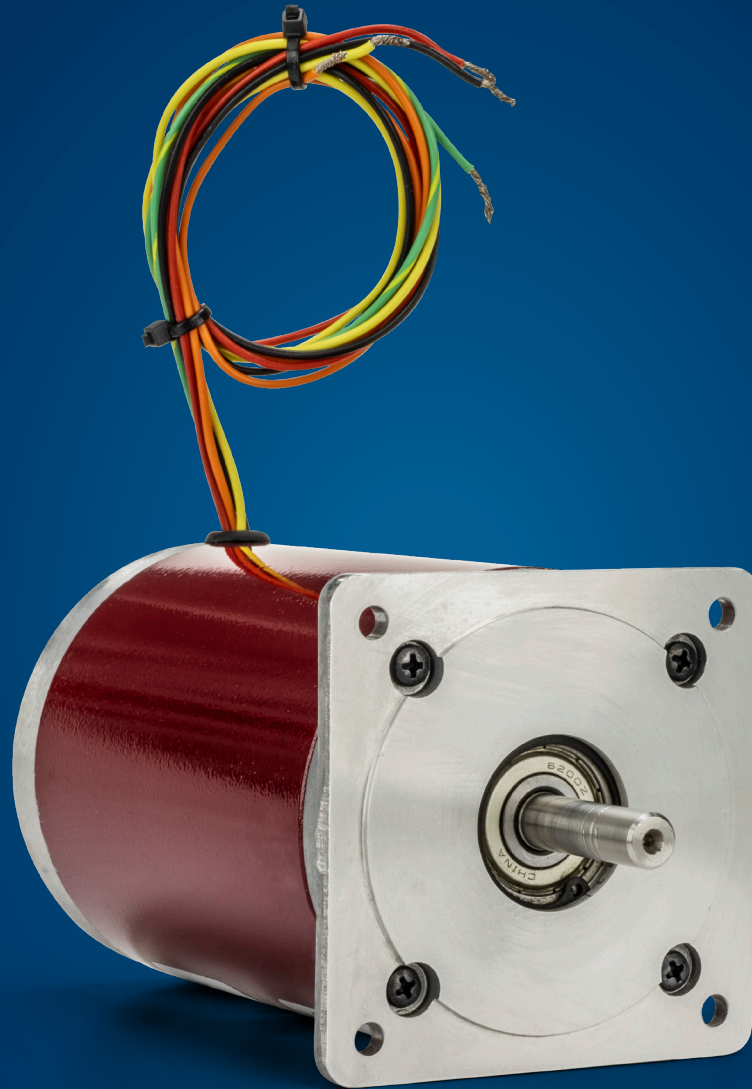


E/H Series Stepper Motor

Selection Guide



KOLLMORGEN

A REGAL REYNORD BRAND

Kollmorgen: Your Partner, In Motion.

Every solution comes from a real understanding of the challenges facing machine designers and users.

Innovators consistently rate Kollmorgen as one of their best motion systems manufacturing partners. Whether you are looking for classic servo motors, direct-drive servo motors, stepper motors, drives & amplifiers, gearing, actuation, or multi-axis motion controllers, Kollmorgen is one of the few companies in the world that actually designs and manufactures all of these products.

Our customers are leaders in many industries such as Aerospace & Defense, Printing, Packaging & Converting, Food & Beverage Processing, Medical Imaging, In Vitro Diagnostics & Laboratory Automation, Pharmaceutical Manufacturing, Material Forming and Cutting, Oil & Gas, and Robotics. Kollmorgen is also a leader in Warehouse Automation, including complete AGV systems, software, awareness and autonomy.

Our Automation Solutions can be found on Mars and in space, ships and submarines, O&G drilling and metrology, surgical robots and laser eye surgery, even inside artificial hearts. These are just a few applications that demand high-performance and high-quality while satisfying their specific needs.

Because motion matters, it's our focus: Motion can distinctly differentiate a specific machine and deliver a marketplace advantage by increasing its performance and dramatically improving Overall Equipment Effectiveness (OEE).

High-performance motion can make your customer's machine more reliable and energy-efficient, enhance accuracy and improve operator safety. Motion also represents endless possibilities for innovation.

We've always understood this potential, and thus have kept motion at our core and in our Vision, Mission & Values, relentlessly developing products that offer precise control of torque, velocity and position accuracy in machines that rely on complex motion.

How To Use This Selection Guide:

This guide covers the technical information required to select and order K/N Series stepper motors. Select the proper motor using one of the following procedures:

- » If you're already familiar with these motors and the available options, refer to the Model Nomenclature on pg. 8 to verify the part number and corresponding motor options prior to order.
- » If you're not familiar with K/N motors and available options: first refer to the General Specifications, pg. 6. To further evaluate individual winding specifications refer to the Drawings and Performance Data. After all the technical parameters and options are determined, construct a part number using the Model Nomenclature (pg. 8).

Where To Order:

Kollmorgen utilizes an experienced channel of Authorized High-Tech Distributors (AHTDs) to assist our customers with applications, sizing and selection, ordering, and technical support. Visit our Distributor Locator to find locally available distributors.
www.kollmorgen.com/enus/where-to-buy/

Kollmorgen Customer Service Representatives are also available by phone or e-mail and can assist in selecting and contacting local distributors.

- » North America: 1-540-633-3545,
support@kollmorgen.com
- » Europe/Middle East/Africa: +49 (0) 2102 9394 0,
think@kollmorgen.com
- » Asia: +86-400 661 2802,
sales.china@kollmorgen.com

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E/H Series Stepper Motors

These high-efficiency, low-loss stepper motors have a conventional, round frame in NEMA 34 and 42 frame sizes (90 and 110 mm). A wide variety of standard windings, connectors and options suit general-purpose applications with holding torques up to 27.95 N-m (3,958 oz-in). The E Series features SIGMAX™ technology for higher torque and acceleration rates.

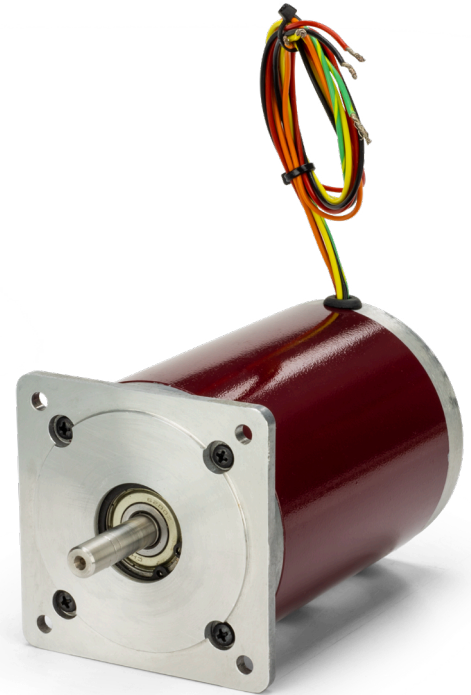
Features

- » Conventional round frame design available in NEMA 34 and NEMA 41
- » Holding torques up to 27.95 N-m (3,958 oz-in)
- » Highly customizable to fit nearly any application
- » Both E and H Series motors provide the high speed capability required for rapid traverse applications
- » E Series general-purpose motors feature our SIGMAX™ technology for higher torque and acceleration rates
- » Select from terminal board connections (via conduit), MS connectors or flying lead connections in waterproof or standard enclosures
- » NEMA 34 and 42 models are UL Recognized and feature Class B insulation
- » NEMA 34 and 42 models are rated for IP65 with "C" (MS Connector), "L" (Terminal Board) or "M" (Terminal Board) construction, with shaft seal



