



CUSTOM MOTORS & GEARMOTORS

LEESON is a leading manufacturer of application specific "customized" AC and DC motors and gearmotors. In fact, about 50% of LEESON's production is dedicated to serving the custom motor requirements of a wide variety of OEM's manufacturing machinery for industrial and commercial use. Reasonable custom production lots, combined with LEESON's DIT, Delivery in Time Program, can tailor shipments to your production needs.

To a greater degree than for AC applications, the careful matching of a direct current motor to an application can result in enhanced performance, life and minimum motor purchase cost. This is especially true of intermittent duty DC low voltage and sub-fractional HP applications. LEESON's DC application engineering staff is experienced in a wide variety of applications and is available to assist you in the design and development of the motor best suited to your

needs and wants. Usually a prototype is produced for test and evaluation on the application before production quantities.

The application data on the following page addresses the possibilities and opportunities for an application specific design in only a very general sense. Many additional voltage, speed, duty cycle ratings and mechanical features are possible. If you feel your application can be most efficiently addressed by a custom motor solution...please contact LEESON.

Tell us about your custom motor needs by completing the Application Design Outline on page 30 and faxing it to us. We'll contact you promptly to mutually determine the next step in the design process.



CUSTOM NEMA FRAME DC MOTORS

MOTOR SELECTION GUIDE

LOW VOLTAGE MOTORS

NEMA FRAMES SS56 and S56

12, 24 or 36 VOLTS^④

HP	RPM	Full Load Amperage			Continuous Duty Enclosures				15 Minute Duty▲ Approximate Amperage			
		12V	24V	36V	ODP Frame	"C" Dim.	TEFC Frame	"C" Dim.	HP	12V	24V	36V
1/4	1200	20	10	6.7	SS56	9.22	SS56	10.31	1/2	40	20	15
	1500	20	10	6.7	SS56	9.22	SS56	10.31		40	20	15
	1800	21	10	6.9	SS56	9.22	SS56	10.31		40	20	15
	2500	21	11	7.0	SS56	9.22	SS56	9.81		40	20	15
	3000	21	11	7.0	SS56	9.22	SS56	9.81		40	20	15
1/3	1200	27	13	8.9	SS56	9.72	SS56	11.31	3/4	65	30	20
	1500	27	13	8.9	SS56	9.22	SS56	10.81		65	30	20
	1800	27	14	9.2	SS56	9.22	SS56	10.31		65	30	20
	2500	28	14	9.2	SS56	9.22	SS56	10.31		65	30	20
	3000	28	14	9.3	SS56	9.22	SS56	10.31		65	30	20
1/2	1200	40	20	13	SS56	10.72	SS56	12.31	1	80	40	30
	1500	40	20	13	SS56	10.22	SS56	11.81		80	40	30
	1800	40	20	13	SS56	9.72	SS56	11.81		80	40	30
	2500	40	20	13	SS56	9.22	SS56	11.31		80	40	30
	3000	41	21	14	SS56	9.22	SS56	11.31		80	40	30
3/4	1200	58	29	19	SS56	12.72	SS56	14.31	1 1/2	—	65	45
	1500	58	29	19	SS56	11.72	SS56	13.31		—	65	45
	1800	58	29	19	SS56	11.22	SS56	13.31		—	65	45
	2500	60	30	20	SS56	10.22	SS56	12.81		—	65	45
	3000	60	30	20	SS56	9.72	SS56	12.81		—	65	45
	1200	58	29	19	S56	13.19	S56	15.31	1 1/2	150	65	45
	1500	58	29	19	S56	12.19	S56	14.81		150	65	45
	1800	58	29	19	S56	11.69	S56	14.31		150	65	45
	2500	60	30	20	S56	10.69	S56	13.81		150	65	45
	3000	60	30	20	S56	10.19	S56	13.81		150	65	45
1	1200	74	37	25	S56	14.69	S56	16.81	2	—	90	60
	1500	78	39	26	S56	13.69	S56	16.31		—	90	60
	1800	78	39	26	S56	12.69	S56	15.81		—	90	60
	2500	78	39	26	S56	11.69	S56	15.31		—	90	60
	3000	80	40	27	S56	11.19	S56	14.81		—	90	60
1 1/2	1800	110	57	38	S56	15.19	—	—	3	—	—	—
	2500	110	57	38	S56	13.69	S56	15.81		—	—	90
	3000	120	58	39	S56	12.69	S56	15.31		—	—	90
2	2500	—	76	51	S56	15.69	—	—	4	—	—	100
	3000	—	78	52	S56	14.69	S56	16.81		—	—	100

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

▲ Periodic intermittent duty of 15 minutes on at rated load followed by 30 minutes off.

