/Arms	50.9
Back EMF Constant ±10%	K _e	Vpeak/(m/s)	41.5
Motor Constant @25°C	K _m	N/Sqrt(W)	23.8
Resistance (L-L) 25°C ±10%	R ₂₅	Ω	3.1
Inductance (L-L) ±30%	L	mH	13.0
Electrical Time Constant	τ _e	ms	4.2
Continuous Current (NC) @100°C	I _{cn}	Arms	4.6
Peak Current	I _{pk}	Arms	18.0
Continuous Power Dissipation (NC) @100°C	P _{cn}	W	124.8
Max. Coil Temperature	t _{max}	°C	100
Thermal Dissipation Constant (NC)	K _{thn}	W/°C	1.7
Max. Bus Voltage	U _{bus}	Vdc	600
Magnetic Period	T _{MN}	mm	20
Attraction Force	F _a	N	1299
Mechanical Parameters			
Coil Mass (NC)	m _{cn}	kg	1.7
Coil Length (NC)	L _{cn}	mm	176
Track Mass Per Meter	m _{track}	kg/m	5.0
Other Information			
Insulation Class	Class B (130°C)		
Protection Grade	IP00		
Compliance with Global Standards	Chinese RoHS, CE		
Ambient Temperature	Operation	0°C to 40°C (non-freezing)	
	Storage	-15°C to 70°C (non-freezing)	
Ambient Humidity	Operation	10%RH to 80%RH (non-condensing)	
	Storage	10%RH to 90%RH (non-condensing)	
Recommended Ambience	Indoor (no direct sunlight); No corrosive gas, inflammable gas, oil mist or dust.		

Dimension

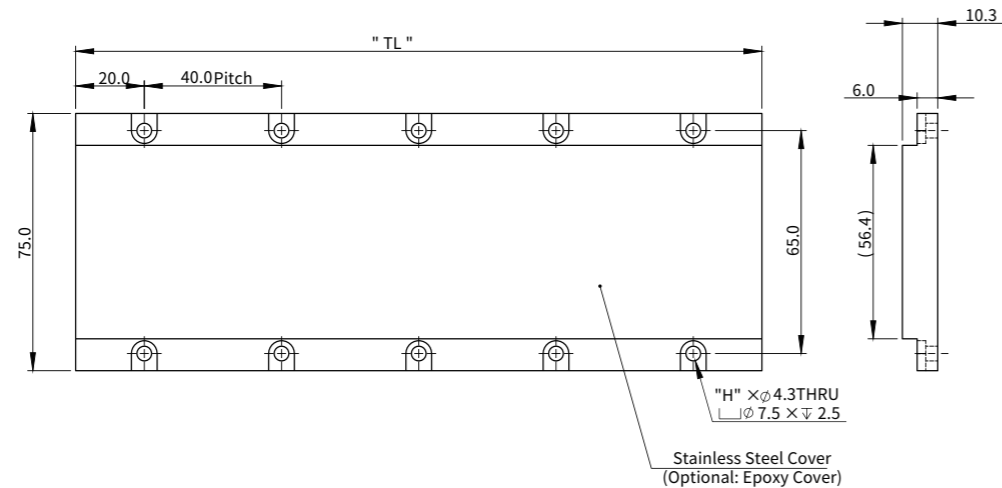


Force-Speed Curve



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 - Resistance is measured by DC current with standard 0.5 m cable.
 - Inductance is measured by current frequency of 1 kHz.
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AJM50 Track



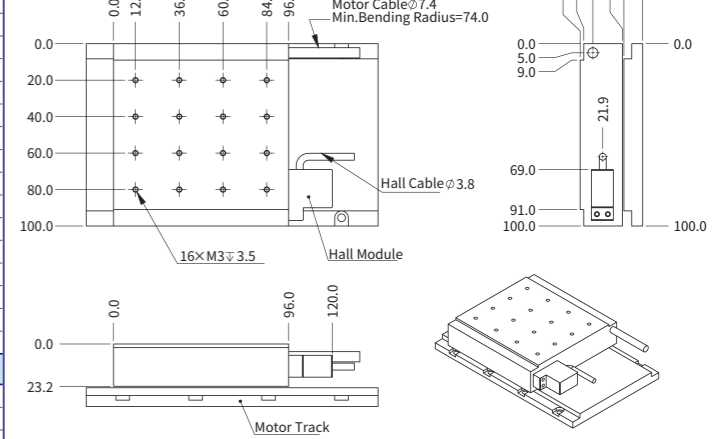
Magnet Track P/N:	Track Length "TL"	No. of Holes "H"
AJM50-TL80-S	80.0	4
AJM50-TL200-S	200.0	10
AJM50-TL400-S	400.0	20

