

AOM130M Series

Motorized Optical Mounts

Standard models 152.4 mm (6 inches) through 609.6 mm (24 inches) optic diameters

Exhibits excellent thermal stability of better than $2 \mu\text{rad}/^\circ\text{C}$

Precise positioning is assured by sub-arc second resolution capability

Mounting holes are slotted to accommodate English or metric hole pattern

Can be supplied prepared for use in vacuum to 10^{-6} mbar

Custom precision mounting designs are available for centering non-circular payloads on the gimbal

The AOM130M series of gimbal mounts position optical components as large as 600 mm (24 inches) in diameter in both azimuth and elevation. The AOM130M mounts provide outstanding stability and sub-arc-second resolution for use in optics and laser experimentation in research or industrial laboratory settings.

Precision Bearings Assure Accuracy

The AOM130M's precision gimbal pivot ball bearings minimize backlash and reduce stiction. The mirror cell and azimuth bearing systems utilize high-quality preloaded angular contact bearings, which permit fully-loaded operation in any orientation, including upside-down.

Excellent Positioning Capability

The AOM130M mounts possess desirable positioning characteristics including: 0.75 arc sec unidirectional repeatability; negligible backlash; and hysteresis that is typically better than 5 arc sec.

The mechanical and thermal stabilities of the AOM130M series are excellent. The rigid castings employed help push resonant frequencies beyond 200 Hz, and thermal stability is better than $2 \mu\text{rad}/^\circ\text{C}$.



Highly Accurate Limits and Homing System

All AOM130M mounts are equipped with high accuracy limit switches. Combining the output of these switches and the motor's marker signal, Aerotech's motion controllers can position the AOM130M mounts to highly accurate home reference points, typically to within 0.001° .

Standard Sizes to 600 mm (24 in)

AOM130M series motor-driven gimbal mounts are available in six standard sizes that accommodate 152.4, 228.6, 304.8, 406.4, 508.0, and 609.6 mm (6, 9, 12, 16, 20 and 24 inch) diameter optical components.

In addition, adapters for 127.0, 203.2, and 254.0 mm (5, 8, and 10 inch) diameter optics are available as accessories, providing mounting capability for virtually all standard optic elements between 127.0 and 609.6 mm (5 to 24 inches) in diameter.

Full 360° AZ and EL Positioning

High resolution positioning in the range of $\pm 4^\circ$ is achieved under motor control. Rotational freedom is further extended to a full 360 degrees by unclamping the mirror cell and/or azimuth assembly (a tool is included), and manually rotating each axis anywhere in a 360° range, and reclamping. Neither of the manual adjustments disturbs the precision motorized drive assembly with a rotary encoder with marker-to-enable closed-loop positioning feedback.

AOM130M Series SPECIFICATIONS

Basic Model	AOM130M-6	AOM130M-9	AOM130M-12
Clear Aperture	144.27 mm (5.68 in)	218.95 mm (8.62 in)	292.1 mm (11.50 in)
Range ⁽¹⁾ (Mechanical)	360° AZ/EL		
Range (Motor-Driven)	± 4° AZ/EL		
Repeatability (Unidirectional)	3.64 μrad (0.75 arc sec)		
Component Diameter (Max)	152.4 mm (6 in)	228.6 mm (9 in)	304.8 mm (12 in)
Component Thickness (Max)	26.92 mm (1.06 in)	41.4 mm (1.63 in)	53.85 mm (2.12 in)
Component Weight (Max)	4.4 kg (9.6 lb)	15 kg (33 lb)	35 kg (77 lb)
Maximum Slew Rate ⁽²⁾	8.3°/min	6.2°/min	
Mount Weight Using Brushless Motors	12.2 kg (26.8 lb)	20.2 kg (44.4 lb)	24.7 kg (54.4 lb)
Vacuum Capability (Optional)	10 ⁻³ or 10 ⁻⁶ mbar		
Material	Aluminum		
Finish	Black Epoxy Paint		

Notes:

1. Clamp screw release required for 360° rotational freedom.
2. Maximum motor speed is 600 rpm.

Basic Model	AOM130M-16	AOM130M-20	AOM130M-24
Clear Aperture	393.7 mm (15.50 in)	488.95 mm (19.25 in)	590.55 mm (23.25 in)
Range ⁽¹⁾ (Mechanical)	360° AZ/EL		
Range (Motor-Driven)	± 4° AZ/EL		
Repeatability (Unidirectional)	3.64 μrad (0.75 arc sec)		
Component Diameter (Max)	406.4 mm (16 in)	508.0 mm (20 in)	609.6 mm (24 in)
Component Thickness (Max)	63.5 mm (2.5 in)	88.9 mm (3.5 in)	101.6 mm (4.0 in)
Component Weight (Max)	73 kg (161 lb)	114 kg (250 lb)	264 kg (580)
Maximum Slew Rate ⁽²⁾	5.2°/min		
Mount Weight Using Brushless Motors	32.9 kg (72.4 lb)	67 kg (147.4 lb)	79.7 kg (175.4 lb)
Vacuum Capability (Optional)	10 ⁻³ or 10 ⁻⁶ mbar		
Material	Aluminum		
Finish	Black Epoxy Paint		

Notes:

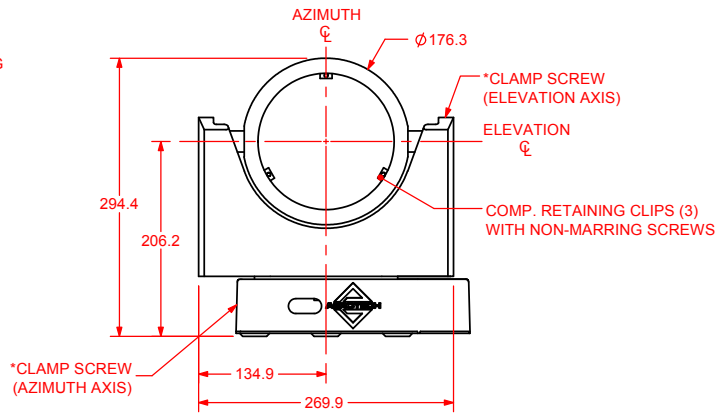
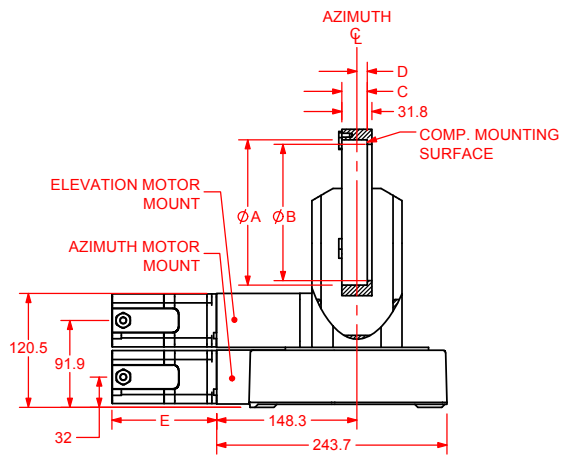
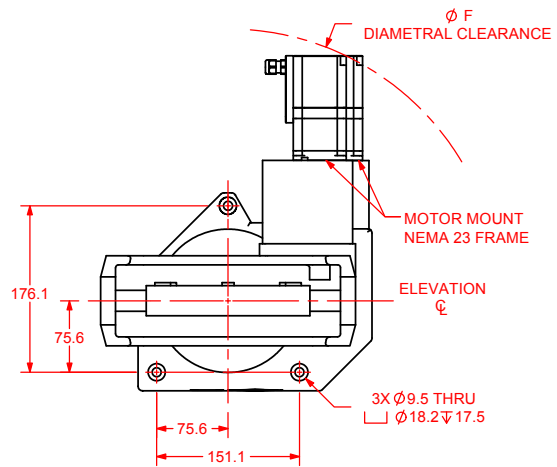
1. Clamp screw release required for 360° rotational freedom.
2. Maximum motor speed is 600 rpm.

