NEMA FRAME MOTORS • SCR RATED

General Specifications:

High voltage permanent magnet DC motors are typically used with an SCR (thyristor) controller in applications requiring adjustable speed and constant torque throughout the speed range. They are also widely used in applications requiring dynamic braking or adjustable speed/reversing capabilities.

Mechanical Features:

Low profile space-saving design. Unique brush holder design provides easy access to brushes and integral constant pressure brush/spring assembly for servicing. Large over-sized brushes assure longer brush life. Heavy-duty, stamped steel, bolt-on base (removable). NEMA C face mounting at no additional cost. Rugged die cast aluminum endshields with cast iron bearing inserts. Permanently lubricated sealed ball bearings. May be converted NEMA 48 base and/or C face using modification kits noted below.

Electrical Features:

Input power of 115 or 230 volts rectified AC when used with an appropriate SCR control. Linear speed/torque characteristics over entire speed range. High starting torque for heavy load applications. Capable of dynamic braking for faster stops. Reversible rotation with simple two-lead connection. For further information on Direct Current Motors, request Bulletin 1600.

PWM RATED PM DC MOTORS

The DC motors listed above have been designed for use on unfiltered SCR (Thyristor) type rectified AC input. These motors may also be used with PWM (pulse width modulated) type DC adjustable speed drives at a higher HP rating. See the chart on page 161 for re-rating data.

TEFC • SCR RATED 90 & 180 VOLTS
NEMA 56C • C FACE WITH REMOVABLE BASE∑

HP	Full Load RPM	NEMA Frame	Catalog Number	List Price	Disc. Sym.	App. Wgt. (lbs.)	Arm. Volts DC	Control Volts AC Input	F.L. Amps DC	"C" Dim. (Inches)
1/4	1750	SS56C	**098002**	$369	A	19	90	115	2.5	10.81
	1750	SS56C	**098003**	369	A	22	180	230	1.4	11.31
1/3	1750	SS56C	**098004**	391	A	23	90	115	3.5	11.31
	1750	SS56C	**098005**	391	A	23	180	230	1.7	11.31
1/2	2500	SS56C	**098006**	391	A	22	90	115	5.0	10.81
	2500	SS56C	**098007**	391	A	22	180	230	2.5	10.81
	1750	SS56C	**098000**	436	A	26	90	115	5.0	11.81
	1750	S56C	**108014**	457	A	29	90	115	5.0	12.81
	1750	SS56C	**098008**	436	A	25	180	230	2.5	11.81
	1750	S56C	**108015**	457	A	30	180	230	2.5	12.81
3/4	2500	SS56C	**098009**	469	A	26	90	115	7.6	11.81
	2500	S56C	**108016**	492	A	29	90	115	7.6	12.81
	2500	SS56C	**098010**	469	A	25	180	230	3.8	11.81
	2500	S56C	**108017**	492	A	29	180	230	3.8	12.81
	1750	SS56C	**098032**	529	A	36	90	115	7.6	13.81
	1750	S56C	**108018**	556	A	38	90	115	7.6	13.81
	1750	SS56C	**098069**	529	A	36	180	230	3.8	13.81
	1750	S56C	**108019**	556	A	35	180	230	3.8	13.81
1	2500	S56C	**108020**	529	A	34	90	115	10.0	13.81
	2500	S56C	**108021**	529	A	38	180	230	5.0	13.81
	1750	S56C	**108022**	646	A	47	90	115	10.0	16.31
	1750	S56C	**108023**	646	A	39	180	230	5.0	14.81
1½	2500	S56C	**108265**	783	A	43	180	230	7.5	14.81
	1750	S56C	**108092**	808	A	53	180	230	7.6	16.88
	1750	S56/145TC	**108262**■	808	A	54	180	230	7.6	17.38
	1750	145TC	**128000**	1227	B	70	180	230	7.5	18.34
2	2500	S56/145TC	**108266**■	1227	A	51	180	230	8.6	16.88
	1750	145TC	**128010**	1464	B	83	180	230	9.5	19.34
	1750	182/145TC	**128001**◀	1464	B	84	180	230	9.5	19.34
3	1750	182/145TC	**108502**◀	1771	B	88	180	230	14.0	21.75

TACH ADAPTER KITS

All necessary parts to mount listed tachometers to stock TEFC SCR motors. Consists of machined cast fan cover, coupling and hardware. Does not include tachometer. Tach adapter kit is not suitable for catalog number 108502.