For epoxy cover option, change "-S" to "-E". (e.g. AJM50-TL80-E)

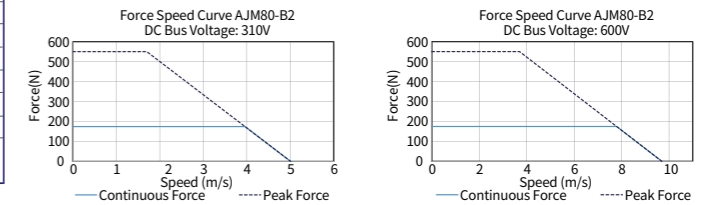
AJM80-B2

AJM80-B2			
Performance Parameters			
Continuous Force (NC) @100°C	F _{cn}	N	174.5
Peak Force	F _{pk}	N	550.2
Force Constant ±10%	K _f	N/Arms	75.9
Back EMF Constant ±10%	K _e	Vpeak/(m/s)	61.9
Motor Constant @25°C	K _m	N/Sqrt(W)	21.4
Resistance (L-L) 25°C ±10%	R ₂₅	Ω	8.4
Inductance (L-L) ±30%	L	mH	37.3
Electrical Time Constant	τ _e	ms	4.5
Continuous Current (NC) @100°C	I _{cn}	Arms	2.3
Peak Current	I _{pk}	Arms	9.0
Continuous Power Dissipation (NC) @100°C	P _{cn}	W	85.5
Max. Coil Temperature	t _{max}	°C	100
Thermal Dissipation Constant (NC)	K _{thn}	W/°C	1.1
Max. Bus Voltage	U _{bus}	Vdc	600
Magnetic Period	T _{MN}	mm	20
Attraction Force	F _a	N	969
Mechanical Parameters			
Coil Mass (NC)	m _{cn}	kg	1.2
Coil Length (NC)	L _{cn}	mm	96
Track Mass Per Meter	m _{track}	kg/m	7.0
Other Information			
Insulation Class	Class B (130°C)		
Protection Grade	IP00		
Compliance with Global Standards	Chinese RoHS, CE		
Ambient Temperature	Operation	0°C to 40°C (non-freezing)	
	Storage	-15°C to 70°C (non-freezing)	
Ambient Humidity	Operation	10%RH to 80%RH (non-condensing)	
	Storage	10%RH to 90%RH (non-condensing)	
Recommended Ambience	Indoor (no direct sunlight); No corrosive gas, inflammable gas, oil mist or dust.		

Dimension



Force-Speed Curve

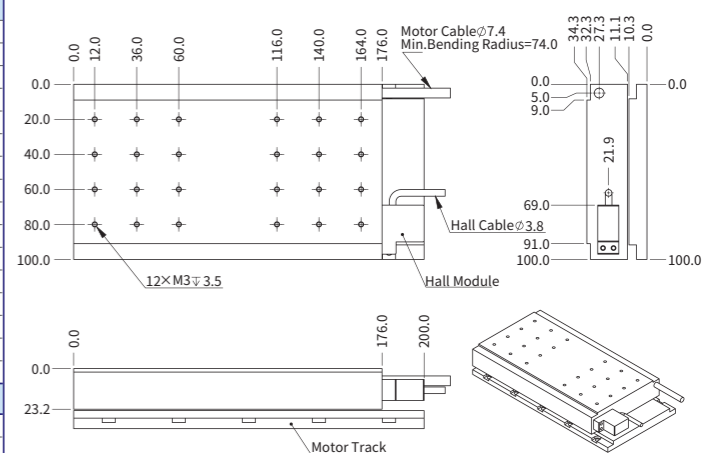


- Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment. Abbreviations: NC-Natural Cooling.
 - Resistance is measured by DC current with standard 0.5 m cable.
 - Inductance is measured by current frequency of 1 kHz.
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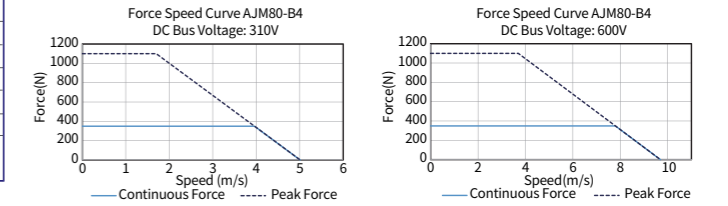
AJM80-B4

