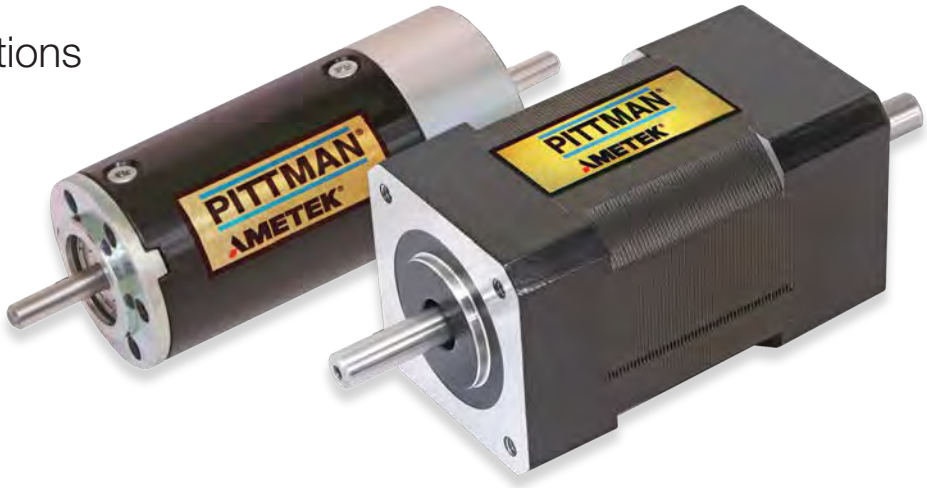
PITTMAN®

Product Guide

DC Motors for precise motion applications



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AMETEK®
ADVANCED MOTION SOLUTIONS

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PITTMAN®

Pittman Motors

We offer a full line of DC Brush and Brushless Motors with various power ratings, sizes, lengths and options to meet most motion applications. In addition, optional components such as encoders, brakes and gearboxes are available.

Pittman Motors can be further customized to include unique motor windings, special wire harnesses, EMI/RFI suppression, shaft modifications, custom output devices (such as pinions and worm gears), and other value-added features to help streamline and simplify your product design and manufacturing.

EC Instrument Grade Motors

For applications that require uniform motion control at all speeds.

Capable of high acceleration.

EA Automation Grade Motors

For applications that require feedback connectivity to other machinery components.

IP-65 Rated

ES Slotless, Brushless Motors

For applications that require high acceleration and precision control at all speeds. Torque production is predictable and very controllable.

DC Brush Commutated Motors

For applications that require reliability and performance with basic control. Yields high efficiencies by consuming less electricity.

Instrument Grade Brushless DC Motors

Pittman Instrument Grade Brushless DC Motors are used in a wide variety of OEM applications including business machines, light industrial equipment, robots, pumps, traction drives and medical equipment.

- Motors are available in diameters from 33 to 121mm with rated torques up to 6 N-m
- Choice of sizes, power densities, speed capabilities, windings and connection options
- Further customization and adaptation to your equipment can offer design solutions not previously envisioned
- Complementary ranges of gears, brakes and encoders available to optimize

Instrument Grade Brushless DC Motors				*Available Motor Options*																
				Encoders					Gearboxes						Brakes		Drives			
Series	Diameter inch [mm]	Torque oz-in [N-m]	RPM Max	E30C/D	H	Z	Q	C	G30A	G35A	G40A	PLG 42S	G51A	PLG 52	B30A	B49A	PBL4850E	BGE3004A	BGE6015A	BGE6060A
EC033A	1.3 [33]	3-8 [0.021-0.056]	12,000	R					R	A							R	R	A	
EC042B	1.66 [42]	9-25 [0.06-0.18]	9,000	R	A							R		A			R	R	A	
EC044A	1.72 [44]	6-11 [0.043-0.081]	15,000	R	A							R	C	A	C		R	R	A	
EC057C	2.25 [57]	11-40 [0.077-0.282]	12,000	R							C	C	A	R		C			A	R
EC057B	2.25 [57]	20-83 [0.14-0.59]	6,000	R			C							A					A	R
EC057A	2.25 [57]	54-130 [0.38-0.93]	6,000	C	A		R	C											A	R
EC083A	3.25 [83]	130-300 [0.09-2.1]	6,000			R		A												R
EC121A	4.75 [121]	431-928 [3.0-6.6]	5,000					R												R

R = Recommended Option A = Available Option C = Consult Factory

Integrated Controllers Brushless DC Motors

Pittman Integrated Brushless DC Motor/Drive Packages simplify the installation and use of a brushless motor. Interconnection cabling, set up, noise and compatibility issues are nearly eliminated. Ideal for variable speed control applications.

- Designed with a wide range of voltage inputs, power outputs, gearboxes and mounting configurations

The EC044A can be directly operated with a 12 or 24 VDC supply.

The EC083A uses a standard 120 VAC input and a Pittman control panel to provide smooth, quiet and efficient operation over a wide range of speeds.

