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	S435D		S435T		S435Q		
Electrical Specs	S435D	S435D 1S	S435T	S435T 1S	S435Q	S435Q 2S	S435Q 1S
Continuous Force ¹	116N (26.1lbs)	115N (25.9lbs)	175N (39.2lbs)	173N (38.75lbs)	233N (52.4lbs)	230N (51.7lbs)	
Continuous Current ¹	3.0Arms	5.9Arms	3.0Arms	8.9Arms	3.0Arms	5.9Arms	12Arms
Acceleration Force ²	464N (104lbs)	459 (102.9lbs)	700N (157lbs)	692N (155.2lbs)	932N (210lbs)	922 (207.7lbs)	
Acceleration Current ²	12Arms	24Arms	12Arms	36Arms	12Arms	24Arms	47Arms
Force Constant (K _f)	39N/Arms (8.7lbs/amp)	19N/Arms (4.2lbs/amp)	58N/Arms (13.1lbs/amp)	19N/Arms (4.29lbs/amp)	78N/Arms (17.4lbs/amp)	39N/Arms (8.7lbs/amp)	19N/Arms (4.24lbs/amp)
Back EMF (K _e)	13V/m/s (0.33V/in/s)	6.4V/m/s (0.16V/in/s)	19V/m/s (0.49V/in/s)	6.5V/m/s (0.17V/in/s)	26V/m/s (0.66V/in/s)	13V/m/s (0.33V/in/s)	6.5V/m/s (0.17V/in/s)
Resistance 25°C ³	2.7Ω	0.68Ω	3.9Ω	0.43Ω	5.2Ω	1.3Ω	0.33Ω
Inductance ³	7.3mH	1.8mH	11mH	1.2mH	15mH	3.8mH	0.94mH
Electric Time Constant	2.70ms		2.82ms		2.88ms		
Max. Rated Voltage (AC)	240V						
Fundamental Motor Constant (K _m)	23.79N√W	23.53N√W	29.86N√W	29.54N√W	34.43N√W	34.06N√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.

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.

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

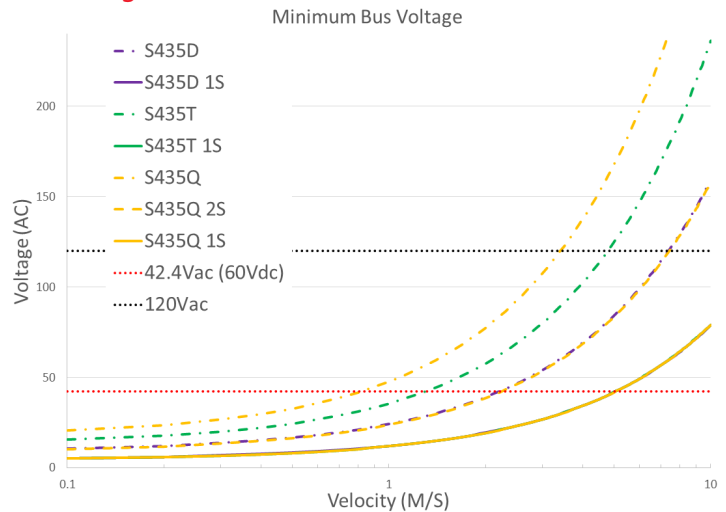
³ All winding parameters listed are measured line-to-line (phase-to-phase).

Thermal Specs	S435D	S435T	S435Q
Max Phase Temperature ⁴	135°C (275°F)		
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 30°C.



