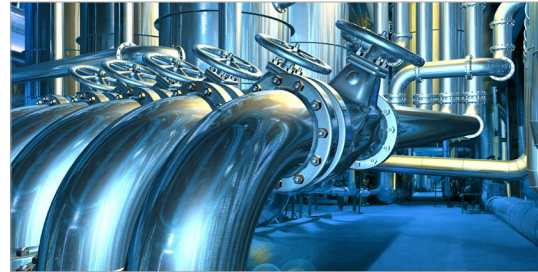


# Performance in Explosive Atmospheres



## Hazardous Location Motors

UL, ATEX and IECEx Certified

**KOLLMORGEN**

A REGAL REXNORD BRAND

# The Certifications You Need. The Performance You Demand.

Motors for use in hazardous locations must be engineered to prevent the ignition of potentially explosive atmospheres and must be certified by the responsible governing body in each region where the motor is used.

Kollmorgen offers motors certified to UL, ATEX and IECEx standards for hazardous locations, meeting regulatory requirements in countries around the world. Typical applications include mining, oil and natural gas refining, pharmaceutical production, food processing, industrial paint booths, textile mills, and many other industrial settings where ignitable gases, dusts, fibers or flyings may be present.

Key safety features include motor enclosures capable of withstanding an internal explosion, flame paths that prevent any internal flame or spark from reaching the outside environment, and surface temperatures that never become hot enough to ignite hazardous materials, even when the motor is in an overload condition or when it is covered by a layer of hazardous dust.

All motors for use in explosive atmospheres are designed and built to Kollmorgen's uncompromising quality standards to ensure years of reliable operation in harsh and rugged industrial environments.

**For complete details and specifications, and to order, visit [www.kollmorgen.com/en-us/products/motors/explosion-proof](http://www.kollmorgen.com/en-us/products/motors/explosion-proof)**

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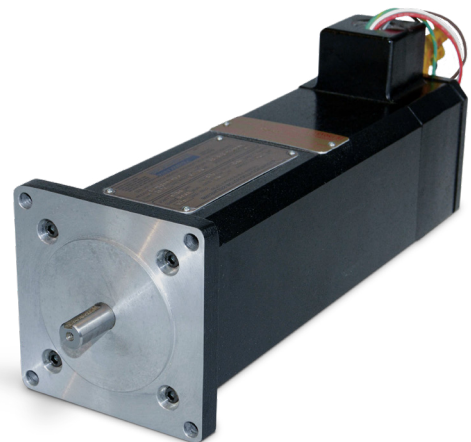
## EB & EBH Series Brushless Servo Motors



UL, File E120721  
Class I, Divisions 1 & 2,  
Groups C & D



ATEX, File ITS12ATEX17548X  
Ex II 2 G Ex d IIB T3 Gb  $-40^{\circ}\text{C} \leq T_a \leq +40^{\circ}\text{C}$   
IECEx ETL 12.0006X



Goldline EB and EBH servo motors offer superior torque density and high maximum speeds. The EB Series is available with a voltage range up to 230 Vac, while the EBH Series has a higher voltage range up to 480 Vac. Both series are available in speeds up to 7,500 rpm. These motors include rugged resolver feedback, a built-in thermostat and Class F\* insulation. They are ideally suited for use in applications that require highly dynamic motion, including variable speeds and varying loads, and in locations where flammable vapors or gases create a potentially hazardous environment.

### EB Series

| Frame Size                   | EB10x | EB20x   | EB40x   | EB60x   | EB80x |
|------------------------------|-------|---------|---------|---------|-------|
| Stack length                 | 2,4,6 | 2,4,6   | 2,4,6   | 2,4,6   | 2,4,6 |
| Windings                     | A,B   | A,B,C,D | A,B,C,D | A,B,C,D | A,B,C |
| Rated voltage (Vrms)         | 230   | 230     | 230     | 230     | 230   |
| Max cont. stall torque (Nm)* | 2.22  | 6.44    | 18.6    | 44.8    | 108.5 |
| Max peak torque (Nm)*        | 6.36  | 19.96   | 49.5    | 131.9   | 362   |
| Max rated speed (rpm)        | 7500  | 7000    | 5000    | 4300    | 3000  |
| Max rated power (hp)         | 2     | 4.53    | 9.6     | 14.2    | 21.2  |