④ Additional voltage ratings of 48, 60, 72 or other inputs also available.



Custom Application Specific Mounting



56C Face Mounting

General Specifications:

The ratings listed are typical designs in continuous and periodic intermittent duty rated motors. Various additional speeds, voltages and duty ratings are possible.

Low voltage direct current motors are well suited for intermittent duty applications requiring peak torques of several times the rated dead load capability of the motor. Proper application of motors to loads having these characteristics will result in the most compact, cost effective motor design. A detailed description of the duty cycle, including off and running time with or without load, and duration and repetition of cycle per hour or day is required.

Electrical Specifications

These motors are intended for direct current input having a form factor of 1.0 to 1.05 such as is provided by a battery, generator or solar power. They have linear speed and torque characteristics. The output speed can be adjusted by voltage change using series/parallel battery connections or adjustable voltage controls having a form factor of 1.05 or lower.

Mechanical Features

In addition to the standardized mountings pictured here, many application specific modifications have been developed for close coupling of hydraulic pumps and gear reducers.

In addition motors encased within driven equipment, or otherwise protected from the environment, can be built to open drip-proof protection standards often resulting in a smaller more cost effective design.

Engineering Services

LEESON's application engineering staff is available, at no additional cost, to assist in developing the motor design best suited for applications. See page 30 for easy-to-use Design Outline.

CUSTOM NEMA FRAME DC MOTORS

MOTOR SELECTION GUIDE



ENHANCED PERFORMANCE "TURBO" DESIGN LOW VOLTAGE MOTORS

NEMA FRAMES S56C

12, 24, 36 or 48 VOLTS^④

HP	RPM	Full Load Amperage				Continuous Duty Enclosures					15 Minute Duty Enclosures [▲]						
		12V	24V	36V	48V	ODP Frame	"C" Dim.	TEFC Frame	"C" Dim.	TENV Frame	"C" Dim.	ODP Frame	"C" Dim.	TEFC Frame	"C" Dim.	TENV Frame	"C" Dim.
2	1800	146	73	49	37	S56C	13.06	S56C	16.31	S56C	16.56	S56C	15.06	S56C	14.81	S56C	13.56
	2500	146	73	49	37	S56C	14.06	S56C	14.81	S56C	14.56	S56C	13.06	S56C	16.31	S56C	12.56
	4000	146	73	49	37	S56C	12.06	S56C	15.31	S56C	12.56	S56C	11.06	S56C	14.31	S56C	13.56
3	1800	—	110	73	55	S56C	14.56	—	—	—	—	S56C	14.56	S56C	16.81	S56C	16.56
	2500	—	110	73	55	S56C	13.06	S56C	16.81	—	—	S56C	13.06	S56C	15.31	S56C	14.56
	4000	—	110	73	55	S56C	14.06	S56C	14.31	S56C	14.56	S56C	12.56	S56C	15.81	S56C	12.56
4	1800	—	146	98	73	S56C	16.56	—	—	—	—	S56C	16.56	S56C	18.31	—	—
	2500	—	146	98	73	S56C	14.56	—	—	—	—	S56C	14.56	S56C	16.31	S56C	15.56
	4000	—	146	98	73	S56C	12.56	S56C	15.81	S56C	14.56	S56C	14.06	S56C	17.31	S56C	13.06
5	1800	—	183	122	91	—	—	—	—	—	—	—	—	—	—	—	—
	2500	—	183	122	91	S56C	16.06	—	—	—	—	S56C	15.56	S56C	18.31	—	—
	4000	—	183	122	91	S56C	13.06	—	—	—	—	S56C	13.06	S56C	15.31	S56C	14.56
6	1800	—	—	146	110	—	—	—	—	—	—	—	—	—	—	—	—
	2500	—	—	146	110	—	—	—	—	—	—	S56C	16.56	—	—	—	—
	4000	—	—	146	110	S56C	15.56	—	—	—	—	S56C	13.56	S56C	16.31	—	—
7	1800	—	—	170	128	—	—	—	—	—	—	—	—	—	—	—	—
	2500	—	—	170	128	—	—	—	—	—	—	—	—	—	—	—	—
	4000	—	—	170	128	—	—	—	—	—	—	S56C	14.56	S56C	17.31	—	—
8	1800	—	—	195	146	—	—	—	—	—	—	—	—	—	—	—	—
	2500	—	—	195	146	—	—	—	—	—	—	—	—	—	—	—	—
	4000	—	—	195	146	—	—	—	—	—	—	S56C	15.56	S56C	18.31	—	—

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

▲ Periodic intermittent duty of 15 minutes on at rated load followed by 30 minutes off.



