

Stepper Products

Our stepper motors, drives and controllers, which accommodate a wide range of power requirements, provide a high-performance, yet very cost-effective solution when you need precise motion control.

Our hybrid stepper motors are some of the highest torque-density motors in the industry. Available in several NEMA frame sizes, these 2 phase stepper motors inherently move in small, precise 0.9 or 1.8 degree increments (400 or 200 steps/revolution). This stepping action is simple to control and does not require complicated, expensive feedback devices. Our stepper motors are excellent alternatives to pneumatic, hydraulic and servomotor systems.

Kollmorgen's stepper drives are designed with versatility, ease-of-use, and cost-effectiveness in mind. Choose from a broad range of advanced drives and controls including full, half, and microstepping models in both modular and packaged designs.

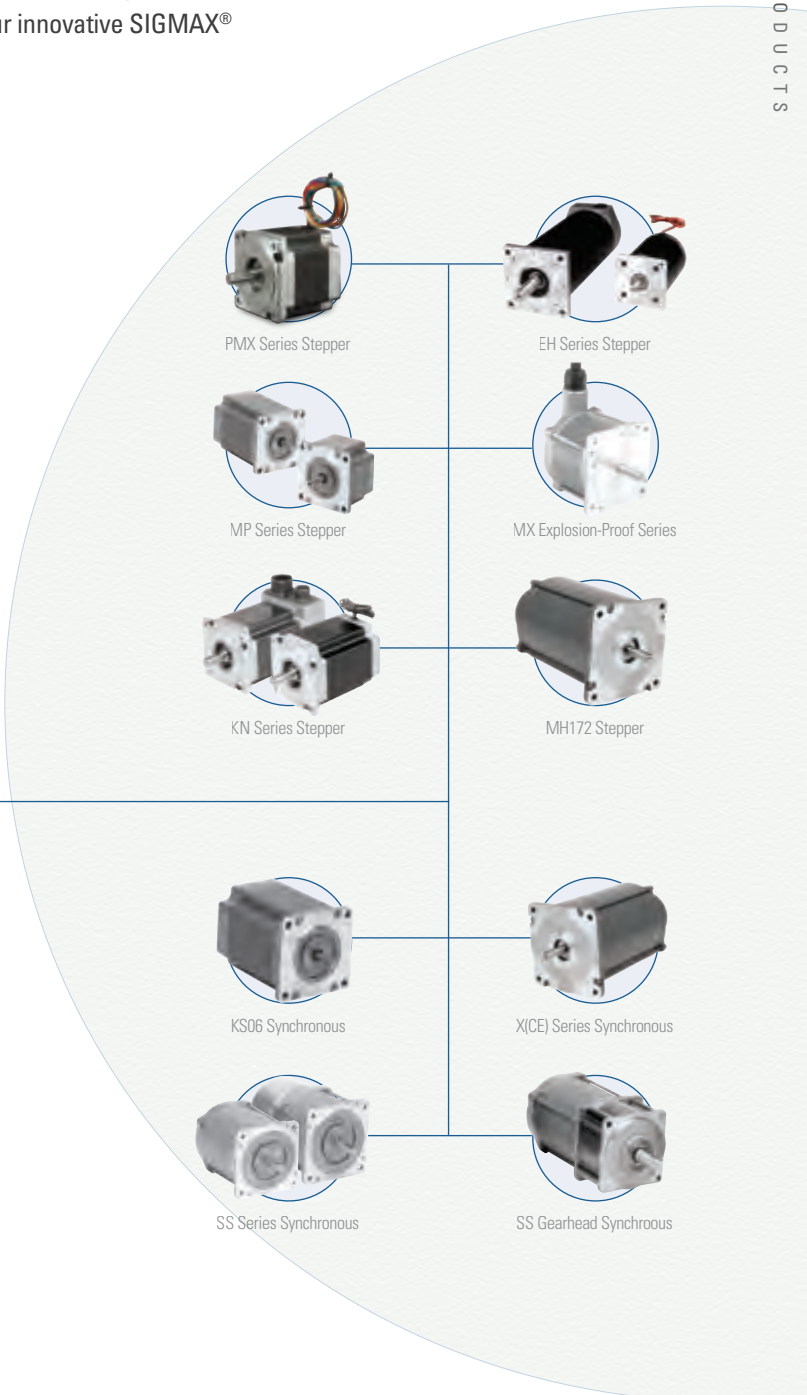
Kollmorgen's stepper drives and motors are designed with versatility, ease-of-use, and cost-effectiveness in mind. The motors provide high torque in a small package and come in a wide range of standard sizes, constructions, windings and options. They are available with custom leads, shafts and connectors are routinely provided to effectively solve your application needs. Several models feature the addition of our innovative SIGMAX® technology for higher torque and acceleration rates.



P-Series Stepper Drives

Best-in-Class Components

P-Series Stepper Drives work seamlessly with Kollmorgen stepper and synchronous motors for quality, reliability, and performance.



P-Series Drive Features and Benefits

P5000



Value DC Input Stepper Drive

- Wave matching for Kollmorgen motors to provide optimal performance
- All inputs and outputs are optically isolated
- Step and direction inputs or internal velocity controlled oscillator (VCO) dip switch selectable
- DIP switch selectable micro-stepping resolution settings
- Idle current reduction, DIP switch selectable
- Compensation for mid-range instability
- RoHS & CE certified
- UL pending

P6000



Full Featured AC Input Stepper Drive

- No programming required
- Covers full power range of Kollmorgen steppers
- Switch selectable current from 0.2-5.7 Arms, 8.0 A peak
- Switch selectable for many Kollmorgen motor pairings
- All inputs and outputs are optically isolated
- Single-ended and differential step and direction
- Enable input
- Switch selectable micro-stepping resolution
- Anti-resonance based on load inertia
- RoHS & CE certified

P7000



Full Featured AC or DC Input Stepper Drives with Intelligent Indexing Option (-PN)

- AC and DC input versions
- Covers full power range of Kollmorgen steppers
- Drives can be configured by either dip switches or P7000 software
- Intelligent indexing option (-PN) provides ability to link motion tasks.
- All inputs and outputs are optically isolated
- Single-ended and differential step and direction
- Enable input
- Switch selectable micro-stepping resolution
- Anti-resonance based on load inertia
- RoHS, CE and UL certified

Budget/Value

Full-Featured

STEPPER DRIVE PRODUCT OVERVIEW

Stepper Drive Model	Modes of Operation*	Input voltage (Vdc)	Input Voltage (Vac)	Output current (Adc) Continuous (Peak)
P5000	S, V	20 - 75	n/a	0.7 - 2.0 (3.5)
P6000	S	n/a	110-240 +/-10%	0.3 - 5.7 (8.0)
P70530	S, M	20 - 75	n/a	0 - 5.0 (7.1)
P70360	S, M	n/a	120/240	0 - 2.5 (3.5)

Modes of Operation: S - Step and Direction; V - Velocity Controlled Oscillator (VCO);
 M - Motion Node Indexing

P5000 Stepper Drive-Controller

Big Performance,
 Micro Package.