Tachometer Type	Frame	Catalog Number	List Price	Disc. Sym.	App. Wt.(lbs.)
GE 5PY Series	SS56	**175156**	$157	A	5
	S56	**175193**	164	A	5
	56/145	**175158**	321	A	5
Servo-tek SA740 Series	SS56	**175157**	165	A	8
	S56	**175194**	174	A	8
	56/145	**175159**	367	A	8
Airpax	SS56	**175173**	165	A	8
	S56	**175174**	174	A	8
REO-315	SS56	**175155**	157	A	5
	S56	**175197**	164	A	5
	56/145	**175198**	321	A	5

MODIFICATION KITS

Motors with S56C or SS56c frame sizes may be converted to 42/48 C face using the following:

Frame	Catalog No.	List Price	Disc. Sym.
SS56C	**175182**	$26	A
S56C	**175082**◇	26	A

DC motors in NEMA S56 frame may be converted to 48 base using the following:

Frame	Catalog No.	List Price	Disc. Sym.
S56C	**175080**◇	$20	A

◇ Addition of base kit will result in non-NEMA BA dimension of $2^{3}/_{4}$". Addition of C face kit will result in conduit box located at 1 o'clock facing lead end.
∑ If base is removed, do not reinstall bolts without using washers to compensate for thickness of base.
◀ NEMA 145TC face mounting with removable NEMA 182T rigid base.
■ NEMA 145TC frame shaft $^{7}/_{8}$" x $2^{1}/_{4}$" and NEMA 56 removable base.

NEMA FRAME • EXPLOSION-PROOF FOR HAZARDOUS LOCATIONS

General Specifications:

These explosion-proof motors are designed and approved for application in hazardous environments having certain explosive gases or materials present.

Features:

Rugged mechanical construction meeting all requirements for safety. UL and CSA listed. NEMA 56C face with removable 56 frame base. Leads exit through ¾"-14NPT pipe-nipple in the top of the motor frame, opposite the shaft end. **Conduit box is not provided.** See optional conduit box below. These motors have pilot-duty thermostats as standard that must be connected to the SCR control. They are rated for continuous duty with full wave SCR (thyristor) controls. Double-shielded, pre-lubricated ball bearings are standard. Easy brush access for field service. These motor are UL and CSA listed.

Application Notes:

These motors must be applied in accordance with the National Electrical Code, Article #500. For a listing of explosive agents, consult NFPA Publication 497M.

EXPLOSION-PROOF • CLASS I, GROUPS C & D – CLASS II, GROUPS F & G • SCR RATED 90 & 180V C FACE WITH REMOVABLE BASE

HP	Full Load RPM	NEMA Frame	Catalog Number	List Price	Disc. Sym.	App. Wgt. (lbs.)	Arm. Volts DC	Control Volts AC Input	F.L. Amps DC	"C" Dim. (Inches)
1/3	1750	S56C	**118015**	$1294	A	23	90	115	3.5	13.41
1/2	1750	S56C	**118016**	1461	A	30	90	115	4.7	14.41
	1750	S56C	**118017**	1461	A	30	180	230	2.5	14.41
3/4	1750	S56C	**118018**	1809	A	36	90	115	7.1	16.41
	1750	S56C	**118019**	1809	A	36	180	230	3.3	16.41

EXPLOSION-PROOF CONDUIT BOX

UL and CSA listed for Class I, Group C & D, and Class II, Groups F & G locations. Has grounding screw and all hardware provided. Mounts to motor by 3/4"-14NPT opening at rear of box. For NEMA 56 frame motors only.

