



STOCK DC MOTORS

NEMA FRAME • SCR RATED

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.

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.

TACH ADAPTER KITS



All necessary parts to mount listed tachometers to stock TEFC SCR motors manufactured June 1991 and later. Consists of machined cast fan cover, coupling and hardware. Does not include tachometer. Tach adapter kit is not suitable for catalog number 108502.

MODIFICATION KITS

DC motors in NEMA 56C frame may be converted to 42/48 C face using the following:

Frame	Catalog No.
SS56C	175182
S56C	175082 ◊

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

Frame	Catalog No.
S56C	175080 ◊

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

HP	Full Load RPM	NEMA Frame	Catalog Number	App. Wgt. (lbs.)	Arm. Volts DC	Control Volts AC Input	F.L. Amps DC	"C" Dim. (Inches)
1/4	1750	SS56C	098002	19	90	115	2.5	10.81
	1750	SS56C	098003	22	180	230	1.4	11.31
1/3	1750	SS56C	098004	23	90	115	3.5	11.31
	1750	SS56C	098005	23	180	230	1.7	11.31
1/2	2500	SS56C	098006	22	90	115	5.0	10.81
	2500	SS56C	098007	22	180	230	2.5	10.81
	1750	SS56C	098000	26	90	115	5.0	11.81
	1750	S56C	108014	29	90	115	5.0	12.81
	1750	SS56C	098008	25	180	230	2.5	11.81
	1750	S56C	108015	30	180	230	2.5	12.81
	2500	SS56C	098009	26	90	115	7.6	11.81
	2500	S56C	108016	29	90	115	7.6	12.81
	2500	SS56C	098010	25	180	230	3.8	11.81
	2500	S56C	108017	29	180	230	3.8	12.81
	1750	SS56C	098032	36	90	115	7.3	13.81
	1750	S56C	108018	38	90	115	7.6	13.81
	1750	SS56C	098069	36	180	230	3.8	13.81
	1750	S56C	108019	35	180	230	3.8	13.81
1	2500	S56C	108020	34	90	115	10.0	13.81
	2500	S56C	108021	38	180	230	5.0	13.81
	1750	S56C	108022	47	90	115	10.0	16.31
	1750	S56C	108023	39	180	230	5.0	14.81
1½	2500	S56C	108265	43	180	230	7.5	14.81
	1750	S56C	108092	53	180	230	7.6	16.88
	1750	S56/145TC	108262 ■	54	180	230	7.6	17.38
	1750	145TC	128000	70	180	230	7.5	18.34
2	2500	S56/145TC	108266 ■	51	180	230	8.6	16.88
	1750	145TC	128010	83	180	230	9.5	19.34
	1750	182/145TC	128001 ◄	84	180	230	9.5	19.34
	1750	182/145TC	108502 ◄	88	180	230	14.0	21.75

For dimensions, see drawing **K** on page 34.

Tachometer Type	Frame	Catalog Number	App. Wt. (lbs.)
GE 5PY Series	SS56	175156	5
	S56	175193	5
	56/145	175158	5
Servo-tek SA740 Series	SS56	175157	8
	S56	175194	8
	56/145	175159	8
Aipax	SS56	175173	8
	S56	175174	8
REO-315	SS56	175155	5
	S56	175197	5
	56/145	175798	5

◊ 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.

n 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.

STOCK DC MOTORS

EXPLOSION-PROOF AND WASHGUARD® • SCR RATED



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 3/4"-14NPT pipe-nipple in the top of the motor frame, opposite the shaft end. **No conduit box is 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	App. Wgt. (lbs.)	Arm. Volts DC	Control Volts AC Input	F.L. Amps DC	"C" Dim. (Inches)
1/3	1750	S56C	118015	23	90	115	3.5	13.41
1/2	1750	S56C	118016	30	90	115	4.7	14.41
	1750	S56C	118017	30	180	230	2.5	14.41
3/4	1750	S56C	118018	36	90	115	7.1	16.41
	1750	S56C	118019	36	180	230	3.3	16.41

For dimensions, see drawing **K** on page 34.

