ATS0300 Series

Mechanical Bearing, Ball-Screw Stage

- Precision-ground, high-accuracy lead screw
- Ultra-fine resolution
- Crossed-roller bearings for high load capacity and smooth motion
- Includes cogless, brushless servomotor
- Compact profile

The ATS0300 provides an economical solution for applications requiring fine positioning in a confined area.

Construction Features

ATS0300 series stages feature bases made from a special alloy aluminum tooling plate for good stiffness and long-term stability. Other high quality features are crossed-roller linear bearings for smooth travel and excellent payload characteristics, a precision-ground lead screw for high accuracy, and hardcoat treated base and table for high resistance to marring and scratching. Table mounting holes have Helicoil™ stainless steel inserts to permit multiple screw insertions without thread wear.

The ATS0300's precision-ground lead screw is available in both metric and English leads. A fine pitch screw results in submicron resolution.

Multi-Axis Combinations

ATS0300 series stages are easily configured in XY, XZ, or XYZ arrangements. The precision-machined HDZ3 right angle L-bracket is designed for Z-axis applications, and the HDT3 bracket is ideal for lower profile configurations.

Options

Both metric and English mounting and bolt-hole patterns are available. A large thru-hole aperture version is available that is ideal for applications requiring backlighting. As is the case with all ATS series stages, the ATS03005 may be vacuum prepared to 10^{-6} torr.

Motors and Drives

The standard motor included with the ATS03005 is Aerotech's BMS series brushless, slotless motor. This motor utilizes an ironless design so there is no cogging, which results in no torque ripple throughout the range of motion.

Aerotech's amplifiers and controllers range from easy-to-use point-to-point indexers to sophisticated multi-axis contouring controllers. Form factors include stand-alone controllers with RS-232 and IEEE-488 interfaces to advanced PC-bus based controllers, to the software-based Automation 3200.

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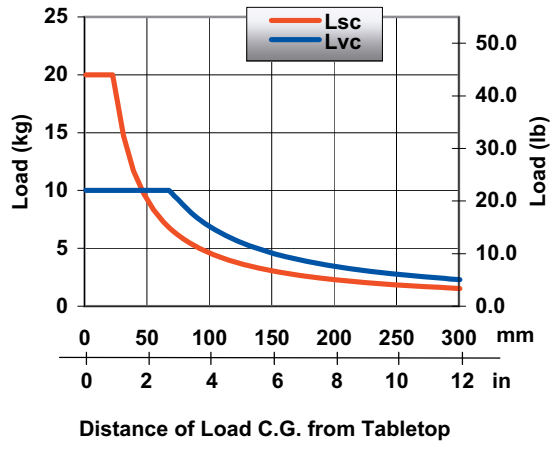
ATS0300 Series SPECIFICATIONS

Basic Model		ATS03005
Total Travel		50 mm (2 in)
Drive System		Precision Ground Lead 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	0.5 mm/rev Lead	0.1 µm @ 4000 steps/rev Motor Resolution
	0.025 in/rev Lead	5 µin @ 4000 steps/rev Motor Resolution
Maximum Travel Speed		4 mm/s (0.2 in/s)
Maximum Load[1]	Horizontal	25.0 kg (55.1 lb)
	Vertical	9.0 kg (19.8 lb)
	Side	9.0 kg (19.8 lb)
Accuracy		2.5 µm/25 mm (100 µin/in)
Repeatability	Unidirectional	0.3 µm (12 µin)
	Bidirectional	1.0 µm (40 µin)
Straightness & Flatness		2.5 µm/25 mm (100 µin/in)
Nominal Stage Weight	Less Motor	1.4 kg (3.1 lb)
	With Motor	2.5 kg (5.5 lb)
Construction		Aluminum Body/Hardcoat

Note:
1. Payload specifications are for single-axis system and based on lead screw and bearing life of 250 km (10 million inches) of travel.



L_{VC} and L_{SC} Cantilevered Load Capability (ATS0300)

Options include metric or English mounting and large thru-hole apertures.

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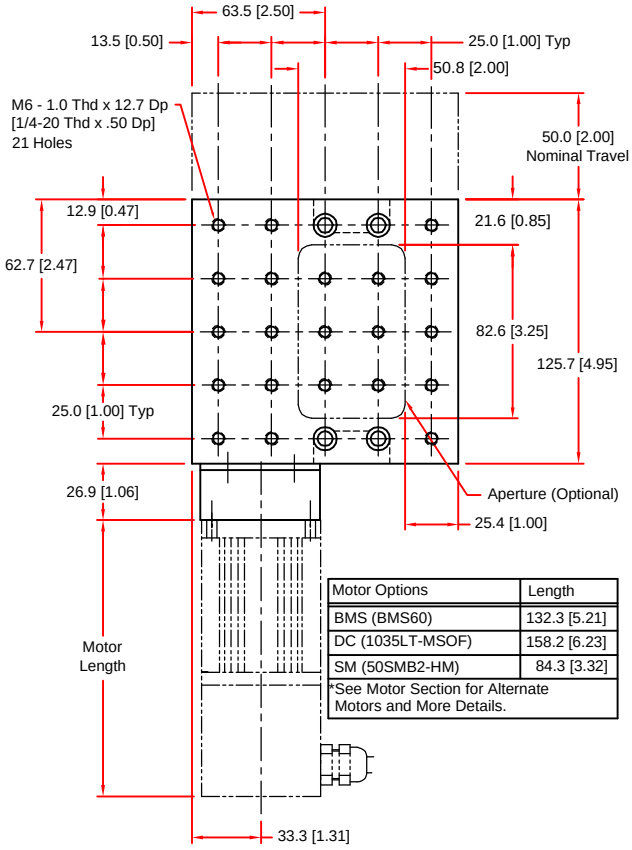
ATS0300 Series DIMENSIONS



Motor Options	Length
BMS (BMS60)	132.3 [5.21]
DC (1035LT-MSOF)	158.2 [6.23]
SM (50SMB2-HM)	84.3 [3.32]
*See Motor Section for Alternate Motors and More Details.	

