Small power motors and gearboxes

Data Sheet

General information

Construction. The frames comprise pressure die-castings accurately located together, ensuring concentric air gap with correct bearing alignment. The armature laminations or die-cast rotor are pressed onto a precision steel shaft and the complete assembly (if armature, after winding, impregnation and baking) is then statically and dynamically balanced. All stators and armatures are wound with first class quality synthetic covered copper wire manufactured to BS Specification 2757 Class 'B', and then impregnated and baked and accordingly can be considered to be tropically impregnated for all practical purposes.

Motor enclosures

Motor type	IP rating	
Shunt wound dc		
SD 1B	20	Ventilated internally fan cooled
SD 11B	22	Drip proof internally fan cooled
SD 12B	22	Drip proof internally fan cooled
Permanent magnet dc		
PM10	54	Totally enclosed
PM2	22	Drip proof internally fan cooled
PM3	54	Totally enclosed
PM4	54	Totally enclosed
Three phase ac		
SD29 30	20	Ventilated internally fan cooled
SD18 30	20	Ventilated internally fan cooled
Single phase ac		
SD8	20	Ventilated internally fan cooled
SD8 (TEFC)	54	Totally enclosed fan cooled
SD29 10	20	Ventilated internally fan cooled
SD 13 (TEFC)	54	Totally enclosed fan cooled
SD 18 10	20	Ventilated internally fan cooled

Bearings. Shielded ball bearings throughout, spring loaded for quiet running.

Brush gear. (Commutator motors.) A new design of adjustable rocker type for maximum brush life and good commutation with easily accessible brushes.

Testing. To BS Specification 5000 Part 11.

Finish. Durable grey hammer synthetic enamel.

Temperature. All motors shown in this data sheet are built with Class 'B' insulation to BS2757 which allows a temperature rise of 75°C based on an ambient of 20°C to 40°C. These figures are with the motor running in normal working conditions in free air and not in any form of enclosure.

Gear units. The motor is fitted with shielded spring loaded ball bearings absorbing worm thrust from gear box. Precision ground output shaft with flats or keyways carried in ball bearings with gear wheels of synthetic resin bonded fabric with hardened and worms. Gearbox and ball bearings are packed with appropriate grade of grease. In the case of worm and multi spur gear units, these are fitted with hardened spur gear units, these are fitted with hardened spur gears and oil bath lubrication. All units are suitable for running in any position.

Lubricants. Worm gear boxes charged with a suitable grease and sealed for life. Worm and multi-spur boxes filled with 20/50 multigrade oil and sealed for life.

Gearbox type

Code	Basic description
S	Single reduction wormgear, 90° drive
M	Single reduction wormgear, 90° drive
MB	Single reduction wormgear, 90° drive
L	Single reduction wormgear, 90° drive
WS	Worm & Multispur reduction gear unit, 90° drive
M/W	In line double reduction worm gear unit, offset drive
L/W	In line double reduction worm gear unit offset drive

Thermal rating and maximum gear loading of gearboxes

Single and double worm reduction gearboxes

Whilst worm gearing has lower efficiency than spur gearing is true to say that generally the noise level of worm reduction is much lower and where noise is therefore an important factor, this type of gearing should be considered. To prevent premature gear failure or excessive gear wear, the maximum gear loading and thermal rating of the particular gear box must be taken into consideration otherwise there is a danger of stripping the gear wheel teeth or failure of the lubrication due to excessive gearbox temperature. The table below shows the recommended mechanical and thermal ratings for the various types of gearbox.

Gear-box type	Ratios	Mechanical rating (Nm)	Thermal rating (Watts)	Radial loading*		Axial loading	
		Fibre	Fibre	lb	kg	lb	kg
S	4⅛:1 to 40:1	2.94					
	44:1 to 60:1	2.26	20	15	7	8	3.6
	66:1 to 72:1	1.47					
M	4⅛:1 to 40:1	7.91					
	44:1 to 60:1	5.88	38	30	13.5	20	9
	66:1 to 72:1	5.09					
MB	4⅛:1 to 40:1	7.91					
	44:1 to 60:1	5.88	40	50	23	24	11
	66:1 to 72:1	5.09					
L	5:1 to 40:1	14.6					
	50:1 to 60:1	11.3	60	40	18	30	13.5
WS	24¾:1 to 98:1	22.6					
	99:1 to 492:1	62.1	-	100	45.5	50	23
	445:1 to 7776:1	73.4					
MIW	ALL	16.9	50	60	27	30	13.5
LIW	ALL	28	-	72	36	45	20

Approx Thermal rating (W) = $\frac{\text{Final rpm x Torque (Nm) x } (1h - 1)}{9.55}$

(η) = gear efficiency)

* Based on midway point of standard shaft extensions (1Nm=10.2cmkp) (1Nm=8.85 lb in).

For intermittent duty the thermal rating for the gearbox is increased by multiplying the appropriate gearbox thermal rating by the factor

$$X = \sqrt{\frac{100\%}{\text{duty cycle \%}}}$$

Maintenance instructions

All units are fitted with grease packed shielded ball bearings with an estimated life of 5000 working hours, which can vary depending on operating conditions and temperature. We recommend replacing a noisy bearing as re-greasing is not possible. Prolonged storage can shorten the estimated life.

In most cases dismantling of the motor or gearbox is straightforward. Carefully note the position of the spring loaded washers, shims, etc. However the commutator type motors require a suitable extractor to remove the armature from the main frame. Commutator motors require more maintenance than induction type due to the accumulation of carbon dust in the brush gear area. This dust should be blown out periodically with a dry air supply and only when the commutator surface is in a very blackened condition should it be lightly cleaned with 'flour' paper or similar.

CAUTION: Do not use emery paper.

When replacing carbon brushes (which may have a life of some 1000 hours depending on operating conditions) care should be taken to ensure these are a free fit in the holders. When dismantling, the brush gear should be marked to ensure it is replaced in the original position and the pigtails clear the motor casing.

Quoted speeds of motors

Please note that all speeds quoted against motors and motor/gearbox combinations are nominal and will vary with load applied.

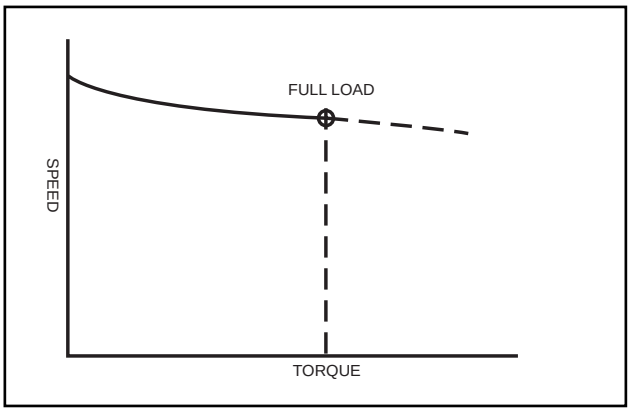
dc motor characteristics

Important: It must be borne in mind when reducing the speed of a dc motor the armature cooling fan efficiency drops and it is wise to reduce the rating or load of the motor by 30-40% over a speed range of 10 : 1 and by 50% for a speed range of 25:1.

Shunt wound motors

Shown is a typical 'torque/speed' characteristic for a dc shunt wound motor. This type of unit has constant speed characteristics, the difference between no load and full load speed being between 10 and 20% of rated speed.

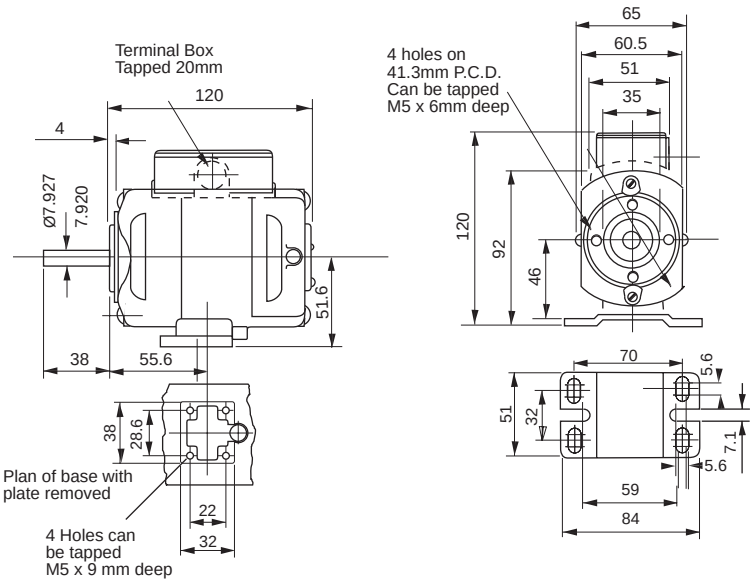
Suitable for reversing as standard i.e. 4 leads brought out (two armature and two fields). The speed can be controlled by means of a dc thyristor speed controller. If an ac supply is available a speed range of up to 25 : 1 can be obtained. Please see motors and controllers section of current RS catalogue for further details.



dc shunt wound motors						
RS stock no.	Type	Shaft size	Rating (w)	Input current	rpm	Suitable controller **RS** stock no.
266-272	SD1C	S	38	0.41	3000	244-2917
716-014	SD1C	M	50	0.5	4000	244-2917
716-020	SD11C	M	95	0.75	3000	244-2917
266-317	SD12C	M	125	0.9	3000	244-2917
716-042	SD12C	M	190	1.4	4000	244-2939

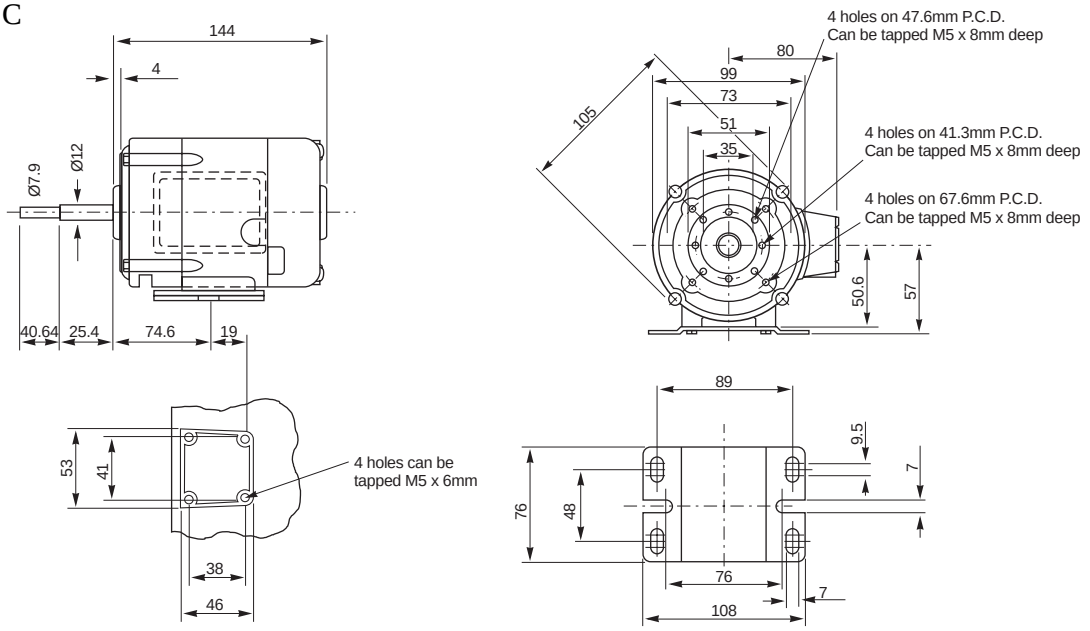
See relevant drawing for shaft details.

SD1C

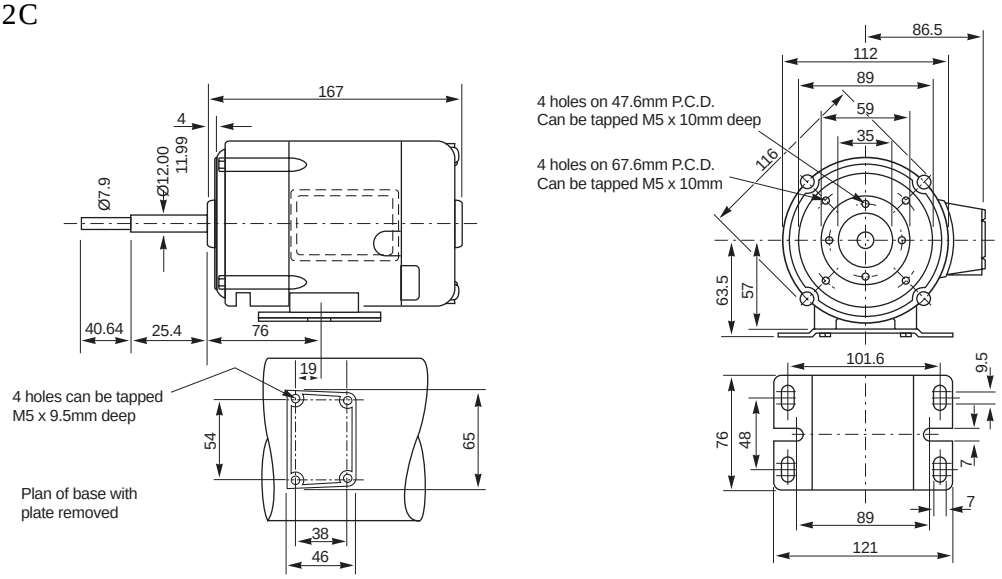


Note: Shaft sizes: RS stock no. 266-272 7.9 Ø x 38 long
RS stock no. 716-014 7.9 Ø x 76.2 long

SD11C



SD12C



DC shunt wound motor/gearbox combinations

SD1CS-220Vdc using motor

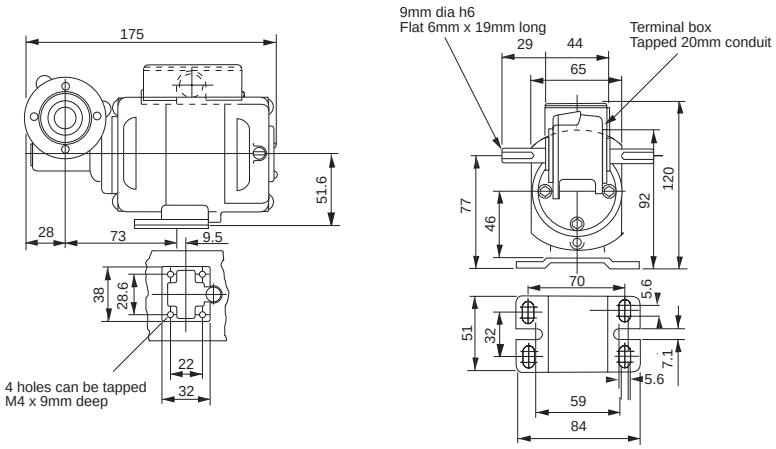
(RS stock no. 266-272), 38W, 0.41A

Suitable controller

(RS stock no. 266-210)

rpm	Output torque (Nm)	**RS** stock no.
50	2.26	716-547
62	2.03	266-244
75	1.58	716-569
100	1.24	716-575
120	1.13	266-250
145	0.9	716-597
190	0.73	716-604
240	0.57	266-266
290	0.51	716-632
360	0.4	716-648

