



All models shown smaller than actual size.

OMEGA offers a robust line of 2-phase bipolar step motors ranging in frame size from NEMA 11 to NEMA 34. Most of our models are the high torque style, with holding torques up to 1845 oz-in. All motors conform to industry-standard NEMA mounting dimensions, and are offered with a range of well-featured, compatible drives and indexers. With the exception of our two smallest motors (OMHT11-013, OM5014-842), all of our step motors are optimized for microstepping: they can achieve a stepping resolution of up to 51,200 steps/revolution (0.007° per step) when operated by one of our microstepping drives. In addition, these motors can be operated in a closed-loop system for even more precise position control when fitted with one of our incremental encoders.

8-lead motors offer the flexibility of either series or parallel connection. The motors should be series connected for best torque at low speeds, and parallel connected for best torque at higher speeds.

### Motor Wiring

#### Parallel Connection (8-lead motors):

Drive A+ = Orange + Black/White  
Drive A- = Black + Orange/White  
Drive B+ = Red + Yellow/White  
Drive B- = Yellow + Red/White

#### Series Connection (8-lead motors):

Drive A+ = Orange  
Drive A- = Black  
Drive B+ = Red  
Drive B- = Yellow  
Connect Orange/White to Black/White (not connected to drive)  
Connect Red/White to Yellow/White (not connected to drive)

#### (4-lead motors):

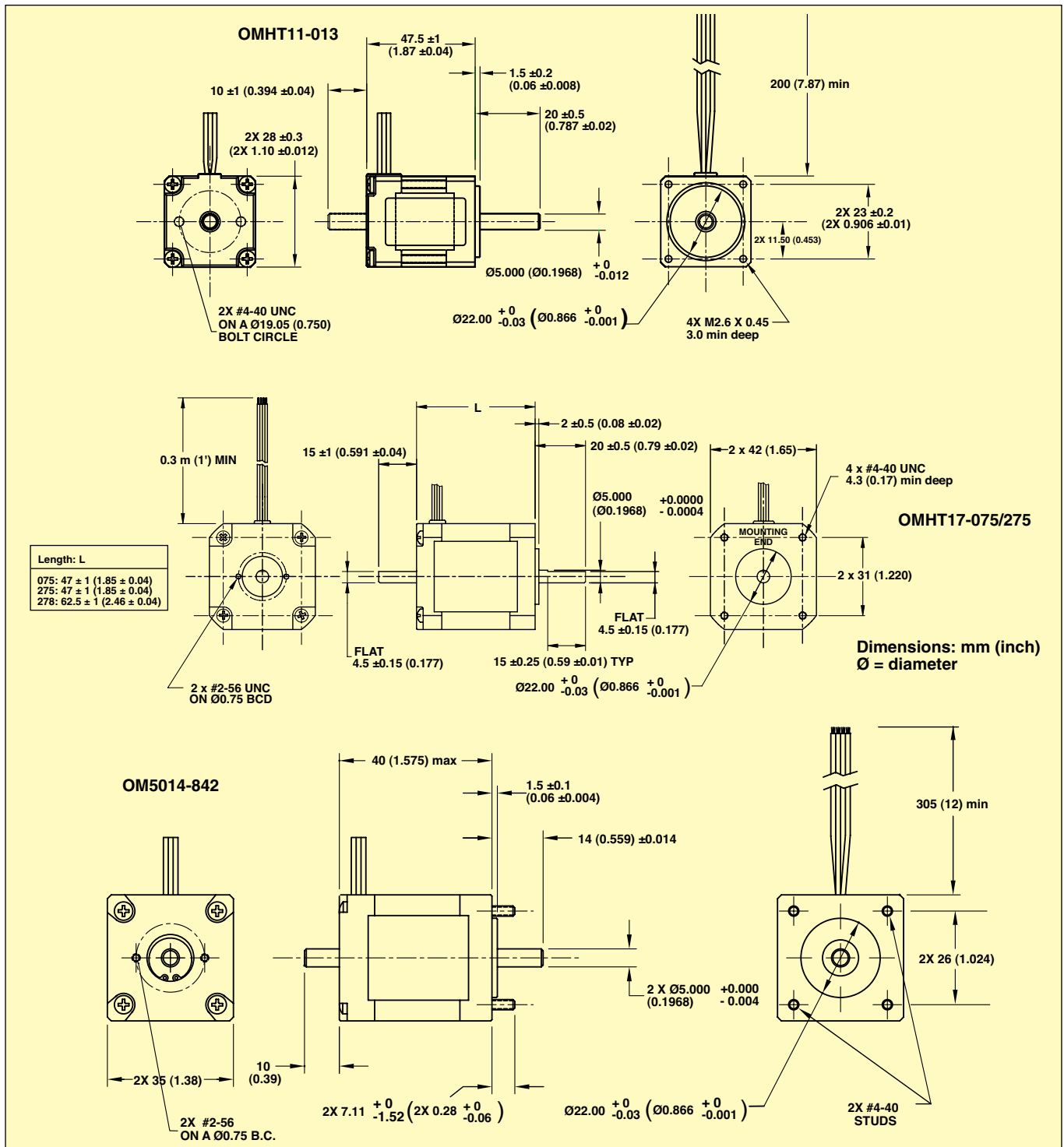
Drive A+ = Red  
Drive A- = Blue  
Drive B+ = Yellow  
Drive B- = White

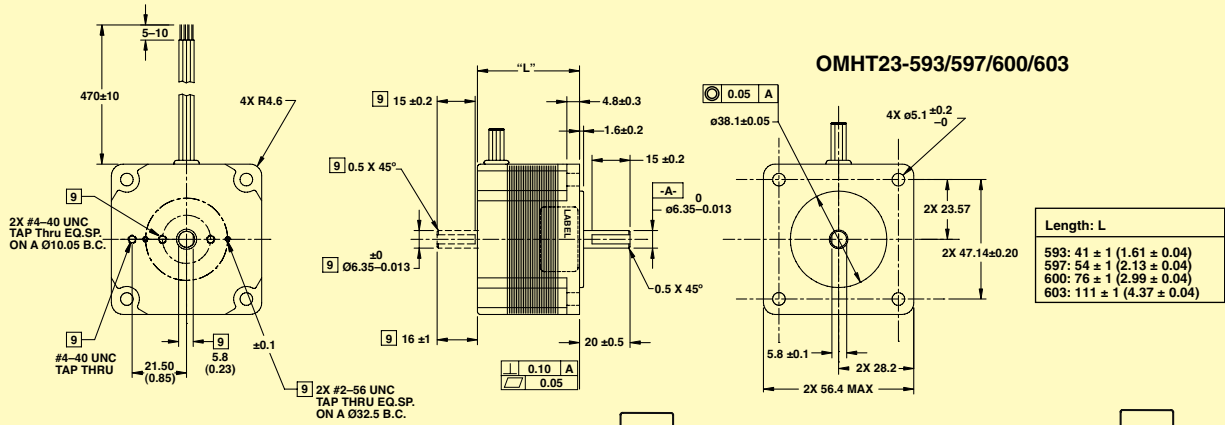
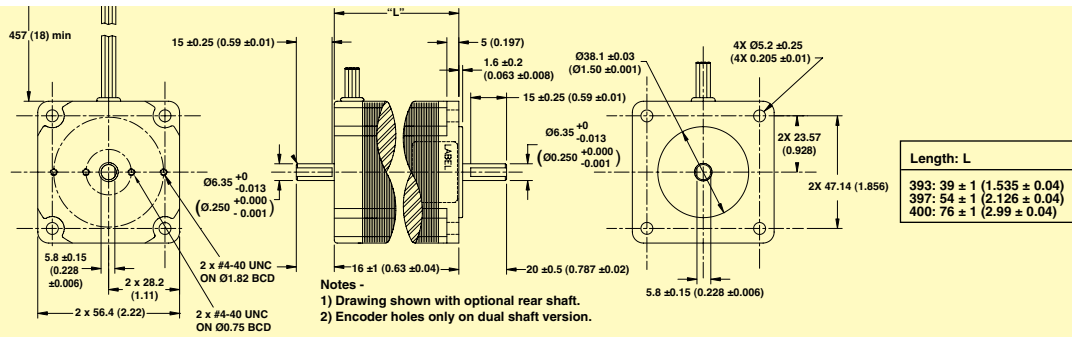
- Protect the motor shaft from snock loads
- DESIGN TIPS**
- Series connect lead wires for best torque at low speeds
  - Center tap to end or parallel connect lead wires for best torque at higher speeds
  - Keep motor case temperature below 100°C. This can be achieved by lowering the motor current or limiting the duty cycle

- Allow sufficient time to
- Size motor with 100% safety factor for required torque @ speed
- Do not disassemble motors. A significant reduction in motor performance will result
- Do not disconnect motor from drive while in operation
- Do not use holding torque/ detent torque of motor as fail-safe brake