General Specifications:

"Turbo" design low-voltage DC motors offer enhanced performance where greater torque and horsepower ratings are required in a compact package. Thinner, longer magnets allow increased armature diameter without additional barrel diameter. Four-brush design used in larger horsepower. Use this table as a guide to availability and performance. Various additional speeds, voltages, duty ratings and frame lengths ("C" dimensions) are possible.

Because low-voltage DC motors are typically used in intermittent-duty applications, careful application engineering will result in the most compact and cost-effective motor design. A detailed description of duty cycle, including run time and off time duration, motor loading and repetition of cycles is required.

Electrical Specifications

These motors are intended for direct current input having a form factor of 1.0 to 1.05 such as that provided by battery, generator or solar power. They have linear speed and torque characteristics. Output speed can be adjusted by changing voltage through series/parallel battery connections or adjustable voltage controls having a form factor of 1.05 or lower.

Mechanical Features

Low-profile "48 frame" barrel. Strong, rolled steel construction with cast aluminum endshields and cast iron bearing inserts. Permanently lubricated sealed ball bearings. Available in a variety of mountings including NEMA C face, with or without base, and four-bolt pump mounting. Special mountings quoted on request.

Engineering Services

LEESON's engineering staff is available, at no additional cost, to assist in application-specific designs. Please use the Design Outline on page 30 to provide input.



Open drip proof frames allow maximum cooling and highest horsepower ratings in clean, protected environments. Use TEFC or TENV enclosures where greater protection is required.



Custom shaft configurations and mountings allow ideal fit with driven equipment.



CUSTOM DC MOTORS SUB-FHP

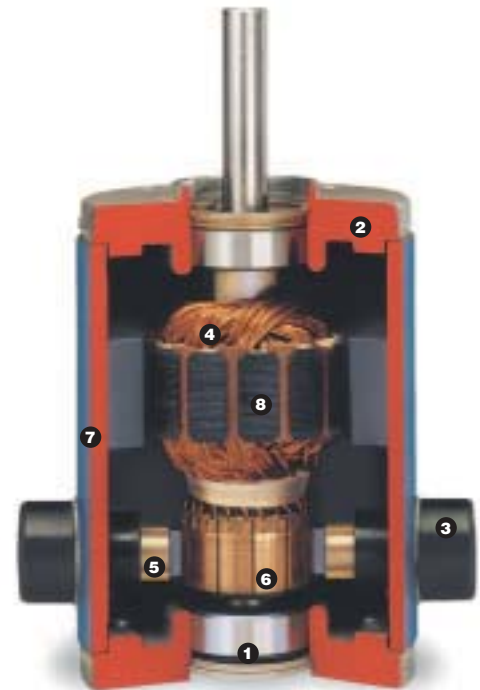
LEESON now offers OEM customers two major design types of custom sub-fractional horsepower DC motors. For demanding applications, there's the LEESON line with a complete range of industrial-duty features. For light industrial or commercial applications, especially those involving longer manufacturing runs, look to our Tru-Torq line, which offers maximum value with application-appropriate features.

LEESON Motors: Top Performance In Demanding Applications

TYPICAL LEESON PM DC MOTOR FEATURES:

- ❶ **Ball bearings (sealed or shielded)** ensure positive shaft alignment, increased reliability, and all-angle mounting flexibility. Preload spring with washer minimizes end play, reduces vibration and noise.
- ❷ **380 alloy aluminum end shields** are high-pressure die cast. Mating surfaces are machined for precise alignment and bearing fit, allowing accurate brush tracking and maximum motor life.
- ❸ **Brushes are accessible** for easy inspection and replacement, without disassembly of motor.
- ❹ **UL recognized insulation system** rated Class F or Class H. Copper magnet wire protected by solventless polyester varnish, for a homogenous, vibration-resistant winding with environmental resistance and high overload capacity.
- ❺ **Brass cartridge-type brush holders** with constant pressure stainless steel spring for positive alignment of high current capacity brushes. Provides for "black band" commutation even in reversing applications.
- ❻ **Molded commutator** of silver-bearing copper with high temperature, fusion-welded connections for vibration resistance and enhanced reliability.
- ❼ **Heavy-gauge, painted steel frame** for maximum structural integrity.
- ❽ **Dynamically balanced armature/rotor** for vibration-free, quiet performance.

