

ATS100 Series

Mechanical Bearing, Ball-Screw Stage

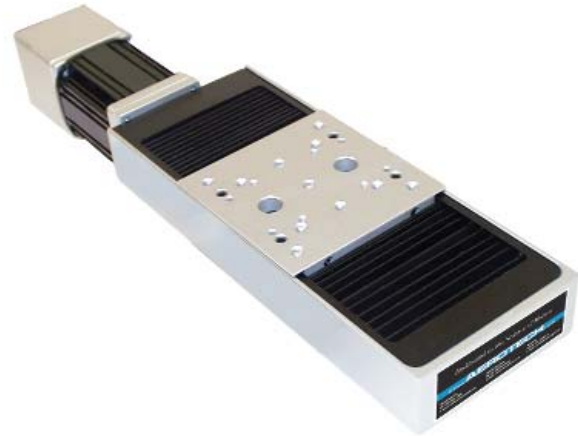
Long life linear motion guide bearing system

Ultra-fine resolution

Integral bellows waycovers

Low profile, compact design

Includes brushless, slotless motor



The ATS100 series motor-driven linear stages provide the high resolution and repeatability required for semiconductor wafer testing and fabrication, automated microscope inspection systems, and precision micromachining applications.

Outstanding Construction Features

ATS100 series stages are machined from a special cast aluminum alloy to provide a high strength-to-weight ratio, and long-term stability. The base is a box design that provides exceptional stiffness and stability.

ATS100 series stages employ a precision-ground ball screw pre-loaded to eliminate backlash, and its nut has wipers to prevent contamination and maintain high accuracy throughout the life of the stage. High-quality, pre-loaded duplex bearings are used to eliminate axial play.

All ATS100 series stages incorporate Linear Motion Guide (LMG) bearings to provide high load capability and high stiffness. The LMG design provides a compact stage with continuous carriage support over the entire travel and good cantilevered load capability. Integral wipers on the bearing trucks help ensure stage travel life. Highly accurate optical limit switches and end stops are also standard.

Integral bellows-type waycovers protect the drive and bearing system from contamination. Metal surfaces are protected with an attractive clear anodized finish. Both metric (standard) and English mounting and bolt-hole patterns are available.

High Accuracy

The ATS100 sets the standard for precision performance in a compact package. With the HALAR option, the ATS100 is capable of submicron accuracy and an impressive repeatability of 0.3 μm .

Motors and Drives

Included with the ATS100 series stages are Aerotech's BMS series brushless rotary motors. This motor has all of the advantages of a brushless motor – high acceleration, no brushes to wear, and lower heating – yet has zero cogging for extremely smooth motion and accuracy.

Aerotech manufactures a wide range of matching drives and controls to provide a fully integrated and optimized motion solution.

Options

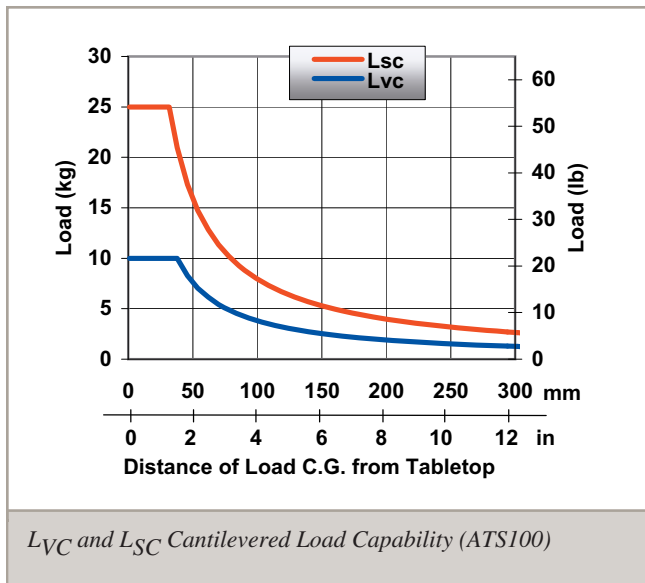
Standard options include a precision right-angle bracket for multi-axis assembly, and vacuum preparation to 10^{-6} torr.