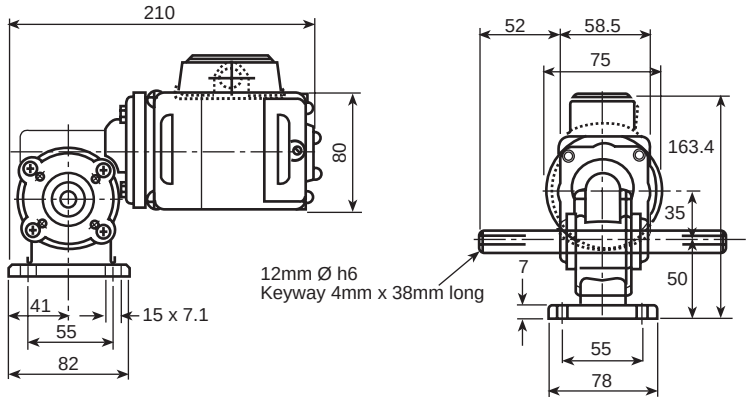
SD1CS



SD1CMB-220Vdc using motor
(RS stock no. 716-014), 50W, 0.41A
Suitable controller
(RS stock no. 244-2917)

rpm	Output torque (Nm)	**RS** stock no.
55	2.71	716-654
65	2.37	716-660
85	2.03	716-676
100	1.07	716-682
130	1.47	716-698
160	1.30	716-705
200	1.13	716-711
260	0.96	716-733
320	0.79	716-727
400	0.68	716-749
480	0.51	716-755

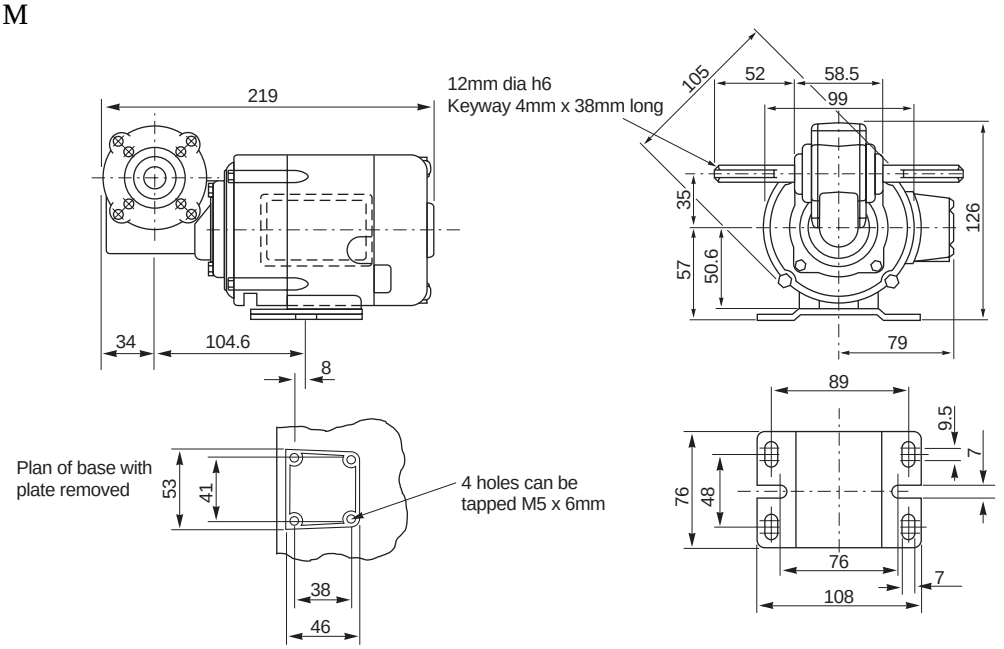
SD1C MB



SD11CM-220Vdc using motor
(RS stock no. 716-020), 95W, 0.75A
Suitable controller
(RS stock no. 244-2917)

rpm	Output torque (Nm)	**RS** stock no.
50	5.88	717-761
62	5.42	717-777
75	5.09	717-783
100	4.18	717-799
145	3.28	717-812
190	2.71	717-828
240	2.26	717-834
290	2.03	717-840
360	1.76	717-856

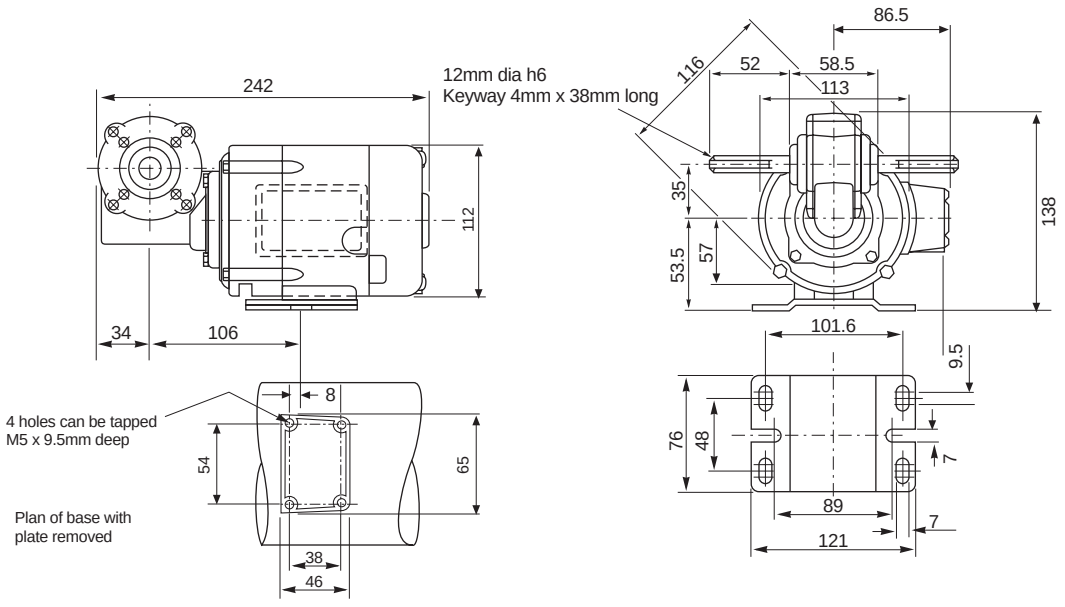
SD11CM



SD12CM-220Vdc using motor
(RS stock no. 266-317), 125W, 0.9A
Suitable controller
(RS stock no. 244-2917)

rpm	Output torque (Nm)	**RS** stock no.
50	5.88	716-862
62	5.88	266-288
75	6.78	716-884
100	5.54	716-890
120	4.86	266-294
145	4.29	716-913
190	3.62	716-929
240	3.05	266-301
290	2.71	716-941
360	2.26	716-957

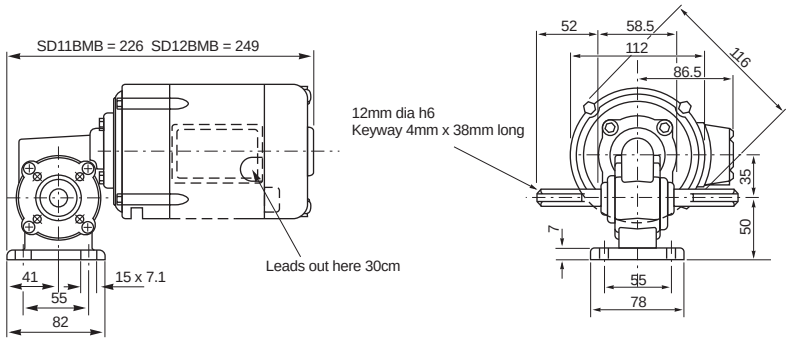
SD12CM



SD11CMB-220Vdc using motor
(RS stock no. 716-020), 95W, 0.75A
Suitable controller
(RS stock no. 244-2917)

rpm	Output torque (Nm)	**RS** stock no.
50	5.88	716-963
62	5.42	716-979
75	5.07	716-985
100	4.19	716-991
120	3.62	717-001
145	3.28	717-017
190	2.71	717.023
240	2.26	717-039
290	2.03	717-045
360	1.70	717-051

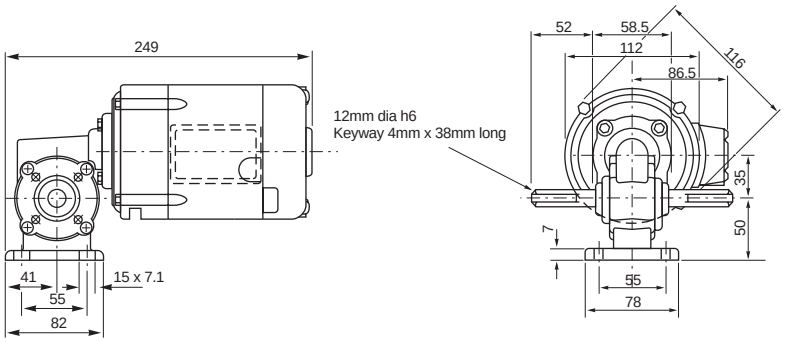
SD11CMB



SD12CMB-220Vdc using motor
(RS stock no. 266-317), 125W, 0.9A
Suitable controller
(RS stock no. 244-2917)

rpm	Output torque (Nm)	**RS** stock no.
50	5.88	717-067
62	5.88	717-073
75	6.78	717-089
100	5.54	717-095
120	4.86	717-102
145	4.29	717-118
190	3.62	717-124
240	3.05	717-130
290	2.71	717-146
360	2.26	717-152

SD12CMB



SD12CMB-220Vdc using motor
(RS stock no. 716-042), 150W, 1.1A
Suitable controller
(RS stock no. 244-2939)

rpm	Output torque (Nm)	**RS** stock no.
100	6.78	717-168
130	6.22	717-174
160	5.54	717-180
200	5.20	717-196
260	4.29	717-203
320	3.73	717-219
400	3.39	717-225
480	2.83	717-231

For line drawing see 125W version of SD12CMB.

SD12CM-220Vdc using motor
(RS stock no. 716-042), 150W, 1.1A
Suitable controller
(RS stock no. 244-2939)

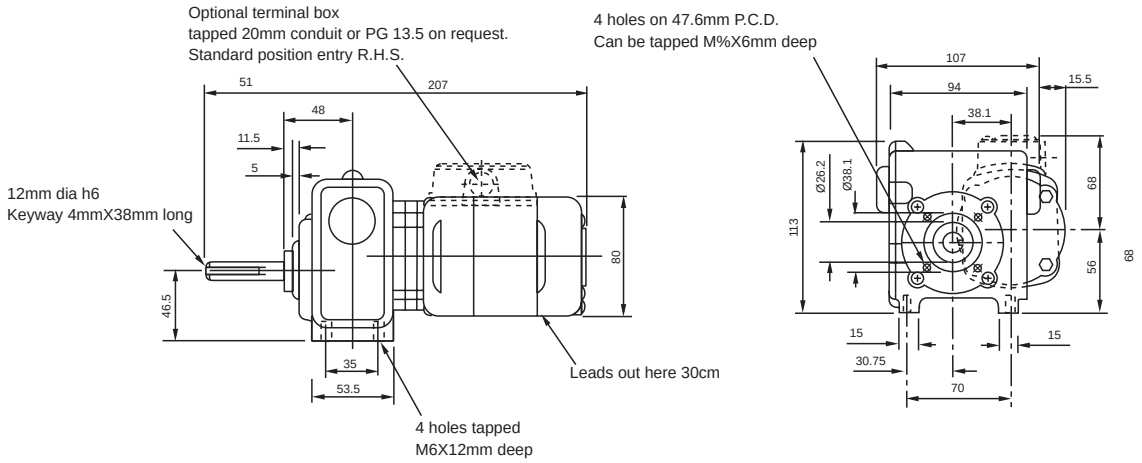
rpm	Output torque (Nm)	**RS** stock no.
100	6.78	717-247
130	6.22	717-253
160	5.54	717-269
200	5.20	717-275
260	4.29	717-281
320	3.73	717-297
400	3.39	717-304
480	2.83	717-310

For line drawing see 125W version of SD12CM.

SD1CM1W-220Vdc using motor
(RS stock no. 266-272), 38W, 0.41A

rpm	Output torque (Nm)	**RS** stock no.
2.2	17.0	397-067
4.5	17.0	397-073
8.3	13.0	397-089
15	8.6	397-095
22	6.5	397-102
30	5.4	397-118
39	4.6	397-124
45	4.1	397-130
57	3.3	397-146
70	2.8	397-152
90	2.1	397-168

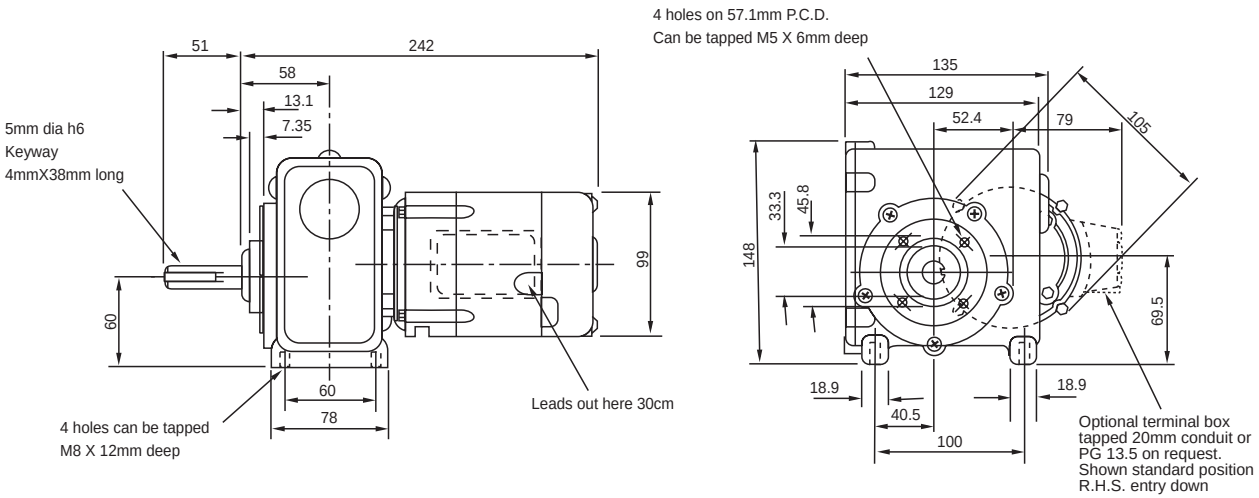
SD1CM1W



SD11CL1W-220Vdc using motor
(RS stock no. 716-020), 95W, 0.75A

rpm	Output torque (Nm)	**RS** stock no.
3	28	397-506
4	28	397-512
9	28	397-528
20	18	397-534
27	14	397-540
42	11	397-556
65	8	397-562
81	6	400-242