Bus Voltage

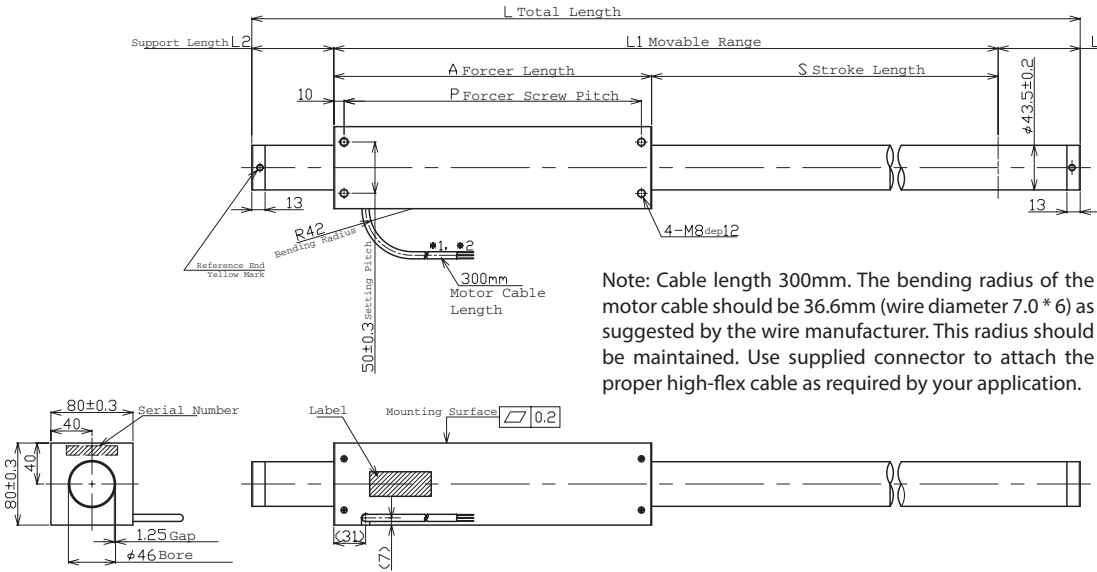


Part Numbering System

S	— Shaft Size 435	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	Blank: 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	S435D	S435T	S435Q
Forcer Length (A)	220mm (8.66in)	310mm (12.2in)	400mm (15.75in)
Forcer Width	80mm (3.15in)		
Forcer Screw Pitch (P)	200mm (7.9in)	290mm (11.4in)	380mm (15in)
Forcer Weight	3.0kg (6.6lbs)	4.2kg (9.3lbs)	5.4kg (11.9lbs)
Gap	1.25mm (0.05in)		



Note: 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.

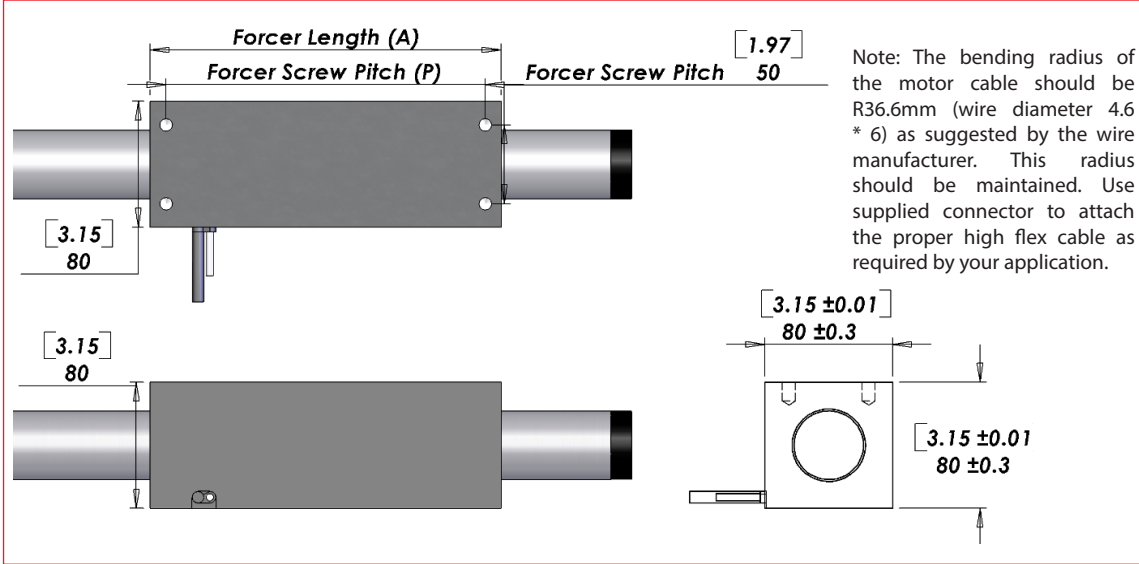
Tolerances are as follows:

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.

FGA/CE Type Motor Cable

Wire Type	UL 1330	Ground Wire	CE
Wire AWG	24	Wire Type	UL 1330
U Phase	Red	Wire AWG	20
V Phase	White	Frame Ground	Green/Yellow
W Phase	Black		

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

Forcer Spacing Distance

Spec	S435T	S435Q
Forcer Spacing Distance	50mm	
Pole (N/S) Distance	90mm	
Forcer Length	310mm	400mm
Flip Forcers	No	Yes

Tandem S435D forcers are possible, but are equivalent to one (1) S435Q forcer and thus are not listed above.

Tandem Forcer



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) - 43.5mm ±0.2
 Total Length (L)=Stroke(S)
 +Forcer Length (A)
 +(Support Length (L2)x2)
 Stroke lengths available
 from 100mm to 2600mm.
 Contact Nippon Pulse for
 more information.

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.