ATS100 Series SPECIFICATIONS

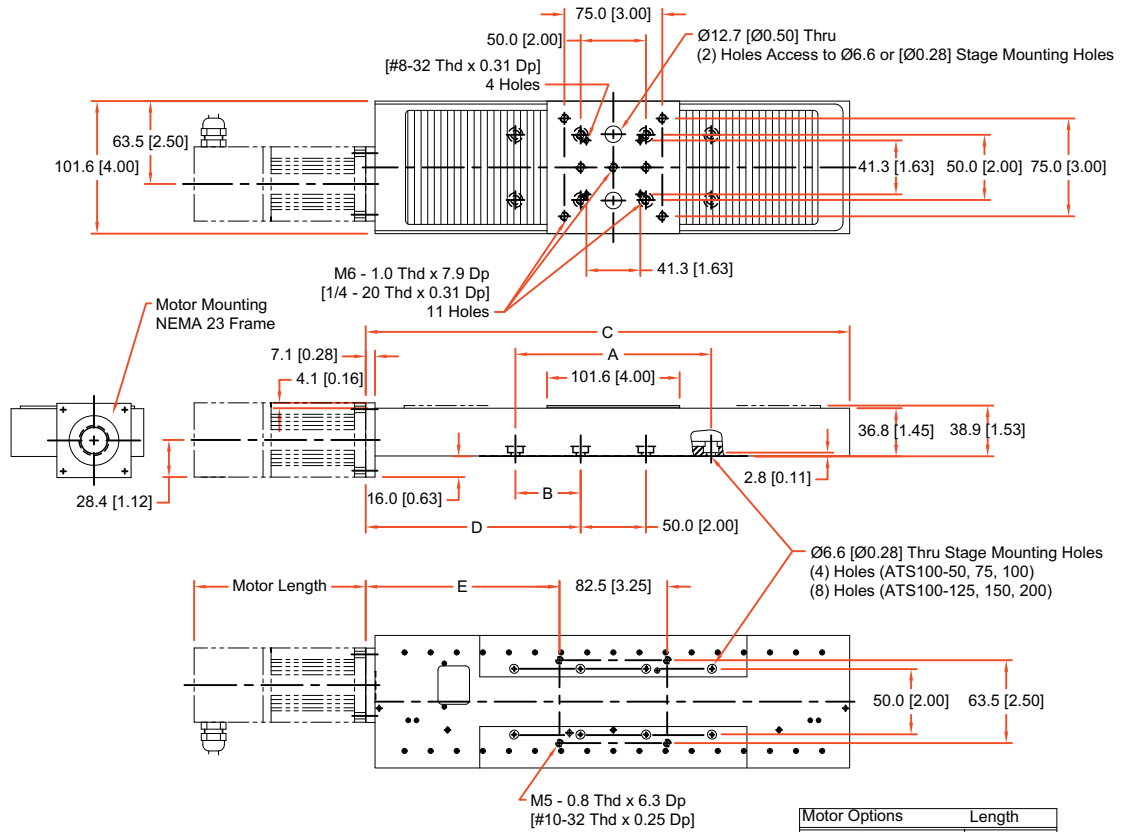
Basic Model		ATS100-050	ATS100-100	ATS100-150	ATS100-200	
Total Travel		50 mm (2 in)	100 mm (4 in)	150 mm (6 in)	200 mm (8 in)	
Drive System		Precision Ground Ball Screw/Brushless Servomotor (BMS60-A-D25-E1000H)				
Bus Voltage		Up to 160 VDC				
Continuous Current	A _{pk}	Up to 2.3 A				
	A _{rms}	Up to 1.6 A				
Feedback		Noncontact Rotary Encoder (1000 line)				
Resolution	2 mm/rev lead	0.5 μm (20 μin) @ 4000 steps/rev Motor Resolution				
Maximum Travel Speed ⁽¹⁾		100 mm/s (4 in/s)				
Maximum Load ⁽²⁾	Horizontal	25.0 kg (55.1 lb)				
	Vertical	10.0 kg (22.0 lb)				
	Side	10.0 kg (22.0 lb)				
Accuracy	HALAR ⁽³⁾	±0.5 μm (±20 μin)	±0.5 μm (±20 μin)	±0.75 μm (±30 μin)	±1.0 μm (±40 μin)	
	Standard	±2.0 μm (±80 μin)	±3.0 μm (±120 μin)	±5.0 μm (±200 μin)	±6.0 μm (±240 μin)	
Repeatability (Bidirectional)	HALAR ⁽³⁾	±0.3 μm (±12 μin)				
	Standard	±0.7 μm (±30 μin)				
Straightness and Flatness	Differential	HALSF	1.0 μm/25 mm (40 μin/in)			
		Standard	2.0 μm/25 mm (80 μin/in)			
	Maximum Deviation	HALSF	±0.5 μm (±20 μin)	±1.0 μm (±40 μin)	±1.5 μm (±60 μin)	±1.75 μm (±70 μin)
		Standard	±1.0 μm (±40 μin)	±2.0 μm (±80 μin)	±2.0 μm (±80 μin)	±3.0 μm (±120 μin)
Pitch and Yaw		5 arc sec	8 arc sec	10 arc sec	12 arc sec	
Nominal Stage Weight	Less Motor	1.6 kg (3.5 lb)	1.7 kg (3.7 lb)	1.8 kg (4.0 lb)	2.0 kg (4.4 lb)	
	With Motor	2.7 kg (6.0 lb)	2.8 kg (6.2 lb)	2.9 kg (6.4 lb)	3.1 kg (6.8 lb)	
Construction		Aluminum Body/Stage and Table; Clear Anodize Finish				

