PARVALUX®

AC motors catalogue

www.parvalux.com

PARVALUX®

:: geared motors :: legendary reliability :: totally customisable ::

Product guide

	Type Code	Shaft Orientation	DC brushless (PBL) Power (Watts)* Max	DC brushless (PBL) Speed (rpm) Max	DC brushless (PBL) Torque (Nm)** Min	DC brushless (PBL) Torque (Nm)** Max	DC permanent magnet (PM) Power (Watts)* Min	DC permanent magnet (PM) Power (Watts)* Max	DC permanent magnet (PM) Speed (rpm) Min	DC permanent magnet (PM) Speed (rpm) Max	DC permanent magnet (PM) Torque (Nm)** Min	DC permanent magnet (PM) Torque (Nm)** Max	AC induction (SD) Power (Watts)* Min	AC induction (SD) Power (Watts)* Max	AC induction (SD) Speed (rpm) Min	AC induction (SD) Speed (rpm) Max	AC induction (SD) Torque (Nm)** Min	AC induction (SD) Torque (Nm)** Max
motors only 	PBL/PM/SD	In-line	440	4000	0.06	1.4	7.5	450	1500	5000	0.05	1.1	3.7	250	900	2800	0.025	1.3
worm 	S	90°	84	640	0.2	3.5	7.5	90	21	1176	0.2	4.0	3.7	120	13	680	0.06	4.5
	M	90°	220	480	0.7	11.8	23	280	21	1176	0.5	11.7	10	190	12	680	0.36	11.4
	MB / MF	90°	220	480	0.7	11.8	23	280	21	1176	0.5	11.7	10	190	12	680	0.36	11.4
	L / LH	90°	346	432	0.7	19.2	45	450	25	976	0.9	18.7	100	250	23	546	1.9	17
	LB / LF / LHB	90°	346	432	0.7	19.2	45	450	25	976	0.9	18.7	100	250	23	546	1.9	17
	LS / LSH	90°	346	432	0.7	19.2	45	450	25	976	0.9	18.7	100	250	23	546	1.9	17
	G / GH	90°	440	240	6.6	50	80	450	20	400	4.6	45.1	-	-	-	-	-	-
double worm 	SS	90°/In-line	-	-	-	-	7.5	60	0.5	150	0.8	5.9	3.7	120	0.32	40	0.34	5.9
	MM	90°/In-line	-	-	-	-	23	60	0.3	60	5	11.8	8	190	0.5	30	1.1	11.8
	MBM	90°/In-line	-	-	-	-	23	60	0.3	60	5	11.8	8	190	0.5	30	1.1	11.8
in-line double worm 	SIW	In-line	136	102	2.5	11.3	7.5	90	1	235	0.6	11.3	8	60	1	164	0.4	11.3
	MIW	In-line	184	77	3.2	28	23	120	1	235	1.7	28	8	120	1	164	0.5	28
	LIW	In-line	-	-	-	-	33	200	1	108	4.7	45	35	190	1.1	75	4.3	45
in-line spur 	SIS	In-line	-	-	-	-	7.5	90	5	182	0.9	7.9	8	60	3	127	1.24	7.9
	MIS	In-line	-	-	-	-	33	200	15	623	1	37	35	120	14	436	1	45
	LIS	In-line	-	-	-	-	23	280	4	667	1	86	10	190	2.6	467	1	100
worm spur 	SWS	90°	52	67	3.6	11	7.5	60	1	101	1.5	11	25	25	1	71	1.9	11
	MWS	90°	134	98	3.3	45	7.5	90	1	149	1	45	60	60	0.65	106	1.1	45
	LWS	90°	184	80	3.4	100	23	450	0.4	80	4	100	190	190	0.22	90	1	100
	GWS	90°	184	44	19.4	250	60	450	0.5	71	16	250	250	250	0.4	50	2	250
planetary 	PG36	In-line	-	-	-	-	3.8	11	3	674	0.05	0.3	-	-	-	-	-	-
	PG45	In-line	-	-	-	-	11	14	5	863	0.1	10	-	-	-	-	-	-
	PG56	In-line	-	-	-	-	3.7	59	3	694	0.1	30	-	-	-	-	-	-
	HP60	In-line	220	1000	0.4	30	23	788	1	1000	0.52	30	-	-	-	-	-	-

* Continuous rated power | ** Continuous output torque

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Motors

for DC brushed permanent magnet and DC brushless motors and geared units, please refer to the appropriate dedicated catalogue

Gear Units

Single Worm

Double Worm

In Line Double Worm

In Line Multi Spur

Worm and Spur

Terms and Conditions of Sale

1	**General**	Contracts and orders are accepted subject to these conditions of sale. Unless expressly accepted in writing any qualification of these conditions contained in any document of the Buyer shall be deemed to be inapplicable.
2	**Variation in price**	Unless otherwise stated all orders are accepted on condition any fluctuation in cost of materials and/or wages will entail a corresponding adjustment to the quoted price.
3	**Quotations**	We reserve the right to consider quotations invalid 14 days after issue.
4	**Acceptance**	All orders (which must be in writing) to be accompanied by sufficient information enabling us to proceed with the order forthwith, otherwise we shall be at liberty to amend the delivery and/or offer price.
5	**Cancellation and variation**	Once an order has been accepted by us it may not be cancelled or varied except with our consent, which at our discretion may be given only on terms which will indemnify us against any expense which shall include all our proper charges for work carried out and goods wholly or partly manufactured prior to the date of such cancellation or variation: If, owing to war, strikes, difficulty in obtaining materials or causes of any nature beyond our control we are unable to deliver any part of an order, we shall have the right (on giving notice in writing) to cancel the undelivered balance of the order and the customer shall not have any claim for or arising out of such inability, delay or cancellation.
6	**Returns**	Goods supplied in accordance with customers orders cannot be accepted for return without our written consent; if approval is given a handling charge will be made. Returned goods must be consigned carriage paid.
7	**Terms**	Subject to a minimum annual turnover our terms are strictly Nett Monthly Account, initial orders should be accompanied by a Bankers and two Trade References. Small value orders will be accepted on a cash with order basis or credit card details.
8	**Delivery**	The time given for delivery ex works is estimated only and not in any way guaranteed. Every endeavour will be made to meet the delivery given in good faith. We cannot however accept liability for failure to do so. When reduction in the scheduled rate of delivery is requested and agreed by us we reserve the right to make and shall be entitled to all additional charges incurred .
9	**Carriage**	Prices include delivery to U.K. mainland destinations, mode of transport at our discretion. When delivery is by a specific carrier at purchaser's request the carriage will be charged as an extra.
10	**Damage shortage and non-delivery**	We undertake to give separate postal notification on the day of despatch. Claims for non-delivery will not be entertained unless the carriers and ourselves are notified within 14 days from despatch date or 5 days in the case of postal or passenger train delivery services. Furthermore, we are unable to accept responsibility for damage, shortage or incorrect goods supplied, unless the carriers and ourselves are notified within 3 days from receipt.
11	**Warranty**	Our products are guaranteed for a period of 24 months from date of invoice against electrical breakdown or mechanical failure resulting from defective materials and/or workmanship providing the breakdown or failure is not due to misuse or operation under adverse conditions (including use with non Parvalux approved controllers). Any unit proving faulty and covered by the provisions of this guarantee must be returned to our works complete, carriage paid, for examination when it will be repaired or replaced at our option. Units that have been dismantled, carbon brushes, capacitors and flexible cables are excepted from this guarantee. **Mutilation or removal of the nameplate will invalidate the guarantee.**
12	**Consequential damage**	Every endeavour will be made to supply goods free from defects, we cannot accept any responsibility or entertain claims for consequential damages or expenses.
13	**Indemnity**	The Buyer will indemnify us against damages, penalties, costs and expenses to which we may become liable as a result of work done in accordance with the Buyer's specification which involves an infringement of any letters, patents, or registered design.
14	**Drawings**	All drawings issued by us remain our property and must be returned on request. These must not be loaned, reproduced, copied or in any way altered wholly or in part without our written authority nor may information injurious to us be furnished from them.
15	**Tools**	All tools, dies, moulds, jigs and fixtures, etc., will remain our property whether or not a charge is made towards their cost.
16	**Inspection and tests**	Our products are carefully inspected and submitted to our standard tests at our works before despatch. If tests other than these are specified, or tests in the presence of you or your representative are required, these will be charged for. In the event of any delay on your part in attending such tests after 7 days' notice that we are ready, the tests will proceed in your absence and shall be deemed to have been made in your presence.
17	**Legal construction**	Unless otherwise agreed in writing the contract shall in all respects be constructed and operate as an English contract and in conformity with English law.
18	**Policy**	**It is our policy to continuously develop and improve our products. We therefore reserve the right to modify or change our designs at our convenience and without prior notice.**

Whilst Parvalux takes all reasonably practicable steps to design and manufacture its products to comply with the requirements of the Health and Safety at Work Act 1974, all products must be properly used and Purchasers are reminded that their obligations under the Act are to ensure that the installation and operation of such products at a place of work should be safe and without risk to health.

To order, re-order or enquire…

…the following will assist

Repeat or Replacement

From the motor nameplate on a unit previously supplied or quote the original acknowledgment number.

Note the REF number E.G. SD or PM and supply the complete information contained on that line. If this information is not available then the complete nameplate details are required.

Then either fax, write, phone or e-mail for your quote and delivery date. Be sure to detail clearly any modifications you require.

When placing your order include all the above details with the number of units required.

New Order

Our sales technicians are available to assist with your choice of unit; however, researching the following questions will ensure the swiftest response from our sales office.

OPERATING ENVIRONMENT
(Select suitable enclosure type).

VOLTAGE
(If A.C., or D.C., 1 or 3 phase, plus frequency or country of destination).

MOTOR SPEED AND/OR FINAL SHAFT SPEED
(Specify catalogue page, table number and final speed to indicate given torque output available).

POWER REQUIRED
(Watts) Motor only/geared unit, torque in (nm)

IS THE FINAL SHAFT TO BE IN-LINE OR AT RIGHT ANGLES TO THE MOTOR?
FINAL SHAFT POSITION
(see page 111).

MOUNTING REQUIREMENT
Flange, Face or Foot mounting.

IS A VARIABLE SPEED CONTROLLER REQUIRED?
(Contact the factory for information).

WHAT DUTY CYCLE
i.e. 0.1, 0.5, 1.0, 3.0, 8.0, 24 hours.

ARE ANY OPTIONAL EXTRAS REQUIRED?
(Detailed on drawings and motor optional extras).

To ensure correct selection either phone, fax or e-mail and your enquiry will be dealt with by our sales engineers, also details can be found on our Website. Details of customer applications are of major importance when selecting a unit, all information discussed with our staff is treated as confidential.

This catalogue is also available on CD.

Enquiry

No matter how well a product is designed and manufactured, improper application can result in poor performance or complete failure. It is important to select the correct unit for your design. If you have any doubts about which Parvalux motor or geared motor unit is best suited to your application then call us. Wherever consistent performance, reliability, and long life of a motor, gearmotor are prime considerations, then a Parvalux unit is the right choice.

PARVALUX HAS WORKED FOR MANY YEARS CO-OPERATING WITH BUYERS, TECHNICIANS, AND O.E.M. CUSTOMERS. IT IS OUR ENDEAVOUR TO UNDERSTAND THE REQUIREMENTS OF THE CUSTOMERS APPLICATION IN RELATIONSHIP TO OUR PRODUCT, OUR UNDERSTANDING OF YOUR REQUIREMENTS WILL BE OF MUTUAL BENEFIT, OUR TEST FACILITIES ETC, ARE AT YOUR DISPOSAL.

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Some of your questions answered!

Q Which motors/gearmotors are electrically reversible?

A All motors and gearmotors shown in this catalogue are reversible. (except shaded pole). Some require a full stop before reversing.

Q Can continuous duty motors/gearmotors be used intermittently?

A All rated torques shown in this catalogue are for continuous operation. Continuous duty products can be used intermittently. Operation at loads higher than nameplate ratings is possible for short periods as long as there are rest periods for cooling. Loads must not exceed the mechanical rating for the gears (see page 5) without consulting our sales engineers. The temperature of the motor should be monitored during testing to make sure it is not overheating.

Q Can single speed motors and gearmotors ever be operated as variable speed?

A Three phase and some Permanent Split Capacitor designs may be operated as variable speed with a frequency inverter. Commutator motors can be operated as variable speed using a thyristor controller.

Q Is an adjustable speed system ever appropriate for a single speed application?

A Adjustable speed systems are sometimes appropriate for single speed applications. If the desired speed is not known or not offered in a single speed product, an adjustable speed system may be set to the desired speed.

Q What is IP 54?

A The IP number is an international system for rating enclosures. An IP 54 is for protection against dust and splashing liquids.

Q What is meant by the term self locking?

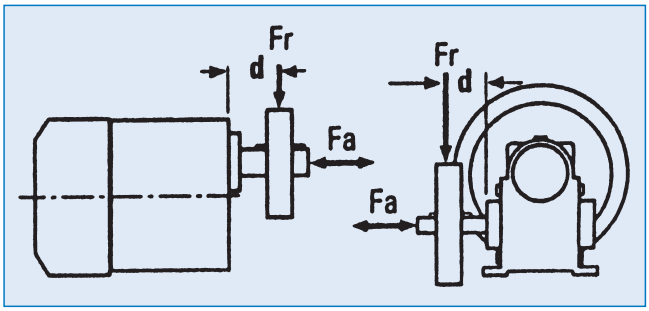
A Self locking refers to the tendency of some gearing to resist movement when the gearmotor is at rest and the load is attempting to move. An example is a load on a conveyer belt trying to drive the system backwards.

Q Which gearheads are self locking?

A Parallel shaft gearheads and right angle gearheads with low ratios are generally not considered to be “Self locking”. Right angle gearheads with ratios greater than 25:1 are often considered to be “Self locking”. They will resist movement up to their torque rating. As the gearing nears the end of its useful life or if it is subjected to overload conditions, it may wear to the point where it is no longer “Self locking”. Self locking gearing is not a recommended method for preventing movement in applications where this movement may cause injury or damage. An external brake is recommended for those applications. (see pages 6, 45 and 72)

Q Can more than one motor be operated from a single control?

A Operation of more than one motor from a single control is not normally recommended. However, when cost is a primary concern, a multiple motor/single control system with either permanent magnet motors and control, or 3 phase motors and control may be successfully implemented. More than one permanent magnet motor may be operated with a single permanent magnet control as long as the sum of the motor currents does not exceed the rated output current of the controller. Comprehensive testing is recommended because this type of system may produce fluctuation or drifting speed output. More than one 3 phase motor may be operated with a single 3 phase control. Motor speeds should not fluctuate as long as the motors are not overloaded and the sum of the motor currents does not exceed the rated output current of the control.



Radial and Axial load parameters

Q What is radial load?

A Radial load is a force pushing or pulling the side of the output shaft. It is shown as Fr above. Exceeding the allowable radial load for a motor or gearmotor will cause premature wear of output shaft bearings and gearing and could cause the shaft to break.
Fr may be the result of a weight on the shaft, belt tension or torque transmitted through a belt, chain, gear, or certain flexible couplings. A permissible radial load, Fr, is shown for each motor and gearmotor. In calculating these values, the following assumptions were made:

1) The radial load is in the worst case direction, i.e. pushing or pulling the shaft sideways.
2) The motor or gearmotor is delivering rated torque.
3) The radial load was applied at distance “d” from the hub or mounting surface. Higher radial loads may be applied closer in on the shaft. Lower radial loads are permitted further out on the shaft.

Flexible couplings are often used to avoid radial load. Most flexible couplings are designed so that they do not transmit radial load, however this should be verified by the coupling manufacturer.

Q What is axial load?

A Axial load is a force on the output shaft into or out of the motor or gearmotor. It is shown as Fa in the diagram above. Exceeding the allowable axial load for a motor or gearmotor will cause premature wear of output shaft bearings and gearing.

General Information and Maintenance Instructions

- **Construction** The frame comprises pressure die-castings accurately located together, alternatively on machined spigots of the hydraulically riveted stator packs, ensuring concentric air gap with correct bearing alignment. The armature laminations or die-cast rotor are pressed onto a precision steel shaft. The 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 B.S. Specification 2757 (≡IEC 85) Class "F" and then impregnated and baked in our Automatic Plant, and accordingly can be considered to be tropically impregnated for all practical purposes.
- **Motor Enclosures** To IEC 34-5 and EN 60034:part 5 and IEC 34-6 and B.S. EN 60034-6. **Induction type motors:** Our standard ventilated internal fan cooled frame conforms to IP 20. **Commutator type motors** SD 1 ventilated internal fan cooled frame conforms to IP 20. SD 11, SD 12 and PM 1, PM 2, PM 6, PM 60 Drip Proof enclosure, internal fan cooled, conforms to IP 21. Plain totally enclosed frame conforms to IP 54. TEFC frames with terminal box conforms to IP 54.

  PM 3, PM 4, PM 5, PM 50, PM 7, PM 8, PM 9, PM 10, PM 11 also conforms to IP 54.
- **Bearings** Shielded ball bearings throughout, spring loaded for quiet running. Temperature parameters -30°C to +100°C/120°C.
- **Brush Gear** (Commutator motors). An adjustable rocker type for maximum brush life and good commutation with easily accessible brushes. To achieve maximum brush life a form factor on the supply voltage as near to 1 as possible would be required.
- **Testing** To B.S. Specification 5000 Part II. (≠IEC 72). All our units are CE marked and comply to current regulations/directives at time of printing.
- **Torque Ratings** All gearbox torque figures have been reproduced to represent an accurate output figure. These figures may be affected by tolerances created during production techniques as well as application circumstances once the units have been installed. **A margin of + or – 10% should be taken into consideration on these figures during your selection of an appropriate unit.**
- **Temperature** All motors are built with Class "F" insulation to B.S. 2757 (≡IEC 85) which allows a temperature rise of 115°C based on an ambient of 40°C. These figures are with the motor running in normal working conditions in free air and not in any form of enclosure. Under full load the heat of the motor casing will be such that it is NOT possible to handle for any length of time.
- **Braking** The problem of instantaneously stopping a motor or geared unit can be overcome by fitting an electromagnetic brake, details on pages 6, 45 and 72.
- **Gear units** The motor is fitted with shielded spring loaded ball bearings absorbing worm thrust from the gear box. The output shaft with flats or keyways is carried in ball bearings pressed into gear wheels of composite or phosphor bronze with hardened and polished steel worms. Gearbox and ball bearings packed with appropriate grade of grease. Worm and multi-spur gear units are fitted with case hardened steel spur gears with an oil bath lubrication. All units are suitable for running in any position.
- **Gearbox positions** Alternative positions for the gearboxes can be arranged to suit customer's requirements (see page 113) but unless specified, will be supplied in standard position as shown on the individual drawings. This also applies to the gearbox shaft extensions.
- **Lubricants** Single and double reduction worm gearboxes are charged with a suitable semi-fluid grease and sealed for life. Worm and multi-spur and in-line spur gearboxes are filled with 20/50 multigrade oil and sealed for life, (in certain conditions semi-fluid grease may be used). Working temperature of lubricants:- Grease -15°C to 120°C; Oil -15°C to 150°C. For units used in extreme temperature conditions i.e., below zero degrees centigrade please contact our sales department.
- **Single and double worm reduction gearboxes** Whilst worm gearing has lower efficiency than spur gearing it is true to say that generally the noise level of worm gear reduction is much lower and therefore, where noise is 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 gearbox 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. If further information is required on this point please consult our sales engineers. The table below shows the recommended mechanical and thermal ratings for the various types of gearbox.

Gearbox Type	Ratios		Mechanical Rating (Nm)		Thermal Rating (watts)		*Radial Loading		Axial Loading	
			COMPOSITE	BRONZE	COMPOSITE	BRONZE	LBS	KG	LBS	KG
S	4 1/8:1 to 40:1 44:1 to 60:1 66:1 to 70:1		2.9 2.3 1.5	4.5 4 2.5	20	25	15	7	8	3.6
M	4 1/8:1 to 40:1 44:1 to 60:1 66:1 to 72:1		7.9 5.9 5.1	11.8 7.9 7.3	38	45	30	13.5	20	9
MB or MF	4 1/8:1 to 40:1 44:1 to 60:1 66:1 to 72:1		7.9 5.9 5.1	11.8 7.9 7.3	40	48	50	23	24	11
L or LH	5:1 to 40:1 50:1 to 60:1		14.6 11.3	22 17	60	72	40	18	30	13.5
LB or LF-LHB	5:1 to 40:1 50:1 to 60:1		14.6 11.3	22 17	60	72	70	32	35	16
SS	47:1 to 2880:1 3000:1 to 4300:1 4320:1 to 4900:1		4 2.7 1.5	5.9 4 2.5	25	30	12	5.5	8	3.6
MM	47:1 to 2880:1 3000:1 to 4300:1 4320:1 to 5184:1		9 5.9 5.1	11.8 7.9 7.3	45	54	20	9	20	9
MBM	47:1 to 2880:1 3000:1 to 4300:1 4320:1 to 5184:1		9 5.9 5.1	11.8 7.9 7.3	47	58	40	18	24	11
SIW	All Ratios		7	11.3	28	38	20	8	12	5
MIW	All Ratios		17	28	50	65	60	27	30	13.5
LIW	All Ratios		28	45	–	–	72	36	45	20
	Worm/Pinion	**Spur Train**								
SIS	22:1 to 29:1 53:1 to 303:1		5.7 7.9		-	-	20	9	10	4.5
MIS	64:1 to 18.5:1 15:1 to 43:1 35:1 to 101:1	5.73:1 13.45:1 33.3:1	12 28 45		-	-	48	22	31	14
LIS	6:1 to 18:1 24:1 to 72:1 57:1 to 171:1 112:1 to 336:1	6:1 25:1 56:1 115:1	23 51 100 74		-	-	60	27	40	18
SWS	40:1 to 120:1 147:1 to 219:1 292:1 to 1377:1	9.6:1 23.5:1 31.3:1	11 11 11		-	-	40	18	25	11.4
MWS	26:1 to 54:1 62:1 to 125:1 145:1 to 1406:1	6.5:1 15.1:1 35.39:1	9 22 45		-	-	80	36	40	18
LWS	23:1 to 98:1 49:1 to 480:1 99:1 to 492:1 231:1 to 1680:1 445:1 to 7776:1	6:1 11:1 25:1 56:1 115:1	45 45 62 100 100		-	-	100	45.5	50	23
GWS	45:1 to 136:1 258:1 to 154:1 351:1 to 1539:1 564:1 to 3300:1	11:1 25:1 57:1 110:1	90 200 250 250		-	-	150	68	80	36

Approx Thermal Rating (W) = $\frac{\text{Final RPM} \times \text{Torque (Nm)}}{9.55} \times (1/n - 1)$ (η=Gear efficiency)

For intermittent duty the thermal rating for the gearbox is increased by multiplying the appropriate gearbox thermal rating by the factor X = $\sqrt{\frac{100\%}{\text{Duty Cycle\%}}}$

*Based on midway point of standard shaft extension (1Nm=10.2cm kp) (1Nm=8.85lbs. ins)

Maintenance Instructions

All units are fitted with grease packed shielded ball bearings and sealed for life, this can vary depending on operating conditions, temperature, and duty cycle. We recommend replacing a noisy bearing, as re-greasing is not possible. Prolonged storage can shorten the estimated life (in excess of 20,000 hours).

In most cases dismantling of the motor or gearbox is straightforward. Carefully note the position of 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 observing Health & Safety. Directives regarding inhalation of carbon dust and only when the commutator surface is in a very blackened condition should it be lightly cleaned with 'flour' paper or similar (note not emery paper). When replacing carbon brushes (which may have a life of some 2000 hours depending on operating conditions) care should be taken to ensure these are a free fit in the brush 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. Magnetic brakes require little maintenance since wear of the bonded lining is automatically compensated for.

Connection Diagrams for Induction Motors

Two Speed 3 Phase – High Speed

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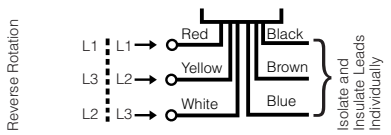
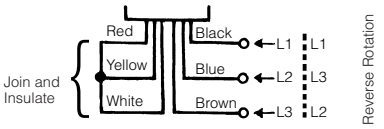


Low Speed



Two Speed 1 Phase – High Speed

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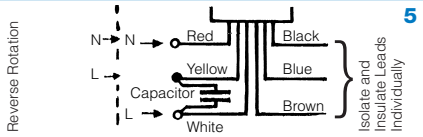
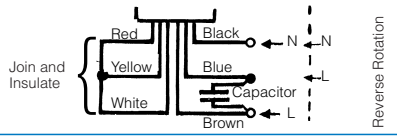


Low Speed



3 Lead Capacitor

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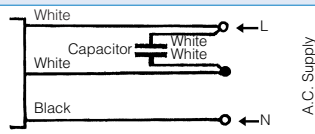
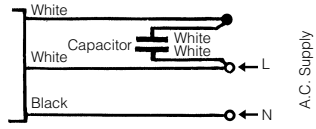


Reverse Rotation



4 Lead Capacitor

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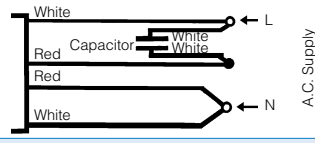
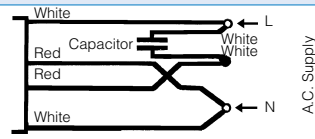
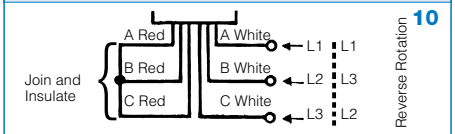


Reverse Rotation

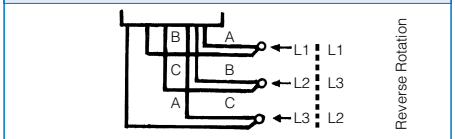


3 Phase Dual Voltage – High Range

10

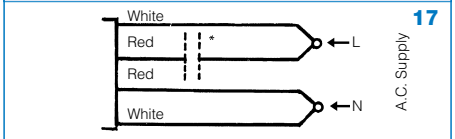


Low Range

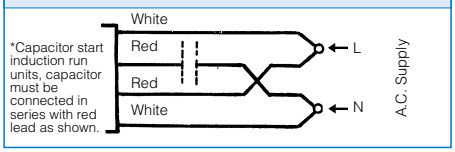


*Capacitor Start Induction Run

17



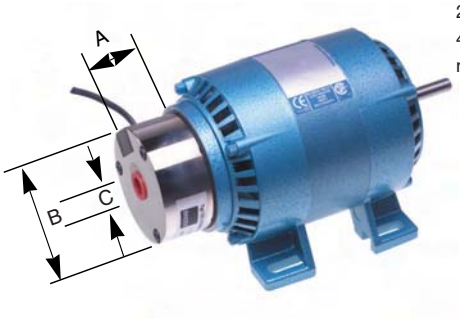
Reverse Rotation



Parvalux Electro Magnetic (Fail Safe) Stop Brakes

(P1-P6) for Induction Motors

Note: Brakes cannot be fitted to T.E.F.C. units.
For frequent stop/starts (more than 3 per minute) please contact our sales engineers.



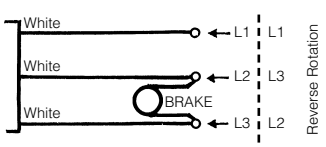
2 core cable 40cm long minimum.

Brake Size P1-P3-P5	Recommended Motor Frames SD 21, SD 41, SD 8 and SD 28				Weight 575g	Brake Size P2-P4-P6	Recommended Motor Frames SD 13, SD 18 and SD 48			
TYPE	P1	P3	P5	DIMENSIONS	APPROVALS	TYPE	P2	P4	P6	DIMENSIONS
Input Power	24 VA (14w)	24 VA (14w)	24 VA (14w)	A B C	C.S.A.C-US C.E. Rec. "Class F"	Input Power	24 VA (14w)	24 VA (14w)	24 VA (14w)	A B C
Input Volts	110v A.C.	230v A.C.	24v D.C.	35 65 12 All dimensions in (mm)	ENCLOSURE	Input Volts	110v A.C.	230v A.C.	24v D.C.	35 65 12 All dimensions in (mm)
Rated Torque	0.4 Nm	0.4 Nm	0.4 Nm	A: inc. adaptor plate	IP 55	Rated Torque	1 Nm	1 Nm	1 Nm	A: inc. adaptor plate

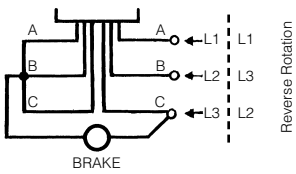
These single-disc electro magnetic brakes are spring applied electrically released units which provide fail to safe operating characteristics, such that on interruption, or failure of power supply, the brake will engage and arrest the load. These brakes operate from single phase a.c. supply (not P5 or P6) and incorporate a built in rectifier. This offers the brake a vibration free characteristic through a lower operating voltage spectrum.

Electro-Magnetic Brake Wiring Diagrams

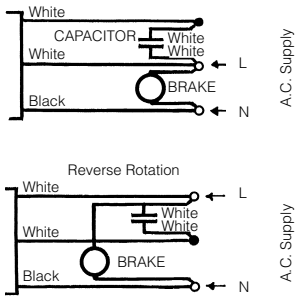
B4 110-250V Three Phase Induction



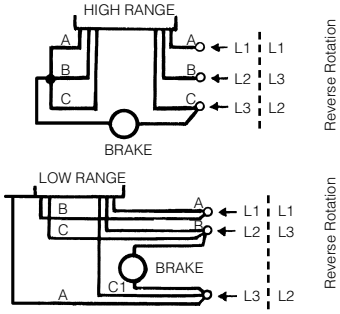
B7 380-440 Three Phase (6 lead) Induction



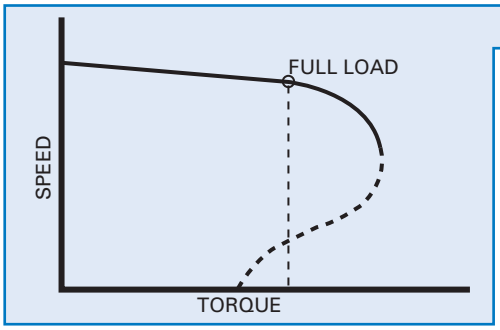
B1 Three Lead Capacitor



B8 Three Phase Dual Voltage



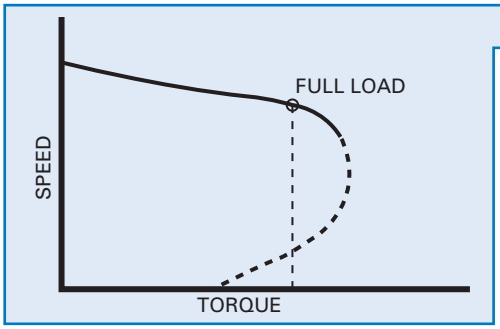
Characteristics of Induction Motors



CAPACITOR START CAPACITOR RUN MOTORS

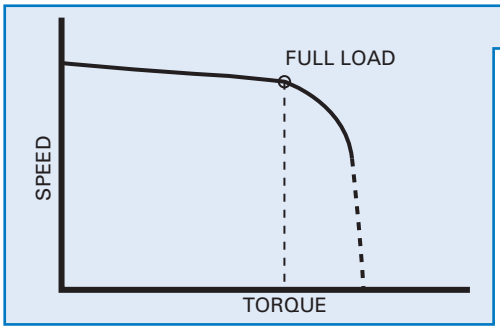
Shown is a typical "torque/speed" characteristic for this type of motor, these units are only suitable for operating from a single phase AC supply and incorporate a permanently connected capacitor.
The speed is fairly constant but it should be borne in mind that the starting torque is lower than the full load output usually in the order of 85% of full load.
The motor however has the advantage of low starting current and is particularly suited for frequent reversing.
Capacitor motors cause no radio or T.V. interference.

(See below for capacitor details).



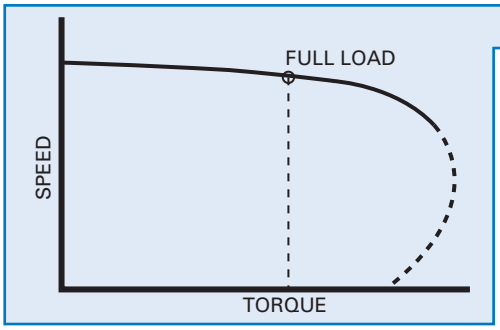
SHADED POLE MOTORS

Shown is a typical "torque/speed" characteristic for this motor. The speed is reasonably constant but between no load and full load the speed variation is greater than the permanent capacitor type.
Starting torque is between 50%-80% full load torque with the advantage of low starting current.
It is important to note rotation is set and cannot be electrically reversed.
This type of motor does not cause radio or T.V. interference.



CAPACITOR START INDUCTION RUN (CENTRIFUGAL SWITCH)

Shown is a typical "torque/speed" characteristic for this type of motor, the speed is fairly constant over the no load to full load range. This unit incorporates an internal centrifugal switch which connects the starting winding, together with an electrolytic type capacitor, in the circuit for a few seconds. This winding and capacitor is only short time rated, the unit is not suitable for driving high inertia loads or frequent start/stops maximum recommended 20 per hour.
The starting current is in the order of 3 x full load current. This type of motor can be electrically reversed, but must not be reversed whilst running, the motor must be allowed to come to rest.



THREE PHASE MOTORS

Shown is a typical "torque/speed" characteristic for this type of motor and where a 3 phase supply is available this motor should be the logical choice.
The speed is constant and starting torque is good, in some cases up to 200% full load.
It is possible to instantaneously reverse this type of motor whilst running.
This type of motor does not cause radio or T.V. interference.

Capacitors

The photograph shows the type of capacitor we are currently stocking.
But other types may be supplied depending upon availability.

Plastic case with part number, capacity, working voltage and connection diagram printed thereon.

When two or more capacitors are necessary for operation then connect the capacitors in parallel.

DATA

Fixing M8 x 13mm long plastic stud and nut, lead length 30cm

Working Voltage	Part Number	MFD −00 +10%	Max Dimension A Diameter	Max Dimension B Length
440	50150	1.5	30	56
440	50200	2	30	56
440	50250	2.5	30	56
440	50300	3	30	56
440	50400	4	30	56
440	50500	5	30	75
440	50600	6	30	75
440	50840	8.4	35	75
440	50942	42	63.5	98
440	50970	70	76	123
250	51000	10	30	75
250	51050	14	35	75

Motor Types:
SD 21 SD 41 SD 8
SD 38 SD 28 SD 29

1 or 3 Phase Induction Motors – Constant Speed

Shaded Pole, Permanent Capacitor or Synchronous

Enclosures: Standard – Ventilated Internal Fan Cooled (IP 20)
Alternative – Totally Enclosed (IP 50) with Terminal Box or T.E.F.C. (IP 54)

SD 21

SD 8

SD 38

SD 8 with brake

- **Voltage Range:** 100/120v – 220/240v A.C. single phase, 50Hz. 380/440 A.C. three phase, 50Hz. Special voltages and frequencies quoted on request.
- **Motor Type:** Single phase with separate capacitor or three phase induction, suitable for reversing. Shaded pole (not reversible) **anti-clockwise** rotation as standard.
- **Starting Currents:** Capacitor or three phase induction: approx 2.5 times full load. Shaded pole: approx 2 times full load.
- **Construction: Motors** – Shielded ball bearings spring loaded for quiet running.
  Single Reduction Gearboxes: Fitted with ball bearings, alloy gearbox with composite gear wheel, grease lubricated for life and suitable for mounting in any position.
  In-Line Double Reduction Gearboxes: Fitted with ball bearings, alloy gearbox with composite gear wheel, grease or oil bath lubricated for life and suitable for mounting in any position.
  Spur Reduction Gearboxes: Fitted with ball bearings, alloy gearbox with composite pinion wheel and multi-spur type hardened steel gears, oil bath lubricated for life. Suitable for mounting in any position.
- **Connections:** 30cm P.V.C. flexible (SD 38 and SD 29 terminal box).
- **Insulation:** Class 'F' (maximum temperature rise 115°C at a maximum ambient of 40°C).
- **Specifications:** B.S. 5000 part 11. (I.E.C. 72). (CSA C-US if required).
- **Optional Extras:** Double ended motor spindles.
  Double ended gear shafts, (not available on in-line units).
  Non standard shafts (stainless steel, keyways, flats, etc).
  Terminal box (not available on SD 21).
  Totally enclosed frame half hour rating.
  Totally enclosed fan cooled frame (T.E.F.C.), continuous rating. (SD 8/SD 28 only).
  Enclosure IP 65 on request.

  Thermal overload protection.
- **Electro-Magnetic Brake:** Page 6.
- **Tachogenerator:** Page 117.
- **Additional Extras for Geared Units:** Non standard catalogue reductions maybe available on request.
- **Bronze Gears:** (Single and double reduction final gears).
- **Flange Mounting Gearbox Details:** Page 114.
- **Gearbox Shaft Positions:** Page 113.

SD 21	Single Phase						
	Shaded Pole						
FULL LOAD R.P.M.	OUTPUT WATTS	STARTING TORQUE FULL LOAD	CURRENT (AMPS)		INPUT WATTS	RATING	
			240V	220V			
1400	3.7	50%	0.22	0.2	30	TOTALLY ENCLOSED CONTINUOUS	
1400	8	80%	0.3	0.29	45	VENTILATED – CONTINUOUS TOTALLY ENCLOSED – 1/2 HR	
Permanent Capacitor						M.F.D.	
						240V	220V
1400	8	100%	0.18	0.16	40	2.5	2.5
2800	20	85%	0.34	0.3	80	2	2

SD 41	Single Phase						
	Permanent Capacitor						
FULL LOAD R.P.M.	OUTPUT WATTS	STARTING TORQUE FULL LOAD	CURRENT (AMPS)		INPUT WATTS	CAPACITOR (M.F.D.)	
			240V	220V		240V	220V
1400	10	100%	0.2	0.19	40	3	3
2800	25	100%	0.25	0.24	65	2.5	2.5
Three Phase							
			440V	380V			
1400	10	150%	0.14	0.12	47		
2800	25	150%	0.14	0.12	58		

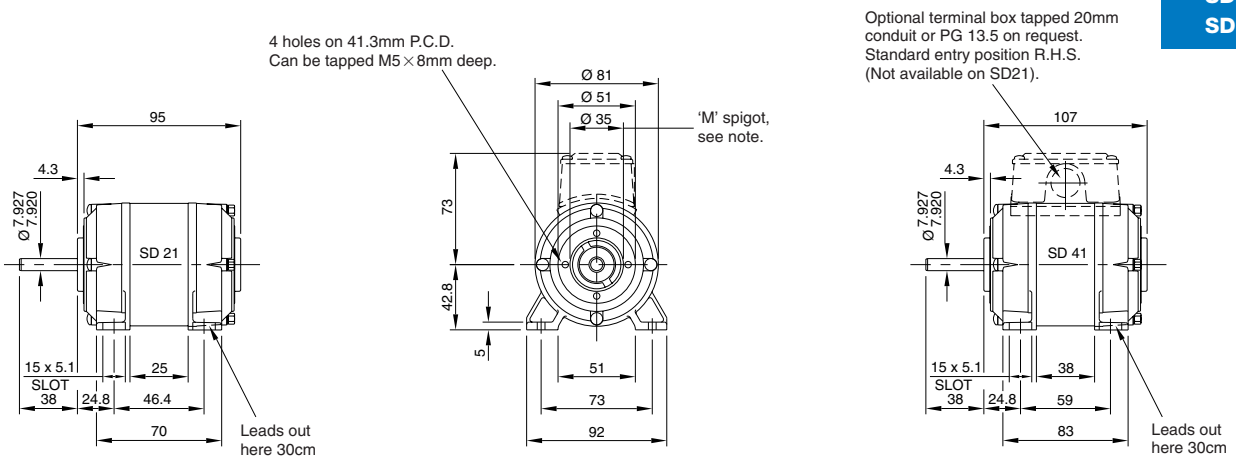
SD 8 SD 38	Single Phase						
	Permanent Capacitor						
FULL LOAD R.P.M.	OUTPUT WATTS	STARTING TORQUE FULL LOAD	CURRENT (AMPS)		INPUT WATTS	CAPACITOR (M.F.D.)	
			240V	220V		240V	220V
900	10	100%	0.2	0.22	45	2	2
1400	35	85%	0.3	0.3	75	2.5	2.5
2800	60	75%	0.57	0.53	127	4	4
Two Speed Permanent Capacitor							
1400	30	50%	0.43	0.4	85	6	6
2800	50	50%	0.47	0.48	110	6	6
Synchronous Permanent Capacitor							
1500 (syn)	10	100%	0.26	0.23	55	5	5

SD 8 SD 38	Three Phase				
FULL LOAD R.P.M.	OUTPUT WATTS	STARTING TORQUE FULL LOAD	CURRENT (AMPS)		INPUT WATTS
			440V	380V	
900	15	100%	0.2	0.17	80
1400	35	200%	0.24	0.22	80
2800	60	200%	0.24	0.22	105
Two Speed					
1400	30	100%	0.21	0.18	90
2800	50	100%	0.16	0.17	90
Synchronous					
1500 (syn)	10	100%	0.22	0.21	60

SD 28 SD 29	Single Phase						
	Permanent Capacitor						
FULL LOAD R.P.M.	OUTPUT WATTS	STARTING TORQUE FULL LOAD	CURRENT (AMPS)		INPUT WATTS	CAPACITOR (M.F.D.)	
			240V	220V		240V	220V
1400	55	85%	0.41	0.46	100	3	4
2800	100	85%	0.76	0.75	185	6	6
Three Phase							
			440V	380V			
1400	55	150%	0.28	0.25	120		
2800	120	150%	0.36	0.38	210		

SD 21
SD 41

Dimensions in mm. Scale 1:5

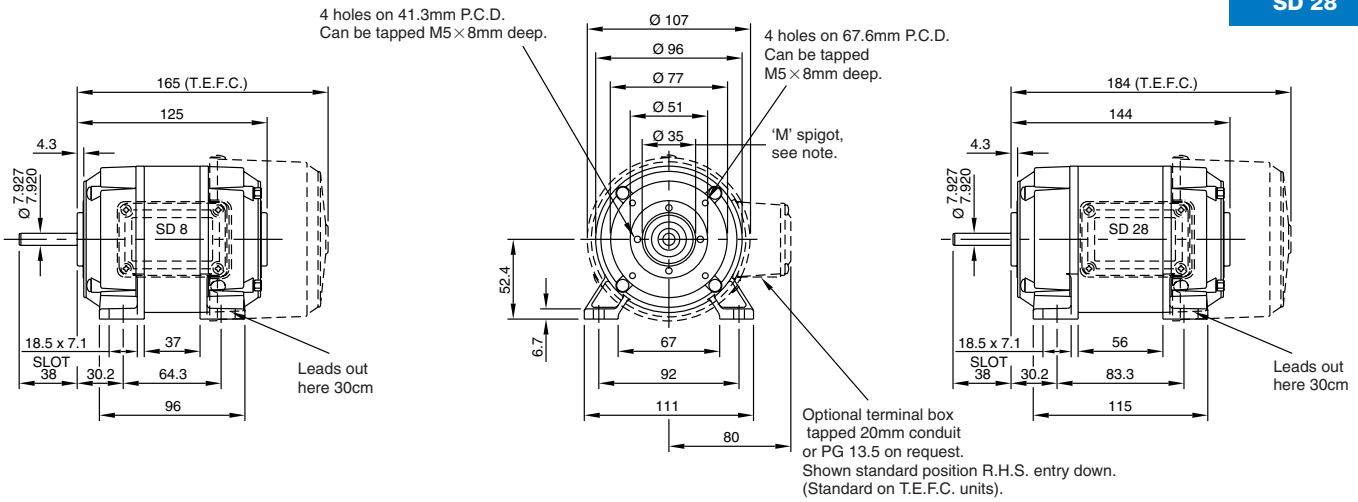


Spigot 'M' can be machined to 34.54/34.49mm dia. concentric with shaft 0.05mm T.I.R.
Optional shaft at lead end, 7.93mm dia.×33mm long.

Approx. weight: SD 21 – 1.54 Kg
SD 41 – 2.10 Kg

SD 8
SD 28

Dimensions in mm. Scale 1:5

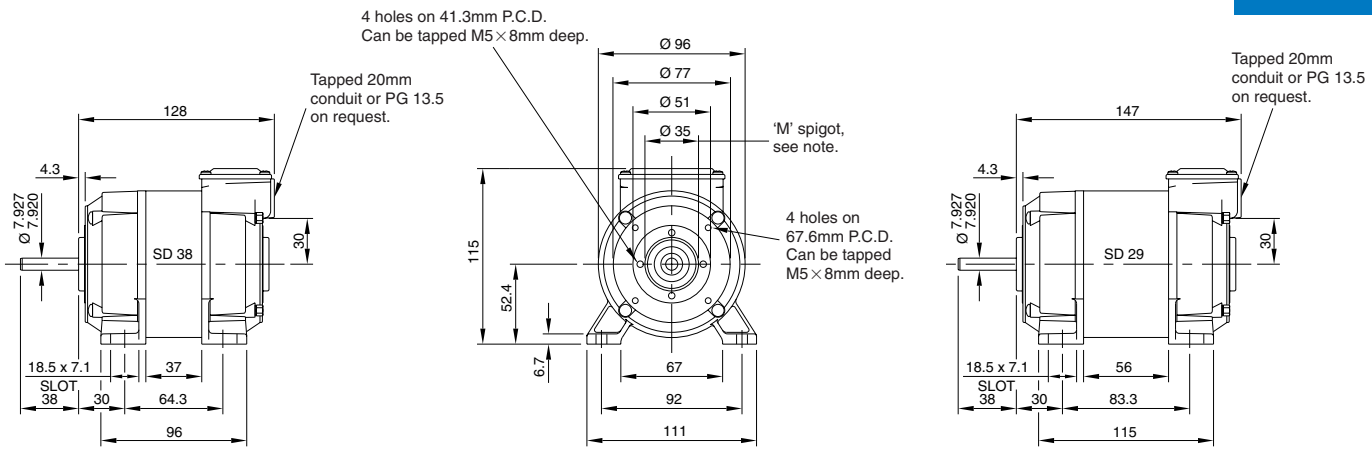


Spigot 'M' can be machined to 34.54/34.49mm dia. concentric with shaft 0.05mm T.I.R.
Optional shaft at lead end see separate drawing for details. Not applicable to T.E.F.C. units.

Approx. weight: SD 8 – 2.80 Kg
SD 28 – 3.60 Kg

SD 38
SD 29

Dimensions in mm. Scale 1:5

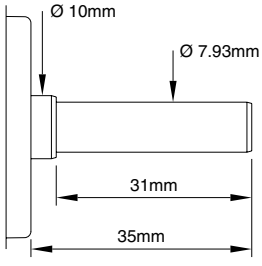


Spigot 'M' can be machined to 34.54/34.49mm dia. concentric with shaft 0.05mm T.I.R.
Optional shaft at terminal box end see separate drawing for details.

Approx. weight: SD 38 – 2.85 Kg
SD 29 – 3.62 Kg

SD 8 SD 38
SD 28 SD 29

Non-drive end
extension (optional)



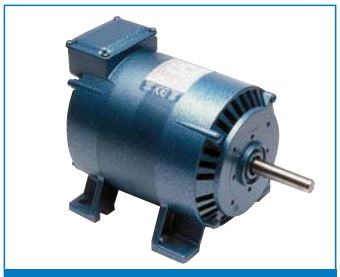
Motor Types:
SD 13 SD 18 SD 48

1 or 3 Phase Induction Motors – Constant Speed
Permanent Capacitor, Capacitor Start Induction Run, or Synchronous
Enclosures: Standard – Ventilated Internal Fan Cooled (IP 20)
Alternative – Totally Enclosed (IP 50) with Terminal Box or T.E.F.C. (IP 54)


SD 13


SD 13 with brake


SD 13 (T.E.F.C.)


SD 48

- **Voltage Range:** 100/120v – 220/240v A.C. single phase, 50Hz. 380/440 A.C. three phase, 50Hz. Special voltages and frequencies quoted on request.
- **Motor Type:** Single phase with separate capacitor or three phase induction, suitable for reversing. (Capacitor start induction run – SD 18 and SD 48, both reversible but must be allowed to come to rest).
- **Starting Currents:** Capacitor or three phase induction: approx 2.5 times full load. Capacitor start induction run: 3 times full load.
- **Construction: Motors** – Shielded ball bearings spring loaded for quiet running.
  Single Reduction Gearboxes: Fitted with ball bearings, alloy gearbox with composite gear, grease lubricated for life and suitable for mounting in any position.
  In-Line Double Reduction Gearboxes: Fitted with ball bearings, alloy gearbox with composite gears, oil bath lubricated for life and suitable for mounting in any position.
  Spur Reduction Gearboxes: Fitted with ball bearings, alloy gearbox with composite pinion gear and multi-spur type hardened steel gears, oil bath lubricated for life. Suitable for mounting in any position.
- **Connections:** 30cm P.V.C. flexible (SD 18 and SD 48 terminal box).
- **Insulation:** Class 'F' (maximum temperature rise 115°C at a maximum ambient of 40°C).
- **Specifications:** B.S. 5000 part 11. (I.E.C. 72). (CSA C-US if required).

- **Optional Extras:** Double ended motor spindles.
  Double ended gear shafts, (not available on in-line gearboxes).
  Non standard shafts (stainless steel, keyways, flats, etc).
  Terminal box.
  Totally enclosed frame half hour rating.
  Totally enclosed fan cooled frame (T.E.F.C.), continuous rating. (Not SD 18).
  Enclosure IP 65 on request.
  Thermal overload protection.
- **Electro-Magnetic Brake:** Page 6.
- **Tachogenerator:** Page 117.
- **Additional Extras for Geared Units:** Non standard catalogue reductions available on request.
- **Bronze Gears:** (Single and double reduction final gears).
- **Flange Mounting Gearbox Details:** Page 114.
- **Gearbox Shaft Positions:** Page 113.

Single Phase							
SD 13 SD 18	Permanent Capacitor						
FULL LOAD R.P.M.	OUTPUT WATTS	STARTING TORQUE FULL LOAD	CURRENT (AMPS)		INPUT WATTS	CAPACITOR (M.F.D.)	
			240V	220V		240V	220V
900	38	100%	0.46	0.43	119	4	4
1400	100	75%	0.76	0.74	180	6	6
2800	150	80%	1.2	1.2	290	8.4	8.4
Capacitor Start Induction Run (SD 18 only)							
1400	95	150%	1.2	1.1	180	40/50 M.F.D. 280 – 350V R.M.S. Electrolytic	
2800	125	130%	1.2	1.2	240		
Two Speed Permanent Capacitor							
1400 / 2800	50 / 100	50%	1.0 / 0.72	0.9 / 0.8	170 / 190	10	10
Synchronous Permanent Capacitor							
1500 (Syn)	25	100%	0.5	0.55	100	6	6

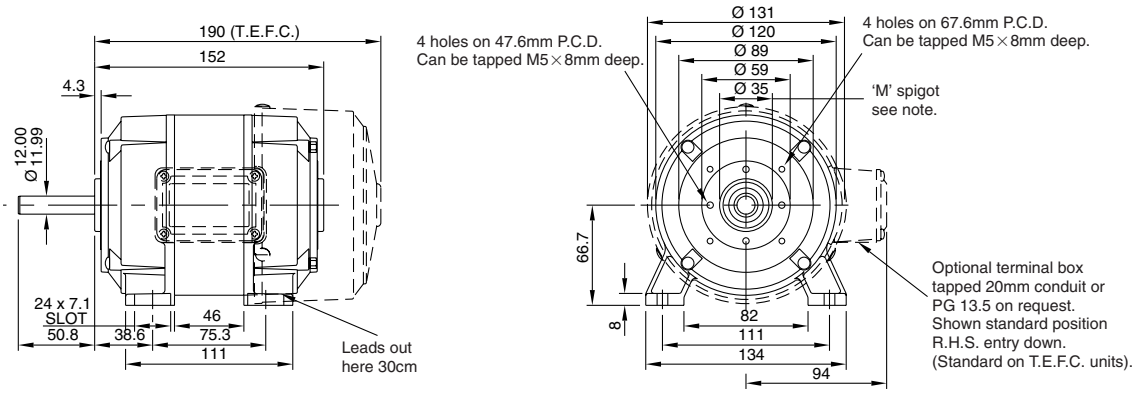
Three Phase					
SD 13 SD 18					
FULL LOAD R.P.M.	OUTPUT WATTS	STARTING TORQUE FULL LOAD	CURRENT (AMPS)		INPUT WATTS
			440V	380V	
900	60	150%	0.31	0.29	130
1400	125	150%	0.44	0.41	210
2800	190	150%	0.46	0.45	273
Two Speed					
1400 / 2800	50 / 100	150%	0.38	0.32	120 / 160
Synchronous					
1500 (Syn)	30	100%	0.3	0.34	110

Single Phase						
SD 48	Capacitor Start – Induction Run					
FULL LOAD R.P.M.	OUTPUT WATTS	ENCLOSURE	STARTING TORQUE FULL LOAD	CURRENT AMPS 220/240V	INPUT WATTS	CAPACITOR (M.F.D.)
						220/240V
1400	125	Ventilated (IP 20)	175%	1.5	250	40/50 M.F.D. 280–350V R.M.S. ELECTROLYTIC
1400	150	T.E.F.C. (IP 54)	150%	1.7	308	
2800	190	Vent or T.E.F.C.	130%	1.7	324	

Three Phase					
SD 48					
FULL LOAD R.P.M.	OUTPUT WATTS	STARTING TORQUE FULL LOAD	CURRENT (AMPS)		INPUT WATTS
			440V	380V	
1400	190	150%	0.5	0.62	300
2800	250	150%	0.75	0.74	400

SD 13

Dimensions in mm. Scale 1:5

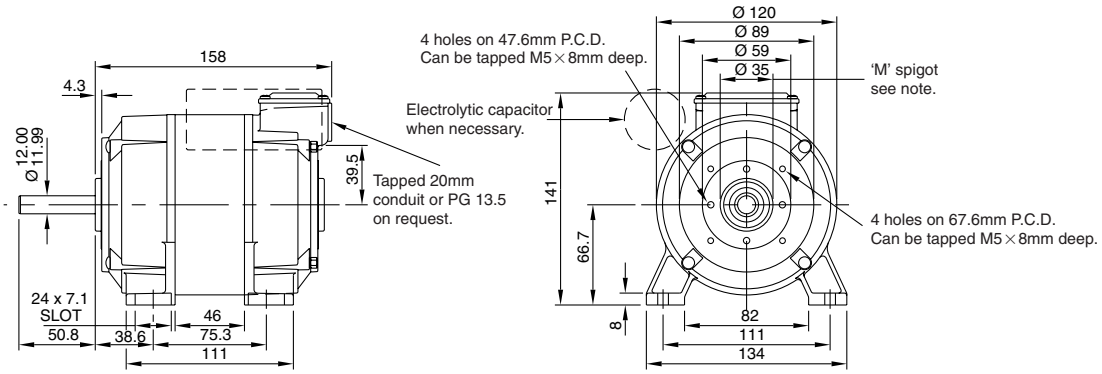


Spigot 'M' can be machined to 34.54/34.49mm dia. concentric with shaft 0.05mm T.I.R.
Optional shaft at lead end, 12mm dia.×51mm long. Not applicable to T.E.F.C. units.

Approx. weight: SD 13 – 5.40 Kg

SD 18

Dimensions in mm. Scale 1:5

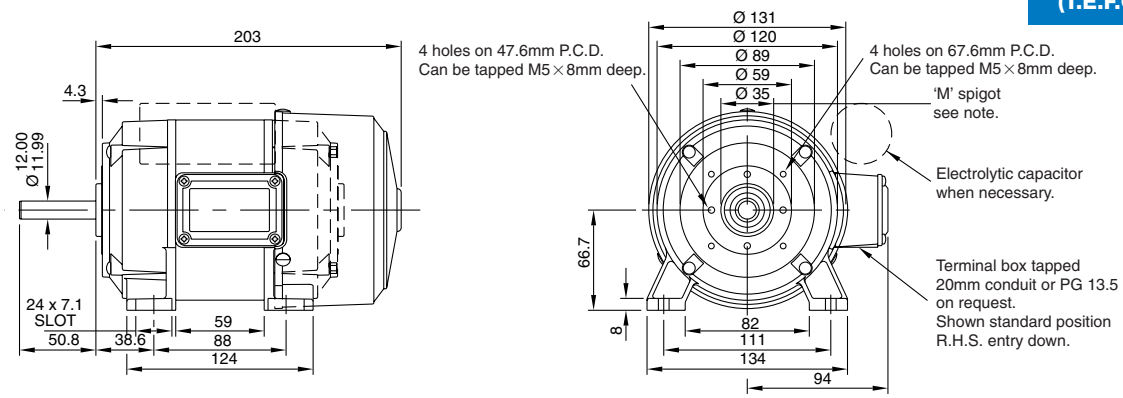


Spigot 'M' can be machined to 34.54/34.49mm dia. concentric with shaft 0.05mm T.I.R.
Optional shaft at terminal box end, 12mm dia.×51mm long.

Approx. weight: SD 18 – 5.40 Kg

SD 48 (T.E.F.C.)

Dimensions in mm. Scale 1:5

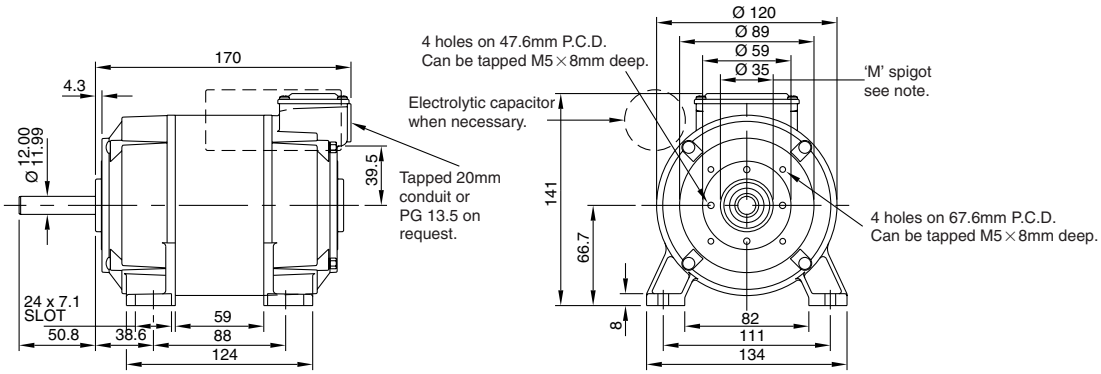


Spigot 'M' can be machined to 34.54/34.49mm dia. concentric with shaft 0.05mm T.I.R.

