

Introduction



Motor Driven



Velmex, Inc. manufactures practical, reliable UniSLIDE®, BiSLIDE® and XSLIDE™ Assemblies in a wide choice of cross sections for medium or high accuracy positioning and scanning. Applications include instrumentation and light machining. The UniSlide Assemblies System offers you the opportunity to specify the slide width, length, lead screw and motor to precisely satisfy your requirements. (The BiSlide and XSlide System has fewer variations but may be more design and cost effective. Please refer to the BiSlide section.) Although there are numerous versions of UniSlide Assemblies, they all share a common design. The key to specifying the proper assembly is understanding the UniSlide Assembly Part Numbering System which is explained on page 2.9.

To begin, we recommend you develop a list of requirements for your application as detailed on page 2.8. Then, look at the examples beginning on page 2.5 of this section (Motor Driven). You'll find even more examples on our website. You should also review the Engineering Information, Sizes, and Load Capacity Sections.

Note: Throughout this catalog you'll see **Keywords in RED**. To get more information, including access to drawings, specs, photos of examples and the latest innovations, go to our web site, www.velmex.com, and enter the corresponding **Keyword in the Quick Search Box**.



Request for Quotation

Please copy and fill out this form for help in selecting a motorized UniSlide or BiSlide Assembly.

Name _____ Phone _____

Company _____ Fax _____

Address _____ Email _____

City _____ State _____ Zip _____

Application Objective _____

This is a positioning application (My work will be done when slides are stationary)

This is a scanning application (My work will be done when slides are in motion)

I need linear or circular interpolation

I have my own motors — Manufacturer/Type/Model? X _____

I have my own controller _____ Y _____

_____ Z _____

A sketch or drawing of your application is helpful. ⊖ _____

<i>Axis</i>	<i>Travel</i>	<i>Payload Weight</i>	<i>Payload Moment</i>	<i>Speed Range</i>	<i>Resolution</i>	<i>Accuracy of Position</i>	<i>Hours/Day Unit is in Use</i>	<i>Duty Cycle</i>
X								
Y								
Z								
⊖								

Fax form to us at 585-657-6153

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Motor Driven

Motorized UniSlide



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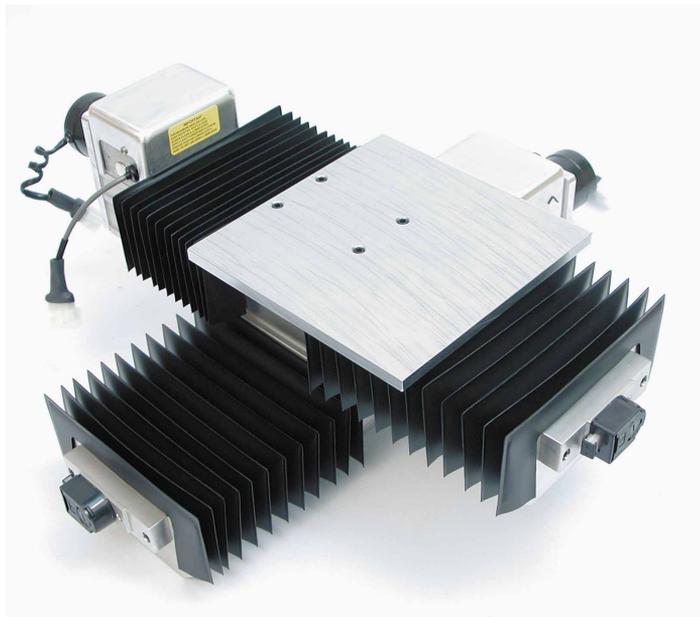
<i>Series MB/MA4000</i>	<i>2.21</i>
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Examples and Application Photos

Here are examples of UniSlide® stock and custom positioning equipment. Previous applications include pill crushers, hot wire anemometry, connector testers, tire

manufacturing, tensile test stand equipment and laser guides. For help call our engineering staff, fill out our website RFQ/RFA form or the Fax-a-Quote form on page 2.2.

Example 1: Medium travel UniSlide with adjustable internal limit switches and resonance damper on the extended motor shaft.



Example 3: Small, compact, low profile XY assembly with timing belt drive. Configurations also available with side or back mount motor.

Example 2: An XY combination with way covers and rotary encoders mounted to lead screwshaft extensions.





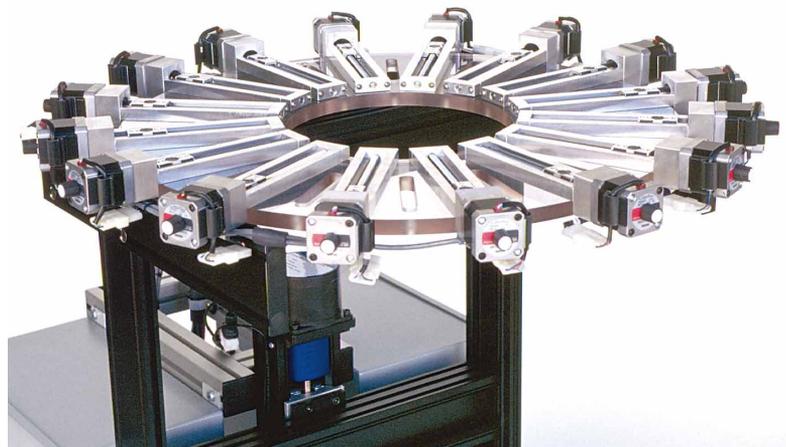
Example 4: UniSlide Assembly with two sliding carriages and a left and right hand threaded lead screw for simultaneous reciprocal motion. This design is useful for alignment and centering operations.

Example 5: Preassembled XY tables come in two Series and five travel distances. Optional linear encoders are available in 1 and 5 Micron resolutions.



Example 6: A ring engraving machine utilizing linear UniSlide Assembly and Velmex rotary table.

Example 7: A circular array of 16 Series M1500 UniSlides for moving diagnostic fiber optic lights. The platform is positioned vertically by a BiSlide Assembly.





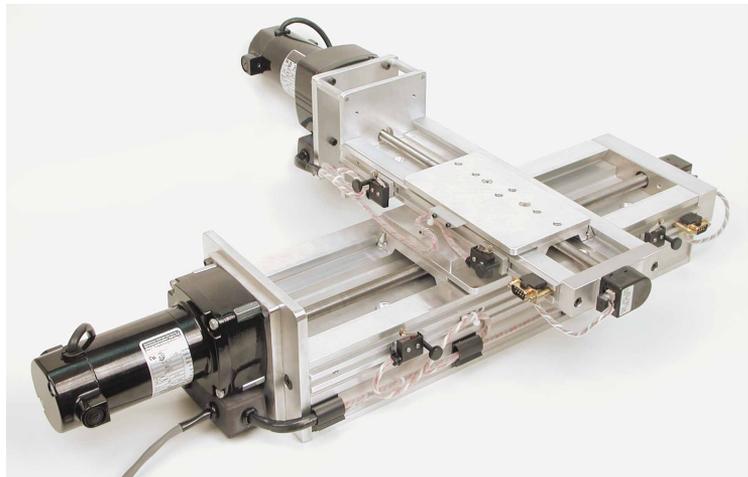
Example 8: A 9 inch wide UniSlide Assembly. UniSlides come in eight cross-sectional sizes and base lengths from 3 inch to 80 inch.

Example 9: Low voltage Speed Control, a small DC gear motor and MB2500 UniSlide produce smooth motion at slow speed.



Example 10: There are two sizes of rotary tables available in four gear ratios.

Example 11: Combining MB6000 and MA4000 Series will reduce total system height. Both units have optional encoders and outboard limit switches.



Linear UniSlide Assemblies Construction

Motor driven UniSlide Assemblies are constructed of 6000 series hard aluminum alloy dovetail base extrusion, or simply base. Straightness for the base are given on page 2.10. The lead screw engages the drive nut which is secured to the movable sliding carriage called a slider. The slider travels on low friction polymer bearing pads and has an adjustment for side play.

There are two styles of dovetail base cross section. The deeper "B" Style, with reinforcing ribs along the bottom, is designed specifically for most common motor driven applications. The standard "B" base incorporates a protective internal limit switch assembly to interface with the motor. This limit switch assembly is denoted by "J" in the part number. The "B" Style base also allows most motor units to be mounted directly on a flat surface.

In applications where reduced slide height is a concern, the "A" cross section extrusion can be used. Motors attached to the "A" cross section base will extend above and below the base. See pages 2.17-2.26 for more information.

Selection

To select a linear slide, you determine a part number based on the width (related to the load), length (related to travel) and lead screw pitch (a function of resolution and speed) for your requirements. Begin by selecting a UniSlide Series. A Series is a group of UniSlide stages with the same base width and height. For example, the Series MB4000 units are 4" W x 2 11/16" H and have a maximum horizontal load

capacity of 100 lbs. Next, specify the slide base length. The nominal length is the sum of the required travel plus the slider length. For the MB4012 (nominal base length = 12"), with the standard 4" long slider the net travel is 8" ($12" - 4" = 8"$). See page 2.12 for UniSlide Base Size and Lengths. Finally, the pitch of the lead screw is chosen. Our screws come in two accuracy grades: Standard and Precision. Please refer to Table II, page 2.12, for available lead screw choices. Motor and control selection is covered separate section in the catalog.

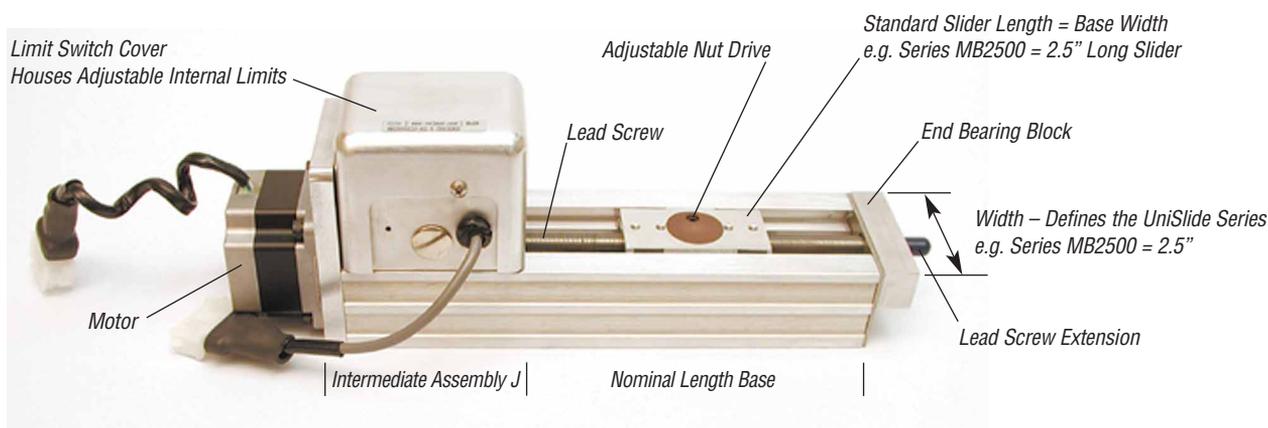
Application Requirements

Before beginning the reader should define his requirements thoroughly. Please determine the following:

1. Type of motion. See the Functional Classification discussion on page 3.4.
2. Human-to-Motor Control interface.
3. Motor control and motor type. See page 3.1.
4. Mechanical requirements of the system including:
 - Load (weight and movement on UniSlide Assembly)
 - Speed
 - Travel distance
 - Lead screw accuracy required (Standard or Precision Grade)
 - Resolution (smallest movement)
 - Life or number of duty cycles/day
 - Position indication system
 - Environmental conditions

After becoming familiar with the catalog, please call Velmex and our technical sales staff will assist you in the selection of equipment.

UniSlide Assembly Components



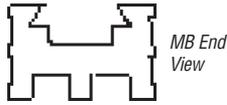
UniSlide Numbering System

For typical Model Number M B 25 12 C J - S2.5

M

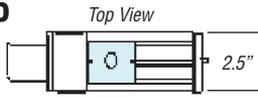
Denotes a motor mounting plate and motor coupling is present.

B



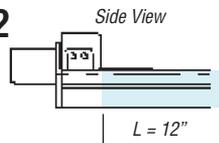
Specifies **cross section type**. **B** is the standard motor driven base. **A** is the low profile base design.

25



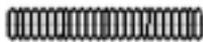
Specifies the UniSlide Assemblies **Series**. The Series is defined by the **base width** and is measured in tenths of inches. The example unit is Series MB2500. See Parameters by Series, page 2.12, for the available choices.

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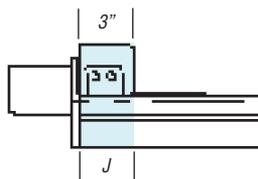
Specifies the **nominal length of the dovetail base (L)**. This is the base length available for slider travel and excludes the length that the internal limit switch assembly J occupies. Standard base lengths increase in 3" increments.

C



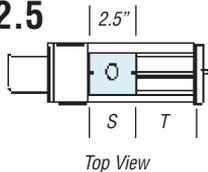
Designates the **lead screw**. See Table II, page 2.12 for available choices. In this example, C = 40 revolutions /in., in the Standard Grade.

J



Indicates Internal Limit Switch **J** is present. It consists of two adjustable limit switches, control rod with two collars and cover atop an additional 3" of dovetail base as shown. Outboard style limit switches may be ordered in place of, or in addition to, internal limit switches. See page 2.31.

S2.5



Defines the **slider length (S)**, for either standard sliders or one of the optional lengths. See Table I, page 2.12, for the available choices. Travel (T) + slider length (S) = required nominal length of dovetail base (L). For this example, S = 2.5" and L = 12" which yields a travel of 9.5". See the price list for the travel of UniSlide Assemblies with standard length sliders.

Other Letter Prefixes:

Z Indicates only dovetail base is hard coat anodized and dyed black. See page 2.32.

MAXY Designates an assembled XY table, See page 2.29.

SP Designates an assembly with a special modification.

N Indicates dovetail base has electroless nickel coating.

Suffixes:

Lead Screws: B, C, W1, W2, W4, P2.5, P5, P10, P20, P40, K1 or K2, and Q1 or Q2. These indicate the lead screw grade and pitch. See page 2.12, Table II.

WC Way Covers

PC xx Parallel coupled Assembly. xx represents the center-to-center separation distance.

BK Black anodized – all aluminum parts.

See accompanying Price List for specific Model Numbers. All other options or details of a UniSlide Assembly should be described verbally in the Description portion of the order. This includes the make and model number of the motor if it will be mounted separately.

Length Summary

1. The length of the standard slider is always equal to the base width. Longer lengths are optional.
2. Travel length is the nominal base length minus the slider length.
3. Total length is the sum of the nominal base length plus 3" occupied by the Limit Switch Assembly, J, if present, plus the motor length, plus the length of the end bearing block plus the length of the lead screw shaft extension.

Refer to pages 2.17-2.28 for detailed drawings.

Engineering Information

Design Advantages of Linear UniSlide Assemblies

- Compact design yields long travel in a short work space
- A simple, reliable design that is easily adaptable
- Modular components facilitate multiple axis system
- A broad variety of lengths, sizes and features

Straightness

Commencing with a aluminum alloy extrusion having a straightness tolerance of half the normal commercial tolerance, the subsequent machining and lapping operations are designed to secure a high degree of straightness and parallelism in the dovetail ways. There are essentially three types of deviation from straightness that can occur. Referring to a UniSlide Assembly resting base down on a flat surface with its linear motion or longitudinal direction, X, there can be a departure from straightness in the upward direction, Z, which is designated as the bow error. There can be a deviation from straightness in the horizontal direction, Y, designated as horizontal run-out, or simply run-out. There can also be a twist in the direction of the slide, X.

The upper limits for these three deviations from straightness as determined by our manufacturing processes are:

Bow* – 0.002" per foot

Run-Out – 0.001" per foot

Twist – 1 milliradian per foot

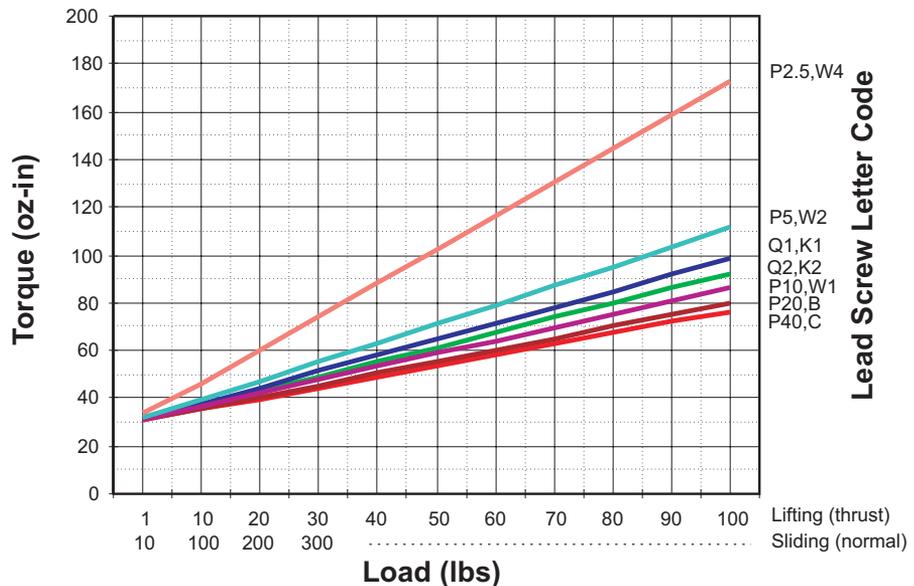
**As installed, bow can be affected by the degree of flatness of the supporting surface and relative tension in the mounting screws.*

If reduced straightness tolerances are required in the order of one half of the nominal values above, Velmex will select, measure and certify UniSlide Assemblies for the customer at an extra charge of \$7/in.

Wear Resistance

The aluminum alloy dovetail base and low friction polymer pads of the slider give excellent performance as a bearing material combination. Under moderate and light loads, the sideways play developed by wear during the first 30,000 cycles of operation is approximately 0.00015 inches. Thereafter, the wear is further reduced, amounting to approximately 0.00005 inches during the next 50,000 cycles. The slider has adjustment screws to compensate for moderate wear. Replacement bearing pads can be laminated to the slider at a nominal cost to recondition the slide after long periods of use, if necessary. For harsh environments and/or a higher number of cycles, UniSlide assemblies are available with hard coat anodized ways. See page 2.31, Options.

UniSlide Lead Screw Torque/Load*



Protective Limit Switch Assembly

Velmex recommends limit switches be included whenever motor torque could damage the lead screw or drive nut at the end of slider travel and for operator safety. This includes most applications except those with small stepper motors. See our website for a complete selection of limits.

Keyword: limits

Vacuum Applications

UniSlide linear and rotary positioners can be used in a vacuum to 10⁻⁶ torr with modifications. Please see our web site for an in-depth discussion of vacuum applications.

Keyword: vacuum

Nonmagnetic properties

Lead screws are made of 303 stainless steel (except W2/P5 and W4/P2.5) and are slightly magnetic. Where an exceptionally high degree of nonmagnetic character is required, Velmex may supply plated brass fasteners and brass lead screws. Rotary tables have several essential steel ball bearings. Electric motors are inherently magnetic.