AOM103M-6

OPTIC ADAPTER	A	B	C	D
NONE	152.4	144.3	26.9	11
-AOM6T5	125	120.6	26.4	6.3

MOTOR	E	F
NONE	-	397.3
-M1	132.3	615.4
-M2	110.9	575.7

* TO HAVE 360° ROTATIONAL FREEDOM,
RELEASE CLAMP SCREW



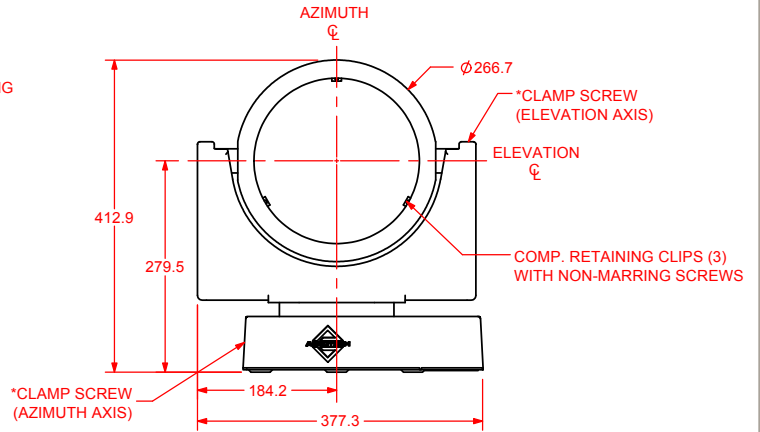
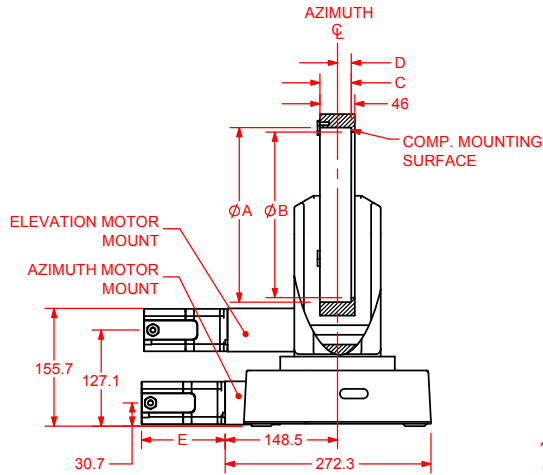
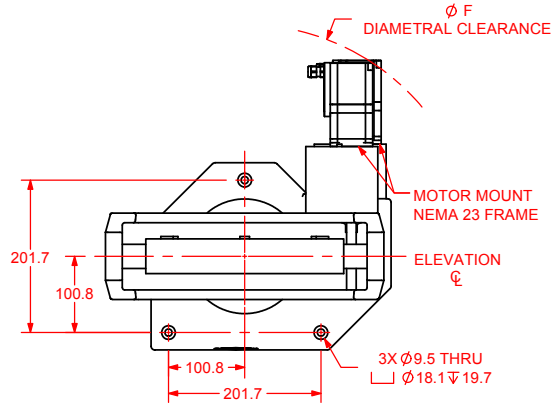
DIMENSIONS: MILLIMETERS

AOM130M Series DIMENSIONS

AOM103M-9

OPTIC ADAPTER	A	B	C	D
NONE	228.6	218.9	41.4	18.3
-AOM9T8	203.2	196.9	39.1	15.3

MOTOR	E	F
NONE	-	397.3
-M1	132.3	650.8
-M2	110.9	613.6



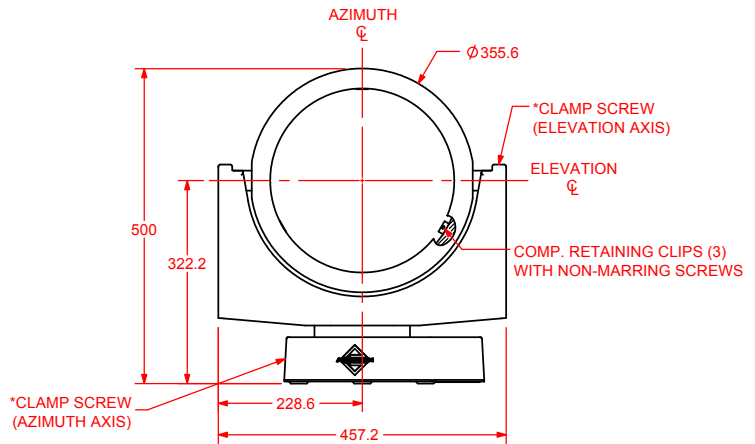
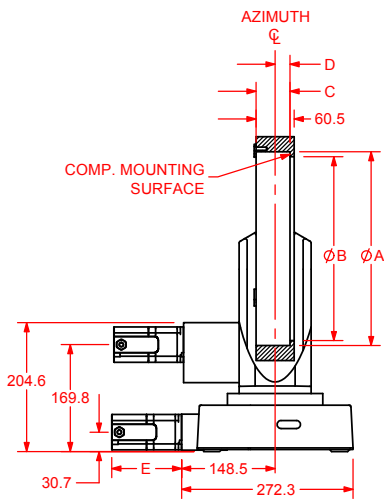
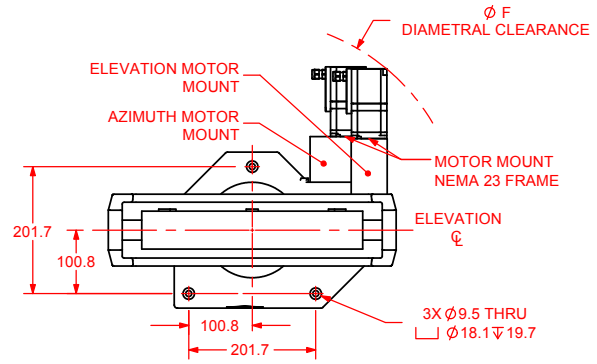
* TO HAVE 360° ROTATIONAL FREEDOM, RELEASE CLAMP SCREW