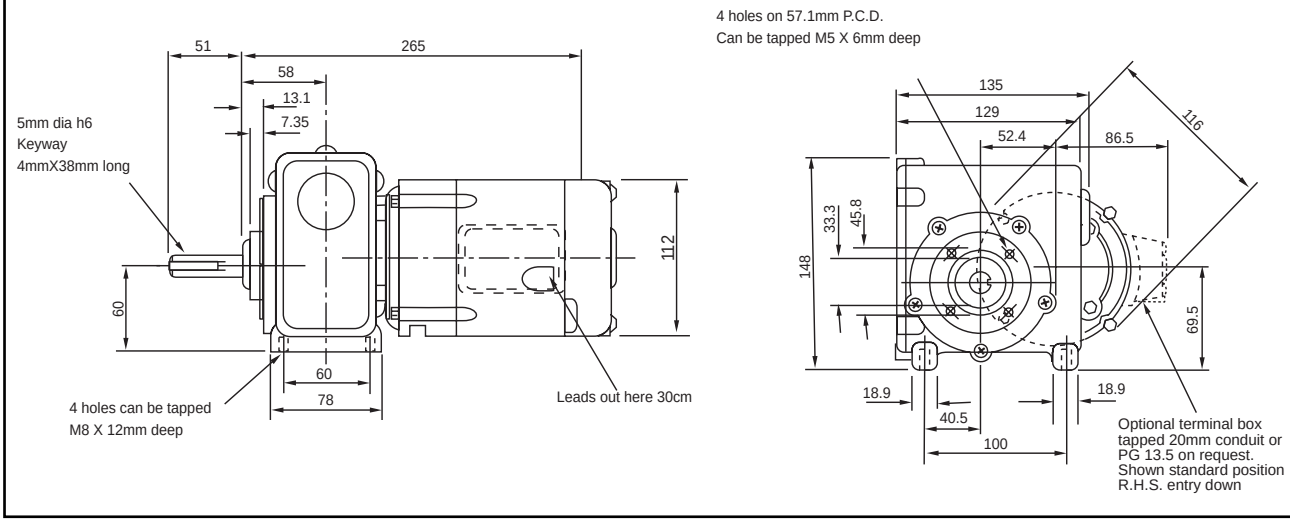
SD11CL1W



SD12CL1W-220Vdc using motor
(RS stock no. 266-317), 125W, 0.9A

rpm	Output torque (Nm)	**RS** stock no.
3.3	28	400-258
5.4	28	400-264
9	28	400-270
20	23	400-286
27	18	400-292
42	14	400-309
65	10	400-315
81	8	400-321

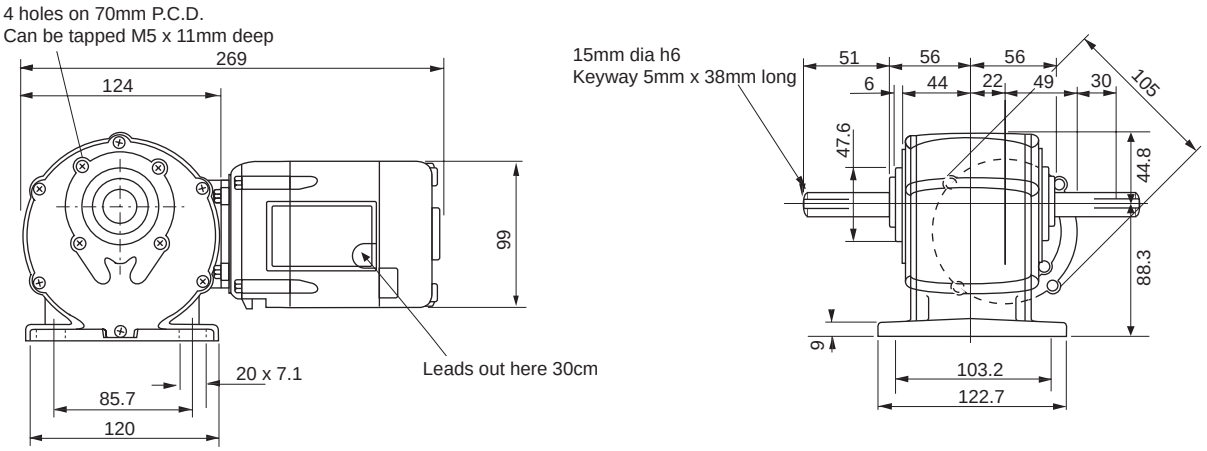
SD12CL1W



SD11CWS-220Vdc using motor
(RS stock no. 716-020), 95W, 0.75A

rpm	Output torque (Nm)	**RS** stock no.
0.5	74	224-7093
1	74	224-7100
1.6	74	224-7116
2.1	74	224-7122
3.2	74	224-7138
4.5	74	224-7144
6.5	74	224-7150
7.5	60	224-7166
10	43	224-7188
15	27	224-7194
20	23	224-7201
30	17	224-7217
40	13	244-7223
60	10	244-7245
80	8	244-7251

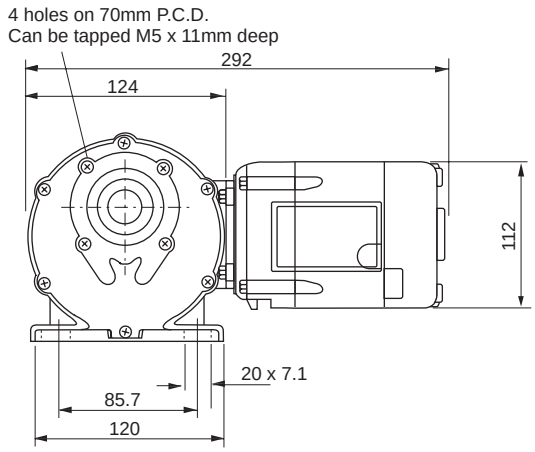
SD11CWS

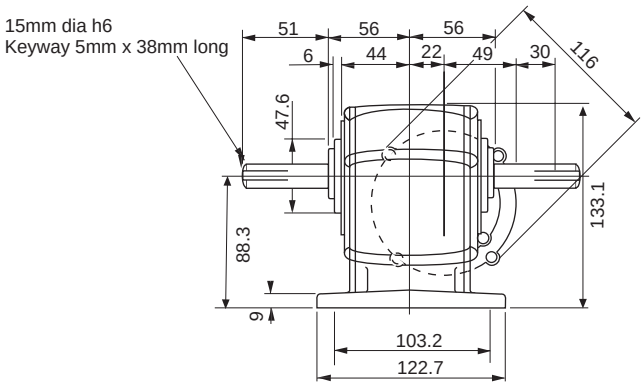


SD12CWS-220Vdc using motor
(RS stock no. 266-317), 125W, 0.9A

rpm	Output torque (Nm)	**RS** stock no.
7.5	62	244-7267
10	56.5	224-7273
15	34	224-7289
20	29	224-7295
30	21	224-7302
40	17	224-7318
60	13	224-7324
80	10	224-7330

SD12CWS





SD12CWS-220Vdc using motor
(RS stock no. 716-042), 150W, 1.1A

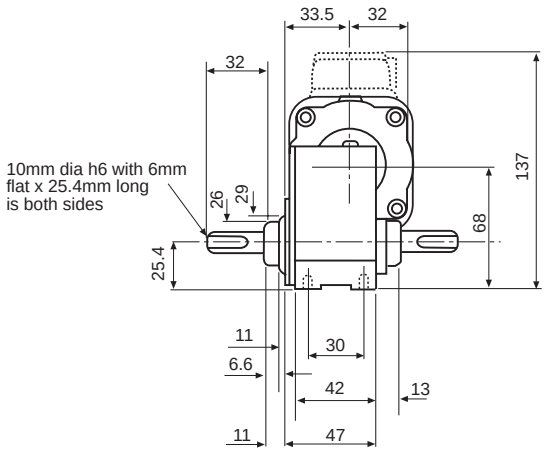
rpm	Output torque (Nm)	**RS** stock no.
0.7	74	224-7346
1.3	74	224-7352
2.2	74	224-7368
3	74	224-7374
4.3	74	224-7380
5.7	74	224-7403
8.7	74	224-7419
10	62	224-7425
13	61	224-7431
20	45	224-7447
27	36	224-7469
40	31	224-7475
53	16	224-7481
80	9	224-7504
106	6	224-7497

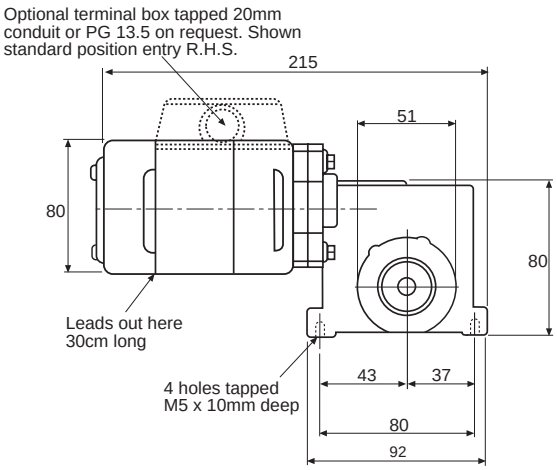
SDIC SWS 220Vdc 0.41A
Supplied with motor (RS stock no. 266-272)

rpm	Output torque (Nm)	**RS** stock no.
7	11	305-9932
13	11	305-9948
23	9.6	305-9960
31	7.7	305-9976
47	5.7	305-9982
71	4.1	305-9998

For line drawing see 125W version of SD12CWS.

SD1CSWS



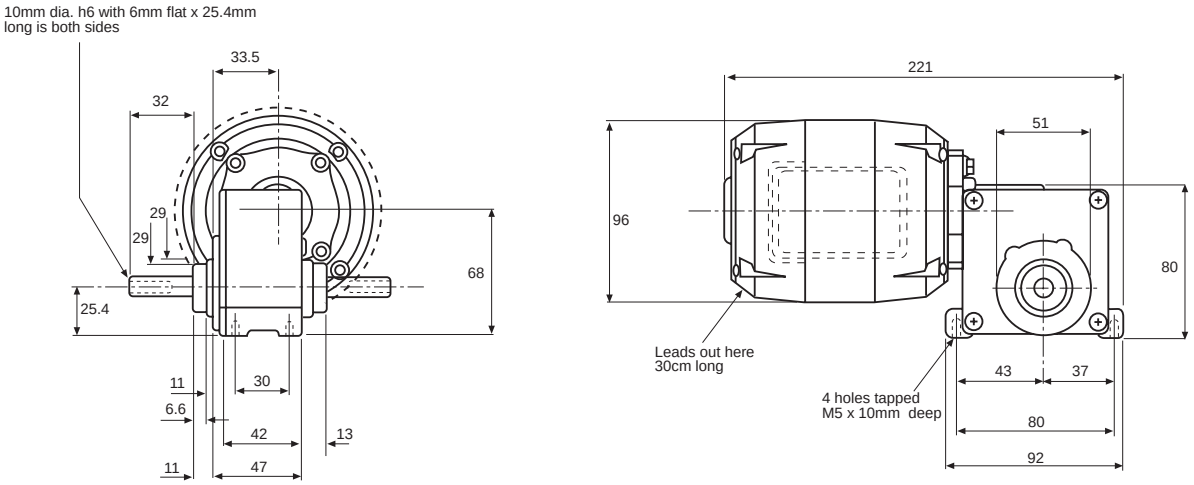


SD8 SWS 240ac 0.3A

Supplied with motor (RS stock no. 716-064)

rpm	Output torque (Nm)	**RS** stock no.
1	11	305-9847
3.5	11	305-9853
6	11	305-9869
11	8.4	305-9875
15	7	305-9881
33	3.8	305-9910

SDBSWS

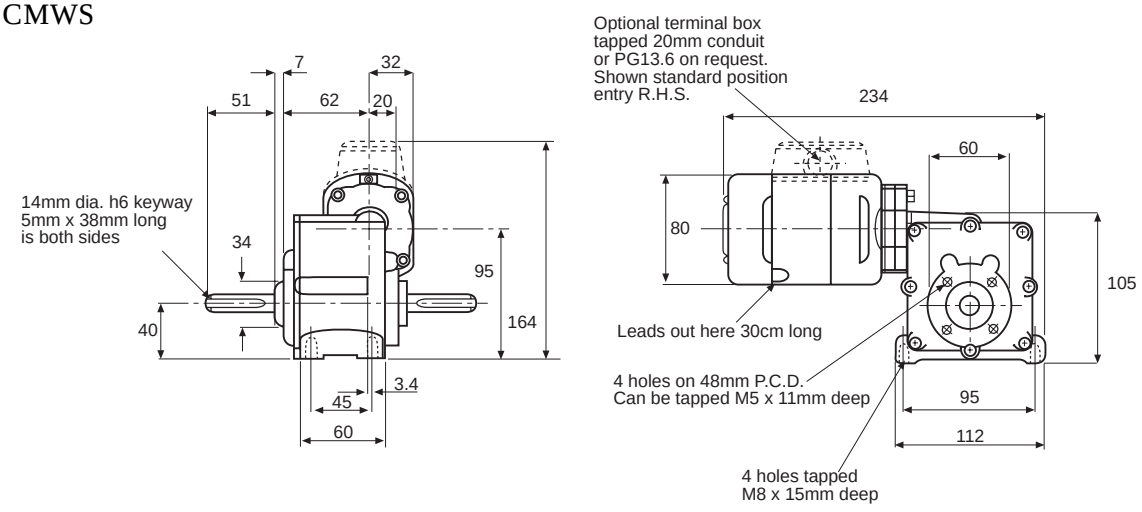


SDIC MWS 220Vdc 0.41A

Supplied with motor (RS stock no. 266-272)

rpm	Output torque (Nm)	**RS** stock no.
2	45	307-5619
5	39	307-5625
12	21	307-5631
32	8	307-5653
48	6	307-5669

SD1CMWS



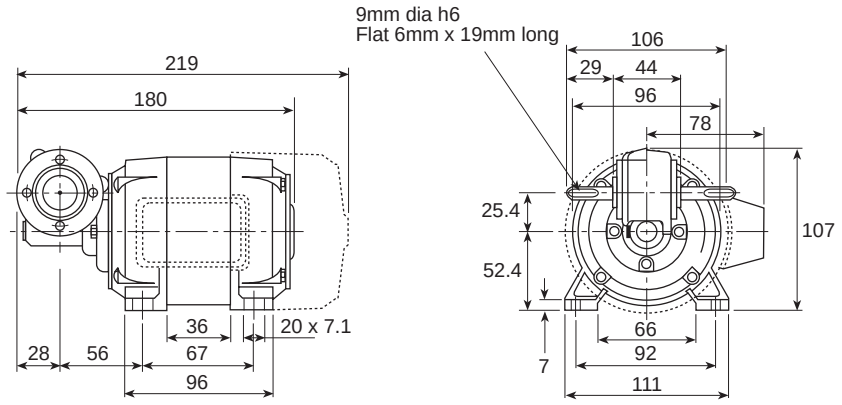
SD8S-240Vac using motor
(RS stock no. 716-058), 35W, 0.30A

rpm	Output torque (Nm)	**RS** stock no.
20	1.47	717-326
23	2.26	717-332
29	2.26	717-348
35	2.94	717.354
47	2.94	717-360
56	2.71	717-376
68	2.49	717-382
90	2.03	717-398
112	1.47	717-405
135	1.24	717-411
168	1.02	717-427

SD8M-240Vac using motor
(RS stock no. 716-064), 35W, 0.36A TEFC

rpm	Output torque (Nm)	**RS** stock no.
20	4.86	717-433
23	5.09	717-449
29	4.52	717-455
35	3.73	717-461
47	3.05	717-477
56	2.83	717-483
68	2.60	717-499
90	2.15	717-506
113	1.47	717-512
135	1.24	717-528
168	1.02	717-534

SD8S



ac single phase capacitor start and run motors

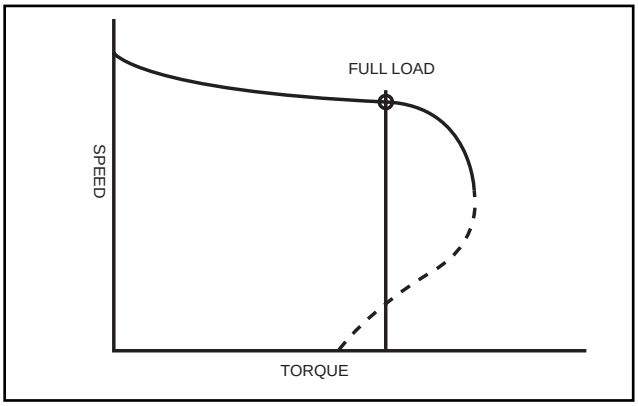
Shown is a typical 'torque/speed' characteristic for this type of motor, these units are only suitable for operating from a single phase ac supply and incorporate a permanently connected capacitor.

