

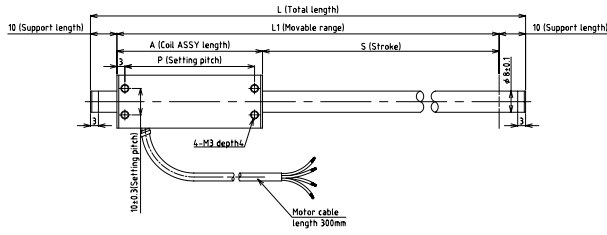
Nippon Pulse

CE Linear Shaft Motor Datasheets



Unless Otherwise Specified:
Dimensions are in mm
Tolerances are as follows:

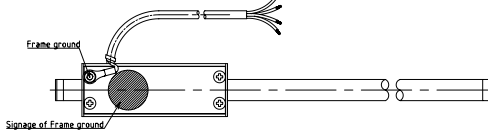
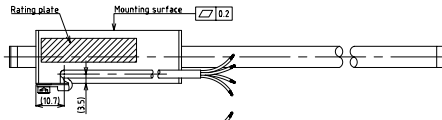
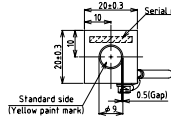
Dimension (mm)	Tolerance (mm)
6	±0.1
7 - 30	±0.2
31 - 120	±0.3
121 - 315	±0.5
316 - 1000	±0.8
1001 - 2000	±1.2
2000 -	±1.5



L = See Shaft Length
L1 = Usable Stroke + A
L2 = See Shaft Support Length
A = See Moving Coil Length
P = See Moving Coil Screw Pitch
Insulating sheet between coils and case



This Linear Shaft Motor meets all requirements of EN60034-1 (1998)



° Note 1
Cable length 300mm
The bending radius of the motor cable should be 10.72 mm (wire diameter 1.34 * 8) as suggested by the wire manufacturer.
This radius should be maintained. Use connector to attach the proper high flex cable as required by your application.

Electrical Specs	S080D	S080T	S080Q
Continuous Force ¹	1.8N	2.7N	3.5N
Continuous Current ¹	0.8Arms	0.8Arms	0.8Arms
Acceleration Force ²	7.2N	10.8N	14N
Acceleration Current ²	3.4Arms	3.4Arms	3.4Arms
Force Constant (K _f)	2.1N/Arms	3.2N/Arms	4.2N/Arms
Back EMF (K _e)	0.7V/m/s	1.1V/m/s	1.4V/m/s
Resistance 25°C, ³	4.7Ω	6.8Ω	9.0Ω
Inductance ³	0.7mH	1.0mH	1.3mH
Electric Time Constant	0.149ms	0.147ms	0.144ms
Rated Voltage (AC)	240V	240V	240V
Fundamental Motor Constant (K _m)	0.95N√W	1.23N√W	1.39N√W
Magnetic Pitch (North-North)	30mm	30mm	30mm

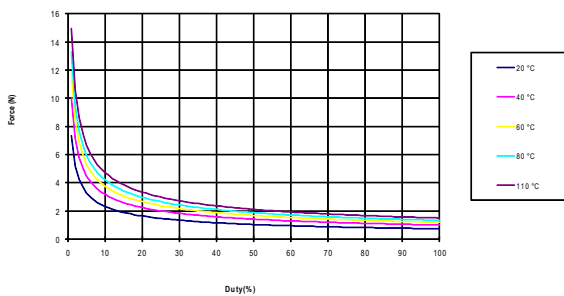
All specifications are for reference only. Specifications may change depending on servo driver selected. Consult Nippon Pulse.
1) Based on a temp rise of coil surface of 110°K over 25°C ambient temperature stalled forcer, and no external cooling or heat sinking
Addition of 10cm x 20cm x 1.2cm aluminum heat sink increases continuous force up to 75%
2) Can be maintained for a maximum of 40 seconds, higher forces and current possible for short periods of time, consult Nippon Pulse
3) All winding parameters listed are measured line-to-line (phase-to-phase)

Thermal Specs	S080D	S080T	S080Q
Max Phase Temperature ⁴	135°C	135°C	135°C
Thermal Resistance (Coil) (K _q)	33.2°C/W	22.9°C/W	17.3°C/W

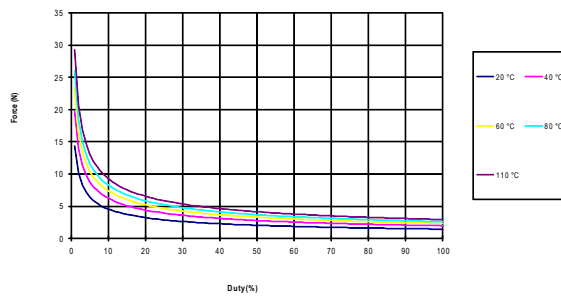
4) The standard temperature difference between the coil and the forcer surface is 10°C

Forcer Specs	S080D	S080T	S080Q
Forcer Length (A)	40mm	55mm	70mm
Forcer Width	20mm	20mm	20mm
Forcer Screw Pitch (P)	34mm	49mm	64mm
Forcer Weight	0.05g	0.06g	0.08g
Gap	0.50mm	0.50mm	0.50mm

S080D Force Duty Curve



S080Q Force Duty Curve



Shaft Length

Stroke	S080D	S080T	S080Q
25	85mm	100mm	115mm
50	110mm	125mm	140mm
100	160mm	175mm	190mm
150	210mm	225mm	240mm
200	260mm	275mm	290mm
250	310mm	325mm	340mm
300	360mm	375mm	390mm

Shaft Mass

Stroke	S080D	S080T	S080Q
25	0.02kg	0.03kg	0.03kg
50	0.03kg	0.04kg	0.04kg
100	0.05kg	0.05kg	0.06kg
150	0.07kg	0.07kg	0.08kg
200	0.08kg	0.09kg	0.1kg
250	0.1kg	0.11kg	0.11kg
300	0.12kg	0.12kg	0.13kg

S080

Linear Shaft Motor

Tandem Forcer



Forcer Spacing Distance

Spec	S080T	S080Q
Forcer Spacing Distance	5mm	5mm
Pole (N/S) Distance	15mm	15mm
Forcer Length	55mm	70mm
Flip Forcers	No	Yes

Tandem S080D forcers are possible, but are equivalent to one (1) S080Q forcer and thus are not listed above.

Shaft Diameter (D) - 8mm ±0.1

Total Length (L)=Stroke (S)+Forcer Length (A)+(Support Length (L2)x2)

Support and Bending

Stroke	Support Length	Max. bending
All	10mm	0.05mm

CE Type Motor Cable

Wire Type	UL 1330
Wire AWG	24
U Phase	Red
V Phase	White
W Phase	Black

Ground Wire	CE
Wire Type	UL 1330
Wire AWG	20
Frame Ground	Green/Yellow

300mm lead wire bare leads

The bending radius of the motor cable should be 16.96mm as suggested by the wire manufacturer.

Hall Effect Specs

Forcer Length (A)
Forcer Screw Pitch (P)

0.39
10
0.79
20

Sensor Cable Specs

Wire Type	UL 1430
Wire AWG	28
VCC	Red
GND	Black
Sensor 1	White
Sensor 2	Blue
Sensor 3	Yellow

The bending radius of the sensor cable should be R10.72 mm (wire diameter 1.38 * 8) as suggested by the wire manufacturer. This radius should be maintained. Attach the proper high flex cable as required by your application.

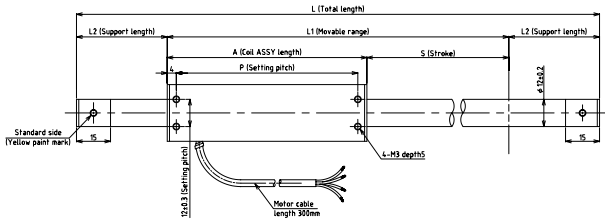
*** Note 1**
 The bending radius of the motor cable should be 10.72 mm (wire diameter 1.34 * 8) as suggested by the wire manufacturer. This radius should be maintained. Use supplied connector to attach the proper high flex cable as required by your application.

Part Numbering System

L	—	Shaft Size (D) 080	—	Forcer Size (A) X	—	Parallel Option XX	—	Usable Stroke XXXXst 25-300mm	—	CE Type Motor CE	—	Options XX	—	Options XX	—	# of Forcers XX Two or more
				D: Double (2) windings T: Triple (3) windings Q: Quadruple (4) windings		Blank: Single Motor PL: Parallel Motors						Blank: Standard WP: Water Resistant HA: Digital Hall Effect		Blank: Standard FO: Forcer Only SO: Shaft Only		

Unless Otherwise Specified:
Dimensions are in mm
Tolerances are as follows:

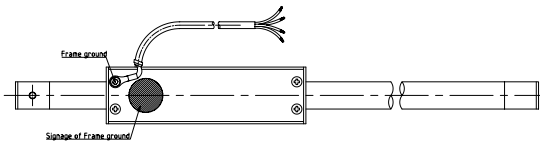
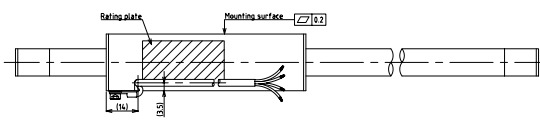
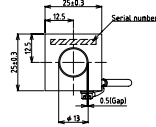
Dimension (mm)	Tolerance (mm)
6	±0.1
7 - 30	±0.2
31 - 120	±0.3
121 - 315	±0.5
316 - 1000	±0.8
1001 - 2000	±1.2
2000 -	±1.5



L = See Shaft Length
L1 = Usable Stroke + A
L2 = See Shaft Support Length
A = See Moving Coil Length
P = See Moving Coil Screw Pitch
Insulating sheet between coils and case



This Linear Shaft Motor meets all requirements of EN60034-1 (1998)



* Note 1
Cable length 300mm
The bending radius of the motor cable should be 10.72 mm (wire diameter 1.34 * 8) as suggested by the wire manufacturer. This radius should be maintained. Use connector to attach the proper high flex cable as required by your application.

Electrical Specs	S120D	S120T	S120Q
Continuous Force ¹	4.5N	6.6N	8.9N
Continuous Current ¹	0.4Arms	0.4Arms	0.4Arms
Acceleration Force ²	18N	27N	36N
Acceleration Current ²	1.6Arms	1.6Arms	1.6Arms
Force Constant (K _f)	11N/Arms	17N/Arms	22N/Arms
Back EMF (K _e)	3.7V/m/s	5.5V/m/s	7.4V/m/s
Resistance 25°C, ³	37Ω	54Ω	73Ω
Inductance ³	12mH	18mH	24mH
Electric Time Constant	0.32ms	0.33ms	0.33ms
Rated Voltage (AC)	240V	240V	240V
Fundamental Motor Constant (K _m)	1.82N√W	2.25N√W	2.60N√W
Magnetic Pitch (North-North)	48mm	48mm	48mm

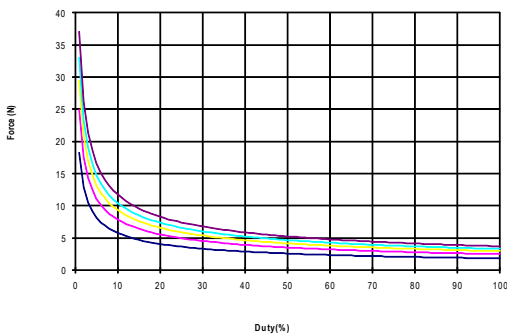
All specifications are for reference only. Specifications may change depending on servo driver selected. Consult Nippon Pulse.
1) Based on a temp rise of coil surface of 110°K over 25°C ambient temperature stalled force, and no external cooling or heat sinking. Addition of 25 cm x 25 cm x 2.5 cm aluminum 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
3) All winding parameters listed are measured line-to-line (phase-to-phase)

Thermal Specs	S120D	S120T	S120Q
Max Phase Temperature ⁴	135°C	135°C	135°C
Thermal Resistance (Coil) (K _q)	18.6°C/W	12.7°C/W	9.4°C/W

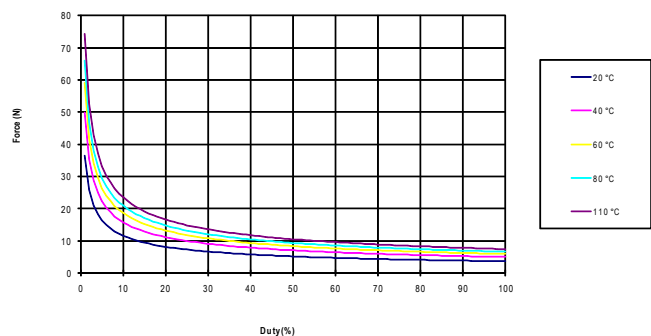
4) The standard temperature difference between the coil and the forcer surface is 10°C

Forcer Specs	S120D	S120T	S120Q
Forcer Length (A)	64mm	88mm	112mm
Forcer Width	25mm	25mm	25mm
Forcer Screw Pitch (P)	56mm	80mm	104mm
Forcer Weight	0.09kg	0.12kg	0.16kg
Gap	0.50mm	0.50mm	0.50mm

S120D Force Duty Curve



S120Q Force Duty Curve



Shaft Length (mm)

Stroke	S120D	S120T	S120Q
50	164	188	212
100	214	238	262
150	264	288	312
200	314	338	362
250	364	388	412
300	414	438	462
350	464	488	512
400	544	568	592
450	594	618	642
500	644	668	692
550	694	718	742
600	744	768	792
650	794	818	842
700	844	868	892
750	894	918	942
800	944	968	992
850	1034	1058	1082
900	1084	1108	1132
950	1134	1158	1182
1000	1184	1208	1232
1050	1234	1258	1282
1100	1284	1308	1332
1150	1334	1358	1382
1200	1384	1408	1432
1250	1434	1458	1482
1300	1484	1508	1532
1350	1534	1558	1582
1400	1584	1608	1632
1450	1634	1658	1682
1500	1684	1708	1732

Shaft Mass (kg)

Stroke	S120D	S120T	S120Q
50	0.1	0.1	0.1
100	0.1	0.2	0.2
150	0.2	0.2	0.2
200	0.2	0.2	0.3
250	0.3	0.3	0.3
300	0.3	0.3	0.3
350	0.3	0.4	0.4
400	0.4	0.4	0.4
450	0.4	0.5	0.5
500	0.5	0.5	0.5
550	0.5	0.5	0.6
600	0.6	0.6	0.6
650	0.6	0.6	0.6
700	0.6	0.7	0.7
750	0.7	0.7	0.7
800	0.7	0.7	0.7
850	0.8	0.8	0.8
900	0.8	0.8	0.8
950	0.8	0.9	0.9
1000	0.9	0.9	0.9
1050	0.9	0.9	1
1100	1	1	1
1150	1	1	1
1200	1	1.1	1.1
1250	1.1	1.1	1.1
1300	1.1	1.2	1.2
1350	1.2	1.2	1.2
1400	1.2	1.2	1.3
1450	1.3	1.3	1.3
1500	1.3	1.3	1.3

S120

Linear Shaft Motor

CE Type Motor Cable

Wire Type	UL 1330
Wire AWG	24
U Phase	Red
V Phase	White
W Phase	Black

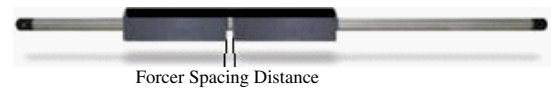
Ground Wire	CE
Wire Type	UL 1330
Wire AWG	20
Frame Ground	Green/Yellow

300mm lead wire bare leads The bending radius of the motor cable should be 16.96mm as suggested by the wire manufacturer.

