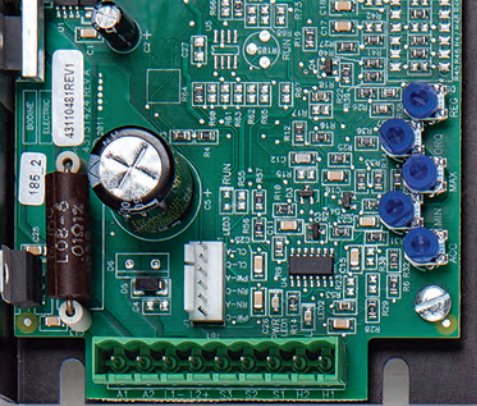
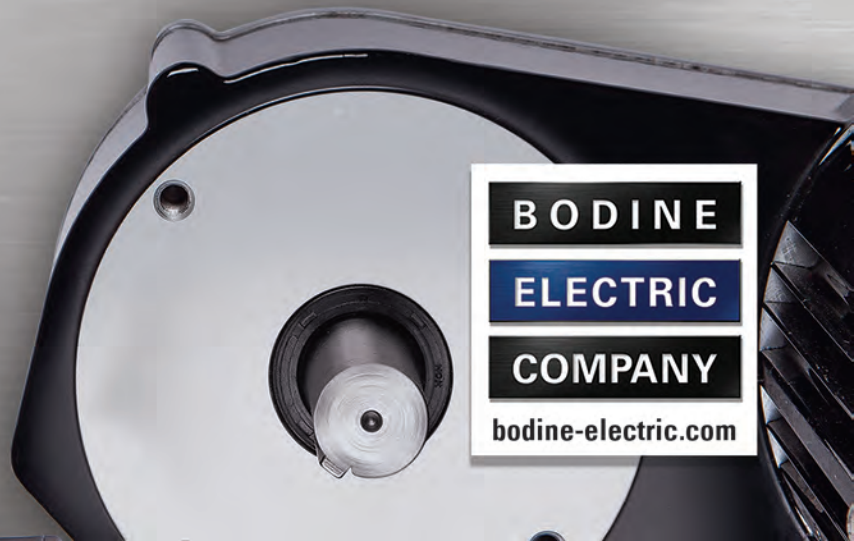
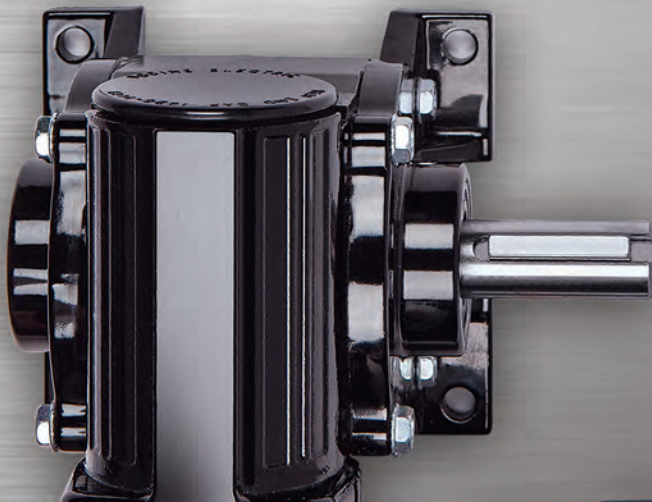
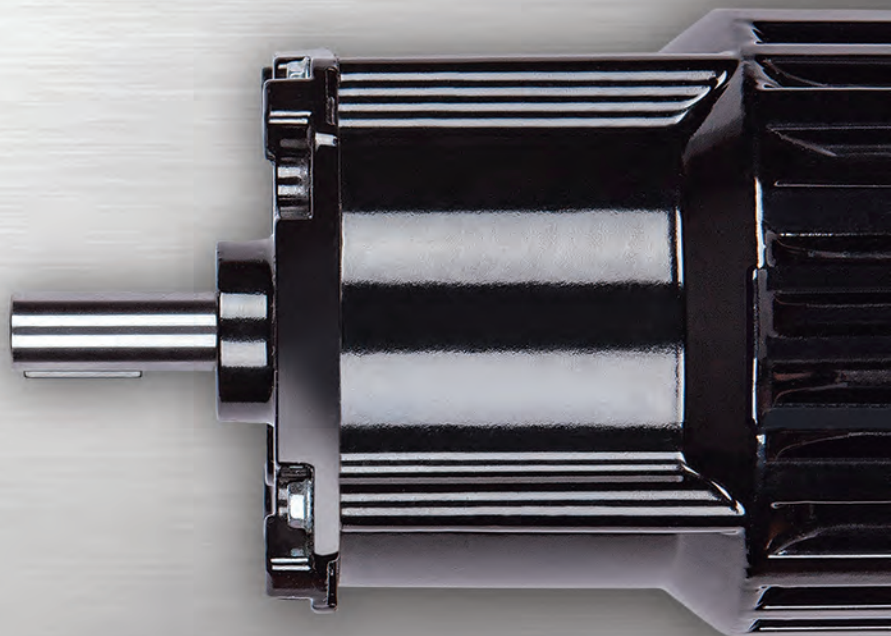




STANDARD PRODUCTS

GEARMOTORS • MOTORS • CONTROLS

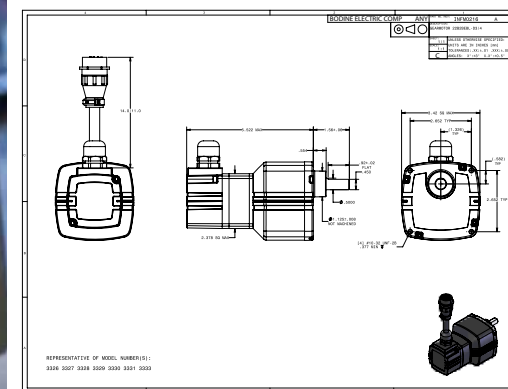
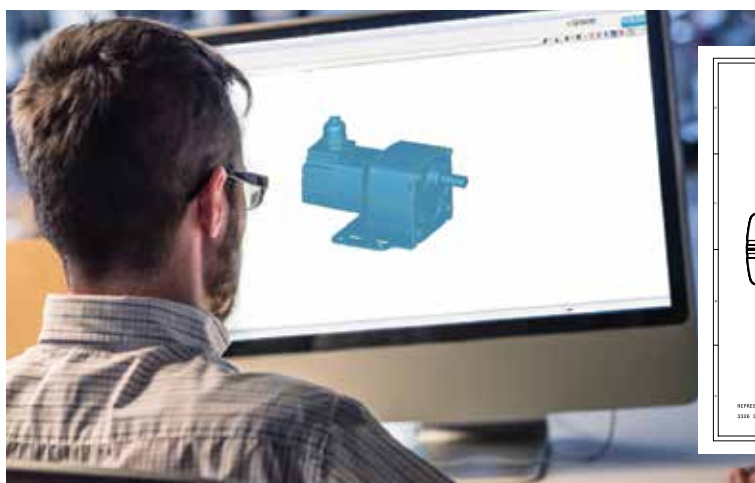
AC
PMDC
BLDC



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ELECTRIC
COMPANY**
bodine-electric.com

For 2D/3D CAD drawings and distributor locations, go to www.bodine-electric.com

Our website features the latest product specifications, technical documents, connection diagrams and instruction manuals. Dimension drawings and 3D models can be imported from the website directly into most CAD software programs. You will also find information about Bodine's newest products, our distributor locator, and helpful Tech Tools designed to answer the most commonly asked motion control questions.