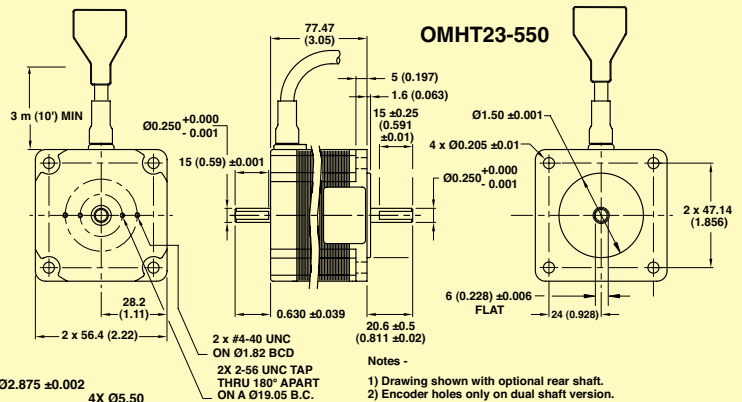
**MOTION INSTALLATION TIPS**

- Mount the motor securely against a surface with good thermal conductivity such as steel or aluminum
- Properly align the motor with the load using a flexible coupling

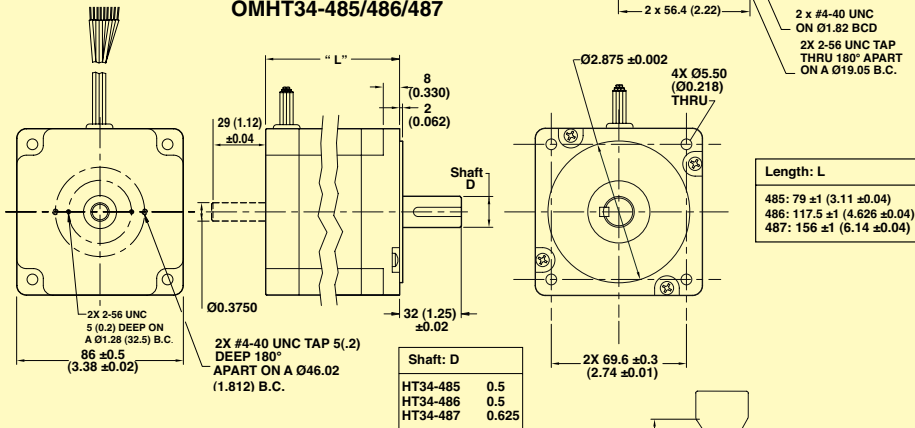




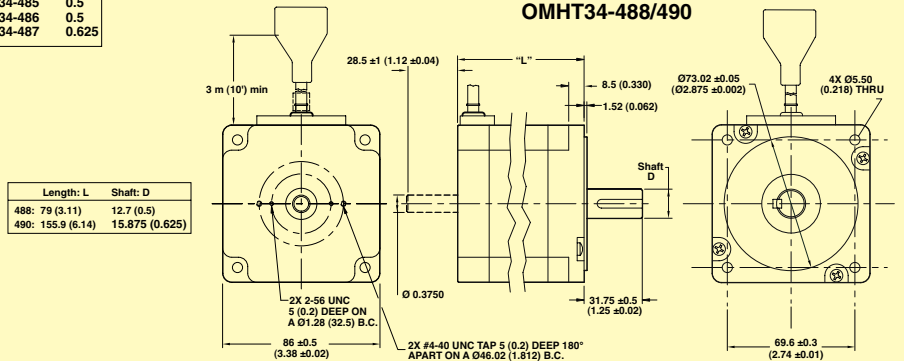
Dimensions: mm (inch)  
 Ø = diameter

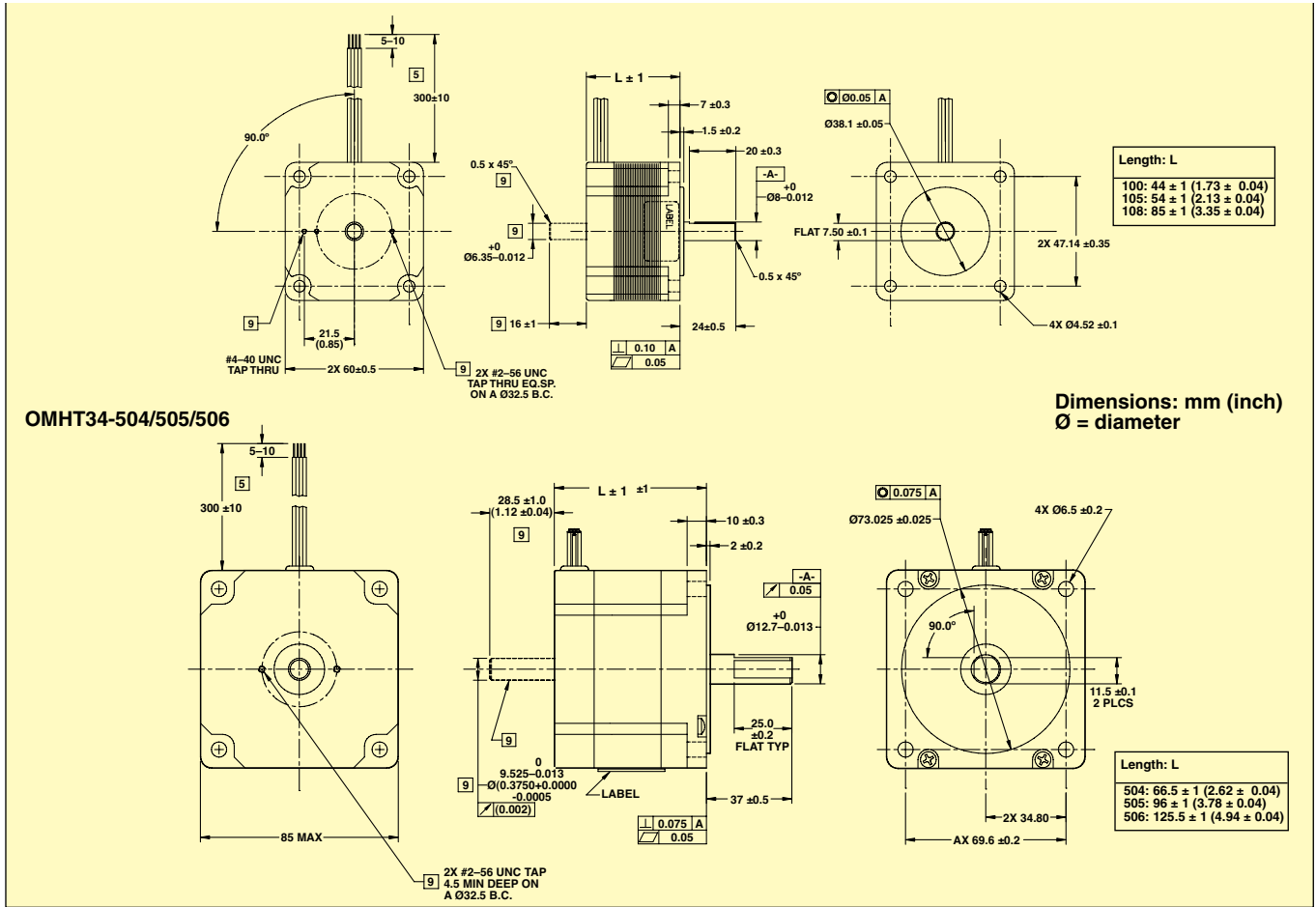


OMHT34-485/486/487



OMHT34-488/490





**OPTIMAL DRIVE/MOTOR COMBINATIONS—“X” INDICATES PRIMARY MOTOR CHOICE**

DRIVE	1240I	2035	3540I	3540M	3540MO	SI3540	STR2	STR4	STR8	ST5-S/Si	ST10-S/Si	STAC6-S/Si
OMHT11-013	X	X					X					
OM5014-842	X	X					X					
OMHT17-075	X	X	X	X	X	X	X			X		
OMHT17-275	X	X	X	X	X	X	X			X		
OMHT17-278	X	X	X	X	X	X		X		X		
OMHT23-393	X	X	X	X	X	X	X			X		
OMHT23-593	X	X	X	X	X	X	X			X		
OMHT23-397		X	X	X	X	X		X		X		
OMHT23-597		X	X	X	X	X		X		X		
OMHT23-400		X	X	X	X	X		X		X		
OMHT23-600		X	X	X	X	X		X		X		
OMHT23-603			X	X	X	X			X		X	
OMHT24-100			X	X	X	X		X		X		
OMHT24-105								X		X		
OMHT24-108								X		X		
OMHT34-504									X		X	
OMHT34-485									X		X	
OMHT34-505									X		X	
OMHT34-486									X		X	
OMHT34-506									X		X	
OMHT34-487									X		X	
OMHT23-550												X
OMHT34-488												X
OMHT34-490												X