Lengths

Catalog lengths are those listed, but longer units are also available. In-between lengths are also available on special order. Slider lengths are only those listed.

Warranty, Cancellation and Repair Return Policies**Warranty**

Velmex Inc. warrants all mechanical UniSlide Assemblies supplied by Velmex Inc. to be free from defects in materials and workmanship for one year from date of invoice.

Velmex motor controls have a two year limited warranty. Velmex's sole obligation under this warranty is limited to furnishing, without additional charge, a replacement for, or at its option, repairing or issuing credit for any product which is returned freight prepaid. This warranty shall not apply to any unit which has been subjected to misuse, improper operating conditions, or any alterations. The seller makes no claim that it's products are intended for every use or purpose to which they may be put by the buyer. IN NO EVENT SHALL VELMEX INC. BE LIABLE FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES.

Material Substitutions

Drive nuts: brass, oil-impregnated bronze, Vespel®.

Lead screws: brass, in some sizes.

Notice

Failure, improper selection or improper use of the products described herein or related items may cause personal injury and property damage. This catalog from Velmex, Inc. provides product options for further investigation by users having technical expertise. It is important that you thoroughly analyze all aspects of your application and review the information in this catalog. Due to the variety of operating conditions and applications for these products, the user, through his own analysis and testing, is solely responsible for making the final selection of products and determining that all performance, safety and warning requirements of the application are met. The products, including, without limitation, product features, specifications, designs, availability and pricing are subject to change by Velmex, Inc. at any time without notice.

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Cancellation Policy

Cancellation of orders consisting of standard products, for any reason, is subject to a 15% cancellation charge. Cancellation of orders for special products and non standard UniSlide Assemblies are subject to a cancellation charge to be determined by Velmex Inc.

Repair Return Policy

Please contact Velmex for an RMA number. When returning a UniSlide Assembly, include a written explanation of the problem. Velmex will inspect the unit and notify you of the cost, if any, before any work is undertaken. If the unit is unrepairable it will be returned at the owner's expense. The charge for non-warranty work will be assessed at the current hourly rate.

Table I: UniSlide Base Size, Length, and Slider lengths by Series

UniSlide Assembly Series ¹	Width	Height	Nominal Base Length in Inches ²	Slider Lengths in Inches	
				Standard ²	Optional ²
MA1500	1 1/2"	9/16"	3 to 12	1.5	2,3
MB2500	2 1/2"	1 11/16"	4 to 60	2.5	3,4
MA2500	2 1/2"	13/16"	4 to 24	2.5	3,4
MB4000	4"	2 11/16"	6 to 90	4	6
MA4000	4"	1 1/16"	6 to 36	4	6
MB6000	6"	3 1/8"	9 to 90	6	8
MA6000	6"	1 3/4"	9 to 48	6	8
MB9000	9"	3 1/8"	12 to 90	9	12

¹ Travel for specific model numbers are given in the accompanying price list.

² Nominal length is the length of the base used for slider travel.

Travel + Slider length = Nominal Base Length.

Optional longer slider length increases the stability of large or offset loads but reduces free travel.

Combining UniSlide Assemblies

Velmex offers XY plates and XZ brackets with threaded hole patterns to match the UniSlide Assembly bases. Thus, UniSlide Assemblies are easily combined for multiple coordinate systems. For dimensions and compatibility information see Adapter Plate and Brackets on page 1.44. See also preassembled Series MAXY X-Y Tables on page 2.29.

Lead Screw and Drive Nuts

A wide variety of lead screws are offered to allow you the greatest flexibility in designing the drive portion of your translation stage.

Lead screws are supplied in two quality grades and are priced accordingly. The Standard rolled screw may deviate in true pitch no more than 0.007"/10" (0.18mm/25.4cm). The Precision lead screw units, designated by the letter "P" if English or "Q" if Metric, have a lead error not to exceed 0.0015"/10" or 0.04mm/25.4cm. All screws are type 303 stainless steel except the W2/P5 and W4/P2.5 which are electroless nickel plated cold rolled steel. The standard drive nut is adjustable to minimize backlash and is made of Delrin or Delrin AF®.

Velmex can also supply lead screws alone. Special lead screws with right and left hand thread for together-apart motion with two sliders can be installed. Please contact us for pricing.

Detrimental lead screw resonance or whip can develop at high RPM. This resonance is a function of lead screw diameter and RPM. All "B" type UniSlide Assemblies over 36" in length will have a resonance damper included to minimize whip. Lead screw RPM should not exceed 1000 RPM for the following models: B2500 Series longer than 12", B4000 Series longer than 18" and B6000 or B9000 Series longer than 24".

Table II: Lead Screws

Standard Accuracy – 0.007"/10" or better
Letter Codes – C, B, W1, W2, W4, K1 and K2

Precision Accuracy – 0.0015"/10" or better
Letter Codes – P40, P20, P10, P5, P2.5, Q1 and Q2

Letter Code		Screw Thread	Turns per Inch	Advance/Rev. (Lead)	Lead Screw Diameter			Efficiency
Standard Accuracy	Precision Accuracy				MA1500	MA/MB2500 MA/MB4000	MA/MB6000 MB9000	
C	P40				40 UNS	40	0.025"	
B	P20	20 UNS/UNF	20	0.050"	1/4"	3/8"	1/2"	0.26
W1	P10	20 Acme Double Start	10	0.100"	NA	3/8"	1/2"	0.46
W2	P5	20 Acme Quad Start	5	0.200"	NA	3/8"	1/2"	0.64
W4	P2.5	10 Acme Quad Start	2.5	0.400"	NA	3/8"	1/2"	0.73
K1	Q1	1 mm	10/cm.	1.0 mm (0.0394")	7 mm	10 mm	14 mm	0.15
K2	Q2	1 mm ISO Double Start	5/cm.	2.0 mm (0.0787")	7 mm	10 mm	14 mm	0.33

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Torque requirements – The minimum dynamic torque required to drive an assembly running horizontally can be calculated as

$$\text{Torque (oz-in)}_{\text{Horiz.}} = \frac{[(W \times 0.15) + 1.5] \times L}{0.39 \times E} + 10 \text{ oz. in.}$$

For a vertical or lifting load:

$$\text{Torque (oz-in)}_{\text{Vert.}} = \frac{(W + 1.5 \text{ lbs.}) \times L}{0.39 \times E} + 10 \text{ oz.-in.}$$

Where W = Weight of the load in pounds

L = Lead of the screw in in./rev. See Table II, above.

E = Efficiency of the lead screw. See Table II, above.

10 = Minimum Torque required to move slider with no load

Note: The calculated torque is a minimum. Add 50% for safety margin.

Permissible Loading

The size of the slide selected for a given application will depend upon your requirements. Load, speed, and duty cycle are major variables to consider. This page gives general guidelines on load handling for horizontal, vertical and cantilevered loads. **Recommended Range** is for continuous duty; **Maximum** is for intermittent duty.

Multi-axis systems require additional engineering. In calculating the moment created by a cross slide, determine the weight of the upper slide assembly and payload. Weights are listed in the Price List. Be cognizant of deflection of an unsupported UniSlide base. For long transport in two or more axes, parallel coupled slide assemblies are recommended. Please see Parallel Coupled BiSlide Assemblies, page 2.43.

Working With Cantilever Loads

The X axis carries the weight of the Y axis, the Z axis and the attached load. For good stability, the X axis should be one model larger than the Y axis when the Y axis length (L) is longer than three times (3x) the width of the X.

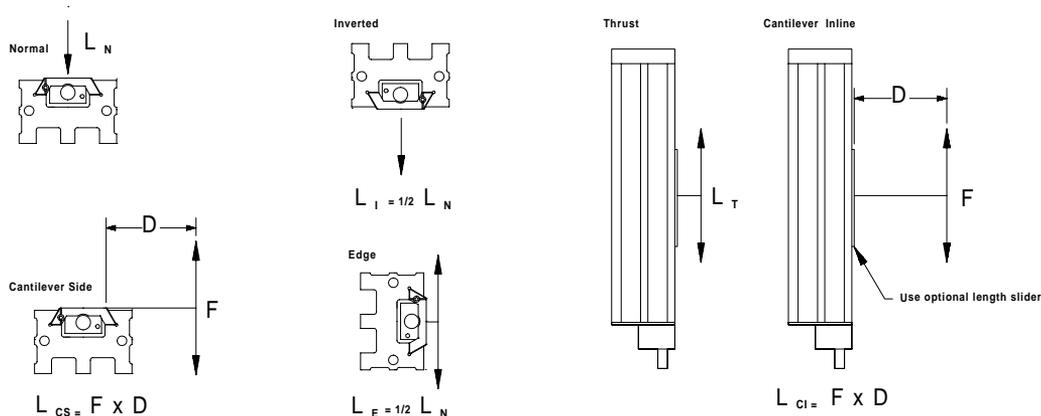
Example 1: Two Model MB4012BJ-S4 UniSlides would be suitable in an X and Y configuration. These models are 4" wide and 12" long.

Example 2: If considering two MB4015BJ-S4 Unislides for an X and Y configuration, choose an MB6018BJ-S6 for the X axis instead. This will be more stable, since the MB6000 model is 6" wide. The MB4015BJ-S4 is only 15" long-not enough to meet the 3x criteria spelled out above.

UniSlide Capacity for Normal, Thrust and Cantilever Loads by Series

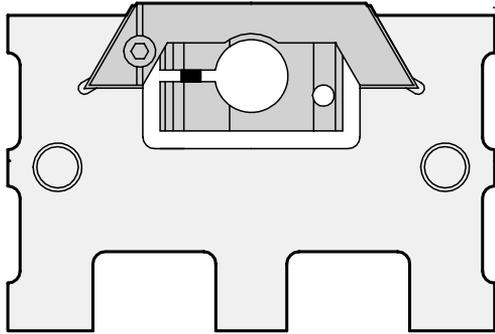
Normal Load (L _N)* Recommended Range		Maximum		Series	Thrust Load (L _T)* Recommended Range		Maximum	
Lbs	Kg	Lbs	Kg		Lbs	Kg	Lbs	Kg
0 - 2	0 - 1	3	1	MA1500	0 - 1	0 - 0.5	1.5	1
0 - 20	0 - 9	30	14	MB2500	0 - 6	0 - 3	15	7
0 - 10	0 - 5	15	7	MA2500	0 - 3	0 - 1	7.5	3
0 - 40	0 - 18	100	45	MB/MA4000	0 - 20	0 - 9	50	23
0 - 80	0 - 36	200	91	MB/MA6000	0 - 40	0 - 18	100	45
0 - 140	0 - 63	400	182	MB9000	0 - 70	0 - 32	125	57

Cantilever Side Load (L _{CS})* Recommended Range		Maximum		Series	Cantilever in Line Load (L _{CL})* Recommended Range		Maximum	
Lbs-Inches	Kg-Cm	Lbs-Inches	Kg-Cm		Lbs-Inches	Kg-Cm	Lbs-Inches	Kg-Cm
0 - 5	0 - 6	7	8	MA1500	0 - 5	0 - 6	7	8
0 - 15	0 - 17	40	46	MB2500	0 - 30	0 - 35	40	46
0 - 10	0 - 12	25	29	MA2500	0 - 20	0 - 23	25	29
0 - 32	0 - 37	130	150	MB/MA4000	0 - 64	0 - 74	130	150
0 - 80	0 - 92	320	369	MB/MA6000	0 - 160	0 - 185	320	369
0 - 120	0 - 139	480	554	MB9000	0 - 240	0 - 277	480	554

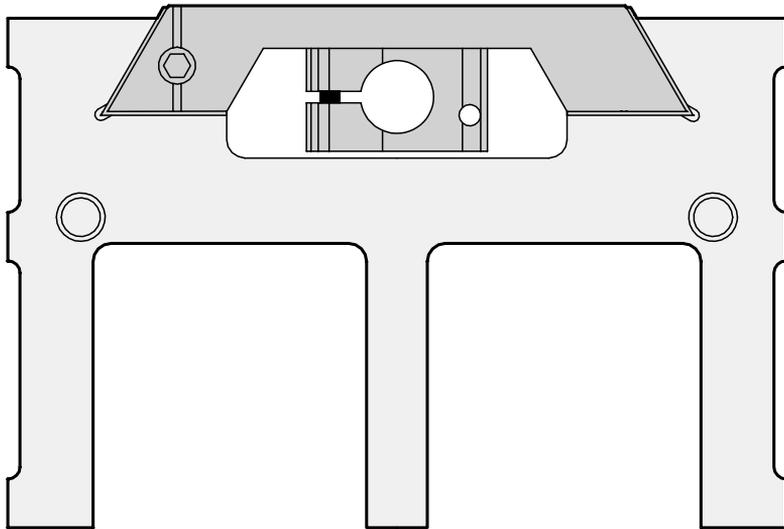


Actual Size Cross Sections of UniSlide Assemblies (Scale 1:1)

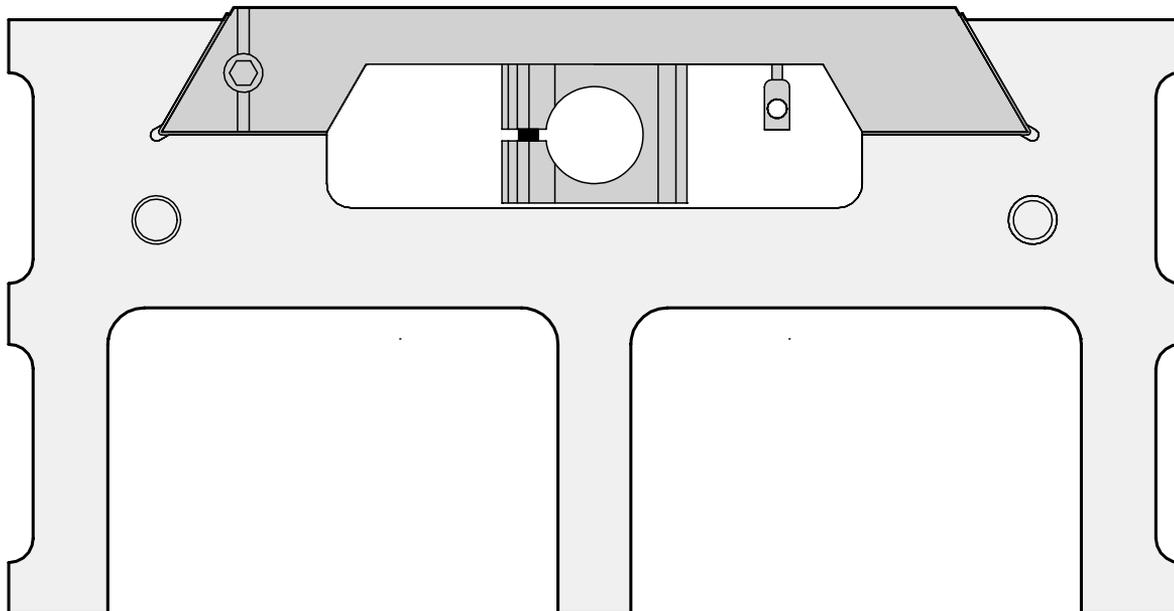
MB2500 Series



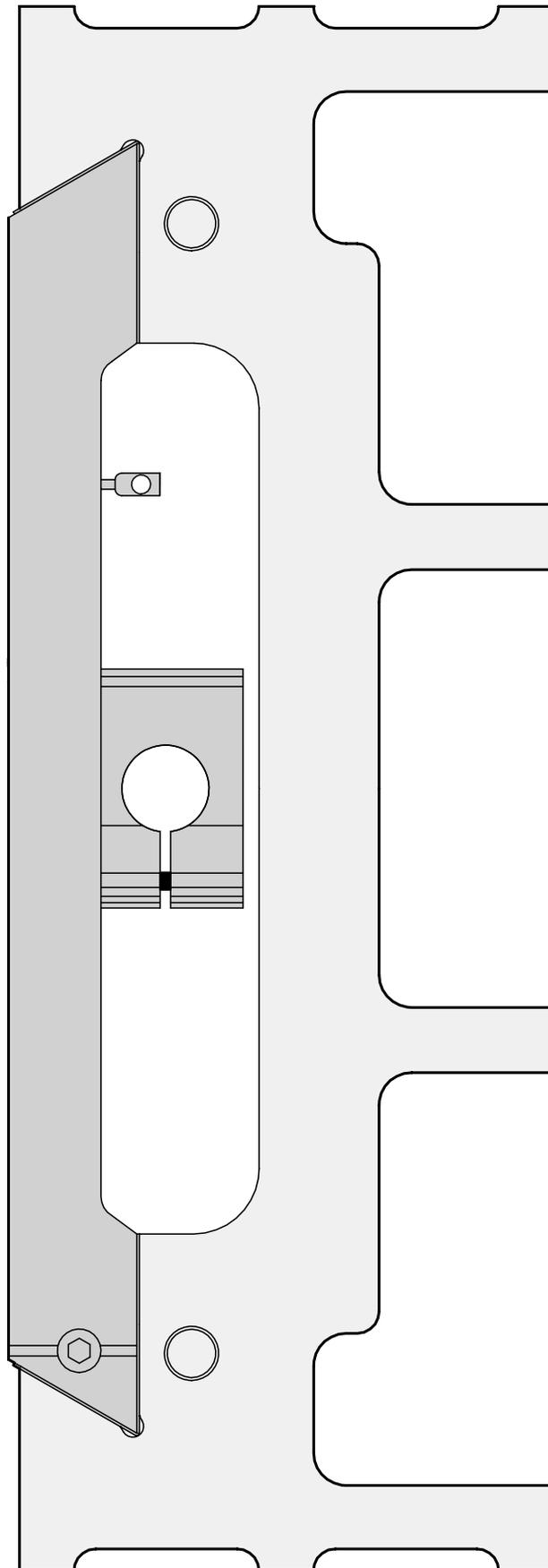
MB4000 Series



MB6000 Series

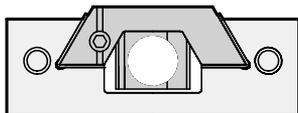


MB9000 Series

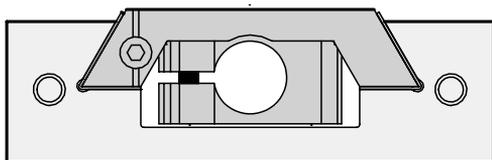


Actual Size Cross Sections of UniSlide Assemblies (Scale 1:1)

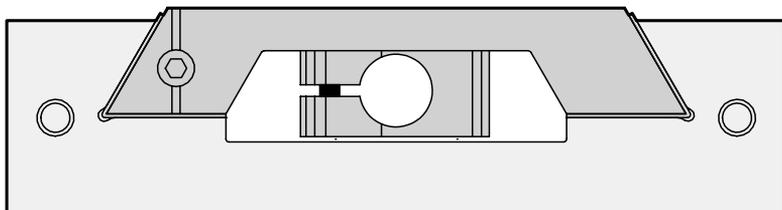
MA1500 Series



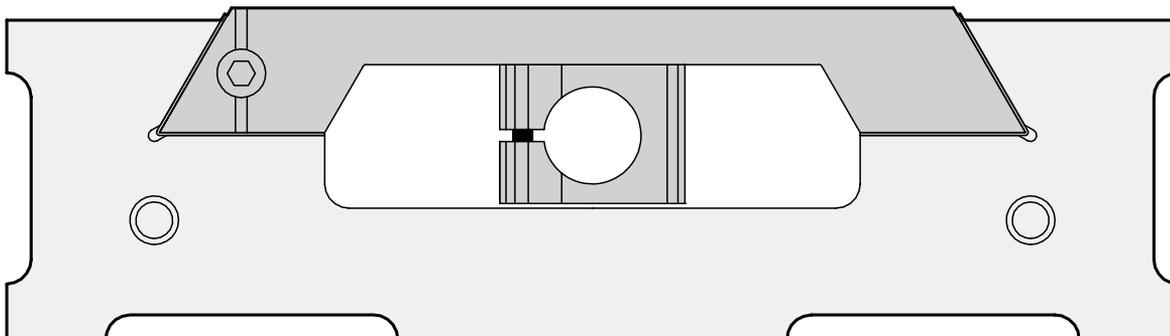
MA2500 Series



MA4000 Series

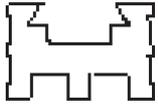


MA6000 Series



UniSlide Assemblies

A comparison of dovetail base style:



MB Style – the standard motorized UniSlide Assembly

- Includes protective internal limit switches, J.
- Base is stiffer than the MA style reducing the deflection of unsupported sections.
- Added height allows most units to lie flat on a flat mounting surface.



