



Miniature Mechanical-Bearing, Screw-Driven Linear Stage **MPS75SL(E)**

Compact, Precise Linear Motion

The MPS75SL and MPS75SLE stages combine high performance with a small, efficient form factor. They are well suited for space-constrained applications without compromising on precision. Both models are configurable with a variety of options to meet your specific application requirements, and MPS75SLE is equipped with a direct linear encoder for added performance and reliability.

Key Applications

MPS75SL and MPS75SLE stages are ideal for a variety of applications in laboratory, research and production environments, including:

- ◆ Measurement & inspection
- ◆ Precision component alignment
- ◆ Spectroscopy
- ◆ Biomedical research
- ◆ Sample manipulation in vacuum

KEY FEATURES:

- ◆ Available with optional linear encoder for **ENHANCED PRECISION** or stepper verification
- ◆ Provides **EXCELLENT GEOMETRIC PERFORMANCE** with anti-creep crossed-roller bearings
- ◆ Integrates with other linear, rotary & vertical-lift MPS series stages for **RELIABLE MULTI-AXIS MOTION**
- ◆ **PROTECTS AGAINST CONTAMINATION** with optional bellows waycover
- ◆ Available in **VACUUM-COMPATIBLE CONFIGURATIONS**

MPS75SL SERIES SPECIFICATIONS

Mechanical Specifications			MPS75SL-025	MPS75SL-050	MPS75SL-075	MPS75SL-100
Travel			25 mm	50 mm	75 mm	100 mm
Accuracy	Uncalibrated		±6 µm	±7 µm	±8 µm	±9 µm
	Uncalibrated with Bellows		±7 µm	±8 µm	±9 µm	±10 µm
	Calibrated⁽¹⁾		±1.0 µm	±1.0 µm	±1.5 µm	±1.5 µm
Resolution (Minimum Incremental Motion)			0.1 µm			
Repeatability (Bidirectional)⁽¹⁾			±0.75 µm (Standard); ±1.2 µm (with Bellows)			
Straightness			±2.0 µm	±2.0 µm	±3.0 µm	±3.0 µm
Flatness			±2.0 µm	±2.0 µm	±3.0 µm	±3.0 µm
Maximum Speed	1.0 mm/rev Ball Screw	DC Motor (-M1)	50 mm/s	50 mm/s	50 mm/s	35 mm/s
		Stepper Motor (-M2)	30 mm/s	30 mm/s	30 mm/s	30 mm/s
Load Capacity⁽²⁾	Horizontal		15 kg			
	Side		15 kg			
	Vertical		4 kg			
Stage Mass			1.7 kg	1.8 kg	1.9 kg	2.0 kg
Material			Anodized Aluminum Body			

Notes:

1. With Aerotech controllers.
2. Payload specifications are single-axis system.
3. Excessive duty cycle may impact stage accuracy.
4. Specifications are for single-axis systems measured 25 mm above the tabletop.
5. Contact factory for specifications of stages with bellows option.

Electrical Specifications	MPS75SL-025	MPS75SL-050	MPS75SL-075	MPS75SL-100
Drive System	DC Motor (-M1): DC Brush Servomotor Stepper Motor (-M2): 24 VDC Bipolar Stepper Motor			
Feedback (Linear Encoder)	N/A			
Feedback (Rotary Motor Encoder)	DC Motor (-M1): 10,000 lines/rev Rotary Encoder Stepper Motor (-M2): N/A			
Electronic Resolution (Rotary Encoder)	DC Motor (-M1): 0.025 µm Stepper Motor (-M2): 0.025 µm @ 40,000 steps/rev Motor Resolution			
Electronic Resolution (Linear Encoder)	N/A			
Maximum Bus Voltage	DC Motor (-M1): 48 VDC Stepper Motor (-M2): 48 VDC*			
Limit Switches	5V, Normally Closed			

Notes:

1. *With Aerotech control system.