A wide variety of mountings are available for both LEESON and Tru-Torq motors. This includes customer-specific designs. Motor-mounted gearheads, brakes, tachometers, and encoders are also available.



Tru-Torq Motors: Maximum Value In PM DC Motors

TYPICAL TRU-TORQ PM DC MOTOR FEATURES:

- ❶ **Self-aligning sleeve bearings** of sintered bronze, with wide temperature range oil impregnation for quiet operation and long life. Ball bearing designs optional.
- ❷ **Zinc alloy endplates** are high-pressure cast for rigidity and reduced cost.
- ❸ **Internal brushes are standard** for lower cost. A wide range of brush grades and sizes are available to match application voltages and life expectations. Cartridge-type brush holders also available.
- ❹ **UL recognized insulation system.** Copper magnet wire is varnish-impregnated, yielding a vibration-resistant winding with environmental protection.
- ❺ **Molded commutator** of silver-bearing copper with high temperature, fusion welded tang connections for reduced cost. Epoxy reinforcement available for vibration resistance and enhanced reliability.
- ❻ **Zinc-plated steel frame** for extra corrosion resistance. Unpainted endcaps are standard. Painted frame and endcaps available. Ceramic magnets are bonded to the frame with high-strength, single component epoxy, for structural integrity and performance.

SCR RATED MOTORS

SUB-FHP FRAMES 24, 31 & 34

90 or 180 VOLTS, 1.3 TO 1.4 FORM FACTOR

HP	RPM	Full Load Amperage		Torque (oz-in)	TENV Frame & Type*
		90V	180V		
1/25	1500	0.5	①	27	24D
	1800	0.5	①	22	24C
	2500	0.5	0.2	16	24B
	3000	0.5	0.2	13	24A
1/20	1500	0.5	①	34	24E
	1800	0.5	①	28	24D
	2500	0.5	0.3	20	24D
	3000	0.5	0.3	17	24C
1/15	1500	0.8	0.4	45	31C
	1800	0.8	0.4	37	31B
	2500	0.8	0.4	27	31A
	3000	0.8	0.4	22	31A
1/12	1500	1.0	0.5	56	31D
	1800	1.0	0.5	47	31C
	2500	1.0	0.5	34	31B
	3000	1.0	0.5	28	31A
1/10	1500	1.2	0.6	67	31E
	1800	1.2	0.6	56	31D
	2500	1.2	0.6	40	31B
	3000	1.2	0.6	34	31B
1/8	1500	1.5	0.8	84	34F
	1800	1.5	0.8	70	34D
	2500	1.5	0.8	50	34C
	3000	1.5	0.8	42	34C
1/5	1500	2.2	1.1	134	34G**
	1800	2.2	1.1	112	34G
	2500	2.2	1.1	81	34G
	3000	2.2	1.1	67	34E
1/4	1800	2.7	1.4	140	34G**
	2500	2.7	1.4	101	34G
	3000	2.7	1.4	84	34G

For dimensions, see drawings **A**, **B**, **C** or **D** on page 32.

① Consult factory, since 31 frame needed for 180V designs.

* 24 frame diameter is 2.38 inches.

31 frame diameter is 3.11 inches.

34 frame diameter is 3.38 inches.

** These motors are totally enclosed fan cooled.



24 Frame, 2.38" diameter



31 Frame, 3.11" diameter



34 Frame, 3.38" diameter

General Specifications:

The ratings listed are typical designs in continuous and periodic intermittent duty rated motors. Various additional speeds, voltages and duty ratings are possible.

Precision sub-fractional horsepower, permanent magnet DC 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.

Electrical Features:

Continuous duty with full-wave, unfiltered rectified SCR (thyristor) controls.

Filtered and pulse width modulated (PWM) motor ratings also available.

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.

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 simplifies connections.

Worm-type and parallel shaft speed reducers also available.

Engineering Services:

LEESON's application engineering staff is available, at no additional cost, to assist in developing the motor design best suited for applications.