MA Style – the low-profile design UniSlide Assembly

- A more compact design with reduced slide height and weight. Base lengths available to 12".
- Compatible with steppers, AC synchronous motors and PM motors only. Motors extend below slide base.
- Outboard limit switches suggested unless used with NEMA 17 low torque motors.

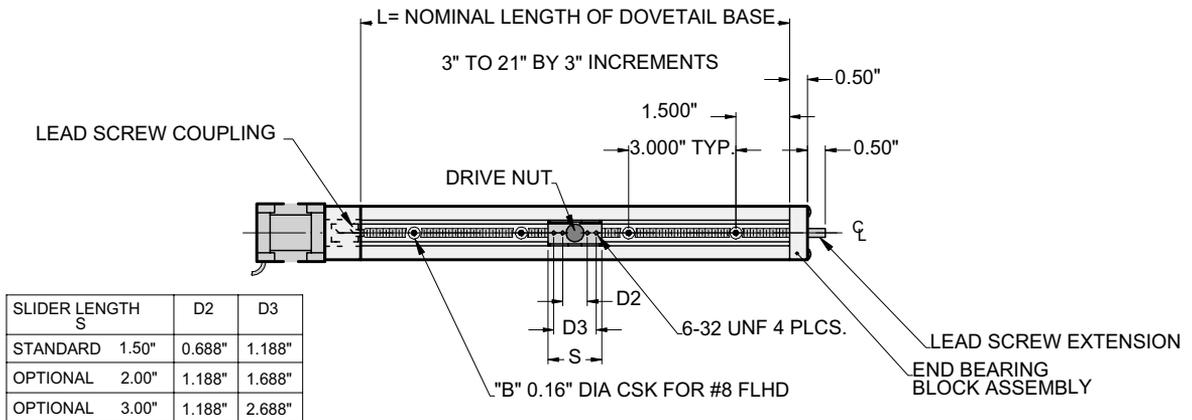
Series MA1500



Description

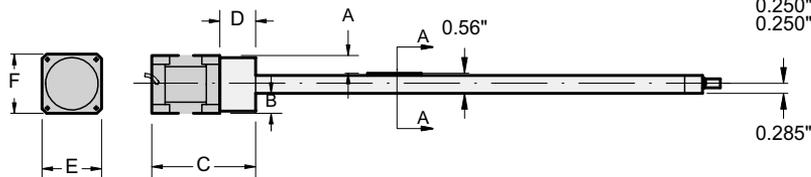
These small, low profile positioners are for light duty applications with light loads. The MA1500 is available in four lengths. The maximum recommended step rate is 1000/steps/second. The base requires support along its full length except for the lightest loads (< 1 lb.). Way covers are not available.

Series MA1500



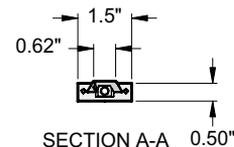
LEAD SCREW EXTENSION DIA.

0.218" FOR B & P20
 0.231" FOR C & P40
 0.250" FOR K1 & Q1
 0.250" FOR K2 & Q2



MOTOR TYPE	A	B	C	D	E	F
PITTMAN GM8000 SERIES	0.68"	0.14"	4.44"	1.15" *	1.5"	1.375"
NEMA TYPE 17 VEXTA PK245	0.65"	0.46"	2.85"	1"	1.5"	1.5"

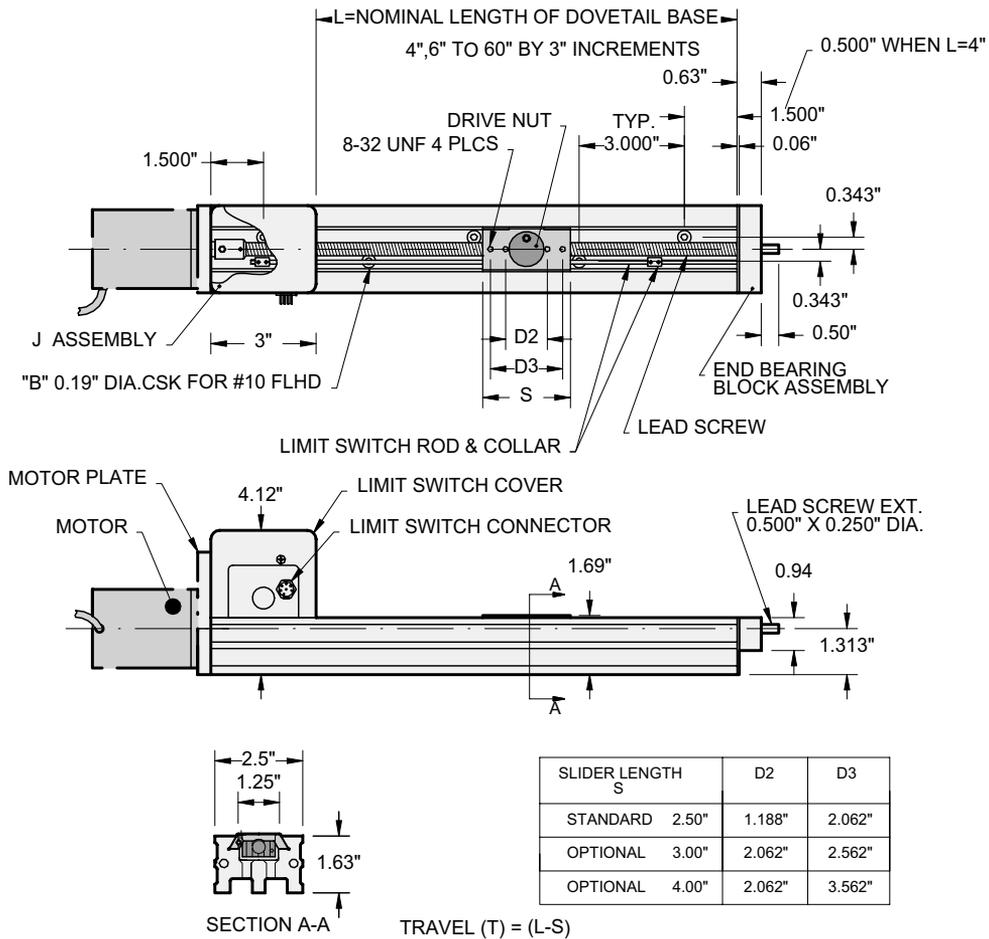
* (2) .125" PLATES & .900" SPACERS



Series MB2500



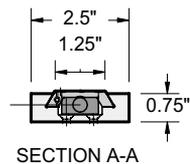
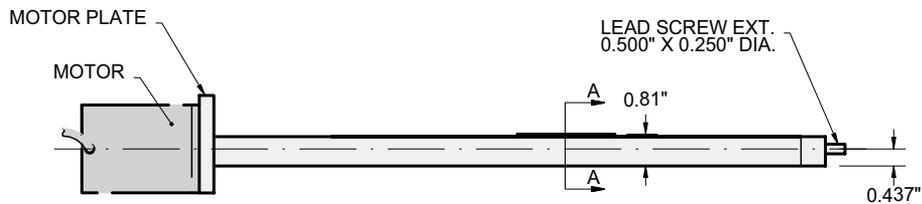
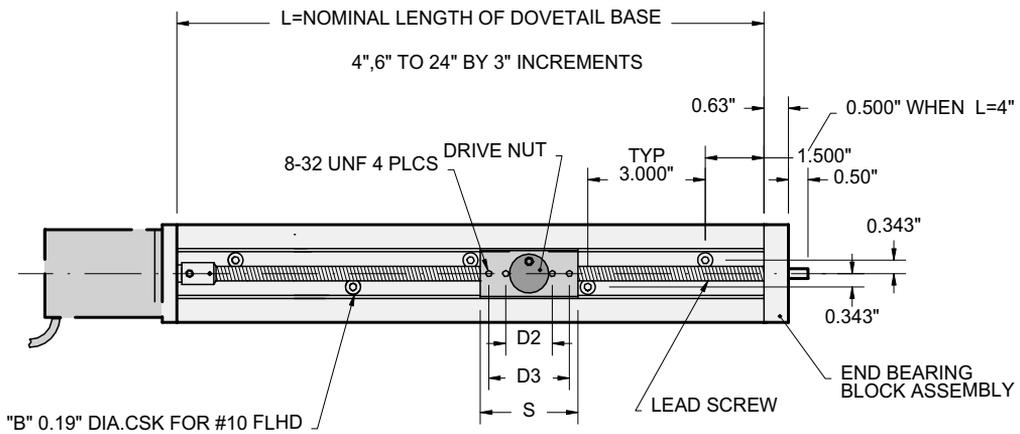
Series MB2500



Series MA2500



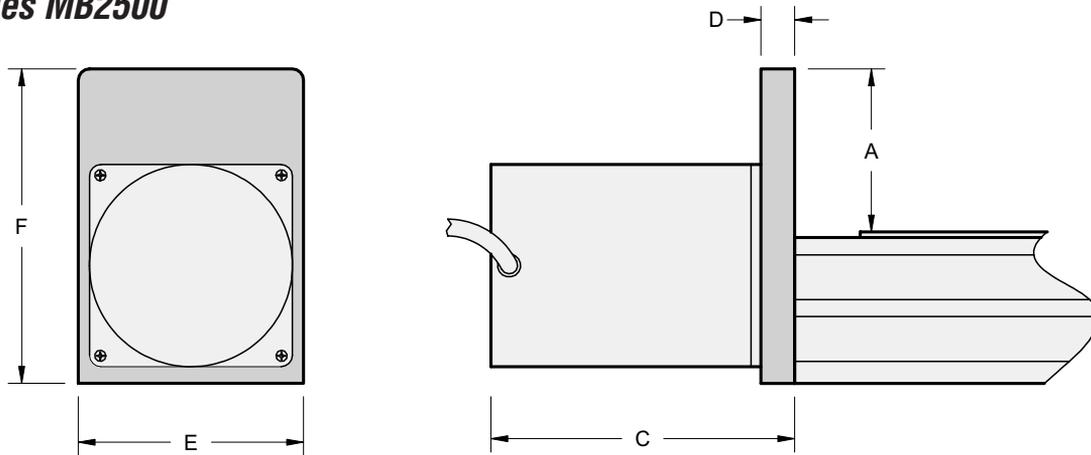
Series MA2500



SLIDER LENGTH S	D2	D3
STANDARD 2.50"	1.188"	2.062"
OPTIONAL 3.00"	2.062"	2.562"
OPTIONAL 4.00"	2.062"	3.562"

TRAVEL (T) = (L-S) -1.0"

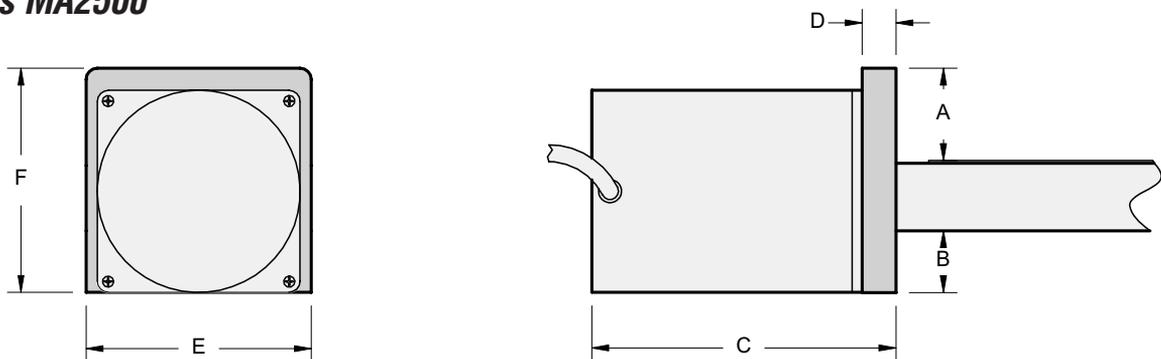
Series MB2500



MOTOR TYPE	A	C	D	E	F
BODINE TYPE K	1.81"	3.40"	0.375"	2.50"	3.50"
PITTMAN GM8000 SERIES	1.81"	3.66"	0.375"	2.50"	3.50"
NEMA TYPE 17 VEXTA PK245	1.81"	3.23"	1.375" *	2.50"	3.50"
NEMA TYPE 23T1 VEXTA PK264	1.81"	1.92"	0.375"	2.50"	3.50"
NEMA TYPE 23T2 VEXTA PK266	1.81"	2.51"	0.375"	2.50"	3.50"

* (2) PLATES .375" X 2.5" X 3.5" & 1" X 1.5" X 1.5"

Series MA2500



MOTOR TYPE	A	B	C	D	E	F
PITTMAN GM8000 SERIES	0.38"	0.31"	3.66"	0.375"	2.5"	1.50"
PITTMAN GM9000 SERIES	1.13"	0.31"	4.58"	0.25"	2.5"	2.25"
NEMA TYPE 17 VEXTA PK245	0.38"	0.31"	3.23"	1.375"	2.5"	1.5"*
NEMA TYPE 23T1 VEXTA PK264	0.75"	0.69"	1.92"	0.375"	2.5"	2.25"
NEMA TYPE 23T2 VEXTA PK266	0.75"	0.69"	2.51"	0.375"	2.5"	2.25"

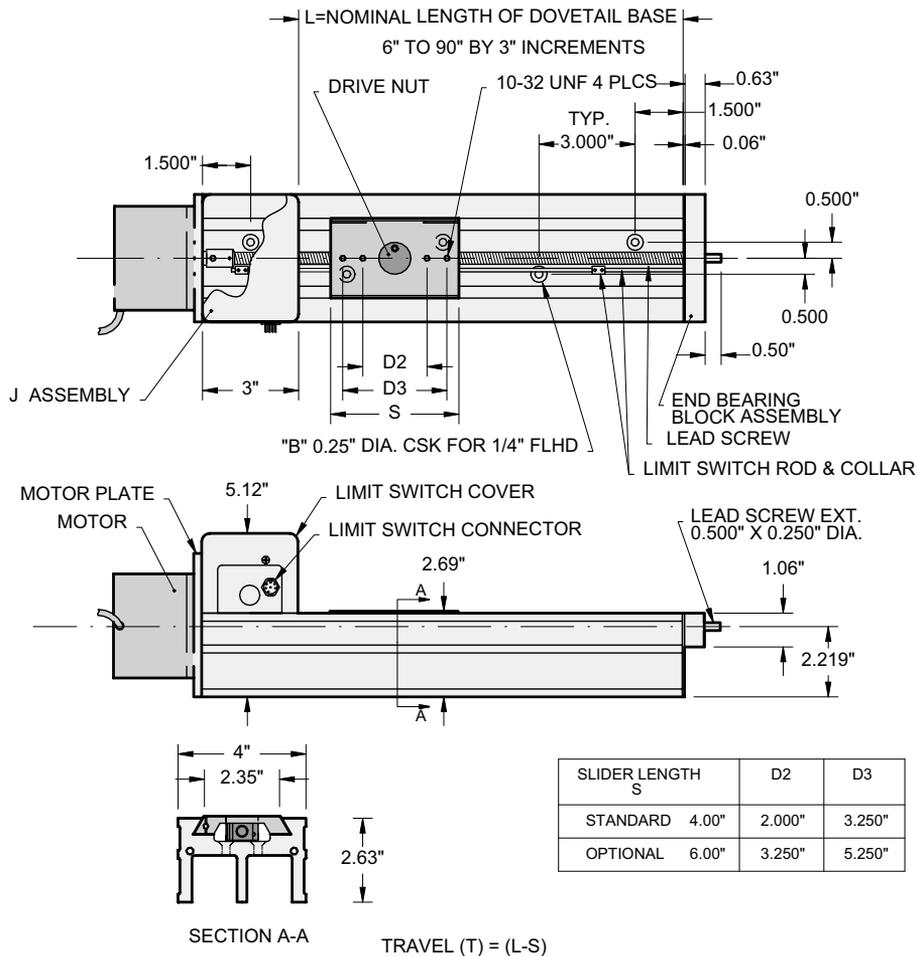
* (2) PLATES .375" X 1.5" X 2.5" & 1" X 1.5" X 1.5"