Introducing the New Kollmorgen P5000 Stepper Drive.

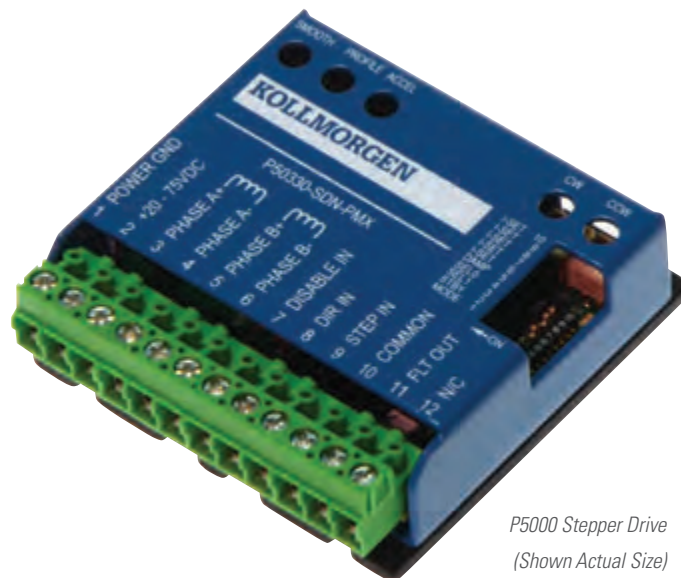
The P5000 is a compact micro-stepping stepper drive optimized for high system performance with Kollmorgen's industry leading POWERMAX II stepper motors. It is an impressive yet simple addition to the Kollmorgen stepper drive family.

Optimized. Smooth. Compact.

Pairing a stepper system doesn't get any easier! The P5000 and Kollmorgen stepper motors are meant to be together. With Kollmorgen motor windings optimized for the P5000, all you have to do is set the dip switches for the motor you are paired with and you have a smooth operating system that fully utilizes the potential of your Kollmorgen motor and drive combination!

Features

- Current output from 0.7-3.5 Arms peak; DIP switch selectable in 0.2 Amp increments
- Bus Voltage 20-75 Vdc
- Wave matching for Kollmorgen motors to provide optimal performance for the Kollmorgen Stepper Motor Families.
- All Inputs and Outputs are Optically Isolated
- Command Source from External Step and Direction Inputs or Internal Velocity Controlled Oscillator (VCO); DIP switch selectable
- External Single-Ended Step and Direction Command
 - Disable or Fault Reset Input
 - Fault or Enable Output
- VCO Mode
 - CW Limit Input
 - CCW Limit Input
 - Run/Stop Input
 - Run/Stop Output
 - CW Speed trimpot
 - CCW Speed trimpot
 - Accel/Decel trimpot
- DIP switch selectable micro-stepping-resolution settings
- Pulse Multiplier smooths micro-stepping*
- Idle Current Reduction; DIP switch selectable
- Compensation for mid-range instability*
- RoHS & CE certified
- UL pending



P5000 Stepper Drive
 (Shown Actual Size)



Note: For complete P-Series model nomenclature, refer to page 146.
 *Patents Pending

P6000 Stepper Drive-Controller

Powerful, Yet Simple.

Introducing the New Kollmorgen P6000 Stepper Drive.

The P6000 is an AC input micro-stepping drive optimized for pairing with POWERPAC and POWERMAX stepper motors. With the simplicity of dip switches and the optimized performance from the complete system, this stepper solution brings increased machine performance without the associated complexity.

Powerful. Simple. Optimized.

The P6000 and Kollmorgen POWERPAC and POWERMAX stepper motors are designed to provide the best system solution when paired with one another. The easy dip switch selection matches the P6000 settings with the optimal Kollmorgen stepper motor requirements to provide the best performance and most efficient solution for nearly any application.

Features

- No programming required!
- Covers full power range of Kollmorgen Stepper Motors
- Switch Selectable Current Output from 0.2-5.7 Arms, 8.0 A peak
- 120/240 VAC Input (160/320 Vdc Bus)
- Kollmorgen Stepper Motor Pairing; Switch Selectable
- All Inputs and Outputs are Optically Isolated
- Single-Ended and Differential Step and Direction or CW/CCW Command; Switch Selectable
- Enable Input
- Fault Output (Sinking or Sourcing)
- Status LEDs for easy troubleshooting
- Switch Selectable Micro-Stepping-Resolution Settings
- Step Smoothing Filter; Switch Selectable
- Idle Current Reduction; Switch Selectable
- Anti-Resonance Based On Load Inertia; Switch Selectable
- Self-Test Conducts Spin Test to Confirm Proper Connection; Switch Selectable
- RoHS & CE Certified



P6000 Stepper Drive

Note: For complete P-Series model nomenclature, refer to page 146.



P7000 Stepper Drive-Controller

P7000 stepper drives offer a unique level of system functionality, smoothness, high-speed performance and innovation unmatched in the industry.

The compact P7000 is designed to power Kollmorgen step motors ranging from NEMA size 17 up to NEMA size 42. Two power configurations are available for operation directly from AC power, or from a DC power supply.

There are two levels of control offered. The basic drive accepts step and direction inputs. P7000 drives are also available with an integrated position controller (-PN option). The drives are configured by either on-board dip switches, or with the P7000 tools software.



Advanced P7000 Features Make it the Best Choice to Meet Your Application Requirements

Multistep™

Also known as auto-smoothing. The P7000 drive accepts full step pulse commands from the indexer and inserts fine micro-steps to smooth coarse low speed motion. This allows you to significantly upgrade machine performance without having to redesign machine control architecture.

Auto-Tuning

Advanced current auto-tuning techniques provide outstanding low-speed smoothness. The P7000 senses the motor's characteristics and automatically fine tunes itself to meet your high-performance needs. This reduces installation and set-up time.

Mid-Band Anti-Resonance Control

Reduces negative effects of mechanical resonance, allowing you to get more out of a smaller motor and virtually eliminating nuisance stalls and machine downtime.

Idle Current Reduction

If you do not require the motor's full torque to hold a load at rest, you can select the right amount of current (torque) to reduce motor heating and power consumption. This increases the life of the system.

Dynamic Smoothing

Quasi-S-curve algorithm reduces jerk, especially upon acceleration. Increases mechanical life of the machine and reduces energy consumption.

Intelligent Indexing Option (-PN)

Wizard-like P7000 helps you to develop and link motion tasks such as homing and conditional and unconditional indexing. You can be up-and-running quickly.

Modbus RTU Compatible

The intelligent indexing option (-PN) supports Modbus RTU to control motion with an external interface device. External interfaces make controlling motion simple for machine operators.

P7000 Tools

The position node option allows you to configure up to 63 absolute or relative moves. You can specify the moves' distance, acceleration, velocity, and deceleration rates, or simply specify the distance and total time for the move – P7000 will perform the calculations automatically.

