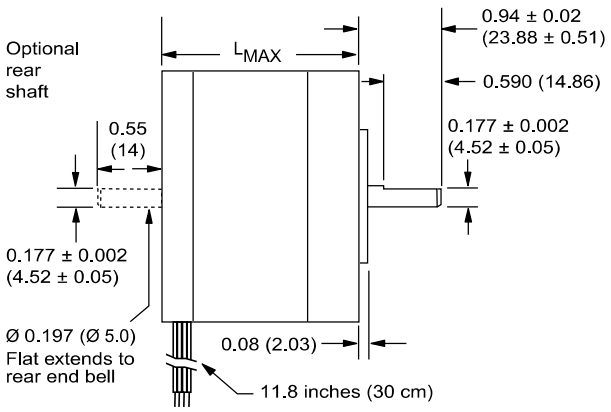
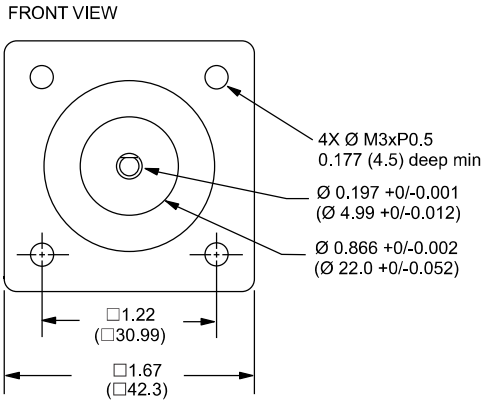
Quick Reference

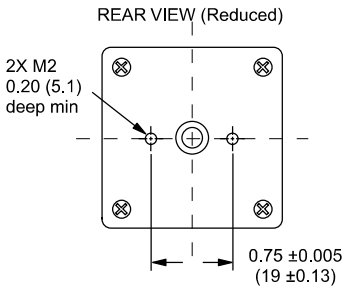
NEMA size 17 1.8° 2-phase stepper motor

Mechanical Specifications

Dimensions in inches (mm)







Motor stack length inches (mm)	Single	Double	Triple
LMAX	1.34 (34.0)	1.57 (40)	1.89 (48)

Notes and Warnings

Installation, configuration and maintenance must be carried out by qualified technicians only. You must have detailed information to be able to carry out this work.

- Unexpected dangers may be encountered when working with this product!
- Incorrect use may destroy this product and connected components!

For more information, go to www.imshome.com

Specifications

1.5 Amp motors		Single length	Double length	Triple length
Part number		**M-1713-1.5** • *(1)*	**M-1715-1.5** • *(1)*	**M-1719-1.5** • *(1)*
Holding torque	oz-in	32	60	75
	N-cm	23	42	53
Detent torque	oz-in	1.7	2.1	3.5
	N-cm	1.2	1.5	2.5
Rotor inertia	oz-in-sec^2	0.000538	0.0008037	0.0011562
	kg-cm^2	0.038	0.057	0.082
Weight	oz	7.4	8.1	12.7
	grams	210	230	360
Phase current	amps	1.5	1.5	1.5
Phase resistance	ohms	1.3	2.1	2.0
Phase inductance	mH	2.1	5.0	3.85

(1) Indicate S for single-shaft or D for double-shaft. Example M-1713-1.5S

Wiring and Connections

Signals and wire colors	
Phase A	Red
Phase /A	Blue
Phase B	Green
Phase /B	Black

Part Numbers

Example:	M - 1 7 1 3 - 1 . 5 S
Stepper motor frame size **M-17** = NEMA 17 (1.7"/42 mm)	**M - 1 7** 1 3 - 1 . 5 S
Motor length **13-** = single stack **15-** = double stack **19-** = triple stack	M - 1 7 **1 3** 1 . 5 S
Phase current **1.5** = 1.5 Amps	M - 1 7 1 3 - **1 . 5** S
Shaft **S** = single, front shaft only **D** = double, front and rear shafts	M - 1 7 1 3 - 1 . 5 **S**
Optional optical encoder *(1)* **ES** = Single-end **ED** = Differential **Line count** 100, 200, 250, 400, 500 or 1000 *(2)*	M - 1 7 1 3 - 1 . 5 **E S 1 0 0**

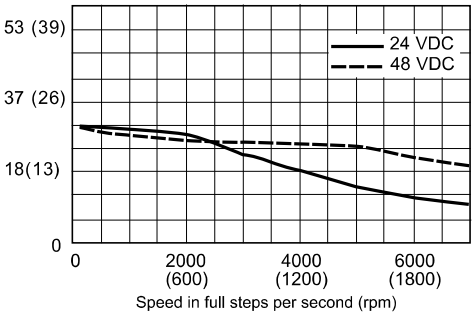
(1) An encoder replaces the shaft designator in the part number.
(2) All encoders have an index mark, except the 1000 line count version.