UL/CSA Safety Compliance

Products are marked cURus or UR/CSA, and most products meet CE. All products are also



RoHS compliant.

Motors and gearmotors

conform to UL standard 1004 and CSA standard C22.2 No. 100. They are documented in UL file number E47177 and CSA file number LR2797.

Electronic controls conform to UL standard 508 and CSA standard C22.2 No. 14. They are documented in UL file number E44529 and CSA file number LR26397.

Motor Options

For the comparative advantages of AC motors and gearmotors, see page 21.

Variable speed

Pacesetter AC motors

- Voltage ratings are 230 VAC, 60 Hz (3-phase) or 230/460 VAC, 60 Hz (3-phase)

Fixed-speed AC motors

- Voltage ratings are 115 VAC, 60 Hz (single-phase) or 230 VAC, 60 Hz (3-phase)
- Metric voltage ratings are 230 VAC, 50 Hz (1- or 3-phase)

Permanent Magnet DC motors

- Voltage ratings are 12/24 VDC, 24 VDC, 90/130 VDC or 130 VDC
- Metric voltage rating is 180 VDC
- Compatible with 90 V controls (90/130 VDC and 130 VDC only)

Brushless DC (ECM) motors

- Voltage ratings are 24 or 130 VDC

	Variable Speed Pacesetter Inverter Duty AC				Fixed-Speed AC					Permanent Magnet DC			Brushless DC		INTEGRA BLDC	
	30R	34R	42R	48R	K-2	30R	34R	42R	48R	24A	33A	42A	22B	34B	22B	34B
Power (HP)	1/25-1/17	1/8-1/4	3/8	1/3-3/4	1/1600- 1/200	1/40-1/30	1/15-1/5	1/12-1/4	1/5-1/2	1/50-1/7	1/16-1/3	1/4-1/2	1/16-1/5	1/5-3/8	1/16-1/8	1/4
Torque (oz-in.)	24-35	70-148	222	185-445	0.35-3.2	10-20	38-119	48-148	112-296	8-24	34-134	101-180	20-50	33-151	25-50	100
Rated Speed (rpm)	1700	1700, 1800	1700	1700, 1800	1200, 1550, 1800, 3600	1700, 1800, 3400	1700, 1800, 3400	1700, 3450	1700, 1800	2500, 11,500	2500	2500	2500, 10,000	2500, 10,000	2500	2500

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2 Year
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Motors without Gearing

Bodine offers a full range of fractional horsepower motors.

AC fixed and variable speed motors are available with voltage ratings of 115 VAC, 60 Hz (single-phase), 230 VAC, 60 Hz (3-phase) and 230/460 VAC, 60 Hz (3-phase). They are offered with three winding types: permanent split capacitor, split phase, and three-phase. **PMDC motors** are available with voltage ratings from 12 to 180 VDC. **Brushless DC motors** are available with voltage ratings of 24 or 130 VDC.



AC Torque Motors | from 3.5 to 68 oz.in.

- Will operate satisfactorily on 50 or 60 Hz
- Totally enclosed non-ventilated IP-20 rating
- Provides excellent performance for holding, winding and tensioning applications
- Provides locked rotor or reverse torque intermittently at rated voltage, or continuously at reduced voltage
- Permanently lubricated, noise tested ball bearings
- Locked bearing design on 30R, 42R, and 48R minimizes shaft endplay
- See page 34 for capacitors and accessories
- See pages 41 and 42 for reference dimensions

AC Torque Motors (for holding applications)

Type KCI

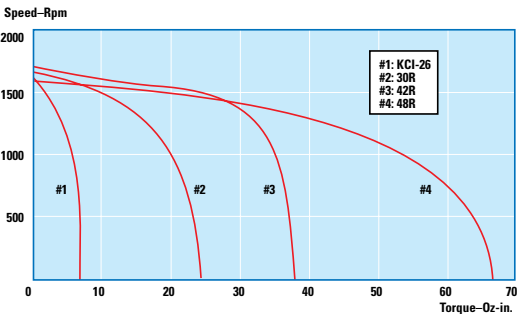
Type 30R

Type 42R

Type 48R

V	Hz	Locked Rotor Performance				rpm @	Capacitor (µF/VAC)	Product Type	Model Number
		% Duty Cycle	Torque (oz-in.)	Watts	Max. On Time (min.)	No Load			
KCI		CAPACITOR IS INCLUDED							
115	60	40	7.0	22	5	1580	2.3/250	KCI-26	0621
83	60	100	3.5	12	—	1570			
115	50	40	6.0	19	5	1310			
92	50	100	4.0	13	—	1300			
30R		CAPACITOR IS REQUIRED							
115	60	50	25	52	30	1660	5.0/250	30R2FECI	5625
100	60	100	19	40	—	1645			
115	50	50	25	47	30	1425			
100	50	100	19	36	—	1420			
42R		CAPACITOR IS REQUIRED							
115	60	40	38	85	28	1690	7.5/370	42R6FECI	2628
87	60	100	22	49	—	1680			
115	50	40	38	82	28	1445			
87	50	100	22	47	—	1435			
48R NEMA-56C Face Mount, Or Base Mount		CAPACITOR IS REQUIRED							
115	60	40	65	120	15	1560	12.5/370	48R6FECI	0632
80	60	100	32	60	—	1560			
115	50	40	68	96	15	1370			
80	50	100	34	58	—	1360			

Typical Performance Curves at 115V, 60 Hz



- Quint insulation™, 5-stage insulation system designed to meet NEMA MG 1-1993, Section IV, Part 31
- Most standard models are available with either 230VAC, 60Hz, 3-phase or 230/460V, 60Hz 3-phase
- Inverter-grade magnet wire and Class F insulation system for increased protection against spikes and corona damage caused by the inverter
- UL recognized for construction, CSA certified, and in compliance with the Low Voltage Directive "CE"
- See page 34 for capacitors and terminal boxes
- See pages 41 and 42 for reference dimensions

Variable Speed—Type 30R — 1/25-1/17 HP

Fixed Speed Ratings				Variable Speed (SOA) Ratings ¹						Product Type	230V Model Number
				Speed Range (rpm)	Frequency Range (Hz)	Torque Type	Torque @				
Speed (rpm)	Torque (oz-in.)	HP	Amps				10 Hz (oz-in.)	60 Hz (oz-in.)	140 Hz (oz-in.)		
1700	24	1/25	0.38	220-3150	10-140	variable	20	56	27	30R2BEPP	N2200
	35	1/17	0.48	133-3240			45	66	35	30R4BEPP	2201



Type 30R Pacesetter

Variable Speed—Type 34R — 1/8-1/4 HP

Fixed Speed Ratings					Variable Speed (SOA) Ratings ¹						Product Type	230V Model Number	230/460V Model Number
					Speed Range (rpm)	Frequency Range (Hz)	Torque Type	Torque @					
Speed (rpm)	Torque (oz-in.)	HP	(230V) Amps	(230/460V) Amps					10 Hz (oz-in.)	60 Hz (oz-in.)	Max. Hz (oz-in.)		
Three-Phase, Inverter Duty, Non-synchronous Motor (TEFC)													
1700	148	1/4	1.2	1.2/0.60	220-3650	10-140	variable	120	247	90	34R6BFPP	2295	2895
Three-Phase, Inverter Duty, Synchronous Motor (TEFC)													
1800	70	1/8	1.4	—	300-2400	10-80	variable	54	103	48	34R6BFYP	2299	—