Other motor options are available – see page 3.6

Series MB4000



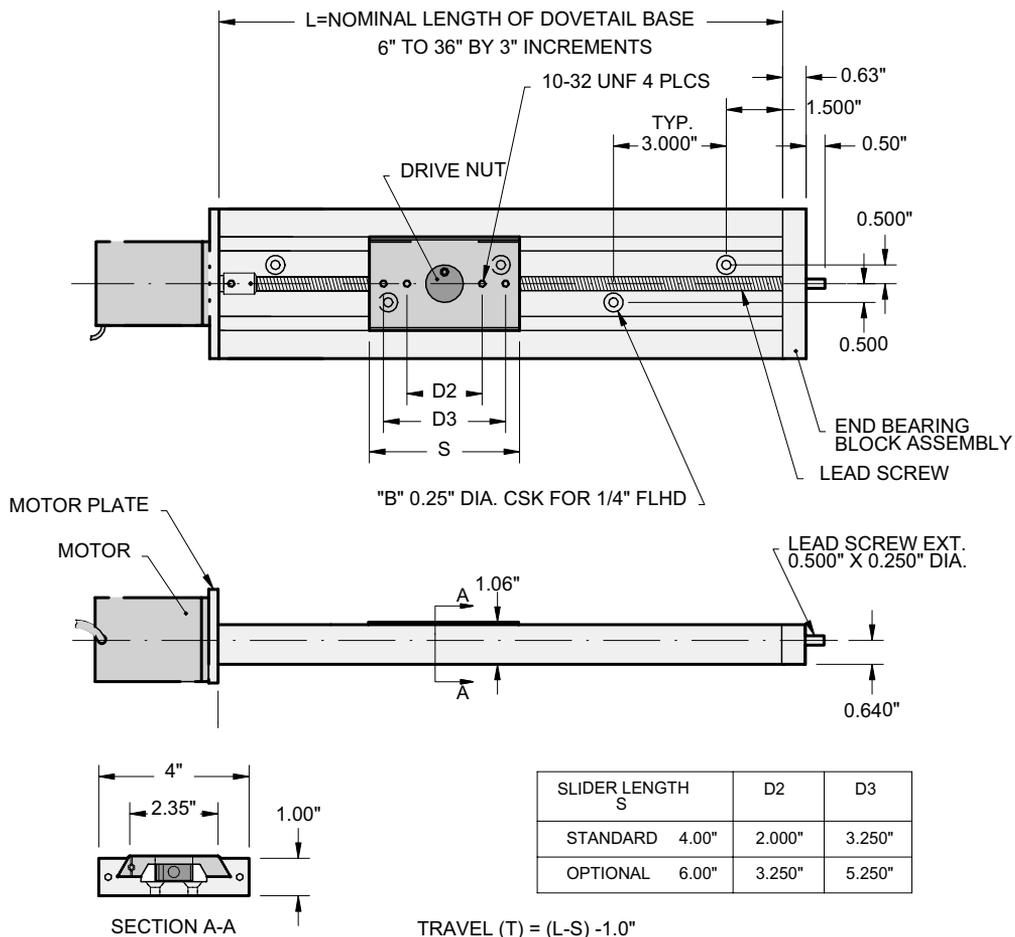
Series MB4000



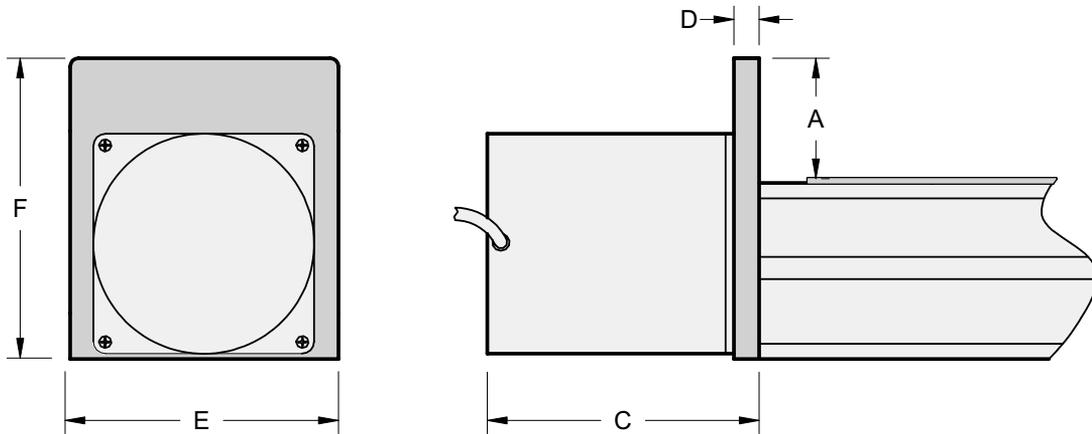
Series MA4000



Series MA4000



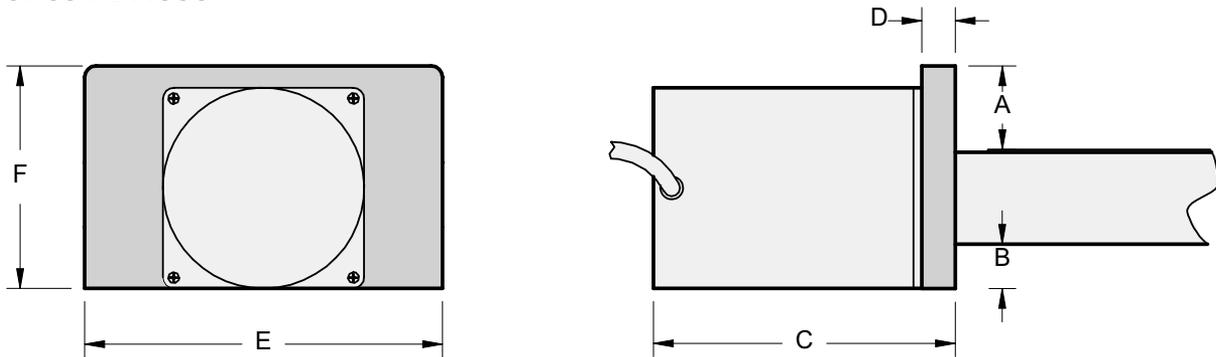
Series MB4000



MOTOR TYPE	A	C	D	E	F
BODINE TYPE 24A4-D MODEL 0186 - 90	1.81"	7.10"	0.375"	4"	4.5"
PITTMAN GM 9000 SERIES	1.81"	4.71"	0.375"	4"	4.5"
NEMA TYPE 23T2 VEXTA PK266	1.81"	2.51"	0.375"	4"	4.5"
NEMA TYPE 34T1 VEXTA PK296	1.81"	2.98"	0.50" *	4"	4.5"

* (2) 0.25" PLATES

Series MA4000



MOTOR TYPE	A	B	C	D	E	F
BODINE 24A-MODEL 0043	0.94"	0.50"	5.06"	0.375"	4"	2.5"
PITTMAN GM9000 SERIES	0.94"	/	4.71"	0.375"	4"	2"
NEMA TYPE 23T2 VEXTA PK266	0.69"	0.50"	2.51"	0.375"	4"	2.25"
NEMA TYPE 34T1 VEXTA PK296	1.44"	1.0"	2.98"	0.50" *	4"	3.5"

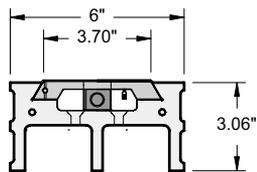
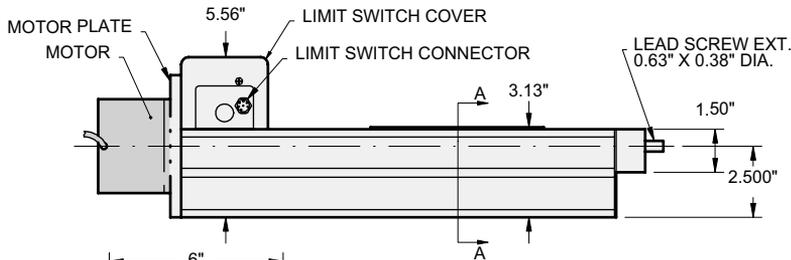
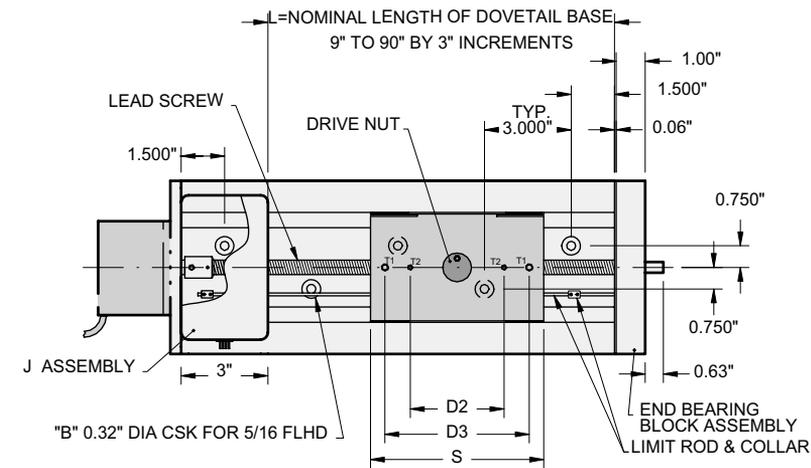
* (2) 0.25" PLATES

Other motor options are available – see page 3.6

Series MB6000



Series MB6000

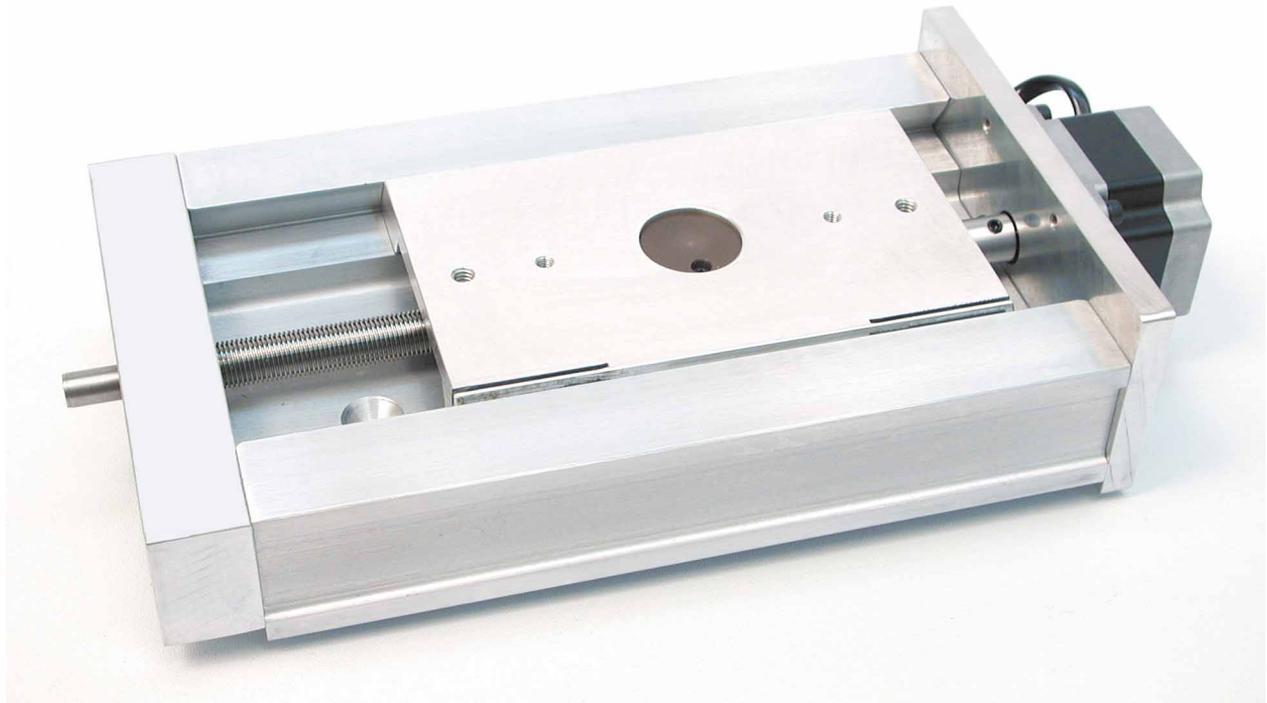


SLIDER LENGTH S	D2	D3	T1	T2
STANDARD 6.00"	3.250"	5.000"	1/4-20	10-32
OPTIONAL 8.00"	5.000"	7.000"	1/4-20	1/4-20

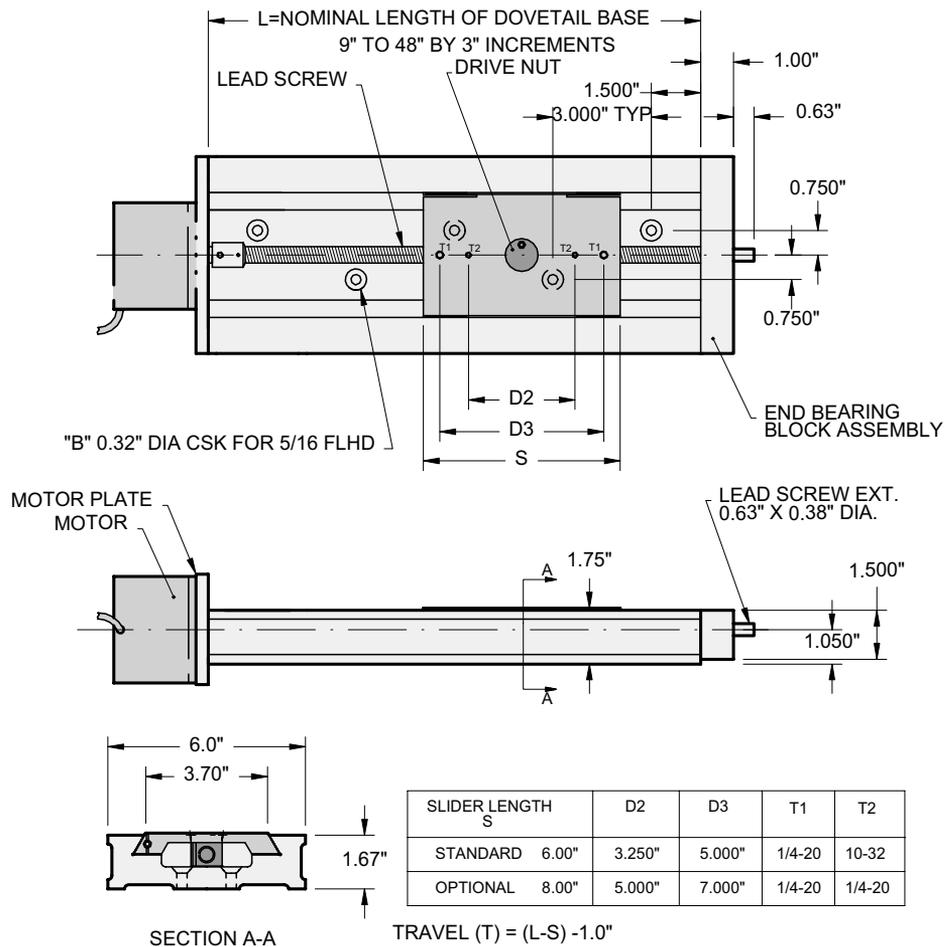
SECTION A-A

TRAVEL (T) = (L-S)

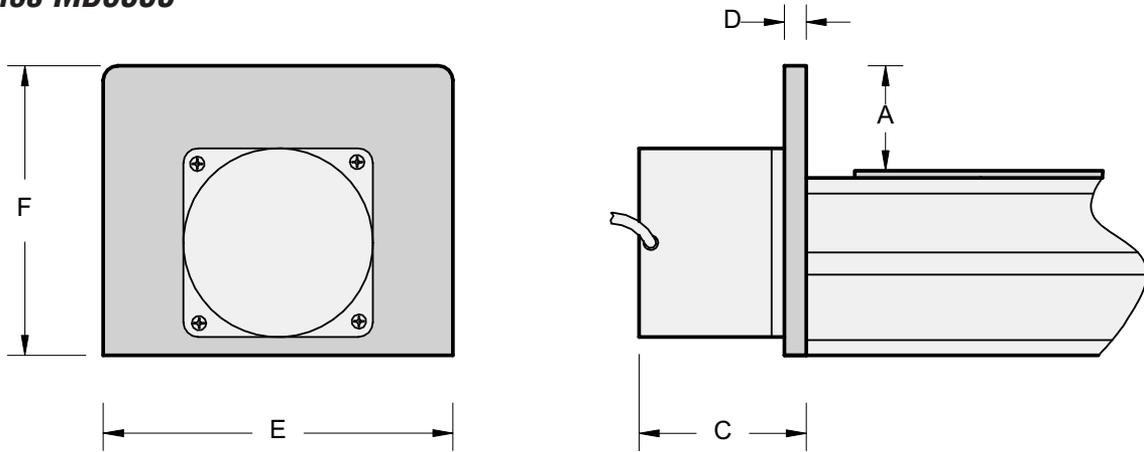
Series MA6000



Series MA6000

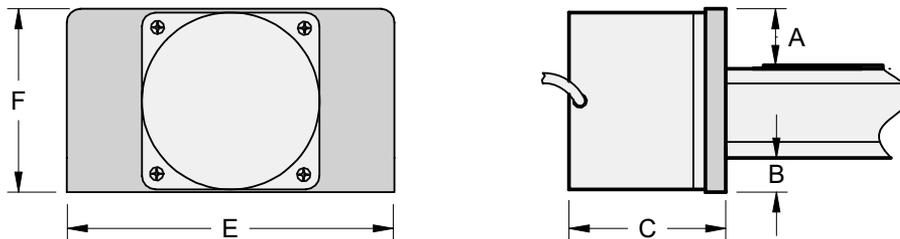


Series MB6000



MOTOR TYPE	A	C	D	E	F
BODINE TYPE 30R-D MODELS 5470-5474	1.87"	5.86"	0.375"	6"	5"
BODINE TYPE 24 A4-Z MODELS 0157-0163	1.87"	8.20"	0.375"	6"	5"
NEMA TYPE 23T2 VEXTA PK266	1.87"	2.51"	0.375"	6"	5"
NEMA TYPE 34T2 VEXTA PK299	1.87"	4.16"	0.375"	6"	5"

Series MA6000



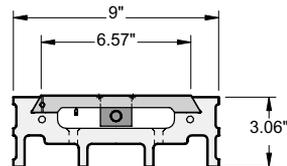
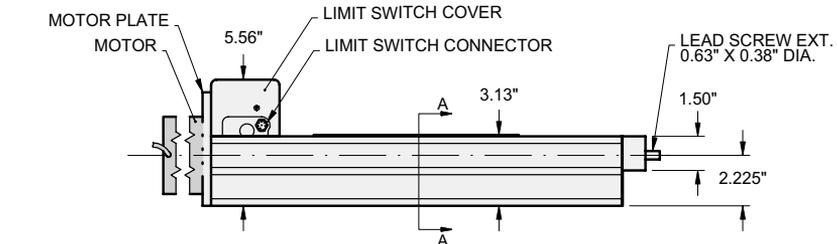
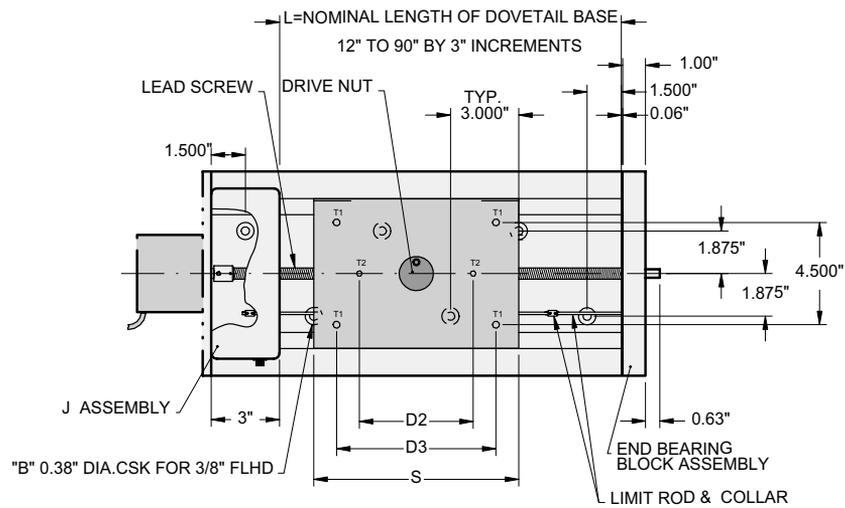
MOTOR TYPE	A	B	C	D	E	F
PITTMAN 9000 SERIES	0.25"		4.71"	0.375"	6"	2"
NEMA TYPE 23T2 VEXTA PK266	0.40"	0.10"	2.51"	0.375"	6"	2.50"
NEMA TYPE 34T1 VEXTA PK296	0.93"	0.70"	2.98"	0.375"	6"	3.375"