General Specifications

- » NEMA Sizes 34 and 42
- » Excellent for applications requiring high torque over a wide speed range
- » Standard "H" and enhanced "E" SIGMAX designs
- » UL, CE Compliant
- » Unipolar or Bipolar windings
- » Standard Features: Shaft Flats or Keyways, Rear Shaft, Flying Leads or Motor-Mounted Connectors, Encoder Mounting Provisions, Incremental Encoders, Shaft Seals, Full IP65 Options
- » Co-Engineered Options: Shaft Modifications, Special Windings, Lead Lengths, Connectors

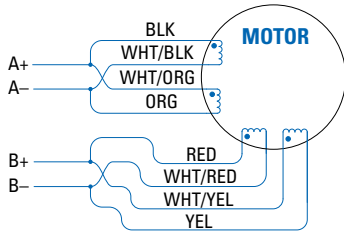


Parameter	E3/H3	E4/H4
NEMA frame size	34	42
Phases	Unipolar and Bipolar	
Full Steps per Revolution	200	
Step Angle (degrees)	1.8	
Step Accuracy % (of one full step, no load)	+/- 1.5 % E Series +/- 3.0 % H Series	
Operating Temperature	-20°C to +40°C	
Insulation Class	Class B, 130°C	
Insulation Voltage Rating	340 Vdc	
Insulation Resistance	100 Megohms	

E / H Series Stepper Motors

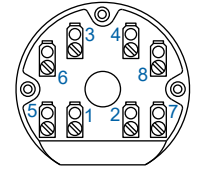
E/H Series Stepper Motor F (8 Lead) Connection Information

"F" 8-Lead Configuration

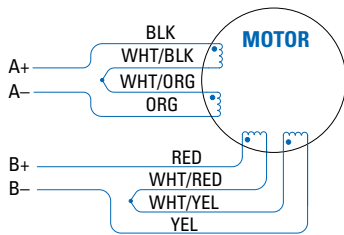


4-Lead Bipolar Connection Parallel

Driver Connection	Lead Color	Terminal Number	MS Connector Pinout
A	Black & Wht/Org	1 & 5	A & F
\bar{A}	Org & Wht/Blk	3 & 6	B & E
B	Red & Wht/Yel	2 & 7	C & H
\bar{B}	Yel & Wht/Red	4 & 8	D & G

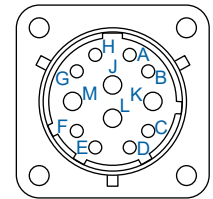


Terminal Board



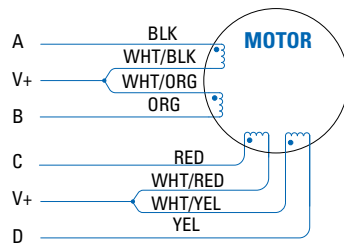
4-Lead Bipolar Connection Series

Driver Connection	Lead Color	Terminal Number	MS Connector Pinout
A	Black (Blk)	1	A
\bar{A}	Orange (Org)	3	B
B	Red	2	C
\bar{B}	Yellow (Yel)	4	D
None	Wht/Blk & Wht/Org	5 & 6	E & F
None	Wht/Red & Wht/Yel	7 & 8	G & H



MS Connector
MS3122E14-12P

Mating Plug Type
MS3116F14-12S



6-Lead Unipolar Connection

Driver Connection	Lead Color	Terminal Number	MS Connector Pinout
A	Black (Blk)	1	A
B	Orange (Org)	3	B
C	Red	2	C
D	Yellow (Yel)	4	D
V+	Wht/Blk & Wht/Org	5 & 6	E & F
V+	Wht/Red & Wht/Yel	7 & 8	G & H

Bipolar Full Step Phase Sequence

STEP	A	\bar{A}	B	\bar{B}
1	+	-	-	+
2	-	+	-	+
3	-	+	+	-
4	+	-	+	-
1	+	-	-	+

CCW ↓ ↑ CW

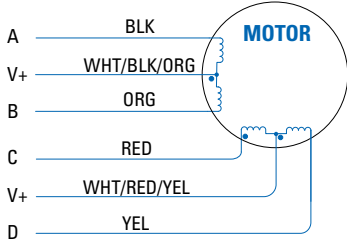
Unipolar Full Step Phase Sequence

STEP	A	B	C	D
1	GND	0	GND	0
2	0	GND	GND	0
3	0	GND	0	GND
4	GND	0	0	GND
1	GND	0	GND	0

CCW ↓ ↑ CW

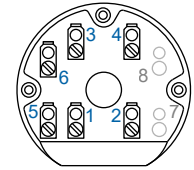
E/H Series Stepper Motor E (6 Lead) and H, L (4 Lead) Connection Information

"E" 6-Lead Configuration

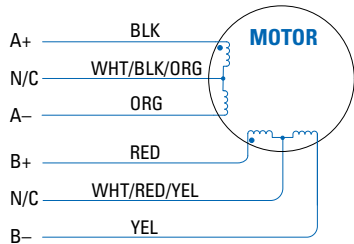


6-Lead Unipolar Connection

Driver Connection	Lead Color	Terminal Number	MS Connector Pinout
A	Black (Blk)	1	A
B	Orange (Org)	3	B
C	Red	2	C
D	Yellow (Yel)	4	D
V+	Wht/Blk/Org	5	J
V+	Wht/Red/Yel	6	L

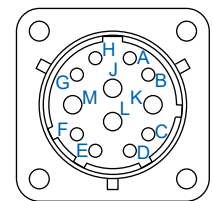


Terminal Board



4-Lead Bipolar Series Connection

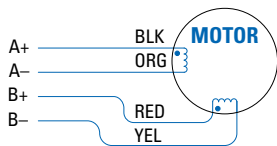
Driver Connection	Lead Color	Terminal Number	MS Connector Pinout
A	Black	1	A
\bar{A}	Orange	3	B
B	Red	2	C
\bar{B}	Yellow	4	D
N/C	Wht/Blk/Org	5	J
N/C	Wht/Red/Yel	6	L
Ground	Green/Yellow	n/a	n/a



MS Connector
MS3122E14-12P

Mating Plug Type
MS3116F14-12S

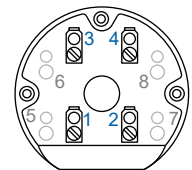
"H" "L" 4-Lead Configuration



4-Lead Bipolar Connection

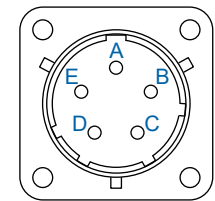
Driver Connection	Lead Color	Terminal Number	MS Connector Pinout
A	Black	1	A
\bar{A}	Orange	3	B
B	Red	2	C
\bar{B}	Yellow	4	D
Ground	Green/Yellow	n/a	E