Support and Bending

Stroke	Support Length	Max. bending
0~350	25mm	0.00mm
351~800	40mm	0.30mm
801~max.	60mm	0.50mm

Tandem Forcer



Forcer Spacing Distance

Spec	S120T	S120Q
Forcer Spacing Distance	8mm	8mm
Pole (N/S) Distance	24mm	24mm
Forcer Length	88mm	112mm
Flip Forcers	No	Yes

Tandem S120D forcers are possible, but are equivalent to one (1) S120Q forcer and thus are not listed above.

Total Length (L)=Stroke (S)+Forcer Length (A)+(Support Length (L2)x2)

Shaft Diameter (D) - 12mm ±0.2

Hall Effect Specs

Sensor Cable Specs

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

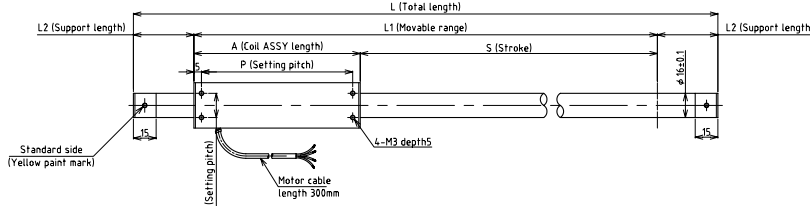
* Note 1
The bending radius of the sensor cable should be R27.6mm (wire diameter 4.6 * 6) as suggested by the wire manufacturer. This radius should be maintained. Use supplied connector to attach the proper high flex cable as required by your application.

Part Numbering System

S	Shaft Size (D) 120	Forcer Size (A) X D: Double (2) windings T: Triple (3) windings Q: Quadruple (4) windings	Parallel Option XX Blank: Single Motor PL: Parallel Motors	Usable Stroke XXXXSt 50-1500mm	CE Type Motor CE	Options XX Blank: Standard WP: Water Resistant HA: Digital Hall Effect	Options XX Blank: Standard FO: Forcer Only SO: Shaft Only	# of Forcers XX Two or more
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Unless Otherwise Specified:
Dimensions are in mm
Tolerances are as follows:

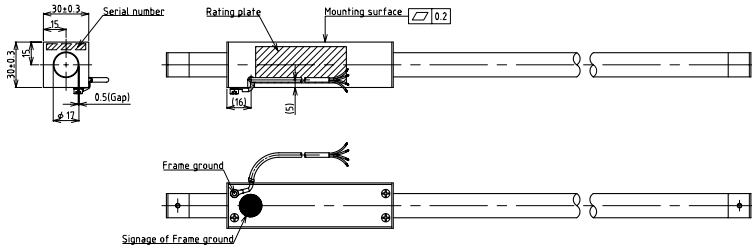
Dimension (mm)	Tolerance (mm)
- 6	±0.1
7 - 30	±0.2
31 - 120	±0.3
121 - 315	±0.5
316 - 1000	±0.8
1001 - 2000	±1.2
2000 -	±1.5



L = See Shaft Length
L1 = Usable Stroke + A
L2 = See Shaft Support Length
A = See Moving Coil Length
P = See Moving Coil Screw Pitch
Insulating sheet between coils and case



This Linear Shaft Motor meets all requirements of EN60034-1 (1998)



* Note 1
Cable length 300mm
The bending radius of the motor cable should be 26.4mm (wire diameter 4.3 * 6) as suggested by the wire manufacturer. This radius should be maintained. Use connector to attach the proper high flex cable as required by your application.

Electrical Specs	S160D	S160T	S160Q
Continuous Force ¹	10N	15N	20N
Continuous Current ¹	0.6Arms	0.6Arms	0.6Arms
Acceleration Force ²	40N	60N	80N
Acceleration Current ²	2.5Arms	2.5Arms	2.5Arms
Force Constant (K _f)	16N/Arms	24N/Arms	33N/Arms
Back EMF (K _e)	5.4V/m/s	8.1V/m/s	11V/m/s
Resistance 25°C, ³	21Ω	33Ω	43Ω
Inductance ³	8.2mH	12mH	16mH
Electric Time Constant	0.39ms	0.36ms	0.37ms
Rated Voltage (AC)	240V	240V	240V
Fundamental Motor Constant (K _m)	3.51N√W	4.20N√W	4.96N√W
Magnetic Pitch (North-North)	60mm	60mm	60mm

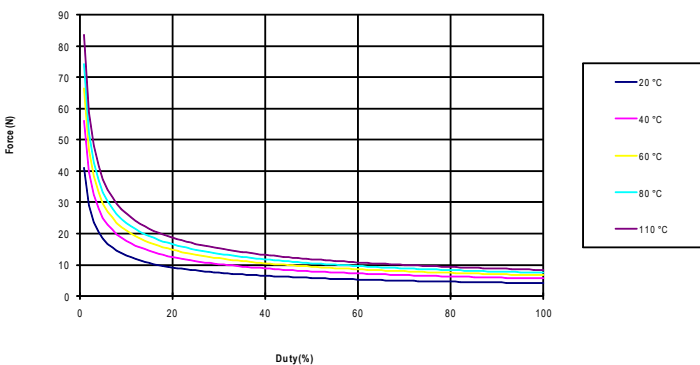
All specifications are for reference only. Specifications may change depending on servo driver selected. Consult Nippon Pulse.
1) Based on a temp rise of coil surface of 110°K over 25°C ambient temperature stalled forcer, and no external cooling or heat sinking. Addition of 10cm x 20cm x 1.2cm aluminum heat sink increases continuous force up to 30%.
2) Can be maintained for a maximum of 40 seconds, higher forces and current possible for short periods of time, consult Nippon Pulse
3) All winding parameters listed are measured line-to-line (phase-to-phase)

Thermal Specs	S160D	S160T	S160Q
Max Phase Temperature ⁴	135°C	135°C	135°C
Thermal Resistance (Coil) (K _q)	13.6°C/W	8.7°C/W	6.7°C/W

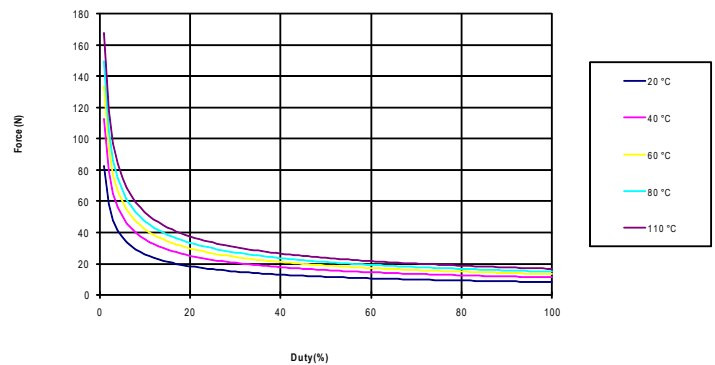
4) The standard temperature difference between the coil and the forcer surface is 15°C

Forcer Specs	S160D	S160T	S160Q
Forcer Length (A)	80mm	110mm	140mm
Forcer Width	30mm ±0.3	30mm ±0.3	30mm ±0.3
Forcer Screw Pitch (P)	70mm	100mm	130mm
Forcer Weight	0.15kg	0.20kg	0.30kg
Gap	0.50mm	0.50mm	0.50mm

S160D Force Duty Curve



S160Q Force Duty Curve



Shaft Length (mm)

Stroke	S160D	S160T	S160Q
100	230	260	290
150	280	310	340
200	330	360	390
250	380	410	440
300	430	460	490
350	480	510	540
400	560	590	620
450	610	640	670
500	660	690	720
550	710	740	770
600	760	790	820
650	810	840	870
700	860	890	920
750	910	940	970
800	960	990	1020
850	1050	1080	1110
900	1100	1130	1160
950	1150	1180	1210
1000	1200	1230	1260
1050	1250	1280	1310
1100	1300	1330	1360
1150	1350	1380	1410
1200	1400	1430	1460
1250	1450	1480	1510
1300	1500	1530	1560
1350	1550	1580	1610
1400	1600	1630	1660
1450	1650	1680	1710
1500	1700	1730	1760
1550	1750	1780	1810
1600	1800	1830	1860
1650	1850	1880	1910
1700	1900	1930	1960
1750	1950	1980	2010
1800	2000	2030	2060

Shaft Mass (kg)


Stroke	S160D	S160T	S160Q
100	0.28	0.33	0.37
150	0.35	0.4	0.44
200	0.42	0.47	0.51
250	0.49	0.54	0.58
300	0.56	0.61	0.65
350	0.64	0.68	0.72
400	0.72	0.77	0.81
450	0.79	0.84	0.88
500	0.86	0.91	0.95
550	0.93	1	1
600	1	1	1.1
650	1.1	1.1	1.2
700	1.1	1.2	1.2
750	1.2	1.3	1.3
800	1.3	1.3	1.4
850	1.4	1.4	1.5
900	1.5	1.5	1.5
950	1.5	1.6	1.6
1000	1.6	1.6	1.7
1050	1.7	1.7	1.7
1100	1.7	1.8	1.8
1150	1.8	1.9	1.9
1200	1.9	1.9	2
1250	2	2	2
1300	2	2.1	2.1
1350	2.1	2.2	2.2
1400	2.2	2.2	2.3
1450	2.3	2.3	2.3
1500	2.3	2.4	2.4
1550	2.4	2.4	2.5
1600	2.5	2.5	2.6
1650	2.6	2.6	2.6
1700	2.6	2.7	2.7
1750	2.7	2.7	2.8

S160

Linear Shaft Motor

CE Type Motor Cable

Wire Type	UL 1330
Wire AWG	24
U Phase	Red
V Phase	White
W Phase	Black

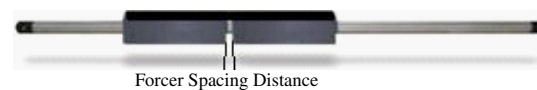
Ground Wire	
Wire Type	UL 1330
Wire AWG	20
Frame Ground	Green/Yellow

300mm lead wire bare leads. The bending radius of the motor cable should be 16.96mm as suggested by the wire manufacturer.

Support and Bending

Stroke	Support Length	Max. bending
0-350	25mm	0.00mm
351-500	40mm	0.30mm
501-800	40mm	0.50mm
801-max	60mm	0.50mm

Tandem Forcer



Forcer Spacing Distance

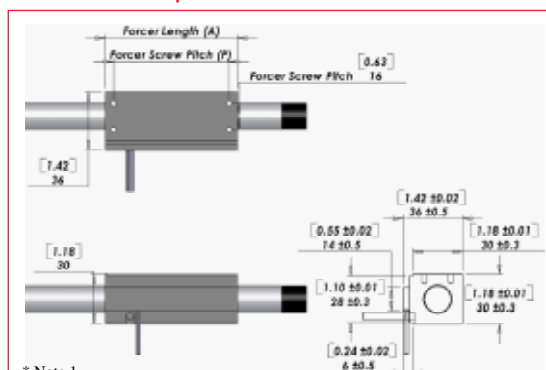
Spec	S160T	S160Q
Forcer Spacing Distance	10mm	10mm
Pole (N/S) Distance	30mm	30mm
Forcer Length	110mm	140mm
Flip Forcers	No	Yes

Tandem S160D forcers are possible, but are equivalent to one (1) S160Q forcer and thus are not listed above.

Shaft Diameter (D) - 16mm ±0.1

Total Length (L)=Stroke (S)+Forcer Length (A)+(Support Length (L2)x2)

Hall Effect Specs



* Note 1

The bending radius of the motor cable should be R26.4mm (wire diameter 4.6 * 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.

Sensor Cable Specs

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

The bending radius of the sensor cable should be R27.6mm (wire diameter 4.4 * 6) as suggested by the wire manufacturer. This radius should be maintained. Attach the proper high flex cable as required by your application.