## RECOMMENDED MOTORS

Rometec srl - [www.rometec.it](http://www.rometec.it) - [info@rometec.it](mailto:info@rometec.it) - Rometec srl - [www.rometec.it](http://www.rometec.it) - [info@rometec.it](mailto:info@rometec.it)

MODEL NO.	CONNECTION 1 = SERIES 2 = PARALLEL 3 = UNIPOLAR	MOTOR LENGTH mm (inch)	MAXIMUM HOLDING TORQUE <sup>2</sup> (oz-inch)	LEADS	STEP ANGLE (DEG)	VOLTS	AMPS	OHMS	MH	ROTOR INERTIA (oz-inch <sup>2</sup> / g-cm <sup>2</sup> )	MOTOR WEIGHT g (lb)
OMHT11-013	2	48 (1.87)	15	4	1.8	2.0	1.0	2.0	2.6	0.098/18	177 (0.39)
OM5014-842	2	40 (1.57)	26.0	4	1.8	4.8	1.0	4.3	5.5	0.109/20	213 (0.47)
OMHT17-075	1	47 (1.85)	62.8	8	1.8	5.7	0.85	6.6	12.0	0.37/68	331 (0.73)
	2		2.8			1.70	1.7	3.0			
	3		4.0			1.20	3.3	3.0			
OMHT17-275	1	48 (1.90)	62.3	8	1.8	5.7	0.85	6.6	10.0	0.44/82	357 (0.79)
	2		2.8			1.70	1.7	2.5			
	3		4.0			1.20	3.3	2.5			
OMHT17-278	1	63 (2.47)	113.0	8	1.8	6.4	1.0	6.4	12.0	0.66/121	357 (1.32)
	2		3.2			2.0	1.6	3.0			
	3		4.5			1.4	3.2	3.0			
OMHT23-393	1	39 (1.54)	76.6	8	1.8	7.4	0.71	1.7	21.6	0.66/120	454 (1.00)
	2		3.7			1.41	2.6	5.4			
	3		5.2			1.00	5.2	5.4			
OMHT23-593	1	41 (1.61)	79.3	8	1.8	7.4	0.71	10.4	26.1	0.73/135	417 (0.92)
	2		3.7			1.41	2.6	6.6			
	3		5.2			1.00	5.2	6.6			
OMHT23-397	1	54 (2.13)	177.0	8	1.8	5.1	1.41	3.6	10.0	1.64/300	699 (1.54)
	2		2.5			2.83	0.9	2.5			
	3		3.6			2.00	1.8	2.5			
OMHT23-597	1	54 (2.13)	177.0	8	1.8	5.1	1.41	3.6	10.8	1.42/260	599 (1.32)
	2		2.5			2.83	0.9	2.7			
	3		3.6			2.00	1.8	2.7			
OMHT23-400	1	76 (2.99)	264.0	8	1.8	6.4	1.41	4.5	14.4	2.62/480	998 (2.20)
	2		3.2			2.83	1.1	3.6			
	3		4.5			2.00	2.3	3.6			
OMHT23-600	1	76 (2.99)	264.8	8	1.8	6.4	1.41	4.5	15.6	2.51/460	998 (2.20)
	2		3.2			2.83	1.1	3.9			
	3		4.5			2.00	2.3	3.9			
OMHT23-603	1	111 (4.37)	354	8	1.8	5.0	2.5	2.0	8.8	4.02/735	1497 (3.30)
	2		2.5			5.0	0.5	2.2			
	3		4.5			2.00	2.25	3.8			
OMHT23-550 <sup>1</sup>	1	78 (3.05)	255.0	8	1.8	6.3	1.41	4.5	15.2	7.8/1400	998 (2.20)
	2		3.2			2.83	1.13	3.8	2.62/480		
	3		4.5			2.00	2.25	3.8			
OMHT24-100	2	44 (1.73)	123	4	1.8	2.0	2.8	0.73	1.6	1.42/260	599 (1.32)
OMHT24-105	2	54 (2.13)	177	4	1.8	1.7	4.0	0.43	1.1	2.46/450	830 (1.83)
OMHT24-108	2	85 (3.35)	354	4	1.8	2.6	4.0	0.65	2.4	4.91/900	1402 (3.09)
OMHT34-504	1	66 (2.62)	396	8	1.8	3.05	3.18	0.96	6.8	6.0/1100	1588 (3.5)
	2		1.51			6.3	0.24	1.7			
	3		2.16			4.5	0.48	1.7			
OMHT34-485	1	79 (3.11)	650	8	1.8	3.2	4.3	0.76	5.2	7.8/1400	2803 (6.18)
	2		1.6			8.6	0.19	1.3			
	3		2.26			6.0	0.38	1.3			
OMHT34-505	1	96 (3.78)	849	8	1.8	4.20	3.18	1.32	10.8	10.1/1850	2676 (5.9)
	2		2.08			6.3	0.33	2.7			
	3		2.97			4.5	0.66	2.7			
OMHT34-486	1	118 (4.63)	1200	8	1.8	4.4	4.1	1.08	8.8	14.6/2680	3810 (8.40)
	2		2.2			8.1	0.27	2.2			
	3		3.1			5.7	0.54	2.2			
OMHT34-506	1	125 (4.94)	1260	8	1.8	5.43	2.8	1.94	21.6	15.0/2750	3810 (8.4)
	2		2.74			5.6	0.49	5.4			
	3		3.88			4.0	0.97	5.4			



All models shown smaller than actual size.

## RECOMMENDED MOTORS (CONTINUED)

MODEL NO.	MOTOR CONNECTION 1 = SERIES 2 = PARALLEL 3 = UNIPOLAR	MOTOR LENGTH mm (inch)	MAXIMUM HOLDING TORQUE <sup>2</sup> (oz-inch)	LEADS	STEP ANGLE (DEG)	VOLTS	AMPS	OHMS	MH	ROTOR INERTIA (oz-inch <sup>2</sup> / g-cm <sup>2</sup> )	MOTOR WEIGHT g (lb)
OMHT34-487	1	156 (6.14)	1845	8	1.8	4.8	4.5	1.08	9.6	21.9/4000	5398 (11.9)
	2		2.4			9.0	0.27	2.4			
	3		3.4			6.3	0.54	2.4			
OMHT34-488 <sup>1</sup>	1	79 (3.11)	650	8	1.8	3.2	4.3	1.6	5.2	7.8/1400	3629 (8.00)
	2		1.6			8.6	0.4	1.3			
	3		2.26			6.0	0.8	1.3			
OMHT34-490 <sup>1</sup>	1	156 (6.14)	1845	8	1.8	4.5	4.8	1.7	9.6	21.9/4000	5398 (11.9)
	2		2.25			9.6	0.42	2.4			
	3		3.2			6.8	0.85	2.4			

<sup>1</sup> Motor with 3 m (10') shielded cable.

<sup>2</sup> Guaranteed minimum holding torque; actual torque may be 5 to 10% greater.

All size 17 through 34 motors are optimized for microstepping. Model numbers listed are for single shaft. To order double shaft add "-D" to the end of the model number for additional cost.

Ordering Example: OMHT23-393-D, NEMA 23 high torque step motor with double shaft.

## MECHANICAL AND ELECTRICAL SPECIFICATIONS

	SIZE 11	SIZE 14	SIZE 17	SIZE HT17	SIZE 23	SIZE HT23	SIZE 34	SIZE HT34
SHAFT RUN-OUT mm (inch)	0.01 (0.0005)	0.01 (0.0005)	0.01 (0.0005)	0.01 (0.0005)	0.03 (0.001)	0.05 (0.002)	0.05 (0.002)	0.05 (0.002)
RADIAL PLAY (inch/lb)	0.001 max @ 1.1 lb	0.0004 max @ 1 lb	0.001 max @ 1 lb	0.001 max @ 1 lb	0.001 max @ 1 lb	0.001 max @ 1 lb	0.001 max @ 1 lb	0.001 max @ 1 lb
END PLAY (inch/lb)	0.003 max @ 2.2 lb	0.0004 max @ 2 lb	0.001 max @ 3 lb	0.003 max @ 2.2 lb	0.003 max @ 2.2 lb	0.003 max @ 2.2 lb	0.001 max @ 15 lb	0.003 max @ 2.2 lb
PERPENDICULARITY	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.003
CONCENTRICITY mm (inch)	0.05 (0.002)	0.05 (0.002)	0.05 (0.002)	0.05 (0.002)	0.05 (0.002)	0.05 (0.002)	0.05 (0.002)	0.05 (0.002)
OPERATING TEMPERATURE RANGE	-20 to 50°C (-4 to 122°F)	-20 to 50°C (-4 to 122°F)	-20 to 50°C (-4 to 122°F)	-20 to 50°C (-4 to 122°F)	-20 to 50°C (-4 to 122°F)	-20 to 50°C (-4 to 122°F)	-20 to 50°C (-4 to 122°F)	-20 to 50°C (-4 to 122°F)
INSULATION CLASS	130°C (266°F) Class B	130°C (266°F) Class B	130°C (266°F) Class B	130°C (266°F) Class B	130°C (266°F) Class B	130°C (266°F) Class B	130°C (266°F) Class B	130°C (266°F) Class B
LEAD WIRE GAGE	26 AWG	26 AWG	22 AWG	26 AWG	22 AWG	22 AWG	18 AWG	22 AWG
MAX RADIAL LOAD g (lb)	2268 (5)	2268 (5)	2268 (5)	2268 (5)	6804 (15)	6804 (15)	11340 (25)	11340 (25)
MAX THRUST LOAD g (lb)	1361 (3)	1361 (3)	1361 (3)	1361 (3)	11340 (25)	11340 (25)	22680 (50)	22680 (50)

