

ATS1500 Series

Mechanical Bearing, Ball-Screw Stage

Low cost, high performance

Travel to 300 mm (12 in)

Crossed-roller bearings

Three drive-screw choices and accuracy levels

Low height profile

Large tabletop mounting area with both metric and English mounting hole spacing and threads



The ATS1500 series provides a flexible platform that makes it an outstanding selection for use as a general purpose positioner.

Flexible Options

With a range of drive-screw options, the ATS1500 can be configured to meet the needs of any application. Three levels of drive-screw accuracy grades are available ranging from a low-cost lead screw to a high precision-ground ball screw. Screw pitches can be either 4 mm/rev or 0.2 in/rev.

A fail-safe brake is available for vertical applications to prevent the stage from backdriving during a power off condition. Standard brackets simplify configuring the ATS1500 for use in multi-axis configurations.

Construction Features

The ATS1500 features a large moving carriage that provides the user with a large area to mount fixturing. All

table mounting holes are fitted with Helicoil™ stainless steel inserts to permit multiple screw insertions without thread wear. Both metric and English bolt-hole and mounting patterns are available.

Accurate optical limit switches and cushioned end stops protect the stage and motor from overrun.

Motors and Drives

Aerotech's BMS series brushless rotary motors are included with all ATS1500 series stages. This motor has all of the advantages of a brushless motor – high acceleration and no wear – at the price of a stepper motor. Both DC and stepping motors are available.

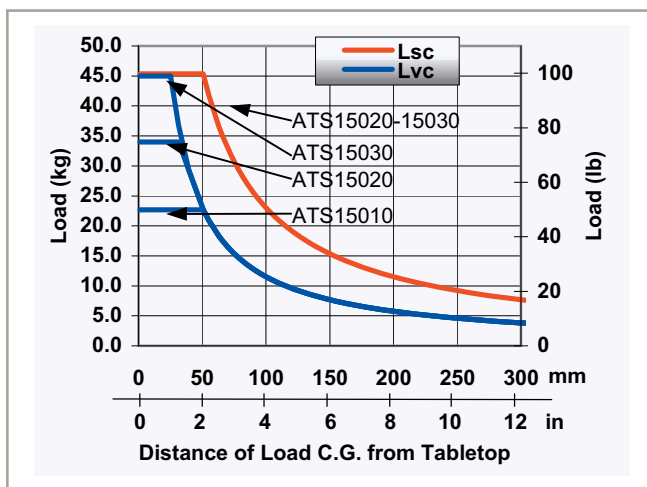
Aerotech manufactures a wide range of amplifiers and controllers to provide a fully integrated and optimized motion solution.

ATS1500 Series SPECIFICATIONS

Basic Model		ATS15010	ATS15020	ATS15030
Total Travel		100 mm (4 in)	200 mm (8 in)	300 mm (12 in)
Drive System		Super Precision Ground Ball Screw (P), Precision Ball Screw (B), Lead Screw (L); Brushless servomotor (BMS60-A-D25-E1000H)		
Bus Voltage		Up to 160 VDC		
Continuous Current	A_{pk}	Up to 2.3 A		
	A_{rms}	Up to 1.6 A		
Feedback		Noncontact Rotary Encoder (1000 line)		
Resolution	4 mm/rev Lead	1.0 μm (40 μin) @ 4000 steps/rev Motor Resolution		
	0.2 in/rev Lead	1.25 μm (50 μin) @ 4000 steps/rev Motor Resolution		
Maximum Travel Speed ⁽¹⁾	4 mm/rev Lead	140 mm/s (5.5 in/s)		
	0.2 in/rev Lead	180 mm/s (7 in/s)		
Maximum Load ⁽²⁾	Horizontal	70.0 kg (154.3 lb)	115.0 kg (253.5 lb)	135.0 kg (297.6 lb)
	Vertical	25.0 kg (55.1 lb)	35.0 kg (77.2 lb)	45.0 kg (99.2 lb)
	Side	45.0 kg (99.2 lb)		
Accuracy	Super Precision Ball Screw	$\pm 4 \mu\text{m}$	$\pm 8 \mu\text{m}$	$\pm 12 \mu\text{m}$
	Precision Ball Screw	$\pm 8 \mu\text{m}$	$\pm 16 \mu\text{m}$	$\pm 24 \mu\text{m}$
	Lead Screw	$\pm 16 \mu\text{m}$	$\pm 32 \mu\text{m}$	$\pm 48 \mu\text{m}$
Repeatability (Bidirectional)	Super Precision Ball Screw	$\pm 1.0 \mu\text{m}$ (40 $\mu\text{in/in}$)		
	Precision Ball Screw	$\pm 2.0 \mu\text{m}$ (80 $\mu\text{in/in}$)		
	Lead Screw	$\pm 4.0 \mu\text{m}$ (160 $\mu\text{in/in}$)		
Straightness and Flatness		$\pm 4 \mu\text{m}$	$\pm 8 \mu\text{m}$	$\pm 12 \mu\text{m}$
Nominal Stage Weight	Less Motor	3.1 kg (6.8 lb)	5.0 kg (11.0 lb)	7.0 kg (15.4 lb)
	With Motor	4.2 kg (9.3 lb)	6.1 kg (13.4 lb)	8.1 kg (17.9 lb)
Construction		Aluminum Body; Black Anodize Finish		