Catalog Number	List Price	Disc. Sym.	App. Wgt. (lbs.)
175026	$50	A	2

NEMA FRAME • WASHGUARD®

LEESON WASHGUARD® motors are designed for extended life in applications requiring regular washdown as in food processing, or otherwise wet, high humidity environments. WASHGUARD® motors retard the entrance of water during cleaning operations and release any water that does enter the motor. Extra protection for the motor's interior prevents rust and corrosion build-up and drains release trapped moisture to insure a longer life than possible with a standard motor.

Mechanical Protection Features:

High quality, corrosion resistant *303 stainless steel* shaft plus lubricated spring-loaded contact seals and patented, "V" ring Forsheda seal deflect water, protect bearings and the motor's interior. Double sealed, oversized bearings with high temperature moisture resistant lubricant are used.

Frame, base, endshields, armature and interior components protected by enamel and polyester compounds of outstanding adhesion and resistance to moisture, acids, alkalies and oil.

Cast conduit box with threaded entrance, drain holes and tough, high temperature Nitrile gaskets keep water out and resist deflection under high pressure washdowns Conduit box cover and fan cover, when used, are type 304 stainless steel.

Four drains in *each* endshield at 3,6,9,and 12 o'clock purge water, and can be repositioned for maximum effectiveness regardless of the motor's mounting. Machined fits are sealed, and nylon gaskets are used to seal bolt heads. Stainless steel data plate.

Chemically inert static free fan is positively positioned on the shaft by opposing flats, shoulder and snap ring arrangement and protected by heavy gauge, stainless steel fan guards. Finished in USDA approved tough white epoxy for superior corrosion resistance and protection against harsh caustic cleaning solutions.

WASHGUARD® • NEMA C FACE • REMOVABLE BASE TENV • SCR RATED 90 & 180 VOLTS

HP	Full Load RPM	NEMA Frame	Catalog Number	List Price	Disc. Sym.	App. Wgt. (lbs.)	Arm. Volts DC	Control Volts AC Input	F.L. Amps DC	"C" Dim. (Inches)
1/4	1750	S56C	**108423**	$480	A	23	90	115	2.7	10.69
1/3	1750	S56C	**108424**	507	A	26	90	115	3.5	11.69
1/2	1750	S56C	**108226**	568	A	38	90	115	4.9	13.69
	1750	S56C	**108227**	568	A	43	180	230	2.4	13.69
3/4	1750	S56C	**108228**	688	A	53	90	115	7.0	15.69
	1750	S56C	**108229**	688	A	50	180	230	3.5	15.69
1	1750	S56C	**108230****	841	A	45	90	115	10.0	15.81
	1750	S56C	**108231****	841	A	42	180	230	5.0	14.81
1½	1750	S56C	**108232****	1073	A	50	180	230	7.6	16.81

WASHGUARD® • IEC FRAME • TENV IP55 B5 FLANGE WITH REMOVABLE B3 BASE⑦▲ SCR RATED 180 VOLTS

Rated HP	Output kW	Full Load RPM	IEC Frame	Catalog Number	List Price	Disc. Sym.	App. Wgt. (lbs.)	Arm. Volts DC	F.L. Amps DC	"C" Dim. (Inches)
1/2	.37	1750	71	**098040**	$503	A	22	180	2.5	10.69
3/4	.55	1750	80	**108407**	681	A	52	180	3.5	16.02

** These motors are totally enclosed fan cooled.
⑦ If base is removed, do not reinstall bolts without using washers to compensate for the thickness of base.
▲ These WASHGUARD® motors are modular design but stocked with B5 flange and B3 foot. The foot is removable. The B5 flange can be replaced with a B14 face or other diameter B5 flanges noted on page 78.