CUSTOM DC MOTORS

SUB-FHP · LOW VOLTAGE

LOW VOLTAGE MOTORS

SUB-FHP FRAMES 24, 31 & 34

12, 24 or 36 VOLTS^④, 1.0 FORM FACTOR

HP	RPM	Full Load Amperage			TENV Frame & Type*	15 Minute Duty▲ Approximate Amperage			
		12V	24V	36V		HP	12V	24V	36V
1/25	1500	3.5	1.8	1.2	24C	1/12	7	3.5	2.5
	1800	3.5	1.8	1.2	24B		7	3.5	2.5
	2500	3.5	1.8	1.2	24B		7	3.5	2.5
	3000	3.5	1.8	1.2	24A		7	3.5	2.5
1/20	1500	4.3	2.1	1.4	24C	1/10	8.5	4	3
	1800	4.3	2.1	1.4	24C		8.5	4	3
	2500	4.3	2.1	1.4	24B		8.5	4	3
	3000	4.3	2.1	1.4	24B		8.5	4	3
1/15	1500	5.7	2.8	1.6	24D	1/8	10	5.5	3.5
	1800	5.7	2.8	1.6	24C		10	5.5	3.5
	2500	5.7	2.8	1.6	24C		10	5.5	3.5
	3000	5.7	2.8	1.6	24B		10	5.5	3.5
1/12	1500	7.1	3.5	2.4	24E	1/6	15	7	5
	1800	7.1	3.5	2.4	24E		15	7	5
	2500	7.1	3.5	2.4	24D		15	7	5
	3000	7.1	3.5	2.4	24C		15	7	5
1/10	1500	8.5	4.3	2.8	31C	1/5	15	8.5	5.5
	1800	8.5	4.3	2.8	31B		15	8.5	5.5
	2500	8.5	4.3	2.8	31B		15	8.5	5.5
	3000	8.5	4.3	2.8	31A		15	8.5	5.5
1/8	1500	10	5.2	3.5	31E	1/4	20	10	7
	1800	10	5.2	3.5	31C		20	10	7
	2500	10	5.2	3.5	31B		20	10	7
	3000	10	5.2	3.5	31B		20	10	7
1/5	1500	16 ^③	7.8	5.2	34G**	1/3	25	15	8.5
	1800	16 ^③	7.8	5.2	34G		25	15	8.5
	2500	16 ^③	7.8	5.2	34D		25	15	8.5
	3000	16 ^③	7.8	5.2	34C		25	15	8.5
1/4	1800	19 ^③	9.7	6.5	34F**	1/2	40	20	15
	2500	19 ^③	9.7	6.5	34G		40	20	15
	3000	19 ^③	9.7	6.5	34E		40	20	15

For dimensions, see drawings **A**, **B**, **C** or **D** on page 32.



24 Frame, 2.38" diameter



31 Frame, 3.11" diameter



34 Frame, 3.38" diameter

General Specifications:

The ratings listed are typical designs in continuous and periodic intermittent duty rated motors. Various additional speeds, voltages and duty ratings are possible.

Low voltage direct current motors are well suited for intermittent duty applications requiring peak torques of several times the rated dead load capability of the motor. Proper application of motors to loads having these characteristics will result in the most compact, cost effective motor design. A detailed description of the duty cycle, including off time and running time with or without load, and duration and repetition of the cycle per hour or day is required.

Electrical Specifications:

These motors are intended for direct current input having a form factor of 1.0 to 1.05 such as is provided by a battery, generator or solar power. They have linear speed torque characteristics. The output speed can be adjusted by voltage change using series/parallel battery connections or adjustable voltage controls having a form factor of 1.05 or lower.

Mechanical Features:

In addition to the standardized mountings pictured here, many application specific modifications have been developed for close coupling of hydraulic pumps and gear reducers.

Worm-type and parallel shaft speed reducers also available.

Engineering Services:

LEESON's application engineering staff is available, at no additional cost, to assist in developing the motor design best suited for applications.

③ Consult factory, since amps exceed brush current density for continuous duty.
 ▲ Periodic intermittent duty of 15 minutes on at rated load followed by 30 minutes off.
 * 24 frame diameter is 2.38 inches.
 31 frame diameter is 3.11 inches.
 34 frame diameter is 3.38 inches.
 ④ Additional voltage ratings of 48, 60, 72 or other inputs also available.
 ** These motors are totally enclosed fan cooled.