AJM80-B4			
Performance Parameters			
Continuous Force (NC) @100°C	F _{cn}	N	348.9
Peak Force	F _{pk}	N	1100.4
Force Constant ±10%	K _f	N/Arms	75.9
Back EMF Constant ±10%	K _e	Vpeak/(m/s)	61.9
Motor Constant @25°C	K _m	N/Sqrt(W)	30.1
Resistance (L-L) 25°C ±10%	R ₂₅	Ω	4.2
Inductance (L-L) ±30%	L	mH	18.6
Electrical Time Constant	τ _e	ms	4.4
Continuous Current (NC) @100°C	I _{cn}	Arms	4.6
Peak Current	I _{pk}	Arms	18.0
Continuous Power Dissipation (NC) @100°C	P _{cn}	W	173.5
Max. Coil Temperature	t _{max}	°C	100
Thermal Dissipation Constant (NC)	K _{thn}	W/°C	2.3
Max. Bus Voltage	U _{bus}	Vdc	600
Magnetic Period	T _{MN}	mm	20
Attraction Force	F _a	N	1937
Mechanical Parameters			
Coil Mass (NC)	m _{cn}	kg	2.3
Coil Length (NC)	L _{cn}	mm	176
Track Mass Per Meter	m _{track}	kg/m	7.0
Other Information			
Insulation Class	Class B (130°C)		
Protection Grade	IP00		
Compliance with Global Standards	Chinese RoHS, CE		
Ambient Temperature	Operation	0°C to 40°C (non-freezing)	
	Storage	-15°C to 70°C (non-freezing)	
Ambient Humidity	Operation	10%RH to 80%RH (non-condensing)	
	Storage	10%RH to 90%RH (non-condensing)	
Recommended Ambience	Indoor (no direct sunlight); No corrosive gas, inflammable gas, oil mist or dust.		

Dimension

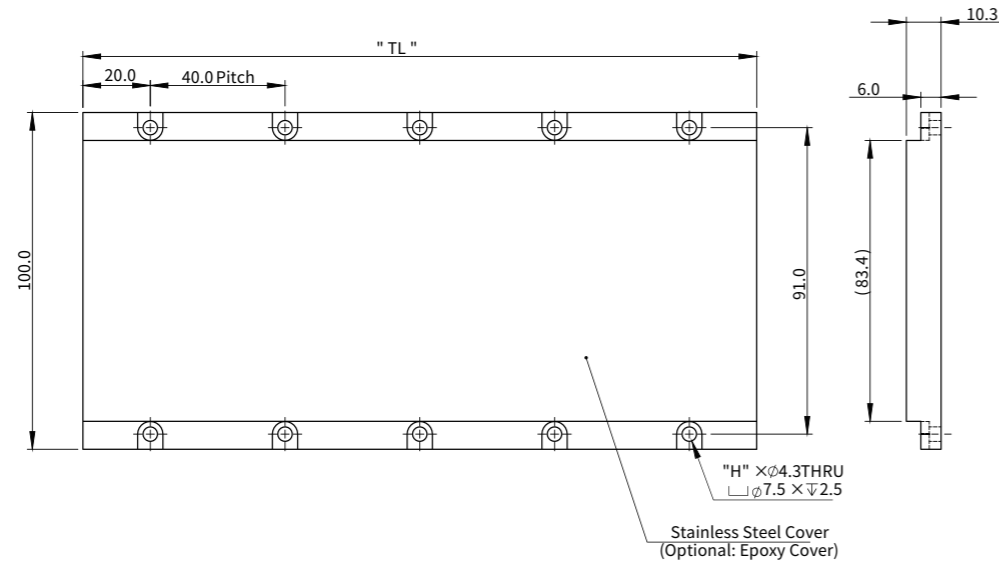


Force-Speed Curve



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 - Inductance is measured by current frequency of 1 kHz.
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AJM80 Track



