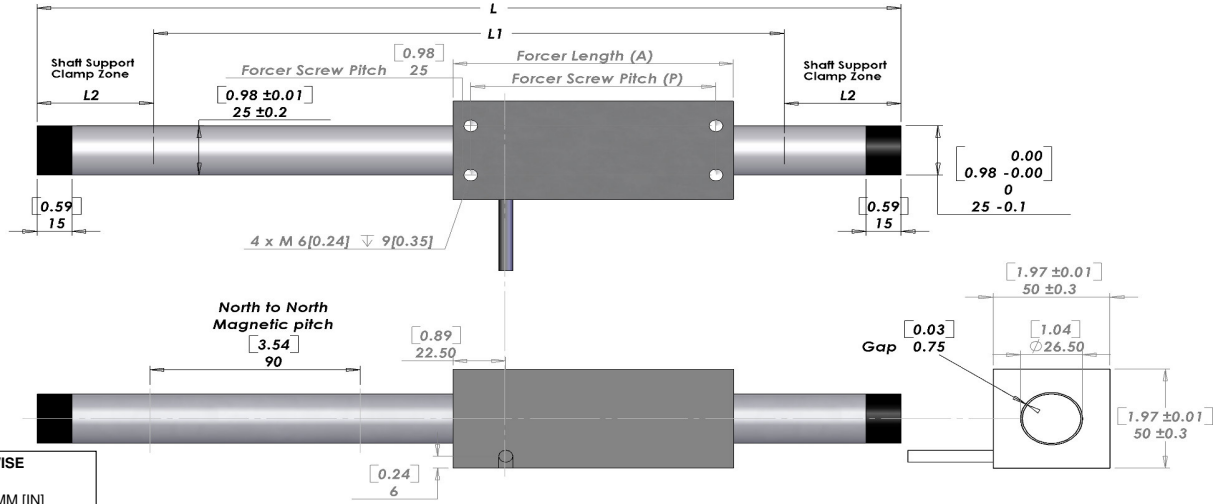


NPM S250



UNLESS OTHERWISE SPECIFIED:
 Dimensions are in MM [IN]
 Tolerances are as follows:

Dimension mm	Tolerance mm
-	6 ±0.1
7 -	30 ±0.2
31 -	120 ±0.3
121 -	315 ±0.5
316 -	1000 ±0.8
1001 -	2000 ±1.2
2000 -	±1.5

* Note 1
 Cable length 300mm
 The bending radius of the motor cable should be 36.6 mm (wire diameter 6.1 * 6) as suggested by the wire manufacturer. This radius should be maintained. Use supplied connector to attach the proper high flex cable as required by your application.

L = See Shaft Length
 L1 = Usable Stroke + A
 L2 = See Shaft Support Length
 A = See Moving Coil Length
 P = See Moving Coil Screw Pitch

Electrical Specifications

	S250D	S250T	S250Q	S250X
Continuous Force ¹	40N (9.0lbs)	60N (13.5lbs)	75N (16.9lbs)	140N (31.5lbs)
Continuous Current ¹	1.3Arms	1.3Arms	1.3Arms	2.4Arms
Peak Force ²	160N (36.0lbs)	240N (54.0lbs)	300N (67.4lbs)	560N (126lbs)
Peak Current ²	5.1Arms	5.1Arms	5.1Arms	9.6Arms
Force Constant K_f	31N/Arms (7.0lbs/Arms)	47N/Arms (10.5lbs/Arms)	59N/Arms (13.2lbs/Arms)	58N/Arms (13.1lbs/Arms)
Back EMF K_e	10.4V/m/s (0.26 V/in/s)	16V/m/s (0.40 V/in/s)	20V/m/s (0.50 V/in/s)	19V/m/s (0.48 V/in/s)
Resistance 25°C, ³	7.8Ω	12Ω	15Ω	7.5Ω
Inductance ³	9.8mH	15mH	19mH	9.5mH
Electrical Time Constant	1.26ms	1.25ms	1.27ms	1.27ms
Fundamental Motor Constant K_m	11.19N√W	13.53N√W	15.13N√W	21.30N√W
Magnetic Pitch (North-North)	90mm (3.54in)	90mm (3.54in)	90mm (3.54in)	90mm (3.54in)

All specifications are for reference only. Specifications may change depending on servo driver selected. Consult Nippon Pulse America.