Other motor options are available – see page 3.6

Series MB9000



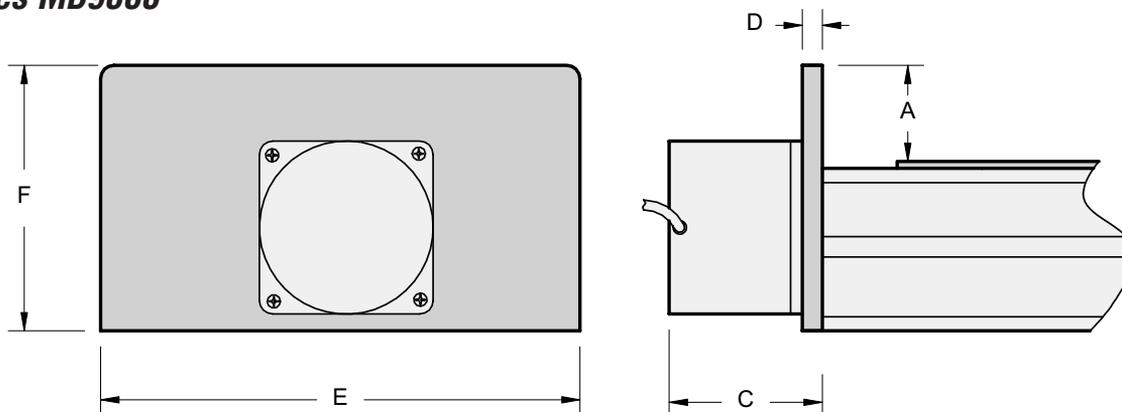
Series MB9000



SLIDER LENGTH S	D2	D3	T1	T2
STANDARD 9.00"	5.000"	7.000"	5/16-18	1/4-20
OPTIONAL 12.00"	5.000"	10.000"	5/16-18	1/4-20

TRAVEL (T) = (L-S)

Series MB9000



MOTOR TYPE	A	C	D	E	F
SLO-SYN SS451C	1.87"	6.53"	0.375"	9"	5"
NEMA TYPE 34T1 SLO-SYN MO92-FD-447	1.87"	4.16"	0.375"	9"	5"
NEMA TYPE 34T1 VEXTA PK299	1.87"	4.16"	0.375"	9"	5"
BODINE TYPE 30R-D MODELS 5470-5474	1.87"	5.86"	0.375"	9"	5"
BODINE TYPE 24 A4-Z MODELS 0157-0163	1.87"	8.20"	0.375"	9"	5"

Other motor options are available – see page 3.6

Note: Throughout this catalog you'll see **Keywords in RED**. To get more information, including access to drawings, specs, photos of examples and the latest innovations, go to our web site, www.velmex.com, and enter the corresponding **Keyword in the Quick Search Box**.

Series MAXY4000 and MA6000 Assembled X-Y Tables

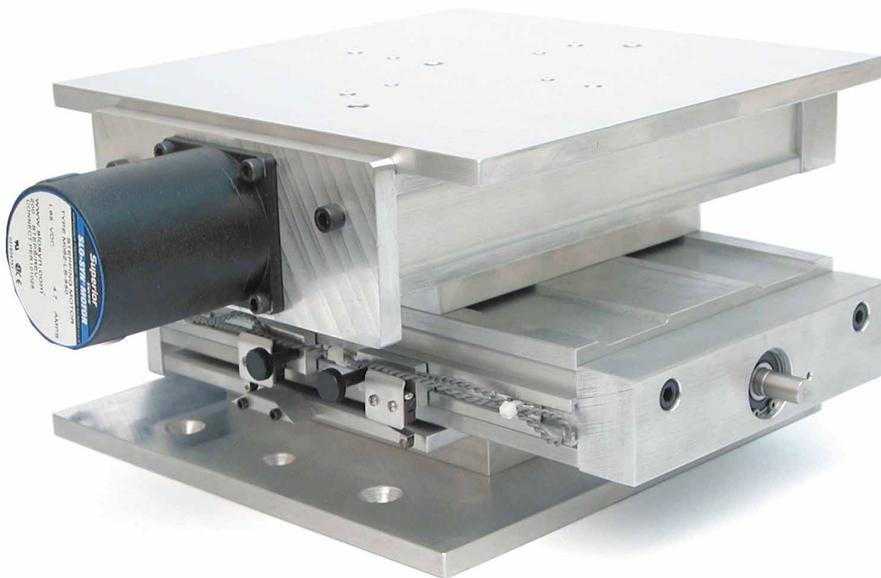
Model MAXY6012WI-S6

Product website: www.unislide.com

Keyword: MAXY



*Model MAXY4006
with Outboard Adjustable
Limit Switches*



*Model MAXY6009
with Outboard Adjustable
Limit Switches*

In addition to the numerous XY systems possible with any two UniSlide Assemblies, we offer the MAXY Series. These sturdy tables are constructed of two crossed and inverted linear UniSlide Assemblies of the Series MA4000 or MA6000. The standard tables include motor mounting plates, couplings, and our W1 (10 pitch) type lead screws. Check factory for availability of other pitches. Order motors, limit switches, and controls separately.

Features

- Large top work surface area
- Precise, smooth travel, low profile
- Plug-in compatibility with Velmex motor controls
- Assembled X-Y table with 2", 3", 5", 6" or 9" of travel

Plate Specifications — See page 1.41 for drawing of plates

Catalog Number	Top/Bottom Plates	Plate Thickness Top/Bottom	A Threaded Hole For	B Threaded Hole For	C and D Holes
Series A4000					
MXY4006W1-S4	6" x 6"	1/2"/3/8"	8-32 on 2.062" B.C.	10-32 on 3 1/4" B.C.	clearance for 1/4"
MXY4009W1-S4	9" x 9"	1/2"/3/8"	8-32 on 2.062" B.C.	10-32 on 3 1/4" B.C.	clearance for 1/4"
Series A6000					
MXY6009W1-S6	9" x 9"	3/8"/3/8"	10-32 on 3 1/4" BC	1/4-20	countersunk for 5/16"(C) and 1/4 (D) FHMS
MXY6012W1-S6	12" x 12"	3/8"/3/8"	10-32 on 3 1/4" BC	1/4-20	countersunk for 5/16" FHMS
MXY6015W1-S6	12" x 12"	3/8"/3/8"	10-32 on 3 1/4" BC	1/4-20	countersunk for 5/16" FHMS

Physical Specifications

Catalog Number	Travel	Height	Load Capacity	Maximum Work Envelope ³
Series MAXY4000				
MXY4006W1-S4	2" x 2"	4.13"	60 lbs.	12 1/2" x 12 1/2"
MXY4009W1-S4	5" x 5"	4.13"	25 lbs.	18 1/2" x 18 1/2"
Series MAXY6000				
MXY6009W1-S6	3" x 3"	5.50"	100 lbs.	17" x 17"
MXY6012W1-S6	6" x 6"	5.50"	60 lbs.	23" x 23"
MXY6015W1-S6	9" x 9"	5.50"	30 lbs.	29" x 29"

³With NEMA 23T2 stepper motor. Add 1" for NEMA 23T3 motor.

Options

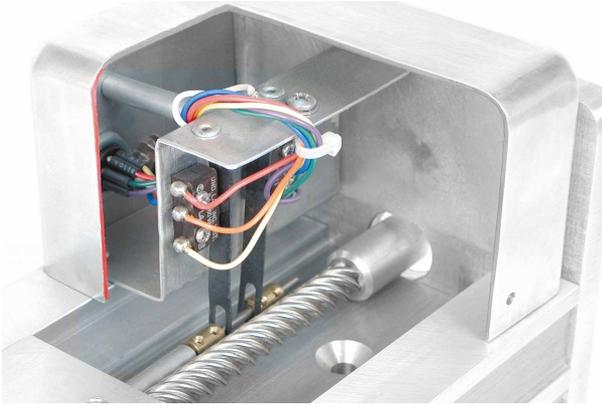
- Available without the top plate for users who want to attach their own surface plate.
- Adjustable outboard limit or fixed end-of-travel switches.
- Precision grade or different pitch lead screw. See Table II, page 00.
- Cosmetic black anodized finish or hard coat anodized ways dyed black.
- Additional threaded or clearance holes can be provided at extra charge.



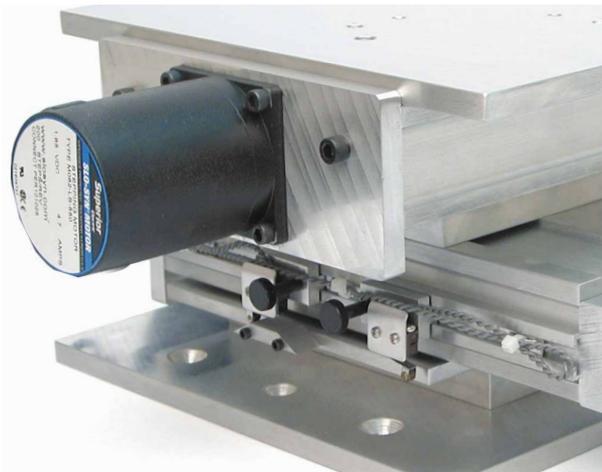
MAXY Table with optional black anodized finish and optional linear encoders.



Standard internal limit switch for MB Series



Cutaway showing standard, limit switch assembly J



Optional outboard limit switches



Detail of fixed limit switch for MA/B40, 60 or MB90 Series

Options

Limit Switches

Limit Switches turn off the motor when activated. They are usually used to prevent over-travel of the slider or send an event signal. There are three variations:

- Standard internal adjustable
- Outboard adjustable
- Fixed end of travel limit switches

Standard Limits Switches, commonly referred to as the "J" assembly, are an internal, adjustable system. They consist of two switches, a control rod with two moveable collars and cover atop an additional 3" of dovetail base as shown. Moving the brass collars changes the activation point. This is available for MB type bases only. e.g. MB2500.

Keyword: limits

Outboard Adjustable Limit Switches

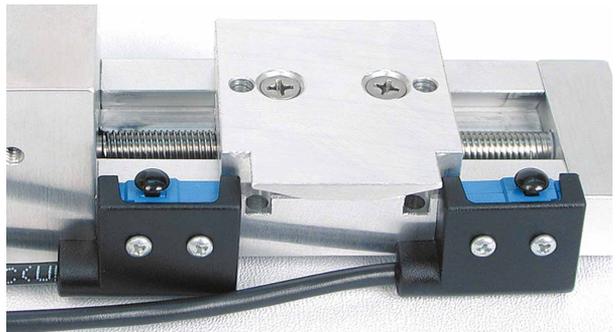
These are mounted on side edge of units and are available for all linear slide except MA1500. Photo shows a movable switch in a track mounted along the side of the UniSlide Assembly base. A 1/4" plate with cam activates the switch when it passes over it. The maximum number of limit switches is only limited by the nominal base length.

These switches can be wired to:

- Stop travel until restarted
- Provide more stops than the normal two
- Over travel a stop point or change speed
- Be active in only one direction

Fixed, End-of-Travel, Limit Switches

Fixed, end-of-travel, limit switches are wired, push button switches. Their position is not adjustable.



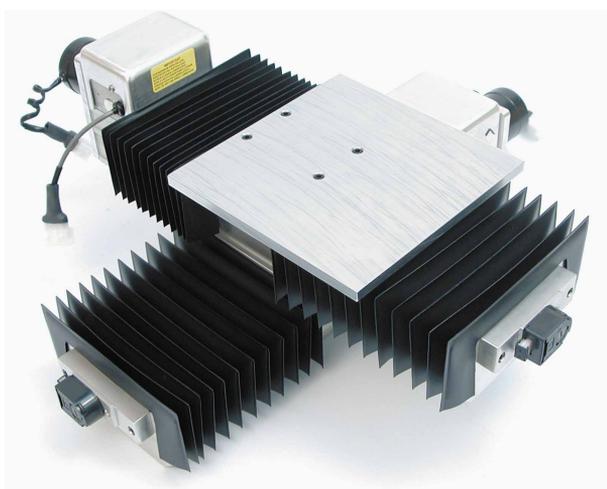
Detail of fixed limit switches for MA15, and MA/B25 Series



Longer slider length increases stability



Model ZMB2524BJ-S2.5 with hard anodized ways



Waycovers protect against dust and dirt

Sliders

Longer length sliders (carriages) increase the stability of your system, particularly with large or overhung loads.

In addition, a base can have multiple sliders. Sliders can be driven or free-floating. See web site for examples.

Optional Finishes

If a motorized UniSlide Assembly will accumulate more than 200,000 cycles of operation or will be used in a production capacity 8 hours per day, a hard coat anodized finish can be applied to the dovetail ways to prolong life. This coat is 0.002" thick, measures Rockwell C 70 and is dyed black. This option is specified by prefacing the part number with the letter "Z", i.e. ZMB4015BJ-S4. The price formula for each Series is given in the price list. Electroless nickel coating is also available.

Way Covers

Polyurethane way covers with attaching plates are available for protection against dust and grit. They extend over and above the UniSlide Assembly as follows:

	Projection above slider mounting surface	Width
MB2500	3/4"	4 1/2"
MA & MB4000	1"	7"
MA & MB6000	1 1/4"	8 1/4"
MB9000	1" 11	1/2"

Since the collapsed or compressed bellows requires additional base length, please add 1/3 of free travel length to the nominal base length of the assembly. For example, the free travel of the MB4021P10J-S4 with the standard slider length of 4" and without way covers is 17". If way covers are desired, the dovetail base must be increased by 17"/3, which, to the nearest 3" length increment, is 6". Therefore, Model MB4027P10J, having a 27" nominal length base will accommodate the compressed bellows and is the correct choice. This option is specified by appending the Part Number with the letters "WC", i.e., MB4021P10J-S4-WC. The price for each unit with way covers is given in the price list.

Table of Contents



Note: Throughout this catalog you'll see **Keywords in RED**.

To get more information, including access to drawings, specs, photos of examples and the latest innovations, go to our web site, www.velmex.com, and enter the corresponding **Keyword in the Quick Search Box**.

Motor Driven

Above: Easy XY configuration, Y axis can be positioned anywhere on X using cleats (see page 2.38).

Below: Three BiSlides configured XYZ — easy Z axis attachment with four bolts.



Motorized BiSlide and XSlide

Examples and Application Photos	2.34
Motorized BiSlide Assemblies are	
Modular, Compact and Durable	2.35
BiSlide Features and Benefits	2.35
Anatomy of a BiSlide	2.36
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BiSlide Load Capacity	2.37
How to Specify Your BiSlide Model	2.37
Combining BiSlides	2.38
Series M BiSlide Assembly and	
T-Slot Profile Cross Section Dimensions	2.38
Motors and Lead Screws	2.40
Choose the Way Cover Model to Minimize Contamination	2.41
Tandem Option Carries Heavy Loads Economically	2.42
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Examples and Application Photos

Here are examples of BiSlide® stock and custom positioning equipment.

All BiSlides are designed to accommodate NEMA size 23 and 34 motors without modifications. Many other types of motors can be used, most of them requiring no modifications to the BiSlide.



All BiSlides can be purchased with or without motors. Related motor drives, controls, and software are also available.

Motor-Driven BiSlides are available in standard lengths from 5"/12.7 cm to 80"/203.2 cm.

For help call our engineering staff, fill out our website RFQ/RFA form or the Fax-a-Quote form at the end of this section.

Example 1: Combine two BiSlides to make an XY table.

Example 2: Use our cleats to join units and eliminate the need for adapter plates.

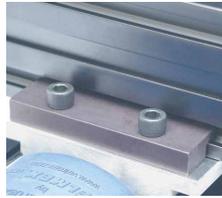


Example 3: Parallel coupled units to move large or bulky loads.

Keyword: examples

Motorized BiSlides Assemblies are Modular, Compact, and Durable

- 45 degree opposing way guides carry high loads in all directions
- Long life anodized ways standard
- Biggest lead screw drive for higher thrust capacity
- Improved modular design eliminates adapter plates and brackets



Cleats make mounting multiple units easy



3 axis system



BiSlide with 80 inch travel length

Features and Benefits of BiSlides

- Lighter weight
- Fewer parts
- Lower cost
- Higher strength to weight ratio – uses hard aluminum alloys and a rigid I-beam cross section
- More compact than most ball screw driven stages
- Self-holding – unlike ball screws, the 10 pitch, 1 or 2 mm lead screw will not creep or backdrive
- Resistant to impact loads
- Natural wiping action expels debris
- Gradual wear not sudden failure of rolling element type screws and guide-ways
- Corrosion resistant anodized finish
- Operate without lubrication
- Spare set of guide-ways built-in on the flip side just in case the primary ones get damaged

The Velmex BiSlide is a modular system of positioning stages and hardware that allows you to quickly and easily create a complete single or multi-axis system by simply bolting together modular components. These components can be configured and assembled to form a work cell dedicated to a specific task. Because BiSlide components are all standard and interchangeable, if this task changes or ends, you can readily disassemble the components and put them to work elsewhere.

If you're a manufacturer, you'll find the BiSlide system delivers ease of service and upgradeability to keep up with your rapidly changing marketplace. If you're a researcher, you'll like BiSlide's easy reconfigurability and expandability for different projects. Everyone appreciates BiSlide's durable construction and low cost.

