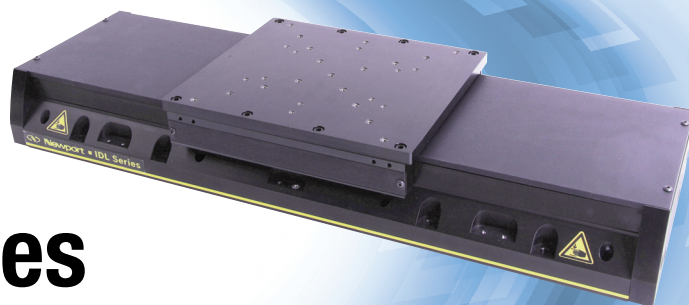


# Long Travel Industrial Linear Stages



## IDL SERIES



The IDL Series of Industrial-grade linear stages is another robust family of high quality Newport products, designed for higher throughput and reliability. This series is designed specifically for laser micro-machining applications that require high precision, down to 50 nm. Additional features for use in industrial environments include a hard top cover, flexible side bands and air purge.

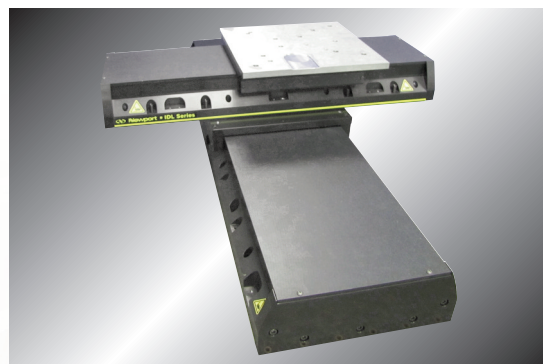
Starting with an FEA-optimized, stiff body, recirculating bearings, high efficiency linear motor and a direct read linear encoder, all components were selected to enable the high precision and dynamic performance expected of high throughput applications. Other features include positive and negative end of runs to prevent overtravel, energy absorbers for unintended scenarios and an origin switch that can be used as a reference for absolute positioning.

Four sizes are offered to address a wide range of loads and travel, which are all compatible with the ACS controller.

- 200 to 1,200 mm travel range
- Speed of 2 m/s
- High load capacity: Up to 2,000 N
- High efficiency linear motor
- Outstanding accuracy
- Stiff aluminum base

## DESIGN DETAILS

Base Material	Aluminum
Bearings	Recirculating caged ball bearings
Drive Mechanism	Ironless Linear motor
Feedback	Linear steel scale with 20 $\mu$ m pitch
Limit Switches	Positive and Negative End-Of-Run -5 V
Origin	Optical at center of travel
Cable	5 m Connectorized, optional cable management



# IDL SERIES

## SPECIFICATIONS

### Model IDL165-LM

Travel Range (mm)	100	200	300
Minimum Incremental Motion <sup>(2)</sup> (μm)		0.050	
Bi-directional Repeatability <sup>(1)</sup> (μm), Typical (Guaranteed)		±0.10 (±0.75)	
Accuracy <sup>(1)</sup> (μm), Typical (Guaranteed) *	(±2.0)	0.8 (±2.0)	(±2.0)
Origin Repeatability (μm)		±0.1	
Maximum Speed (mm/s)		2,000	
Pitch <sup>(1)(3)</sup> (μrad), Typical (Guaranteed)	(±15)	(±20)	(±30)
Yaw <sup>(1)(3)</sup> (μrad), Typical (Guaranteed)	(±15)	(±20)	(±30)
Straightness/Flatness (μm)	±2.5/±2.5	±4.5/±4.5	±6/±6
Normal Load Capacity [Cz] (N)		450	
Axial Load, Continuous, [±Cx] (N)		57	