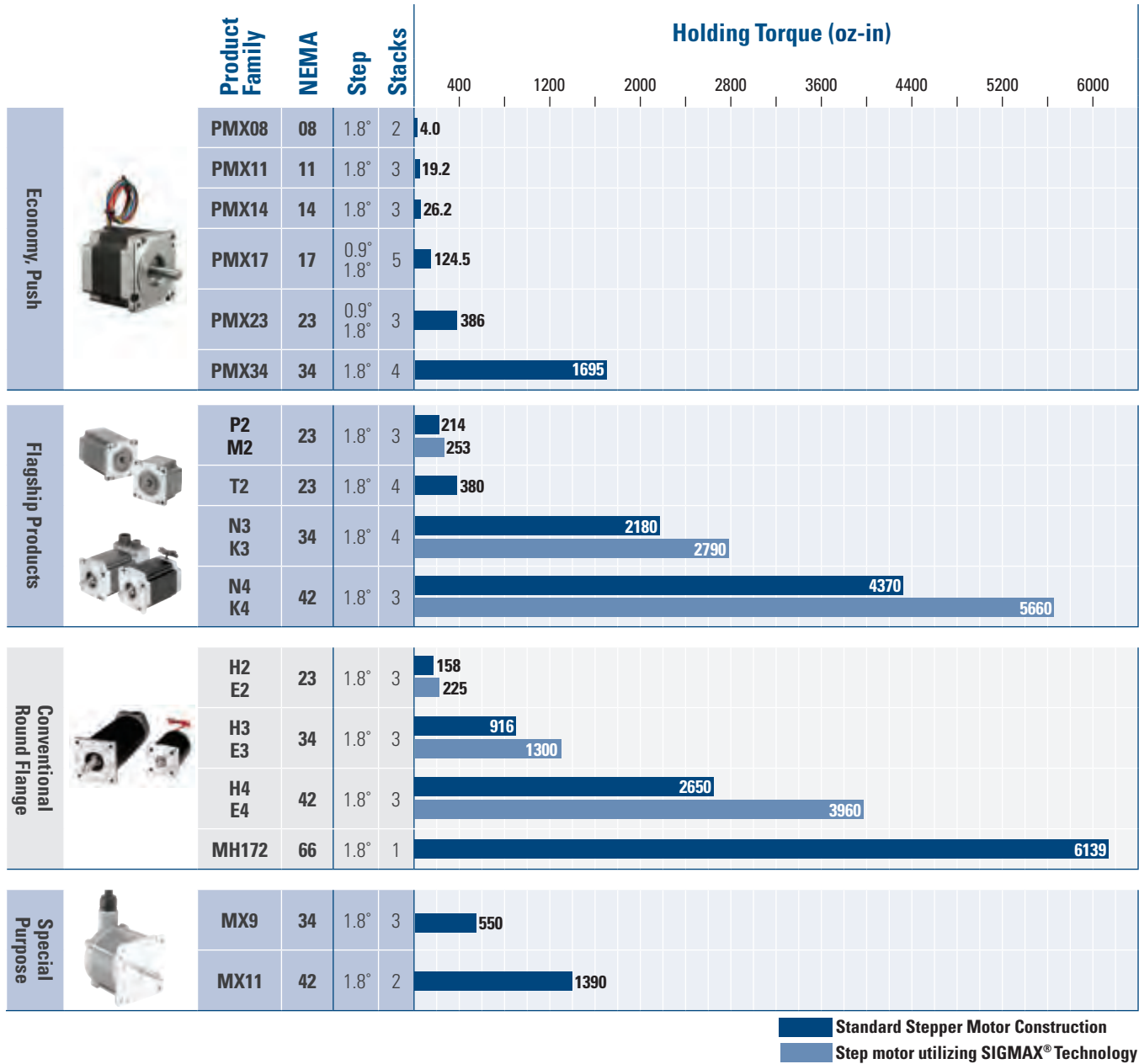
Specifications	Units	P70530	P70360
Input voltage range	Volts	20 - 75 Vdc	120 or 240 Vac
Continuous current	Amps rms	5	2.5
Microstep peak current	Amps peak	7.1	3.5



Note: For complete P-Series model nomenclature, refer to page 146.

Stepper Motor Overview

Kollmorgen offers a comprehensive range of stepper motor products including continuous torque, high torque and hybrid options to meet a wide range of application requirements. For other Kollmorgen stepper products or information not included in this catalog go to www.kollmorgen.com.



STEPPER PRODUCTS STEPPER MOTOR

Product Family	NEMA	Features				Standard Options											Family Features			
		UL Recognized	CE Mark	RoHS	SIGMAX® Technology	Integral Connectoin	Leadwire	4-Lead Bipolar	6-Lead Unipolar	8-Lead	Terminal Box	MS Connector	IP Sealing	Encoders	Front Shaft			Rear Shaft	Low Inertia	
○ available option																				
PMX08	08		•	•			•	•						30	○	•	•		<ul style="list-style-type: none"> • NEMA Sizes 8, 11, 14, 17, 23, 34 • CE, RoHS, and REACH Compliant • Unipolar or Bipolar windings • Options: shaft flats, rear shaft with encoder mounting holes, IP Sealing • Special Options readily available: spur and planetary gearboxes, encoders, special shafts 	
PMX11	11		•	•		•	•	•	○					30	○	•	•			
PMX14	14		•	•		•	•	•						30	○	•	•			
PMX17	17		•	•		•	•	•	○					30	○	•	•			
PMX23	23		•	•		•	•	•	○					30, 65 ¹	○	•	•			
PMX34	34		•	•		•	•							30, 65 ¹	○	•	○	•		
P2 M2	23	•	•		•	•			•					40 40	•	•	○	•	•	<ul style="list-style-type: none"> • High torque standard hybrid stepper motor • Enhanced M and K SIGMAX models provide up to 25% more torque in same package • Low detent torque for smoother microstepping • Bipolar and unipolar winding • Large array of options
T2	23	•	•			•	•	•		•	•			40	•	•	○	•		
K3 N3	34	•	•		•	•	•	•	•	•	•			65 ¹ 65 ¹	•			•	•	
K4 N4	42	•	•		•	•	•	•	•	•	•			65 ¹ 65 ¹	•			•	•	
H2 E2	23	•	•		•	•	•	•		•	•			40 40	•	•	○	•	•	<ul style="list-style-type: none"> • High efficiency, low loss hybrid designs in a conventional round frame • Enhanced E SIGMAX models provide up to 25% more torque in the same package • Torque produced over a wide speed range • Large array of options • E2, H2 offer high axial loading
H3 E3	34	•	•		•	•	•	•		•	•			65 ¹ 65 ¹	•	•	○	•		
H4 E4	42	•	•		•	•	•	•		•	•			65 ² 65 ²	•			•	•	
MH172	66									•				40	•			•	•	
MX9	34	•												40	•			•		<ul style="list-style-type: none"> • Standard hybrid stepper motor • Meets Explosion proof UL Class 1, Division 1 Group D requirements • Up to 150% rated torque reserve capacity (MX9) and 200% for {MX11}
MX11	42	•												40		•		•		