SUB-FHP MOTORS

General Specifications:

Precision subfractional horsepower DC permanent magnet motors designed for use with full wave non-filtered SCR controls for adjustable speed applications requiring dynamic braking and constant torque throughout the speed range.

31/34 Frame

Mechanical Features:

Compact space saving designs. Ball bearings. Long-life brushes for demanding applications. Brushes easily replaced without disassembly of the motor. Standard mounted conduit box on 31 and 34 frame models simplifies connections.

25 Frame

Electrical Features:

Continuous duty with full wave un-filtered rectified SCR (thyristor) controls. Linear speed torque characteristics throughout the speed range. High starting torques. Reversible rotation from a simple two lead connection.

SCR RATED (90 & 180 V) • TENV • SQUARE FLANGE OR C FACE

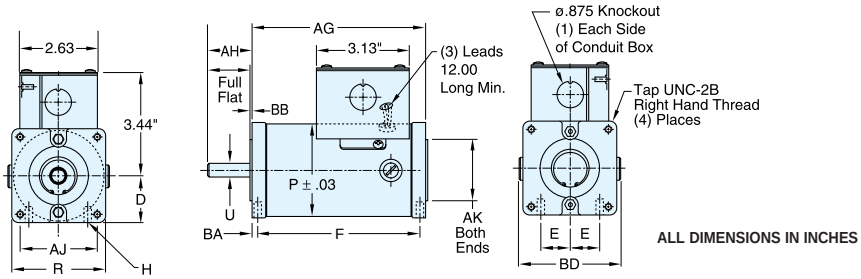
HP	Full Load RPM	Frame	Catalog Number	List Price	Disc. Sym.	App. Wgt. (lbs.)	Arm. Volts DC	Control Volts AC Input	F.L. Amps DC
1/25	3500	25AS	**M1110014**Ⓑ	$171	S	3	90	115	0.5
	1750	25CS	**M1110003**Ⓑ	177	S	3	90	115	0.5
	1750	31AS	**M1120064**	177	S	5	180	230	0.3
1/15	3500	25CS	**M1110015**Ⓑ	183	S	2	90	115	0.7
	1750	31BS	**M1120013**	189	S	5	90	115	0.8
	1750	31BS	**M1120039**	189	S	7	180	230	0.4
1/10	3500	31BS	**M1120060**	189	S	5	90	115	1.3
	1750	31CS	**M1120014**	224	S	7	90	115	1.1
	1750	31CS	**M1120041**	224	S	7	180	230	0.6
1/8	3500	31CS	**M1120059**	224	S	6	90	115	1.5
	1750	31ES	**M1120027**	243	S	7	90	115	1.3
	1750	31ES	**M1120045**	243	S	7	180	230	0.7
	1750	34D42CZ	**M1130053**	252	S	8	90	115	1.4
	1750	34D42CZ	**M1130118**	252	S	7	180	230	0.7
1/6	3500	31ES	**M1120058**	243	S	9	90	115	1.9
	1750	31GS	**M1120042**	246	S	9	90	115	1.8
	1750	31GS	**M1120043**	246	S	11	180	230	0.9
	1750	34E56C	**M1130054**	258	S	11	90	115	1.7
	1750	34E56C	**M1130119**	258	S	11	180	230	0.9
1/4	3500	31GS	**M1120062**	257	S	9	90	115	2.6
	1750	34G56C	**M1130055****	266	S	13	90	115	2.7
	1750	34G56C	**M1130120****	266	S	13	180	230	1.3

Ⓑ 24 frame motors have provisions for an optional conduit box catalog number M1760000, see page 150.
** These motors are totally enclosed fan cooled.

25 & 31 FRAME SQUARE FLANGE MOUNT

Note: Optional conduit box not included on 25 frame models.

Conduit box dimensions shown here are for 31 frame only.