Approx. weight: SD 48 T.E.F.C. – 6.50 Kg

SD 48

Dimensions in mm. Scale 1:5



Spigot 'M' can be machined to 34.54/34.49mm dia. concentric with shaft 0.05mm T.I.R.
Optional shaft at terminal box end, 12mm dia.×51mm long.

Approx. weight: SD 48 – 6.40 Kg

Gearbox Type:

S

Speed Range: 13 – 680 r.p.m.

Single Reduction Worm Gear Units

1 or 3 Phase Induction Motors – Constant Speed

Enclosures: Standard – Ventilated Internal Fan Cooled (IP 20)
Alternative – Totally Enclosed (IP 50) with Terminal Box or T.E.F.C. (IP 54)

SD 21 S

SD 38 S

SD 8 S (T.E.F.C.)

SD 28 S

■ **Voltage, Construction, Connections, Motor Performance Specifications and Optional Extras** see pages 6 and 8 for full details.

(1 Nm = 8.85 lbs. ins.) (1 Nm = 10.2 cmkp)

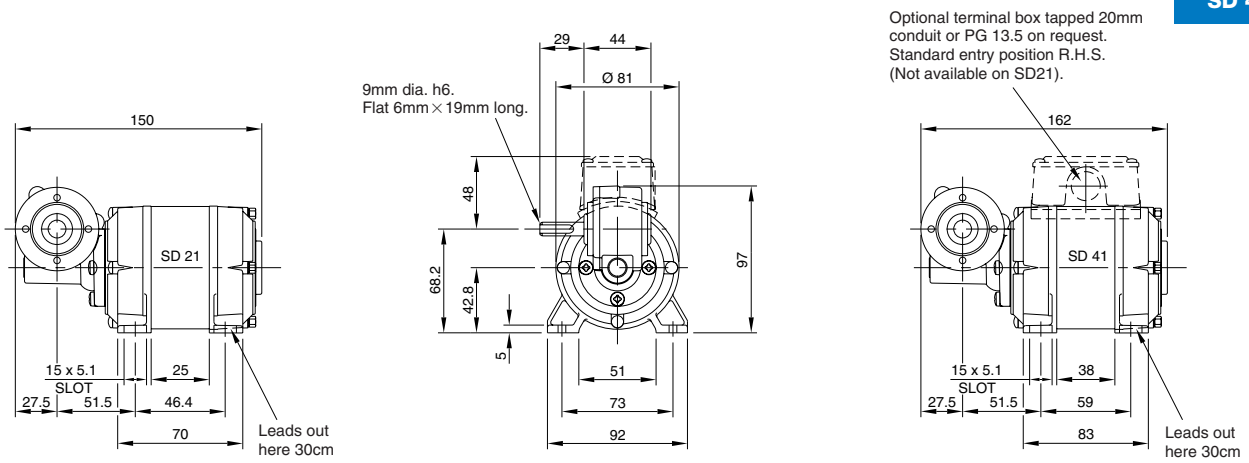
Gearbox Specification *Motor Speed 1400 r.p.m.*		SD 21 S (1 Phase Only) Shaded Pole (T.E.) *Motor Rating 3.7 watts*	SD 21 S (1 Phase Only) Shaded Pole/Capacitor *Motor Rating 8 watts*	SD 41 S 1 or 3 Phase *Motor Rating 10 watts*	SD 8 S – SD 38 S 1 or 3 Phase *Motor Rating 35 watts*		SD 28 S – SD 29 S 1 or 3 Phase *Motor Rating 55 watts*	
FINAL R.P.M.	RATIO	OUTPUT TORQUE (Nm)						
		COMPOSITE	COMPOSITE	COMPOSITE	COMPOSITE	BRONZE	COMPOSITE	BRONZE
20	70:1	0.45	1.36	1.5	1.5	2.5	-	-
21	66:1	0.45	1.24	1.5	1.5	2.5	-	-
23	60:1	0.40	1.13	1.36	2.3	4	-	-
26	54:1	0.34	1.02	1.13	2.3	4	-	-
29	48:1	0.34	1.02	1.13	2.3	4	-	-
32	44:1	0.34	0.90	1.02	2.3	4	-	-
35	40:1	0.34	0.90	1.02	2.9	4.3	-	4.5
39	36:1	0.34	0.90	1.02	2.9	3.8	-	4.5
42	33:1	0.28	0.90	1.02	2.9	3.5	-	4.5
47	30:1	0.28	0.79	0.90	2.9	3.3	-	4.5
52	27:1	0.28	0.79	0.90	2.9	3.2	2.9	4.5
56	25:1	0.28	0.79	0.90	2.9	3.1	2.9	4.5
62	22 1/2:1	0.28	0.68	0.79	2.9	-	2.9	4.5
68	20 1/2:1	0.23	0.68	0.79	2.9	-	2.9	4.5
75	18 1/2:1	0.23	0.57	0.68	2.64	-	2.9	4.5
85	16 1/2:1	0.23	0.51	0.62	2.47	-	2.9	4.3
90	15 1/2:1	0.23	0.45	0.51	2.37	-	2.9	4.1
97	14 1/2:1	0.20	0.40	0.45	2.11	-	2.9	3.6
104	13 1/2:1	0.20	0.34	0.40	1.98	-	2.9	3.4
112	12 1/2:1	0.20	0.34	0.40	1.72	-	2.9	-
123	11 1/3:1	0.17	0.34	0.40	1.58	-	2.7	-
135	10 1/3:1	0.17	0.28	0.34	1.44	-	2.5	-
150	9 1/3:1	0.17	0.28	0.34	1.32	-	2.3	-
168	8 1/3:1	0.17	0.28	0.34	1.19	-	2	-
193	7 1/4:1	0.14	0.23	0.28	1.05	-	1.8	-
224	6 1/4:1	0.11	0.17	0.19	0.92	-	1.6	-
270	5 1/6:1	0.08	0.11	0.14	0.79	-	1.36	-
340	4 1/8:1	0.06	0.08	0.10	0.52	-	0.90	-

Gearbox Specification *Motor Speed 2800 r.p.m.*		SD 41 S 1 or 3 Phase *Motor Rating 25 watts*	SD 8 S – SD 38 S 1 or 3 Phase *Motor Rating 60 watts*		SD 28 S – SD 29 S 1 Phase *Motor Rating 100 watts*		SD 28 S – SD 29 S 3 Phase *Motor Rating 120 watts*	
FINAL R.P.M.	RATIO	OUTPUT TORQUE (Nm)						
		COMPOSITE	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE
40	70:1	1.5	-	2.5	-	-	-	-
42	66:1	1.5	-	2.5	-	-	-	-
46	60:1	2.3	2.3	3.62	-	-	-	-
52	54:1	2.3	2.3	3.39	-	-	-	-
58	48:1	2.03	2.3	3.28	-	-	-	-
64	44:1	1.81	2.3	3.16	-	-	-	-
70	40:1	1.58	2.9	2.9	2.9	4.5	2.9	4.5
78	36:1	1.47	2.9	-	2.9	4.5	2.9	4.5
84	33:1	1.36	2.9	-	2.9	4.5	2.9	4.5
94	30:1	1.24	2.9	-	2.9	4.5	2.9	4.5
104	27:1	1.13	2.71	-	2.9	4.5	2.9	4.5
112	25:1	1.02	2.44	-	2.9	4.5	2.9	4.5
124	22 1/2:1	0.96	2.30	-	2.9	4	2.9	4.5
136	20 1/2:1	0.90	2.17	-	2.9	3.73	2.9	4.5
152	18 1/2:1	0.85	2.04	-	2.9	3.39	2.9	4.07
170	16 1/2:1	0.79	1.90	-	2.9	3.16	2.9	3.73
180	15 1/2:1	0.73	1.76	-	2.9	-	2.9	3.62
194	14 1/2:1	0.70	1.69	-	2.83	-	2.9	3.39
208	13 1/2:1	0.68	1.63	-	2.71	-	2.9	3.28
224	12 1/2:1	0.64	1.56	-	2.60	-	2.9	3.05
246	11 1/3:1	0.62	1.49	-	2.49	-	2.9	-
270	10 1/3:1	0.57	1.36	-	2.26	-	2.71	-
300	9 1/3:1	0.51	1.22	-	2.03	-	2.37	-
336	8 1/3:1	0.45	1.08	-	1.81	-	2.15	-
386	7 1/4:1	0.40	0.95	-	1.58	-	1.81	-
448	6 1/4:1	0.36	0.88	-	1.47	-	1.70	-
540	5 1/6:1	0.28	0.74	-	1.24	-	1.47	-
680	4 1/8:1	0.25	0.61	-	1.02	-	1.24	-

Gearbox Specification *Motor Speed 900 r.p.m.*		SD 8 S – SD 38 S 1 Phase *Motor Rating 10 watts*	SD 8 S – SD 38 S 3 Phase *Motor Rating 15 watts*
FINAL R.P.M.	RATIO	OUTPUT TORQUE (Nm)	
		COMPOSITE	COMPOSITE
13	70:1	1.5	1.5
14	66:1	1.5	1.5
15	60:1	2.3	2.3
17	54:1	2.3	2.3
18	48:1	2.3	2.3
20	44:1	2	2.3
22	40:1	1.90	2.83
25	36:1	1.63	2.49
27	33:1	1.52	2.28
30	30:1	1.50	2.25
33	27:1	1.38	2.03
36	25:1	1.20	1.81
40	22 1/2:1	1.13	1.70
44	20 1/2:1	1.10	1.65
48	18 1/2:1	1.07	1.60
54	16 1/2:1	1.06	1.58
58	15 1/2:1	1	1.50
62	14 1/2:1	0.97	1.47
66	13 1/2:1	0.94	1.36
72	12 1/2:1	0.88	1.24
79	11 1/3:1	0.81	1.19
87	10 1/3:1	0.76	1.13
96	9 1/3:1	0.69	1.02
108	8 1/3:1	0.63	0.96
124	7 1/4:1	0.57	0.85
144	6 1/4:1	0.50	0.73
174	5 1/6:1	0.38	0.57
218	4 1/8:1	0.26	0.34

SD 21 S
SD 41 S

Dimensions in mm. Scale 1:5

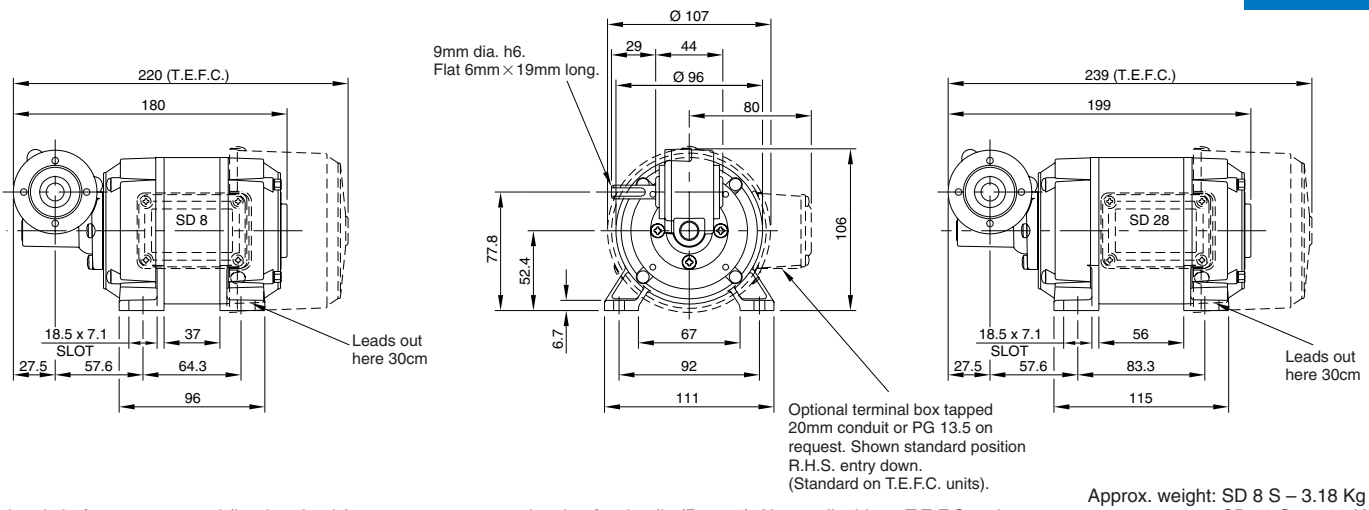


Optional shaft at motor speed (lead end only) 7.93mm dia. × 33mm long.

Approx. weight: SD 21 S – 1.92 Kg
SD 41 S – 2.48 Kg

SD 8 S
SD 28 S

Dimensions in mm. Scale 1:5

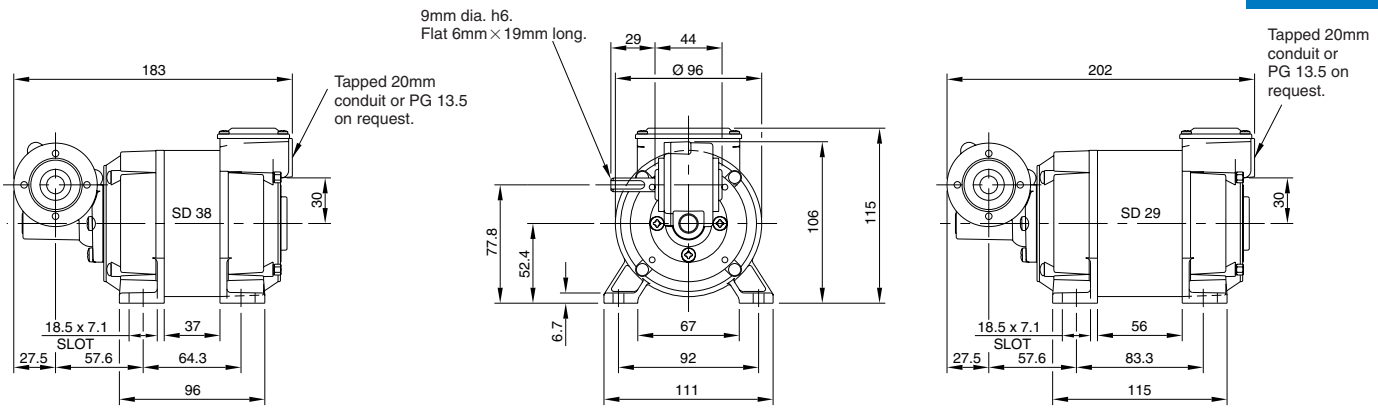


Optional shaft at motor speed (lead end only) see separate motor drawing for details (Page 9). Not applicable to T.E.F.C. units.

Approx. weight: SD 8 S – 3.18 Kg
SD 28 S – 3.98 Kg

SD 38 S
SD 29 S

Dimensions in mm. Scale 1:5



Optional shaft at motor speed (terminal box end only) see separate motor drawing for details (Page 9).

Approx. weight: SD 38 S – 3.23 Kg
SD 29 S – 4.00 Kg

Gearbox Type:
M
Speed Range: 12 – 680 r.p.m.

Single Reduction Worm Gear Units
1 or 3 Phase Induction Motors – Constant Speed
Enclosures: Standard – Ventilated Internal Fan Cooled (IP 20)
Alternative – Totally Enclosed (IP 50) with Terminal Box or T.E.F.C. (IP 54)


SD 28 M


SD 8 M (T.E.F.C.)


SD 38 M


SD 13 M with brake

Voltage, Construction, Connections, Motor Performance Specifications and Optional Extras see pages 6, 8 and 10 for full details.
Hollow shaft available on request. Maximum internal diameter 8mm.

(1 Nm = 8.85 lbs. ins.) (1 Nm = 10.2 cmkp)

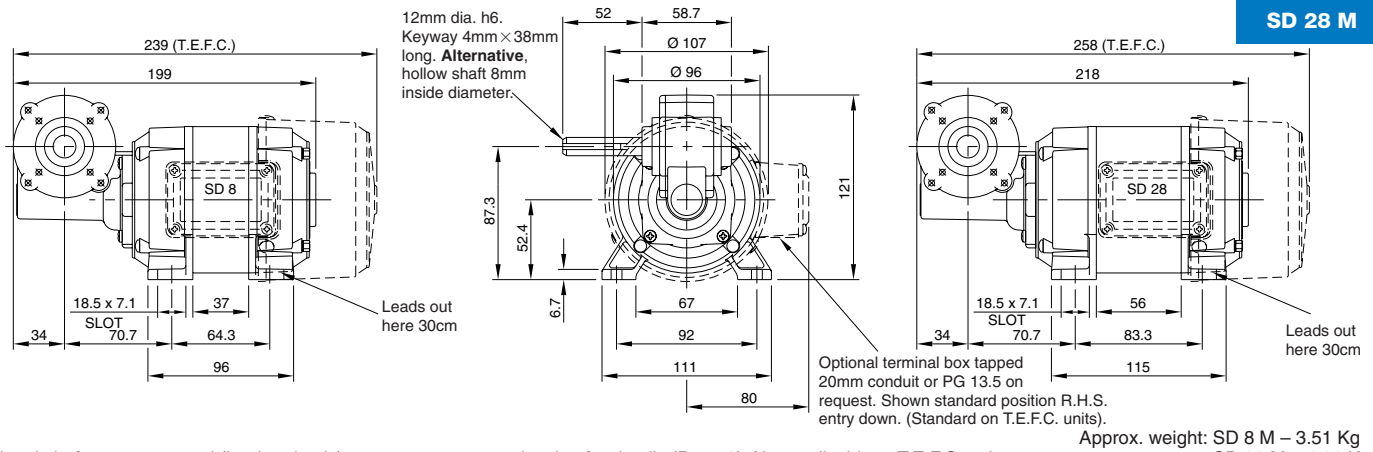
Gearbox Specification *Motor Speed 1400 r.p.m.*		SD 8 M – SD 38 M 1 or 3 Phase *Motor Rating 35 watts*		SD 28 M – SD 29 M 1 or 3 Phase *Motor Rating 55 watts*		SD 13 M – SD 18 M 1 Phase *Motor Rating 100 watts*		SD 13 M – SD 18 M 3 Phase *Motor Rating 125 watts*		SD 18 M (Capacitor start induction run) 1 Phase *Motor Rating 95 watts*	
FINAL R.P.M.	RATIO	OUTPUT TORQUE (Nm)									
		COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE
20	72:1	5.1	6.6	5.1	7.3	-	-	-	-	-	-
21	66:1	5.1	6.5	5.1	7.3	-	-	-	-	-	-
23	60:1	5.1	6.3	5.9	7.9	-	-	-	-	-	-
26	54:1	4.9	-	5.9	7.9	-	-	-	-	-	-
29	48:1	4.6	-	5.9	7.9	-	-	-	-	-	7.9
32	44:1	4.4	-	5.9	7.3	5.9	7.9	5.9	7.9	5.9	7.9
35	40:1	4		6.3	-	7.9	11.4	7.9	11.8	7.9	10.9
39	36:1	3.8		6	-	7.9	10.9	7.9	11.8	7.9	10.3
42	33:1	3.7		5.8	-	7.9	10.6	7.9	11.8	7.9	10
47	30:1	3.4		5.3		7.9	9.7	7.9	11.8	7.9	9.2
52	27:1	3.2		5		7.9	9.1	7.9	11.4	7.9	8.7
56	25:1	3		4.7		7.9	8.6	7.9	10.7	7.9	8.2
62	22 1/2:1	2.8		4.4		7.9	8	7.9	10	7.6	-
68	20 1/2:1	2.7		4.2		7.7	-	7.9	9.6	7.3	-
75	18 1/2:1	2.5		3.9		7.1	-	7.9	8.9	6.8	-
85	16 1/2:1	2.3		5.2		6.6	-	7.9	8.2	6.2	
90	15 1/2:1	2.2		3.4		6.3		7.9	-	5.9	
97	14 1/2:1	2.1		3.3		6		7.5	-	5.7	
105	13 1/3:1	2		3.1		5.7		7	-	5.4	
113	12 1/3:1	1.9		3		5.4		6.8		5.2	
123	11 1/3:1	1.8		2.8		5.1		6.4		4.9	
135	10 1/3:1	1.7		2.7		4.8		6		4.6	
150	9 1/3:1	1.6		2.5		4.6		5.7		4.3	
168	8 1/3:1	1.4		2.2		4		5		3.8	
193	7 1/4:1	1.3		2.1		3.7		4.6		3.5	
227	6 1/6:1	1.1		1.7		3.1		3.9		3	
273	5 1/8:1	0.9		1.4		2.5		3.2		2.4	
340	4 1/8:1	0.8		1.2		2.2		2.9		2.2	

Gearbox Specification *Motor Speed 2800 r.p.m.*		SD 8 M – 38 M 1 or 3 Phase *Motor Rating 60 watts*	SD 28 M – 29 M 1 Phase *Motor Rating 100 watts*		SD 28 M – 29 M 3 Phase *Motor Rating 120 watts*		SD 13 M – 18 M 1 Phase *Motor Rating 150 watts*		SD 13 M – 18 M 3 Phase *Motor Rating 190 watts*	
FINAL R.P.M.	RATIO	OUTPUT TORQUE (Nm)								
		COMPOSITE	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE
40	72:1	5.1	-	-	-	-	-	-	-	-
42	66:1	4.8	-	-	-	-	-	-	-	-
46	60:1	4.6	5.9	7.2	5.9	7.9	5.9	7.3	5.9	7.9
52	54:1	4.2	5.9	6.8	5.9	7.9	5.9	7.3	5.9	7.9
58	48:1	4	5.9	6.3	5.9	7.6	5.9	7.3	5.9	7.9
64	44:1	3.8	5.9	-	5.9	7.1	5.9	7.9	5.9	7.9
70	40:1	3.6	6	-	5.9	6.8	7.9	9	7.9	11.4
78	36:1	3.3	5.5	-	5.9	6.2	7.9	8.3	7.9	10.5
84	33:1	3.1	5.2		5.9	6	7.8		7.9	9.8
93	30:1	2.9	4.8		5.8	-	7.3		7.9	9.2
104	27:1	2.7	4.5		5.4	-	6.7		7.9	8.6
112	25:1	2.6	4.3		5.2	-	6.5		7.9	8.2
124	22 1/2:1	2.4	4		4.8		6		7.6	-
136	20 1/2:1	2.3	3.8		4.6		5.7		7.3	-
152	18 1/2:1	2.1	3.5		4.2		5.3		6.7	-
170	16 1/2:1	2	3.3		4		5		6.3	
180	15 1/2:1	1.9	3.2		3.8		4.7		6	
194	14 1/2:1	1.8	3		3.6		4.5		5.7	
210	13 1/3:1	1.7	2.8		3.4		4.3		5.4	
226	12 1/3:1	1.7	2.8		3.4		4.3		5.3	
250	11 1/3:1	1.6	2.7		3.2		4		5.1	
270	10 1/3:1	1.4	2.3		2.8		3.5		4.4	
300	9 1/3:1	1.3	2.2		2.6		3.3		4.1	
338	8 1/3:1	1.2	2		2.4		3		3.8	
386	7 1/4:1	1.1	1.8		2.2		2.8		3.4	
456	6 1/6:1	0.9	1.5		1.8		2.3		2.8	
545	5 1/8:1	0.8	1.3		1.6		2		2.5	
680	4 1/8:1	0.7	1.2		1.4		1.8		2.2	

Gearbox Specification *Motor Speed 900 r.p.m.*		SD 8 M – 38 M 1 Phase *Motor Rating 10 watts*	SD 8 M – 38 M 3 Phase *Motor Rating 15 watts*	SD 13 M – 18 M 1 Phase *Motor Rating 38 watts*		SD 13 M – 18 M 3 Phase *Motor Rating 60 watts*	
FINAL R.P.M.	RATIO	OUTPUT TORQUE (Nm)					
		COMPOSITE	COMPOSITE	COMPOSITE	BRONZE	COMPOSITE	BRONZE
12	72:1	2.7	4	5.1	7.3	5.1	7.3
14	66:1	2.5	3.8	5.1	7.3	5.1	7.3
15	60:1	2.4	3.6	5.9	7.9	5.9	7.9
17	54:1	2.2	3.3	5.9	7.9	5.9	7.9
18	48:1	2.1	3.2	5.9	7.9	5.9	7.9
20	44:1	2	3	5.9	7.9	5.9	7.9
22	40:1	1.8	2.7	6.8	7.9	7.9	10.8
25	36:1	1.7	2.6	6.5	-	7.9	10.2
27	33:1	1.6	2.4	6.1	-	7.9	9.6
30	30:1	1.5	2.2	5.7	-	7.9	9
33	27:1	1.4	2.1	5.3		7.9	8.4
36	25:1	1.3	1.9	4.9		7.8	-
40	22 1/2:1	1.2	1.8	4.6		7.2	-
44	20 1/2:1	1.1	1.7	4.2		6.6	-
48	18 1/2:1	1	1.5	3.8		6	
54	16 1/2:1	1	1.5	3.8		6	
58	15 1/2:1	0.9	1.35	3.42		5.4	
62	14 1/2:1	0.88	1.32	3.34		5.3	
67	13 1/3:1	0.85	1.27	3.23		5.1	
73	12 1/3:1	0.80	1.20	3.04		4.8	
79	11 1/3:1	0.78	1.17	2.96		4.68	
87	10 1/3:1	0.74	1.11	2.81		4.44	
96	9 1/3:1	0.70	1	2.66		4.20	
108	8 1/3:1	0.64	0.96	2.43		3.84	
124	7 1/4:1	0.58	0.87	2.2		3.48	
146	6 1/6:1	0.50	0.75	1.9		3	
174	5 1/6:1	0.43	0.65	1.63		2.58	
218	4 1/8:1	0.36	0.54	1.37		2.16	

SD 8 M
SD 28 M

Dimensions in mm. Scale 1:5

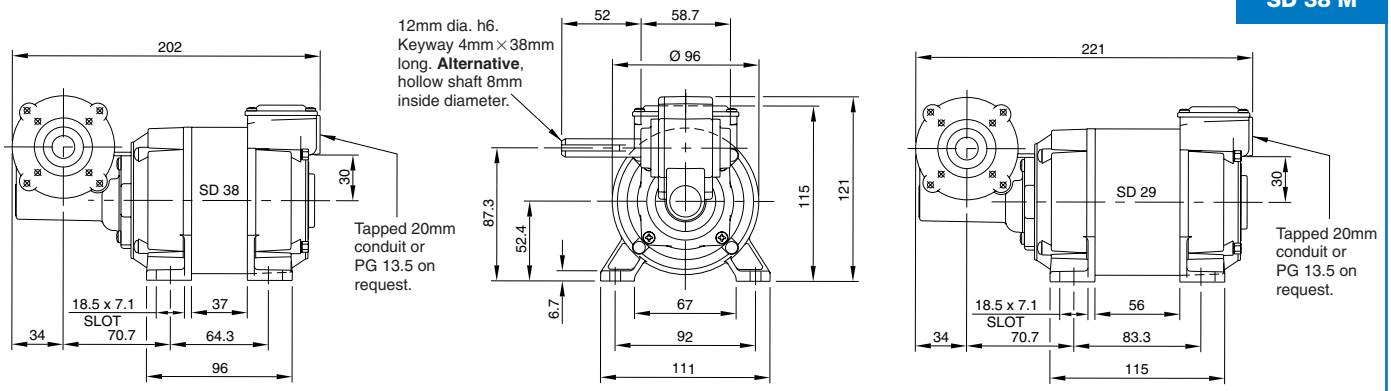


Approx. weight: SD 8 M – 3.51 Kg
SD 28 M – 4.31 Kg

Optional shaft at motor speed (lead end only) see separate motor drawing for details (Page 9). Not applicable to T.E.F.C. units.

SD 29 M
SD 38 M

Dimensions in mm. Scale 1:5

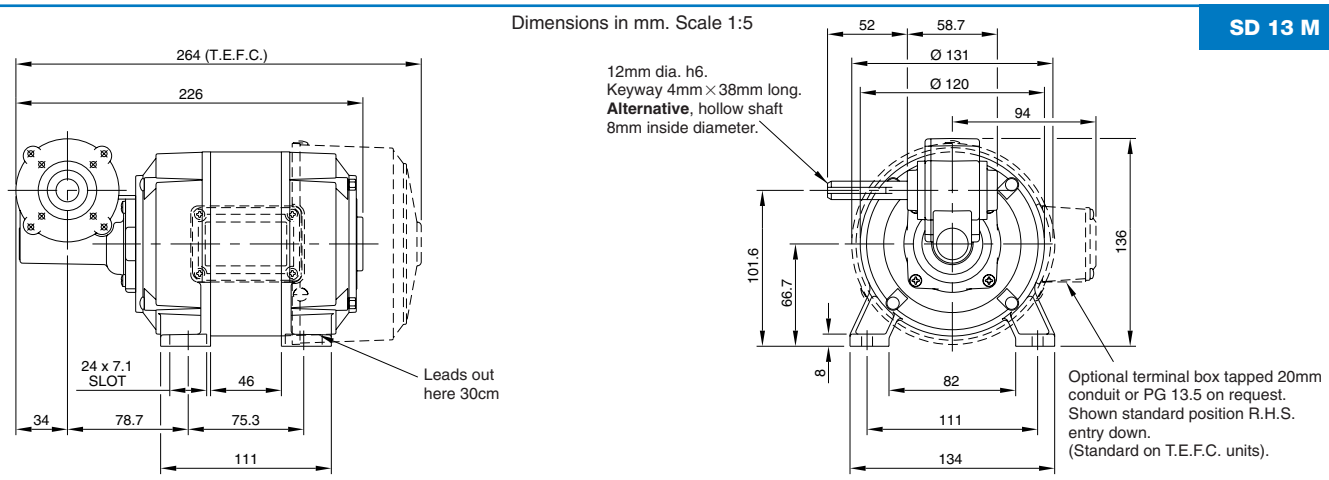


Approx. weight: SD 38 M – 3.56 Kg
SD 29 M – 4.33 Kg

Optional shaft at motor speed (terminal box end only) see separate motor drawing for details (Page 9).

SD 13 M

Dimensions in mm. Scale 1:5

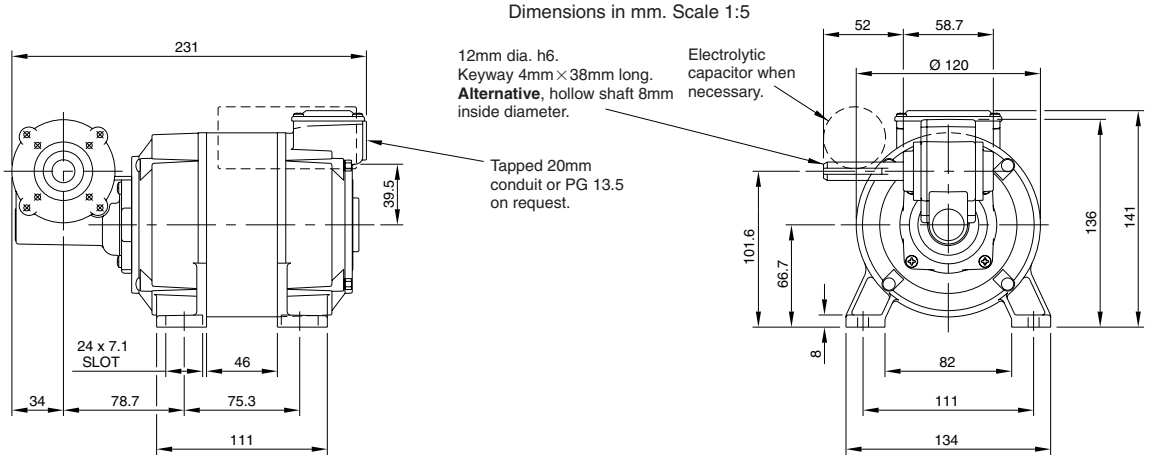


Optional shaft at motor speed (lead end only) 10mm dia. × 33mm long. Not applicable to T.E.F.C. units.

Approx. weight: SD 13 M – 6.11 Kg

SD 18 M

Dimensions in mm. Scale 1:5



Optional shaft at motor speed (terminal box end only) 10mm dia. × 33mm long.

Approx. weight: SD 18 M – 6.11 Kg

Gearbox Type:
MB
Speed Range: 12 – 680 r.p.m.

Single Reduction Worm Gear Units
1 or 3 Phase Induction Motors – Constant Speed
Enclosures: Standard – Ventilated Internal Fan Cooled (IP 20)
Alternative – Totally Enclosed (IP 50) with Terminal Box or T.E.F.C. (IP 54)


SD 28 MB


SD 8 MB (T.E.F.C.)


SD 18 MF


SD 18 MB with brake

■ **Voltage, Construction, Connections, Motor Performance**
Specifications and Optional Extras see pages 6, 8 and 10 for full details.
Hollow shaft available on request. Maximum internal diameter 8mm.

(1 Nm = 8.85 lbs. ins.) (1 Nm = 10.2 cmkp)

Gearbox Specification *Motor Speed 1400 r.p.m.*		SD 8 MB – SD 38 MB 1 or 3 Phase *Motor Rating 35 watts*		SD 28 MB – SD 29 MB 1 or 3 Phase *Motor Rating 55 watts*		SD 13 MB – SD 18 MB 1 Phase *Motor Rating 100 watts*		SD 13 MB – SD 18 MB 3 Phase *Motor Rating 125 watts*		SD 18 MB (Capacitor start induction run) 1 Phase *Motor Rating 95 watts*	
FINAL R.P.M.	RATIO	OUTPUT TORQUE (Nm)									
		COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE
20	72:1	5.1	6.6	5.1	7.3	-	-	-	-	-	-
21	66:1	5.1	6.5	5.1	7.3	-	-	-	-	-	-
23	60:1	5.1	6.3	5.9	7.9	-	-	-	-	-	-
26	54:1	4.9	-	5.9	7.9	-	-	-	-	-	-
29	48:1	4.6	-	5.9	7.9	-	-	-	-	-	7.9
32	44:1	4.4	-	5.9	7.3	5.9	7.9	5.9	7.9	5.9	7.9
35	40:1	4		6.3	-	7.9	11.4	7.9	11.8	7.9	10.9
39	36:1	3.8		6	-	7.9	10.9	7.9	11.8	7.9	10.3
42	33:1	3.7		5.8	-	7.9	10.6	7.9	11.8	7.9	10
47	30:1	3.4		5.3		7.9	9.7	7.9	11.8	7.9	9.2
52	27:1	3.2		5		7.9	9.1	7.9	11.4	7.9	8.7
56	25:1	3		4.7		7.9	8.6	7.9	10.7	7.9	8.2
62	22 1/2:1	2.8		4.4		7.9	8	7.9	10	7.6	-
68	20 1/2:1	2.7		4.2		7.7	-	7.9	9.6	7.3	-
75	18 1/2:1	2.5		3.9		7.1	-	7.9	8.9	6.8	-
85	16 1/2:1	2.3		5.2		6.6	-	7.9	8.2	6.2	
90	15 1/2:1	2.2		3.4		6.3		7.9	-	5.9	
97	14 1/2:1	2.1		3.3		6		7.5	-	5.7	
105	13 1/3:1	2		3.1		5.7		7	-	5.4	
113	12 1/3:1	1.9		3		5.4		6.8		5.2	
123	11 1/3:1	1.8		2.8		5.1		6.4		4.9	
135	10 1/3:1	1.7		2.7		4.8		6		4.6	
150	9 1/3:1	1.6		2.5		4.6		5.7		4.3	
168	8 1/3:1	1.4		2.2		4		5		3.8	
193	7 1/4:1	1.3		2.1		3.7		4.6		3.5	
227	6 1/6:1	1.1		1.7		3.1		3.9		3	
273	5 1/8:1	0.9		1.4		2.5		3.2		2.4	
340	4 1/8:1	0.8		1.2		2.2		2.9		2.2	

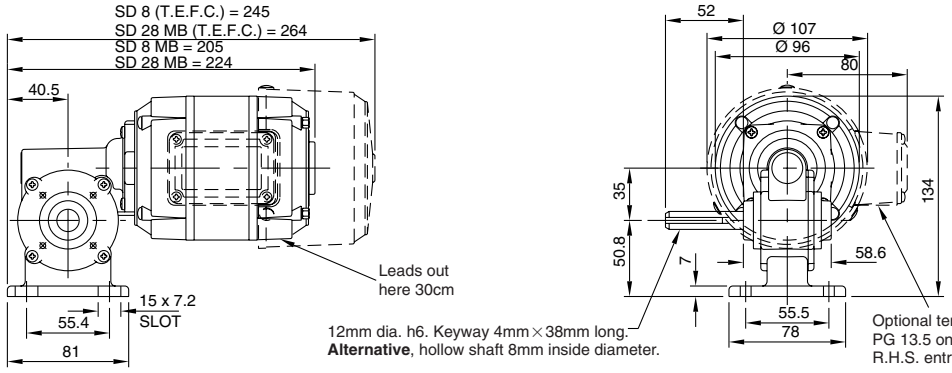
Gearbox Specification *Motor Speed 2800 r.p.m.*		SD 8 MB – 38 MB 1 or 3 Phase *Motor Rating 60 watts*	SD 28 MB – 29 MB 1 Phase *Motor Rating 100 watts*		SD 28 MB – 29 MB 3 Phase *Motor Rating 120 watts*		SD 13 MB – 18 MB 1 Phase *Motor Rating 150 watts*		SD 13 MB – 18 MB 3 Phase *Motor Rating 190 watts*	
FINAL R.P.M.	RATIO	OUTPUT TORQUE (Nm)								
		COMPOSITE	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE
40	72:1	5.1	-	-	-	-	-	-	-	-
42	66:1	4.8	-	-	-	-	-	-	-	-
46	60:1	4.6	5.9	7.2	5.9	7.9	5.9	7.3	5.9	7.9
52	54:1	4.2	5.9	6.8	5.9	7.9	5.9	7.3	5.9	7.9
58	48:1	4	5.9	6.3	5.9	7.6	5.9	7.3	5.9	7.9
64	44:1	3.8	5.9	-	5.9	7.1	5.9	7.9	5.9	7.9
70	40:1	3.6	6	-	5.9	6.8	7.9	9	7.9	11.4
78	36:1	3.3	5.5	-	5.9	6.2	7.9	8	7.9	10.5
84	33:1	3.1	5.2		5.9	6	7.8		7.9	9.8
93	30:1	2.9	4.8		5.8	-	7.3		7.9	9.2
104	27:1	2.7	4.5		5.4	-	6.7		7.9	8.6
112	25:1	2.6	4.3		5.2	-	6.5		7.9	8.2
124	22 1/2:1	2.4	4		4.8		6		7.6	-
136	20 1/2:1	2.3	3.8		4.6		5.7		7.3	-
152	18 1/2:1	2.1	3.5		4.2		5.3		6.7	-
170	16 1/2:1	2	3.3		4		5		6.3	
180	15 1/2:1	1.9	3.2		3.8		4.7		6	
194	14 1/2:1	1.8	3		3.6		4.5		5.7	
210	13 1/3:1	1.7	2.8		3.4		4.3		5.4	
226	12 1/3:1	1.7	2.8		3.4		4.3		5.3	
250	11 1/3:1	1.6	2.7		3.2		4		5.1	
270	10 1/3:1	1.4	2.3		2.8		3.5		4.4	
300	9 1/3:1	1.3	2.2		2.6		3.3		4.1	
338	8 1/3:1	1.2	2		2.4		3		3.8	
386	7 1/4:1	1.1	1.8		2.2		2.8		3.4	
456	6 1/6:1	0.9	1.5		1.8		2.3		2.8	
545	5 1/8:1	0.8	1.3		1.6		2		2.5	
680	4 1/8:1	0.7	1.2		1.4		1.8		2.2	

Gearbox Specification *Motor Speed 900 r.p.m.*		SD 8 MB – 38 MB 1 Phase *Motor Rating 10 watts*	SD 8 MB – 38 MB 3 Phase *Motor Rating 15 watts*	SD 13 MB – 18 MB 1 Phase *Motor Rating 38 watts*		SD 13 MB – 18 MB 3 Phase *Motor Rating 60 watts*	
FINAL R.P.M.	RATIO	OUTPUT TORQUE (Nm)					
		COMPOSITE	COMPOSITE	COMPOSITE	BRONZE	COMPOSITE	BRONZE
12	72:1	2.7	4	5.1	7.3	5.1	7.3
14	66:1	2.5	3.8	5.1	7.3	5.1	7.3
15	60:1	2.4	3.6	5.9	7.9	5.9	7.9
17	54:1	2.2	3.3	5.9	7.9	5.9	7.9
18	48:1	2.1	3.2	5.9	7.9	5.9	7.9
20	44:1	2	3	5.9	7.9	5.9	7.9
22	40:1	1.8	2.7	6.8	7.9	7.9	10.8
25	36:1	1.7	2.6	6.5	-	7.9	10.2
27	33:1	1.6	2.4	6.1	-	7.9	9.6
30	30:1	1.5	2.2	5.7	-	7.9	9
33	27:1	1.4	2.1	5.3		7.9	8.4
36	25:1	1.3	1.9	4.9		7.8	-
40	22 1/2:1	1.2	1.8	4.6		7.2	-
44	20 1/2:1	1.1	1.7	4.2		6.6	-
48	18 1/2:1	1	1.5	3.8		6	
54	16 1/2:1	1	1.5	3.8		6	
58	15 1/2:1	0.9	1.35	3.42		5.4	
62	14 1/2:1	0.88	1.32	3.34		5.3	
67	13 1/3:1	0.85	1.27	3.23		5.1	
73	12 1/3:1	0.80	1.20	3.04		4.80	
79	11 1/3:1	0.78	1.17	2.96		4.68	
87	10 1/3:1	0.74	1.11	2.81		4.44	
96	9 1/3:1	0.70	1	2.66		4.20	
108	8 1/3:1	0.64	0.96	2.43		3.84	
124	7 1/4:1	0.58	0.87	2.2		3.48	
146	6 1/6:1	0.50	0.75	1.90		3	
174	5 1/6:1	0.43	0.65	1.63		2.58	
218	4 1/8:1	0.36	0.54	1.37		2.16	

SD 8 MB
SD 28 MB

Dimensions in mm. Scale 1:5

NB: Unit drawn is SD 8 MB



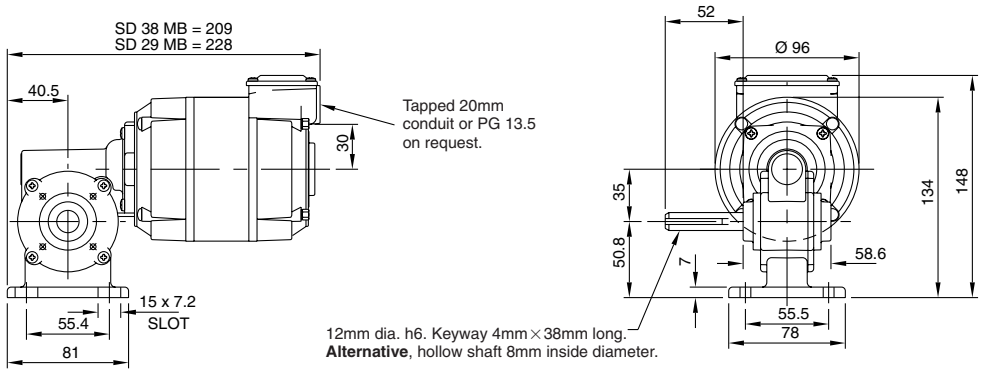
Optional shaft at motor speed (lead end only) see separate motor drawing for details (Page 9). Not applicable to T.E.F.C. units.

Approx. weight: SD 8 MB – 3.70 Kg
SD 28 MB – 4.50 Kg

SD 38 MB
SD 29 MB

Dimensions in mm. Scale 1:5

NB: Unit drawn is SD 38 MB

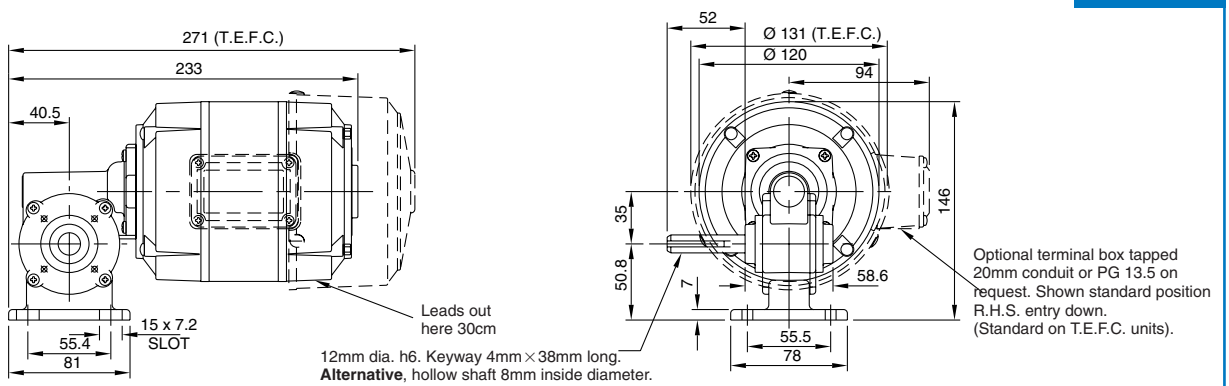


Optional shaft at motor speed (terminal box end only) see separate motor drawing for details (Page 9).

Approx. weight: SD 38 MB – 3.75 Kg
SD 29 MB – 4.52 Kg

SD 13 MB

Dimensions in mm. Scale 1:5

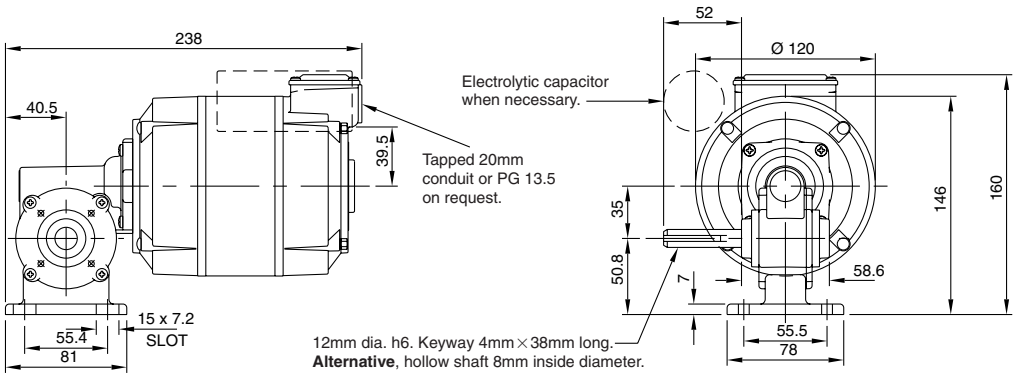


Optional shaft at motor speed (lead end only) 10mm dia. × 33mm long. Not applicable to T.E.F.C. units.

Approx. weight: SD 13 MB – 6.30 Kg

SD 18 MB

Dimensions in mm. Scale 1:5



Optional shaft at motor speed (terminal box end only) 10mm dia. × 33mm long.

Approx. weight: SD 18 MB – 6.30 Kg

Gearbox Type:

L/LB/LH/LHB

Speed Range: 23 – 546 r.p.m.

Single Reduction Worm Gear Units

1 or 3 Phase Induction Motors – Constant Speed

Enclosures: Standard – Ventilated Internal Fan Cooled (IP 20)
Alternative – Totally Enclosed (IP 50) with Terminal Box or T.E.F.C. (IP 54)

SD 13 L

SD 13 LB (T.E.F.C.)

SD 13 LF

■ **Voltage, Construction, Connections, Motor Performance Specifications and Optional Extras** see pages 6 and 10 for full details.
LH/LHB, for hollow shaft details see page 114.

(1 Nm = 8.85 lbs. ins.) (1 Nm = 10.2 cmkp)

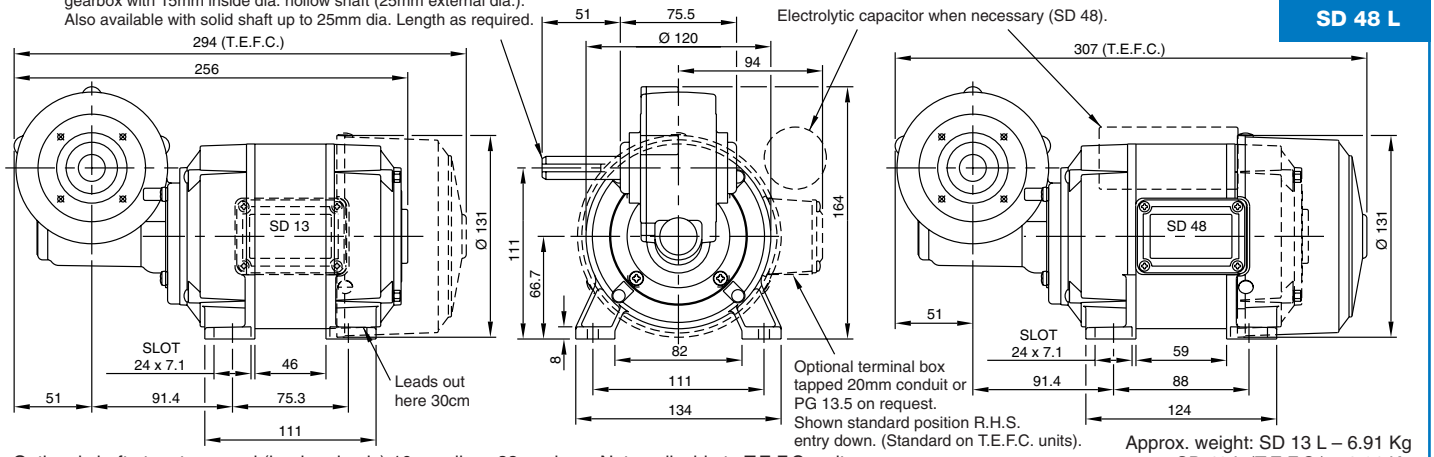
Gearbox Specification *Motor Speed 1400 r.p.m.*		SD 18 L/LB/LH/LHB 1 Phase Capacitor Start Induction Run *Motor Rating 95 watts*		SD 13 L/LB/LH/LHB - SD 18 L/LB/LH/LHB 1 Phase Permanent Capacitor *Motor Rating 100 watts*		SD 13 L/LB/LH/LHB - SD 18 L/LB/LH/LHB 3 Phase *Motor Rating 125 watts*		SD 48 L/LB/LH/LHB 1 Phase Capacitor Start Induction Run *Motor Rating 125 watts Ventilated*		SD 48 L/LB/LH/LHB 1 Phase Capacitor Start Induction Run *Motor Rating 150 watts T.E.F.C.*		SD 48 L/LB/LH/LHB 3 Phase *Motor Rating 190 watts*	
FINAL R.P.M.	RATIO	OUTPUT TORQUE (Nm)											
		COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE
23	60:1	11.3	17	11.3	17	11.3	17	11.3	17	11.3	17	11.3	17
28	50:1	11.3	13.5	11.3	13.5	11.3	17	11.3	17	11.3	17	11.3	17
35	40:1	11.3	-	11.3	-	14.6	-	14.6	-	14.6	-	14.6	-
47	30:1	9.04		9.52		12.2		12.2		14.6		14.6	
56	25:1	7.9		8.33		10.9		10.9		13.1		14.6	
68	20 1/2:1	6.8		7.1		9.5		9.5		11.3		13.5	
93	15 1/3:1	5.9		6.2		7.8		7.8		9.3		11.3	
114	12 1/3:1	5.1		5.3		6.8		6.8		8.1		10.1	
147	9 1/4:1	4.5		4.8		5.6		5.6		6.8		8.5	
195	7 1/6:1	3.4		3.6		4.4		4.4		5.2		6.4	
273	5 1/8:1	2.5		2.6		3.3		3.3		3.8		4.8	

Gearbox Specification *Motor Speed 2800 r.p.m.*		SD 18 L/LB/LH/LHB 1 Phase Capacitor Start Induction Run *Motor Rating 125 watts*	SD 13 L/LB/LH/LHB - SD 18 L/LB/LH/LHB 1 Phase Permanent Capacitor *Motor Rating 150 watts*	SD 13 L/LB/LH/LHB - SD 18 L/LB/LH/LHB 3 Phase *Motor Rating 190 watts*		SD 48 L/LB/LH/LHB 1 Phase Capacitor Start Induction Run *Motor Rating 190 watts*		SD 48 L/LB/LH/LHB 3 Phase *Motor Rating 250 watts*	
FINAL R.P.M.	RATIO	OUTPUT TORQUE (Nm)							
		COMPOSITE	COMPOSITE	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE
46	60:1	9	10.8	11.3	15.2	11.3	15.2	11.3	17
56	50:1	8.5	10.2	11.3	12.4	11.3	12.4	11.3	17
70	40:1	7.2	8.7	10.1	-	10.1	-	13.5	-
94	30:1	6.1	7.3	9		9		11.8	
112	25:1	5.4	6.5	7.9		7.9		11.3	
136	20 1/2:1	4.8	5.7	6.8		6.8		9.6	
183	15 1/3:1	3.8	4.6	5.6		5.6		7.9	
228	12 1/3:1	3.4	4.1	5		5		6.8	
295	9 1/4:1	2.8	3.5	4.2		4.2		5.6	
390	7 1/6:1	2.1	2.6	3.2		3.2		4.3	
546	5 1/8:1	1.6	1.9	2.3		2.3		3.2	

SD 13 L
SD 48 L

15mm dia. h6. Keyway 5mm × 38mm long. **Alternative**, LH gearbox with 15mm inside dia. hollow shaft (25mm external dia.). Also available with solid shaft up to 25mm dia. Length as required.

Dimensions in mm. Scale 1:5



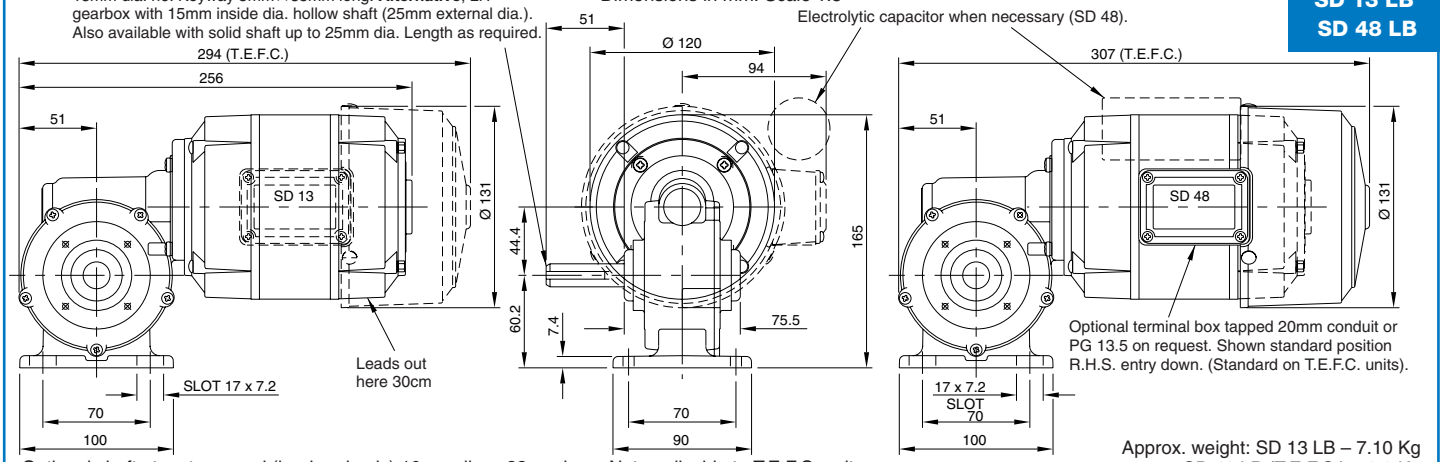
Optional shaft at motor speed (lead end only) 10mm dia. × 33mm long. Not applicable to T.E.F.C. units.

Approx. weight: SD 13 L – 6.91 Kg
SD 48 L (T.E.F.C.) – 8.01 Kg

SD 13 LB
SD 48 LB

15mm dia. h6. Keyway 5mm × 38mm long. **Alternative**, LH gearbox with 15mm inside dia. hollow shaft (25mm external dia.). Also available with solid shaft up to 25mm dia. Length as required.

Dimensions in mm. Scale 1:5



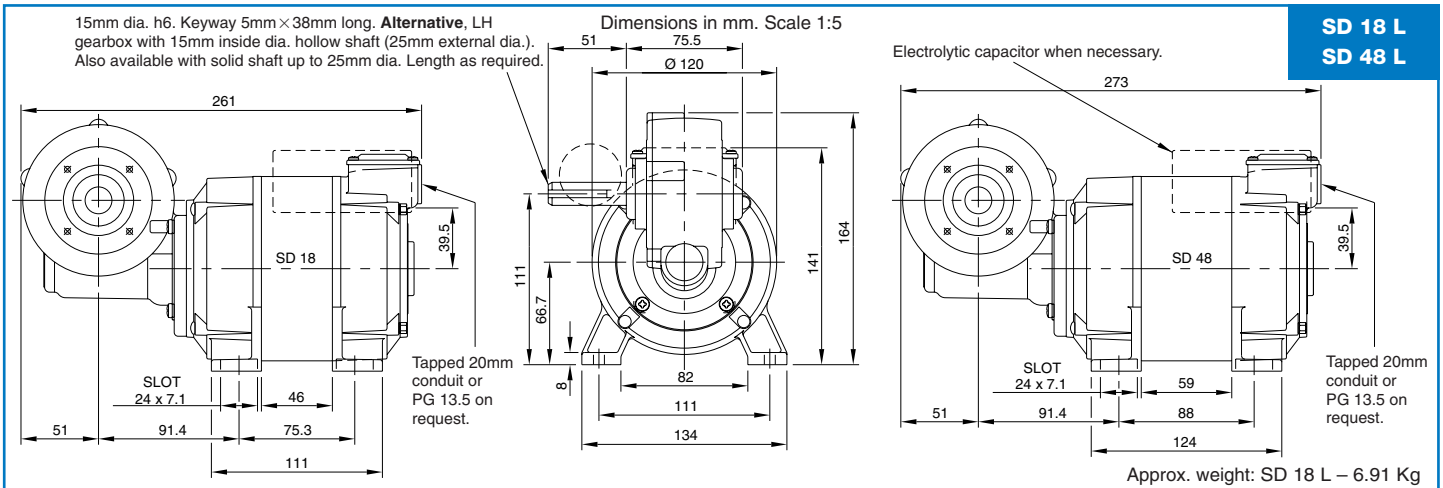
Optional shaft at motor speed (lead end only) 10mm dia. × 33mm long. Not applicable to T.E.F.C. units.

Approx. weight: SD 13 LB – 7.10 Kg
SD 48 LB (T.E.F.C.) – 8.2 Kg

SD 18 L
SD 48 L

15mm dia. h6. Keyway 5mm × 38mm long. **Alternative**, LH gearbox with 15mm inside dia. hollow shaft (25mm external dia.). Also available with solid shaft up to 25mm dia. Length as required.

