

# Stepper Motors

1.8° 2-phase stepper motors



**NEMA 14**  
1.8° 2-phase stepper motors

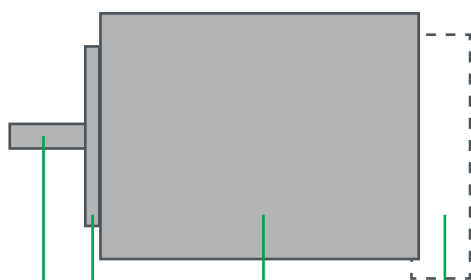
# Stepper motors

## 1.8° 2-phase

### Product offer

2-phase stepper motors		M-14•	M-17•	M-22•	M-34•
					
Size	NEMA	14	17	23	34
Holding torque	oz-in	10	32 ... 75	90 ... 239	408 ... 1090
	N-cm	7	23 ... 53	64 ... 169	288 ... 770
Number of full steps per revolution		200			
Step angle $\alpha$	°	1.8			
Number of leads		4			

### Motor types



Shaft version			Centering collar		Flange size		Lengths without shaft		Winding	Motor connection	Optional rear shaft (1)	Optional encoder
M-14•	inches	mm	inches	mm	inches	mm	inches	mm				
Round shaft with single flat feature	Ø 0.197	Ø 5.0	Ø 0.866	Ø 22	1.39	35.3	1.02	26	2-phase full coil for bi-polar operation	4 flying leads	Round shaft	Single-end or differential
M-17•												
Round shaft with single flat feature	Ø 0.197	Ø 5.0	Ø 0.866	Ø 22	1.67	42.3	1.34 1.57 1.89	34 40 48	2-phase full coil for bi-polar operation	4 flying leads	Flat feature extending to rear end bell	Single-end or differential
M-22•												
Round shaft with single flat feature	Ø 0.25	Ø 6.35	Ø 1.50	Ø 38	2.22	56.4	1.77 2.13 2.99	45 54 76	2-phase full coil for bi-polar operation	4 flying leads	Flat feature extending to rear end bell (2)	Single-end or differential
M-34•												
Round shaft with single flat feature	Ø 0.554	Ø 14.0	Ø 2.874	Ø 73	3.386	86.0	2.48 3.15 4.72	63 80 120	2-phase full coil for bi-polar operation	4 flying leads	Flat feature on round shaft	Single-end or differential

(1) Optional rear shaft available except for NEMA23 2.4amp motors.

(2) Optional rear shaft on NEMA23 6.0amp motors is round without a flat feature.

### Ambient conditions

Ambient temperature	°C	-25 ... +40
Max. installation height over m.s.l. without power loss	m	< 1000
Transport and storage temperature	°C	-25 ... +70
Relative humidity	%	15 ... 85, no condensation allowed
Thermal class		130 (B)

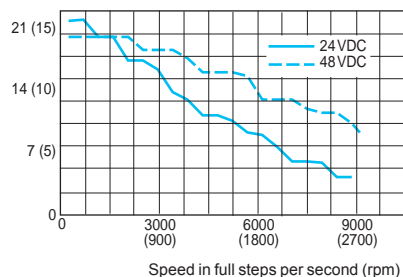
### Electrical and mechanical data

NEMA14		M-1410-0.75•
Stack length		single
Phase current	amps	0.75
Holding torque	oz-in	10
	N-cm	7
Rotor inertia	oz-in-sec <sup>2</sup>	0.00017
	kg-cm <sup>2</sup>	0.012
Phase inductance	mH	4.0
Phase resistance	Ω	4.3
Weight	oz	4.2
	grams	120

### Speed-torque curves

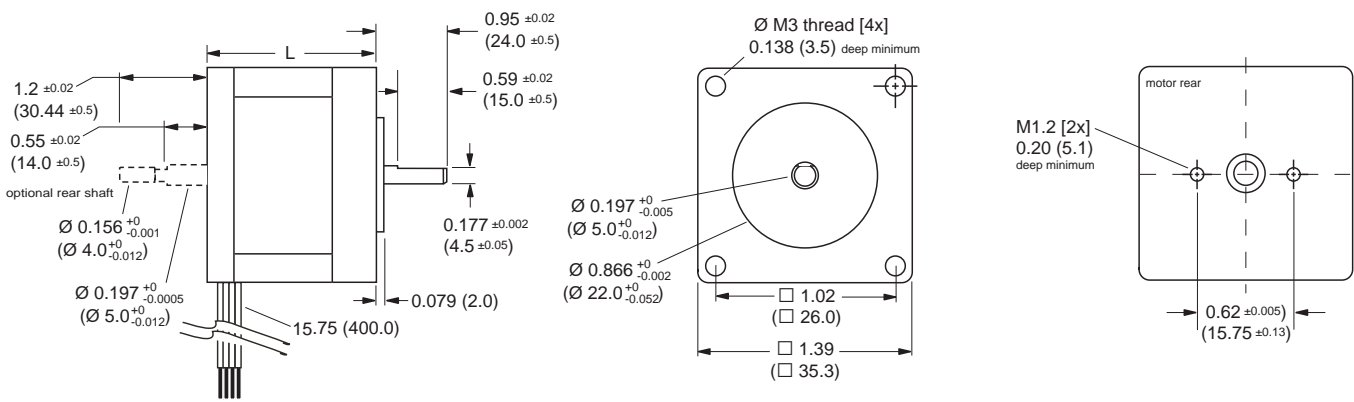
#### M-1410-0.75•

Torque in Oz-In (N-cm)



NEMA 14 stepper motors  
1.8° 2-phase

NEMA14, dimensions in inches (mm)



L	
M-1410-0.75•	1.02 (26)

# NEMA 14 stepper motors

## 1.8° 2-phase

### References

<b>Example:</b>	M	-	1	4	1	0	-	0.75	S
<b>Motor type</b> M = stepper motor	M	-	1	4	1	0	-	0.75	S
<b>Flange size</b> 14 = NEMA 14 (36 mm)	M	-	1	4	1	0	-	0.75	S
<b>Motor length</b> 10 = single stack	M	-	1	4	1	0	-	0.75	S
<b>Phase current</b> 0.75 = 0.75 amp	M	-	1	4	1	0	-	0.75	S
<b>Shaft</b> S = single shaft D = double shaft									S

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#### **Schneider Electric Motion USA**

370 North Main Street

Marlborough, CT 06447 – U.S.A.

Tel. +00 (1) 860-295-6102 – Fax +00 (1) 860-295-6107

e-mail: [info@imshome.com](mailto:info@imshome.com)

[www.motion.schneider-electric.com](http://www.motion.schneider-electric.com)