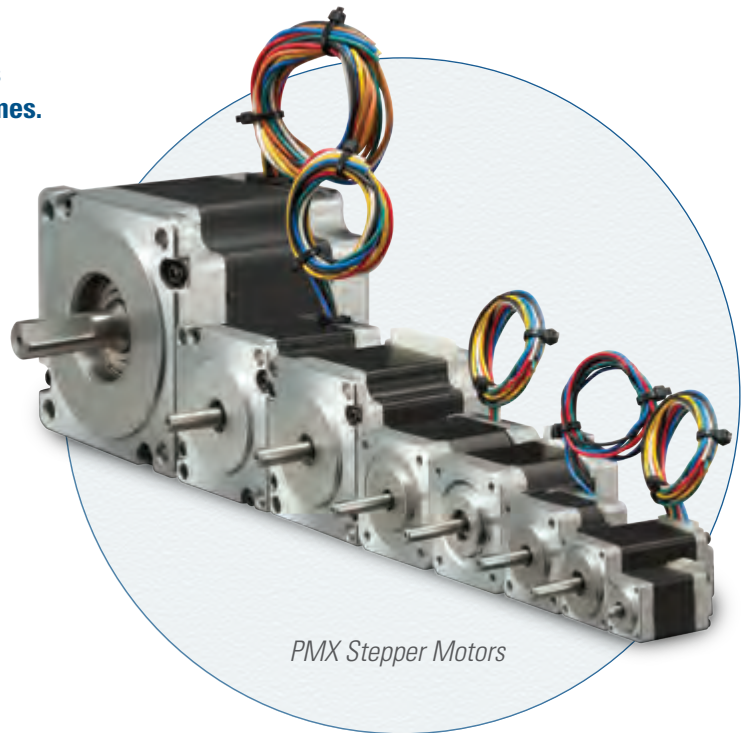
Notes: 1. Requires shaft seal and connection option other than leaded (Meets IP40 otherwise)
2. Requires shaft seal option (Meets IP40 otherwise)

Hybrid PMX Step Motor

Kollmorgen's new PMX™ stepper motor line delivers breadth and design flexibility at competitive lead times.

Kollmorgen is excited to continue its winning heritage in hybrid stepper motors by introducing the PMX family. Leveraging the best practices from customer preferred products in the POWERMAX and POWERPAC families, the PMX lines will deliver breadth and design flexibility at a very competitive lead time. Look no further for that hybrid stepper motor family with local support that gives you the flexibility you need to succeed.

PMX Series motors include smaller Nema 08, 11, and 14 frame sizes in addition to the traditional Nema 17, 23, and 34 frame sizes. Each frame size is built with high quality construction in an affordable, market competitive solution. Numerous co-engineering options are also available including: customizing shafts, encoders, and mounted spur and planetary gearboxes.



- **Increased Design Flexibility** – six frame sizes (08, 11, 14, 17, 23, 34) each with several stack length and winding options available
- **Minimal Drive Adjustments** – options for 1.8 and 0.9 degree step angles
- **Lower Unit Cost** – PMX motors are priced competitively in today's current stepper market and are the lowest of all Kollmorgen stepper products.
- **Quality construction** translates to reliability in the field and a long service life.
- **Localized Support** gives you the delivery terms and immediate technical support you need, meaning to quicker time to market and less downtime.
- **Flexible Manufacturing** enables Kollmorgen to immediately evaluate modifications and co-engineered solutions for rapid prototyping
- **Easy to Apply Worldwide** – CE, RoHS, REACH

Many Applications

PMX motors allow Kollmorgen customers to fulfil their automation needs at an affordable cost, enabling higher throughput in a wide variety of equipment. In addition, leveraging Kollmorgen's technical expertise and flexible engineering, the PMX is ready for seamless special and co-engineering options, allowing for swifter and easier integration into both new and existing applications.

PMX Stepper Motor General Specifications




	Series	Stacks	Holding Torque (Motor Mounted)		Length		Features
			Bipolar		in	mm	
			oz-in	Nm			
Size 08 PMX Series 	2 Phase, 1.8° Step Motors. Frame size: 0.8 inch, 20 mm						
	PMX081	1	2.5	0.02	1.30	33.0	<ul style="list-style-type: none"> • Front shaft flat option • Rear shaft option
	PMX082	2	4.0	0.03	1.65	42.0	
Size 11 PMX Series 	2 Phase, 1.8° Step Motors. Frame size: 1.1 inch, 28 mm						
	PMX111	1	10.0	0.07	1.26	32.0	<ul style="list-style-type: none"> • Front shaft flat option • Bipolar or Unipolar winding available • Rear shaft option • Integral connector option
	PMX112	2	16.6	0.12	1.77	45.0	
PMX113	3	19.2	0.14	2.01	51.0		
Size 14 PMX Series 	2 Phase, 1.8° Step Motors. Frame size: 1.4 inch, 35 mm						
	PMX141	1	14.2	0.10	1.02	26.0	<ul style="list-style-type: none"> • Front shaft flat option • Bipolar or Unipolar winding available • Rear shaft option • Integral connector option
	PMX142	2	15.9	0.11	1.10	28.0	
PMX143	3	26.2	0.18	1.42	36.0		
Size 17 PMX Series 	2 Phase, 0.9° or 1.8° Step Motors. Frame size: 1.7 inch, 42 mm						
	PMX171 (1.8)	1	29.4	0.21	1.02	26.0	<ul style="list-style-type: none"> • Front shaft flat option • Rear shaft option • Integral connector option
	PMX172 (1.8)	2	38.5	0.27	1.32	33.5	
	PMX173 (1.8)	3	60.0	0.42	1.56	39.5	
	PMX174 (1.8)	4	73.9	0.52	1.87	47.5	
PMX171 (1.8)	5	125	0.88	2.36	60.0		
Size 23 PMX Series 	2 Phase, 0.9° or 1.8° Step Motors. Frame size: 2.2 inch, 57 mm						
	PMX231 (1.8)	1	95.6	0.67	1.62	41.0	<ul style="list-style-type: none"> • Front shaft flat option • Bipolar or Unipolar winding available • Rear shaft option • Integral connector option • Option for IP65 sealing
	PMX232 (1.8)	2	199.2	1.41	2.21	56.0	
	PMX233 (1.8)	3	315	2.23	2.99	76.0	
PMX234 (1.8)	4	387	2.73	3.31	84.0		
Size 34 PMX Series 	2 Phase, 1.8° Step Motors. Frame size: 3.4 inch, 86 mm						
	PMX341	1	496	3.50	2.56	65.0	<ul style="list-style-type: none"> • Front shaft flat option • Bipolar or Unipolar winding available • Rear shaft option • Option for IP65 sealing
	PMX342	2	741	5.23	3.15	80.0	
	PMX343	3	1311	9.26	4.65	118.0	
PM344	4	1695	11.97	6.15	156.0		

Note: For complete PMX series model nomenclature, refer to page 147.