Options

- Step Motors and Controls
- AC Motors
- DC Motors and Controls
- Servo Motors
- Position Sensors and Switches
- Rotary, Linear Encoders, and Digital Readouts
- Extra Carriages
- Short Carriages
- Right/Left-hand Drives
- Custom Lengths
- Special Holes

For More Information:

- Call Velmex at 1-800-642-6446 from 8 am to 5:30 pm EST.
- See specifications at Motor Driven BiSlide Assemblies on page 2.37.
- Visit www.Velmex.com/motor_choose_BiSlide.asp to input your specifications, find prices, see photographs and download drawings of specific BiSlide models.
- Visit www.BiSlide.com for more examples of BiSlide's extraordinary versatility. **Keyword: find**

BiSlide Construction Delivers High Precision and Long Life

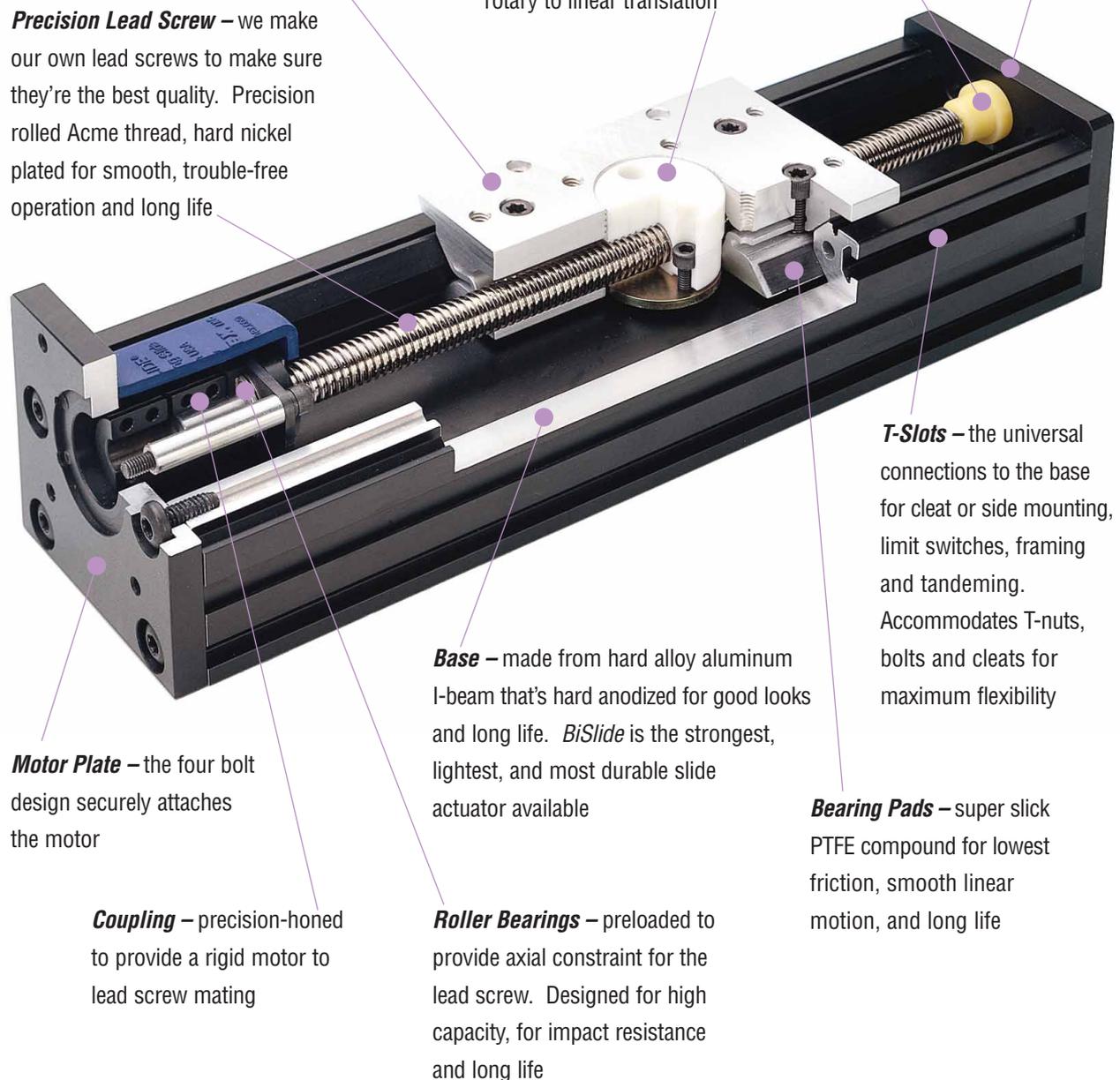
Large, Versatile Carriage – provides a 4.6" x 3.1" mounting surface suitable for carrying anything from an assembly fixture to a measuring probe – eight threaded attachment holes let you securely fasten any kind of payload. Also, there's four accessory holes for limit switch cam or other sensors. Carriage has fit and wear compensation adjustments

Precision Lead Screw – we make our own lead screws to make sure they're the best quality. Precision rolled Acme thread, hard nickel plated for smooth, trouble-free operation and long life

Support Bearing – delivers just the right combination of constraint and anti-vibration qualities for the lead screw

StabilNut™ – a Velmex exclusive, is the "solid", low friction connection between the lead screw and carriage. It has an antibacklash design with fine mesh adjustment for responsive rotary to linear translation

End Plate – provides a convenient way to directly mount a BiSlide assembly on end. Four hole pattern mates with other BiSlide carriages and T-slots



T-Slots – the universal connections to the base for cleat or side mounting, limit switches, framing and tandeming. Accommodates T-nuts, bolts and cleats for maximum flexibility

Base – made from hard alloy aluminum I-beam that's hard anodized for good looks and long life. BiSlide is the strongest, lightest, and most durable slide actuator available

Bearing Pads – super slick PTFE compound for lowest friction, smooth linear motion, and long life

Motor Plate – the four bolt design securely attaches the motor

Coupling – precision-honed to provide a rigid motor to lead screw mating

Roller Bearings – preloaded to provide axial constraint for the lead screw. Designed for high capacity, for impact resistance and long life

Versatile and Durable Design

BiSlide Delivers the Accuracy and Load-Carrying Capacity You Need

Coefficient of friction: 0.09 typical

Coefficient range: 0.04 (Heavy Load Dynamic)
to 0.15-0.3 (Lubricated Heavy Load Static >1 hour)

Minimum motor torque required: 55 oz-in (0.4 N-M)

Repeatability: 0.0002" over short term,
long term dependent on wear

Straight line accuracy: 0.003" over entire
travel distance

Screw lead accuracy: 0.003"/10" (0.076 mm/25 cm)
0.0015"/10" available. Consult factory.

Operating temperature: 0 to 180° F (-18 to 82° C)

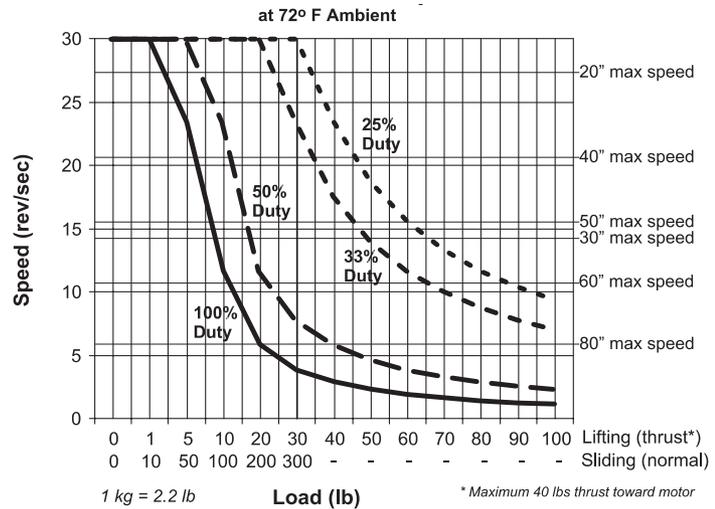
Finish

Lead screw: hard nickel plated

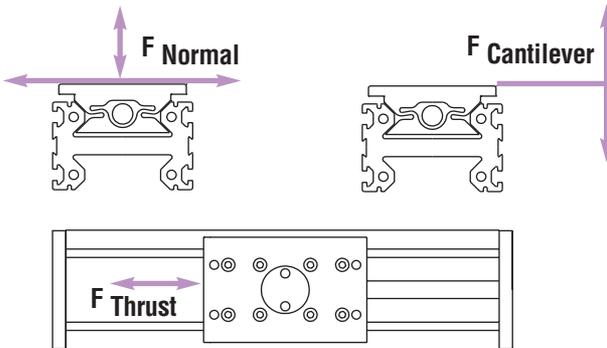
Carriage: machined aluminum

Other surfaces: black anodized aluminum

Maximum Load/Speed**



** In other environments contact our technical sales department for recommendations



Maximum Load Carrying Capacity

Load	Dynamic	Static	Momentary
Normal Centered	300 lb.	300 lb.	1000 lb.
Thrust	100 lb*	200 lb.	300 lb.
Cantilevered	500 inch-lb. (See formula below)		

* Maximum 40 lbs. thrust towards motor.

For cantilevered loads: equivalent center load = $(d \times L/2) + L$
where d = distance load is from center in inches,
 L = Load (lbs.)

How to Specify Your BiSlide Model

M N 1 0 - 0 2 0 0 - E 0 1 - 2 1

Cross Section M
M = Nut/Screw Drive
F = Free Sliding
T = Tandem

Design
10 = Inch
11 = Inch & Way Cover

Lead Screw Advance/Turn

Blank	None
M01	1.00 mm
M02	2.00 mm
E01	0.10 inches
E04	0.40 inches

Mounting
Blank = None
11 = Basic Knob
12 = Knob/Counter, Horizontal, Increment + from Knob
13 = Knob/Counter, Vertical, Increment + from Knob**
14 = Knob/Counter, Horizontal, Increment - from Knob
15 = Knob/Counter, Vertical, Increment - from Knob**
20 = NEMA 23 Motor Mount 1/4" diameter shaft
21 = NEMA 23 Mount 1/4" diameter shaft & Limit Switch
30 = NEMA 34 Motor Mount 3/8" diameter shaft
31 = NEMA 34 Mount 3/8" diameter shaft & Limit Switch

Options

Design Travel* (Tenth of Inch)
Standard Travel Lengths (Inches):
5, 10, 15, 20, 30, 40, 50, 60, 80

* Free sliding models have 2.4" longer travel,
way cover models under 40" travel have 1.0" less

** For BiSlides oriented vertically with the knob up.
Use the horizontal reading (-12 or -14) for applications with knob down.

Simple and Versatile Mounting Makes Multi-Axis Systems Easy

The BiSlide system is designed around a hard alloy aluminum I-beam base. Mounting features include a pair of T-slots on each side, drilled end plates and a series of threaded holes on the carriage. Using standard Velmex cleats, T-nuts, bolts and T-Slot plate (see page 11) you can quickly and easily configure a BiSlide system for multiple coordinates. Combine that attachment flexibility with the availability of BiSlides up to 80" and choice of manual or motor-driven models, and you have a positioning system that will do precisely what you want, at low cost.

Here are two mounting examples. **There are more on our web site at www.velmex.com. Keyword: example**



Above: Easy XZ Configuration. Just use the four predrilled holes in end plate. Any 90 degree orientation is possible. *Items Needed:* four MB-1 bolts.



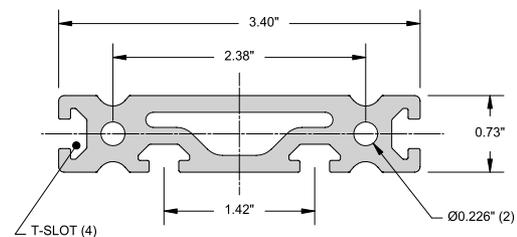
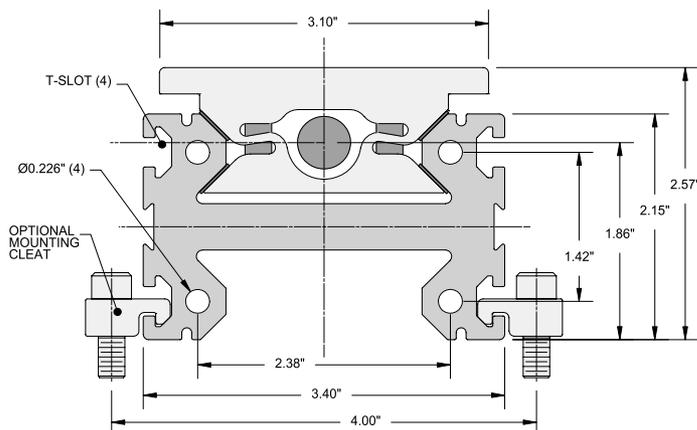
Left: Rigid XY attachment using BiSlide cleat. The Y axis can be positioned anywhere on X axis without an adapter plate or special holes. *Items needed:* Two MC-2 cleats and four MB-1 bolts.

Right: Velmex BiSlide

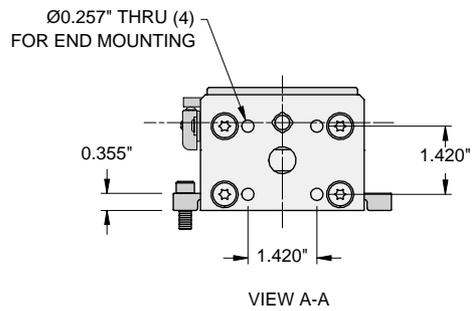
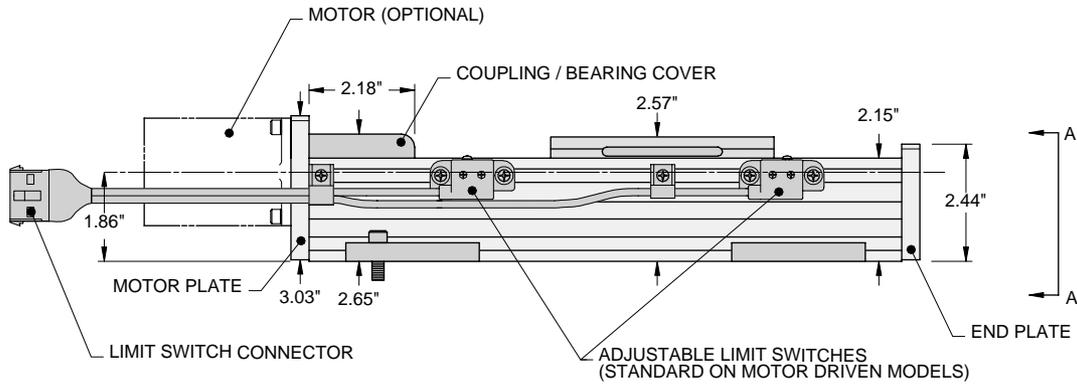
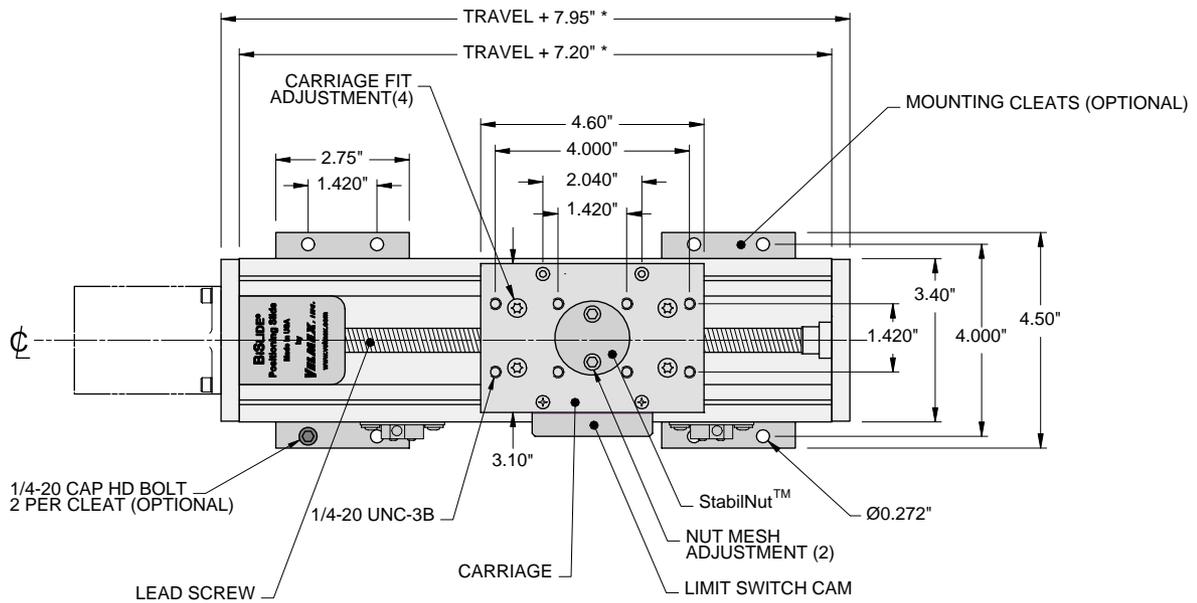
Cleats. Cleats are available in standard two-hole versions, a two-hole design with 2 inch spacing for optical table mounting, and single hole cleats for attachment to other T-Slot framing systems.



Series M BiSlide Assembly and T-Slot Profile Cross Section



BiSlide Assembly Series M Dimensions



Travel Length (Inches)	Cleats Recommended**
5	4
10	4-6
15	4-8
20	6-10
30	8-12
40	10-14
50	12-16
60	14-18
80	16-20

**Use higher number for heavy loads

Motors and Lead Screws

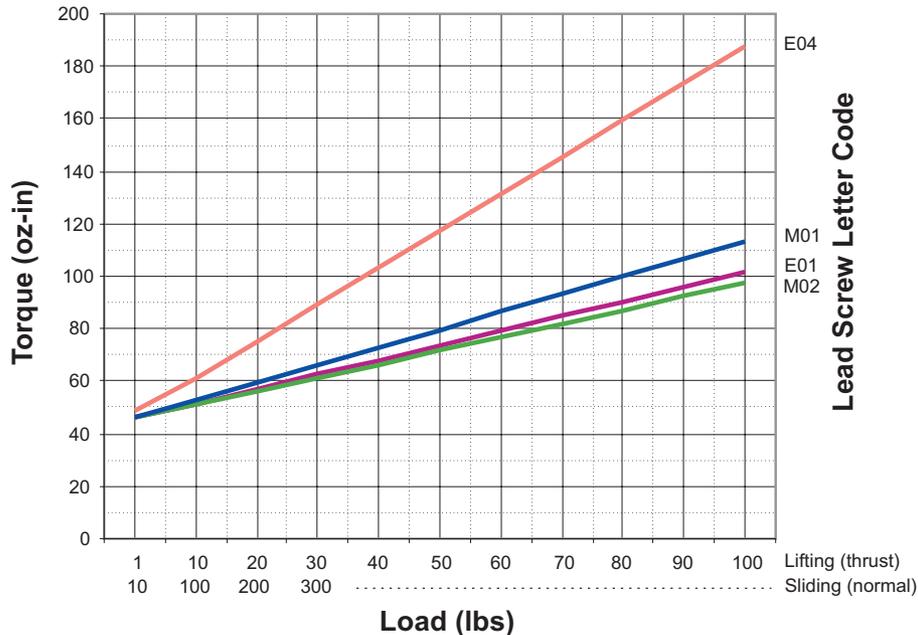
All BiSlides are designed to accommodate NEMA size 23 and size 34 motors without modifications. Many other types of motors can also be used, most of them requiring no modifications to the BiSlide.

All BiSlides can be purchased with, or without motors. Related motor drives, controls, and software are also available.

The motor to lead screw connection is a precision honed steel coupling that rigidly clamps to the motor shaft without the need for key ways or set screw flats. Size 23 motors use a 0.375" to 0.250" coupling bushing; size 34 motors use a 0.375" coupling and an additional plate.

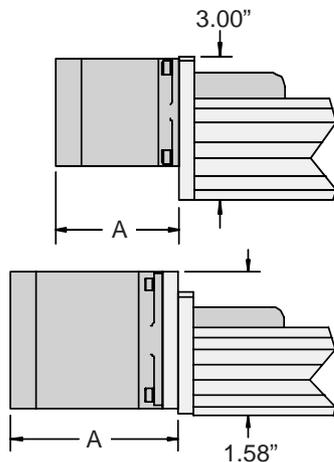
Motor-Driven BiSlides are available in standard travels to 80"/203.2 cm. Please refer to the chart on page 2.39.

