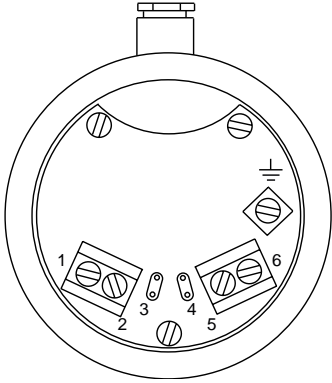


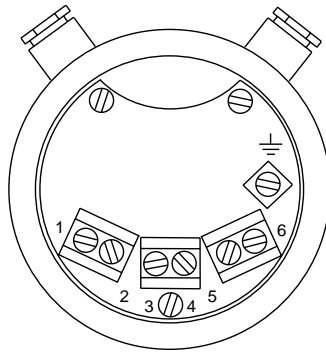
SY Series Stepper Motor Data Sheet

SY56 Connection Details



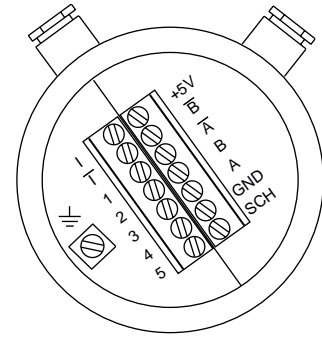
Standard SY56 Motor - Parallel

- 1 : Motor Phase A-
- 2 : Motor Phase A+
- 3 : n/c
- 4 : n/c
- 5 : Motor Phase B-
- 6 : Motor Phase B+



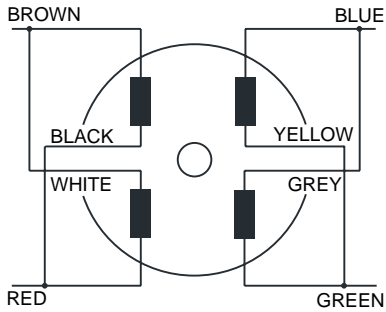
SY56 Motor with Brake - Parallel

- 1 : Motor Phase A-
- 2 : Motor Phase A+
- 3 : Brake + (+24V_{DC})
- 4 : Brake - (GND)
- 5 : Motor Phase B-
- 6 : Motor Phase B+



SY56 Motor with Encoder - Series

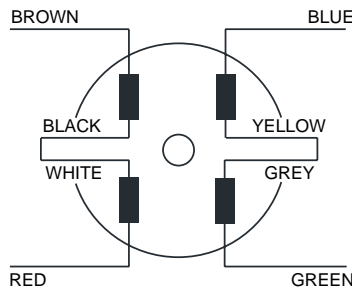
- 1 : Encoder 'I' Channel
- /I : Encoder '/I' Channel
- 1 : Motor Phase A-
- 2 : Motor Phase A+
- 3 : Motor Phase B-
- 4 : Motor Phase B+
- 5 : n/c
- +5V : +5V Encoder Supply
- /B : Encoder '/B' Channel
- /A : Encoder '/A' Channel
- B : Encoder 'B' Channel
- A : Encoder 'A' Channel
- GND : 0V Encoder Supply
- SCN : Screen



SY56 Flying Lead - Parallel Connection

Lead	Signal
Brown	Motor Phase B+
Red	Motor Phase B-
Blue	Motor Phase A+
Green	Motor Phase A-

Link : 'Brown' to 'White'
 Link : 'Black' to 'Red'
 Link : 'Blue' to 'Grey'
 Link : 'Yellow' to 'Green'



SY56 Flying Lead - Series Connection

Lead	Signal
Brown	Motor Phase B+
Red	Motor Phase B-
Blue	Motor Phase A+
Green	Motor Phase A-

Link : 'White' to 'Black'
 Link : 'Grey' to 'Yellow'

	SY561	SY562	SY563
Maximum Holding Torque	0.45Nm	0.85Nm	1.25Nm
Current per Phase (parallel)	4.2A	4.2A	6.5A
Inductance per phase	1.0mH	2.6mH	1.2mH
Rotor Inertia (kg-cm ²)	0.125	0.250	0.325
Weight	0.6kg	1.0kg	1.35kg
Axial bearing loading	80N	80N	80N
Radial bearing loading	150N	150N	150N

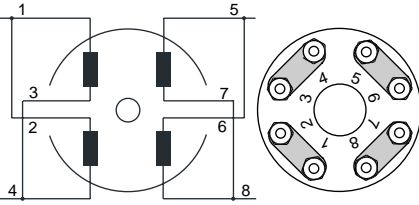


Parker Hannifin plc
EMD DIGIPLAN
 21 Balena Close
 Poole, Dorset. BH17 7DX UK
 Tel: +44 (0)1202-699000
 Fax: +44 (0)1202-695750
 Website: www.parker-emd.com
 e-mail: sales.digiplan@parker.com