### Model IDL225-LM

Travel Range (mm)	200	300	400	500	600	1000	1200
Minimum Incremental Motion <sup>(2)</sup> (μm)				0.050			
Bi-directional Repeatability <sup>(1)</sup> (μm), Typical (Guaranteed)				±0.10 (±0.75)			
Accuracy <sup>(1)</sup> (μm), Typical (Guaranteed) *	(±2.0)	±0.9 (±2.0)	(±2.3)	(±2.7)	±1.2 (3.0)	(±4.3)	(±5.0)
Origin Repeatability (μm)				±0.1			
Maximum Speed (mm/s)				2,000			
Pitch <sup>(1)(3)</sup> (μrad), Typical (Guaranteed)	(±20)	±18 (±25)	(±30)	(±35)	±35 (±40)	(±55)	(±65)
Yaw <sup>(1)(3)</sup> (μrad), Typical (Guaranteed)	(±20)	±13 (±25)	(±30)	(±30)	±15 (±30)	(±40)	(±40)
Straightness/Flatness (μm)	±4.5/±4.5	±6/±6	±7/±7	±8/±8	±9/±9	±13/±13	±13/±13
Normal Load Capacity [Cz] (N)				1,000			
Axial Load, Continuous, [±Cx] (N)				113			

### Model IDL280-LM

Travel Range (mm)	300	400	500	600	700	1000	1200
Minimum Incremental Motion <sup>(2)</sup> (μm)				0.050			
Bi-directional Repeatability <sup>(1)</sup> (μm), Typical (Guaranteed)				±0.10 (±0.75)			
Accuracy <sup>(1)</sup> (μm), Typical (Guaranteed) *	±0.7 (±2.0)	(±2.3)	±(±2.7)	±1.3 (±3.0)	(±3.3)	(±4.3)	(±5.0)
Origin Repeatability (μm)				±0.1			
Maximum Speed (mm/s)				2,000			
Pitch <sup>(1)(3)</sup> (μrad), Typical (Guaranteed)	±21 (±25)	(±30)	(±35)	±20 (±40)	(±45)	(±55)	(±60)
Yaw <sup>(1)(3)</sup> (μrad), Typical (Guaranteed)	±15 (±25)	(±30)	(±30)	±14 (±30)	(±30)	(±40)	(±40)
Straightness/Flatness (μm)	±5/±5	±7/±7	±7/±7	±8/±8	±10/±10	±11/±11	±11/±11
Normal Load Capacity [Cz] (N)				1,500			
Axial Load, Continuous, [±Cx] (N)				221			

### Model IDL560-LM

Travel Range (mm)	450	600	750	1000
Minimum Incremental Motion <sup>(2)</sup> (μm)				0.050
Bi-directional Repeatability <sup>(1)</sup> (μm), Typical (Guaranteed)				±0.10 (±0.75)
Accuracy <sup>(1)</sup> (μm), Typical (Guaranteed) *	(±2.5)	±1.5 (±3.0)	(±3.5)	(±4.3)
Origin Repeatability (μm)				±0.1
Maximum Speed (mm/s)				2,000
Pitch <sup>(1)(3)</sup> (μrad), Typical (Guaranteed)	(±33)	(±40)	(±45)	(±55)
Yaw <sup>(1)(3)</sup> (μrad), Typical (Guaranteed)	(±30)	(±30)	(±30)	(±40)
Straightness/Flatness (μm)	±7/±7	±8/±8	±10/±10	±11/±11
Normal Load Capacity [Cz] (N)				2,000
Axial Load, Continuous, [±Cx] (N)				393

<sup>1)</sup> Shown are ± half the peak to peak values of typical and guaranteed specifications. For the definition of typical specifications which are about 2X better than the guaranteed values, visit [www.newport.com](http://www.newport.com) for the Motion Control Metrology Primer.

<sup>2)</sup> Driver dependent.