BiSlide Lead Screw Torque/Load*



* Add 35 oz-in for Parallel Coupled, 1.5x torque for dynamic safety margin, 2x torque needed for startup

Motor Mounting



Motor Size	A
Nema 23 Two Stack (PK 264)	2.13"
Nema 23 Three Stack (PK 268)	2.99"

Motor Size	A
Nema 34 One Stack (M091-FD-454)	2.90"
Nema 34 Two Stack (M092-FD-447)	4.15"

Choose the lead screw that fits your application.

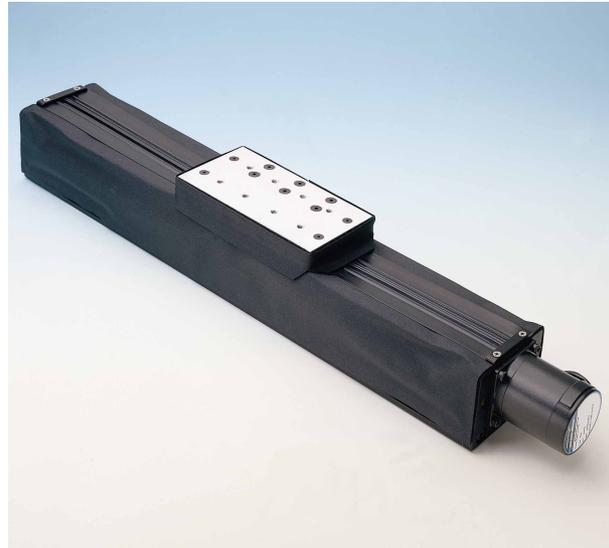
Lead Screw	Advance/Turn	Resolution with Step Motor (400 steps/rev.)
E01	0.100"	0.00025"
E04	0.400"	0.001"
M01	1 mm	0.0025 mm
M02	2 mm	0.005 mm

An Important Note About Lead Screws:
 The E01, M01 and M02 are self-locking designs that under normal conditions will not creep or backdrive (external forces on carriage do not cause lead screw to rotate). However, with the motor power off, the E04 can backdrive when used vertically or when the thrust load exceeds 2 lbs.

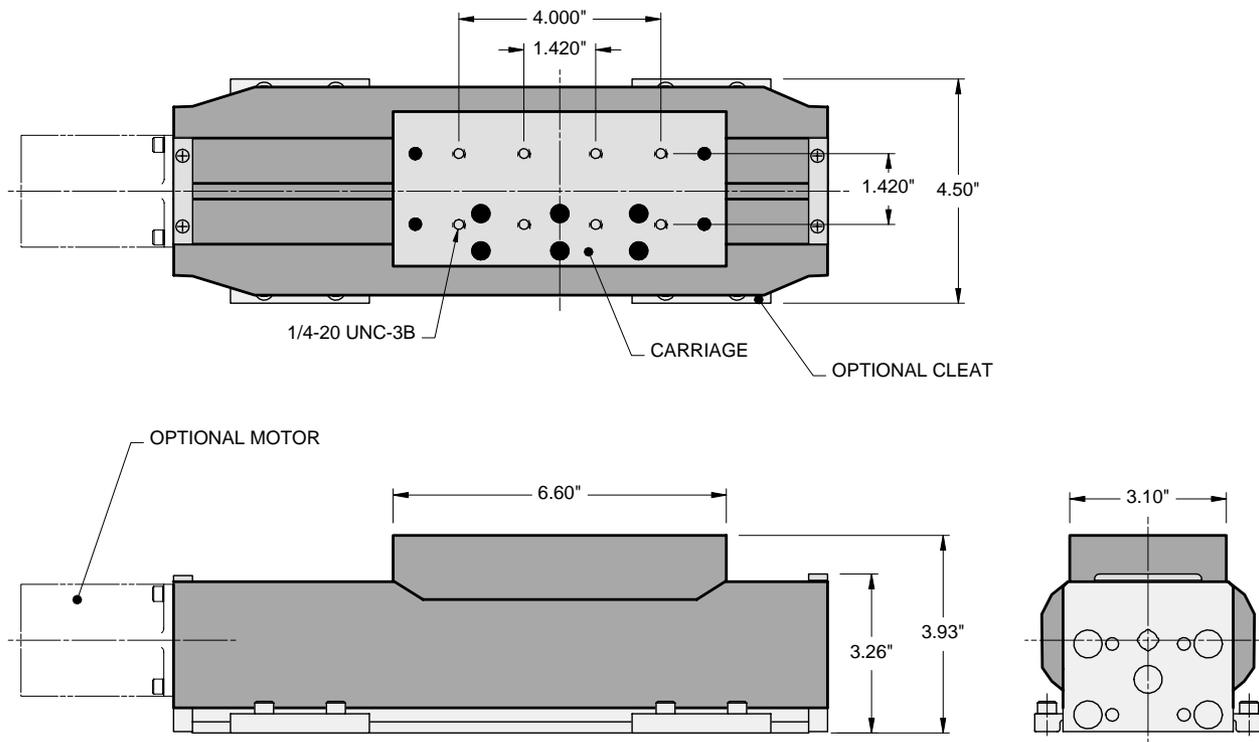
Choose the Way Cover Model to Minimize Contamination

For BiSlide installations in environments with particulate matter, machining chips and the like, use this convenient option to protect your BiSlide against damage from foreign material. The way cover encloses the ways, lead screw and limit switch assembly, protecting all of these vital areas. The way cover is a reclosable seal zipper design with Velcro™ attachment that keeps dirt out but allows easy access if you need to get inside the BiSlide. It works with the BiSlide at any orientation, so you can install it on any axis.

Travel distance is reduced by 1" for units less than 40" standard travel, but there is no loss of travel on assemblies 40" or longer. Cantilever load capacity is reduced by one half. Carriage height is 1.36" higher than standard.



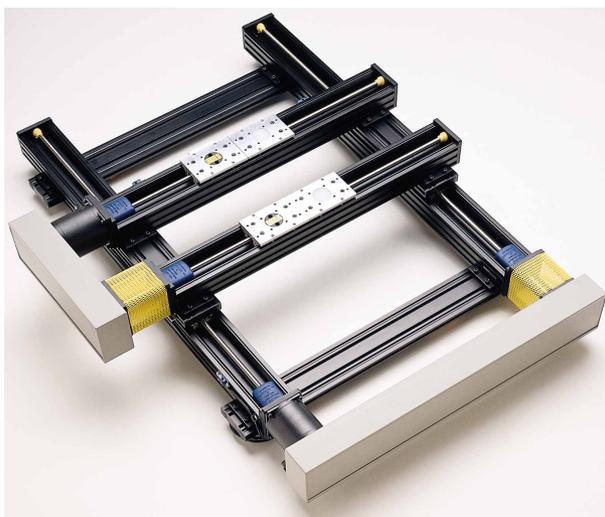
BiSlide Way Cover Model with NEMA 23 Motor



Tandem Option Carries Heavy Load Economically

For higher loads and increased stiffness, the tandem option is an attractive solution for many applications. This configuration uses a standard motor-driven model mechanically attached to a free sliding model. The two bases are securely fastened together and the carriages are precision machined in place to insure flatness and parallelism.

For more options visit our web site at www.bislide.com and www.velmex.com.



Double Parallel Coupled BiSlide Assembly with Optional Double Carriages (see the section on BiSlide Frames & Bases on page 4.4 for another example)



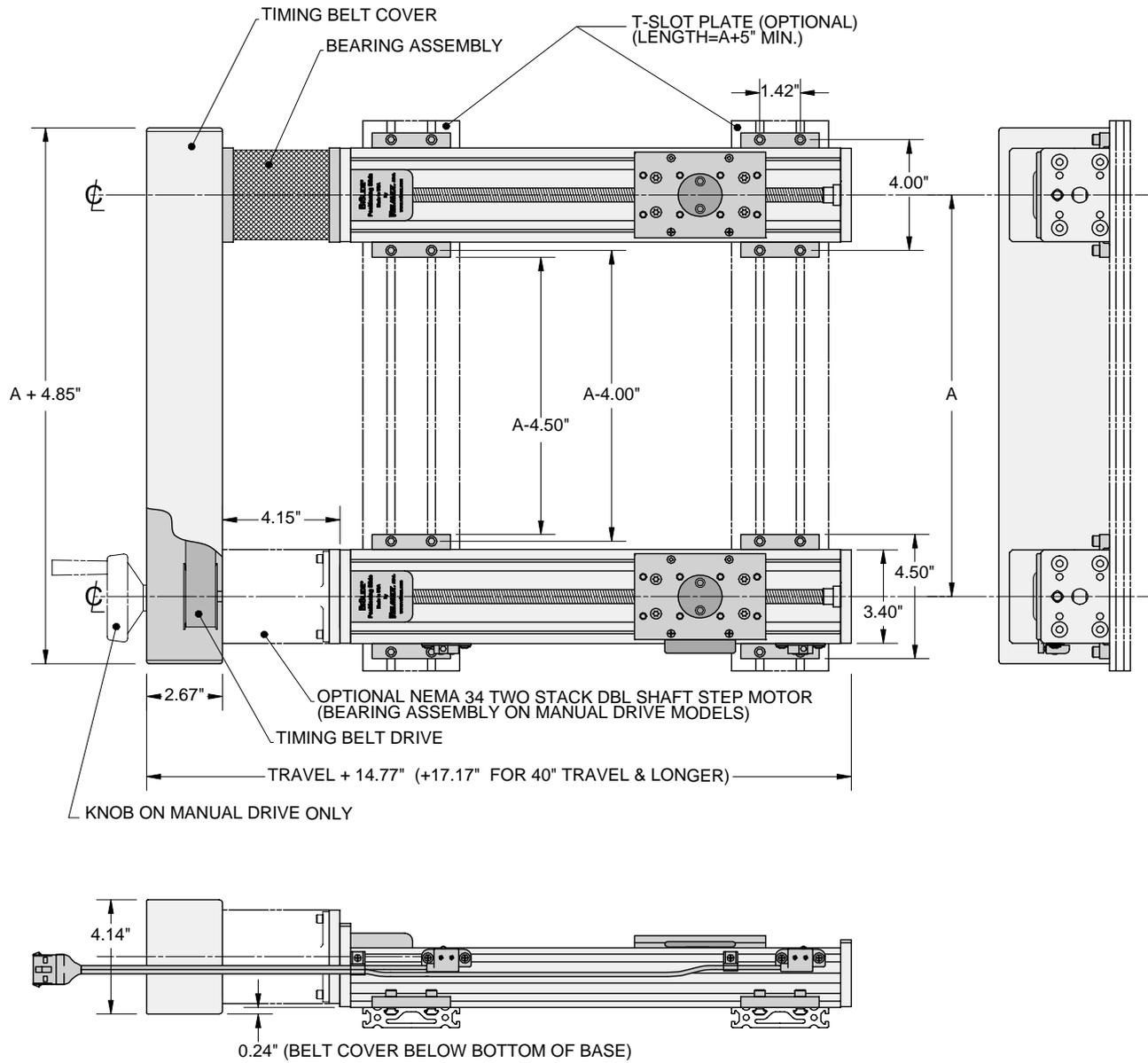
Motor Driven BiSlide with Tandem Option

Choose the Parallel Coupled Assembly for Large and Long Traverses

If your application calls for large loads or the ability to traverse long distances in two or three axes, the Parallel Coupled Assembly is what you need. It uses two identical BiSlide units. Motor driven models use a double shaft motor on one slide and a bearing assembly on the other slide. A timing belt drive connects the two slides for synchronous operation. Manual versions have a bearing assembly on both slides; a hand wheel (knob/crank) drives the timing belt drive. Use our inexpensive cleats to mount your Parallel Coupled BiSlide Assembly to nearly any flat surface. For a free-standing assembly, BiSlides can be cleated to the T-slot plate or base structural profiles.

Parallel systems are usually shipped unassembled to eliminate crating charges and trucking costs. These kits include detailed assembly instructions, all fasteners, hardware, and come complete with a timing belt tensioner. They can be shipped fully assembled if required.

Parallel Coupled BiSlide Assembly Drawing

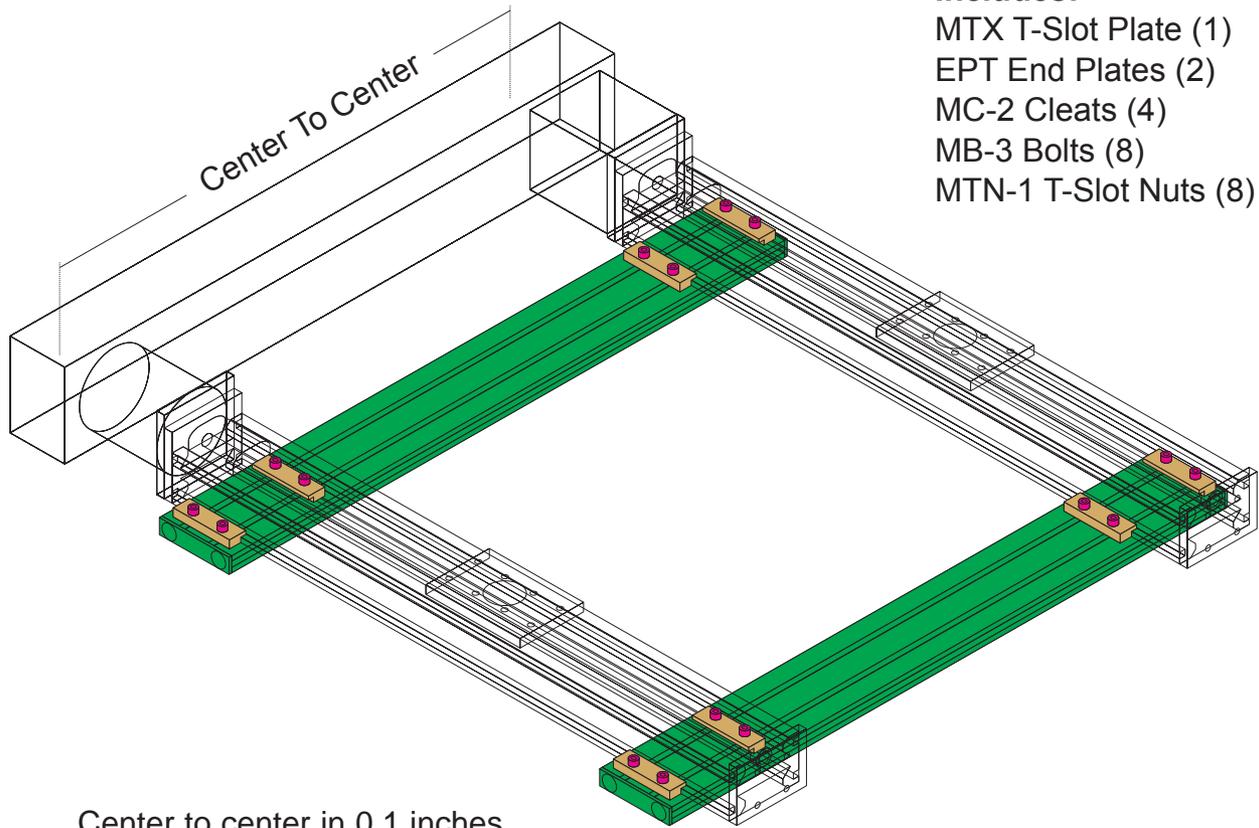


A (Available Center to Center Distances in Inches)

8.5 13.5 14.5 16 17.5 19 20.5 22 23.5 25 26.5 28 29.5 31.5 34 36.5 39 41.5 46.5 51.5 59 66.5 81.5

Contact our technical sales department regarding additional center to center distances

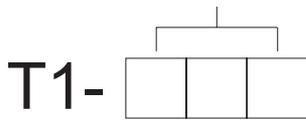
T1 Parallel Coupled Separators



Includes:

- MTX T-Slot Plate (1)
- EPT End Plates (2)
- MC-2 Cleats (4)
- MB-3 Bolts (8)
- MTN-1 T-Slot Nuts (8)

Center to center in 0.1 inches



NOTE: Minimum of 2 required (as shown)

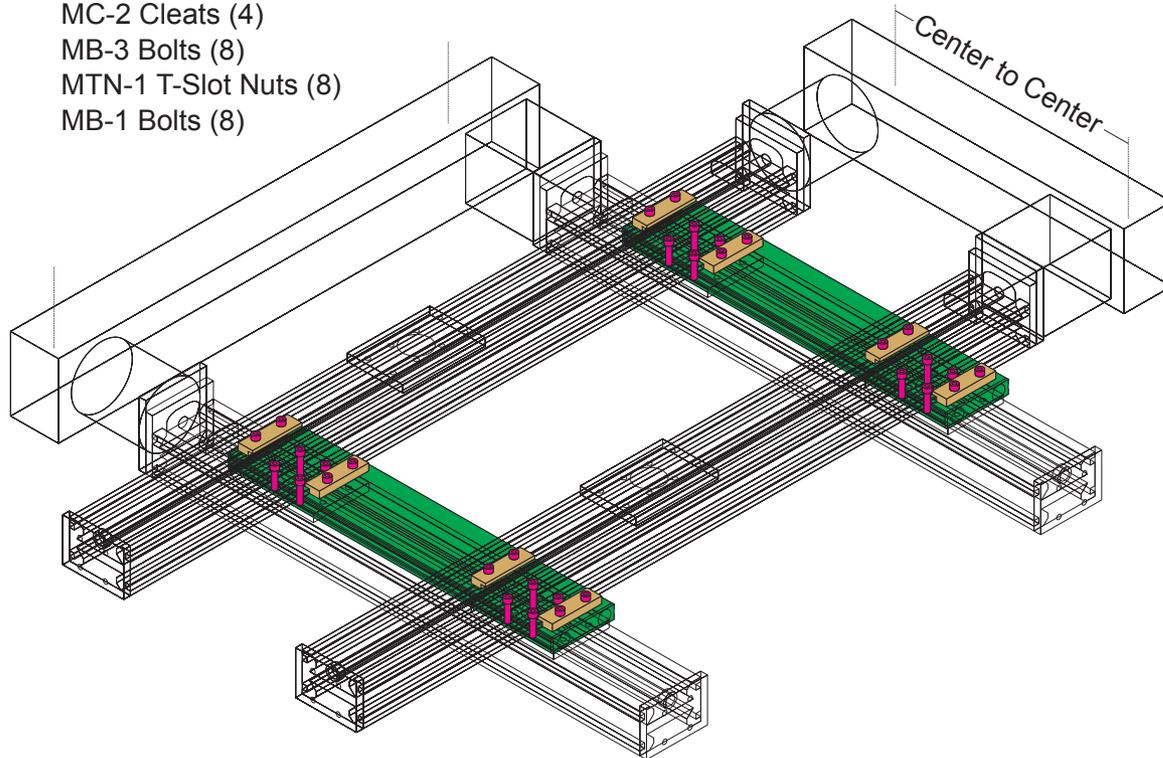
Actual Length = Center to Center + 5.0 inches