Dimensions in mm. Scale 1:5

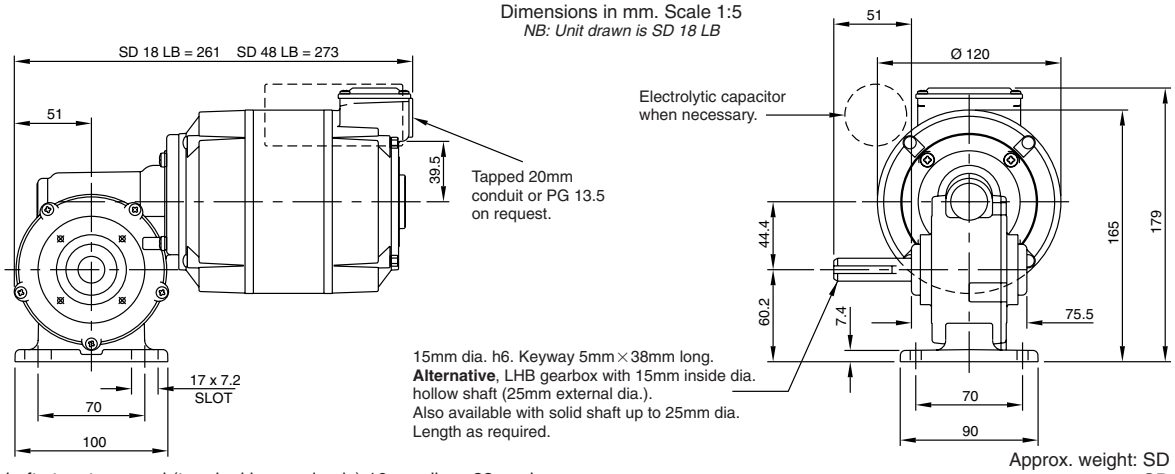


Optional shaft at motor speed (terminal box end only) 10mm dia. × 33mm long.

Approx. weight: SD 18 L – 6.91 Kg
SD 48 L – 7.91 Kg

SD 18 LB
SD 48 LB

Dimensions in mm. Scale 1:5
NB: Unit drawn is SD 18 LB



Optional shaft at motor speed (terminal box end only) 10mm dia. × 33mm long.

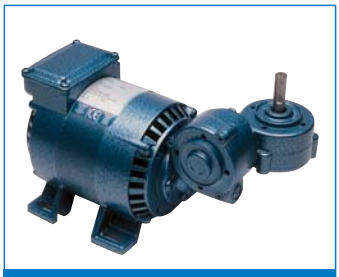
Approx. weight: SD 18 LB – 7.10 Kg
SD 48 LB – 8.10 Kg

Gearbox Type:
SS
Speed Range: 0.32 – 40 r.p.m.

Double Reduction Worm Gear Units
1 or 3 Phase Induction Motors – Constant Speed
Enclosures: Standard – Ventilated Internal Fan Cooled (IP 20)
Alternative – Totally Enclosed (IP 50) with Terminal Box or T.E.F.C. (IP 54)


SD 41 SS


SD 8 SS (T.E.F.C.)


SD 38 SS


SD 8 SS with brake

■ **Voltage, Construction, Connections, Motor Performance Specifications and Optional Extras** see pages 6 and 8 for full details.

(1 Nm = 8.85 lbs. ins.) (1 Nm = 10.2 cmkp)

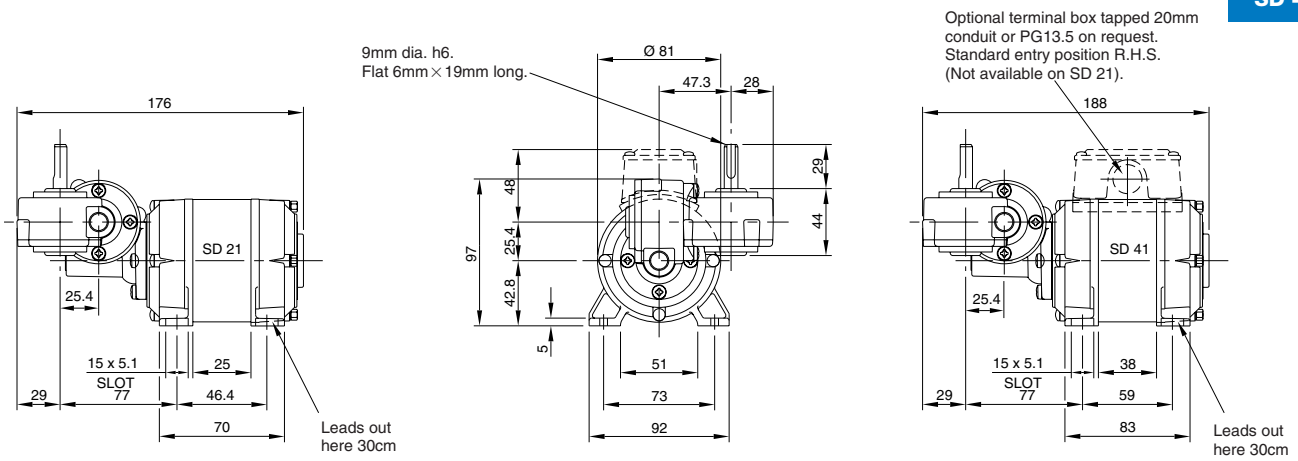
Gearbox Specification *Motor Speed 1400 r.p.m.*		SD 21 SS (1 Phase Only)			SD 41 SS		SD 8 SS – SD 38 SS		SD 28 SS – SD 29 SS	
		Shaded Pole *Totally Enclosed Motor Rating 3.7 watts*	Shaded Pole *Ventilated Motor Rating 8 watts*	Capacitor *Motor Rating 8 watts*	1 or 3 Phase *Motor Rating 10 watts*		1 or 3 Phase *Motor Rating 35 watts*		1 or 3 Phase *Motor Rating 55 watts*	
FINAL R.P.M.	RATIO	OUTPUT TORQUE (Nm)								
		COMPOSITE	COMPOSITE	COMPOSITE	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE
0.5	2800:1	4	4	4	4	5.9	4	5.9	4	5.9
0.6	2376:1	4	4	4	4	5.9	4	5.9	4	5.9
0.75	1933:1	3.4	4	4	4	5.9	4	5.9	4	5.9
0.8	1800:1	2.9	4	4	4	5.9	4	5.9	4	5.9
0.9	1620:1	2.7	4	4	4	5.9	4	5.9	4	5.9
1	1440:1	2.5	4	4	4	5.9	4	5.9	4	5.9
2	729:1	2.26	4	4	4	5.9	4	5.9	4	5.9
3	479:1	2.03	4	4	4	5.9	4	5.9	4	5.9
4	365:1	1.81	4	4	4	5.9	4	5.9	4	5.9
5	287:1	1.58	4	4	4	5.9	4	5.9	4	5.9
6	240:1	1.36	4	4	4	5.65	4	5.9	4	5.9
7	209:1	1.24	3.4	4	4	5.09	4	5.9	4	5.9
8	182:1	1.19	3.16	3.16	4	4.52	4	5.9	4	5.9
9	160:1	1.13	2.94	2.94	4	–	4	5.9	4	5.9
10	145:1	1.07	2.71	2.71	3.62	–	4	5.9	4	5.9
11	129:1	1.02	2.49	2.49	3.28	–	4	5.9	4	5.9
12	117:1	0.96	2.26	2.26	2.94		4	5.9	4	5.9
13	112:1	0.90	2.15	2.15	2.83		4	5.9	4	5.9
14	104:1	0.85	2.03	2.03	2.71		4	5.9	4	5.9
15	94:1	0.79	1.92	1.92	2.49		4	5.9	4	5.9
16	91:1	0.73	1.81	1.81	2.37		4	5.9	4	5.9
17	86:1	0.68	1.70	1.70	2.26		4	5.9	4	5.9
18	78:1	0.62	1.58	1.58	2.03		4	5.8	4	5.9
19	75:1	0.57	1.47	1.47	1.92		4	5.54	4	5.9
20	69:1	0.51	1.36	1.36	1.81		4	5.27	4	5.9
24	58:1	0.45	1.24	1.24	1.58		4	4.75	4	5.9
26	53:1	0.40	1.13	1.13	1.47		4	4.22	4	5.9
30	47:1	0.34	1.02	1.02	1.36		4	3.96	4	5.9

Gearbox Specification *Motor Speed 2800 r.p.m.*		SD 41 SS 1 or 3 Phase *Motor Rating 25 watts*		SD 8 SS - SD 38 SS 1 or 3 Phase *Motor Rating 60 watts*		SD 28 SS – SD 29 SS 1 Phase *Motor Rating 100 watts*		SD 28 SS – SD 29 SS 3 Phase *Motor Rating 120 watts*	
FINAL R.P.M.	RATIO	OUTPUT TORQUE (Nm)							
		COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE
1	2800:1	4	5.9	4	5.9	4	5.9	4	5.9
1.2	2376:1	4	5.9	4	5.9	4	5.9	4	5.9
1.5	1933:1	4	5.9	4	5.9	4	5.9	4	5.9
1.6	1800:1	4	5.9	4	5.9	4	5.9	4	5.9
1.8	1620:1	4	5.9	4	5.9	4	5.9	4	5.9
2	1440:1	4	5.9	4	5.9	4	5.9	4	5.9
4	729:1	4	5.9	4	5.9	4	5.9	4	5.9
6	479:1	4	5.9	4	5.9	4	5.9	4	5.9
8	365:1	4	5.9	4	5.9	4	5.9	4	5.9
10	287:1	4	5.9	4	5.9	4	5.9	4	5.9
12	240:1	4	5.9	4	5.9	4	5.9	4	5.9
14	209:1	4	5.2	4	5.9	4	5.9	4	5.9
16	182:1	4	4.75	4	5.9	4	5.9	4	5.9
18	160:1	4	4.29	4	5.9	4	5.9	4	5.9
20	145:1	4	–	4	5.9	4	5.9	4	5.9
22	129:1	3.62	–	4	5.9	4	5.9	4	5.9
24	117:1	3.39	–	4	5.9	4	5.9	4	5.9
26	112:1	3.16		4	5.9	4	5.9	4	5.9
28	104:1	2.94		4	5.9	4	5.9	4	5.9
30	94:1	2.83		4	5.9	4	5.9	4	5.9
32	91:1	2.71		4	5.9	4	5.9	4	5.9
34	86:1	2.6		4	5.9	4	5.9	4	5.9
36	78:1	2.37		4	5.7	4	5.9	4	5.9
38	75:1	2.26		4	5.42	4	5.9	4	5.9
40	69:1	2.03		4	4.88	4	5.9	4	5.9

Gearbox Specification *Motor Speed 900 r.p.m.*		SD 8 SS – SD 38 SS 1 Phase *Motor Rating 10 watts*		SD 8 SS – SD 38 SS 3 Phase *Motor Rating 15 watts*	
FINAL R.P.M.	RATIO	OUTPUT TORQUE (Nm)			
		COMPOSITE	BRONZE	COMPOSITE	BRONZE
0.32	2800:1	4	5.9	4	5.9
0.38	2376:1	4	5.9	4	5.9
0.46	1933:1	4	5.9	4	5.9
0.50	1800:1	4	5.9	4	5.9
0.56	1620:1	4	5.9	4	5.9
0.63	1440:1	4	5.9	4	5.9
1.23	729:1	4	5.9	4	5.9
1.9	479:1	4	5.9	4	5.9
2.5	365:1	4	5.9	4	5.9
3.0	287:1	4	5.9	4	5.9
3.8	240:1	4	5.9	4	5.9
4.3	209:1	4	5.9	4	5.9
5.0	182:1	4	5.9	4	5.9
5.6	160:1	4	5.42	4	5.9
6.2	145:1	4	4.97	4	5.9
7.0	129:1	4	4.52	4	5.9
7.7	117:1	4	4.29	4	5.9
8.0	112:1	4	4.18	4	5.9
8.7	104:1	4	–	4	5.9
9.3	94:1	4	–	4	5.9
9.6	97:1	3.88	–	4	5.9
10.5	86:1	3.76		4	5.54
11.5	78:1	3.54		4	5.2
12	75:1	3.39		4	4.97
13	69:1	3.14		4	4.52

SD 21 SS
SD 41 SS

Dimensions in mm. Scale 1:5

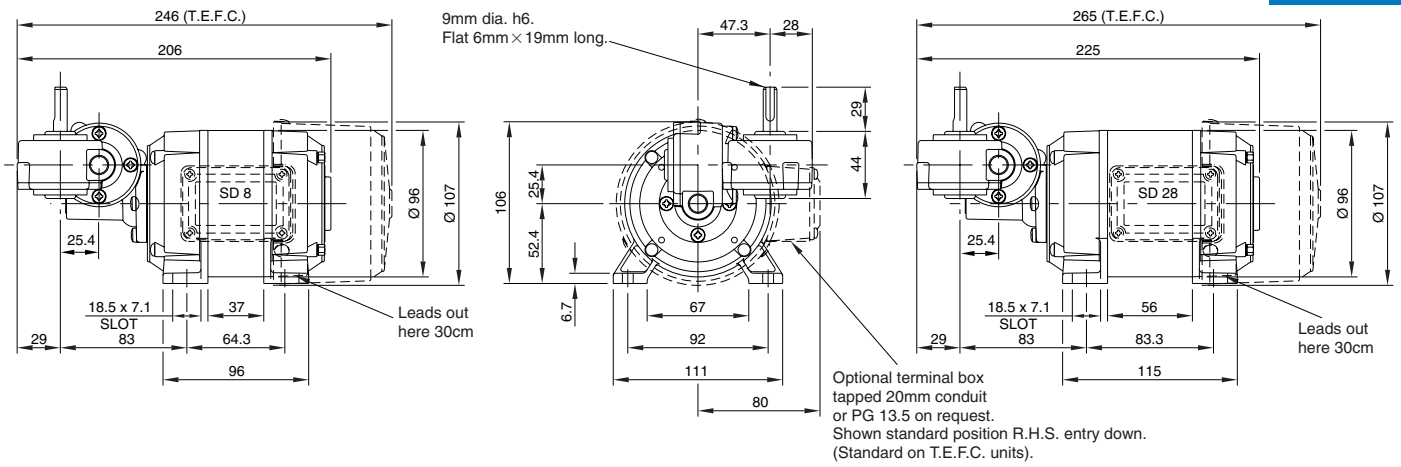


Optional shaft at motor speed (lead end only) 7.93mm dia. × 33mm long.

Approx. weight: SD 21 SS – 2.35 Kg
SD 41 SS – 2.91 Kg

SD 8 SS
SD 28 SS

Dimensions in mm. Scale 1:5

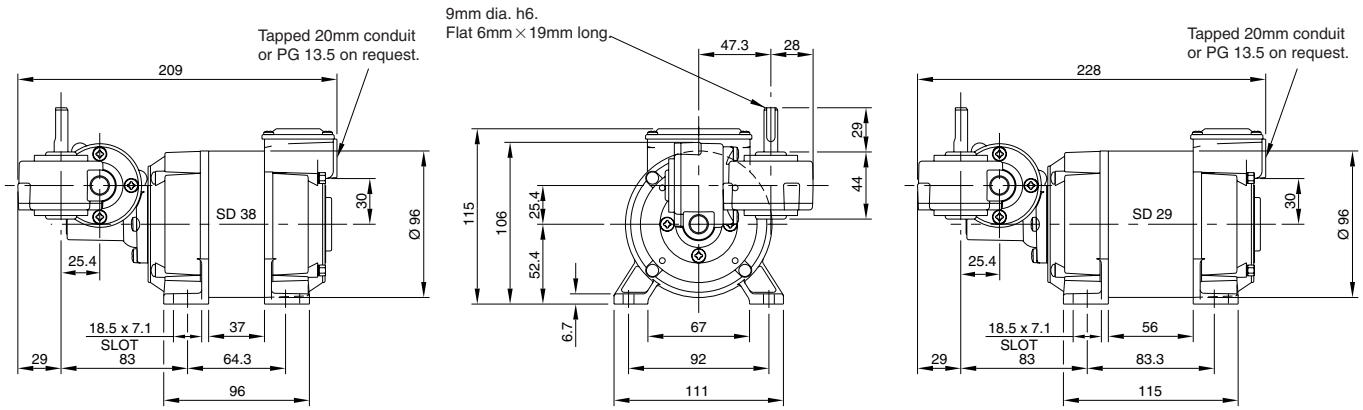


Optional shaft at motor speed (lead end only) see separate motor drawing for details (Page 9). Not applicable to T.E.F.C.

Approx. weight: SD 8 SS – 3.61 Kg
SD 28 SS – 4.41 Kg

SD 38 SS
SD 29 SS

Dimensions in mm. Scale 1:5

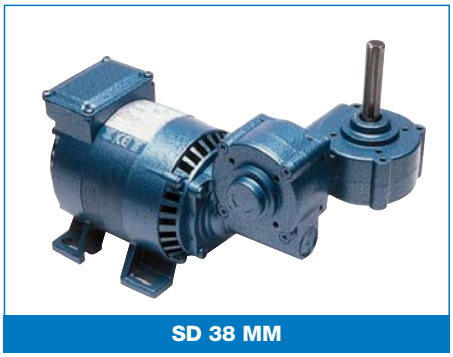


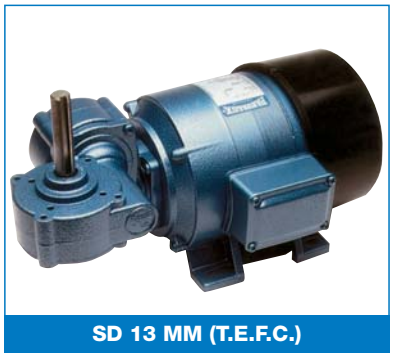
Optional shaft at motor speed (terminal box end only) see separate motor drawing for details (Page 9).

Approx. weight: SD 38 SS – 3.66 Kg
SD 29 SS – 4.43 Kg

Gearbox Type:
MM
Speed Range: 0.5 – 30 r.p.m.

Double Reduction Worm Gear Units
1 or 3 Phase Induction Motors – Constant Speed
Enclosures: Standard – Ventilated Internal Fan Cooled (IP 20)
Alternative – Totally Enclosed (IP 50) with Terminal Box or T.E.F.C. (IP 54)


SD 38 MM


SD 13 MM (T.E.F.C.)


SD 18 MM with brake

■ **Voltage, Construction, Connections, Motor Performance**
Specifications and Optional Extras see pages 6, 8 and 10 for full details.

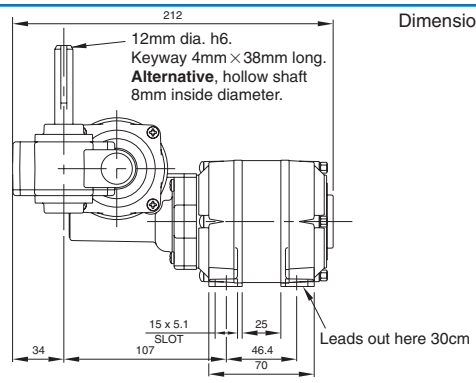
(1 Nm = 8.85 lbs. ins.) (1 Nm = 10.2 cmkp)

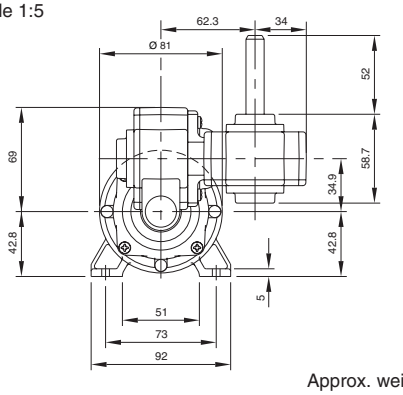
Gearbox Specification *Motor Speed 1400 r.p.m.*		SD 21 MM (1 Phase Only) Shaded Pole (Vent) *Motor Rating 8 watts*		SD 21 MM (1 Phase Only) Permanent Capacitor *Motor Rating 8 watts*		SD 8 MM – SD 38 MM 1 or 3 Phase *Motor Rating 35 watts*		SD 28 MM – SD 29 MM 1 or 3 Phase *Motor Rating 55 watts*	
FINAL R.P.M.	RATIO	OUTPUT TORQUE (Nm)							
		COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE
0.5	2880:1	8.5	11.8	8.5	11.8	8.5	11.8	8.5	11.8
0.6	2376:1	8.5	11.8	8.5	11.8	8.5	11.8	8.5	11.8
0.75	1933:1	8.5	11.8	8.5	11.8	8.5	11.8	8.5	11.8
0.8	1800:1	9	11.8	9	11.8	9	11.8	9	11.8
0.9	1620:1	9	11.8	9	11.8	9	11.8	9	11.8
1	1440:1	9	11.8	9	11.8	9	11.8	9	11.8
2	720:1	9	–	9	–	9	11.8	9	11.8
3	479:1	6.8	–	6.8	–	9	11.8	9	11.8
4	360:1	5.7	–	5.7	–	9	11.8	9	11.8
5	287:1	4.5		4.5		9	11.8	9	11.8
6	240:1	4.1		4.1		9	11.8	9	11.8
7	209:1	4		4		9	11.8	9	11.8
8	178:1	3.8		3.8		9	11.8	9	11.8
9	160:1	3.6		3.6		9	11.8	9	11.8
10	145:1	3.4		3.4		9	11.8	9	11.8
11	129:1	3.2		3.2		9	11.8	9	11.8
12	117:1	3		3		9	11.8	9	11.8
13	111:1	2.7		2.7		9	11.8	9	11.8
14	103:1	2.6		2.6		9	11.8	9	11.8
15	94:1	2.4		2.4		9	–	9	11.8
16	89:1	2.3		2.3		9	–	9	11.8
17	86:1	2		2		8.6	–	9	11.8
18	78:1	1.9		1.9		7.9		9	11.8
19	75:1	1.7		1.7		7.2		9	11.8
20	70:1	1.6		1.6		6.6		9	11.3
24	58:1	1.5		1.5		6.1		9	10.4
26	53:1	1.4		1.4		5.5		9	9.4
30	47:1	1.1		1.1		5		8.6	8.6

Gearbox Specification *Motor Speed 1400 r.p.m.*		SD 18 MM 1 Phase Capacitor Start Induction Run *Motor Rating 95 watts*		SD 13 MM – SD 18 MM 1 Phase Capacitor *Motor Rating 100 watts*		SD 13 MM – SD 18 MM 3 Phase *Motor Rating 125 watts*	
FINAL R.P.M.	RATIO	OUTPUT TORQUE (Nm)					
		COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE
0.5	2880:1	9	11.8	9	11.8	9	11.8
0.6	2376:1	9	11.8	9	11.8	9	11.8
0.75	1933:1	9	11.8	9	11.8	9	11.8
0.8	1800:1	9	11.8	9	11.8	9	11.8
0.9	1620:1	9	11.8	9	11.8	9	11.8
1	1440:1	9	11.8	9	11.8	9	11.8
2	720:1	9	11.8	9	11.8	9	11.8
3	479:1	9	11.8	9	11.8	9	11.8
4	360:1	9	11.8	9	11.8	9	11.8
5	287:1	9	11.8	9	11.8	9	11.8
6	240:1	9	11.8	9	11.8	9	11.8
7	209:1	9	11.8	9	11.8	9	11.8
8	178:1	9	11.8	9	11.8	9	11.8
9	160:1	9	11.8	9	11.8	9	11.8
10	145:1	9	11.8	9	11.8	9	11.8
11	129:1	9	11.8	9	11.8	9	11.8
12	117:1	9	11.8	9	11.8	9	11.8
13	111:1	9	11.8	9	11.8	9	11.8
14	103:1	9	11.8	9	11.8	9	11.8
15	94:1	9	11.8	9	11.8	9	11.8
16	89:1	9	11.8	9	11.8	9	11.8
17	86:1	9	10.7	9	11.8	9	11.8
18	78:1	9	9.6	9	11.8	9	11.8
19	75:1	8.5	-	9	11.8	9	11.8
20	70:1	7.9	-	9	11.8	9	11.8
24	58:1	7.4	-	9	10.7	9	11.8
26	53:1	6.8		9	10.1	9	11.8
30	47:1	6.2		9	9.5	9	11.8

SD 21 MM

Dimensions in mm. Scale 1:5



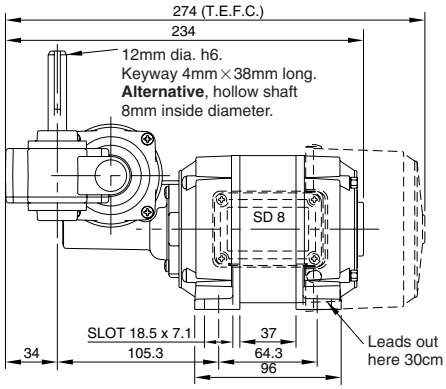


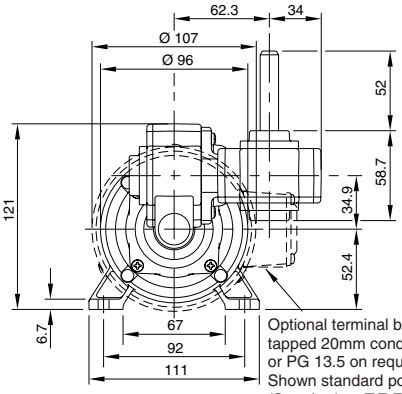
Optional shaft at motor speed (lead end only) 7.93mm dia. × 33mm long.

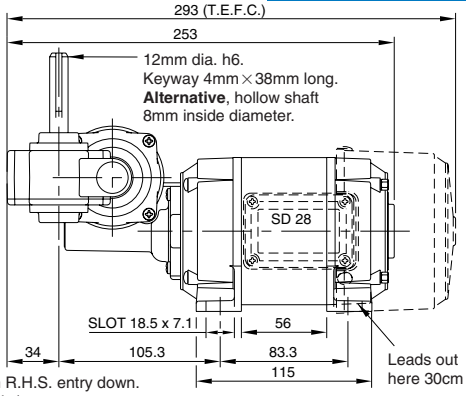
Approx. weight: SD 21 MM – 2.92 Kg

SD 8 MM SD 28 MM

Dimensions in mm. Scale 1:5





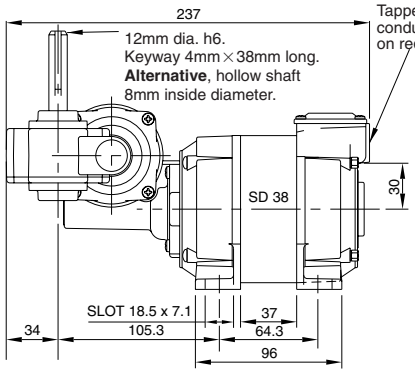


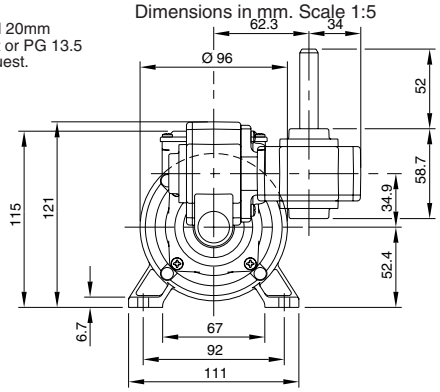
Optional shaft at motor speed (lead end only) see separate motor drawing for details (Page 9). Not applicable to T.E.F.C. units.

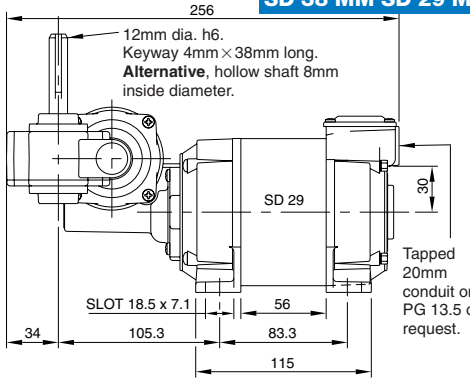
Approx. weight: SD 8 MM – 4.18 Kg
SD 28 MM – 4.98 Kg

SD 38 MM SD 29 MM

Dimensions in mm. Scale 1:5





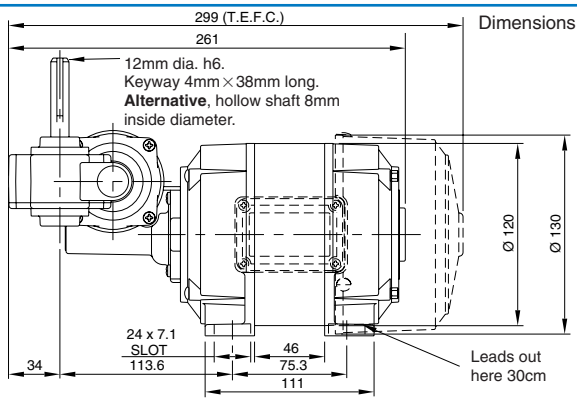


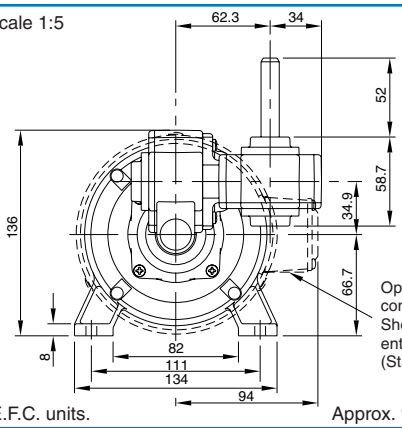
Optional shaft at motor speed (terminal box end only) see separate motor drawing for details (Page 9).

Approx. weight: SD 38 MM – 4.23 Kg SD 29 MM – 5.00 Kg

SD 13 MM

Dimensions in mm. Scale 1:5



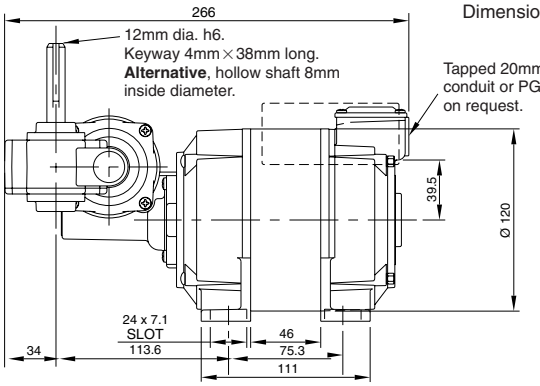


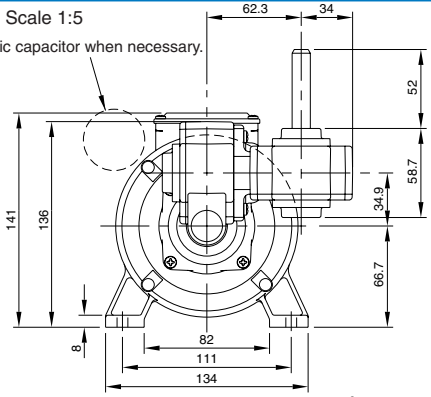
Optional shaft at motor speed (lead end only) 10mm dia. × 33mm long. Not applicable to T.E.F.C. units.

Approx. weight: SD 13 MM – 6.78 Kg

SD 18 MM

Dimensions in mm. Scale 1:5



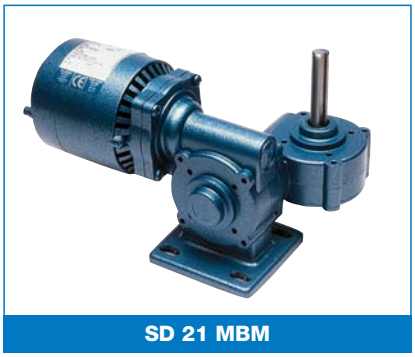


Optional shaft at motor speed (terminal box end only) 10mm dia. × 33mm long.

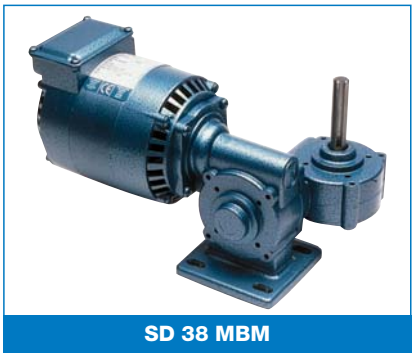
Approx. weight: SD 18 MM – 6.78 Kg

Gearbox Type:
MBM
Speed Range: 0.5 – 30 r.p.m.

Double Reduction Worm Gear Units
1 or 3 Phase Induction Motors – Constant Speed
Enclosures: Standard – Ventilated Internal Fan Cooled (IP 20)
Alternative – Totally Enclosed (IP 50) with Terminal Box or T.E.F.C. (IP 54)



SD 21 MBM



SD 38 MBM

■ **Voltage, Construction, Connections, Motor Performance Specifications and Optional Extras** see pages 6, 8 and 10 for full details.

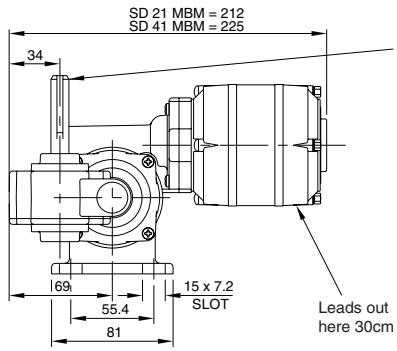
(1 Nm = 8.85 lbs. ins.) (1 Nm = 10.2 cmkp)

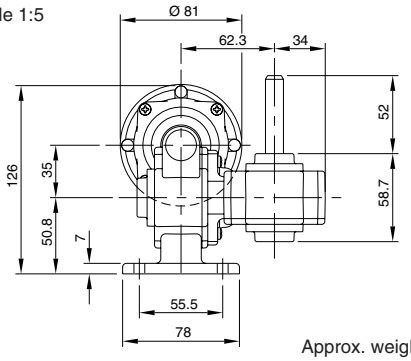
Gearbox Specification *Motor Speed 1400 r.p.m.*		SD 21 MBM (1 Phase Only) Shaded Pole (Vent) *Motor Rating 8 watts*		SD 21 MBM (1 Phase Only) Permanent Capacitor *Motor Rating 8 watts*		SD 8 MBM – SD 38 MBM 1 or 3 Phase *Motor Rating 35 watts*		SD 28 MBM – SD 29 MBM 1 or 3 Phase *Motor Rating 55 watts*	
FINAL R.P.M.	RATIO	OUTPUT TORQUE (Nm)							
		COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE
0.5	2880:1	8.5	11.8	8.5	11.8	8.5	11.8	8.5	11.8
0.6	2376:1	8.5	11.8	8.5	11.8	8.5	11.8	8.5	11.8
0.75	1933:1	8.5	11.8	8.5	11.8	8.5	11.8	8.5	11.8
0.8	1800:1	9	11.8	9	11.8	9	11.8	9	11.8
0.9	1620:1	9	11.8	9	11.8	9	11.8	9	11.8
1	1440:1	9	11.8	9	11.8	9	11.8	9	11.8
2	720:1	9	–	9	–	9	11.8	9	11.8
3	479:1	6.8	–	6.8	–	9	11.8	9	11.8
4	360:1	5.7	–	5.7	–	9	11.8	9	11.8
5	287:1	4.5		4.5		9	11.8	9	11.8
6	240:1	4.1		4.1		9	11.8	9	11.8
7	209:1	4		4		9	11.8	9	11.8
8	178:1	3.8		3.8		9	11.8	9	11.8
9	160:1	3.6		3.6		9	11.8	9	11.8
10	145:1	3.4		3.4		9	11.8	9	11.8
11	129:1	3.2		3.2		9	11.8	9	11.8
12	117:1	3		3		9	11.8	9	11.8
13	111:1	2.7		2.7		9	11.8	9	11.8
14	103:1	2.6		2.6		9	11.8	9	11.8
15	94:1	2.4		2.4		9	–	9	11.8
16	89:1	2.3		2.3		9	–	9	11.8
17	86:1	2		2		8.6	–	9	11.8
18	78:1	1.9		1.9		7.9		9	11.8
19	75:1	1.7		1.7		7.2		9	11.8
20	70:1	1.6		1.6		6.6		9	11.3
24	58:1	1.5		1.5		6.1		9	10.4
26	53:1	1.4		1.4		5.5		9	9.4
30	47:1	1.1		1.1		5		8.6	8.6

Gearbox Specification *Motor Speed 1400 r.p.m.*		SD 18 MBM 1 Phase Capacitor Start Induction Run *Motor Rating 95 watts*		SD 13 MBM – SD 18 MBM 1 Phase Capacitor *Motor Rating 100 watts*		SD 13 MBM – SD 18 MBM 3 Phase *Motor Rating 125 watts*	
FINAL R.P.M.	RATIO	OUTPUT TORQUE (Nm)					
		COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE
0.5	2880:1	9	11.8	9	11.8	9	11.8
0.6	2376:1	9	11.8	9	11.8	9	11.8
0.75	1933:1	9	11.8	9	11.8	9	11.8
0.8	1800:1	9	11.8	9	11.8	9	11.8
0.9	1620:1	9	11.8	9	11.8	9	11.8
1	1440:1	9	11.8	9	11.8	9	11.8
2	720:1	9	11.8	9	11.8	9	11.8
3	479:1	9	11.8	9	11.8	9	11.8
4	360:1	9	11.8	9	11.8	9	11.8
5	287:1	9	11.8	9	11.8	9	11.8
6	240:1	9	11.8	9	11.8	9	11.8
7	209:1	9	11.8	9	11.8	9	11.8
8	178:1	9	11.8	9	11.8	9	11.8
9	160:1	9	11.8	9	11.8	9	11.8
10	145:1	9	11.8	9	11.8	9	11.8
11	129:1	9	11.8	9	11.8	9	11.8
12	117:1	9	11.8	9	11.8	9	11.8
13	111:1	9	11.8	9	11.8	9	11.8
14	103:1	9	11.8	9	11.8	9	11.8
15	94:1	9	11.8	9	11.8	9	11.8
16	89:1	9	11.8	9	11.8	9	11.8
17	86:1	9	10.7	9	11.8	9	11.8
18	78:1	9	9.6	9	11.8	9	11.8
19	75:1	8.5	-	9	11.8	9	11.8
20	70:1	7.9	-	9	11.8	9	11.8
24	58:1	7.4	-	9	10.7	9	11.8
26	53:1	6.8		9	10.1	9	11.8
30	47:1	6.2		9	9.5	9	11.8

SD 21 MBM
SD 41 MBM

Dimensions in mm. Scale 1:5



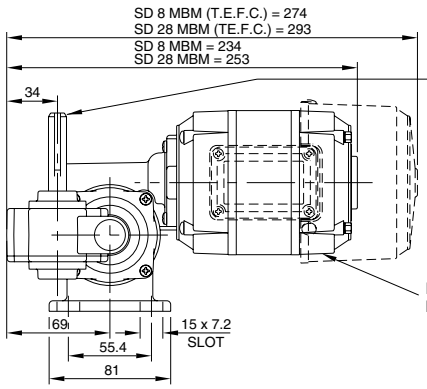


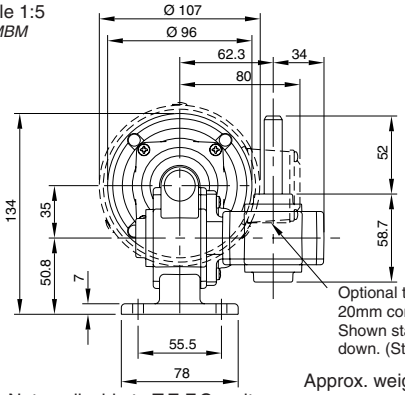
Optional shaft at motor speed (lead end only) 7.93mm dia. × 33mm long.

Approx. weight: SD 21 MBM – 3.12 Kg
SD 41 MBM – 3.7 Kg

SD 8 MBM
SD 28 MBM

Dimensions in mm. Scale 1:5
NB: Unit drawn is SD 8 MBM



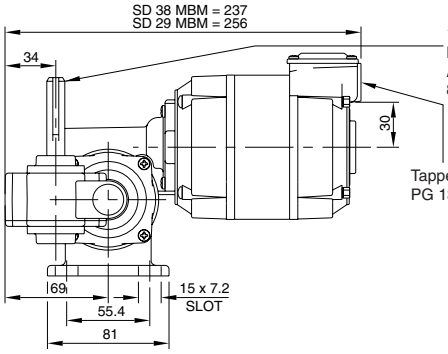


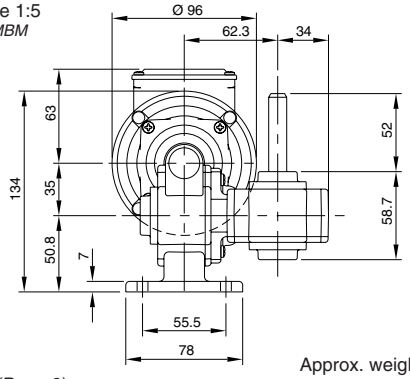
Optional shaft at motor speed (lead end only) see separate motor drawing for details (Page 9). Not applicable to T.E.F.C. units.

Approx. weight: SD 8 MBM – 4.38 Kg
SD 28 MBM – 5.18 Kg

SD 38 MBM
SD 29 MBM

Dimensions in mm. Scale 1:5
NB: Unit drawn is SD 38 MBM



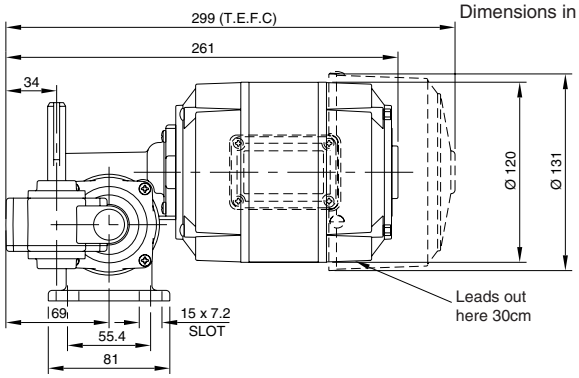


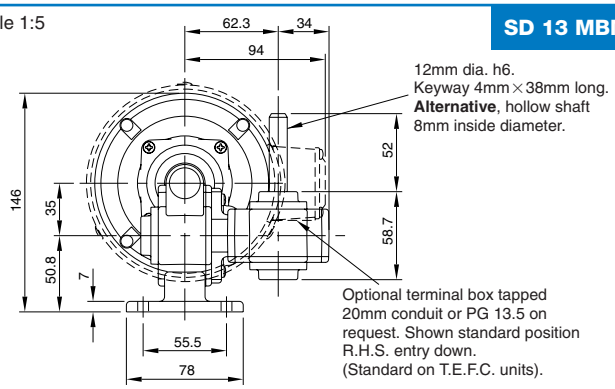
Optional shaft at motor speed (terminal box end only) see separate motor drawing for details (Page 9).

Approx. weight: SD 38 MBM – 4.43 Kg
SD 29 MBM – 5.20 Kg

SD 13 MBM

Dimensions in mm. Scale 1:5



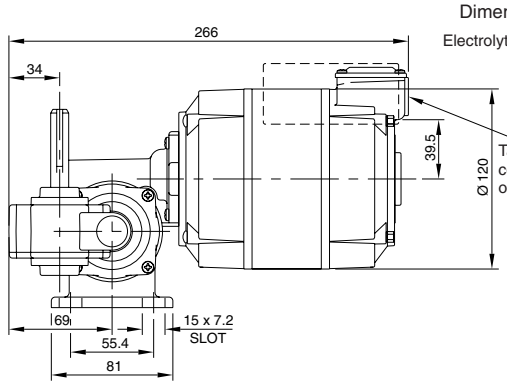


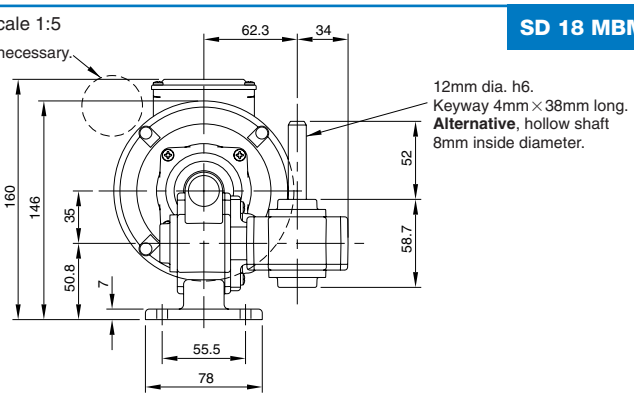
Optional shaft at motor speed (lead end only) 10mm dia. × 33mm long. Not applicable to T.E.F.C. units.

Approx. weight: SD 13 MBM – 6.98 Kg

SD 18 MBM

Dimensions in mm. Scale 1:5





Optional shaft at motor speed (terminal box end only) 10mm dia. × 33mm long.

Approx. weight: – 6.98 Kg

Gearbox Type:

SIW

Speed Range: 1 – 164 r.p.m.

In Line Double Reduction Worm Gear Units

1 or 3 Phase Induction Motors – Constant Speed

Enclosures: Standard – Ventilated Internal Fan Cooled (IP 20)
Alternative – Totally Enclosed (IP 50) with Terminal Box (IP 54)

SD 21 SIW

SD 41 SIW

SD 8 SIW

SD 38 SIW

■ **Voltage, Construction, Connections, Motor Performance Specifications and Optional Extras** see pages 6 and 8 for full details.
Minimum speed of 0,30 r.p.m. obtainable on request, using 900 r.p.m. motor.

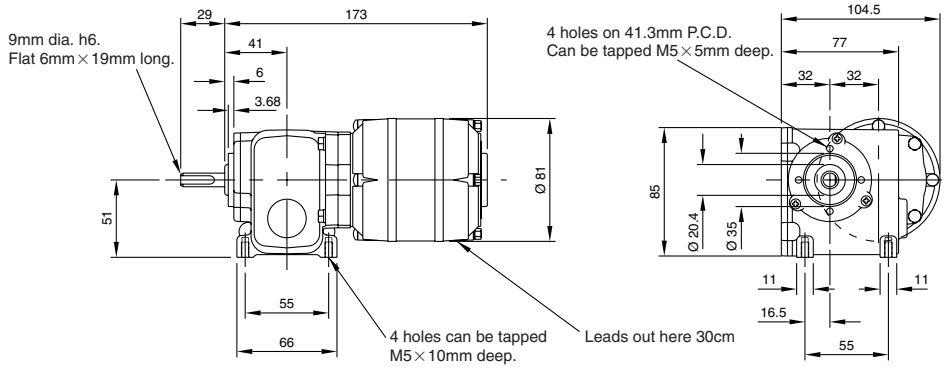
(1 Nm = 8.85 lbs. ins.) (1 Nm = 10.2 cmkp)

Gearbox Specification *Motor Speed 1400 r.p.m.*			SD 21 SIW 1 Phase Capacitor *Motor Rating 8 watts*	SD 41 SIW 1 or 3 Phase *Motor Rating 10 watts*	SD 8 SIW – SD 38 SIW 1 or 3 Phase *Motor Rating 35 watts*	
FINAL R.P.M.	RATIO		OUTPUT TORQUE (Nm)			
	INT	FINAL	COMPOSITE	COMPOSITE	COMPOSITE	BRONZE
1	54:1	25:1	7	7	7	11.3
2	27:1	25:1	7	7	7	11.3
3	18 1/2:1	25:1	7	7	7	11.3
4	14 1/2:1	25:1	6.6	7	7	11.3
5	11 1/3:1	25:1	5.4	6.3	7	11.3
6	9 1/3:1	25:1	4.8	5.5	7	11.3
7	8 1/3:1	25:1	4.3	5	7	11.3
8	7 1/4:1	25:1	3.9	4.5	7	11.3
9	6 1/4:1	25:1	3.4	4	7	11.3
10	5 1/6:1	25:1	2.9	3.4	7	11.3
13	5 1/6:1	20 1/2:1	2.7	3	7	10.9
15	11 1/3:1	8 1/3:1	2.5	2.9	7	10
17	10 1/3:1	8 1/3:1	2.3	2.7	7	9.2
20	8 1/3:1	8 1/3:1	2	2.4	7	8.2
23	7 1/4:1	8 1/3:1	1.8	2	7	7.3
27	6 1/4:1	8 1/3:1	1.6	1.8	6.3	–
32	5 1/6:1	8 1/3:1	1.4	1.6	5.5	–
36	6 1/4:1	6 1/4:1	1.2	1.3	4.8	–
40	4 1/8:1	8 1/3:1	1	1.1	4.1	
44	5 1/6:1	6 1/4:1	0.8	1	3.4	
52	5 1/6:1	5 1/6:1	0.7	0.8	2.8	
65	4 1/8:1	5 1/6:1	0.5	0.6	2.3	
82	4 1/8:1	4 1/8:1	0.4	0.5	1.8	

Gearbox Specification *Motor Speed 2800 r.p.m.*			SD 21 SIW 1 Phase Capacitor *Motor Rating 20 watts*	SD 41 SIW 1 or 3 Phase *Motor Rating 25 watts*		SD 8 SIW – SD 38 SIW 1 or 3 Phase *Motor Rating 60 watts*	
FINAL R.P.M.	RATIO		OUTPUT TORQUE (Nm)				
	INT	FINAL	COMPOSITE	COMPOSITE	BRONZE	COMPOSITE	BRONZE
2	54:1	25:1	7	7	11.3	7	11.3
4	27:1	25:1	7	7	11.3	7	11.3
6	18 1/2:1	25:1	7	7	11.3	7	11.3
8	14 1/2:1	25:1	7	7	9.7	7	11.3
10	11 1/3:1	25:1	6.5	7	8.1	7	11.3
12	9 1/3:1	25:1	5.5	7	–	7	11.3
14	8 1/3:1	25:1	5.1	6.5	–	7	11.3
21	5 1/6:1	25:1	3.4	4.3	–	7	10.3
26	5 1/6:1	20 1/2:1	3.1	4		7	9.6
30	11 1/3:1	8 1/3:1	3	3.8		7	9.2
33	10 1/3:1	8 1/3:1	2.7	3.6		7	8.4
40	8 1/3:1	8 1/3:1	2.3	2.9		7	–
46	7 1/4:1	8 1/3:1	2.1	2.6		6.3	–
54	6 1/4:1	8 1/3:1	1.8	2.3		5.7	–
65	5 1/6:1	8 1/3:1	1.6	2		4.9	
72	6 1/4:1	6 1/4:1	1.5	1.8		4.5	
81	4 1/8:1	8 1/3:1	1.2	1.6		3.8	
87	5 1/6:1	6 1/4:1	1	1.2		2.9	
105	5 1/6:1	5 1/6:1	0.8	1		2.4	
131	4 1/8:1	5 1/6:1	0.6	0.8		1.9	
164	4 1/8:1	4 1/8:1	0.5	0.6		1.5	

SD 21 SIW

Dimensions in mm. Scale 1:5

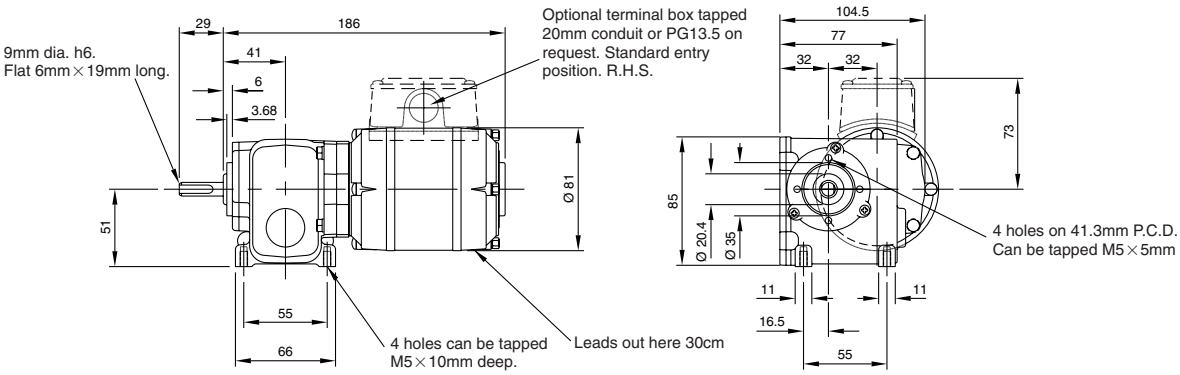


Optional shaft at motor speed (lead end only) 7.93mm dia. × 33mm long.

Approx. weight: SD 21 SIW – 2.55 Kg

SD 41 SIW

Dimensions in mm. Scale 1:5

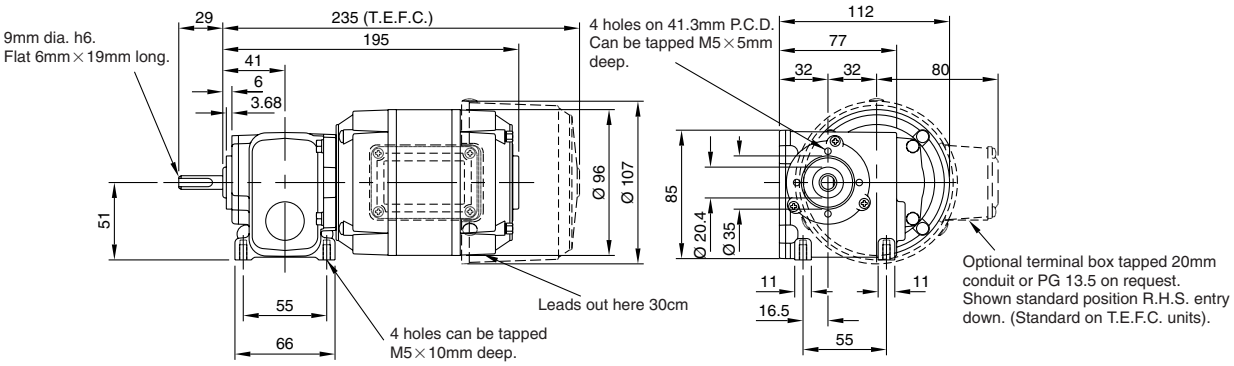


Optional shaft at motor speed (lead end only) 7.93mm dia. × 33mm long.

Approx. weight: SD 41 SIW – 3.11 Kg

SD 8 SIW

Dimensions in mm. Scale 1:5

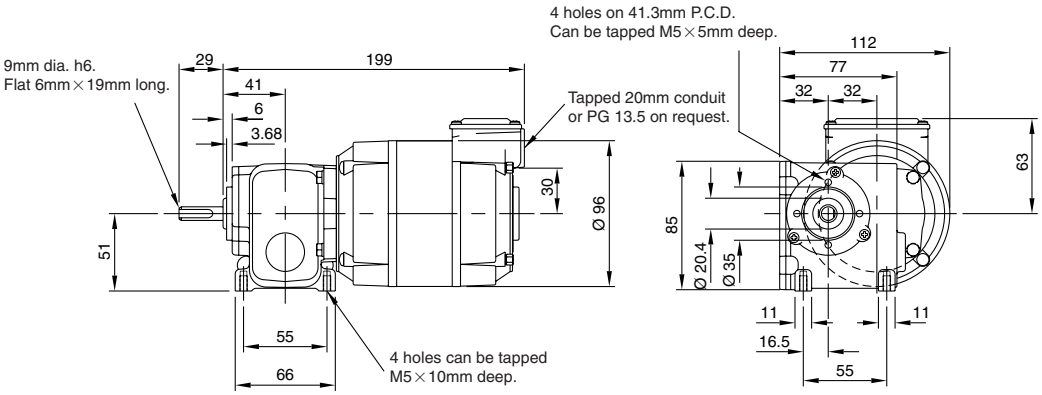


Optional shaft at motor speed (lead end only) see separate motor drawing for details (Page 9). Not applicable to T.E.F.C. units.

Approx. weight: SD 8 SIW: – 3.81 Kg

SD 38 SIW

Dimensions in mm. Scale 1:5



Optional shaft at motor speed (terminal box end only) see separate motor drawing for details (Page 9).

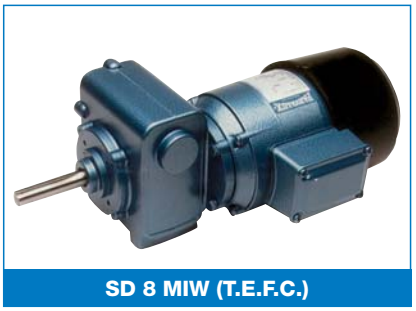
Approx. weight: SD 38 SIW – 3.86 Kg

Gearbox Type:
MIW
Speed Range: 1 – 164 r.p.m.

In Line Double Reduction Worm Gear Units
1 or 3 Phase Induction Motors – Constant Speed
Enclosures: Standard – Ventilated Internal Fan Cooled (IP 20)
Alternative – Totally Enclosed (IP 50) with Terminal Box or T.E.F.C. (IP 54)


SD 41 MIW


SD 28 MIW


SD 8 MIW (T.E.F.C.)

■ **Voltage, Construction, Connections, Motor Performance Specifications and Optional Extras** see pages 6 and 8 for full details.
Minimum speed 0.27 r.p.m. obtainable using 900 r.p.m. motor (SD 8).