Part Numbering System

S	Shaft Size (D) 160	Forcer Size (A) X	Parallel Option XX	Usable Stroke XXXXst 100-1800mm	CE Type Motor CE	Options XX	Options XX	# of Forcers XX
		D: Double (2) windings T: Triple (3) windings Q: Quadruple (4) windings	Blank: Single Motor PL: Parallel Motors			Blank: Standard WP: Water Resistant HA: Digital Hall Effect	Blank: Standard FO: Forcer Only SO: Shaft Only	Two or more

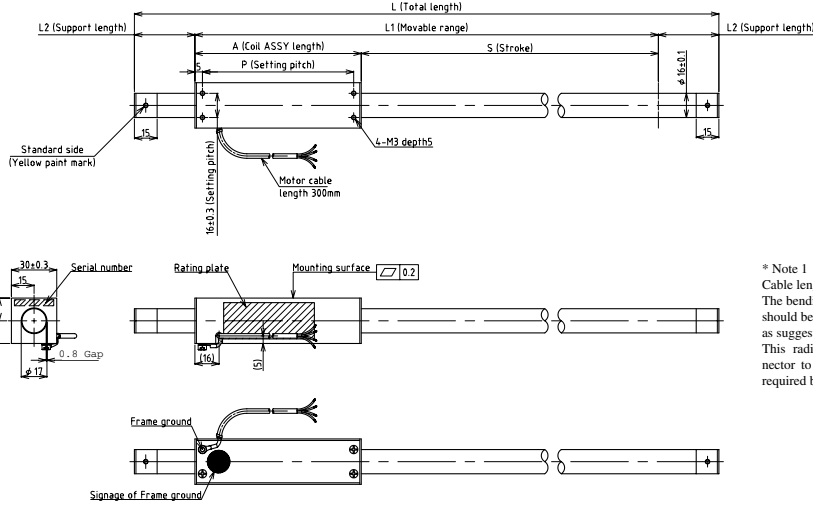
Unless Otherwise Specified:
Dimensions are in mm
Tolerances are as follows:

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

L = See Shaft Length
L1 = Usable Stroke + A
L2 = See Shaft Support Length
A = See Moving Coil Length
P = See Moving Coil Screw Pitch
Insulating sheet between coils and case



This Linear Shaft Motor meets all requirements of EN60034-1 (1998)



* Note 1
Cable length 300mm
The bending radius of the motor cable should be 26.4mm (wire diameter 4.3 * 6) as suggested by the wire manufacturer. This radius should be maintained. Use connector to attach the proper high flex cable as required by your application.

Electrical Specs	L160D	L160T	L160Q
Continuous Force ¹	10N	15N	20N
Continuous Current ¹	0.6Arms	0.6Arms	0.6Arms
Acceleration Force ²	40N	60N	80N
Acceleration Current ²	2.5Arms	2.5Arms	2.5Arms
Force Constant (K _f)	16N/Arms	24N/Arms	33N/Arms
Back EMF (K _e)	5.4V/m/s	8.1V/m/s	11V/m/s
Resistance 25°C, ³	21Ω	33Ω	43Ω
Inductance ³	8.2mH	12mH	16mH
Electric Time Constant	0.39ms	0.36ms	0.37ms
Rated Voltage (AC)	240V	240V	240V
Fundamental Motor Constant (K _m)	3.51N√W	4.20N√W	4.96N√W
Magnetic Pitch (North-North)	60mm	60mm	60mm

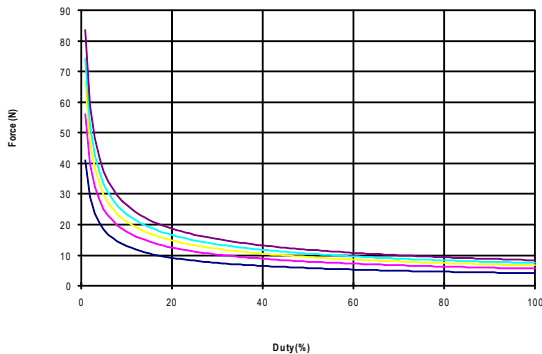
All specifications are for reference only. Specifications may change depending on servo driver selected. Consult Nippon Pulse.
1) Based on a temp rise of coil surface of 110°K over 25°C ambient temperature stalled forcer, and no external cooling or heat sinking. Addition of 10cm x 20cm x 1.2cm aluminum heat sink increases continuous force up to 30%.
2) Can be maintained for a maximum of 40 seconds, higher forces and current possible for short periods of time, consult Nippon Pulse
3) All winding parameters listed are measured line-to-line (phase-to-phase)

Thermal Specs	L160D	L160T	L160Q
Max Phase Temperature ⁴	135°C	135°C	135°C
Thermal Resistance (Coil) (K _q)	13.6°C/W	8.7°C/W	6.7°C/W

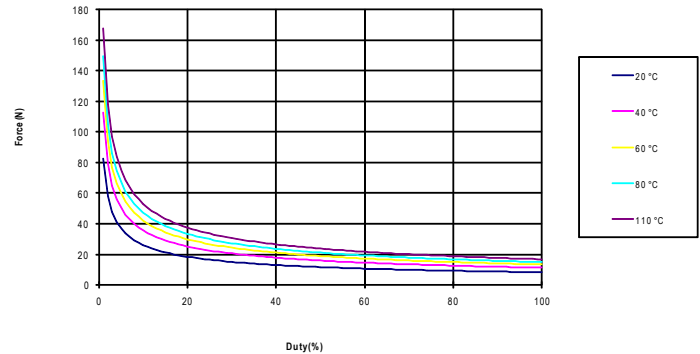
4) The standard temperature difference between the coil and the forcer surface is 15°C

Forcer Specs	L160D	L160T	L160Q
Forcer Length (A)	80mm	110mm	140mm
Forcer Width	30mm ±0.3	30mm ±0.3	30mm ±0.3
Forcer Screw Pitch (P)	70mm	100mm	130mm
Forcer Weight	0.15kg	0.20kg	0.30kg
Gap	0.80mm	0.80mm	0.80mm

L160D Force Duty Curve



L160Q Force Duty Curve



Shaft Length (mm)

Stroke	L160D	L160T	L160Q
100	230	260	290
150	280	310	340
200	330	360	390
250	380	410	440
300	430	460	490
350	480	510	540
400	560	590	620
450	610	640	670
500	660	690	720
550	710	740	770
600	760	790	820
650	810	840	870
700	860	890	920
750	910	940	970
800	960	990	1020
850	1050	1080	1110
900	1100	1130	1160
950	1150	1180	1210
1000	1200	1230	1260
1050	1250	1280	1310
1100	1300	1330	1360
1150	1350	1380	1410
1200	1400	1430	1460
1250	1450	1480	1510
1300	1500	1530	1560
1350	1550	1580	1610
1400	1600	1630	1660
1450	1650	1680	1710
1500	1700	1730	1760
1550	1750	1780	1810
1600	1800	1830	1860
1650	1850	1880	1910
1700	1900	1930	1960
1750	1950	1980	2010
1800	2000	2030	2060

Shaft Mass (kg)


Stroke	L160D	L160T	L160Q
100	0.28	0.33	0.37
150	0.35	0.4	0.44
200	0.42	0.47	0.51
250	0.49	0.54	0.58
300	0.56	0.61	0.65
350	0.64	0.68	0.72
400	0.72	0.77	0.81
450	0.79	0.84	0.88
500	0.86	0.91	0.95
550	0.93	1	1
600	1	1	1.1
650	1.1	1.1	1.2
700	1.1	1.2	1.2
750	1.2	1.3	1.3
800	1.3	1.3	1.4
850	1.4	1.4	1.5
900	1.5	1.5	1.5
950	1.5	1.6	1.6
1000	1.6	1.6	1.7
1050	1.7	1.7	1.7
1100	1.7	1.8	1.8
1150	1.8	1.9	1.9
1200	1.9	1.9	2
1250	2	2	2
1300	2	2.1	2.1
1350	2.1	2.2	2.2
1400	2.2	2.2	2.3
1450	2.3	2.3	2.3
1500	2.3	2.4	2.4
1550	2.4	2.4	2.5
1600	2.5	2.5	2.6
1650	2.6	2.6	2.6
1700	2.6	2.7	2.7
1750	2.7	2.7	2.8

L160

Linear Shaft Motor

CE Type Motor Cable

Wire Type	UL 1330
Wire AWG	24
U Phase	Red
V Phase	White
W Phase	Black

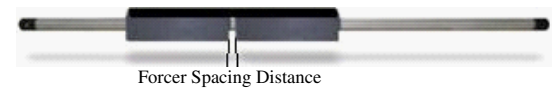
Ground Wire	
Wire Type	UL 1330
Wire AWG	20
Frame Ground	Green/Yellow

300mm lead wire bare leads. The bending radius of the motor cable should be 16.96mm as suggested by the wire manufacturer.

Support and Bending

Stroke	Support Length	Max. bending
0-350	25mm	0.00mm
351-500	40mm	0.30mm
501-800	40mm	0.50mm
801-max	60mm	0.50mm

Tandem Forcer



Forcer Spacing Distance

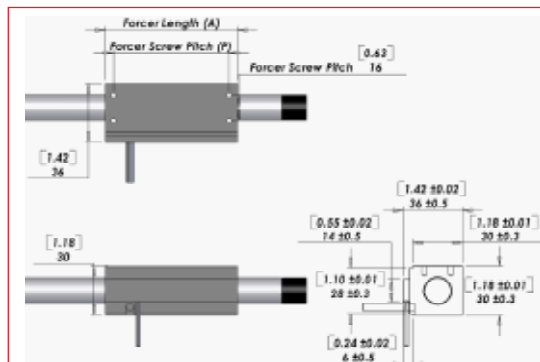
Spec	L160T	L160Q
Forcer Spacing Distance	10mm	10mm
Pole (N/S) Distance	30mm	30mm
Forcer Length	110mm	140mm
Flip Forcers	No	Yes

Tandem S160D forcers are possible, but are equivalent to one (1) S160Q forcer and thus are not listed above.

Shaft Diameter (D) - 16mm ±0.1

Total Length (L)=Stroke (S)+Forcer Length (A)+(Support Length (L2)x2)

Hall Effect Specs



* Note 1

The bending radius of the motor cable should be 26.4mm (wire diameter 4.6 * 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.

Sensor Cable Specs

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

The bending radius of the sensor cable should be R27.6mm (wire diameter 4.4 * 6) as suggested by the wire manufacturer. This radius should be maintained. Attach the proper high flex cable as required by your application.

Part Numbering System

L	Shaft Size (D) 160	Forcer Size (A) X	Parallel Option XX	Usable Stroke XXXXst 100-1800mm	CE Type Motor CE	Options XX	Options XX	# of Forcers XX
		D: Double (2) windings T: Triple (3) windings Q: Quadruple (4) windings	Blank: Single Motor PL: Parallel Motors			Blank: Standard WP: Water Resistant HA: Digital Hall Effect	Blank: Standard FO: Forcer Only SO: Shaft Only	Two or more

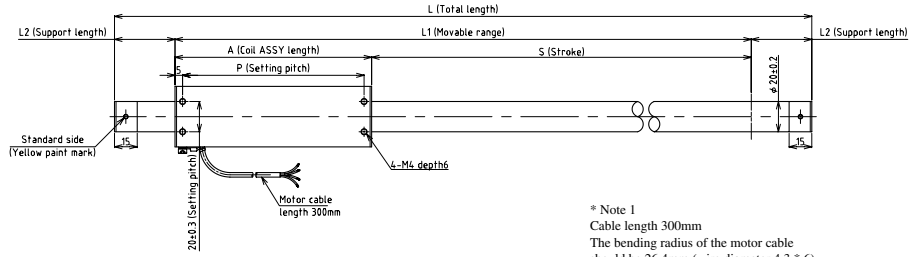
Unless Otherwise Specified:
Dimensions are in mm
Tolerances are as follows:

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

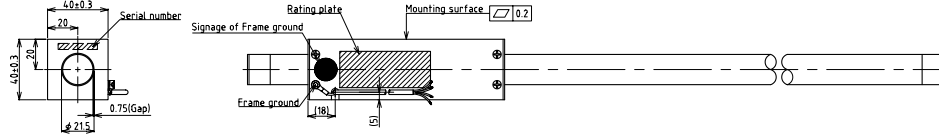
L = See Shaft Length
L1 = Usable Stroke + A
L2 = See Shaft Support Length
A = See Moving Coil Length
P = See Moving Coil Screw Pitch
Insulating sheet between coils and case



This Linear Shaft Motor meets all requirements of EN60034-1 (1998)



* Note 1
Cable length 300mm
The bending radius of the motor cable should be 26.4mm (wire diameter 4.3 * 6) as suggested by the wire manufacturer. This radius should be maintained. Use connector to attach the proper high flex cable as required by your application.