\* @ 40°C ambient

### EBH Series

| Frame Size                   | EBH12x | EBH22x        | EBH42x     | EBH62x        | EBH82x     |
|------------------------------|--------|---------------|------------|---------------|------------|
| Stack length                 | 2,4,6  | 2,4,6         | 2,4,6      | 2,4,6         | 2,4,6      |
| Windings                     | A, B   | A, B, C, D, E | A, B, C, D | A, B, C, D, E | A, B, C, D |
| Rated voltage (Vrms)         | 480    | 480           | 480        | 480           | 460        |
| Max cont. stall torque (Nm)* | 1.89   | 5.59          | 15.80      | 36.7          | 93.5       |
| Max peak torque (Nm)*        | 6.35   | 20.2          | 49.5       | 126.0         | 322.8      |
| Max rated speed (rpm)        | 7500   | 7000          | 5000       | 4500          | 3000       |
| Max rated power (hp)         | 1.57   | 4.0           | 7.89       | 11.56         | 16.2       |

\* @ 40°C ambient

EB motors can be ordered in either cULus or ATEX/IECEx + cETLus configurations. EBH motors can only be ordered with ATEX/IECEx configurations. These configurations, and their corresponding certifications, are mutually exclusive. UL configurations do not have ATEX/IECEx. ATEX/IECEx+cETLus have the ETL listed mark instead of the UL listed mark, using equivalent UL and CSA standards.

ATEX/IECEx certification is not available for EB80x sizes.

# PMDC EP Series

## Brush Permanent Magnet DC Motors

 **UL, File E56538**  
Class I, Divisions 1 & 2, Groups C & D  
Class II, Division 1 & 2, Groups F & G  
Class III, Divisions 1 & 2



PMDC EP (explosion proof) motors are brushed, permanent magnet DC motors for use in fixed-speed, constant load applications. They are available in a NEMA 56C frame size with a TENV (totally enclosed, non-ventilated) configuration and are capable of power ranges from 1/4 to 3/4 hp.

Anti-cog magnets allow for smooth low-speed operation, and these motors feature high overcurrent capacity and dynamic braking capabilities. A long, reliable operational life is ensured through Class H insulation; a polyester-impregnated armature; rugged, fused commutator; large sealed bearings; and long-life, constant-force brush springs with field replaceable brushes.

