

Electrical Specifications

	S320D	S320T	S320Q	S320X
Continuous Force ¹	56N (12.6lbs)	85N (19.1lbs)	113N (25.4lbs)	140N (31.5lbs)
Continuous Current ¹	1.2Arms	1.2Arms	1.2Arms	2.5Arms
Peak Force ²	224N (50.4lbs)	340N (76.4lbs)	452N (102lbs)	560N (126lbs)
Peak Current ²	5.0Arms	5.0Arms	5.0Arms	10Arms
Force Constant K _f	45N/Arms (10.12lbs/Arms)	68N/Arms (15.29lbs/Arms)	91N/Arms (20.37lbs/Arms)	91N/Arms (20.37lbs/Arms)
Back EMF	15V/m/s (0.38 V/in/s)	23V/m/s (0.58 V/in/s)	30V/m/s (0.77 V/in/s)	30V/m/s (0.77 V/in/s)
Resistance 25 °C, ³	11Ω	17Ω	23Ω	11.5Ω
Inductance ³	17.0mH	26.0mH	34.0mH	17.0mH
Electrical Time Constant	1.55ms	1.53ms	1.48ms	1.48ms
Magnetic Pitch (North-North)	120mm (4.72in)	120mm (4.72in)	120mm (4.72in)	120mm (4.72in)

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, consult Nippon Pulse America.

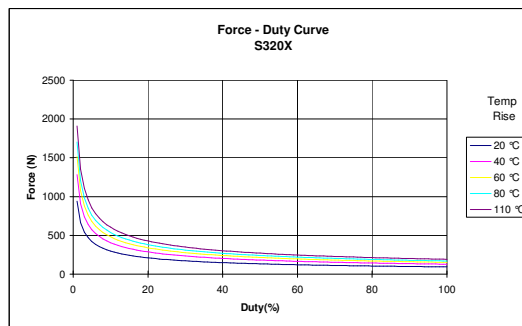
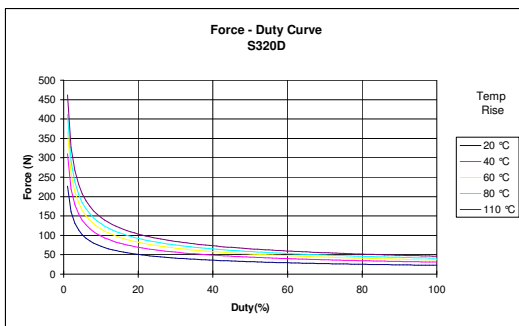
3) All winding parameters listed are measured line-to-line (phase-to-phase).

Thermal Specifications

	S320D	S320T	S320Q	S320X
Max phase temperature	135 °C (275 °F)	135 °C (275 °F)	135 °C (275 °F)	135 °C (275 °F)
Thermal Resistance K _q	6.3 °C/W	4.5 °C/W	3.1 °C/W	1.5 °C/W

Mechanical Specifications

Forcer		S320D	S320T	S320Q	S320X
Forcer Length	A	160mm (6.3in)	220mm (8.6in)	280mm (11in)	520mm (20.5in)
Forcer Width		60mm (2.36in)	60mm (2.36in)	60mm (2.36in)	60mm (2.36in)
Forcer Screw Pitch	P	140mm (5.51in)	200mm (7.87in)	260mm (10.24in)	500mm (19.69in)
Forcer Weight		1.2kg (2.6lbs)	1.7kg (3.7lbs)	2.2kg (4.9lbs)	2.6kg (5.7lbs)
Gap		1.00mm (0.039in)	1.00mm (0.039in)	1.00mm (0.039in)	1.00mm (0.039in)



Mechanical Specifications

Shaft

Shaft Diameter (D) 32 ±0.2mm (1.26in)