Type 34R Pacesetter

Variable Speed—Type 42R — 3/8 HP

Fixed Speed Ratings					Variable Speed (SOA) Ratings ¹						Product Type	230V Model Number	230/460V Model Number
					Speed Range (rpm)	Frequency Range (Hz)	Torque Type	Torque @					
Speed (rpm)	Torque (oz.-in.)	HP	(230V) Amps	(230/460V) Amps				10 Hz (oz.-in.)	60 Hz (oz.-in.)	140 Hz (oz.-in.)			
Three-Phase, Inverter Duty, Non-synchronous Motor (TEFC), Base Mount													
1700	222	3/8	1.9	1.9/95	177-3500	10-140	variable	170	281	137	42R6BFPP	2235	2835
Three-Phase, Inverter Duty, Non-synchronous Motor (TEFC), NEMA C Face Mount													
1700	222	3/8	1.9	1.9/95	177-3500	10-140	variable	170	281	137	42R6BFPP	N2234	2834



Type 42R Pacesetter

Variable Speed—Type 48R — 1/3-3/4 HP

Fixed Speed Ratings				Variable Speed (SOA) Ratings ¹						Product Type	230/460V Model Number
				Speed Range (rpm)	Frequency Range (Hz)	Torque Type	Torque @				
Speed (rpm)	Torque (oz-in.)	HP	(230/460V) Amps				10 Hz (oz-in.)	60 Hz (oz-in.)	Max. Hz (oz-in.)		
Three-Phase, Inverter Duty, Non-synchronous Motor (TEFC), NEMA-56C Face Mount or Base Mount											
1700	445	3/4	2.7/1.3	160-3600	10-140	variable	412	675	220	48R6BFPP	2240
Three-Phase, Inverter Duty, Synchronous Motor (TEFC), NEMA-56C Face Mount or Base Mount											
1800	185	1/3	2.4/1.2	300-2400	10-80	variable	220	262	125	48R5BFYP	2244



Type 48R Pacesetter

¹ SOA: Contact the factory for detailed speed/torque information (Safe Operating Area). See page 19.
 "N" model numbers require lead time and minimum quantities.

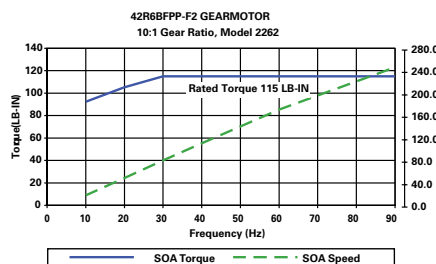
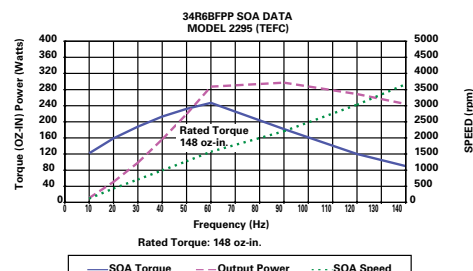
Safe Operating Torque and Speed Area (SOA)

Rated Torque is either the value of torque which corresponds to nameplate output power and speed at 60 Hz, or it is the maximum torque at gear strength limits (rated torque can be either motor limited or gear-limited).

SOA Torque is defined as the maximum torque at which the motor still operates within Class F thermal limits, or as the maximum torque of a gearmotor when it is gear-limited. Continuous duty operation must be limited to the area below the

SOA or gear-limited torque curves. The SOA torque for synchronous motors is close to the pull-in torque; that is, the motor will pull out of synchronism if the required torque exceeds the SOA torque.

Examples of typical "SOA" Graphs. Contact our technical support staff for specific SOA information.



- Totally enclosed IP-20 rating
- Fan cooled for high output power
- Class B insulation system operated within Class A limits to prolong winding and lubricant life
- Locked bearing design minimizes shaft endplay
- Locked bearing design on 30R, 34R, 42R, and 48R minimizes shaft endplay
- See page 34 for capacitors and accessories
- See pages 41 and 42 for reference dimensions

Fixed Speed—Type K-2 1/1600-1/200 HP

Type K-2

Speed (rpm)	Rated Torque (oz-in.)	HP	V	Hz	Ph	Amps	Radial Load (lbs.)	Capacitor (μF/VAC)	Product Type	Model Number
Permanent Split Capacitor, Non-synchronous								CAPACITOR IS INCLUDED		
1550	1.4	1/450	115	60	1	0.08	5.7	1.0/250	KCI-23	0705
1550	2.2	1/300	115	60		0.104		1.3/250	KCI-24	0712
1550	3.2	1/200	115	60		0.124		1.6/250	KCI-26	0713
Permanent Split Capacitor, High Slip, Non-synchronous								CAPACITOR IS INCLUDED		
1200	1.1	1/800	115	60	1	0.082	5.7	1.0/250	KCI-23	0707
	1.8	1/450				0.098		1.2/250	KCI-24	0714
Permanent Split Capacitor, Synchronous								CAPACITOR IS INCLUDED		
1800	0.35	1/1600	115	60	1	0.077	5.7	1.0/250	KYC-23	0701
1800	0.62	1/900				0.091		1.3/250	KYC-24	0709
3600	0.31	1/900				0.102		1.6/250	KYC-24	0710

Fixed Speed—Type 30R 1/40-1/30 HP

Type 30R

Speed (rpm)	Rated Torque (oz-in.)	HP	V	Hz	Ph	Amps	Radial Load (lbs.)	Capacitor (μF/VAC)	Product Type	Model Number
Permanent Split Capacitor, Non-synchronous									CAPACITOR IS REQUIRED	
1700	20	1/30	115	60	1	0.45	18	5.0/250	30R2BECI	5240
3400	10					0.47				5219
Permanent Split Capacitor, High Slip, Synchronous									CAPACITOR IS REQUIRED	
1800	14	1/40	115	60	1	0.52	18	5.0/250	30R2BEYC	5246

Fixed Speed—Type 34R 1/15-1/5 HP

Type 34R

Speed (rpm)	Rated Torque (oz-in.)	HP	V	Hz	Ph	Amps	Radial Load (lbs.)	Capacitor (μF/VAC)	Product Type	Model Number
Permanent Split Capacitor, Three-Wire Reversible, Non-Synchronous								CAPACITOR IS REQUIRED		
1700	85	1/7	115	60	1	1.7	50	27.5/250	34R6BFCI	0294
1400/1700	74	1/8	230	50/60		0.8/0.7		6.0/450		0296
Permanent Split Capacitor, Non-synchronous								CAPACITOR IS REQUIRED		
1700	39	1/15	115	60	1	1	50	10.0/250	34R4BFCI	0290
1700	65	1/9				1.4		12.5/250	34R6BFCI	0291
3400	42	1/7				1.75		15.0/250	34R6BFCI	0293
Permanent Split Capacitor, Synchronous								CAPACITOR IS REQUIRED		
1800	38	1/15	115	60	1	1.5	50	15.0/250	34R6BFYC	N0297
Three-phase, Non-synchronous										
1700	119	1/5	230	60	3	1.2	50	—	34R6BFPP	0295
Three-phase, Synchronous										
1800	70	1/8	230	60	3	1.4	50	—	34R6BFYP	0299

Common Abbreviations

BLDC	Brushless DC
FF	Form Factor—A measurement which indicates to what degree rectified current departs from pure DC. A higher form factor increases the heating effect of the motor and reduces brush life. ¹
IP-44	Ingress Protection Rating—Protection against sprays from all directions—limited ingress permitted. ²
NEMA-12	Enclosures (without knockouts) for indoor use. Provides a degree of protection to personnel against access to hazardous parts and to the equipment inside against ingress of solid objects, and lightly splashed liquids. ³
NEMA-4	Enclosures constructed for either indoor or outdoor use. Protects personnel against access to hazardous parts. Protects equipment inside the enclosure against ingress of solid objects and rain, sleet, snow, splashing water, and hose-directed water. ³
PMDC	Permanent magnet DC
TEFC	Totally enclosed, fan cooled
TENV	Totally enclosed, non-ventilated