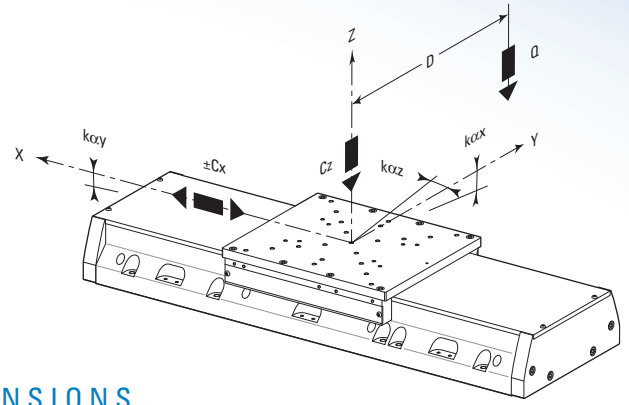
<sup>3)</sup> To obtain arcsec units, divide μrad value by 4.8.

\* **Note** : The error mapping option will increase the accuracy of the IDL stages.

LOAD CHARACTERISTICS AND STIFFNESS

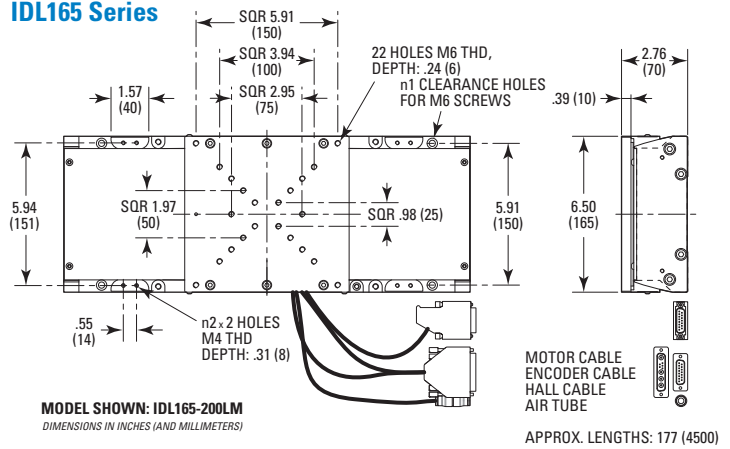
	IDL165	IDL225	IDL280	IDL560
Cz, Normal center load capacity on bearings (N)	450	1,000	1,500	2,000
±Cx, Axial Load, Continuous (N)	57	113	221	393
k <sub>cx</sub> , Angular stiffness [Roll] (μrad/Nm)	0.3	0.7	0.3	0.12
k <sub>cy</sub> , Angular stiffness [Pitch] (μrad/Nm)	0.4	0.55	0.3	0.37
k <sub>cz</sub> , Angular stiffness [Yaw] (μrad/Nm)	0.4	0.3	0.2	0.1

**Note:** The max. values for the normal center load (Cz) and the off-center load (Q) are given in the graph located close to the dimension drawings.



DIMENSIONS

IDL165 Series



RECOMMENDED CONTROLLERS/DRIVERS

<b>CMhp</b>	ACS 2-3 Axis Motion Controller/drivers
<b>SP+EC</b>	ACS 4-axis Motion Controller
<b>UDMnt</b>	ACS driver
<b>XPS-Qx</b>	Universal Controller/Driver (special order)

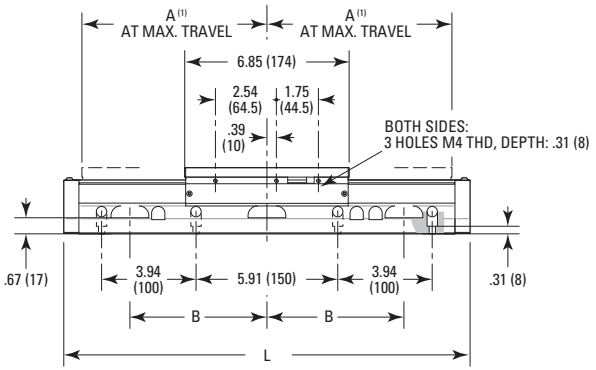
**Note :** Performance is driver and motor dependent.