AC Synchronous Motor Overview

Kollmorgen offers a comprehensive range of AC synchronous motor products including continuous torque, high torque and hybrid options to meet a wide range of application requirements. For products not included in this catalog go to www.kollmorgen.com for information about other Kollmorgen synchronous motor products.

Flagship Products

	Product Family	Page No.	NEMA	Torque (oz-in)										
				200	400	600	800	1000	1200	1400	1600			
High Torque, Feature Rich 	KS06	110	23	80 – 185										
	SS240, 450	112	34	240 – 450										
	SS150, 250, 400, 700	112	42	150 – 700										
	SS1800	112	66	700 – 1800										
Special Purpose 	X(CE)250, 700	118	42	250 – 700										
	X(CE)1100, 1500	118	66	1100 – 1500										
Gearmotor 	SS24x, 45x Gearmotor	122	34	630 – 5000										

STEPPER PRODUCTS
 AC SYNCHRONOUS MOTOR

Product Family	Page No.	NEMA	Phases	Options			Family Features
				Leaded	Terminal Box	Rear Shaft	
KS06	110	23	1Ø	•	•	•	<ul style="list-style-type: none"> • 1Ø and 3Ø (SS240, 450 models only) • 72 rpm motor speed (with 60 Hz voltage) • 60 rpm motor speed (with 50 Hz voltage) • 120 volt or 240 volt AC models • Torques: 80 – 1800 oz-in (0.56 – 12.7 Nm) • Fast starting, stopping, or reversing • Can be stalled indefinitely without overheating
SS240, 450	112	34	3Ø	•	•	•	
SS150, 250,400, 700	112	42	1Ø	•	•	•	
SS1800	112	66	1Ø	•	•	•	
X(CE)250, 700	118	42	1Ø	•		•	<ul style="list-style-type: none"> • 1Ø models • X models meet UL Class 1, Group D requirements • XCE models meet ATEX CE 0081 G Exd IIC T5 Gb reqmt. • 60 and 50 Hz models (72 and 60 rpm respectively) • 120 volt or 240 volt AC models • Torques: 250 – 1500 oz-in (1.77 – 10.6 Nm) • Fast starting, stopping, or reversing • Can be stalled indefinitely without overheating
X(CE)1100, 1500	118	66	1Ø	•		•	
SS240, 450 Gearmotor	122	34	3Ø	•	•	•	<ul style="list-style-type: none"> • All the features of the SS240, 450 series • Gear reducers with ratios up to 125:1 • Torques: 634 - 5000 oz-in (4.48 – 35.3 Nm)

Model Nomenclature

MODEL NOMENCLATURE

P-Series Stepper Drive

P7 03 6 0 – SD N

P-Series

- P5 = P5000 Series
- P6 = P6000 Series
- P7 = P7000 Series

Current Rating

- 03 = 2.5 Arms continuous, 3.5 Arms peak (AC models only)
- 05 = 5 Arms continuous, 7.2 Arms peak (DC models only)
- 06 = 5.7 Arms Continuous, 8.0 Amps peak*

Voltage Range

- 3 = 20 - 75 Vdc
- 6 = 120/240 Vac (160/320 Vdc)

Electrical Options

0 = None

Customization

- Omit field for standard configurations
- 000 = Optimized for Standard POWERPAC
- 001 = Optimized for Enhanced POWERPAC
- PMX = Optimized Powermax Settings

Feedback Device

- N = No feedback, with mating connectors (P6000)**
- 0 = No feedback, no connectors

Functionality

- PN = Motion node indexing
- SD = Step/direction base drive, Internal VCO (P5000)**
- R4 = RS485 (P70360 only)

PMX™ Series Stepper Motor

PMX 11 2 0 - A 1 0 - B N 0 - 00

Motor Series

NEMA Motor Frame Size

08, 11, 14, 17, 23, 34

Rotor Stack Length

1 = 1 stack All PMX series motors
 2 = 2 stacks All PMX series motors
 3 = 3 stacks PMX11, -17, -23, -34
 4 = 4 stacks PMX17, -34
 5 = 5 stacks PMX17

Motor Winding

A, B, C, D, E, F Bipolar windings
 G, H, J Unipolar/Bipolar Series windings

Step Angle

1 = 1.8° All PMX series motors
 9 = 0.9° PMX17, PMX23

Sealing Option

00 = No shaft seal All PMX
 01 = Shaft seal PMX23, PMX34
 XX = Special motor designator All PMX

Rear Shaft Option

0 = No rear shaft All PMX series motors
 R = Rear shaft All PMX series motors

Front Shaft Option

N = Normal/Smooth front shaft All PMX
 F = Flat front shaft All PMX
 K = Open keyway PMX34

Connection/Hookup Option

B = 4 lead Bipolar All PMX
 U = 6 lead Unipolar PMX11, -17, -23
 X = Integrated Connector PMX11, -14, -17, -23

Model Nomenclature

MODEL NOMENCLATURE

E & H Series Stepper Motor

E 3 3 H C H P - L E K - M2 - 01

Basic series

H = Standard construction

E = SIGMAX construction (n/a half stack)

Size

2 = NEMA 23

frame size (2.25" dia.)

3 = NEMA 34

frame size (3.38" dia.)

4 = NEMA 42

frame size (4.28" dia.)

Number of Rotor Stacks

H = Half stack (H series only)

1 = 1 stack

2 = 2 stacks

3 = 3 stacks (size 3,4 only)

4 = 4 stacks (size 3 only)

Mounting

N = NEMA (n/a 4 stacks)

H = Heavy duty NEMA

(opt. on 3 stacks, std. on 4 stacks)

S = Special, contact customer support

Construction/Connection Style

R = Regular/leadwire

C = System MS connector

L = Splashproof/to terminal board via conduit connector: 1/2" NPS pipe thread (size 3,4 only)

M = Splashproof/to terminal board via conduit connect: metric PG11 pipe thread (size 3,4 only)

S = Special, contact customer support

Number of Connections

F = 8 lead

L = 4 lead series

H = 4 lead parallel

E = 6 lead

Winding Type

T = Max. torque at low speed

P = Max. torque torque at high speed

A, B and C = Additional standards

S = Special, contact customer support

Special Sequence

00 = Standard motor without shaft seal

01 = Standard motor with shaft seal (size 3 and 4 only)

Other numbers will be assigned for special motors

Encoder Option

NS = No feedback

All options below require construction R or C

M1 = Encoder mounting provision (size 2 only). Requires shaft configuration E

HD = 500 LPR encoder (size 2 only)

HJ = 512 LPR encoder (size 2 only)

M2 = HP encoder mounting provision (size 3,4 only). Requires shaft configuration E

M3 = BEI encoder mounting provision (size 3,4 only). Requires shaft configuration D

SS = Special, contact customer support

Shaft Modifications

N = Smooth (size 2,3 only)

(mounting config. N only)

F = Flat (size 2,3 only)

(mounting config. N only)

K = Straight key (size 3,4 only)

(mounting config. H only)

W = #303 Woodruff key (size 3 only)

(mounting config. N only)

S = Special

Shaft Configuration (Diameter & Length)

N = Single

D = Double (R or C construction only)

E = Double ended for encoder (R or C construction only, size 3,4 only)

S = Special, contact customer support

Rotor Type

L = Laminated

J = Low inertia (size 2 only, n/a with half stack motors)

Note: Options shown in bold blue text are considered standard.