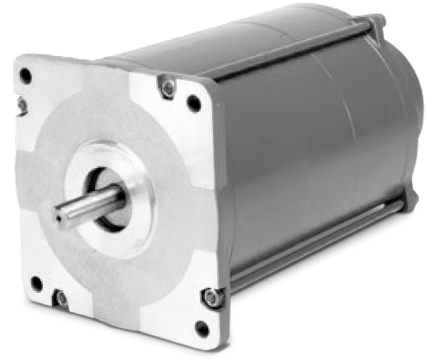
### PMDC EP Series

|      |     |                       |              |      |           | Parameters             |                                         |                  |                                         |                |                                 |                 |
|------|-----|-----------------------|--------------|------|-----------|------------------------|-----------------------------------------|------------------|-----------------------------------------|----------------|---------------------------------|-----------------|
|      | HP  | Model Number          | Product Code | NEMA | Enclosure | Continuous Current (A) | Continuous Torque (lb <sub>f</sub> -in) | Peak Current (A) | Torque Constant (lb <sub>f</sub> -in/A) | Resistance (Ω) | Inertia (lb <sub>f</sub> -in/A) | Inductance (mH) |
| 90V  | 1/4 | EP3624-1434-7-56BC-CU | FGE0212      | 56C  | TENV      | 2.6                    | 9.0                                     | 52.0             | 4.07                                    | 2.63           | 4.0                             | 10.5            |
|      | 1/3 | EP3632-1435-7-56BC-CU | FGE0242      | 56C  | TENV      | 3.5                    | 12.0                                    | 71.0             | 3.94                                    | 1.76           | 5.0                             | 6.6             |
|      | 1/2 | EP3640-1436-7-56BC-CU | FGE0213      | 56C  | TENV      | 4.7                    | 18.0                                    | 87.0             | 4.24                                    | 1.03           | 6.4                             | 5.1             |
|      | 3/4 | EP3758-5151-7-56BC-CU | FGE0248      | 56C  | TENV      | 7.0                    | 27.0                                    | 113.0            | 4.15                                    | 0.74           | 8.0                             | 3.8             |
| 180V | 1/4 | EP3624-5269-7-56BC-CU | FGE0261      | 56C  | TENV      | 1.3                    | 9.0                                     | 26.0             | 8.10                                    | 10.50          | 4.0                             | 51.80           |
|      | 1/2 | EP3644-5214-7-56BC-CU | FGE0262      | 56C  | TENV      | 2.3                    | 18.0                                    | 34.0             | 8.10                                    | 4.00           | 6.7                             | 24.20           |
|      | 3/4 | EP3752-5215-7-56BC-CU | FGE0263      | 56C  | TENV      | 3.3                    | 27.0                                    | 38.0             | 8.10                                    | 3.10           | 11.4                            | 17.40           |
| 12V  | 1/3 | EP3620-1954-7-56BC-CU | FGE0243      | 56C  | TENV      | 28.0                   | 12.0                                    | n/a              | 0.52                                    | 0.04           | 3.5                             | 0.18            |
| 24V  | 1/3 | EP3624-2757-7-56BC-CU | FGE0245      | 56C  | TENV      | 13.4                   | 12.0                                    | n/a              | 1.02                                    | 0.16           | 4.0                             | 0.66            |
|      | 3/4 | EP3648-4952-7-56BC-CU | FGE0244      | 56C  | TENV      | 28.2                   | 27.0                                    | n/a              | 1.02                                    | 0.06           | 7.1                             | 0.22            |

## AC Synchronous Motors



UL, File E32246  
Class I, Divisions 1 & 2, Group D



These hazardous-duty synchronous motors provide torque up to 1,500 oz-in (1059 N-cm) and are available in NEMA 42 and 66 frame sizes (110 mm and 170 mm). They run at 72 rpm with a 120 Vac or 240 Vac, 60 Hz power supply, or 60 rpm with a 240 Vac, 50 Hz power supply.

| 120 Volt, 60 Hz, Single Phase, 72 rpm |              |       |                    |                    |      |                | Phase Shifting |      |       |                    |      |
|---------------------------------------|--------------|-------|--------------------|--------------------|------|----------------|----------------|------|-------|--------------------|------|
| Model                                 | Torque (min) |       | Load Inertia*      |                    | Amps | Wiring Diagram | Resistor       |      |       | Capacitor (330VAC) |      |
|                                       | oz-in        | N-cm  | lb-in <sup>2</sup> | kg-cm <sup>2</sup> |      |                | Kit Number     | Ohms | Watts | Kit Number         | µF   |
| X250                                  | 250          | 177   | 3                  | 8.8                | 0.6  | RC             | 201052-013     | 150  | 50    | 201053-010         | 6.5  |
| X700                                  | 700          | 494   | 10                 | 30                 | 1.1  | RC             | 201052-027     | 150  | 100   | 201053-032         | 12.5 |
| X1100                                 | 1,100        | 777   | 9                  | 26                 | 3    | RC             | 201052-025     | 100  | 160   | 201053-026         | 17.5 |
| X1500                                 | 1,500        | 1,059 | 12                 | 35                 | 3    | RC             | 201052-020     | 55   | 375   | 201053-014         | 30   |