This speed is fairly constant but it should be borne in mind that the starting torque is lower than the full load output usually in order of 85% of full load output.

The motor however has the advantage of low starting current and is particularly suited for frequent reversing. Capacitor motors cause no radio or tv interference.

Note: That for maximum capacitor life, mount capacitor away from motor.

General characteristics

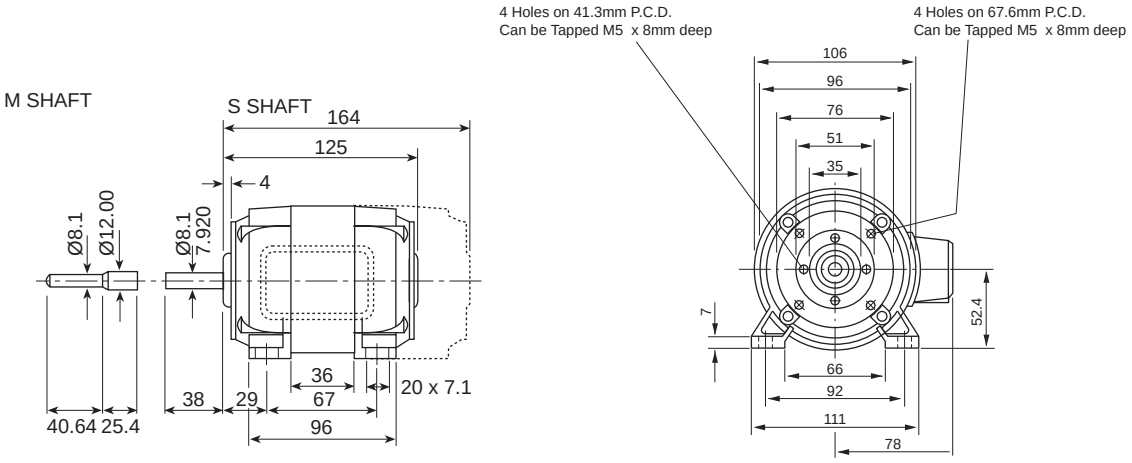


ac cap start and run motors						
RS stock no.	Type	Shaft size	Supplied capacitor value	Rating (w)	Input current	rpm
716-058	SD8	S	3µF	30	0.33	1400
716-064	SD8 (TEFC)	M	2.5µF	30	0.33	1400
716-070	SD29	M	4µF	60	0.58	1400
716-092	SD13 (TEFC)	M	5µF	95	0.66	1400
266-531	SD18	M	6µF	125	1.00	2800

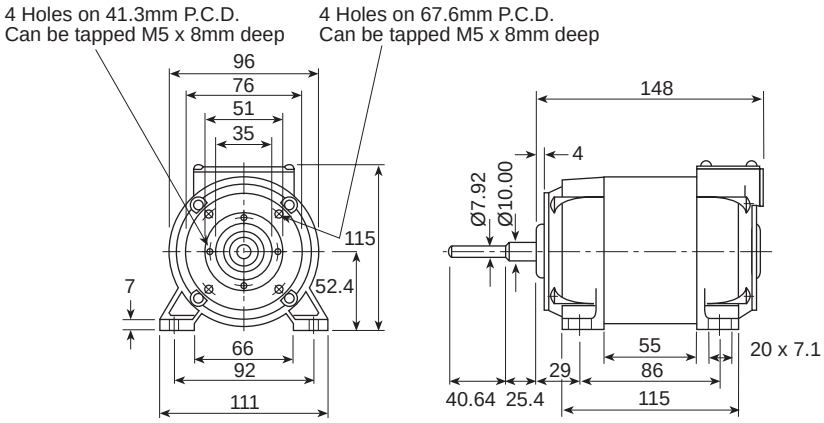
(TEFC) Totally enclosed fan cooled.

See relevant drawing for shaft details

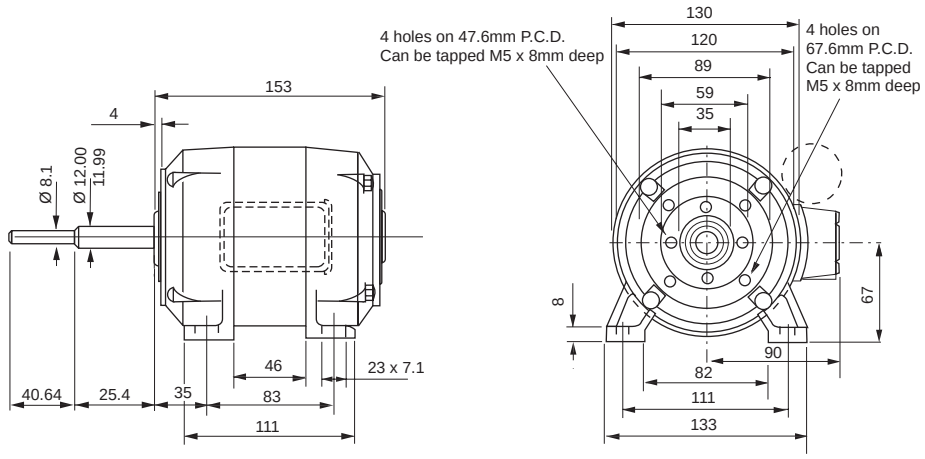
SD8



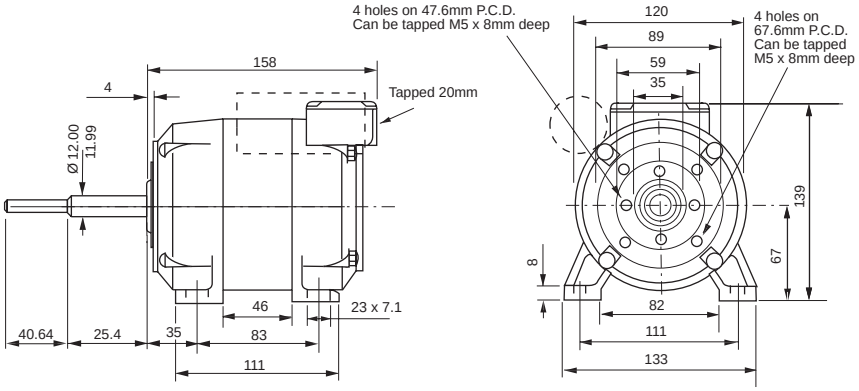
SD29



SD13



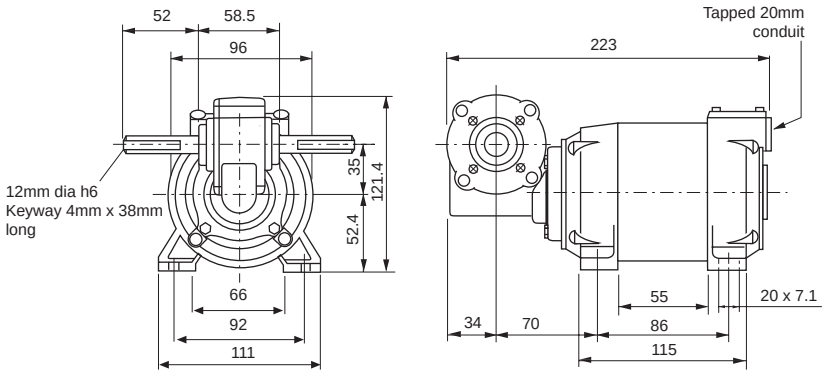
SD18



SD29M-240Vac using motor
(RS stock no. 716-070), 50W, 0.41A

rpm	Output torque (Nm)	**RS** stock no.
20	5.09	717-540
23	5.88	717-556
29	5.88	717-562
35	6.78	266-468
47	6.10	717-584
56	5.65	717-590
68	5.20	717-607
90	4.29	266-474
113	2.94	266-480
135	2.49	717-635
168	2.03	717-641

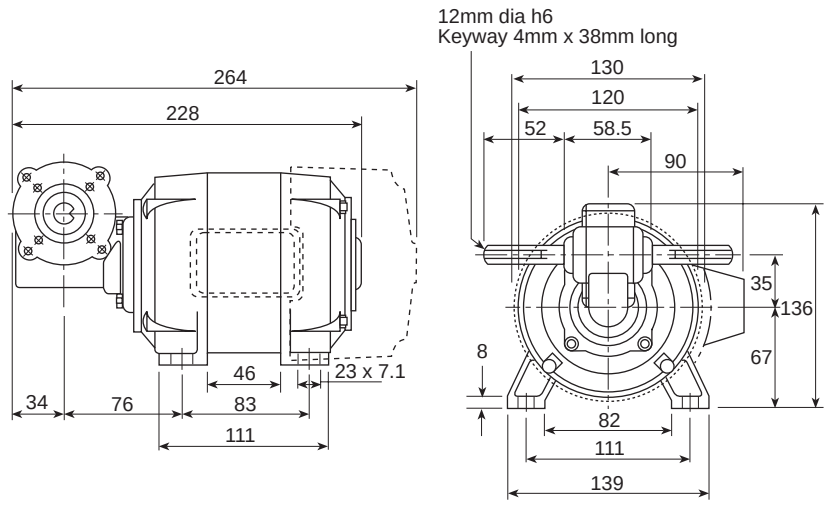
SD29M



SD13M-240Vac using motor
(RS stock no. 716-092), 100W, 0.76 TEFC

rpm	Output torque (Nm)	**RS** stock no.
35	6.78	717-764
47	6.78	717-770
56	6.78	717-786
68	6.44	717-792
90	4.97	717-809
113	4.29	717-815
135	3.62	717-821
168	2.94	717-837

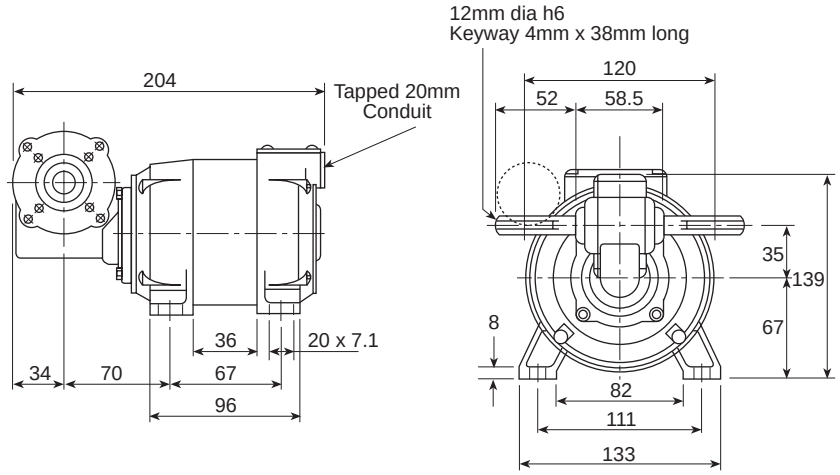
SD13M



SD18M-240Vac using motor
(RS stock no. 266-531), 150W, 1.2A

rpm	Output torque (Nm)	**RS** stock no.
58	5.88	717-859
70	6.55	717-865
93	5.65	717-871
112	5.20	717-887
136	4.52	717-893
180	3.96	266-496
226	3.39	717-916
270	2.83	717-922
338	2.26	266-503

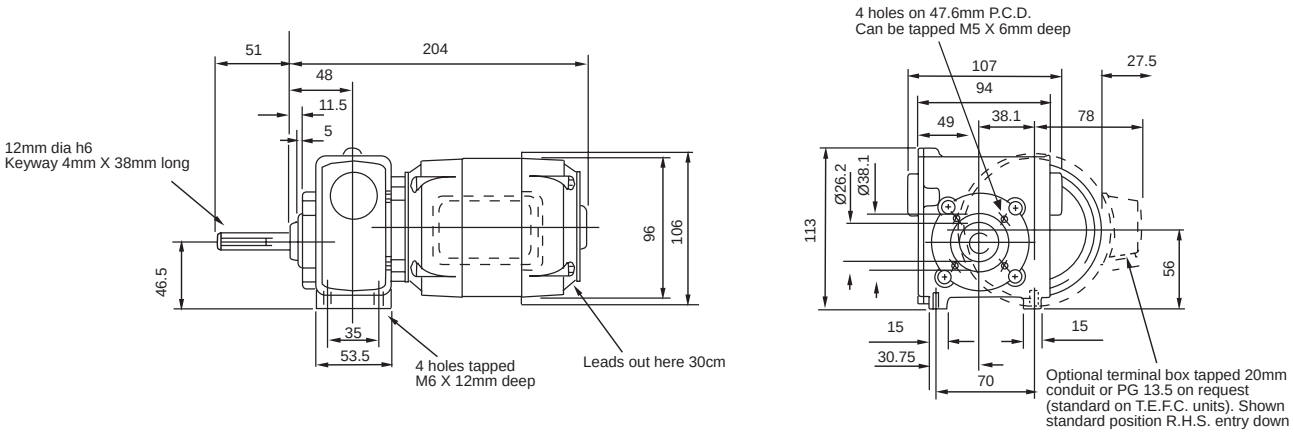
SD18M



SD8M1W-240Vac using motor
(RS stock no. 716-058), 35W, 0.36A

rpm	Output torque (Nm)	**RS** stock no.
1	17	397-398
2	17	397-405
4	17	397-427
7	17	397-411
11	14.3	397-433
13.5	11.2	397-449
18	9.1	397-455
20	8.2	397-461
27	6.3	397-477
32	5.5	397-483
41	4.1	397-499

