

Visit [nipponpulse.com](http://nipponpulse.com) to download 3D CAD drawings and 2D prints of this motor.

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		3.4Arms
Acceleration Force <sup>2</sup>	450N (101.2lbs)	680N (152.9lbs)	830N (186.6lbs)
Acceleration Current <sup>2</sup>	14Arms		13Arms
Force Constant (K <sub>f</sub> )	31N/amp (6.97lbs/amp)	47N/amp (10.6lbs/amp)	62N/amp (13.9lbs/amp)
Back EMF (K <sub>e</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
Fundamental Motor Constant (K <sub>m</sub> )	18.24N√W	22.38N√W	25.73N√W
Magnetic Pitch (North-North)	180mm (7.09in)		

Is this the proper Linear Shaft Motor for your application? Use our **SMART sizing program** to assist in your decision.

This motor can be customized to fit your application demands; contact your application engineer for more information.

<sup>1</sup> 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.

<sup>2</sup> Can be maintained for a maximum of 40 seconds. Higher forces and current possible for short periods of time, contact Nippon Pulse for more information.

<sup>3</sup> 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)		
Thermal Resistance (Coil) (K <sub>v</sub> )	2.9°C/W (37.2°F/W)	1.9°C/W (35.4°F/W)	1.7°C/W (35.1°F/W)

<sup>4</sup>The standard temperature difference between the coil and the forcer surface is 25°C.

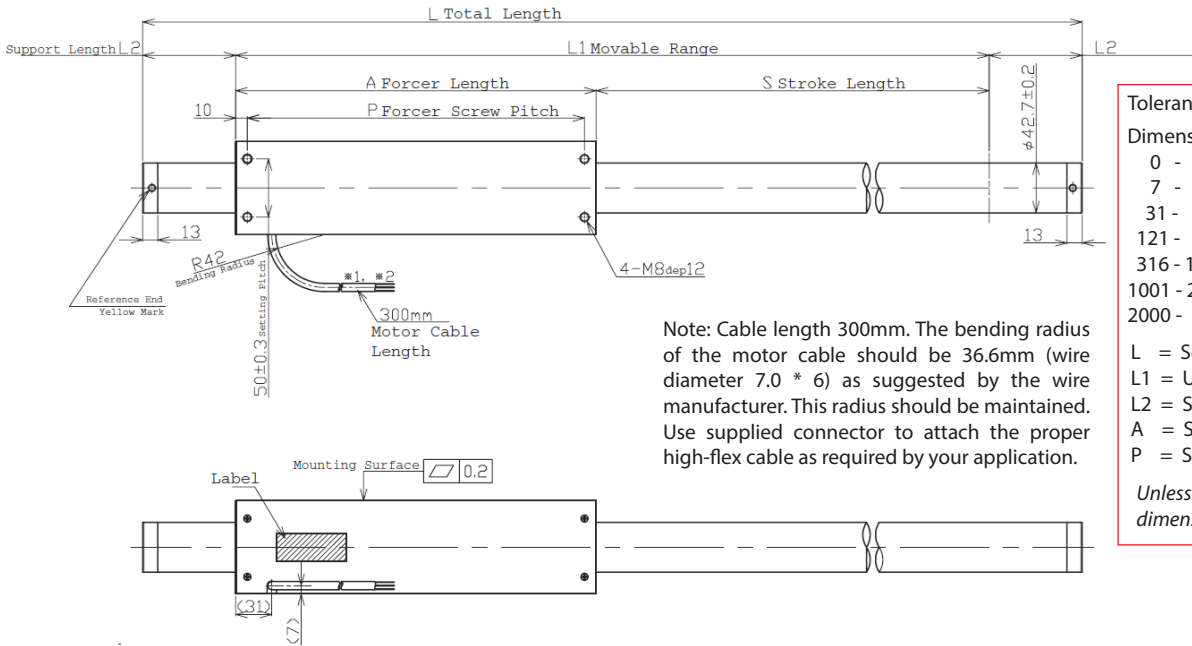


### Part Numbering System

L	—	Shaft Size 427	—	Forcer Size (A) <u>X</u>	—	Parallel Option <u>XX</u>	—	Usable Stroke (S) <u>XXXXst</u>	—	Options <u>XX</u>	—	Options <u>XX</u>
				D: Double (2) windings T: Triple (3) windings Q: Quadruple (4) windings		Blank: Single Motor PL: Parallel Motors		200-2000mm		ST: Standard WP: Water Resistant HA: Digital Hall Effect CE: CE Type Motor		Blank: Standard FO: Forcer Only SO: Shaft Only

These motors have not received a CE Declaration of Conformity, and as such are designated FGA.

