



ACW SERIES

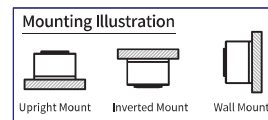
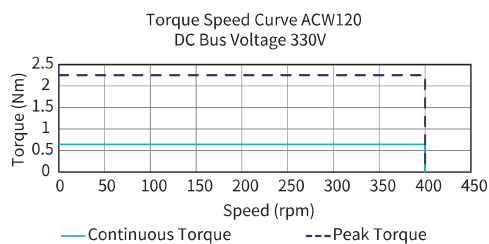
- ▶ Flat design
- ▶ Large centre hole
- ▶ No cogging torque
- ▶ Direct drive brushless motor
- ▶ Precise homing through index pulse
- ▶ Fully integrated with encoder and bearing

EN-24.5.1

ACW120

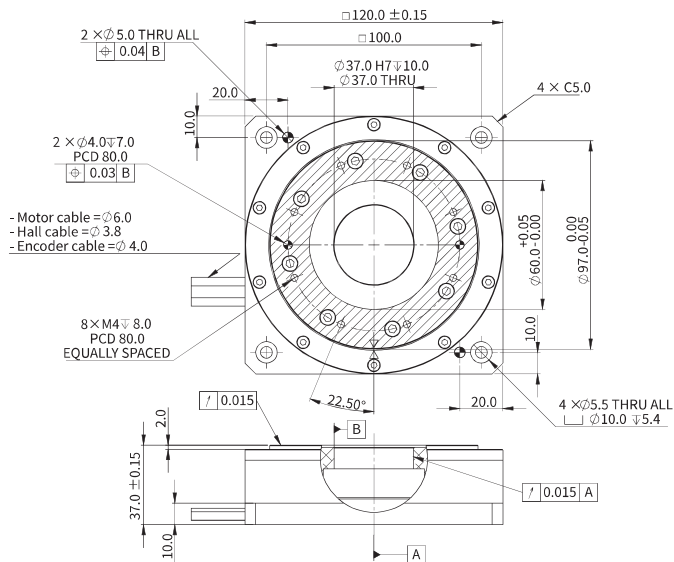
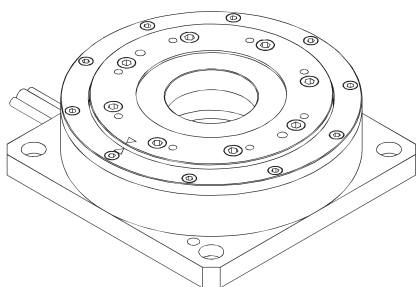
ACW120				
Performance Parameters		Symbol	Unit	Parallel
Continuous Torque @100°C ^①		T _{cn}	Nm	0.6
Peak Torque		T _{pk}	Nm	2.3
Torque Constant ±10%		K _t	Nm/Arms	0.14
Back EMF Constant ±10%		K _e	Vpeak/rpm	0.012
Motor Constant @25°C		K _m	Nm/Sqrt(W)	0.10
Resistance (L-L) @25°C ±10% ^②		R ₂₅	Ω	1.43
Inductance (L-L) ±20% ^③		L	mH	0.47
Electrical Time Constant		τ _e	ms	0.33
Continuous Current @100°C ^①		I _{cn}	Arms	4.6
Peak Current		I _{pk}	Arms	16.1
Continuous Power Dissipation @100°C ^①		P _{cn}	W	58.5
Max. Coil Temperature		t _{max}	°C	100
Thermal Dissipation Constant ^①		K _{thn}	W/°C	0.78
Max. Bus Voltage		U _{bus}	Vdc	330.0
Pole Number		2P	-	16
Max. Speed For Standard Axial/Radial Runout @230V AC ^④		Ω _{max}	rpm	400
Max. Speed For Optional Axial/Radial Runout (P10, P5) @230V AC ^④		Ω _{max}	rpm	120
Mechanical Parameters				
Overall Mass		m _n	kg	2.0
Rotor Inertia		J _r	kg.m ²	6.584E-04
Axial Runout ^⑤		-	μm	15 (10,5)
Radial Runout ^⑥		-	μm	15 (10,5)
Max. Axial Load (Upright Mounting) ^⑥		-	N	150.0
Max. Axial Load (Inverted / Wall Mounting)		-	N	15.0
Max. Moment Load (Upright Mounting)		-	Nm	14.7
Max. Moment Load (Inverted / Wall Mounting)		-	Nm	1.47
Encoder Parameters				
ABI Optical Incremental Encoder (SIN/COS)		-	lines / rev	3934
ABI Optical Incremental Encoder (80x)		-	counts / rev	314720
ABI Optical Incremental Encoder (160x)		-	counts / rev	629,440
ABI Optical Incremental Encoder (400x)		-	counts / rev	1,573,600
Accuracy after Error Mapping ^⑦		-	arc sec	+/-8
Repeatability ^⑧		-	arc sec	+/-4
Other Information				
Insulation Class		Class B (130°C)		
Protection Grade		IP40		
Compliance with Global Standards		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.		