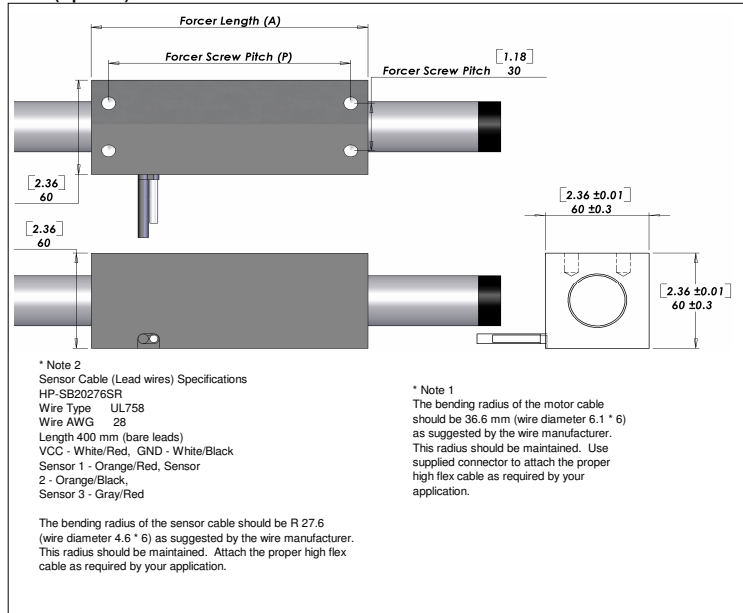
Shaft Length (L) Motor Type	Maximum Stroke length 2700mm (106.3in)			
	S320D	S320T	S320Q	S320X
150	370mm (14.6in)	415mm (16.3in)	460mm (18.1in)	640mm (25.2in)
200	420mm (16.5in)	465mm (18.3in)	510mm (20.1in)	690mm (27.2in)
250	470mm (18.5in)	515mm (20.3in)	560mm (22in)	740mm (29.1in)
300	520mm (20.5in)	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 (35in)
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	970mm (38.2in)	1015mm (40in)	1060mm (41.7in)	1280mm (50.4in)
800	1020mm (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	1980mm (78in)	2025mm (79.7in)	2070mm (81.5in)	2250mm (88.6in)
1650	2090mm (82.3in)	2135mm (84.1in)	2180mm (85.8in)	2360mm (92.9in)
1700	2200mm (86.6in)	2245mm (88.4in)	2290mm (90.2in)	2470mm (97.2in)
1750	2310mm (90.9in)	2355mm (92.7in)	2400mm (94.5in)	2580mm (101.6in)
1800	2420mm (95.3in)	2465mm (97in)	2510mm (98.8in)	2690mm (105.9in)
1850	2530mm (99.6in)	2575mm (101.4in)	2620mm (103.1in)	2800mm (110.2in)
1900	2640mm (103.9in)	2685mm (105.7in)	2730mm (107.5in)	2910mm (114.6in)
1950	2750mm (108.3in)	2795mm (110in)	2840mm (111.8in)	3020mm (118.9in)
2000	2860mm (112.6in)	2905mm (114.4in)	2950mm (116.1in)	3130mm (123.2in)

Stroke lengths from 100mm and up to 2700mm are available. Please consult Nippon Pulse America for more information.

Support and Bending

Stroke D / T / Q	X	Shaft Support length (L2)	Max Bending
0 → 750	0 → 500	50mm (1.97in)	0.00mm (0.00in)
751 → 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)