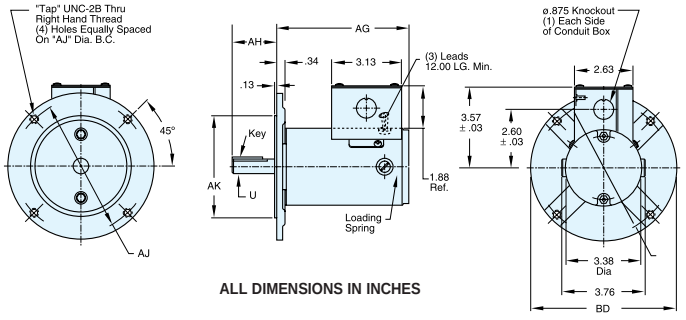


ALL DIMENSIONS IN INCHES

Frame	& Type	AG	P	BD	U	AH	AH-BB	AJ	TAP	R	AK	BB	D	BA	E	F	H
25	AS	4.08	2.50	3.00	.312	1.5	1.00	1.73	8-32	2.62	.997	.03	1.28	.125	.625	3.83	8-32
	CS	4.94	2.50	3.00	.312	1.5	1.00	1.73	8-32	2.62	.997	.03	1.28	.125	.625	4.69	8-32
31	AS	5.39	3.07	3.45	.5000	1.5	1.00	2.63	1/4-20	3.16	1.97	.07	1.57	.235	1.000	4.92	1/4-20
	BS	5.39	3.07	3.45	.5000	1.5	1.00	2.63	1/4-20	3.16	1.97	.07	1.57	.235	1.000	5.42	1/4-20
	CS**	5.89	3.07	3.45	.5000	1.5	1.00	2.63	1/4-20	3.16	1.97	.07	1.57	.235	1.000	5.42	1/4-20
	ES**	6.89	3.07	3.45	.5000	1.5	1.00	2.63	1/4-20	3.16	1.97	.07	1.57	.235	1.000	6.42	1/4-20
	GS	7.89	3.07	3.45	.5000	1.5	1.00	2.63	1/4-20	3.16	1.97	.07	1.57	.235	1.000	7.42	1/4-20

**Catalog numbers M1120041 & M1120044 have an 'AG' & 'F' dimension that is .5" longer than stated in table.

34-FRAME, NEMA C FACE, LESS BASE



ALL DIMENSIONS IN INCHES

42C FACE MOUNT

Frame	AG	P	U	AH	AH-BB	KEY	AJ	TAP	AK	BD
34D42C	6.43	3.38	.500	1.38	1.25	.13 SQ	3.750	1/4-20	3.00	4.25

56C FACE MOUNT

Frame	AG	P*	U	AH	AH-BB	KEY	AJ	TAP	AK	BD
34E56C	6.87	3.38	.625	2.06	1.93	.19 SQ	5.875	3/8-16	4.50	6.50
34G56C	8.59	3.38	.625	2.06	1.93	.19 SQ	5.875	3/8-16	4.50	6.50

*For 1/4 HP 34 frame TEFC designs. Fan cover diameter is 3.88".

DC METRIC (IEC) FRAME MOTORS IP54

B5 IEC 56 & 63

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 next page for B5 flange and B14 face kits. B3 rigid base kits are listed below.

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—please contact LEESON for data.

B14 IEC 56 & 63

TOTALLY ENCLOSED • SCR RATED 180 VOLTS⌘ WITH B5 FLANGE

KW/HP	Full Load RPM	IEC Frame	Catalog Number	List Price	Disc. Sym.	App. Wgt. (lbs.)	F.L. Amps DC	"C" Dim. Inches (mm)
0.06/1/12	1800	56	**M1130146●**	$273	S	8	0.5	6.24 (158.6)
0.09/1/8	3000	56	**M1130150●**	273	S	9	0.7	6.74 (171.3)
	1800	56	**M1130147●**	294	S	10	0.7	7.55 (191.7)
0.12/1/6	3000	56	**M1130151●**	284	S	9	0.9	7.55 (191.7)
	1800	63	**M1130148**	334	S	7	0.9	8.30 (210.8)
0.18/1/4	3000	63	**M1130152●**	308	S	11	1.3	8.78 (223.1)
	1800	63	**M1130149**	359	S	13	1.3	9.50 (241.3)
0.25/1/3	3000	63	**M1130153**	341	S	11	1.7	9.50 (241.3)

These motors have accommodations for B3 base mountings with the kits below.

