



Mechanical Bearing, Ball-Screw Stage

PRO165SL



Precise & Robust Linear Motion for All

The PRO165SL offers a desirable balance of compact form factor and high load-carrying capability, making it ideal to use in medium- and high-performance industrial applications. Combining superior craftsmanship with the highest quality components, PRO165SL stages consistently and reliably deliver best-in-class positioning performance. Thoughtfully engineered features and options, coupled with competitive pricing, make PRO165SL stages the ideal choice for streamlined integration into a wide variety of precision systems.

Key Applications

PRO165SL mechanical bearing, ball-screw stages are extremely versatile, trusted and proven in medium- and high-performance applications, such as:

- ◆ Laser material processing
- ◆ Precision metrology, inspection & microscopy
- ◆ Electronics & circuit board manufacturing & inspection
- ◆ Display processing
- ◆ Synchrotron & light source experiments
- ◆ Medical device manufacturing
- ◆ Semiconductor fabrication
- ◆ Fiber optics & silicon photonics processing
- ◆ Additive manufacturing & precision assembly

KEY FEATURES:

- ◆ **SUPERIOR PAYLOAD CAPACITY** in a compact form-factor provides maximum utility
- ◆ Best-in-class geometric performance ensures **SUPERIOR WORKPOINT ACCURACY**
- ◆ **EXCELLENT MOTION & POSITIONING PERFORMANCE** in a cost-effective package
- ◆ Rugged, reliable construction is ideal for **VERSATILE INDUSTRIAL USE**
- ◆ Hardcover & side seals offer **PROTECTION AGAINST CONTAMINATION & PARTICULATES**
- ◆ **VACUUM- & CLEANROOM-COMPATIBLE** versions available

PR0165SL SPECIFICATIONS

Mechanical Specifications		PR0165SL				
Travel		100	150	200	300	400
Accuracy⁽¹⁾	Standard	±6 µm	±8 µm	±8 µm	±10 µm	±12 µm
	Calibrated	±1.25 µm	±1.5 µm	±1.75 µm	±2.5 µm	±3 µm
Resolution (Min. Incremental Motion)		0.1 µm ⁽²⁾ ; 1.0 µm ⁽³⁾				
Bidirectional Repeatability⁽¹⁾		±1 µm	±1 µm	±1 µm	±1 µm	±1 µm
Horizontal Straightness⁽¹⁾		±2.5 µm	±3 µm	±4 µm	±6 µm	±8 µm
Vertical Straightness⁽¹⁾		±2.5 µm	±3 µm	±4 µm	±6 µm	±8 µm
Pitch		29 µrad	29 µrad	39 µrad	58 µrad	70 µrad
Roll		29 µrad	29 µrad	39 µrad	58 µrad	70 µrad
Yaw		29 µrad	29 µrad	39 µrad	58 µrad	70 µrad
Maximum Speed⁽⁴⁾		300 mm/s				
Maximum Acceleration⁽⁴⁾		Function of Motor, Amplifier Selection, Payload, and Maximum Axial Load				
Load Capacity⁽⁵⁾	Horizontal	45 kg				
	Vertical (Axial)	25 kg				
	Side	45 kg				
Moving Mass (w/ Tabletop)		2.3 kg				
Stage Mass (No Motor)		6.1 kg	6.6 kg	7.1 kg	8.1 kg	9.1 kg
Material		Anodized Aluminum				
MTBF (Mean Time Between Failure)		20,000 Hours				

Notes:

1. Certified with -PL1/PL2 options.
2. Achieved with Aerotech rotary motor with amplified sine encoder.
3. Achieved with Aerotech rotary motor with 2500 cnts/rev digital encoder.
4. Requires the selection of an appropriate amplifier with sufficient voltage and current.
5. Axis-orientation for on-axis loading is listed.
6. Specifications are for single-axis systems measured 25 mm above the tabletop. Performance of multi-axis systems is payload and workpoint dependent. Contact factory for multi-axis applications.
7. Specifications listed are non-foldback kit options. Contact factory for specifications when a foldback kit (-FBx) is used.

Electrical Specifications	
Drive System	Brushless Linear Servomotor
Feedback (Rotary Encoder)⁽¹⁾	Incremental – 1000 lines/rev (1 Vpp) and 2500 lines/rev (TTL)
Maximum Bus Voltage	340 VDC
Limit Switches	5 V, Normally-Closed

1. Requires the selection of a motor option.

PRO165SL ORDERING OPTIONS

Travel (Required)

- 100 100 mm travel stage
- 150 150 mm travel stage
- 200 200 mm travel stage
- 300 300 mm travel stage
- 400 400 mm travel stage

Other travel options are available upon request. Contact Aerotech for more information.