<b>To Order</b> Visit <a href="http://omega.com/omht_series">omega.com/omht_series</a> for Pricing and Details	
<b>MODEL NO.</b>	<b>DESCRIPTION</b>
<b>OMHT11-013</b>	NEMA 11 high torque step motor, 15 oz-in holding torque
<b>OM5014-842</b>	NEMA 14 standard torque step motor, 26 oz-in holding torque
<b>OMHT17-075</b>	NEMA 17 high torque step motor, 62.8 oz-in holding torque
<b>OMHT17-275</b>	NEMA 17 high torque step motor, 62.3 oz-in holding torque
<b>OMHT17-278</b>	NEMA 17 high torque step motor, 113 oz-in holding torque
<b>OMHT23-393</b>	NEMA 23 high torque step motor, 76.6 oz-in holding torque
<b>OMHT23-593</b>	NEMA 23 high torque step motor, 79.3 oz-in holding torque
<b>OMHT23-397</b>	NEMA 23 high torque step motor, 177 oz-in holding torque
<b>OMHT23-597</b>	NEMA 23 high torque step motor, 177 oz-in holding torque
<b>OMHT23-400</b>	NEMA 23 high torque step motor, 264 oz-in holding torque
<b>OMHT23-600</b>	NEMA 23 high torque step motor, 264.8 oz-in holding torque
<b>OMHT23-603</b>	NEMA 23 high torque step motor, 354 oz-in holding torque
<b>OMHT24-100</b>	NEMA 24 high torque step motor with, 123 oz-in holding torque
<b>OMHT24-105</b>	NEMA 24 high torque step motor with, 177 oz-in holding torque
<b>OMHT24-108</b>	NEMA 24 high torque step motor with, 354 oz-in holding torque
<b>OMHT34-504</b>	NEMA 34 high torque step motor, 396 oz-in holding torque
<b>OMHT34-485</b>	NEMA 34 high torque step motor, 650 oz-in holding torque
<b>OMHT34-505</b>	NEMA 34 high torque step motor, 849 oz-in holding torque
<b>OMHT34-486</b>	NEMA 34 high torque step motor, 1200 oz-in holding torque
<b>OMHT34-506</b>	NEMA 34 high torque step motor, 1260 oz-in holding torque
<b>OMHT34-487</b>	NEMA 34 high torque step motor, 1845 oz-in holding torque

## MOTORS FOR STAC6 DRIVE: SHIELDED CABLE AND CONNECTOR

<b>MODEL NO.</b>	<b>DESCRIPTION</b>
<b>OMHT23-550</b>	NEMA 23 high torque step motor with 3 m (10') shielded cable, 255 oz-in holding torque
<b>OMHT34-488</b>	NEMA 34 high torque step motor with 3 m (10') shielded cable, 650 oz-in holding torque
<b>OMHT34-490</b>	NEMA 34 high torque step motor with 3 m (10') shielded cable, 1845 oz-in holding torque

## ACCESSORIES

<b>MODEL NO.</b>	<b>DESCRIPTION</b>
<b>ENC-1000i</b>	Differential encoder for NEMA 11/14 motors, 1000-line, with index pulse
<b>ENC-CA-4217-6FT</b>	Encoder cable, 2 m (6'), ENC-1000i
<b>ENC-CA-4217-10FT</b>	Encoder cable, 3 m (10'), ENC-1000i
<b>ENC-CA-4217-20FT</b>	Encoder cable, 6 m (20'), ENC-1000i
<b>ENC-WAA</b>	Differential encoder for NEMA 17 motors, 2000-line, with index
<b>ENC-ZAA</b>	Differential encoder for NEMA 23/24 motors, 2000-line, with index
<b>ENC-YAA</b>	Differential encoder for NEMA 34 motors, 2000-line, with index
<b>ENC-ST-CA-10</b>	Encoder cable for ENC-WAA, ZAA, YAA, 3 m (10')

Encoders offered are differential encoders with line drivers. These provide two channels of signals with complementary signals. Versions with index also offer Z-channel and its complementary signal. Remember that a double shaft motor is required.

**Ordering Examples:** **OMHT17-075-D** NEMA 17 high torque step motor with 62.8 oz-in min holding torque and double shaft.

**ENC-WAA** 2000-line encoder with index pulse for NEMA 17 motor, and **ENC-ST-CA-10** 3 m (10') encoder cable.

### ST/STAC6 Encoder Option:

Use encoder **ENC-ZAA** for ST5-Si, ST10-Si, and STAC6-Si drives with NEMA 23 motors.

Use encoder **ENC-YAA** for ST5-Si, ST10-Si, and STAC6-Si drives with NEMA 34 motors.

The **ENC-ST-CA-10** cable connects the optional encoders listed above to the ST and STAC6 series drives.

# STEPPER MOTORS

## IP65 RATED STEPPER MOTORS FOR WET AND DUSTY ENVIRONMENTS

### OMHW SERIES



- NEMA 23, 24 and 34 Frame Sizes Available
- Integral 3 m (10') Shielded Cable with Cable Gland
- Sealed Laminations
- Front Shaft Seal

OMEGA® is pleased to announce the addition of NEMA size 23, 24 and 34 stepper motors with IP65 ratings for operation in severe environmental conditions.

The OMHW series are dust proof and resistant to low pressure water jets, and are ideal for applications in wet factory environments such as the food and beverage industry or outdoor use. Key features include a nickel plated brass cable gland, sealed laminations, and front shaft contact seal. All models have an internal corrosion-resistant film coating as standard.

IP65 specifies a product that is dust tight (no ingress of dust; complete protection against contact) and protected against water jets (water projected by a nozzle from any direction shall have no harmful effects).

OMHW24-108 shown smaller than actual size.



OMHW23-601 shown smaller than actual size.



OMHW23-598 shown smaller than actual size.

#### DESIGN TIPS

- Series connect lead wires for best torque at low speeds.
- Center tap to end or parallel connect lead wires for best torque at higher speeds.
- Keep motor case temperature below 100°C. This can be achieved by lowering the motor current or limiting the duty cycle.
- Allow sufficient time to accelerate load.
- Size motor with 100% safety factor for required torque @ speed.
- Do not disassemble motors. A significant reduction in motor performance will result.
- Do not disconnect motor from drive while in operation.
- Do not use holding torque/detent torque of motor as fail safe brake.

#### MOTION INSTALLATION TIPS

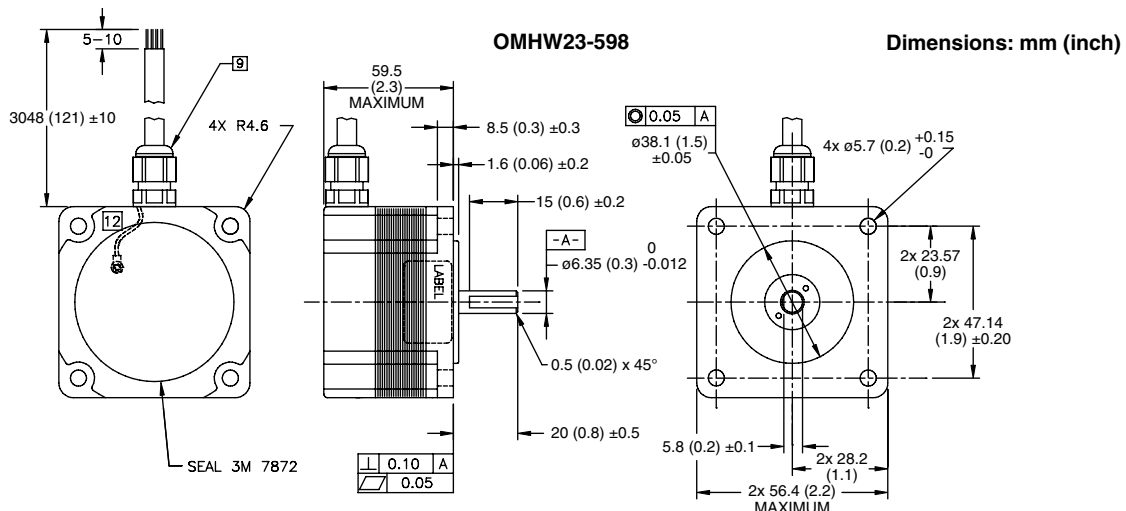
- Mount the motor securely against a surface with good thermal conductivity such as steel or aluminum.
- Properly align the motor with the load using a flexible coupling.
- Protect the motor shaft from excessive thrust, overhang and shock loads.