- Torque-Speed Curve



- 1 Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
 - 2 Resistance is measured by DC current with standard 0.5m cable.
 - 3 Inductance is measured by current frequency of 1 kHz.
 - 4 The value is based on ABI optical SIN/COS encoder (4096x interpolation) under max. bus voltage.
 - 5 Runout specification define in the datasheet is based on constant loading and temperature condition (the value in parenthesis is optional).
 - 6 Please refer to the illustration for different mountings.
 - 7 Based on ABI optical SIN/COS encoder (4096x interpolation) with P5 runout.
- The contents of datasheet are subject to change without prior notice.**

■ Dimension



Note:

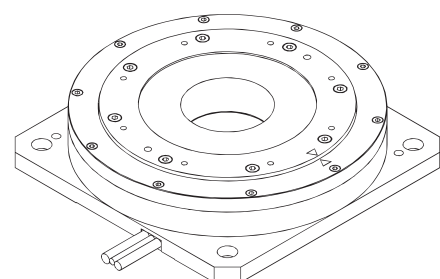
- ① 37mm diameter through hole
- ② Shaded area, mounting surface

ACW170

ACW170				
Performance Parameters		Symbol	Unit	Parallel
Continuous Torque @100°C ^①		T _{cn}	Nm	2.8
Peak Torque		T _{pk}	Nm	9.7
Torque Constant ±10%		K _t	Nm/Arms	0.66
Back EMF Constant ±10%		K _e	Vpeak/rpm	0.056
Motor Constant @25°C		K _m	Nm/Sqrt(W)	0.32
Resistance (L-L) @25°C ±10% ^②		R ₂₅	Ω	2.76
Inductance (L-L) ±20% ^③		L	mH	1.65
Electrical Time Constant		T _e	ms	0.60
Continuous Current @100°C ^①		I _{cn}	Arms	4.2
Peak Current		I _{pk}	Arms	14.7
Continuous Power Dissipation @100°C ^①		P _{cn}	W	94.1
Max. Coil Temperature		t _{max}	°C	100
Thermal Dissipation Constant ^④		K _{thn}	W/°C	1.26
Max. Bus Voltage		U _{bus}	Vdc	330.0
Pole Number		2P	-	16
Max. Speed For Standard Axial/Radial Runout @230V AC ^④		Ω _{max}	rpm	250
Max. Speed For Optional Axial/Radial Runout (P10, P5) @230V AC ^④		Ω _{max}	rpm	120
Mechanical Parameters				
Overall Mass		m _n	kg	3.7
Rotor Inertia		J _r	kg.m ²	2.020E-03
Axial Runout ^⑤		-	μm	18 (10,5)
Radial Runout ^⑤		-	μm	18 (10,5)
Max. Axial Load (Upright Mounting) ^⑥		-	N	230.0
Max. Axial Load (Inverted / Wall Mounting)		-	N	23.0
Max. Moment Load (Upright Mounting)		-	Nm	31.7
Max. Moment Load (Inverted / Wall Mounting)		-	Nm	3.17
Encoder Parameters				
ABI Optical Incremental Encoder (SIN/COS)		-	lines / rev	5560
ABI Optical Incremental Encoder (80x)		-	counts / rev	444800
ABI Optical Incremental Encoder (160x)		-	counts / rev	889,600
ABI Optical Incremental Encoder (400x)		-	counts / rev	2,224,000
Accuracy after Error Mapping ^⑦		-	arc sec	+/-6
Repeatability ^⑦		-	arc sec	+/-3
Other Information				
Insulation Class		Class B (130°C)		
Protection Grade		IP40		
Compliance with Global Standards		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.		