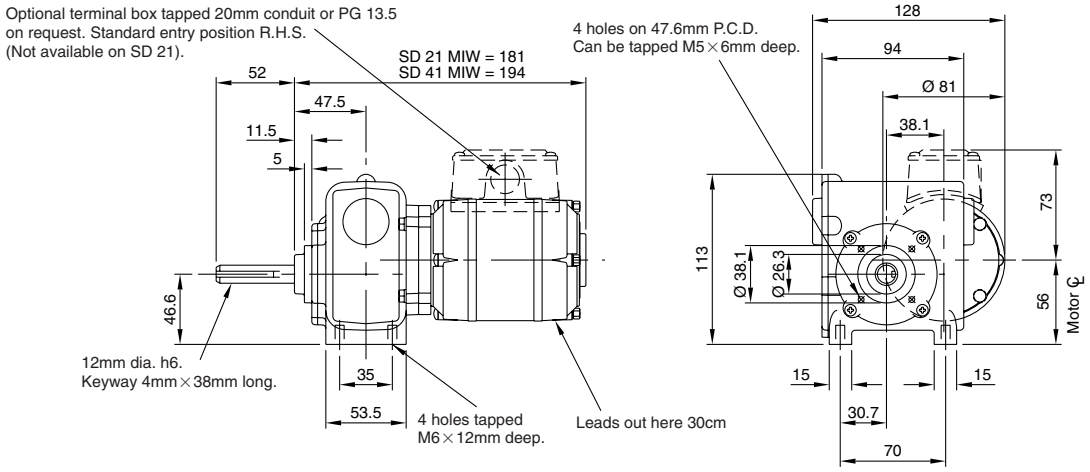
(1 Nm = 8.85 lbs. ins.) (1 Nm = 10.2 cmkp)

Gearbox Specification *Motor Speed 1400 r.p.m.*			SD 21 MIW 1 Phase Capacitor *Motor Rating 8 watts*	SD 41 MIW 1 or 3 Phase *Motor Rating 10 watts*	SD 8 MIW – SD 38 MIW 1 or 3 Phase *Motor Rating 35 watts*		SD 28 MIW – SD 29 MIW 1 or 3 Phase *Motor Rating 55 watts*	
FINAL R.P.M.	RATIO		OUTPUT TORQUE (Nm)					
	INT	FINAL	COMPOSITE	COMPOSITE	COMPOSITE	BRONZE	COMPOSITE	BRONZE
1	54:1	25:1	14	16	17	28	17	28
2	27:1	25:1	9.7	11	17	28	17	28
3	18 1/2:1	25:1	7.9	9	17	22.6	17	28
4	14 1/2:1	25:1	6.6	7.6	17	20.3	17	28
5	11 1/3:1	25:1	5.4	6.3	17	18.8	17	28
6	9 1/3:1	25:1	4.8	5.5	17	–	17	28
7	8 1/3:1	25:1	4.3	5	17	–	17	27.5
8	7 1/4:1	25:1	3.8	4.5	15.5	–	17	24.8
9	6 1/4:1	25:1	3.4	4	13.6		17	22
11	5 1/6:1	25:1	2.9	3.4	11.8		17	18.7
13	5 1/6:1	20 1/2:1	2.7	3	10.9		17	–
15	11 1/3:1	8 1/3:1	2.5	2.9	10		15.7	–
16	10 1/3:1	8 1/3:1	2.3	2.7	9.2		14.5	–
20	8 1/3:1	8 1/3:1	2	2.4	8.2		12.9	
23	7 1/4:1	8 1/3:1	1.8	2	7.3		11.5	
27	6 1/4:1	8 1/3:1	1.6	1.8	6.3		9.9	
32	5 1/6:1	8 1/3:1	1.4	1.6	5.5		8.6	
36	6 1/4:1	6 1/6:1	1.2	1.3	4.8		7.5	
41	4 1/8:1	8 1/3:1	1	1.1	4.1		6.4	

Gearbox Specification *Motor Speed 2800 r.p.m.*			SD 21 MIW 1 Phase *Motor Rating 20 watts*	SD 41 MIW 1 or 3 Phase *Motor Rating 25 watts*		SD 8 MIW – SD 38 MIW 1 or 3 Phase *Motor Rating 60 watts*		SD 28 MIW – SD 29 MIW 1 Phase *Motor Rating 100 watts*		SD 28 MIW – SD 29 MIW 3 Phase *Motor Rating 120 watts*	
FINAL R.P.M.	RATIO		OUTPUT TORQUE (Nm)								
	INT	FINAL	COMPOSITE	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE
2	54:1	25:1	17	17	22.6	17	28	17	28	17	28
4	27:1	25:1	11.7	14.6	–	17	28	17	28	17	28
6	18 1/2:1	25:1	9.3	11.7	–	17	23	17	28	17	28
8	14 1/2:1	25:1	7.7	9.7	–	17	19	17	28	17	28
10	11 1/3:1	25:1	6.5	8.1		17	–	17	28	17	28
12	9 1/3:1	25:1	5.5	7		17	–	17	27	17	28
15	7 1/4:1	25:1	4.8	6		14.4	–	17	24	17	28
21	5 1/6:1	25:1	3.7	4.6		11		17	–	17	22
26	5 1/6:1	20 1/2:1	3.1	4		9.6		16	–	17	19
30	11 1/3:1	8 1/3:1	3	3.8		9.2		15.3	–	17	–
33	10 1/3:1	8 1/3:1	2.7	3.6		8.4		14		16.8	–
40	8 1/3:1	8 1/3:1	2.3	2.9		7		11.7		14	–
46	7 1/4:1	8 1/3:1	2.1	2.6		6.3		10.5		12.6	
54	6 1/4:1	8 1/3:1	1.8	2.3		5.7		9.5		11.3	
65	5 1/6:1	8 1/3:1	1.6	2		4.9		8		9.7	
73	6 1/4:1	6 1/6:1	1.3	1.7		4		6.7		8	
81	4 1/8:1	8 1/3:1	1.2	1.6		3.8		6.3		7.6	
88	5 1/6:1	6 1/6:1	1	1.2		2.9		4.8		5.8	
105	5 1/6:1	5 1/8:1	0.8	1		2.4		4		4.9	
132	4 1/8:1	5 1/8:1	0.6	0.8		1.9		3.2		3.9	
164	4 1/8:1	4 1/8:1	0.5	0.6		1.5		2.6		3.1	

SD 21 MIW
SD 41 MIW

Dimensions in mm. Scale 1:5
NB: Unit drawn is SD 41 MIW

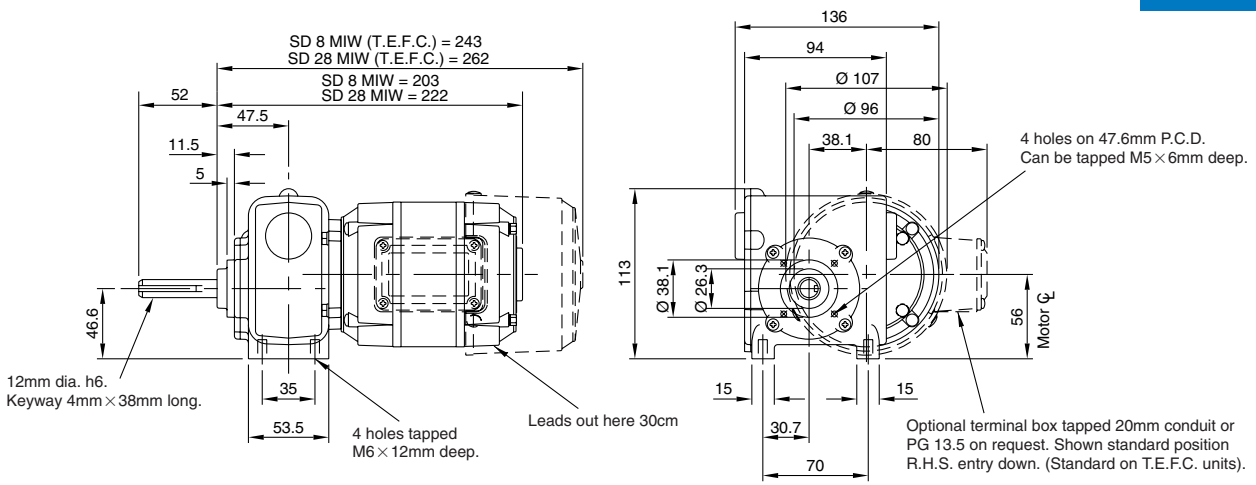


Approx. weight: SD 21 MIW – 3.29 Kg
SD 41 MIW – 3.85 Kg

Optional shaft at motor speed (lead end only) 7.93mm dia. × 33mm long.

SD 8 MIW
SD 28 MIW

Dimensions in mm. Scale 1:5
NB: Unit drawn is SD 8 MIW

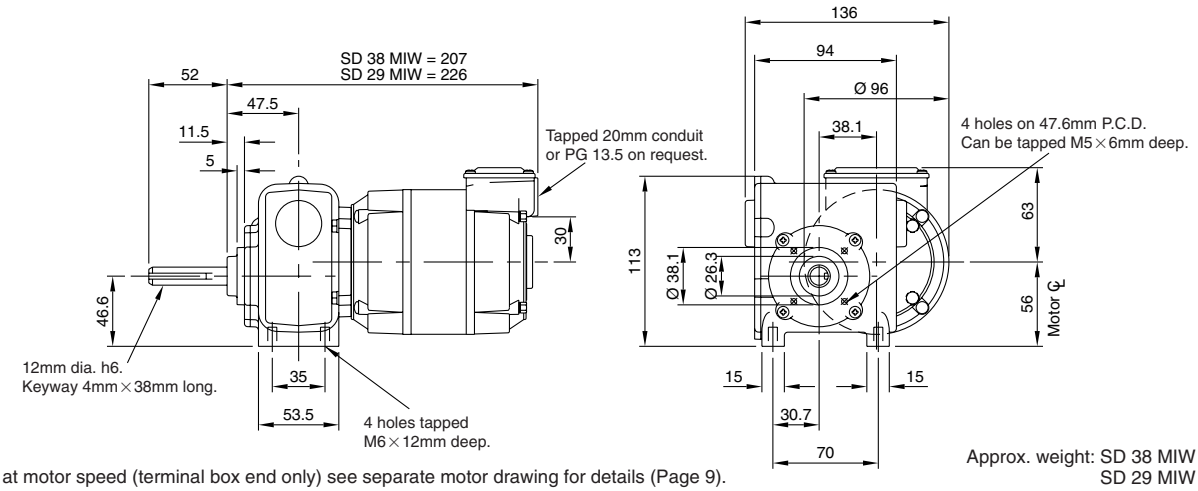


Approx. weight: SD 8 MIW – 4.55 Kg
SD 28 MIW – 5.35 Kg

Optional shaft at motor speed (lead end only) see separate motor drawing for details (Page 9). Not applicable to T.E.F.C. units.

SD 38 MIW
SD 29 MIW

Dimensions in mm. Scale 1:5
NB: Unit drawn is SD 38 MIW



Approx. weight: SD 38 MIW – 4.60 Kg
SD 29 MIW – 5.37 Kg

Optional shaft at motor speed (terminal box end only) see separate motor drawing for details (Page 9).

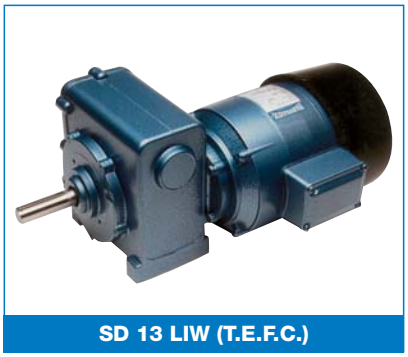
Gearbox Type:
LIW
Speed Range: 1.1 – 75 r.p.m.

In Line Double Reduction Worm Gear Units
1 or 3 Phase Induction Motors – Constant Speed
Enclosures: Standard – Ventilated Internal Fan Cooled (IP 20)
Alternative – Totally Enclosed (IP 50) with Terminal Box or T.E.F.C. (IP 54)


SD 28 LIW


SD 8 LIW with brake


SD 13 LIW


SD 13 LIW (T.E.F.C.)

■ **Voltage, Construction, Connections, Motor Performance**
Specifications and Optional Extras see pages 6, 8 and 10 for full details.
Minimum speed of 0.74 r.p.m. obtainable using 900 r.p.m. motor (SD 13).

(1 Nm = 8.85 lbs. ins.) (1 Nm = 10.2 cmkp)

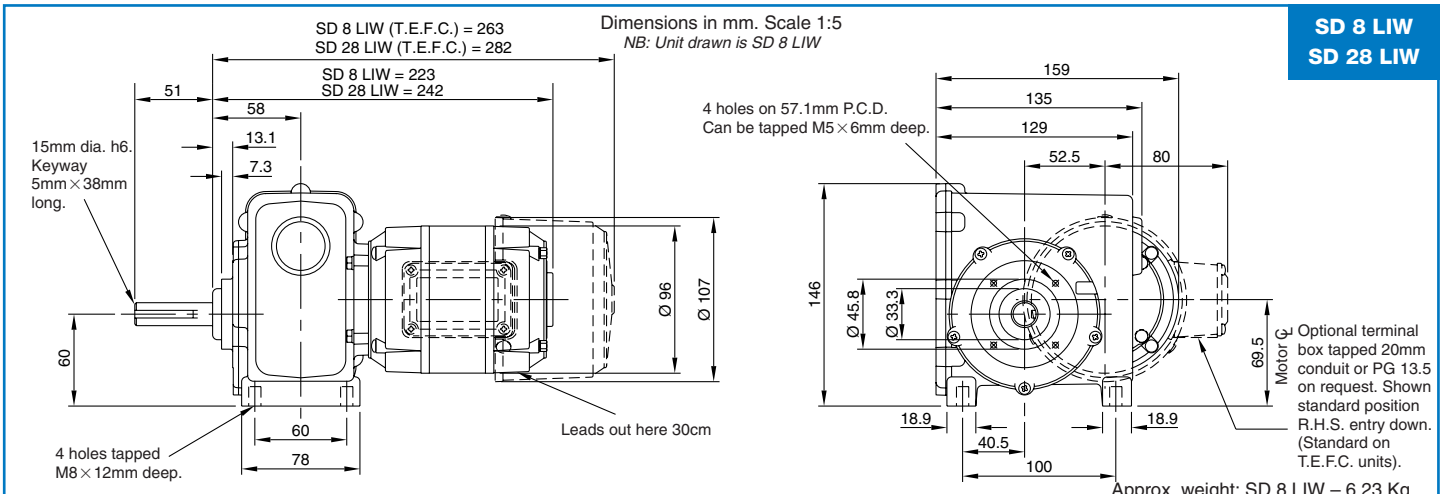
Gearbox Specification *Motor Speed 1400 r.p.m.*			SD 8 LIW – SD 38 LIW 1 or 3 Phase *Motor Rating 35 watts*		SD 28 LIW – SD 29 LIW 1 or 3 Phase *Motor Rating 55 watts*		SD 13 LIW – SD 18 LIW 1 Phase *Motor Rating 100 watts*		SD 13 LIW – SD 18 LIW 3 Phase *Motor Rating 125 watts*	
FINAL R.P.M.	GEAR RATIO		OUTPUT TORQUE (Nm)							
	INT	FINAL	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE
1.1	60:1	20 1/2:1	28	45	28	45	28	45	28	45
1.5	44:1	20 1/2:1	28	45	28	45	28	45	28	45
1.9	36:1	20 1/2:1	28	43	28	45	28	45	28	45
2.5	27:1	20 1/2:1	28	36	28	45	28	45	28	45
3.4	20 1/2:1	20 1/2:1	28	30	28	45	28	45	28	45
4	16 1/2:1	20 1/2:1	25	–	28	42	28	45	28	45
5.5	12 1/3:1	20 1/2:1	21	–	28	34	28	45	28	45
8	8 1/3:1	20 1/2:1	16	–	25	–	28	45	28	45
9.4	7 1/4:1	20 1/2:1	14		23	–	28	41	28	45
13	5 1/8:1	20 1/2:1	11		17	–	28	31	28	38
16	9 1/3:1	9:1	10		15		27	–	28	34
19	8 1/3:1	9:1	9		14		25	–	28	31
21	7 1/4:1	9:1	7		12		21	–	26	–
30	5 1/8:1	9:1	6		9		17		21	–
38	4 1/8:1	9:1	5		7.5		14		17	–

Gearbox Specification *Motor Speed 2800 r.p.m.*			SD 8 LIW – SD 38 LIW 1 or 3 Phase *Motor Rating 60 watts*		SD 28 LIW – SD 29 LIW 1 Phase *Motor Rating 100 watts*		SD 28 LIW – SD 29 LIW 3 Phase *Motor Rating 120 watts*		SD 13 LIW – SD 18 LIW 1 Phase *Motor Rating 150 watts*		SD 13 LIW – SD 18 LIW 3 Phase *Motor Rating 190 watts*	
FINAL R.P.M.	GEAR RATIO		OUTPUT TORQUE (Nm)									
	INT	FINAL	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE
2.2	60:1	20 1/2:1	28	45	28	45	28	45	28	45	28	45
3	44:1	20 1/2:1	28	43	28	45	28	45	28	45	28	45
3.8	36:1	20 1/2:1	28	38	28	45	28	45	28	45	28	45
5	27:1	20 1/2:1	28	31	28	45	28	45	28	45	28	45
7	20 1/2:1	20 1/2:1	26	30	28	43	28	45	28	45	28	45
8	16 1/2:1	20 1/2:1	22	–	28	37	28	42	28	45	28	45
11	12 1/3:1	20 1/2:1	18	–	28	30	28	34	28	45	28	45
16	8 1/3:1	20 1/2:1	14	–	23	–	28	–	28	35	28	44
19	7 1/4:1	20 1/2:1	12		20	–	24	–	28	30	28	38
26	5 1/8:1	20 1/2:1	9		15	–	18	–	23	–	28	–
32	9 1/3:1	9:1	8		13		16		20	–	28	–
38	8 1/3:1	9:1	7.5		12.5		15		19	–	24	–
42	7 1/4:1	9:1	7		11.6		14		17		22	–
60	5 1/8:1	9:1	5		8.3		10		12		16	–
75	4 1/8:1	9:1	4.3		7.2		8.6		11		13	–

SD 8 LIW
SD 28 LIW

Dimensions in mm. Scale 1:5

NB: Unit drawn is SD 8 LIW



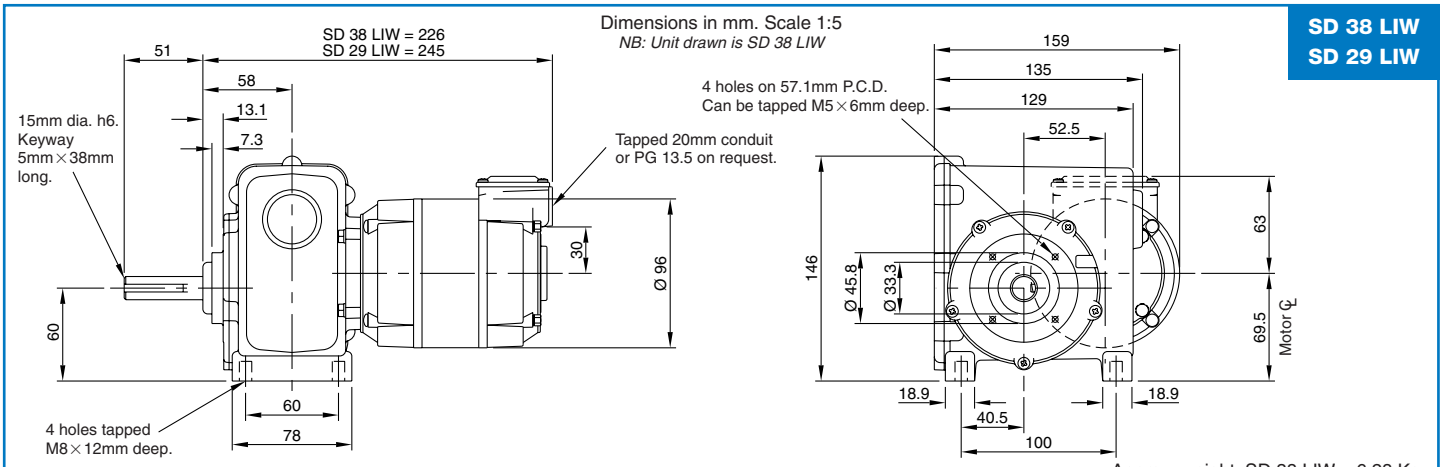
Optional shaft at motor speed (lead end only) see separate motor drawing for details. (Page 9). Not applicable to T.E.F.C. units.

Approx. weight: SD 8 LIW – 6.23 Kg
SD 28 LIW – 7.03 Kg

SD 38 LIW
SD 29 LIW

Dimensions in mm. Scale 1:5

NB: Unit drawn is SD 38 LIW

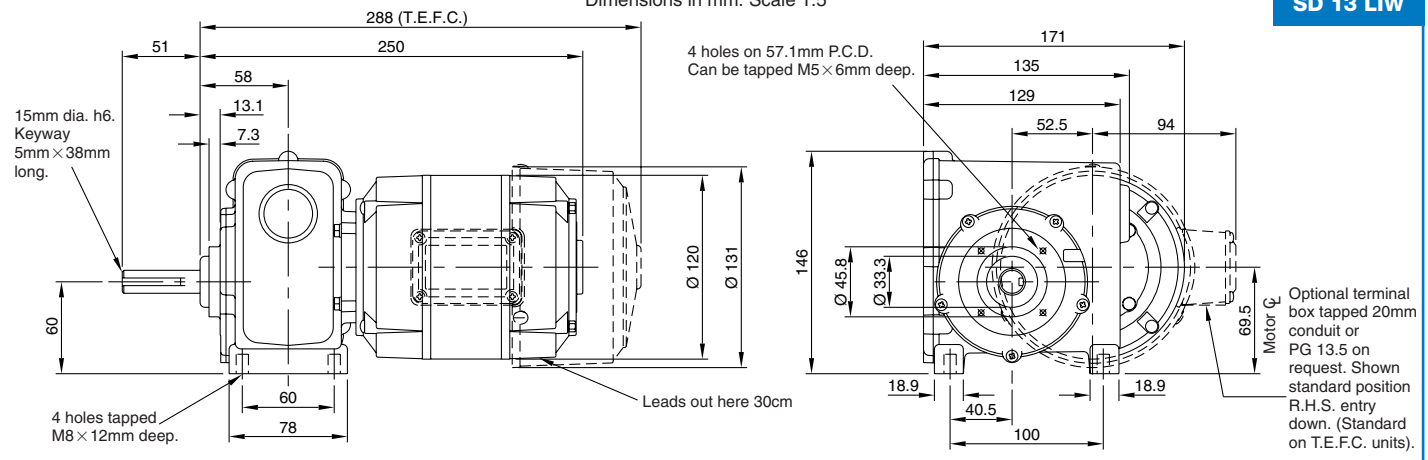


Optional shaft at motor speed (terminal box end only) see separate motor drawing for details. (Page 9).

Approx. weight: SD 38 LIW – 6.28 Kg
SD 29 LIW – 7.05 Kg

SD 13 LIW

Dimensions in mm. Scale 1:5

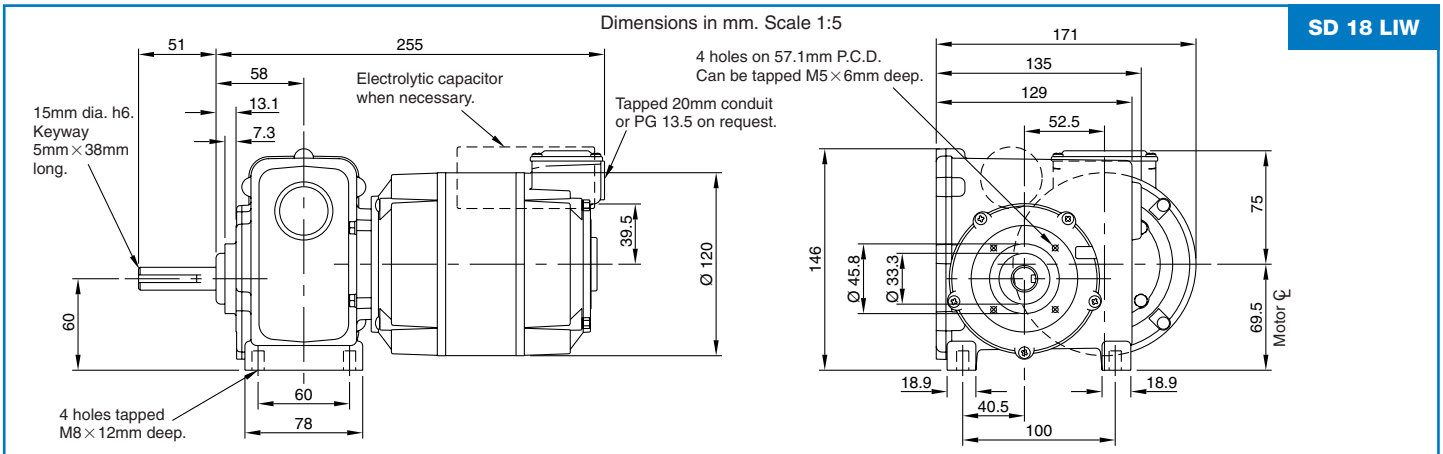


Optional shaft at motor speed (lead end only) 10mm dia. × 33m long. Not applicable to T.E.F.C. units.

Approx. weight: SD 13 LIW – 8.83 Kg

SD 18 LIW

Dimensions in mm. Scale 1:5



Optional shaft at motor speed (terminal box end only) 10mm dia. × 33mm long.

Approx. weight: SD 18 LIW – 8.83 Kg

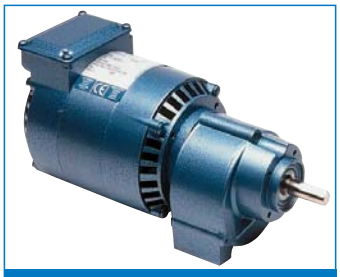
Gearbox Type:
SIS
Speed Range: 3 – 127 r.p.m.

In Line Reduction Multi-Spur Gear Units
1 or 3 Phase Induction Motors – Constant Speed
Enclosures: Standard – Ventilated Internal Fan Cooled (IP 20)
Alternative – Totally Enclosed (IP 50) with Terminal Box or T.E.F.C. (IP 54)


SD 41 SISF


SD 41 SIS with brake


SD 8 SIS (T.E.F.C.)


SD 38 SIS

■ **Voltage, Construction, Connections, Motor Performance Specifications and Optional Extras** see pages 6 and 8 for full details.

(1 Nm = 8.85 lbs. ins.) (1 Nm = 10.2 cmkp)

Gearbox Specification *Motor Speed 1400 r.p.m.*		SD 21 SIS 1 Phase *Motor Rating 8 watts*	SD 41 SIS 1 or 3 Phase *Motor Rating 10 watts*	SD 8 SIS – SD 38 SIS 1 or 3 Phase *Motor Rating 35 watts*
FINAL R.P.M.	RATIO	OUTPUT TORQUE (Nm)		
4.6	303:1	7.9	7.9	7.9
6	228:1	7.9	7.9	7.9
8	172:1	6.6	7.5	7.9
11	129:1	5.5	6.4	7.9
15	94:1	4.5	5.2	7.9
20	71:1	3.6	4.2	7.9
26	53:1	2.7	3.2	7.9
48	29:1	1.7	1.9	5.7
64	22:1	1.24	1.5	4.5

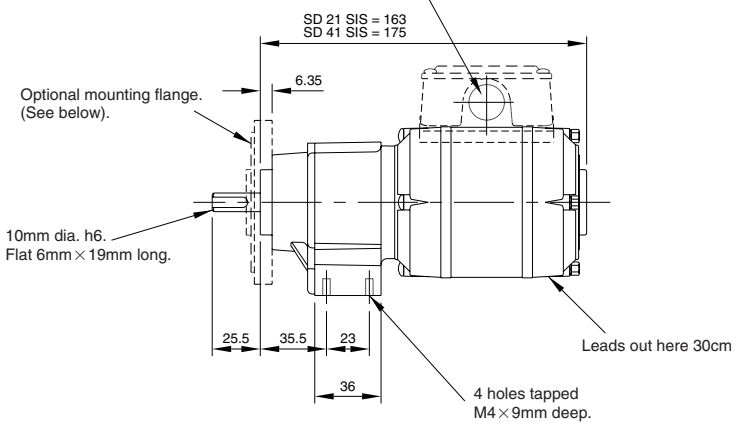
Gearbox Specification *Motor Speed 2800 r.p.m.*		SD 21 SIS 1 Phase *Motor Rating 20 watts*	SD 41 SIS 1 or 3 Phase *Motor Rating 25 watts*	SD 8 SIS – SD 38 SIS 1 or 3 Phase *Motor Rating 60 watts*
FINAL R.P.M.	RATIO	OUTPUT TORQUE (Nm)		
9.2	303:1	7.9	7.9	7.9
12	228:1	7.9	7.9	7.9
16	172:1	6.3	7.9	7.9
22	129:1	5.4	6.8	7.9
30	94:1	4.5	5.7	7.9
39.4	71:1	3.6	4.5	7.9
53	53:1	2.7	3.4	7.9
97	29:1	1.7	2	4.8
127	22:1	1.25	1.6	3.8

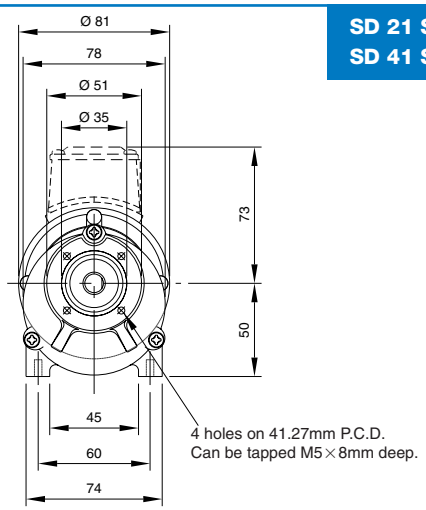
Gearbox Specification *Motor Speed 900 r.p.m.*		SD 8 SIS – SD 38 SIS 1 Phase *Motor Rating 10 watts*	SD 8 SIS – SD 38 SIS 3 Phase *Motor Rating 15 watts*
FINAL R.P.M.	RATIO	OUTPUT TORQUE (Nm)	
3	303:1	7.9	7.9
4	228:1	7.9	7.9
5.2	172:1	7.9	7.9
7	129:1	7.9	7.9
9.6	94:1	7.3	7.9
12.7	71:1	5.8	7.9
17	53:1	4.4	7.2
31	29:1	2.6	4.3
41	22:1	2.1	3.3

SD 21 SIS
SD 41 SIS

Optional terminal box tapped 20mm conduit or PG 13.5 on request. Standard entry position R.H.S. (Not available on SD 21).

Dimensions in mm. Scale 1:4
NB: Unit drawn is SD 41 SIS



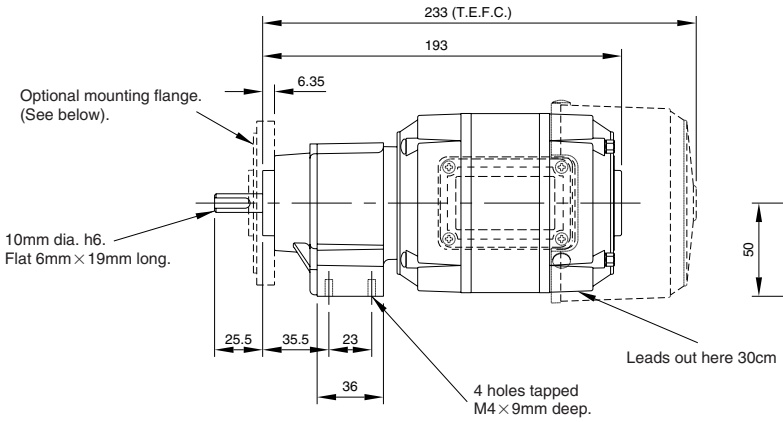


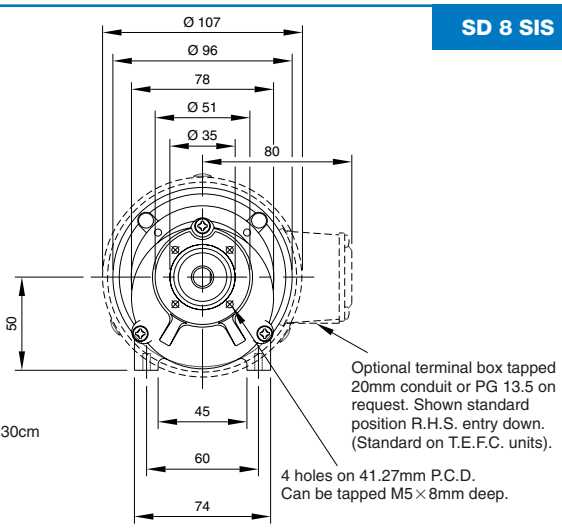
Optional shaft at motor speed (lead end only) 7.93mm dia. × 33mm long.

Approx. weight: SD 21 SIS – 2.46 Kg
SD 41 SIS – 3.02 Kg

SD 8 SIS

Dimensions in mm. Scale 1:4



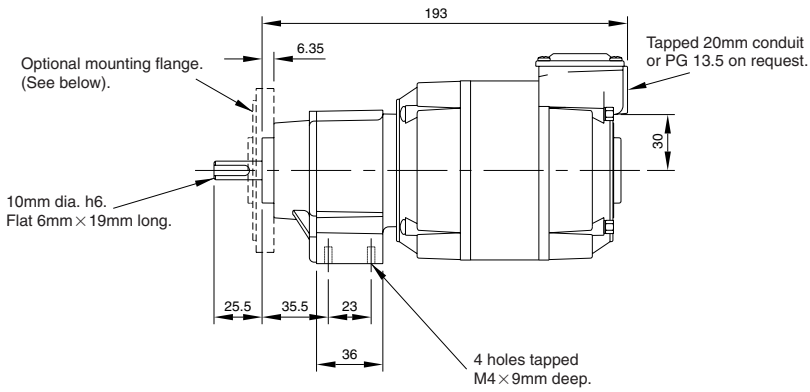


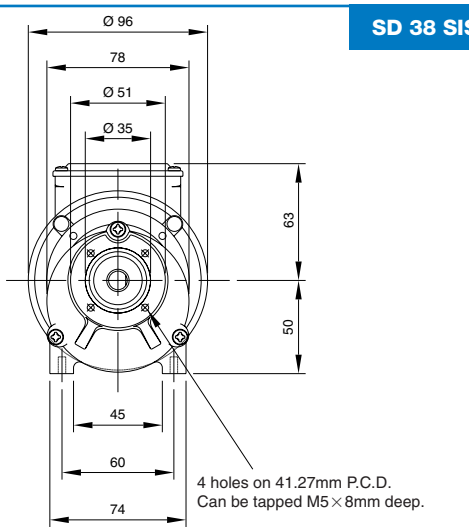
Optional shaft at motor speed (lead end only) see separate motor drawing for detail (Page 9). Not applicable to T.E.F.C. units.

Approx. weight: SD 8 SIS – 3.72 Kg

SD 38 SIS

Dimensions in mm. Scale 1:4



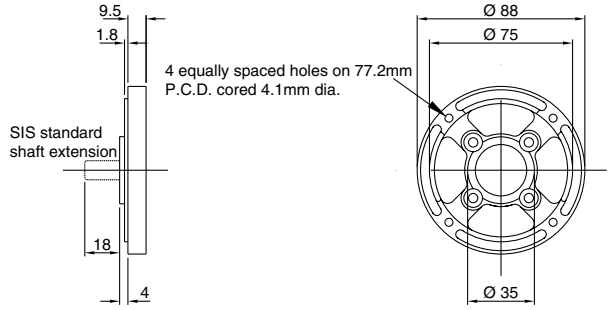


Optional shaft at motor speed (terminal box end only) see separate motor drawing for details (Page 9).

Approx. weight: SD 38 SIS – 3.77 Kg

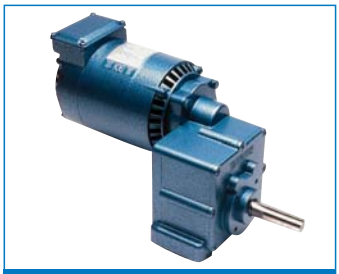
Optional Plastic Mounting Flange

Dimensions in mm. Scale 1:4



Gearbox Type:
MIS
Speed Range: 14 – 436 r.p.m.

In Line Reduction Multi-Spur Gear Units
1 or 3 Phase Induction Motors – Constant Speed
Enclosures: Standard – Ventilated Internal Fan Cooled (IP 20)
Alternative – Totally Enclosed (IP 50) with Terminal Box or T.E.F.C. (IP 54)



SD 29 MIS

■ **Voltage, Construction, Connections, Motor Performance Specifications and Optional Extras** see pages 6, 8 and 10 for full details.

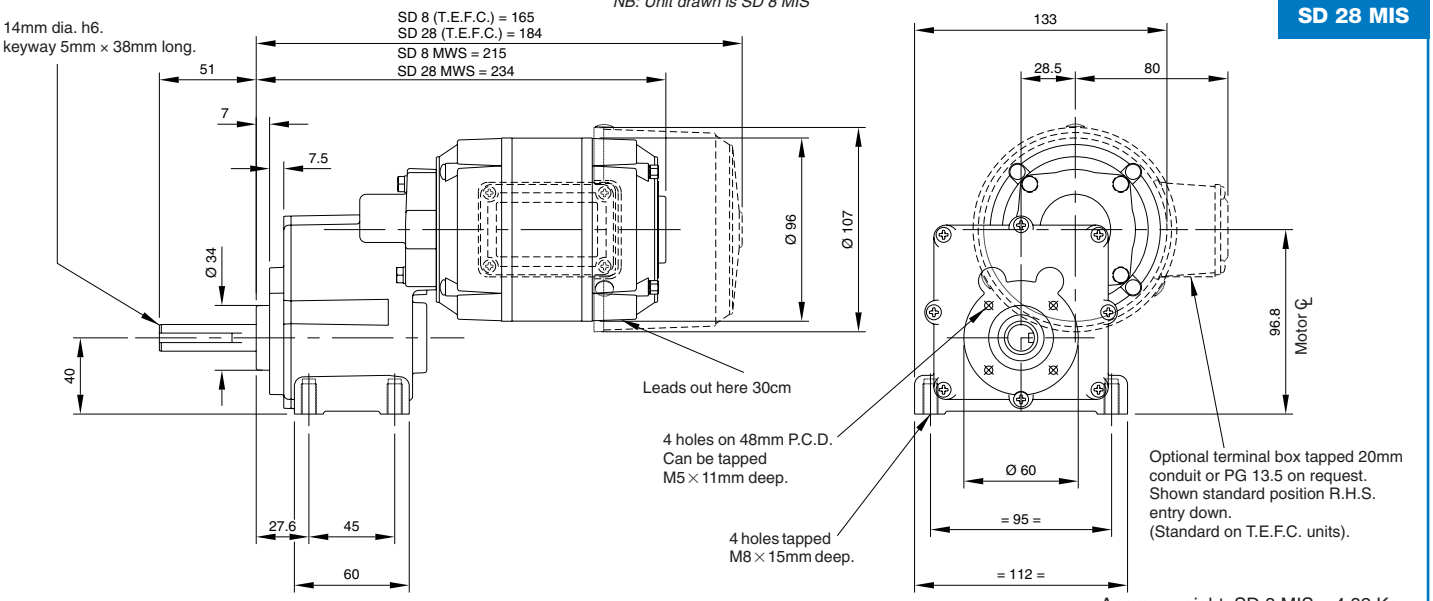
(1 Nm = 8.85 lbs. ins.) (1 Nm = 10.2 cmkp)

Gearbox Specification *Motor Speed 1400 r.p.m.*			SD 8 MIS SD 38 MIS 1 or 3 Phase *Motor Rating 35 watts*	SD 28 MIS SD 29 MIS 1 or 3 Phase *Motor Rating 55 watts*	SD 13 MIS / SD 18 MIS 1 Phase *Motor Rating 100 watts*	SD 13 MIS / SD 18 MIS 3 Phase *Motor Rating 125 watts*
FINAL R.P.M.	RATIO PINION	RATIO SPUR	OUTPUT TORQUE (Nm)			
14	3.23	31.3	18	29	45	45
21	2.13	31.3	12	19	35	43
32	3.23	13.45	8	13	23	29
40	1.12	31.3	7	11	19	24
49	2.13	13.45	5	8	15	19
76	3.23	5.73	4	6	10	13
93	1.12	13.45	3	5	8	11
115	2.13	5.73	2.4	4	7	8
218	1.12	5.73	1.3	2	4	5

Gearbox Specification *Motor Speed 2800 r.p.m.*			SD 8 MIS SD 38 MIS 1 or 3 Phase *Motor Rating 60 watts*	SD 28 MIS – SD 29 MIS 1 Phase *Motor Rating 100 watts*	SD 28 MIS – SD 29 MIS 3 Phase *Motor Rating 120 watts*	SD 13 MIS / SD 18 MIS 1 Phase *Motor Rating 150 watts*	SD 13 MIS / SD 18 MIS 3 Phase *Motor Rating 190 watts*
FINAL R.P.M.	RATIO PINION	RATIO SPUR	OUTPUT TORQUE (Nm)				
28	3.23	31.3	16	26	31	39	45
42	2.13	31.3	10	17	21	26	33
64	3.23	13.45	7	12	14	17	22
80	1.12	31.3	6	10	11	14	18
98	2.13	13.45	5	8	9	12	15
151	3.23	5.73	3	5	6	8	10
186	1.12	13.45	3	4	5	6	8
229	2.13	5.73	2	3	4	5	6
436	1.12	5.73	1	2	2	3	4

Dimensions in mm. Scale 1:4
NB: Unit drawn is SD 8 MIS

SD 8 MIS
SD 28 MIS



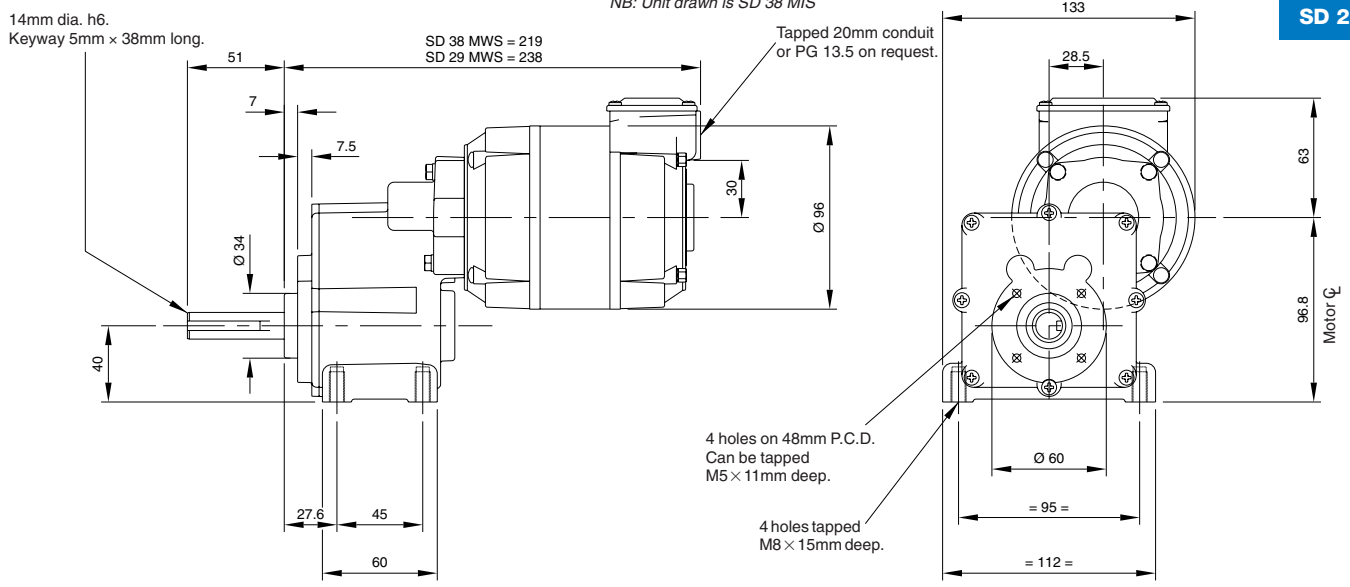
Optional shaft at motor speed (lead end only) see separate motor drawing for details (Page 9). Not applicable to T.E.F.C. units.

Approx. weight: SD 8 MIS – 4.82 Kg
SD 28 MIS – 5.62 Kg

SD 38 MIS
SD 29 MIS

Dimensions in mm. Scale 1:4

NB: Unit drawn is SD 38 MIS

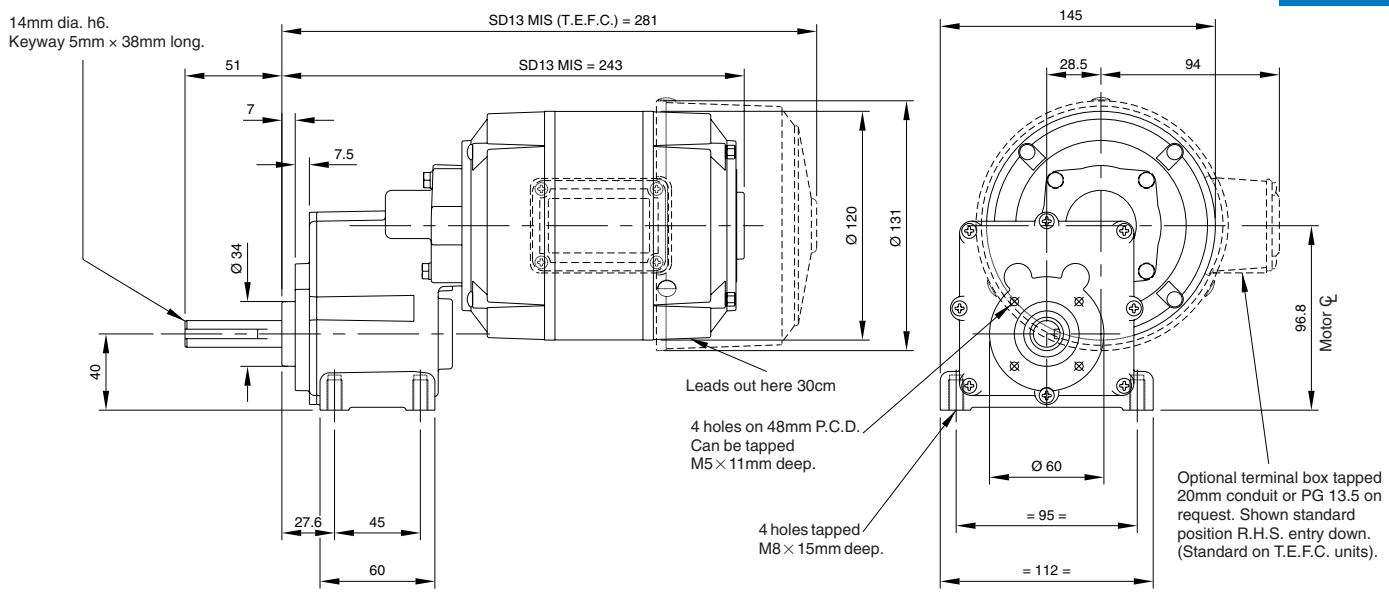


Optional shaft at motor speed (terminal box end only) see separate motor drawing for details (Page 9).

Approx. weight: SD 38 MIS – 4.87 Kg
SD 29 MIS – 5.64 Kg

SD 13 MIS

Dimensions in mm. Scale 1:4

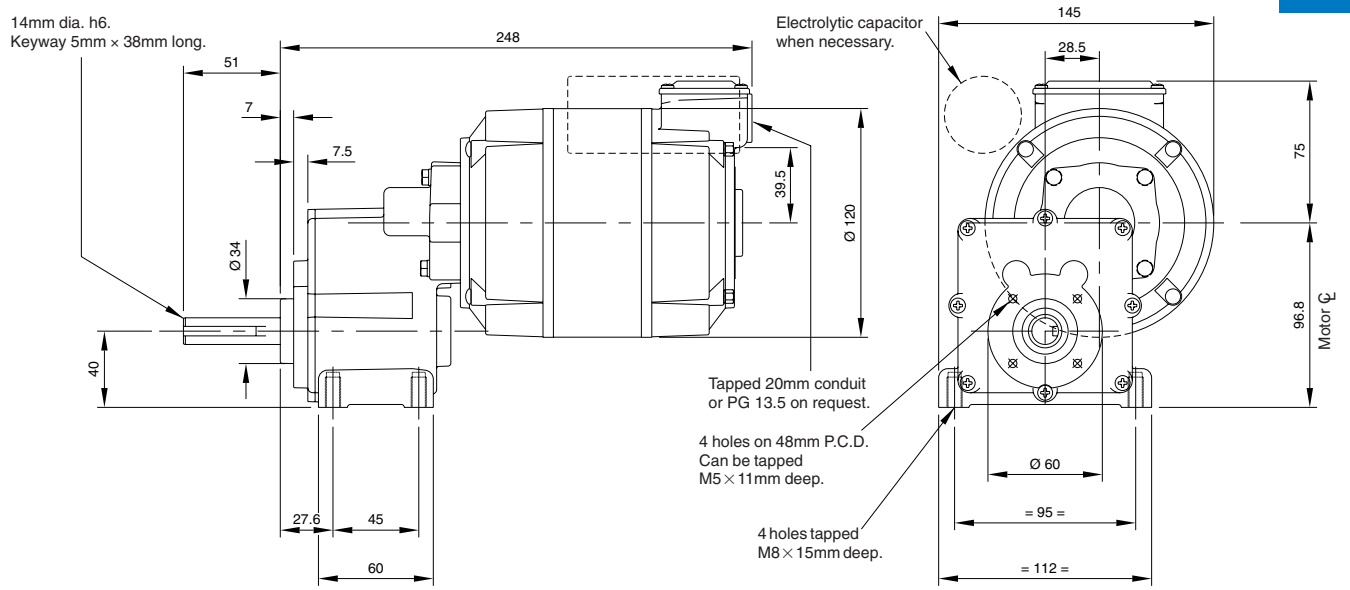


Optional shaft at motor speed (lead end only) 10mm dia. × 33mm long. Not applicable to T.E.F.C. units.

Approx. weight: SD 13 MIS – 7.42 Kg

SD 18 MIS

Dimensions in mm. Scale 1:4

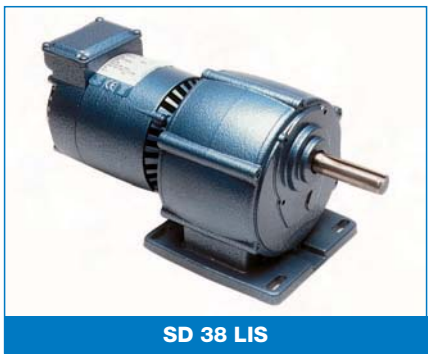


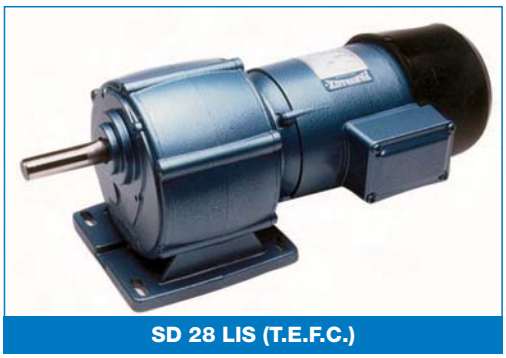
Optional shaft at motor speed (terminal box end only) 10mm dia. × 33mm long.

Approx. weight: SD 18 MIS – 7.42 Kg

Gearbox Type:
LIS
Speed Range: 2.6 – 467 r.p.m.

In Line Reduction Multi-Spur Gear Units
1 or 3 Phase Induction Motors – Constant Speed
Enclosures: Standard – Ventilated Internal Fan Cooled (IP 20)
Alternative – Totally Enclosed (IP 50) with Terminal Box or T.E.F.C. (IP 54)


SD 38 LIS


SD 28 LIS (T.E.F.C.)


SD 18 LIS

■ **Voltage, Construction, Connections, Motor Performance Specifications and Optional Extras** see pages 6, 8 and 10 for full details.
On request gearbox available without feet, can be mounted off of gearbox spigot tappings.

(1 Nm = 8.85 lbs. ins.) (1 Nm = 10.2 cmkp)

Gearbox Specification *Motor Speed 1400 r.p.m.*			SD 8 LIS – SD 38 LIS 1 or 3 Phase *Motor Rating 35 watts*	SD 28 LIS – SD 29 LIS 1 or 3 Phase *Motor Rating 55 watts*	SD 18 LIS 1 Phase Capacitor Start Induction Run *Motor Rating 95 watts*	SD 13 LIS – SD 18 LIS 1 Phase *Motor Rating 100 watts*	SD 13 LIS – SD 18 LIS 3 Phase *Motor Rating 125 watts*
FINAL R.P.M.	RATIO PINION	RATIO SPUR	OUTPUT TORQUE (Nm)				
4	3:1	115:1	61	74	74	74	74
6	2:1	115:1	41	64	74	74	74
8	3:1	56:1	33	51	89	94	100
12	1:1	115:1	20	32	55	58	73
19	3:1	25:1	14	21	37	39	49
25	1:1	56:1	11	17	30	31	39
28	2:1	25:1	9	14	30	31	39
56	1:1	25:1	5	7	12	13	16
78	3:1	6:1	4	6	10	10	13
117	2:1	6:1	2	4	6	7	8
233	1:1	6:1	1	2	3	3	4

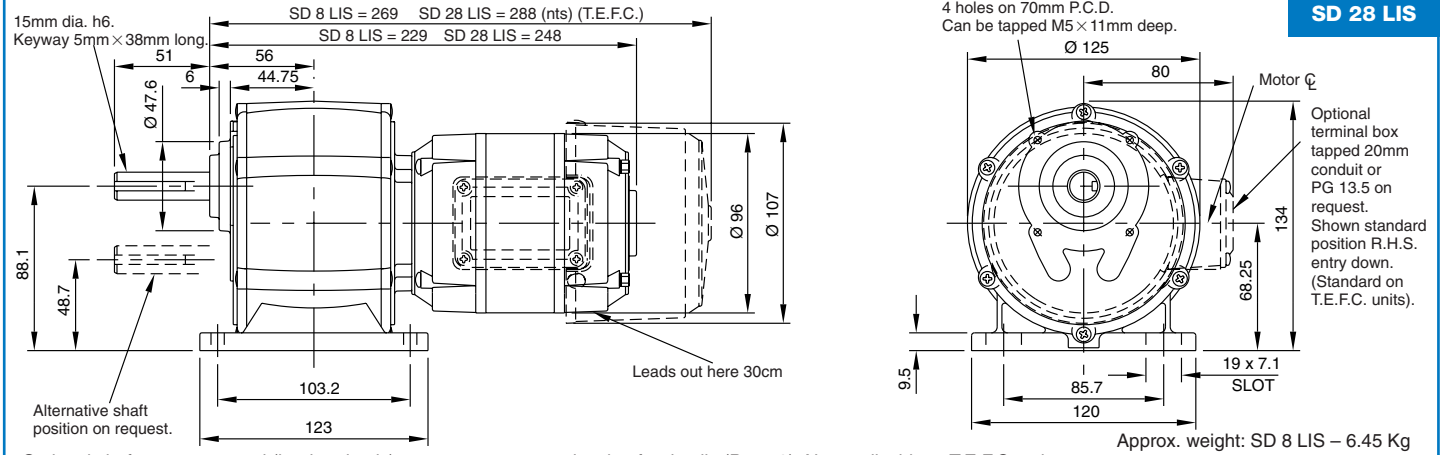
Gearbox Specification *Motor Speed 2800 r.p.m.*			SD 8 LIS – SD 38 LIS 1 or 3 Phase *Motor Rating 60 watts*	SD 28 LIS – SD 29 LIS 1 Phase *Motor Rating 100 watts*	SD 28 LIS – SD 29 LIS 3 Phase *Motor Rating 120 watts*	SD 18 LIS 1 Phase Capacitor Start Induction Run *Motor Rating 125 watts*	SD 13 LIS – SD 18 LIS 1 Phase *Motor Rating 150 watts*	SD 13 LIS – SD 18 LIS 3 Phase *Motor Rating 190 watts*
FINAL R.P.M.	RATIO PINION	RATIO SPUR	OUTPUT TORQUE (Nm)					
8	3:1	115:1	53	74	74	74	74	74
12	2:1	115:1	35	58	70	73	74	74
16	3:1	56:1	28	46	56	58	70	88
25	1:1	115:1	18	29	35	36	44	55
38	3:1	25:1	12	19	23	24	29	37
50	1:1	56:1	9	15	18	19	23	29
56	2:1	25:1	8	13	16	16	19	25
112	1:1	25:1	4	6	8	8	10	12
156	3:1	6:1	3	5	6	6	8	10
233	2:1	6:1	2	3	4	4	5	6
467	1:1	6:1	1	2	2	2	3	3

Gearbox Specification *Motor Speed 900 r.p.m.*			SD 8 LIS – SD 38 LIS 1 Phase *Motor Rating 10 watts*	SD 8 LIS – SD 38 LIS 3 Phase *Motor Rating 15 watts*	SD 13 LIS – SD 18 LIS 1 Phase *Motor Rating 38 watts*	SD 13 LIS – SD 18 LIS 3 Phase *Motor Rating 60 watts*
FINAL R.P.M.	RATIO PINION	RATIO SPUR	OUTPUT TORQUE (Nm)			
2.6	3:1	115:1	27	41	74	74
4	2:1	115:1	18	27	69	74
5	3:1	56:1	14	22	55	87
8	1:1	115:1	9	14	35	55
12	3:1	25:1	6	9	23	36
16	1:1	56:1	5	7	18	29
18	2:1	25:1	4	6	15	24
36	1:1	25:1	2	3	8	12
50	3:1	6:1	2	2	6	9
75	2:1	6:1	1	2	4	6
150	1:1	6:1	1	1	2	3

SD 8 LIS
SD 28 LIS

Dimensions in mm. Scale 1:4

NB: Unit drawn is SD 8 LIS



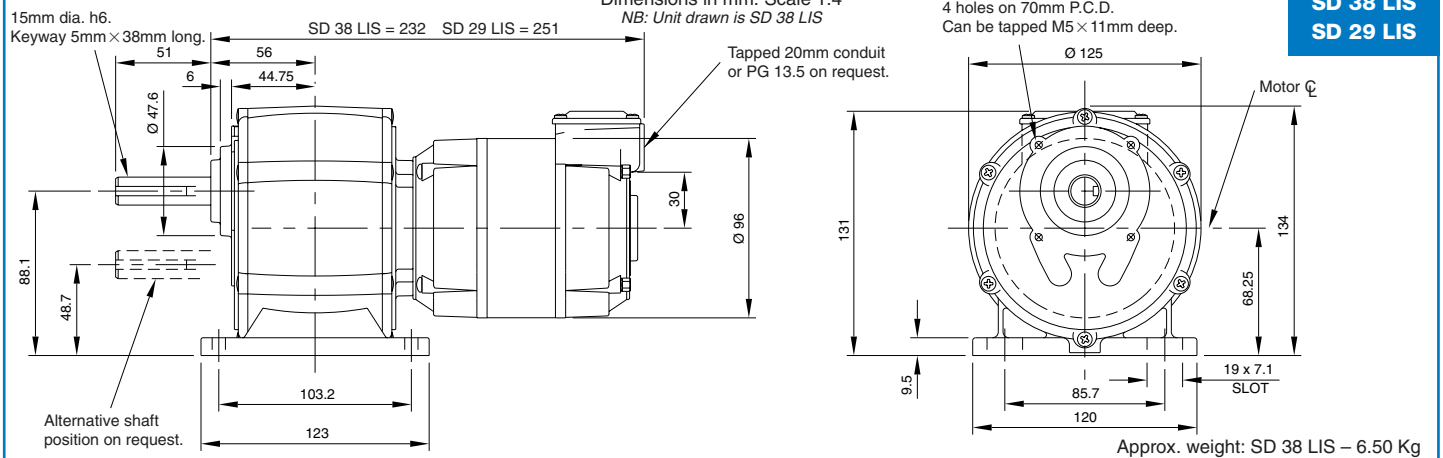
Optional shaft at motor speed (lead end only) see separate motor drawing for details (Page 9). Not applicable to T.E.F.C. units.

