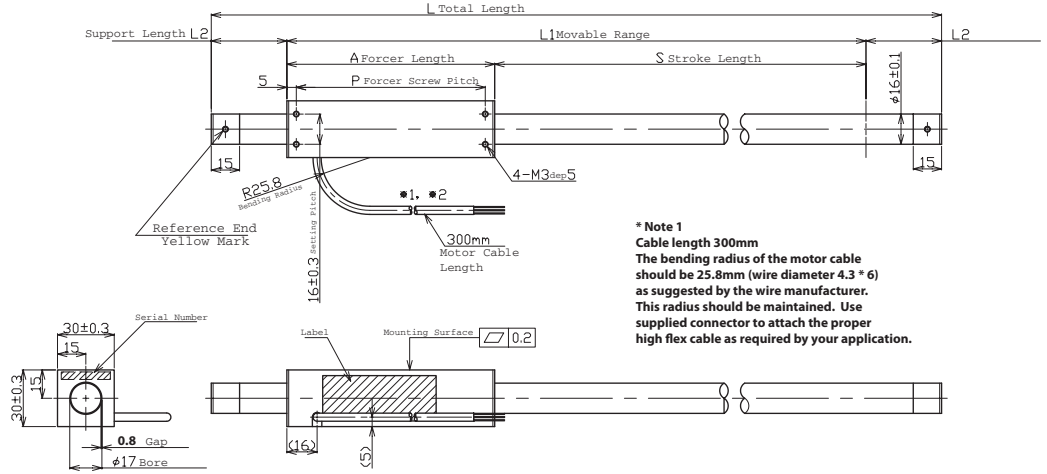


**Unless Otherwise Specified:  
Dimensions are in mm  
Tolerances are as follows:**

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



**\* Note 1**  
 Cable length 300mm  
 The bending radius of the motor cable should be 25.8mm (wire diameter 4.3 \* 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.

Electrical Specs	L160D	L160T	L160Q
Continuous Force <sup>1</sup>	8.8N (2.0lbs)	13N (2.9lbs)	18N (4.05lbs)
Continuous Current <sup>1</sup>	0.55Arms	0.55Arms	0.55Arms
Acceleration Force <sup>2</sup>	35N (7.9lbs)	53N (11.9lbs)	70N (15.7lbs)
Acceleration Current <sup>2</sup>	2.2Arms	2.2Arms	2.2Arms
Force Constant (K <sub>f</sub> )	16N/Arms (3.6lbs/amp)	24N/Arms (5.4lbs/amp)	32N/Arms (7.3lbs/amp)
Back EMF (K <sub>v</sub> )	5.4V/m/s	8.0V/m/s	11V/m/s
Resistance 25°C <sup>3</sup>	21Ω	31Ω	41Ω
Inductance <sup>3</sup>	7.3mH	11mH	15mH
Electric Time Constant	0.39ms	0.36ms	0.37ms
Rated Voltage (AC)	240V	240V	240V
Fundamental Motor Constant (K <sub>m</sub> )	3.51N√W	4.20N√W	4.96N√W
Magnetic Pitch (North-North)	60mm (2.36in)	60mm (2.36in)	60mm (2.36in)

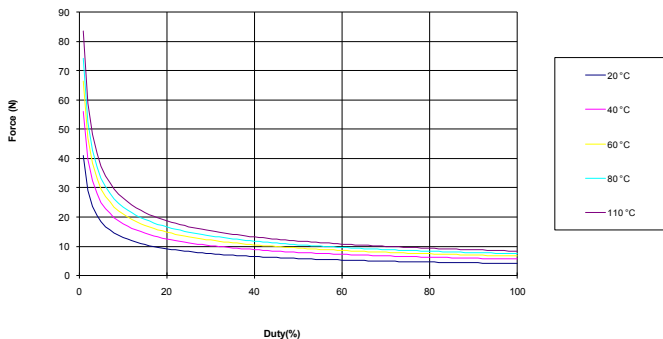
All specifications are for reference only. Specifications may change depending on servo driver selected. Consult Nippon Pulse.  
 1) Based on a temp rise of coil surface of 110°K over 25°C ambient temperature stalled force, and no external cooling or heat sinking. Addition of 10cm x 20cm x 1.2cm aluminum 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 <sup>4</sup>	135°C (275°F)	135°C (275°F)	135°C (275°F)
Thermal Resistance (Coil) (K <sub>c</sub> )	18°C/W (64.4°F/W)	12°C/W (53.6°F/W)	8.9°C/W (48.0°F/W)

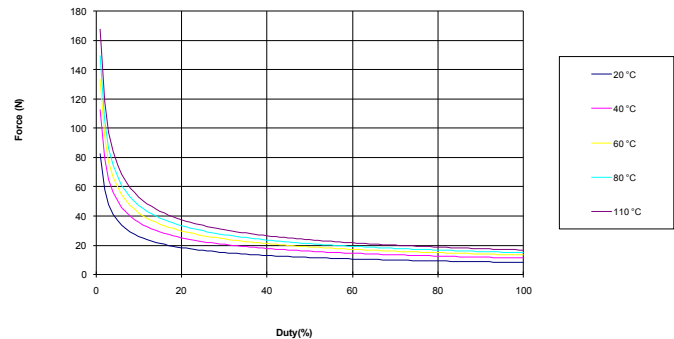
4) The standard temperature difference between the coil and the forcer surface is 15°C

Forcer Specs	L160D	L160T	L160Q
Forcer Length (A)	80mm (3.15in)	110mm (4.3in)	140mm (5.5in)
Forcer Width	30mm ±0.3 (1.18in)	30mm ±0.3 (1.18in)	30mm ±0.3 (1.18in)
Forcer Screw Pitch (P)	70mm (2.8in)	100mm (3.94in)	130mm (5.1in)
Forcer Weight	0.15kg	0.23kg	0.30kg
Gap	0.80mm (0.03in)	0.80mm (0.03in)	0.80mm (0.03in)

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

Shaft Diameter (D) - 16mm ±0.1  
 Total Length (L)=Stroke (S)+Forcer Length (A)+(Support Length (L2)x2)

## 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 R 26.4mm (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	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 CE: CE type motor	Blank: Standard FO: Forcer Only SO: Shaft Only	

# L160

## Linear Shaft Motor

### Lead Wire

Wire Type	UL 2464FA
Wire AWG	25
U Phase	Red
V Phase	White
W Phase	Black

300mm lead wire bare leads  
 The bending radius of the motor cable should be 25.8mm as suggested by the wire manufacturer.

### Connector (Motor Cable)

Receptacle Housing	XMR-03V
Plug Housing	XMP-03V
Retainer	XMS-03V
Pin Contact	SXM-001T-P0.6
Socket Contact	SXA-001T-P0.6

To be installed by the user

### CE Type Motor Cable

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

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

### 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 L160D forcers are possible, but are equivalent to one (1) L160Q forcer and thus are not listed above.