

Permanent Magnet DC Motors

TYPICAL APPLICATIONS

Robotics and factory automation

- Pick-and-place robots
- Positioning tables
- Welding wire feeders
- Automatic guided vehicles
- Barcoding equipment

Computer and office equipment

- Copier and microfilm machines
- Printers / plotters
- Tape drives

Industrial equipment

- Automatic door actuators
- Material handling equipment
- Packaging, marking and sorting equipment
- Machine tools
- Web drives
- Gimbal controlled cameras for security systems
- Antenna drives

Medical equipment

- Electric wheelchairs and scooters
- Bio-analytical equipment
- Medical pumps
- Centrifuges

FEATURES

- Long-life, externally replaceable brushes; various grade materials available for high / low voltage applications
- Superior protection provided by totally enclosed, high strength, zinc-plated steel housing
- Shaft configuration optional
- Machined aluminum end-cap for precise locating; round or square. Precision-tapped mounting holes provided to your specifications
- Silicon steel laminations
- Diamond turned commutator for quiet operation and long brush life
- Skewed rotors available for minimal cogging torque
- Rotors are dynamically balanced to ISO G2.5
- Available with standard NEMA mountings
- Polyester resin impregnated insulated windings
- Double-shielded, permanently lubricated ball bearings, ABEC 5 standard; others optional

BENEFITS

- Optional pre-aligned encoders provide accurate positioning
- Tachometers are available – 7, 10, 14 V / KRPM
- These motors offer continuous torques from 16.5 to 560 oz-in, peak torques from 125 to 3500 oz-in
- Motor lengths – 3.33 to 9.0 inches
- Diameter – 2.25 to 4.0 inches
- Permanently lubricated bearings
- Available with carbon steel or stainless steel shafts; single or double ended extensions
- Custom shaft and end cap configurations are also available

C23, 34, 42 Series



Available with integrated tachometers, resolvers and encoders for closed-loop control

Moog Components Group offers a complete line of 2.25 to 4 inches diameter permanent magnet motors. Integrated feedback devices (tachometers and encoders) are available for closed-loop control.

We offer a variety of standard sizes. If mechanical modifications are needed custom options are available for your specific application. Our engineering department is prepared to discuss your application to help tailor a permanent magnet motor to fit your needs.

Brush Motors

C42 SERIES SPECIFICATIONS – Continuous Stall Torque 145 - 560 oz-in (1.024 - 3.955 Nm) Peak Torque 1100 - 3500 oz-in (7.768 - 24.716 Nm)