| 240 Volt, 60 Hz, Single Phase, 72 rpm |              |       |                    |                    |      |                | Phase Shifting |      |       |                    |      |
|---------------------------------------|--------------|-------|--------------------|--------------------|------|----------------|----------------|------|-------|--------------------|------|
| Model                                 | Torque (min) |       | Load Inertia*      |                    | Amps | Wiring Diagram | Resistor       |      |       | Capacitor (330VAC) |      |
|                                       | oz-in        | N-cm  | lb-in <sup>2</sup> | kg-cm <sup>2</sup> |      |                | Kit Number     | Ohms | Watts | Kit Number         | µF   |
| X252                                  | 250          | 177   | 3                  | 8.8                | 0.4  | RC             | 201052-015     | 500  | 50    | 201053-012         | 1.75 |
| X1102                                 | 1,100        | 777   | 9                  | 26                 | 1.5  | RC             | 201052-026     | 400  | 160   | 201053-028         | 4    |
| X1502                                 | 1,500        | 1,059 | 12                 | 35                 | 1.5  | RC             | 201052-018     | 250  | 200   | 201053-016         | 8    |
| X1500                                 | 1,500        | 1,059 | 12                 | 35                 | 3    | RC             | 201052-020     | 55   | 375   | 201053-014         | 30   |

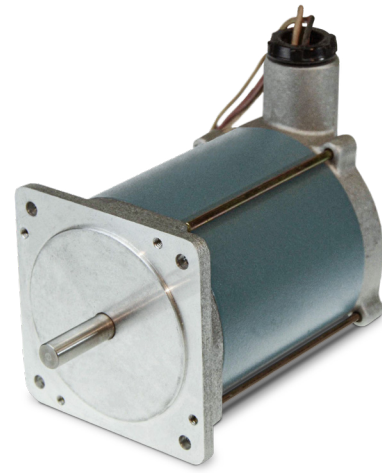
| 240 Volt, 60 Hz, Single Phase, 60 rpm |              |       |                    |                    |      |                | Phase Shifting |      |       |                    |      |
|---------------------------------------|--------------|-------|--------------------|--------------------|------|----------------|----------------|------|-------|--------------------|------|
| Model                                 | Torque (min) |       | Load Inertia*      |                    | Amps | Wiring Diagram | Resistor       |      |       | Capacitor (330VAC) |      |
|                                       | oz-in        | N-cm  | lb-in <sup>2</sup> | kg-cm <sup>2</sup> |      |                | Kit Number     | Ohms | Watts | Kit Number         | µF   |
| X252                                  | 250          | 177   | 3                  | 8.8                | 0.4  | RC             | 201052-015     | 500  | 50    | 201053-012         | 1.75 |
| X1102                                 | 1,100        | 777   | 9                  | 26                 | 1.5  | RC             | 201052-026     | 400  | 160   | 201053-029         | 6    |
| X1502                                 | 1,500        | 1,059 | 12                 | 35                 | 1.5  | RC             | 201052-018     | 250  | 200   | 201053-019         | 9    |
| X1500                                 | 1,500        | 1,059 | 12                 | 35                 | 3    | RC             | 201052-020     | 55   | 375   | 201053-014         | 30   |

\* This is the maximum rigidly attached load inertia the motor will reliably start. If the load is attached to the motor with a coupling that has a 5° flex, the motor can start loads up to seven times listed.

# Stepper MX Series



UL, File E32246 (MX9) and E120721 (MX11)  
Class I, Divisions 1 & 2, Group D



Explosion proof MX Series stepper motors are available in NEMA 34 and 42 frame sizes (90 and 110 mm). They move in 200 steps per revolution (1.8° step angle) and provide minimum holding torques from 1.27 to 9.82 N-m (180 to 1,390 oz-in).

MX Series steppers are available with bipolar windings and a choice of stack lengths, providing speeds up to 3,000 rpm to meet the velocity demands of most high-torque application