Shaft Length (L)

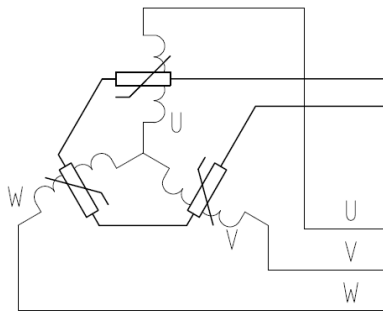
Stroke	S435D	S435T	S435Q
100	Stroke is less than the electrical cycle length. Contact Nippon Pulse.		
150	Stroke is less than the electrical cycle length. Contact Nippon Pulse.		
200	540mm (21.3in)	630mm (24.8in)	720mm (28.3in)
250	590mm (23.2in)	680mm (26.8in)	770mm (30.3in)
300	640mm (25.2in)	730mm (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)

Shaft Mass

Stroke	S435D	S435T	S435Q
100	Stroke is less than the electrical cycle length. Contact Nippon Pulse.		
150	Stroke is less than the electrical cycle length. Contact Nippon Pulse.		
200	5.1kg (11.2lb)	6kg (13.2lb)	7kg (15.4lb)
250	5.6kg (12.3lb)	6.6kg (14.6lb)	7.5kg (16.5lb)
300	6.1kg (13.4lb)	7.1kg (15.7lb)	8kg (17.6lb)
350	6.7kg (14.8lb)	7.6kg (16.8lb)	8.5kg (18.7lb)
400	7.2kg (15.9lb)	8.1kg (17.9lb)	9kg (19.8lb)
450	7.7kg (17lb)	8.6kg (19lb)	9.6kg (21.2lb)
500	8.2kg (18.1lb)	9.2kg (20.3lb)	10.1kg (22.3lb)
550	8.7kg (19.2lb)	9.7kg (21.4lb)	10.6kg (23.4lb)
600	9.4kg (20.7lb)	10.4kg (22.9lb)	11.3kg (24.9lb)
650	10kg (22lb)	10.9kg (24lb)	11.8kg (26lb)
700	10.5kg (23.1lb)	11.4kg (25.1lb)	12.3kg (27.1lb)
750	11kg (24.3lb)	11.9kg (26.2lb)	12.9kg (28.4lb)
800	11.5kg (25.4lb)	12.5kg (27.6lb)	13.4kg (29.5lb)
850	12kg (26.5lb)	13kg (28.7lb)	13.9kg (30.6lb)
900	12.6kg (27.8lb)	13.5kg (29.8lb)	14.4kg (31.7lb)
950	13.1kg (28.9lb)	14kg (30.9lb)	14.9kg (32.8lb)
1000	13.6kg (30lb)	14.5kg (32lb)	15.5kg (34.2lb)
1050	14.3kg (31.5lb)	15.2kg (33.5lb)	16.2kg (35.7lb)
1100	14.8kg (32.6lb)	15.7kg (34.6lb)	16.7kg (36.8lb)
1150	15.3kg (33.7lb)	16.3kg (35.9lb)	17.2kg (37.9lb)
1200	15.9kg (35.1lb)	16.8kg (37lb)	17.7kg (39lb)
1250	16.4kg (36.2lb)	17.3kg (38.1lb)	18.2kg (40.1lb)
1300	16.9kg (37.3lb)	17.8kg (39.2lb)	18.8kg (41.4lb)
1350	17.4kg (38.4lb)	18.4kg (40.6lb)	19.3kg (42.5lb)
1400	17.9kg (39.5lb)	18.9kg (41.7lb)	19.8kg (43.7lb)
1450	18.5kg (40.8lb)	19.4kg (42.8lb)	20.3kg (44.8lb)
1500	19kg (41.9lb)	19.9kg (43.9lb)	20.8kg (45.9lb)
1550	19.5kg (43lb)	20.4kg (45lb)	21.4kg (47.2lb)
1600	20kg (44.1lb)	21kg (46.3lb)	21.9kg (48.3lb)
1650	20.5kg (45.2lb)	21.5kg (47.4lb)	22.4kg (49.4lb)
1700	21.1kg (46.5lb)	22kg (48.5lb)	22.9kg (50.5lb)
1750	21.6kg (47.6lb)	22.5kg (49.6lb)	23.4kg (51.6lb)
1800	22.1kg (48.7lb)	23kg (50.7lb)	24kg (52.9lb)
1850	22.6kg (49.8lb)	23.6kg (52lb)	24.5kg (54lb)
1900	23.1kg (50.9lb)	24.1kg (53.1lb)	25kg (55.1lb)
1950	23.7kg (52.2lb)	24.6kg (54.2lb)	25.5kg (56.2lb)
2000	24.2kg (53.4lb)	25.1kg (55.3lb)	26kg (57.3lb)

Additional stroke lengths are available (up to 2180mm for S435D, 2090mm for S435T, and 2000mm for S435Q). Contact Nippon Pulse for more information.

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