- 1) Based on a temp rise of coil surface of 110°K over 25°C ambient temperature stalled forcer, and no external cooling or heat sinking. Addition of 25 cm x 25 cm x 2.5 cm aluminum heat sink increases continuous force by 20%.
- 2) Can be maintained for a maximum of 40 seconds, higher forces and current possible for short periods of time, consult Nippon Pulse America.
- 3) All winding parameters listed are measured line-to-line (phase-to-phase).

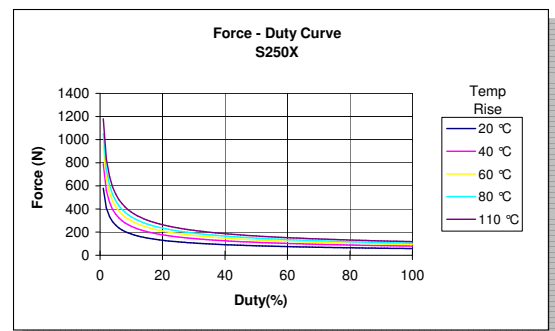
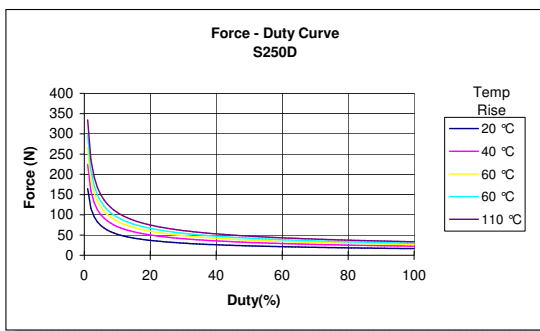
Thermal Specifications

	S250D	S250T	S250Q	S250X
Max phase temperature ⁴	135°C (275°F)	135°C (275°F)	135°C (275°F)	135°C (275°F)
Thermal Resistance (Coil) K_{θ}	8.6°C/W	5.6°C/W	4.5°C/W	2.5°C/W

4) The standard temperature difference between the coil and the forcer surface is 20°C

Mechanical Specifications

Forcer		S250D	S250T	S250Q	S250X
Forcer Length	A	120mm (4.7in)	165mm (6.5in)	210mm (8.3in)	390mm (15.4in)
Forcer Width		50mm (1.96in)	50mm (1.96in)	50mm (1.96in)	50mm (1.96in)
Forcer Screw Pitch	P	105mm (4.13in)	150mm (5.9in)	195mm (7.68in)	375mm (14.76in)
Forcer Weight		0.80kg (1.8lbs)	1.1kg (2.4lbs)	1.5kg (3.3lbs)	2.9kg (6.4lbs)
Gap		0.75mm (0.029in)	0.75mm (0.029in)	0.75mm (0.029in)	0.75mm (0.029in)



Mechanical Specifications

Shaft

Shaft Diameter (D) 25 ±0.2mm (0.98in)