MPS75SLE SERIES SPECIFICATIONS

Mechanical Specifications			MPS75SLE-025	MPS75SLE-050	MPS75SLE-075	MPS75SLE-100
Travel			25 mm	50 mm	75 mm	100 mm
Accuracy	Uncalibrated		±3 µm	±4 µm	±5 µm	±6 µm
	Uncalibrated with Bellows		±4 µm	±5 µm	±6 µm	±7 µm
	Calibrated ⁽¹⁾		±0.75 µm	±0.75 µm	±1.0 µm	±1.0 µm
Resolution (Minimum Incremental Motion)			0.025 µm			
Repeatability (Bidirectional) ⁽¹⁾			±0.2 µm (Standard); ±0.3 µm (with Bellows)			
Straightness			±2.0 µm	±2.0 µm	±3.0 µm	±3.0 µm
Flatness			±2.0 µm	±2.0 µm	±3.0 µm	±3.0 µm
Maximum Speed	1.0 mm/rev Ball Screw	DC Motor (-M1)	50 mm/s	50 mm/s	50 mm/s	35 mm/s
		Stepper Motor (-M2)	30 mm/s	30 mm/s	30 mm/s	30 mm/s
Load Capacity ⁽²⁾	Horizontal		15 kg			
	Side		15 kg			
	Vertical		4 kg			
Stage Mass			2.3 kg	2.4 kg	2.5 kg	2.6 kg
Material			Anodized Aluminum Body			

Notes:

1. With Aerotech controllers.
2. Payload specifications are single-axis system.
3. Excessive duty cycle may impact stage accuracy.
4. Specifications are for single-axis systems measured 25 mm above the tabletop.
5. Contact factory for specifications of stages with bellows option.

Electrical Specifications	MPS75SLE-025	MPS75SLE-050	MPS75SLE-075	MPS75SLE-100
Drive System	DC Motor (-M1): DC Brush Servomotor Stepper Motor (-M2): 24 VDC Bipolar Stepper Motor			
Feedback (Linear Encoder)	Noncontact Linear Encoder; Amplified sine and TTL versions available			
Feedback (Rotary Motor Encoder)	DC Motor (-M1): 10,000 lines/rev Rotary Encoder Stepper Motor (-M2): N/A			
Electronic Resolution (Rotary Encoder)	DC Motor (-M1): 0.025 µm Stepper Motor (-M2): 0.025 µm @ 40,000 steps/rev Motor Resolution			
Electronic Resolution (Linear Encoder)	20 µm fundamental, 0.05 µm with LTX100 option; Amplified Sine (-AS) option allows for electronic resolutions below 1 nm ⁽²⁾			
Maximum Bus Voltage	DC Motor (-M1): 48 VDC Stepper Motor (-M2): 48 VDC*			
Limit Switches	5V, Normally Closed			

Notes:

1. *With Aerotech control system.
2. For optimum performance, Aerotech recommends using 0.025 µm as the highest-resolution when using the linear encoder as part of the servo feedback loop (e.g., dual-loop).

MPS75SL AND MPS75SLE ORDERING INFORMATION

Direct Linear Feedback (MPS75SLE Only)

- E1 Incremental linear encoder; 1 Vpp
- E2 Incremental linear encoder; 0.05 μ m digital TTL output

Travel (Optional)

- 025 25 mm travel stage
- 050 50 mm travel stage
- 075 75 mm travel stage
- 100 100 mm travel stage

Vacuum Preparation (Optional)

- HV High vacuum preparation to 10⁻⁶ Torr

Note: Vacuum preparation is not a standard ordering option for -SLE models with direct linear feedback. Contact Aerotech for more information.

Motor (Required)

- M1 DC servomotor
- M2 Stepper motor

Bellows (Optional)

- BL Bellows waycover

Note: Bellows waycover not available with -HV vacuum preparation.

Mounting Plate (Optional)

- MP Optical table mounting plate

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 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.

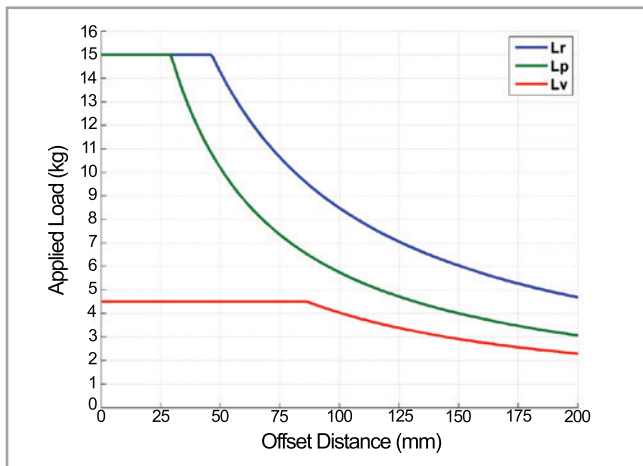
Accessories (to be ordered as separate line item)

- HDZ-MPS75SL Right angle bracket, MPS75SL
- HDZ-MPS75SL-HV Right angle bracket, MPS75SL, high vacuum preparation to 10⁻⁶ Torr

MPS75SL SERIES SPECIFICATIONS



MPS50SL with MPS75SL in a dual-axis XY configuration.

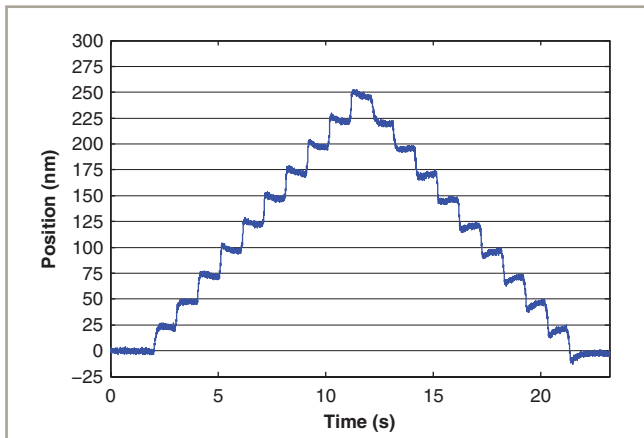


MPS75SL load curves.

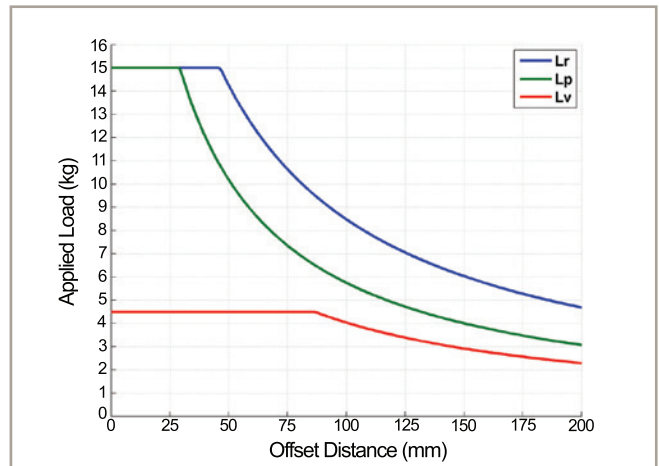


The MPS75SL is also available in a vacuum-prepared version.

MPS75SLE SERIES SPECIFICATIONS

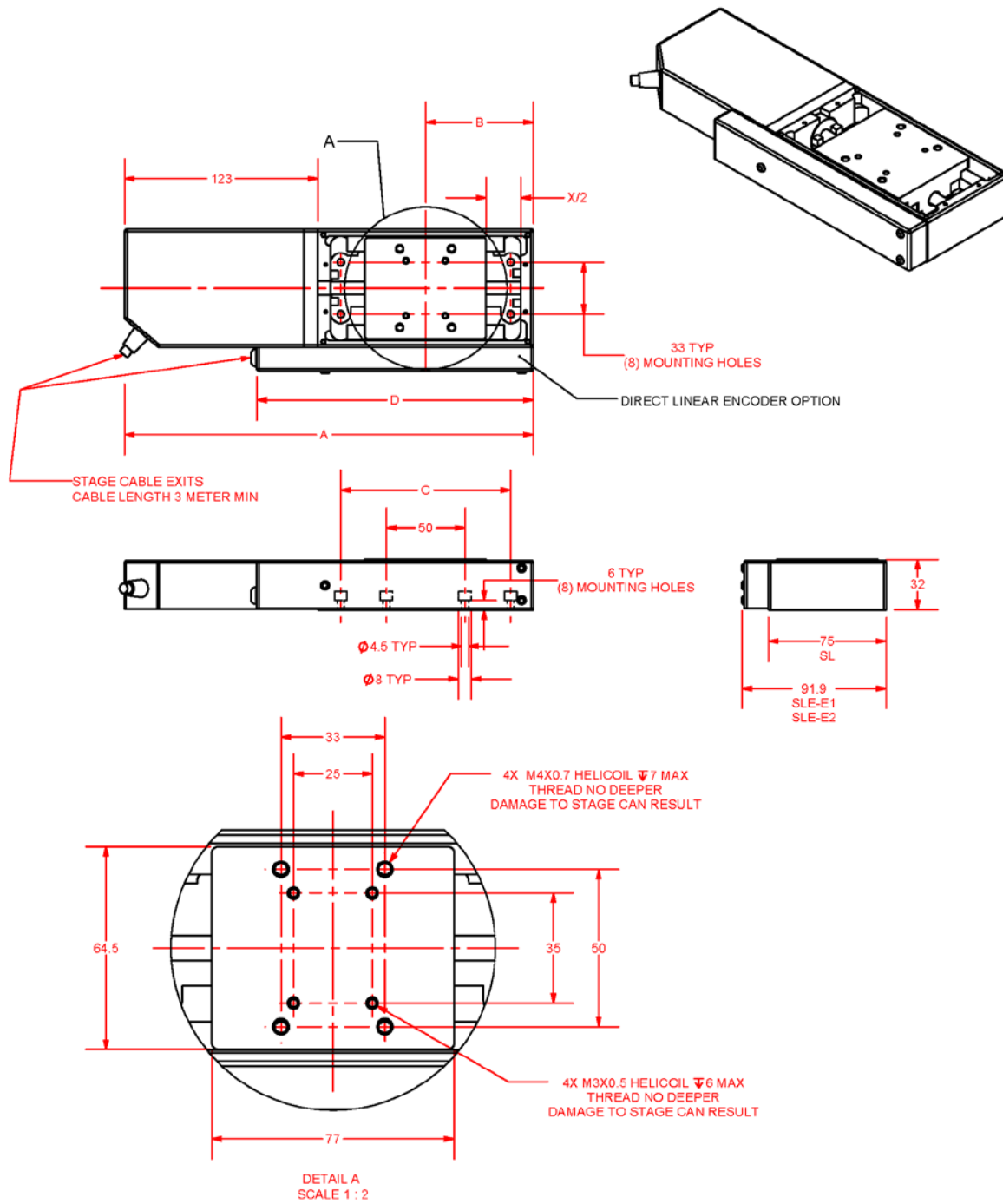


A 25 nm bidirectional step plot taken on an MPS75SLE-LTAS-DC with 25 nm electronic resolution on the linear encoder.



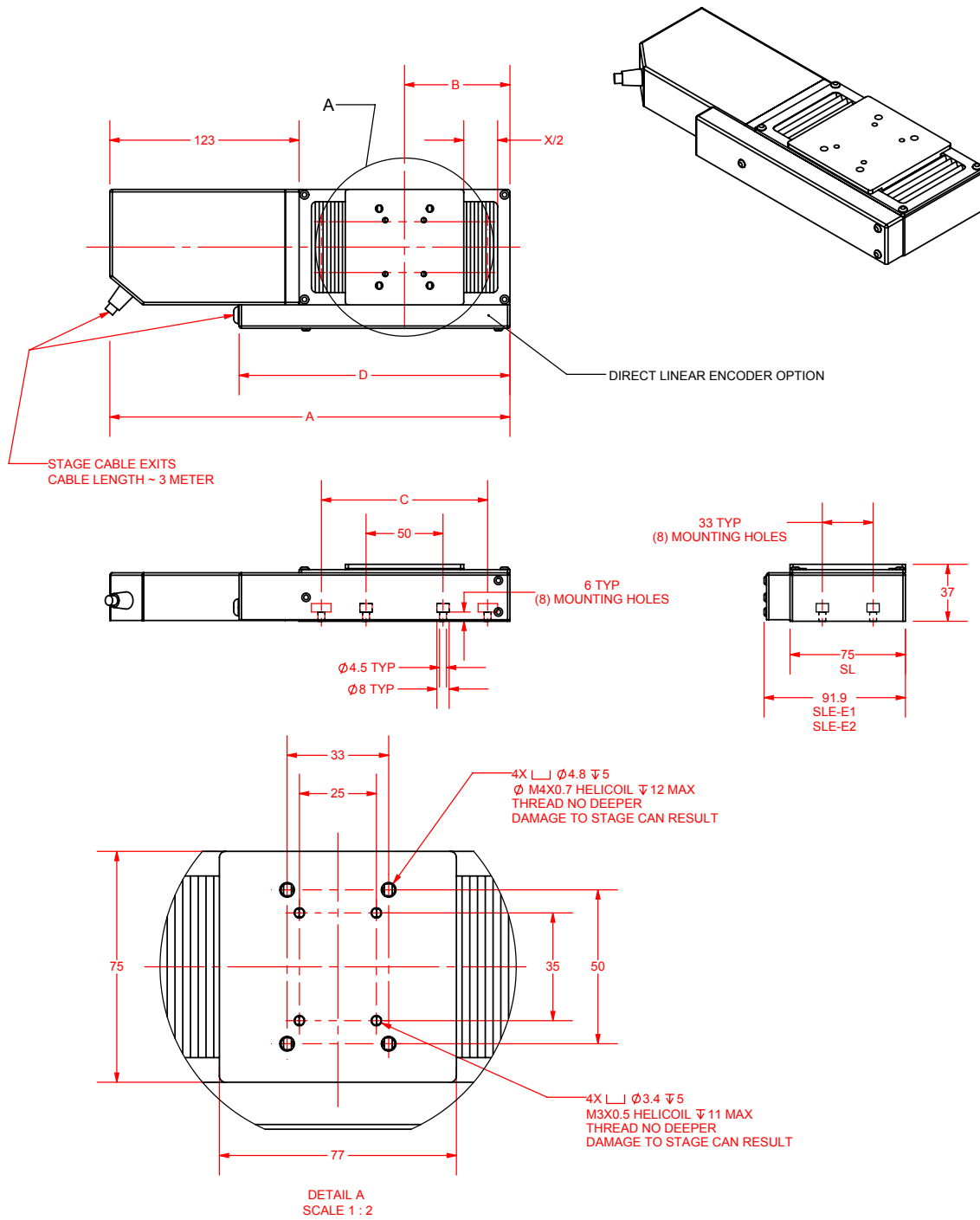
MPS75SLE load curves.

MPS75SL(E) SERIES DIMENSIONS



BASIC MODEL	A	B	C	D	X NOMINAL TRAVEL	X ELECTRICAL LIMIT TRAVEL	X MECHANICAL LIMIT TRAVEL
MPS75SL-025	260	68.5	108	176	25	29	34
MPS75SL-050	290	83.5	138	176	50	54	58
MPS75SL-075	320	98.5	125	260	75	79	84
MPS75SL-100	350	113.5	150	260	100	104	108

BELLOWS DIMENSIONS

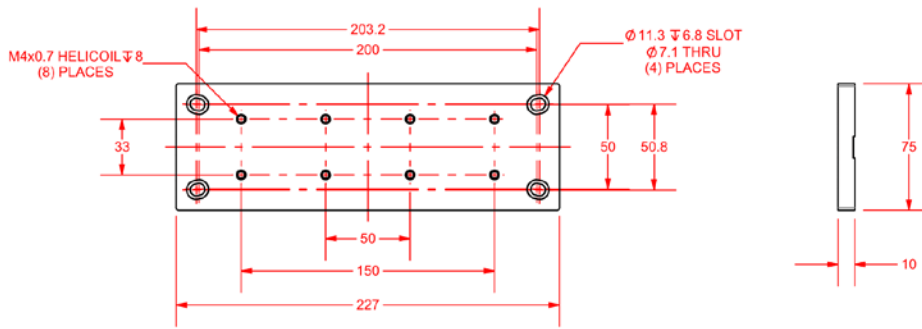


BASIC MODEL	A	B	C	D	X NOMINAL TRAVEL	X ELECTRICAL LIMIT TRAVEL	X MECHANICAL LIMIT TRAVEL
MPS75SL-025	260	68.5	108	176	25	29	34
MPS75SL-050	290	83.5	138	176	50	54	58
MPS75SL-075	320	98.5	125	260	75	79	84
MPS75SL-100	350	113.5	150	260	100	104	108

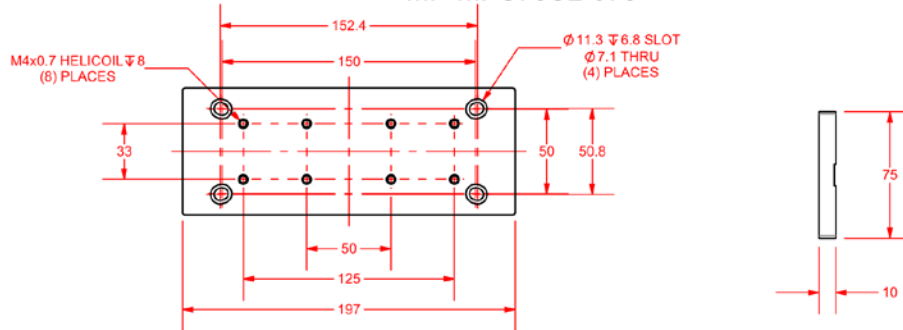
DIMENSIONS: MILLIMETERS

MOUNTING PLATES DIMENSIONS

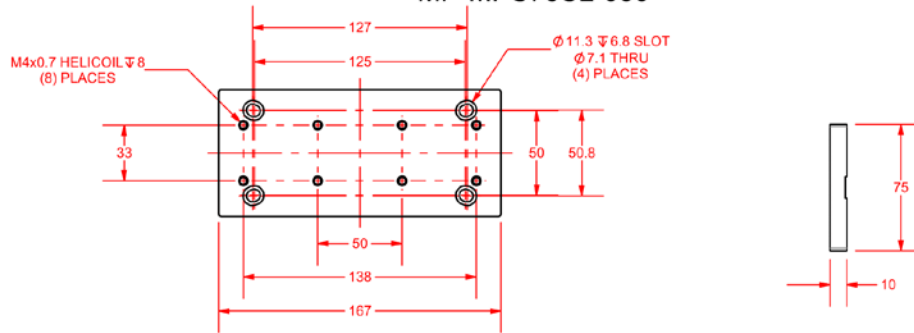
MP-MPS75SL-100



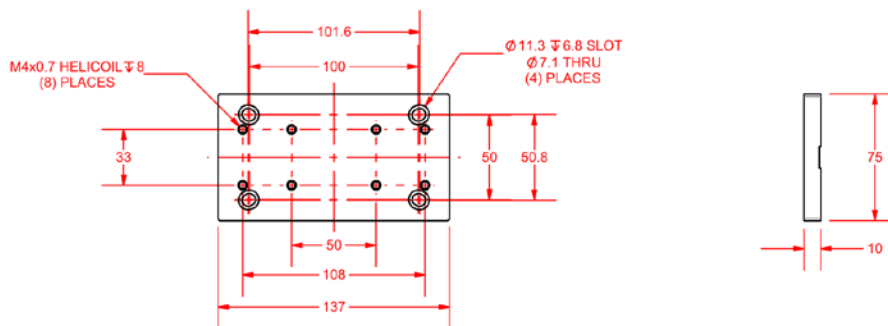
MP-MPS75SL-075



MP-MPS75SL-050

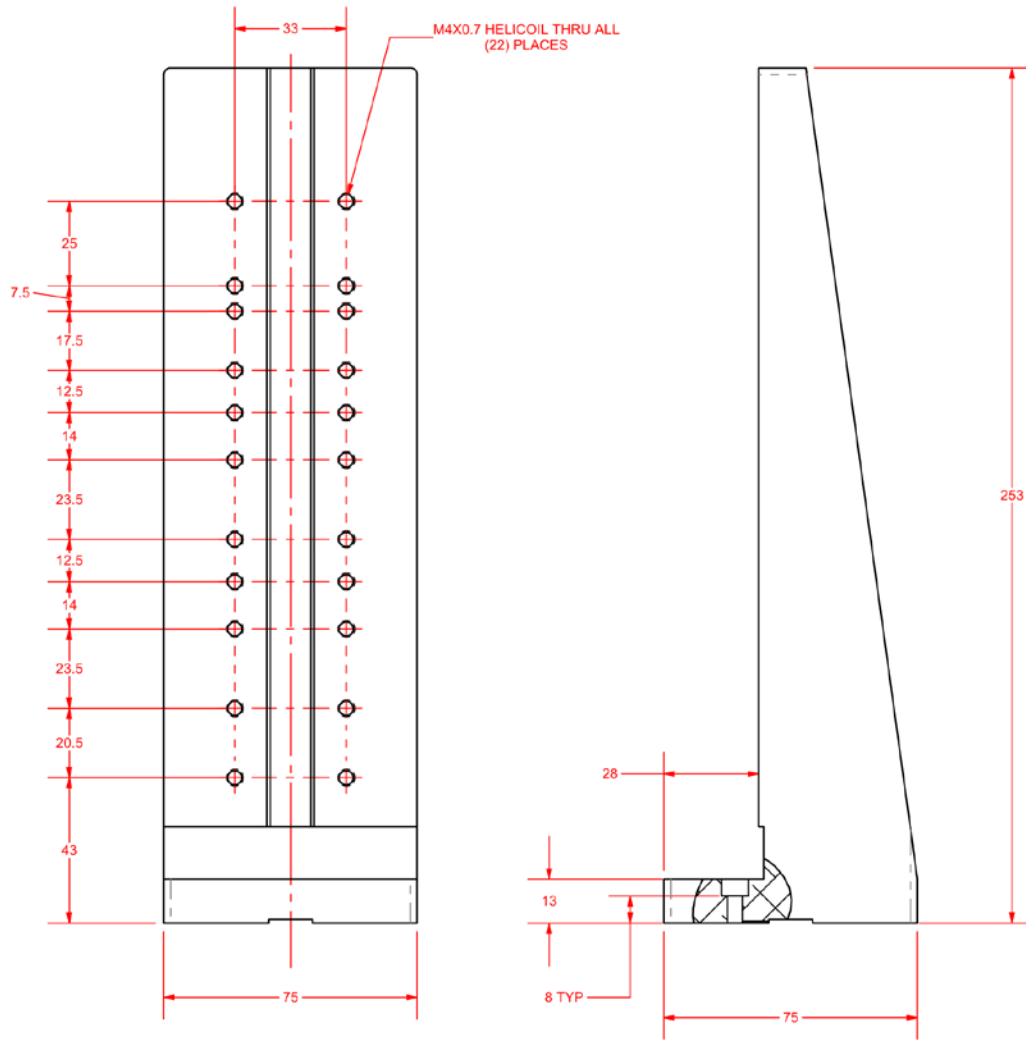
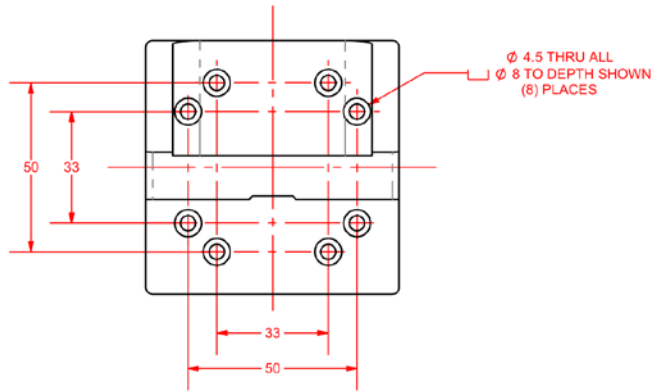


MP-MPS75SL-025



DIMENSIONS: MILLIMETERS

HDZ BRACKET DIMENSIONS



DIMENSIONS: MILLIMETERS