Terminal Board



MS Connector
MS3122E14-5P

Mating Plug Type
MS3116F14-5S



Unipolar Full Step Phase Sequence

STEP	A	B	C	D
1	GND	0	GND	0
2	0	GND	GND	0
3	0	GND	0	GND
4	GND	0	0	GND
1	GND	0	GND	0

CCW ↓ ↑ CW

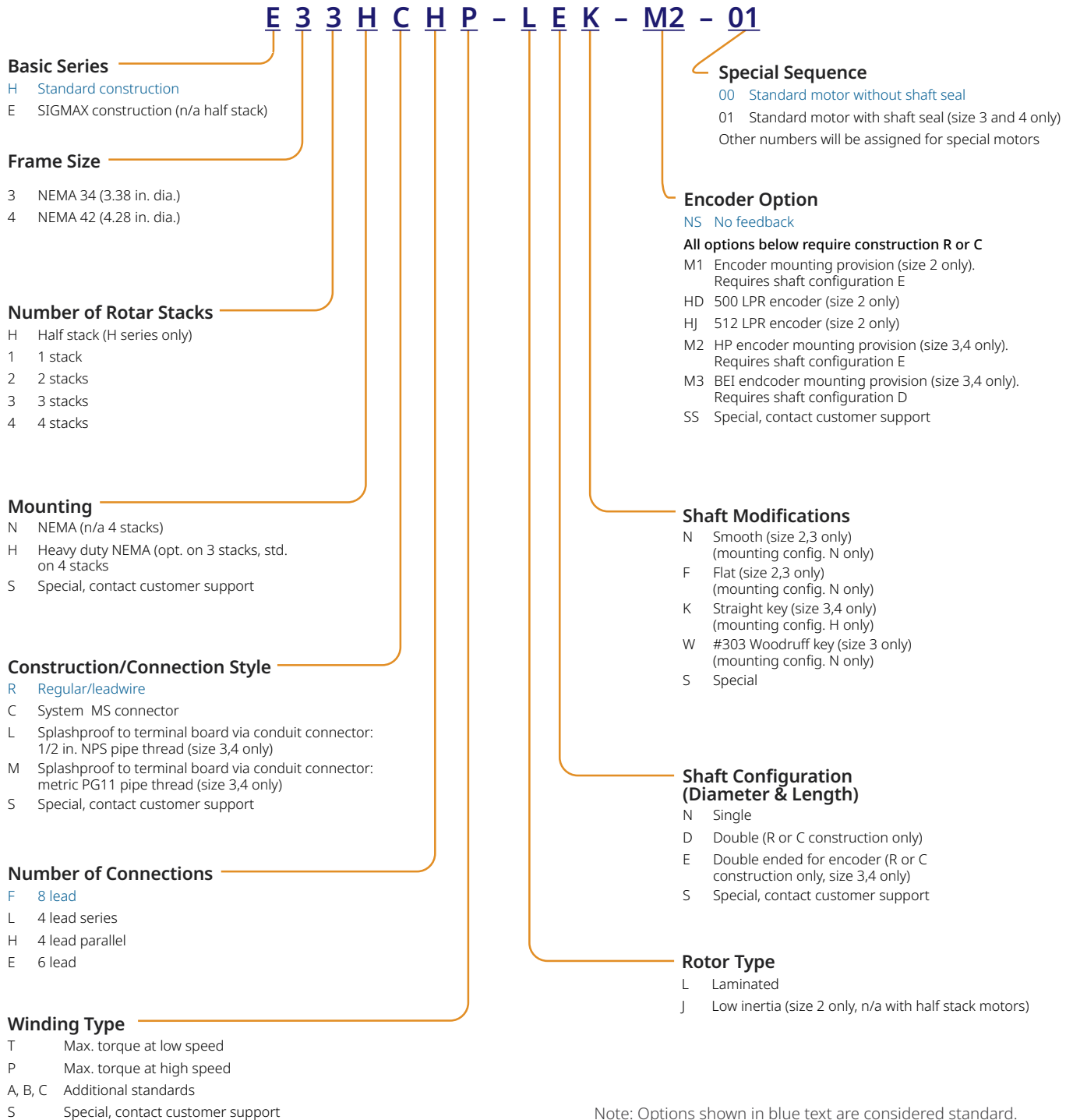
Bipolar Full Step Phase Sequence

STEP	A	\bar{A}	B	\bar{B}
1	+	-	-	+
2	-	+	-	+
3	-	+	+	-
4	+	-	+	-
1	+	-	-	+

CCW ↓ ↑ CW

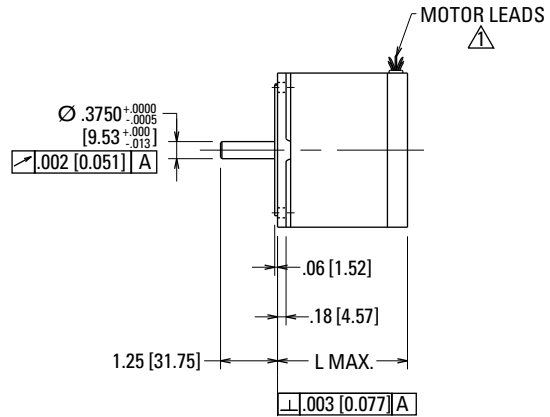
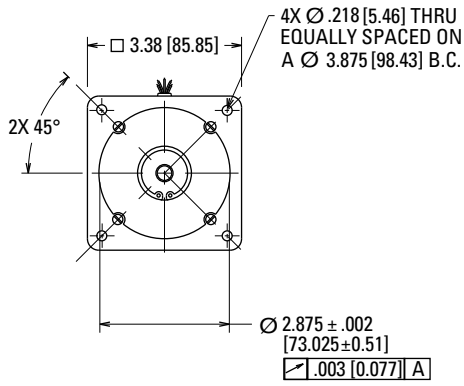
E / H Series Stepper Motors

E/H Series Stepper Motor Nomenclature



E3 / H3 Outline Drawings

Leadwire Construction, Standard NEMA Front End Bell

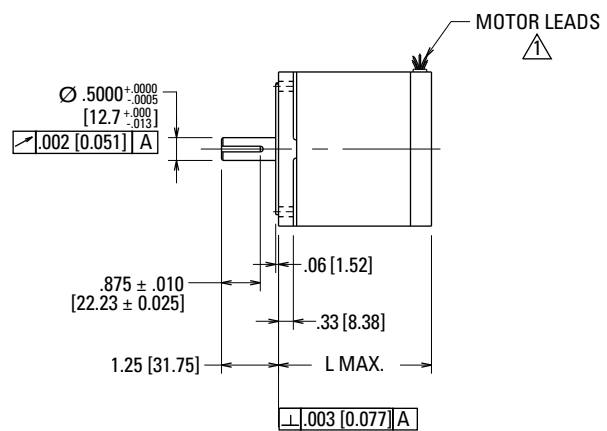
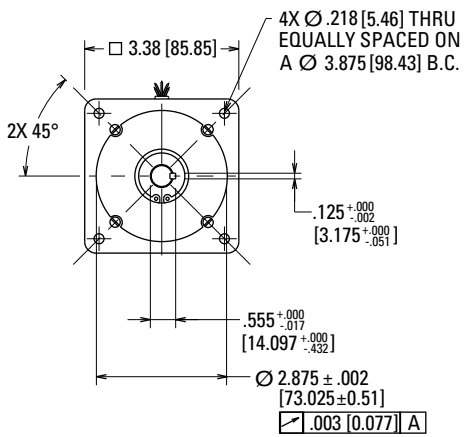


Model	L Max.
31NR	2.58 [65.5]
32NR	3.76 [95.5]
33NR	5.06 [128.5]

▲ 12.0 [304.8] MINIMUM
 4 Lead Motors: #18 AWG
 6 & 8 Lead Motors: #22 AWG.

Dimensions in inches [mm]

Leadwire Construction, Heavy Duty Front End Bell



Model	Max.
33HR	5.33 [135.4]
34HR	6.58 [162.1]

▲ 12.0 [304.8] MINIMUM
 4 Lead Motors: #18 AWG
 6 & 8 Lead Motors: #22 AWG.