Tabletop (Optional)

- TT1 Tabletop with metric dimension mounting

Other tabletop options are available upon request. Contact Aerotech for more information.

Motor (Optional)

- M5 BM130 brushless servomotor and 2500-line TTL encoder
- M6 BM130 brushless servomotor, 2500-line TTL encoder, and brake
- M7 BM130 brushless servomotor and 1000-line 1 Vpp encoder
- M8 BM130 brushless servomotor, 1000-line 1 Vpp encoder, and brake

Other motor options are available upon request. Contact Aerotech for more information.

Foldback (Optional)

- FB3 Foldback kit for 0.375 inch diameter shaft NEMA 23 motor

Note: TT option required for lower axis of XY when a foldback kit is used.

Motor Orientation (Optional)

- 2 Bottom cable exit, optional orientation
- 3 Left-side cable exit, standard orientation
- 8 Right-side foldback, standard orientation

Other motor orientation options are available upon request. Contact Aerotech for more information.

Limits (Required)

- LI1 Normally-closed limit switches; 5 VDC with 9-Pin D connector

Other limit options are available upon request. Contact Aerotech for more information.

Coupling (Optional)

- CP2 Coupling for 0.375 inch diameter shaft

Other coupling options are available upon request. Contact Aerotech for more information.

Lifting Hardware (Optional)

- LF Lifting hardware

Note: Lifting option only available on travels 400 mm and greater. Lifting should never be ordered on the upper-axis of an XY set (only order on lower-axis).

Metrology (Required)

- PL0 No metrology performance plots
- PL1 Metrology, uncalibrated with performance plots
- PL2 Metrology, calibrated (HALAR) with performance plots

PRO165SL ORDERING OPTIONS

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. This is typically used for spare parts, replacement parts or items that will not be used or shipped together (ex: stage only). These components may or may not be part of a larger system.

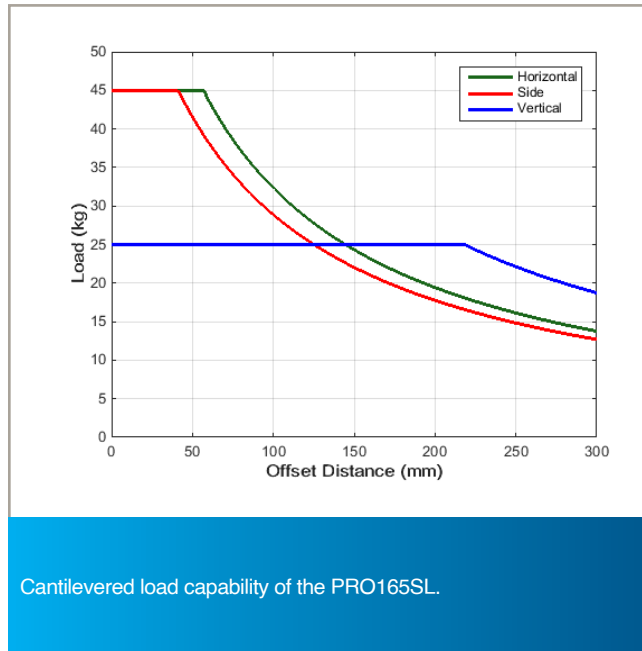
Accessories (To Be Ordered As Separate Line Item)

ALIGN-NPA	Non-precision XY assembly
ALIGN-NPAZ	Non-precision XZ or YZ assembly
ALIGN-PA10	XY assembly; 10 arc sec orthogonality. Alignment to within 7 microns orthogonality for short travel stages.
ALIGN-PA10Z	XZ or YZ assembly with L-bracket; 10 arc second orthogonality. Alignment to within 10 microns orthogonality for short travel stages.
ALIGN-PA5	XY assembly; 5 arc sec orthogonality. Alignment to within 3 microns orthogonality for short travel stages.
ALIGN-PA5Z	XZ or YZ assembly with L-bracket; 5 arc second orthogonality. Alignment to within 5 microns orthogonality for short travel stages.
HDZ165	Right angle L-bracket for PRO165SL-100 and PRO165SL-150 only.

