The 5-phase Stepping Set

BP1 series
AC100V/115V
Full-step/Half-step

(500 x 1 divisions)　(500 x 2 divisions)

Configuration of the 5-phase stepping set “BP1 series”

Name	Quantity
BP1 series instruction manual	1 pc.
PM driver	1 pc.
Stepping motor	1 pc.
Terminal Base Cover	1 pc.

Two types of PM driver can be selected for the 5-phase stepping set “BP1 series”.

Classification	Type	PM driver Model	Rated Current of Applicable Stepping motor
BP12	Normal	PMM-BA-5603-1	0.75 A/phase
BP13	High-speed	PMM-BA-5604-1	1.5 A/phase

Characteristics

- **Flexible**
  This stepping system can drive wide variety of stepping motors from small capacity to large capacity without adjustment, resulting in wide applications.
- **Compact and high torque**
  Mounting dedicated ICs, which are highly integrated and have higher reliability, realizes the compact and high-torque system.

Built-in function

- **Low vibration mode**
  Our dedicated control system realizes a low vibration and smooth operation.
- **Pulse input system selection function**
  Either "Pulse and direction mode" or "2-input mode" can be selected, using a dipswitch. Resolution setting function.
- **Operation current switch function**
  Operation current of the stepping motor ranging from rated current to 40% of rated current can be set by using rotary switches.

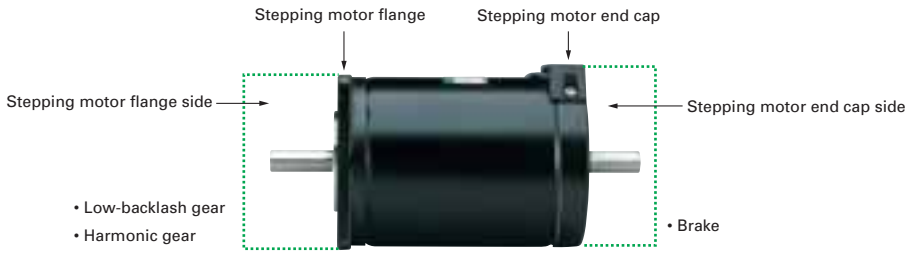
Explanation of set model number

① System on the stepping motor flange side

Code	Flange side	Deceleration ratio
C	Low-backlash gear	1 / 3.6, 1 / 7.2, 1 / 10, 1 / 20, 1 / 30, 1 / 36
H	Harmonic gear	1 / 50, 1 / 100
X	None	

② System on the stepping motor end cap side

Code	End cap side	Function
B	Brake	Electromagnetic brake
E	Encoder	Please contact us regarding the encoder.
X	None	



③ Deceleration ratio of gear system
Example: deceleration ratio 1 / 3.6 → 3.6

Explanation for model number in the combined case
The set model number of the stepping motor is as follows when PMM-BA-5603-1 and 103F7851 type are combined and equipped with the system of harmonic gear (1/100) and brake:

BP12F781D – H B 100

Standard set model number
③ Gear deceleration ratio (1/100)
② Brake
① Harmonic gear

How to order:

Please order by using the "Set model number" in the list, Standard combined stepping motors for 5-phase stepping set "BP1" series.
When gear, brake, and/or encoder are necessary for the stepping motor "STEPSYN F", select codes of your preferences from the above ①, ②, and ③ to continuously describe them after "Set model number".

PM driver specifications

Model number			PMM-BA-5603-1	PMM-BA-5604-1
Standard specification	Input source		Single phase AC100V/115V+10, -15% 50/60Hz	
	Source current		4A	8A
	Environment	Operating ambient temperature	0 to +50˚C	
		Conservation temperature	-20 to +70˚C	
		Operating ambient humidity	35 to 85%RH (no condensation)	
		Conservation humidity	10 to 90%RH (no condensation)	
		Vibration resistance	Tested under the following conditions, 4.9m/s², Frequency range 10 to 55Hz, Direction: along X, Y and Z axes, for 2 hours each	
		Impact resistance	Considering the NDS-C-0110 standard section 3.2.2 division "C", not influenced	
		Withstand voltage	Not influenced when AC1500V is applied between power input terminal and cabinet for one minute	
		Insulation resistance	10MΩ MIN. when measured with DC500V megohmmeter between input terminal and cabinet.	
	Mass(Weight)		0.8kg(1.76 lbs)	1.3kg(2.87 lbs)
Function	Protect function		Against PM driver overheat	
	Select function		Auto current down, energization mode, input pulse mode, stepping motor current, low vibration	
	LED display		Power supply monitor, phase origin monitor, pulse monitor, alarm display	
I/O signals	Command pulse input signal		Photo coupler input method, input resistance 330Ω Input signal voltage, H = 4.0 to 5.5V, L = 0 to 0.5V Maximum input frequency 100kpulse/s	
	Power down input signal		Photo coupler input method, input resistance 330Ω Input signal voltage, H = 4.0 to 5.5V, L = 0 to 0.5V	
	Alarm output signal		Relay terminal output (normally open) Terminal capacity: DC24V 1A MAX, or AC120V 0.5A MAX	

* Refer to pages 189/203 and after for operation, connection, function, and dimensions of the PM driver.

Stepping motor Common specifications

Item	Combined stepping motors of BP12 (Applicable to PMM-BA-5603-1)	Combined stepping motors of BP13 (Applicable to PMM-BA-5604-1)
Insulation class	Class B (+130°C)	
Withstand voltage	AC1500V, 50/60 Hz, one minute	
Insulation resistance	100MΩ against DC500V	
Vibration resistance	Amplitude 1.52mm (P-P), frequency range 10 to 55Hz, 5 minutes sweep time, along X, Y, and Z axes, for 2 hours	
Impact resistance	Conditions: 98 m/s^2 acceleration, 11 minutes duration, half-wave/sine wave, three times each along X, Y, and Z axes, 18 times in total	
Operating ambient temperature	-10 to +50°C (0 to +40°C for the one with harmonic gear)	
Operating ambient humidity	20 to 90% (no condensation)	

Standard combined stepping motors for 5-phase stepping set "BP1" series

Combination model number for BP12

PM driver model number: PMM-BA-5603-1

Combination model number for STEPSYN F series

System support	Dimensions of stepping motor	Single shaft		Double shaft	
		Set model number	Standard combined stepping motor number	Set model number	Standard combined stepping motor number
Standard type	ø 42mm	**BP12F551S**	103F5505-7041	**BP12F551D**	103F5505-7011
		BP12F552S	103F5508-7041	**BP12F552D**	103F5508-7011
		BP12F554S	103F5510-7041	**BP12F553D**	103F5510-7011
	ø 60mm	**BP12F781S**	103F7851-7041	**BP12F781D**	103F7851-7011
		BP12F782S	103F7852-7041	**BP12F782D**	103F7852-7011
		BP12F783S	103F7853-7041	**BP12F783D**	103F7853-7011
Low-backlash gear	ø 42mm	**BP12F551S-CX3.6**	103F5505-70CXA4	**BP12F551D-CX3.6**	103F5505-70CXA1
		BP12F551S-CX7.2	103F5505-70CXB4	**BP12F551D-CX7.2**	103F5505-70CXB1
		BP12F551S-CX10	103F5505-70CXE4	**BP12F551D-CX10**	103F5505-70CXE1
		BP12F551S-CX20	103F5505-70CXG4	**BP12F551D-CX20**	103F5505-70CXG1
		BP12F551S-CX30	103F5505-70CXJ4	**BP12F551D-CX30**	103F5505-70CXJ1
		BP12F551S-CX36	103F5505-70CXK4	**BP12F551D-CX36**	103F5505-70CXK1
Harmonic gear	ø 42mm	**BP12F551S-HX50**	103F5505-70HXL4	**BP12F551D-HX50**	103F5505-70HXL1
		BP12F551S-HX100	103F5505-70HXM4	**BP12F551D-HX100**	103F5505-70HXM1
Electromagnetic brake	ø 42mm	**BP12F551S-XB**	103F5505-70XB41		
		BP12F552S-XB	103F5508-70XB41		
		BP12F554S-XB	103F5510-70XB41		

Combination model number for BP13

PM driver model number: PMM-BA-5604-1

Combination model number for STEPSYN F series

System support	Dimensions of stepping motor	Single shaft		Double shaft	
		Set model number	Standard combined stepping motor	Set model number	Standard combined stepping motor
Standard type	ø 60mm	**BP13F781S**	103F7851-8041	**BP13F781D**	103F7851-8011
		BP13F782S	103F7852-8041	**BP13F782D**	103F7852-8011
		BP13F783S	103F7853-8041	**BP13F783D**	103F7853-8011
	ø 86mm	**BP13F851S**	103F8581-8041	**BP13F851D**	103F8581-8011
		BP13F852S	103F8582-8041	**BP13F852D**	103F8582-8011
		BP13F853S	103F8583-8041	**BP13F853D**	103F8583-8011
	ø 106mm	**BP13F892S**	103F89582-8041	**BP13F892D**	103F89582-8011
		BP13F893S	103F89583-8041	**BP13F893D**	103F89583-8011
Low-backlash gear	ø 60mm	**BP13F781S-CX3.6**	103F7851-80CXA4	**BP13F781D-CX3.6**	103F7851-80CXA1
		BP13F781S-CX7.2	103F7851-80CXB4	**BP13F781D-CX7.2**	103F7851-80CXB1
		BP13F781S-CX10	103F7851-80CXE4	**BP13F781D-CX10**	103F7851-80CXE1
		BP13F781S-CX20	103F7851-80CXG4	**BP13F781D-CX20**	103F7851-80CXG1
		BP13F781S-CX30	103F7851-80CXJ4	**BP13F781D-CX30**	103F7851-80CXJ1
		BP13F781S-CX36	103F7851-80CXK4	**BP13F781D-CX36**	103F7851-80CXK1
	ø 86mm	**BP13F851S-CX3.6**	103F8581-80CXA4	**BP13F781D-CX3.6**	103F8581-80CXA1
		BP13F851S-CX7.2	103F8581-80CXB4	**BP13F851D-CX7.2**	103F8581-80CXB1
		BP13F851S-CX10	103F8581-80CXE4	**BP13F851D-CX10**	103F8581-80CXE1
		BP13F851S-CX20	103F8581-80CXG4	**BP13F851D-CX20**	103F8581-80CXG1
		BP13F851S-CX30	103F8581-80CXJ4	**BP13F851D-CX30**	103F8581-80CXJ1
		BP13F851S-CX36	103F8581-80CXK4	**BP13F851D-CX36**	103F8581-80CXK1
Harmonic gear	ø 60mm	**BP13F781S-HX50**	103F7851-80HXL4	**BP13F781D-HX50**	103F7851-80HXL1
		BP13F781S-HX100	103F7851-80HXM4	**BP13F781D-HX100**	103F7851-80HXM1
	ø 86mm	**BP13F851S-HX50**	103F8581-80HXL4	**BP13F851D-HX50**	103F8581-80HXL1
		BP13F851S-HX100	103F8581-80HXM4	**BP13F851D-HX100**	103F8581-80HXM1
Electromagnetic brake	ø 60mm	**BP13F781S-XB**	103F7851-80XB41		
		BP13F782S-XB	103F7852-80XB41		
		BP13F783S-XB	103F7853-80XB41		
	ø 86mm	**BP13F851S-XB**	103F8581-80XB41		
		BP13F852S-XB	103F8582-80XB41		
		BP13F853S-XB	103F8583-80XB41		