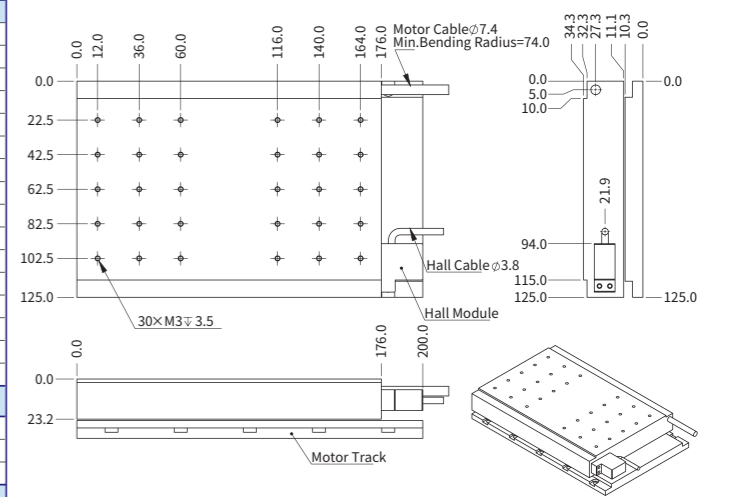
Magnet Track P / N:	Track Length "TL"	No. of Holes "H"
AJM80-TL80-S	80.0	4
AJM80-TL200-S	200.0	10
AJM80-TL400-S	400.0	20

For epoxy cover option, change "-S" to "-E". (e.g. AJM80-TL80-E)

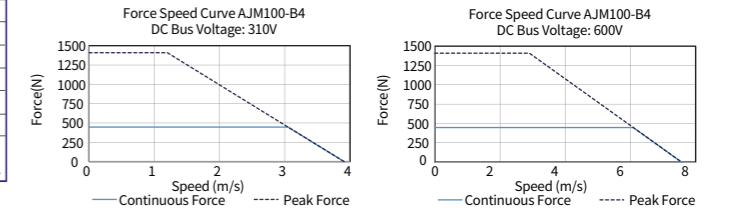
AJM100-B4

AJM100-B4			
Performance Parameters	Symbol	Unit	Parallel
Continuous Force (NC) @100°C	F _{cn}	N	446.8
Peak Force	F _{pk}	N	1409.1
Force Constant ±10%	K _f	N/Arms	97.1
Back EMF Constant ±10%	K _e	Vpeak/(m/s)	79.3
Motor Constant @25°C	K _m	N/Sqrt(W)	34.8
Resistance (L-L) 25°C ±10%	R ₂₅	Ω	5.2
Inductance (L-L) ±30%	L	mH	23.6
Electrical Time Constant	τ _e	ms	4.5
Continuous Current (NC) @100°C	I _{cn}	Arms	4.6
Peak Current	I _{pk}	Arms	18.0
Continuous Power Dissipation (NC) @100°C	P _{cn}	W	213.0
Max. Coil Temperature	t _{max}	°C	100
Thermal Dissipation Constant (NC)	K _{thn}	W/°C	2.8
Max. Bus Voltage	U _{bus}	Vdc	600
Magnetic Period	τ _M	mm	20
Attraction Force	F _a	N	2481
Mechanical Parameters			
Coil Mass (NC)	m _{cn}	kg	2.9
Coil Length (NC)	L _{cn}	mm	176
Track Mass Per Meter	m _{track}	kg/m	8.8
Other Information			
Insulation Class	Class B (130°C)		
Protection Grade	IP00		
Compliance with Global Standards	Chinese RoHS, CE		
Ambient Temperature	Operation	0°C to 40°C (non-freezing)	
	Storage	-15°C to 70°C (non-freezing)	
Ambient Humidity	Operation	10%RH to 80%RH (non-condensing)	
	Storage	10%RH to 90%RH (non-condensing)	
Recommended Ambience	Indoor (no direct sunlight); No corrosive gas, inflammable gas, oil mist or dust.		