DIMENSIONS: MILLIMETERS

AOM103M-12

OPTIC ADAPTER	A	B	C	D
NONE	304.8	292.1	53.8	23.6
-AOM12T10	254	241.3	53.8	23.6

MOTOR	E	F
NONE	-	564.6
-M1	132.3	731
-M2	110.9	666.6



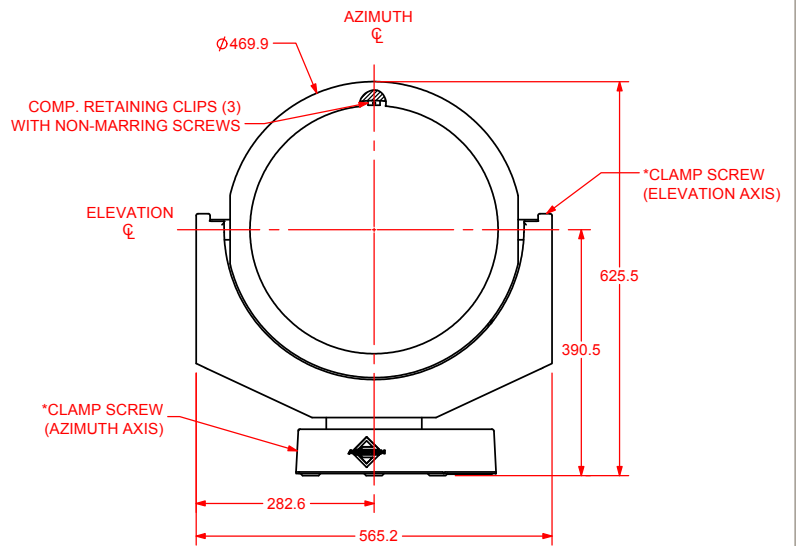
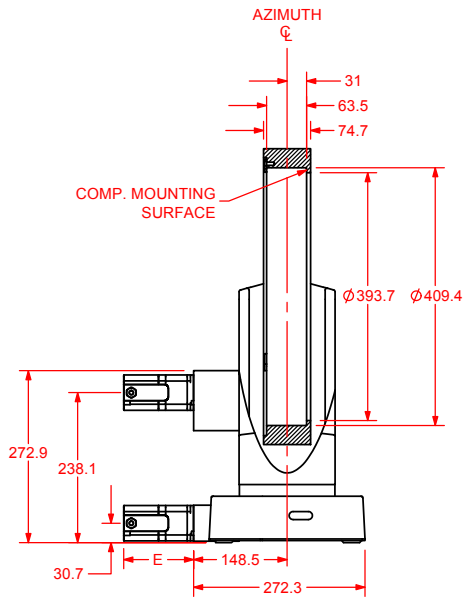
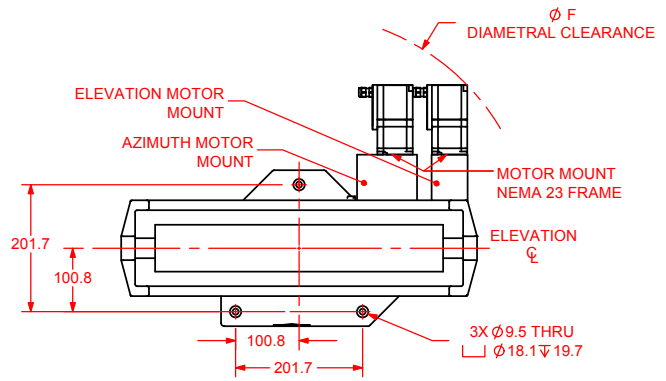
* TO HAVE 360° ROTATIONAL FREEDOM, RELEASE CLAMP SCREW