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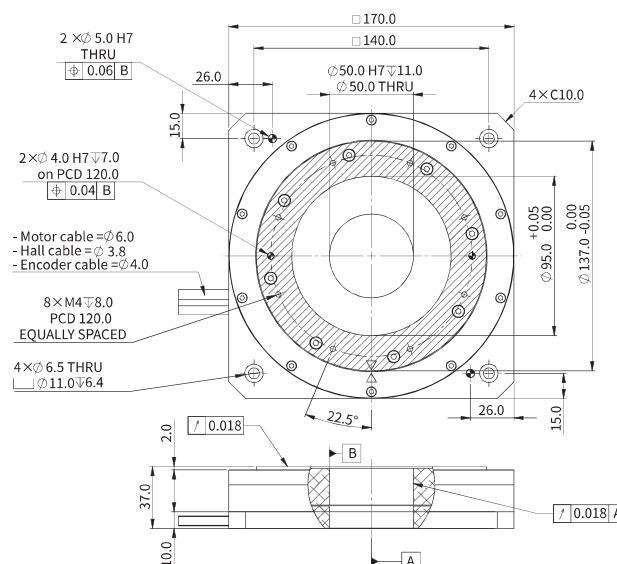
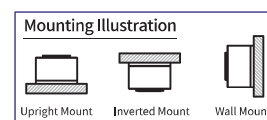
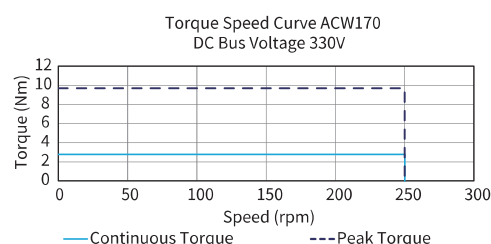
■ Dimension



Note:

- ① 50mm diameter through hole
- ② Shaded area, mounting surface

- Torque-Speed Curve

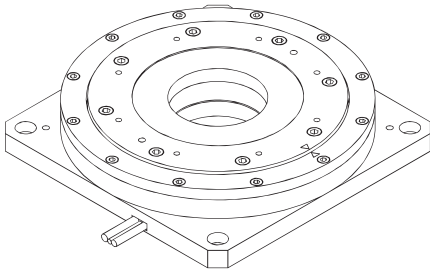


ACW220

ACW220			
Performance Parameters		Symbol	Unit
Continuous Torque @100°C ^①		T _{cn}	Nm
Peak Torque		T _{pk}	Nm
Torque Constant ±10%		K _t	Nm/Arms
Back EMF Constant ±10%		K _e	Vpeak/rpm
Motor Constant @25°C		K _m	Nm/Sqrt(W)
Resistance (L-L) @25°C ±10% ^②		R ₂₅	Ω
Inductance (L-L) ±20% ^③		L	mH
Electrical Time Constant		τ _e	ms
Continuous Current @100°C ^①		I _{cn}	Arms
Peak Current		I _{pk}	Arms
Continuous Power Dissipation @100°C ^①		P _{cn}	W
Max. Coil Temperature		t _{max}	°C
Thermal Dissipation Constant ^④		K _{thn}	W/°C
Max. Bus Voltage		U _{bus}	Vdc
Pole Number		2P	-
Max. Speed For Standard Axial/Radial Runout @230V AC ^⑤		Ω _{max}	rpm
Max. Speed For Optional Axial/Radial Runout (P10, P5) @230V AC ^⑥		Ω _{max}	rpm
Mechanical Parameters			
Overall Mass		m _n	kg
Rotor Inertia		J _r	kg.m ²
Axial Runout ^⑦		-	μm
Radial Runout ^⑦		-	μm
Max. Axial Load (Upright Mounting) ^⑧		-	N
Max. Axial Load (Inverted / Wall Mounting)		-	N
Max. Moment Load (Upright Mounting)		-	Nm
Max. Moment Load (Inverted / Wall Mounting)		-	Nm
Encoder Parameters			
ABI Optical Incremental Encoder (SIN/COS)		-	lines / rev
ABI Optical Incremental Encoder (80x)		-	counts / rev
ABI Optical Incremental Encoder (160x)		-	counts / rev
ABI Optical Incremental Encoder (400x)		-	counts / rev
Accuracy after Error Mapping ^⑨		-	arc sec
Repeatability ^⑩		-	arc sec
Other Information			
Insulation Class		Class B (130°C)	
Protection Grade		IP40	
Compliance with Global Standards		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.	