Dimension



Force-Speed Curve

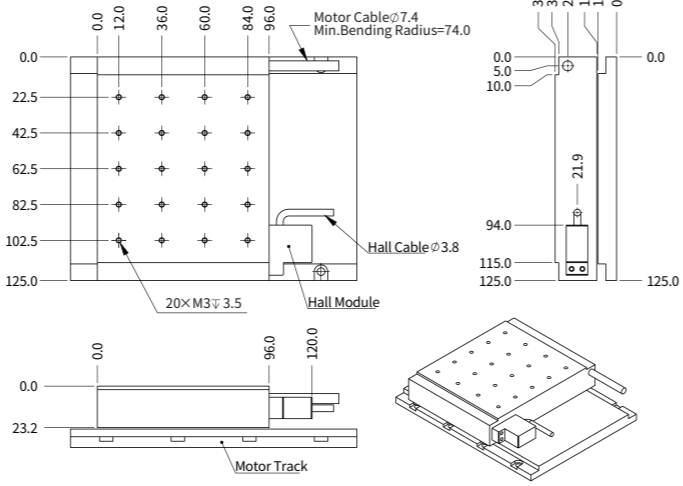


- Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment. Abbreviations: NC-Natural Cooling.
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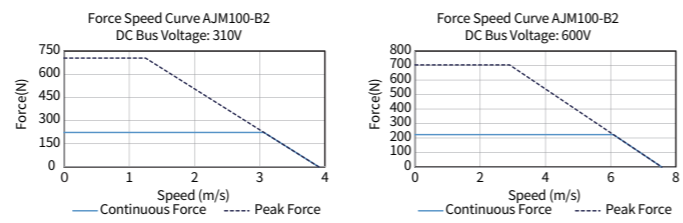
AJM100-B2

AJM100-B2			
Performance Parameters	Symbol	Unit	Series
Continuous Force (NC) @100°C	F _{cn}	N	223.4
Peak Force	F _{pk}	N	704.5
Force Constant ±10%	K _f	N/Arms	97.1
Back EMF Constant ±10%	K _e	Vpeak/(m/s)	79.3
Motor Constant @25°C	K _m	N/Sqrt(W)	24.7
Resistance (L-L) 25°C ±10%	R ₂₅	Ω	10.3
Inductance (L-L) ±30%	L	mH	47.2
Electrical Time Constant	τ _e	ms	4.6
Continuous Current (NC) @100°C	I _{cn}	Arms	2.3
Peak Current	I _{pk}	Arms	9.0
Continuous Power Dissipation (NC) @100°C	P _{cn}	W	105.3
Max. Coil Temperature	t _{max}	°C	100
Thermal Dissipation Constant (NC)	K _{thn}	W/°C	1.4
Max. Bus Voltage	U _{bus}	Vdc	600
Magnetic Period	τ _M	mm	20
Attraction Force	F _a	N	1240
Mechanical Parameters			
Coil Mass (NC)	m _{cn}	kg	1.5
Coil Length (NC)	L _{cn}	mm	96
Track Mass Per Meter	m _{track}	kg/m	8.8
Other Information			
Insulation Class	Class B (130°C)		
Protection Grade	IP00		
Compliance with Global Standards	Chinese RoHS, CE		
Ambient Temperature	Operation	0°C to 40°C (non-freezing)	
	Storage	-15°C to 70°C (non-freezing)	
Ambient Humidity	Operation	10%RH to 80%RH (non-condensing)	
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Recommended Ambience	Indoor (no direct sunlight); No corrosive gas, inflammable gas, oil mist or dust.		

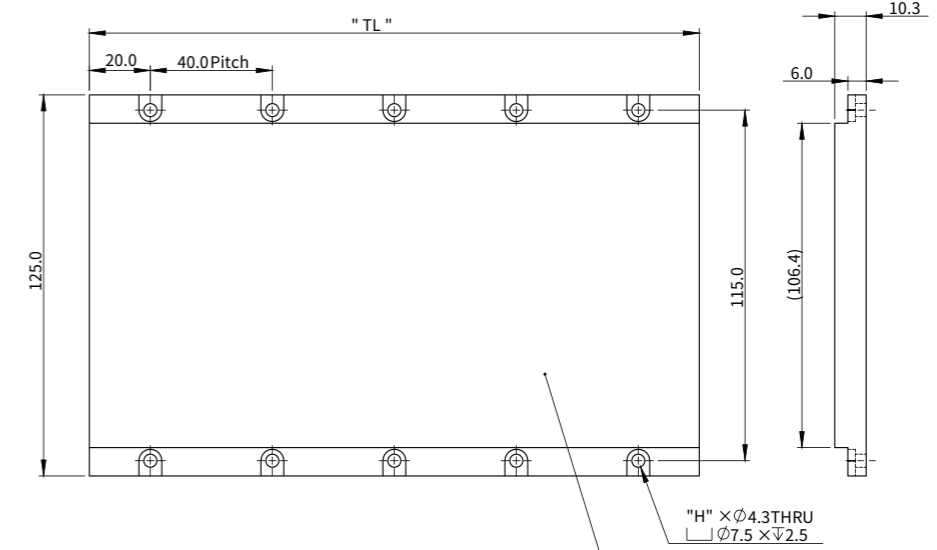
Dimension



Force-Speed Curve



AJM100 Track



Magnet Track P / N:	Track Length "TL"	No. of Holes "H"
AJM100-TL80-S	80.0	4
AJM100-TL200-S	200.0	10
AJM100-TL400-S	400.0	20