Forcer Specs	L427D	L427T	L427Q
Forcer Length (A)	220mm (8.66in)	310mm (12.2in)	400mm (15.75in)
Forcer Width	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)		



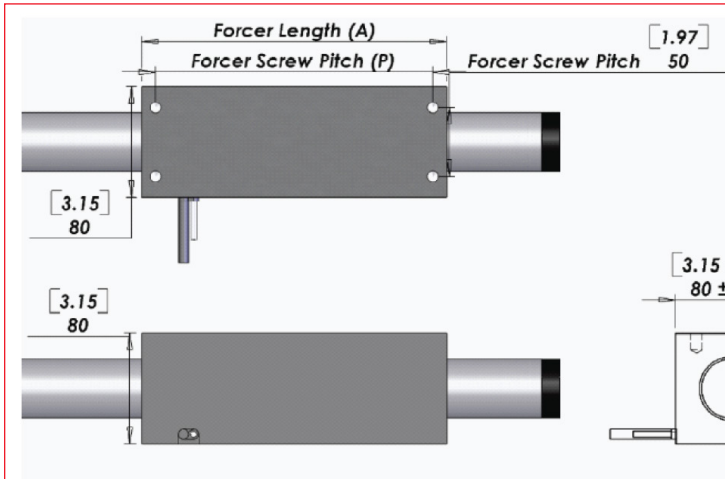
Tolerances are as follows:

Dimension (mm)	Tolerance (mm)
0 - 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 Support Length  
A = See Forcer Length  
P = See Forcer Screw Pitch

*Unless otherwise specified, dimensions are in mm*

### Hall Effect Specs



Note: 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.

### Support and Bending

Stroke	Support Length (L2)	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)×2)

### Forcer Spacing Distance

Spec	L427T	L427Q
Forcer Spacing Distance	50mm	
Pole (N/S) Distance	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.

### Tandem Forcer



## FG Type Motor Cable

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

Ground Wire	<b>CE</b>
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. FG type with insulating sheet between coils and case. Meets all requirements of EN60034-1 (1998).

## 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.

## 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.

## Shaft Length (L)

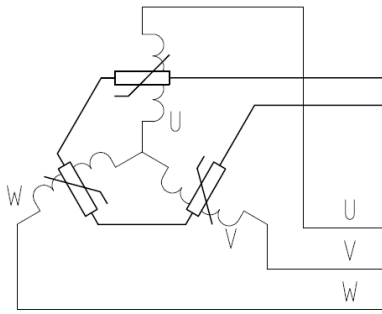
Stroke	L427D	L427T	L427Q
200	540mm (21.3in)	630mm (24.8in)	720mm (28.3in)
250	590mm (23.2in)	680mm (26.8in)	770mm (30.3in)
300	640mm (25.2in)	730mm (28.7in)	820mm (32.3in)
350	690mm (27.2in)	780mm (30.7in)	870mm (34.3in)
400	740mm (29.1in)	830mm (32.7in)	920mm (36.2in)
450	790mm (31.1in)	880mm (34.6in)	970mm (38.2in)
500	840mm (33.1in)	930mm (36.6in)	1020mm (40.2in)
550	890mm (35in)	980mm (38.6in)	1070mm (42.1in)
600	980mm (38.6in)	1070mm (42.1in)	1160mm (45.7in)
650	1030mm (40.6in)	1120mm (44.1in)	1210mm (47.6in)
700	1080mm (42.5in)	1170mm (46.1in)	1260mm (49.6in)
750	1130mm (44.5in)	1220mm (48in)	1310mm (51.6in)
800	1180mm (46.5in)	1270mm (50in)	1360mm (53.5in)
850	1230mm (48.4in)	1320mm (52in)	1410mm (55.5in)
900	1280mm (50.4in)	1370mm (53.9in)	1460mm (57.5in)
950	1330mm (52.4in)	1420mm (55.9in)	1510mm (59.4in)
1000	1380mm (54.3in)	1470mm (57.9in)	1560mm (61.4in)
1050	1470mm (57.9in)	1560mm (61.4in)	1650mm (65in)
1100	1520mm (59.8in)	1610mm (63.4in)	1700mm (66.9in)
1150	1570mm (61.8in)	1660mm (65.4in)	1750mm (68.9in)
1200	1620mm (63.8in)	1710mm (67.3in)	1800mm (70.9in)
1250	1670mm (65.7in)	1760mm (69.3in)	1850mm (72.8in)
1300	1720mm (67.7in)	1810mm (71.3in)	1900mm (74.8in)
1350	1770mm (69.7in)	1860mm (73.2in)	1950mm (76.8in)
1400	1820mm (71.7in)	1910mm (75.2in)	2000mm (78.7in)
1450	1870mm (73.6in)	1960mm (77.2in)	2050mm (80.7in)
1500	1920mm (75.6in)	2010mm (79.1in)	2100mm (82.7in)
1550	1970mm (77.6in)	2060mm (81.1in)	2150mm (84.6in)
1600	2020mm (79.5in)	2110mm (83.1in)	2200mm (86.6in)
1650	2070mm (81.5in)	2160mm (85in)	2250mm (88.6in)
1700	2120mm (83.5in)	2210mm (87in)	2300mm (90.6in)
1750	2170mm (85.4in)	2260mm (89in)	2350mm (92.5in)
1800	2220mm (87.4in)	2310mm (90.9in)	2400mm (94.5in)
1850	2270mm (89.4in)	2360mm (92.9in)	2450mm (96.5in)
1900	2320mm (91.3in)	2410mm (94.9in)	2500mm (98.4in)
1950	2370mm (93.3in)	2460mm (96.9in)	2550mm (100.4in)
2000	2420mm (95.3in)	2510mm (98.8in)	2600mm (102.4in)

Additional stroke lengths are available. Contact Nippon Pulse for more information.