ORDERING INFORMATION

Series	Width (mm)	Travel (mm)	Drive
IDL	165	100	LM
		200	
	225	300	
		400	
	280	450 <sup>(1)</sup>	
		500 <sup>(2)</sup>	
	560	600	
		700 <sup>(2)(3)</sup>	
		750 <sup>(1)</sup>	
		1000	
		1200	

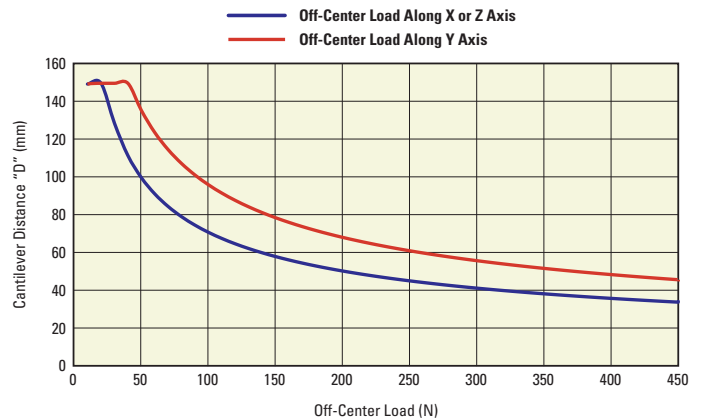
*Example: The IDL225-600LM is an IDL stage with 600 mm travel and a linear motor drive.*

- <sup>1)</sup> Only IDL560 stages.
  - <sup>2)</sup> Except IDL560 stages.
  - <sup>3)</sup> Except IDL225 stages.
- LM: Linear motor



MODEL	TRAVEL	L	A <sup>(1)</sup>	n1	B	n2
IDL165-200LM	7.87 (200)	16.93 (430)	7.67 (194.8)	8	5.71 (145)	6
IDL165-300LM	11.81 (300)	20.87 (530)	9.64 (244.8)	8	5.71 (145)	6

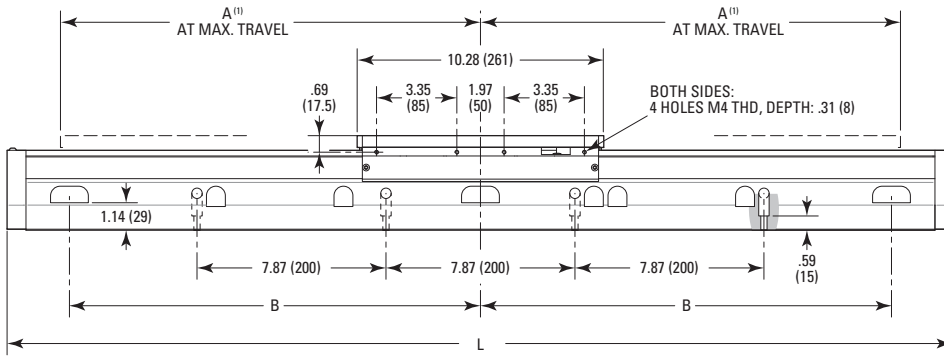
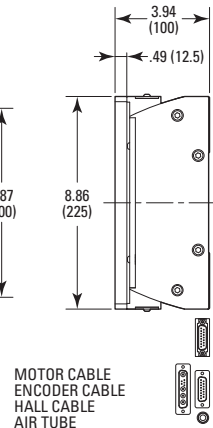
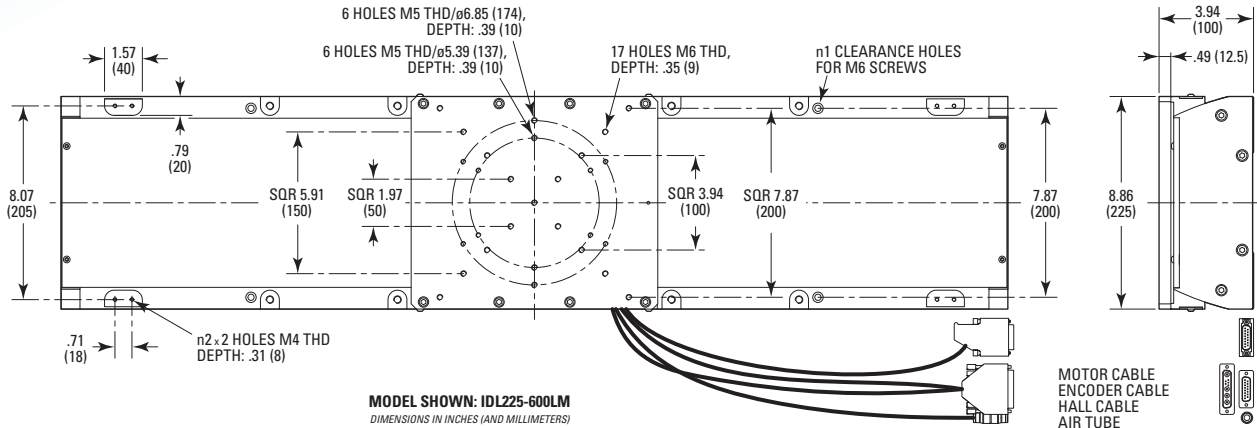
<sup>(1)</sup> INCLUDING OVER-TRAVEL ALLOWED BY THE HARD STOP.