For epoxy cover option, change "-S" to "-E". (e.g. AJM100-TL80-E)

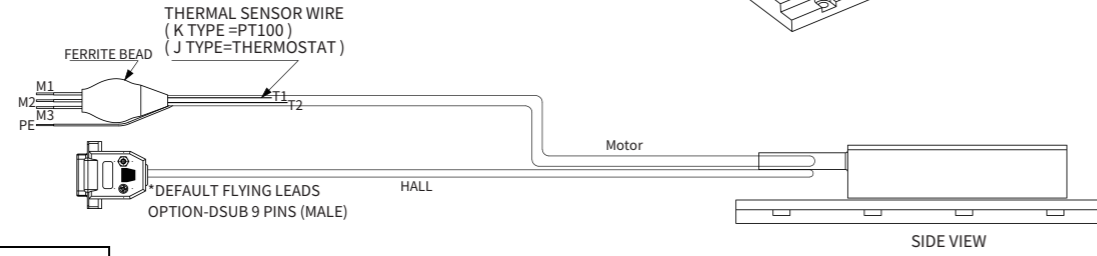
Introduction Sizing Guide Frequently Asked Questions Linear Motors Voice Coil Motors Direct Drive Rotary Motors Motion Control of Gantry Stages Akribis systems

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Motor Cable Connection

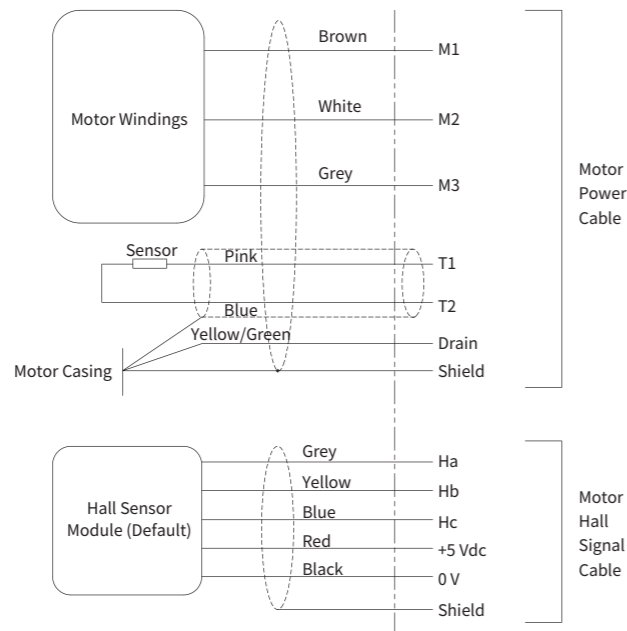
MOTOR CABLE

PIN	DESCRIPTION	NO FERRITE BEAD	FERRITE BEAD
-	M1	BROWN	BLACK1
-	M2	WHITE	BLACK2
-	M3	GREY	BLACK3
-	PE	YELLOW/GREEN	YELLOW/GREEN
-	T1	PINK	PINK
-	T2	BLUE	BLUE



HALL CABLE

PIN	DESCRIPTION	COLOR
1	HA	GREY
2	HB	YELLOW
3	HC	BLUE
4	5VDC	RED
5	0VDC	BLACK



Part Numbering

Motor Coil

AJM30-B2-J-NH-0.5-NFB

Model: **AJM30 / AJM50 / AJM80 / AJM100**

Size: **B2 / B4**

Thermal Sensor: **J=Thermostat(standard) / K=PT100(RTD)**
(Contact us for other thermal sensor)

Motor Cable Option: **NFB / FB**

Cable Length(m): **0.5 / 3.0**
(Contact us for other lengths)

Hall Cable Option: **NH / HF**

- NH = Without Built-in Hall Sensor cable
- HF = With Built-in hall sensor & hall cable comes with flying leads (Standard)
- NFB = No ferrite bead
- FB = Ferrite bead

Motor Track

AJM30-TL200-S

Model: **AJM30 / AJM50 / AJM80 / AJM100**

Cover Type: **S / E**

Track Length: **TL80 / TL200 / TL400**

- S = Stainless steel cover
- E = Epoxy cover