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	App. Wgt. (lbs.)
175026	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	App. Wgt. (lbs.)	Arm. Volts DC	Control Volts AC Input	F.L. Amps DC	"C" Dim. (Inches)
1/4	1750	S56C	108423	23	90	115	2.7	10.69
1/3	1750	S56C	108424	26	90	115	3.5	11.69
1/2	1750	S56C	108226	38	90	115	4.9	13.69
	1750	S56C	108227	43	180	230	2.4	13.69
3/4	1750	S56C	108228	53	90	115	7.0	15.69
	1750	S56C	108229	50	180	230	3.5	15.69
1	1750	S56C	108230**	45	90	115	10.0	15.81
	1750	S56C	108231**	42	180	230	5.0	14.81
1 1/2	1750	S56C	108232**	50	180	230	7.6	16.81

For dimensions, see drawing **K** on page 34.

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

KW/HP	Full Load RPM	IEC Frame	Catalog Number	Wgt. (lbs.)	Arm. Volts DC	F.L. Amps DC	"C" Dim. Inches (mm)
.37/1/2	1750	71	098040	22	180	2.5	10.69 (299)
.55/3/4	1750	80	108407	52	180	3.5	16.02 (407)

For dimensions, see drawing **G** on page 33.

** These motors are totally enclosed fan cooled.

▲ These motors meet IEEE 45 and military specification CCM-1807 including fungus proofing conforming to MIL-173.

⑦ If base is removed, do not reinstall bolts without using washers to compensate for the thickness of base.



STOCK DC MOTORS

SUB-FHP • SCR RATED

SUB-FHP MOTORS



31/34 Frame



24 Frame

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.

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.

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. Class F insulated with high temperature welded commutators.

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

HP	Full Load RPM	Frame	Catalog Number	App. Wgt. (lbs.)	Arm. Volts DC	Control Volts AC Input	F.L. Amps DC
1/25	3500	24AS	M1110014 (B)	3	90	115	0.5
	1750	24CS	M1110003 (B)	3	90	115	0.5
	1750	31AS	M1120064	5	180	230	0.3
1/15	3500	24CS	M1110015 (B)	4	90	115	0.7
	1750	31BS	M1120013	5	90	115	0.8
	1750	31BS	M1120039	7	180	230	0.4
1/10	3500	31BS	M1120060	5	90	115	1.3
	1750	31CS	M1120014	7	90	115	1.1
	1750	31CS	M1120041	7	180	230	0.6
1/8	3500	31CS	M1120059	6	90	115	1.5
	1750	31ES	M1120027	7	90	115	1.3
	1750	31ES	M1120045	7	180	230	0.7
	1750	34D42CZ	M1130053	8	90	115	1.4
	1750	34D42CZ	M1130118	7	180	230	0.7
1/6	3500	31ES	M1120058	9	90	115	1.9
	1750	31GS	M1120042	9	90	115	1.8
	1750	31GS	M1120043	11	180	230	0.9
	1750	34E56C	M1130054	11	90	115	1.7
	1750	34E56C	M1130119	11	180	230	0.9
1/4	3500	31GS	M1120062	9	90	115	2.6
	1750	34G56C	M1130055**	13	90	115	2.7
	1750	34G56C	M1130120**	13	180	230	1.4

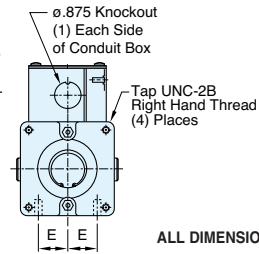
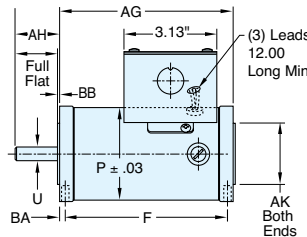
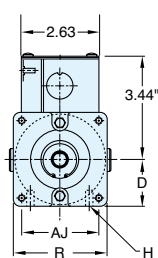
(B) 24 frame motors have provisions for an optional conduit box catalog number M1760000, see page 11.