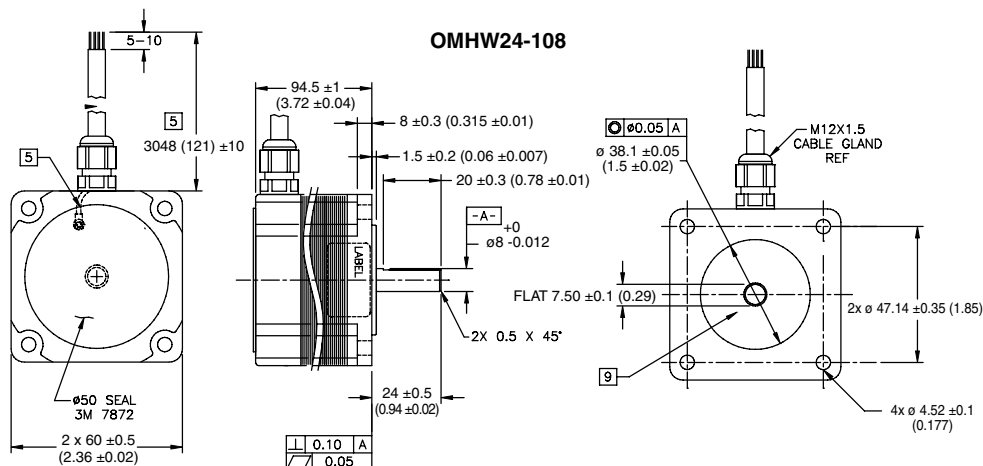
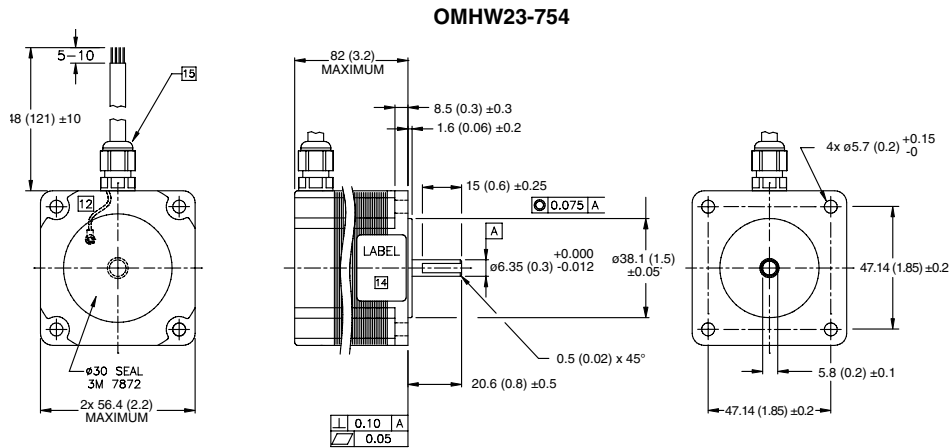
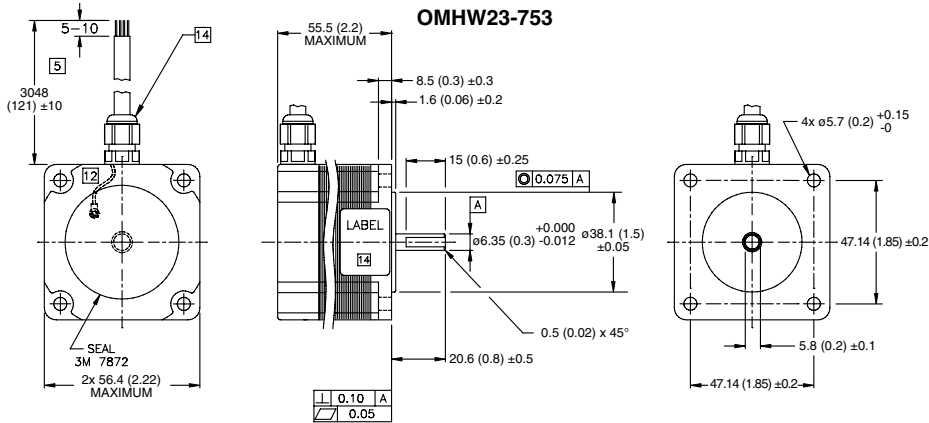
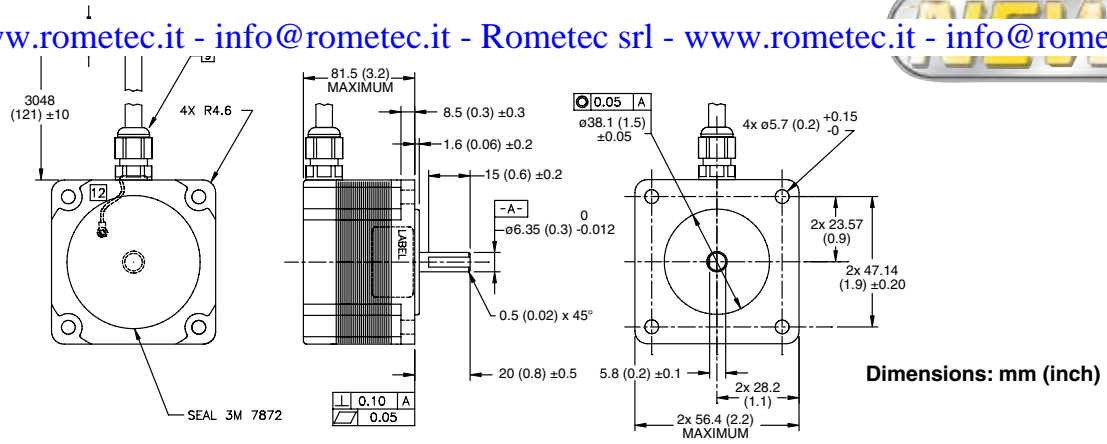


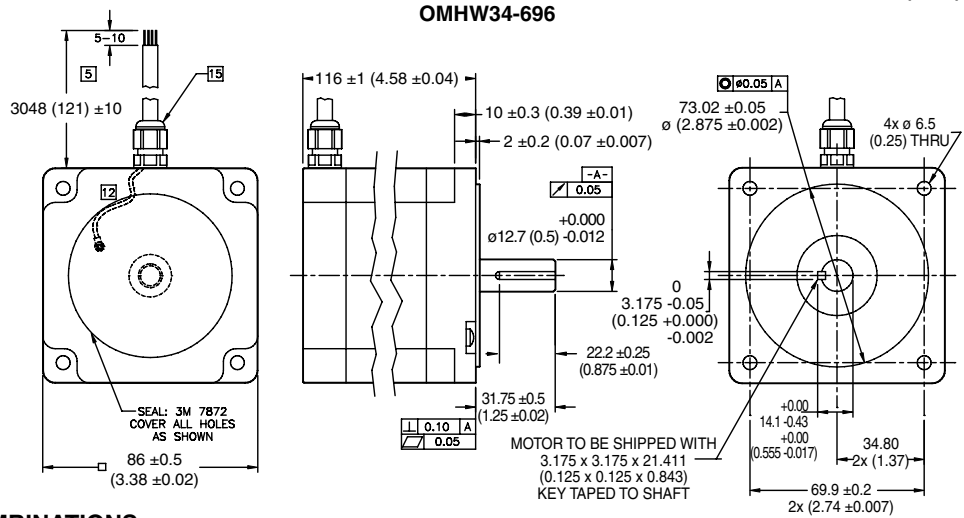
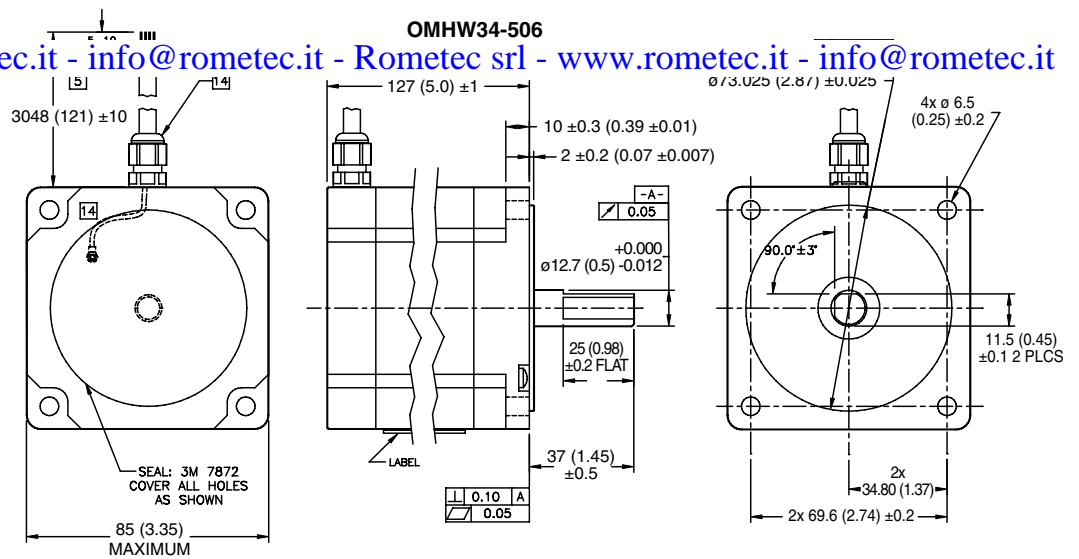


