Mechanical Bearing,
Ball-Screw Stage

PRO280SL

Precise & Robust Linear Motion for All

The PRO280SL is a heavy-duty industrial stage with an exceptional payload-carrying capacity. Compared to PRO225SL, PRO280SL provides up to 50% greater payload capacity, and its wider bearing separation further minimizes geometric errors. Combining superior craftsmanship with the highest quality components, PRO280SL stages consistently and reliably deliver best-in-class positioning performance. Thoughtfully engineered features and options, coupled with competitive pricing, make PRO280SL stages the ideal choice for streamlined integration into a wide variety of precision systems, machines and processes.

Key Applications

PRO280SL 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:

- Offers **ULTRA HEAVY-DUTY LOAD CAPACITY** & high stiffness
- **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

PRO280SL SPECIFICATIONS

Mechanical Specifications		PRO280SL					
Travel		300	400	500	600	800	1000
Accuracy[1]	**Standard**	±9.5 µm	±11 µm	±13 µm	±15 µm	±17 µm	±18 µm
	Calibrated	±1.5 µm	±1.5 µm	±2 µm	±2 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	±1 µm
Horizontal Straightness[1]		±3 µm	±4 µm	±5 µm	±6 µm	±7 µm	±8.5 µm
Vertical Straightness[1]		±3µm	±4 µm	±5 µm	±6 µm	±7 µm	±8.5 µm
Pitch		49 µrad	60 µrad	70 µrad	78 µrad	90 µrad	110 µrad
Roll		49 µrad	60 µrad	70 µrad	78 µrad	90 µrad	110 µrad
Yaw		49 µrad	60 µrad	70 µrad	78 µrad	90 µrad	110 µrad
Maximum Speed[4]		220 mm/s					140 mm/s
Maximum Acceleration[4]		Function of Motor, Amplifier Selection, Payload, and Maximum Axial Load					
Load Capacity[5]	**Horizontal**	150 kg					
	Vertical (Axial)	70 kg					
	Side	150 kg					
Moving Mass (w/ Tabletop)		12.3 kg					
Stage Mass (No Motor)		39.1 kg	42.5 kg	45.9 kg	49.3 kg	56.1 kg	62.9 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.

Electrical Specifications	
Drive System	Brushless Rotary 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.

PRO280SL ORDERING OPTIONS

Travel (Required)

-0300 300 mm travel stage
-0400 400 mm travel stage
-0500 500 mm travel stage
-0600 600 mm travel stage
-0800 800 mm travel stage
-1000 1000 mm travel stage

Tabletop (Optional)

-TT1 Tabletop with metric dimension mounting

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

Motor (Optional)

-M5 BM500 brushless servomotor and 2500-line TTL encoder
-M6 BM500 brushless servomotor, 2500-line TTL encoder, and brake
-M7 BM500 brushless servomotor and 1000-line 1 Vpp encoder
-M8 BM500 brushless servomotor, 1000-line 1 Vpp encoder, and brake

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

Motor Orientation (Optional)

-2 Bottom cable exit, optional orientation
-3 Left-side cable exit, 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)

-CP1 Coupling for 0.500 inch diameter shaft

Lifting Hardware (Optional)

-LF Lifting hardware

Note: Lifting option available on all travels. 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

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.

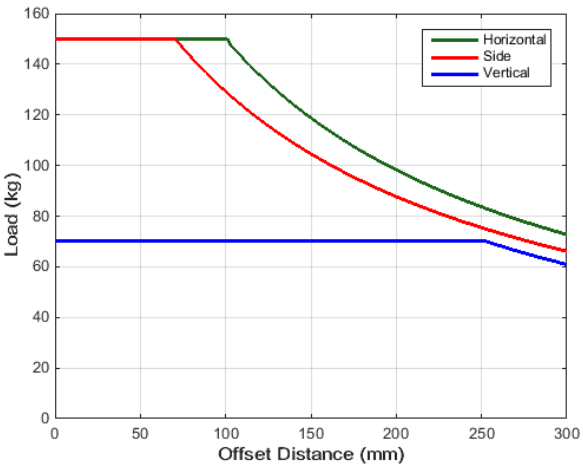
-TAS **Integration - Test as system**
Testing, integration and documentation of a group of components as a complete system that will be used together (ex: drive, controller and stage). This includes parameter file generation, system tuning and documentation of the system configuration.