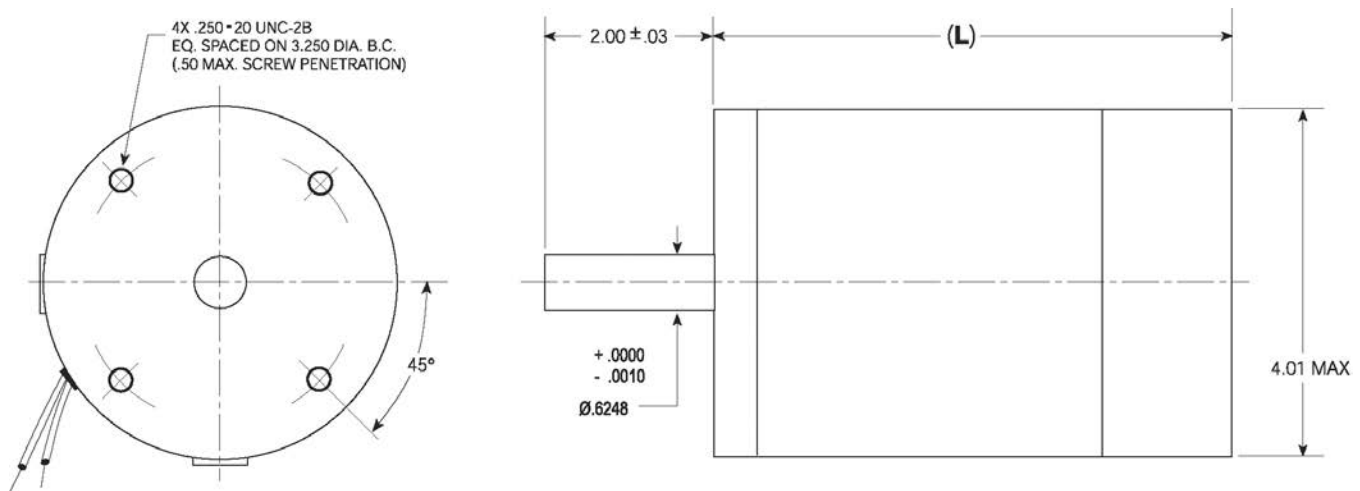
Part Number*		C42-L50			C42-L70			C42-L90		
Winding Code**		10	20	30	10	20	30	10	20	30
L = Length	inches	5.00			7.00			9.00		
	millimeters	127.0			177.8			228.6		
Peak Torque	oz-in	1100.0	1100.0	1100.0	2400.0	2400.0	2400.0	3500.0	3500.0	3500.0
	Nm	7.768	7.768	7.768	16.948	16.948	16.948	24.716	24.716	24.716
Continuous Stall Torque	oz-in	145.0	145.0	145.0	400.0	400.0	400.0	560.0	560.0	560.0
	Nm	1.024	1.024	1.024	2.825	2.825	2.825	3.955	3.955	3.955
Rated Terminal Voltage	volts DC	12 - 48	24 - 72	36 - 96	12 - 48	24 - 72	36 - 96	24 - 60	24 - 84	36 - 96
Terminal Voltage	volts DC	48	72	84	36	48	72	48	60	90
Rated Speed	RPM	3226	1885	1526	1160	1130	1060	1273	1238	1517
	rad/sec	338	197	160	121	118	111	133	130	159
Rated Torque	oz-in	80.3	98.2	126.7	249	237	263	336	341	320
	Nm	0.57	0.69	0.89	1.76	1.67	1.86	2.37	2.41	2.26
Rated Current	Amps	5.3	2.7	2.4	8	5.75	3.9	8.5	6.7	5
Rated Power	Watts	192	137	143	214	198	206	317	312	359
	Horsepower	0.26	0.18	0.19	0.29	0.27	0.28	0.42	0.42	0.48
Torque Sensivity	oz-in/amp	20	46	65	39	52.8	85	50	64.3	82
	Nm/amp	0.1412	0.3248	0.4590	0.2754	0.3729	0.6002	0.3531	0.4541	0.5791
Back EMF	volts/KRPM	14.8	34	48	28.8	39	62.85	37	47.5	60
	volts/rad/sec	0.1413	0.3247	0.4584	0.2750	0.3724	0.6002	0.3533	0.4536	0.5730
Terminal Resistance	ohms	0.7	4	5.7	0.62	1.2	2.6	0.6	0.95	1.45
Terminal Inductance	mH	1.3	6.6	13.5	2	3.7	9.6	2	3.3	5.4
Motor Constant	oz-in/watt ^{1/2}	23.9	23.0	27.2	49.5	48.2	52.7	64.5	66.0	68.1
	Nm/watt	0.169	0.162	0.192	0.350	0.340	0.372	0.456	0.466	0.481
Rotor Inertia	oz-in-sec ²	0.09	0.09	0.09	0.21	0.21	0.21	0.31	0.31	0.31
	g-cm ²	6355.4	6355.4	6355.4	14829.2	14829.2	14829.2	21890.7	21890.7	21890.7
Friction Torque	oz-in	14.0	14.0	14.0	20.0	20.0	20.0	24	24	24
	Nm	0.10	0.10	0.10	0.14	0.14	0.14	0.17	0.17	0.17
Thermal Resistance	°C/watt	2.20	2.20	2.20	1.30	1.30	1.30	0.85	0.85	0.85
Damping Factor	oz-in/KRPM	5.25	5.25	5.25	10.00	10.00	10.00	10.00	10.00	10.00
	Nm/KRPM	0.037	0.037	0.037	0.071	0.071	0.071	0.071	0.071	0.071
Weight	oz	110	110	110	200	200	200	262	262	262
	g	3118	3118	3118	5670	5670	5670	7428	7428	7428
Electrical Time Constant	millisecond	1.8571	1.6500	2.3684	3.2258	3.0833	3.6923	3.3333	3.4737	3.7241
Mech. Time Constant	millisecond	22.28412	24.09974	17.2151	12.1367	12.81294	10.70077	10.52659	10.09549	9.565579
Speed/Torque Gradient	rpm/oz-in	-2.36486	-2.55754	-1.82692	-0.55199	-0.58275	-0.48669	-0.32432	-0.31104	-0.29472

Notes:

1. For MS (military style) connector, please specify connector housing and terminal.
2. Data for informational purposes only. Should not be considered a binding performance agreement. For specific applications, please contact the factory.