**Note :** For Brushless motor versions, contact sales@newport.com

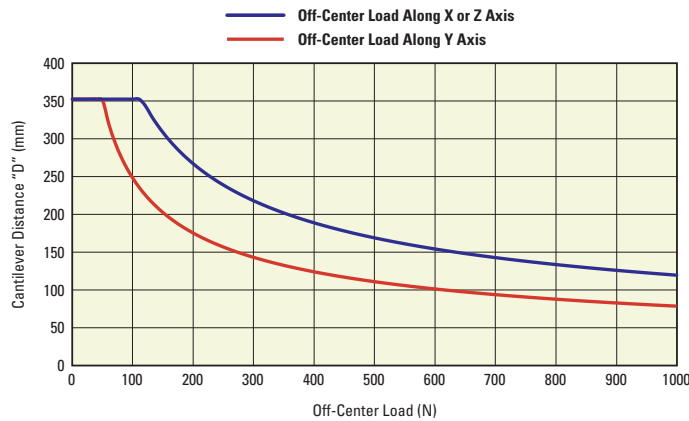
# IDL SERIES

## IDL225 Series

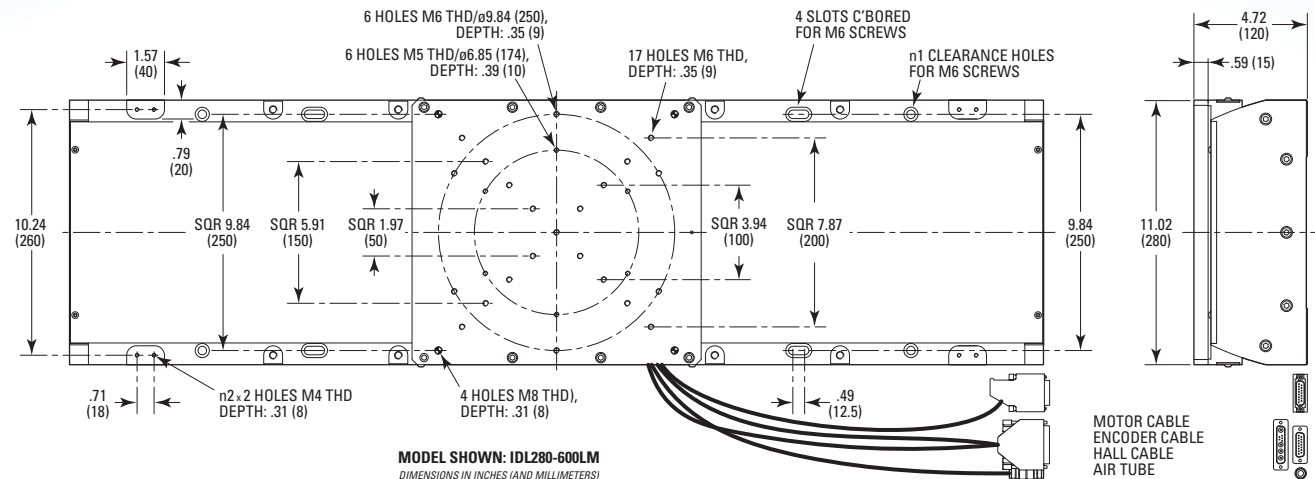


MODEL	TRAVEL	L	A <sup>(1)</sup>	n1	B	n2
IDL225-200LM	11.81 (200)	23.07 (586)	9.63 (244.5)	8	8.07 (205)	6
IDL225-300LM	11.81 (300)	27.00 (686)	11.59 (294.5)	8	8.07 (205)	6
IDL225-400LM	15.75 (400)	30.94 (786)	13.56 (344.5)	8	8.07 (205)	6
IDL225-500LM	19.69 (500)	34.88 (886)	15.53 (394.5)	8	8.07 (205)	6