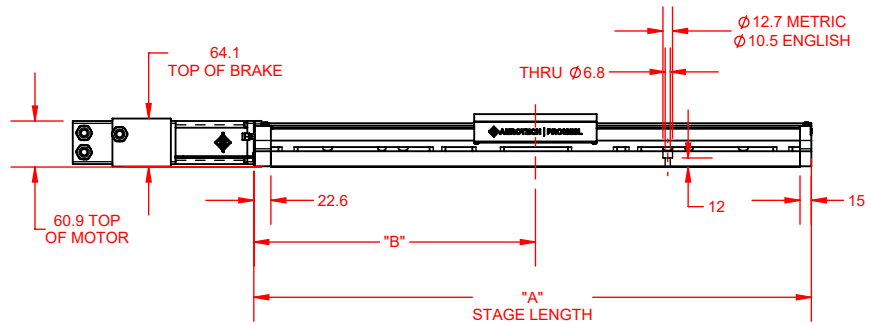
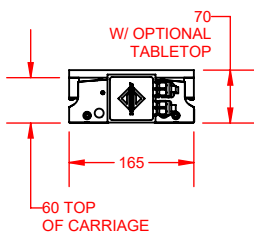
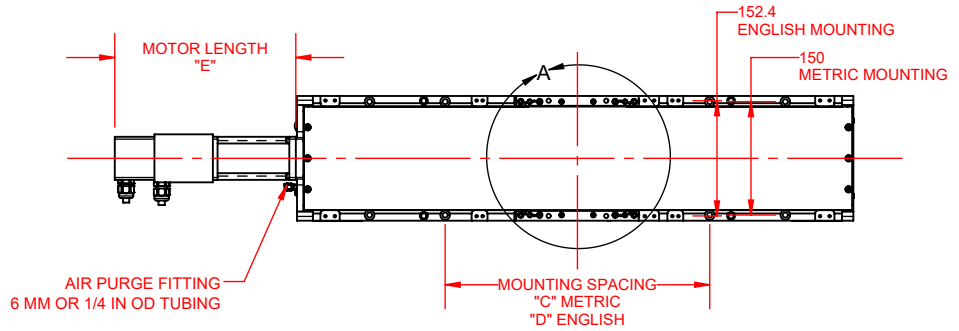
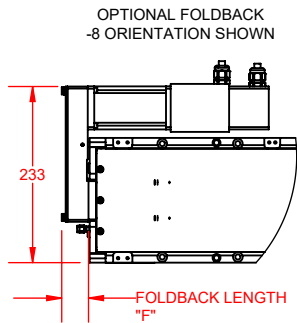
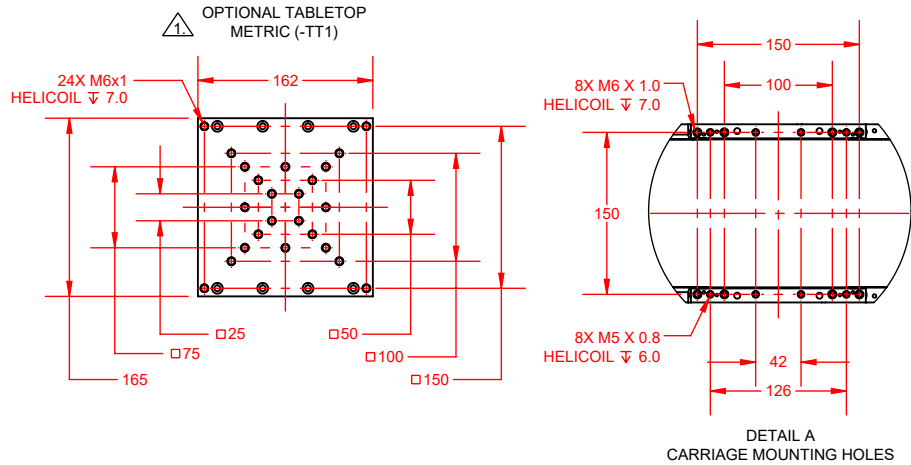
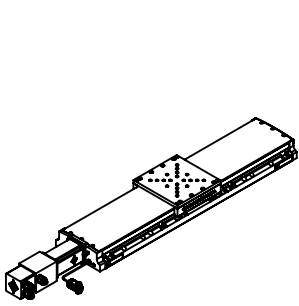
Note: HDZ bracket requires the -TT1 tabletop option when mounting to a PRO stage.