Approx. weight: SD 8 LIS – 6.45 Kg
SD 28 LIS – 7.25 Kg

SD 38 LIS
SD 29 LIS

Dimensions in mm. Scale 1:4

NB: Unit drawn is SD 38 LIS

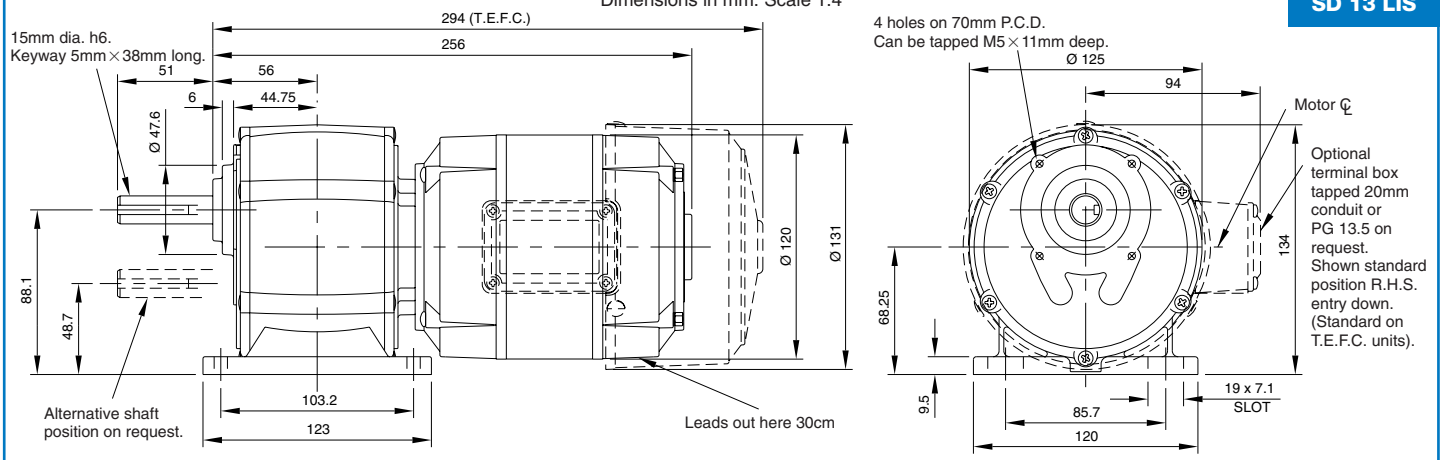


Optional shaft at motor speed (terminal box end only) see separate motor drawing for details (Page 9).

Approx. weight: SD 38 LIS – 6.50 Kg
SD 29 LIS – 7.27 Kg

SD 13 LIS

Dimensions in mm. Scale 1:4

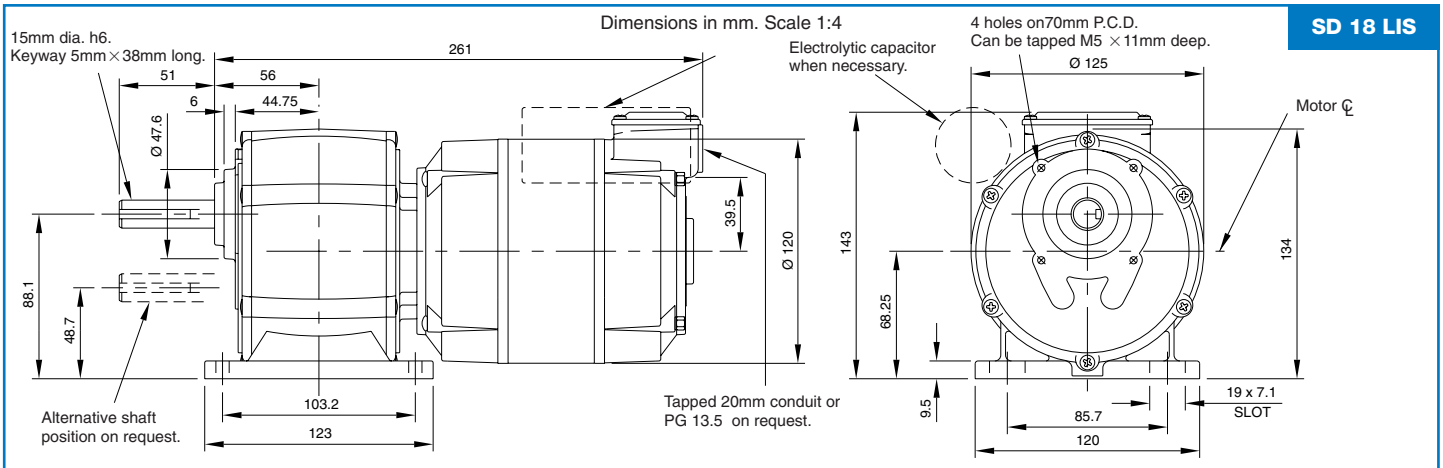


Optional shaft at motor speed (lead end only) 10mm dia. × 33mm long. Not applicable to T.E.F.C. units.

Approx. weight: SD 13 LIS – 9.05 Kg

SD 18 LIS

Dimensions in mm. Scale 1:4

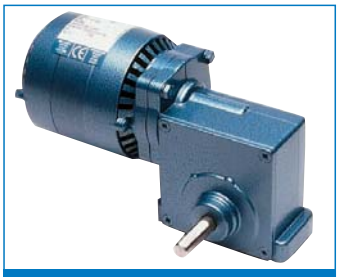


Optional shaft at motor speed (terminal box end only) 10mm dia. × 33mm long.

Approx. weight: SD 18 LIS – 9.05 Kg

Gearbox Type:
SWS
Speed Range: 1 – 71 r.p.m.

Worm and Multi-Spur Reduction Gear Unit
1 or 3 Phase Induction Motor – Constant Speed
Enclosures: Standard – Ventilated Internal Fan Cooled (IP 20)
Alternative – Totally Enclosed (IP 50) with Terminal Box (IP 54) (SD 41 only)



SD 21 SWS

SD 41 SWS

■ **Voltage, Construction, Connections, Motor Performance Specifications and Optional Extras** see pages 6 and 8 for full details.

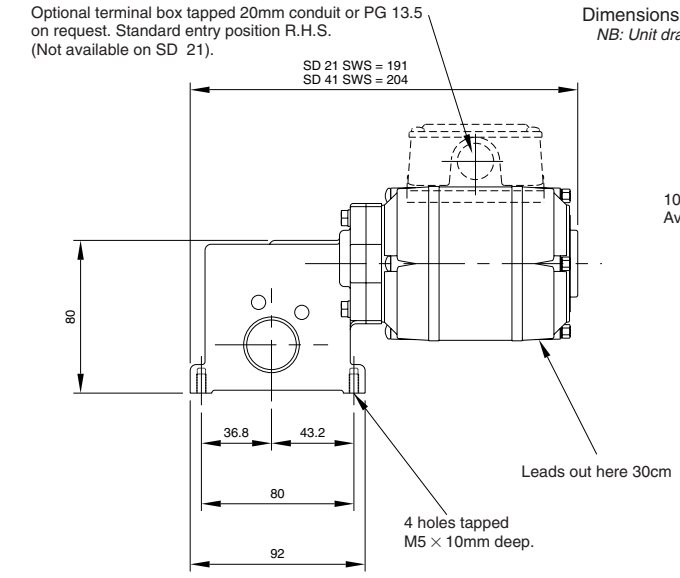
(1 Nm = 8.85 lbs. ins.) (1 Nm = 10.2 cmkp)

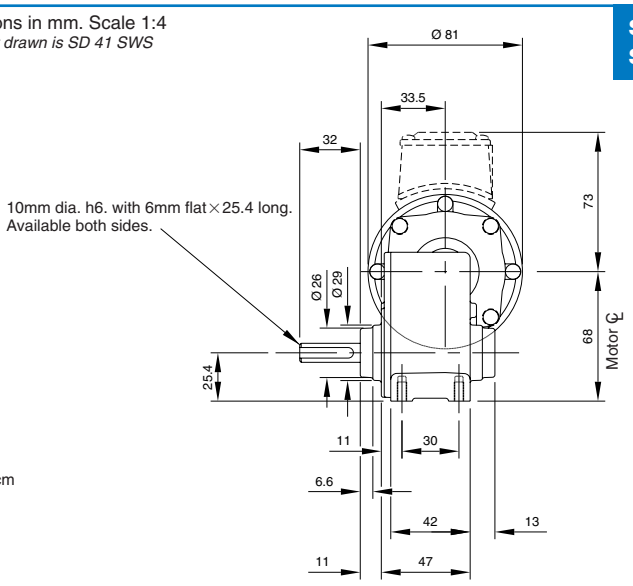
Gearbox Specification *Motor Speed 1400 r.p.m.*			SD 21 SWS 1 Phase *Motor Rating 8 watts*	SD 41 SWS 1 or 3 Phase *Motor Rating 10 watts*
FINAL R.P.M.	RATIO		OUTPUT TORQUE (Nm)	
	WORM	SPUR		
1	44:1	31.3	11	11
2	22½:1	31.3	11	11
3.6	12½:1	31.3	11	11
4.8	9½:1	31.3	10	11
6.4	9½:1	23.5	8	10
9.5	6¼:1	23.5	6	7
11.7	12½:1	9.6	4.2	5
15.7	9½:1	9.6	3.4	4
23	6¼:1	9.6	2.6	3
28.3	5¼:1	9.6	2.3	2.7
35.4	4¼:1	9.6	1.9	2.2

Gearbox Specification *Motor Speed 2800 r.p.m.*			SD 21 SWS 1 Phase *Motor Rating 20 watts*	SD 41 SWS 1 or 3 Phase *Motor Rating 25 watts*
FINAL R.P.M.	RATIO		OUTPUT TORQUE (Nm)	
	WORM	SPUR		
2	44:1	31.3	11	11
4	22½:1	31.3	11	11
7.2	12½:1	31.3	11	11
9.6	9½:1	31.3	11	11
13	9½:1	23.5	10	11
19	6¼:1	23.5	7	9
23.3	12½:1	9.6	5	6
31.4	9½:1	9.6	4	5
47	6¼:1	9.6	3	3.7
56.5	5¼:1	9.6	2.7	3.3
71	4¼:1	9.6	2.2	2.7

SD 21 SWS
SD 41 SWS

Dimensions in mm. Scale 1:4
NB: Unit drawn is SD 41 SWS





Optional shaft at motor speed (lead end only) 7.93mm dia. × 33mm long.

Approx. weight: SD 21 SWS – 2.39 Kg
SD 41 SWS – 2.95 Kg

Worm and Multi-Spur Reduction Gear Units

1 or 3 Phase Induction Motors – Constant Speed

Enclosures: Standard – Ventilated Internal Fan Cooled (IP 20)
Alternative – Totally Enclosed (IP 50) with Terminal Box or T.E.F.C. (IP 54)

Gearbox Type:
MWS
Speed Range: 0.65 – 106 r.p.m.

Voltage, Construction, Connections, Motor Performance and Optional Extras
see pages 6 and 8 for full details.

SD 41 MWS

SD 8 MWS

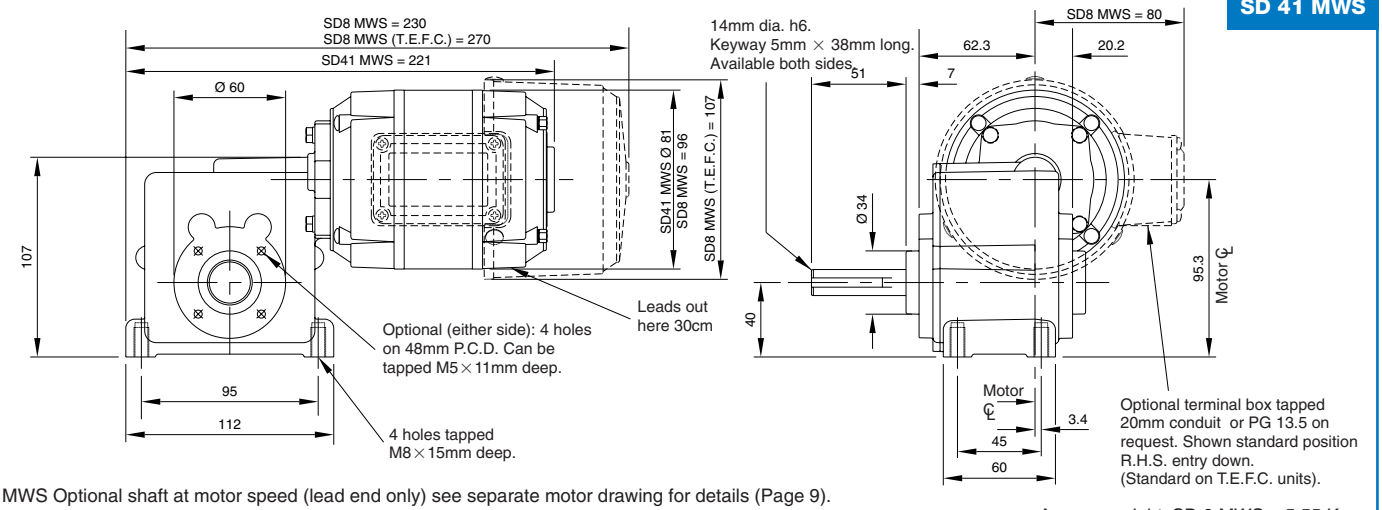
Minimum speed of 0.65 r.p.m.
Obtainable using 900 r.p.m. SD8/38
(1 Nm = 8.85 lbs. ins.) 1 Nm = 10.2 cmkp

Gearbox Specification *Motor Speed 1400 r.p.m.*			SD 41 MWS *Motor Rating 10 watts*	SD 8 MWS SD 38 MWS *Motor Rating 35 watts*
FINAL R.P.M.	RATIO		OUTPUT TORQUE (Nm)	
	WORM	SPUR		
1	40:1	35.39:1	28.9	45
1.5	27:1	35.39:1	21.7	45
2.2	18 1/2:1	35.39:1	17.1	45
3.2	12 1/2:1	35.39:1	13.0	45
4.3	9 1/3:1	35.39:1	10.5	36.7
5.5	7 1/4:1	35.39:1	8.7	30.5
8	5 1/6:1	35.39:1	6.6	23.2
10	4 1/8:1	35.39:1	5.5	19.1
11	8 1/3:1	15.1:1	4.1	14.5
13	7 1/4:1	15.1:1	3.7	13.1
15	6 1/4:1	15.1:1	3.3	11.6
23	4 1/8:1	15.1:1	2.3	8.2
30	7 1/4:1	6.5:1	1.7	5.9
35	6 1/4:1	6.5:1	1.5	5.3
42	5 1/6:1	6.5:1	1.3	4.5
53	4 1/8:1	6.5:1	1.1	3.7

Gearbox Specification *Motor Speed 2800 r.p.m.*			SD 41 MWS *Motor Rating 25 watts*	SD 8 MWS SD 38 MWS *Motor Rating 60 watts*
FINAL R.P.M.	RATIO		OUTPUT TORQUE (Nm)	
	WORM	SPUR		
2	40:1	35.39:1	36.1	45
2.9	27:1	35.39:1	27.1	45
4.3	18 1/2:1	35.39:1	21.3	45
6.4	12 1/2:1	35.39:1	16.3	39.1
8.5	9 1/3:1	35.39:1	12.1	31.2
11	7 1/4:1	35.39:1	10.9	26.2
15	5 1/6:1	35.39:1	8.3	19.9
19	4 1/8:1	35.39:1	6.8	16.4
22	8 1/3:1	15.1:1	5.2	12.4
26	7 1/4:1	15.1:1	4.7	11.2
30	6 1/4:1	15.1:1	4.2	10.0
45	4 1/8:1	15.1:1	2.9	7.0
60	7 1/4:1	6.5:1	2.1	5.1
70	6 1/4:1	6.5:1	1.9	4.5
84	5 1/6:1	6.5:1	1.6	3.9
106	4 1/8:1	6.5:1	1.3	3.2

Dimensions in mm. Scale 1:4
NB: Unit drawn is SD 8 MWS

SD 8 MWS
SD 41 MWS

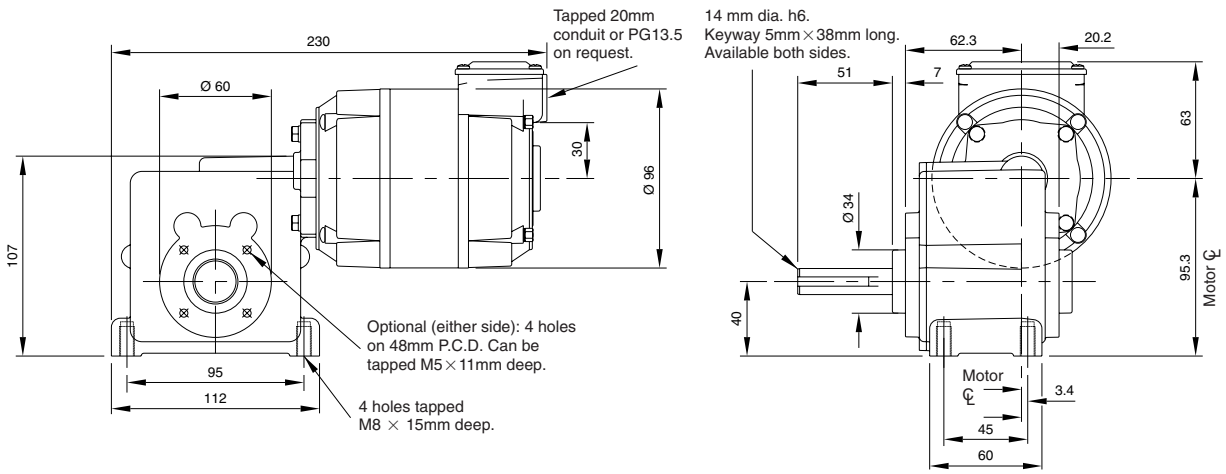


SD8 MWS Optional shaft at motor speed (lead end only) see separate motor drawing for details (Page 9).
Not applicable to T.E.F.C. units.
SD41 MWS Optional shaft at motor speed (lead end only) 7.93mm dia. × 33mm long.

Approx. weight: SD 8 MWS – 5.55 Kg
SD 41 MWS – 4.85 Kg

Dimensions in mm. Scale 1:4

SD 38 MWS



Optional shaft at motor speed (terminal box end only) see separate motor drawing for details (Page 9).

Approx weight: SD 38 MWS – 5.60 Kg

Gearbox Type:
LWS
Speed Range: 0.22 – 90 r.p.m.

Worm and Multi-Spur Reduction Gear Units
1 or 3 Phase Induction Motors – Constant Speed
Enclosures: Standard – Ventilated Internal Fan Cooled (IP 20)
Alternative – Totally Enclosed (IP 50) with Terminal Box or T.E.F.C. (IP 54)


SD 21 LWS


SD 29 LWS


SD 13 LWS (T.E.F.C.)


SD 18 LWS

■ **Voltage, Construction, Connections, Motor Performance Specifications and Optional Extras** see pages 6, 8 and 10 for full details.
Minimum speed of 0.15 r.p.m. obtainable using 900 r.p.m. motor (SD 8/13/18).
On request gearbox available without feet, can be mounted off of gearbox spigot tappings.

Note: 17mm diameter shaft available with gear ratio's 115:1, 56:1.

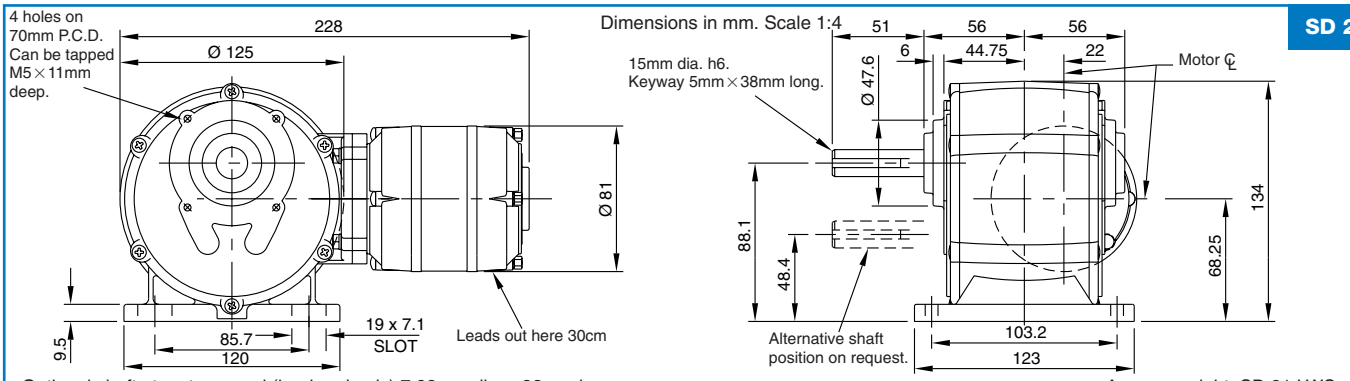
(1 Nm = 8.85 lbs. ins.) (1 Nm = 10.2 cmkp)

Gearbox Specification *Motor Speed 1400 r.p.m.*			SD 21 LWS 1 Phase Capacitor *Motor Rating 8 watts*	SD 8 LWS - SD 38 LWS 1 or 3 Phase *Motor Rating 35 watts*	SD 28 LWS - SD 29 LWS 1 or 3 Phase *Motor Rating 55 watts*	SD 18 LWS 1 Phase Capacitor Start Induction Run *Motor Rating 95 watts*	SD 13 LWS – SD 18 LWS 1 Phase *Motor Rating 100watts*	SD 13 LWS – SD 18 LWS 3 Phase *Motor Rating 125 watts*
FINAL R.P.M.	RATIO WORM	RATIO SPUR	OUTPUT TORQUE (Nm)					
0.22	54:1	115:1	100	100	100	100	100	100
0.45	27:1	115:1	67	100	100	100	100	100
0.62	40:1	56:1	45	100	100	100	100	100
0.92	27:1	56:1	35	100	100	100	100	100
1.5	16 1/2:1	56:1	25	100	100	100	100	100
1.85	13 1/2:1	56:1	22	93	100	100	100	100
2.2	11 1/3:1	56:1	20	83	100	100	100	100
2.4	10 1/3:1	56:1	18	78	100	100	100	100
3	8 1/3:1	56:1	15.5	66	100	100	100	100
3.4	16 1/2:1	25:1	11	49	62	62	62	62
4	14 1/2:1	25:1	10	44	62	62	62	62
4.5	12 1/2:1	25:1	9	40	62	62	62	62
5	11 1/3:1	25:1	8	35	55	62	62	62
6	9 1/3:1	25:1	7	30	49	62	62	62
7	8 1/3:1	25:1	6.5	28	45	62	62	62
8	7 1/4:1	25:1	6	26	41	62	62	62
9	6 1/4:1	25:1	5.6	24.5	37	62	62	62
11	5 1/6:1	25:1	5	20	32	55	58	62
13.5	4 1/8:1	25:1	4	17	27	47	50	62
16	14 1/2:1	6:1	2.5	11	17	30	32	39
18.5	12 1/2:1	6:1	2.3	10	16	27	28	35
22.5	10 1/3:1	6:1	1.9	8	13	23	23	28
28	8 1/3:1	6:1	1.7	7	11	20	21	26
32	7 1/4:1	6:1	1.5	6	10	18	18	23
37	6 1/4:1	6:1	1.4	5	9	16	16	21
45	5 1/6:1	6:1	1.2	4.8	8	13.5	14	18
56.5	4 1/8:1	6:1	1.0	4	6.6	11.3	12	15

Gearbox Specification *Motor Speed 2800 r.p.m.*			SD 21 LWS 1 Phase Capacitor *Motor Rating 20 watts*	SD 8 LWS - SD 38 LWS 1 or 3 Phase *Motor Rating 60 watts*	SD 28 LWS – SD 29 LWS 1 Phase *Motor Rating 100 watts*	SD 28 LWS – SD 29 LWS 3 Phase *Motor Rating 120 watts*	SD 18 LWS 1 Phase Capacitor Start Induction Run *Motor Rating 125 watts*	SD 13 LWS – SD 18 LWS 1 Phase *Motor Rating 150 watts*	SD 13 LWS – SD 18 LWS 3 Phase *Motor Rating 190 watts*
FINAL R.P.M.	RATIO WORM	RATIO SPUR	OUTPUT TORQUE (Nm)						
0.9	27:1	115:1	84	100	100	100	100	100	100
1.25	40:1	56:1	57	100	100	100	100	100	100
1.85	27:1	56:1	43	100	100	100	100	100	100
3.0	16 1/2:1	56:1	32	93	100	100	100	100	100
4	12 1/12:1	56:1	26	79	100	100	100	100	100
5	10 1/3:1	56:1	20	60	100	100	100	100	100
5.4	9 1/3:1	56:1	21	59	100	100	100	100	100
7	7 1/4:1	56:1	17	50	84	100	100	100	100
8	6 1/4:1	56:1	15	45.5	76	91	95	100	100
10	11 1/3:1	25:1	10.6	32	53	62	62	62	62
12	9 1/3:1	25:1	9	27	45	54	57	62	62
15.5	7 1/4:1	25:1	7.5	22.5	37.5	45	46	56	62
22	5 1/6:1	25:1	6	17	29	35	36	44	56
27	4 1/8:1	25:1	5	15	25	30	31	37.5	47
37	12 1/2:1	6:1	3	8.4	14	17	17.5	21	26
45	10 1/3:1	6:1	2.1	6.3	10.5	12.6	13	15.7	19
56	8 1/3:1	6:1	2.0	6	10	12	12.5	15	18
74	6 1/4:1	6:1	1.6	4.8	8	9.6	10	12	15
90	5 1/6:1	6:1	1.4	4.2	7	8.4	8	10.5	13

SD 21 LWS

Dimensions in mm. Scale 1:4

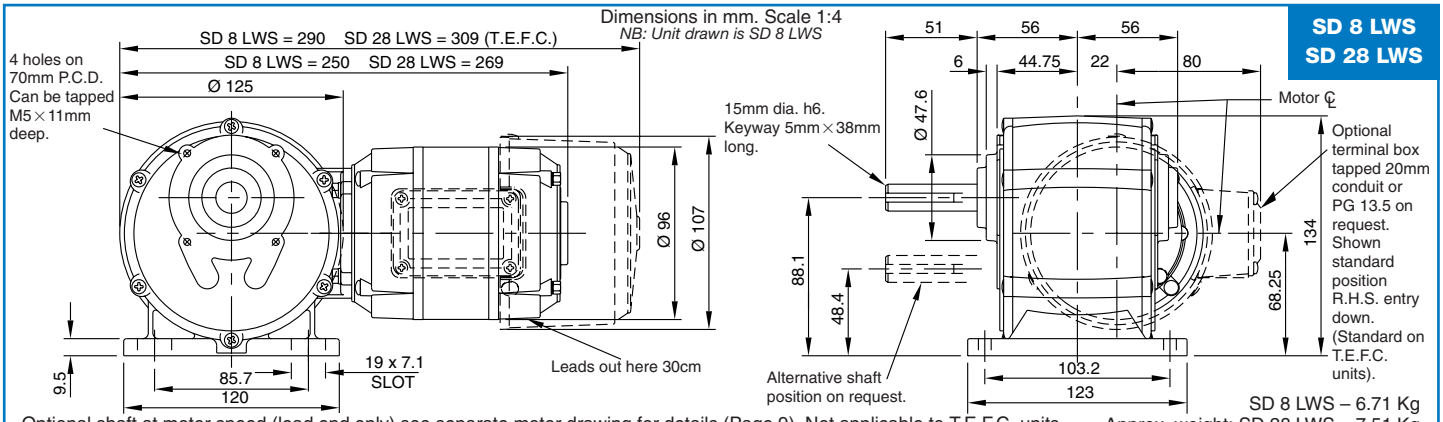


Optional shaft at motor speed (lead end only) 7.93mm dia.×33mm long.

Approx. weight: SD 21 LWS – 5.45 Kg

SD 8 LWS
SD 28 LWS

Dimensions in mm. Scale 1:4
NB: Unit drawn is SD 8 LWS

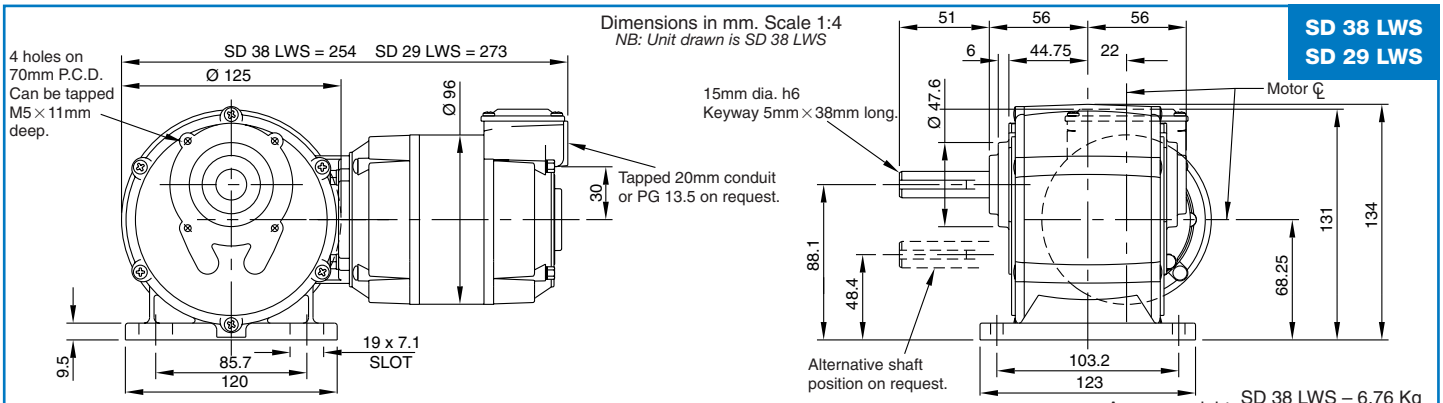


Optional shaft at motor speed (lead end only) see separate motor drawing for details (Page 9). Not applicable to T.E.F.C. units.

SD 8 LWS – 6.71 Kg
Approx. weight: SD 28 LWS – 7.51 Kg

SD 38 LWS
SD 29 LWS

Dimensions in mm. Scale 1:4
NB: Unit drawn is SD 38 LWS

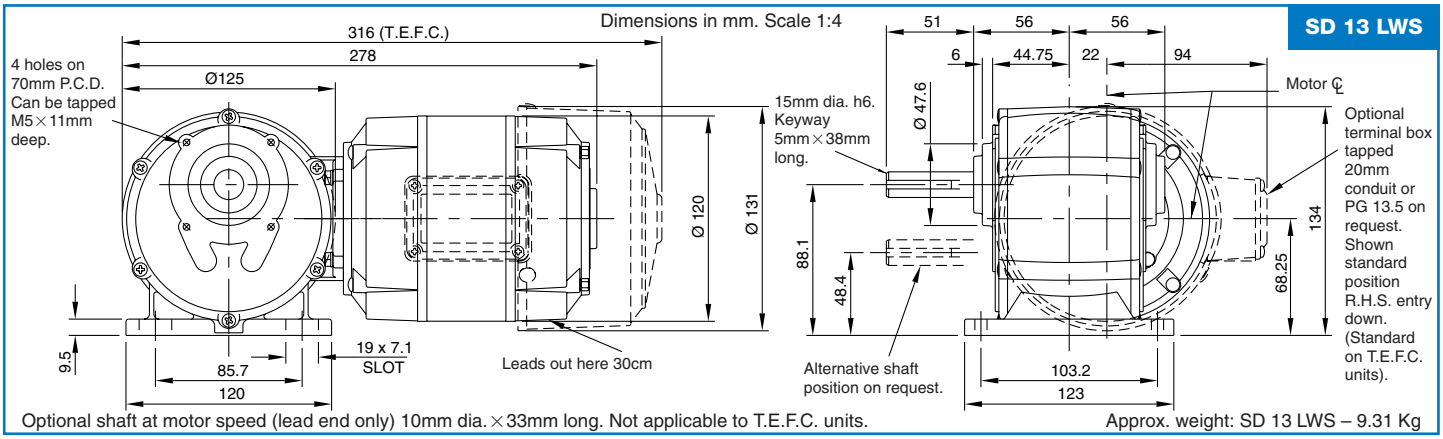


Optional shaft at motor speed (terminal box end only) see separate motor drawing for details (Page 9).

Approx. weight: SD 38 LWS – 6.76 Kg
SD 29 LWS – 7.53 Kg

SD 13 LWS

Dimensions in mm. Scale 1:4

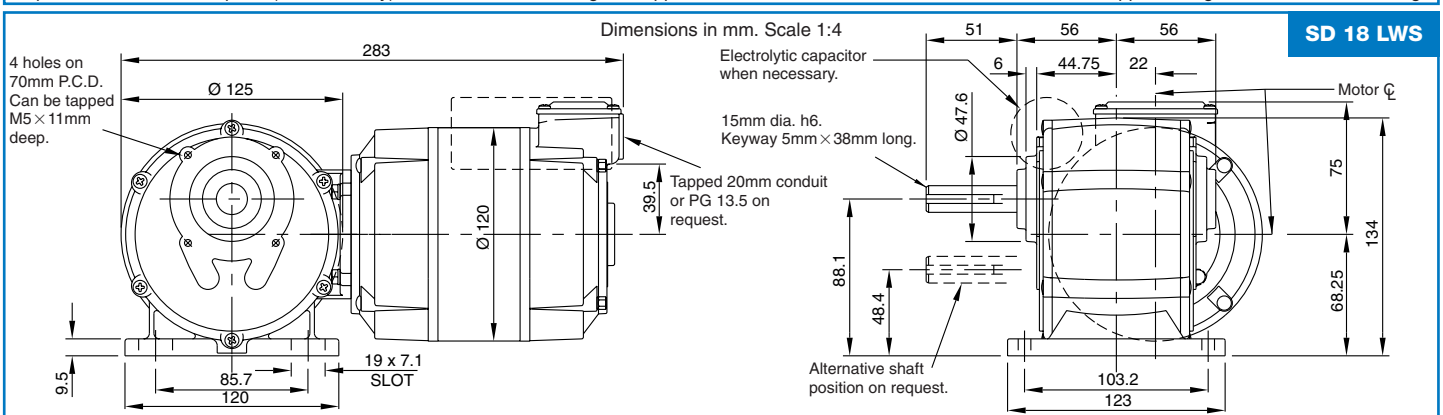


Optional shaft at motor speed (lead end only) 10mm dia.×33mm long. Not applicable to T.E.F.C. units.

Approx. weight: SD 13 LWS – 9.31 Kg

SD 18 LWS

Dimensions in mm. Scale 1:4



Optional shaft at motor speed (terminal box end only) 10mm dia.×33mm long.

Approx. weight: SD 18 LWS – 9.31 Kg

Gearbox Type:

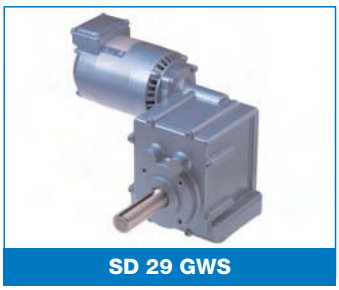
GWS

Speed Range: 0.4 – 50 r.p.m.

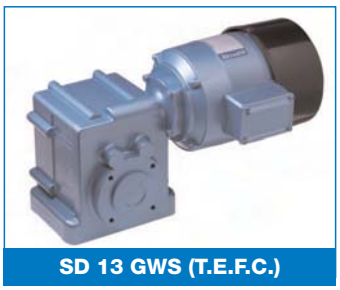
Worm and Multi-Spur Reduction Units

1 or 3 Phase Induction Motors – Constant Speed

Enclosures: Standard – Ventilated Internal Fan Cooled (IP 20)
Alternative – Totally Enclosed (IP 50) with Terminal Box or T.E.F.C. (IP 54)



SD 29 GWS



SD 13 GWS (T.E.F.C.)

SD 48 GWS (T.E.F.C.) with hollow shaft

GWS gearbox with hollow shaft available on request (15mm I/D with 5 mm keyway).

■ **Voltage, Construction, Connections, Motor Performance Specifications and Optional Extras** see pages 6, 8 and 10 for full details.
Minimum speed of 0.27 r.p.m. obtainable with 900 r.p.m. motor (SD 13/18).

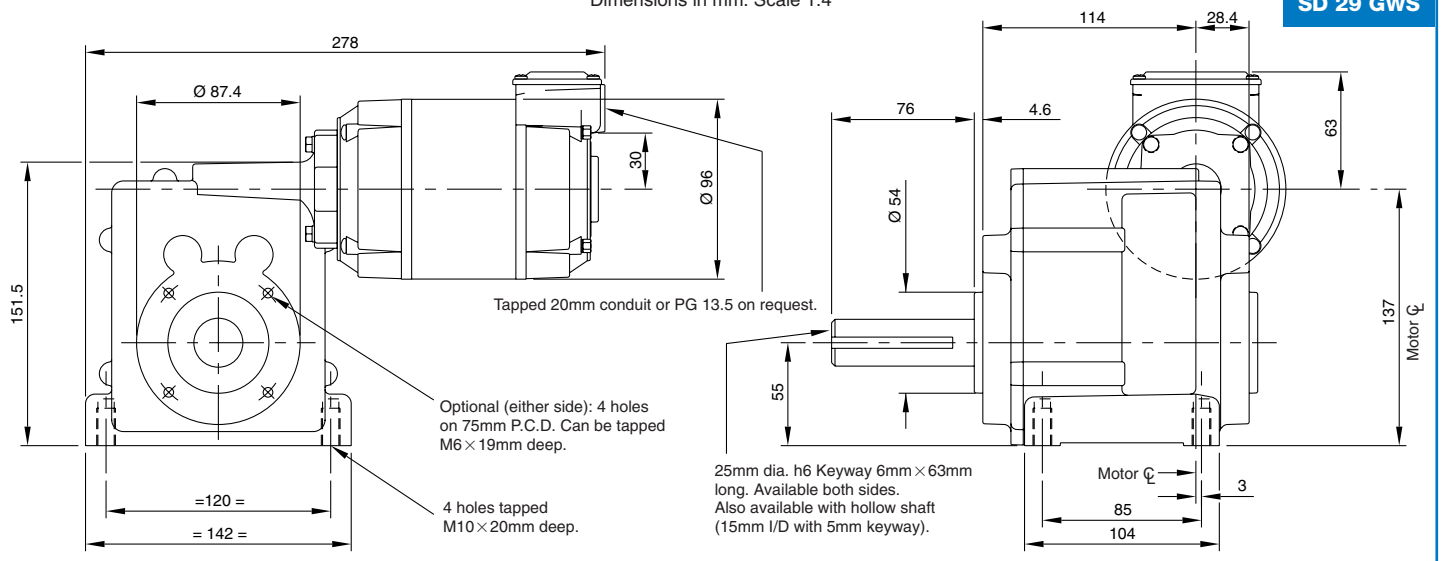
(1 Nm = 8.85 lbs. ins.) (1 Nm = 10.2 cmkp)

Gearbox Specification *Motor Speed 1400 r.p.m.*			SD 28 GWS – SD 29 GWS 1 or 3 Phase *Motor Rating 55 watts*	SD 13 GWS – SD 18 GWS 1 Phase *Motor Rating 100 w*	SD 13 GWS – SD 18 GWS 3 Phase *Motor Rating 125 w*	SD 48 – GWS 1 Phase Cap Start Induction Run *Motor Rating 150 w TEFC*	SD 48 – GWS 3 Phase *Motor Rating 190 w*
FINAL R.P.M.	RATIO WORM	RATIO SPUR	OUTPUT TORQUE (Nm)				
0.4	30:1	110:1	250	250	250	250	250
0.8	16 1/2:1	110:1	250	250	250	250	250
1.4	9 1/3:1	110:1	180	250	250	250	250
1.8	7 1/3:1	110:1	152	250	250	250	250
2.5	5 1/6:1	110:1	110	199	249	250	250
3.4	7 1/4:1	57:1	78	141	177	212	250
4.0	6 1/6:1	57:1	68	124	154	185	234
5.4	10 1/3:1	25:1	45	82	102	123	156
7	8 1/3:1	25:1	39	71	89	106	135
9	6 1/6:1	25:1	31	56	71	84	107
10	12 1/3:1	11:1	24	44	54	64	82
15	8 1/3:1	11:1	18	33	41	49	62
21	6 1/6:1	11:1	14	26	32	38	48
25	5 1/8:1	11:1	12	22	28	33	42

Gearbox Specification *Motor Speed 2800 r.p.m.*			SD 28 GWS – SD 29 GWS 1 Phase *Motor Rating 100w*	SD 28 GWS – SD 29 GWS 3 Phase *Motor Rating 120w*	SD 13 GWS – SD 18 GWS 1 Phase *Motor Rating 150 w*	SD 13 GWS – SD 18 GWS 3 Phase *Motor Rating 190 w*	SD 48 – GWS 1 Phase Cap Start Induction Run *Motor Rating 190 w*	SD 48 – GWS 3 Phase *Motor Rating 250 w*
FINAL R.P.M.	RATIO WORM	RATIO SPUR	OUTPUT TORQUE (Nm)					
0.85	30:1	110:1	250	250	250	250	250	250
1.54	16 1/2:1	110:1	248	250	250	250	250	250
2.7	9 1/3:1	110:1	164	197	240	250	250	250
3.5	7 1/3:1	110:1	143	171	214	250	250	250
5	5 1/6:1	110:1	100	120	150	190	196	250
7	7 1/4:1	57:1	71	85	106	134	134	177
8	6 1/6:1	57:1	62	75	93	118	118	155
11	10 1/3:1	25:1	41	49	62	78	78	102
13.5	8 1/3:1	25:1	36	43	54	68	69	90
18	6 1/6:1	25:1	28	34	42	54	54	70
20.5	12 1/3:1	11:1	22	25	33	41	41	55
30.5	8 1/3:1	11:1	16	20	25	31	31	40
41	6 1/6:1	11:1	13	16	19	24	24	32
50	5 1/8:1	11:1	11	13.5	16.5	21	21	28

Dimensions in mm. Scale 1:4

SD 29 GWS

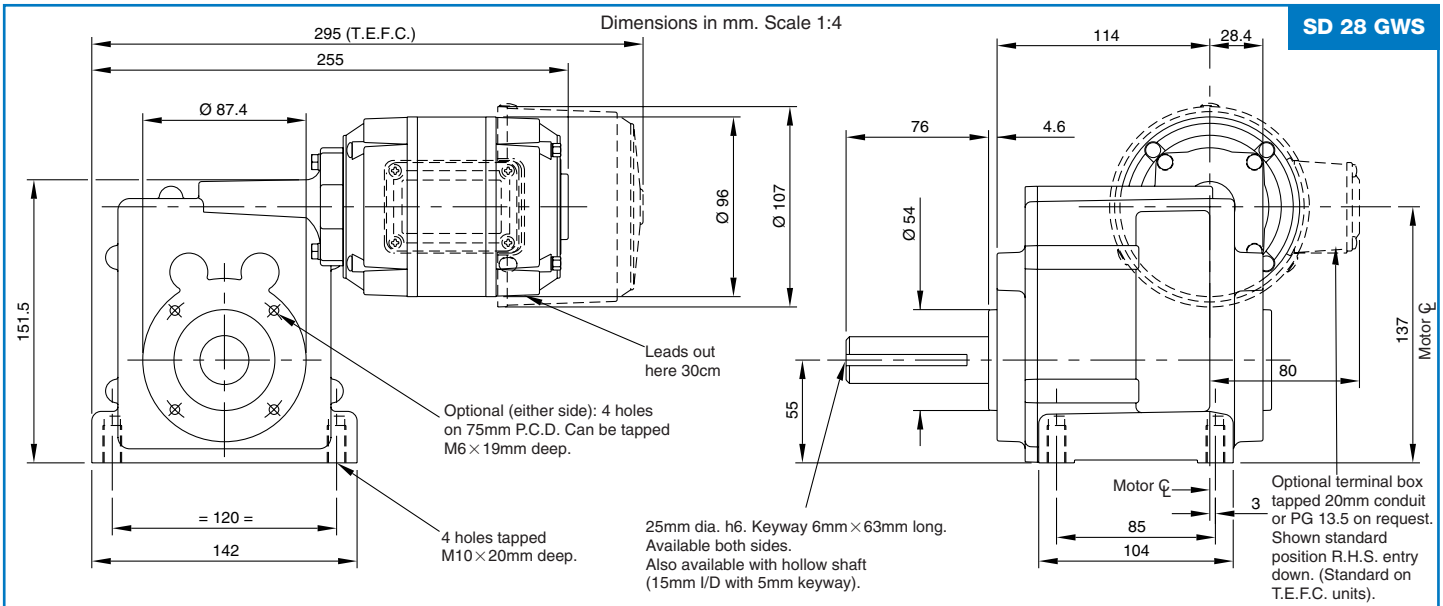


Optional shaft at motor speed (terminal box end only) see separate motor drawing for details. (page 9).

Approx. weight: SD 29 GWS – 10.62 Kg

SD 28 GWS

Dimensions in mm. Scale 1:4

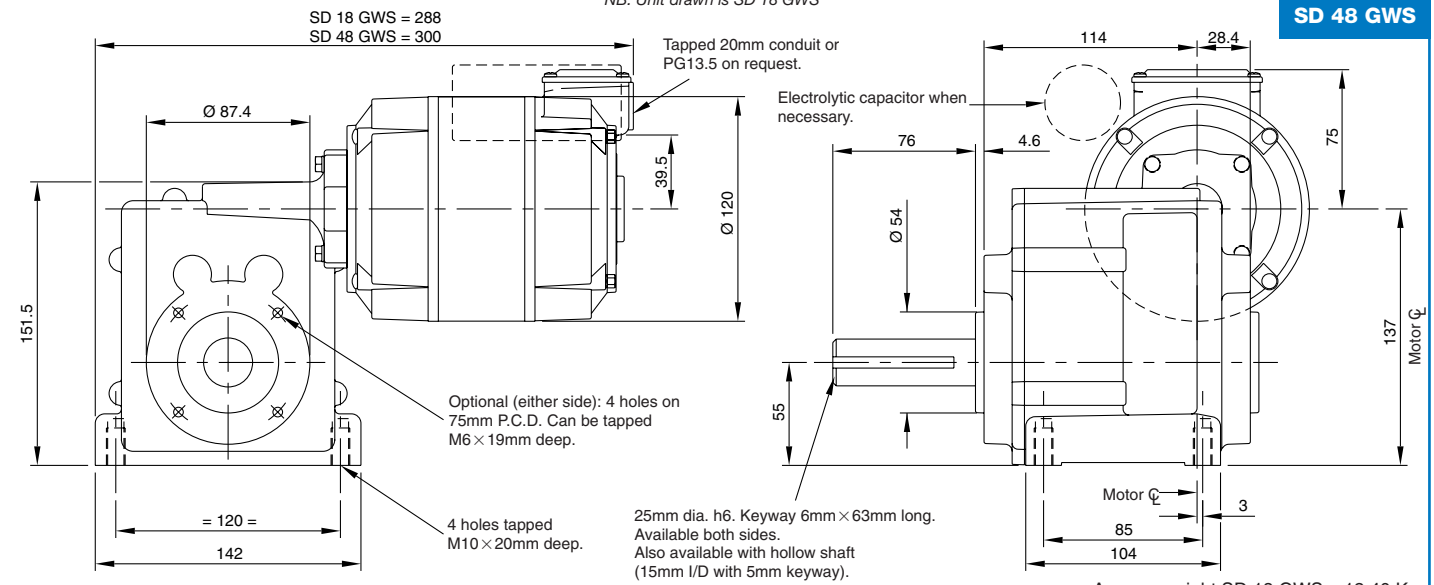


Optional shaft at motor speed (lead end only) see separate motor drawing for details (Page 9). Not applicable to T.E.F.C. units.

Approx. weight: SD 28 GWS – 10.60Kg

SD 18 GWS
SD 48 GWS

Dimensions in mm. Scale 1:4
NB: Unit drawn is SD 18 GWS

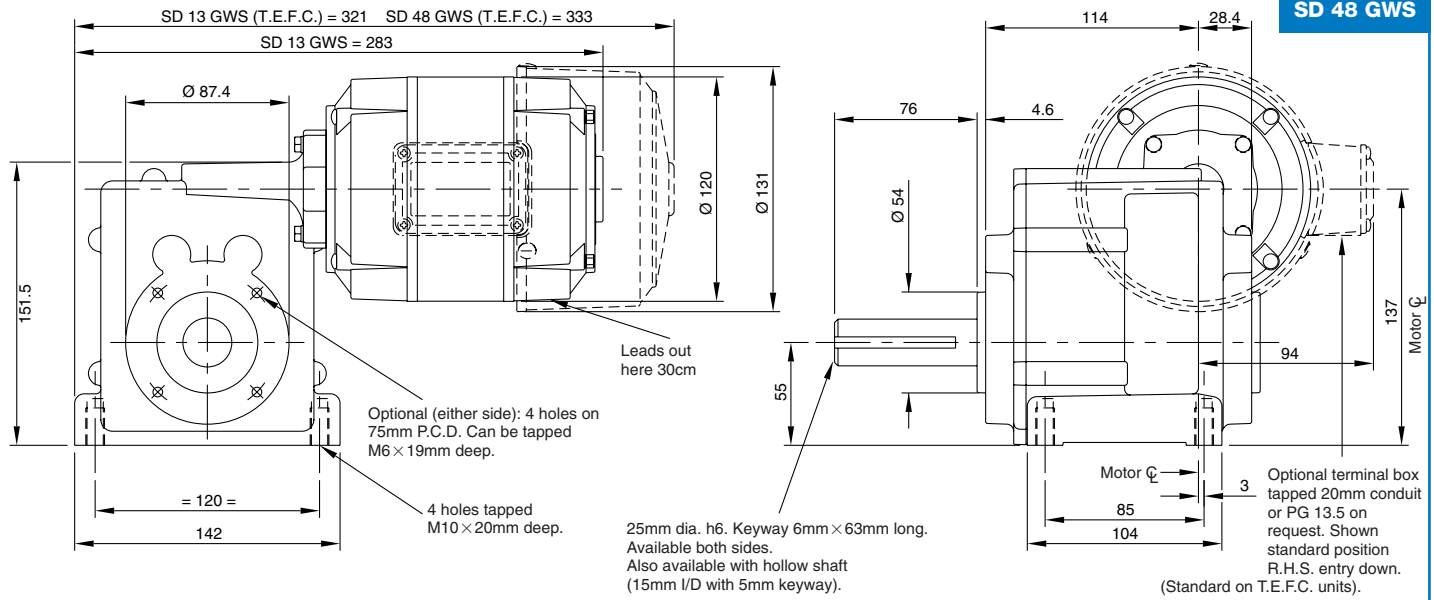


Optional shaft at motor speed (terminal box end only) 10mm dia.× 33mm long.

Approx. weight:SD 18 GWS – 12.40 Kg
SD 48 GWS – 13.40 Kg

SD 13 GWS
SD 48 GWS

Dimensions in mm. Scale 1:4
NB: Unit drawn is SD 13 GWS

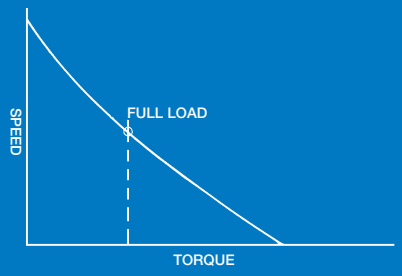


Optional shaft at motor speed (lead end only) 10mm dia.×33mm long. Not applicable to T.E.F.C. units.

Approx. weight: SD 13 GWS – 12.40 Kg
SD 48 GWS (T.E.F.C.) – 13.50 Kg

Characteristics of Commutator Motors

Series Wound Motors



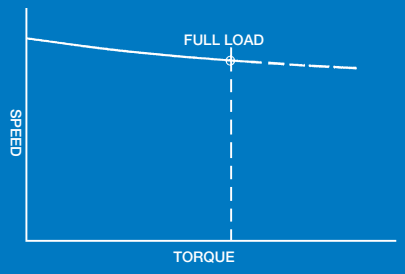
Shown is a typical "torque/speed" characteristic for series wound motors. Series wound motors can be wound for A.C. or D.C. supply. A.C. wound units when operated from a similar D.C. voltage will have approximately 15% increase in output.

Suitable for reversing as standard i.e. 4 leads brought out (two armature and two field). Series motors can be supplied as 3 lead reversing (split field) (the motor runs on one field coil at a time with approximately 30% power loss), change of direction being affected by a single pole switch.

As will be seen from the characteristic the speed varies inversely with the load, consequently series wound motors should not be oversized for their particular application as this will result in the motor running at much higher speeds than required.

It is possible to control the speed of this type of motor by means of a variable resistance transformer in a ratio 5:1 although this can vary depending on the application.

Shunt Wound Motors



Shown is a typical "torque/speed" characteristic for D.C. shunt wound motors. 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.

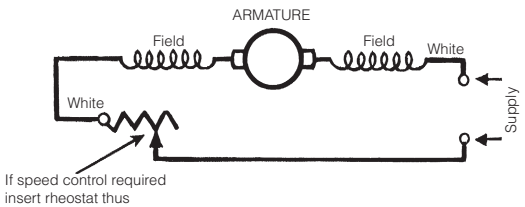
Suitable for reversing as standard i.e. 4 leads brought out (two armature and two fields). The speed can be controlled by means of a variable resistance in series with the armature by a ratio of approximately 6:1, however this can vary considerably depending on the application. Alternatively if an A.C. supply is available a speed range of up to 25:1 can be obtained by means of a D.C. thyristor controller.

IMPORTANT: It must be noted, in mind when reducing the motor speed the armature cooling fan efficiency drops and therefore 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.

Connection Diagrams for Wound Field Commutator Motors

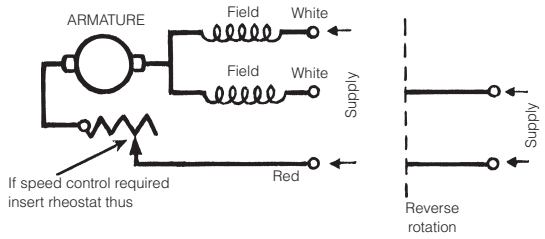
Series Wound 2 Lead

14



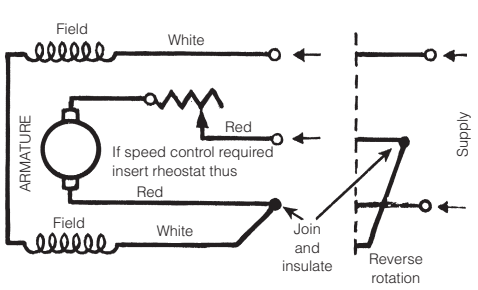
Series Wound 3 Lead Reversing (Split-Series)

13



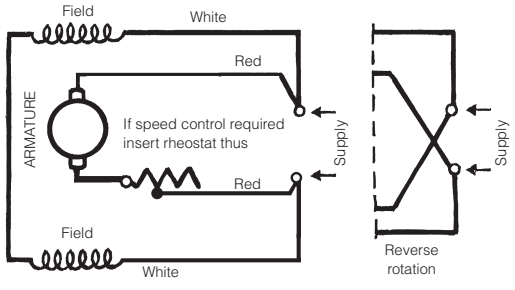
Series Wound 4 Lead Reversing

11



D.C. Shunt Wound

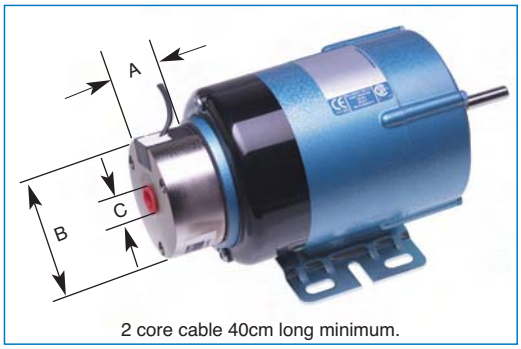
12



Parvalux Electro-Magnetic (Fail Safe) Stop Brakes

for Commutator Motors

For frequent stop/starts (more than 3 per minute) please contact our sales engineers.



2 core cable 40cm long minimum.

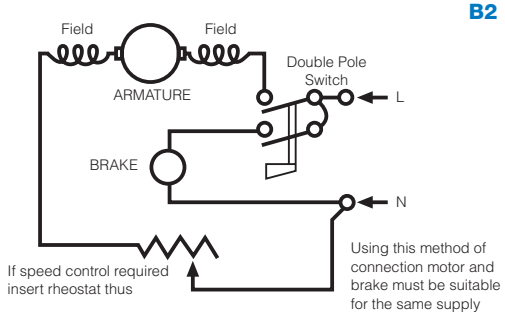
Brake Size P1-P3-P5	Recommended Motor Frames SD 1 and SD 11				Weight 575g	Brake Size P2-P4-P6	Recommended Motor Frame SD 12			
TYPE	P1	P3	P5	DIMENSIONS	APPROVALS	TYPE	P2	P4	P6	DIMENSIONS
Input Power	24 VA (14w)	24 VA (14w)	24 VA (14w)	A B C	C.S.A C-US C.E. Rec. "Class F"	Input Power	24 VA (14w)	24 VA (14w)	24 VA (14w)	A B C
Input Volts	110v A.C.	230v A.C.	24v D.C.	35 65 12 All dimensions in (mm)	ENCLOSURE	Input Volts	110v A.C.	230v A.C.	24v D.C.	35 65 12 All dimensions in (mm)
Rated Torque	0.4 Nm	0.4 Nm	0.4 Nm	A: inc adaptor plate	IP 55	Rated Torque	1 Nm	1 Nm	1 Nm	A: inc adaptor plate

These single-disc electro magnetic brakes are spring applied electrically released units which provide fail safe operating characteristics, that on interruption, or failure of power supply, the brake will engage and arrest the load. These brakes operate from single phase A.C. supply (not P5 or P6) and incorporate a built in rectifier. This offers the brake a vibration free characteristic through a lower operating voltage spectrum.

Motor and Brake Wiring Diagram

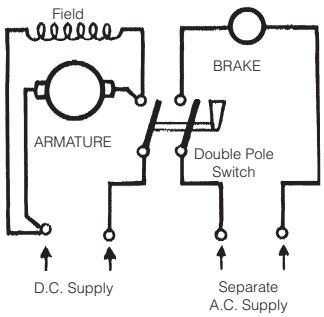
D.C. or A.C. Series Wound

B2



D.C. Shunt Wound (A.C. Stop Brake)

B3



EMC Filter (unless declined in writing by customer, will be supplied)

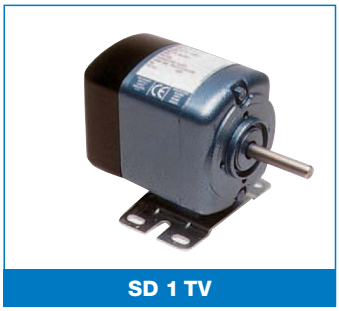
EMC FILTER

41mm dia. x 75mm long with 8mm fixing stud and nut. 12mm long. Lead length 30cm. For use with commutator and permanent magnet motor, to reduce the emissions the motor might make which could affect adjacent sensitive equipment. The filter is connected between the supply and the motor.