Torque-speed performance

Measured at 1.5 Amps RMS

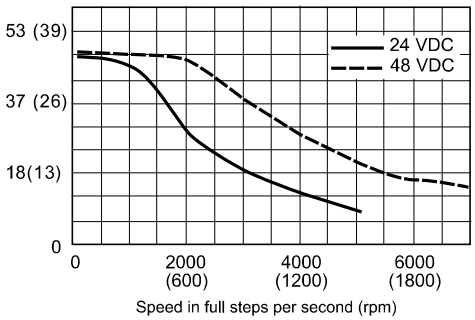
M-1713-1.5

Torque in oz-in (N-cm)



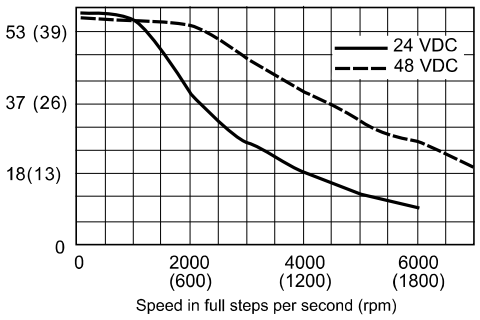
M-1715-1.5

Torque in oz-in (N-cm)



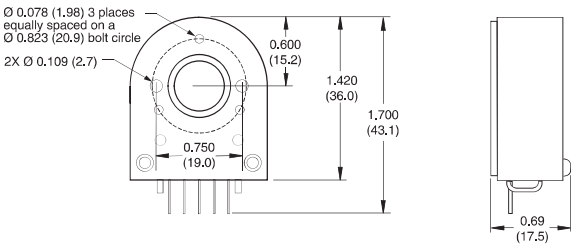
M-1719-1.5

Torque in oz-in (N-cm)



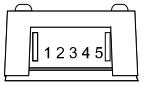
Optical Encoder Option

Dimensions in inches (mm)



Connectivity

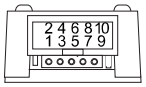
single-end encoder



	wire	*function*
1	Brown	Ground
2	Violet	Index
3	Blue	Channel A
4	Orange	+5 VDC input
5	Yellow	Channel B

optional interface cable available: ES-CABLE-2

differential encoder

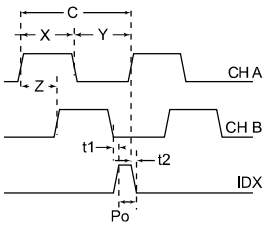


pin	*function*	*pin*	*function*
1	no connect	6	Channel A+
2	+5 VDC input	7	Channel B –
3	Ground	8	Channel B+
4	no connect	9	Index –
5	Channel A –	10	Index +

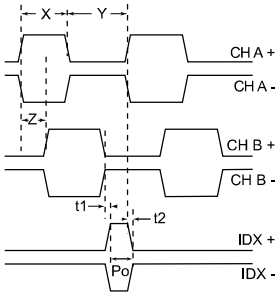
interface cable included

Timing

single-end encoder



differential encoder



Parameter	Symbol	Min	Typ	Max	Units
Cycle error			3	5.5	°e
Symmetry		130	180	230	°e
Quadrature		40	90	140	°e
Index pulse width	Po	60	90	120	°e
Index rise (after Ch A or B rise)	t1	-300	100	250	ns
Index fall (after Ch A or B fall)	t2	70	150	1000	ns

C One cycle: 360 electrical degrees (°e).
X/Y Symmetry: the measure of the relationship between X and Y, nominally 180°e.
Z Quadrature: the phase lead or lag between channels A and B, nominally 90°e.
Po Index pulse width, nominally 90 °e.
NOTE: Rotation is as viewed from the cover side of the encoder.