Stepping motor data sheet

Combination of BP12

STEPSYN F Series (Standard)

Set model number	Single shaft	BP12F551S	BP12F552S	BP12F554S	BP12F781S	BP12F782S	BP12F783S
	Double shaft	BP12F551D	BP12F552D	BP12F554D	BP12F781D	BP12F782D	BP12F783D
Holding torque	N·m(oz·in)	0.13(18.41)	0.18(25.49)	0.26(36.82)	0.6(85.0)	0.93(131.7)	1.79(253.5)
Rotor inertia	$\times10^{-4}$kg·m^2(oz·in^2)	0.03(0.16)	0.053(0.29)	0.065(0.36)	0.275(1.50)	0.4(2.19)	0.84(4.59)
Mass(Weight)	kg(lbs)	0.23(0.51)	0.28(0.62)	0.37(0.82)	0.6(1.32)	0.78(1.72)	1.36(3.00)

STEPSYN F Series (With low-backlash gear)

Set model number	Single shaft	BP12F551S-CX3.6	BP12F551S-CX7.2	BP12F551S-CX10	BP12F551S-CX20	BP12F551S-CX30	BP12F551S-CX36
	Double shaft	BP12F551D-CX3.6	BP12F551D-CX7.2	BP12F551D-CX10	BP12F551D-CX20	BP12F551D-CX30	BP12F551D-CX36
Allowable torque	N·m(oz·in)	0.35(49.6)	0.7(99.1)	1(141.6)	1.5(212.4)	1.5(212.4)	1.5(212.4)
Rotor inertia	$\times10^{-4}$kg·m^2(oz·in^2)	0.03(0.16)					
Basic step angle	°	0.2	0.1	0.072	0.036	0.024	0.02
Deceleration ratio		1 : 3.6	1 : 7.2	1 : 10	1 : 20	1 : 30	1 : 36
Backlash	°	0.6	0.4	0.35	0.25	0.25	0.25
Allowable number of rotations	min^{-1}	500	250	180	90	60	50
Mass(Weight)	kg(lbs)	0.36(0.79)					
Allowable thrust load	N	15					
Allowable radial load (Note1)	N	20					

* The rotation direction of the motor and the gear output shaft is as follows: when deceleration ratio is 1:3.6, 1:7.2, or 1:10, both motor and shaft rotate in the same direction, and for 1:20 or 1:30 type, the motor and the shaft rotate in opposite direction.

(Note1) When load is applied at 1/3 length from output shaft edge.

STEPSYN F Series (With harmonic gear)

Set model number	Single shaft	BP12F551S-HX50	BP12F551S-HX100
	Double shaft	BP12F551D-HX50	BP12F551D-HX100
Allowable torque	N·m(oz·in)	2.5(354.0)	4(566.4)
Rotor inertia	$\times10^{-4}$kg·m^2(oz·in^2)	0.042(0.23)	
Basic step angle	°	0.0144	0.0072
Deceleration ratio		1 : 50	1 : 100
Lost motion	Minute	0.4~3 (±0.16N·m)(±22.66 oz·in)	0.4~3 (±0.2N·m)(±28.32 oz·in)
Allowable number of rotations	min^{-1}	500	250
Mass(Weight)	kg(lbs)	0.52(1.15)	
Allowable thrust load	N	200	
Allowable radial load (Note1)	N	250	

* The gear output shaft rotates in the opposite direction of the motor.

(Note1) When load is applied at 1/3 length from output shaft edge.

STEPSYN F Series (With electromagnetic brake)

Set model number		Single shaft	BP12F551S-XB	BP12F552S-XB	BP12F554S-XB
		Double shaft	————	————	————
Holding torque		N·m(oz·in)	0.13(18.4)	0.18(25.5)	0.26(36.8)
Rotor inertia		$\times10^{-4}$kg·m^2(oz·in^2)	0.045(0.25)	0.068(0.37)	0.08(0.44)
Mass(Weight)		kg	0.38(0.84)	0.43(0.95)	0.52(1.15)
Electromagnetic brake specification	Brake operation system		Non-excitation operation system		
	Source voltage	V	DC 24 ± 5%		
	Exciting current	A	0.08		
	Electric power consumption	W	2		
	Static friction torque	N·m(oz·in)	0.3		
	Brake operating time	ms	30(42.48)		
	Brake release time	ms	20		
	Polarity		Brown:⊕,White:⊖		

Stepping motor data sheet

Combination of BP13

STEPSYN F Series (Standard)

Set model number	Single shaft	BP13F781S	BP13F782S	BP13F783S
	Double shaft	BP13F781D	BP13F782D	BP13F783D
Holding torque	N·m(oz·in)	0.6(85.0)	0.93(131.7)	1.79(253.5)
Rotor inertia	$\times10^{-4}$kg·m^2(oz·in^2)	0.275(1.50)	0.4(2.19)	0.84(4.59)
Mass(Weight)	kg(lbs)	0.6(1.32)	0.78(1.72)	1.36(3.00)

Set model number	Single shaft	BP13F851S	BP13F852S	BP13F853S	BP13F892S	BP13F893S
	Double shaft	BP13F851D	BP13F852D	BP13F853D	BP13F892D	BP13F893D
Holding torque	N·m(oz·in)	2.06(291.7)	4.02(569.3)	6.17(873.7)	10.8(1529.4)	16(2265.7)
Rotor inertia	$\times10^{-4}$kg·m^2(oz·in^2)	1.45(7.93)	2.9(15.86)	4.4(24.06)	14.6(79.83)	22(120.28)
Mass(Weight)	kg(lbs)	1.5(3.31)	2.5(5.51)	3.5(7.72)	7.5(16.53)	10.5(23.15)

STEPSYN F Series (With low-backlash gear)

Set model number	Single shaft	BP13F781S-CX3.6	BP13F781S-CX7.2	BP13F781S-CX10	BP13F781S-CX20	BP13F781S-CX30	BP13F781S-CX36
	Double shaft	BP13F781D-CX3.6	BP13F781D-CX7.2	BP13F781D-CX10	BP13F781D-CX20	BP13F781D-CX30	BP13F781D-CX36
Allowable torque	N·m(oz·in)	1.25(177.0)	2.5(354.0)	3(424.8)	3.5(495.6)	4(566.4)	4(566.4)
Rotor inertia	$\times10^{-4}$kg·m^2(oz·in^2)	0.275(1.50)					
Basic step angle	°	0.2	0.1	0.072	0.036	0.024	0.02
Deceleration ratio		1 : 3.6	1 : 7.2	1 : 10	1 : 20	1 : 30	1 : 36
Backlash	°	0.55	0.25	0.25	0.17	0.17	0.17
Allowable number of rotations	min^{-1}	500	250	180	90	60	50
Mass(Weight)	kg(lbs)	0.97(2.14)					
Allowable thrust load	N	30					
Allowable radial load (Note1)	N	100					

* The rotation direction of the motor and the gear output shaft is as follows: when deceleration ratio is 1:3.6 or 1:7.2, both motor and shaft rotate in the same direction, and for 1:10, 1:20, or 1:30 type, the motor and the shaft rotate in opposite direction.

(Note1) When load is applied at 1/3 length from output shaft edge.

Set model numbe	Single shaft	BP13F851S-CX3.6	BP13F851S-CX7.2	BP13F851S-CX10	BP13F851S-CX20	BP13F851S-CX30	BP13F851S-CX36
	Double shaft	BP13F851D-CX3.6	BP13F851D-CX7.2	BP13F851D-CX10	BP13F851D-CX20	BP13F851D-CX30	BP13F851D-CX36
Allowable torque	N·m(oz·in)	4.5(637.2)	9(1274.5)	9(1274.5)	12(1699.3)	12(1699.3)	12(1699.3)
Rotor inertia	$\times10^{-4}$kg·m^2(oz·in^2)	1.45(7.93)					
Basic step angle	°	0.2	0.1	0.072	0.036	0.024	0.02
Deceleration ratio		1 : 3.6	1 : 7.2	1 : 10	1 : 20	1 : 30	1 : 36
Backlash	°	0.4	0.25	0.25	0.17	0.17	0.15
Allowable number of rotations	min^{-1}	500	250	180	90	60	50
Mass(Weight)	kg(lbs)	2.7(5.95)					
Allowable thrust load	N	60					
Allowable radial load (Note1)	N	300					

* The rotation direction of the motor and the gear output shaft is as follows: when deceleration ratio is 1:3.6 or 1:7.2, both motor and shaft rotate in the same direction, and for 1:10, 1:20, or 1:30 type, the motor and the shaft rotate in opposite direction.

(Note1) When load is applied at 1/3 length from output shaft edge.

Stepping motor data sheet

STEPSYN F Series (With harmonic gear)

Set model number	Single shaft	BP13F781S-HX50	BP13F781S-HX100
	Double shaft	BP13F781D-HX50	BP13F781D-HX100
Allowable torque	N·m(oz·in)	5.5(778.8)	8(1132.9)
Rotor inertia	×10⁻⁴kg·m²(oz·in²)	0.31(1.69)	
Basic step angle	°	0.0144	0.0072
Deceleration ratio		1 : 50	1 : 100
Lost motion	Minute	0.4~3 (±0.28N·m)(±39.65 oz·in)	0.4~1.5 (±0.4N·m)(±56.64 oz·in)
Allowable number of rotations	min⁻¹	70	35
Mass(Weight)	kg(lbs)	1.2(2.65)	
Allowable thrust load	N	400	
Allowable radial load (Note1)	N	400	

* The gear output shaft rotates in the opposite direction of the motor.
(Note1) When load is applied at 1/3 length from output shaft edge.

Set model number	Single shaft	BP13F851S-HX50	BP13F851S-HX100
	Double shaft	BP13F851D-HX50	BP13F851D-HX100
Allowable torque	N·m(oz·in)	25(3540.2)	41(5805.9)
Rotor inertia	×10⁻⁴kg·m²(oz·in²)	1.65(9.02)	
Basic step angle	°	0.0144	0.0072
Deceleration ratio		1 : 50	1 : 100
Lost motion	Minute	0.4~3 (±0.28N·m)(±39.65 oz·in)	0.4~3 (±0.28N·m)(±39.65 oz·in)
Allowable number of rotations	min⁻¹	500	250
Mass(Weight)	kg(lbs)	3.3(7.28)	
Allowable thrust load	N	1400	
Allowable radial load (Note1)	N	1400	

* The gear output shaft rotates in the opposite direction of the motor.
(Note1) When load is applied at 1/3 length from output shaft edge.