Motor Types:
SD 1
SD 11 SD 12

Commutator Type Motors
Variable Speed A.C. – D.C. Series or D.C. Shunt Wound

Enclosures: Standard – SD 1 Ventilated Internal Fan Cooled (IP 20)
SD 11 – SD 12 Drip Proof Internal Fan Cooled (IP 23)
Alternative – Totally Enclosed (IP 50) with Terminal Box (IP 54)


SD 1 TV


SD 1


SD 11


SD 12

- **Voltage Range:** 12v – 24v, 100/120v, 200/220v and 230/250v, A.C. Series – D.C. Shunt or Series. Special voltages quoted for on request. See data column for minimum voltages.
- **Starting Current:** Approximately 3 times full load.
- **Rotation:** Reversible four leads as standard.
- **Construction: Motors** – Shielded ball bearings spring loaded for quiet running.
  Single Reduction Gearboxes: Fitted with ball bearings, alloy gearbox with composite gear, grease lubricated for life and suitable for mounting in any position.
  In-Line Double Reduction Gearboxes: Fitted with ball bearings, alloy gearbox with composite gear, grease or oil bath lubricated for life and suitable for mounting in any position.
  Spur Reduction Gearboxes: Fitted with ball bearings, alloy gearbox with composite pinion gear and multi-spur type hardened steel gears, oil bath lubricated for life. Suitable for mounting in any position.
- **Connections:** 30cm P.V.C. flexible (Terminal box on request).
- **Insulation:** Class 'F' (maximum temperature rise 115°C at a maximum ambient of 40°C).
- **Specifications:** B.S. 5000 part 11. (I.E.C. 72). (CSA C-US if required).

- **Optional Extras:** Double ended motor spindles.
  Double ended gear shafts (not available on in-line units).
  Non standard shafts (stainless steel, keyways, flats, etc).
  Terminal box. (not SD 1 T.V.).
  Totally enclosed half hour rating. (SD 1 T.V. reduced length).
  Holes tapped for spigot mounting.
  3 lead reversing (split series) 30% reduction in torque.
  Radio and T.V. suppression (class B insulation).
- **Electro-Magnetic Brake:** Page 45.
- **Thyristor D.C. Controller:** Contact Parvalux.
- **Tachogenerator:** Page 117.
- **Additional Extras for Geared Units:** Non standard catalogue reductions available on request.
- **Bronze Gears:** Single and double reduction final gears.
- **Flange Mounting Gearbox Details:** Page 114.
- **Gearbox Shaft Positions:** Page 113.

SD 1	Series Wound				
FULL LOAD R.P.M.	OUTPUT WATTS	INPUT CURRENT (AMPS)		INPUT WATTS	MINIMUM VOLTAGE AVAILABLE
		240V A.C.	220V A.C.		
6500	75	0.8	0.95	160	24
5500	63	0.68	0.75	130	24
4000	50	0.65	0.7	125	24
4000	38	0.45	0.5	90	24
3000	38	0.6	0.65	110	12
3000	25	0.27	0.3	40	12
2500	15	0.25	0.3	40	12
2000	10	0.23	0.25	37	12

SD 1	Shunt Wound				
FULL LOAD R.P.M.	OUTPUT WATTS	INPUT CURRENT (AMPS)		INPUT WATTS	MINIMUM VOLTAGE AVAILABLE
		240V D.C.	220V D.C..		
5000	75	0.6	0.7	140	24
4000	50	0.44	0.5	100	12
3000	38	0.36	0.41	80	12
2500	15	0.25	0.3	40	12
***2000**	10	120V D.C. 0.23	110V D.C. 0.25	37	12

*Maximum voltage for this output is 120v D.C.

SD 11	Series Wound				
FULL LOAD R.P.M.	OUTPUT WATTS	INPUT CURRENT (AMPS)		INPUT WATTS	MINIMUM VOLTAGE AVAILABLE
		240V A.C.	220V A.C.		
6000	150	1.3	1.6	290	36
5000	125	1.15	1.4	220	24
4000	95	1.1	1.2	190	12
3000	75	1.0	1.1	160	12
3000	30	0.27	0.3	60	12
3000	18.5	0.24	0.25	50	12
2000	30	0.6	0.65	70	12
2000	15	0.19	0.2	40	12

SD 11	Shunt Wound				
FULL LOAD R.P.M.	OUTPUT WATTS	INPUT CURRENT (AMPS)		INPUT WATTS	MINIMUM VOLTAGE AVAILABLE
		240V D.C.	220V D.C..		
4000	125	0.9	1.0	216	12
3000	95	0.7	0.75	168	12
2000	50	0.4	0.45	96	12

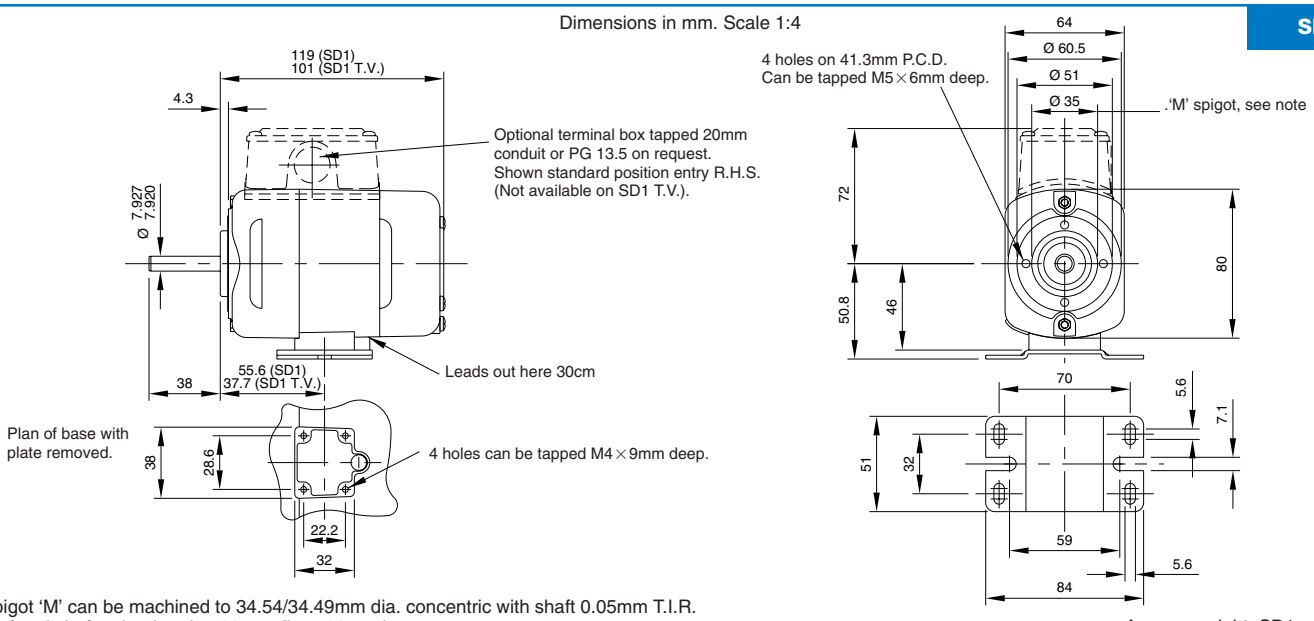
SD 12	Series Wound				
FULL LOAD R.P.M.	OUTPUT WATTS	INPUT CURRENT (AMPS)		INPUT WATTS	MINIMUM VOLTAGE AVAILABLE
		240V A.C.	220V A.C.		
6000	190	1.5	1.6	340	24
4000	150	1.8	1.8	350	24
4000	125	1.2	1.3	240	24
3000	95	1.1	1.2	200	24
2500	75	1.3	1.4	200	24
2000	50	1.2	1.3	160	12

SD 12	Shunt Wound				
FULL LOAD R.P.M.	OUTPUT WATTS	INPUT CURRENT (AMPS)		INPUT WATTS	MINIMUM VOLTAGE AVAILABLE
		240V D.C.	220V D.C..		
4000	150	1.0	1.1	265	24
3000	125	0.82	0.9	200	24
2500	75	0.6	0.65	140	12
2000	60	0.4	0.46	115	12

Shunt wound motor outputs are based on a pure D.C. supply (i.e. form factor 1) with electronic control, outputs will be reduced, to what degree depends on the form factor (FF) and the matching of motor and controller. We recommend a controller range to give the best performance and brush life.

SD 1

Dimensions in mm. Scale 1:4

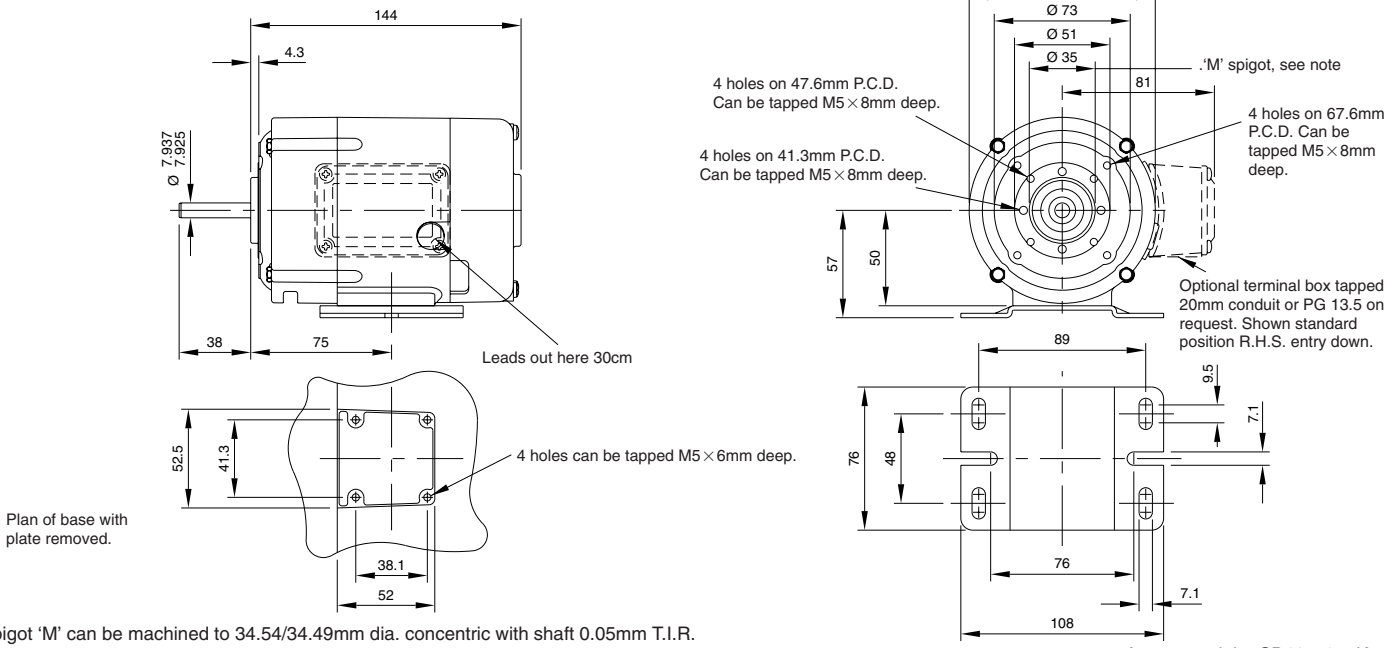


Spigot 'M' can be machined to 34.54/34.49mm dia. concentric with shaft 0.05mm T.I.R.
Optional shaft at lead end, 7.93mm dia. × 33mm long.

Approx. weight: SD1 – 1.22 Kg

SD 11

Dimensions in mm. Scale 1:4

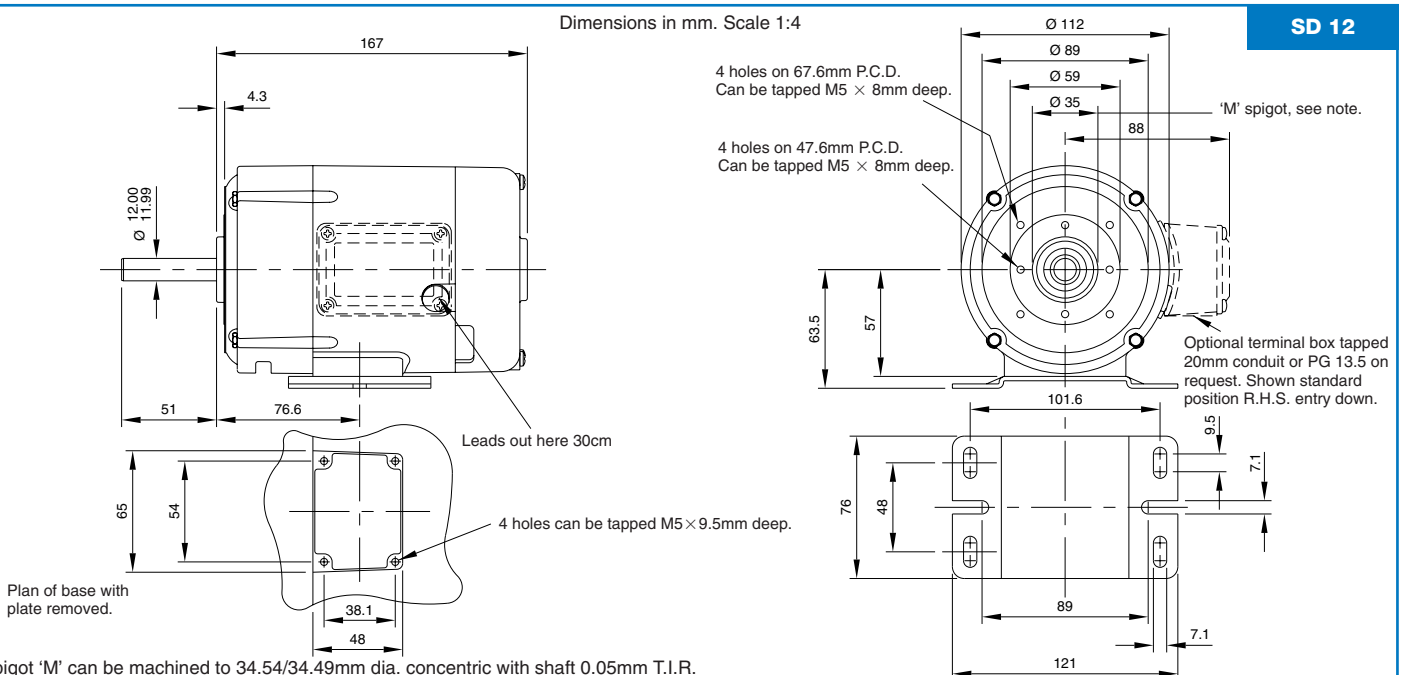


Spigot 'M' can be machined to 34.54/34.49mm dia. concentric with shaft 0.05mm T.I.R.
Optional shaft at lead end, 7.93mm dia. × 33mm long.

Approx. weight: SD11 – 2.5 Kg

SD 12

Dimensions in mm. Scale 1:4



Spigot 'M' can be machined to 34.54/34.49mm dia. concentric with shaft 0.05mm T.I.R.
Optional shaft at lead end, 10mm dia. × 51mm long.

Approx. weight: SD 12 – 3.57 Kg

Gearbox Type:

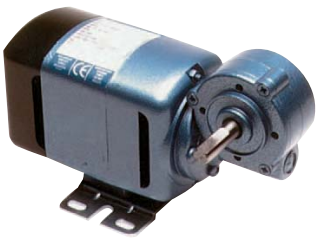
S

Speed Range: 43 – 960 r.p.m.

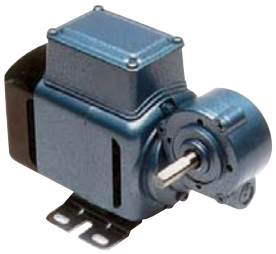
Single Reduction Worm Gear Units

Variable Speed A.C. – D.C. Series or D.C. Shunt Wound

Enclosures: Standard – Ventilated Internal Fan Cooled (IP 20)
Alternative – Totally Enclosed (IP 50) with Terminal Box (IP 54)



SD 1 S



SD 1 S with terminal box

SD 1 S with brake

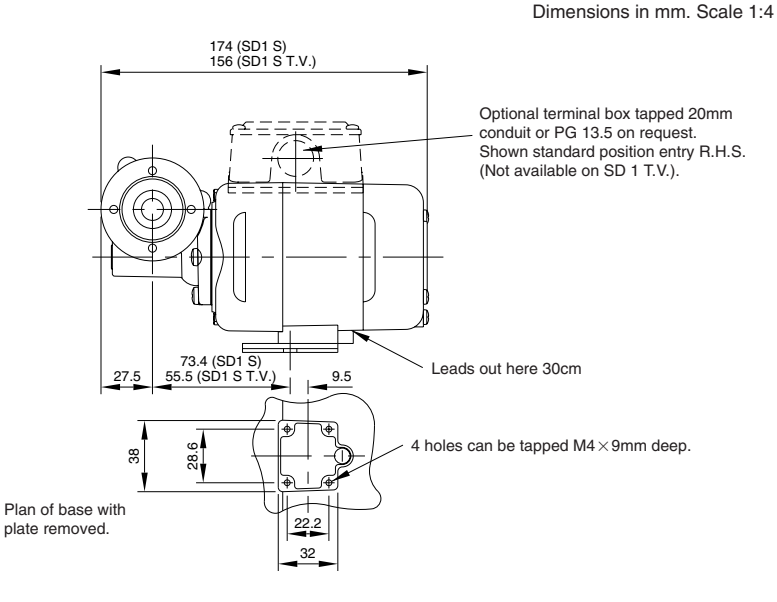
Voltage, Construction, Connections, Motor Performance Specifications and Optional Extras see pages 44 and 46 for full details.

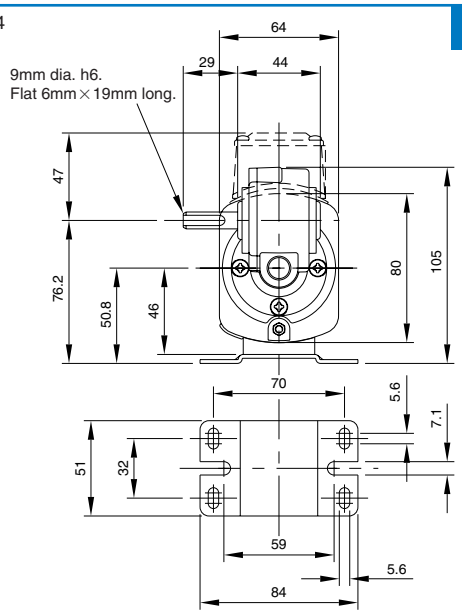
(1 Nm = 8.85 lbs. ins.) (1 Nm = 10.2 cmkp)

Gearbox Specification *Motor Speed 3000 r.p.m.*		SD 1 S Series *Motor Rating 38 watts*	SD 1 S Shunt *Motor Rating 38 watts*
FINAL R.P.M.	RATIO	OUTPUT TORQUE (Nm)	
		COMPOSITE	COMPOSITE
43	70:1	–	1.5
45	66:1	–	1.5
50	60:1	2.3	2.3
55	54:1	2.3	2.3
62	48:1	2.03	2.03
68	44:1	1.81	1.81
75	40:1	1.58	1.58
83	36:1	1.47	1.47
90	33:1	1.36	1.36
100	30:1	1.24	1.24
110	27:1	1.19	1.19
120	25:1	1.13	1.13
130	22 1/2:1	1.02	1.02
145	20 1/2:1	0.9	0.9
160	18 1/2:1	0.79	0.79
180	16 1/2:1	0.73	0.73
190	15 1/2:1	0.73	0.73
205	14 1/2:1	0.68	0.68
220	13 1/2:1	0.62	0.62
240	12 1/2:1	0.57	0.57
265	11 1/3:1	0.57	0.57
290	10 1/3:1	0.51	0.51
320	9 1/3:1	0.45	0.45
360	8 1/3:1	0.4	0.4
410	7 1/4:1	0.34	0.34
480	6 1/4:1	0.31	0.31
580	5 1/6:1	0.28	0.28
725	4 1/8:1	0.23	0.23

Gearbox Specification *Motor Speed 4000 r.p.m.*		SD 1 S Series *Motor Rating 50 watts*	SD 1 S Shunt *Motor Rating 50 watts*
FINAL R.P.M.	RATIO	OUTPUT TORQUE (Nm)	
		COMPOSITE	COMPOSITE
55	70:1	–	–
60	66:1	–	–
65	60:1	–	–
75	54:1	2.3	2.3
85	48:1	2.03	2.03
90	44:1	1.81	1.81
100	40:1	1.7	1.7
110	36:1	1.58	1.58
120	33:1	1.53	1.53
130	30:1	1.47	1.47
150	27:1	1.36	1.36
160	25:1	1.3	1.3
180	22 1/2:1	1.24	1.24
200	20 1/2:1	1.13	1.13
220	18 1/2:1	1.07	1.07
240	16 1/2:1	1.02	1.02
260	15 1/2:1	0.96	0.96
275	14 1/2:1	0.9	0.9
300	13 1/2:1	0.85	0.85
320	12 1/2:1	0.79	0.79
350	11 1/3:1	0.73	0.73
400	10 1/3:1	0.68	0.68
430	9 1/3:1	0.57	0.57
480	8 1/3:1	0.51	0.51
550	7 1/4:1	0.45	0.45
640	6 1/4:1	0.4	0.4
780	5 1/6:1	0.4	0.4
960	4 1/8:1	0.28	0.28

Dimensions in mm. Scale 1:4





Optional shaft at motor speed (lead end only) 7.93mm dia.×33mm long.

Approx. weight: SD 1 S – 1.60 Kg

Gearbox Type:

M or MB

Speed Range: 28 – 970 r.p.m.

Single Reduction Worm Gear Units

Variable Speed A.C. – D.C. Series or D.C. Shunt Wound

Enclosures: Standard – SD 1 Ventilated Internal Fan Cooled (IP 20)
SD 11 – SD 12 Drip Proof Internal Fan Cooled (IP 23)
Alternative – Totally Enclosed (IP 50) with Terminal Box (IP 54)

SD 1 MF

SD 1 MB

SD 11 M

SD 12 MB

■ **Voltage, Construction, Connections, Motor Performance Specifications and Optional Extras** see pages 44 and 46 for full details.
Hollow shaft. Available on request maximum internal diameter 8mm.

(1 Nm = 8.85 lbs. ins.) (1 Nm = 10.2 cmkp)

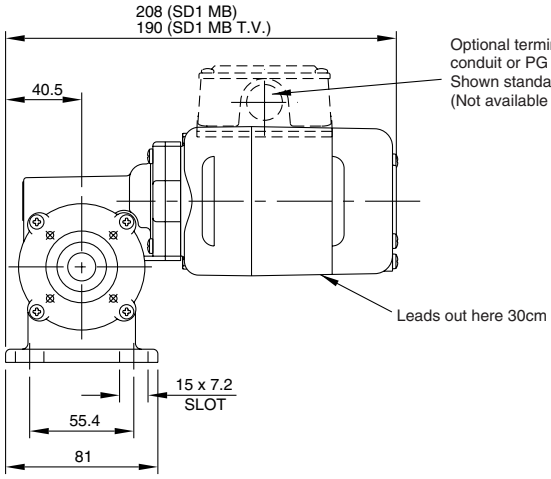
Gearbox Specification *Motor Speed 2000 r.p.m.*		SD 11 M/MB Shunt *Motor Rating 50 watts*	SD 12 M/MB Shunt *Motor Rating 60 watts*
FINAL R.P.M.	RATIO	OUTPUT TORQUE (Nm)	
		COMPOSITE	COMPOSITE
28	72:1	5.1	–
30	66:1	5.1	–
33	60:1	4.97	5.9
38	54:1	4.75	5.65
43	48:1	4.41	5.42
45	44:1	4.29	5.2
50	40:1	4.07	4.97
55	36:1	3.73	4.52
60	33:1	3.5	4.29
65	30:1	3.16	3.96
75	27:1	2.94	3.62
80	25:1	2.83	3.5
90	22 1/2:1	2.71	3.39
100	20 1/2:1	2.49	3.05
110	18 1/2:1	2.26	2.83
120	16 1/2:1	2.15	2.71
130	15 1/2:1	2.03	2.6
138	14 1/2:1	1.92	2.49
150	13 1/3:1	1.81	2.26
160	12 1/3:1	1.7	2.15
175	11 1/3:1	1.58	2.03
200	10 1/3:1	1.47	1.92
215	9 1/3:1	1.36	1.81
240	8 1/3:1	1.24	1.58
275	7 1/4:1	1.13	1.47
325	6 1/6:1	1.02	1.24
390	5 1/8:1	0.79	0.9
485	4 1/8:1	0.57	0.68

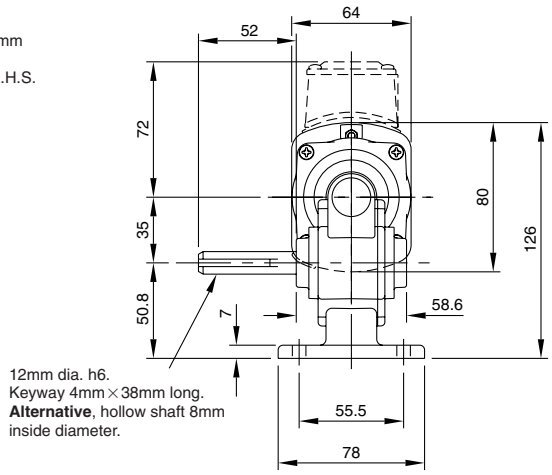
Gearbox Specification *Motor Speed 3000 r.p.m.*		SD 1 M/MB Series/Shunt *Motor Rating 38 watts*	SD 11 M/MB Series *Motor Rating 75 watts*	SD 11 M/MB Shunt *Motor Rating 95 watts*	SD 12 M/MB Series *Motor Rating 95 watts*	SD 12 M/MB Shunt *Motor Rating 125 watts*
FINAL R.P.M.	RATIO	OUTPUT TORQUE (Nm)				
		COMPOSITE	COMPOSITE	COMPOSITE	COMPOSITE	COMPOSITE
42	72:1	2.71	–	–	–	–
45	66:1	2.6	–	–	–	–
50	60:1	2.37	4.97	5.9	5.9	5.9
55	54:1	2.26	4.75	5.65	5.65	5.9
62	48:1	2.03	4.41	5.42	5.42	5.9
68	44:1	1.81	4.29	5.20	5.2	5.9
75	40:1	1.58	4.07	5.09	5.09	6.78
83	36:1	1.47	3.73	4.75	4.75	6.33
90	33:1	1.36	3.5	4.41	4.41	5.99
100	30:1	1.24	3.16	4.18	4.18	5.54
110	27:1	1.19	2.94	3.84	3.84	5.09
120	25:1	1.13	2.83	3.62	3.62	4.86
130	22 1/2:1	1.02	2.71	3.5	3.5	4.75
145	20 1/2:1	0.9	2.49	3.28	3.28	4.29
160	18 1/2:1	0.79	2.26	2.94	2.94	3.96
180	16 1/2:1	0.73	2.15	2.83	2.83	3.73
190	15 1/2:1	0.73	2.03	2.71	2.71	3.62
205	14 1/2:1	0.68	1.92	2.6	2.6	3.39
220	13 1/3:1	0.62	1.81	2.37	2.37	3.28
240	12 1/3:1	0.57	1.7	2.26	2.26	3.05
265	11 1/3:1	0.57	1.58	2.15	2.15	2.94
290	10 1/3:1	0.51	1.47	2.03	2.03	2.71
320	9 1/3:1	0.45	1.36	1.81	1.81	2.49
360	8 1/3:1	0.4	1.24	1.7	1.7	2.26
410	7 1/4:1	0.34	1.13	1.47	1.47	2.03
480	6 1/6:1	0.31	1.02	1.36	1.36	1.81
580	5 1/8:1	0.28	0.79	1.02	1.02	1.47
725	4 1/8:1	0.23	0.57	0.79	0.79	1.13

Gearbox Specification *Motor Speed 4000 r.p.m.*		SD 1 M/MB Series/Shunt *Motor Rating 50 watts*	SD 11 M/MB Series *Motor Rating 95 watts*	SD 11 M/MB Shunt *Motor Rating 125 watts*	SD 12 M/MB Series *Motor Rating 125 watts*	SD 12 M/MB Series *Motor Rating 150 watts*	SD 12 M/MB Shunt *Motor Rating 150 watts*
FINAL R.P.M.	RATIO	OUTPUT TORQUE (Nm)					
		COMPOSITE	COMPOSITE	COMPOSITE	COMPOSITE	COMPOSITE	COMPOSITE
55	72:1	2.71	–	–	–	–	–
60	66:1	2.6	–	–	–	–	–
65	60:1	2.37	–	–	–	–	–
75	54:1	2.26	–	–	–	–	–
85	48:1	2.03	5.65	–	–	–	–
90	44:1	1.81	4.52	5.65	5.65	5.9	5.9
100	40:1	1.7	4.29	5.31	5.31	6.37	6.37
110	36:1	1.58	4.18	5.09	5.09	6.12	6.12
120	33:1	1.53	3.96	4.86	4.86	5.17	5.17
130	30:1	1.47	3.62	4.41	4.41	4.91	4.91
150	27:1	1.36	3.28	4.07	4.07	4.73	4.73
160	25:1	1.3	3.05	3.73	3.73	4.37	4.37
180	22 1/2:1	1.24	2.83	3.5	3.5	4.28	4.28
200	20 1/2:1	1.13	2.6	3.16	3.16	4.1	4.1
220	18 1/2:1	1.07	2.49	3.05	3.05	3.92	3.92
240	16 1/2:1	1.02	2.37	2.94	2.94	3.57	3.57
260	15 1/2:1	0.96	2.26	2.83	2.83	3.38	3.38
275	14 1/2:1	0.9	2.15	2.6	2.6	3.3	3.3
300	13 1/3:1	0.85	1.92	2.37	2.37	3.21	3.21
320	12 1/3:1	0.79	1.81	2.26	2.26	2.94	2.94
350	11 1/3:1	0.73	1.7	2.15	2.15	2.76	2.76
400	10 1/3:1	0.68	1.58	1.81	1.81	2.68	2.68
430	9 1/3:1	0.57	1.47	1.7	1.7	2.41	2.41
480	8 1/3:1	0.51	1.36	1.58	1.58	2.23	2.23
550	7 1/4:1	0.45	1.24	1.47	1.47	2.1	2.1
650	6 1/6:1	0.4	1.13	1.36	1.36	1.78	1.78
780	5 1/8:1	0.4	0.9	1.13	1.13	1.43	1.43
970	4 1/8:1	0.28	0.73	0.9	0.9	1.16	1.16

SD 1 MB

Dimensions in mm. Scale 1:4





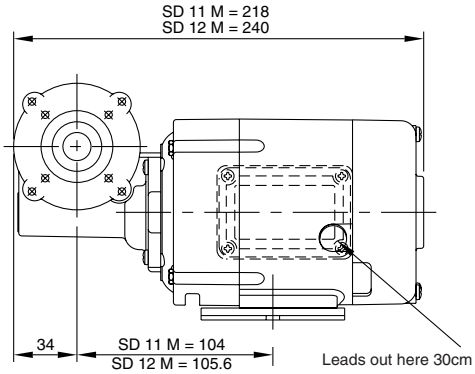
Optional shaft at motor speed (lead end only) 7.93mm dia. × 33mm long.

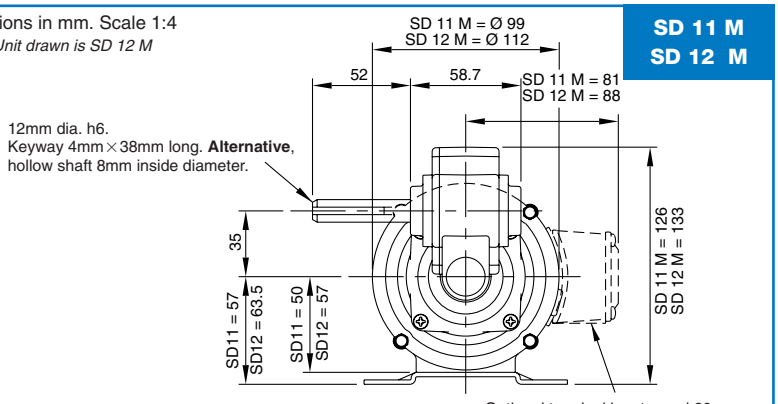
Approx. weight: SD 1 MB – 2.12 Kg

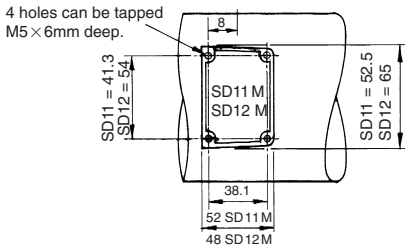
SD 11 M
SD 12 M

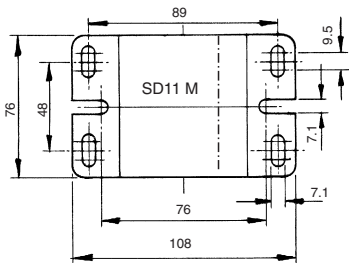
Dimensions in mm. Scale 1:4

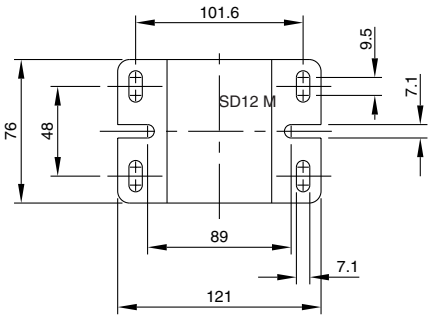
NB: Unit drawn is SD 12 M











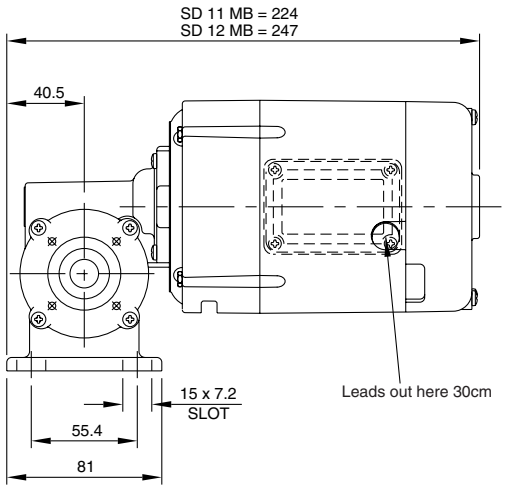
SD 11 M Optional shaft at motor speed (lead end only) 7.93mm dia. × 33mm long.
SD 12 M Optional shaft at motor speed (lead end only) 10mm dia. × 33mm long.

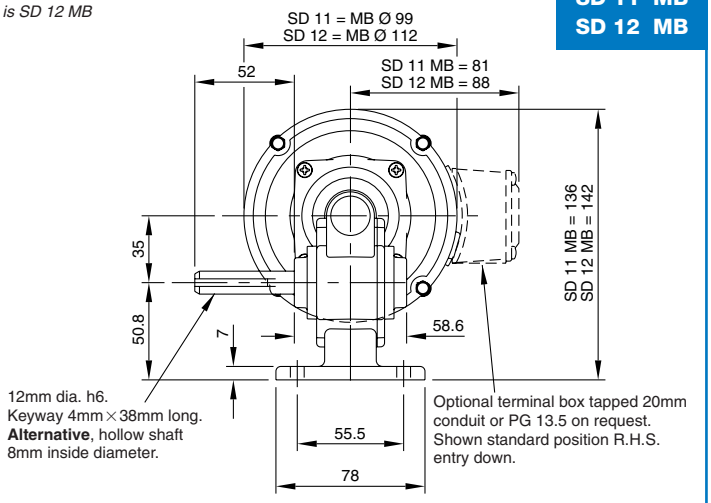
Approx. weight: SD 11 M – 3.21 Kg
SD 12 M – 4.28 Kg

SD 11 MB
SD 12 MB

Dimensions in mm. Scale 1:4

NB: Unit drawn is SD 12 MB





SD 11 M Optional shaft at motor speed (lead end only) 7.93mm dia. × 33mm long.
SD 12 M Optional shaft at motor speed (lead end only) 10mm dia. × 33mm long.

Approx. weight: SD 11 MB – 3.40 Kg
SD 12 MB – 4.47 Kg

Gearbox Type:

L/LB/LH/LHB

Speed Range: 33 – 780 r.p.m.

Single Reduction Worm Gear Units

Variable Speed A.C. – D.C. Series or D.C. Shunt Wound

Enclosures: Standard – SD 11 – SD 12 Drip Proof Internal Fan Cooled (IP 23)
Alternative – Totally Enclosed (IP 50) with Terminal Box (IP 54)

SD 12 L

SD 12 LB

SD 12 LF

■ **Voltage, Construction, Connections, Motor Performance Specifications and Optional Extras** see pages 44 and 46 for full details.
LH/LHB for hollow shaft details see page 114.

(1 Nm = 8.85 lbs. ins.) (1 Nm = 10.2 cmkp)

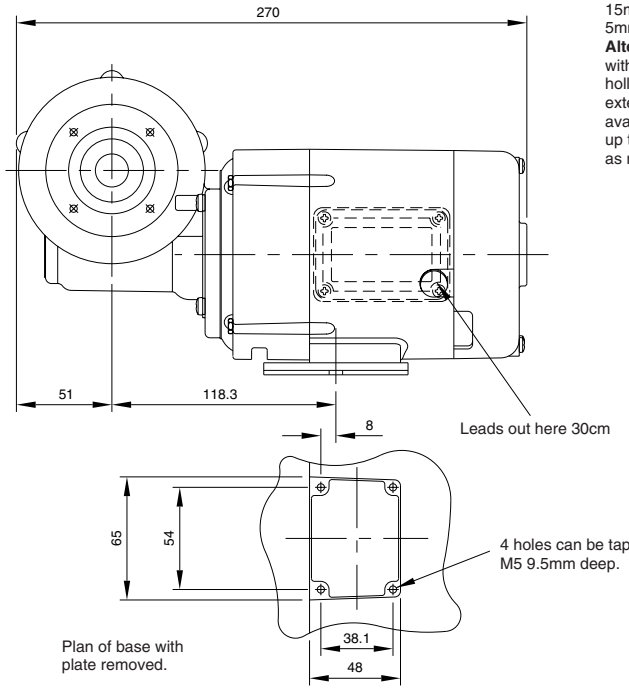
Gearbox Specification *Motor Speed 2000 r.p.m.*		SD 12 L/LB/LH/LHB Series *Motor Rating 50 watts*	Shunt *Motor Rating 60 watts*
FINAL R.P.M.	RATIO	OUTPUT TORQUE (Nm) COMPOSITE	COMPOSITE
33	60:1	5	6
40	50:1	4.5	5.4
50	40:1	4	4.7
66	30:1	3.2	3.8
80	25:1	2.8	3.4
100	20 1/2:1	2.5	3
130	15 1/3:1	2	2.5
166	12 1/3:1	1.8	2.1
222	9: 1/41	1.5	1.8
279	7 1/6:1	1.13	1.4
390	5 1/8:1	0.85	1

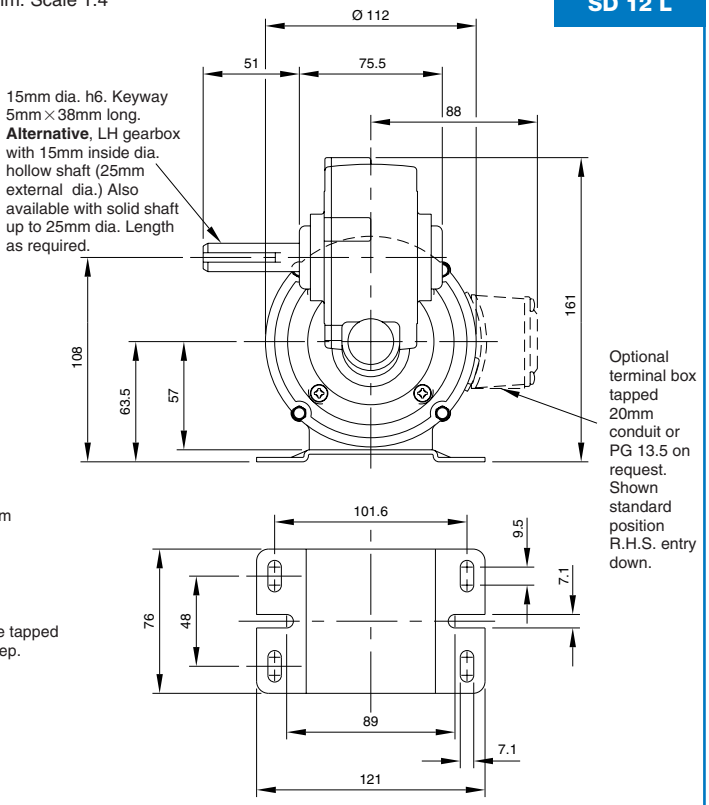
Gearbox Specification *Motor Speed 3000 r.p.m.*		SD 12 L/LB/LH/LHB Series *Motor Rating 95 watts*	Shunt *Motor Rating 125 watts*
FINAL R.P.M.	RATIO	OUTPUT TORQUE (Nm) COMPOSITE	COMPOSITE
50	60:1	8.5	10
60	50:1	7.3	9
75	40:1	6.8	8.5
100	30:1	4.5	5.9
120	25:1	3.8	5
150	20 1/2:1	3.6	4.6
200	15 1/3:1	3.2	4
250	12 1/3:1	2.7	3.5
333	9 1/4:1	2.3	2.9
419	7 1/6:1	1.7	2.1
585	5 1/8:1	1.1	1.5

Gearbox Specification *Motor Speed 4000 r.p.m.*		SD 12 L/LB/LH/LHB Series *Motor Rating 150 watts*		Shunt *Motor Rating 150 watts*	
FINAL R.P.M.	RATIO	OUTPUT TORQUE (Nm) COMPOSITE	BRONZE	COMPOSITE	BRONZE
67	60:1	8	11.3	8	11.3
80	50:1	7	9	7.1	9
100	40:1	6.3	–	6.3	-
133	30:1	5		5	
160	25:1	4.6		4.6	
195	20 1/2:1	4		4	
267	15 1/3:1	3.2		3.2	
333	12 1/3:1	2.8		2.8	
444	9 1/4:1	2.3		2.3	
558	7 1/6:1	1.8		1.8	
780	5 1/8:1	1.4		1.4	

SD 12 L

Dimensions in mm. Scale 1:4



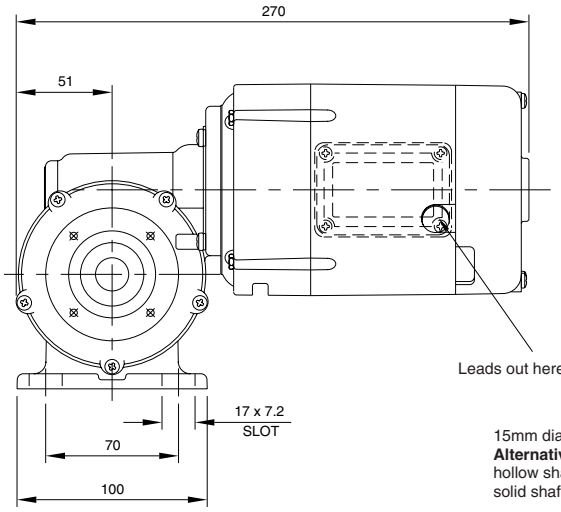


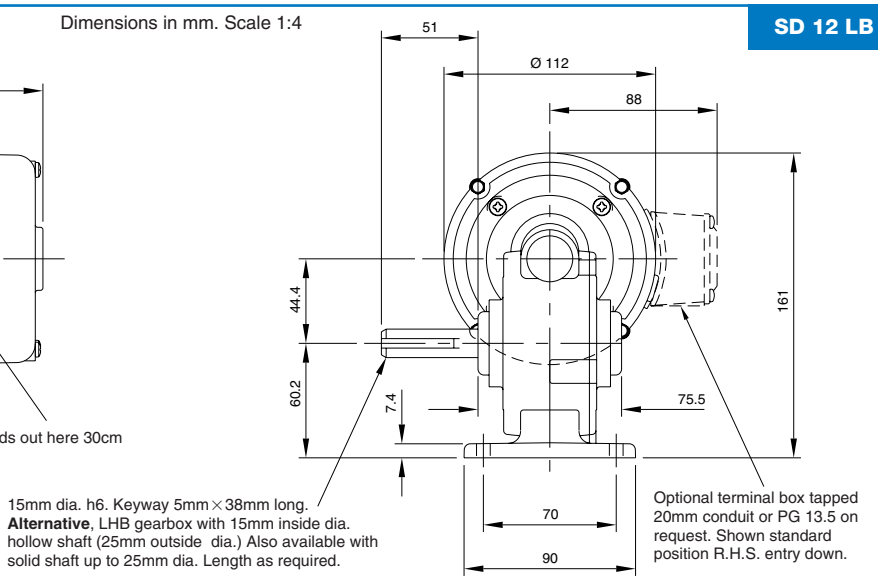
Optional shaft at motor speed (lead end only) 10mm dia. × 33mm long.

Approx. weight: SD 12 L – 5.08 Kg

SD 12 LB

Dimensions in mm. Scale 1:4



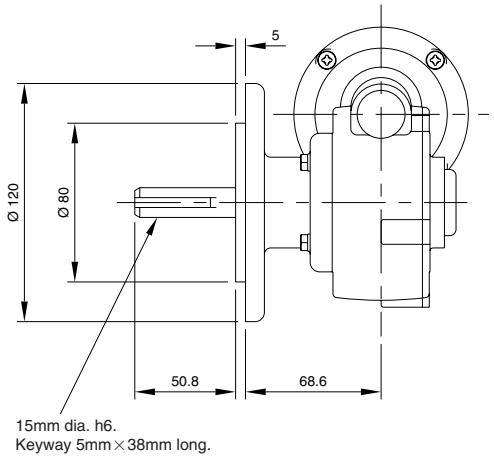


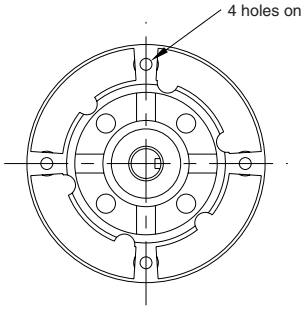
Optional shaft at motor speed (lead end only) 10mm dia. × 33mm long.

Approx. weight: SD 12 LB – 5.27 Kg

'LF' Mounting Flange Details

Dimensions in mm. Scale 1:4

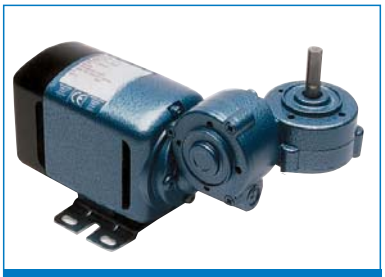




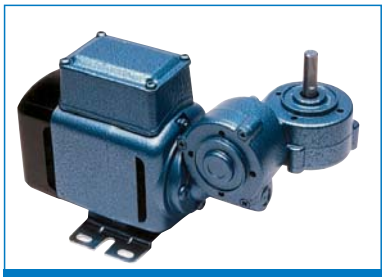
Approx. weight: Mounting Flange 0.7 Kg

Gearbox Type:
SS
Speed Range: 1 – 80 r.p.m.

Double Reduction Worm Gear Units
Variable Speed A.C. – D.C. Series or D.C. Shunt Wound
Enclosures: Standard – Ventilated Internal Fan Cooled (IP 20)
Alternative – Totally Enclosed (IP 50) with Terminal Box (IP 54)


SD 1 SS


SD 1 SS with brake


SD 1 SS with terminal box

■ **Voltage, Construction, Connections, Motor Performance Specifications and Optional Extras** see pages 44 and 46 for full details.

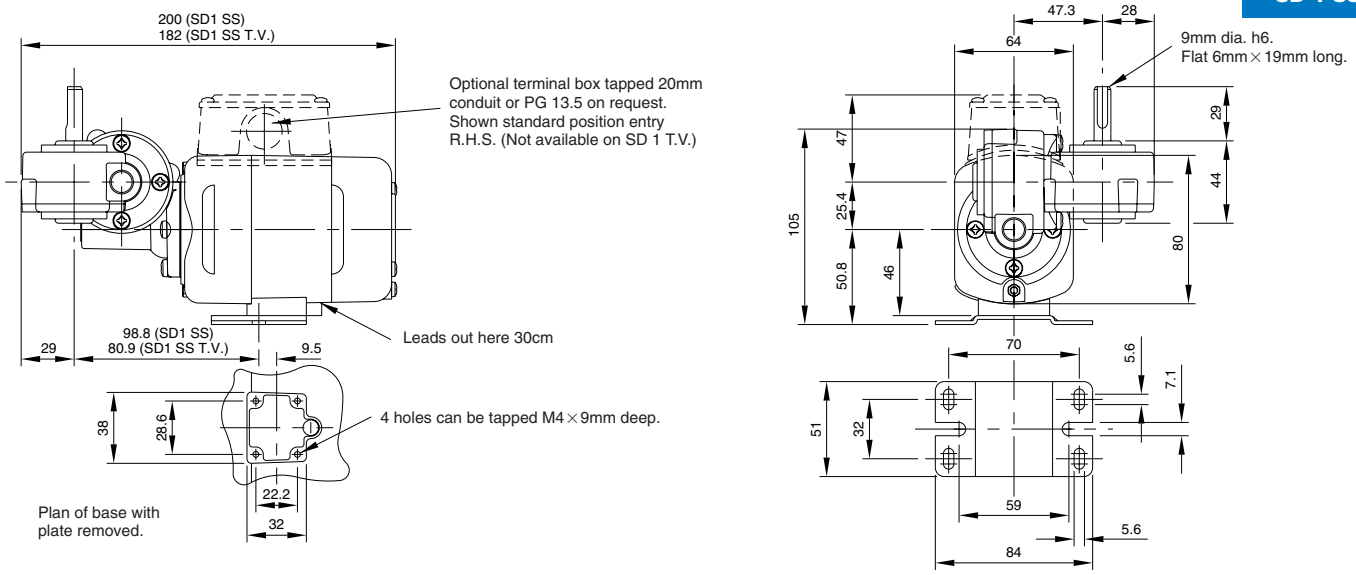
(1 Nm = 8.85 lbs. ins.) (1 Nm = 10.2 cmkp)

Gearbox Specification *Motor Speed 3000 r.p.m.*		SD 1 SS					
		Series *Motor Rating 15 watts*		Series *Motor Rating 38 watts*		Shunt *Motor Rating 38 watts*	
FINAL R.P.M.	*RATIO	OUTPUT TORQUE (Nm)					
		COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE
1	3168:1	–	4	–	–	2.7	4
2	1584:1	4	5.9	–	–	4	5.9
3	1023:1	4	5.9	–	–	4	5.9
4	792:1	4	5.9	–	–	4	5.9
5	620:1	4	5.9	–	–	4	5.9
10	306:1	–	–	4	5.9	4	5.9
15	204:1	–	–	4	5.9	4	5.9
20	153:1	–	–	4	5.9	4	5.9
25	127:1	–	–	4	5.6	4	5.6
30	101:1	–	–	4	5.1	4	5.1
40	78:1	–	–	4	4.3	4	4.3
50	65:1	–	–	3.4	3.4	3.4	3.4

Gearbox Specification *Motor Speed 4000 r.p.m.*		SD 1 SS					
		Series *Motor Rating 38 watts*		Series *Motor Rating 50 watts*		Shunt *Motor Rating 50 watts*	
FINAL R.P.M.	*RATIO	OUTPUT TORQUE (Nm)					
		COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE
10	405:1	4	5.9	–	–	–	–
15	268:1	4	5.9	–	–	–	–
20	196:1	4	5.9	–	–	–	–
25	164:1	4	5.9	–	–	–	–
30	135:1	4	5.9	–	–	–	–
40	105:1	4	5.1	4	5.9	4	5.9
50	75:1	2.8	–	4	4.1	4	4.2
60	68:1	2.6	–	4	–	4	–
70	58:1	2.1	–	3.4	–	3.4	–
80	50:1	1.8	–	2.8	–	2.8	–

*Ratios are for guidance only and may be varied.

Dimensions in mm. Scale 1:4



Optional shaft at motor speed (lead end only) 7.93mm dia.×33mm long.

Approx. weight: SD 1 SS – 2.03 Kg

Gearbox Type:

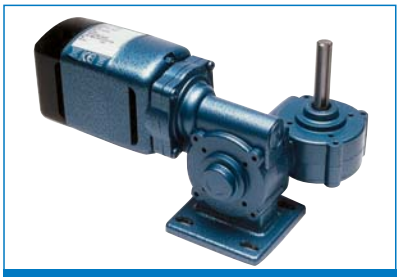
MM or MBM

Speed Range: 1 – 80 r.p.m.

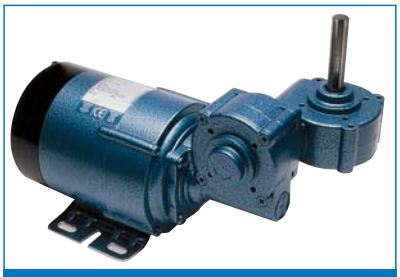
Double Reduction Worm Gear Units

Variable Speed A.C. – D.C. Series or D.C. Shunt Wound

Enclosures: Standard – SD 1 Ventilated Internal Fan Cooled (IP 20)
SD 11 – SD 12 Drip Proof Internal Fan Cooled (IP 23)
Alternative – Totally Enclosed (IP 50) with Terminal Box (IP 54)



SD 1 MBM



SD 11 MM

SD 12 MM

■ **Voltage, Construction, Connections, Motor Performance Specifications and Optional Extras** see pages 44 and 46 for full details.

(1 Nm = 8.85 lbs. ins.) (1 Nm = 10.2 cmkp)

Gearbox Specification *Motor Speed 2000 r.p.m.*		SD 1 MM/MBM Series *Motor Rating 10 watts*		SD 1 MM/MBM †Shunt *Motor Rating 10 watts*		SD 11 MM/MBM Series *Motor Rating 30 watts*		SD 11 MM/MBM Shunt *Motor Rating 50 watts*	
FINAL R.P.M.	*RATIO	OUTPUT TORQUE (Nm)							
		COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE
1	2480:1	9	11.8	9	11.8	9	11.8	9	11.8
2	1296:1	9	11.8	9	11.8	9	11.8	9	11.8
3	675:1	7.9	–	7.9	–	9	11.8	9	11.8
5	412:1	5.1	–	5.1	–	9	11.8	9	11.8
8	258:1	3.4	–	3.4	–	9	10.1	9	11.8

†Maximum voltage 120V D.C.

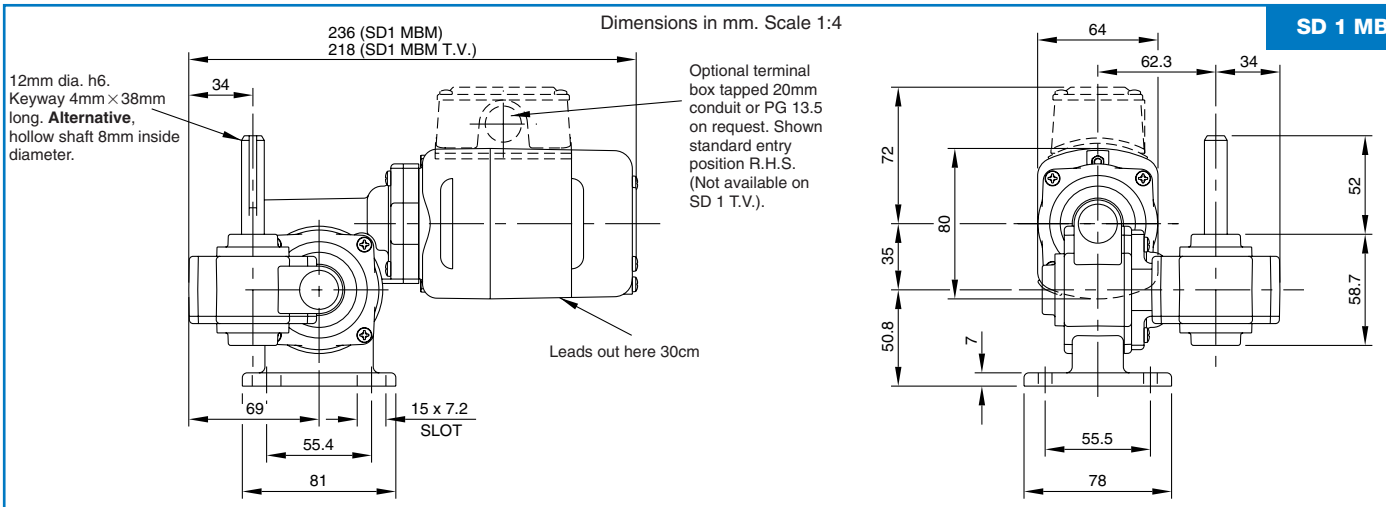
Gearbox Specification *Motor Speed 3000 r.p.m.*		SD 1 MM/MBM Series *Motor Rating 38 watts*		SD 1 MM/MBM Shunt *Motor Rating 38 watts*		SD 11 MM/MBM Series *Motor Rating 75 watts*		SD 11 MM/MBM Shunt *Motor Rating 95 watts*	
FINAL R.P.M.	*RATIO	OUTPUT TORQUE (Nm)							
		COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE
10	308:1	7.9	–	7.9	–	9	11.8	9	11.8
15	225:1	7.3	–	7.3	–	9	11.8	9	11.8
20	150:1	6.8	–	6.8	–	9	11.8	9	11.8
25	120:1	6.2		6.2		9	11.8	9	11.8
30	107:1	5.6		5.6		9	10.7	9	11.8
35	86:1	5.1		5.1		9	9.6	9	11.8

Gearbox Specification *Motor Speed 4000 r.p.m.*		SD 11 MM/MBM Series *Motor Rating 95 watts*		SD 11 MM/MBM Shunt *Motor Rating 125 watts*		SD 12 MM/MBM Series *Motor Rating 125 watts*		SD 12 MM/MBM Shunt *Motor Rating 150 watts*	
FINAL R.P.M.	*RATIO	OUTPUT TORQUE (Nm)							
		COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE
40	94:1	7.9	–	9	10.1	9	10.1	9	11.8
45	89:1	7.3	–	9	–	9	–	9	11.8
50	82:1	6.8	–	8.5	–	8.5	–	9	11.8
60	68:1	5.6		7.9		7.9		9	11.3
70	58:1	5.1		6.8		6.8		9	9.6
80	51:1	4.5		5.6		5.6		9	9

*Ratios are for guidance only and may be varied.