DIMENSIONS: MILLIMETERS

AOM130M Series DIMENSIONS

AOM103M-16

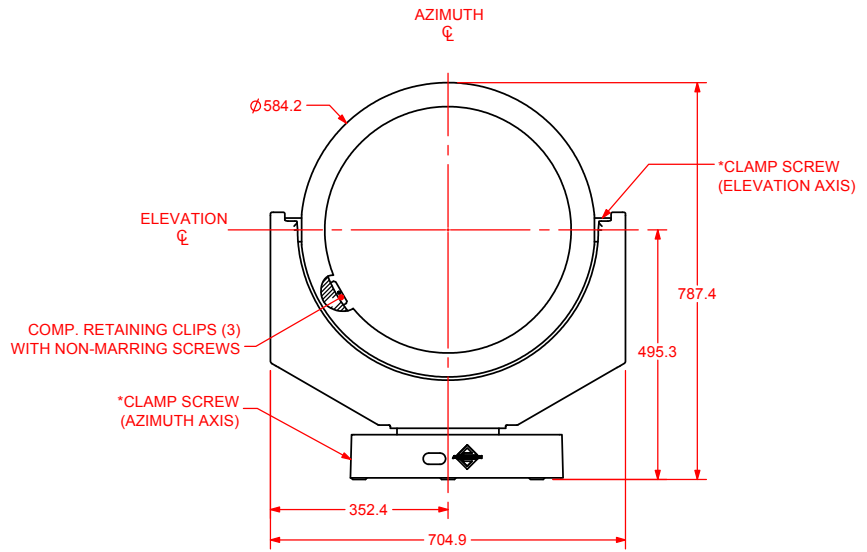
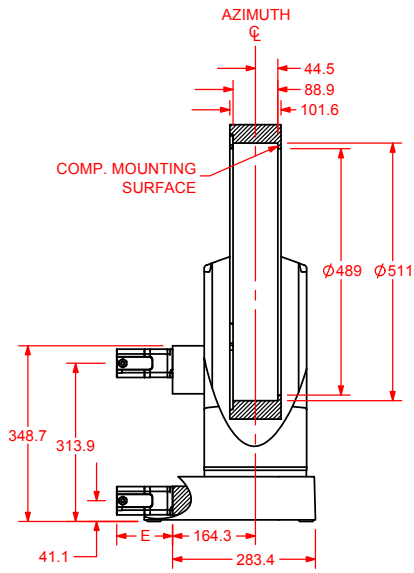
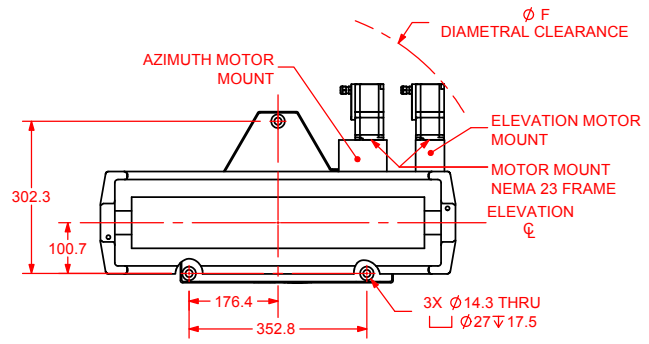
MOTOR	E	F
NONE	-	612
-M1	132.3	775.8
-M2	110.9	743.8