1. Bodine Handbook, fifth edition. Chicago, 1993; 2. American National Standards Institute ANSI/IEC 60529-2004; 3. NEMA.org, NEMA 250-2003

Fixed Speed—Type 42R 1/12-1/4 HP

Speed (rpm)	Rated Torque (oz-in.)	HP	V	Hz	Ph	Amps	Radial Load (lbs.)	Capacitor (μF/VAC)	Product Type	Model with NEMA-C Face and Base Mount	Model with NEMA-C Face Mount	Model with Base Mount
Permanent Split Capacitor, Three-Wire Reversible, Non-Synchronous										CAPACITOR IS REQUIRED		
1700	148	1/4	115	60	1	2.9	50	45.0/250 ¹	42R6BFCI	0267	—	—
1400/1700	144/119	1/5	230	50/60	1	1.1 / 1.2	50	10.0/450	—	0268	—	—
Permanent Split Capacitor, Non-synchronous										CAPACITOR IS REQUIRED		
1700	101	1/6	115	60	1	1.9	50	15.0/350	42R5BFCI	—	0260	0258
Split phase (with centrifugal switch), Non-synchronous												
1700	48	1/12	115	60	1	2.4	50	—	42R3BFSI	—	N0261	0251
1700	101	1/6	115	60	1	3.6	50	—	42R5BFSI	—	0254	0253
3450	50	1/6	115	60	1	3.3	50	—	42R5BFSI	—	N0265	0255
Three-phase, Non-synchronous												
1700	148	1/4	230	60	3	1.2	50	—	42R5BFPP	—	N0263	0273
			230/460	60	3	1.2/0.6	50	—	—	—	N0264	0274



Type 42R
(Base Mount shown)

¹ Run capacitor 45μF/250 VAC for 60Hz operation (p/n 49401145). Use 40μF/250 VAC capacitor (p/n 49401147) for 50 Hz operation (motor derated to 1/6 HP at 50 Hz).

Fixed Speed—Type 48R 1/3-1/2 HP

Speed (rpm)	Rated Torque (oz-in.)	HP	V	Hz	Ph	Amps	Radial Load (lbs.)	Capacitor (μF/VAC)	Product Type	Model Number
Permanent Split Capacitor, Non-synchronous								CAPACITOR IS REQUIRED		
1700	196	1/3	115 230	60	1	4.0/2.0	205	20.0/350 12.5/350	48R6BFCI	0283
Split Phase, Non-Synchronous (With Centrifugal Switch)										
1700	196	1/3	115/230	60	1	4.8/2.4	205	—	48R6BFSI	0284
Three-phase, Non-Synchronous										
1400	296	1/2	230	50	3	2.0	205	—	48R6BFPP	0286
1700			230	60		1.7				
1400			460	50		1.0				
1700			460	60		0.85				
Three-phase, Synchronous										
1800	185	1/3	230/460	60	3	2.5/1.3	205	—	48R5BFYP	0281



Type 48R
(NEMA-56C Face Mount,
and/or Base Mount)

“N” model numbers require lead time and minimum quantities.

Comparative Advantages of AC Motors and Gearmotors

This table illustrates some of the capabilities, advantages, and disadvantages of common AC motor and gearmotor designs.

Motor Winding	Speed Tolerance	Typical Rated Speeds at 60Hz	Start/Stop Frequency	Coast without Brake	Coast with Dynamic Braking	Starting Torque (% of Rated Torque)	Pros	Cons
Split Phase (SI)	±3%	1700-1750 (4-pole) 3450 (2-pole)	Up to 6/hour	20-600 rev.	0.5-6 rev.	175% and up	No capacitors	Switch life 50k to 250k starts
Permanent Split Capacitor (CI)	±3%	1700-1750 (4-pole) 3450 (2-pole)	Up to 10/min.	20-600 rev.	0.5-6 rev.	90-100%	Very reliable, Low starting current	Low starting torque
Three Phase (PP, Non-synchronous)	±3%	1700-1750 (4-pole) 3450 (2-pole)	Up to 10/min.	20-600 rev.	0.5-6 rev.	200-400%	Most reliable and efficient, No cap/switch	Requires three-phase power supply

Variable Speed Drive Systems

	Requires Brushes	High Torque at Speeds Above and Below Rated	Noise Level	Performance	Speed Range
Variable Speed AC	No	No	Higher	Limited	Limited
PMDC System	Yes	Yes	Highest	Good	Widest
BLDC System	No	Yes	Lowest	Best	Widest

- Totally Enclosed, Non-Ventilated (IP-40)
- Class F insulation, Class B rating
- Skewed armature for smooth low speed operation
- High starting torque and self-braking
- Oversized magnets resist demagnetization, stabilized to common strength for consistent performance
- Locked bearing minimizes endplay
- Models with accessory shafts are ideal for mounting encoders or brakes
- See page 34 for accessories
- See pages 41 and 42 for reference dimensions

PMDC Type 24A | 1/50-1/7 HP



Type 24A

Speed (rpm)	Rated Torque (oz-in.)	Current (Amps)	HP	FF	K _T (oz-in/A)	K _E (V/krpm)	Wdg. Res. (Ohms)	Winding Ind. (mH)	Inertia (oz-in-sec. ²)	Radial Load (lbs.)	Product Type ²	24V Winding		130V Winding	
												Accy Shaft	No Accy Shaft	Base ¹	Flange
2500	8	1.2	1/50	1.0	8.3	6.1	5.7	6.7	0.003	25	24A0BEPM	N4440	N0040	—	—
2500	8	0.22	1/50		42	31	176	220	0.003		24A0BEPM	—	—	—	—
2500	16	1.8	1/29		10	7.5	2.5	3.6	0.005		24A2BEPM	N4445	0045	—	N4439 N0039
2500	14	0.3	1/29		55	41	84	133	0.005		24A2BEPM	—	—	0042	N4441 0041
2500	22	2.6	1/17		9.2	6.8	2	6.7	0.007		24A4BEPM	N4444	0044	—	—
2500	24	0.48	1/17		55	40	5	84	0.007		24A4BEPM	—	—	—	0047 0043
11,500	12	1.1	1/7		14	10	3.15	4.5	0.007		24A4BEPM	—	—	0049 ²	—

¹ Models 0042 and 0049 ship with a factory installed base mounting kit.² Model 0049 rated V is 115VDC.