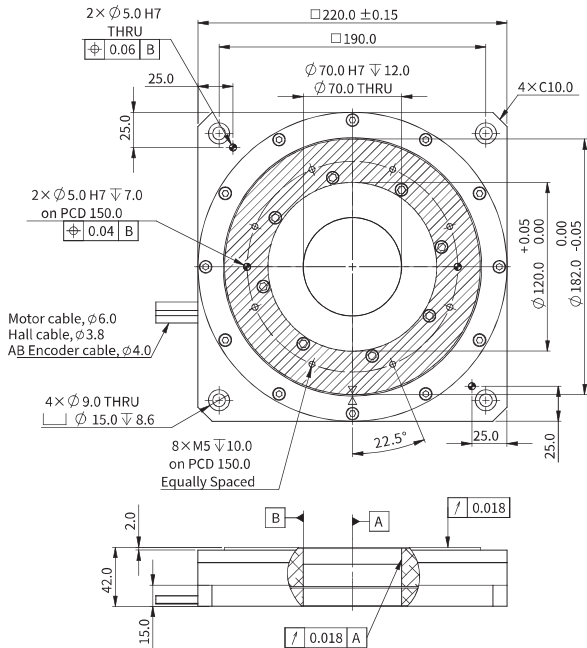
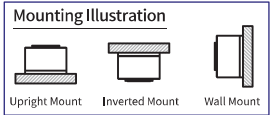
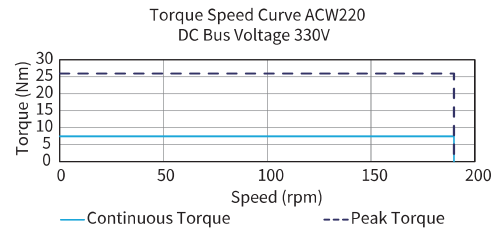
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Dimension