ELECTRICAL SPECIFICATIONS											
MODEL NO.	MOTOR CONNECTION 1=SERIES 2=PARALLEL 3=UNIPOLAR	MOTOR LENGTH mm (inch)	MINIMUM HOLDING TORQUE (oz-in)	LEADS	STEP ANGLE (DEG)	VOLTS	AMPS	OHMS	mH	ROTOR INERTIA g- cm <sup>2</sup> (oz-in <sup>2</sup> )	MOTOR WEIGHT g (lbs)
OMHW23-598	1	59.5 (2.34)	158	8	1.8	4.2	2.12	2.0	5.6	1.42	599 (1.32)
	2					2.1	4.24	0.5	1.4		
	3					3.0	3.00	1.0	1.4		
OMHW23-601	1	81.5 (3.21)	269	8	1.8	4.7	2.12	2.2	6.8	2.51	998 (2.2)
	2					3.0	4.24	0.7	1.7		
	3					3.3	3.00	1.1	1.7		
OMHW23-753	1	55.5 (2.18)	153	8	1.8	9.9	0.71	14.0	51.2	1.20	549 (1.21)
	2					4.9	1.41	3.5	12.8		
	3					7.0	1.00	7.0	12.8		
OMHW23-754	1	82 (3.23)	227	8	1.8	11.8	0.71	16.6	60.8	2.51	998 (2.2)
	2					5.8	1.41	4.15	15.2		
	3					8.3	1.00	8.3	15.2		
OMHW24-108	2	94.5 (3.72)	354	4	1.8	3.6	4.0	1.0	2.1	4.91	1361 (3)
OMHW34-506	1	127 (5.00)	1260	8	1.8	7.3	2.8	2.6	2.6	14.94	3810 (8.4)
	2					3.6	5.6	0.65	5.4		
	3					5.2	4.0	1.29	5.4		
OMHW34-696	1	116.5 (4.59)	1062	8	1.8	9.7	2.03	4.8	43.2	14.94	3810 (8.4)
	2					4.9	4.06	1.2	10.8		
	3					7.0	2.90	2.4	10.8		

MECHANICAL AND ENVIRONMENTAL SPECIFICATIONS			
	SIZE HW23	SIZE HW24	SIZE HW34
SHAFT RUN-OUT (inches)	0.002	0.0012	0.002
RADIAL PLAY (inch/Lbs) @ 1.1 lb	0.0008 maximum @ 1.1 lb	0.0008 maximum @ 1.1 lb	0.001 maximum @ 1.1 lb
END PLAY (inch/lbs)	0.003 maximum @ 2.2 lbs	0.003 maximum @ 2.2 lbs	0.003 maximum @ 2.2 lbs
OPERATING TEMPERATURE RANGE	>-20 to 50°C (-4 to 122°F)		
INSULATION CLASS	130°C (266°F) Class B		
LEAD WIRE GAUGE	22 AWG		
MAXIMUM RADIAL LOAD (lbs)	15	15	28
MAXIMUM THRUST LOAD (lbs)	25	25	50







**OPTIMAL DRIVE/MOTOR COMBINATIONS**

MODEL NO.	OPTIMAL DRIVE
OMHW23-753	2035, 3540i, 3540M/MO, Si3540, STR2, ST5, STAC6
OMHW23-754	2035, 3540i, 3540M/MO, Si3540, STR2, ST5
OMHW23-598	STR8, ST5
OMHW23-601	STR8, ST5
OMHW24-108	STR8, ST5
OMHW34-506	STR8, ST10
OMHW34-696	STR8, ST5

**To Order Visit [omega.com/omhw\\_series](http://omega.com/omhw_series) for Pricing and Details**

MODEL NO.	DESCRIPTION
OMHW23-598	NEMA 23 step motor, 158 oz-in minimum holding torque, 4.24 A/phase (parallel)
OMHW23-601	NEMA 23 step motor, 269 oz-in minimum holding torque, 4.24 A/phase (parallel)
OMHW23-753	NEMA 23 step motor, 153 oz-in minimum holding torque, 1.41 A/phase (parallel)
OMHW23-754	NEMA 23 step motor, 227 oz-in minimum holding torque, 1.41 A/phase (parallel)
OMHW24-108	NEMA 24 step motor, 354 oz-in minimum holding torque, 4.0 A/phase (parallel)
OMHW34-506	NEMA 34 step motor, 1260 oz-in minimum holding torque, 5.6 A/phase (parallel)
OMHW34-696	NEMA 34 step motor, 1062 oz-in minimum holding torque, 4.06 A/phase (parallel)

Ordering Example: OMHW23-598, NEMA 23 step motor with 158 oz-in minimum holding torque.

# STEPPED DRIVES

Rometec srl - [www.rometec.it](http://www.rometec.it) - [info@rometec.it](mailto:info@rometec.it) - Rometec srl - [www.rometec.it](http://www.rometec.it) - [info@rometec.it](mailto:info@rometec.it)

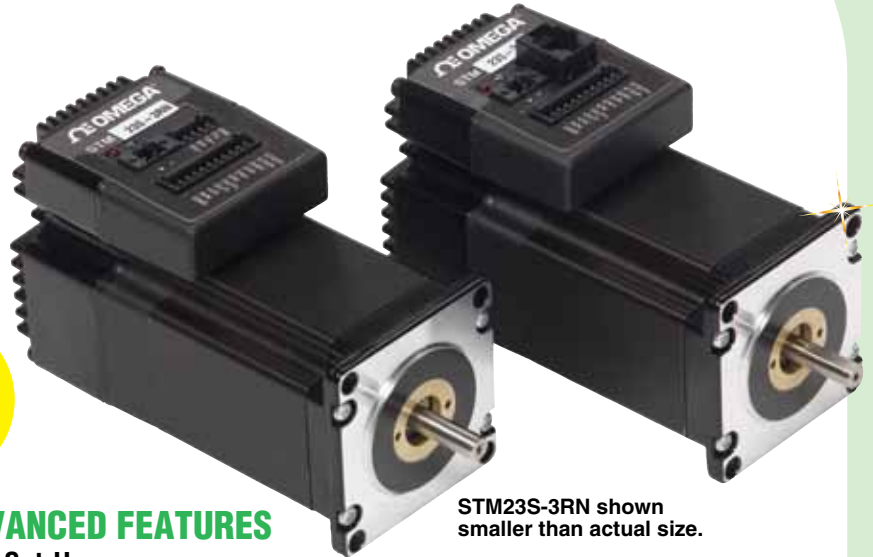
## INTEGRATED STEPPER DRIVES/MOTORS WITH ADVANCED FEATURES AND CONTROL OPTIONS

STM Series



- **Current Output 0.5 to 5.0 A**
- **Configurator™ Configuration Software**
- **Configurable Idle Current Reduction**
- **External Control Options**
- **Pulse and Direction**
- **Analog Command Signal**
- **Host Command via RS232/485**
- **Fault Protection:**
  - **Over-Voltage, Under-Voltage**
  - **Over-Temp**
  - **External Output Shorts**
  - **Internal Amplifier Shorts**
  - **Open Motor Phases**
- **Multi-Axis System with SiNet™ Hub**
- **Microstepping Up to 51200 Steps/Revolution**

Configuration Software Included!



STM23S-3RN shown smaller than actual size.

### ADVANCED FEATURES

#### Auto Set-Up:

At start-up the drive measures motor parameters, including the resistance and inductance, then uses this information to optimize the system performance.

#### Self-Test:

At power-up the drive diagnoses mis-wires and detects any open or shorted motor phases.

#### Torque Ripple Smoothing:

The drive smoothes the low-speed torque ripple which is inherent in all step motor systems.

#### Command Signal Smoothing:

Command Signal Smoothing can soften the effect of immediate changes in velocity and direction, making the motion of the motor less jerky.