TOTALLY ENCLOSED • SCR RATED 180 VOLTS⌘ WITH B14 FACE

KW/HP	Full Load RPM	IEC Frame	Catalog Number	List Price	Disc. Sym.	App. Wgt. (lbs.)	F.L. Amps DC	"C" Dim. Inches (mm)
0.06/1/12	3000	56	**M1110024●**	$244	S	6	0.4	6.34 (177.0)
	1800	56	**M1130136●**	273	S	8	0.5	6.24 (158.6)
0.09/1/8	3000	56	**M1130140●**	273	S	9	0.7	6.74 (171.3)
	1800	56	**M1130137●**	294	S	14	0.7	7.55 (191.7)
0.12/1/6	3000	56	**M1130141●**	284	S	10	0.9	7.55 (191.7)
	1800	63	**M1130138**	334	S	8	0.9	8.30 (210.8)
0.18/1/4	3000	63	**M1130142●**	308	S	10	1.3	8.78 (223.1)
	1800	63	**M1130139**	359	S	10	1.3	9.50 (241.3)
0.25/1/3	3000	63	**M1130143**	341	S	10	1.7	9.50 (241.3)

Except for M1110024, these motors have accommodations for B3 base mountings with the kits below.

TEFC • SCR RATED 180 VOLTS⌘ • ROUND BODY

KW/HP	Full Load RPM	IEC Frame	Catalog Number	List Price	Disc. Sym.	App. Wgt. (lbs.)	F.L. Amps DC	"C" Dim. Inches (mm)
0.25/1/3	1800	71	**098014**	$346	A	23	1.7	11.28 (286.5)
0.37/1/2	3000	71	**098016**	370	A	21	2.5	10.78 (273.8)
	1800	71	**098015**	393	A	26	2.5	11.78 (299.2)
0.55/3/4	3000	71	**098017**	426	A	24	3.6	11.78 (299.2)
	1800	80	**108369**	486	A	34	3.5	14.64 (371.9)
0.75/1	3000	80	**108372**	486	A	45	4.9	14.64 (371.9)
	1800	80	**108370**	601	A	48	4.6	17.14 (435.4)
1.1/1 1/2	3000	80	**108373**	538	A	47	7.1	16.14 (410.0)
	1800	80	**108371**	793	A	52	7.0	17.14 (435.4)
	1800	90L	**118007**	1181	B	64	7.5	18.97 (481.8)
1.5/2	3000	90L	**118009**	1181	B	72	10.0	18.47 (469.1)
	1800	90L	**118008**	1416	B	84	9.5	20.47 (519.9)
2.2/3	3000	90L	**118010**	1416	B	82	16.0	19.47 (494.5)
	1800	112M	**118014**	1799	B	90	14.0	21.79 (553.5)

IMPORTANT: These round body motors require either a B3 rigid base, B14 face or B5 flange kit. Catalog number 118014 comes complete with IEC 112 B14 face and B3 foot; shaft diameter is 24mm.

B3 FOOT MOUNTING KITS

(For DC Metric Motors Only)

All motors are stocked with provisions to accommodate B3 foot mountings with the packages noted below.

IEC Frame	Catalog Number	List Price	Disc. Sym.
56	**175142**	$13	A
63	**175143**	13	A
71	**175144**	19	A
80	**175145**	19	A
90	**175146**	24	A

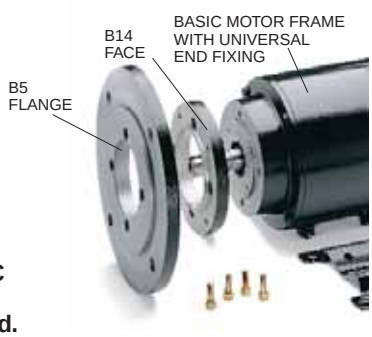
⌘ For 230 VAC input controls.
● These motors are totally enclosed, non-ventilated. Other ratings utilize IC41 cooling—external cooling fan on motor shaft.