SD 1 MBM

Dimensions in mm. Scale 1:4



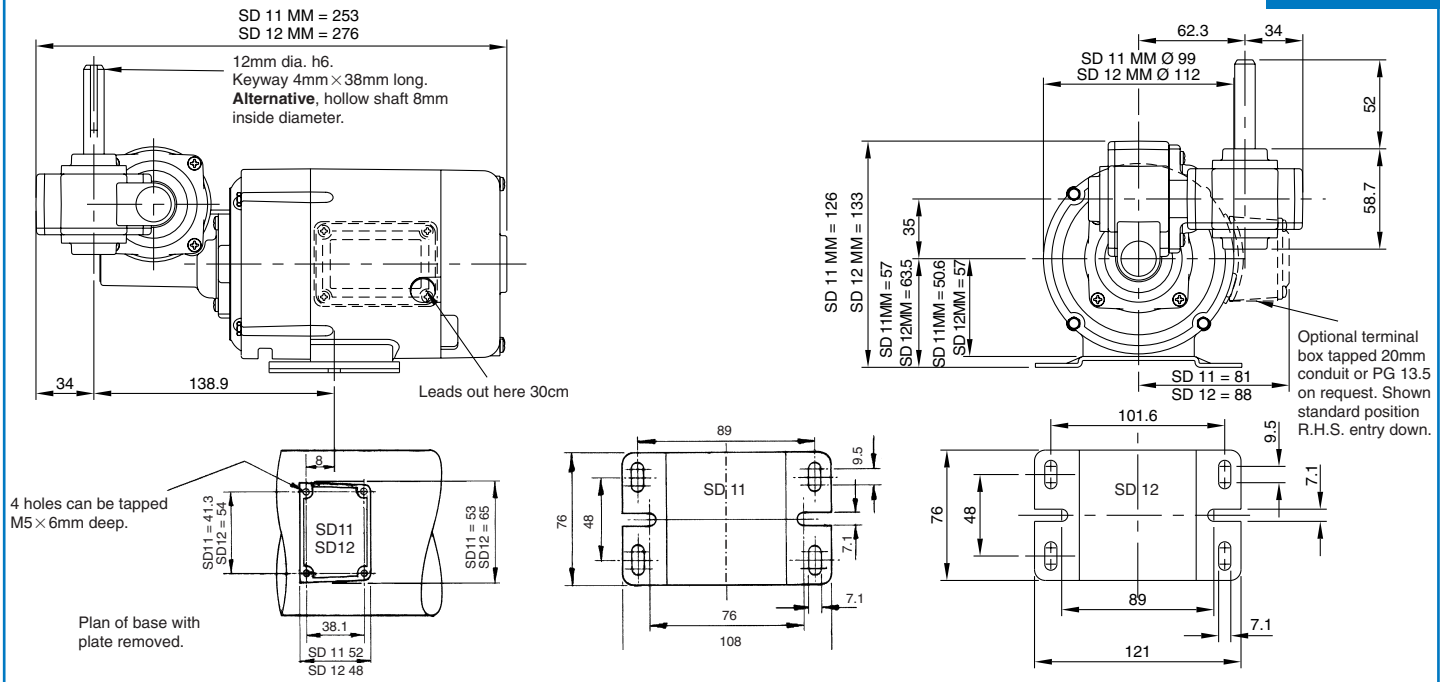
Optional shaft at motor speed (lead end only) 7.93mm dia. × 33mm long.

Approx. weight: SD 1 MBM – 2.80 Kg

SD 11 MM
SD 12 MM

Dimensions in mm. Scale 1:4

NB: Unit drawn is SD 12 MM



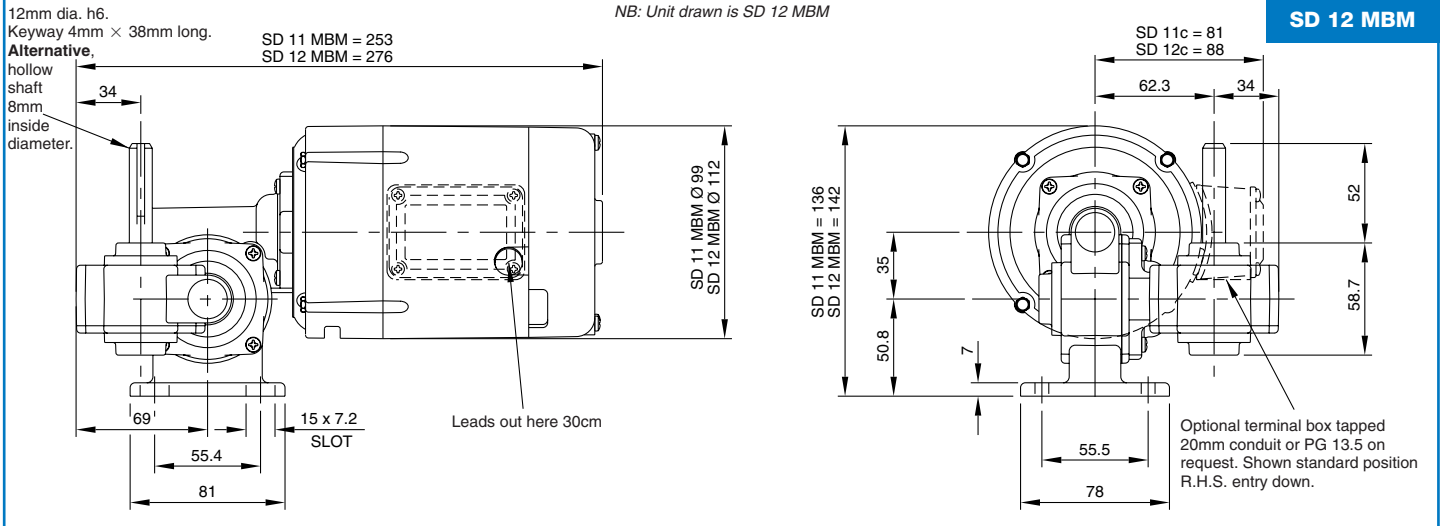
SD 11 MM Optional shaft at motor speed (lead end only) 7.93mm dia. × 33mm long.
SD 12 MM Optional shaft at motor speed (lead end only) 10mm dia. × 33mm long.

Approx. weight: SD 11 MM – 3.88 Kg
SD 12 MM – 4.95 Kg

SD 11 MBM
SD 12 MBM

Dimensions in mm. Scale 1:4

NB: Unit drawn is SD 12 MBM



SD 11 MM Optional shaft at motor speed (lead end only) 7.93mm dia. × 33mm long.
SD 12 MM Optional shaft at motor speed (lead end only) 10mm dia. × 33mm long.

Approx. weight: SD 11 MBM – 4.08 Kg
SD 12 MBM – 5.15 Kg

Gearbox Type:
SIW
Speed Range: 1.5 – 176 r.p.m.

In Line Double Reduction Worm Gear Units
A.C. – D.C. Series or D.C. Shunt Wound
Enclosures: Standard – Ventilated Internal Fan Cooled (IP 20)
Alternative – Totally Enclosed (IP 50) with Terminal Box (IP 54)

SD 1 SIW

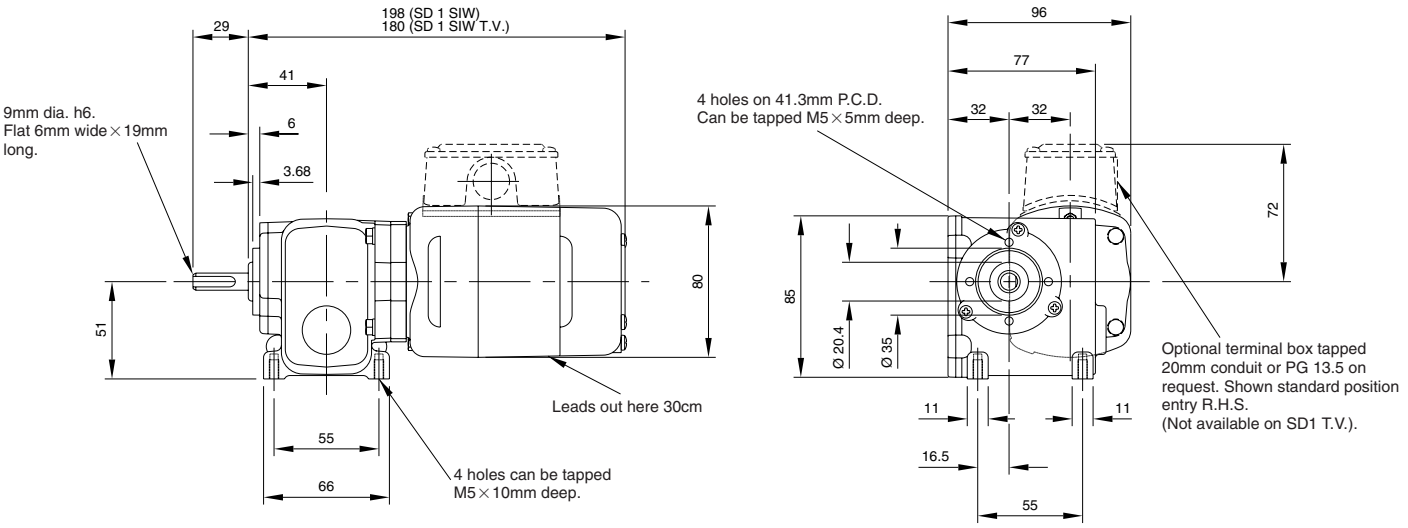
■ **Voltage, Construction, Connections, Motor Performance Specifications and Optional Extras** see pages 44 and 46 for full details.

(1 Nm = 8.85 lbs. ins.) (1 Nm = 10.2 cmkp)

Gearbox Specification *Motor Speed 2000 r.p.m.*			**SD 1 SIW Series/Shunt** *Motor Rating 10 watts*	
FINAL R.P.M.	RATIO		**OUTPUT TORQUE (Nm)**	
	INT	FINAL	COMPOSITE	BRONZE
1.5	54:1	25:1	7	11.3
3	27:1	25:1	7	7.9
5.5	14 1/2:1	25:1	5.3	–
10	8 1/3:1	25:1	3.5	–
15	16 1/2:1	8 1/3:1	2.7	–
20	12 1/2:1	8 1/3:1	2.1	
23	10 1/3:1	8 1/3:1	2	
26	9 1/3:1	8 1/3:1	1.8	
30	8 1/3:1	8 1/3:1	1.6	
33	7 1/4:1	8 1/3:1	1.5	
38	6 1/4:1	8 1/3:1	1.3	
46	5 1/6:1	8 1/3:1	1.1	
52	6 1/4:1	6 1/4:1	1	
63	5 1/6:1	6 1/4:1	0.8	
75	5 1/6:1	5 1/6:1	0.7	
95	4 1/8:1	5 1/6:1	0.6	
118	4 1/8:1	4 1/8:1	0.5	

Gearbox Specification *Motor Speed 3000 r.p.m.*			**SD 1 SIW Series/Shunt** *Motor Rating 38 watts*	
FINAL R.P.M.	RATIO		**OUTPUT TORQUE (Nm)**	
	INT	FINAL	COMPOSITE	BRONZE
2.2	54:1	25:1	7	11.3
4.5	27:1	25:1	7	11.3
8.3	14 1/2:1	25:1	7	11.3
15	8 1/3:1	25:1	7	8.6
22	16 1/2:1	8 1/3:1	6.5	–
30	12 1/2:1	8 1/3:1	5.4	–
35	10 1/3:1	8 1/3:1	5.1	–
39	9 1/3:1	8 1/3:1	4.6	
45	8 1/3:1	8 1/3:1	4.1	
57	6 1/4:1	8 1/3:1	3.3	
70	5 1/6:1	8 1/3:1	2.8	
78	6 1/4:1	6 1/4:1	2.6	
87	4 1/8:1	8 1/3:1	2.4	
94	5 1/6:1	6 1/4:1	2	
113	5 1/6:1	5 1/6:1	1.9	
142	4 1/8:1	5 1/6:1	1.5	
176	4 1/8:1	4 1/8:1	1.2	

Dimensions in mm. Scale 1:4



Optional shaft at motor speed (lead end only) 7.93mm dia. × 33mm long.

Approx. weight: SD 1 SIW – 2.23 Kg

Gearbox Type:

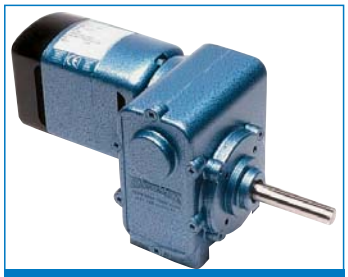
MIW

Speed Range: 1.5 – 176 r.p.m.

In Line Double Reduction Worm Gear Units

A.C. – D.C. Series or D.C. Shunt Wound

Enclosures: Standard – SD 1 Ventilated Internal Fan Cooled (IP 20)
SD 11 Drip Proof Internal Fan Cooled (IP 23)
Alternative – Totally Enclosed (IP 50) with Terminal Box (IP 54)



SD 1 MIW

SD 11 MIW

■ **Voltage, Construction, Connections, Motor Performance Specifications and Optional Extras** see pages 44 and 46 for full details.

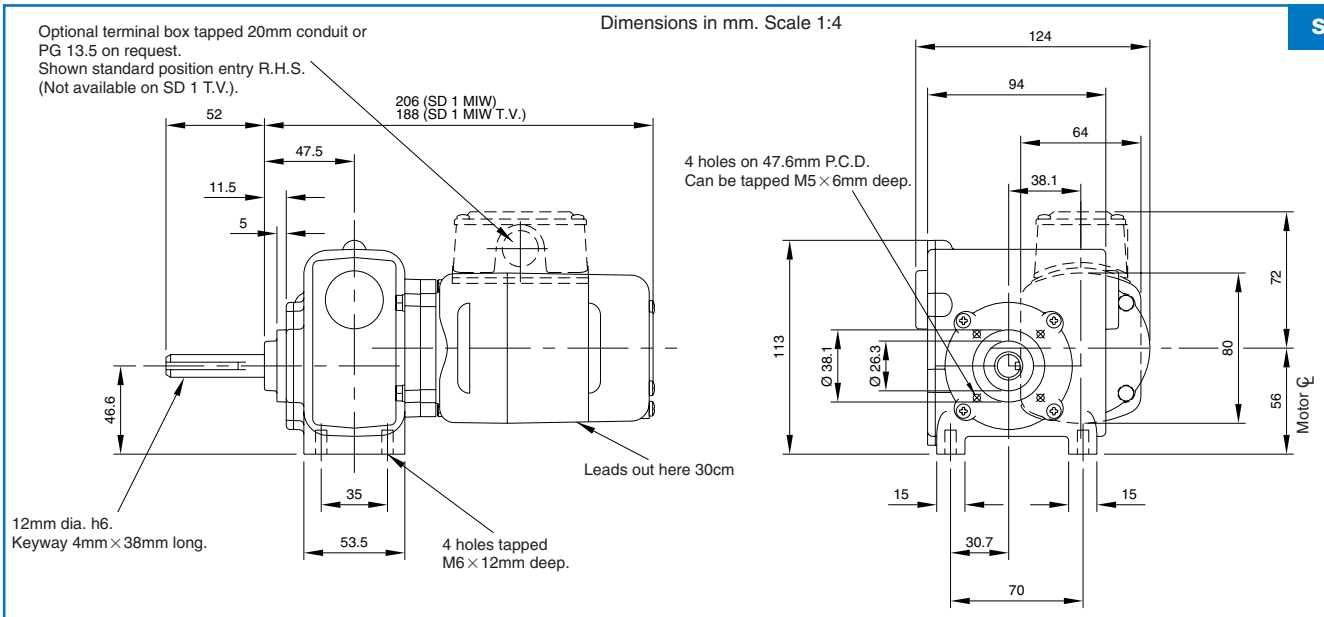
(1 Nm = 8.85 lbs. ins.) (1 Nm = 10.2 cmkp)

Gearbox Specification *Motor Speed 2000 r.p.m.*			SD 1 MIW		SD 11 MIW			
			Series *Motor Rating 10 watts*	Shunt *Motor Rating 10 watts*	Series *Motor Rating 30 watts*		Shunt *Motor Rating 50 watts*	
FINAL R.P.M.	RATIO		OUTPUT TORQUE (Nm)					
	INT	FINAL	COMPOSITE	COMPOSITE	COMPOSITE	BRONZE	COMPOSITE	BRONZE
1.5	54:1	25:1	11.3	11.3	17	28	17	28
3	27:1	25:1	7.9	7.9	17	23.7	17	28
5.5	14 1/2:1	25:1	5.3	5.3	17	–	17	26
10	8 1/3:1	25:1	3.5	3.5	10.5	–	17	18
15	16 1/2:1	8 1/3:1	2.7	2.7	8.1	–	13.5	
20	12 1/2:1	8 1/3:1	2.1	2.1	6.4		10.7	
23	10 1/3:1	8 1/3:1	2	2	5.9		9.8	
26	9 1/3:1	8 1/3:1	1.8	1.8	5.3		8.9	
30	8 1/3:1	8 1/3:1	1.6	1.6	4.7		7.9	
33	7 1/4:1	8 1/3:1	1.5	1.5	4.5		7.5	
38	6 1/4:1	8 1/3:1	1.3	1.3	3.9		6.5	
46	5 1/6:1	8 1/3:1	1.1	1.1	3.4		5.5	
52	6 1/4:1	6 1/6:1	1	1	3.1		5.2	
63	5 1/6:1	6 1/6:1	0.8	0.8	2.6		4.3	
75	5 1/6:1	5 1/8:1	0.7	0.7	2.3		3.7	
95	4 1/8:1	5 1/8:1	0.6	0.6	1.8		3	
118	4 1/8:1	4 1/8:1	0.5	0.5	1.5		2.5	

Gearbox Specification *Motor Speed 3000 r.p.m.*			SD 1 MIW				SD 11 MIW			
			Series *Motor Rating 38 watts*		Shunt *Motor Rating 38 watts*		Series *Motor Rating 75 watts*		Shunt *Motor Rating 95 watts*	
FINAL R.P.M.	RATIO		OUTPUT TORQUE (Nm)							
	INT	FINAL	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE
2.2	54:1	25:1	17	28	17	28	17	28	17	28
4.5	27:1	25:1	17	19.7	17	19.7	17	28	17	28
8.3	14 1/2:1	25:1	13	–	13	–	17	28	17	28
15	8 1/3:1	25:1	8.6	–	8.6	–	17	–	17	21.4
22	16 1/2:1	8 1/3:1	6.5	–	6.5	–	12.8	–	16.3	–
30	12 1/2:1	8 1/3:1	5.4		5.4		10.7	–	13.5	–
35	10 1/3:1	8 1/3:1	5.1		5.1		9.8		12.5	–
39	9 1/3:1	8 1/3:1	4.6		4.6		8.9		11.3	
45	8 1/3:1	8 1/3:1	4.1		4.1		7.9		10.1	
57	6 1/4:1	8 1/3:1	3.3		3.3		6.5		8.2	
70	5 1/6:1	8 1/3:1	2.8		2.8		5.5		6.8	
78	6 1/4:1	6 1/6:1	2.6		2.6		5.2		6.5	
90	4 1/8:1	8 1/3:1	2.1		2.1		4.2		5.3	
94	5 1/6:1	6 1/6:1	2		2		4		5.4	
113	5 1/6:1	5 1/8:1	1.9		1.9		3.7		4.7	
142	4 1/8:1	5 1/8:1	1.5		1.5		3		3.7	
176	4 1/8:1	4 1/8:1	1.2		1.2		2.5		3.1	

SD 1 MIW

Dimensions in mm. Scale 1:4

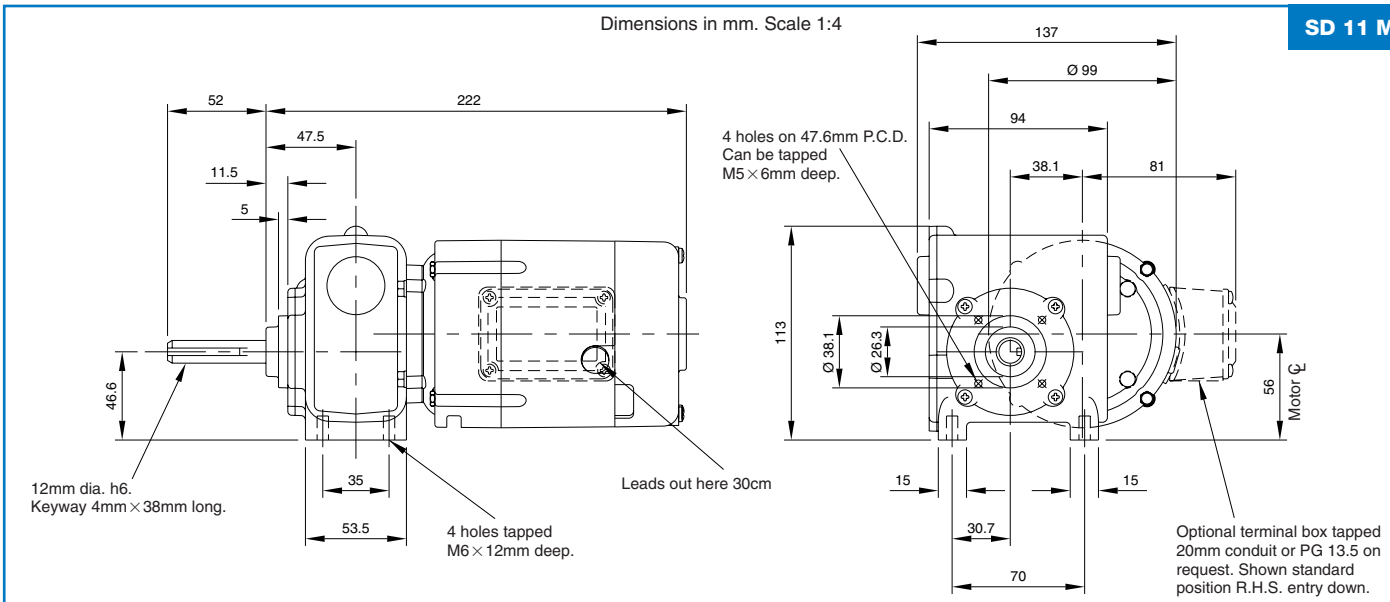


Optional shaft at motor speed (lead end only) 7.93mm dia. × 33mm long.

Approx. weight: SD 1 MIW – 2.97 Kg

SD 11 MIW

Dimensions in mm. Scale 1:4



Optional shaft at motor speed (lead end only) 7.93mm dia. × 33mm long.

Approx. weight: SD 11 MIW – 4.25 Kg

Gearbox Type:

LIW

Speed Range: 1.6 – 81 r.p.m.

In Line Double Reduction Worm Gear Units

Variable Speed A.C. – D.C. Series or D.C. Shunt Wound

Enclosures: Standard – SD11 – SD 12 Drip Proof Internal Fan Cooled (IP 23)
Alternative – Totally Enclosed (IP 50) with Terminal Box (IP 54)

SD 11 LIW

SD 11 LIW with brake

SD 12 LIW

Voltage, Construction, Connections, Motor Performance
Specifications and Optional Extras see pages 44 and 46 for full details.

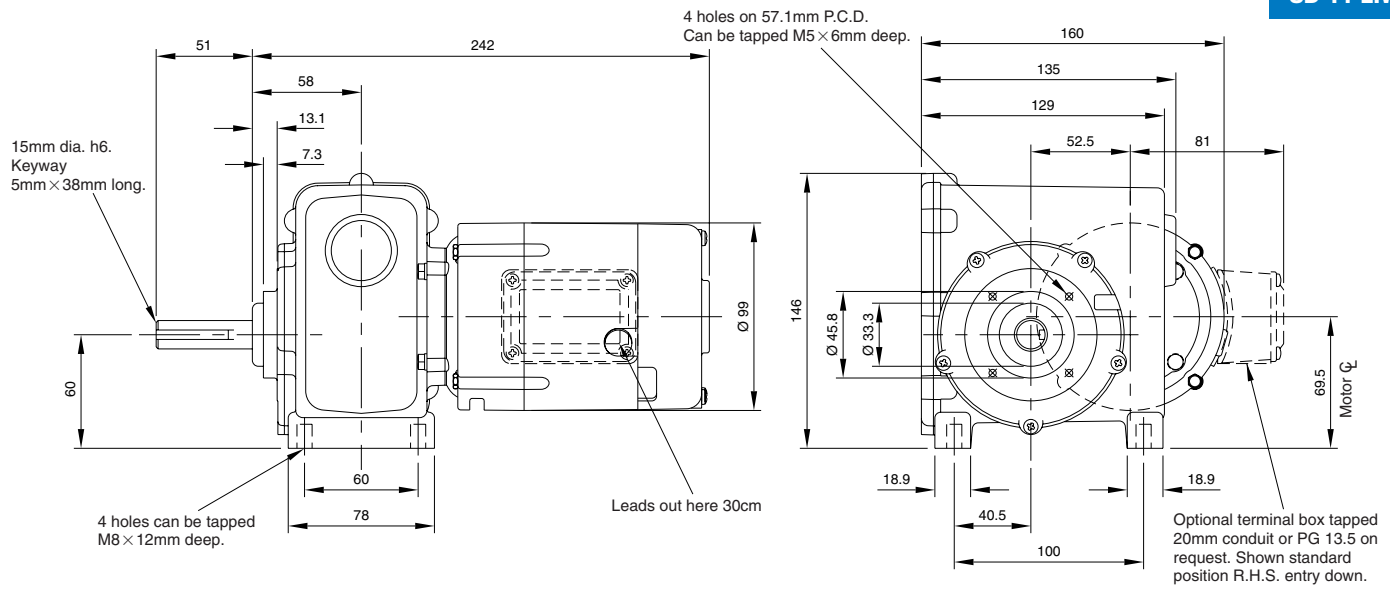
(1 Nm = 8.85 lbs. ins.) (1 Nm = 10.2 cmkp)

Gearbox Specification *Motor Speed 2000 r.p.m.*			SD 11 LIW				SD 12 LIW			
			Series *Motor Rating 30 watts*		Shunt *Motor Rating 50 watts*		Series *Motor Rating 50 watts*		Shunt *Motor Rating 60 watts*	
FINAL R.P.M.	GEAR RATIO		OUTPUT TORQUE (Nm)							
	INT	FINAL	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE
1.6	60:1	20 1/2:1	28	36	28	45	28	45	28	45
2.2	44:1	20 1/2:1	28	32	28	45	28	45	28	45
2.7	36:1	20 1/2:1	23	–	28	38	28	38	28	45
3.6	27:1	20 1/2:1	22	–	28	36	28	36	28	45
5	20 1/2:1	20 1/2:1	18	–	28	30	28	30	28	36
6	16 1/2:1	20 1/2:1	15		25	–	25	–	28	31
8	12 1/3:1	20 1/2:1	13		22	–	22	–	26	–
12	8 1/3:1	20 1/2:1	9		15	–	15	–	19	–
13	7 1/4:1	20 1/2:1	8		13		13		17	–
19	5 1/8:1	20 1/2:1	6		10		10		13	
20	10 1/3:1	9:1	6		10		10		13	
25	8 1/3:1	9:1	5		8		8		11	
29	7 1/4:1	9:1	4		6		6		9	
41	5 1/8:1	9:1	3		5		5		7	
52	4 1/8:1	9:1	2		4		4		5	

Gearbox Specification *Motor Speed 3000 r.p.m.*			SD 11 LIW				SD 12 LIW			
			Series *Motor Rating 75 watts*		Shunt *Motor Rating 95 watts*		Series *Motor Rating 95 watts*		Shunt *Motor Rating 125 watts*	
FINAL R.P.M.	GEAR RATIO		OUTPUT TORQUE (Nm)							
	INT	FINAL	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE	COMPOSITE	BRONZE
2.4	60:1	20 1/2:1	28	45	28	45	28	45	28	45
3.3	44:1	20 1/2:1	28	45	28	45	28	45	28	45
4	36:1	20 1/2:1	28	44	28	45	28	45	28	45
5.4	27:1	20 1/2:1	28	36	28	45	28	45	28	45
7	20 1/2:1	20 1/2:1	28	30	28	38	28	38	28	45
9	16 1/2:1	20 1/2:1	26	–	28	33	28	33	28	43
12	12 1/3:1	20 1/2:1	21	–	27	–	27	–	28	35
18	8 1/3:1	20 1/2:1	16	–	20	–	20	–	27	–
20	7 1/4:1	20 1/2:1	14		18		18		23	–
29	5 1/8:1	20 1/2:1	11		14		14		18	
32	10 1/3:1	9:1	10		13		13		17	
40	8 1/3:1	9:1	9		11		11		14	
46	7 1/4:1	9:1	8		10		10		13	
65	5 1/8:1	9:1	6		8		8		10	
81	4 1/8:1	9:1	5		6		6		8	

SD 11 LIW

Dimensions in mm. Scale 1:4

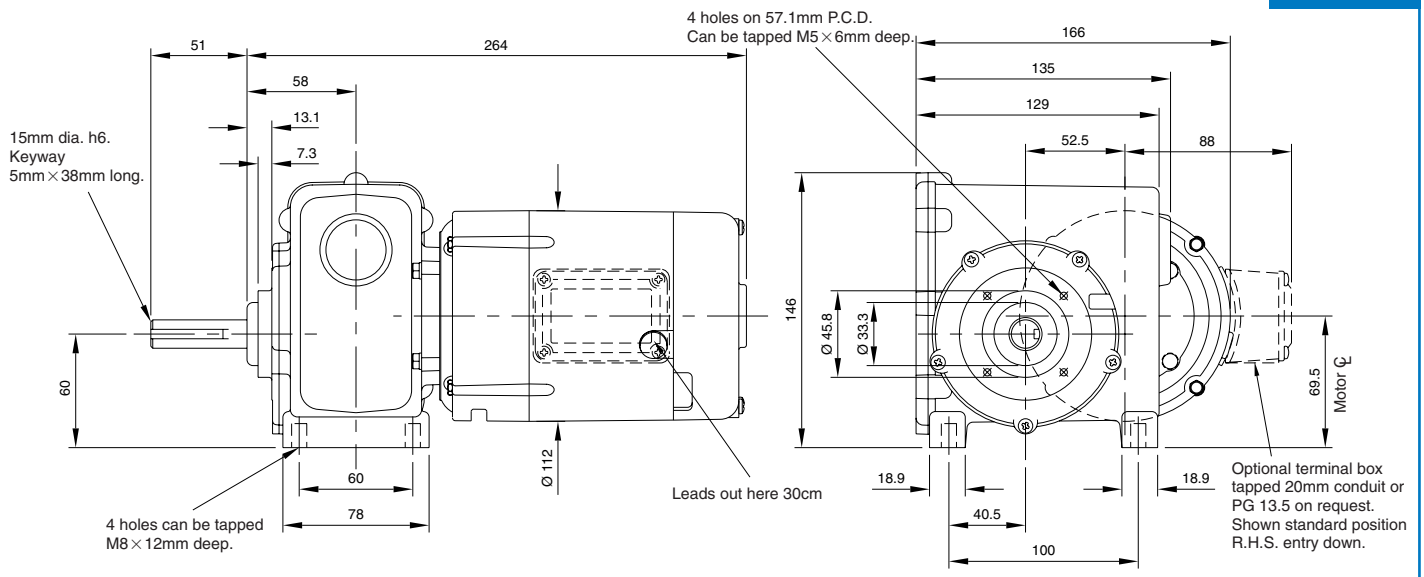


Optional shaft at motor speed (lead end only) 7.93mm dia.×33mm long.

Approx. weight: SD 11 LIW – 5.93 Kg

SD 12 LIW

Dimensions in mm. Scale 1:4

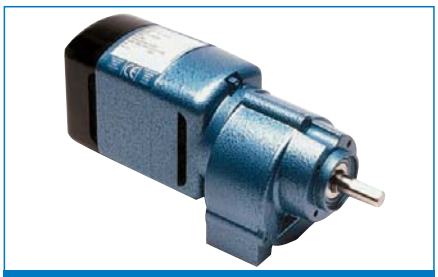


Optional shaft at motor speed (lead end only) 10mm dia.×33mm long.

Approx. weight: SD 12 LIW – 7.0 Kg

Gearbox Type:
SIS
Speed Range: 6.6 – 136 r.p.m.

In Line Reduction Multi-Spur Gear Units
Variable Speed A.C. – D.C. Series or D.C. Shunt Wound
Enclosures: Standard – Ventilated Internal Fan Cooled (IP 20)
Alternative – Totally Enclosed (IP 50) with Terminal Box (IP 54)



SD 1 SIS

SD 1 SIS with brake

SD 1 SISF with brake

■ **Voltage, Construction, Connections, Motor Performance**
Specifications and Optional Extras see pages 44 and 46 for full details.

(1 Nm = 8.85 lbs. ins.) (1 Nm = 10.2 cmkp)

Gearbox Specification *Motor Speed *2000 r.p.m.*		SD 1 SIS Series/Shunt *Motor Rating 10 watts*
FINAL R.P.M.	RATIO	**OUTPUT TORQUE (Nm)**
6.6	303	7.9
9	228	7.9
11.6	172	6.22
15.5	129	4.86
21	94	3.5
28	71	2.83
38	53	2.15
69	29	1.36
91	22	1.02

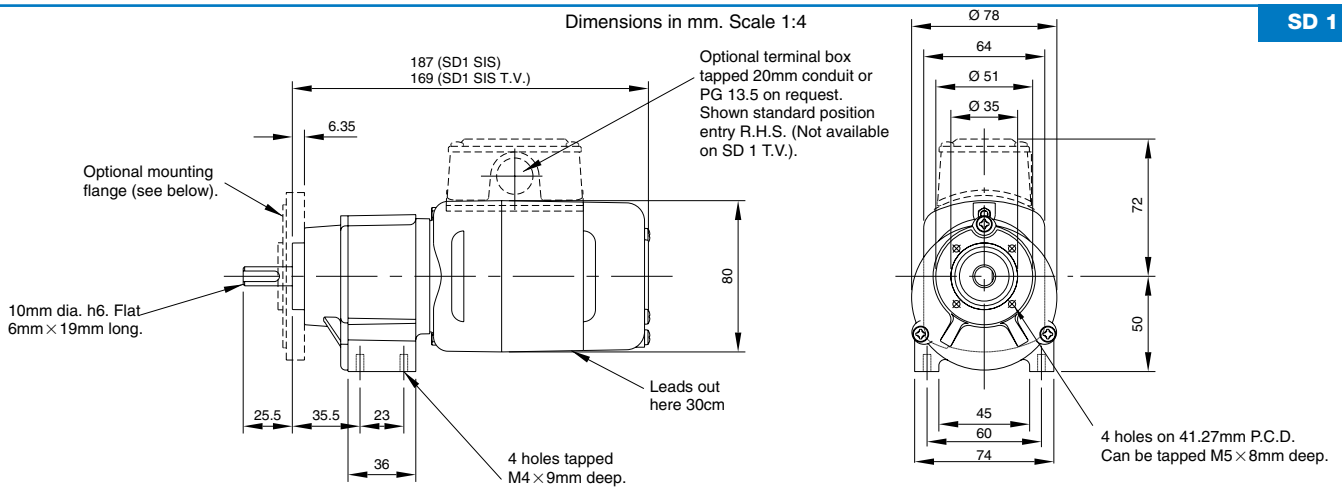
*Maximum voltage shunt wound for this output is 120V D.C.

Gearbox Specification *Motor Speed 2500 r.p.m.*		SD 1 SIS Series/Shunt *Motor Rating 15 watts*
FINAL R.P.M.	RATIO	**OUTPUT TORQUE (Nm)**
8.2	303	7.9
11	228	7.9
14.5	172	6.78
19.4	129	5.2
26.6	94	3.73
35	71	2.94
47	53	2.09
86	29	1.36
114	22	1.07

Gearbox Specification *Motor Speed 3000 r.p.m.*		SD 1 SIS Series/Shunt *Motor Rating 38 watts*
FINAL R.P.M.	RATIO	**OUTPUT TORQUE (Nm)**
10	303	7.9
13	228	7.9
17.4	172	7.9
23	129	7.9
32	94	7.9
42	71	6.22
57	53	4.52
103	29	2.71
136	22	2.15

SD 1 SIS

Dimensions in mm. Scale 1:4

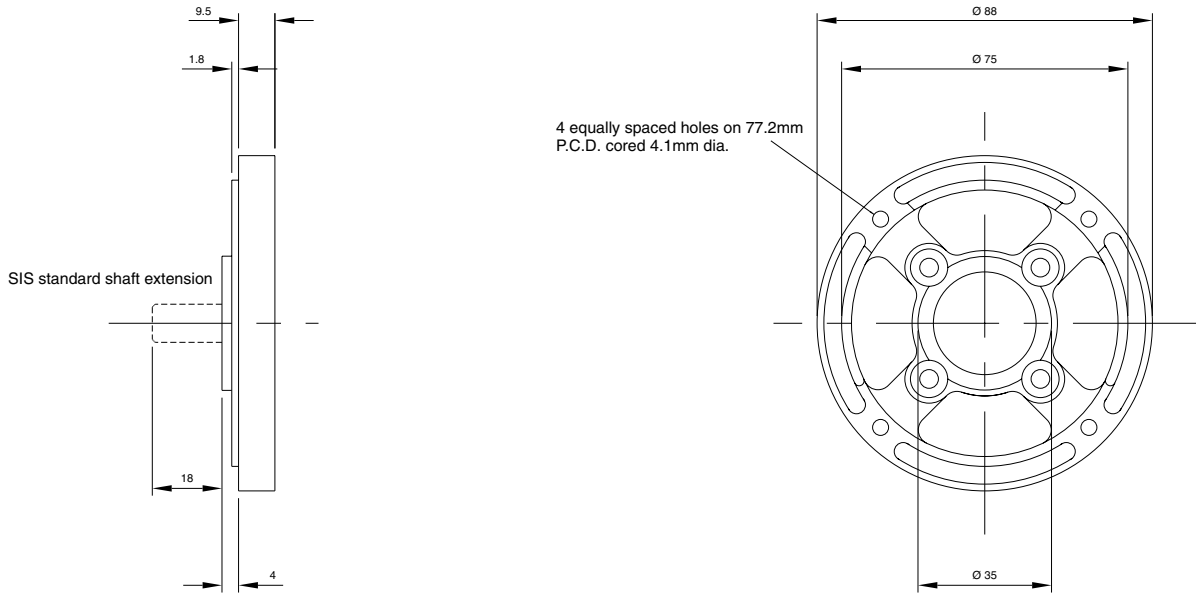


Optional shaft at motor speed (lead end only) 7.93mm dia. × 33mm long.

Approx. weight: SD 1 SIS – 2.14 Kg

S67 Optional Plastic Mounting Flange

Dimensions in mm. Scale 1:4



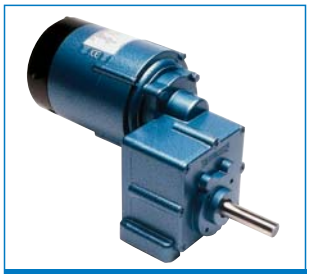
In Line Reduction Multi-Spur Gear Units

Variable Speed A.C. – D.C. Series or D.C. Shunt Wound

Enclosures: Standard SD 11 – SD12 – Drip Proof Internal Fan Cooled (IP 23)
Alternative – Totally Enclosed (IP 50) with Terminal Box (IP 54)

Gearbox Type:
MIS
Speed Range: 20 – 467 r.p.m.

■ **Voltage, Construction, Connections, Motor Performance Specifications and Optional Extras** see page 46 for full details.



SD 11 MIS

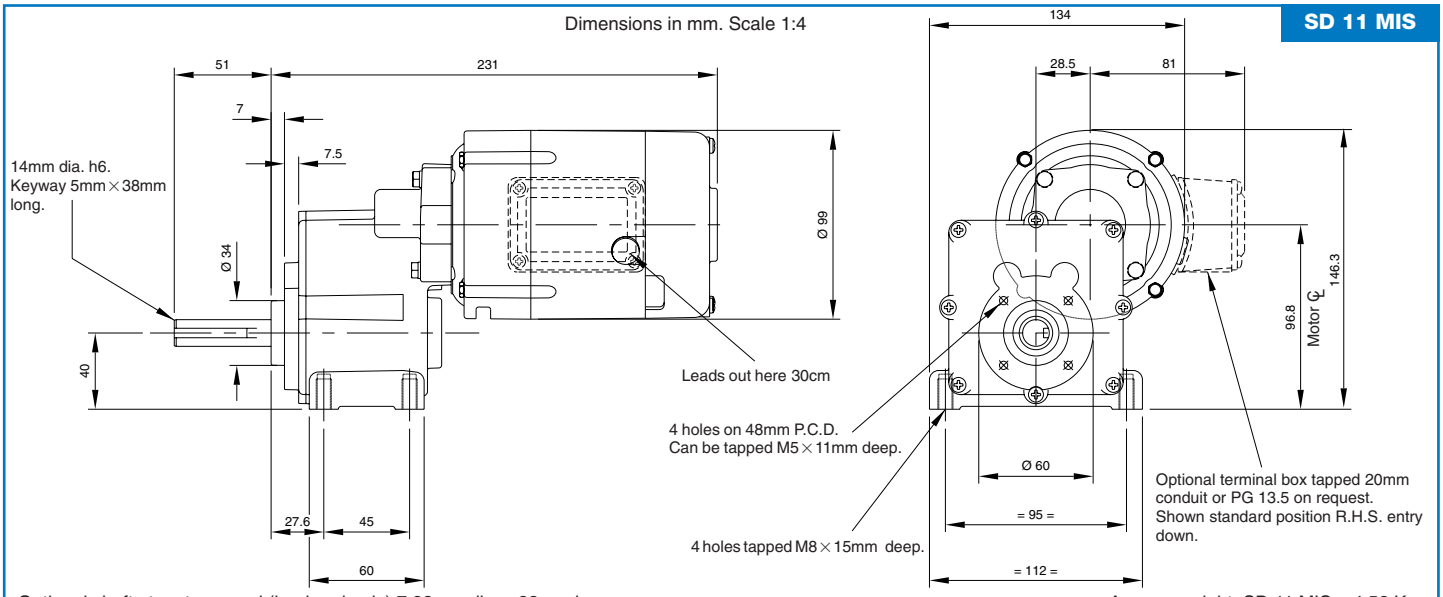
(1 Nm = 10.2 cmkp)

Gearbox Specification *Motor Speed 2000 r.p.m.*			SD 11 MIS		SD 12 MIS	
			Series *Motor Rating 30 watts*	Shunt *Motor Rating 50 watts*	Series *Motor Rating 50 watts*	Shunt *Motor Rating 60 watts*
FINAL R.P.M.	RATIO		OUTPUT TORQUE (Nm)			
	PINION	SPUR				
20	3.23	31.3	11	18	18	22
30	2.13	31.3	7	12	12	15
46	3.23	13.45	5	8	8	10
57	1.12	31.3	4	7	7	8
70	2.13	13.45	3	5	5	6
108	3.23	5.73	2	4	4	4
133	1.12	13.45	2	3	3	4
164	2.13	5.73	1.4	2.4	2.4	3
312	1.12	5.73	0.8	1.3	1.3	1.6

Gearbox Specification *Motor Speed 3000 r.p.m.*			SD 11 MIS		SD 12 MIS	
			Series *Motor Rating 75 watts*	Shunt *Motor Rating 95 watts*	Series *Motor Rating 95 watts*	Shunt *Motor Rating 125 watts*
FINAL R.P.M.	RATIO		OUTPUT TORQUE (Nm)			
	PINION	SPUR				
30	3.23	31.3	18	23	23	30
45	2.13	31.3	12	15	15	20
69	3.23	13.45	8	10	10	13
86	1.12	31.3	7	8	8	11
106	2.13	13.45	5	7	7	9
162	3.23	5.73	4	4	4	6
199	1.12	13.45	3	4	4	5
246	2.13	5.73	2.4	3.0	3.0	3.9
467	1.12	5.73	1.3	1.6	1.6	2.2

SD 11 MIS

Dimensions in mm. Scale 1:4

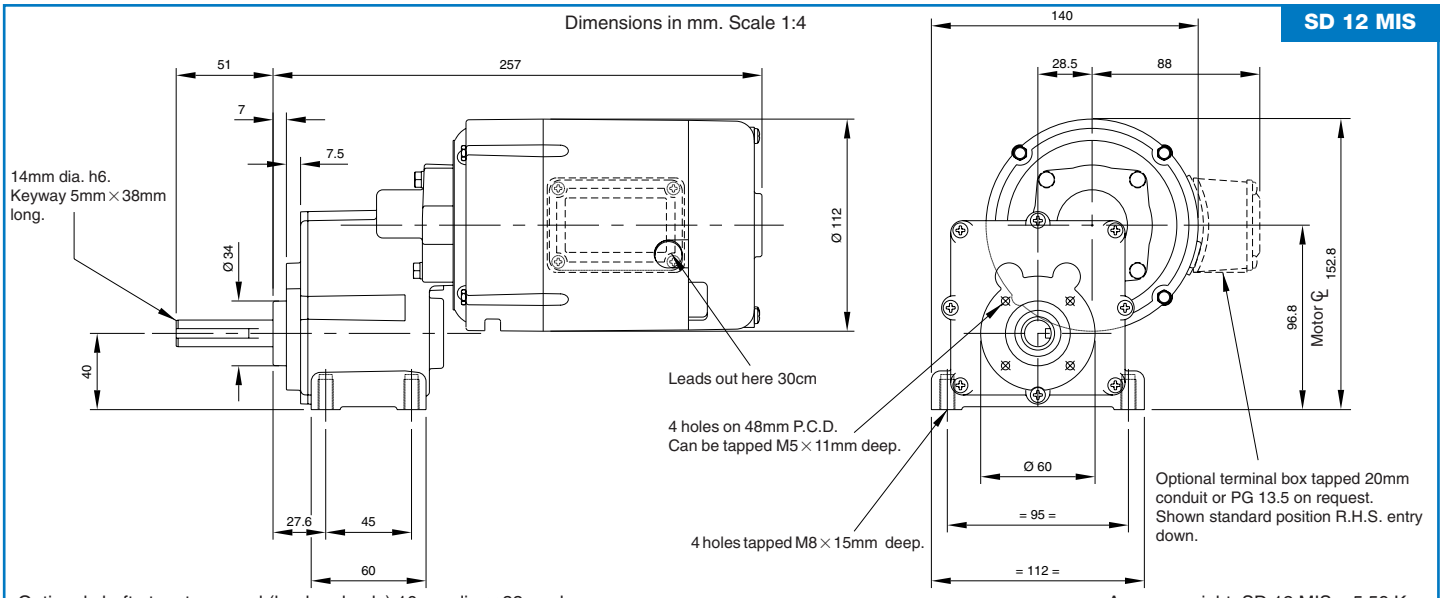


Optional shaft at motor speed (lead end only) 7.93mm dia. × 33mm long.

Approx. weight: SD 11 MIS – 4.52 Kg

SD 12 MIS

Dimensions in mm. Scale 1:4



Optional shaft at motor speed (lead end only) 10mm dia. × 33mm long.

Approx. weight: SD 12 MIS – 5.59 Kg

Gearbox Type:

LIS

Speed Range: 6 – 500 r.p.m.

In Line Reduction Multi-Spur Gear Units

Variable Speed A.C. – D.C. Series or D.C. Shunt Wound

Enclosures: Standard SD11 – SD12 Drip Proof Internal Fan Cooled (IP 23)
Alternative – Totally Enclosed (IP 50) with Terminal Box (IP 54)

SD 11 LIS

SD 12 LIS

SD 12 LIS with brake

■ **Voltage, Construction, Connections, Motor Performance Specifications and Optional Extras** see pages 44 and 46 for full details.
On request gearbox available without feet, can be mounted off of gearbox spigot tappings.

(1 Nm = 8.85 lbs. ins.) (1 Nm = 10.2 cmkp)

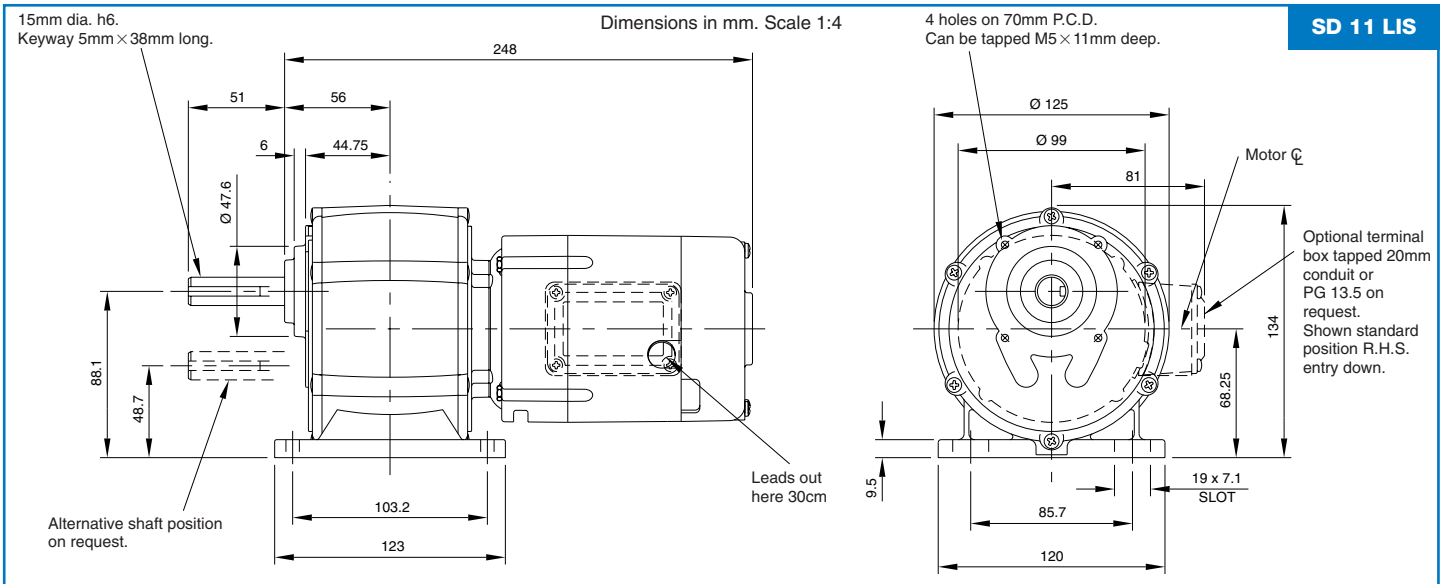
Gearbox Specification *Motor Speed 2000 r.p.m.*			SD 11 LIS		SD 12 LIS	
			Series	Shunt	Series	Shunt
			Motor Rating 30 watts	*Motor Rating 50 watts*	*Motor Rating 50 watts*	*Motor Rating 60 watts*
FINAL R.P.M.	RATIO		OUTPUT TORQUE (Nm)			
	PINION	SPUR				
6	3:1	115:1	37	61	61	74
9	2:1	115:1	25	41	41	49
12	3:1	56:1	18	30	30	36
17	1:1	115:1	12	20	20	25
27	3:1	25:1	8	14	14	16
35	1:1	56:1	6	10	10	12
40	2:1	25:1	5	9	9	11
80	1:1	25:1	3	5	5	5
111	3:1	6:1	2	4	4	4
167	2:1	6:1	1	2	2	3
333	1:1	6:1	1	1	1	1

Gearbox Specification *Motor Speed 2500 r.p.m.*			SD 12 LIS	
			Series	Shunt
			Motor Rating 75 watts	*Motor Rating 75 watts*
FINAL R.P.M.	RATIO		OUTPUT TORQUE (Nm)	
	PINION	SPUR		
7	3:1	115:1	74	74
11	2:1	115:1	49	49
15	3:1	56:1	36	36
22	1:1	115:1	25	25
33	3:1	25:1	16	16
45	1:1	56:1	13	13
50	2:1	25:1	11	11
100	1:1	25:1	5	5
140	3:1	6:1	4	4
210	2:1	6:1	3	3
420	1:1	6:1	1	1

Gearbox Specification *Motor Speed 3000 r.p.m.*			SD 11 LIS		SD 12 LIS	
			Series	Shunt	Series	Shunt
			Motor Rating 75 watts	*Motor Rating 95 watts*	*Motor Rating 95 watts*	*Motor Rating 125 watts*
FINAL R.P.M.	RATIO		OUTPUT TORQUE (Nm)			
	PINION	SPUR				
9	3:1	115:1	61	74	74	74
13	2:1	115:1	41	52	52	68
18	3:1	56:1	30	38	38	50
26	1:1	115:1	20	26	26	34
40	3:1	25:1	14	17	17	23
53	1:1	56:1	10.5	13	13	17.5
60	2:1	25:1	9	11	11	15
120	1:1	25:1	5	6	6	8
167	3:1	6:1	4	4	4	6
250	2:1	6:1	2	3	3	4
500	1:1	6:1	1	1	1	2

SD 11 LIS

Dimensions in mm. Scale 1:4

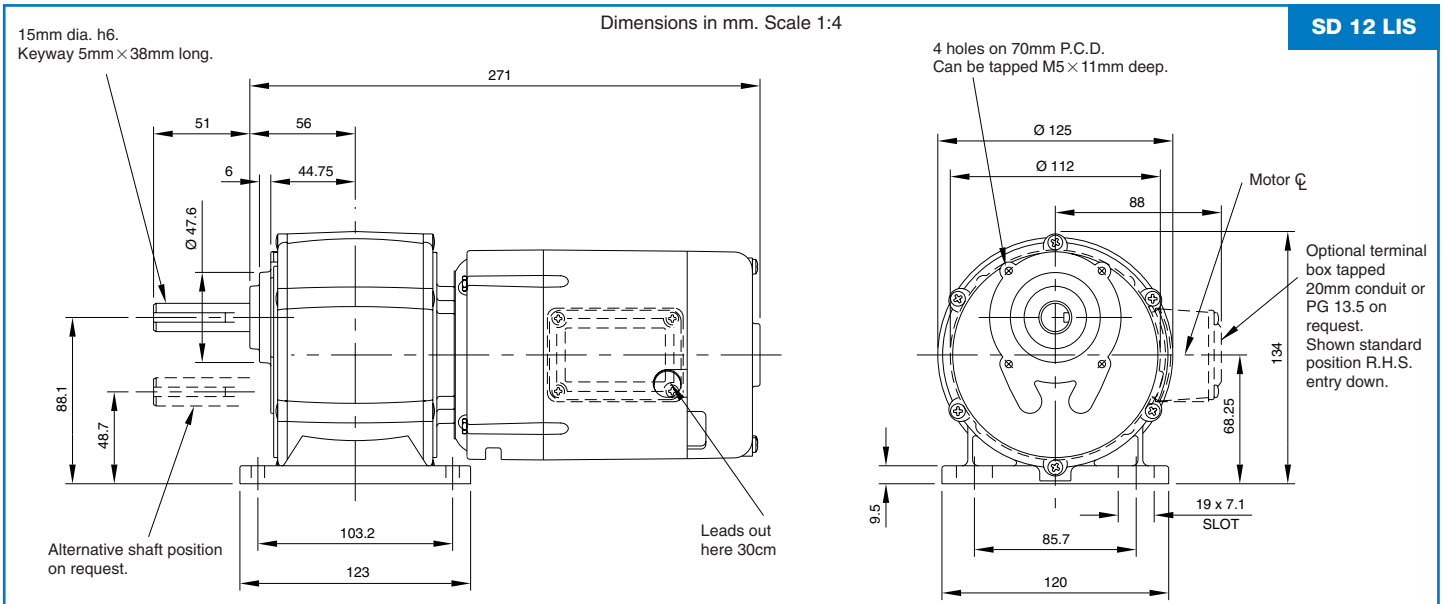


Optional shaft at motor speed (lead end only) 7.93mm dia. × 33mm long.

Approx. weight: SD 11 LIS – 6.15 Kg

SD 12 LIS

Dimensions in mm. Scale 1:4

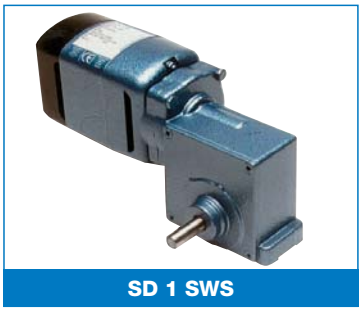


Optional shaft at motor speed (lead end only) 10mm dia. × 33mm long.

Approx. weight: SD 12 LIS – 7.22 Kg

Gearbox Type:
SWS
Speed Range: 1.8 – 76 r.p.m.

Worm and Multi-Spur Reduction Gear Unit
Variable Speed A.C. – D.C. Series or D.C. Shunt Wound
Enclosures: Standard – SD 1 Ventilated Internal Fan Cooled (IP 20)
Alternative – Totally Enclosed (IP 50) with Terminal Box (IP 54)



SD 1 SWS

■ **Voltage, Construction, Connections, Motor Performance Specifications and Optional Extras** see pages 44 and 46 for full details.