NEMA 34 K & N Series Stepper Motor

N 3 3 H C H J - L E K - M2 - 01

K and N series

N = Standard construction

K = Sigmax construction

Size

3 = NEMA 34 frame size;
 3.38" width/height, square frame

Length

1 = 1 stack
 2 = 2 stacks
 3 = 3 stacks
 4 = 4 stacks

Mounting

H = Heavy duty NEMA

S = Special, contact customer support

Construction/Connection Style

R = Regular/leadwire

C = System MS connector
 L = splashproof/to terminal board via conduit connector: 1/2" NPSC pipe thread
 M = Splashproof/to terminal board via conduit connect: metric PG11 pipe thread
 S = Special, contact customer support

Number of Connections

F = 8 lead (n/a C construction)

L = 4 lead series
 H = 4 lead parallel
 E = 6 lead (n/a C construction)

Special Sequence

00 = Standard motor without shaft seal

01 = Standard motor with shaft seal
 Other numbers will be assigned for special motors

Encoder Option

NS = No feedback

M2 = Encoder mounting provision (must use construction C or R and shaft configuration E)
 PD = 500 LPR encoder
 PF = 1000 LPR encoder
 SS = Special, contact customer support

Shaft Modifications

K = Straight key

S = Special, contact customer support

Shaft Configuration (Diameter & Length)

N = Single

D = Double (R or C construction only)
 E = Double ended for encoder (R or C construction only)

Rotor Type

L = Laminated

Winding Type

H = Standard, 1 stack only
 D, E, G, J, K, L = Standard
 M = Standard, N/A on 1 stack
 S = Special, contact customer support

Note: Options shown in bold blue text are considered standard.

Model Nomenclature

MODEL NOMENCLATURE

NEMA 42 K & N Series Stepper Motor

N 4 3 H C H J - L E K - M2 - 01

K and N series

N = Standard construction

K = Sigmoid construction

Size

4 = NEMA 42 frame size;
 4.325" width/height, square frame

Length

1 = 1 stack
 2 = 2 stacks
 3 = 3 stacks

Mounting

H = Heavy duty NEMA

S = Special, contact customer support

Construction/Connection Style

R = Regular/leadwire

C = System MS connector

L = splashproof/to terminal board via conduit
 connector: 1/2" NPSC pipe thread

M = Splashproof/to terminal board via
 conduit connect: metric PG13.5 pipe thread

S = Special, contact customer support

Number of Connections

F = 8 lead (n/a C construction)

L = 4 lead series

H = 4 lead parallel

E = 6 lead (n/a C construction)

Special Sequence

00 = Standard motor without shaft seal

01 = Standard motor with shaft seal

Other numbers will be assigned for special motors

Encoder Option

NS = No feedback

M2 = Encoder mounting provision
 (must use construction C or R and shaft configuration E)

PD = 500 LPR encoder

PF = 1000 LPR encoder

SS = Special, contact customer support

Shaft Modifications

K = Straight key

S = Special, contact customer support

Shaft Configuration
 (Diameter & Length)

N = Single

D = Double (R or C construction only)

E = Double ended for encoder
 (R or C construction only)

S = Special, contact customer support

Rotor Type

L = Laminated

Winding Type

J = Standard, 1 stack only

K, N = Standard, N/A on 1 stack

L = N/A on 1 stack

F, M, G = Standard

S = Special, contact customer support

Note: Options shown in bold blue text are considered standard.

M & P Series Stepper Motor

P 2 1 N R X A - L N N - N S - 00

Series

P = Standard
 M = Enhanced (n/a half stack)

Size

2 = NEMA 23
 (2.25" across flat)

Number of Stacks

H = Half stack
 1 = 1 stack
 2 = 2 stacks

Mounting

N = NEMA
 S = Special, contact customer support

Construction

R = Regular
 S = Special, contact customer support

Termination

X = Receptacle
 F = 8 flying leads
 S = Special, contact customer support
 For X (receptacle) designation,
 Mating leaded connectors may
 be ordered seperately.
 Optional GRN/YEL ground wire
 available.

Winding Type

A, B, C, D
 S = Special, contact customer support

Sequence Number

Insert 00 if all parts are standard.
 Other numbers will be assigned for special
 motors.

Encoder Option

NS = No Feedback
 Use encoders below. You must specify
 shaft configuration D (double ended)
Caution: An encoder with line driver
 output may be required for use with
 some stepper motor controls.
 M1 = Encoder mounting provisions
 HD = Encoder 500 LPR
 HJ = Encoder 512 LPR
 SS = Special, contact customer support

**Shaft Configuration
 (Diameter & Length)**

N = Single
 D = Double
 S = Special, contact customer support

Shaft Modifications

N = Smooth
 F = Flat
 S = Special, contact customer support

Rotor Type

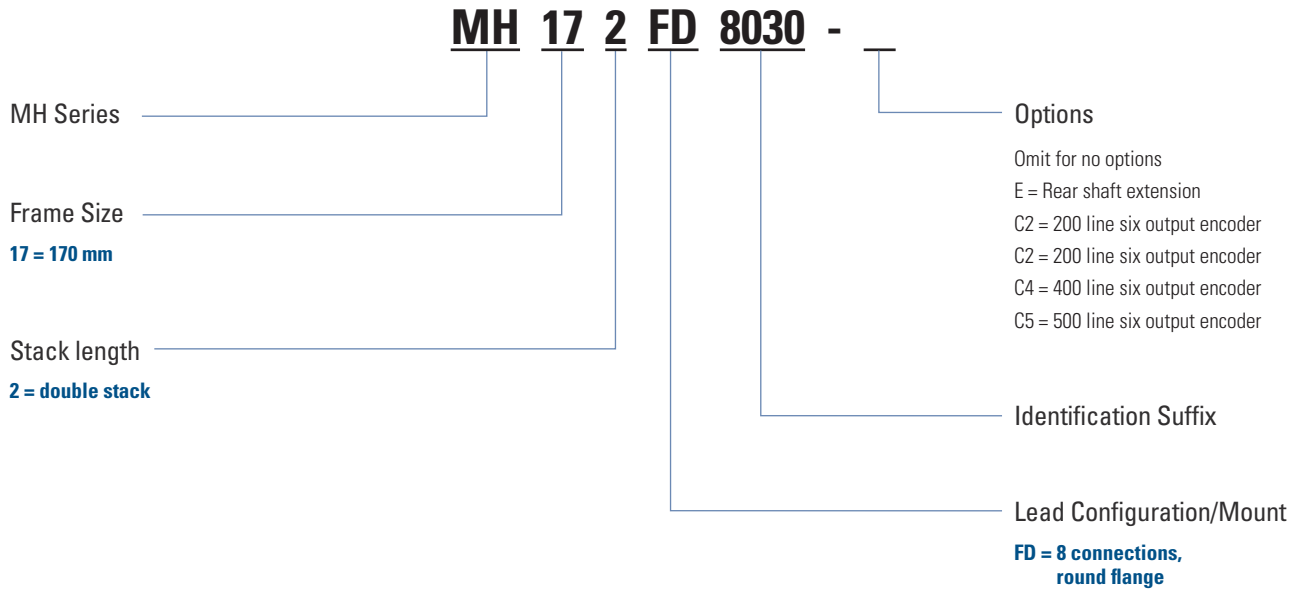
L = Standard
 J = Low inertia (n/a half stack)