Parker Hannifin GmbH
EMD HAUSER
 Robert-Bosch-Str. 22
 D-77656 Offenburg, Germany
 Tel: +49 (0)781 509-0
 Fax: +49 (0)781 509-176
 Website: www.parker-emd.com
 e-mail: sales.hauser@parker.com

Parker Hannifin SpA
Divisione SBC
 20092 Cinisello Balsamo
 Milan, Italy Via Gounod, 1
 Tel: +39 02 6601 2478
 Fax: +39 02 6601 2808
 Website: www.parker-emd.com
 e-mail: sales.sbc@parker.com

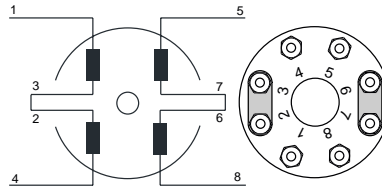
SY87/SY107 Connection Details



SY87/107 Motor – Parallel Connection

Lead	T/Box	Signal
Brown	1	Motor Phase B+
Red	4	Motor Phase B-
Blue	5	Motor Phase A+
Green	8	Motor Phase A-

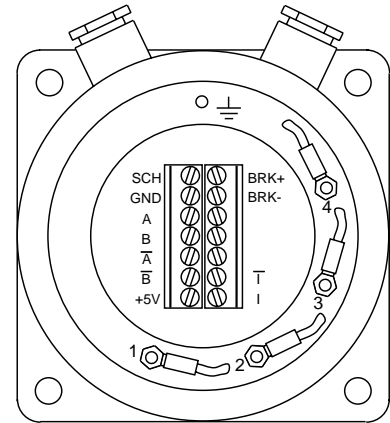
Link : 'Brown' to 'White' / '1' to '2'
 Link : 'Black' to 'Red' / '3' to '4'
 Link : 'Blue' to 'Grey' / '5' to '6'
 Link : 'Yellow' to 'Green' / '7' to '8'



SY87/107 Motor – Series Connection

Lead	T/Box	Signal
Brown	1	Motor Phase B+
Red	4	Motor Phase B-
Blue	5	Motor Phase A+
Green	8	Motor Phase A-

Link : 'White' to 'Black' / '2' to '3'
 Link : 'Grey' to 'Yellow' / '6' to '7'



SY87/107 Motor with Encoder or Brake

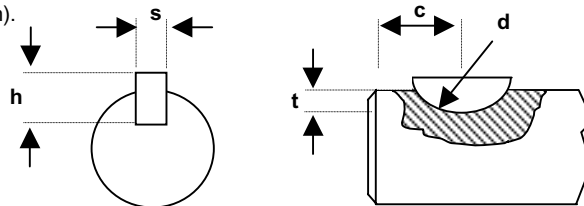
SCN	: Screen
GND	: 0V Encoder Supply
A	: Encoder 'A' Channel
B	: Encoder 'B' Channel
/A	: Encoder '/A' Channel
/B	: Encoder '/B' Channel
+5V	: +5V Encoder Supply
BRK+	: Brake +24V
BRK-	: Brake 0V
/I	: Encoder '/I' Channel
I	: Encoder 'I' Channel
1	: Motor Phase A-
2	: Motor Phase A+
3	: Motor Phase B-
4	: Motor Phase B+

	SY871	SY872	SY873	SY1072	SY1073
Maximum Holding Torque	1.8Nm	3.6Nm	5.4Nm	9Nm	13Nm
Current per Phase (parallel)	4.2A	6.5A	8.4A	8.0A	10A
Inductance per phase	1.6mH	1.5mH	1.7mH	2.4mH	2.7mH
Rotor Inertia (kg-cm ²)	0.65	1.3	1.95	8.00	12.0
Weight	1.7kg	2.85kg	3.65kg	7.2kg	9.8kg
Axial bearing loading	180N	180N	180N	400N	400N
Radial bearing loading	280N	280N	280N	650N	650N

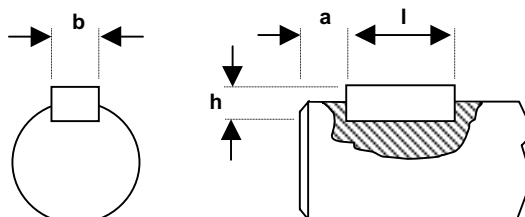
SY Keyway Options

Motor Frame	Keyway	s x h	d	c	t
SY56	WOODRUFF DIN 6888	2 x 2.6mm	7.0mm	7.0mm	1.8mm

Keyway options are available on SY56 and SY87 series motors. The SY107 series is supplied with a DIN 6885 T1 keyway as standard (not on rear shaft option).