Basic Model - ATS0300 Dimensions - Millimeters [Inches]

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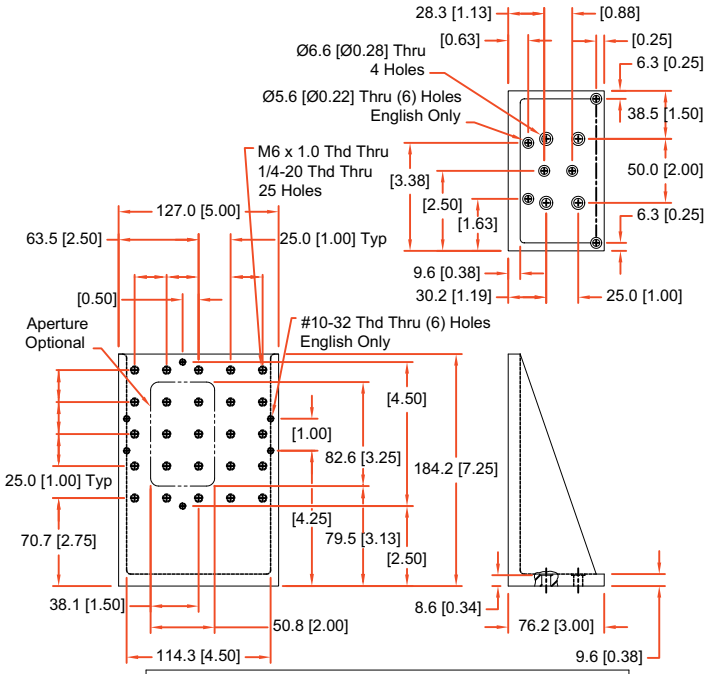
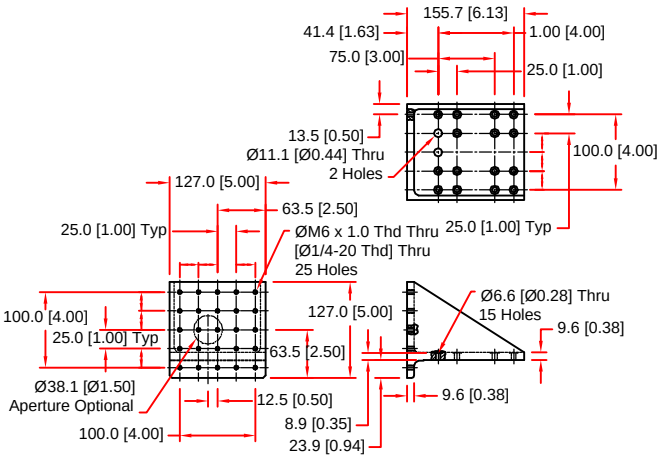
ATS0300 Series – HDZ3 and HDT3 DIMENSIONS

HDZ3 Bracket



Dimensions - Millimeters [Inches]		
Basic Model	Recommended For Series	Weight kg [lb]
HDZ3	ATS0300 (Linear) Stage & ART310 & ART315 (Rotary) Stages	1.1 [2.4]

HDT3 Bracket



Dimensions - Millimeters [Inches]
Basic Model HDT3, HDT3A For ATS0300 Stage - Weight - kg [lb] = 1.2 [2.6]

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ATS0300 Series ORDERING INFORMATION

Ordering Example

ATS03	-005		-M	-5	-BMS	-NC
Series	Travel (mm)	Stage Construction Options	Mounting and Grid Pattern	Drive Screw	Motor	Limits
	-005	/VAC3 /VAC6	-M -U -MA -UA	-0025 -5	-BMS -SM -NM	-NC -NO -9DU -FLY

ATS0300 Series Linear Ball-Screw Stage

ATS03005	50 mm (2 in) travel stage with ground lead screw and limits

Stage Construction Options

/VAC3	Vacuum preparation of stage to 10^{-3} torr
/VAC6	Vacuum preparation of stage to 10^{-6} torr

Mounting and Grid Pattern

-M	Metric dimension mounting pattern and holes
-U	English dimension mounting pattern and holes
-MA	Metric dimension mounting pattern and holes with aperture tabletop and base
-UA	English dimension mounting pattern and holes with aperture tabletop and base

Drive Screw

-0025	0.025 in/rev drive-screw lead
-5	0.5 mm/rev drive-screw lead

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

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
HDZ3	English right angle L-bracket
HDZ3M	Metric right angle L-bracket
HDZ3A	English right angle L-bracket with aperture
HDZ3AM	Metric right angle L-bracket with aperture
HDT3	English low profile right angle L-bracket
HDT3M	Metric low profile right angle L-bracket
HDT3A	English low profile right angle L-bracket with aperture
HDT3AM	Metric low profile right angle L-bracket with aperture

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