Dimensions in inches [mm]

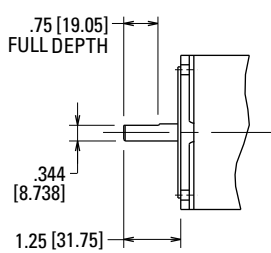
E / H Series Stepper Motors

E3 / H3 Outline Drawings

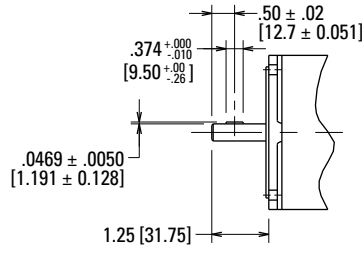
Shaft Configurations

Standard Front Shaft Configurations

Note: Not available with heavy duty models



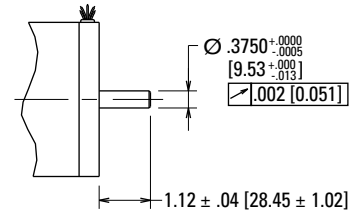
Flat, Configuration = F



#303 Woodruff Key, Configuration = W

Standard Double Shaft Configuration

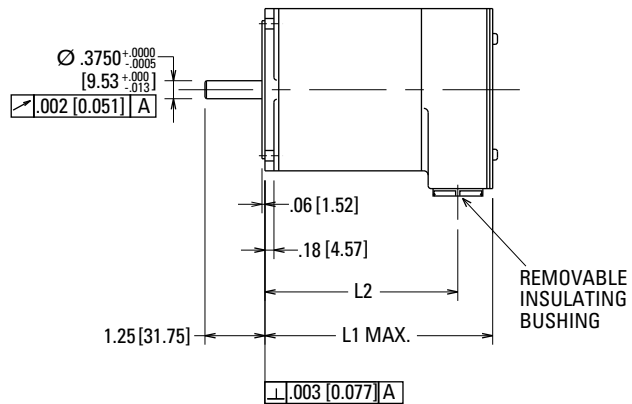
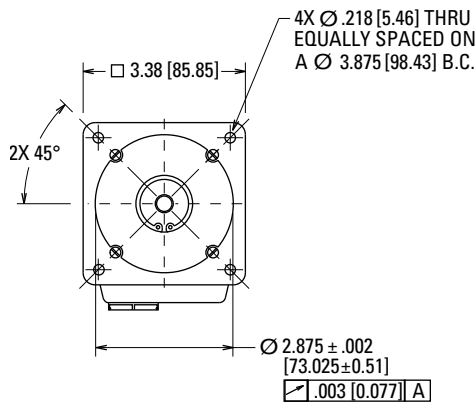
Note: Not available with splashproof models



Rear Shaft, Configuration = D

Dimensions in inches [mm]

Splashdown Construction, Standard NEMA Front End Bell

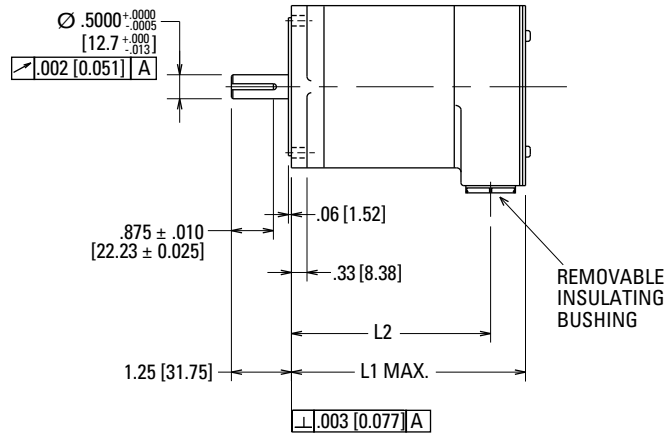
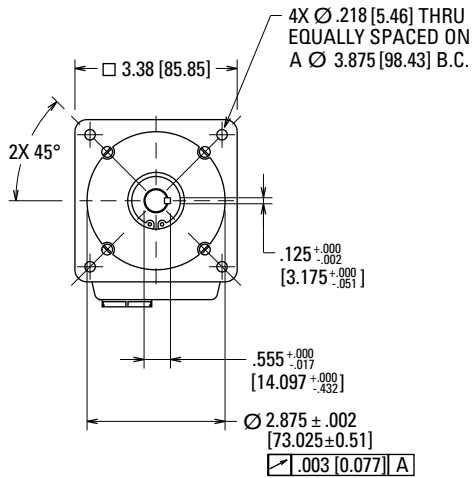


Model	L1 Max.	L2
31N[L or M]	3.62 [91.95]	2.87 [72.9]
32N[L or M]	4.77 [121.2]	4.02 [102.11]
33N[L or M]	6.05 [153.7]	5.30 [134.62]

Dimensions in inches [mm]

E3 / H3 Outline Drawings

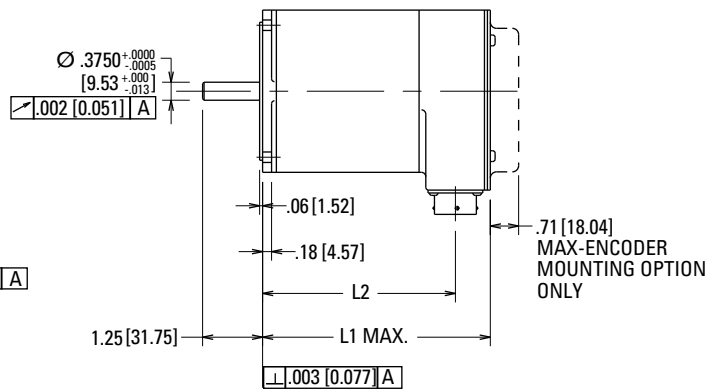
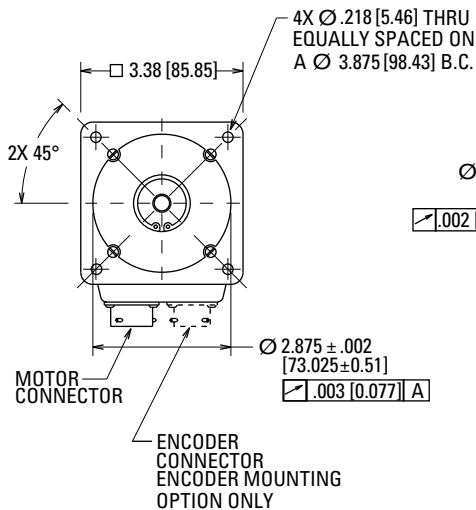
Splashdown Construction, Heavy Duty NEMA Front End Bell



Model	L1 Max.	L2
33H[L or M]	6.73 [170.94]	5.61 [142.49]
34H[L or M]	7.62 [193.6]	6.86 [174.24]

Dimensions in inches [mm]

MS Connector, Encoder Option, Standard NEMA Front End Bell



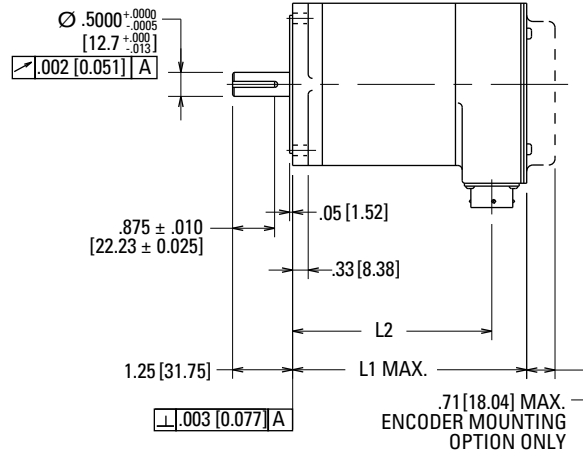
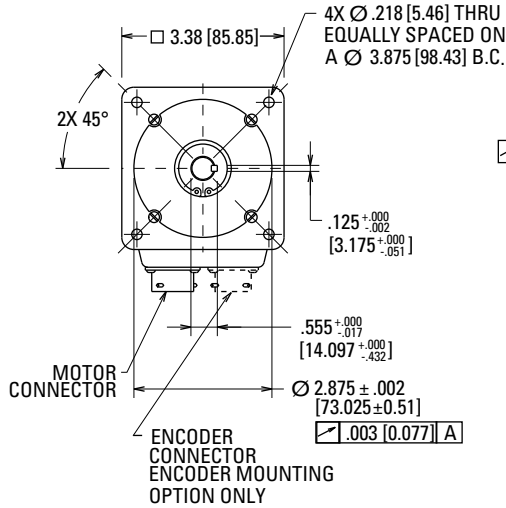
Model	L1 Max.	L2
31NC	3.62 [91.95]	2.87 [72.9]
32NC	4.77 [121.2]	4.02 [102.11]
33NC	6.05 [153.7]	5.30 [134.62]