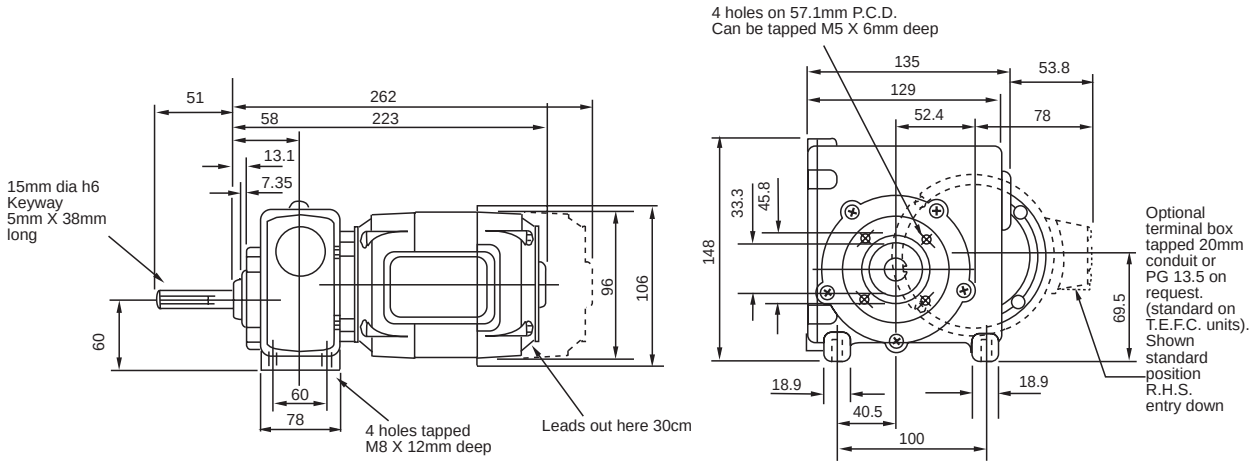
SD8MIW



SD8L1W-240Vac using motor
(RS stock no. 716-064), 35W, 0.36A TEFC

rpm	Output torque (Nm)	**RS** stock no.
1.5	28	400-595
2.5	28	400-602
4.0	26	400-618
9.4	14	400-624
12	11	400-630
19	9	400-646
30	6	400-652
38	5	400-668

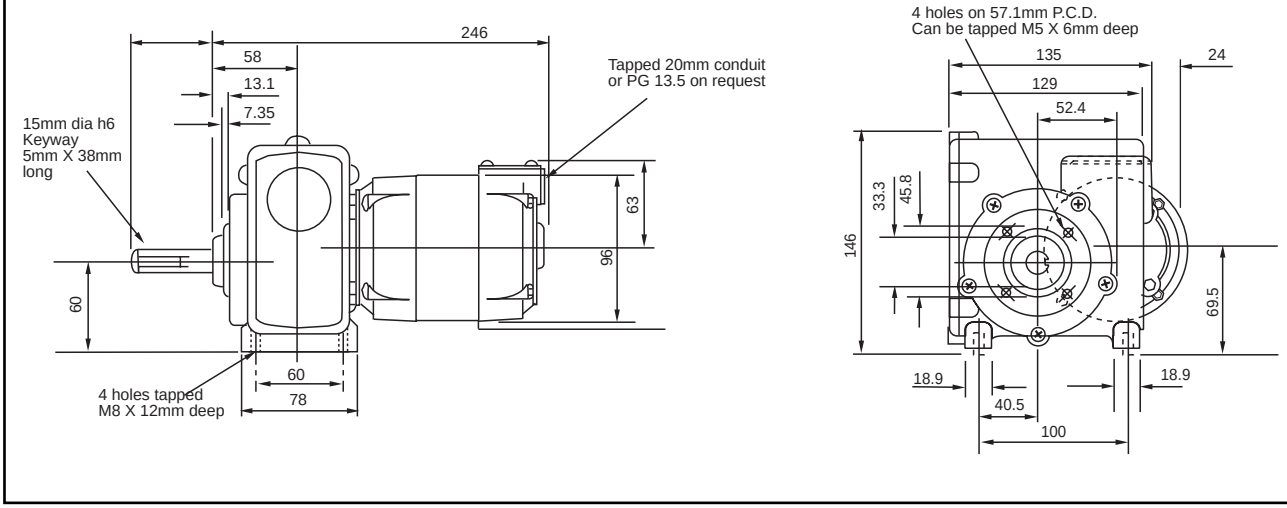
SD8LIW



SD29L1W-240Vac using motor
(RS stock no. 716-070), 55W, 0.41A

rpm	Output torque (Nm)	**RS** stock no.
1.5	28	400-674
2.5	28	400-680
4.0	28	400-696
9.4	24	400-703
12	20	400-719
19	15	400-725
30	11	400-731
38	8.5	400-747

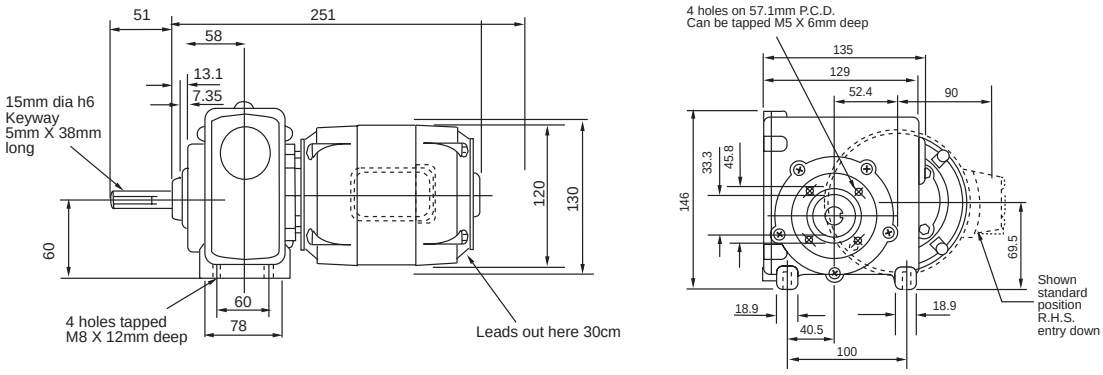
SD29LIW



SD13L1W-240Vac using motor
(RS stock no. 716-092), 100W, 0.76A

rpm	Output torque (Nm)	**RS** stock no.
1.5	28	400-753
2.5	28	400-769
4.0	28	400-775
9.4	28	400-781
12	28	400-797
19	24	400-804
30	17	400-810
38	13	400-826

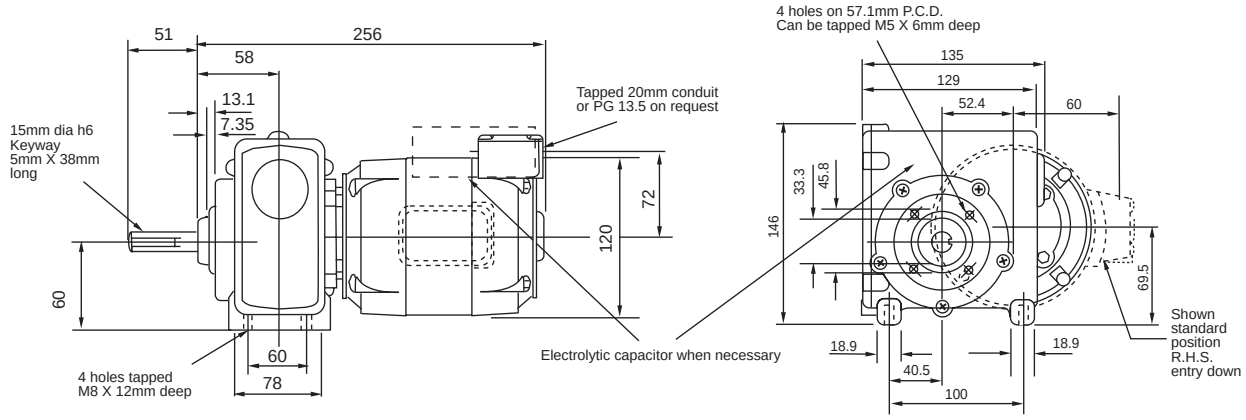
SD13LIW



SD18L1W-240Vac using motor
(RS stock no. 266-531), 150W, 1.2A

rpm	Output torque (Nm)	**RS** stock no.
3	28	400-832
5	28	400-848
8	28	400-854
19	218	400-860
24	25	400-876
37	16	400-882
61	13.2	400-898
75	10.5	400-905

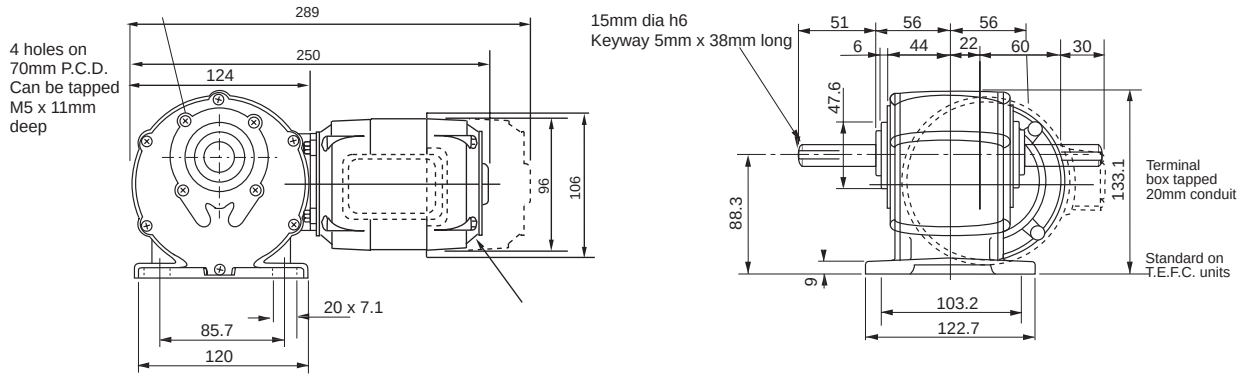
SD18L1W



SD8WS-240Vac using motor
(RS stock no. 716-064), 35W, 0.36A TEFC

rpm	Output torque (Nm)	**RS** stock no.
0.25	74	227-1440
0.5	74	227-1456
0.75	74	227-1462
1	784	227-1478
1.5	74	227-1490
2	66	227-1507
3	46	227-1513
3.5	43	227-1529
4.5	35	227-1535
7	26	227-1557
9	19	227-1563
14	13	227-1579
18.5	10	227-1585
28	6.5	227-1591
37	5	227-1614
38	3.5	227-1620

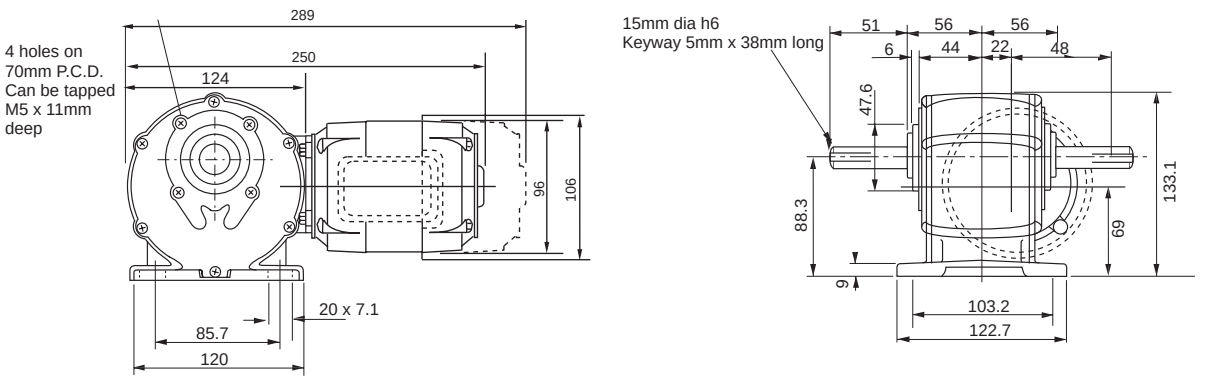
SD8WS



SD13WS-240Vac using motor
(RS stock no. 716-092), 100W, 0.75A TEFC

rpm	Output torque (Nm)	**RS** stock no.
2	74	227-1636
3	74	227-1642
3.5	62	227-1658
4.5	62	227-1664
7	62	227-1670
9	56	227-1686
14	39	227-1692
18.5	28	227-1709
28	20	227-1715
37	16	227-1721
38	11	227-1737

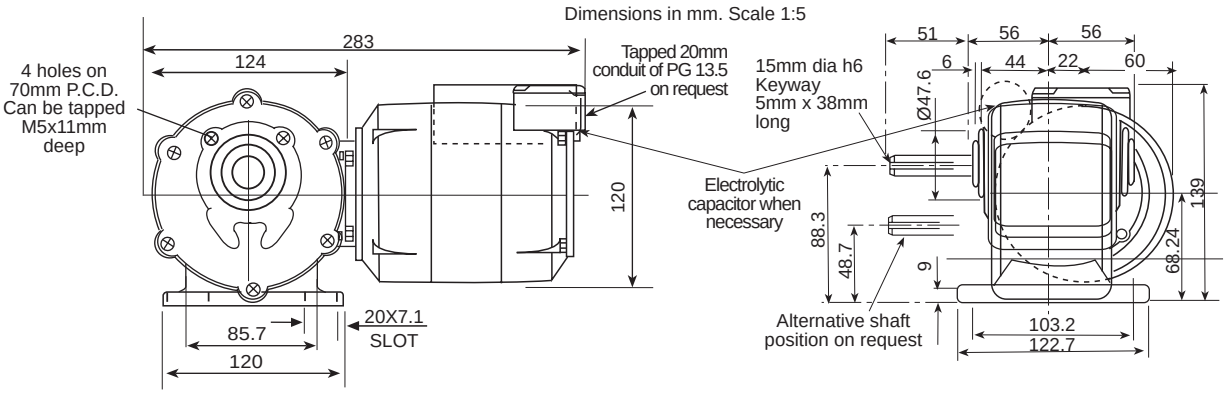
SD13WS



SD18WS-240Vac using motor
(RS stock no. 266-531), 150W, 1.2A TEFC

rpm	Output torque (Nm)	**RS** stock no.
2	74	227-1743
3	74	227-1759
4	74	227-1771
6	74	227-1787
7	62	227-3115
9	62	227-1793
14	62	227-1800
18	52	227-1816
28	27	227-1838
37	17	227-1844
56	12	227-1850
74	9	227-1866
113	7.5	227-1872