Note: Options shown in bold blue text are considered standard.

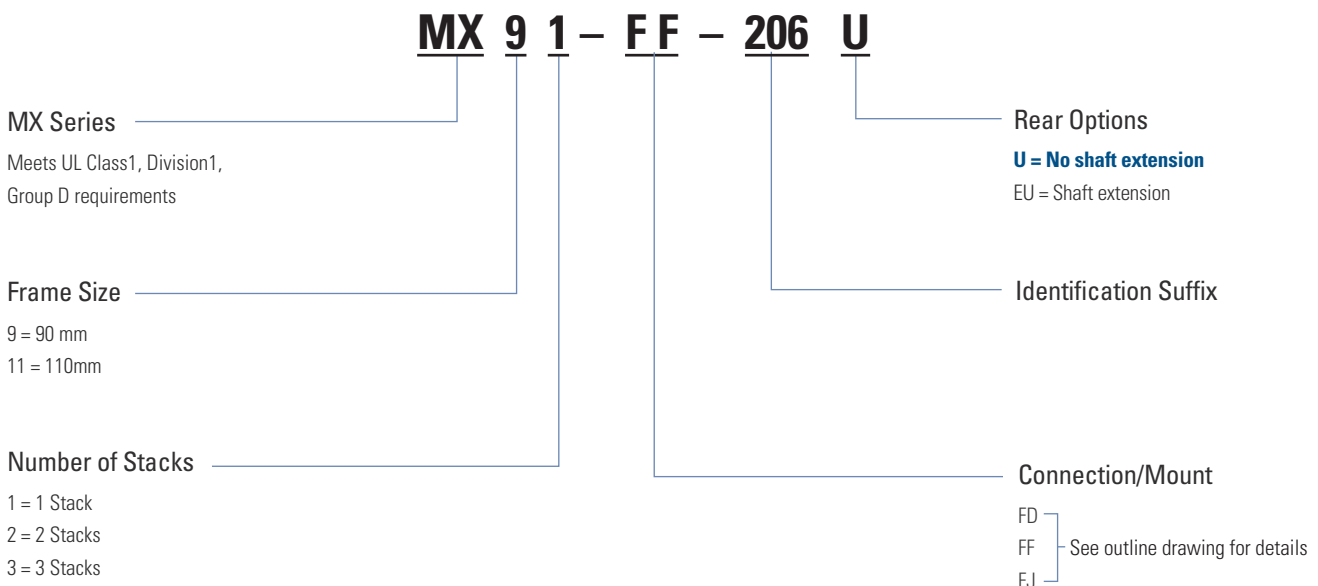
Model Nomenclature

MODEL NOMENCLATURE

MH172 Stepper Motor

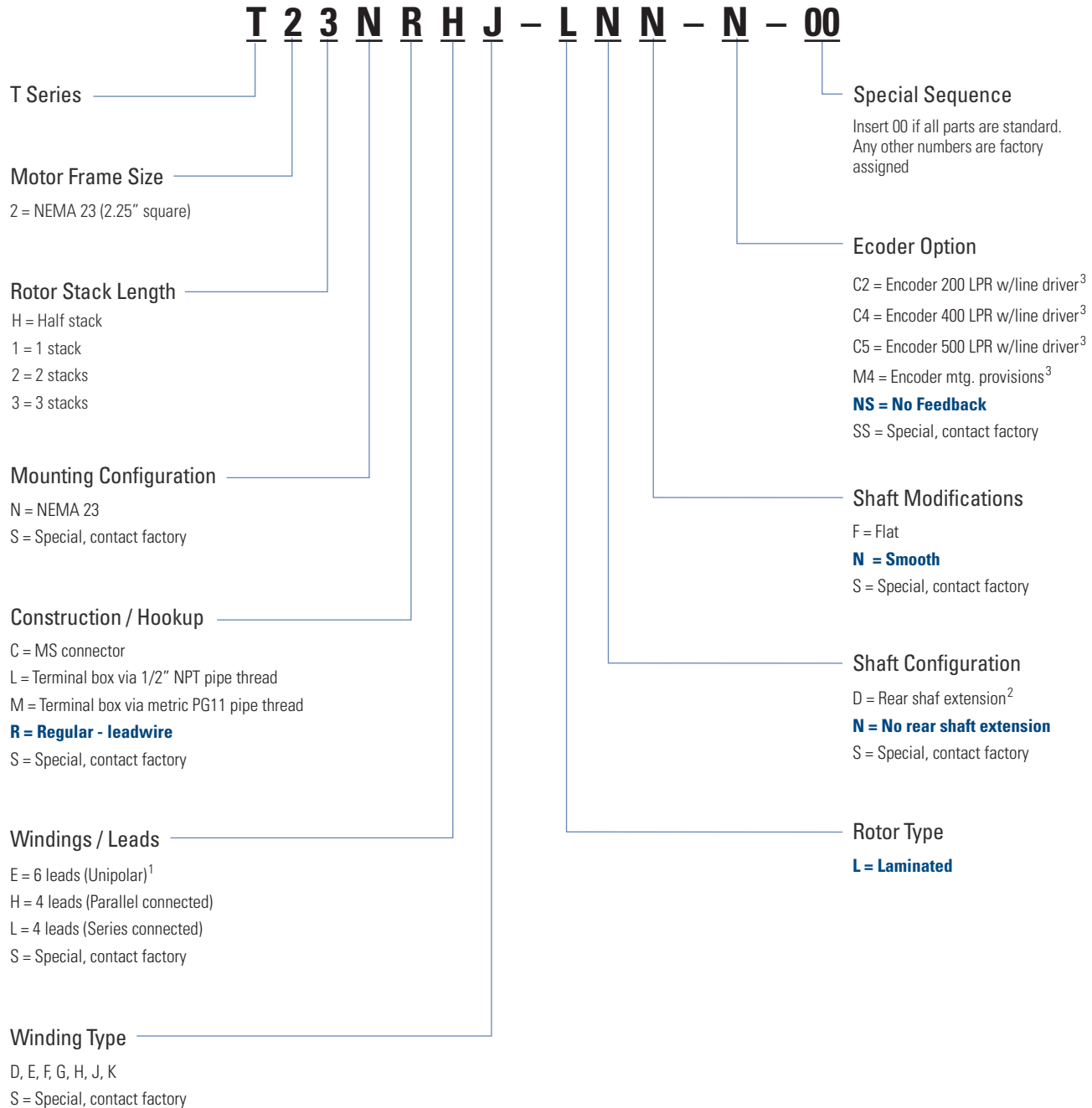


MX Series Hazardous Duty Stepper Motor



Note: Options shown in bold blue text are considered standard.