Dimensions in inches [mm]

E / H Series Stepper Motors

E3 / H3 Outline Drawings

MS Connector, Encoder Option, Heavy Duty Front End Bell

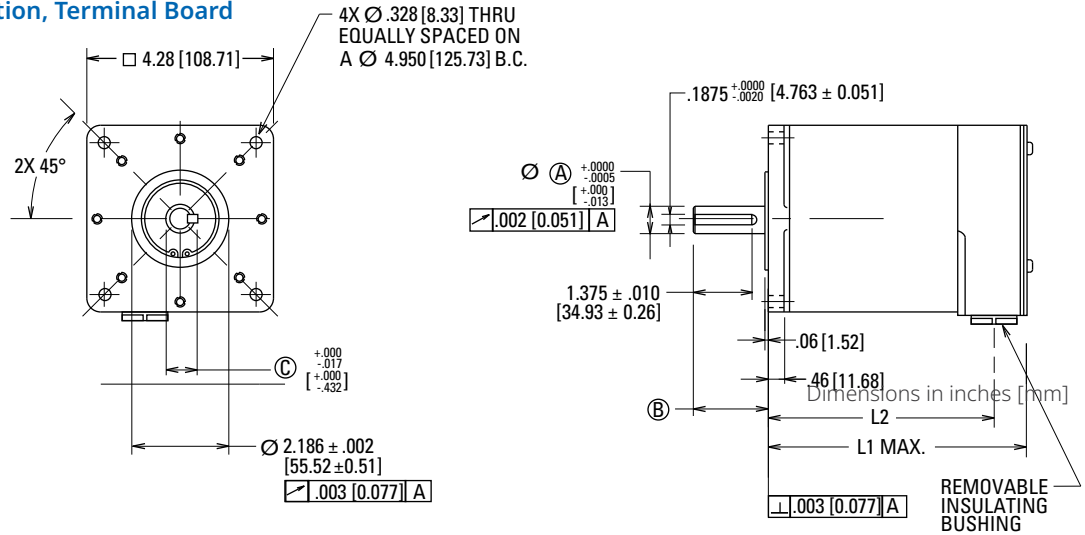


Model	L1 Max.	L2
33HC	6.73 [170.94]	5.61 [142.49]
34HC	7.62 [193.6]	6.86 [174.24]

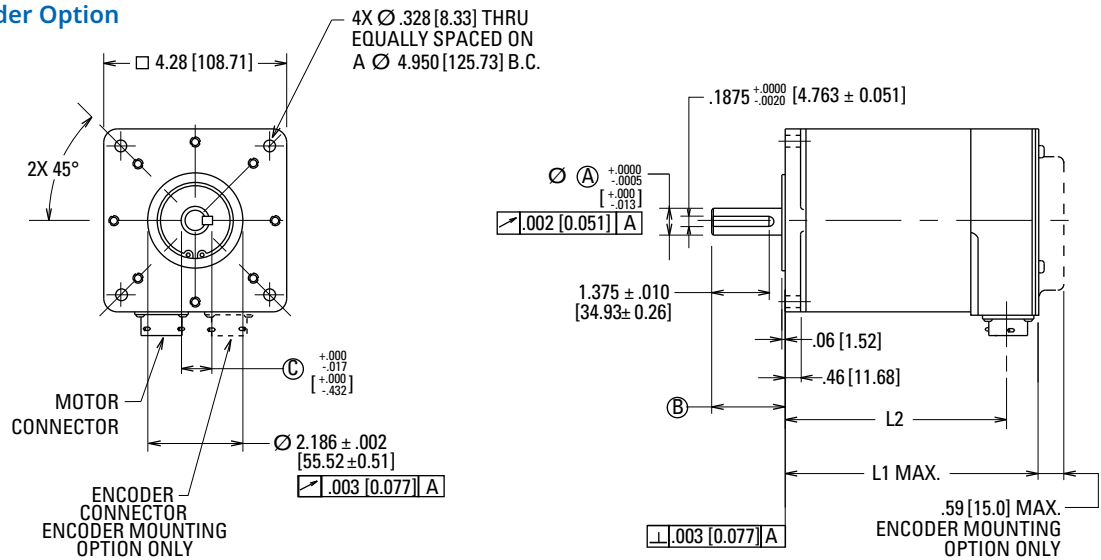
Dimensions in inches [mm]

E4 / H4 Outline Drawings

Splashproof Construction, Terminal Board



MS Connector, Encoder Option

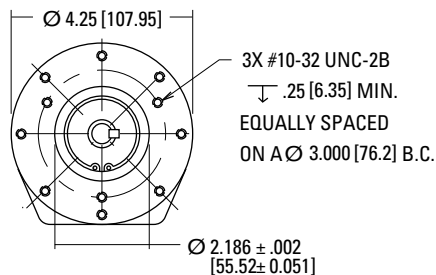


Model	L1 Max.	L2
41H[C.L. or M]	5.61 [142.5]	4.85 [123.19]
42H[C.L. or M]	8.04 [204.22]	7.29 [185.17]
43H[C.L. or M]	10.56 [268.23]	9.81 [249.18]

Model	A	B	C
41H[C.L. or M]	0.6250 [15.875]	1.75 [17.91]	0.705 [17.91]
42H[C.L. or M]	0.6250 [15.875]	2.19 [55.63]	0.705 [17.91]
43H[C.L. or M]	0.7500 [19.05]	2.19 [55.63]	0.830 [21.09]

Standard Round Mounting Configuration

Note: Not available on 3 stack motor



E / H Series Stepper Motors

E3 / H3 1-Stack Performance Data

	Motor Model Number	Config.			Holding Torque (2 phases on) oz-in (Nm) +/-10%	Rated Current/ Phase Amps DC	Phase Resistance Ohms +/-10%	Phase Inductance mH Typical	Thermal Resistance Mounted °C/Watt	Rotor Inertia oz-in-s ² (kg-m ² x 10 ⁻³)	Weight lb (kg)	Shaft Loading	
		Parallel	Series	Unipolar								Radial Force lb (N)	Axial Force lb (N)
1 Stack	H31xxHP-L	•			239 (1.69)	8.4	0.13	1.0	3.9	0.0083 (0.0586)	3.2 (1.45)	35 (156)	180 (801)
	H31xxLP-L		•			4.2	0.52	4.0					
	H31xxHA-L	•			242 (1.71)	8.2	0.14	1.1					
	H31xxLA-L		•			4.1	0.50	4.5					
	H31xxHB-L	•			224 (1.58)	5.9	0.24	1.6					
	H31xxLB-L		•			3.0	0.94	6.4					
	H31xxHT-L	•			236 (1.67)	5.4	0.29	2.3					
	H31xxLT-L		•			2.7	1.12	9.3					
	H31xxHC-L	•			224 (1.58)	3.0	0.94	6.4					
	H31xxLC-L		•			1.48	3.73	25.8					
	H31xxEP-L			•	169 (1.19)	5.9	0.27	1.0					
	H31xxEA-L			•	171 (1.21)	5.8	0.28	1.1					
	H31xxEB-L			•	158 (1.12)	4.2	0.50	1.6					
	H31xxET-L			•	167 (1.18)	3.8	0.59	2.3					
	H31xxEC-L			•	158 (1.12)	2.1	1.89	6.4					
1 Stack Enhanced	E31xxHP-L	•			344 (2.43)	8.4	0.13	1.1	3.9	0.0083 (0.0586)	3.2 (1.45)	35 (156)	180 (801)
	E31xxLP-L		•			4.2	0.52	4.4					
	E31xxHA-L	•			349 (2.46)	8.2	0.14	1.2					
	E31xxLA-L		•			4.1	0.55	4.9					
	E31xxHB-L	•			316 (2.23)	5.9	0.24	1.7					
	E31xxLB-L		•			3.0	0.94	6.9					
	E31xxHT-L	•			337 (2.38)	5.4	0.29	2.5					
	E31xxLT-L		•			2.7	1.12	10					
	E31xxHC-L	•			316 (2.23)	3.0	0.94	6.9					
	E31xxLC-L		•			1.48	3.73	27.6					
	E31xxEP-L			•	243 (1.72)	5.9	0.27	1.1					
	E31xxEA-L			•	247 (1.74)	5.8	0.28	1.2					
	E31xxEB-L			•	224 (1.58)	4.2	0.5	1.7					
	E31xxET-L			•	238 (1.68)	3.8	0.59	2.5					
	E31xxEC-L			•	223 (1.57)	2.1	1.89	6.9					