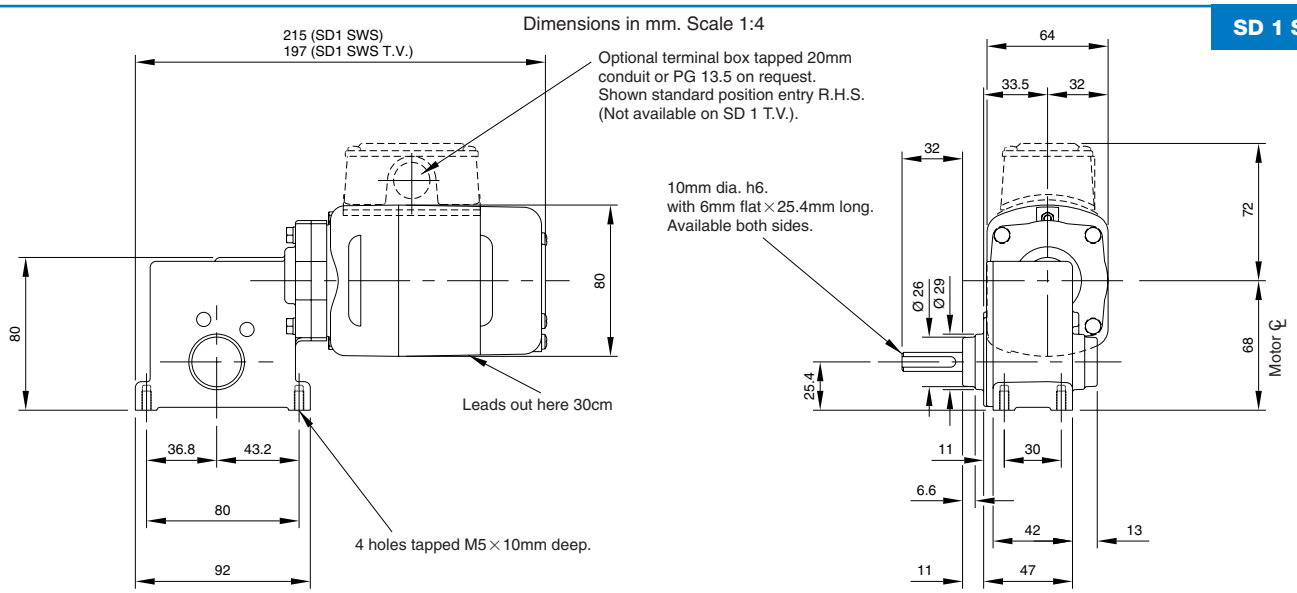
(1 Nm = 8.85 lbs. ins.) (1 Nm = 10.2 cmkp)

Gearbox Specification *Motor Speed 2500 r.p.m.*			SD 1 SWS Series/shunt *Motor Rating 15 watts*
FINAL R.P.M.	RATIO		OUTPUT TORQUE (Nm)
	WORM	SPUR	
1.8	44:1	31.3:1	11
3.5	22½:1	31.3:1	11
6.4	12½:1	31.3:1	11
8.6	9½:1	31.3:1	11
11.4	9½:1	23.5:1	9
17	6¼:1	23.5:1	6
21	12½:1	9.6:1	4.5
28	9½:1	9.6:1	3.6
41.7	6¼:1	9.6:1	2.7
50	5¼:1	9.6:1	2.2
63	4¼:1	9.6:1	1.9

Gearbox Specification *Motor Speed 3000 r.p.m.*			SD 1 SWS Series/shunt *Motor Rating 38 watts*
FINAL R.P.M.	RATIO		OUTPUT TORQUE (Nm)
	WORM	SPUR	
2.2	44:1	31.3:1	11
4.3	22½:1	31.3:1	11
7.7	12½:1	31.3:1	11
10.3	9½:1	31.3:1	11
14	9½:1	23.5:1	11
20.5	6¼:1	23.5:1	11
25	12½:1	9.6:1	9.6
33.5	9½:1	9.6:1	7.7
50	6¼:1	9.6:1	5.7
60	5¼:1	9.6:1	4.8
76	4¼:1	9.6:1	4.1

SD 1 SWS

Dimensions in mm. Scale 1:4



Optional shaft at motor speed (lead end only) 7.93mm dia. × 33mm long.

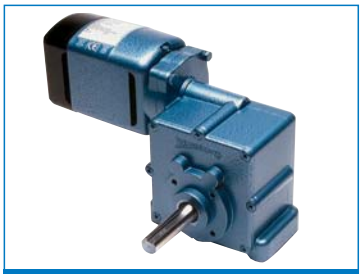
Approx. weight: SD 1 SWS – 2.07 Kg

Worm and Multi-Spur Reduction Gear Units

Variable Speed A.C. – D.C. Series or D.C. Shunt Wound

Enclosures: Standard – SD 1 Ventilated Internal Fan Cooled (IP 20)
Alternative – Totally Enclosed (IP 50) with Terminal Box (IP 54)

Gearbox Type:
MWS
Speed Range: 1.4 – 150 r.p.m.



SD 1 MWS

■ **Voltage, Construction, Connections, Motor Performance Specifications and Optional Extras** see page 46 for full details.

(1 Nm = 8.85 lbs. ins.) (1 Nm = 10.2 cmkp)

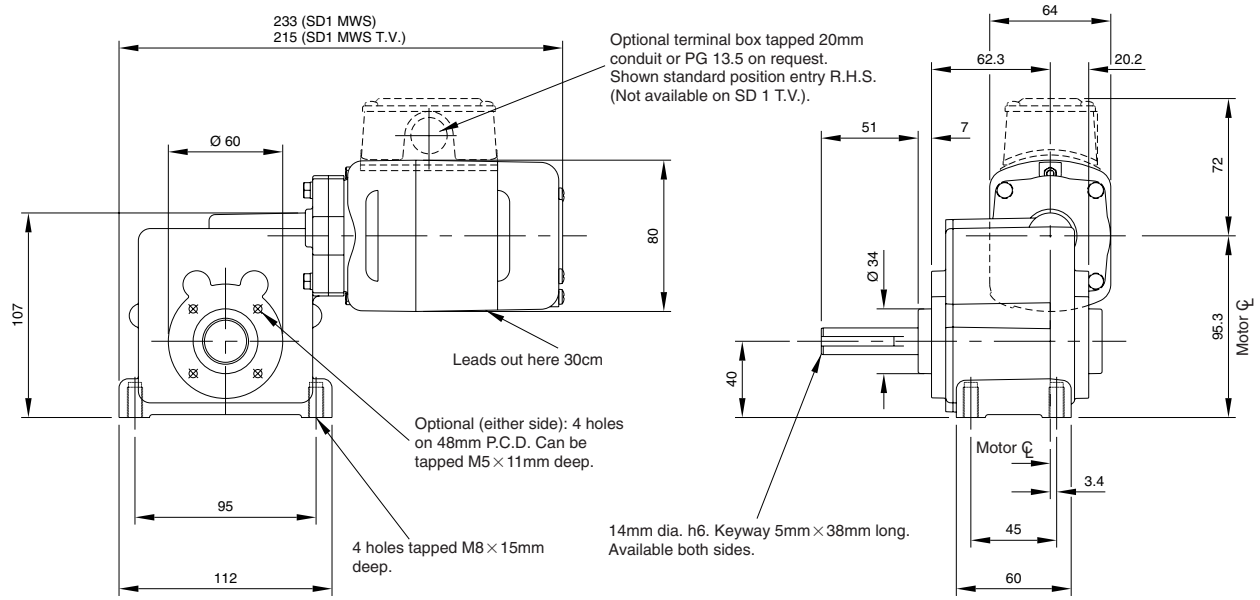
Gearbox Specification *Motor Speed 2000 r.p.m.*			SD 1 MWS Series/shunt *Motor Rating 25 watts*
FINAL R.P.M.	RATIO		OUTPUT TORQUE (Nm)
	WORM	SPUR	
1.4	40:1	35.39:1	45
2.1	27:1	35.39:1	37.2
3	18 1/2:1	35.39:1	29.3
5	12 1/2:1	35.39:1	22.4
6	9 1/3:1	35.39:1	18.0
8	7 1/4:1	35.39:1	15.0
11	5 1/6:1	35.39:1	11.4
14	4 1/8:1	35.39:1	9.4
16	8 1/3:1	15.1:1	7.1
18	7 1/4:1	15.1:1	6.4
21	6 1/4:1	15.1:1	5.7
32	4 1/8:1	15.1:1	4.0
37	8 1/3:1	6.5:1	3.2
42	7 1/4:1	6.5:1	2.9
49	6 1/4:1	6.5:1	2.6
60	5 1/6:1	6.5:1	2.2
75	4 1/8:1	6.5:1	1.8

Gearbox Specification *Motor Speed 3000 r.p.m.*			SD 1 MWS Series/shunt *Motor Rating 38 watts*
FINAL R.P.M.	RATIO		OUTPUT TORQUE (Nm)
	WORM	SPUR	
2.1	40:1	35.39:1	45
3.1	27:1	35.39:1	37.7
5	18 1/2:1	35.39:1	29.7
7	12 1/2:1	35.39:1	22.7
9	9 1/3:1	35.39:1	18.2
12	7 1/4:1	35.39:1	15.2
17	5 1/6:1	35.39:1	11.5
20	4 1/8:1	35.39:1	9.5
24	8 1/3:1	15.1:1	7.2
27	7 1/4:1	15.1:1	6.5
32	6 1/4:1	15.1:1	5.8
48	4 1/8:1	15.1:1	4.1
56	8 1/3:1	6.5:1	3.3
64	7 1/4:1	6.5:1	3.0
74	6 1/4:1	6.5:1	2.6
90	5 1/6:1	6.5:1	2.2
112	4 1/8:1	6.5:1	1.8

Gearbox Specification *Motor Speed 4000 r.p.m.*			SD 1 MWS Series/shunt *Motor Rating 50 watts*
FINAL R.P.M.	RATIO		OUTPUT TORQUE (Nm)
	WORM	SPUR	
2.9	40:1	35.39:1	45
4.2	27:1	35.39:1	37.2
6	18 1/2:1	35.39:1	29.3
9	12 1/2:1	35.39:1	22.4
12	9 1/3:1	35.39:1	18.0
16	7 1/4:1	35.39:1	15.0
22	5 1/6:1	35.39:1	11.4
28	4 1/8:1	35.39:1	9.4
32	8 1/3:1	15.1:1	7.1
37	7 1/4:1	15.1:1	6.4
42	6 1/4:1	15.1:1	5.7
64	4 1/8:1	15.1:1	4.0
74	8 1/3:1	6.5:1	3.2
85	7 1/4:1	6.5:1	2.9
99	6 1/4:1	6.5:1	2.6
120	5 1/6:1	6.5:1	2.2
150	4 1/8:1	6.5:1	1.8

Dimensions in mm. Scale 1:4

SD 1 MWS



Optional shaft at motor speed (lead end only) 7.93mm dia.×33mm long.

Approx. weight: SD 1 MWS – 3.97 Kg

Gearbox Type:
LWS
Speed Range: 0.9 – 80 r.p.m.

Worm and Multi-Spur Reduction Gear Units
Variable Speed A.C. – D.C. Series or D.C. Shunt Wound

Enclosures: Standard – SD 1 Ventilated Internal Fan Cooled (IP 20)
SD 11 – SD 12 – Drip Proof Internal Fan Cooled (IP 23)
Alternative – Totally Enclosed (IP 50) with Terminal Box (IP 54)

SD 1 LWS

SD 11 LWS

SD 12 LWS

■ **Voltage, Construction, Connections, Motor Performance Specifications and Optional Extras** see pages 44 and 46 for full details.
On request gearbox available without feet, can be mounted off of gearbox spigot trapping.

Note: 17mm diameter shaft available with gear ratio's 115:1, 56:1.

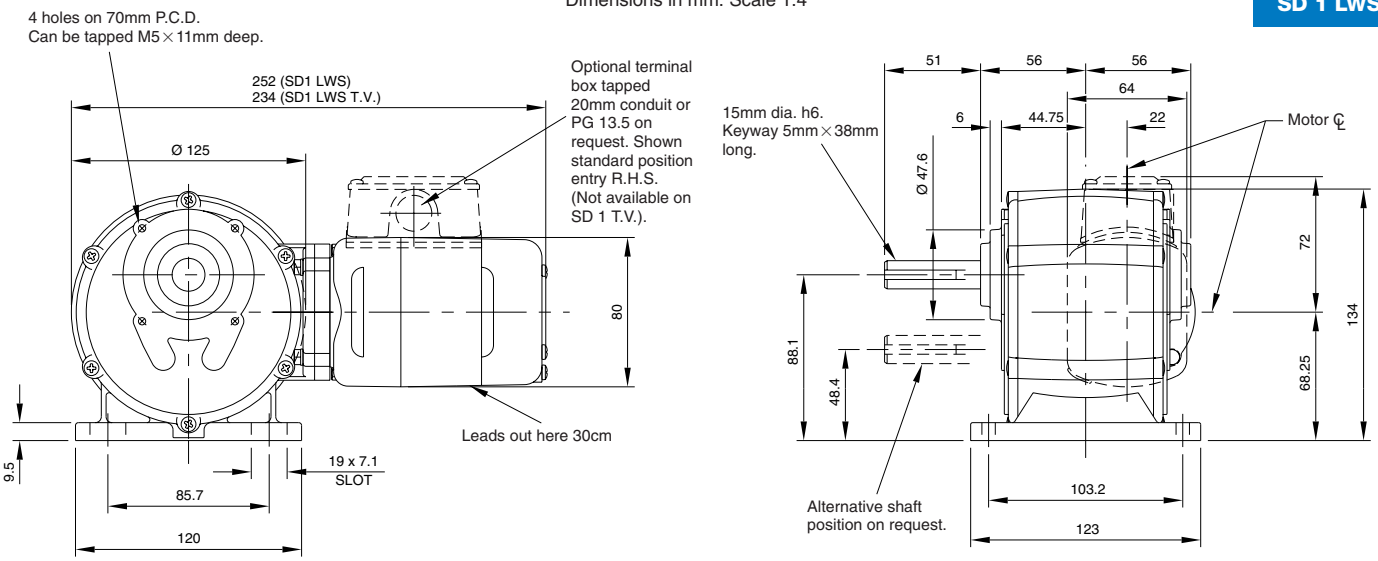
(1 Nm = 8.85 lbs. ins.) (1 Nm = 10.2 cmkp)

Gearbox Specification *Motor Speed 3000 r.p.m.*			SD 1 LWS Series/Shunt *Motor Rating 38 watts*	SD 11 LWS Series *Motor Rating 75 watts*	SD 11 LWS Shunt *Motor Rating 95 watts*	SD 12 LWS Series *Motor Rating 95 watts*	SD 12 LWS Shunt *Motor Rating 125 watts*
FINAL R.P.M.	RATIO		OUTPUT TORQUE (Nm)				
	WORM	SPUR					
0.9	30:1	115:1	100	100	100	100	100
1.6	16 1/2:1	115:1	100	100	100	100	100
3	8 1/3:1	115:1	66	100	100	100	100
3.6	7 1/4:1	115:1	58	100	100	100	100
4.3	12 1/2:1	56:1	47	93	100	100	100
5.2	10 1/3:1	56:1	40	79	100	100	100
5.8	9 1/3:1	56:1	36	71	90	90	100
6.5	8 1/3:1	56:1	34	67	85	85	100
7.4	7 1/4:1	56:1	30	60	76	76	100
8.5	6 1/4:1	56:1	28	54	69	69	91
8.9	13 1/2:1	25:1	22	44	56	56	74
9.6	12 1/2:1	25:1	21	42	53	53	69
11.6	10 1/3:1	25:1	18	35	45	45	59
13	9 1/3:1	25:1	16	32	40	40	53
14.4	8 1/3:1	25:1	15	30	38	38	50
19	6 1/4:1	25:1	12	24	31	31	41
30	16 1/2:1	6:1	6	12	16	16	20.5
37	13 1/2:1	6:1	5.4	10.6	13.5	13.5	17.7
44	11 1/3:1	6:1	4.6	9	11.6	11.6	15
53.5	9 1/3:1	6:1	4	8.6	9.7	9.7	12.8
60	8 1/3:1	6:1	3.6	7	9	9	12

Gearbox Specification *Motor Speed 4000 r.p.m.*			SD 1 LWS Series/Shunt *Motor Rating 50 watts*	SD 11 LWS Series *Motor Rating 95 watts*	SD 11 LWS Shunt *Motor Rating 125 watts*	SD 12 LWS Series *Motor Rating 125 watts*	SD 12 LWS Shunt *Motor Rating 150 watts*
FINAL R.P.M.	RATIO		OUTPUT TORQUE (Nm)				
	WORM	SPUR					
1.2	30:1	115:1	100	100	100	100	100
2	16 1/2:1	115:1	100	100	100	100	100
4	8 1/3:1	115:1	65	100	100	100	100
4.8	7 1/4:1	115:1	58	100	100	100	100
5.7	12 1/2:1	56:1	47	89	100	100	100
7	10 1/3:1	56:1	40	75	99	99	100
7.6	9 1/3:1	56:1	36	68	89	89	100
8.6	8 1/3:1	56:1	33	64	84	84	100
9.8	7 1/4:1	56:1	30	57	75	75	90
11.4	6 1/4:1	56:1	27	52	68	68	82
12	13 1/2:1	25:1	22	42	55	55	67
13	12 1/2:1	25:1	21	40	52	52	63
15.5	10 1/3:1	25:1	18	33	44	44	53
17	9 1/3:1	25:1	16	30	40	40	48
19	8 1/3:1	25:1	15	28	38	38	45
25.5	6 1/4:1	25:1	12	23	30	30	37
40	16 1/2:1	6:1	6	12	15	15	18.5
49	13 1/2:1	6:1	5	10	13	13	16
60	11 1/3:1	6:1	4.6	9	11.4	11.4	13.8
70	9 1/3:1	6:1	3.8	7.3	9.6	9.6	11.5
80	8 1/3:1	6:1	3.5	6.8	9	9	10.8

SD 1 LWS

Dimensions in mm. Scale 1:4

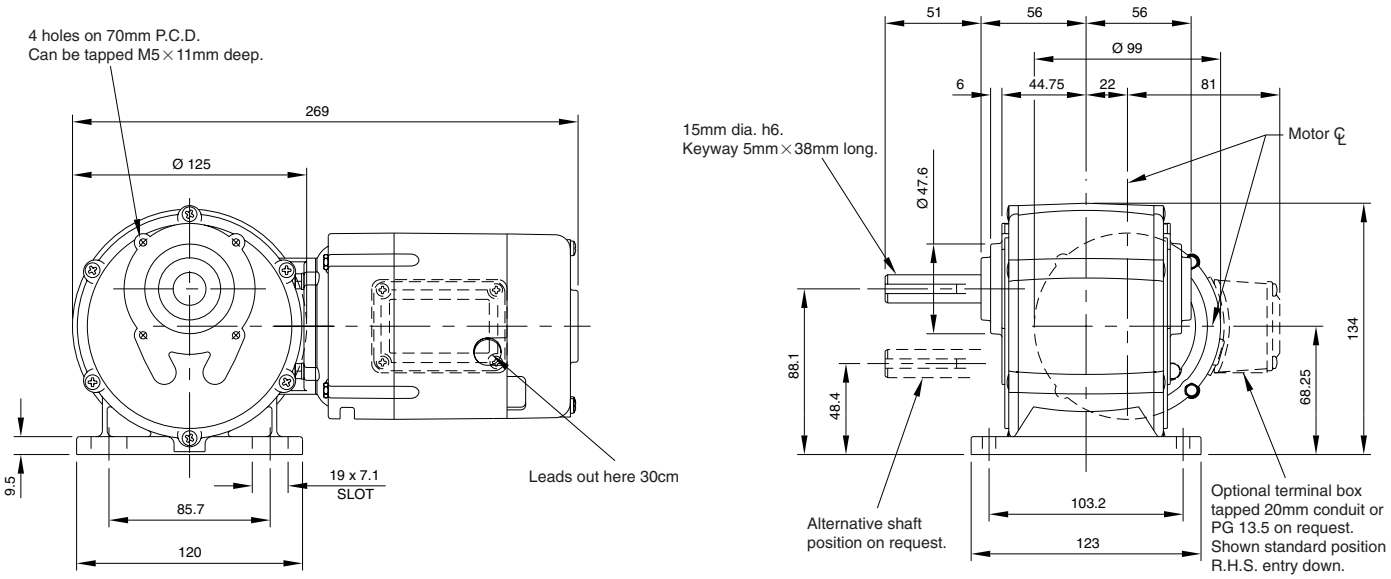


Optional shaft at motor speed (lead end only) 7.93mm dia. × 33mm long.

Approx. weight: SD 1 LWS – 5.13 Kg

SD 11 LWS

Dimensions in mm. Scale 1:4

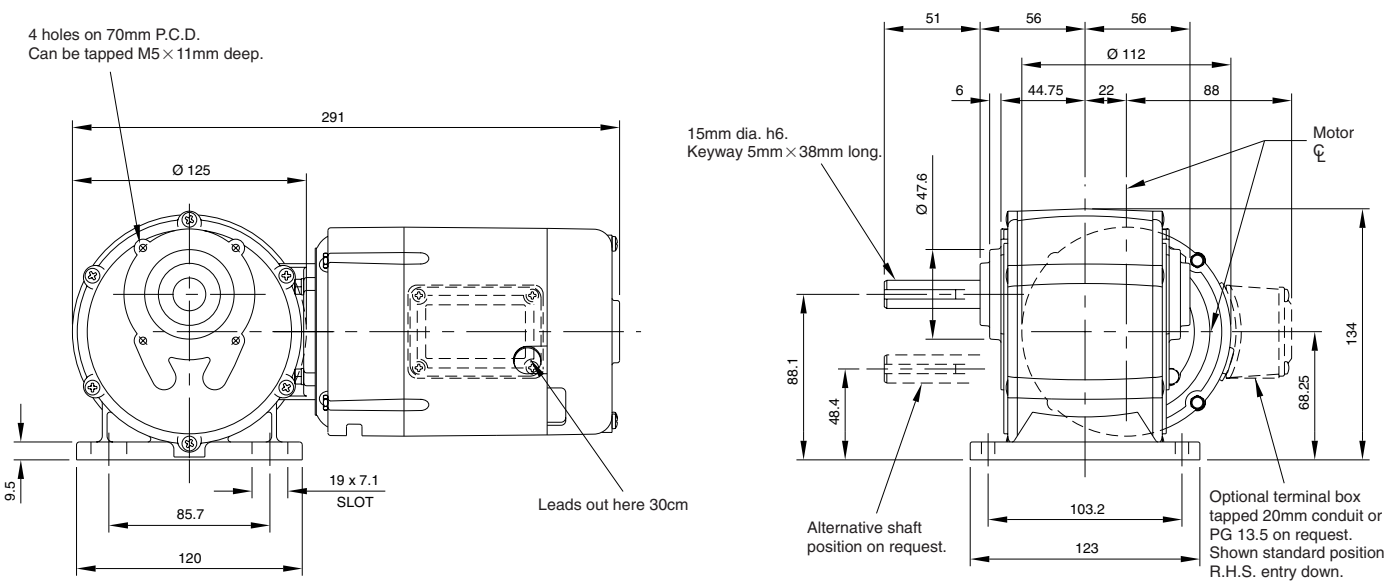


Optional shaft at motor speed (lead end only) 7.93mm dia. × 33mm long.

Approx. weight: SD 11 LWS – 6.41 Kg

SD 12 LWS

Dimensions in mm. Scale 1:4



Optional shaft at motor speed (lead end only) 10mm dia. × 33mm long.

Approx. weight: SD 12 LWS – 7.48 Kg

Blower Units

1 or 3 Phase Induction Motors – Constant Speed – 12 – 220v DC Shunt and Permanent Magnet Blowers on request

Enclosures: – SD 21 B Totally Enclosed (IP 23)
SD 38 BM – SD 18 BL Totally Enclosed (IP 54)

SD 21 B
SD 38 BM – SD 18 BL

SD 21 B

SD 38 BM

SD 18 BL

- **Voltage Range:** 110/120v – 220/240v. A.C. single phase, 50 Hz. SD21B – 38BM – 18BL 220 – 380/440 A.C., three phase , 50 Hz, SD 38 BM – SD 18 BL frames only. Special voltages and frequencies, D.C. supply etc. quoted on request.
- **Motor Type:** Single phase SD 21 B shaded pole – SD 38 BM – SD 18 BL capacitor. Suitable for direct-on-line starting.
- **Bearings:** Shielded ball bearings, spring loaded for quiet running. Unit suitable for mounting in any position.
- **Casing:** Cast aluminium.
- **Impeller:** Steel – rust-proofed.
- **Connections:** SD 38 BM – SD 18 BL terminal box, SD 21 B 300mm P.V.C. flexible.
- **Weight:** SD 21B – 2.75 kg; SD 38 BM – 4.5 kg; SD 18 BL – 8 kg.
- **Note:** 2500/2800 r.p.m. is standard and will be supplied unless otherwise specified.
- **Important:** Motor rotation must be set to give **anticlockwise** direction, as arrow on casting.

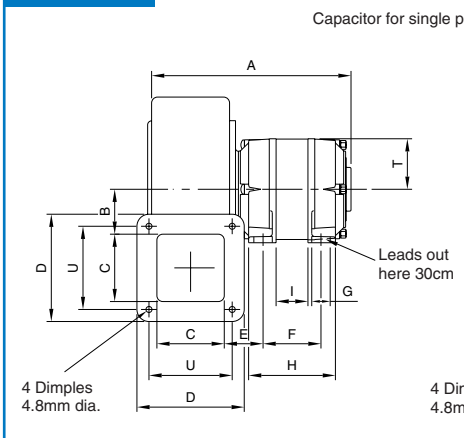
Motor Speed 2500 – 2800 r.p.m.

SD 21 B	INCHES/W.g.	CU./FT./MIN.	Cm/Ws	CU./METRES/MIN.
240v A.C. 1 phase 50 Hz 0.2 Amp 40 watts	0	80	0	2.26
	0.1	75	0.254	2.13
	0.2	70	0.508	1.98
220v A.C. 1 phase 50 Hz 0.18 Amp 35 watts	0.3	66	0.76	1.86
	0.4	60	1.016	1.7
	0.5	54	1.27	1.53
Starting current approx. 2½ x FL current	0.6	46	1.52	1.3
	0.68	22	1.72	0.62
	0.7	5	1.78	0.14
SD 38 BM	INCHES/W.g.	CU./FT./MIN.	Cm/Ws	CU./METRES/MIN.
240v A.C. 1 phase 50 Hz 0.55 Amp 95 watts	0	127	0	3.59
	0.2	120	0.508	3.4
	0.4	113	1.016	3.2
220v A.C. 1 phase 50 Hz 0.45 Amp 80 watts	0.6	104	1.53	2.94
	0.7	99	1.77	2.8
	0.9	89	2.3	2.5
Starting current approx. 2½ x FL current	1.0	79	2.54	2.24
	1.1	66	2.79	1.87
	1.2	4	3.04	1.13
SD 18 BL	INCHES/W.g.	CU./FT./MIN.	Cm/Ws	CU./METRES/MIN.
240v A.C. 1 phase 50 Hz 1.1 Amp 260 watts	0	320	0	9.04
	0.5	290	1.27	8.19
220v A.C. 1 phase 50 Hz 1.0 Amp 245 watts	1.0	250	2.54	7.06
	1.5	215	3.81	6.07
	1.75	175	4.44	4.92
Starting current approx. 2½ x FL current	2.0	75	5.08	2.12
	2.2	0	5.59	0

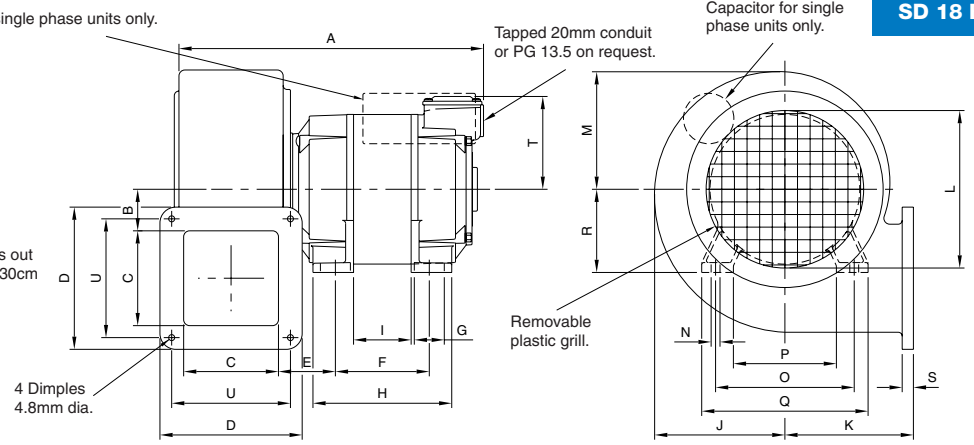
Motor Speed 1380 – 1400 r.p.m.

SD 21 B	INCHES/W.g.	CU./FT./MIN.	Cm/Ws	CU./METRES/MIN.
240v A.C. 1 phase 50 Hz 0.25 Amp 30 watts	0	43	0	1.23
	0.05	37	0.127	1.06
	0.1	32	0.254	0.9
220v A.C. 1 phase 50 Hz 0.2 Amp 28 watts	0.13	27	0.33	0.765
	0.15	21	0.38	0.595
	0.16	11	0.406	0.325
Starting current approx. 2 x FL current	0.17	0	0.43	0
SD 38 BM	INCHES/W.g.	CU./FT./MIN.	Cm/Ws	CU./METRES/MIN.
240v A.C. 1 phase 50 Hz 0.23 Amp 42 watts	0	65	0	1.84
	0.1	58	0.254	1.66
	0.15	53	0.38	1.52
220v A.C. 1 phase 50 Hz 0.2 Amp 35 watts	0.2	47	0.52	1.34
	0.25	36	0.635	1.03
	0.275	20	0.7	0.58
Starting current approx. 2 x FL current	0.3	0	0.76	0
SD 18 BL	INCHES/W.g.	CU./FT./MIN.	Cm/Ws	CU./METRES/MIN.
240v A.C. 1 phase 50 Hz 0.7 Amp 160 watts	0	220	0	6.21
	0.1	185	0.25	5.22
220v A.C. 1 phase 50 Hz 0.6 Amp 150 watts	0.3	145	0.76	4.09
	0.4	102	1.02	2.88
	0.45	62	1.14	1.25
Starting current approx. 2½ x FL current	0.51	0	1.29	0

SD 21 B



SD 38 BM
SD 18 BL



Dimensions (mm)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
SD 21 B N.T.S.	163	36	54	86	30	49	15	70	25	83	77	85	72	5.1	73	51	92	43	7.1	40.5	66.7
SD 38 BM N.T.S.	197	36	57	89	36	67	20	96	36	97.5	82.2	108	87	7.1	92	66	111	52.4	7.1	62.6	69.8
SD 18 BL N.T.S.	244	33.3	76	114	45	83	23	111	46	105	103	127	92	7.1	111	82	133	67	9	72	95.2

Blowers

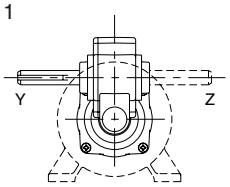
Shaft and Worm Gear Box Positions

Single Shaft Y standard – Z Shaft optional on request.
Double Shaft extensions Y and Z available at extra cost.

Single Reduction

S, M and L Boxes Standard Position 1Y	MB and LB Box Position 3 only	MB/MF and LB/LF Boxes Standard Position 3Y

1



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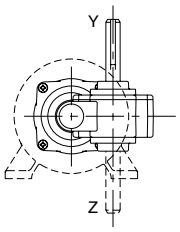

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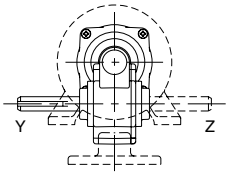

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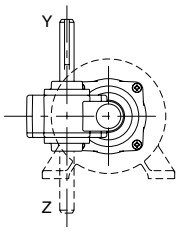
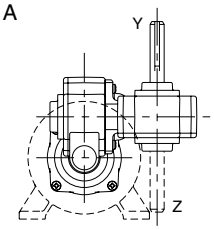


Double Reduction

SS and MM Boxes Standard Position AY	MBM Box Positions C, G, S and W only. Position I to X Single Shaft (Y) facing forward unless otherwise specified	MBM Box Standard Position GY

A



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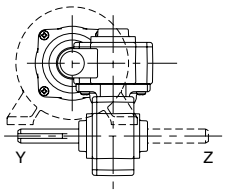

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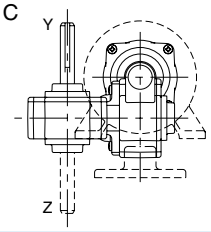

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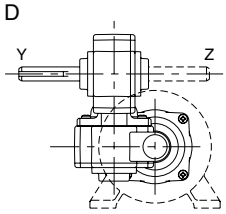

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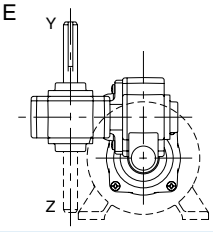

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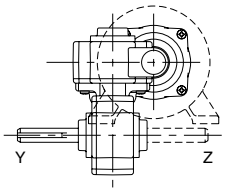

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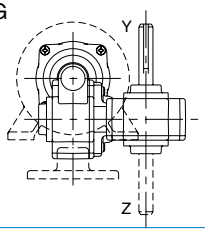

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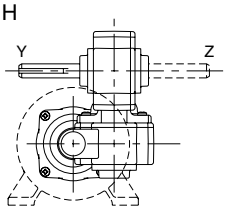

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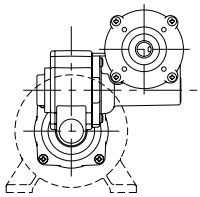

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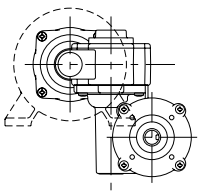

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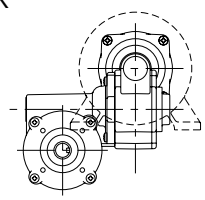

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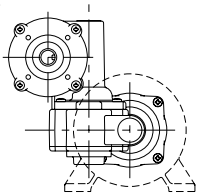

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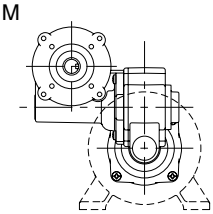

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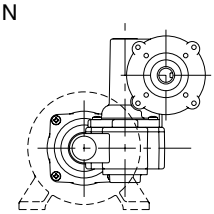

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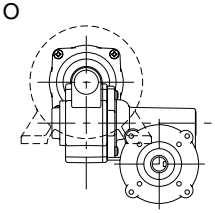

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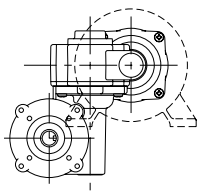

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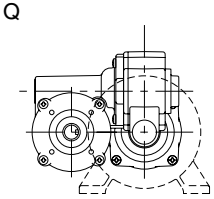

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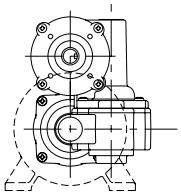

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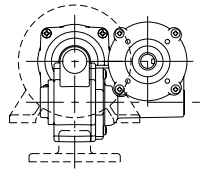

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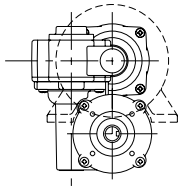

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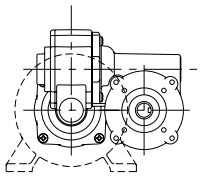

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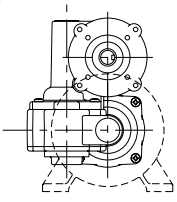

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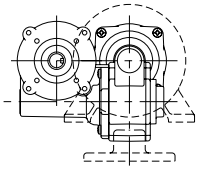

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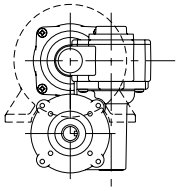


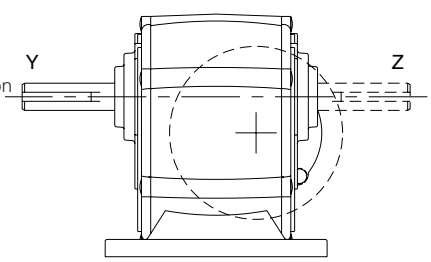
All the above positions correspond to the end elevation drawing of the appropriate unit with feet at the base of drawing.

Shaft Positions Worm and Multi Spur Gear Box

Single Shaft Y standard – Z Shaft optional on request. Double Shaft extensions Y and Z available at extra cost

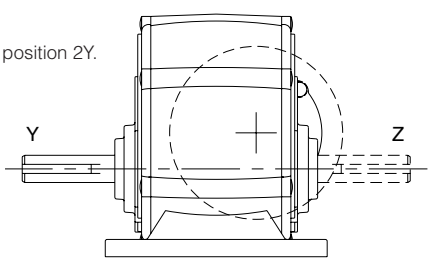
1

Standard position 1Y.



2

Lower position 2Y.

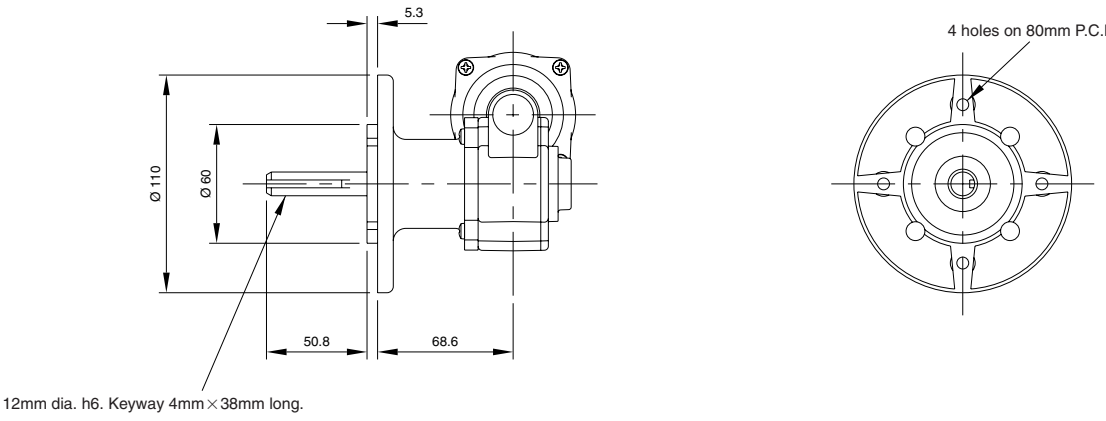


Dimensions of Mounting Flanges for ‘M’ and ‘L’ Boxes

Details of small, medium and large Worm Gear Boxes

Dimensions in mm. Scale 1:4

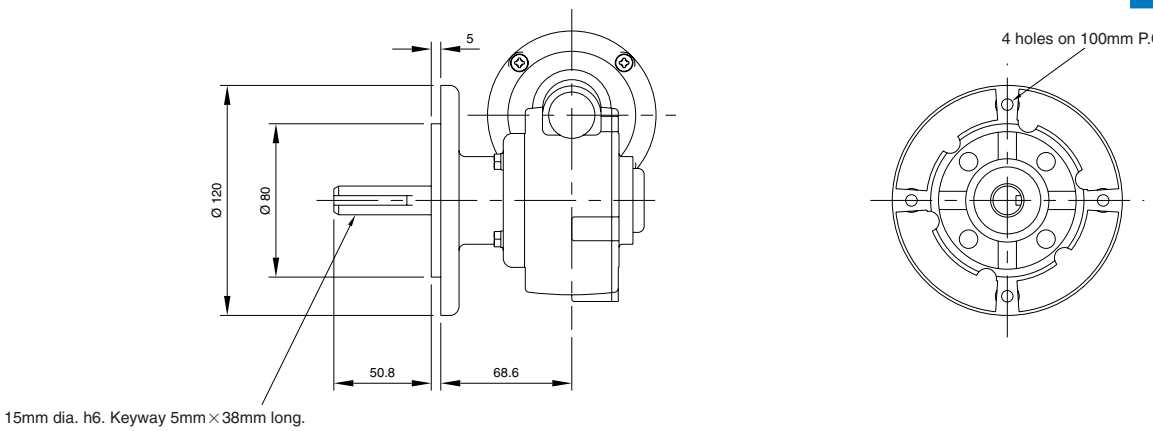
‘M’ Box Mounting Flange



Approx. weight: 0.50 Kg

Dimensions in mm. Scale 1:4

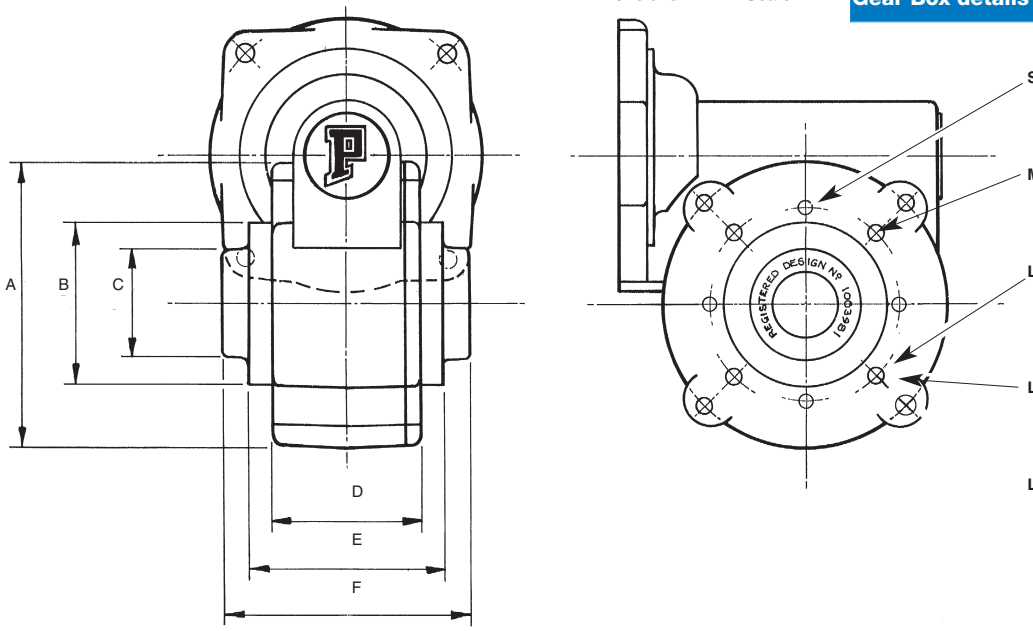
‘L’ Box Mounting Flange



Approx. weight: 0.75 Kg

Dimensions in mm. Scale 1:4

Gear Box details for ‘S’, ‘M’, ‘MB’, ‘L’, ‘LB’, ‘LH’ ‘LHB’



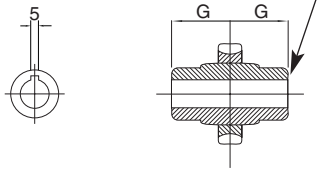
S Box 4 holes each side in this position equi-spaced on 41.3mm P.C.D. Cast 4.2mm dia. suitable for 10-24 taptite screws. Can be tapped M5×5mm deep on request.

M Box 4 holes each side in this position equi-spaced on 47.6mm P.C.D. Cast 3.8mm dia. Suitable for 8-32 taptite screws. Can be tapped M5×6mm deep on request.

L Box 4 holes each side in this position equi-spaced on 57.1mm P.C.D. Cast 3.8mm dia. Suitable for 8-32 taptite screws. Can be tapped M5×6mm deep on request. Optional 6mm stud fixing (details on request).

LH/LHB Box 4 holes each side in this position equi-spaced on 70mm P.C.D. Cast 5.1mm dia. Can be tapped M6×9mm deep on request. Optional 6mm stud fixing (details on request).

LH/LHB Box Shaft dimension 25mm O/D × 15 mm I/D ×37.5mm long with 5mm internal keyway. Alternatively 25mm Ø solid shaft available on request in Y, Z, or YZ format.



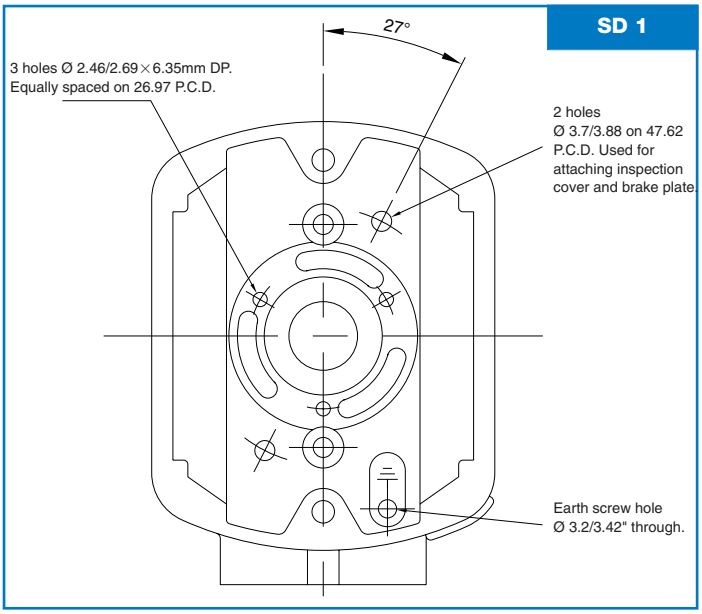
NOMINAL AS CAST DIMENSIONS ± 0.13mm

Gear Box Type	A Ø	B Ø	C Ø	D	E	F	G
S	55.4	35	20.4	32.5	40	44	-
M	67.7	38.1	26.2	35.5	45.8	58.7	-
L	98.6	45.8	33	49.3	64	75.5	-
LH	98.6	52	45	49.3	64	75.5	37.75

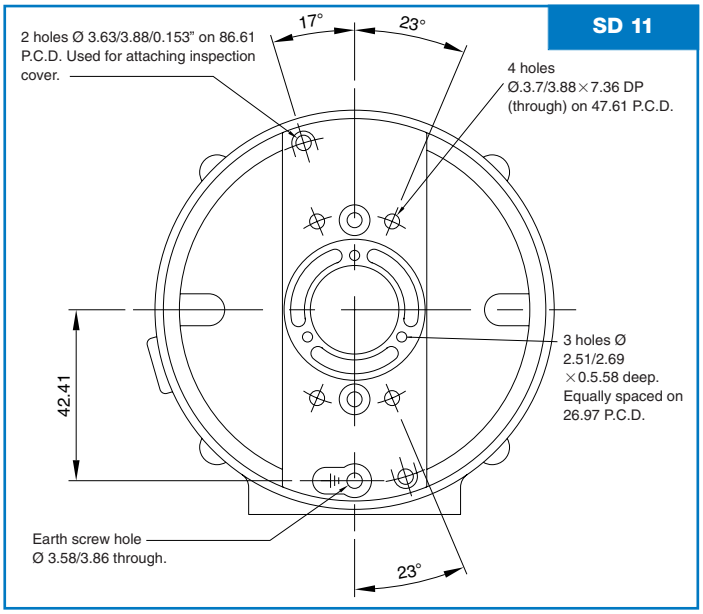
Non-drive end Mounting Hole details

for Commutator Motors

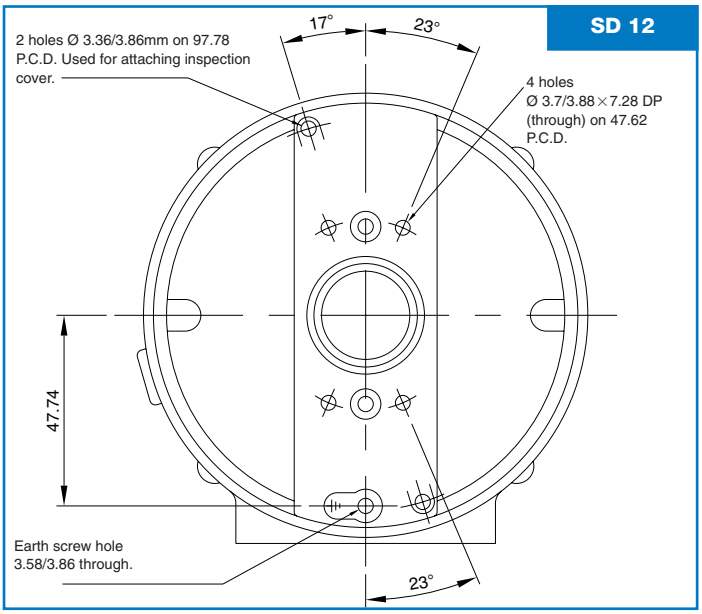
SD 1



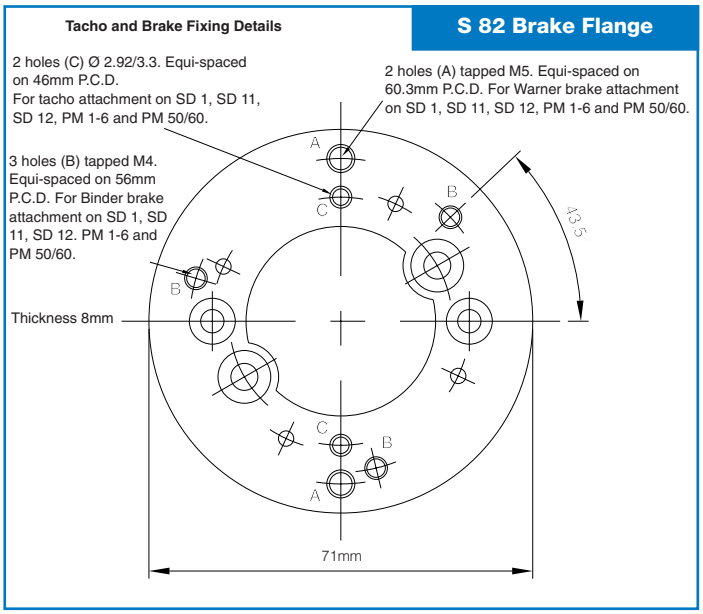
SD 11



SD 12



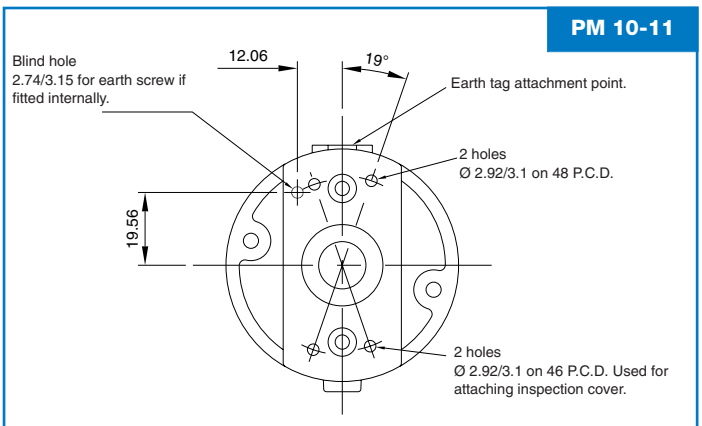
S 82 Brake Flange



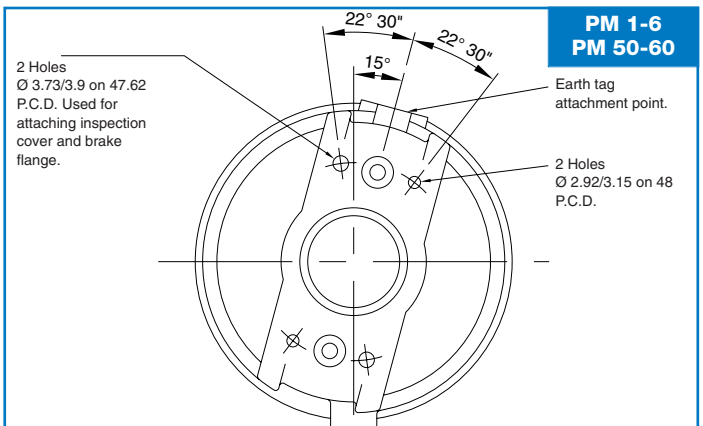
Non-drive end Mounting Hole details

for Permanent Magnet Motors

PM 10-11

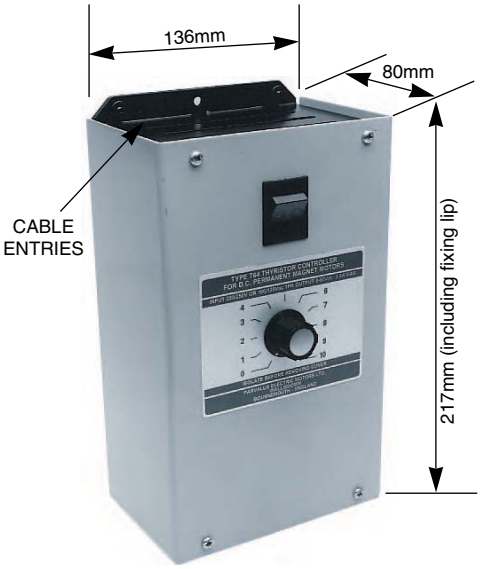


PM 1-6
PM 50-60

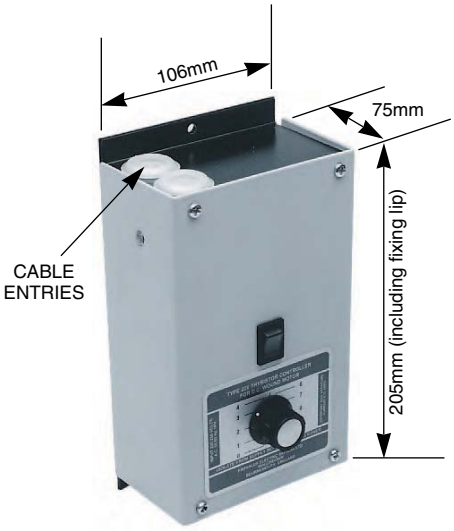


General Information

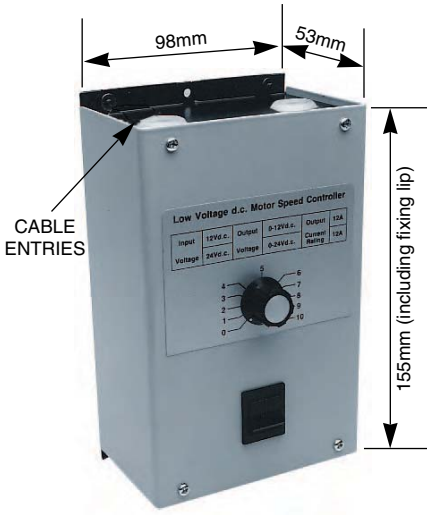
Controllers



126 Boxed Controllers



226 Boxed Controller



2020B Boxed Controller

Controller Type	126B	226B	2020B
Volts Input }	200/250V A.C. 50/60Hz	200/240V A.C. 50/60Hz	12V or 24V via battery
}	100/120V A.C. 50/60Hz	–	240V A.C. via transformer/rectifier
Volts Output	0-200		0-220V D.C. 0-12V D.C. or 0-24V D.C.
Motor Volts/speed Output	200V @ 4000rpm	200V D.C. @ 4000rpm	12V/24V D.C.
Motor Types	Shunt/Permanent Magnet Motors	Shunt/Permenent Magnet Motors	All Permanent Magnet Motors/shunt
Max (Arm) Current	1.9A Continuous		12A
Output Watts (max)	380W	140W	300W
Enclosure	IP 22 (boxed)	IP 22 (boxed)	IP 22 (boxed)
Form Factor	1	1	1.05
Soft Start	Yes	Yes	Yes
Integral Choke (boxed)	Yes	Yes	–
Weight Boxed	3.25Kg	1.75Kg	.9Kg
Connections	14-Way terminal box	12-way terminal block	4-way connection block
Speed Range	25:1	25:1	20:1

General Information for Commutator and

Permanent Magnet Motor Controllers

- **All wiring diagrams are supplied with the controllers. (for additional information contact our sales engineers).**
- Supply, motor and enclosure must be earthed.
- All connections are live with respect to supply).
- Do **not** instantaneously reverse the motors. They must be allowed to come to rest.
- Maximum ambient temperature 25˚C.
- 0-100% Speed Control.
- 150% acceleration torque.

Practical Information

- The controllers have a soft start and adjustable current (torque) limit combined with load compensation to give excellent speed/torque characteristics.
- When a choke is supplied separately it is imperative that it is incorporated into the motor and application to avoid unnecessary commutator damage and excessive brush wear. Where a choke is supplied and not used this may invalidate the warranty.

3001 Inverter

Induction Motor Variable Speed Drive

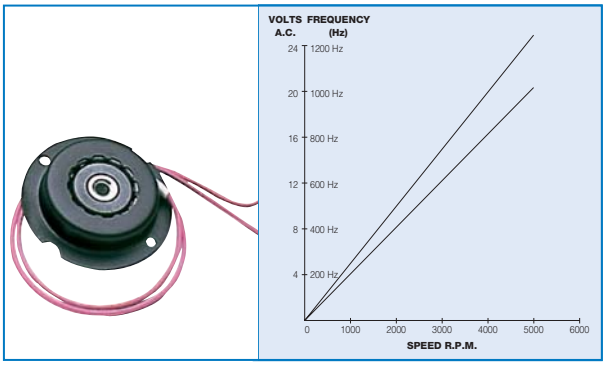
The 3001 series of 3 phase Induction Motor Drives offers the latest technology for reliable control of squirrel cage induction motors. Operated from a single-phase supply the microprocessor-controlled drive generates full 3 phase PWM output from smooth speed and torque control at up to twice synchronous speed. Fast monitoring of both current and voltage protect the drive and motor against fault conditions. Speed is controlled from a single potentiometer or voltage source and directional control can be implemented with either push buttons or toggle switch depending on your application.

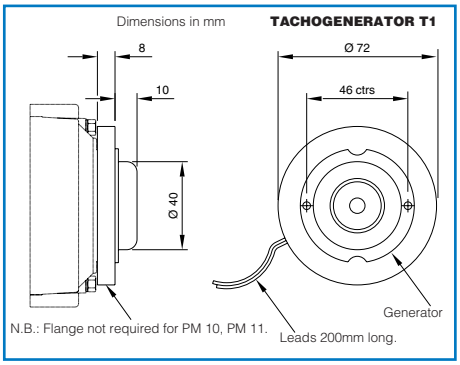
3001 Panel	**3001 Box (IP22)**
Motor up to 0.37Kw	
Single phase input	
Three phase output	
Microprocessor controlled	
IGBT power stage	
Earth fault protected	
Reversing	
Dc braking on power-up	
0 to 60/120Hz output	
Based speed selector 50/60Hz	
Fan Law selector	
200% overload for 1min	
EMC filtered	
Output filtered	
CE compliant	
Specification	
Power rating	370 Watts
Input voltage	85 – 265 V ac
Input frequency	45 – 65Hz
Input current	5.0A
Output voltage	0 – 230V ac nom
Output frequency	1 – 120Hz
Output current	2.3A
PWM frequency	24kHz
Ambient temp	0 – 45°
Weight Boxed	1.95Kg

Tachogenerator (T1) A.C. Single Phase

Technical Data	
Nominal output A.C. Voltage:	4V per 1000 r.p.m.
Output frequency:	200Hz per 1000 r.p.m. (approx.)
Maximum speed:	5000 r.p.m.
Internal resistance:	600 Ω
Minimum external resistance:	5k Ω per 1000 r.p.m.

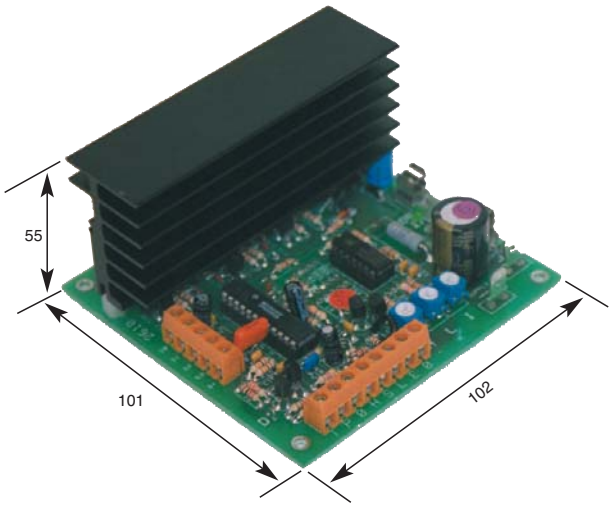
Tacho cannot be fitted to TEFC or brake units.





Skeleton Controller for Brushless Motor BLI

Boxed controll available on request.



Volts input	24V dc
Volts output	24V dc
Amps	12A
Speed variation	25:1
Control voltage via Potentiometer or a dc input	0-6 V dc
Adjustment available for high and low speed settings	
Torque limiter	

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