SD18WS

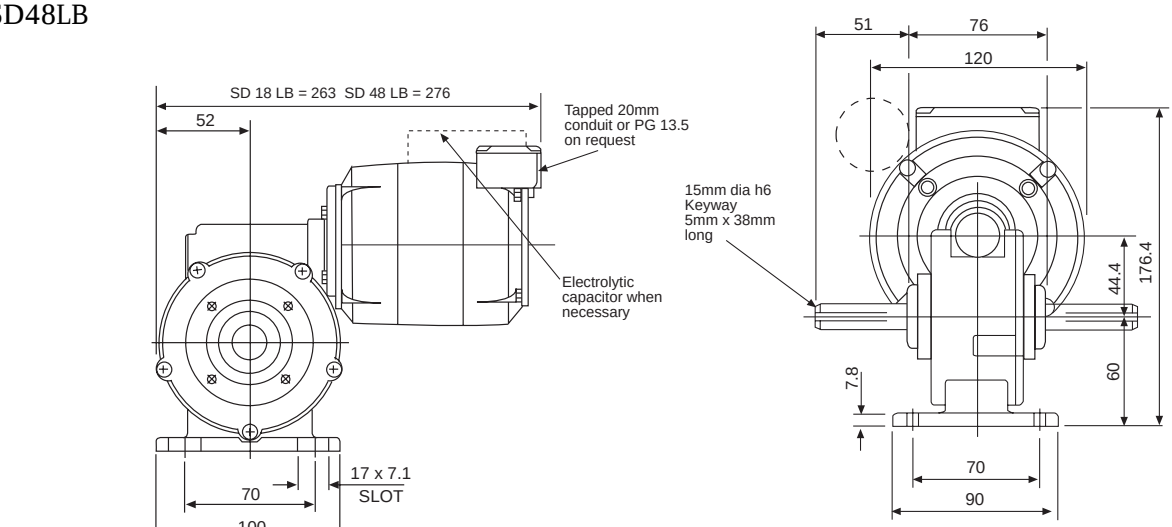


ac capacitor start induction and run motor/gearbox combinations

SD48LB-240Vac, 125W, 1.6A

rpm	Output torque (Nm)	**RS** stock no.
68	9.49	266-519
112	6.78	266-525

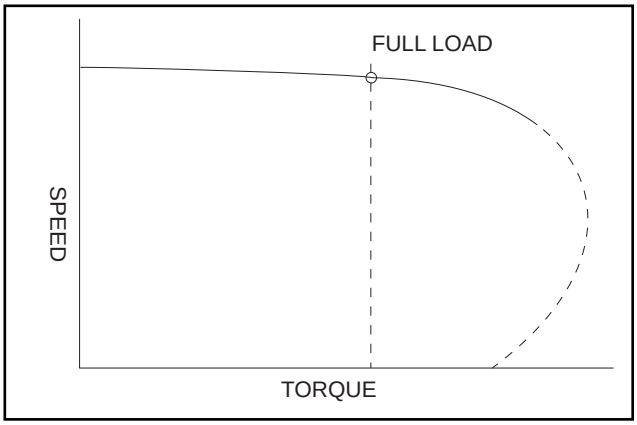
SD48LB



ac three phase motors

Shown below is a typical torque/speed characteristic for this type of motor. The speed is fairly constant over the no load to full load range. Where a 3 phase supply is available this motor should be the logical choice. The starting torque is up to 200% of full load torque. It is possible to instantaneously reverse this type of motor whilst running. The motor does cause radio or tv interference.

General characteristics



ac three phase motors						
RS stock no.	Type	Shaft Type	Rating (w)	Input current	rpm	Suitable controller **RS** stock no.
716-086	SD29	M	60	0.28	1400	266-856
716-115	SD18	M	190	0.5	2800	266-856

SD29

For line drawing see SD39 single phase motor.

SD18

For line drawing see SD18 single phase motor

ac three phase motors/gearbox combinations

SD29M-220 to 440Vac using motor
(RS stock no. 716-086), 60W, 0.28A

rpm	Output torque (Nm)	**RS** stock no.
20	5.09	717-657
23	5.88	717-663
29	5.88	717-679
35	6.78	717-685
47	6.10	717-691
56	5.65	717-708
68	5.20	717-714
90	4.29	717-720
113	2.94	717-736
135	2.49	717-742
168	2.03	717-758

For line drawing see SD29M single phase motor/gearbox.

SD18M-220 to 440V ac using motor
(RS stock no. 716-115), 190W, 0.5A

rpm	Output torque (Nm)	**RS** stock no.
46	5.88	717-944
58	5.88	717-950
70	6.78	717-966
93	6.78	717-972
112	6.78	717-988
136	6.78	717-994
180	5.99	718-004
270	4.52	718-010

For line drawing see SD18M single phase motor/gearbox.

SD29L1W 220/380/440Vac using motor
(RS stock no. 716-086), 60W, 0.28A

rpm	Output torque (Nm)	**RS** stock no.
1.5	28	400-911
2.5	28	400-927
4.0	28	400-933
9.4	24	400-949
12	20	400-955
19	15	400-961
30	11	400-977
38	8.5	400-983

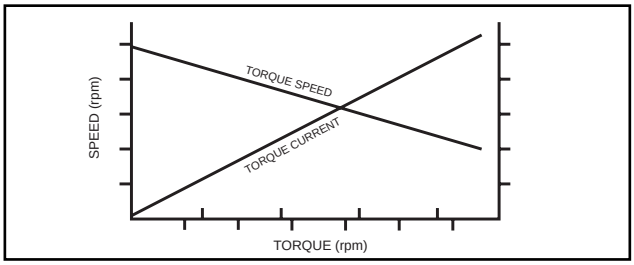
For line drawing see 55W version of SD29LIW

Permanent magnet dc motors

Shown is a typical 'torque/speed' and 'torque/current' characteristic for a dc permanent magnet motor, the 'torque/speed' being linear.

Suitable for reversing as standard i.e. 2 leads brought out (armature). The speed can be controlled by means of our dc thyristor controller (RS stock no. 266-626). Please see motors and controllers section of current RS Catalogue.

General characteristics



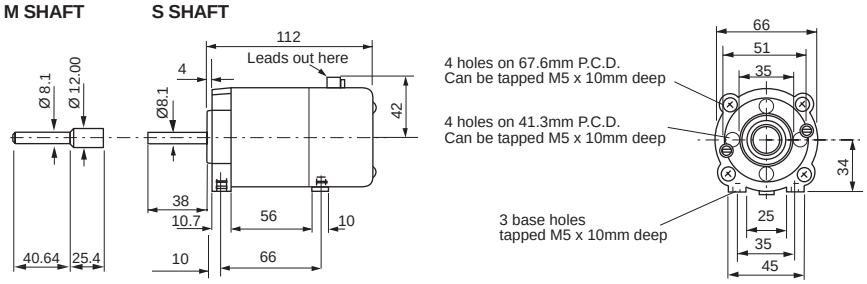
SD18L1W 220/380/440Vac using motor
(RS stock no. 716-115), 190W, 0.5A

rpm	Output torque (Nm)	**RS** stock no.
3	28	407-647
5	28	407-653
8	28	407-669
19	28	407-675
24	28	407-681
37	24	407-697
61	17	407-704
75	13	407-710

For line drawing see 150W version of SD18LIW

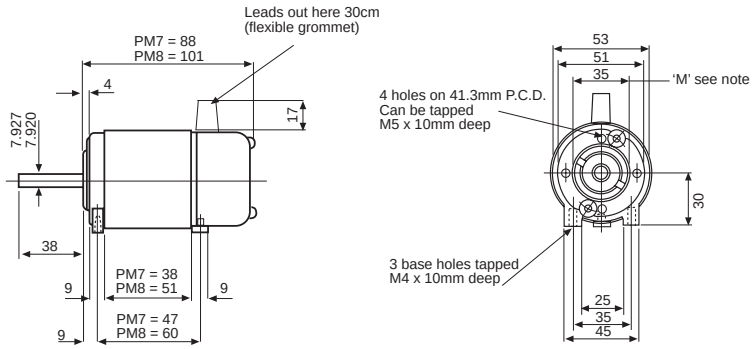
Permanent magnet dc motors							
RS stock no.	Type	Shaft Type	Rating (W)	Input current	rpm	Voltage	Suitable controller **RS** stock no.
266-424	PM10	S	60	1.7	4000	50	244-2939
716-165	PM10	M	60	1.7	4000	50	244-2939
716-171	PM10	S	60	7.3	4000	12	440-492
716-187	PM10	M	60	7.3	4000	12	440-492
716-137	PM2	M	160	3.8	4000	50	-
266-389	PM3	M	90	2.4	4000	50	244-2939
716-193	PM4	M	90	10.5	3000	12	440-492
716-200	PM4	M	90	5.2	3000	24	440-492
298-5060	PM7	M	15	1.7	3000	12	
298-5076	PM7	M	15	0.9	3000	24	
298-5082	PM7	M	15	0.4	3000	50	
298-5098	PM8	M	25	2.8	3000	12	
298-5105	PM8	M	25	1.4	3000	24	
298-5111	PM8	M	25	0.7	3000	50	
298-5155	PM8	M	25	0.16	3000	220	
296-3054	PM10	M	30	4.3	2000	12	
296-3076	PM10	M	30	1.1	2000	50	
298-5127	PM10	M	45	6	3000	12	
298-5149	PM10	M	45	1.3	3000	50	

PM10



PM7

PM8

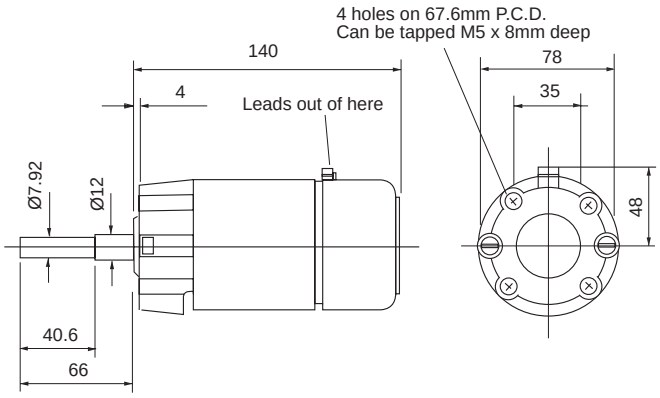


Spigot 'M' can be machined to 34.54/34.49mm dia. concentric with shaft 0.05mm T.I.R.

Optional shaft at lead end 7.93mm dia. x 33mm long (TOL on length ± 0.25mm)

PM2, PM3 & PM4

PM2 = 165
PM3 = 140
PM4 = 153



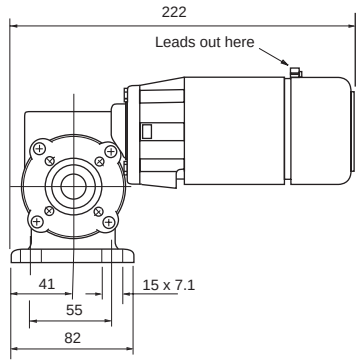
PM2CMB-50Vdc using motor
(RS stock no. 716-137), 160W, 3.8A

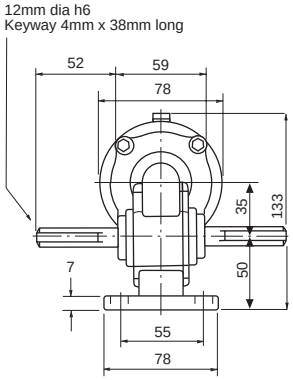
rpm	Output torque (Nm)	**RS** stock no.
100	6.3	718-026
130	5.0	718-032
160	4.4	718-048
200	3.9	718-054
260	3.3	718-060
320	2.6	718-076
400	2.4	718-082
480	2.0	718-098

PM3CMB-50Vdc using motor
(RS stock no. 266-389), 90W, 2.4A

rpm	Output torque (Nm)	**RS** stock no.
66	4.43	718-105
83	4.2	718-111
100	3.75	266-351
130	3.0	718-133
160	2.63	718-149
200	2.33	266-367
260	1.95	718-161
320	2.0	266-373
400	1.43	718-183
480	1.2	718-199

PM2CMB/PM3CMB/PM4CMB

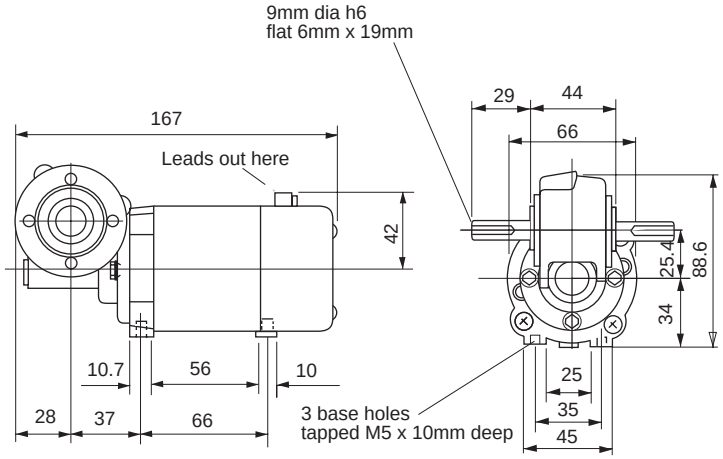




PM10CS-50Vdc using motor
(RS stock no. 266-424), 60W, 1.7A

rpm	Output torque (Nm)	**RS** stock no.
100	2.5	266-395
130	2.0	718-212
160	1.75	718-228
200	1.55	266-402
260	1.3	718-240
330	1.05	266-418
400	0.95	718-262
480	0.8	718-278

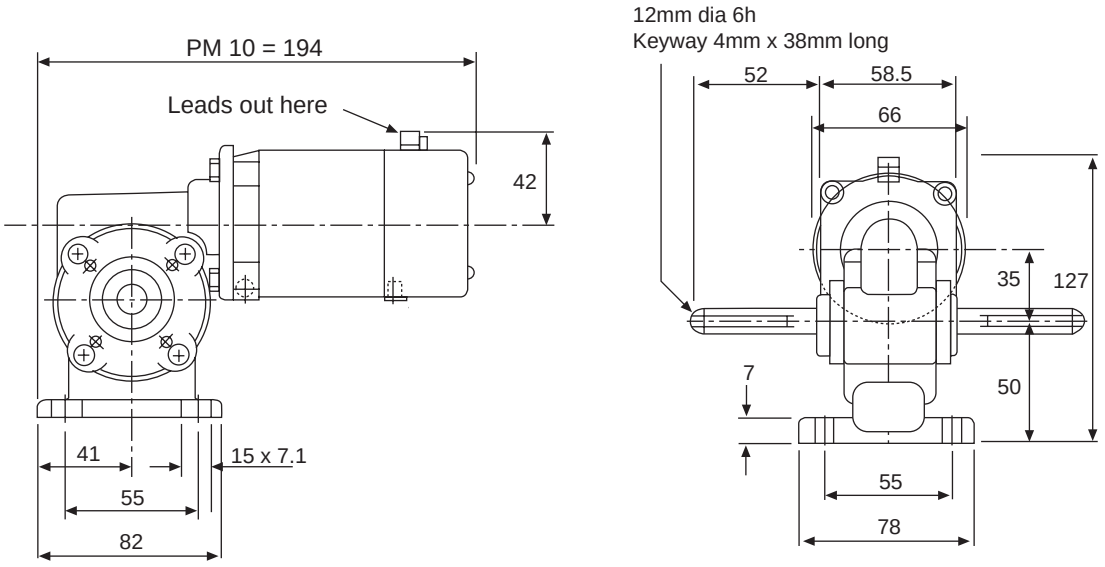
PM10CS



PM10CMB-50Vdc using motor
(RS stock no. 716-165), 60W, 1.7A

rpm	Output torque (Nm)	**RS** stock no.
60	2.95	718-284
83	2.80	718-290
100	2.5	718-307
130	2.0	718-313
160	1.75	718-329
200	1.55	718-335
260	1.3	718-341
320	1.05	718-357
400	0.95	718.363
480	0.8	718-379