#### Anti-Resonance/ Electronic Damping:

Step motor systems resonate at certain speeds. The STM drive + motor automatically calculates the system's natural frequency and applies damping to the control algorithm.

### SPECIFICATIONS

#### POWER AMPLIFIER (ALL MODELS)

**Amplifier Type:** Dual H-Bridge, 4 Quadrant

**Current Control:** 4 state PWM at 20 Khz  
**Output Torque:**

**STM23x-2 Series:** To 125 oz-in with suitable power supply

**STM23x-3 Series:** To 210 oz-in with suitable power supply

**Power Supply:** External 12 to 70 Vdc power supply required

**Input Voltage Range:** 12 to 70 Vdc

**Protection:** Over-voltage, under-voltage, over-temp, motor/wiring shorts (phase-to-phase, phase-to-ground)

**Idle Current Reduction:** Reduction range of 0 to 90% of running current after delay selectable in milliseconds

**Ambient Temperature:** 0 to 40°C (32 to 104°F) (mounted to suitable heatsink)

**Humidity:** 90% non-condensing

#### CONTROLLER (ALL MODELS)

**Microstep Resolution:** Software selectable from 200 to 51200 steps/rev in increments of 2 steps/rev

**Anti-Resonance (Electronic Damping):** Raises the system damping ratio to eliminate midrange instability and allow stable operation throughout the speed range and improves settling time

**Torque Ripple Smoothing:** Allows for fine adjustment of phase current waveform harmonic content to reduce low-speed torque ripple in the range 0.25 to 1.5 rps

**Auto Set-Up:** Measures motor parameters and configures motor current control and anti-resonance gain settings

**Self Test:** Checks internal and external power supply voltages; diagnoses open motor phases and motor resistance changes >40%; detects encoder wiring and signal faults (differential encoder only)

**Microstep Emulation:** Performs high resolution stepping by synthesizing fine microsteps from coarse steps (step and direction mode only)

The STM is a drive + motor + control unit, fusing step motor, drive, and controller technologies into a single device, offering savings on space, wiring and cost over conventional motor and drive solutions. The "S" models offer control options such as step and direction, analog input, joystick control, and host commands using the Si Command Language (SCL). The "Q" models add the capability of stand-alone programmable operation using the "Q" text-based programming language. This language offers high-level features such as multi-tasking, conditional programming, math functions, register access, and much more. Both of the STM models offer RS232 and RS485 versions, as well as the option of a 1000-line encoder that is integrated into the motor housing. The encoder option provides stall detection and prevention; the controller senses rotor lag and reduces speed to avoid stalling. In addition, all models offer two different motor sizes: a 2-stack version that provides 125 oz-in of holding torque, and a 3-stack version with 210 oz-in of torque.

Rometec srl - [www.rometec.it](http://www.rometec.it) - [info@rometec.it](mailto:info@rometec.it) - Rometec srl - [www.rometec.it](http://www.rometec.it) - [info@rometec.it](mailto:info@rometec.it)

**Command Signal Smoothing:**

Software configurable filtering reduces jerk and excitation of extraneous system resonances (step and direction mode only)

**CONTROLLER ("S" MODELS)**

**Non-Volatile Storage:**

Configurations are saved in FLASH memory on-board the DSP

**Mode of Operation:** Step and direction, CW/CCW, A/B quadrature, oscillator, joystick, SCL, hub

**Step and Direction Inputs:**

**STEP ±:** Optically Isolated, 5 to 24V; minimum pulse width = 250 ns; maximum pulse frequency = 3 MHz; function: Step, CW Step, A quadrature, encoder following, CW limit, CW jog, start/stop (oscillator mode)

**DIR ±:** Optically isolated, 5 to 24V; minimum pulse width = 250 ns; maximum pulse frequency = 3 MHz; function: DIR, CCW step, B quadrature, encoder following, CCW limit, CCW jog, sensor, DIR (oscillator mode), adjustable bandwidth digital noise rejection filter on all inputs

**Enable Input:**

**EN±:** Optically isolated, 5 to 24V; minimum pulse width = 250 ns; maximum pulse frequency = 3 MHz; function: enable, reset, speed 1/speed 2 (oscillator mode)

**Output:** Optically isolated, 24V, 40 mA max NPN/sinking; function: fault, motion, tach or general purpose programmable

**Analog Input Range:** 0 to 5 Vdc

**Analog Input Resolution:** 12 bits

**Communication Interface:** RS232 or RS485

**CONTROLLER ("Q" MODELS)**

**Non-Volatile Storage:** Programs, data and drive configuration are saved in FLASH and EEPROM memory

**Inputs:**

**STEP ±:** Optically isolated, 5 to 24V; minimum pulse width = 250 ns; maximum pulse frequency = 3 MHz; function: step, CW step, A quadrature, encoder following, CW limit, CW jog, start/stop (oscillator mode), general purpose input

**DIR ±:** Optically isolated, 5 to 24V; minimum pulse width = 250 ns; maximum pulse frequency = 3 MHz; function: DIR, CCW step, B quadrature, encoder following, CCW limit, CCW jog, sensor, DIR (oscillator mode), general purpose input

minimum pulse width = 250 ns; maximum pulse frequency = 3 MHz; function: enable, reset, speed 1/speed 2 (oscillator mode), general purpose input

Adjustable bandwidth digital noise rejection filter on all inputs

**Output:** Optically isolated, 24V, 40 mA max NPN/sinking

**Function:** Fault, motion, tach or general purpose programmable

**Analog Input Range:** 0 to 5 Vdc

**Analog Input Resolution:** 12 bits

**Communication Interface:**

RS232 or RS485

**PHYSICAL (ALL MODELS)**

**Mass:**

STM23X-2XX = 1 lb 14 oz

STM23X-3XX = 2 lb 10 oz

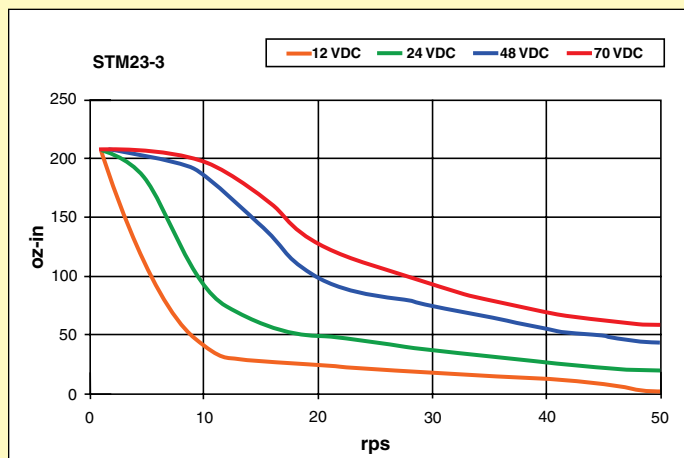
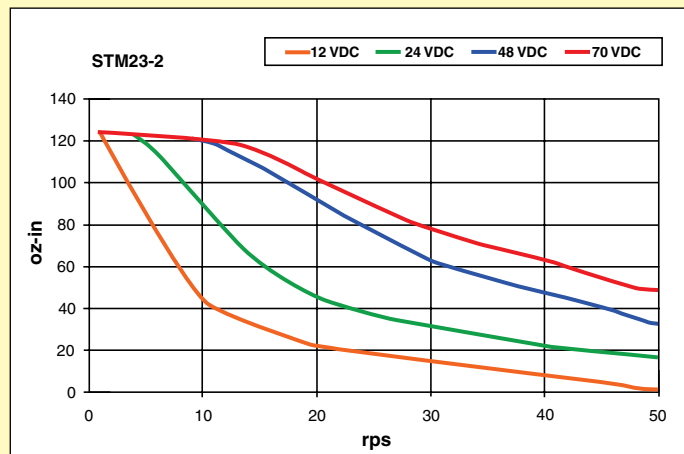
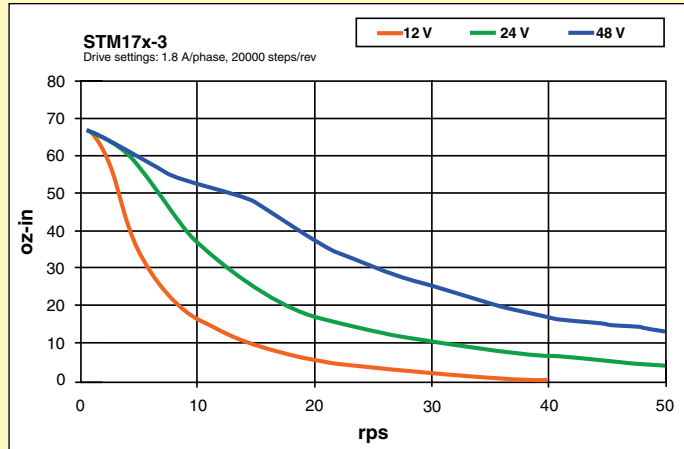
**Rotor Inertia:**