E3 / H3 2-Stack Performance Data

	Motor Model Number	Config.			Holding Torque (2 phases on) oz-in (Nm) +/-10%	Rated Current/Phase Amps DC	Phase Resistance Ohms +/-10%	Phase Inductance mH Typical	Thermal Resistance Mounted °C/Watt	Rotor Inertia oz-in-s ² (kg-m ² x 10 ⁻³)	Weight lb (kg)	Shaft Loading	
		Parallel	Series	Unipolar								Radial Force lb (N)	Axial Force lb (N)
2 Stack	H32xxHP-L	•			471 (3.33)	8.1	0.19	2.4	2.7	0.017 (0.120)	5.3 (2.40)	35 (156)	180 (801)
	H32xxLP-L		•			4.1	0.74						
	H32xxHA-L	•			445 (3.14)	5.6	0.39	4.1					
	H32xxLA-L		•			2.8	1.51	16.2					
	H32xxHT-L	•			463 (3.27)	5.2	0.44	5.4					
	H32xxLT-L		•			2.6	1.74	21.6					
	H32xxEP-L			•	333 (2.35)	5.7	0.39	2.4					
	H32xxEA-L			•	314 (2.22)	4.0	0.78	4.1					
	H32xxET-L			•	328 (2.32)	3.7	0.89	5.4					
2 Stack Enhanced	E32xxHP-L	•			673 (4.75)	8.1	0.19	2.2	2.7	0.0170 (0.120)	5.3 (2.40)	35 (156)	180 (801)
	E32xxLP-L		•			4.1	0.74						
	E32xxHA-L	•			627 (4.43)	5.6	0.39	3.7					
	E32xxLA-L		•			2.8	1.51	15					
	E32xxHT-L	•			659 (4.65)	5.2	0.44	5.0					
	E32xxLT-L		•			2.6	1.74	19.9					
	E32xxEP-L			•	476 (3.36)	5.7	0.39	2.2					
	E32xxEA-L			•	443 (3.13)	4.0	0.78	3.7					
	E32xxET-L			•	466 (3.29)	3.7	0.89	5.0					

E / H Series Stepper Motors

E3 / H3 3-Stack Performance Data

Motor Model Number	Config.			Holding Torque (2 phases on) oz-in (Nm) +/-10%	Rated Current/Phase Amps DC	Phase Resistance Ohms +/-10%	Phase Inductance mH Typical	Thermal Resistance Mounted °C/Watt	Rotor Inertia oz-in-s ² (kg-m ² x 10 ⁻³)	Weight lb (kg)	Shaft Loading	
	Parallel	Series	Unipolar								Radial Force lb (N)	Axial Force lb (N)
3 Stack	H33xxHC-L	•		659 (4.65)	11.1	0.15	1.6	2.0	0.025 (0.177)	7.6 (3.45)	35 (156)	180 (801)
	H33xxLC-L		•		5.5	0.59	6.3					
	H33xxHA-L	•		666 (4.70)	8.6	0.23	2.7					
	H33xxLA-L		•		4.3	0.87	10.8					
	H33xxHB-L	•		666 (4.70)	5.4	0.55	6.8					
	H33xxLB-L		•		2.7	2.17	27.2					
	H33xxHT-L	•		687 (4.85)	5.1	0.61	8.4					
	H33xxLT-L		•		2.6	2.41	33.6					
	H33xxHP-L	•		698 (4.93)	7.9	0.26	3.7					
	H33xxLP-L		•		4.0	1.02	14.9					
	H33xxEC-L		•	466 (3.29)	7.8	0.29	1.6					
	H33xxEA-L		•	471 (3.33)	6.1	0.46	2.7					
	H33xxEB-L		•	471 (3.33)	3.8	1.11	6.8					
	H33xxET-L		•	486 (3.43)	3.6	1.23	8.4					
H33xxEP-L		•	494 (3.49)	5.6	0.54	3.7						
3 Stack Enhanced	E33xxHC-L	•		927 (6.55)	11.1	0.15	1.3	2.0	0.025 (0.177)	7.6 (3.45)	35 (156)	180 (801)
	E33xxLC-L		•		5.5	0.59	5.3					
	E33xxHA-L	•		940 (6.64)	8.6	0.23	2.3					
	E33xxLA-L		•		4.3	0.87	9.1					
	E33xxHP-L	•		995 (7.03)	7.9	0.26	3.1					
	E33xxLP-L		•		4.0	1.02	12.6					
	E33xxHB-L	•		939 (6.63)	5.4	0.55	5.7					
	E33xxLB-L		•		2.7	2.17	22.9					
	E33xxHT-L	•		975 (6.89)	5.1	0.61	7.1					
	E33xxLT-L		•		2.6	2.41	28.2					
	E33xxEC-L		•	656 (4.63)	7.8	0.29	1.3					
	E33xxEA-L		•	664 (4.69)	6.1	0.46	2.3					
	E33xxEP-L		•	703 (4.96)	5.6	0.54	3.1					
	E33xxEB-L		•	664 (4.69)	3.8	1.11	5.7					
E33xxET-L		•	689 (4.87)	3.6	1.23	7.1						

E3 / H3 4-Stack Performance Data

	Motor Model Number	Config.			Holding Torque (2 phases on) oz-in (Nm) +/-10%	Rated Current/Phase Amps DC	Phase Resistance Ohms +/-10%	Phase Inductance mH Typical	Thermal Resistance Mounted °C/Watt	Rotor Inertia oz-in-s ² (kg-m ² x 10 ⁻³)	Weight lb (kg)	Shaft Loading	
		Parallel	Series	Unipolar								Radial Force lb (N)	Axial Force lb (N)
4 Stack	H34xxHA-L	•			888 (6.27)	8.1	0.29	3.8	1.7	0.035 (0.247)	9.7 (4.40)	35 (156)	180 (801)
	H34xxLA-L		•			4.1	1.14						
	H34xxHP-L	•			916 (6.47)	7.7	0.33	4.7					
	H34xxLP-L		•			3.9	1.27	18.6					
	H34xxHT-L	•			882 (6.23)	5.2	0.71	9.1					
	H34xxLT-L		•			2.6	2.8	36.5					
	H34xxEA-L			•	628 (4.43)	5.7	0.60	3.8					
	H34xxEP-L			•	648 (4.58)	5.5	0.66	4.7					
	H34xxET-L			•	624 (4.41)	3.7	1.43	9.1					
4 Stack Enhanced	E34xxHA-L	•			1250 (8.83)	8.1	0.29	3.6	1.7	0.035 (0.247)	9.7 (4.40)	96 (427)	180 (801)
	E34xxLA-L		•			4.1	1.14	13.7					
	E34xxHP-L	•			1300 (9.18)	7.7	0.33	4.4					
	E34xxLP-L		•			3.9	1.27	17.8					
	E34xxHT-L	•			1240 (8.76)	5.2	0.71	8.7					
	E34xxLT-L		•			2.6	2.8	34.8					
	E34xxEA-L			•	886 (6.26)	5.7	0.60	3.6					
	E34xxEP-L			•	920 (6.50)	5.5	0.66	4.4					
	E34xxET-L			•	879 (6.21)	3.7	1.43	8.7					