T2 Series Stepper Motor



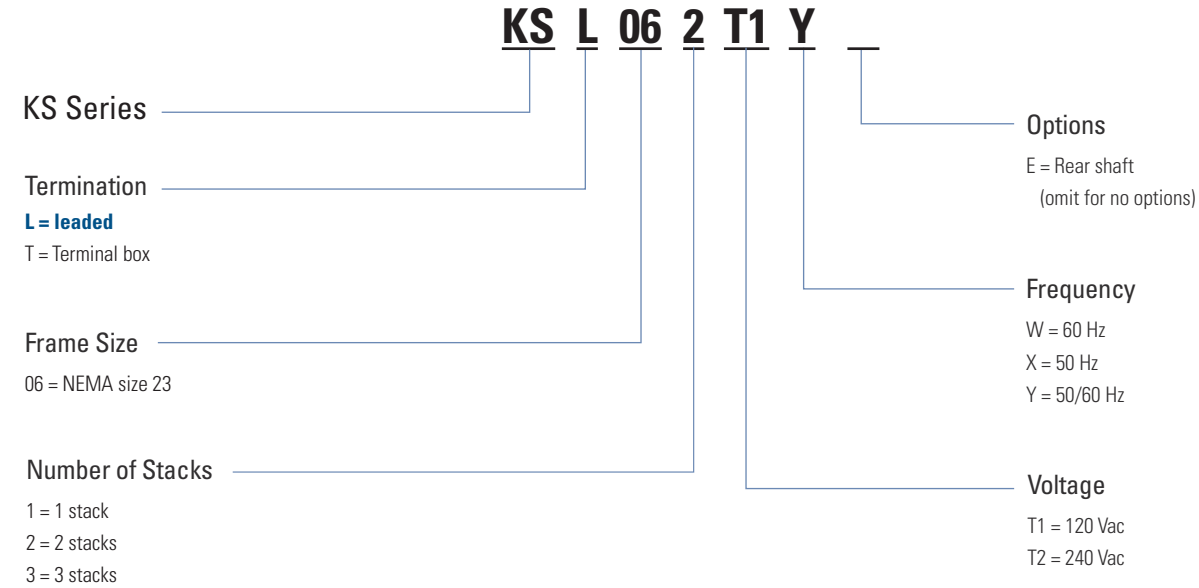
Notes:

1. N/A with "C" Construction / Hookup option
2. "R" Construction / Hookup only, required for motors with encoders
3. Requires "R" Construction / Hookup option and "D" Shaft Configuration option

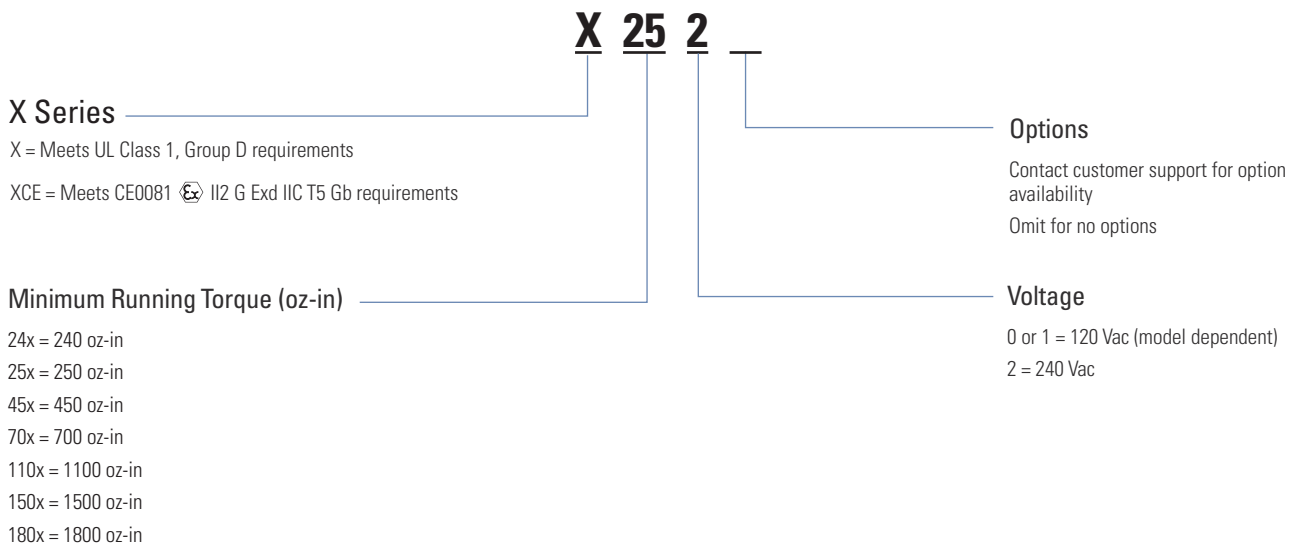
Model Nomenclature

MODEL NOMENCLATURE

KS Series AC Synchronous Motor



X(CE) Series AC Synchronous Motor



Note: Options shown in bold blue text are considered standard.

SS Series AC Synchronous Motor

SS 24 1 L G60

SS Series

Minimum Running Torque (oz-in)

NEMA Size 23

25 = 25 oz-in

9x = 90 oz-in

13x = 130 oz-in

NEMA Size 24

5x = 50 oz-in

8x = 80 oz-in

24x = 240 oz-in

45x = 450 oz-in

NEMA Size 42

15xB = 150 oz-in

25xB = 250 oz-in

40xB = 400 oz-in

70xB = 700 oz-in

NEMA Size 66

180x = 1800 oz-in

Voltage

0 or 1 = 120 Vac (model dependent)

Omit for 25 oz-in models (25 oz-in models are 120 Vac)

2 = 240 Vac

Gearbox

GXX where XX = reducer ratio

(see page 121 for available models)

omit for no gearbox

Options

L = Leads

T = Terminal box

(blank) = connector on leads

C = Covered capacitor

CT = Capacitor in terminal box

E = Rear shaft extension

Note: Options shown in bold blue text are considered standard.