Example: Use T1-220 for Parallel Coupled with 22 inches Center to Center (Actual = 27 inches)

T2 Parallel Coupled Separators

Includes:

- MTX T-Slot Plate with 8 Holes (1)
- EPT End Plates (2)
- MC-2 Cleats (4)
- MB-3 Bolts (8)
- MTN-1 T-Slot Nuts (8)
- MB-1 Bolts (8)

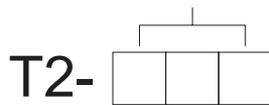


NOTE: 2 required (as shown)

Lower Parallel requires additional Carriages

Travel on lower Parallel is reduced by Center to Center + .65"

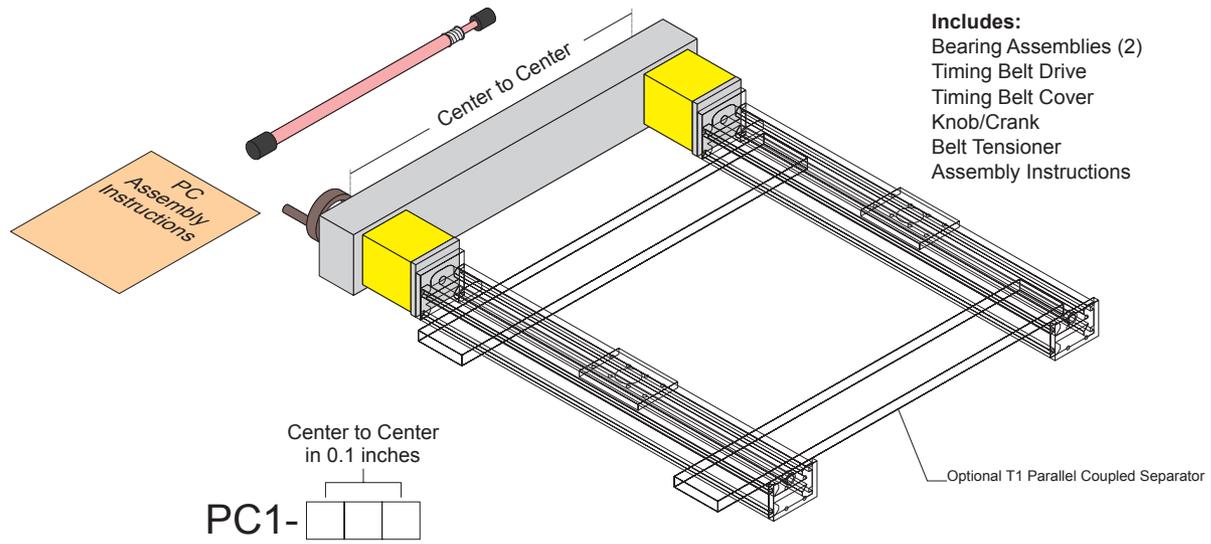
Center to center in 0.1 inches



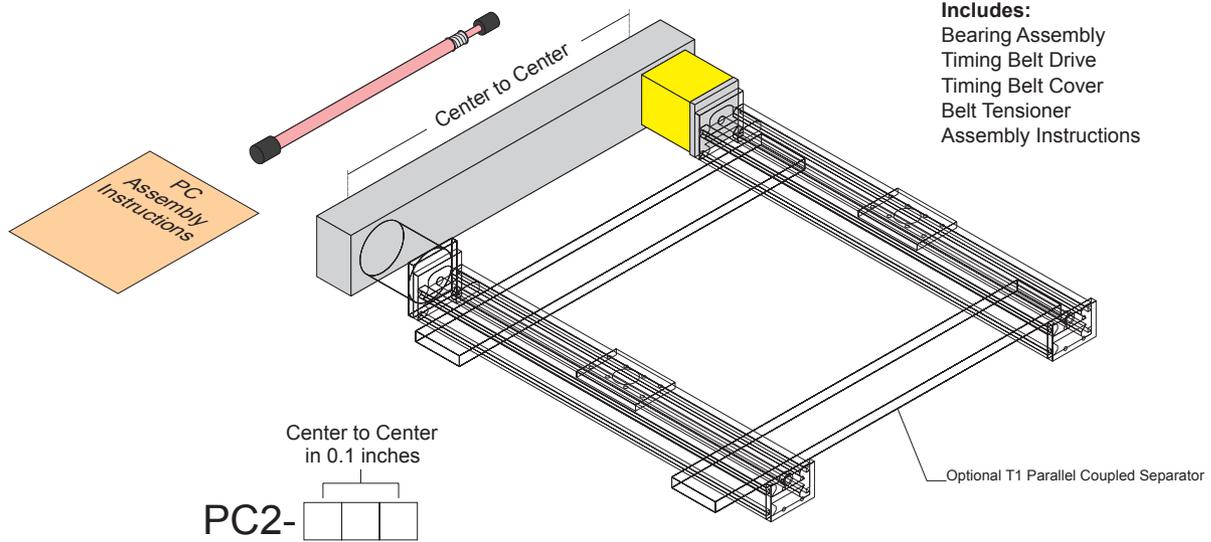
Actual Length = Center to Center + 5.0 inches

Example: Use T2-135 for Parallel Coupled with 13.5 inches Center to Center
(Actual = 18.5 inches)

PC1 Manual Parallel Coupled



PC2 Motor Driven Parallel Coupled



It's Easy to Position Your BiSlide Vertically

Vertical application versatility is built in to every BiSlide. The end plate includes four mounting holes for attaching directly to the carriage of a horizontal assembly, or any other suitable mounting surface. For even more mounting

flexibility, the standard BiSlide Assembly can be end mounted, or "sandwich" cleated to the T-Slot plate and I-beam Base profiles.



This right angle drive option has a standard BiSlide sandwich cleated to the I-beam Base profile (vertical). The bottom (horizontal) surface is the T-Slot plate profile.



BiSlide mounted directly to another BiSlide in an XYZ configuration. See above insert photo for details.



Warranty Protects Your BiSlide and XSlide Investment For Five Full Years

BiSlide and XSlide Assembly products sold by Velmex are warranted to be free from defects for a period of 5 (five) years on all parts. Velmex's obligation under this warranty does not apply to defects due, directly or indirectly, to misuse, abuse, negligence, accidents, or unauthorized repairs, alterations, or lack of maintenance; or to items that would normally be consumed or require replacement due to normal wear. Claims must be authorized, and a return authorization number issued before a product can be returned.

The warranty does not cover items which are not manufactured or constructed by Velmex, Inc. These components are warranted by their respective manufacturer.

Under the above warranty, Velmex will, at its option, either repair or replace a nonconforming or defective product.

The above warranty is the only warranty authorized by Velmex. Velmex shall in no event be responsible for any

loss of business or profits, downtime or delay, labor, repair, or material costs, injury to person or property or any similar or dissimilar incidental or consequential loss or damage incurred by purchaser, even if Velmex has been advised of the possibility of such losses or damages.

Inasmuch as Velmex does not undertake to evaluate the suitability of any Velmex product for any particular application, the purchaser is expected to understand the operational characteristics of the product, as suggested in documentation supplied by Velmex, and to assess the suitability of Velmex products for each application.



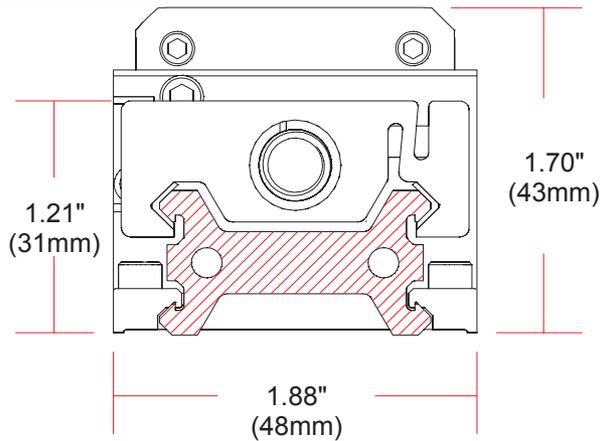
BiSlide Assemblies conform to the European Machinery Directive (89/392/EEC) Annex 1.

Introducing XSlides — New for 2006*

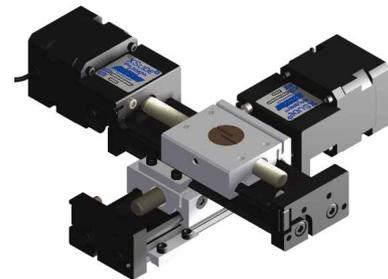
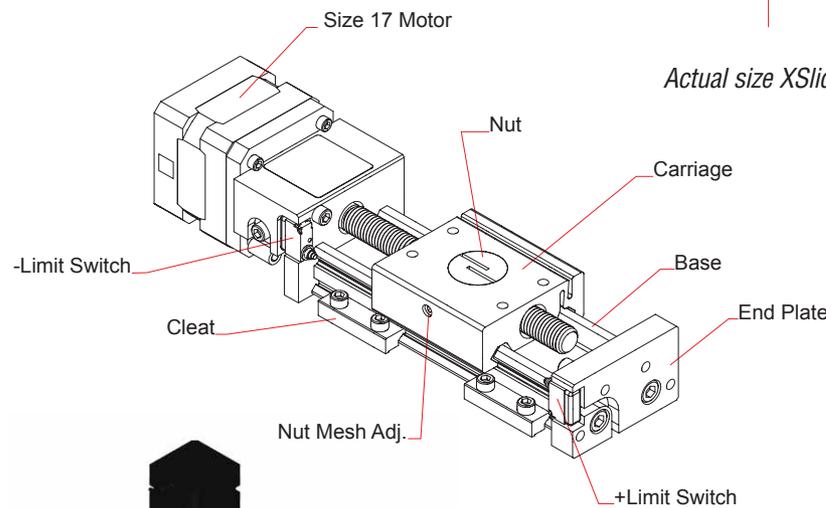
The new XSlide™ is based on the BiSlide design in a more compact size for smaller loads. XSlide assemblies combine the best features with new innovation in half the size at half the cost.

Features and Benefits of XSlides

- High precision at a low cost
- Motor Driven, Knob/Crank, and Free Motion versions
- Wide choice of 3/8" and 10mm diameter lead screws to meet a broad range of resolution/speeds
- Easily accessible adjustments for carriage and lead screw fine tuning
- Long life anodized aluminum ways and PTFE linear bearings
- 0.0001" (0.0025 mm) repeatability
- Standard mounting for NEMA size 17 and 23 motors
- Integrated precision limit switches
- Cleat system for secure distortion free mounting
- Multi-axis configuration without adapters
- 45 degree opposing ways provide maximum rigidity in any direction



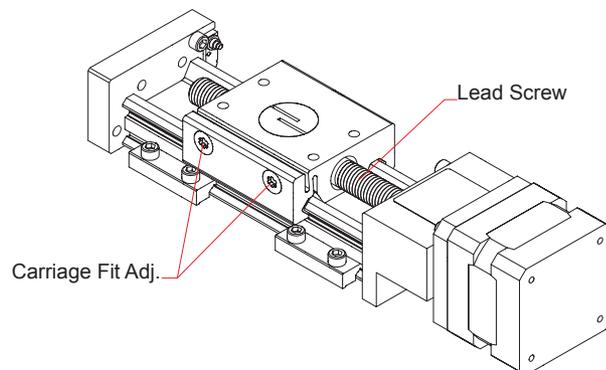
Actual size XSlide cross section with size 17 motor



XY with 2 Cleats and 4 bolts



XYZ with 2 Cleats and 6 bolts



XSlide is a trademark of Velmex, Inc.

*Preproduction models shown, actual production units may be slightly different.

Table of Contents

Motor Driven



Motorized Rotary Tables

B4800TS	2.50
B5990TS	2.52

Note: Throughout this catalog you'll see **Keywords in RED**. To get more information, including access to drawings, specs, photos of examples and the latest innovations, go to our web site, www.velmex.com, and enter the corresponding **Keyword in the Quick Search Box**.



Rotary Tables

Velmex offers two sizes of every table: Series B4800TS (4.9" diameter) and Model B5990TS (1.65" diameter).

B4800TS

B4800 is a Series of three Rotary Tables that use a worm and gear drive design with a central rotating ball bearing. Gear ratios are: 18, 36, and 72:1. Models with 18 or 36 gear ratios require holding torque to maintain position. The tables can be driven by frame size 23 stepper motors, Bodine Type K or Pittman PM DC motors.

All tables have a hollow spindle or clear aperture for optical applications, an 360° scale and an adjustment to minimize gear backlash. They can be attached to the slider of the 4000 and the 6000 UniSlide Assemblies via the B6000TX adapter plate. Also mounts to BiSlide with MSPP-3 adapter plate. Plate is 6" x 6" x 1/4".

Options:

- Black anodized finish (see previous page)
- Magnetic reed home switch option
- Encoders on motor shaft extension



Magnetic reed homes switch option

Mounting B4800TS

Anchoring table base: There are two approaches to securing the base of the table. First, there are two clearance holes for 10-32 UNF cap screws for attachment from above through the top access hole. Alternatively, to attach with screws from below, there are four threaded holes. They are 1/4-20 x 7/16" UNC on a 4" diameter bolt circle.

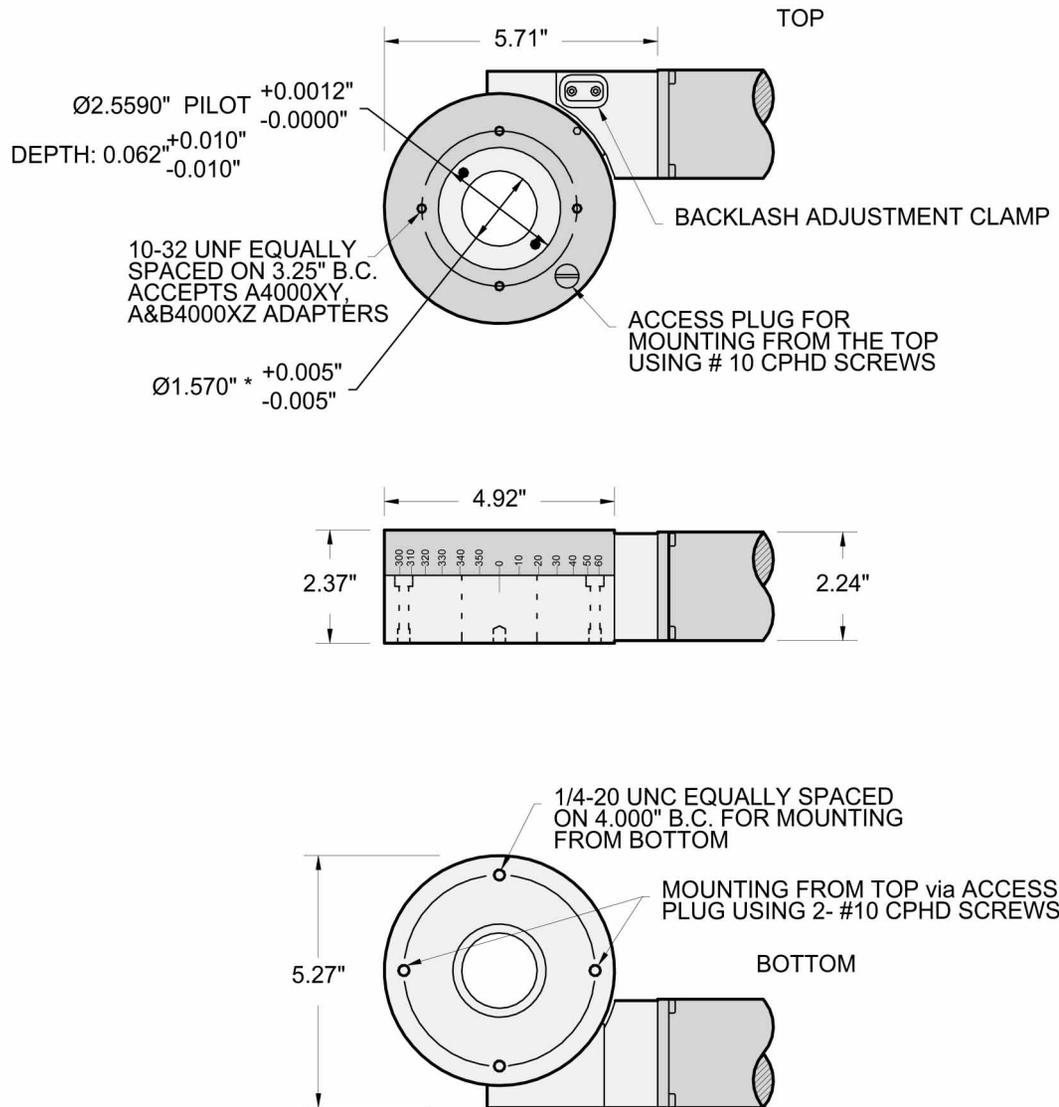
Series B4800TS	
Horizontal load capacity	200 lbs.
Vertical load capacity	25 lbs.
Cantilever load (Horizontal)	500 in.-lbs.
Table top axial runout	0.00025" TIR
Table top radial runout	0.0005" TIR
Accuracy	100 arc-seconds
Repeatability	1 arc-seconds
Table weight	5.5 lbs./2.5 kg.
Maximum input shaft torque	150 oz.-in.
Maximum input shaft speed	600 RPM.

Keyword: worm



Rotary encoder mounted to motor shaft extension

Model B4800TS



Model Number	Gear Ratio	RPM	At maximum input 600 RPM		Degree per Step	Typical Backlash
			Time per Revolution	Speed		
B4818TS	18:1	33.3	1.8 seconds	200°/second	0.050°*	600 arc-second
B4836TS	36:1	16.7	3.6 seconds	100°/second	0.025°*	400 arc-second
B4872TS	72:1	8.3	7.2 seconds	50°/second	0.0125°*	200 arc-second

*Degree per step values are based on 400 steps/revolution using a 1.8 degree step motor and a Velmex VXM motor controller operating in half step mode.



Model B5990TS A 1.7" diameter table with a gear ratio of 90:1

Model B5990TS Rotary Table

B5990TS Rotary Table is our smallest table, has a 90:1 gear ratio, and is lower in cost. The table price includes a NEMA 17 stepper.

Series B5990TS	
Horizontal load capacity	50 lbs.
Vertical load capacity	5 lbs.
Cantilever load (Horizontal)	20 in.-lbs.
Table top axial runout	0.00011" TIR
Table top radial runout	0.00008" TIR
Accuracy	100 arc-seconds
Repeatability	1 arc-seconds
Table weight	2.7 lbs. with motor
Maximum input shaft torque	50 oz.-in.

Options:

Home switch/Zero reference switch (See photo on web site)

Model Number	Gear Ratio	RPM	At maximum input 600 RPM		Degree per Step	Typical Backlash
			Time per Revolution	Speed		
B5990TS	90:1	6	9 seconds	40.2°/second	0.010°*	160 arc-second

Rotary table speed is a function of motor and driver choice. *With 400 step/rev motor.

Model B5990TS