PMDC Type 33A | 1/16-1/3 HP



Type 33A

16-1/3 HP												24V Winding		130V Winding	
Speed (rpm)	Rated Torque (oz-in.)	Current (Amps)	HP	FF	K _T (oz-in/A)	K _E (V/krpm)	Winding Res. (Ohms)	Winding Ind. (mH)	Inertia (oz-in-sec. ²)	Radial Load (lbs.)	Product Type ²	Accy Shaft	No Accy Shaft	Accy Shaft	No Accy Shaft
24V, Class F Temperature Rating															
2500	50	5.5	1/8	1.0	10.2	7.5	0.66	1.9	0.031	55	33A3BEPM	N6424	6024	—	—
	95	9.2	1/4		11.1	8.2	0.29	0.98	0.043		33A5BEPM	—	6021	—	—
	134	12	1/3		11.5	8.5	0.31	0.59	0.075		33A7BEPM	N6422	6022	—	—
90/130 V Class F Temperature Rating															
1725 / 2500	36/50	.78 / 1.0	1/16 / 1/8	1.4 / 1.0	56	42	22	0.57	0.031	55	33A3BEPM	—	—	6434	6034
	73/95	1.4 / 1.8	1/8 / 1/4		60	44	11	0.28	0.043		33A5BEPM	—	—	6435	6035
	97/134	1.8 / 2.4	1/6 / 1/3		66	49	8.8	0.18	0.075		33A7BEPM	—	—	—	6037
130V, Class B Temperature Rating															
2500	34	.71	1/12	1.0	54	40	23	67	0.031	55	33A3BEPM	—	—	—	6016
	50	.91	1/8		57	42	13	41	0.043		33A5BEPM	—	—	—	6020

PMDC Type 42A | 1/4-1/2 HP



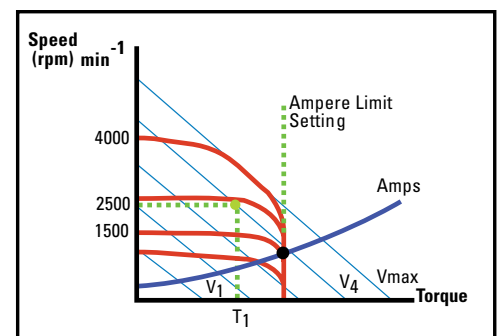
Type 42A

1-1/2 HP												24V Winding		130V Winding	
Speed (rpm)	Rated Torque (oz-in.)	Current (Amps)	HP	FF	K _T (oz-in/A)	K _E (V/krpm)	Winding Res. (Ohms)	Winding Ind. (mH)	Inertia (oz-in-sec. ²)	Radial Load (lbs.)	Product Type ³	Accy Shaft	No Accy Shaft	Accy Shaft	No Accy Shaft
NEMA 42C Face Mount, Class B Temperature Rating															
2500	101	8.8	1/4	1.0	12	9.2	0.27	0.64	0.082	90	42A5BEPM	N4421	N4021	—	—
	101	1.8	1/4		60	44	5.5	20	0.082		42A5BEPM	—	—	4435	4035
	135	12	1/3		12	9	0.16	0.45	0.12		42A7BEPM	N4422	N4022	—	—
	135	2.3	1/3		64	47	4.2	17	0.12		42A7BEPM	—	—	N4437	4037
NEMA 42CZ Face Mount, Class F Temperature Rating															
2500	150	15	1/3	1.0	11	8	0.18	0.61	0.082	90	42A5BEPM	N4800	N4601	—	—
	150	2.7	1/3		60	45	3.2	—	0.082		42A5BEPM	—	—	N4430	N4031
	180	19	1/2		11.5	8.5	0.12	0.54	0.12		42A7BEPM	N4802	N4603	—	—
	180	3.3	1/2		57	42	2.7	—	0.12		42A7BEPM	—	—	N4432	4033

³ The fifth digit of the product type changes from "B" to "F" for accessory ready models.
 "N" model numbers require lead time and minimum quantities.

Speed Regulation of Permanent Magnet DC Motors

In a PMDC motor, speed is proportional to voltage and torque is proportional to current. When voltage is held constant, the amount that speed drops due to increasing torque is called "speed regulation." The thin blue lines illustrate motor performance without the aid of a regulating electronic control. The heavy red lines illustrate performance from a control with "excellent" (1-3%) speed regulation.



- Quiet operation, low electromagnetic interference (EMI)
- No brush maintenance or contamination from brush dust
- Wire harness differs between 24V and 130V models. Check online CAD drawings for details.
- See page 34 for accessories
- See page 41 for reference dimensions

Brushless DC—Type 22B | 1/16-1/5 HP

Speed (rpm)	Rated Torque (oz-in.)	HP	Torque Constant (oz-in./A)	Voltage Constant V/krpm	Winding		Rotor Inertia (oz-in.-sec. ²)	Radial Load (lb.)	Product Type ²	Accy Shaft	No Accy Shaft	Accy Shaft	No Accy Shaft
					Res. (Ohms)	Induct. (mH)				24V		130V	
2500	25	1/16	8.4	5.8	1.2	2.1	0.0036	25	22B2BEBL	N3602	3502	—	—
2500	25	1/16	47	35	40	70	0.0036		22B2BEBL	—	—	—	3302
2500	50	1/8	9	6.7	0.52	1.1	0.0072		22B4BEBL	3604	N3504	—	—
2500	50	1/8	63	37	15	40	0.0072		22B4BEBL	—	—	3404	3304
10,000	20	1/5	14	9.8	4.8	10	0.0072		22B4BEBL	—	—	—	3314



Type 22B

Brushless DC—Type 34B | 1/5-3/8 HP

Speed (rpm)	Rated Torque (oz-in.)	HP	Torque Constant (oz-in./A)	Voltage Constant V/krpm	Winding		Rotor Inertia (oz-in.-sec. ²)	Radial Load (lb.)	Product Type ²	Accy Shaft	No Accy Shaft	Accy Shaft	No Accy Shaft
					Res. (Ohms)	Induct. (mH)				24V		130V	
2500	81	1/5	8.8	6.6	0.3	0.54	0.0115	42	34B3BEBL	3600	3500	—	—
2500	81	1/5	51	38	9.2	24	0.0115		34B3BEBL	—	—	3406	3306
2500	101	1/4	9.0	6.7	0.17	0.40	0.0154		34B4BEBL	—	N3507	—	—
2500	101	1/4	51	38	5.8	14	0.0154		34B4BEBL	—	—	—	3307
2500	151	3/8	9.0	6.7	0.099	0.246	0.0215		34B6BEBL	N3609	N3509	—	—
2500	151	3/8	57	42	3.4	11	0.0215		34B6BEBL	—	—	3409	3309
10,000	33	1/3	14.5	10.7	1.7	4.6	0.0154		34B4BEBL	—	—	—	3317



Type 34B

INTEGRAmotor BLDC—Type 22B | 1/16-1/4 HP

Motor Output			Torque Constant (oz-in/A)	Voltage Constant (V/krpm)	Winding		Rotor Inertia (oz-in-sec. ²)	Control Input			Product Type	Model Number	
Speed Range (rpm)	Torque	Res. (Ohms)			Induct. (mH)	HP		Volts (VDC)	Continuous Amps	Type SR Analog Interface		Type FV Digital Interface ³	
Type SR	Type FV	(oz-in.)											
22B INTEGRAmotor													
200-2500	75-2500	25	47	35	40	70	0.004	1/16	24	3.3	22B2BEBL/**	3802	N3702
		50	50	37	15	40	0.007	1/8		4.4	22B4BEBL/**	3804	3704
34B INTEGRAmotor													
—	60-2500	100	9.6	7.1	0.18	0.43	0.0154	1/4	24	12	34B4FEBL/FV	—	3708



Type 22B/SR and 22B/FV INTEGRAmotor



Type 34B/FV INTEGRAmotor

¹ SOA: Contact the factory for detailed speed/torque information (Safe Operating Area). See page 19.

² The fifth character of the product type changes from "B" to "F" for accessory ready models.

³ Type FV INTEGRAmotors require a PWM signal from a motion controller or PLC to operate.

** INTEGRAmotor can be ordered with either analog (/SR) or digital (/FV) interface option.

"N" model numbers require lead time and minimum quantities.

High-Performance Direct Drive Brushless DC System

The e-TORQ motors employ a unique electromagnetic design to improve efficiency, minimize size, and maximize torque. They are ideal for OEM applications where high torque, very compact design, enclosed construction, and economy are necessary.