Electrical Specs	S200D	S200T	S200Q
Continuous Force ¹	18N	28N	38N
Continuous Current ¹	0.6Arms	0.6Arms	0.6Arms
Acceleration Force ²	72N	112N	152N
Acceleration Current ²	2.4Arms	2.4Arms	2.4Arms
Force Constant (K _f)	31N/Arms	47N/Arms	64N/Arms
Back EMF (K _e)	10V/m/s	16V/m/s	21V/m/s
Resistance 25°C, ³	28.7Ω	43Ω	56Ω
Inductance ³	19.3mH	29mH	39mH
Electric Time Constant	0.67ms	0.67ms	0.70ms
Rated Voltage (AC)	240V	240V	240V
Fundamental Motor Constant (K _m)	5.70N√W	7.24N√W	8.61N√W
Magnetic Pitch (North-North)	72mm	72mm	72mm

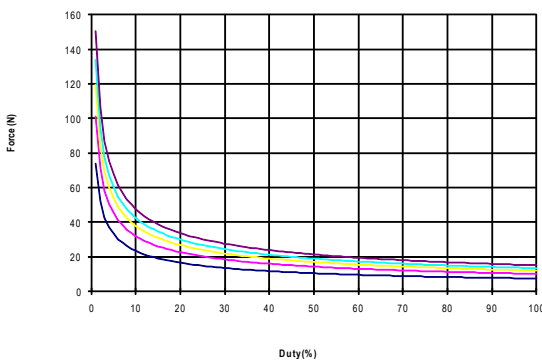
All specifications are for reference only. Specifications may change depending on servo driver selected. Consult Nippon Pulse.
1) Based on a temp rise of coil surface of 110°K over 25°C ambient temperature stalled forcer, and no external cooling or heat sinking. Addition of 25 cm x 25 cm x 2.5 cm aluminum 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
3) All winding parameters listed are measured line-to-line (phase-to-phase)

Thermal Specs	S200D	S200T	S200Q
Max Phase Temperature ⁴	135°C	135°C	135°C
Thermal Resistance (Coil) (K _q)	11°C/W	7.3°C/W	5.6°C/W

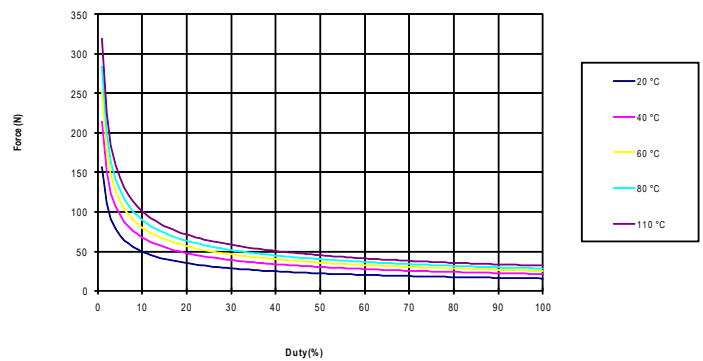
4) The standard temperature difference between the coil and the forcer surface is 20°C

Forcer Specs	S200D	S200T	S200Q
Forcer Length (A)	94mm	130mm	166mm
Forcer Width	40mm	40mm	40mm
Forcer Screw Pitch (P)	84mm	120mm	156mm
Forcer Weight	0.30kg	0.50kg	0.70kg
Gap	0.75mm	0.75mm	0.75mm

S200D Force Duty Curve



S200Q Force Duty Curve



Shaft Length (mm)

Stroke	S200D	S200T	S200Q
100	244	280	316
150	294	330	366
200	344	380	416
250	394	430	466
300	444	480	516
350	524	560	596
400	574	610	646
450	624	660	696
500	674	710	746
550	724	760	796
600	774	810	846
650	824	860	896
700	874	910	946
750	964	1000	1036
800	1014	1050	1086
850	1064	1100	1136
900	1114	1150	1186
950	1164	1200	1236
1000	1214	1250	1286
1050	1264	1300	1336
1100	1314	1350	1386
1150	1364	1400	1436
1200	1414	1450	1486
1250	1464	1500	1536
1300	1514	1550	1586
1350	1564	1600	1636
1400	1614	1650	1686
1450	1664	1700	1736
1500	1714	1750	1786
1550	1764	1800	1836
1600	1814	1850	1886
1650	1864	1900	1936
1700	1914	1950	1986
1750	1964	2000	2036
1800	2014	2050	2086
1850	2064	2100	2136
1900	2114	2150	2186
1950	2164	2200	2236
2000	2214	2250	2286

Shaft Mass (kg)

Stroke	S200D	S200T	S200Q
100	0.5	0.6	0.6
150	0.6	0.7	0.7
200	0.7	0.8	0.9
250	0.8	0.9	1
300	0.9	1	1.1
350	1.1	1.1	1.2
400	1.2	1.2	1.3
450	1.3	1.4	1.4
500	1.4	1.5	1.5
550	1.5	1.6	1.6
600	1.6	1.7	1.8
650	1.7	1.8	1.9
700	1.8	1.9	2
750	2	2	2.1
800	2.1	2.2	2.2
850	2.2	2.3	2.3
900	2.3	2.4	2.5
950	2.4	2.5	2.6
1000	2.5	2.6	2.7
1050	2.6	2.7	2.8
1100	2.7	2.8	2.9
1150	2.8	2.9	3
1200	3	3	3.1
1250	3.1	3.1	3.2
1300	3.2	3.3	3.3
1350	3.3	3.4	3.4
1400	3.4	3.5	3.6
1450	3.5	3.6	3.7
1500	3.6	3.7	3.8
1550	3.7	3.8	3.9
1600	3.8	3.9	4
1650	3.9	4	4.1
1700	4.1	4.1	4.2
1750	4.2	4.2	4.3
1800	4.3	4.4	4.4
1850	4.4	4.5	4.5
1900	4.5	4.6	4.7
1950	4.6	4.7	4.8
2000	4.7	4.8	4.9

S200 Linear Shaft Motor

CE Type Motor Cable

Wire Type	UL 1330
Wire AWG	24
U Phase	Red
V Phase	White
W Phase	Black

Ground Wire	CE
Wire Type	UL 1330
Wire AWG	20
Frame Ground	Green/Yellow

300mm lead wire bare leads. The bending radius of the motor cable should be 16.96mm as suggested by the wire manufacturer.

Support and Bending

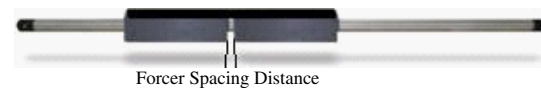
Stroke	Support Length	Max. bending
0~300	25mm	0.00mm
301~700	40mm	0.30mm
701~1000	60mm	0.70mm
1001~max	60mm	0.90mm

Shaft Diameter (D) - 20mm ±0.2

Total Length (L)=Stroke (S)+Forcer Length (A)+(Support Length (L2)x2)

Stroke lengths available up to 2700mm. Contact Nippon Pulse for more information.

Tandem Forcer

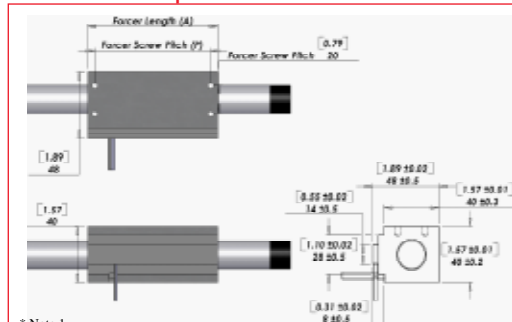


Forcer Spacing Distance

Spec	S200T	S200Q
Forcer Spacing Distance	14mm	14mm
Pole (N/S) Distance	36mm	36mm
Forcer Length	130mm	166mm
Flip Forcers	No	Yes

Tandem S200D forcers are possible, but are equivalent to one (1) S200Q forcer and thus are not listed above.

Hall Effect Specs



Sensor Cable Specs

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

The bending radius of the sensor cable should be R27.6mm (wire diameter 4.4 * 6) as suggested by the wire manufacturer. This radius should be maintained. Attach the proper high flex cable as required by your application.

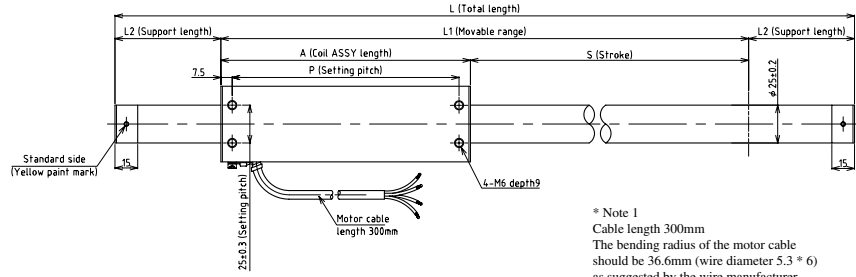
* Note 1
The bending radius of the motor cable should be R26.4mm (wire diameter 4.6 * 6) as suggested by the wire manufacturer. This radius should be maintained. Use supplied connector to attach the proper high flex cable as required by your application.

Part Numbering System

S	—	200	—	X	—	XX	—	XXXXst	—	CE	—	XX	—	XX	—	XX
	Shaft Size (D)		Forcer Size (A)		Parallel Option		Usable Stroke		CE Type Motor		Options		Options		# of Forcers	
			D: Double (2) windings T: Triple (3) windings Q: Quadruple (4) windings		Blank: Single Motor PL: Parallel Motors		100-2000mm				Blank: Standard WP: Water Resistant HA: Digital Hall Effect		Blank: Standard FO: Forcer Only SO: Shaft Only		Two or more	

Unless Otherwise Specified:
Dimensions are in mm
Tolerances are as follows:

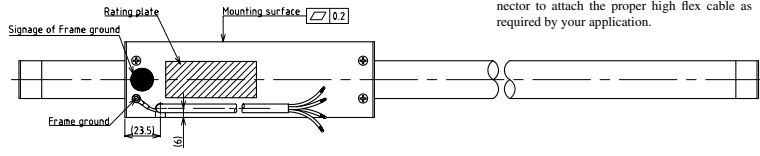
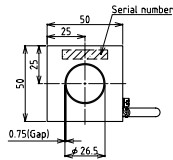
Dimension (mm)	Tolerance (mm)
6	±0.1
7 - 30	±0.2
31 - 120	±0.3
121 - 315	±0.5
316 - 1000	±0.8
1001 - 2000	±1.2
2000 -	±1.5



L = See Shaft Length
L1 = Usable Stroke + A
L2 = See Shaft Support Length
A = See Moving Coil Length
P = See Moving Coil Screw Pitch
Insulating sheet between coils and case



This Linear Shaft Motor meets all requirements of EN60034-1 (1998)



* Note 1
Cable length 300mm
The bending radius of the motor cable should be 36.6mm (wire diameter 5.3 * 6) as suggested by the wire manufacturer. This radius should be maintained. Use connector to attach the proper high flex cable as required by your application.

Electrical Specs	S250D	S250T	S250Q	S250X
Continuous Force ¹	40N	60N	75N	140N
Continuous Current ¹	1.3Arms	1.3Arms	1.3Arms	2.4Arms
Acceleration Force ²	160N	240N	300N	560N
Acceleration Current ²	5.1Arms	5.1Arms	5.1Arms	9.6Arms
Force Constant (K _f)	31N/Arms	47N/Arms	59N/Arms	58N/Arms
Back EMF (K _e)	10.4V/m/s	16V/m/s	20V/m/s	19V/m/s
Resistance 25°C, ³	7.8Ω	12Ω	15Ω	7.5Ω
Inductance ³	9.8mH	15mH	19mH	9.5mH
Electric Time Constant	1.26ms	1.25ms	1.27ms	1.27ms
Rated Voltage (AC)	240V	240V	240V	240V
Fundamental Motor Constant (K _m)	11.19N√W	13.53N√W	15.13N√W	21.30N√W
Magnetic Pitch (North-North)	90mm	90mm	90mm	90mm

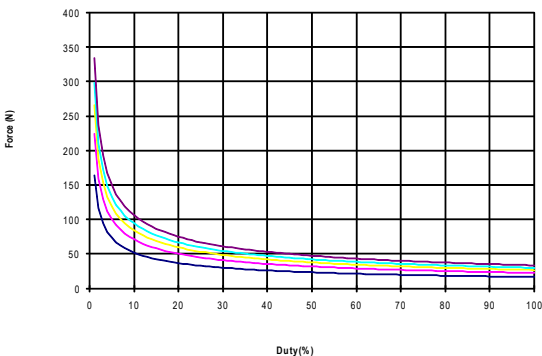
All specifications are for reference only. Specifications may change depending on servo driver selected. Consult Nippon Pulse.
1) Based on a temp rise of coil surface of 110°K over 25°C ambient temperature stalled forcer, and no external cooling or heat sinking. Addition of 25 cm x 25 cm x 2.5 cm aluminum 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
3) All winding parameters listed are measured line-to-line (phase-to-phase)

Thermal Specs	S250D	S250T	S250Q	S250X
Max Phase Temperature ⁴	135°C	135°C	135°C	135°C
Thermal Resistance (Coil) (K _q)	8.6°C/W	5.6°C/W	4.5°C/W	2.5°C/W

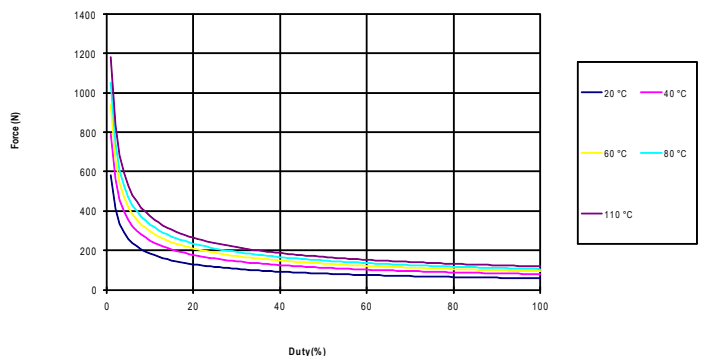
4) The standard temperature difference between the coil and the forcer surface is 20°C

Forcer Specs	S250D	S250T	S250Q	S250X
Forcer Length (A)	120mm	165mm	210mm	390mm
Forcer Width	50mm	50mm	50mm	50mm
Forcer Screw Pitch (P)	105mm	150mm	195mm	375mm
Forcer Weight	0.80kg	1.1kg	1.5kg	2.9kg
Gap	0.75mm	0.75mm	0.75mm	0.75mm

S250D Force Duty Curve



S250Q Force Duty Curve



Shaft Length (mm)

Stroke	S250D	S250T	S250Q	S250X
100	320	365	410	590
150	370	415	460	640
200	420	465	510	690
250	470	515	560	740
300	520	565	610	790
350	570	615	660	840
400	620	665	710	890
450	670	715	760	940
500	720	765	810	990
550	770	815	860	1080
600	820	865	910	1130
650	870	915	960	1180
700	920	965	1010	1230
750	1010	1055	1100	1280
800	1060	1105	1150	1330
850	1110	1155	1200	1380
900	1160	1205	1250	1430
950	1210	1255	1300	1480
1000	1260	1305	1350	1530
1050	1310	1355	1400	1580
1100	1360	1405	1450	1630
1150	1410	1455	1500	1680
1200	1460	1505	1550	1730
1250	1510	1555	1600	1780
1300	1560	1605	1650	1830
1350	1610	1655	1700	1940
1400	1660	1705	1750	1990
1450	1710	1755	1800	2040
1500	1760	1805	1850	2090
1550	1870	1915	1960	2140
1600	1920	1965	2010	2190
1650	1970	2015	2060	2240
1700	2020	2065	2110	2290
1750	2070	2115	2160	2340
1800	2120	2165	2210	2390
1850	2170	2215	2260	2440
1900	2220	2265	2310	2490
1950	2270	2315	2360	2540
2000	2320	2365	2410	2590

Shaft Mass (kg)