SCR RATED MOTORS
SUB-FHP FRAMES 2.25", 2.50", 3.00", & 3.13"
90 or 180 VOLTS, 1.3 TO 1.4 FORM FACTOR

HP	Rated Torque (oz-in)	RPM	Amperage 90V	TENV Frame & Type (inches dia.)
1/60	10	1750	0.25	2.25 A
1/40	10	2500	0.35	2.25 B
1/35	15	1750	0.34	2.25 B
	17	1750	0.36	2.50 A
1/30	15	2500	0.48	2.25 B
	20	1750	0.42	2.25 B
	21	1750	0.44	2.50 B
1/25	17	2500	0.52	2.50 A
	25	1750	0.50	2.50 C
	25	1750	0.50	3.00 A
	25	1750	0.50	3.13 A
1/20	20	2500	0.59	2.25 B
	21	2500	0.62	2.50 C
	28	1750	0.54	3.00 B
	28	1750	0.54	3.13 B
1/17	25	2500	0.71	2.50 C
	25	2500	0.71	3.00 A
	25	1750	0.71	3.13 A
	34	1750	0.64	3.00 C
	34	1750	0.64	3.13 C
1/15	28	2500	0.77	3.00 B
	28	2500	0.77	3.13 B
	40	1750	0.73	3.00 D
	40	1750	0.73	3.13 D
1/12	34	2500	0.91	3.00 C
	34	2500	0.91	3.13 C
1/10	40	2500	1.04	3.00 D
	40	2500	1.04	3.13 D
1/5	70	2900	2.00	3.13 E

For dimensions, see drawings **M**, **N**, **O** or **P** on page 35.



2.50" Frame



3.00" Frame



3.13" Frame

General Specifications:

The ratings listed are typical designs in continuous and periodic intermittent duty rated motors. Various additional speeds, voltages and duty ratings are possible.

Electrical Options:

- SCR ratings include 90 or 180V and 115 or 220V (half-wave)
- Filtered and pulse width modulated (PWM) motor ratings also available
- Reversible
- Thermal protection
- Cartridge-type brush holders

Mechanical Options:

- Ball bearing design
- Special shafts
- Custom mounting configurations
- Worm-type and parallel shaft speed reducers also available
- Custom finish/painted
- Metric thru-bolts & shafts
- Vented housing
- Dynamically balanced armature

Engineering Services:

LEESON's application engineering staff is available, at no additional cost, to assist in developing the motor design best suited for applications.



TYPICAL TRU-TORQ CUSTOM MOTORS



CUSTOM DC MOTORS

SUB-FHP · LOW VOLTAGE

LOW VOLTAGE MOTORS

SUB-FHP FRAMES 2.25", 2.50", 3.00", & 3.13"
12, 24 & 36 VOLTS, 1.0 FORM FACTOR

HP	Rated Torque (oz-in)	RPM	Amperage 12V	TENV Frame & Type (inches dia.)
1/50	10	1800	1.91	2.25 A
1/40	10	2400	2.55	2.25 B
1/30	18	1800	3.12	2.25 B
	20	1800	3.41	2.50 A
1/25	18	2400	4.16	2.25 B
	23	1800	3.75	2.25 B
	24	1800	3.92	2.50 B
	25	1800	4.08	3.00 A
	25	1800	4.08	3.13 A
1/20	20	2400	4.55	2.50 A
	28	1800	4.44	2.50 C
1/17	23	2400	5.00	2.25 B
	24	2400	5.22	2.50 B
	25	2400	5.44	3.00 A
	32	1800	4.93	3.00 B
	25	2400	5.44	3.13 A
1/15	32	1800	4.93	3.13 B
	28	2400	5.92	2.50 C
	32	2400	6.57	3.00 B
	38	1800	5.62	3.00 C
	32	2400	6.57	3.13 B
1/12	38	1800	5.62	3.13 C
	38	2400	7.50	3.00 C
	48	1800	6.83	3.00 D
	38	2400	7.50	3.13 C
	48	1800	6.83	3.13 D
1/10	48	2400	9.10	3.00 D
	48	2400	9.10	3.13 D
1/6	95	1800	11.40	3.13 E

For dimensions, see drawings **M**, **N**, **O** or **P** on page 35.



2.25" Frame



2.50" Frame



3.00" Frame

General Specifications:

The ratings listed are typical designs in continuous and periodic intermittent duty rated motors. Various additional speeds, voltages and duty ratings are possible.

Electrical Options:

- Low voltage ratings 12 through 72V
- Reversible
- Thermal protection
- Cartridge-type brush holders

Mechanical Options:

- Ball bearing design
- Special shafts
- Worm-type and parallel shaft speed reducers also available
- Custom mounting configurations
- Custom finish/painted
- Metric thru-bolts & shafts
- Vented housing
- Dynamically balanced armature

Engineering Services:

LEESON's application engineering staff is available, at no additional cost, to assist in developing the motor design best suited for applications.



TYPICAL TRU-TORQ CUSTOM MOTORS