STEPSYN F Series (With electromagnetic brake)

Set model number		Single shaft	BP13F781S-XB	BP13F782S-XB	BP13F783S-XB
		Double shaft	————	————	————
Holding torque		N·m(oz·in)	0.6(85.0)	0.93(131.7)	1.79(253.5)
Rotor inertia		×10⁻⁴kg·m²(oz·in²)	0.43(2.35)	0.56(3.06)	1(5.47)
Mass(Weight)		kg(lbs)	0.94(2.07)	1.12(2.47)	1.7(3.75)
Electromagnetic brake specification	Brake operation system		Non-excitation operation system		
	Source voltage	V	DC 24 ± 5%		
	Exciting current	A	0.25		
	Electric power consumption	W	6		
	Static friction torque	N·m(oz·in)	0.8(113.3)		
	Brake operating time	ms	30		
	Brake release time	ms	20		
	Polarity		Red:⊕,Black:⊖		

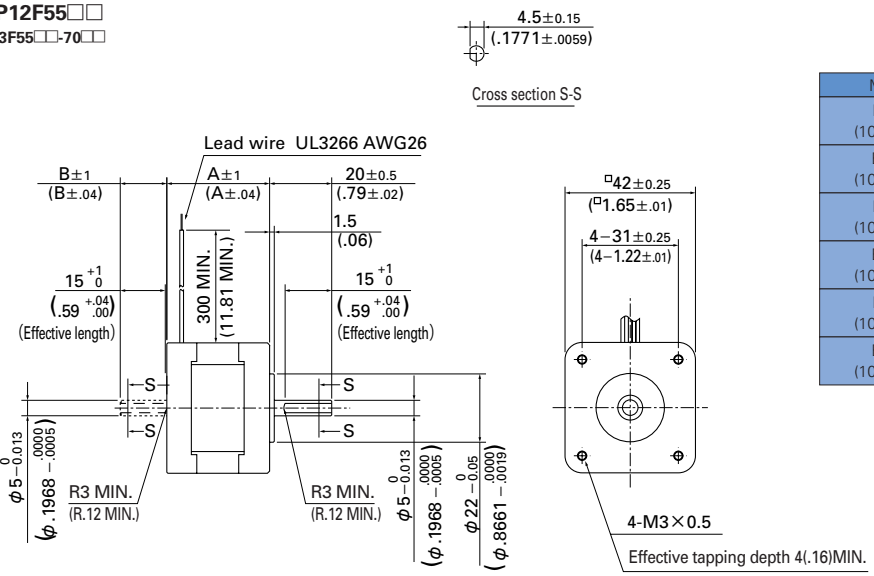
Set model number		Single shaft	BP13F851S-XB	BP13F852S-XB	BP13F853S-XB
		Double shaft	————	————	————
Holding torque		N·m(oz·in)	2.06(291.7)	4.02(569.3)	6.17(873.7)
Rotor inertia		×10⁻⁴kg·m²(oz·in²)	2.24(12.25)	3.69(20.17)	5.19(28.38)
Mass(Weight)		kg(lbs)	3.5(7.72)	4.5(9.92)	5.5(12.13)
Electromagnetic brake specification	Brake operation system		Non-excitation operation system		
	Source voltage	V	DC 24 ± 5%		
	Exciting current	A	0.42		
	Electric power consumption	W	10		
	Static friction torque	N·m(oz·in)	7(991.2)		
	Brake operating time	ms	50		
	Brake release time	ms	20		
	Polarity		Red:⊕,Black:⊖		

Dimensions [Unit: mm (inch)]

STEPSYN F

BP12F55□□

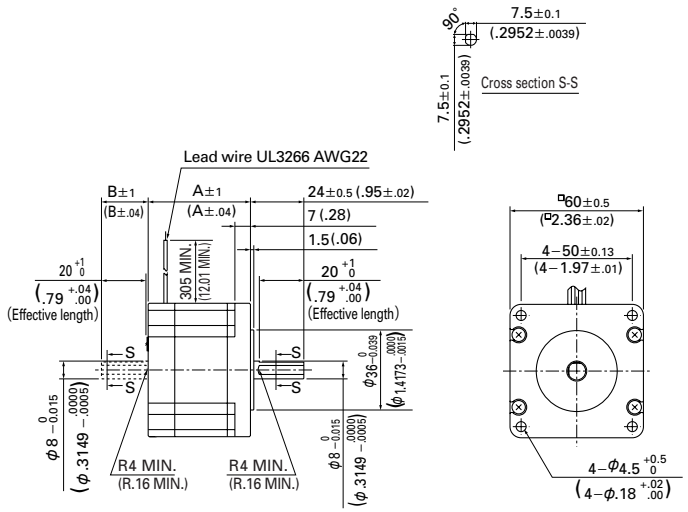
103F55□□-70□□



Model name	A	B
BP12F551S (103F5505-7041)	34 (1.34)	—
BP12F551D (103F5505-7011)	34 (1.34)	15 (.59)
BP12F552S (103F5508-7041)	40 (1.57)	—
BP12F552D (103F5508-7011)	40 (1.57)	15 (.59)
BP12F554S (103F5510-7041)	49 (1.93)	—
BP12F554D (103F5510-7011)	49 (1.93)	15 (.59)

BP12F78□□ / BP13F78□□

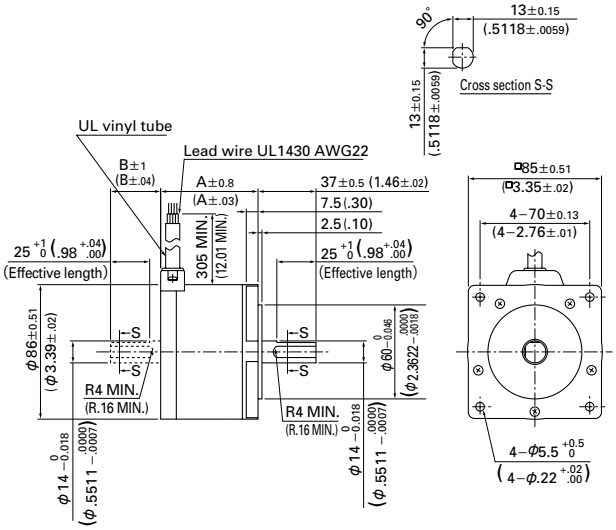
103F785□-70□□ / 103F785□-80□□



Model name	A	B
BP12F781S (103F7851-7041)	46.5 (1.83)	—
BP12F781D (103F7851-7011)	46.5 (1.83)	21 (.83)
BP12F782S (103F7852-7041)	55.0 (2.17)	—
BP12F782D (103F7852-7011)	55.0 (2.17)	21 (.83)
BP12F783S (103F7853-7041)	87.5 (3.44)	—
BP12F783D (103F7853-7011)	87.5 (3.44)	21 (.83)
BP13F781S (103F7851-8041)	46.5 (1.83)	—
BP13F781D (103F7851-8011)	46.5 (1.83)	21 (.83)
BP13F782S (103F7852-8041)	55.0 (2.17)	—
BP13F782D (103F7852-8011)	55.0 (2.17)	21 (.83)
BP13F783S (103F7853-8041)	87.5 (3.44)	—
BP13F783D (103F7853-8011)	87.5 (3.44)	21 (.83)

BP13F85□□

103F858□-80□□

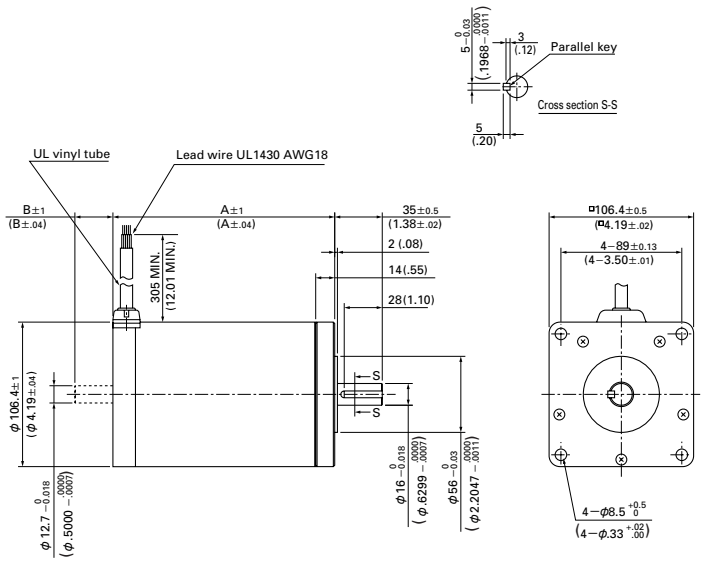


Model name	A	B
BP13F851S (103F8581-8041)	62.15 (2.45)	—
BP13F851D (103F8581-8011)	62.15 (2.45)	32 (1.26)
BP13F852S (103F8582-8041)	92.2 (3.63)	—
BP13F852D (103F8582-8011)	92.20 (3.63)	32 (1.26)
BP13F853S (103F8583-8041)	125.85 (4.95)	—
BP13F853D (103F8583-8011)	125.85 (4.95)	32 (1.26)

Dimensions [Unit: mm (inch)]

BP13F89□S

103F8958□-80□□



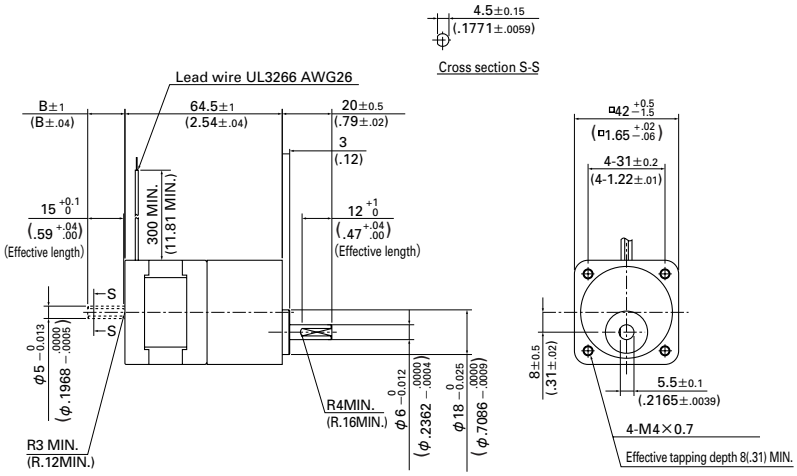
Model name	A	B
BP13F892S (103F89582-8041)	163.3 (6.43)	—
BP13F892D (103F89582-8011)	163.3 (6.43)	28 (1.10)
BP13F893S (103F89583-8041)	221.3 (8.71)	—
BP13F893D (103F89583-8011)	221.3 (8.71)	28 (1.10)

Dimensions [Unit: mm (inch)]