Integrated Controllers Brushless DC Motors				*Available Motor Options*			
				Gearboxes			Brakes
Series	Square inch [mm]	Torque oz-in [N-m]	RPM Max	PLG 42S	G51A	PLG 52	B30A
EC044A	1.72 [44]	6 [0.042]	5,500	R	C	A	C
EC083A	3.25 [83]	104-214 [0.73-1.51]	3,600				

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Automation Grade Brushless DC Motors

Pittman Automation Grade Brushless DC Motors are IP65 rated construction packaged in a rugged and compact enclosure. Integrated encoders provide high resolution and frequency response.

- Quick disconnect connectors, heavy duty shafts and bearings
- Extreme power densities
- NEMA mounts
- Specialty windings, encoders, resolvers and connection options available

Automation Grade Brushless DC Motors				*Available Motor Options*					
				Encoder				Drives	
Series	Square inch [mm]	Torque oz-in [N-m]	RPM Max	Q	V	C	D	BGE6015A	BGE6060A
EA057A	2.25 [57]	66-250 [0.47-1.7]	6,000		R		A	A	R
EA090A	3.5 [90]	260-650 [1.8-4.6]	6,000	R		A			R

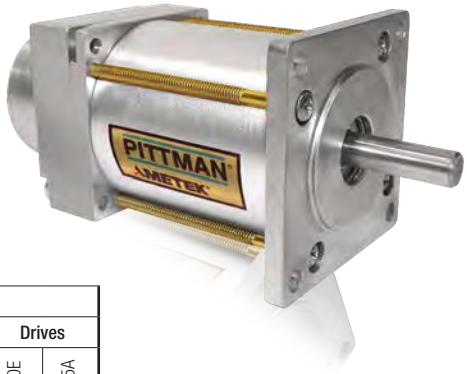
R = Recommended Option A = Available Option C = Consult Factory

Slotless Brushless DC Motors

Pittman Slotless Brushless DC Motors offer many advantages over conventional slotted stator construction. Negligible magnetic cogging provides improved servo efficiency and enables extremely smooth, quiet motion.

Low inductance and high current bandwidth provides precise control. Slotless construction also provides excellent winding heat transfer for high thermal efficiency and transient load capacity.

- Internal Hall Effect feedback sensors for linear speed-torque characteristics, high starting torque and variable speed control with appropriate drive electronics
- Modifications to the shaft, winding and mechanical mounting are available for OEM applications



Slotless Brushless DC Motors				Available Motor Options										
				Encoder	Gearboxes						Brakes		Drives	
Series	Diameter inch [mm]	Torque oz-in [N-m]	RPM Max	E30C/D	G30A	G35A	G40A	PLG 42S	G51A	PLG 52	B30A	B49A	PBL4850E	BGE6015A
ES030A	1.38 [35]	4-5.8 [0.028-0.040]	8,000	R	R	A	A				C		R	A
ES040A	1.65 [42]	12-19 [0.08-0.13]	8,000	R			A	R	A	A	C	C	R	R
ES050A	2.28 [58]	25-43 [0.176-0.30]	5,000	R			A	A		R		C	R	R

R = Recommended Option A = Available Option C = Consult Factory

Brush Commutated DC Motors

Pittman Brush Commutated DC Motors have a wide range of frame sizes and magnetic technologies from 22 to 83mm in diameter. Motors are designed to offer smooth low speed performance, quiet operation and long life. Armatures are skewed to minimize magnetic cogging, while brush and commutator designs minimize noise.

- Available options: brush materials, EMI/RFI suppression networks, shaft modifications, special windings, lead wire assemblies, spur and planetary gearing
- Holding brakes, and customer specified pulleys and gears
- Multiple encoder platforms with a wide range of resolutions available

Brush Commutated DC Motors				Available Motor Options																
				Encoders				Gearboxes								Brakes		Drives		Tach
Series (Previous Part #)	Diameter inch [mm]	Torque oz-in [N-m]	RPM Max	E21C/D	E30C/D	H	Q	G22A	PLG 24	G30A	G35A	G40A	PLG 42S	G51A	PLG 52	B30A	B49A	PBL4850E*	BGE6060A	14V
DC022C	0.866 [22]	0.8-2 [0.005-0.014]	10,000	R				A	A									R		
DC026C	1.02 [26]	1.9-3.2 [0.013-0.022]	10,000	R	A				A	R	R					A		R		
DC030B	1.18 [30]	1.6-2.6 [0.011-0.018]	10,000		R					R	R					A		R		
DC030C	1.18 [30]	2.7-8.5 [0.019-0.060]	10,000		R					R	R			A		A		R		
DC032A	1.25 [32]	3.8-4.9 [0.027-0.035]	6,500			R					R							R	A	
DC040B	1.58 [40]	2.4-11.5 [0.016-0.08]	8,000	C	R					R		A	A	R		A	A	R	R	
DC054B	2.125 [54]	10-50 [0.07-0.35]	6,000		R		C					R	R	R	R			A	R	
DC057A	2.25 [57]	30-57 [0.21-0.40]	6,000		C	R	R									A		A	R	A
DC083A	3.25 [83]	80-230 [0.56-1.62]	6,000		A	R	R										A		R	A

R = Recommended Option A = Available Option C = Consult Factory

*For PBL4850E to operate a brush motor, an encoder is required.