DIMENSIONS: MILLIMETERS

AOM103M-20

MOTOR	E	F
NONE	-	737.2
-M1	132.3	888
-M2	110.9	858.3



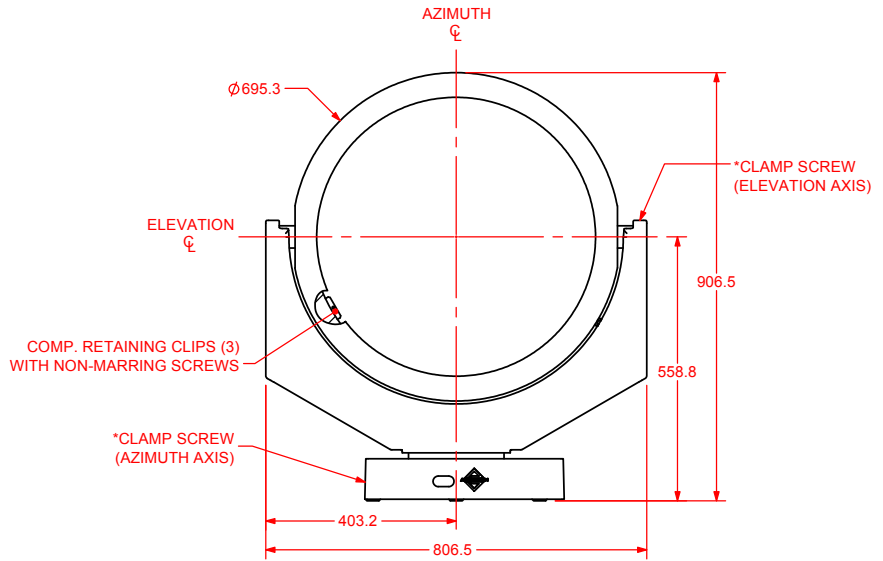
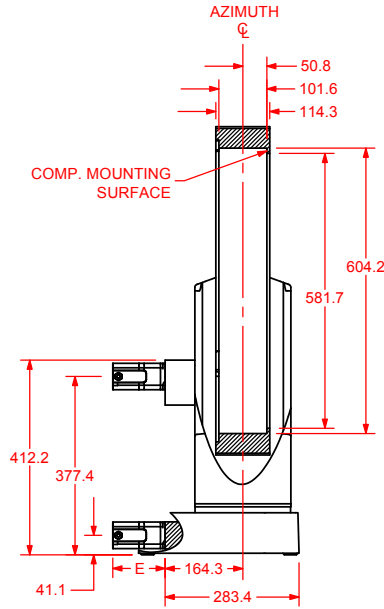
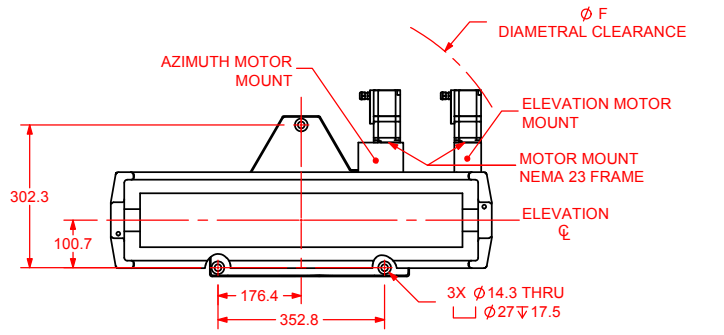
* TO HAVE 360° ROTATIONAL FREEDOM, RELEASE CLAMP SCREW

DIMENSIONS: MILLIMETERS

AOM130M Series DIMENSIONS

AOM103M-24

MOTOR	E	F
NONE	-	830
-M1	132.3	966
-M2	110.9	938.8



* TO HAVE 360° ROTATIONAL FREEDOM, RELEASE CLAMP SCREW

DIMENSIONS: MILLIMETERS

AOM130M Series ORDERING INFORMATION

Cell Size (Required)

-6	6 in (152.5 mm) diameter optic
-9	9 in (228.6 mm) diameter optic
-12	12 in (304.8 mm) diameter optic
-16	16 in (406.4 mm) diameter optic
-20	20 in (508.0 mm) diameter optic
-24	24 in (609.6 mm) diameter optic

Motor (Required)

-M1	BMS60 brushless servomotor with 1000-line TTL encoder
-M2	SM60 stepper motor

Limits (Required)

-LI1	End-of-travel limit switches with 9-pin connector, normally-closed
-LI2	End-of-travel limit switches with 9-pin connector, normally-open
-LI3	End-of-travel limit switches with flying leads

Adapter (Optional)

-AOM6T5	6 in (150 mm) dia. cell to 5 in (125 mm) dia. optic
-AOM9T8	9 in (225 mm) dia. cell to 8 in (200 mm) dia. optic
-AOM12T10	12 in (300 mm) dia. cell to 10 in (250 mm) dia. optic

Integration (Required)

Aerotech offers both standard and custom integration services to help you get your system fully operational as quickly as possible. The following standard integration options are available for this system. Please consult Aerotech if you are unsure what level of integration is required, or if you desire custom integration support with your system.

-TAS	Integration - Test as system Testing, integration, and documentation of a group of components as a complete system that will be used together (ex: drive, controller, and stage). This includes parameter file generation, system tuning, and documentation of the system configuration.
-TAC	Integration - Test as components Testing and integration of individual items as discrete components that ship together. This is typically used for spare parts, replacement parts, or items that will not be used together. These components may or may not be part of a larger system.