STEPSYN F with low-backlash gear

BP12F551S-CX□□

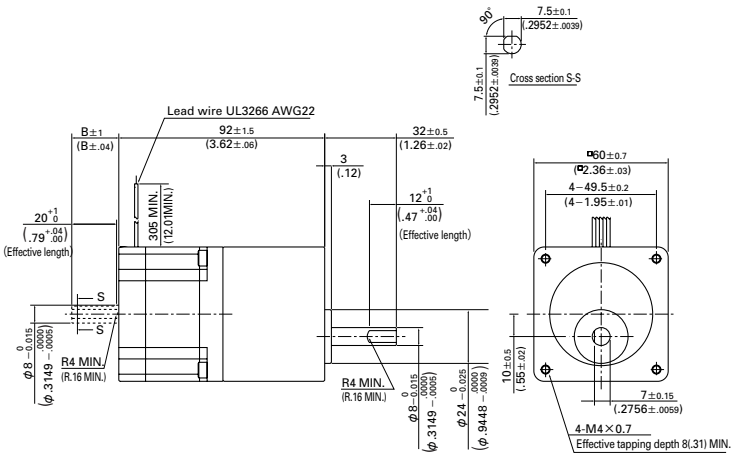
103F5505-70CX□□



Model name	B
BP12F551S-CX3.6 (103F5505-70CXA4)	—
BP12F551D-CX3.6 (103F5505-70CXA1)	15 (.59)
BP12F551S-CX7.2 (103F5505-70CXB4)	—
BP12F551D-CX7.2 (103F5505-70CXB1)	15 (.59)
BP12F551S-CX10 (103F5505-70CXE4)	—
BP12F551D-CX10 (103F5505-70CXE1)	15 (.59)
BP12F551S-CX20 (103F5505-70CXG4)	—
BP12F551D-CX20 (103F5505-70CXG1)	15 (.59)
BP12F551S-CX30 (103F5505-70CXJ4)	—
BP12F551D-CX30 (103F5505-70CXJ1)	15 (.59)
BP12F551S-CX36 (103F5505-70CXK4)	—
BP12F551D-CX36 (103F5505-70CXK1)	15 (.59)

BP13F781□-CX□□

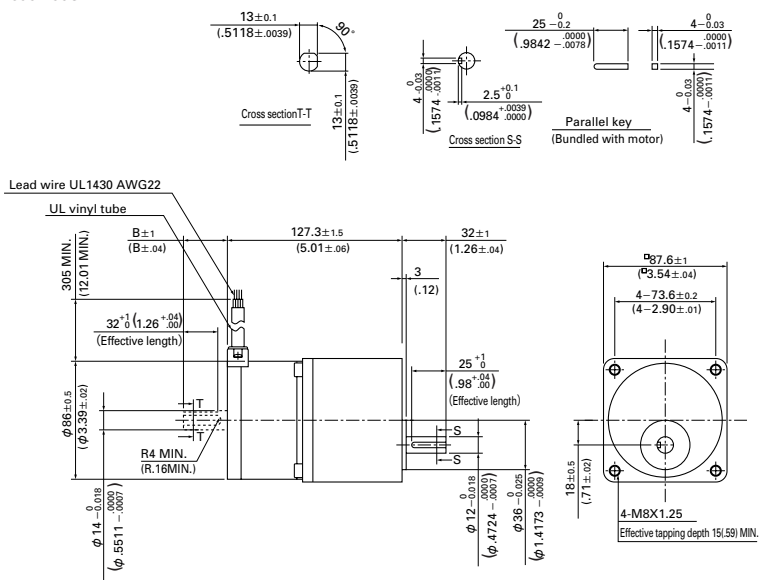
103F7851-80CX□□



Model name	B
BP13F781S-CX3.6 (103F7851-80CXA4)	—
BP13F781D-CX3.6 (103F7851-80CXA1)	21 (.83)
BP13F781S-CX7.2 (103F7851-80CXB4)	—
BP13F781D-CX7.2 (103F7851-80CXB1)	21 (.83)
BP13F781S-CX10 (103F7851-80CXE4)	—
BP13F781D-CX10 (103F7851-80CXE1)	21 (.83)
BP13F781S-CX20 (103F7851-80CXG4)	—
BP13F781D-CX20 (103F7851-80CXG1)	21 (.83)
BP13F781S-CX30 (103F7851-80CXJ4)	—
BP13F781D-CX30 (103F7851-80CXJ1)	21 (.83)
BP13F781S-CX36 (103F7851-80CXK4)	—
BP13F781D-CX36 (103F7851-80CXK1)	21 (.83)

BP13F851□-CX□□

103F8581-80CX□□



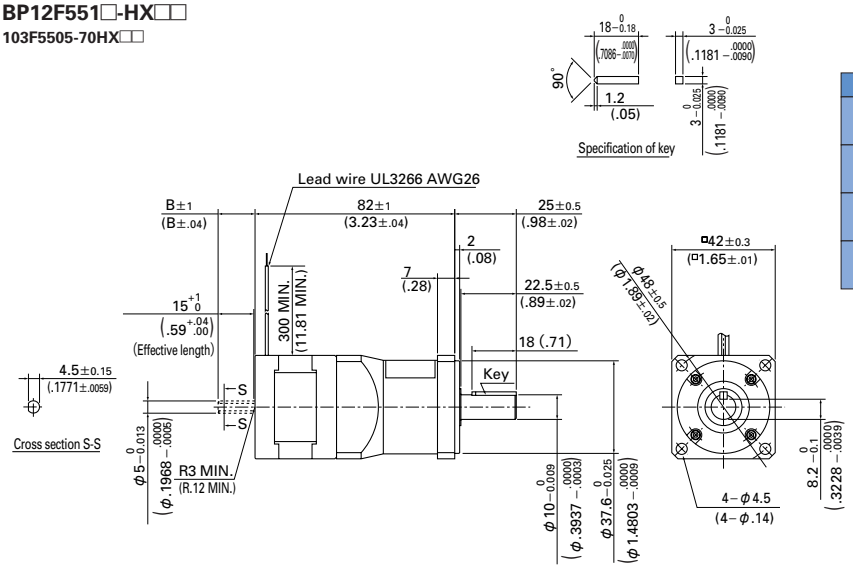
Model name	B
BP13F851S-CX3.6 (103F8581-80CXA4)	—
BP13F851D-CX3.6 (103F8581-80CXA1)	32 (1.26)
BP13F851S-CX7.2 (103F8581-80CXB4)	—
BP13F851D-CX7.2 (103F8581-80CXB1)	32 (1.26)
BP13F851S-CX10 (103F8581-80CXE4)	—
BP13F851D-CX10 (103F8581-80CXE1)	32 (1.26)
BP13F851S-CX20 (103F8581-80CXG4)	—
BP13F851D-CX20 (103F8581-80CXG1)	32 (1.26)
BP13F851S-CX30 (103F8581-80CXJ4)	—
BP13F851D-CX30 (103F8581-80CXJ1)	32 (1.26)
BP13F851S-CX36 (103F8581-80CXK4)	—
BP13F851D-CX36 (103F8581-80CXK1)	32 (1.26)

Dimensions [Unit: mm (inch)]

STEPSYN F with harmonic gear

BP12F551□-HX□□

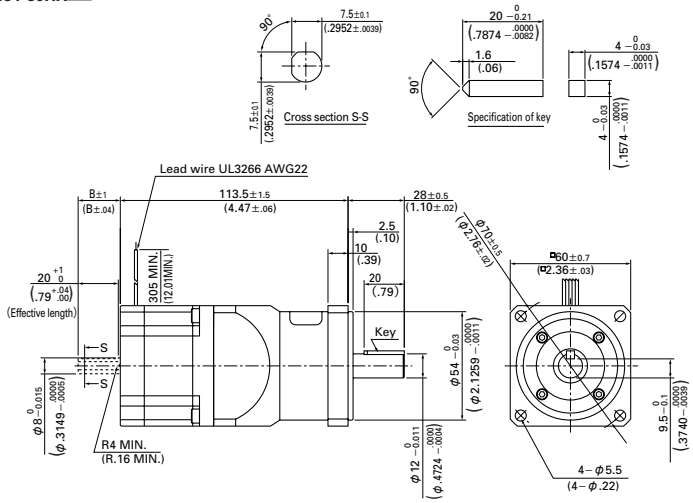
103F5505-70HX□□



Model name	B
BP12F551S-HX50 (103F5505-70HXL4)	—
BP12F551D-HX50 (103F5505-70HXL1)	15 (.59)
BP12F551S-HX100 (103F5505-70HXM4)	—
BP12F551D-HX100 (103F5505-70HXM1)	15 (.59)

BP13F781□-HX□□

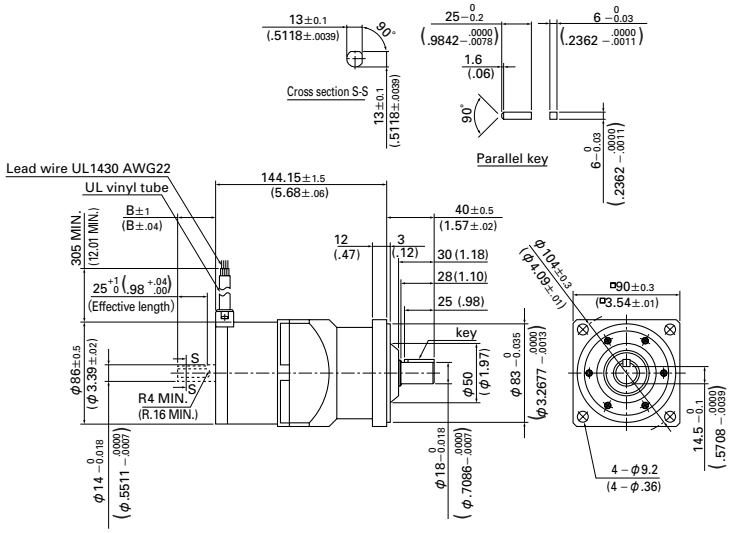
103F7851-80HX□□



Model name	B
BP13F781S-HX50 (103F7851-80HXL4)	—
BP13F781D-HX50 (103F7851-80HXL1)	21 (.83)
BP13F781S-HX100 (103F7851-80HXM4)	—
BP13F781D-HX100 (103F7851-80HXM1)	21 (.83)

BP13F851□-HX□□

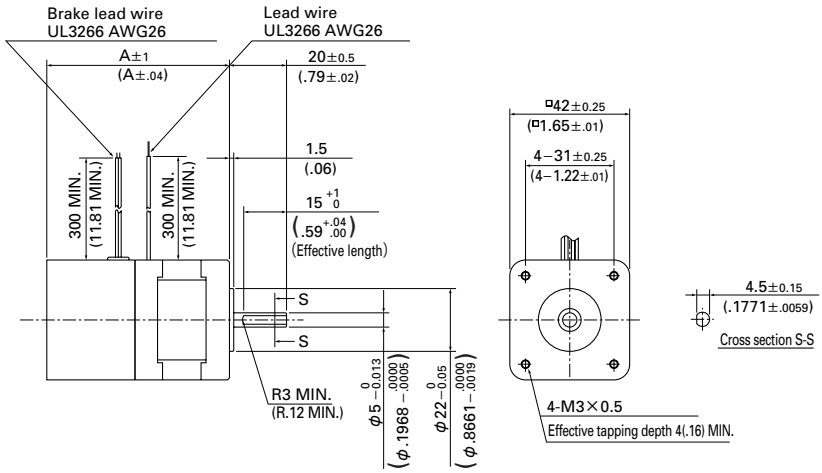
103F8581-80HX□□



Model name	B
BP13F851S-HX50 (103F8581-80HXL4)	—
BP13F851D-HX50 (103F8581-80HXL1)	32 (1.26)
BP13F851S-HX100 (103F8581-80HXM4)	—
BP13F851D-HX100 (103F8581-80HXM1)	32 (1.26)