-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)

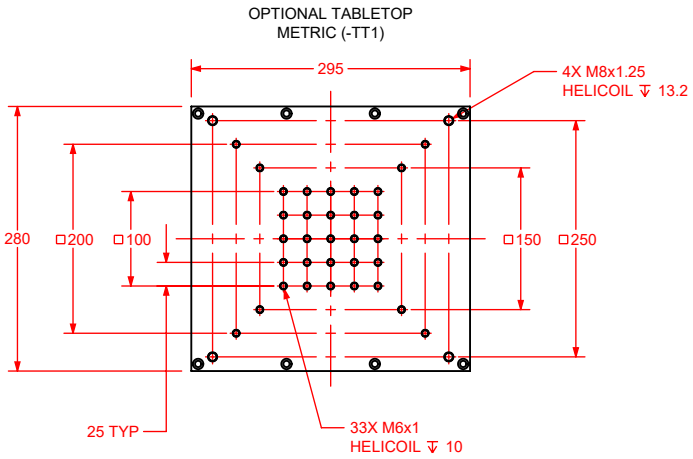
ALIGN-NPA	Non-precision XY assembly
ALIGN-NPAZ	Non-precision XZ or YZ assembly
ALIGN-PA10	XY assembly; 10 arc sec orthogonality. Alignment to within 7 microns orthogonality for short travel stages.
ALIGN-PA10Z	XZ or YZ assembly with L-bracket; 10 arc second orthogonality. Alignment to within 10 microns 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.
HDZ280	Right angle L-bracket for PRO280SL-300 and PRO280SL-400 only

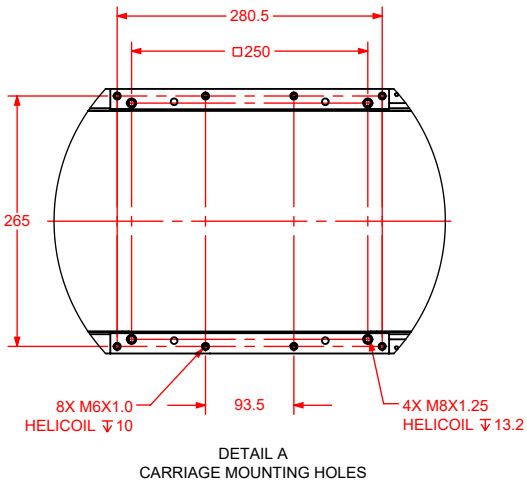
PRO280SL SPECIFICATIONS

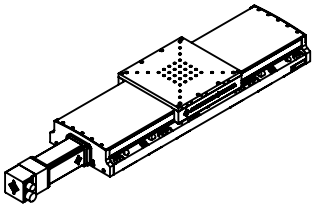


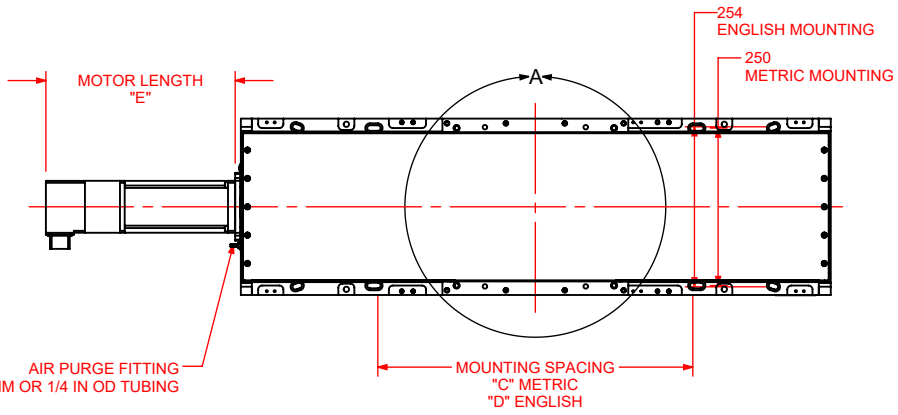
Cantilevered load capability of the PRO280SL.

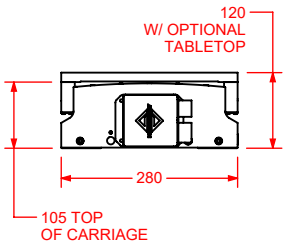
PRO280SL DIMENSIONS

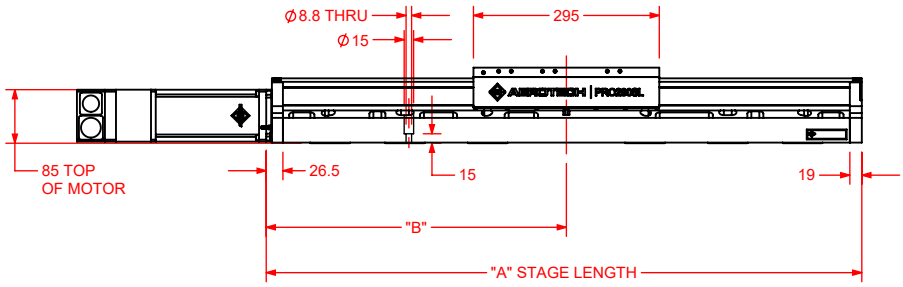








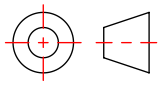




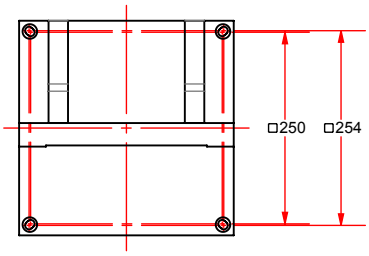
	DIMENSION
OPTION	E
-M5, -M7	244.9
-M6, -M8	300.5