Shaft Mass

Stroke	Motor Type			
	S320D	S320T	S320Q	S320X
150	2.1kg (4.6lb)	2.4kg (5.4lb)	2.8kg (6.1lb)	4.1kg (9.1lb)
200	2.4kg (5.2lb)	2.7kg (6lb)	3kg (6.7lb)	4.4kg (9.7lb)
250	2.7kg (5.8lb)	3kg (6.6lb)	3.3kg (7.3lb)	4.7kg (10.3lb)
300	2.9kg (6.5lb)	3.3kg (7.2lb)	3.6kg (8lb)	5kg (10.9lb)
350	3.2kg (7.1lb)	3.6kg (7.8lb)	3.9kg (8.6lb)	5.2kg (11.6lb)
400	3.5kg (7.7lb)	3.8kg (8.5lb)	4.2kg (9.2lb)	5.5kg (12.2lb)
450	3.8kg (8.3lb)	4.1kg (9.1lb)	4.5kg (9.8lb)	5.8kg (12.8lb)
500	4.1kg (8.9lb)	4.4kg (9.7lb)	4.7kg (10.4lb)	6.1kg (13.4lb)
550	4.3kg (9.6lb)	4.7kg (10.3lb)	5kg (11.1lb)	6.4kg (14lb)
600	4.6kg (10.2lb)	5kg (10.9lb)	5.3kg (11.7lb)	6.6kg (14.7lb)
650	4.9kg (10.8lb)	5.2kg (11.6lb)	5.6kg (12.3lb)	6.9kg (15.3lb)
700	5.2kg (11.4lb)	5.5kg (12.2lb)	5.9kg (12.9lb)	7.2kg (15.9lb)
750	5.5kg (12.1lb)	5.8kg (12.8lb)	6.1kg (13.5lb)	7.5kg (16.5lb)
800	5.8kg (12.9lb)	6.2kg (13.6lb)	6.5kg (14.4lb)	7.9kg (17.4lb)
850	6.1kg (13.5lb)	6.5kg (14.3lb)	6.8kg (15lb)	8.2kg (18lb)
900	6.4kg (14.1lb)	6.7kg (14.9lb)	7.1kg (15.6lb)	8.4kg (18.6lb)
950	6.7kg (14.7lb)	7kg (15.5lb)	7.4kg (16.2lb)	8.7kg (19.2lb)
1000	7kg (15.4lb)	7.3kg (16.1lb)	7.6kg (16.9lb)	9kg (19.8lb)
1050	7.3kg (16lb)	7.6kg (16.7lb)	7.9kg (17.5lb)	9.3kg (20.5lb)
1100	7.5kg (16.6lb)	7.9kg (17.4lb)	8.2kg (18.1lb)	9.6kg (21.1lb)
1150	7.8kg (17.2lb)	8.2kg (18lb)	8.5kg (18.7lb)	9.8kg (21.7lb)
1200	8.1kg (17.9lb)	8.4kg (18.6lb)	8.8kg (19.3lb)	10.1kg (22.3lb)
1250	8.4kg (18.5lb)	8.7kg (19.2lb)	9.1kg (20lb)	10.4kg (22.9lb)
1300	8.7kg (19.1lb)	9kg (19.8lb)	9.3kg (20.6lb)	10.7kg (23.6lb)
1350	8.9kg (19.7lb)	9.3kg (20.5lb)	9.6kg (21.2lb)	11kg (24.2lb)
1400	9.2kg (20.3lb)	9.6kg (21.1lb)	9.9kg (21.8lb)	11.2kg (24.8lb)
1450	9.5kg (21lb)	9.8kg (21.7lb)	10.2kg (22.4lb)	11.5kg (25.4lb)
1500	9.8kg (21.6lb)	10.1kg (22.3lb)	10.5kg (23.1lb)	11.8kg (26lb)
1550	10.2kg (22.5lb)	10.5kg (23.3lb)	10.9kg (24lb)	12.2kg (27lb)
1600	10.5kg (23.1lb)	10.8kg (23.9lb)	11.2kg (24.6lb)	12.5kg (27.6lb)
1650	10.8kg (23.8lb)	11.1kg (24.5lb)	11.5kg (25.2lb)	12.8kg (28.2lb)
1700	11.1kg (24.4lb)	11.4kg (25.1lb)	11.7kg (25.9lb)	13.1kg (28.8lb)
1750	11.3kg (25lb)	11.7kg (25.7lb)	12kg (26.5lb)	13.4kg (29.5lb)
1800	11.6kg (25.6lb)	12kg (26.4lb)	12.3kg (27.1lb)	13.6kg (30.1lb)
1850	11.9kg (26.2lb)	12.2kg (27lb)	12.6kg (27.7lb)	13.9kg (30.7lb)
1900	12.2kg (26.9lb)	12.5kg (27.6lb)	12.9kg (28.3lb)	14.2kg (31.3lb)
1950	12.5kg (27.5lb)	12.8kg (28.2lb)	13.1kg (29lb)	14.5kg (31.9lb)
2000	12.7kg (28.1lb)	13.1kg (28.8lb)	13.4kg (29.6lb)	14.8kg (32.6lb)

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)	

Hall Effect Cable (Optional)

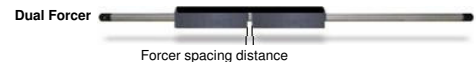
Wire Type	UL 758
Wire AWG	28
VCC	White / Red
GND	White / Black
Sensor 1	Orange / Red
Sensor 2	Orange / Black
Sensor 3	Gray / Red
No Connection	Gray / Black

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



	S320T	S320X
Forcer spacing distance	50	20
Pole (North-South) distance	90	90
Forcer length	220	520
Flip forcers	Yes	No