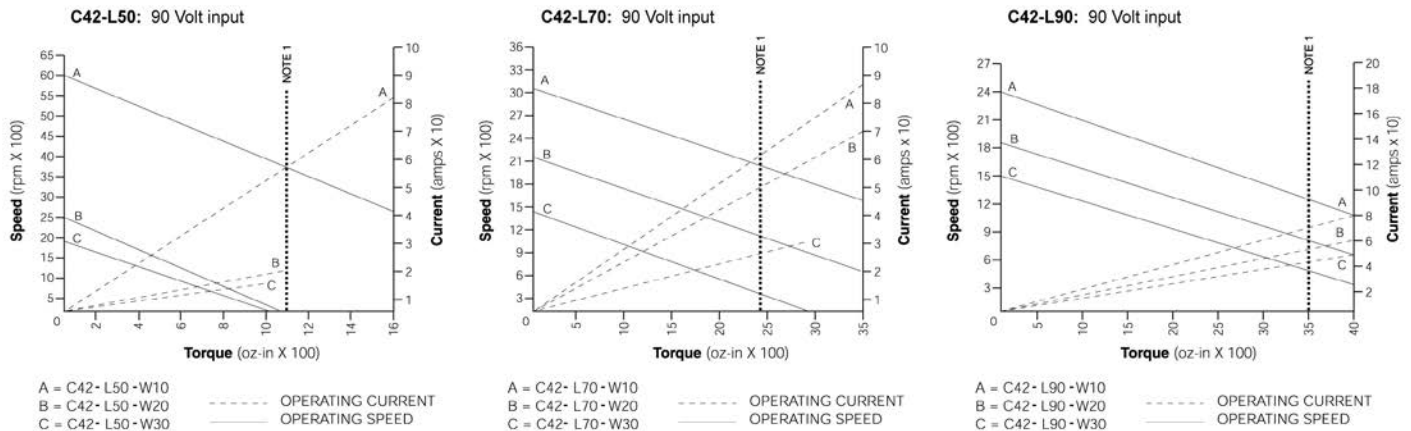
*Many other custom mechanical options are available – consult factory.
**Many other winding options are available – consult factory.

C42 Typical Outline Drawing



Dimensions are in inches

C42 Torque / Speed Curves



NOTE 1: Do not operate motor beyond this line. Maximum current and torque must be limited to data sheet values to avoid possibility of magnet demagnetization.

INTEGRAL FEEDBACK DEVICES FOR CLOSED-LOOP CONTROL

All feedback devices are pre-assembled, aligned and fully tested, with output requirements matched (even custom designed) to your application. They are ideal for sensing rotary speed and angular position where space is a premium and low inertia is required.

Encoders

High resolution, high reliability, and state-of-the-art technology in a small package.

- Bidirectional incremental code
- Up to 1024 cycles standard
- Up to 3 channels: A, B, and index
- TTL / CMOS compatible
- Other configurations and resolutions available

Tachometers

Analog tachometers are an economical and efficient choice for applications requiring velocity feedback. These tachometers are integral to the motor on a common shaft, eliminating coupling or mounting irregularities.

- Voltage gradient: 7, 10, 14 V / Krpm
- Ripple voltage: 20% max peak to peak

Note: Tachometers not available for C34 and C42 models.



HOW TO SELECT A MOTOR

The motor you require can be customized to your application. Review the motor data tables shown above to determine the size and winding that most closely matches your needs. Then supply us with the following information:

- Maximum voltage and current available
- Load torque required
- Load inertia, oz-in / sec²
- Velocity profile: speed vs time
- Maximum motor dimensions
- Shaft and endcap configuration
- Feedback options