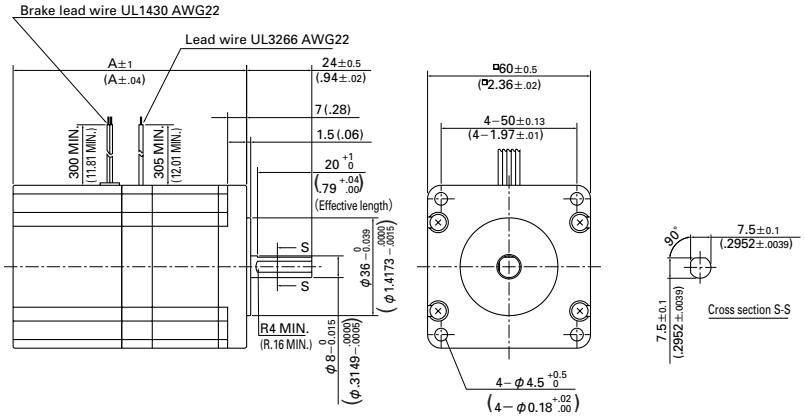
Dimensions [Unit: mm (inch)]

STEPSYN F with Electromagnetic Brake
BP12F55□S-XB
103F55□□-70XB41



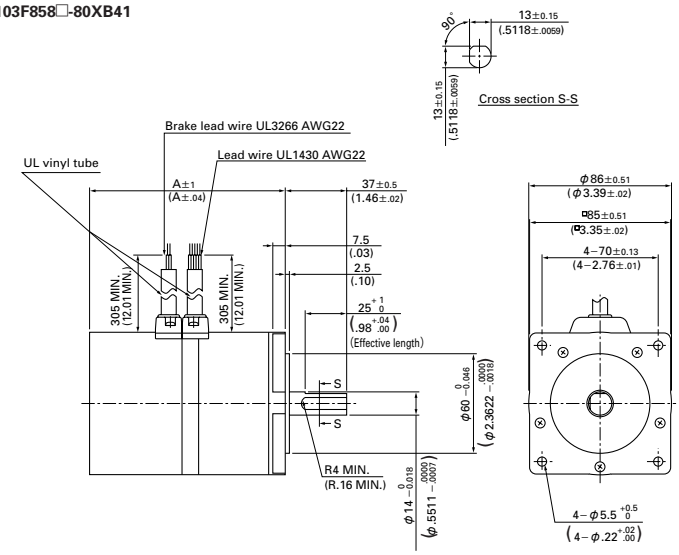
Model name	A
BP12F551S-XB (103F5505-70XB41)	64.5 (2.54)
BP12F552S-XB (103F5508-70XB41)	70.5 (2.78)
BP12F554S-XB (103F5510-70XB41)	79.5 (3.13)

BP13F78□S-XB
103F785□-80XB41



Model name	A
BP13F781S-XB (103F7851-80XB41)	85.8 (3.38)
BP13F782S-XB (103F7852-80XB41)	94.5 (3.72)
BP13F783S-XB (103F7853-80XB41)	126.7 (4.99)

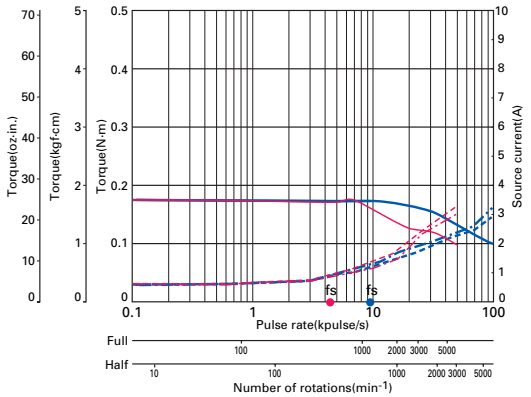
BP13F85□S-XB
103F858□-80XB41



Model name	A
BP13F851S-XB (103F8581-80XB41)	116.7 (4.59)
BP13F852S-XB (103F8582-80XB41)	146.8 (5.78)
BP13F853S-XB (103F8583-80XB41)	180.4 (7.10)

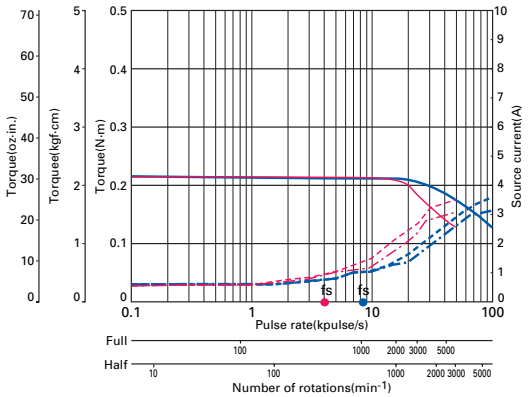
Pulse rate-torque characteristics/pulse rate-source current characteristics

● BP12F551□ / BP12F551S-XB : 100V



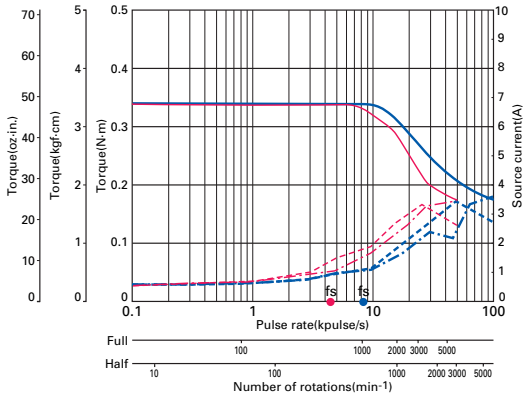
103F5505-70□□/103F5505-70XB41
Source voltage : AC100V·Operating current : 0.75A/phase
—— Pull-out torque(J_{L1}=0.94×10^{-4}kg·m^2 [5.14 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX) – – – Source current(T_L=0)
fs : No load maximum starting pluse rate
■ Full-step ■ Half-step

● BP12F552□ / BP12F552S-XB : 100V



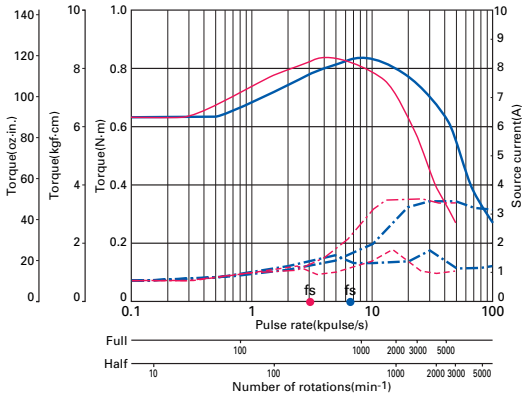
103F5508-70□□/103F5508-70XB41
Source voltage : AC100V·Operating current : 0.75A/phase
—— Pull-out torque(J_{L1}=0.94×10^{-4}kg·m^2 [5.14 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX) – – – Source current(T_L=0)
fs : No load maximum starting pluse rate
■ Full-step ■ Half-step

● BP12F554□ / BP12F554S-XB : 100V



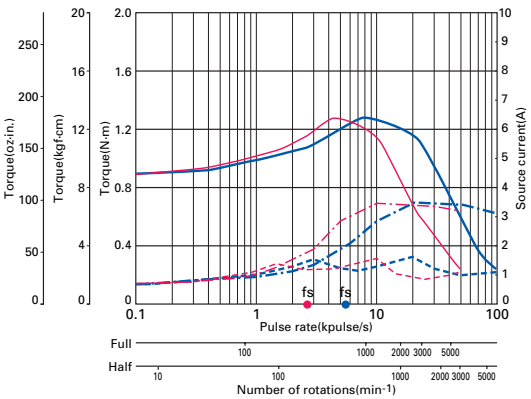
103F5510-70□□/103F5510-70XB41
Source voltage : AC100V·Operating current : 0.75A/phase
—— Pull-out torque(J_{L1}=0.94×10^{-4}kg·m^2 [5.14 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX) – – – Source current(T_L=0)
fs : No load maximum starting pluse rate
■ Full-step ■ Half-step

● BP12F781□ : 100V



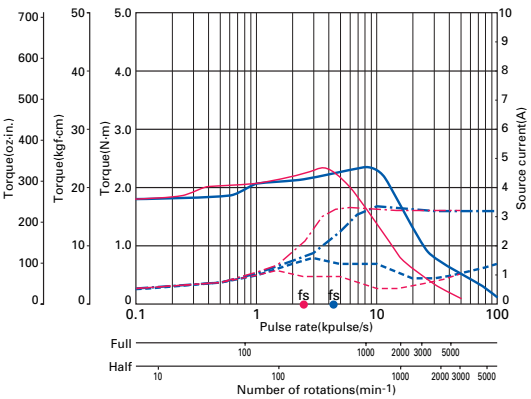
103F7851-70□□
Source voltage : AC100V·Operating current : 0.75A/phase
—— Pull-out torque(J_{L1}=2.6×10^{-4}kg·m^2 [14.22 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX) – – – Source current(T_L=0)
fs : No load maximum starting pluse rate
■ Full-step ■ Half-step

● BP12F782□ : 100V



103F7852-70□□
Source voltage : AC100V·Operating current : 0.75A/phase
—— Pull-out torque(J_{L1}=2.6×10^{-4}kg·m^2 [14.22 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX) – – – Source current(T_L=0)
fs : No load maximum starting pluse rate
■ Full-step ■ Half-step

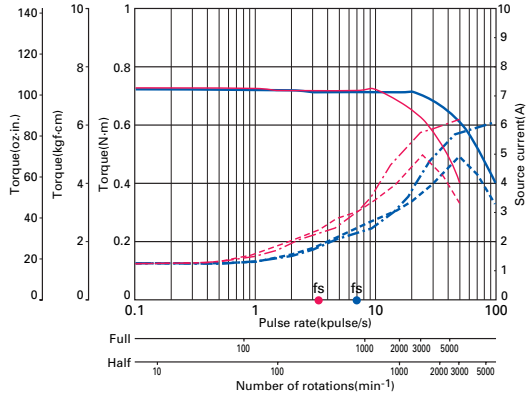
● BP12F783□ : 100V



103F7853-70□□
Source voltage : AC100V·Operating current : 0.75A/phase
—— Pull-out torque(J_{L1}=7.4×10^{-4}kg·m^2 [40.46 oz·in^2]Use the rubber coupling)
– · – Source current(T_L=MAX) – – – Source current(T_L=0)
fs : No load maximum starting pluse rate
■ Full-step ■ Half-step

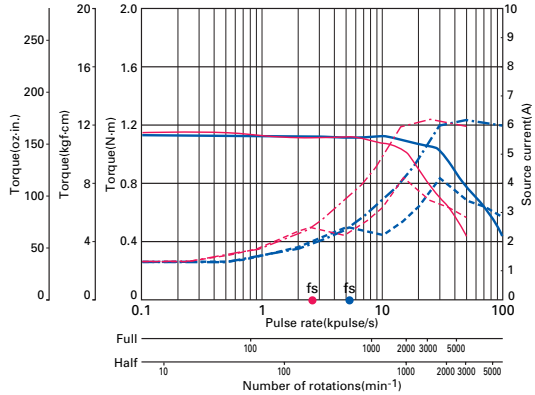
Pulse rate-torque characteristics/pulse rate-source current characteristics