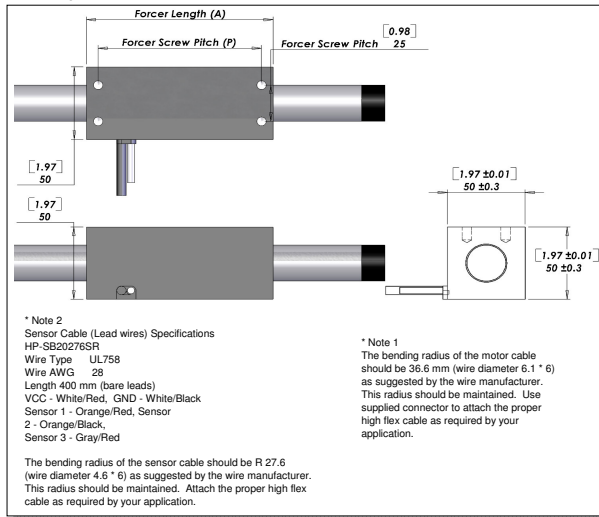
Shaft Length (L) Stroke	Maximum Stroke length 2550mm (100.4in)			
	Motor Type	S250D	S250T	S250Q
100	320mm (12.6in)	365mm (14.4in)	410mm (16.1in)	590mm (23.2in)
150	370mm (14.6in)	415mm (16.3in)	460mm (18.1in)	640mm (25.2in)
200	420mm (16.5in)	465mm (18.3in)	510mm (20.1in)	690mm (27.2in)
250	470mm (18.5in)	515mm (20.3in)	560mm (22in)	740mm (29.1in)
300	520mm (20.5in)	565mm (22.2in)	610mm (24in)	790mm (31.1in)
350	570mm (22.4in)	615mm (24.2in)	660mm (26in)	840mm (33.1in)
400	620mm (24.4in)	665mm (26.2in)	710mm (28in)	890mm (35.1in)
450	670mm (26.4in)	715mm (28.1in)	760mm (29.9in)	940mm (37in)
500	720mm (28.3in)	765mm (30.1in)	810mm (31.9in)	990mm (39in)
550	770mm (30.3in)	815mm (32.1in)	860mm (33.9in)	1080mm (42.5in)
600	820mm (32.3in)	865mm (34.1in)	910mm (35.8in)	1130mm (44.5in)
650	870mm (34.3in)	915mm (36in)	960mm (37.8in)	1180mm (46.5in)
700	920mm (36.2in)	965mm (38in)	1010mm (39.8in)	1230mm (48.4in)
750	1010mm (39.8in)	1055mm (41.5in)	1100mm (43.3in)	1280mm (50.4in)
800	1060mm (41.7in)	1105mm (43.5in)	1150mm (45.3in)	1330mm (52.4in)
850	1110mm (43.7in)	1155mm (45.5in)	1200mm (47.2in)	1380mm (54.3in)
900	1160mm (45.7in)	1205mm (47.4in)	1250mm (49.2in)	1430mm (56.3in)
950	1210mm (47.6in)	1255mm (49.4in)	1300mm (51.2in)	1480mm (58.3in)
1000	1260mm (49.6in)	1305mm (51.4in)	1350mm (53.1in)	1530mm (60.2in)
1050	1310mm (51.6in)	1355mm (53.3in)	1400mm (55.1in)	1580mm (62.2in)
1100	1360mm (53.5in)	1405mm (55.3in)	1450mm (57.1in)	1630mm (64.2in)
1150	1410mm (55.5in)	1455mm (57.3in)	1500mm (59.1in)	1680mm (66.1in)
1200	1460mm (57.5in)	1505mm (59.3in)	1550mm (61in)	1730mm (68.1in)
1250	1510mm (59.4in)	1555mm (61.2in)	1600mm (63in)	1780mm (70.1in)
1300	1560mm (61.4in)	1605mm (63.2in)	1650mm (65in)	1830mm (72in)
1350	1610mm (63.4in)	1655mm (65.2in)	1700mm (66.9in)	1940mm (76.4in)
1400	1660mm (65.4in)	1705mm (67.1in)	1750mm (68.9in)	1990mm (78.3in)
1450	1710mm (67.3in)	1755mm (69.1in)	1800mm (70.9in)	2040mm (80.3in)
1500	1760mm (69.3in)	1805mm (71.1in)	1850mm (72.8in)	2090mm (82.3in)
1550	1870mm (73.6in)	1915mm (75.4in)	1960mm (77.2in)	2140mm (84.3in)
1600	1920mm (75.6in)	1965mm (77.4in)	2010mm (79.1in)	2190mm (86.2in)
1650	1970mm (77.6in)	2015mm (79.3in)	2060mm (81.1in)	2240mm (88.2in)
1700	2020mm (79.5in)	2065mm (81.3in)	2110mm (83.1in)	2290mm (90.2in)
1750	2070mm (81.5in)	2115mm (83.3in)	2160mm (85in)	2340mm (92.1in)
1800	2120mm (83.5in)	2165mm (85.2in)	2210mm (87in)	2390mm (94.1in)
1850	2170mm (85.4in)	2215mm (87.2in)	2260mm (89in)	2440mm (96.1in)
1900	2220mm (87.4in)	2265mm (89.2in)	2310mm (90.9in)	2490mm (98in)
1950	2270mm (89.4in)	2315mm (91.1in)	2360mm (92.9in)	2540mm (100in)
2000	2320mm (91.3in)	2365mm (93.1in)	2410mm (94.9in)	2590mm (102in)

Stroke lengths up to 2550mm available. Please consult Nippon Pulse America for more information.