IDL225-600LM	23.62 (600)	39.45 (1002)	17.50 (444.5)	8	17.13 (435)	6
IDL225-1000LM	39.37 (1000)	54.57 (1386)	25.37 (644.5)	12	17.13 (435)	6
IDL225-1200LM	47.24 (1200)	63.07 (1602)	29.31 (744.5)	16	17.13 (435)	6

<sup>(1)</sup> INCLUDING OVER-TRAVEL ALLOWED BY THE HARD STOP.

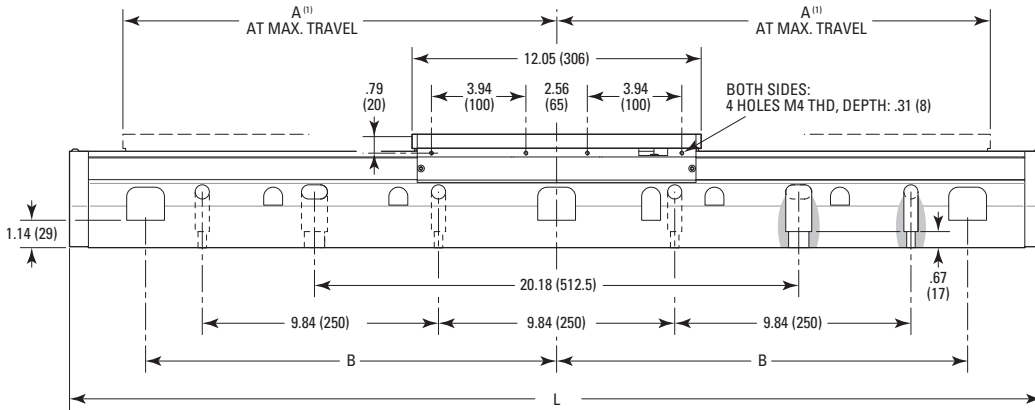


## IDL280 Series



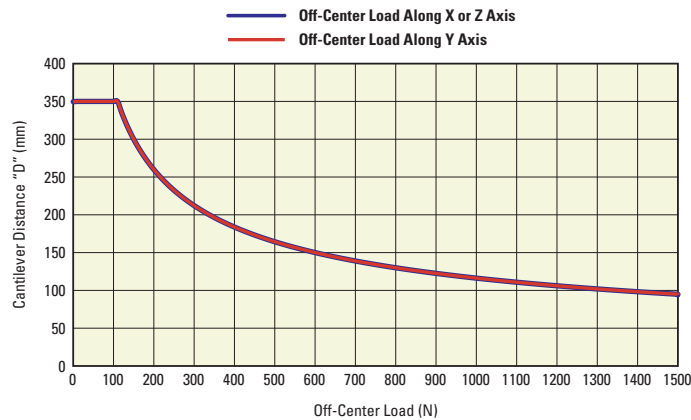
MOTOR CABLE  
ENCODER CABLE  
HALL CABLE  
AIR TUBE