● BP13F781□ / BP13F781S-XB : 100V



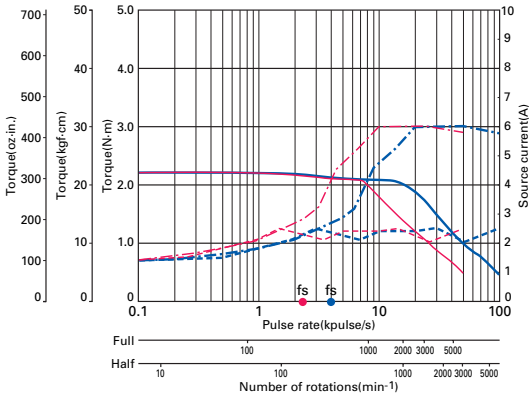
103F7851-80□□/103F7851-80XB41
Source voltage : AC100V·Operating current : 1.5A/phase
—— Pull-out torque(J_{L1}=2.6×10^{-4}kg·m^2 [14.22 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX) – – – Source current(T_L=0)
fs : No load maximum starting pluse rate
■ Full-step ■ Half-step

● BP13F782□ / BP13F782S-XB : 100V



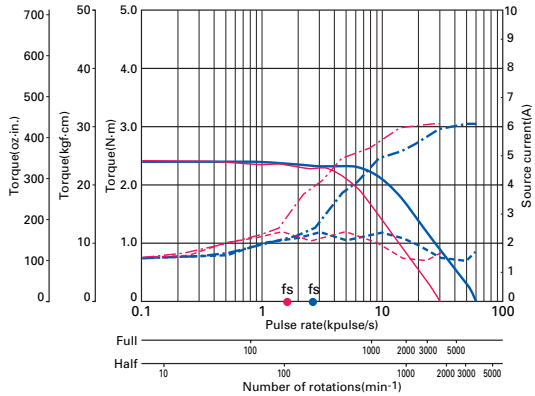
103F7852-80□□/103F7852-80XB41
Source voltage : AC100V·Operating current : 1.5A/phase
—— Pull-out torque(J_{L1}=2.6×10^{-4}kg·m^2 [14.22 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX) – – – Source current(T_L=0)
fs : No load maximum starting pluse rate
■ Full-step ■ Half-step

● BP13F783□ / BP13F783S-XB : 100V



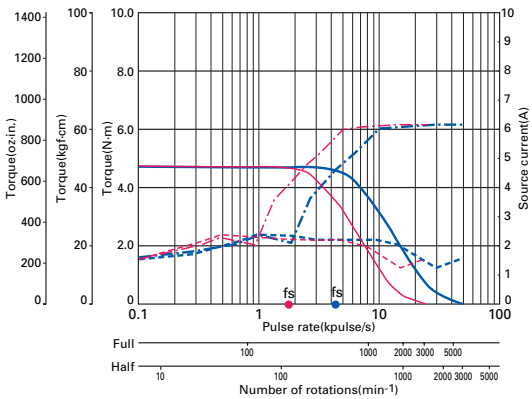
103F7853-80□□/103F7853-80XB41
Source voltage : AC100V·Operating current : 1.5A/phase
—— Pull-out torque(J_{L1}=7.4×10^{-4}kg·m^2 [40.46 oz·in^2]Use the rubber coupling)
– · – Source current(T_L=MAX) – – – Source current(T_L=0)
fs : No load maximum starting pluse rate
■ Full-step ■ Half-step

● BP13F851□ / BP13F851S-XB : 100V



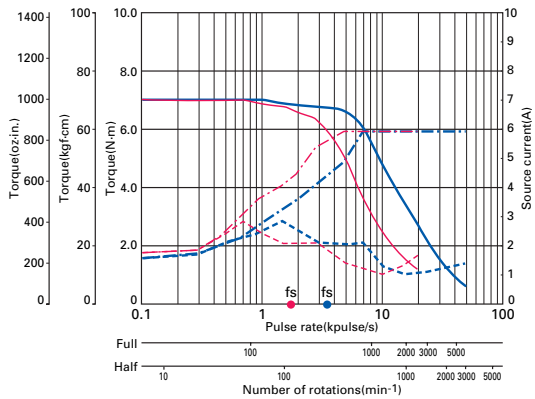
103F8581-80□□/103F8581-80XB41
Source voltage : AC100V·Operating current : 1.5A/phase
—— Pull-out torque(J_{L1}=7.4×10^{-4}kg·m^2 [40.46 oz·in^2]Use the rubber coupling)
– · – Source current(T_L=MAX) – – – Source current(T_L=0)
fs : No load maximum starting pluse rate
■ Full-step ■ Half-step

● BP13F852□ / BP13F852S-XB : 100V



103F8582-80□□/103F8582-80XB41
Source voltage : AC100V·Operating current : 1.5A/phase
—— Pull-out torque(J_{L1}=15.3×10^{-4}kg·m^2 [83.65 oz·in^2]Use the rubber coupling)
– · – Source current(T_L=MAX) – – – Source current(T_L=0)
fs : No load maximum starting pluse rate
■ Full-step ■ Half-step

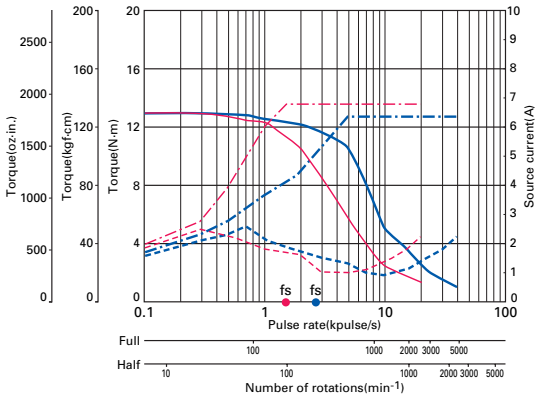
● BP13F853□ / BP13F853S-XB : 100V



103F8583-80□□/103F8583-80XB41
Source voltage : AC100V·Operating current : 1.5A/phase
——Pull-out torque(J_{L1}=43×10^{-4}kg·m^2 [235.10 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX) – – – Source current(T_L=0)
fs : No load maximum starting pluse rate
■ Full-step ■ Half-step

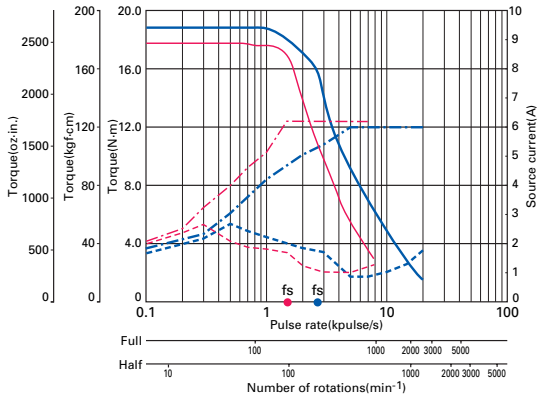
Pulse rate-torque characteristics/pulse rate-source current characteristics

● BP13F892□ : 100V



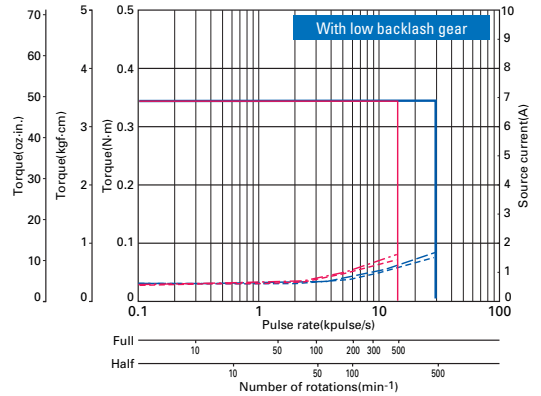
103F89582-80□□
Source voltage : AC100V·Operating current : 1.5A/phase
——Pull-outtorque(J_{L1}=43×10^{-4}kg·m^2 [235.10 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX)　– – – Source current(T_L=0)
fs : No load maximum starting pluse rate
■ Full-step ■ Half-step

● BP13F893□ : 100V



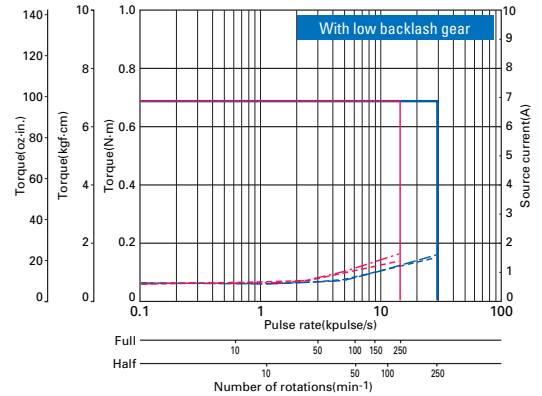
103F89583-80□□
Source voltage : AC100V·Operating current : 1.5A/phase
——Pull-out torque(J_{L1}=43×10^{-4}kg·m^2 [235.10 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX)　– – – Source current(T_L=0)
fs : No load maximum starting pluse rate
■ Full-step ■ Half-step

● BP12F551□-CX3.6 : 100V



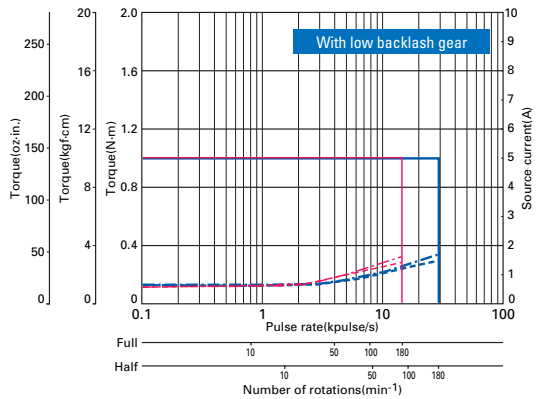
103F5505-70CXA□
Source voltage : AC100V·Operating current : 0.75A/phase
—— Allowable torque(J_{L1}=0.94×10^{-4}kg·m^2 [5.14 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX)　– – – Source current(T_L=0)
■ Full-step ■ Half-step

● BP12F551□-CX7.2 : 100V



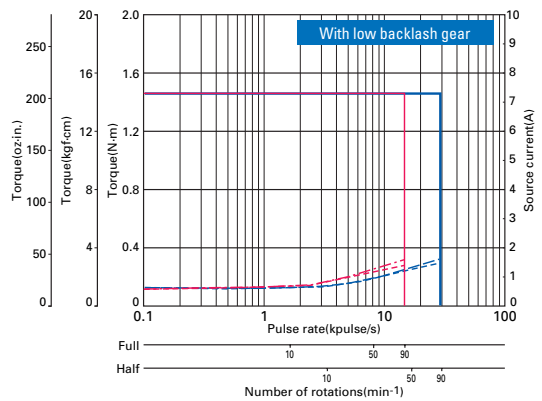
103F5505-70CXB□
Source voltage : AC100V·Operating current : 0.75A/phase
—— Allowable torque(J_{L1}=0.94×10^{-4}kg·m^2 [5.14 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX)　– – – Source current(T_L=0)
■ Full-step ■ Half-step

● BP12F551□-CX10 : 100V



103F5505-70CXE□
Source voltage : AC100V·Operating current : 0.75A/phase
—— Allowable torque(J_{L1}=2.6×10^{-4}kg·m^2 [14.22 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX)　– – – Source current(T_L=0)
■ Full-step ■ Half-step