DC MOTORS
METRIC (IEC) FRAME • SCR RATED

FLANGE AND FACE KITS FOR DC METRIC (IEC) FRAME MOTORS

An advantage of LEESON'S modular design concept is the possible use of a different diameter B5 flange or B14 face than is normally assigned to a motor by IEC dimensional standards. This flexibility makes it possible to accommodate a wide variety of gear reducers, pumps and similar close coupled motor mounted loads.

B5 B14



Round body DC Metric IEC motors will accept any of the flange or face kits listed.

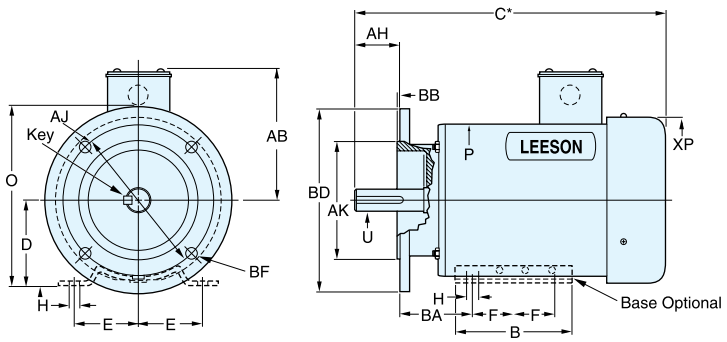
B5 FLANGE KITS (For DC Metric Motors Only)

IEC Frame	Catalog Number	List Price	Disc. Sym.	App. Wgt. (lbs.)	BD Flange Dia. (mm)	AK Register (mm)	BF Hole (mm)	AJ Bolt Circle (mm)
71	**175106**	$40	A	2	160	110	9	130
80	**175108**	40	A	3	200	130	12	165
90S/90L	**175108**	40	A	3	200	130	12	165
100L/112M	**175137**	99	A	5	250	180	15	215

B14 FACE KITS (For DC Metric Motors Only)

IEC Frame	Catalog Number	List Price	Disc. Sym.	App. Wgt. (lbs.)	BD Flange Dia. (mm)	AK Register (mm)	BF Tap (mm)	AJ Bolt Circle (mm)
71	**175107**	$40	A	1	105	70	6	85
80	**175109**	40	A	1	120	80	6	100
90S/90L	**175129**	40	A	1	140	95	6	115
100L/112M	**175130**	99	A	2	160	110	6	130

CONDENSED DIMENSIONS • DC METRIC (IEC) FRAME MOTORS



*For overall length, see motor listing.

IEC FRAME DIMENSIONS (Millimeters)

IEC Frame	Mounting					Shaft						B14 Face/B5 Flange					General			
	2E	2F	BA	D	H	U	AH✧	KEY	S	R	TAP	AJ	AK	BD	BF	BB	AB	XP	B	O
56	90	71	36	56	6	9	20	15	3	7.0	M3	65 100	50 80	80 120	M5 7	2.5 2.5	83	96	90	99
63	100	80	40	63	7	11	23	19	4	9.0	M4	75 115	60 95	90 140	M5 9	2.5 3.0	116	96	96	108
71	112	90	45	71	7	14	30	26	5	11.5	M5	85 130	70 110	105 160	M6 9	2.5 3.5	114	130	105	132
80	125	100	50	80	10	19	40	33	6	16.0	M6	100 165	80 130	120 200	M6 12	3.0 3.5	124	149	127	151
90S	140	100	56	90	10	24	50	36	8	20.5	M8	115 165	95 130	140 200	M8 12	3.0 3.5	135	182	152	173
90L	140	125	56	90	10	24	50	36	8	20.5	M8	115 165	95 130	140 200	M8 12	3.0 3.5	135	182	152	173
100L	160	140	63	100	12	28	60	41	8	24.5	M10	130 215	110 180	160 250	M8 15	3.5 4.0	135	182	176	173
112M	190	140	70	112	12	28	60	41	8	24.5	M10	130 215	110 180	160 250	M8 15	3.5 4.0	162	231	176	225

✧ Without face or flange AH shaft dimension is 12mm longer.

