



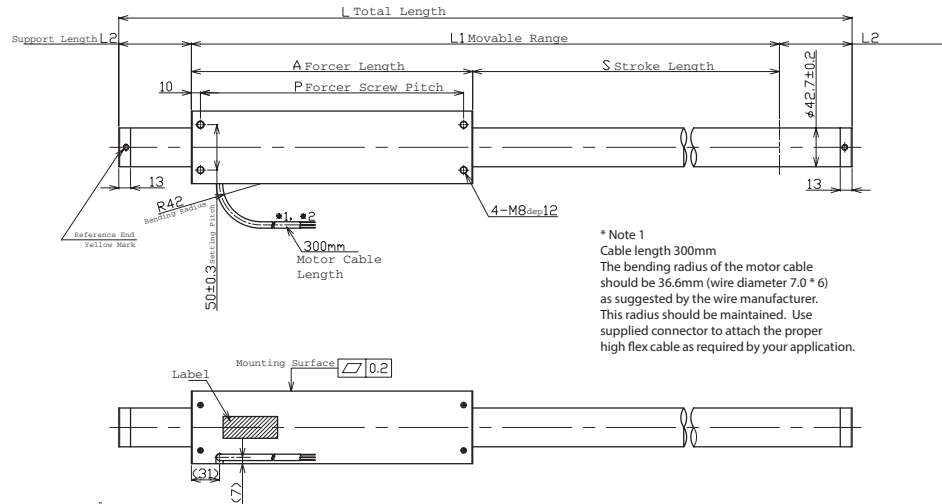
Nippon Pulse  
Your Partner in Motion Control

# L427 Linear Shaft Motor

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 36.6mm (wire diameter 7.0 \* 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	L427D	L427T	L427Q
Continuous Force <sup>1</sup>	110N (24.7lbs)	170N (38.2lbs)	210N (47.2lbs)
Continuous Current <sup>1</sup>	3.6Arms	3.6Arms	3.4Arms
Acceleration Force <sup>2</sup>	450N (101.2lbs)	680N (152.9lbs)	830N (186.6lbs)
Acceleration Current <sup>2</sup>	14Arms	14Arms	13Arms
Force Constant (K <sub>f</sub> )	31N/Arms (6.97lbs/amp)	47N/Arms (10.6lbs/amp)	62N/Arms (13.9lbs/amp)
Back EMF (K <sub>v</sub> )	10V/m/s (0.26V/in/s)	16V/m/s (0.4V/in/s)	21V/m/s (0.55V/in/s)
Resistance 25°C, <sup>3</sup>	2.9Ω	4.4Ω	5.8Ω
Inductance <sup>3</sup>	7.8mH	12mH	15mH
Electric Time Constant	2.69ms	2.73ms	2.59ms
Rated Voltage (AC)	240V	240V	240V
Fundamental Motor Constant (K <sub>m</sub> )	18.24N√W	22.38N√W	25.73N√W
Magnetic Pitch (North-North)	180mm (7.09in)	180mm (7.09in)	180mm (7.09in)

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 <sup>4</sup>	135°C (275°F)	135°C (275°F)	135°C (275°F)
Thermal Resistance (Coil) (K <sub>q</sub> )	2.9°C (37.2°F/W)	1.9°C (35.4°F/W)	1.7°C (35.1°F/W)

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

Forcer Specs	L427D	L427T	L427Q
Forcer Length (A)	220mm (8.66in)	310mm (12.2in)	400mm (15.75in)
Forcer Width	80mm (3.15in)	80mm (3.15in)	80mm (3.15in)
Forcer Screw Pitch (P)	200mm (7.87in)	290mm (11.4in)	380mm (15in)
Forcer Weight	3.0kg (6.6lbs)	4.4kg (9.7lbs)	5.7kg (12.6lbs)
Gap	5.0mm (0.2in)	5.0mm (0.2in)	5.0mm (0.2in)

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## 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

### 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

### 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 36.6mm as suggested by the wire manufacturer.

### 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

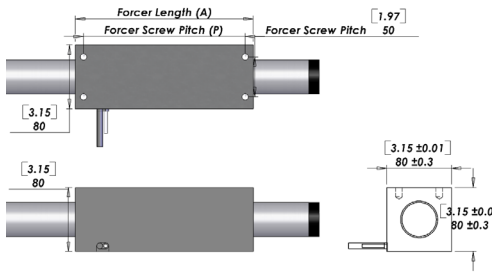
Stroke	Support Length	Max. bending
0~550	60mm	0.00mm
551~1000	80mm	0.15mm
1001~1500	100mm	0.60mm
1501~2000	100mm	1.10mm
2001~2500	100mm	2.00mm
2501~max	100mm	2.10mm

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



\* 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.

### 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.

## 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) <u>X</u>	Parallel Option <u>XX</u>	Usable Stroke <u>XXXXSt</u> 200-2000mm	Options <u>XX</u> Sold & Serviced By: ST: Standard WP: Wire & Forcer Only HA: Digital Hall Effect CE: CE type motor	Options <u>XX</u> Blank: Standard SO: Shaft Only	# of Forcers <u>XX</u> Two or more
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