## MX9 Series Stepper Motors, NEMA 34

| Motor Model Number | Config.  |        |          | Holding Torque (2 phases on)<br><br>oz-in (Nm) +/-10% | Rated Current/ Phase<br><br>Amps DC | Phase Resistance<br><br>Ohms +/-10% | Phase Inductance<br><br>mH Typical | Detent Torque<br><br>oz-in (Nm) | Thermal Resistance<br><br>Mounted °C/Watt | Rotor Inertia<br><br>oz-in-s <sup>2</sup> (kg-m <sup>2</sup> x 10 <sup>3</sup> ) | Weight<br><br>lb (kg) | Shaft Loading |             |
|--------------------|----------|--------|----------|-------------------------------------------------------|-------------------------------------|-------------------------------------|------------------------------------|---------------------------------|-------------------------------------------|----------------------------------------------------------------------------------|-----------------------|---------------|-------------|
|                    | Parallel | Series | Unipolar |                                                       |                                     |                                     |                                    |                                 |                                           |                                                                                  |                       | Radial Force  | Axial Force |
| MX91-FF-206U       |          | •      |          | 180 (1.27)                                            | 3.0                                 | 1.0                                 | 10                                 | 2.0                             | 2.9                                       | 0.0095 (0.067)                                                                   | 6.0 (2.7)             | 25 (111)      | 50 (222)    |
| MX91-FF-402U       |          | •      |          |                                                       | 4.0                                 | 0.72                                | 6.0                                |                                 |                                           |                                                                                  |                       |               |             |
| MX91-FF-403U       |          | •      |          |                                                       | 6.0                                 | 0.18                                | 1.5                                |                                 |                                           |                                                                                  |                       |               |             |
| MX92-FF-206U       |          | •      |          | 370 (2.61)                                            | 4.0                                 | 1.0                                 | 11                                 | 4.0                             | 1.7                                       | 0.0174 (0.123)                                                                   | 9.0 (4.1)             | 25 (111)      | 50 (222)    |
| MX92-FF-401U       |          | •      |          |                                                       | 7.0                                 | 0.28                                | 2.8                                |                                 |                                           |                                                                                  |                       |               |             |
| MX93-FF-206U       |          | •      |          | 550 (3.88)                                            | 4.0                                 | 0.90                                | 13                                 | 7.0                             | 2.1                                       | 0.0265 (0.187)                                                                   | 11 (5.0)              | 25 (111)      | 50 (222)    |
| MX93-FF-401U       |          | •      |          |                                                       | 5.0                                 | 0.65                                | 8.0                                |                                 |                                           |                                                                                  |                       |               |             |
| MX93-FF-402U       |          | •      |          |                                                       | 7.0                                 | 0.16                                | 2.0                                |                                 |                                           |                                                                                  |                       |               |             |

## MX11 Series Stepper Motors, NEMA 42

| Motor Model Number | Config.  |        |          | Holding Torque (2 phases on)<br><br>oz-in (Nm) +/-10% | Rated Current/ Phase<br><br>Amps DC | Phase Resistance<br><br>Ohms +/-10% | Phase Inductance<br><br>mH Typical | Detent Torque<br><br>oz-in (Nm) | Thermal Resistance<br><br>Mounted °C/Watt | Rotor Inertia<br><br>oz-in-s <sup>2</sup> (kg-m <sup>2</sup> x 10 <sup>3</sup> ) | Weight<br><br>lb (kg) | Shaft Loading |             |
|--------------------|----------|--------|----------|-------------------------------------------------------|-------------------------------------|-------------------------------------|------------------------------------|---------------------------------|-------------------------------------------|----------------------------------------------------------------------------------|-----------------------|---------------|-------------|
|                    | Parallel | Series | Unipolar |                                                       |                                     |                                     |                                    |                                 |                                           |                                                                                  |                       | Radial Force  | Axial Force |
| MX111              |          | •      |          | 850 (6.0)                                             | 1.1                                 | 3.6                                 | 16                                 | 6.0 (4.24)                      | 7.4                                       | 0.55 (393)                                                                       | 10 (4.5)              | 25 (111)      | 50 (222)    |
| MX112              |          | •      |          | 1390 (9.82)                                           | 2.7                                 | 2.5                                 | 2.5                                | 12 (8.47)                       | 1.8                                       | 0.114 (806)                                                                      | 18 (8.2)              | 25 (111)      | 50 (222)    |



## About Kollmorgen

Kollmorgen, a Regal Rexnord brand, has more than 100 years of motion experience, proven in the industry's highest-performing, most reliable motors, drives, linear actuators, AGV control solutions and automation platforms. We deliver breakthrough solutions that are unmatched in performance, reliability and ease of use, giving machine builders an irrefutable marketplace advantage.

[www.kollmorgen.com](http://www.kollmorgen.com)

# KOLLMORGEN

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