E / H Series Stepper Motors

E4 / H4 Performance Data

	Motor Model Number	Config.			Holding Torque (2 phases on) oz-in (Nm) +/-10%	Rated Current/Phase Amps DC	Phase Resistance Ohms +/-10%	Phase Inductance mH Typical	Thermal Resistance Mounted °C/Watt	Rotor Inertia oz-in-s ² (kg-m ² x 10 ⁻³)	Weight lb (kg)	Shaft Loading	
		Parallel	Series	Unipolar								Radial Force lb (N)	Axial Force lb (N)
1 Stack	H41xxHA-L ¹	•			839 (5.92)	10.6	0.16	3.1	1.8	0.080 (0.565)	10.9 (4.94)	140 (623)	400 (1780)
	H41xxLA-L ¹		•			5.3	0.64	12.4					
	H41xxHT-L ¹	•			828 (5.84)	5.4	0.61	11.2					
	H41xxLT-L ¹		•			2.7	2.41	44.6					
	H41xxHB-L ¹	•			839 (5.92)	5.3	0.64	12.4					
	H41xxLB-L ¹		•			2.7	2.54	49.4					
	H41xxEA-L ¹			•	593 (4.19)	7.5	0.32	3.1					
	H41xxET-L ¹			•	585 (4.13)	3.8	1.21	11.2					
	H41xxEB-L ¹			•	593 (4.19)	3.7	1.27	12.4					
1 Stack Enhanced	E41xxHA-L ¹	•			1380 (9.74)	10.6	0.16	2.5	1.8	0.080 (0.565)	10.9 (4.94)	140 (623)	400 (1780)
	E41xxLA-L ¹		•			5.3	0.64	10					
	E41xxHT-L ¹	•			1350 (9.53)	5.4	0.61	9.0					
	E41xxLT-L ¹		•			2.7	2.41	36.1					
	E41xxHB-L ¹	•			1380 (9.74)	5.3	0.64	10					
	E41xxLB-L ¹		•			2.7	2.54	40					
	E41xxEA-L ¹			•	974 (6.88)	7.5	0.32	2.5					
	E41xxET-L ¹			•	957 (6.76)	3.8	1.21	9.0					
	E41xxEB-L ¹			•	974 (6.88)	3.7	1.27	10					
2 Stack	H42xxHC-L ¹	•			1650 (11.7)	14.7	0.12	3.3	1.3	0.16 (1.13)	18.2 (8.26)	140 (623)	400 (1780)
	H42xxLC-L ¹		•			7.4	0.47	13.3					
	H42xxHB-L ¹	•			1600 (11.3)	9.8	0.27	6.8					
	H42xxLB-L ¹		•			4.9	1.07	27.2					
	H42xxHT-L ¹	•			1580 (11.2)	7.9	0.41	9.8					
	H42xxLT-L ¹		•			4.0	1.62	39.2					
	H42xxHA-L ¹	•			1650 (11.7)	5.9	0.74	20.8					
	H42xxLA-L ¹		•			2.9	2.96	83.4					
	H42xxEC-L ¹			•	1170 (8.26)	10.4	0.24	3.3					
	H42xxEB-L ¹			•	1130 (7.98)	6.9	0.54	6.8					
	H42xxET-L ¹			•	1120 (7.91)	5.6	0.81	9.8					
	H42xxEA-L ¹			•	1170 (8.26)	4.1	1.48	20.8					

Note 1: Requires mounting to 10 in. x 10 in. x 1/4 in. thick aluminum plate to meet torque ratings and not exceed allowable temperature rise.

Continued on next page.

E4 / H4 Performance Data (continued)

	Motor Model Number	Config.			Holding Torque (2 phases on) oz-in (Nm) +/-10%	Rated Current/Phase Amps DC	Phase Resistance Ohms +/-10%	Phase Inductance mH Typical	Thermal Resistance Mounted °C/Watt	Rotor Inertia oz-in-s ² (kg-m ² x 10 ⁻³)	Weight lb (kg)	Shaft Loading	
		Parallel	Series	Unipolar								Radial Force lb (N)	Axial Force lb (N)
2 Stack Enhanced	E42xxHC-L ¹	•			2700 (19.1)	14.7	0.12	2.7	1.3	0.16 (1.13)	18.2 (8.26)	140 (623)	400 (1780)
	E42xxLC-L ¹		•			7.4	0.47	10.6					
	E42xxHB-L ¹	•			2600 (18.4)	9.8	0.27	5.4					
	E42xxLB-L ¹		•			4.9	1.07	21.7					
	E42xxHT-L ¹	•			2550 (18.0)	7.9	0.41	7.8					
	E42xxLT-L ¹		•			4.0	1.62	31.3					
	E42xxHA-L ¹	•			2690 (19.0)	5.9	0.74	16.6					
	E42xxLA-L ¹		•			2.9	2.96	66.5					
	E42xxEC-L ¹			•	1910 (13.5)	10.4	0.24	2.7					
	E42xxEB-L ¹			•	1840 (13.0)	6.9	0.54	5.4					
	E42xxET-L ¹			•	1810 (12.8)	5.6	0.81	7.8					
	E42xxEA-L ¹			•	1900 (13.4)	4.1	1.48	16.6					
3 Stack	H43xxHC-L ¹	•			2160 (15.3)	13.3	0.21	1.3	0.90	0.24 (1.69)	25.7 (11.7)	140 (623)	400 (1780)
	H43xxLC-L ¹		•			6.7	0.84	5.4					
	H43xxHB-L ¹	•			2260 (16.0)	12.5	0.24	1.8					
	H43xxLB-L ¹		•			6.2	0.96	7.0					
	H43xxHT-L ¹	•			2650 (18.7)	7.9	0.60	16.8					
	H43xxLT-L ¹		•			4.0	2.38	67.1					
	H43xxHA-L ¹	•			2340 (16.5)	5.0	1.48	40.8					
	H43xxLA-L ¹		•			2.5	5.9	163					
	H43xxEC-L ¹			•	1530 (10.8)	9.4	0.42	1.3					
	H43xxEB-L ¹			•	1600 (11.3)	8.8	0.48	1.8					
	H43xxET-L ¹			•	1870 (13.2)	5.6	1.19	16.8					
	H43xxEA-L ¹			•	1860 (13.1)	3.5	2.95	40.8					
3 Stack Enhanced	E43xxHC-L ¹	•			3720 (26.3)	13.3	0.21	3.7	0.90	0.24 (1.69)	25.7 (11.7)	140 (623)	400 (1780)
	E43xxLC-L ¹		•			6.7	0.84	14.7					
	E43xxHB-L ¹	•			3960 (28.0)	12.5	0.24	4.8					
	E43xxLB-L ¹		•			6.2	0.96	19.3					
	E43xxHT-L ¹	•			3930 (27.8)	7.9	0.60	11.8					
	E43xxLT-L ¹		•			4.0	2.38	47					
	E43xxHA-L ¹	•			3910 (27.6)	5.0	1.48	28.6					
	E43xxLA-L ¹		•			2.5	5.9	114					
	E43xxEC-L ¹			•	2670 (18.9)	9.4	0.42	3.7					
	E43xxEB-L ¹			•	2800 (19.8)	8.8	0.48	4.8					
	E43xxET-L ¹			•	2780 (19.6)	5.6	1.19	11.8					
	E43xxEA-L ¹			•	2760 (19.5)	3.5	2.95	28.6					

Note 1: Requires mounting to 10 in. x 10 in. x 1/4 in. thick aluminum plate to meet torque ratings and not exceed allowable temperature rise.