APPROX. LENGTHS: 177 (4500)



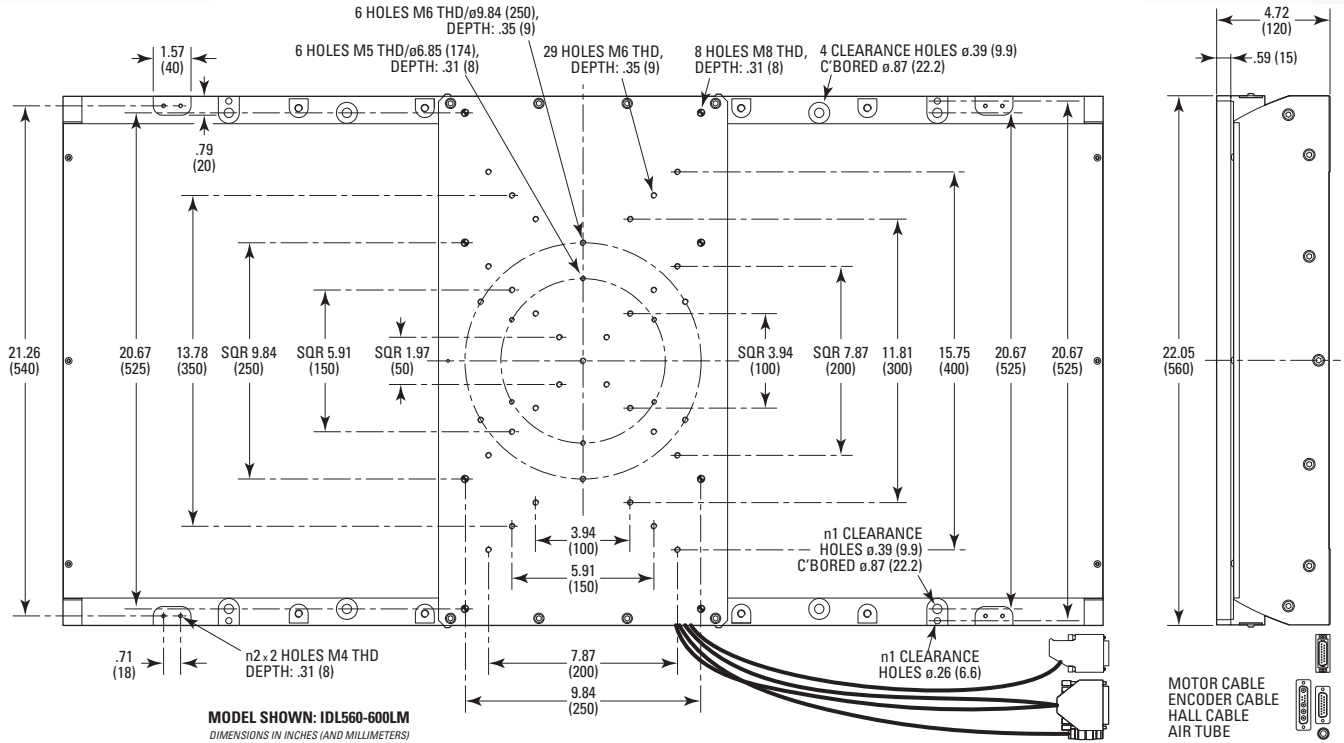
MODEL	TRAVEL	L	A <sup>(1)</sup>	n1	B	n2
IDL280-300LM	11.81 (300)	27.78 (731)	12.48 (317)	4	8.07 (205)	6
IDL280-400LM	15.75 (400)	32.72 (831)	14.45 (367)	8	8.07 (205)	6
IDL280-500LM	19.69 (500)	36.65 (931)	16.42 (417)	8	8.07 (205)	6
IDL280-600LM	23.62 (600)	40.59 (1031)	18.39 (467)	8	17.13 (435)	6
IDL280-700LM	27.56 (700)	44.53 (1131)	20.35 (517)	8	17.13 (435)	6
IDL280-1000LM	39.37 (1000)	56.34 (1431)	26.26 (667)	12	17.13 (435)	6
IDL280-1200LM	47.24 (1200)	64.21 (1631)	30.20 (767)	12	17.13 (435)	6

<sup>(1)</sup> INCLUDING OVER-TRAVEL ALLOWED BY THE HARD STOP.