Stroke	S250D	S250T	S250Q	S250X
100	0.9	1.1	1.2	1.8
150	1.1	1.2	1.4	2
200	1.2	1.4	1.6	2.2
250	1.4	1.6	1.7	2.3
300	1.6	1.7	1.9	2.5
350	1.8	1.9	2.1	2.7
400	1.9	2.1	2.2	2.9
450	2.1	2.3	2.4	3
500	2.3	2.4	2.6	3.2
550	2.4	2.6	2.8	3.4
600	2.6	2.8	2.9	3.5
650	2.8	2.9	3.1	3.7
700	3	3.1	3.3	3.9
750	3.2	3.4	3.5	4.1
800	3.4	3.5	3.7	4.3
850	3.5	3.7	3.8	4.5
900	3.7	3.9	4	4.6
950	3.9	4	4.2	4.8
1000	4.1	4.2	4.4	5
1050	4.2	4.4	4.5	5.2
1100	4.4	4.6	4.7	5.3
1150	4.6	4.7	4.9	5.5
1200	4.7	4.9	5.1	5.7
1250	4.9	5.1	5.2	5.8
1300	5.1	5.2	5.4	6
1350	5.3	5.4	5.6	6.2
1400	5.4	5.6	5.7	6.4
1450	5.6	5.8	5.9	6.5
1500	5.8	5.9	6.1	6.7
1550	6	6.2	6.3	7
1600	6.2	6.3	6.5	7.1
1650	6.3	6.5	6.6	7.3
1700	6.5	6.7	6.8	7.4
1750	6.7	6.8	7	7.6
1800	6.9	7	7.2	7.8
1850	7	7.2	7.3	8
1900	7.2	7.4	7.5	8.1
1950	7.4	7.5	7.7	8.3
2000	7.6	7.7	7.9	8.5

S250 Linear Shaft Motor

CE Type Motor Cable

Wire Type	UL 1330
Wire AWG	24
U Phase	Red
V Phase	White
W Phase	Black

Ground Wire	
Wire Type	UL 1330
Wire AWG	20
Frame Ground	Green/Yellow

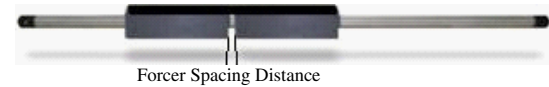
300mm lead wire bare leads. The bending radius of the motor cable should be 18.96mm as suggested by the wire manufacturer.

Support and Bending

Stroke D/T/Q	Stroke X	Support Length	Max. Bending
0~700	0~500	50mm	0.00mm
701~1000	501~800	70mm	0.30mm
1001~1500	801~1300	70mm	0.70mm
1501~max	1301~max	100mm	0.70mm

Shaft Diameter (D) - 25mm ±0.2
Total Length (L)=Stroke (S)+Forcer Length (A)+(Support Length (L2)x2)
Stroke lengths available up to 2550mm. Contact Nippon Pulse for more information.

Tandem Forcer

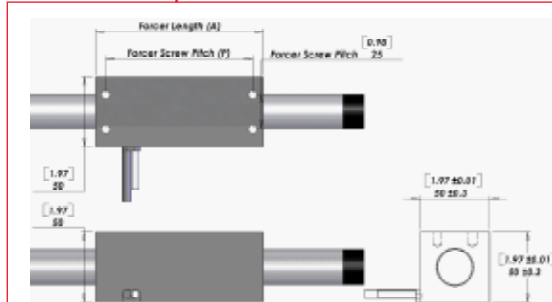


Forcer Spacing Distance

Spec	S250T	S250X
Forcer Spacing Distance	15mm	15mm
Pole (N/S) Distance	45mm	45mm
Forcer Length	165mm	390mm
Flip Forcers	No	Yes

Tandem S250D forcers are possible, but are equivalent to one (1) S250Q forcer. Tandem S250Q forcers are equal to one (1) S250X forcer. Tandem S250X are possible, but are equal to one S250X forcer.

Hall Effect Specs



Sensor Cable Specs

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

The bending radius of the sensor cable should be R27.6mm (wire diameter 6.1 * 6) as suggested by the wire manufacturer. Attach the proper high flex cable as required by your application.

* Note 1
The bending radius of the motor cable should be R36.6mm (wire diameter 4.6 * 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.

Part Numbering System

S	Shaft Size (D) 250	Forcer Size (A) X	Parallel Option XX	Usable Stroke XXXXst 100-2000mm	CE Type Motor CE	Options XX	Options XX	# of Forcers XX
		D: Double (2) windings T: Triple (3) windings Q: Quadruple (4) windings X: Octuple (8) Windings	Blank: Single Motor PL: Parallel Motors			Blank: Standard WP: Water Resistant HA: Digital Hall Effect	Blank: Standard FO: Forcer Only SO: Shaft Only	Two or more

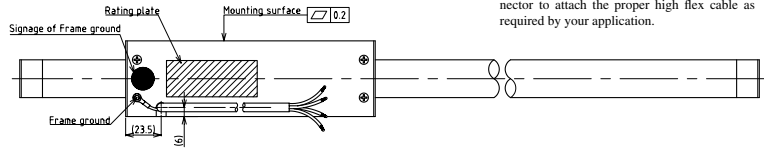
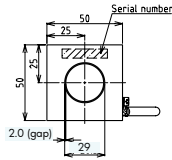
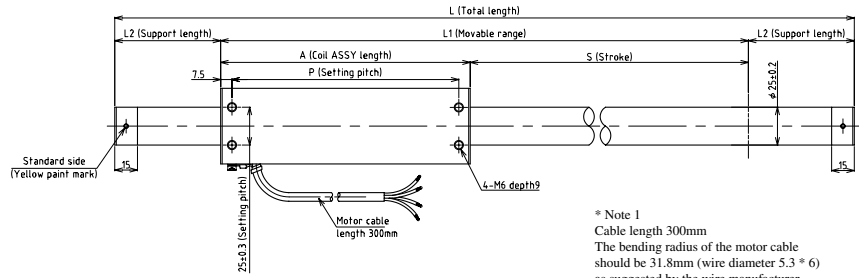
Unless Otherwise Specified:
Dimensions are in mm
Tolerances are as follows:

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

L = See Shaft Length
L1 = Usable Stroke + A
L2 = See Shaft Support Length
A = See Moving Coil Length
P = See Moving Coil Screw Pitch
Insulating sheet between coils and case



This Linear Shaft Motor meets all requirements of EN60034-1 (1998)



Electrical Specs	L250D	L250T	L250Q
Continuous Force ¹	34N	52N	69N
Continuous Current ¹	1.3Arms	1.3Arms	1.3Arms
Acceleration Force ²	138N	207N	276N
Acceleration Current ²	5.2Arms	5.2Arms	5.2Arms
Force Constant (K _f)	27N/Arms	40N/Arms	53N/Arms
Back EMF (K _b)	8.8V/m/s	13V/m/s	18V/m/s
Resistance 25°C, ³	8.4Ω	13Ω	17Ω
Inductance ³	9.2mH	14mH	18mH
Electric Time Constant	1.11ms	1.11ms	1.11ms
Rated Voltage (AC)	240V	240V	240V
Fundamental Motor Constant (K _m)	9.17N√W	11.23N√W	12.97N√W
Magnetic Pitch (North-North)	90mm	90mm	90mm

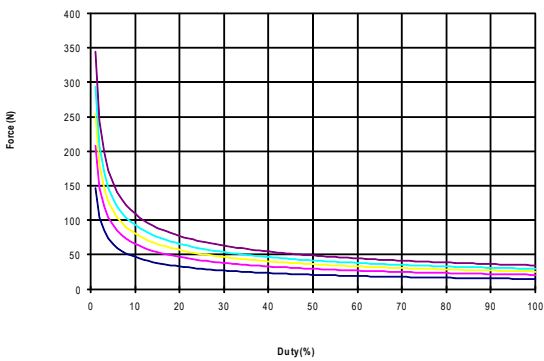
All specifications are for reference only. Specifications may change depending on servo driver selected. Consult Nippon Pulse.
1) Based on a temp rise of coil surface of 110°K over 25°C ambient temperature stalled forcer, and no external cooling or heat sinking. Addition of 25 cm x 25 cm x 2.5 cm aluminum 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
3) All winding parameters listed are measured line-to-line (phase-to-phase)

Thermal Specs	L250D	L250T	L250Q
Max Phase Temperature ⁴	135°C	135°C	135°C
Thermal Resistance (Coil) (K _θ)	7.8°C/W	5.2°C/W	3.9°C/W

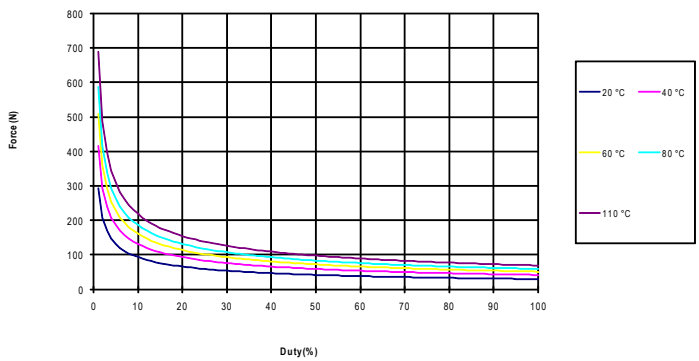
4) The standard temperature difference between the coil and the forcer surface is 20°C

Forcer Specs	L250D	L250T	L250Q
Forcer Length (A)	120mm	165mm	210mm
Forcer Width	50mm	50mm	50mm
Forcer Screw Pitch (P)	105mm	150mm	195mm
Forcer Weight	0.77kg	1.1kg	1.5kg
Gap	2.0mm	2.0mm	2.0mm

L250D Force Duty Curve



L250Q Force Duty Curve



Shaft Length (mm)

Stroke	L250D	L250T	L250Q
100	320	365	410
150	370	415	460
200	420	465	510
250	470	515	560
300	520	565	610
350	570	615	660
400	620	665	710
450	670	715	760
500	720	765	810
550	770	815	860
600	820	865	910
650	870	915	960
700	920	965	1010
750	1010	1055	1100
800	1060	1105	1150
850	1110	1155	1200
900	1160	1205	1250
950	1210	1255	1300
1000	1260	1305	1350
1050	1310	1355	1400
1100	1360	1405	1450
1150	1410	1455	1500
1200	1460	1505	1550
1250	1510	1555	1600
1300	1560	1605	1650
1350	1610	1655	1700
1400	1660	1705	1750
1450	1710	1755	1800
1500	1760	1805	1850
1550	1870	1915	1960
1600	1920	1965	2010
1650	1970	2015	2060
1700	2020	2065	2110
1750	2070	2115	2160
1800	2120	2165	2210
1850	2170	2215	2260
1900	2220	2265	2310
1950	2270	2315	2360
2000	2320	2365	2410

Shaft Mass (kg)

Stroke	L250D	L250T	L250Q
100	0.9	1.1	1.2
150	1.1	1.2	1.4
200	1.2	1.4	1.6
250	1.4	1.6	1.7
300	1.6	1.7	1.9
350	1.8	1.9	2.1
400	1.9	2.1	2.2
450	2.1	2.3	2.4
500	2.3	2.4	2.6
550	2.4	2.6	2.8
600	2.6	2.8	2.9
650	2.8	2.9	3.1
700	3	3.1	3.3
750	3.2	3.4	3.5
800	3.4	3.5	3.7
850	3.5	3.7	3.8
900	3.7	3.9	4
950	3.9	4	4.2
1000	4.1	4.2	4.4
1050	4.2	4.4	4.5
1100	4.4	4.6	4.7
1150	4.6	4.7	4.9
1200	4.7	4.9	5.1
1250	4.9	5.1	5.2
1300	5.1	5.2	5.4
1350	5.3	5.4	5.6
1400	5.4	5.6	5.7
1450	5.6	5.8	5.9
1500	5.8	5.9	6.1
1550	6	6.2	6.3
1600	6.2	6.3	6.5
1650	6.3	6.5	6.6
1700	6.5	6.7	6.8
1750	6.7	6.8	7
1800	6.9	7	7.2
1850	7	7.2	7.3
1900	7.2	7.4	7.5
1950	7.4	7.5	7.7
2000	7.6	7.7	7.9

L250 Linear Shaft Motor

CE Type Motor Cable

Wire Type	UL 1330
Wire AWG	24
U Phase	Red
V Phase	White
W Phase	Black

Ground Wire	CE
Wire Type	UL 1330
Wire AWG	20
Frame Ground	Green/Yellow

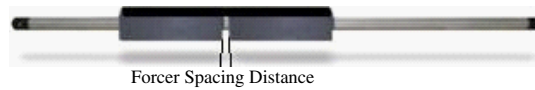
300mm lead wire bare leads
The bending radius of the motor cable should be 18.96mm as suggested by the wire manufacturer.

Support and Bending

Stroke D/T/Q	Support Length	Max. bending
0~700	50mm	0.00mm
701~1000	70mm	0.30mm
1001~1500	70mm	0.70mm
1501~max	100mm	0.70mm

Shaft Diameter (D) - 20.5mm ±0.2
Total Length (L)=Stroke (S)+Forcer Length (A)+(Support Length (L2)x2)
Stroke lengths available from 100mm to 3650mm. Contact Nippon Pulse for more information.

Tandem Forcer

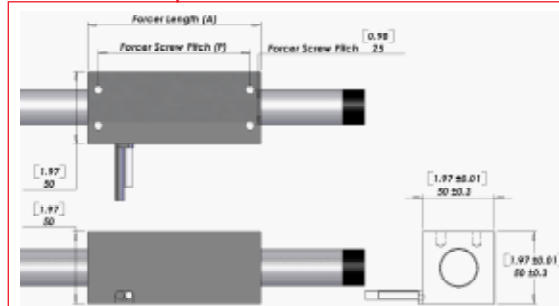


Forcer Spacing Distance

Spec	L250T	L250Q
Forcer Spacing Distance	15mm	15mm
Pole (N/S) Distance	45mm	45mm
Forcer Length	165mm	210mm
Flip Forcers	No	Yes

Tandem L250D forcers are possible, but are equivalent to one (1) L250Q forcer and thus are not listed above.