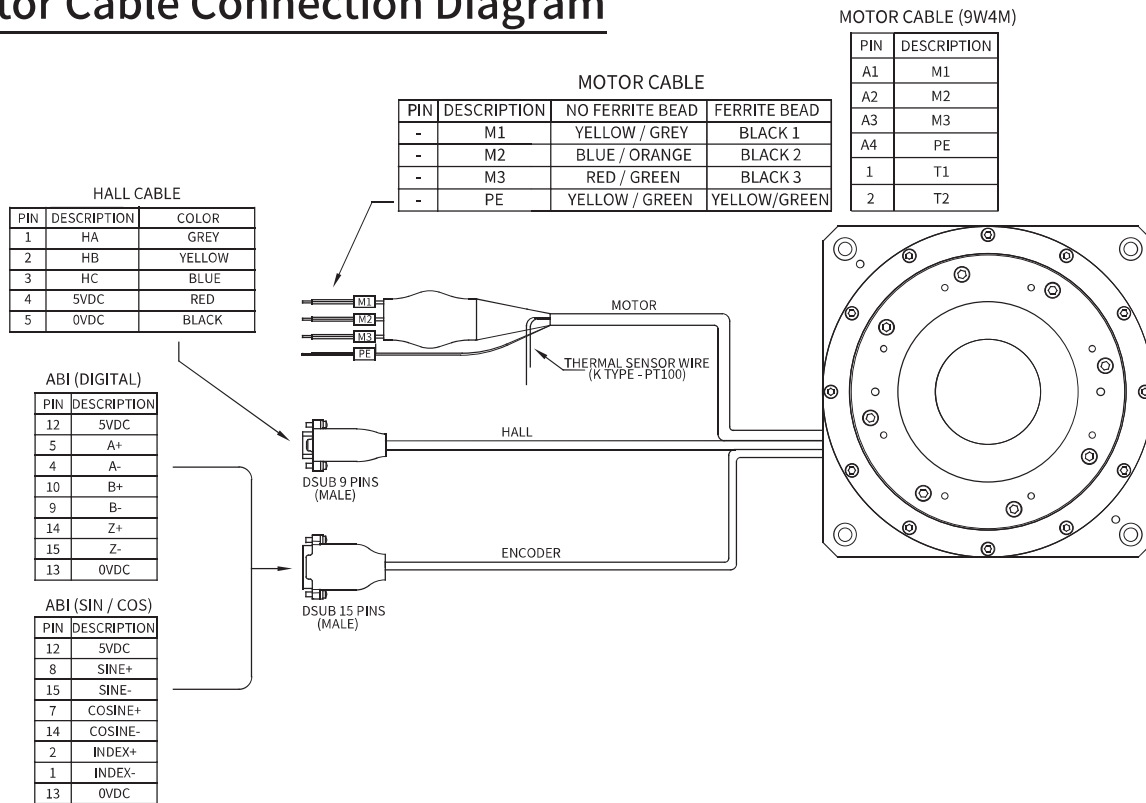


- Note:
 ① 70mm diameter through hole
 ② Shaded area, mounting surface

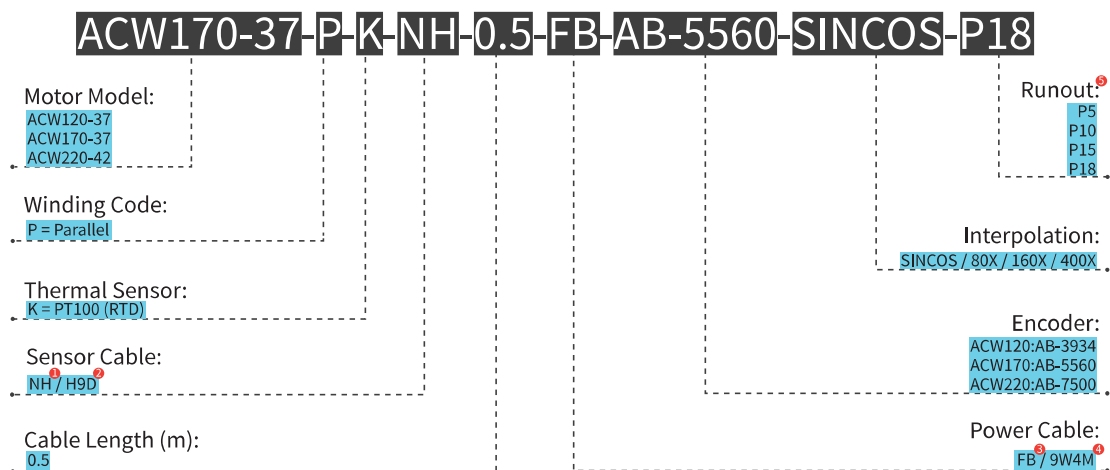
Torque-Speed Curve



Motor Cable Connection Diagram



Part Numbering



- ① NH = Without Built-in Hall Sensor C/W Flying Leads
- ② H9D = With Built-in Hall Sensor C/W 9-Pins D-Sub Connector
- ③ FB = With Ferrite Bead C/W Flying Leads
- ④ 9W4M = Without Ferrite Bead C/W D-Sub 9W4 Male Connector
- ⑤ ACW120 / ACW170 / AXW220:P5= Axial Runout 5µm, Radial Runout is 5µm
- ACW120 / ACW170 / AXW220:P10= Axial Runout 10µm, Radial Runout is 10µm
- ACW120:P15= Axial Runout 15µm, Radial Runout is 15µm
- ACW170 / AXW220:P18= Axial Runout 18µm, Radial Runout is 18µm