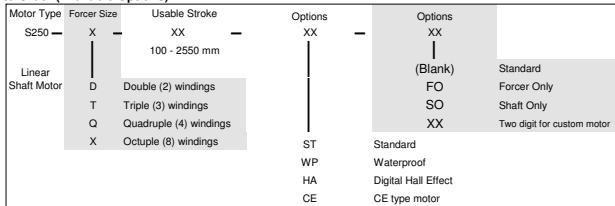
Support and Bending

Stroke	D / T / Q	X	Shaft Support length (L2)	Max Bending
0 → 700		0 → 500	50mm (1.97in)	0.00mm (0.00in)
701 → 1000		501 → 800	70mm (2.76in)	0.30mm (0.012in)
1001 → 1500		801 → 1300	70mm (2.76in)	0.70mm (0.028in)
1501 → Max		1301 → Max	100mm (3.94in)	0.70mm (0.028in)

Hall Effect (Optional)



How to Order (Available Options)



Shaft Mass

Stroke	Motor Type	S250D	S250T	S250Q	S250X
100		0.9kg (2lb)	1.1kg (2.3lb)	1.2kg (2.7lb)	1.8kg (4lb)
150		1.1kg (2.4lb)	1.2kg (2.7lb)	1.4kg (3.1lb)	2kg (4.4lb)
200		1.2kg (2.7lb)	1.4kg (3.1lb)	1.6kg (3.4lb)	2.2kg (4.8lb)
250		1.4kg (3.1lb)	1.6kg (3.5lb)	1.7kg (3.8lb)	2.3kg (5.2lb)
300		1.6kg (3.5lb)	1.7kg (3.8lb)	1.9kg (4.2lb)	2.5kg (5.6lb)
350		1.8kg (3.9lb)	1.9kg (4.2lb)	2.1kg (4.6lb)	2.7kg (5.9lb)
400		1.9kg (4.3lb)	2.1kg (4.6lb)	2.2kg (4.9lb)	2.9kg (6.3lb)
450		2.1kg (4.6lb)	2.3kg (5lb)	2.4kg (5.3lb)	3kg (6.7lb)
500		2.3kg (5lb)	2.4kg (5.4lb)	2.6kg (5.7lb)	3.2kg (7.1lb)
550		2.4kg (5.4lb)	2.6kg (5.7lb)	2.8kg (6.1lb)	3.4kg (7.4lb)
600		2.6kg (5.8lb)	2.8kg (6.1lb)	2.9kg (6.5lb)	3.5kg (7.8lb)
650		2.8kg (6.2lb)	2.9kg (6.5lb)	3.1kg (6.8lb)	3.7kg (8.2lb)
700		3kg (6.5lb)	3.1kg (6.9lb)	3.3kg (7.2lb)	3.9kg (8.6lb)
750		3.2kg (7lb)	3.4kg (7.4lb)	3.5kg (7.7lb)	4.1kg (9.1lb)
800		3.4kg (7.4lb)	3.5kg (7.8lb)	3.7kg (8.1lb)	4.3kg (9.5lb)
850		3.5kg (7.8lb)	3.7kg (8.1lb)	3.8kg (8.5lb)	4.5kg (9.8lb)
900		3.7kg (8.2lb)	3.9kg (8.5lb)	4kg (8.9lb)	4.6kg (10.2lb)
950		3.9kg (8.6lb)	4kg (8.9lb)	4.2kg (9.2lb)	4.8kg (10.6lb)
1000		4.1kg (8.9lb)	4.2kg (9.3lb)	4.4kg (9.6lb)	5kg (11lb)
1050		4.2kg (9.3lb)	4.4kg (9.7lb)	4.5kg (10lb)	5.2kg (11.4lb)
1100		4.4kg (9.7lb)	4.6kg (10lb)	4.7kg (10.4lb)	5.3kg (11.7lb)
1150		4.6kg (10.1lb)	4.7kg (10.4lb)	4.9kg (10.8lb)	5.5kg (12.1lb)
1200		4.7kg (10.5lb)	4.9kg (10.8lb)	5.1kg (11.1lb)	5.7kg (12.5lb)
1250		4.9kg (10.8lb)	5.1kg (11.2lb)	5.2kg (11.5lb)	5.8kg (12.9lb)
1300		5.1kg (11.2lb)	5.2kg (11.6lb)	5.4kg (11.9lb)	6kg (13.3lb)