Hall Effect Specs



Sensor Cable Specs

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

The bending radius of the sensor cable should be R27.6mm (wire diameter 6.1 * 6) as suggested by the wire manufacturer. This radius should be maintained. Attach the proper high flex cable as required by your application.

* Note 1
The bending radius of the motor cable should be R31.8mm (wire diameter 4.6 * 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.

Part Numbering System

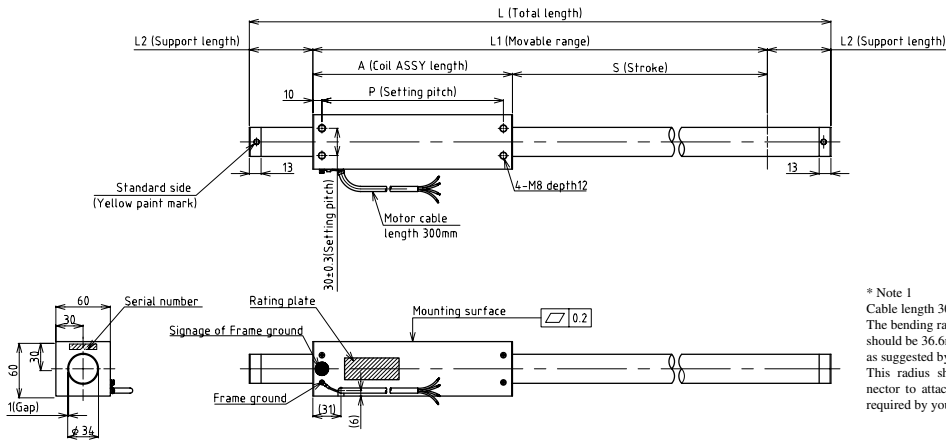
L	Shaft Size (D) 250	Forcer Size (A) X	Parallel Option XX	Usable Stroke XXXXSt 100-2000mm	CE Type Motor CE	Options XX	Options XX	# of Forcers XX
		D: Double (2) windings T: Triple (3) windings Q: Quadruple (4) windings	Blank: Single Motor PL: Parallel Motors			Blank: Standard WP: Water Resistant HA: Digital Hall Effect	Blank: Standard FO: Forcer Only SO: Shaft Only	Two or more

Unless Otherwise Specified:
Dimensions are in mm
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

L = See Shaft Length
L1 = Usable Stroke + A
L2 = See Shaft Support Length
A = See Moving Coil Length
P = See Moving Coil Screw Pitch
Insulating sheet between coils and case

CE
This Linear Shaft Motor meets all requirements of EN60034-1 (1998)



* Note 1
Cable length 300mm
The bending radius of the motor cable should be 36.6mm (wire diameter 5.3 * 6) as suggested by the wire manufacturer. This radius should be maintained. Use connector to attach the proper high flex cable as required by your application.

Electrical Specs	S320D	S320T	S320Q
Continuous Force ¹	56N	85N	113N
Continuous Current ¹	1.2Arms	1.2Arms	1.2Arms
Acceleration Force ²	226N	338N	451N
Acceleration Current ²	5.0Arms	5.0Arms	5.0Arms
Force Constant (K _f)	45N/Arms	68N/Arms	91N/Arms
Back EMF (K _e)	15V/m/s	23V/m/s	30V/m/s
Resistance 25°C, ³	11Ω	17Ω	23Ω
Inductance ³	17.0mH	26.0mH	34.0mH
Electric Time Constant	1.55ms	1.53ms	1.48ms
Rated Voltage (AC)	240V	240V	240V
Fundamental Motor Constant (K _m)	13.66N√W	16.49N√W	18.89N√W
Magnetic Pitch (North-North)	120mm	120mm	120mm

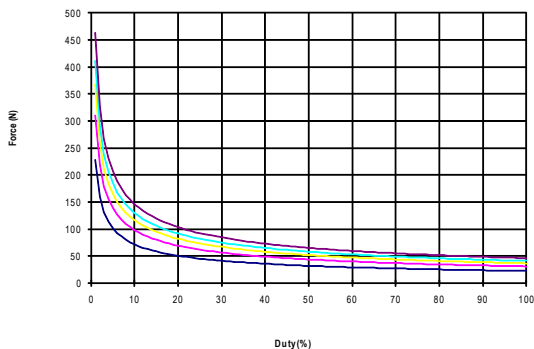
All specifications are for reference only. Specifications may change depending on servo driver selected. Consult Nippon Pulse.
1) Based on a temp rise of coil surface of 110°K over 25°C ambient temperature stalled forcer, and no external cooling or heat sinking. Addition of 25 cm x 25 cm x 2.5 cm aluminum 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
3) All winding parameters listed are measured line-to-line (phase-to-phase)

Thermal Specs	S320D	S320T	S320Q
Max Phase Temperature ⁴	135°C	135°C	135°C
Thermal Resistance (Coil) (K _q)	6.7°C/W	4.7°C/W	3.6°C/W

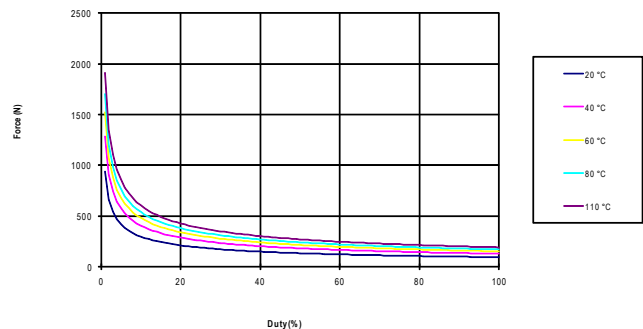
4) The standard temperature difference between the coil and the forcer surface is 25°C

Forcer Specs	S320D	S320T	S320Q
Forcer Length (A)	160mm	220mm	280mm
Forcer Width	60mm	60mm	60mm
Forcer Screw Pitch (P)	140mm	200mm	260mm
Forcer Weight	1.2kg	1.7kg	2.2kg
Gap	1.00mm	1.00mm	1.00mm

S320D Force Duty Curve



S320Q Force Duty Curve



Shaft Length (mm) Shaft Mass (kg)

Stroke	S320D	S320T	S320Q
150	410	470	530
200	460	520	580
250	510	570	630
300	560	620	680
350	610	670	730
400	660	720	780
450	710	770	830
500	760	820	880
550	810	870	930
600	860	920	980
650	910	970	1030
700	960	1020	1080
750	1010	1070	1130
800	1100	1160	1220
850	1150	1210	1270
900	1200	1260	1320
950	1250	1310	1370
1000	1300	1360	1420
1050	1350	1410	1470
1100	1400	1460	1520
1150	1450	1510	1570
1200	1500	1560	1620
1250	1550	1610	1670
1300	1600	1660	1720
1350	1650	1710	1770
1400	1700	1760	1820
1450	1750	1810	1870
1500	1800	1860	1920
1550	1910	1970	2030
1600	1960	2020	2080
1650	2010	2070	2130
1700	2060	2120	2180
1750	2110	2170	2230
1800	2160	2220	2280
1850	2210	2270	2330
1900	2260	2320	2380
1950	2310	2370	2430
2000	2360	2420	2480

Stroke	S320D	S320T	S320Q
150	2.1	2.4	2.8
200	2.4	2.7	3
250	2.7	3	3.3
300	2.9	3.3	3.6
350	3.2	3.6	3.9
400	3.5	3.8	4.2
450	3.8	4.1	4.5
500	4.1	4.4	4.7
550	4.3	4.7	5
600	4.6	5	5.3
650	4.9	5.2	5.6
700	5.2	5.5	5.9
750	5.5	5.8	6.1
800	5.8	6.2	6.5
850	6.1	6.5	6.8
900	6.4	6.7	7.1
950	6.7	7	7.4
1000	7	7.3	7.6
1050	7.3	7.6	7.9
1100	7.5	7.9	8.2
1150	7.8	8.2	8.5
1200	8.1	8.4	8.8
1250	8.4	8.7	9.1
1300	8.7	9	9.3
1350	8.9	9.3	9.6
1400	9.2	9.6	9.9
1450	9.5	9.8	10.2
1500	9.8	10.1	10.5
1550	10.2	10.5	10.9
1600	10.5	10.8	11.2
1650	10.8	11.1	11.5
1700	11.1	11.4	11.7
1750	11.3	11.7	12
1800	11.6	12	12.3
1850	11.9	12.2	12.6
1900	12.2	12.5	12.9
1950	12.5	12.8	13.1
2000	12.7	13.1	13.4

S320 Linear Shaft Motor

CE Type Motor Cable

Wire Type	UL 1330
Wire AWG	24
U Phase	Red
V Phase	White
W Phase	Black

Ground Wire	
Wire Type	UL 1330
Wire AWG	20
Frame Ground	Green/Yellow

300mm lead wire bare leads. The bending radius of the motor cable should be 18.96mm as suggested by the wire manufacturer.

Support and Bending

Stroke (D/T/Q)	X	Support Length	Max. bending
0~750	0~500	50mm	0.00mm
751~1000	501~800	70mm	0.30mm
1001~1500	801~1300	70mm	0.70mm
1501~max	1301~max.	100mm	0.70mm

Shaft Diameter (D) - 32mm ±0.2

Total Length (L)=Stroke (S)+Forcer Length (A)+(Support Length (L2)x2)

Stroke lengths available from 100mm to 2700mm. Contact Nippon Pulse for more information.

Tandem Forcer



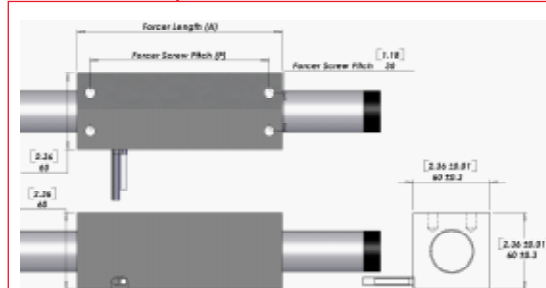
Forcer Spacing Distance

Forcer Spacing Distance

Spec	S320T	S320Q
Forcer Spacing Distance	20mm	20mm
Pole (N/S) Distance	60mm	60mm
Forcer Length	220mm	280mm
Flip Forcers	No	Yes

Tandem S320D forcers are possible, but are equivalent to one (1) S320Q forcer.

Hall Effect Specs



Sensor Cable Specs

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

The bending radius of the sensor cable should be R27.6mm (wire diameter 6.1 * 6) as suggested by the wire manufacturer. This radius should be maintained. Attach the proper high flex cable as required by your application.

* Note 1
The bending radius of the motor cable should be R36.6mm (wire diameter 4.6 * 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.

Part Numbering System

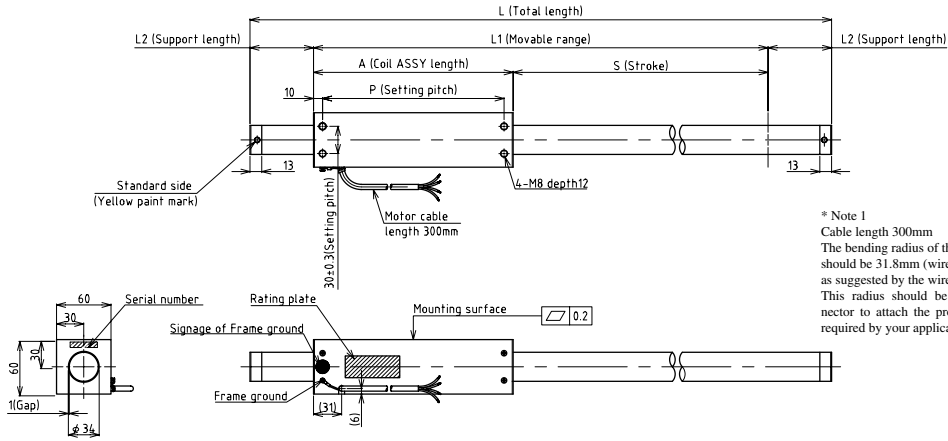
S	Shaft Size (D) 320	Forcer Size (A) X D: Double (2) windings T: Triple (3) windings Q: Quadruple (4) windings	Parallel Option XX Blank: Single Motor PL: Parallel Motors	Usable Stroke XXXXSt 100-2000mm	CE Type Motor CE	Options XX Blank: Standard WP: Water Resistant HA: Digital Hall Effect	Options XX Blank: Standard FO: Forcer Only SO: Shaft Only	# of Forcers XX Two or more
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Unless Otherwise Specified:
Dimensions are in mm
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

L = See Shaft Length
L1 = Usable Stroke + A
L2 = See Shaft Support Length
A = See Moving Coil Length
P = See Moving Coil Screw Pitch
Insulating sheet between coils and case

CE
This Linear Shaft Motor meets all requirements of EN60034-1 (1998)



* Note 1
Cable length 300mm
The bending radius of the motor cable should be 31.8mm (wire diameter 5.3 * 6) as suggested by the wire manufacturer. This radius should be maintained. Use connector to attach the proper high flex cable as required by your application.