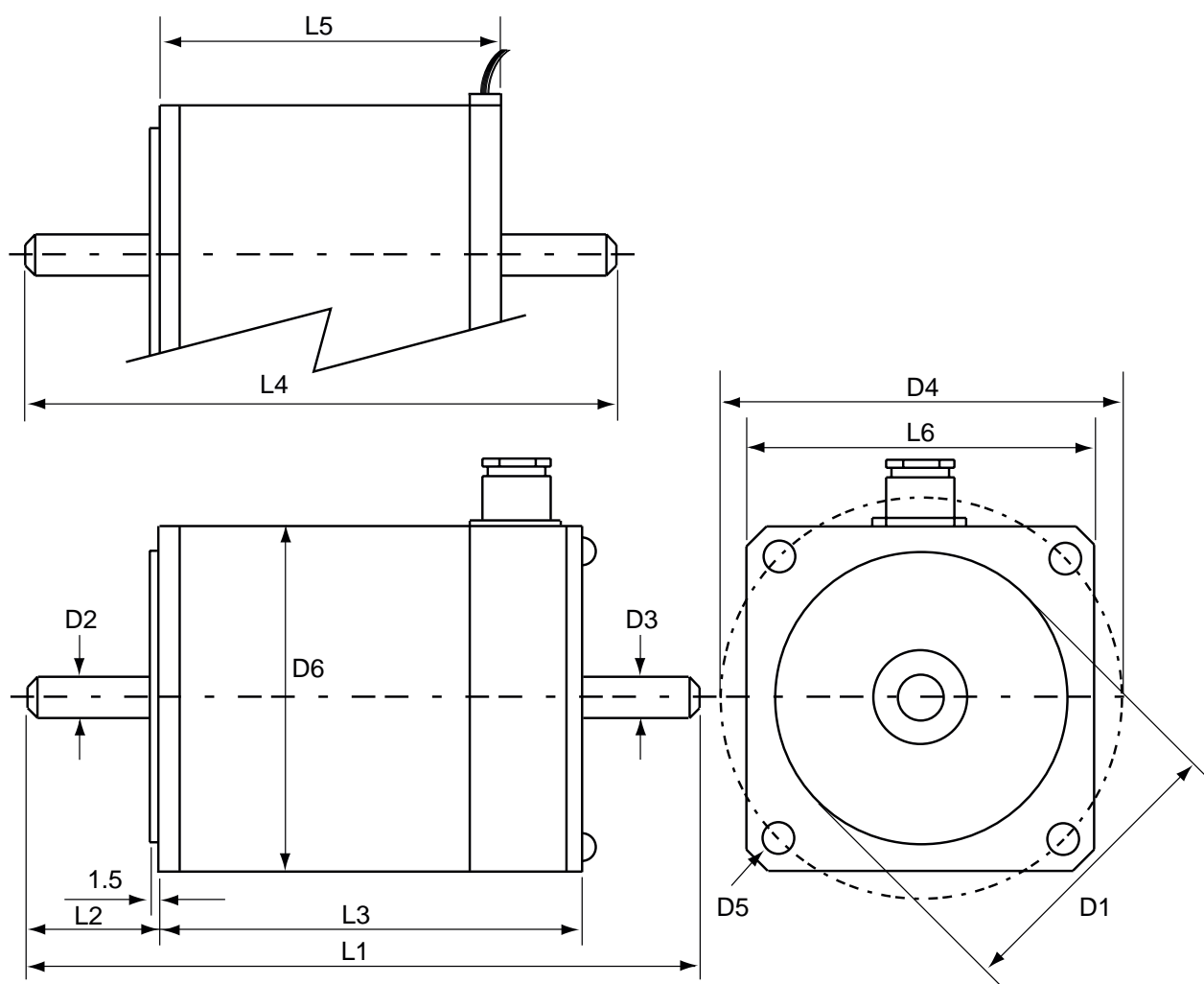


Motor Frame	Keyway	Type	b x h x l	a	¹⁾ a
SY87	DIN 6885 T1	'A'	A3 x 3 x 15mm	6.0mm	1.5mm
SY107	DIN 6885 T1	'A'	A5 x 5 x 20mm	5.0mm	5.0mm



¹⁾ Double Ended-Shaft

Motor Dimensions



Type	D1	D2	D3	D4	D5	D6	L1	L2	L3	L4	L5	L6	PG
SY561	38.1	6.35	6.35	66.5	5.3	56.5	108	21	76	90	50	56.5	11
SY562							134		102	116	76		
SY563							162		130	144	104		
SY871	73	9.52	9.52	99	6.5	86	137	31.5	85.5	137	60.5	86	11
SY872							169		117.5	169	92.5		
SY873							201		149.5	210	124.5		
SY1072	55.54	15.87	12.7	125.5	8.5	108	238	50	161	-	-	108	13.5
SY1073							288		211	-	-		

All dimensions in mm

IP Rating

The flying lead versions of the SY motors are IP41 as standard; the terminal box versions are IP55 as standard with IP68 available as an option.

