



# DC MOTORS

NEMA FRAME • LOW VOLTAGE 12, 24, 36 & 48 VOLTS

## NEMA FRAME LOW VOLTAGE MOTORS

### General Specifications:

Low voltage permanent magnet DC motors are suitable for installations having battery or solar powered operations, or generator supplied low voltage DC.

### Mechanical Features:

Unique brush holder design provides easy access to brushes and integral, constant pressure brush/spring assembly for servicing. Larger over-sized brushes assure longer brush life. Heavy-duty, stamped steel, bolt-on base (removable). NEMA C face mounting flange at no additional cost. High strength rolled steel frame. Rugged die cast aluminum endshields with steel bearing inserts. Permanently lubricated sealed ball bearings. May be converted to NEMA 48 frame base dimensions or NEMA 42/48 frame C face dimensions using modification kits noted on page 153.

### Electrical Features:

High starting torques for heavy load applications. Linear speed/torque characteristics over entire speed range. Capable of dynamic braking for faster stops. Reversible rotation and simple two-lead connection. Convenient wiring access.



## DC METRIC (IEC) FRAME MOTORS IP54

### General Specifications:

These metric dimensioned motors are built to IEC 34-1 electrical and mechanical standards.

The IEC 63 and smaller frames are stocked with an integral B5 flange or B14 face less base. An optional B3 rigid base kit is available.

A unique modular approach for IEC 71 frame and larger allows the motor to be field modified to B3 rigid base mounted construction, B5 flange mounted or B14 face mounted construction using conversion kits. Please note that one or more of the mounting kits must be used with IEC motors of these frame sizes. See listing on page 85 for B5 flange and B14 face kits. B3 rigid base kits are listed below.



B5 IEC 56 & 63



B14 IEC 56 & 63

### Electrical & Mechanical Features:

A terminal board is provided for connections. All fasteners are metric. Electrical and mechanical features are the same as listed for the NEMA frame motors on the opposite page. Tachometer mounting kits are available for 71 and 80 frames only.



71 & 80 IEC with Modular Flange & Base Kits

## LOW VOLTAGE (12, 24, 36 & 48V) • TENV/TEFC NEMA C FACE WITH REMOVABLE BASE $\Sigma$

HP	Full Load RPM	NEMA Frame	Catalog Number	App. Wgt. (lbs.)	Arm. Volts DC	F.L. Amps DC	"C" Dim. (Inches)
1/4	1800	S56C	108045.00 $\clubsuit$	21	12	21.0	10.27
1/3	1800	S56C	108046.00 $\clubsuit$	24	12	27.0	10.77
	1800	S56C	108050.00 $\clubsuit$	22	24	13.5	10.77
1/2	1800	S56C	108047.00 $\clubsuit$	29	12	39.0	11.77
	1800	S56C	108051.00 $\clubsuit$	29	24	20.0	11.77
	1800	SS56C	098381.00	29	36	13.5	10.81
	1800	SS56C	098382.00	29	48	11.0	10.81
3/4	1800	S56C	108048.00 $\clubsuit$	30	12	58.0	13.82
	1800	S56C	108052.00	30	24	29.0	12.82
1	1800	S56C	108322.00 $\clubsuit$	39	12	80.0	13.81
	1800	S56C	108053.00 $\clubsuit$	37	24	39.0	13.82
	1800	S56C	109101.00	37	36	25.5	13.81
	1800	S56C	109102.00	37	48	18.5	13.81
1 1/2	1800	S56CZ	109103.00 $\clubsuit$ $\square$	39	24	60.0	15.25
	1800	S56CZ	109104.00 $\clubsuit$ $\square$	37	36	36.0	17.38
	1800	S56CZ	109105.00 $\clubsuit$ $\square$	37	48	27.0	17.38
2	1800	S56CZ	109106.00 $\clubsuit$ $\square$	42	24	70.0	16.74
	1800	S56CZ	109107.00 $\clubsuit$ $\square$	42	36	49.0	16.74
	1800	S56CZ	109108.00 $\clubsuit$ $\square$	42	48	38.0	16.74

$\clubsuit$  Built-in conduit box located at 12:00.

$\blacklozenge$  Studs at 12:00.

$\Sigma$  If base is removed, do not reinstall bolts without using washers to compensate for thickness of base.

$\square$  S56CZ motors have mounting bases with NEMA 56 mounting holes, NEMA 56/143-5T C-face and a NEMA 143-5T shaft extension (7/8" dia. x 2 1/4" long).

$\bullet$  These motors are totally enclosed, non-ventilated.

$\blacksquare$  SS56C motors have a 4.88 inch diameter frame. S56C motors have a 5.61 inch diameter frame.

## METRIC (IEC) FRAME • LOW VOLTAGE (24V) • TEFC/TENV • MODULAR DESIGN

kW/HP	Full Load RPM	IEC Frame	Catalog Number	App. Wgt. (lbs.)	F.L. Amps DC	C Dim. (inches)
0.06/1/12	3000	56	M1110025.00 $\clubsuit$	5	3.3	5.34
	1800	56	M1110026.00 $\clubsuit$	6	3.4	6.34
0.18/1/4	3000	63	M1130206.00 $\clubsuit$	13	11.0	7.75
	3000	63	M1130296.00 $\clubsuit$	9	11.0	7.75
	1800	63	M1130207.00 $\clubsuit$	13	10.0	8.75
	1800	63	M1130297.00 $\clubsuit$	9	10.0	8.75
0.37/1/2	1800	71	098065.00	19	11.0	10.77
	3000	71	098066.00	23	20.0	11.27
	1800	71	098067.00	23	20.0	12.27
0.75/1	3000	80	108456.00 $\clubsuit$	33	40.0	14.14
	1800	80	108455.00 $\clubsuit$	52	39.0	14.64
1.1/1 1/2	3000	80	108457.00 $\clubsuit$	33	65.0	15.64
1.5/2	3000	80	108458.00 $\clubsuit$	43	78.0	17.14

**IMPORTANT:** IEC 71 and 80 frame motors in this chart are round body and require either B14 face, B5 flange or B3 foot from kits shown on pages 156-157.