- Zero cogging over full speed range
- Maximum torque linearity
- Very high efficiency
- Ten times peak torque is available
- Supplied with encoder
- See page 43 for reference dimensions

DC Bus Voltage (VDC)	Continuous Rating				Peak Ratings			Motor Constants				Model Number
	Speed (rpm)	Torque (lb-in.)	Current (Amps)	Power Output (Watts)	Speed (rpm)	Torque (lb-in.)	Current (A-rms)	Ke (V/krpm)	Kt (lb-in./Amp)	Resistance (Ohms)	Inductance (mH)	
7 in. e-TORQ Motor, Flange Mount												
130/260	2500/5000	20/19	5.5/5.3	590/1230	6000	200	45	42.5	3.88	2.16	1.5	N9411
7 in. e-TORQ Motor, Face Mount												
130/260	2500/5000	20/16	5.5/4.6	590/1040	6000	200	45	42.5	3.88	2.16	1.5	N9410
14 in. e-TORQ Motor, Face Mount												
130/260	1150	200	21	2700	2000	2000	200	96.1	8.22	0.119	0.09	N9430

"N" model numbers require lead time and minimum quantities.



e-TORQ

Flange mount shown

"L" Brackets



Model No.	Description
A 0969	Kit for E, F and FX gearmotors (will not fit 48R-F or 48R-FX)
B 0970	Kit for WX gearmotors
C 0979	Kit for 34R and 34B motors
D 0980	Kit for 34R-Z gearmotors
E 0990	Kit for 24A motors
F 5968	Kit for 30R and 33A motors; 30R-D, 24A-D, 22B-D, 24A-Z, 33A-Z and 22B-Z gearmotors

AC | DC Motor and Gearmotor Accessory Kits



Model No.	Description
A 0967	Base plate kit for 3F gearmotors
B 0977	IP-44 protection kit for 33A gearmotors and motors
C 0978	IP-44 protection kit for 42A gearmotors and motors
D 0984	Die cast terminal box kit for 34R, 42R, 48R, and 33A, 42A motors and gearmotors (<i>DC: does not fit on 12 or 24VDC models</i>)
E 0985	Oversized die cast t-box kit. Fits capacitor for use with 42R-FX gearmotors. Also fits 42R, 48R, 33A and 42A motors/gearmotors.
— 1982	Die cast terminal box with terminal block for 30R motors and gearmotors
— 1984	Die cast terminal box kit with terminal block for 34R, 42R, 48R, 33A and 42A motors/gmtrs. <i>90/130, 130V and 180VDC models only.</i>
— 5982	Die cast terminal box for 30R motors and gearmotors
F 0992	Adaptor plate for mounting brakes or encoders for 33A/42A gearmotors/motors with accy. ready shaft extensions
G 0993	Adaptor plate for mounting brakes or encoders for 22B/34B gearmotors/motors with accy. ready shaft extensions
H 0995	3-hole adaptor plate for E, F, WX and FX gearmotors. Provides drop-in replacement for competitive gearmotors.
I 0996	Base kit for 34R motors and gearmotors
J 0960	Mounting Flange for 60P planetary gearmotors (U.S.)
K 0961	Mounting Flange for 60P planetary gearmotors (Metric)
L 0962	IP-66 Seal Kit for 60P planetary gearmotors (U.S.)
M 0963	IP-66 Seal Kit for 60P planetary gearmotors (Metric)

AC Capacitors



Box-Type Capacitor



Metal Can-Type Capacitor



A, B

Select a run capacitor based on the specifications found on pages 4-21 (29-33 for metric models) and in the tables below. The AC gearmotor or motor nameplate states the required capacitance of the run capacitor, but it is also critical to specify a capacitor that has the voltage ratings as shown in these tables. When using a run capacitor that is not supplied by Bodine Electric, please make sure the voltage rating is equal to or higher than the voltage rating specified on this page. Different motor sizes might require a different minimum voltage rating for the run capacitor.

Part No.	µF /VAC	Part No.	µF /VAC	Part No.	µF /VAC
Box-Type Metalized Film Capacitor (Plastic Case)					
49400045 ¹	0.9/250	49426812 ¹	4.0/250	49401123 ¹	3.75/370
49400046 ¹	1.0/250	49401015	5.0/250	49401068 ¹	5.0/400
49400047 ¹	1.2/250	49401154 ^{1,3}	7.5/370	49401107 ¹	12.5/370
49400048 ¹	1.3/250	49401054	10.0/250	49401075 ¹	15.0/350
49400050 ¹	1.5/250	49401115 ¹	6.0/450	49401057	20.0/350
49400051 ¹	1.6/250	49401106	9.0/250	Round Metal Can-Type Capacitor	
49401049	0.4/440	49401006	12.5/250	49401124	25.0/370
49400091	1.3/440	49401156 ³	15.0/250	49401145 ²	45.0/250
49401047	2.3/250	49401113 ¹	20.0/250	49401147 ²	40.0/250
		49401112 ¹	27.5/250	49401148 ²	10.0/450
		49401090 ¹	30.0/250		

¹ Capacitor fits inside terminal box kit model 0984. ² Capacitor fits inside oversized terminal box model number 0985. ³ New capacitor part number effective 06/2016.

Capacitor Mounting Clamps

Model No.	Description
A 54701013	Mounting clamp for round, metal can type capacitor model 49401124
B 54701029	Mounting clamp for round, metal can type capacitors: models 49401145, 49401147, and 49401148

For mounting details and dimensions, visit www.bodine-electric.com

Shaft kits for type 3F/H, 5L/H and GB/H gearmotors



Cover kits type 3F/H (left), types 5L/H and GB/H (right)



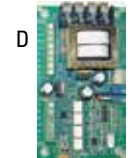
Flange mount kits type 3F/H (left), types 5L/H and GB/H (right)

Item	Model No.	Description
—	0910	Shaft kit for type 3F/H gearmotors, 1/2 inch diameter, single shaft
—	0920	Shaft kit for type 3F/H gearmotors, 1/2 inch diameter, double shaft
—	0912	Shaft kit for type 5L/H gearmotors, 5/8 inch diameter, single shaft
—	0922	Shaft kit for type 5L/H gearmotors, 5/8 inch diameter, double shaft
—	0917	Shaft kit for type GB/H gearmotors, 3/4 inch diameter, single shaft
—	0927	Shaft kit for type GB/H gearmotors, 3/4 inch diameter, double shaft
—	0950	Cover kit for type 3F/H gearmotors
—	0951	Cover kit for type 5L/H and GB/H gearmotors
—	0955	Flange mount kit for 3F/H gearmotors
—	0956	Flange mount kit for 5L/H and GB/H gearmotors

Control Accessories

BLDC
PMDC

Item	Model No.	Description
—	0888	Analog Interface Board for use with model 0810, 0830, and 0850 controls. Allows control to accept a variable voltage or current signal from user's host controller to automatically control motor speed. Inputs are optically isolated.
—	0890	Electronic Direction and Braking Board, F-B-R Kit , for use with model 0810, 0830, and 0850 controls. Allows user to change motor direction and to dynamically brake motor to a quick stop. Inputs are not optically isolated. This kit includes one F-B-R board, one cable and connector, mounting hardware, and two additional braking resistors.
—	0893	Local/Remote Switch for use with model 0810, 0830, and 0850 controls when used with accessory model 0888. Allows user to switch between automatic and manual operation.
—	0895	Switch Sealing Kit upgrades NEMA-12 brushless DC and PMDC enclosed controls to IP-44 rating.
A	3981	Cable Kit for stock 34B/FV INTEGRAMotors. Length: six feet (3 cables: power, logic and encoder).
B	3982	Extension Cable for model 3910, 3911, 3921 and 3912 controls. Extends the cable between the motor and control by six feet. Both ends are equipped with circular connections for easy connection between model 3983 cable assembly or encased control and the motor. Length: six feet.
C	3983	Connection Cable Assembly for connecting model 3910, 3921 and 3911 chassis controls to stock 130 V motors. One end of the cable is equipped with a circular connector, the other end is equipped with quick disconnects for phase leads, and a molded connector for the commutation leads. Length: 6 feet.
D	3984	Analog Interface And Isolation Module for model 3910, 3911, 3921 and 3912 controls. Provides Analog interface and isolates controls from system controller input signals which may be at different potentials.
—	43300260	Speed Potentiometer Kit for use with FPM controls. Contains 10k Ohm potentiometer, hardware, wire and connector for manually regulating motor speed.
—	43300270	Fuse and Speed Potentiometer Kit for use with model 3910 control. Contains potentiometer for manually regulating motor speed and various fuses to cover the range of motors and gearmotors which can be used with the control.