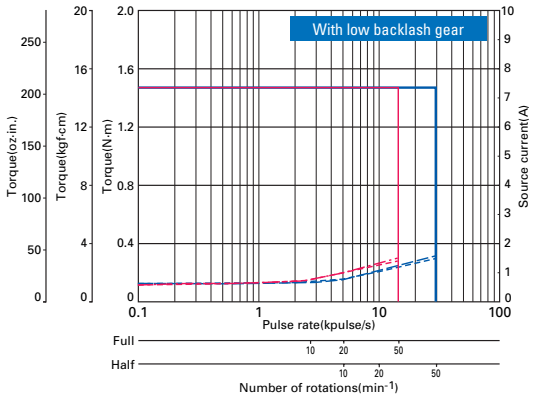
● BP12F551□-CX20 : 100V



103F5505-70CXG□
Source voltage : AC100V·Operating current : 0.75A/phase
—— Allowable torque(J_{L1}=2.6×10^{-4}kg·m^2[14.22 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX)　– – – Source current(T_L=0)
■ Full-step ■ Half-step

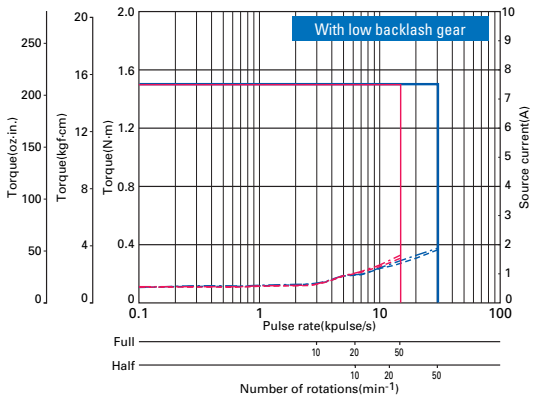
Pulse rate-torque characteristics/pulse rate-source current characteristics

● BP12F551□-CX30 : 100V



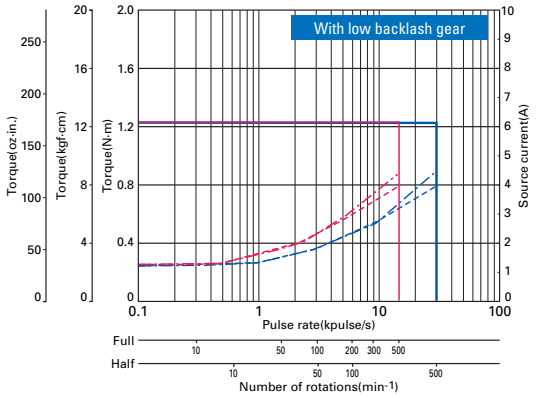
103F5505-70CXJ□
Source voltage : AC100V·Operating current : 0.75A/phase
—— Allowable torque(J_{L1}=2.6×10^{-4}kg·m^2 [14.22 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX) – – – Source current(T_L=0)
■ Full-step ■ Half-step

● BP12F551□-CX36 : 100V



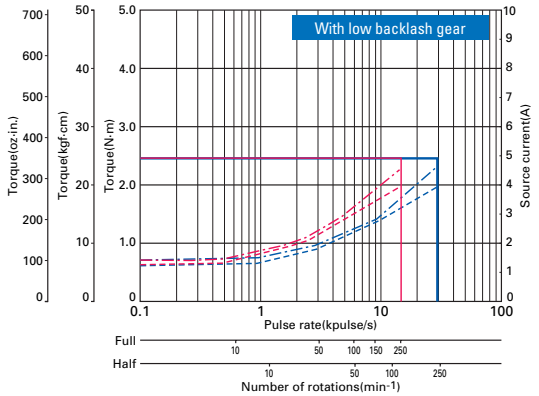
103F5505-70CXK□
Source voltage : AC100V·Operating current : 0.75A/phase
——Allowable torque(J_{L1}=2.6×10^{-4}kg·m^2 [14.22 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX) – – – Source current(T_L=0)
■ Full-step ■ Half-step

● BP13F781□-CX3.6 : 100V



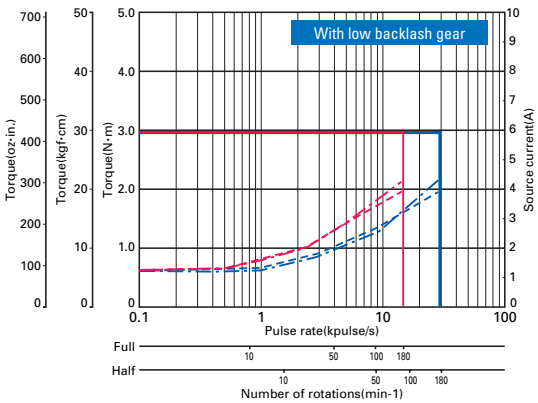
103F7851-80CXA□
Source voltage : AC100V·Operating current : 1.5A/phase
—— Allowable torque(J_{L1}=2.6×10^{-4}kg·m^2[14.22 oz·in^2]Use therubber coupling)
– · – Source current(T_L=MAX) – – – Source current(T_L=0)
■ Full-step ■ Half-step

● BP13F781□-CX7.2 : 100V



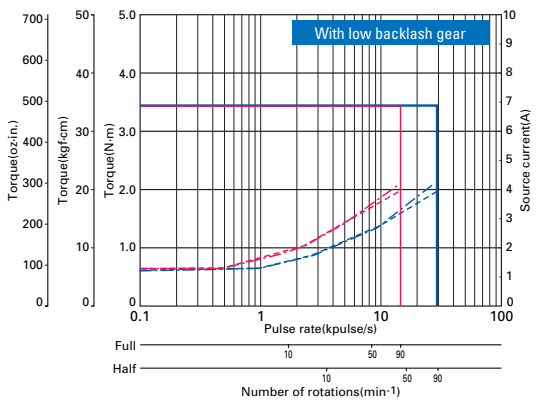
103F7851-80CXB□
Source voltage : AC100V·Operating current : 1.5A/phase
——Allowable torque(J_{L1}=7.4×10^{-4}kg·m^2 [40.46 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX) – – – Source current(T_L=0)
■ Full-step ■ Half-step

● BP13F781□-CX10 : 100V



103F7851-80CXE□
Source voltage : AC100V·Operating current : 1.5A/phase
——Allowable torque(J_{L1}=7.4×10^{-4}kg·m^2 [40.46 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX) – – – Source current(T_L=0)
■ Full-step ■ Half-step

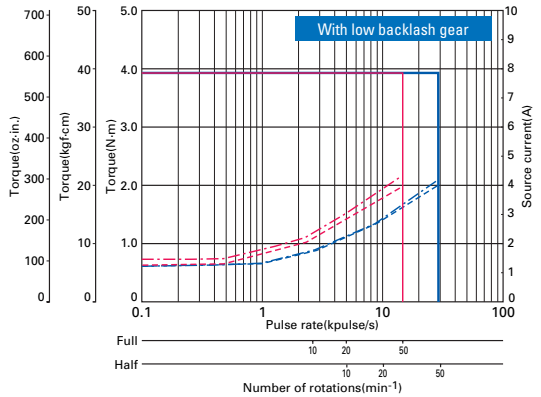
● BP13F781□-CX20 : 100V



103F7851-80CXG□
Source voltage : AC100V·Operating current : 1.5A/phase
——Allowable torque(J_{L1}=15.3×10^{-4}kg·m^2 [83.65 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX) – – – Source current(T_L=0)
■ Full-step ■ Half-step

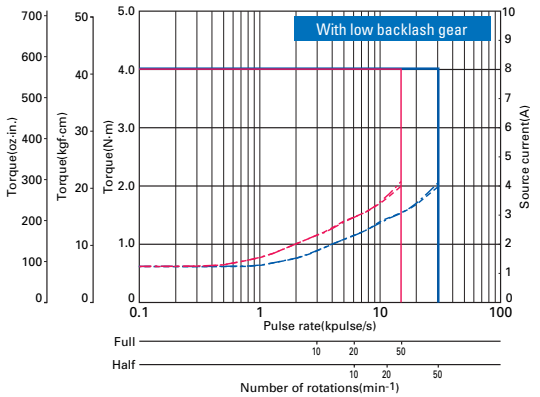
Pulse rate-torque characteristics/pulse rate-source current characteristics

● BP13F781□-CX30 : 100V



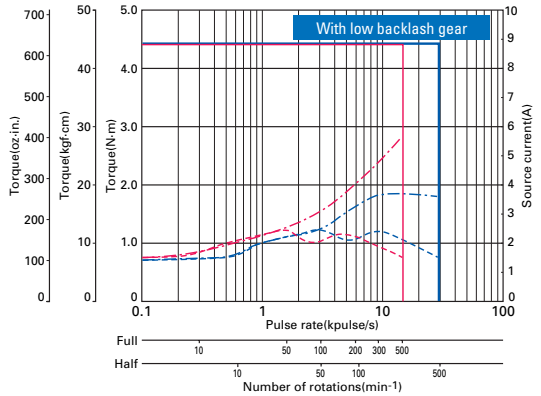
103F7851-80CXJ□
Source voltage : AC100V·Operating current : 1.5A/phase
——Allowable torque(J_{L1}=15.3×10^{-4}kg·m^2 [83.65 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX) – – – Source current(T_L=0)
■ Full-step ■ Half-step

● BP13F781□-CX36 : 100V



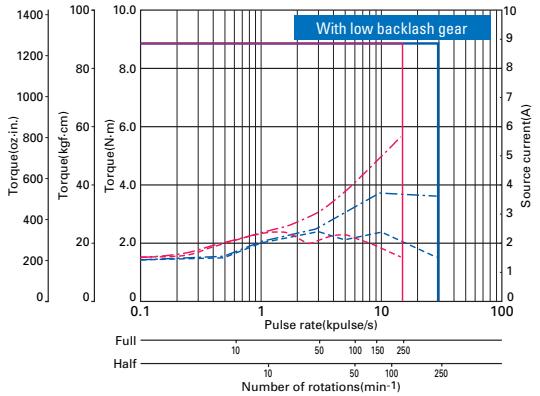
103F7851-80CXK□
Source voltage : AC100V·Operating current : 1.5A/phase
——Allowable torque(J_{L1}=15.3×10^{-4}kg·m^2 [83.65 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX) – – – Source current(T_L=0)
■ Full-step ■ Half-step

● BP13F851□-CX3.6 : 100V



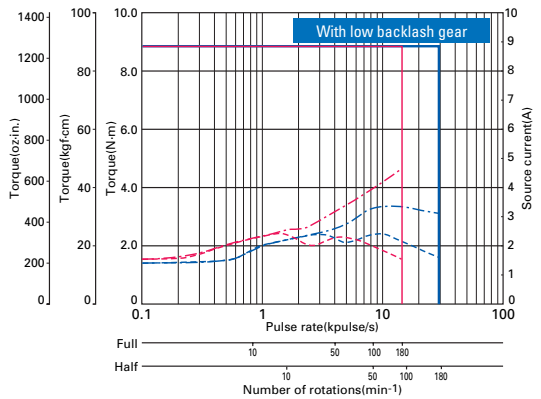
103F8581-80CXA□
Source voltage : AC100V·Operating current : 1.5A/phase
——Allowable torque(J_{L1}=15.3×10^{-4}kg·m^2 [83.65 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX) – – – Source current(T_L=0)
■ Full-step ■ Half-step