\* Dedicated B5 Flange

$\clubsuit$  Dedicated B14 Face

$\bullet$  These motors are totally enclosed, non-ventilated. Others are TEFC/IC41 cooling – external cooling fan on motor shaft.

DC MOTORS

## SUB-FHP LOW VOLTAGE MOTORS

### General Specifications:

Precision sub-fractional horsepower low voltage direct current permanent magnet motors designed for battery or solar powered operations, or generator supplied low voltage DC.

### Mechanical Features:

Compact space saving designs. Standard conduit box simplifies connections. Ball bearings. Long-life brushes for demanding applications. Brushes easily replaced without disassembly of motor.

### Electrical Features:

High starting torques for heavy load applications. Linear speed/torque characteristics over entire speed range. Capable of dynamic braking for faster stops. Reversible rotation from a simple two lead connection. Class F insulated with high temperature welded commutators.



## LOW VOLTAGE (12 & 24V) • TENV • SQUARE FLANGE

HP▲	Full Load RPM	Frame	Catalog Number	App. Wgt. (lbs.)	Input Volts DC	F.L. Amps DC
1/20	1750	25CS	M1110006.00*	3	12	4.4
1/10	4200				24	4.4
1/14	1750	31AS	M1120040.00	4	12	7.7
1/7	4200				24	7.7
1/7	1750	31ES	M1120044.00	9	12	13.0
1/4	3500				24	13.0
1/6	1800	31GS	M1120046.00	8	12	14.0
1/3	3900				24	14.0

\* 25 frame motors have provision for an optional conduit box catalog number M1760000, see page 107.

▲ These motors may be operated at 12, 24V, or at intermediate voltages between 12 and 24V, within horsepower ranges noted.

## COMMERCIAL DUTY METRIC (IEC) FRAME MOTORS

Specially designed low voltage DC motors for use in OEM applications. Combination of features and low cost makes these motors excellent for many uses. All feature IP44 (TENV) enclosure and dedicated B14 face mount. Rated S1 for continuous duty, and zinc plated steel frame construction.



## 12, 24V & 90 VOLT • TENV B14 FACE MOUNT

HP	Full Load RPM	IEC Frame▲	Catalog Number	App. Wgt. (lbs.)	Arm. Volts DC	F.L. Amps DC
1/15	3000	56	980.159	2.3	12	6.4
	3000	56	980.143	2.3	24	3.2
	3000	56	980.549	2.3	90	.75
1/8	3000	56	970.600	3.0	12	12.0
	3000	56	970.601	3.0	24	5.3
	3000	56	970.576	3.0	90	1.2
1/6	3000	56	970.620	3.5	12	13.1
	3000	56	970.621	3.5	24	6.8
	3000	56	970.577	3.5	90	1.6

▲ Use "S" Discount Symbol.

For dimensions, see drawings on page 283.

## LOW VOLTAGE ADJUSTABLE SPEED CONTROLLERS

LEESON's DC to DC controllers are a chassis type design, that accept a DC input voltage and output a DC power voltage to control the motor speed. The speed may be varied with the potentiometer that is shipped loose with the control or an external voltage signal.



Higher design efficiency results in longer running time between battery charges than is possible with traditional methods of speed control using resistance in series with the battery.

**Typical Operating Features:** Provides smooth 40 to 1 speed range capability for mobile equipment. Maintains variable speed control as batteries discharge. Adjustable min/max speed, IR compensation, and 200% current limit overload protection. Inhibit pin terminals provide customer optional start-stop without breaking battery lines. Green LED power on indicator is provided.

Catalog number 175290 does not require a heat sink, and measures 6.9L x 4.44W x 2.19D. Catalog numbers 175291 & 175292 do require heat sink, which is included and measures 7.78L x 6.9W x 3.25D.

Input Voltage	Max. Amp Ratings	Catalog Number	App. Wgt.(lbs.)
12/24	16	175290.00	2
12/24	60	175291.00	4
36/48	60	175292.00	4

## LOW VOLTAGE ADJUSTABLE SPEED CONTROLS FOUR QUADRANT CONTROL

**General Specifications:** This series of drives is a chassis type design that accepts DC input to output up to 100% of the input voltage. The 12/24-volt drive is rated at 120 amps continuous and the 36/48-volt drive is rated at 100 amps continuous. The speed is adjustable with a speed potentiometer that is shipped loose with the controls. This control also offers extended battery life through a sleep mode feature and has an inhibit circuit for convenient remote starting and stopping.



**Additional Features Include:** Simple reversing and braking using a switch closure to the drive. Controls have a built-in short circuit to protect itself from a shorted motor. They offer a 1.01 Form Factor, which offers clean DC output for quiet motor operation and efficiency. They also have a temperature sensor, which automatically reduces the current limit if the controller heats up. On Board trim pots for calibration, speed and forward and reverse settings.

Units include heat sink and measure 6.9L x 5.0W (including terminals) x 2.5D and have mounting slots.

Input Voltage	Max. Amp Ratings	Catalog Number	App. Wgt.(lbs.)
12/24	120	174298.00	3
36/48	100	174299.00	3