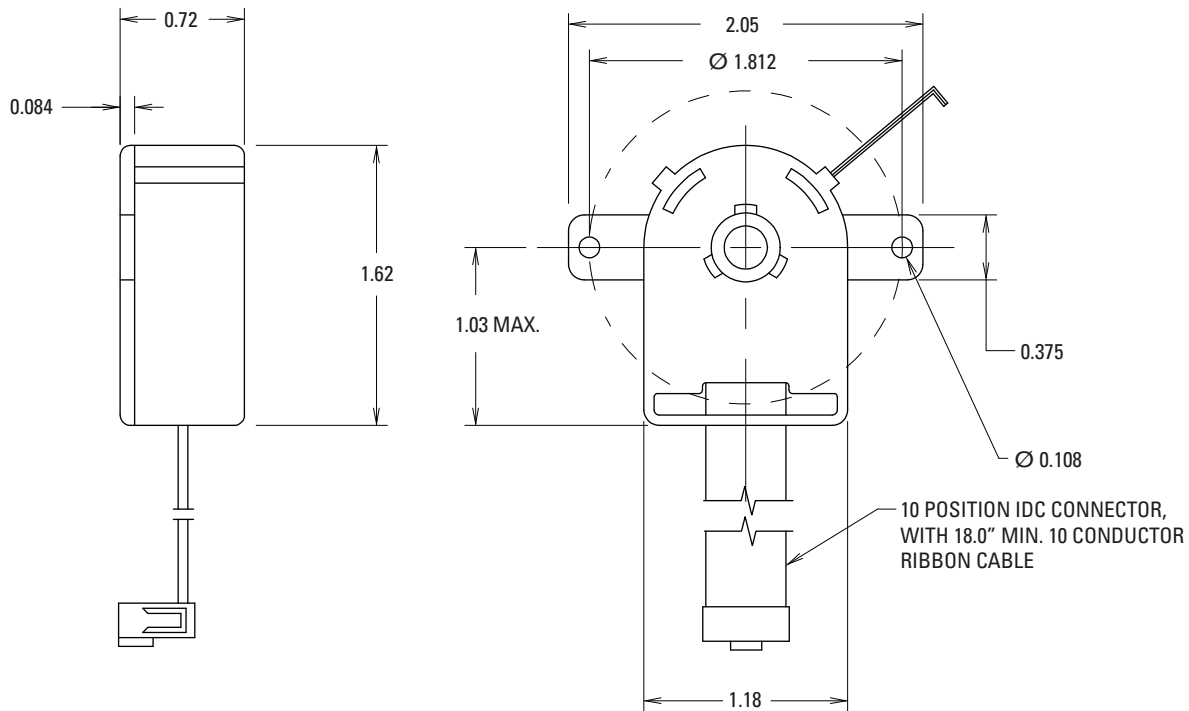
E / H Series Stepper Motors

E/H Encoder Options

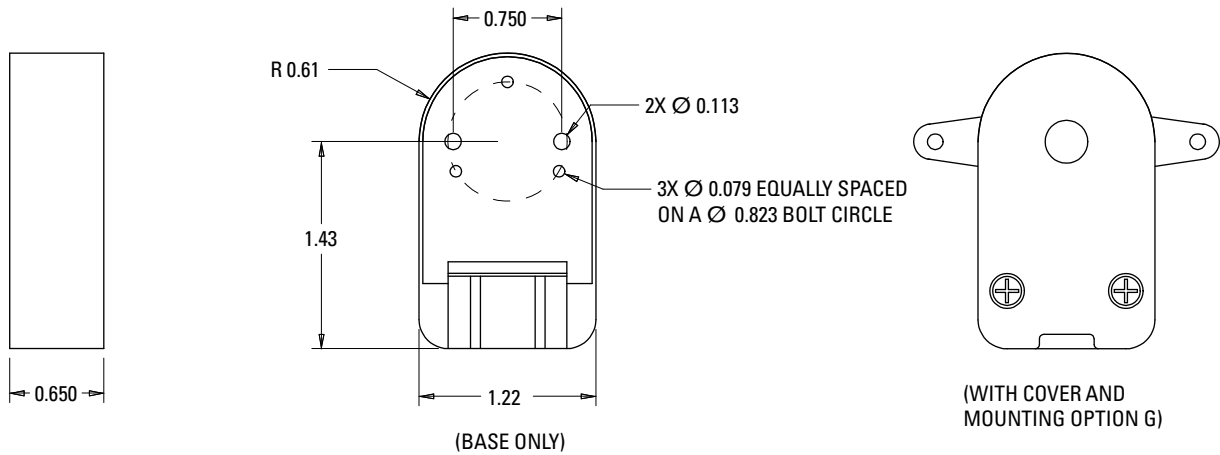
Encoder Specifications

Parameter	Code	
	PD	PF
Type	Optical Incremental	
Supply Voltage	5 Vdc ±10%	
Lines per Revolution	500	1000
Output Format	Dual Channel Quadrature with Index (Z)	
Output Type	Differential Line Drive (with compliments)	
Output Frequency (kHz)	100	
Operating Temperature (°C)	-40 to 100	
Storage Temperature (°C)	-40 to 100	

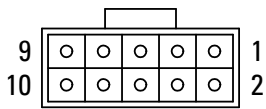
PD Encoder Dimensional Drawings



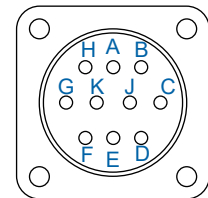
PF Encoder Dimensional Drawings



PD, PF Encoder Connection



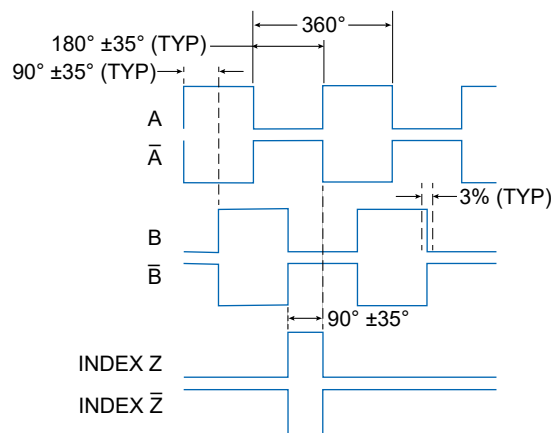
10 -PIN Connector	Color	Function	MS Connector
1	Brown	N/C	-
2	Red	+5 V	G
3	Orange	GROUND	H
4	Yellow	N/C	-
5	Green	\bar{A}	A
6	Blue	A	B
7	Violet	\bar{B}	C
8	Gray	B	D
9	White	Z (Index)	E
10	Black	\bar{Z} (Index)	F



MS Connector MS3122E12-10P

Mating Plug Type MS3116F12-10S

PD, PF Encoder Phase Diagram



OUTPUT FORMAT FOR CCW ROTATION VIEWED FROM ENCODER END

More Expertise for a More Successful Machine

Our global engineering, service and support network provides deep knowledge of all the major industries that rely on advanced motion control and automation technology. We offer world-class engineering expertise, self-service design tools, personalized field service, and easy access to our design, application and manufacturing centers in strategic locations across the globe.

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 (Automated Guided Vehicle) control solutions, and automation control platforms. We deliver breakthrough solutions that combine exceptional performance, reliability and ease of use, giving machine builders an irrefutable marketplace advantage.

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