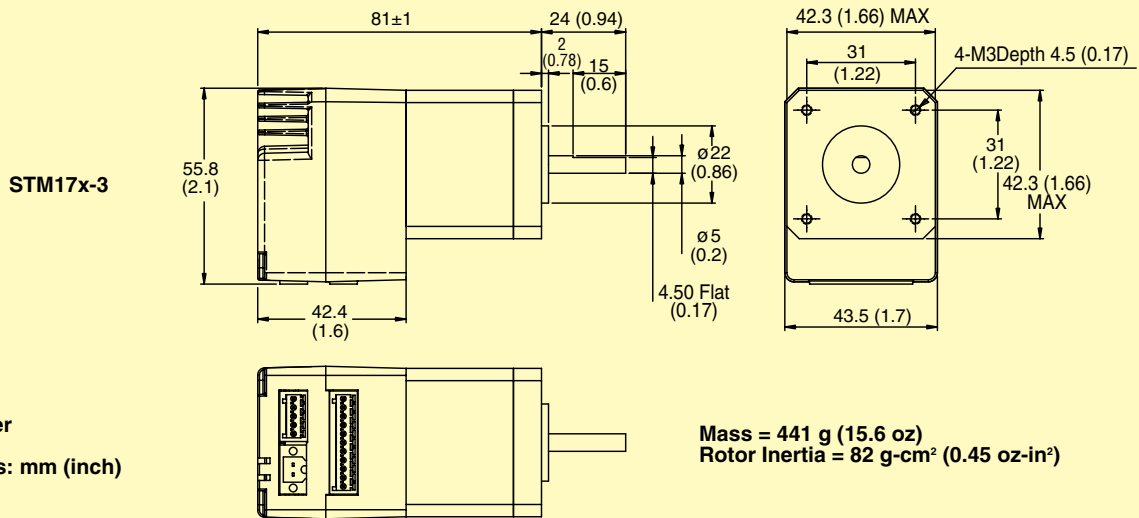
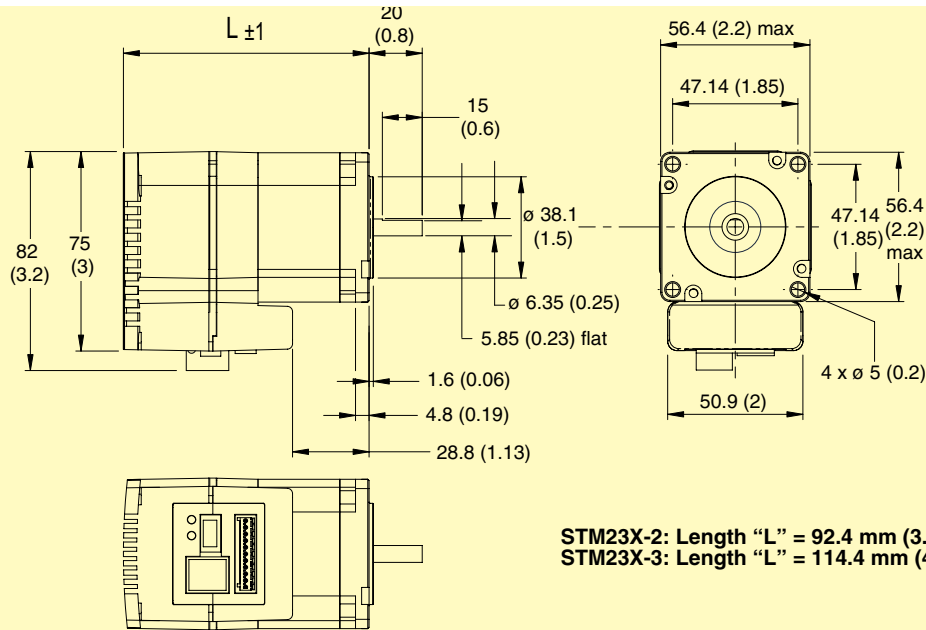
STM23X-2XX = 0.0037 oz-in<sup>2</sup>

STM23X-2XX = 0.0065 oz-in<sup>2</sup>

**Operating Temp Range:** -20 to 50°C (-4 to 122°F)

**TORQUE-SPEED CURVES**





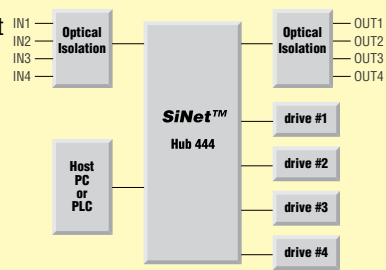
∅ = diameter  
 Dimensions: mm (inch)

## ACCESSORIES

### Multi-Axis Systems

Connect up to 4 drives on a multi-axis system using SiNet™ Hub 444. Use SiNet Hub Programmer™ software to develop your sequence of events, then download to the hub for a stand-alone system or send serial commands to the drives from a PC, PLC, HMI, or other host controller.

Order HUB 444 Separately. Available from OMEGA.



HUB 444 shown smaller than actual size.



HUB 444 for Multi-Axis Systems



HUB 444 DIN RAIL with DIN rail mounting kit shown smaller than actual size.

OMRC-050 shown

### RC050 Regen Clamp— For Stepper Drive Power Supply Protection

- Voltage Range  
24 to 80 Vdc
- 50 W Power Dissipation
- Regen Present LED
- Power LED
- 76 x 102 x 6.4 mm (3 x 4 x 2.5")

#### SPECIFICATIONS

Input Power Cont: 50 W  
Input Power Peak: 800 W  
Voltage Range: 24 to 80 Vdc



Order  
OMRC-050  
Separately.  
Available from  
OMEGA.

OMPS150A24  
shown smaller  
than actual  
size.

when using 100V  
23 motors @  
speeds >1- rps  
deceleration rate is  
> 100 rev/sec?

Order Power  
Supplies  
Separately.



## SOFTWARE ST CONFIGURATOR™

- Simple Drive Set-Up
- Store and Download  
Configurations



Software  
Included  
Free with  
Purchase of  
STM Drives!

### To Order

MODEL NO.	DESCRIPTION
<b>"S" MODELS</b>	
STM17S-3AN	Integrated stepper drive/motor, 85 oz-in max torque, RS232
STM17S-3RN	Integrated stepper drive/motor, 85 oz-in max torque, RS485
STM17S-3AE	Integrated stepper drive/motor, 85 oz-in max torque, RS232, encoder
STM17S-3RE	Integrated stepper drive/motor, 85 oz-in max torque, RS485, encoder
STM23S-2AN	Integrated stepper drive/motor, 125 oz-in max torque, RS232
STM23S-2RN	Integrated stepper drive/motor, 125 oz-in max torque, RS485
STM23S-2AE	Integrated stepper drive/motor, 125 oz-in max torque, RS232, encoder
STM23S-2RE	Integrated stepper drive/motor, 125 oz-in max torque, RS485, encoder
STM23S-3AN	Integrated stepper drive/motor, 210 oz-in max torque, RS232
STM23S-3RN	Integrated stepper drive/motor, 210 oz-in max torque, RS485
STM23S-3AE	Integrated stepper drive/motor, 210 oz-in max torque, RS232, encoder
STM23S-3RE	Integrated stepper drive/motor, 210 oz-in max torque, RS485, encoder
<b>"Q" MODELS</b>	
STM23Q-2AN	Integrated stepper drive/motor, 125 oz-in max torque, RS232
STM23Q-2RN	Integrated stepper drive/motor, 125 oz-in max torque, RS485
STM23Q-2AE	Integrated stepper drive/motor, 125 oz-in max torque, RS232, encoder
STM23Q-2RE	Integrated stepper drive/motor, 125 oz-in max torque, RS485, encoder
STM23Q-3AN	Integrated stepper drive/motor, 210 oz-in max torque, RS232
STM23Q-3RN	Integrated stepper drive/motor, 210 oz-in max torque, RS485
STM23Q-3AE	Integrated stepper drive/motor, 210 oz-in max torque, RS232, encoder
STM23Q-3RE	Integrated stepper drive/motor, 210 oz-in max torque, RS485, encoder
<b>ACCESSORIES</b>	
OMPS150A24	Power supply for STM drive, 24 Vdc, 6.3 A
OMPS300A48	Power supply for STM drive, 48 Vdc, 6.7 A
HUB 444 DIN RAIL	Multi-axis motion serial hub with DIN-rail mounting kit
OMRC-050	Motor regeneration clamp

Comes complete with software and download cable. **Note:** Power supply is required (sold separately).

**Ordering Examples:** STM23S-2AE, integrated stepper drive/motor with 125 oz-in holding torque and RS232 interface plus 1000-line encoder and OMPS150A24, 24 Vdc power supply. STM23S-2RN, integrated stepper drive/motor with 125 oz-in holding torque and RS485 interface.