PRO165SL SPECIFICATIONS



PRO165SL DIMENSIONS



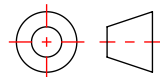
OPTION	DIMENSION
	E
-M5, -M7	162.3
-M6, -M8	239.5
	F
-FB3	35.4

BASIC MODEL	NOMINAL TRAVEL	ELEC LIMIT TRAVEL	MECH LIMIT TRAVEL	A	B	C	D
PRO165SL-100	100	109.2-114	125.3	337.6	172.6	150	152.4
PRO165SL-150	150	160-164.8	175.3	387.6	197.6	150	152.4
PRO165SL-200	200	210.8-215.6	225.3	437.6	222.6	150, 350	152.4
PRO165SL-300	300	312.4-317.2	325.3	537.6	272.6	150, 350	152.4, 406.4
PRO165SL-400	400	414-418.8	425.3	637.6	322.6	150, 350, 550	152.4, 406.4

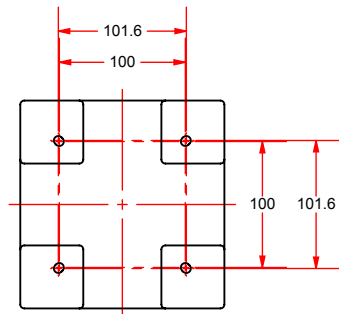
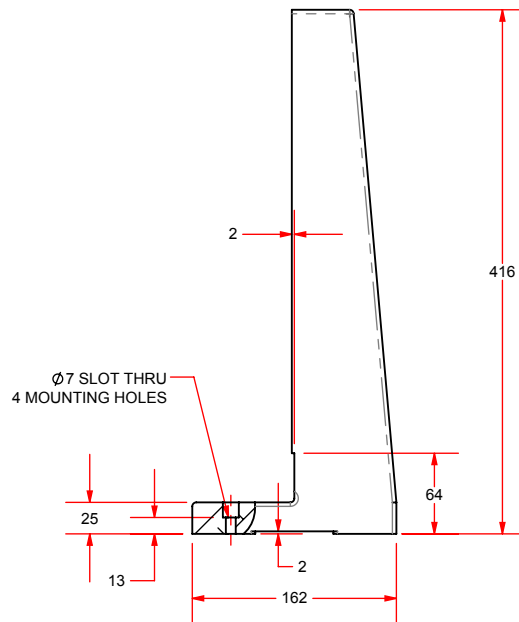
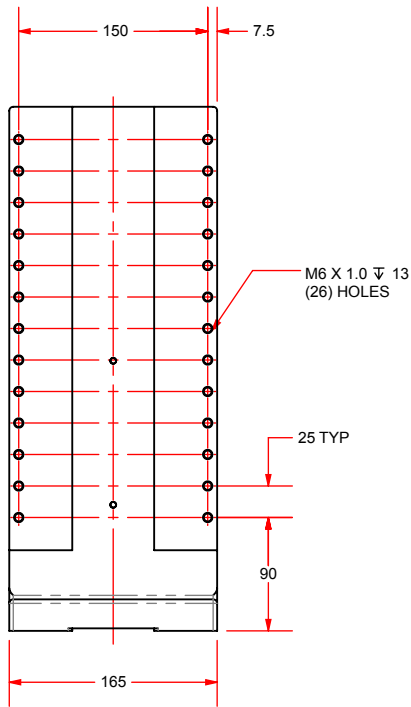
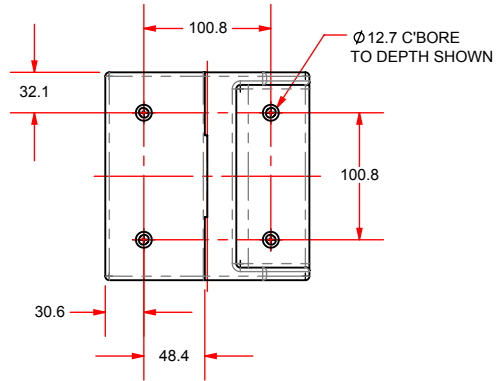
NOTES:

1. -TT1 TABLETOP OPTION REQUIRED FOR LOWER AXIS OF XY ASSEMBLIES WHEN FOLDBACK OPTION IS CHOSEN.

2. DIMENSIONS: MILLIMETERS.



PRO165SL SERIES HDZ BRACKET DIMENSIONS



BASIC MODEL	RECOMMENDED FOR	MASS [kg]
HDZ165	PRO165SL-050, PRO165SL-100, PRO165SL-150	6.7

DIMENSIONS: MILLIMETERS