● BP13F851□-CX7.2 : 100V



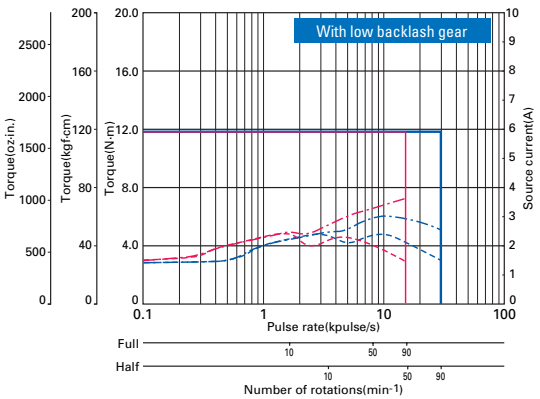
103F8581-80CXB□
Source voltage : AC100V·Operating current : 1.5A/phase
——Allowable torque(J_{L1}=43×10^{-4}kg·m^2 [235.10 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX) – – – Source current(T_L=0)
■ Full-step ■ Half-step

● BP13F851□-CX10 : 100V



103F8581-80CXE□
Source voltage : AC100V·Operating current : 1.5A/phase
——Allowable torque(J_{L1}=43×10^{-4}kg·m^2 [235.10 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX) – – – Source current(T_L=0)
■ Full-step ■ Half-step

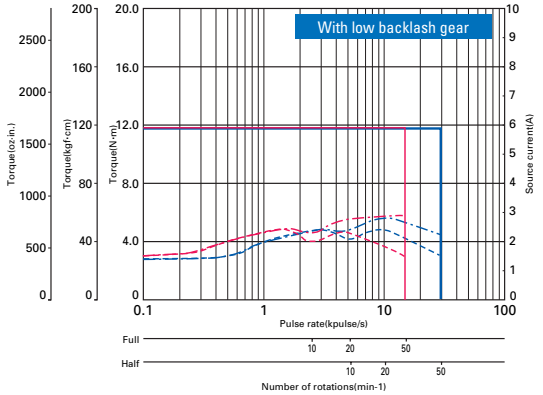
● BP13F851□-CX20 : 100V



103F8581-80CXG□
Source voltage : AC100V·Operating current : 1.5A/phase
——Allowable torque(J_{L1}=43×10^{-4}kg·m^2 [235.10 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX) – – – Source current(T_L=0)
■ Full-step ■ Half-step

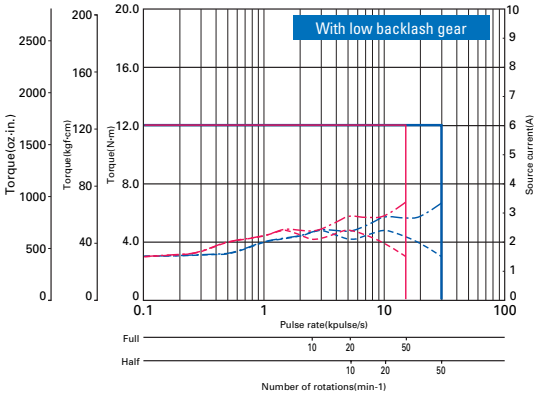
Pulse rate-torque characteristics/pulse rate-source current characteristics

● BP13F851□-CX30 : 100V



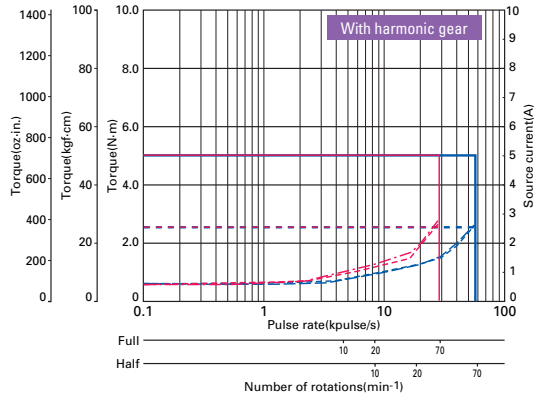
103F8581-80CXJ□
Source voltage : AC100V·Operating current : 1.5A/phase
——Allowable torque(J_{L1}=43×10^{-4}kg·m^2 [235.10 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX)　– – – Source current(T_L=0)
■ Full-step ■ Half-step

● BP13F851□-CX36 : 100V



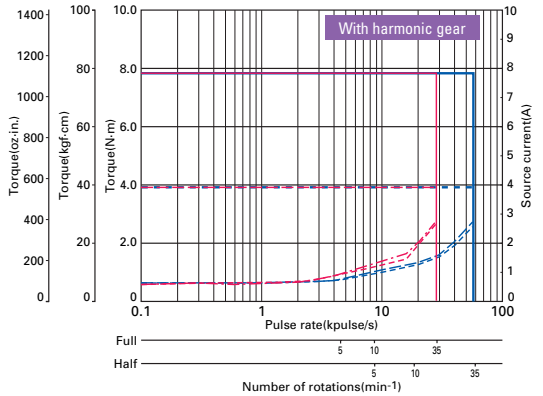
103F8581-80CXK□
Source voltage : AC100V·Operating current : 1.5A/phase
——Allowable torque(J_{L1}=43×10^{-4}kg·m^2 [235.10 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX)　– – – Source current(T_L=0)
■ Full-step ■ Half-step

● BP12F551□-HX50 : 100V



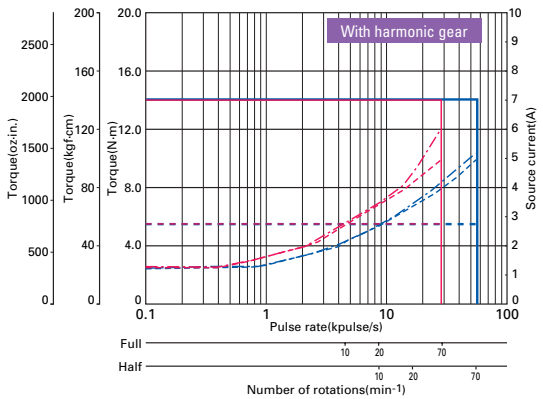
103F5505-70HXL□ ■ Full-step ■ Half-step
Source voltage : AC100V·Operating current : 0.75A/phase
——Instantaneous allowable torque(J_{L1}=15.3×10^{-4}kg·m^2 [83.65 oz·in^2] Use the rubber coupling)
– –Allowable torque(J_{L1}=15.3×10^{-4}kg·m^2 [83.65 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX)　– – – Source current(T_L=0)

● BP12F551□-HX100 : 100V



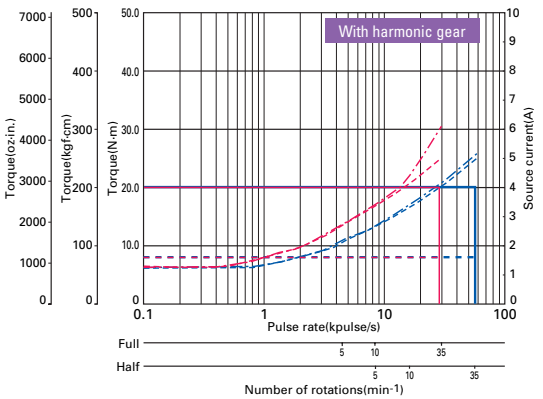
103F5505-70HXM□ ■ Full-step ■ Half-step
Source voltage : AC100V·Operating current : 0.75A/phase
——Instantaneous allowable torque(J_{L1}=43×10^{-4}kg·m^2 [235.10 oz·in^2] Use the rubber coupling)
– –Allowable torque(J_{L1}=43×10^{-4}kg·m^2 [235.10 oz·in^2] Use the the rubber coupling)　– – –
Source current(T_L=MAX)　Source current(T_L=0)

● BP13F781□-HX50 : 100V



103F7851-80HXL□ ■ Full-step ■ Half-step
Source voltage : AC100V·Operating current : 1.5A/phase
——Instantaneous allowable torque(J_{L1}=43×10^{-4}kg·m^2 [235.10 oz·in^2]Use the rubber coupling)
– –Allowable torque(J_{L1}=43×10^{-4}kg·m^2 [235.10 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX)　– – – Source current(T_L=0)

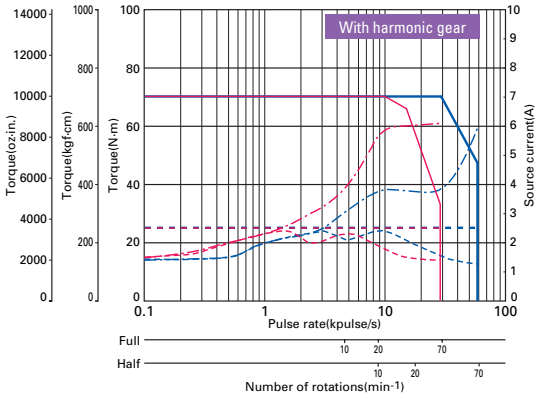
● BP13F781□-HX100 : 100V



103F7851-80HXM□ ■ Full-step ■ Half-step
Source voltage : AC100V·Operating current : 1.5A/phase
—— Instantaneous allowable torque(J_{L1}=43×10^{-4}kg·m^2 [235.10 oz·in^2] Use the rubber coupling)
– –Allowable torque(J_{L1}=43×10^{-4}kg·m^2 [235.10 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX)　– – – Source current(T_L=0)

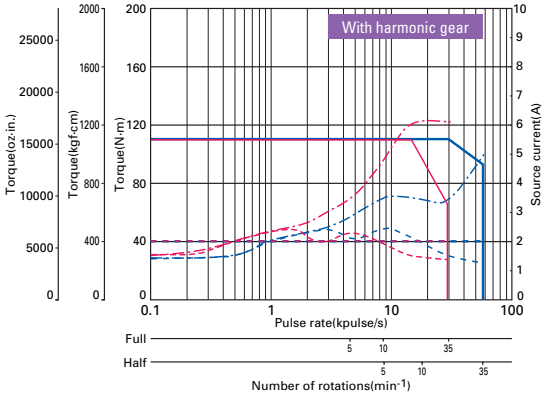
Pulse rate-torque characteristics/pulse rate-source current characteristics

● **BP13F851□-HX50 : 100V**



103F8581-80HXL□ ■ Full-step ■ Half-step
Source voltage : AC100V·Operating current : 1.5A/phase
—— Instantaneous allowable torque(J_{L1}=43×10^{-4}kg·m^2 [235.10 oz·in^2] Use the rubber coupling)
– – Allowable torque(J_{L1}=43×10^{-4}kg·m^2 [235.10 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX) – – – Source current(T_L=0)

● **BP13F851□-HX100 : 100V**



103F8581-80HXM□ ■ Full-step ■ Half-step
Source voltage : AC100V·Operating current : 1.5A/phase
—— Instantaneous allowable torque(J_{L1}=43×10^{-4}kg·m^2 [235.10 oz·in^2] Use the rubber coupling)
– – Allowable torque(J_{L1}=43×10^{-4}kg·m^2 [235.10 oz·in^2] Use the rubber coupling)
– · – Source current(T_L=MAX) – – – Source current(T_L=0)