PM10CMB



PM10CS-12Vdc using motor
(RS stock no. 716-171), 60W, 7.3A

rpm	Output torque (Nm)	**RS** stock no.
100	2.5	718-385
130	2.0	718-391
160	1.75	718-408
200	1.55	718-414
260	1.3	718-420
330	1.05	718-436
400	0.95	718-442
480	0.8	718-458

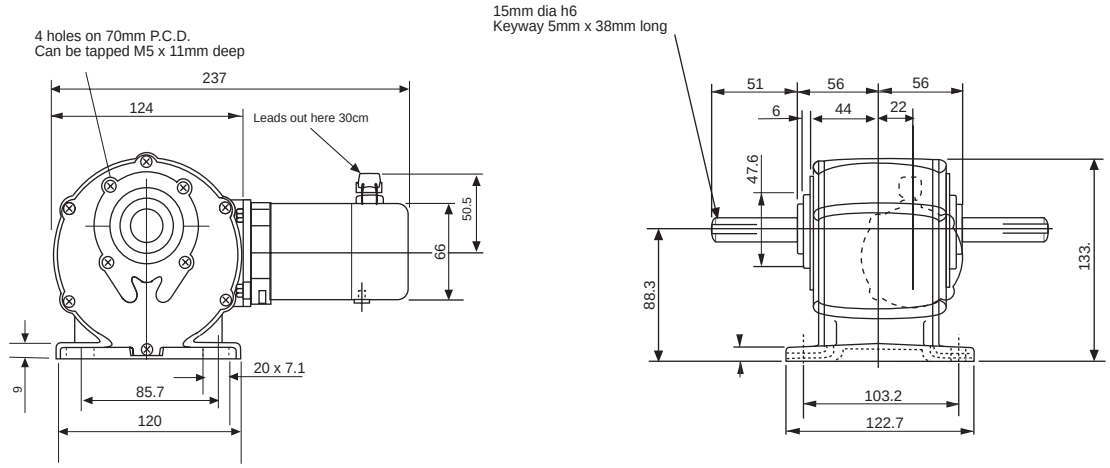
For line drawing see PM10CS, 50V.

PM10CMB-12Vdc using motor
(RS stock no. 716-187), 60W, 7.3A

rpm	Output torque (Nm)	**RS** stock no.
66	2.95	718-464
83	2.80	718-470
100	2.5	718-486
130	2.0	718-492
160	1.75	718-509
200	1.55	718-515
260	1.3	718-521
320	1.05	718-537
400	0.95	718-543
480	0.8	718-559

For line drawing see PM10CS, 50V

PM10CLWS



PM4CMB-12Vdc using motor
(RS stock no. 716-193), 90W, 10.5A

rpm	Output torque (Nm)	**RS** stock no.
50	5.9	718-565
62	5.6	718-571
75	5.0	718-587
100	4.0	718-593
120	3.5	718-600
145	3.1	718-616
190	2.6	718-622
240	2.1	718-638
290	1.9	718-644
360	1.6	718-650

PM4CMB-12Vdc using motor
(RS stock no. 716-200), 90W, 10.5A

rpm	Output torque (Nm)	**RS** stock no.
50	5.9	718-666
62	5.6	718-672
75	5.0	718-688
100	4.0	718-694
120	3.5	718-701
145	3.1	718-717
190	2.6	718-723
240	2.1	718-739
290	1.9	718-745
360	1.6	718-751

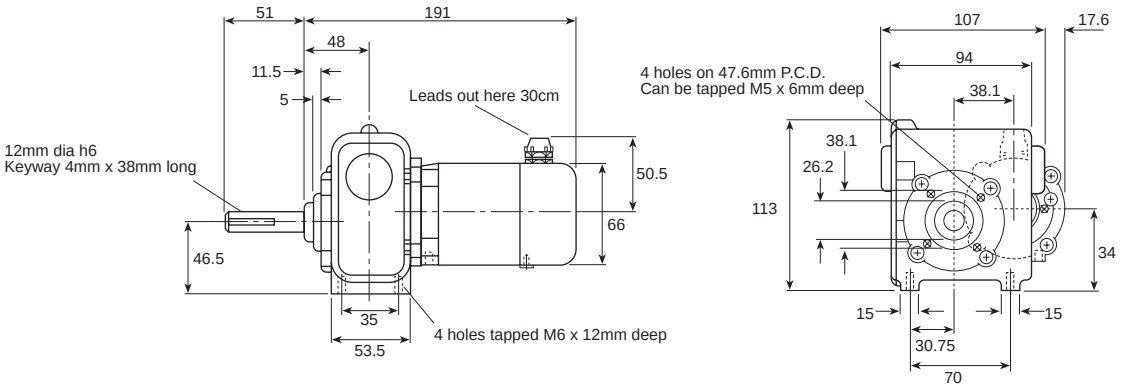
PM10CM1W-50Vdc using motor
(RS stock no. 266-424), 60W, 1.7A

rpm	Output torque (Nm)	**RS** stock no.
3	17	397-174
6	17	397-180
11	15.9	397-196
20	10.5	397-203
30	8.1	397-219
38	6.5	397-225
52	5.3	397-231
58	4.7	397-247
76	3.9	397-253
92	3.4	397-269
152	2.6	397-275

PM10CM1W-12Vdc using motor
(RS stock no. 716-171), 60W, 7.3A

rpm	Output torque (Nm)	**RS** stock no.
3	17	397-281
6	17	397-297
11	15.9	397-304
20	10.5	397-310
30	8.1	397-326
38	6.5	397-332
52	5.3	397-348
58	4.7	397-354
76	3.9	397-360
92	3.4	397-376
152	2.6	397-382

PM10CMIW



PM7 SWS 12Vdc 1.7A
Supplied with motor
(RS stock no. 298-5060)

rpm	Output torque (Nm)	**RS** stock no.
2	11	306-0005
4	11	306-0011
9.7	9	306-0027
19	5	306-0033
31	3	306-0049
47	2	306-0061
71	2	306-0077

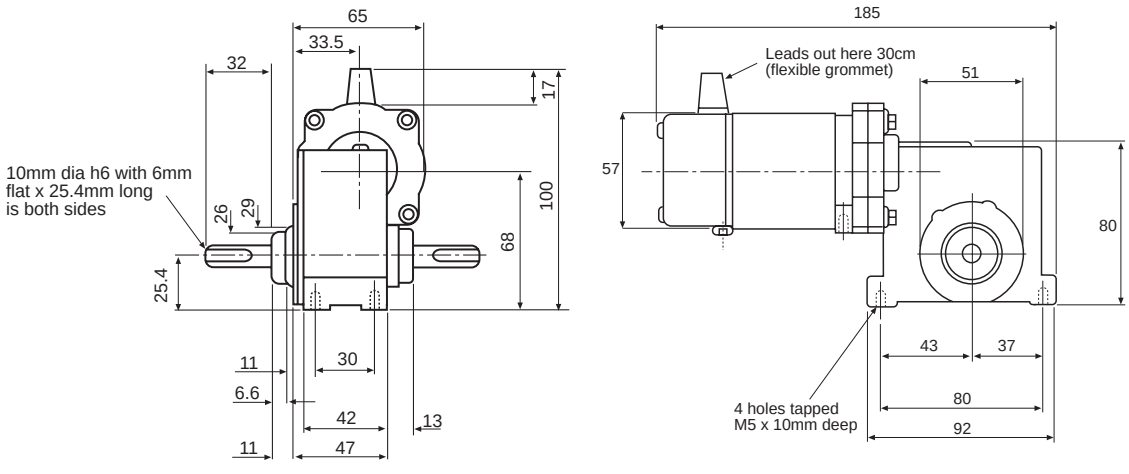
PM7C SWS-50Vdc 0.4A
Supplied with motor
(RS stock no. 298-5082)

rpm	Output torque (Nm)	**RS** stock no.
2	11	306-0162
4	11	306-0178
9.7	9	306-0184
19	5	306-0190
31	3	306-0207
47	2	306-0213
71	2	306-0229

PM7C SWS-24Vdc 0.9A
Supplied with motor
(RS stock no. 298-5076)

rpm	Output torque (Nm)	**RS** stock no.
2	11	306-0083
4	11	306-0099
9.7	9	306-0106
19	5	306-0128
31	3	306-0134
47	2	306-0140
71	2	306-0156

PM7SWS



PM10C SWS-12Vdc 4.3A
Supplied with motor
(RS stock no. 296-3054)

rpm	Output torque (Nm)	**RS** stock no.
1.4	11	306-0235
4.8	11	306-0241
8.6	11	306-0257
16	11	306-0263
21	9	306-0285
31	7	306-0291
47	5	306-0308

PM10C SWS-12Vdc 6A
Supplied with motor
(RS stock no. 298-5127)

rpm	Output torque (Nm)	**RS** stock no.
2.1	11	306-0392
44	11	306-0409
9.7	11	306-0415
19	11	306-0421
231	9	306-0437
47	7	306-0443
71	5	306-0459

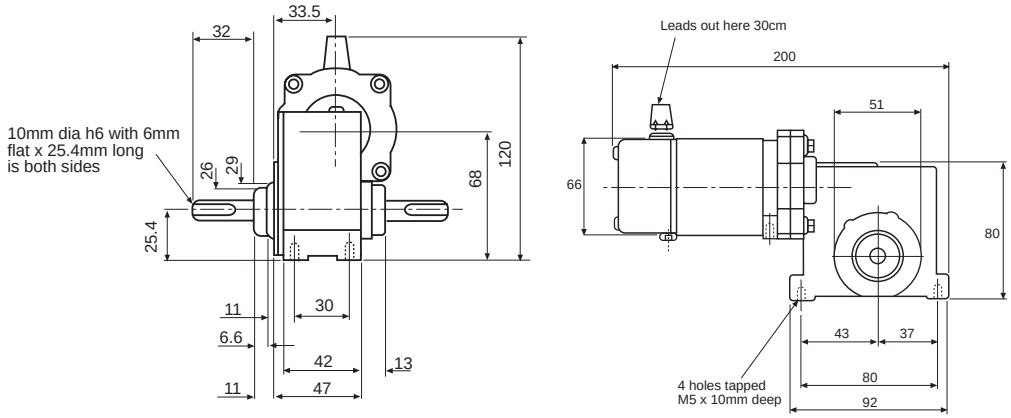
PM10C SWS-50Vdc 1.1A
Supplied with motor
(RS stock no. 296-3076)

rpm	Output torque (Nm)	**RS** stock no.
1.4	11	306-0314
4.8	11	306-0320
8.6	11	306-0342
16	11	306-0358
21	9	306-0364
31	7	306-0370
47	5	306-0386

PM10C SWS-50Vdc 1.3A
Supplied with motor
(RS stock no. 298-5149)

rpm	Output torque (Nm)	**RS** stock no.
2.1	11	306-0465
4	11	306-0471
9.7	11	306-0487
19	11	306-0500
31	9	306-0516
47	7	306-0522
71	5	306-0538

PM10c SWS



PM7 MWS-12Vdc 1.7A
Supplied with motor
(RS stock no. 298-5060)

rpm	Output torque (Nm)	**RS** stock no.
4	26	306-0588
4.5	16	306-0594
9	10	306-0601
17	6	306-0623
21	5	306-0639
24	4	306-0645
32	3	306-0651

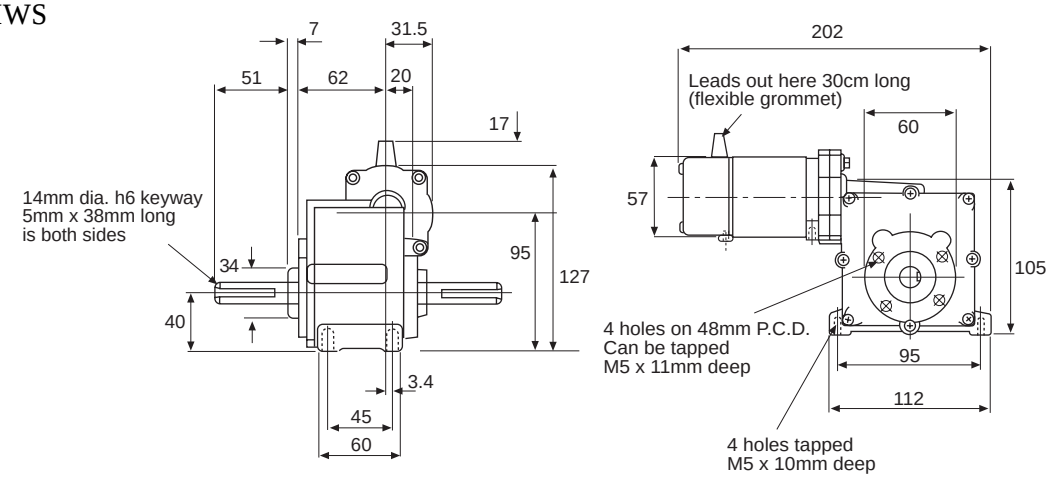
PM7 MWS-50Vdc 0.4A
Supplied with motor
(RS stock no. 298-5082)

rpm	Output torque (Nm)	**RS** stock no.
2	26	306-0730
4.5	16	306-0746
9	10	306-0752
17	6	306-0768
21	5	306-0780
24	4	306-0796
32	3	306-0803

PM7 MWS-24Vdc 0.9A
Supplied with motor
(RS stock no. 298-5076)

rpm	Output torque (Nm)	**RS** stock no.
2	26	306-0667
4.5	16	306-0673
99	10	306-0689
17	6	306-0695
21	5	306-0702
24	4	306-0718
32	3	306-0724

PM7CMWS



PM10C MWS-12Vdc 4.3A
Supplied with motor
(RS stock no. 296-3054)

rpm	Output torque (Nm)	**RS** stock no.
1.4	45	306-0819
3	45	306-0825
6	30	306-0847
11	19	306-0853
14	15	306-0869
18	12	306-0875
21	10	306-0881
32	7	306-0897

PM10C MWS-50Vdc 1.1A
Supplied with motor
(RS stock no. 298-3076)

rpm	Output torque (Nm)	**RS** stock no.
1.4	45	306-0904
3	45	306-0910
6	30	306-0926
11	19	306-0932
4	15	306-0948
18	12	306-0954
21	10	306-0960
32	7	306-0976