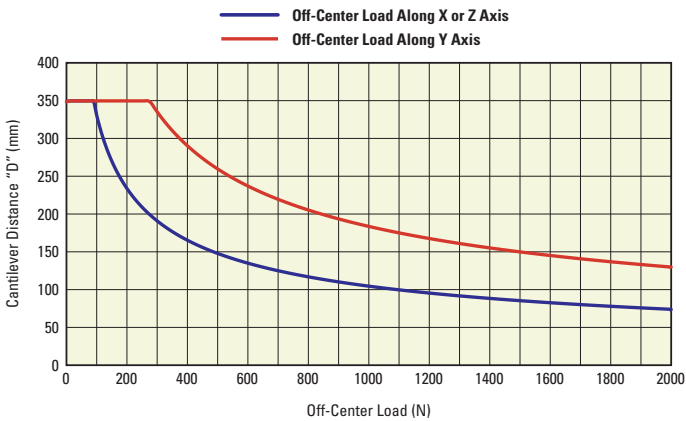
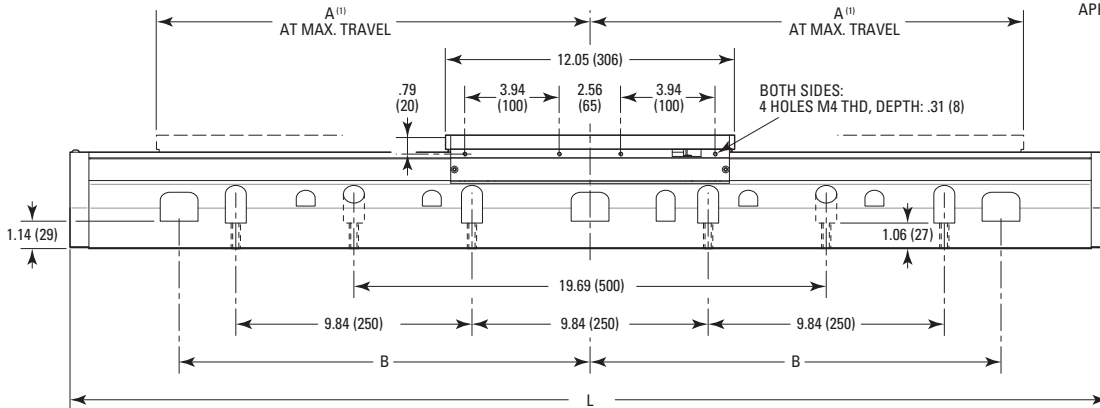




IDL560 Series



MODEL SHOWN: IDL560-600LM  
 DIMENSIONS IN INCHES (AND MILLIMETERS)



MODEL	TRAVEL	L	A <sup>(1)</sup>	n1	B	n2
IDL560-450LM	17.72 (450)	39.41 (1001)	15.43 (392)	8	8.07 (205)	6
IDL560-600LM	23.62 (600)	43.35 (1101)	18.39 (467)	8	17.13 (435)	6
IDL560-750LM	29.53 (750)	51.22 (1301)	21.34 (542)	8	17.13 (435)	6
IDL560-1000LM	39.37 (1000)	59.09 (1501)	26.26 (667)	8	17.13 (435)	6

<sup>(1)</sup> INCLUDING OVER-TRAVEL ALLOWED BY THE HARD STOP.



Newport Corporation, Global Headquarters  
 1791 Deere Avenue, Irvine, CA 92606, USA

[www.newport.com](http://www.newport.com)

PHONE: 1-800-222-6440 1-949-863-3144 FAX: 1-949-253-1680 EMAIL: [sales@newport.com](mailto:sales@newport.com)

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