Notes:

- Excessive duty cycle may impact stage accuracy.
- Payload specifications are for single axis systems and based on ball screw and bearing life of 2500 km (100 million inches) of travel.
- Available with Aerotech controllers.
- 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.



ATS100 Series DIMENSIONS



Dimensions - Millimeters [Inches]						
Base Model	Total Travel	A	B	C	D	E
ATS100-50	50.0 [2.00]	-	-	218.4 [8.60]	88.5 [3.48]	72.3 [2.84]
ATS100-100	100.0 [4.00]	-	-	269.2 [10.60]	113.9 [4.48]	97.7 [3.84]
ATS100-150	150.0 [6.00]	150.0 [6.00]	50.0 [2.00]	320.0 [12.60]	139.3 [5.48]	123.1 [4.84]
ATS100-200	200.0 [8.00]	150.0 [6.00]	50.0 [2.00]	370.8 [14.60]	164.7 [6.48]	148.5 [5.84]

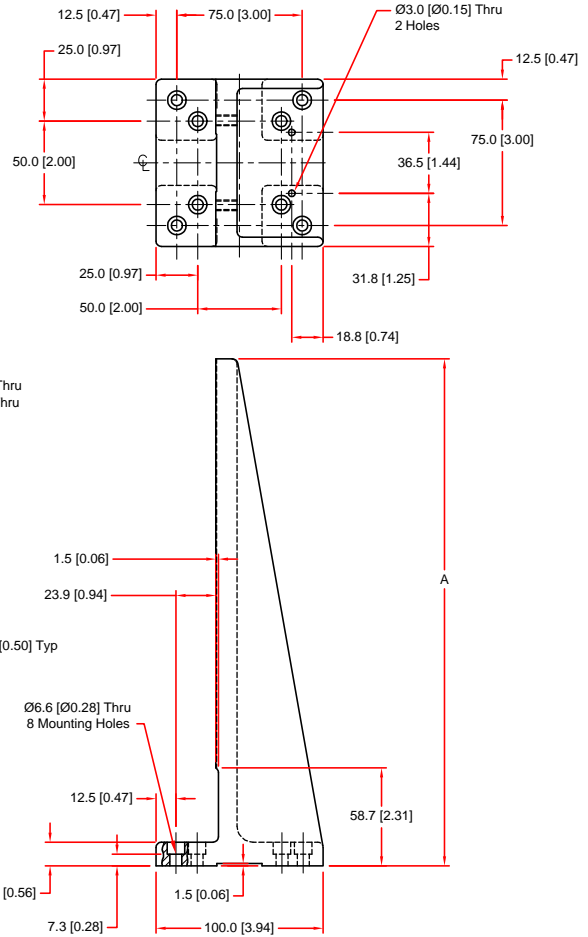
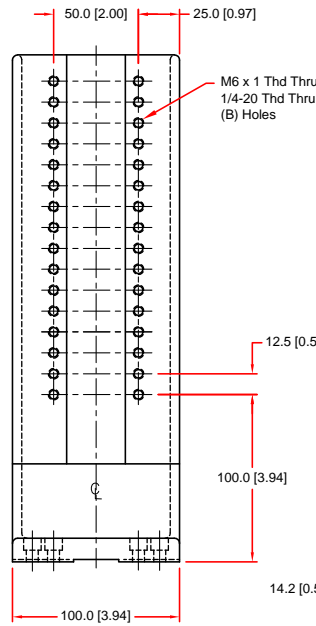
Motor Options	Length
BMS (BMS60)	132.3 [5.21]
SM (50SMB2-HM)	84.3 [3.32]
DC (1035LT-MSOF)	158.2 [6.23]

*See Motor Section for Alternate Motors and More Details.