1350		5.3kg (11.6lb)	5.4kg (11.9lb)	5.6kg (12.3lb)	6.2kg (13.6lb)
1400		5.4kg (12lb)	5.6kg (12.3lb)	5.7kg (12.7lb)	6.4kg (14lb)
1450		5.6kg (12.3lb)	5.8kg (12.7lb)	5.9kg (13.1lb)	6.5kg (14.4lb)
1500		5.8kg (12.7lb)	5.9kg (13.1lb)	6.1kg (13.4lb)	6.7kg (14.8lb)
1550		6kg (13.3lb)	6.2kg (13.6lb)	6.3kg (13.9lb)	7kg (15.3lb)
1600		6.2kg (13.6lb)	6.3kg (13.9lb)	6.5kg (14.2lb)	7.1kg (15.6lb)
1650		6.3kg (14lb)	6.5kg (14.3lb)	6.6kg (14.6lb)	7.3kg (16lb)
1700		6.5kg (14.3lb)	6.7kg (14.7lb)	6.8kg (15lb)	7.4kg (16.4lb)
1750		6.7kg (14.7lb)	6.8kg (15.1lb)	7kg (15.4lb)	7.6kg (16.8lb)
1800		6.9kg (15.1lb)	7kg (15.5lb)	7.2kg (15.8lb)	7.8kg (17.2lb)
1850		7kg (15.5lb)	7.2kg (15.8lb)	7.3kg (16.2lb)	8kg (17.6lb)
1900		7.2kg (15.9lb)	7.4kg (16.2lb)	7.5kg (16.6lb)	8.1kg (17.9lb)
1950		7.4kg (16.3lb)	7.5kg (16.6lb)	7.7kg (17lb)	8.3kg (18.3lb)
2000		7.6kg (16.7lb)	7.7kg (17lb)	7.9kg (17.4lb)	8.5kg (18.7lb)

Lead Wire

Motor Cable	Wire Type	UL 2464
Wire AWG		20
U phase		White
V phase		Black
W phase		Green / Yellow

300mm lead wire bare leads
The bending radius of the motor cable should be 36.6mm as suggested by the wire manufacturer.

Supplied Connector (Motor Cable)

Receptacle housing	HLR-03V
Plug Housing	HLP-03V
Retainer	HLS-03V
Pin contact	SSM-21T-P1.4
Socket contact	SSF-21T-P1.4

(To be installed by the user)

CE Type Motor Cable (Optional)

Wire Type	UL 1330
Wire AWG	24
U phase	Red
V phase	White
W phase	Black
Ground Cable	
Wire Type	UL 1330
Wire AWG	20
FG (Frame Ground)	Green / Yellow

300mm lead wire blunt cut
The bending radius of the motor cable should be 16.96mm or more as suggested by the wire manufacturer.

Hall Effect Cable (Optional)

Wire Type	UL 758
Wire AWG	28
VCC	White / Red
GND	White / Black
Sensor 1	Orange / Red
Sensor 2	Orange / Black
Sensor 3	Gray / Red
No Connection	Gray / Black

400mm lead wire bare leads
The bending radius of the hall effect cable should be 27.6mm as suggested by the wire manufacturer.

Connector (Hall Effect Cable)
None supplied

Tandem Forcer