The IP68 version includes additional 'O' rings, a shaft seal and is subject to an additional test underwater at a pressure of 1 bar.

ST/SY Motor Range Cross-Reference

The following table cross references the SY motor range to the equivalent STL/STT series motor.

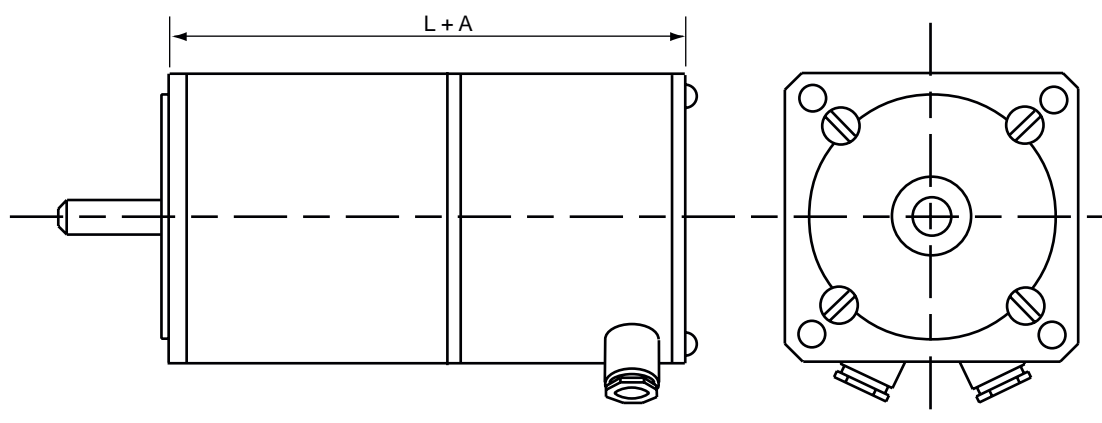
SY Range	ST Range
SY561T	STT57-51P
SY561L	STL57-51P
SY562T	STT57-83P
SY562L	STL57-83P
SY563T	STT57-102P
SY563L	STL57-102P
SY871T	STT83-62P
SY871L	STL83-62P
SY872T	STT83-93P
SY872L	STL83-93P
SY873T	STT83-135P
SY873L	STL83-135P
SY1072T	STT106-178P
SY1072L	-
SY1073T	STT106-250P
SY1073L	-

Brake Options

Available on terminal box motor versions only, the mechanical brake is integral to the motor housing with connections made via a separate PG9 cable gland at the rear of the motor. These failsafe mechanical brakes have class 'B' insulation and require a 24V_{DC} / 0.5A supply to release the shaft.

Motor Frame	Brake Torque	Additional Inertia	Switch On Time	Switch Off Time
SY56	0.75Nm	0.02 kg-cm ²	7ms	15ms
SY87	3.0Nm	0.15 kg-cm ²	20ms	15ms
SY107	6.0Nm	0.63 kg-cm ²	35ms	25ms

Motors fitted with the brake option are IP55 as standard, with IP68 available as an option.



The additional length 'A' for brake motors is 40mm for SY56 series, 45.5mm for SY87 series and 50mm for SY107 series.

Encoder Options

Optical encoder options with resolutions of either 200 or 500 lines/rev are available on terminal box motor versions only. The encoder option is integral to the motor housing, with connections made via screw terminals inside the motor housing and a separate PG9 cable gland at the rear of the motor for cable entry. Encoder connection details are shown under the motor connection section.

Operating from a $5V_{DC}$ supply, the encoder options generate differential driven 'A' and 'B' channel signals, plus an index pulse, at industry-standard RS422 signal. These encoders have a maximum operating temperature of $100^{\circ}C$, and a maximum output frequency of 100kHz (independent of motor performance).

Motors fitted with the encoder option are IP55 as standard, with IP68 available as an option.

The additional length 'A' for encoder motors (see diagram above) is 22mm for SY56 series, 18.5mm for SY87 series and 25mm for SY107 series.

Combining Brake and Encoder Options

It is possible to combine both a brake and encoder within one motor. The additional length 'A' for combined brake/encoder motors (see diagram above) is 61.5mm for SY56 series, 67.5mm for SY87 series and 82mm for SY107 series.