Spur and Planetary Gearboxes

Available in diameters from 22 to 75mm, our Spur and Planetary Gearboxes offer the most cost effective solutions to maximize torque and optimize machine performance.

- Multiple configurations: sintered, cut steel, wide face or plastic gears, ball or sintered bearings, custom outputs and special lubrication

Gearboxes

Series	Style	Reduction Ratios XXX.X : 1	Maximum Load	
			oz-in	N-m
G35A	Spur	6.3:1 to 1803.6:1	100 to 175	0.706 to 1.2355
G51A		5.9:1 to 4732.5:1	175 to 500	1.2355 to 3.53
G22A	Planetary	4:1 to 429:1	7 to 42	0.0494 to 0.2965
PLG24		4.33:1 to 352.6:1	42 to 85	0.30 to 0.60
G30A		4:1 to 1296:1	350 to 1250	2.47 to 8.83
G40A		4:1 to 864:1	2000	14.12
PLG42S		4:1 to 512:1	496 to 1983	3.5 to 14
PLG52		4.5:1 to 400:1	170 to 3399	1.2 to 24

Encoders

Our cost effective Quadrature Encoders provide parameters of reflective optical technology, transmissive optical technology with and without differential line drivers, and multitude of line counts.

- Compact, low profile sizes
- Modular and bearing construction options. Bearing style encoders provide significant performance upgrades in demanding applications
- Factory installed and tested for quick start-up and reliable operation

Incremental Encoders

Series	Available Resolutions (Lines / Rev)	Output Signals
E21	E21C - 120, 125, 128, 200, 250, 256, 300, 360 E21D - 500, 512, 1000, 1024, 1600, 2000, 2048, 3200, 4000, 4096, 6400, 8000, 8192	E21C - A, B E21D - A, B, Index – Differential Line Driver Option
E30	E30C - 200, 250, 256, 400, 500 E30D - 500, 512, 1000, 1024, 2000, 2048	E30C - A, B E30D - A, B, Index – Differential Line Driver Option
N	1000 (standard), 100, 200, 250, 256, 400, 500, 512, 800, 1024	A, B, Index, 3-channel Commutation
H	H1 - 500 H2 - 1000	H1 - A, B, Index H2 - A, B
Z	1000, 2000	A, B, Index, 3-channel Commutation Differential Line Drivers
Q / V	1000, 2000, 2500, 5000	A, B, Index Differential Line Drivers
C / D	1000, 2000, 2500, 5000	A, B, Index, 3-channel Commutation Differential Line Drivers 4- or 8-Pole Commutation

Brakes

Power off, fail safe holding brakes compliment our motor product line. When voltage is applied, the friction disk is released allowing the motor shaft to rotate. Pittman Power-Off Brakes are best suited for parking brake applications used to hold a load in position, and are ideal for creating brake motor packages for small frame servo and stepper motors.

Incremental Encoders

Part No.	Holding Torque		Voltage Ratio	Mounting	Compatible Brush DC Motor
	lb -in	Nm	VDC		
B30A Power-off Brake	1	0.113	12, 19, 24, 30	3 holes eq. space on a 0.875 in (22.23 mm) BC	DC026C, DC030B, DC030C, DC040B, DC057A
B49 Power-off Brake	3	0.339	12, 24	3 holes eq. space on a 0.875 in (22.23 mm) BC	DC040B, DC083A

Programmable Brushless Motor Drives

Our Haydon Kerk® Motion Solutions and Dunkermotoren® brands of brushless controllers are available in many configurations from simple analog controlled single quadrant drives to fully programmable servo motion controllers.

The PBL4850E Drive Brushless Motor Controller is PC computer programmable that features an intuitive patent-pending Graphic User Interface (GUI) the removes the complexity of programming. Simple to use drive software, with on-screen buttons and easy to understand programming guides.

The BGE Series of compact, 4-quadrant positioning controllers are suitable for use with Pittman Brushless or Brushed DC Motors. Information about the motor's rotor position can be supplied to the positioning controller by an encoder or integrated Hall sensors contained within a brushless motor. The controls incorporate protection against over-voltage, low voltage and excessive temperature.

Non-Programmable Brushless Motor Drive

For simple speed control applications.

Programmable Drives

Part No.	Input Voltage (DC)	Current Continuous (A rms)	Communication (A)	Torque Mode	Speed Mode	Position Mode
PBL4850E	12 to 48	6.5	USB	No	YES	YES
BGE6005A	9 to 60	15	CANopen	Yes		
BGE6015A	9 to 60	50				
BGE6060A	9 to 60	160				

Non-Programmable Drives

Part No.	Input Voltage (DC)	Current Continuous (A rms)	Communication (A)	Torque Mode	Speed Mode	Position Mode
BGE3004A	12 to 40	4	0 to +10 V analog	No	Yes	No

343 Godshall Drive
Harleysville, PA 19438
www.haydonkerkpittman.com