** These motors are totally enclosed fan cooled.

24 & 31 FRAME SQUARE FLANGE MOUNT

Note: Optional conduit box not included on 24 frame models.

Conduit box dimensions shown here are for 31 frame only.

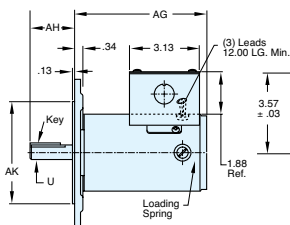
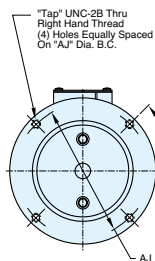


ALL DIMENSIONS IN INCHES

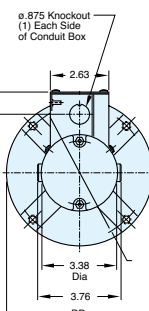
Frame & Type	AG	P	BD	U	AH	AH-BB	AJ	TAP	R	AK	BB	D	BA	E	F	H	
24	AS	4.08	2.38	2.75	.312	1.5	1.00	1.73	8-32	2.47	.997	.03	1.23	.125	.625	3.83	8-32
	CS	4.94	2.38	2.75	.312	1.5	1.00	1.73	8-32	2.47	.997	.03	1.23	.125	.625	4.92	8-32
31	AS	5.39	3.07	3.45	.500	1.5	1.00	2.63	1/4-20	3.16	1.97	.07	1.57	.235	1.000	4.92	1/4-20
	BS	5.39	3.07	3.45	.500	1.5	1.00	2.63	1/4-20	3.16	1.97	.07	1.57	.235	1.000	5.92	1/4-20
	CS*	5.89	3.07	3.45	.500	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	.500	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	.500	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 .50" 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 3.38".

STOCK DC MOTORS

METRIC (IEC) FRAME • SCR RATED AND LOW VOLTAGE



MODULAR DESIGN CONCEPT

LEESON's larger horsepower SCR rated motors, in IEC frames 71 through 100, utilize a unique modular mounting design. The basic frame is fitted with a universal end fixing and also has provisions to accept a rigid foot.

The basic frame can be field-adapted for use as a B3 footed motor, B5 or B14 flange or face mounted motor or a combination such as B3 foot with B5 flange.

The universal end fixing of the frame will accept the IEC 71, 80, 90, 100 or 112 frame B5 flange or B14 face adapter packages.



METRIC FRAME FLANGE AND FACE KITS (FRAMES 71-112)

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 FLANGE KITS

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

B14 FACE KITS

IEC Frame	Catalog Number	App. Wgt. (lbs.)	BD Flange Dia. (mm)	AK Register (mm)	BF Tap (mm)	AJ Bolt Circle (mm)
71	175107	2	105	70	6	85
80	175109	2	120	80	6	100
90S/90L	175129	2	140	95	6	115
100L/112M	175130	3	160	110	6	130

TEFC • SCR RATED 180 VOLTS~ • ROUND BODY

KW/HP	Full Load RPM	IEC Frame	Catalog Number	App. Wgt. (lbs.)	F.L. Amps DC	"C" Dim. Inches (mm)
0.25/1/3	1800	71	098014	23	1.7	11.28 (286)
0.37/1/2	3000	71	098016	21	2.5	10.78 (274)
	1800	71	098015	26	2.5	11.78 (299)
0.55/3/4	3000	71	098017	24	3.6	11.78 (299)
	1800	80	108369	34	3.5	14.64 (372)
0.75/1	3000	80	108372	45	4.9	14.64 (372)
	1800	80	108370	48	4.6	17.14 (435)
1.1/1 1/2	3000	80	108373	47	7.1	16.14 (410)
	1800	80	108371	52	7.0	17.14 (435)
	1800	90L	118007	64	7.5	18.97 (482)
1.5/2	3000	90L	118009	72	10.0	18.47 (469)
	1800	90L	118008	84	9.5	20.47 (520)
2.2/3	3000	90L	118010	82	16.0	19.47 (495)
	1800	112M	118014	90	14.0	21.79 (553)

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.