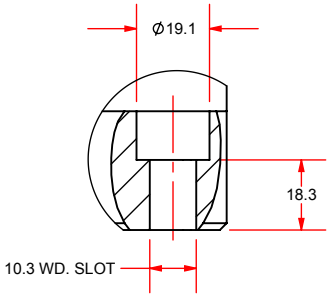
BASIC MODEL	NOMINAL TRAVEL	ELEC LIMIT TRAVEL	MECH LIMIT TRAVEL	A	B	C	D
PRO280SL-0300	300	312.4-317.2	334.4	745.5	376.5	250, 500-525	254
PRO280SL-0400	400	414-418.8	434.4	845.5	426.5	250, 500-525, 750	254, 762
PRO280SL-0500	500	515.6-520.4	534.4	945.5	476.5	250, 500-525, 750	254, 762
PRO280SL-0600	600	617.2-622	634.4	1045.5	526.5	250, 500-525, 750	254, 762
PRO280SL-0800	800	820.4-825.2	834.4	1245.5	626.5	250, 500-525, 750	254, 762
PRO280SL-1000	1000	1023.6-1028.4	1034.4	1445.5	726.5	250, 500-525, 750, 1250	254, 762, 1193.8

DIMENSIONS: MILLIMETERS

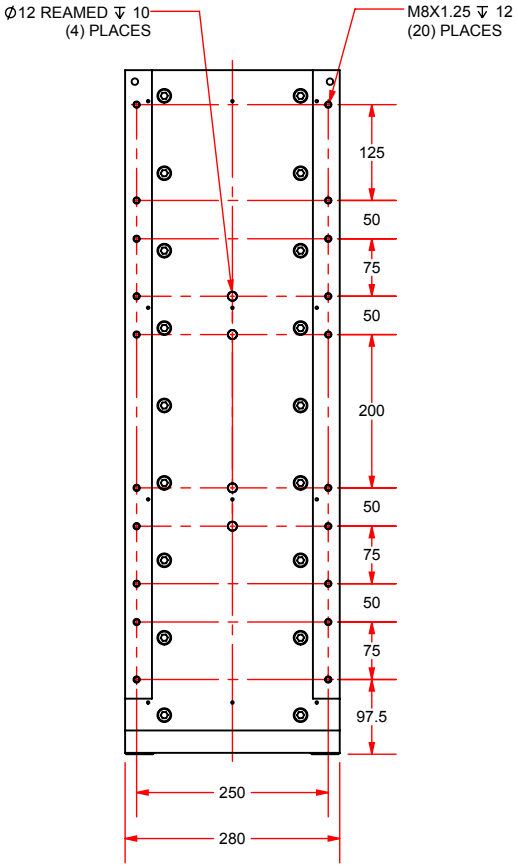


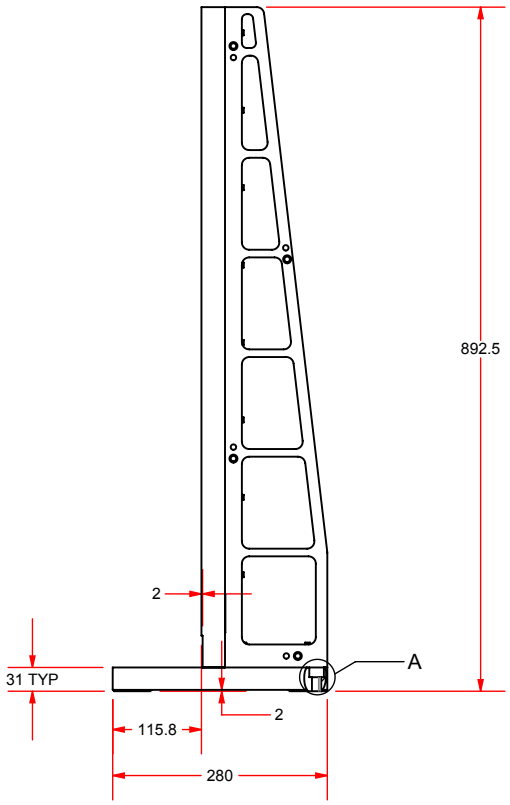
PRO280SL SERIES HDZ BRACKET DIMENSIONS





DETAIL A
BRACKET MOUNTING HOLES
(4) PLACES





BASIC MODEL	RECOMMENDED FOR	MASS [kg]
HDZ280	PRO280SL-0300, PRO280SL-0400	28.3

DIMENSIONS: MILLIMETERS