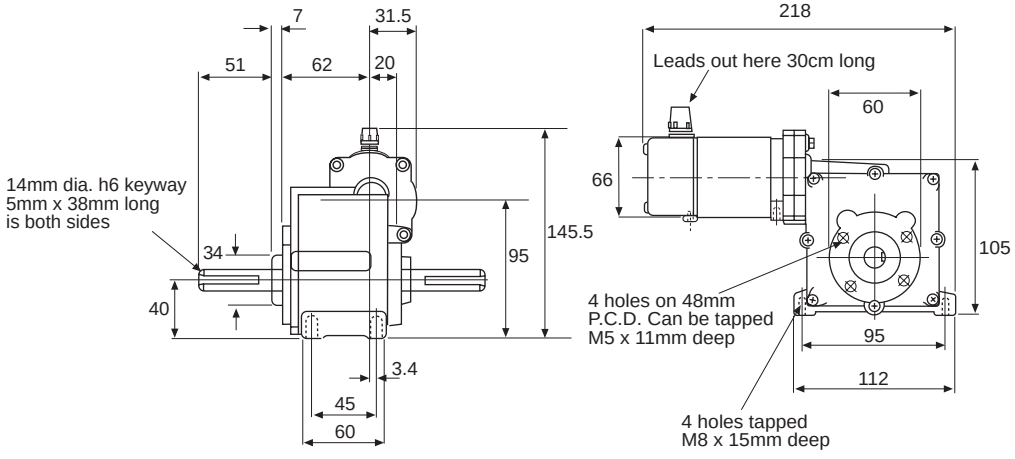
PM10C MWS-12Vdc 6.0A
Supplied with motor
(RS stock no. 298-5127)

rpm	Output torque (Nm)	**RS** stock no.
2.1	45	306-0982
4.6	37	306-1008
9	30	306-1014
17	18	306-1020
21	15	306-1036
28	11	306-1042
32	10	306-1058
48	7	306-1070

PM10C MWS-50Vdc 1.3A
Supplied with motor
(RS stock no. 298-5149)

rpm	Output torque (Nm)	**RS** stock no.
2.1	45	306-1086
4.6	37	306-1092
9	30	306-1109
17	18	306-1115
21	15	306-1137
28	11	306-1143
32	10	306-1159
48	7	306-1165

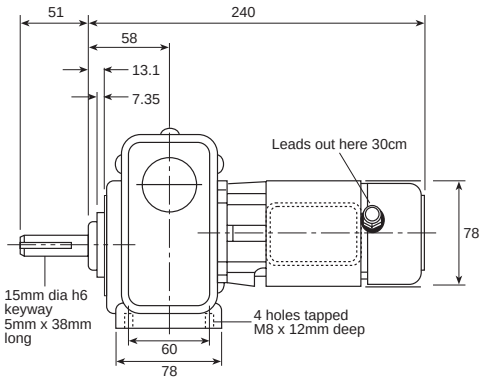
PM10c MWS

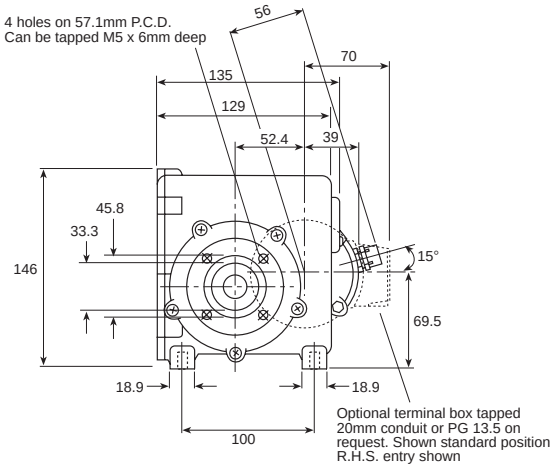


PM3CL1W-50Vdc using motor
(RS stock no. 266-389), 90W, 2.4A

rpm	Output torque (Nm)	**RS** stock no.
4.5	28	400-337
7.2	28	400-343
12	22	400-359
27	12	400-365
36	10	400-371
53	9	400-387
87	6	400-393
107	5	400-400

PM3aLIW

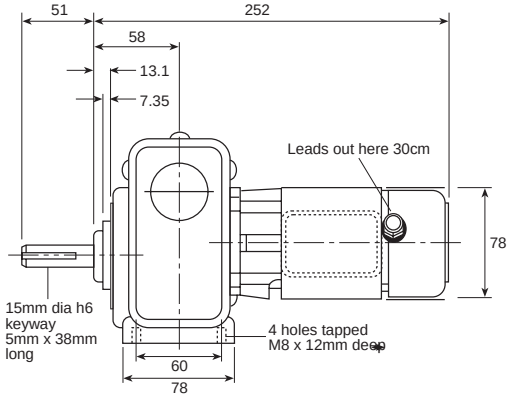


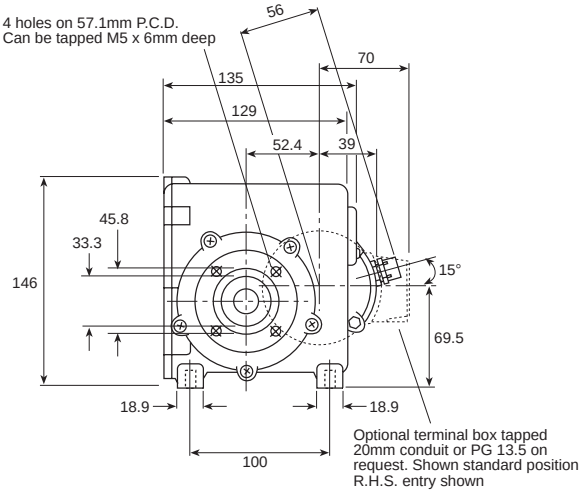


PM4CL1W-12Vdc using motor
(RS stock no. 716-193), 90W, 10.5A

rpm	Output torque (Nm)	**RS** stock no.
3.3	28	400-416
5.4	28	400-422
9.0	28	400-438
20	15	400-444
27	13.5	400-450
42	10.5	400-466
65	7.5	400-472
81	6	400-488

PM4c WS





PM4CL1W-24Vdc using motor
(RS stock no. 716-200), 90W, 5.2A

rpm	Output torque (Nm)	**RS** stock no.
3.3	28	400-517
5.4	28	400-523
9	28	400-539
20	15	400-545
27	13.5	400-551
42	10.5	400-567
65	7.5	400-573
81	6	400-589

PM10CWS-12Vdc using motor
(RS stock no. 716-187), 60W, 7.3A

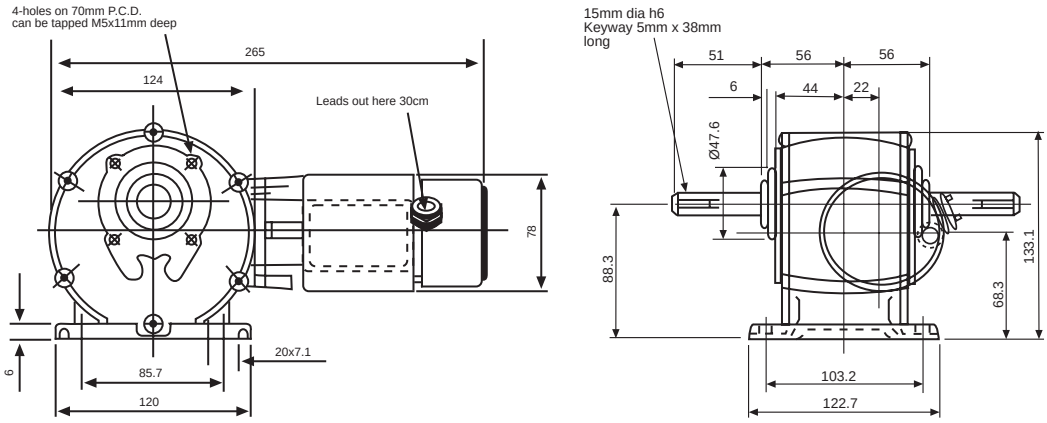
rpm	Output torque (Nm)	**RS** stock no.
0.5	74	224-7683
1	74	224-7699
1.6	74	224-7706
2.1	74	224-7712
3.2	74	224-7728
4.5	74	224-7740
6.5	74	224-7756
8	54	224-7762
10	43	224-7778
15	27	224-7784
20	24	224-7790
30	16	224-7807
40	12	224-7813
60	9	224-7829
80	7	224-7835

For line drawing see PM10CWS
PM10CWS-50Vdc using motor
(RS stock no. 716-165), 60W, 1.7A

rpm	Output torque (Nm)	**RS** stock no.
0.7	74	224-7526
1.3	74	224-7532
2.2	74	224-7548
3	74	224-7554
4.3	74	224-7560
5.7	74	224-7576
8.7	69	224-7582
10	41	224-7598
13	32	224-7605
20	20	224-7611
27	18	224-7627
40	15	224-7633
53	9	224-7649
80	7	224-7655
106	5	224-7661

For line drawing see PM10CWS

PM10cWS



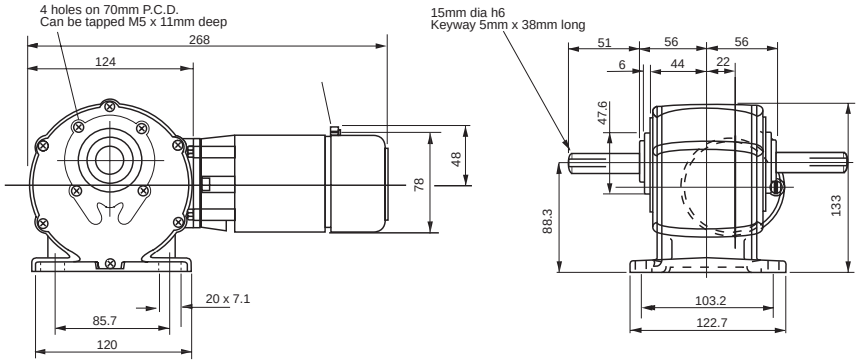
PM2C WS-50Vdc using motor
(RS stock no. 716-137), 160W, 3.8A

rpm	Output torque (Nm)	**RS** stock no.
5.7	74	224-7841
8.7	74	224-7857
10	62	224-7863
13	57	224-7879
20	38	224-7885
27	32	224-7908
40	27	224-7914
53	16	224-7920
80	12	224-7936
100	9	224-7942

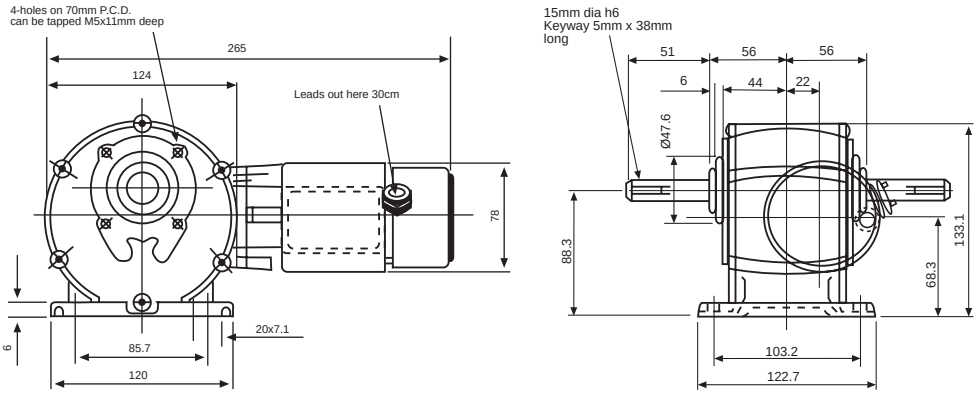
PM3CWS-50Vdc using motor
(RS stock no. 266-389), 90W, 2.4A

rpm	Output torque (Nm)	**RS** stock no.
0.7	74	224-7964
1.3	74	224-7970
2.2	74	224-7986
3	74	224-7992
4.3	74	224-8002
5.7	74	224-8018
8.7	69	224-8030
13	32	227-3137
20	20	266-446
27	18	224-8068
40	15	224-8074
53	9	224-8080
60	7.5	266-452
80	7	224-8096
106	5	224-8103

PM3WS



PM4cWS



PM4CWS-12Vdc using motor
(RS stock no. 716-193), 90W, 10.5A

rpm	Output torque (Nm)	**RS** stock no.
0.5	74	224-8119
1	74	224-8125
1.6	74	224-8131
2.1	74	224-8147
3.2	74	224-8153
4.5	74	224-8169
6.5	74	224-8175
8	54	224-8197
10	43	224-8204
15	43	224-8210
20	24	224-8226
30	16	224-8232
40	12	224-8254
60	9	224-8260
80	7	224-8276

PM4CWS-24Vdc using motor
(RS stock no. 716-200), 90W, 5.2A

rpm	Output torque (Nm)	**RS** stock no.
0.5	74	224-8282
1	74	224-8298
1.6	74	224-8311
2.1	74	224-8327
3.2	74	224-8333
4.5	74	224-8349
6.5	74	224-8355
8	54	224-8361
10	43	224-8377
15	43	224-8383
20	24	224-8399
30	16	224-8406
40	12	224-8412
60	9	224-8428
80	7	224-8434

Replacement gearboxes (these are only suitable for use with Parvalux motors)

S gearbox

Ratio	**RS** stock no.
72:1	716-216
60:1	716-222
48:1	716-238
40:1	716-244
30:1	716-250
25:1	716-266
20.5:1	716-272
15.5:1	716-288
12.5:1	716-294
10.3:1	716-301
8.33:1	716-317

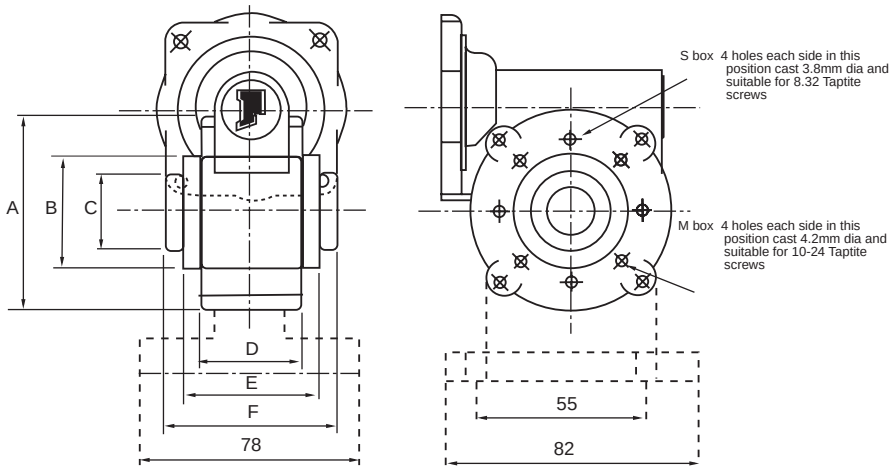
'S' type box						
Nominal as cast dimensions ± .13mm						
	A Dia.	B Dia.	C Dia.	D	E	F
mm	60	34.9	22.9	32.5	40	44

M and MB gearbox

Ratio	**RS** stock no.
72:1	716-323
60:1	716-339
48:1	716-345
40:1	716-351
30:1	716-367
25:1	716-373
20.5:1	716-389
15.5:1	716-395
12.5:1	716-402
10.3:1	716-418
8.33:1	716-424

'M' type box						
Nominal as cast dimensions ± .13mm						
	A Dia.	B Dia.	C Dia.	D	E	F
mm	68.6	38.1	26.2	35.6	45.2	58.5

Gearbox



Greased used in gearboxes is Polyurea - 'O' grade - Not supplied with replacement gearboxes.

RS Components, PO Box 99, Corby, Northants, NN17 9RS
Telephone: 01536 201234
An Electrocomponents Company