For dimensions, see drawings G, H, I or J on page 33.

~ Control input is 230 volts AC.

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 (mm)
0.06/1/12	3000	56	M1110025^●	5	3.3	5.97 (152)
0.06/1/12	1800	56	M1110026^●	6	3.4	6.97 (177)
0.18/1/4	3000	63	M1130206*	13	11.0	7.75 (197)
0.18/1/4	3000	63	M1130296^	9	11.0	7.75 (197)
0.18/1/4	1800	63	M1130207*	13	10.0	8.75 (222)
0.18/1/4	1800	63	M1130297^	9	10.0	8.75 (222)
0.18/1/4	1800	71	098065	19	11.0	10.77 (274)
0.37/1/2	3000	71	098066	23	20.0	11.27 (286)
0.37/1/2	1800	71	098067	23	20.0	12.27 (312)
0.75/1	3000	80	108456+	33	40.0	14.14 (359)
0.75/1	1800	80	108455+	52	39.0	14.64 (372)
1.10/1 1/2	3000	80	108457+	33	65.0	15.64 (397)
1.50/2	3000	80	108458+	43	78.0	17.14 (435)

IMPORTANT: These round body motors (IEC71 and 80) require either B14 face, B5 flange or B3 foot. See listings below.

For dimensions, see drawings E, F, G, H or I on page 33.

* Dedicated B5 Flange

^ Dedicated B14 Face

+ Studs at 12:00

● These motors are totally enclosed, non-ventilated. Other ratings are TEFC/IC41-external cooling fan on motor shaft.



B3 FOOT MOUNTING

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

IEC Frame	Catalog No.
56	175142
63	175143
71	175144
80	175145
90	175146



STOCK DC MOTORS

METRIC (IEC) FRAME • SCR RATED

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 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.



B5 IEC 56 & 63



B14 IEC 56 & 63



METRIC (IEC) FRAME

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.



TOTALLY ENCLOSED • SCR RATED 180 VOLTS÷ WITH B5 FLANGE

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

These motors have accommodations for B3 base mountings with the kits on page 7.

TOTALLY ENCLOSED • SCR RATED 180 VOLTS÷ WITH B14 FACE

KW/HP	Full Load RPM	IEC Frame	Catalog Number	App. Wgt. (lbs.)	F.L. Amps DC	"C" Dim. Inches (mm)
0.06/1/12	3000	56	M1110024●	6	0.4	6.97 (117.0)
	1800	56	M1130136●	8	0.5	6.24 (158.6)
0.09/1/8	3000	56	M1130140●	9	0.7	6.74 (171.3)
	1800	56	M1130137●	14	0.7	7.55 (191.7)
0.12/1/6	3000	56	M1130141●	10	0.9	7.55 (191.7)
	1800	63	M1130138	8	0.9	8.30 (210.8)
0.18/1/4	3000	63	M1130142●	10	1.3	8.78 (223.1)
	1800	63	M1130139	10	1.3	9.50 (241.3)
0.25/1/3	3000	63	M1130143	10	1.7	9.50 (241.3)

Except for M1110024, these motors have accommodations for B3 base mountings with the kits on page 7.

÷ For 230 VAC input controls.

● These motors are totally enclosed, non-ventilated. Other ratings utilize IC41 cooling—external cooling fan on motor shaft.

LOW VOLTAGE 12 & 24V • TENV B14 FACE MOUNT

Watts	HP	Full Load RPM	IEC Frame	Catalog Number	App. Wgt. (Kg.)	Arm. Volts DC	F.L. Amps DC	C Dim. (mm)
50	1/15	3000	56	980.159	2,3	12	6,0	116,6
		3000	56	980.143	2,3	24	3,2	116,6
100	1/8	3000	56	970.600	3,0	12	12,0	140,5
		3000	56	970.601	3,0	24	5,30	140,5
125	1/6	3000	56	970.620	3,5	12	13,0	153,0
		3000	56	970.621	3,5	24	6,50	153,0

For dimensions, see drawings Q & R on page 35.