All dimensions in millimeters (1 inch = 25.4mm)

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 74.

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.

LOW VOLTAGE (12 & 24V) • TENV/TEFC NEMA C FACE WITH REMOVABLE BASE∑

HP	Full Load RPM	NEMA Frame	Catalog Number	List Price	Disc. Sym.	App. Wgt. (lbs.)	Arm. Volts DC	F.L. Amps DC	"C" Dim. (Inches)
1/4	1800	S56C	108045♣	$397	A	21	12	21.0	10.44
1/3	1800	S56C	108046♣	437	A	24	12	27.0	11.44
	1800	S56C	108050♣	417	A	22	24	13.5	10.94
1/2	1800	S56C	108047♣	453	A	29	12	39.0	12.44
	1800	S56C	108051♣	433	A	29	24	20.0	11.94
3/4	1800	S56C	108048◆**	501	A	30	12	58.0	13.81
	1800	S56C	108052**	452	A	30	24	29.0	12.81
1	1800	S56C	108322◆**	596	A	39	12	80.0	13.81
	1800	S56C	108053◆**	550	A	37	24	39.0	13.81

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

kW/HP	Full Load RPM	IEC Frame	Catalog Number	List Price	App. Wgt. (lbs.)	F.L. Amps DC	C Dim. (inches)
0.06/1/12	3000	56	M1110025^●	$215	5	3.3	5.34
	1800	56	M1110026^●	244	6	3.4	6.34
0.18/1/4	3000	63	M1130206*	275	13	11.0	7.75
	3000	63	M1130296^	275	9	11.0	7.75
	1800	63	M1130207*	315	13	10.0	8.75
	1800	63	M1130297^	315	9	10.0	8.75
	1800	71	098065	377	19	11.0	10.77
0.37/1/2	3000	71	098066	390	23	20.0	11.27
	1800	71	098067	412	23	20.0	12.27
0.75/1	3000	80	108456◆	451	33	40.0	14.14
	1800	80	108455◆	529	52	39.0	14.64
1.1/1 1/2	3000	80	108457◆	503	33	65.0	15.64
1.5/2	3000	80	108458◆	578	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 77-78.

* Dedicated B5 Flange
^ Dedicated B14 Face
● These motors are totally enclosed, non-ventilated. Others are TEFC/IC41 cooling – external cooling fan on motor shaft.

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 maybe 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	List Price	App. Wgt.(lbs.)	Disc. Sym.
12/24	16	175290	$344	2	A
12/24	60	175291	420	4	A
36/48	60	175292	420	4	A

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	List Price	Disc. Sym.	App. Wgt. (lbs.)	Input Volts DC	F.L. Amps DC
1/20	1750	25CS	M1110006Ⓑ	$162	S	3	12	4.4
1/10	4200						24	4.4
1/14	1750	31AS	M1120040	189	S	4	12	7.7
1/7	4200						24	7.7
1/7	1750	31ES	M1120044	251	S	9	12	13.0
1/4	3500						24	13.0
1/6	1800	31GS	M1120046	265	S	8	12	14.0
1/3	3900						24	14.0

For dimensions, see drawings on page 76.

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

♣ Built-in conduit box located at 12:00.
◆ Studs at 12:00.
∑ If base is removed, do not reinstall bolts without using washers to compensate for thickness of base.
** These motors are totally enclosed fan cooled.
Ⓑ 25 frame motors have provision for an optional conduit box catalog number M1760000, see page 156.