Metric Accessories



Metric "L" Brackets

Item	Model No.	Description
A	0990	Metric Kit for 24A
B	1968	Metric Kit for 33A motors, and type D and Z gearmotors
C	1970	Metric Kit for type W gearmotors
D	1969	Metric Kit for E, F and FX gearmotors (will not fit 48R-F or 48R-FX)
—	—	no "L" bracket kits are available for 34R and 34R-Z gearmotors

A



B

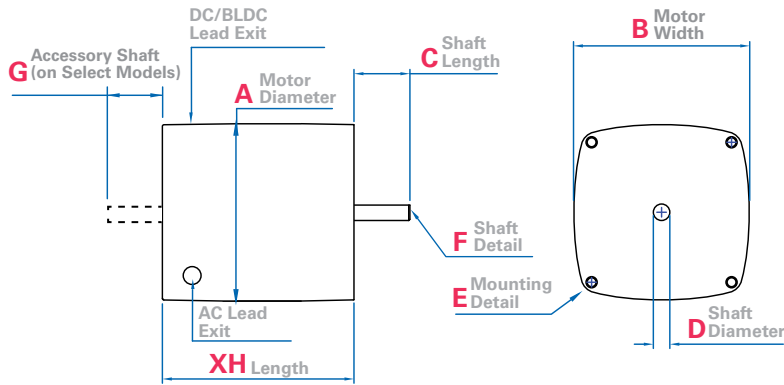


Metric Motor and Gearmotor Kits

Item	Model No.	Description
A	1982	Metric die cast terminal box kit for 30R motors and gearmotors
A	1984	Metric die cast terminal kit with terminal block for 33A, 34R, 42A and 42R motors and gearmotors. For 90/130, 130V and 180VDC models only.
B	0991	Metric die cast base kit for 42A motors and gearmotors
—	0992	Metric adaptor plate for 33A and 42A motors and gearmotors

Motor Dimensions

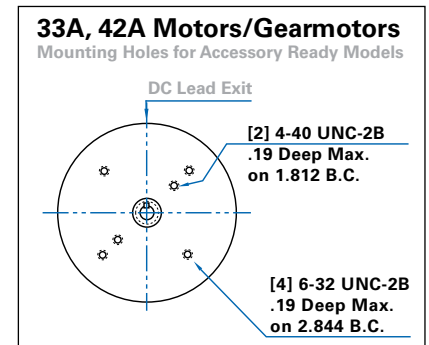
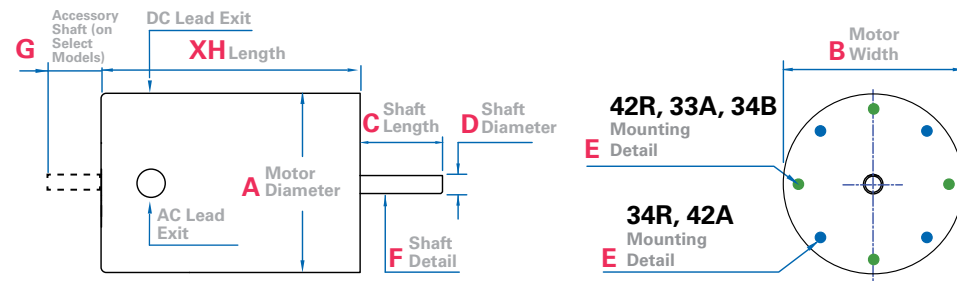
Dimensions (in inches) are for reference only. For CAD drawings and up-to-date specifications, please visit www.bodine-electric.com.



Motor Type K-2, 30R, 22B, pages 18-19, 23

	Product Type	Weight (lbs.)	XH Length	A Diameter Square	B Width	C Shaft Length	D Shaft Diameter	E Mounting Detail	F Shaft Detail	G Acc'y Shaft	Lead/Cord Length (in.)
K-2	K2-23	1.6	1.827	2.38	2.38	.62	.188	[4] 8-32 UNC-2B x .18 Deep Max. on 2.687 B.C.	Flat	No	12
	K2-24	1.9	2.20								
	K2-26	2.2	2.50								
K-2 Torque Motor	Model 0621	2.2	2.484	3.34	3.34	1.06	.313	[4] 10-32 UNF-2B x .32 deep Max. on 3.75 B.C.	Flat	Yes	12
	30R2	4.75	3.665								
30R Torque Motor	Model 5625	4.75	3.665	2.378	2.378	.94	.375	[4] 8-32 UNC-2B x .35 Deep Max. on 2.625 B.C.	Flat	Yes	12 or 24
	22B2	2.5	3.610								
22B INTEGRA	22B4	3.5	4.570	2.93	2.93					No	None
	22B2	2.5	4.719								
	22B4	3.5	5.679								

Only the first four characters of the product type are relevant to dimensions



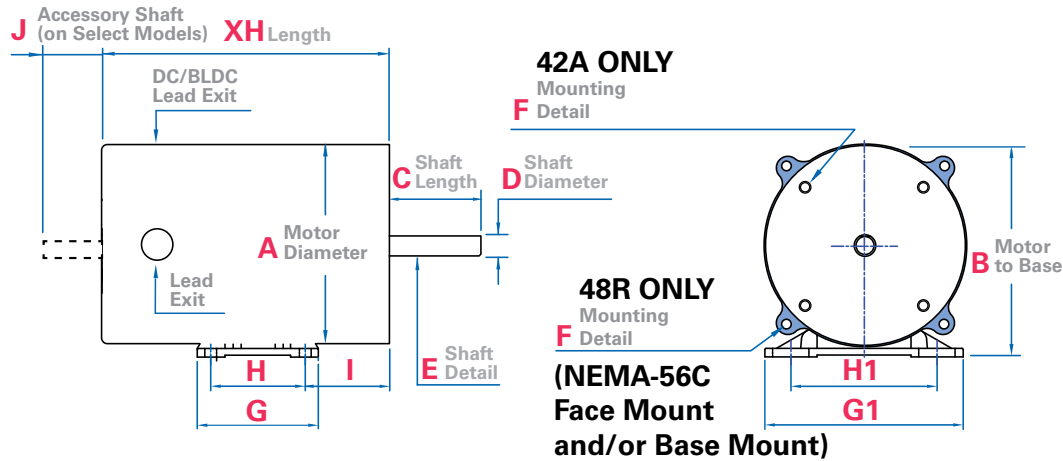
Motor Type 34R, 42R, 33A, 42A, 34B, pages 19-23 (Face Mount)