## Shaft Mass

Stroke	L427D	L427T	L427Q
200	4.9kg (10.8lb)	5.8kg (12.8lb)	6.7kg (14.8lb)
250	5.4kg (11.9lb)	6.3kg (13.9lb)	7.2kg (15.9lb)
300	5.9kg (13lb)	6.8kg (15lb)	7.7kg (17lb)
350	6.4kg (14.1lb)	7.3kg (16.1lb)	8.2kg (18.1lb)
400	6.9kg (15.2lb)	7.8kg (17.2lb)	8.7kg (19.2lb)
450	7.4kg (16.3lb)	8.3kg (18.3lb)	9.2kg (20.3lb)
500	7.9kg (17.4lb)	8.8kg (19.4lb)	9.7kg (21.4lb)
550	8.4kg (18.5lb)	9.3kg (20.5lb)	10.2kg (22.5lb)
600	9.1kg (20.1lb)	10kg (22lb)	10.9kg (24lb)
650	9.6kg (21.2lb)	10.5kg (23.1lb)	11.4kg (25.1lb)
700	10.1kg (22.3lb)	11kg (24.3lb)	11.9kg (26.2lb)
750	10.6kg (23.4lb)	11.5kg (25.4lb)	12.4kg (27.3lb)
800	11.1kg (24.5lb)	12kg (26.5lb)	12.9kg (28.4lb)
850	11.6kg (25.6lb)	12.5kg (27.6lb)	13.4kg (29.5lb)
900	12.1kg (26.7lb)	13kg (28.7lb)	13.9kg (30.6lb)
950	12.6kg (27.8lb)	13.5kg (29.8lb)	14.4kg (31.7lb)
1000	13.1kg (28.9lb)	14kg (30.9lb)	14.9kg (32.8lb)
1050	13.8kg (30.4lb)	14.7kg (32.4lb)	15.6kg (34.4lb)
1100	14.3kg (31.5lb)	15.2kg (33.5lb)	16.1kg (35.5lb)
1150	14.8kg (32.6lb)	15.7kg (34.6lb)	16.6kg (36.6lb)
1200	15.3kg (33.7lb)	16.2kg (35.7lb)	17.1kg (37.7lb)
1250	15.8kg (34.8lb)	16.7kg (36.8lb)	17.6kg (38.8lb)
1300	16.3kg (35.9lb)	17.2kg (37.9lb)	18.1kg (39.9lb)
1350	16.8kg (37lb)	17.7kg (39lb)	18.6kg (41lb)
1400	17.3kg (38.1lb)	18.2kg (40.1lb)	19.1kg (42.1lb)
1450	17.8kg (39.2lb)	18.7kg (41.2lb)	19.6kg (43.2lb)
1500	18.3kg (40.3lb)	19.2kg (42.3lb)	20.1kg (44.3lb)
1550	18.8kg (41.4lb)	19.7kg (43.4lb)	20.6kg (45.4lb)
1600	19.3kg (42.5lb)	20.2kg (44.5lb)	21.1kg (46.5lb)
1650	19.8kg (43.7lb)	20.7kg (45.6lb)	21.6kg (47.6lb)
1700	20.3kg (44.8lb)	21.2kg (46.7lb)	22.1kg (48.7lb)
1750	20.8kg (45.9lb)	21.7kg (47.8lb)	22.6kg (49.8lb)
1800	21.3kg (47lb)	22.2kg (48.9lb)	23.1kg (50.9lb)
1850	21.8kg (48.1lb)	22.7kg (50lb)	23.6kg (52lb)
1900	22.3kg (49.2lb)	23.2kg (51.1lb)	24.1kg (53.1lb)
1950	22.8kg (50.3lb)	23.7kg (52.2lb)	24.6kg (54.2lb)
2000	23.3kg (51.4lb)	24.2kg (53.4lb)	25.1kg (55.3lb)

## THM Option



Circuit Diagram

4. Thermistor  
PTCSL20T071DBE(Vishay)

## Thermocouple

Thermal sensor  
Thermocouple K type (marked each phase name)  
Attached to the surface of inside of coil  
Length 3000mm

Note: Metric units guaranteed. Imperial (United States customary) units are calculated.

---

For assistance in selecting the best motor for your application, contact Nippon Pulse  
to speak with an applications engineer. 1-540-633-1677

[www.nipponpulse.com](http://www.nipponpulse.com)