Electrical Specs	L320D	L320T	L320Q
Continuous Force ¹	55N	82N	109N
Continuous Current ¹	1.3Arms	1.3Arms	1.3Arms
Acceleration Force ²	218N	327N	436N
Acceleration Current ²	5.0Arms	5.0Arms	5.0Arms
Force Constant (K _f)	44N/arms	65N/Arms	87N/Arms
Back EMF (K _e)	15V/m/s	22V/m/s	29V/m/s
Resistance 25°C, ³	12Ω	17Ω	23Ω
Inductance ³	14.0mH	21.0mH	28.0mH
Electric Time Constant	1.22ms	1.22ms	1.22ms
Rated Voltage (AC)	240V	240V	240V
Fundamental Motor Constant (K _m)	12.83N√W	15.72N√W	18.15N√W
Magnetic Pitch (North-North)	120mm	120mm	120mm

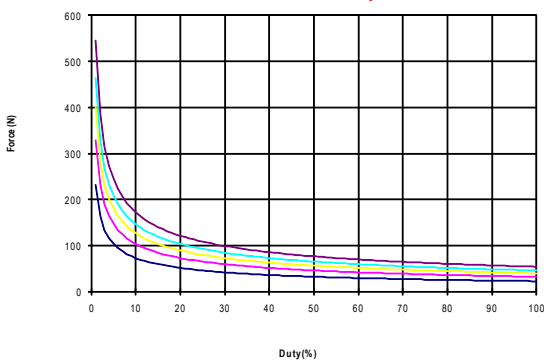
All specifications are for reference only. Specifications may change depending on servo driver selected. Consult Nippon Pulse.
1) Based on a temp rise of coil surface of 110°K over 25°C ambient temperature stalled forcer, and no external cooling or heat sinking. Addition of 25 cm x 25 cm x 2.5 cm aluminum 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
3) All winding parameters listed are measured line-to-line (phase-to-phase)

Thermal Specs	L320D	L320T	L320Q
Max Phase Temperature ⁴	135°C	135°C	135°C
Thermal Resistance (Coil) (K _q)	6.1°C/W	4.1°C/W	3.1°C/W

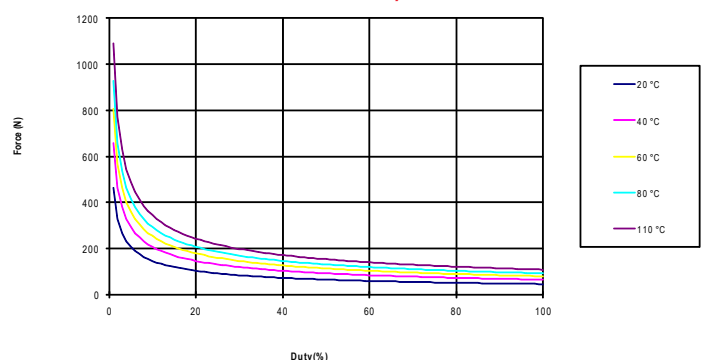
4) The standard temperature difference between the coil and the forcer surface is 25°C

Forcer Specs	L320D	L320T	L320Q
Forcer Length (A)	160mm	220mm	280mm
Forcer Width	60mm	60mm	60mm
Forcer Screw Pitch (P)	140mm	200mm	260mm
Forcer Weight	1.3kg	1.9kg	2.6kg
Gap	2.50mm	2.50mm	2.50mm

L320D Force Duty Curve



L320Q Force Duty Curve



Shaft Length (mm)

Stroke	L320D	L320T	L320Q
150	410	470	530
200	460	520	580
250	510	570	630
300	560	620	680
350	610	670	730
400	660	720	780
450	710	770	830
500	760	820	880
550	810	870	930
600	860	920	980
650	910	970	1030
700	960	1020	1080
750	1010	1070	1130
800	1100	1160	1220
850	1150	1210	1270
900	1200	1260	1320
950	1250	1310	1370
1000	1300	1360	1420
1050	1350	1410	1470
1100	1400	1460	1520
1150	1450	1510	1570
1200	1500	1560	1620
1250	1550	1610	1670
1300	1600	1660	1720
1350	1650	1710	1770
1400	1700	1760	1820
1450	1750	1810	1870
1500	1800	1860	1920
1550	1910	1970	2030
1600	1960	2020	2080
1650	2010	2070	2130
1700	2060	2120	2180
1750	2110	2170	2230
1800	2160	2220	2280
1850	2210	2270	2330
1900	2260	2320	2380
1950	2310	2370	2430
2000	2360	2420	2480

Shaft Mass (kg)

Stroke	L320D	L320T	L320Q
150	2.1	2.4	2.8
200	2.4	2.7	3
250	2.7	3	3.3
300	2.9	3.3	3.6
350	3.2	3.6	3.9
400	3.5	3.8	4.2
450	3.8	4.1	4.5
500	4.1	4.4	4.7
550	4.3	4.7	5
600	4.6	5	5.3
650	4.9	5.2	5.6
700	5.2	5.5	5.9
750	5.5	5.8	6.1
800	5.8	6.2	6.5
850	6.1	6.5	6.8
900	6.4	6.7	7.1
950	6.7	7	7.4
1000	7	7.3	7.6
1050	7.3	7.6	7.9
1100	7.5	7.9	8.2
1150	7.8	8.2	8.5
1200	8.1	8.4	8.8
1250	8.4	8.7	9.1
1300	8.7	9	9.3
1350	8.9	9.3	9.6
1400	9.2	9.6	9.9
1450	9.5	9.8	10.2
1500	9.8	10.1	10.5
1550	10.2	10.5	10.9
1600	10.5	10.8	11.2
1650	10.8	11.1	11.5
1700	11.1	11.4	11.7
1750	11.3	11.7	12
1800	11.6	12	12.3
1850	11.9	12.2	12.6
1900	12.2	12.5	12.9
1950	12.5	12.8	13.1
2000	12.7	13.1	13.4

L320

Linear Shaft Motor

CE Type Motor Cable

Wire Type	UL 1330
Wire AWG	24
U Phase	Red
V Phase	White
W Phase	Black

Ground Wire	CE
Wire Type	UL 1330
Wire AWG	20
Frame Ground	Green/Yellow

300mm lead wire bare leads
The bending radius of the motor cable should be 18.96mm as suggested by the wire manufacturer.

Support and Bending

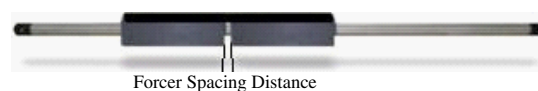
Stroke	Support Length	Max. bending
0-750	50mm	0.00mm
751-1000	70mm	0.30mm
1001-1500	70mm	0.70mm
1501-max	100mm	0.70mm

Shaft Diameter (D) - 32mm ±0.2

Total Length (L)=Stroke (S)+Forcer Length (A)+(Support Length (L2)x2)

Stroke lengths available from 100mm to 3650mm. Contact Nippon Pulse for more information.

Tandem Forcer

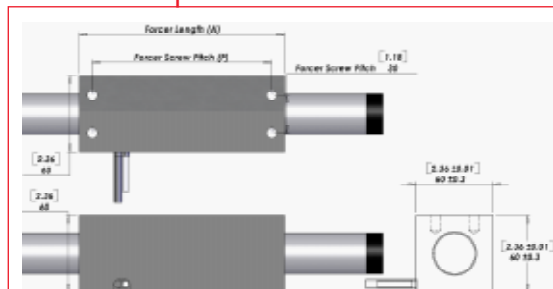


Forcer Spacing Distance

Spec	L320T	L320Q
Forcer Spacing Distance	20mm	20mm
Pole (N/S) Distance	60mm	60mm
Forcer Length	220mm	280mm
Flip Forcers	No	Yes

Tandem L320D forcers are possible, but are equivalent to one (1) L320Q forcer and thus are not listed above.

Hall Effect Specs



Sensor Cable Specs

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

The bending radius of the sensor cable should be R27.6mm (wire diameter 5.3 * 6) as suggested by the wire manufacturer. This radius should be maintained. Attach the proper high flex cable as required by your application.

* Note 1

The bending radius of the motor cable should be R31.8mm (wire diameter 4.6 * 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.

Part Numbering System

L	Shaft Size (D) 320	Forcer Size (A) X	Parallel Option XX	Usable Stroke XXXXst 100-2000mm	CE Type Motor CE	Options XX	Options XX	# of Forcers XX
		D: Double (2) windings T: Triple (3) windings Q: Quadruple (4) windings	Blank: Single Motor PL: Parallel Motors			Blank: Standard WP: Water Resistant HA: Digital Hall Effect	Blank: Standard FO: Forcer Only SO: Shaft Only	Two or more

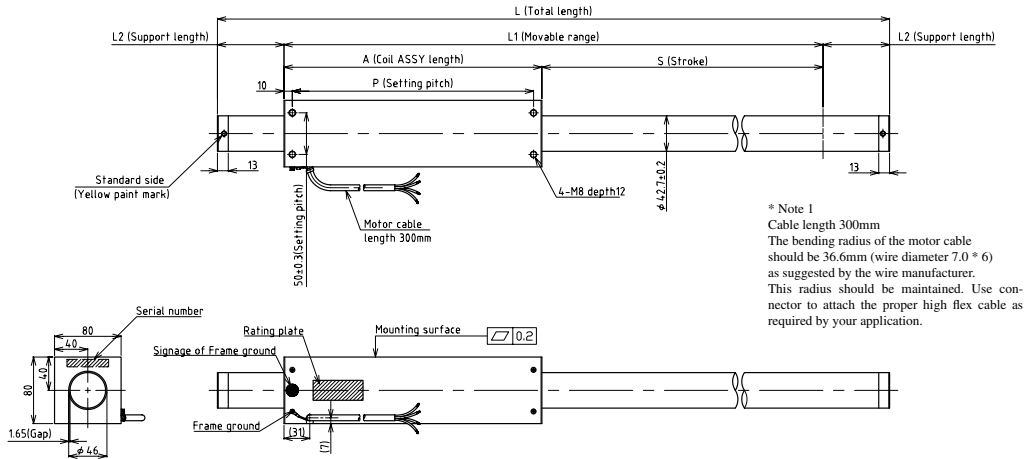
Unless Otherwise Specified:
Dimensions are in mm
Tolerances are as follows:

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

L = See Shaft Length
L1 = Usable Stroke + A
L2 = See Shaft Support Length
A = See Moving Coil Length
P = See Moving Coil Screw Pitch
Insulating sheet between coils and case



This Linear Shaft Motor meets all requirements of EN60034-1 (1998)



Electrical Specs	S427D	S427T	S427Q
Continuous Force ¹	100N	150N	200N
Continuous Current ¹	3.0Arms	3.0Arms	3.0Arms
Acceleration Force ²	400N	600N	800N
Acceleration Current ²	12Arms	12Arms	12Arms
Force Constant (K _f)	33N/Arms	50N/Arms	67N/Arms
Back EMF (K _e)	11V/m/s	17V/m/s	22V/m/s
Resistance 25°C, ³	2.7Ω	3.9Ω	5.2Ω
Inductance ³	7.3mH	11mH	15mH
Electric Time Constant	2.70ms	2.82ms	2.88ms
Rated Voltage (AC)	240V	240V	240V
Fundamental Motor Constant (K _m)	20.27N√W	25.52N√W	29.21N√W
Magnetic Pitch (North-North)	180mm	180mm	180mm

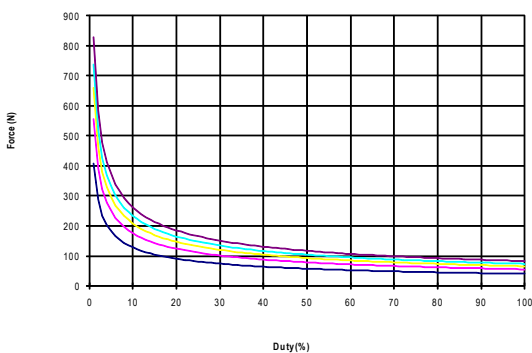
All specifications are for reference only. Specifications may change depending on servo driver selected. Consult Nippon Pulse.
1) Based on a temp rise of coil surface of 110°K over 25°C ambient temperature stalled forcer, and no external cooling or heat sinking. Addition of 25 cm x 25 cm x 2.5 cm aluminum 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
3) All winding parameters listed are measured line-to-line (phase-to-phase)

Thermal Specs	S427D	S427T	S427Q
Max Phase Temperature ⁴	135°C	135°C	135°C
Thermal Resistance (Coil) (K _q)	4.6°C/W	3.2°C/W	2.4°C/W

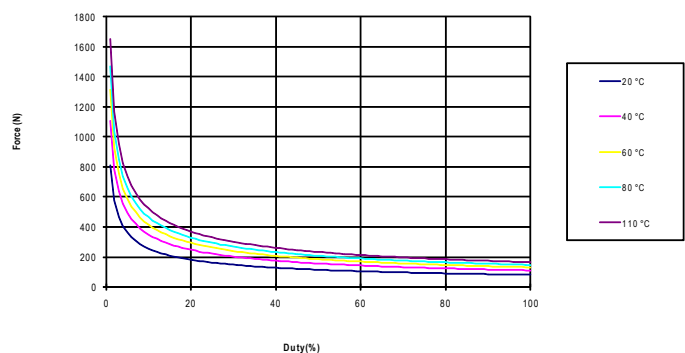
4) The standard temperature difference between the coil and the forcer surface is 25°C

Forcer Specs	S427D	S427T	S427Q
Forcer Length (A)	220mm	310mm	400mm
Forcer Width	80mm	80mm	80mm
Forcer Screw Pitch (P)	200mm	290mm	380mm
Forcer Weight	3.0kg	4.2kg	5.4kg
Gap	1.65mm	1.65mm	1.65mm

S427D Force Duty Curve



S427Q Force Duty Curve



Shaft Length (mm)

Stroke	S427D	S427T	S427Q
200	540	630	720
250	590	680	770
300	640	730	820
350	690	780	870
400	740	830	920
450	790	880	970
500	840	930	1020
550	890	980	1070
600	980	1070	1160
650	1030	1120	1210
700	1080	1170	1260
750	1130	1220	1310
800	1180	1270	1360
850	1230	1320	1410
900	1280	1370	1460
950	1330	1420	1510
1000	1380	1470	1560
1050	1470	1560	1650
1100	1520	1610	1700
1150	1570	1660	1750
1200	1620	1710	1800
1250	1670	1760	1850
1300	1720	1810	1900
1350	1770	1860	1950
1400	1820	1910	2000
1450	1870	1960	2050
1500	1920	2010	2100
1550	1970	2060	2150
1600	2020	2110	2200
1650	2070	2160	2250
1700	2120	2210	2300
1750	2170	2260	2350
1800	2220	2310	2400
1850	2270	2360	2450
1900	2320	2410	2500
1950	2370	2460	2550
2000	2420	2510	2600

Shaft Mass (kg)

Stroke	S427D	S427T	S427Q
200	4.9	5.8	6.7
250	5.4	6.3	7.2
300	5.9	6.8	7.7
350	6.4	7.3	8.2
400	6.9	7.8	8.7
450	7.4	8.3	9.2
500	7.9	8.8	9.7
550	8.4	9.3	10.2
600	9.1	10	10.9
650	9.6	10.5	11.4
700	10.1	11	11.9
750	10.6	11.5	12.4
800	11.1	12	12.9
850	11.6	12.5	13.4
900	12.1	13	13.9
950	12.6	13.5	14.4
1000	13.1	14	14.9
1050	13.8	14.7	15.6
1100	14.3	15.2	16.1
1150	14.8	15.7	16.6
1200	15.3	16.2	17.1
1250	15.8	16.7	17.6
1300	16.3	17.2	18.1
1350	16.8	17.7	18.6
1400	17.3	18.2	19.1
1450	17.8	18.7	19.6
1500	18.3	19.2	20.1
1550	18.8	19.7	20.6
1600	19.3	20.2	21.1
1650	19.8	20.7	21.6
1700	20.3	21.2	22.1
1750	20.8	21.7	22.6
1800	21.3	22.2	23.1
1850	21.8	22.7	23.6
1900	22.3	23.2	24.1
1950	22.8	23.7	24.6
2000	23.3	24.2	25.1

S427

Linear Shaft Motor

CE Type Motor Cable

Wire Type	UL 1330
Wire AWG	24
U Phase	Red
V Phase	White
W Phase	Black

Ground Wire	CE
Wire Type	UL 1330
Wire AWG	20
Frame Ground	Green/Yellow

300mm lead wire bare leads. The bending radius of the motor cable should be 21.6mm as suggested by the wire manufacturer.