	Product Type	Weight (lbs.)	XH Length	A Diameter	B Width (PMDC)	C Shaft Length	D Shaft Diameter	E Mounting Detail	F Shaft Detail	G Acc'y Shaft	Lead/Cord Length (in.)
34R	34R4	7.0	5.69	4.02	—	1.25	.375	[4] 1/4-20 UNC-2B x .31 Min. Deep on 2.75 B.C.	Flat	No	12
	34R6	9.0	6.69								
42R	42R3	7.75	5.616	4.73	—	1.38	.375	[4] 1/4-20 UNC-2B x .31 Min. Deep on 3.75 B.C.	Flat	No	12
	42R5	11.0	6.679								
	42R6	13.0	7.116			1.125					
33A	33A3	5.1	5.140	3.39	3.75	1.48	.375	[4] 10-32 UNF-2B x .25 Min. Deep on 2.75 B.C.	Flat	Yes	24
	33A5	6.28	6.200								
	33A7	7.45	7.401			1.48	.500				
42A NEMA 42C	42A5	11.3	6.656	4.26	4.25	1.62	.500	[4] 1/4-20 UNC-2B x .31 Min. Deep on 3.75 B.C.	Flat	Yes	24
	42A7	14.5	7.781								
42A NEMA 42CZ	42A5	11.3	6.656	4.26	4.25	1.31	.500	[4] 1/4-20 UNC-2B x .31 Min. Deep on 3.75 B.C.	Flat/Key	Yes	24
	42A7	14.5	7.781								
34B	34B3	6.0	4.043	4.02	—	1.625	.500	[4] 1/4-20 UNC-2B x .31 Min. Deep on 2.75 B.C.	Flat	Yes	12 or 24
	34B4	7.0	4.543								
	34B6	9.0	5.543								

Only the first four characters of the product type are relevant to dimensions

Motor Dimensions

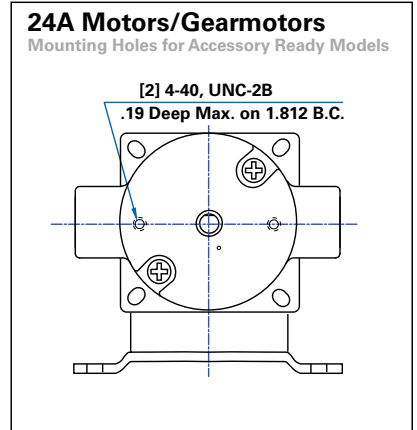
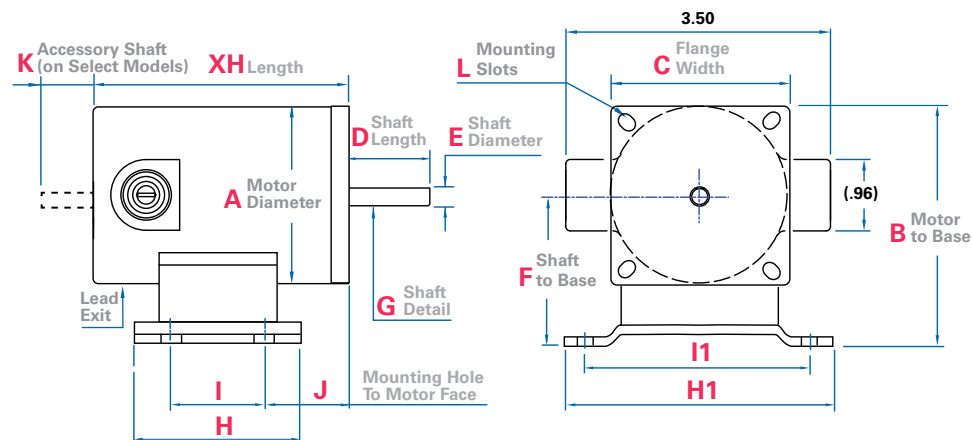
Dimensions (in inches) are for reference only. For CAD drawings and up-to-date specifications, please visit www.bodine-electric.com.



Motor Type 42R, 48R, 42A, pages 18-22 (Base Mount)

	Product Type	Weight (lbs.)	XH Length	A Diameter	B Motor to Base	C Shaft Length	D Shaft Diameter	E Shaft Detail	F Face Mount Detail	G Base Length	G1 Base Width	H Mtg. Hole Length	H1 Mtg. Hole Width	I Base Mtg. to Face	J Acc'y Shaft	Lead/Cord Length (in.)
42R	42R3	7.8	5.616	4.73	4.999	1.38	.375	Flat	Base mount 42R motors have no face mounting holes	2.88	4.75	2.25	3.50	1.572	None	12
	42R5	11	6.679													
	42R6	13	7.116													
42R Torque Motor	Model 2628	12.5	6.201	4.62	4.93	1.31	.375	Flat	[4] 1/4-20 UNC-2B x .31 Max. Deep on 3.75 B.C.	2.88	4.75	2.25	3.50	1.569	1.56	12
48R	48R5	17.0	7.329	5.90	5.85	2.06	.625	Key	[4] 3/8-16 UNC-2B x .50 Max. Deep on 5.875 B.C.	3.50	5.75	2.75	4.25	1.446	None	12
	48R6	20.0	7.797													
48R Torque Motor	Model 0632	20.5	6.676	5.73	5.85	2.06	.625	Key	[4] 3/8-16 UNC-2B x .50 Max. Deep on 5.875 B.C.	3.50	5.75	2.75	4.25	1.446	2.00	12
42A	42A5	11.3	6.656	4.26	4.77	1.62	.500	Flat	[4] 1/4-20 UNC-2B x .31 Max. Deep on 3.75 B.C.	2.88	4.75	2.25	3.50	1.471	1.28	24
	42A7	14.5	7.781													

Only the first four characters of the product type are relevant to dimensions



Motor Type 24A, page 22 (Base/Flange Mount)

	Product Type	Wt. (lbs.)	XH Length	A Diameter	B Motor to Base	C Flange Width	D Shaft Length	E Shaft Diameter	F Shaft to Base	G Shaft Detail	H Base Length	H1 Base Width	I Base Mounting Hole Length	I1 Base Mounting Hole Width	J Mounting Hole to Motor Face	K Acc'y Shaft	L Mounting Slots	Lead/Cord Length (in.)
24A	24A0	2.0	3.240	2.42	3.185	2.41	.94	0.312	1.98	Flat	2.25	3.62	1.25	3.00	.625	Yes	0.181W x 0.257L on 2.764 B.C.	24
	24A2	2.5	3.870												1.62			
	24A4	3.0	4.620												1.81			

Only the first four characters of the product type are relevant to dimensions

Standard products for demanding applications



Hollow Shaft Gearmotors and Accessories

Hollow shaft gearmotors connect directly to the driven load, reducing the overall space required by the gearmotor. Get the flexibility of Bodine's hollow shaft gearmotors without expensive couplings and mounting hardware.

- Rated torques: 6.8 to 380 lb-in
- Gear ratios: 5:1 to 280:1
- Single- or double-output stainless steel shaft kits
- Face-mounting flanges
- 230VAC and 230/460VAC 3-phase models available



Speed Controls for Fractional Horsepower Gearmotors

Bodine filtered and unfiltered speed controls provide optimized performance for a wide range of gearmotors and motors. Match a Bodine gearmotor and control and get an extended two-year system warranty. Chassis and enclosed models are available.

- PMDC, brushless DC, and AC motor speed controls
- Various input and output voltages (AC or DC)



bodine-electric.com

201 Northfield Road
Northfield, IL 60093
U.S.A.
Tel: 773.478.3515
Fax: 773.478.3232
Toll Free: 1.800.726.3463
www.bodine-electric.com
info@bodine-electric.com

Presented by:

