

NLS8 SERIES LINEAR STAGE



Heavy-duty Precision Linear Slide NLS8 linear slides are designed for a variety of applications in research and other industrial areas requiring precision positioning such as in semiconductor processing, fiber optics manufacturing and biotech automation.

The design of the NLS8 series slides was optimized for maximum stability and performance with the use of FEA analysis and incorporates the best in materials and component selection. For more reliability and durability, the ways and leads crews are protected with a strong machined cover and the encoder is mounted internally directly to the lead screw rather than being exposed to shock and contamination when mounted in the rear of the motor.

All NLS8 series slides are machined from 6061 aluminum alloy to provide a light yet stiff and stable linear slide.

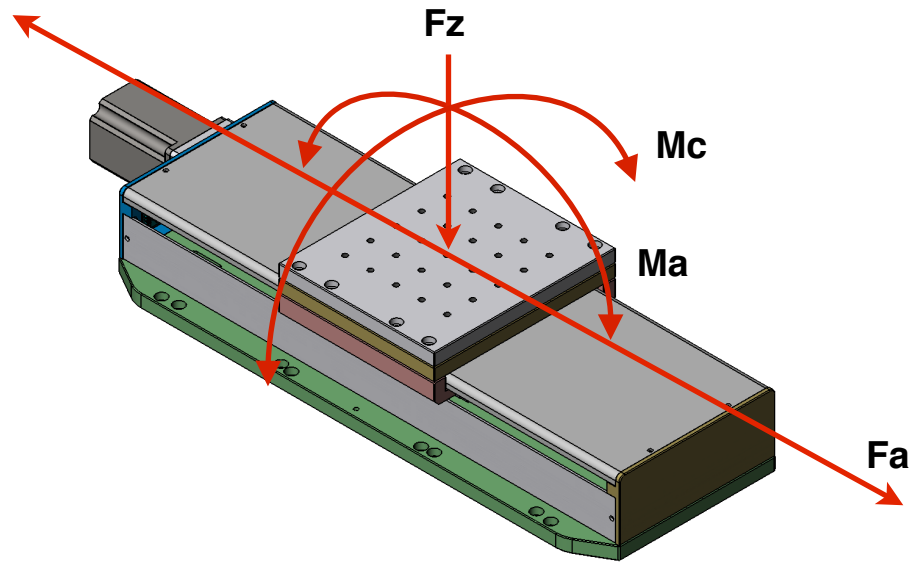
The drive system utilizes a stainless steel ACME lead screw with internally lubricated plastic drive nut. The drive nut offers zero backlash operation that automatically adjusts for wear to insure zero backlash for the life of the stage. The use linear guide bearings provide a smooth motion with high load capacity and stiffness. Since the carriage is supported over the entire travel of the stage, a good cantilevered load capacity can be achieved. Separate connectors for motor power and limit/encoder signals are provided for ease of operation. Integrated limit switches and a high torque size 23 stepper motor are supplied as standard items.

Specifications

Travel Range	200 mm (8"), 300 mm (12"), 400 mm (16"), 500 mm (20")
Resolution	0.08 μm (Stepper Motor) 1 μm (Servo Motor)
Accuracy	Lead Screw (0.0006 mm/mm of travel) Linear Encoder ($\pm 1.5 \mu\text{m}$ / 100mm of travel)
Max. Speed	25 mm/sec (Stepper Motor) 50 mm/sec (Servo Motor)
Uni-direction Repeatability	1 μm 0.5 μm with linear encoder option
Bi-direction Repeatability	15 μm 0.5 μm with linear encoder option
Maximum Load	113 kg (250 lbs)
Encoder	Option 1: Optical rotary encoder mounted to read of motor, 4000 CPR with index Option 2: Optical linear encoder with index, 0.1 μm resolution
Limit Switches	Optical switches, normally closed
Home Switch	Optical switch, normally closed
Lead Screw Pitch	4 mm
Stage Weight	NLS8-200 = 9 kg (20 lbs) NLS8-300 = 10 kg (22 lbs) NLS8-400 = 12 kg (25 lbs) NLS8-500 = 14 kg (31 lbs)
Material	Aluminum
Finish	Black Anodize
Operating Temperature	0°C to 50°C

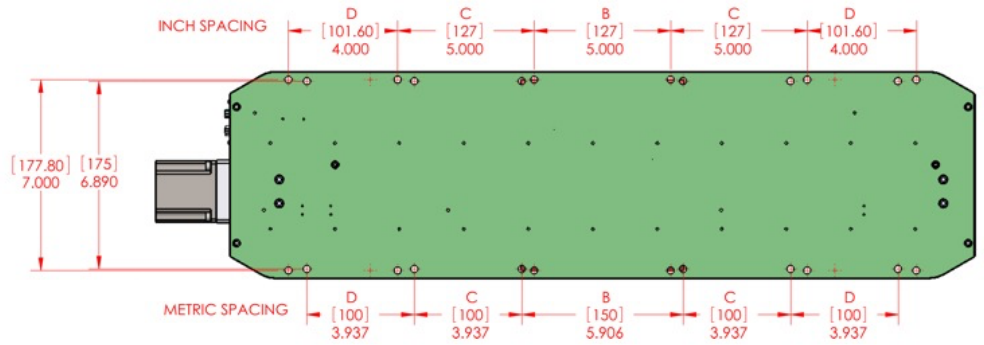
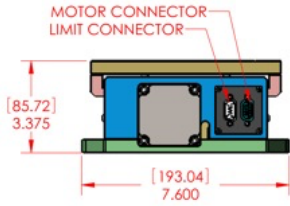
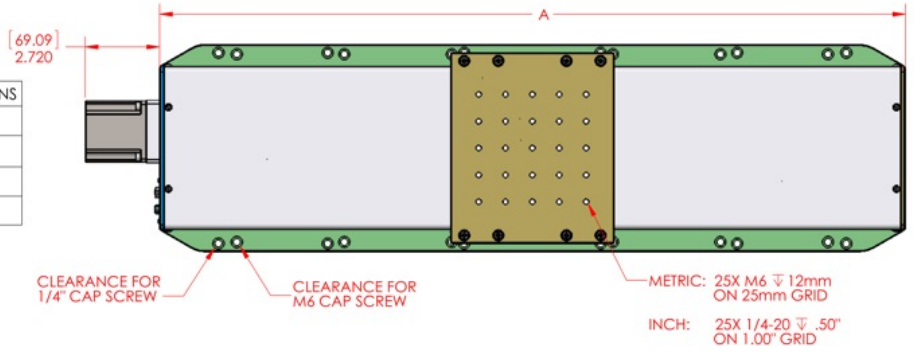
Load Characteristics

Axial Load F_a	36.3 kg (80 lbs) @ 25 mm/sec
Normal Load F_z	113.4 kg (250 lbs)
Moment Load M_a	297 Nm (219 lb-ft)
Moment Load M_c	230 Nm (170 lb-ft)

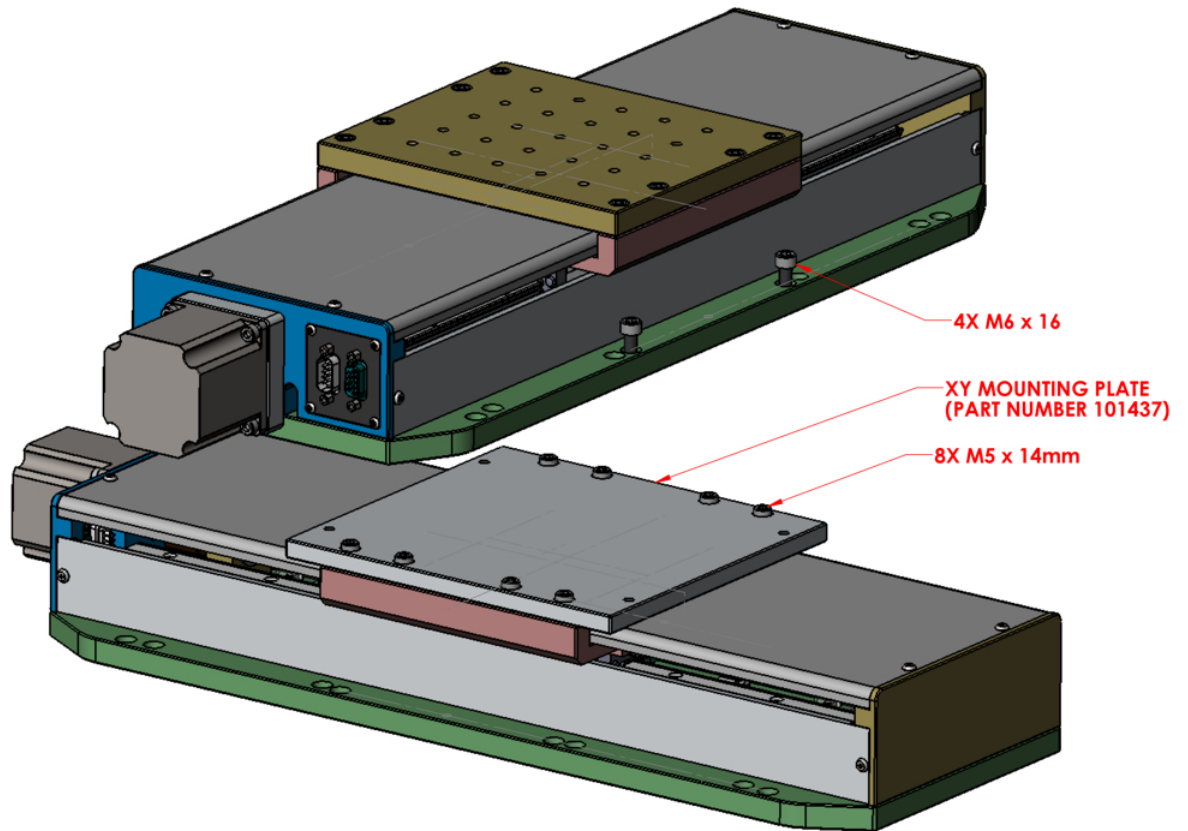


Dimensions

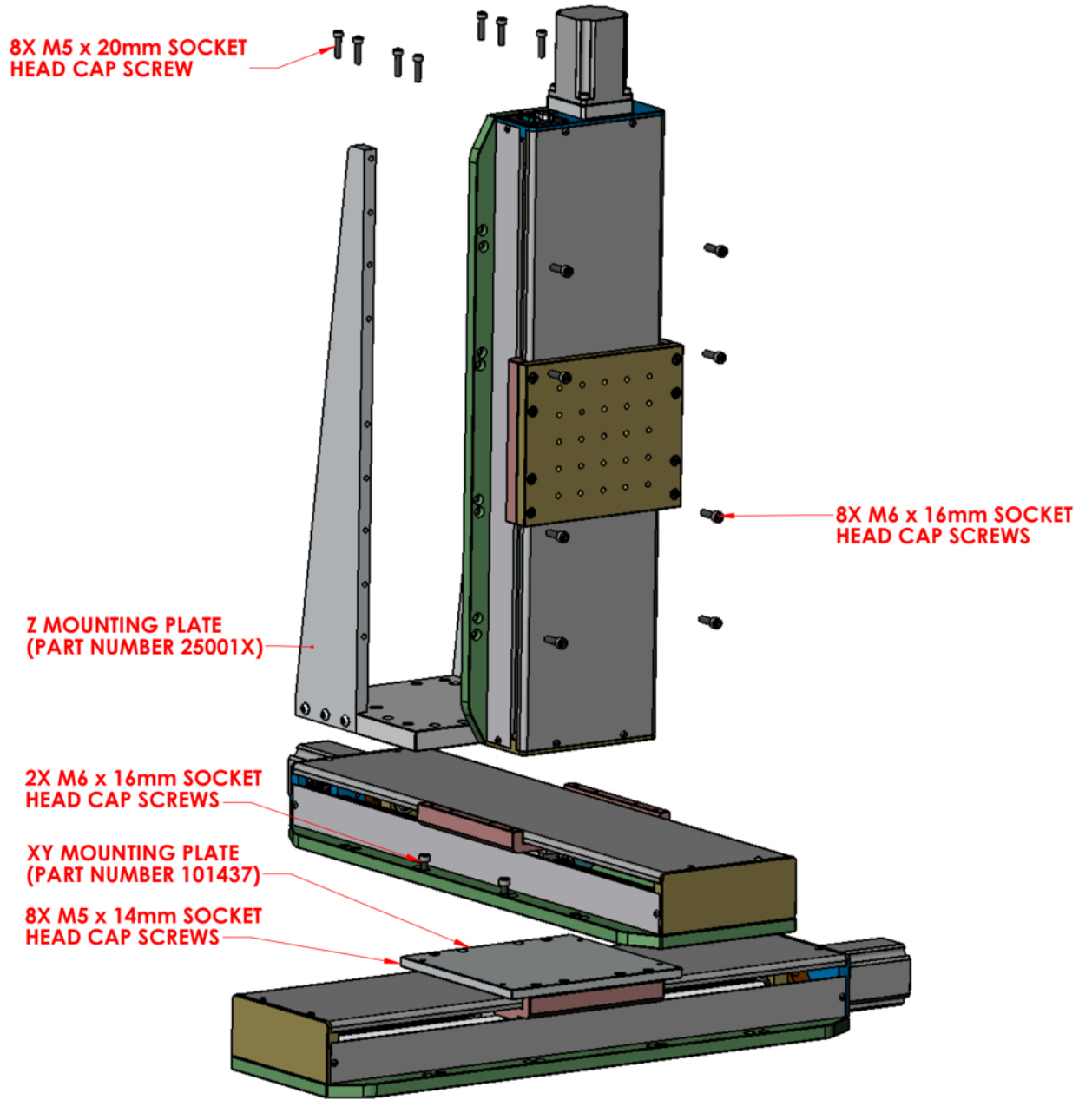
TRAVEL	A	HOLE LOCATIONS
200mm	388.6mm/15.300"	B
300mm	490.2mm/19.300"	B, C
400mm	591.8mm/23.300"	B, C
500mm	693.4mm/27.300"	B, C, D



XY Configuration



XYZ Configuration



Standard Stepper Motor Version

Motor

DB-9 Male	Description
1.	Phase A
2.	Phase A'
3.	Phase B
4.	Phase B'

Motor Specifications

Step Size: 1.8°/step

Amps/Phase: 2.8

Resistance: 0.9 Ohm/Phase

Inductance: 2.5 mH/Phase

Signals (Encoder Option)

DB-9 Female	Description
1.	+ Limit Switch
2.	- Limit Switch (motor side)
3.	Ground
4.	Home Switch
5.	+5V

Limit switch wired normally closed

Signals (Encoder Option)

HD-15 Female	Description
1.	+ Limit Switch
2.	- Limit Switch
3.	Limit Switch Ground
4.	Encoder Ground
5.	+5V Encoder Power
6.	Ch. A
7.	Ch. A-
8.	Ch. B
9.	Ch. B-
10.	Index +
11.	Index -
12.	Home Switch

Limit switch wired normally closed

Pin Assignment

MDrive Stepper Motor Version

Motor Connector

DB-9 Male	Description
1.	+24 VDC
2.	Power Ground

Signals Connector

DB-9 Female	Description
1	I/O 3
2	I/O 4
3	GND
4	Analog Input

RS-422 Communications

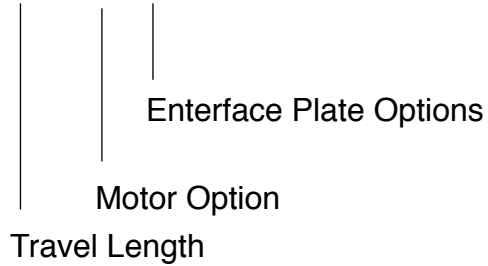
10-Pin IDC	Description
1	TX+
2	TX-
3	RX+
4	RX-
5	Aux-Logic
6	RX+
7	RX-
8	TX-
9	TX+
10	COMM GND

The forward limit switch is connected to I/O 1.
The reverse limit switch is connected to I/O 2.
Limit switches are wired normally closed.

Ordering Information

Part Number Configuration

NLS8 - XXX - XXX



Interface Plate Options

- 1 English Plate
- 2 Metric Plate

Travel Length

- 200 mm
- 300 mm
- 400 mm
- 500 mm

Motor Options

- Stepper Motor
- Stepper Motor with Encoder
- MDrive Motor with Encoder
- Servo Motor

Motion Controllers

The following Newmark Systems, Inc. controllers are compatible with the NLS8 Stage.

[NCS-A1 Series](#) | [NSC-G Series](#)