Support and Bending

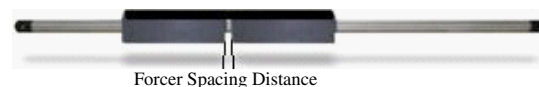
Stroke	Support Length	Max. bending
0~550	60mm	0.00mm
551~1000	80mm	0.15mm
1001~1500	100mm	0.60mm
1501~2000	100mm	1.10mm
2001~2500	100mm	2.00mm
2501~max	100mm	2.10mm

Shaft Diameter (D) - 42.7mm ±0.2

Total Length (L)=Stroke (S)+Forcer Length (A)+(Support Length (L2)x2)

Stroke lengths available from 100mm to 4600mm. Contact Nippon Pulse for more information.

Tandem Forcer



Forcer Spacing Distance

Spec	S427T	S427Q
Forcer Spacing Distance	50mm	50mm
Pole (N/S) Distance	90mm	90mm
Forcer Length	310mm	400mm
Flip Forcers	No	Yes

Tandem S427D forcers are possible, but are equivalent to one (1) S427Q forcer and thus are not listed above.

Hall Effect Specs

Sensor Cable Specs

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

The bending radius of the sensor cable should be R27.6mm (wire diameter 6.1 * 6) as suggested by the wire manufacturer. This radius should be maintained. Attach the proper high flex cable as required by your application.

* Note 1
The bending radius of the motor cable should be R36.6mm (wire diameter 4.6 * 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.

Part Numbering System

S	Shaft Size (D) 427	Forcer Size (A) X	Parallel Option XX	Usable Stroke XXXXSI 100-2000mm	CE Type Motor CE	Options XX Blank: Standard WP: Water Resistant HA: Digital Hall Effect	Options XX Blank: Standard FO: Forcer Only SO: Shaft Only	# of Forcers XX Two or more
		D: Double (2) windings T: Triple (3) windings Q: Quadruple (4) windings	Blank: Single Motor PL: Parallel Motors					

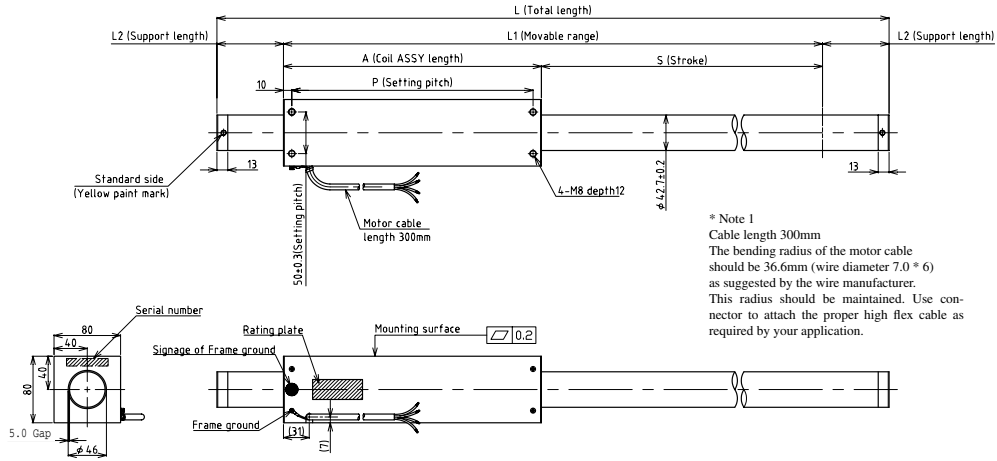
Unless Otherwise Specified:
Dimensions are in mm
Tolerances are as follows:

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

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



This Linear Shaft Motor meets all requirements of EN60034-1 (1998)



Electrical Specs	L427D	L427T	L427Q
Continuous Force ¹	110N	170N	210N
Continuous Current ¹	3.6Arms	3.6Arms	3.4Arms
Acceleration Force ²	450N	680N	830N
Acceleration Current ²	14Arms	14Arms	13Arms
Force Constant (K _f)	31N/Arms	47N/Arms	62N/Arms
Back EMF (K _e)	10V/m/s	16V/m/s	21V/m/s
Resistance 25°C, ³	2.9Ω	4.4Ω	5.8Ω
Inductance ³	7.8mH	12mH	15mH
Electric Time Constant	2.69ms	2.73ms	2.59ms
Rated Voltage (AC)	240V	240V	240V
Fundamental Motor Constant (K _m)	18.24N√W	22.38N√W	25.83N√W
Magnetic Pitch (North-North)	180mm	180mm	180mm

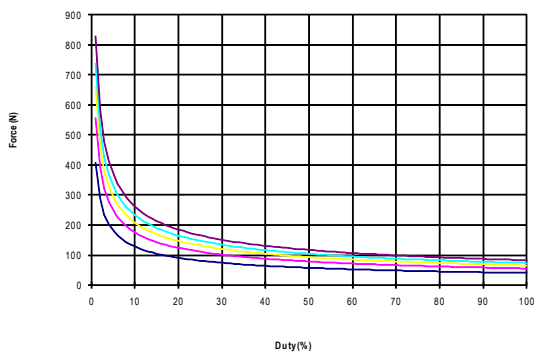
All specifications are for reference only. Specifications may change depending on servo driver selected. Consult Nippon Pulse.
1) Based on a temp rise of coil surface of 110°K over 25°C ambient temperature stalled forcer, and no external cooling or heat sinking. Addition of 25 cm x 25 cm x 2.5 cm aluminum 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
3) All winding parameters listed are measured line-to-line (phase-to-phase)

Thermal Specs	L427D	L427T	L427Q
Max Phase Temperature ⁴	135°C	135°C	135°C
Thermal Resistance (Coil) (K _θ)	2.9°C	1.9°C	1.7°C

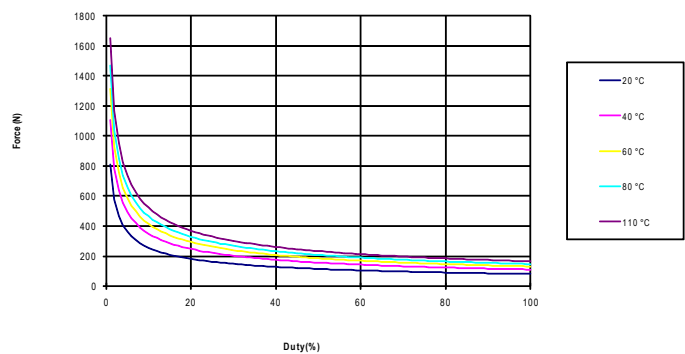
4) The standard temperature difference between the coil and the forcer surface is 25°C

Forcer Specs	L427D	L427T	L427Q
Forcer Length (A)	220mm	310mm	400mm
Forcer Width	80mm	80mm	80mm
Forcer Screw Pitch (P)	200mm	290mm	380mm
Forcer Weight	3.0kg	4.4kg	5.7kg
Gap	5.0mm	5.0mm	5.0mm

L427D Force Duty Curve



L427Q Force Duty Curve



Shaft Length (mm)

Stroke	L427D	L427T	L427Q
200	540	630	720
250	590	680	770
300	640	730	820
350	690	780	870
400	740	830	920
450	790	880	970
500	840	930	1020
550	890	980	1070
600	980	1070	1160
650	1030	1120	1210
700	1080	1170	1260
750	1130	1220	1310
800	1180	1270	1360
850	1230	1320	1410
900	1280	1370	1460
950	1330	1420	1510
1000	1380	1470	1560
1050	1470	1560	1650
1100	1520	1610	1700
1150	1570	1660	1750
1200	1620	1710	1800
1250	1670	1760	1850
1300	1720	1810	1900
1350	1770	1860	1950
1400	1820	1910	2000
1450	1870	1960	2050
1500	1920	2010	2100
1550	1970	2060	2150
1600	2020	2110	2200
1650	2070	2160	2250
1700	2120	2210	2300
1750	2170	2260	2350
1800	2220	2310	2400
1850	2270	2360	2450
1900	2320	2410	2500
1950	2370	2460	2550
2000	2420	2510	2600

Shaft Mass (kg)

Stroke	L427D	L427T	L427Q
200	4.9	5.8	6.7
250	5.4	6.3	7.2
300	5.9	6.8	7.7
350	6.4	7.3	8.2
400	6.9	7.8	8.7
450	7.4	8.3	9.2
500	7.9	8.8	9.7
550	8.4	9.3	10.2
600	9.1	10	10.9
650	9.6	10.5	11.4
700	10.1	11	11.9
750	10.6	11.5	12.4
800	11.1	12	12.9
850	11.6	12.5	13.4
900	12.1	13	13.9
950	12.6	13.5	14.4
1000	13.1	14	14.9
1050	13.8	14.7	15.6
1100	14.3	15.2	16.1
1150	14.8	15.7	16.6
1200	15.3	16.2	17.1
1250	15.8	16.7	17.6
1300	16.3	17.2	18.1
1350	16.8	17.7	18.6
1400	17.3	18.2	19.1
1450	17.8	18.7	19.6
1500	18.3	19.2	20.1
1550	18.8	19.7	20.6
1600	19.3	20.2	21.1
1650	19.8	20.7	21.6
1700	20.3	21.2	22.1
1750	20.8	21.7	22.6
1800	21.3	22.2	23.1
1850	21.8	22.7	23.6
1900	22.3	23.2	24.1
1950	22.8	23.7	24.6
2000	23.3	24.2	25.1

L427

Linear Shaft Motor

Lead Wire

Wire Type	UL 2570FA
Wire AWG	16
U Phase	Red
V Phase	White
W Phase	Black

300mm lead wire bare leads
The bending radius of the motor cable should be 42mm as suggested by the wire manufacturer.

Connector (Motor Cable)

Receptacle Housing	VLR-03V
Plug Housing	VLP-03V
Retainer	VLS-03V
Pin Contact	SVM-61T-P2.0
Socket Contact	SVF-61T-P2.0

To be installed by the user

CE Type Motor Cable

Wire Type	UL 1330
Wire AWG	24
U Phase	Red
V Phase	White
W Phase	Black

Ground Wire	CE
Wire Type	UL 1330
Wire AWG	20
Frame Ground	Green/Yellow

300mm lead wire bare leads
The bending radius of the motor cable should be 16.96mm as suggested by the wire manufacturer.

Support and Bending

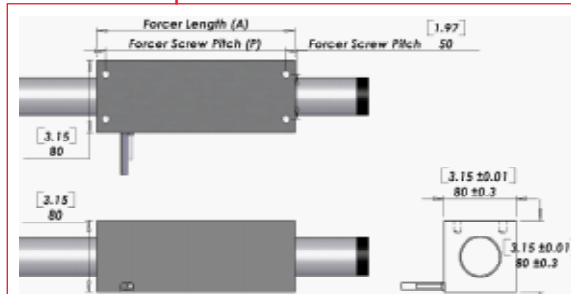
Stroke	Support Length	Max. bending
0~550	60mm	0.00mm
551~1000	80mm	0.15mm
1001~1500	100mm	0.60mm
1501~2000	100mm	1.10mm
2001~2500	100mm	2.00mm
2501~max	100mm	2.10mm

Shaft Diameter (D) - 42.7mm ±0.2

Total Length (L)=Stroke (S)+Forcer Length (A)+(Support Length (L2)x2)

Stroke lengths available from 100mm to 4600mm. Contact Nippon Pulse for more information.

Hall Effect Specs



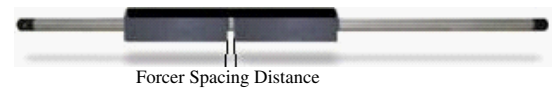
Sensor Cable Specs

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

The bending radius of the sensor cable should be R36.6mm (wire diameter 6.1 * 6) as suggested by the wire manufacturer. This radius should be maintained. Attach the proper high flex cable as required by your application.

* Note 1
The bending radius of the motor cable should be R27.6mm (wire diameter 4.6 * 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.

Tandem Forcer



Forcer Spacing Distance

Spec	L427T	L427Q
Forcer Spacing Distance	50mm	50mm
Pole (N/S) Distance	90mm	90mm
Forcer Length	310mm	400mm
Flip Forcers	No	Yes

Tandem L427D forcers are possible, but are equivalent to one (1) L427Q forcer and thus are not listed above.

Part Numbering System

L	Shaft Size (D) 427	Forcer Size (A) X	Parallel Option XX	Usable Stroke XXXXSt 100-2000mm	CE Type Motor CE	Options XX	Options XX	Custom Options XX
		D: Double (2) windings T: Triple (3) windings Q: Quadruple (4) windings	Blank: Single Motor PL: Parallel Motors			Blank: Standard WP: Water Resistant HA: Digital Hall Effect	Blank: Standard FO: Forcer Only SO: Shaft Only	Custom code