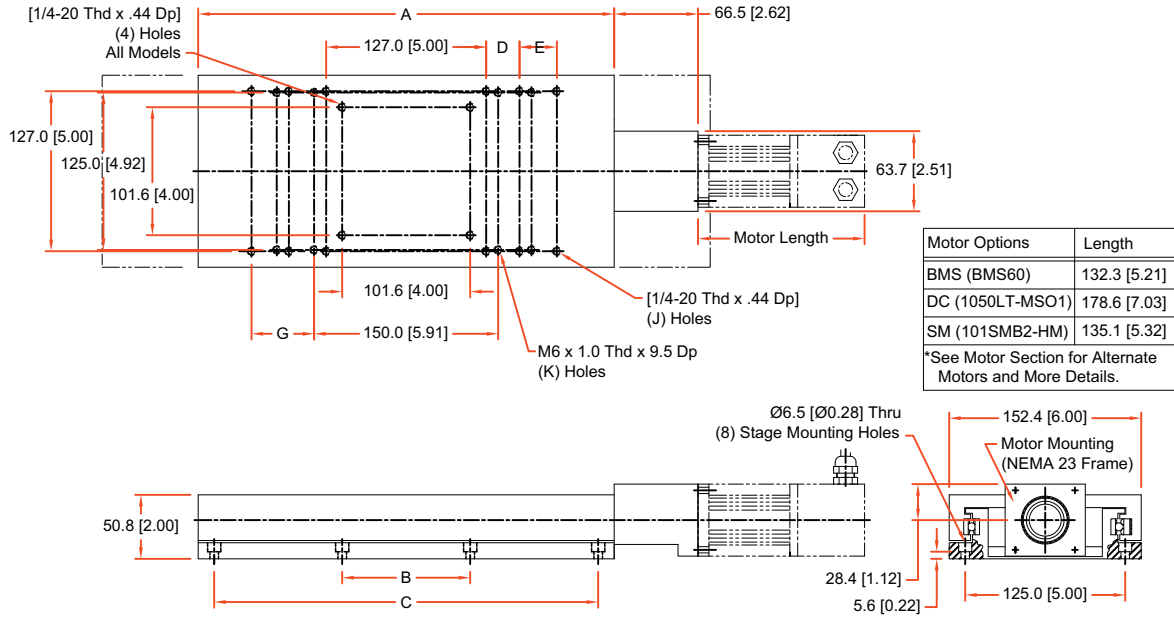
Notes:

- "L" grade screws are limited to less than 75 mm/s (3 in/s). Excessive duty cycle may impact stage accuracy.
- Payload specifications are for single-axis system and based on ball screw and bearing life of 250 km (10 million inches) of travel.
- Specifications are for single-axis systems, measured 50 mm above the tabletop. Performance of multi-axis systems is payload and workpoint dependent. Consult factory for multi-axis or non-standard applications.



L_{VC} and L_{SC} Cantilevered Load Capability (ATS1500 with Crossed Roller Bearings)

ATS1500 Series DIMENSIONS



Dimensions - Millimeters [Inches]									
Basic Model	Total Travel	A	B	C	D	E	G	J	K
ATS15010	100.0 [4.00]	177.8 [7.00]	125.0 [5.00]	-	-	-	-	4	4
ATS15020	200.0 [8.00]	304.8 [12.00]	125.0 [5.00]	280.0 [11.00]	63.5 [2.50]	-	62.5 [2.46]	8	8
ATS15030	300.0 [12.00]	457.2 [18.00]	175.0 [7.00]	430.0 [17.00]	127.0 [5.00]	25.4 [1.00]	125.0 [4.92]	12	8

ATS1500 Series ORDERING INFORMATION

Ordering Example

ATS15	-010		-2	-02P	-BMS	-NC	
Series	Travel (mm)	Stage Construction Options	Bearing System	Drive Screw	Motor	Limits	Options
	-010	/VAC3	-2	-02L	-BMS	-NC	-BRK
	-020	/VAC6		-02B	-SM	-NO	
	-030			-40L	-NM	-9DU	
				-40P		-FLY	

ATS1500 Series Linear Ball-Screw Stage

ATS15010	100 mm (4 in) travel stage with limits
ATS15020	200 mm (8 in) travel stage with limits
ATS15030	300 mm (12 in) travel stage with limits

Stage Construction Options

/VAC3	Vacuum preparation of stage to 10 ⁻³ torr
/VAC6	Vacuum preparation of stage to 10 ⁻⁶ torr

Bearing System

-2	Crossed roller bearing system
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Drive Screw

-02L	0.2 inch per rev lead screw (not recommended for vertical applications)
-02B	0.2 inch per rev precision ball screw
-40L	4 mm per rev lead screw (not recommended for vertical applications)
-40P	4 mm per rev super-precision ball screw

Motor

-BMS	Brushless servomotor with connectors and 1000-line encoder; requires cable (BMS60-A-D25-E1000H/)
-SM	Stepping motor with connector and home marker pulse (one per rev); requires cable (101SMB2-HM/)
-NM	No motor or encoder

Limits

-NC	Normally-closed end of travel limit switches (standard)
-NO	Normally-open end of travel limit switches
-9DU	With 9-pin limit connector
-FLY	With flying leads

Options

-BRK	24 VDC spring-set motor brake for NEMA 23 motor
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Accessories (to be ordered as separate line item)

ALIGNMENT-NPA	Non-precision XY assembly
ALIGNMENT-NPAZ	Non-precision XZ or YZ assembly
ALIGNMENT-PA10	XY assembly; 10 arc sec orthogonal
ALIGNMENT-PA10Z	XZ or YZ assembly with L-bracket; 10 arc second orthogonal
HDZ2/AP1500	English right angle bracket/mounting plate for Z-axis configurations
HDZ2M/AP1500	Metric right angle bracket/mounting plate for Z-axis configurations

Note: Cannot use longer than 200 mm travel as Y or Z axis without custom adapter plates — please consult factory