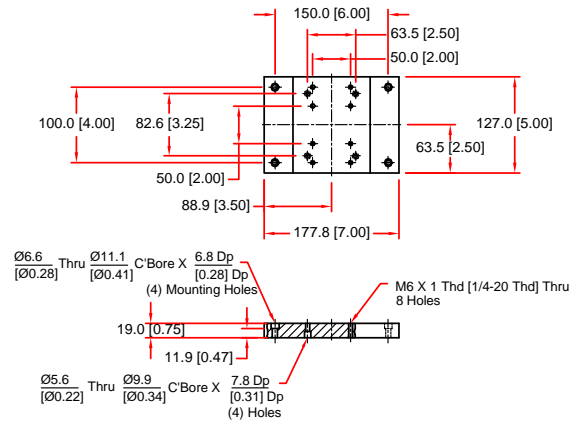
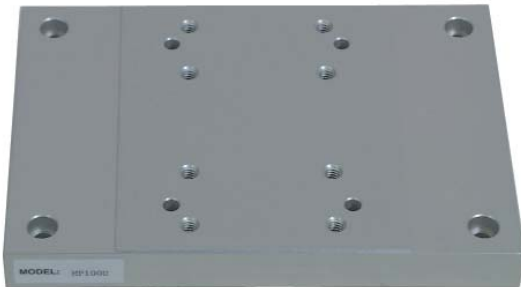
ATS100 Series – HDZ1 Bracket and MP100 DIMENSIONS

HDZ1 Bracket

Dimensions - Millimeters [Inches]				
Basic Model	Recommended For	A	B	Weight kg [lb]
HDZ1	ATS100-50 thru ATS100-100	241.3 [9.50]	20	3.05 [1.39]
HDZ1L	ATS100-150 thru ATS100-200	303.3 [11.94]	32	3.28 [1.49]



MP100



Dimensions - Millimeters [Inches]	
Basic Model	Recommended For
MP100 Mtg Plate	ATS100-50, -100, -150 & ATS100-200

ATS100 Series ORDERING INFORMATION

Ordering Example

ATS100	-050		-M	-20P	-BMS	-NC		
Series	Travel (mm)	Stage Construction Options	Mounting and Grid Pattern	Drive Screw	Motor	Limits	Options	Coupling
	-050	/VAC3	-M	-20P	-BMS	-NC	-BRK	-NO COUPLING
	-100	/VAC6	-U		-SM	-NO	-FB	-STD COUPLING
	-150	/STEEL			-NM	-9DU		-LGR MTR COUPLING
	-200					-FLY		

ATS100 Series Linear Ball-Screw Stage

ATS100-50	50 mm (2 in) travel stage with limits
ATS100-100	100 mm (4 in) travel stage with limits
ATS100-150	150 mm (6 in) travel stage with limits
ATS100-200	200 mm (8 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
/STEEL	All steel construction

Mounting and Grid Pattern

-M	Metric dimension mounting pattern and holes
-U	English dimension mounting pattern and holes

Drive Screw

-20P	2 mm/rev precision-ground ball screw
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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 (50SMB2-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
-FB	Fold-back motor configuration

Coupling

-NO COUPLING	No coupling
-STD COUPLING	0.25 in coupling
-LGR MTR COUPLING	0.375 in coupling

ATS100 Series ORDERING INFORMATION

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
ALIGNMENT-PA5	XY assembly; 5 arc sec orthogonal
ALIGNMENT-PA5Z	XZ or YZ assembly with L-bracket; 5 arc second orthogonal
HDZ1	English right angle L-bracket (ATS100-50 thru ATS100-100)
HDZ1U/VAC6	VAC6 prepared English right angle L-bracket (ATS100-50 thru ATS100-100)
HDZ1M	Metric right angle L-bracket (ATS100-50 thru ATS100-100)
HDZ1M/VAC6	VAC6 prepared metric right angle L-bracket (ATS100-50 thru ATS100-100)
HDZ1L	English right angle L-bracket (ATS100-150 thru ATS100-200)
HDZ1L/VAC6	VAC6 prepared English right angle L-bracket (ATS100-150 thru ATS100-200)
HDZ1LM	Metric right angle L-bracket (ATS100-150 thru ATS100-200)
HDZ1LM/VAC6	VAC6 prepared metric right angle L-bracket (ATS100-150 thru ATS100-200)
MP100U	English base mounting plate
MP100U/VAC6	VAC6 prepared English base mounting plate
MP100M	Metric base mounting plate
MP100M/VAC6	VAC6 prepared metric base mounting plate
HALAR	High-accuracy system linear error correction for accuracy and repeatability
HALSF	High-accuracy system improved straightness and flatness