Limit Switches for Motorized Linear Stages

Limit Switches are electro-mechanical devices that regulate the motion on positioning devices. On Velmex products they are primarily used to stop/turn off the motor when activated preventing over-travel of the carriage/slider. They also can be used to send an event signal. Velmex uses several different types.

- Adjustable (moveable) limits, which are standard on BiSlide Assemblies and optional on XSlide and UniSlide Assemblies.
- Fixed end of travel limits, which are standard on XSlide Assemblies and optional on UniSlide Assemblies. These are not adjustable.
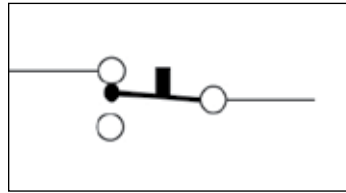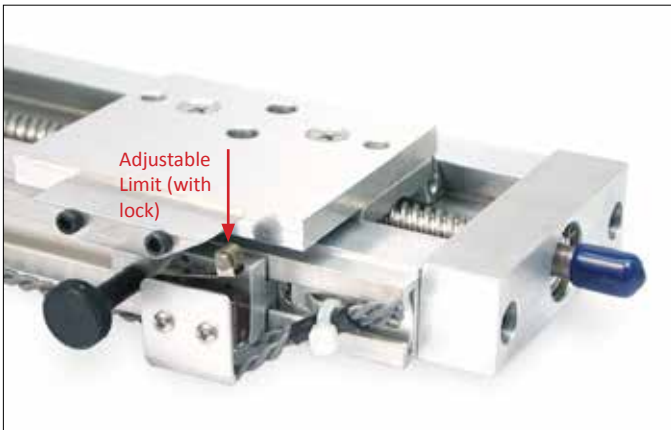- Internal limits which are only available on the UniSlide MB90 Series.

Diagram 1.
Typical limit switch used by Velmex. The default mode is auto-detect normally closed switches.

- Home switches, which actually reference a point rather than limit travel, are used on Rotary Tables and can be used on XSlide Assemblies.

It is possible to purchase motor-driven Velmex stages without limits, however, it is not recommended and it may effect the warranty should you incur any damage.

BiSlide® Limits

Adjustable Limit

Adjustable limits (Standard) - Velmex BiSlide Assemblies have two adjustable limit switches mounted in a track on the side rib of the assembly to prevent over-travel. An optional third limit switch can be added between the two standard limits and used as an adjustable home switch. (This would require a different controller.)

BiSlide limit switches are referenced by either a "-21" or "-31" at the end of the model number. On Parallel-Coupled BiSlide Assemblies, the limits would be eliminated from one of the two linear stages that comprise the assembly.

UniSlide® Limits

Adjustable Limit (with lock)

Adjustable Limits (Optional) - Mounted on the side rib of Velmex UniSlide Assemblies, these two switches can be used to stop travel. These are ordered as a separate part number (OBLS).

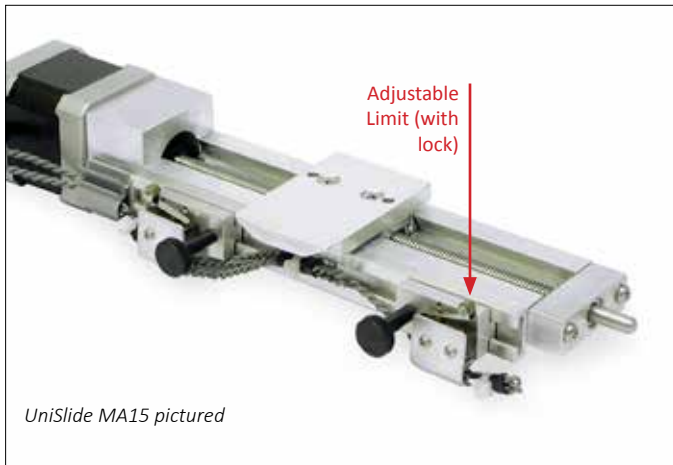Available on all UniSlide Series and UniSlide XY Tables.

Adjustable Limit (with lock)

UniSlide MA15 pictured

UniSlide® Adjustable Limits (Continued) - The adjustable limits are located inside a rail that runs the length of the UniSlide® base. A 1/4" cam plate is added to the carriage/slide that depresses the cam when the carriage encounteres it and activates the switch. Thumb locks affix the limit in the proper position.

Fixed, End of Travel Limit
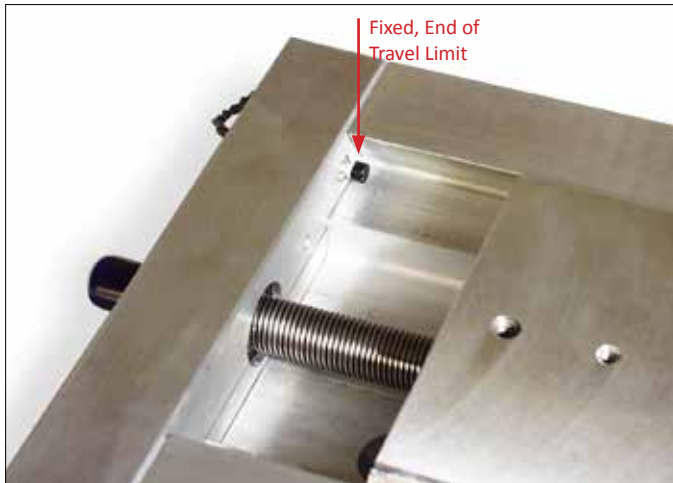
UniSlide Fixed, End-of-travel Limits (Optional) - These push button switches are fixed on the side rib of Velmex Unislide Assemblies. They are not adjustable. On all UniSlide Series except the MA15 and MA25 the limits are built into the end plate of the slide. On the MA15 and MA25 Series they are outboard switches affixed to the side rib. These are ordered as a separate part number which begins 3-934.

Also available on UniSlide XY Tables.

Fixed, End of Travel Limit
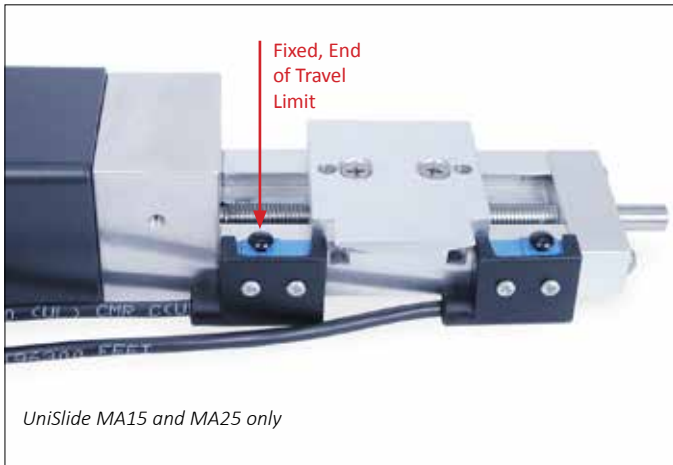
UniSlide MA15 and MA25 only

Fixed, End of Travel Limits (Optional) - Outboard fixed, end-of-travel limits available on the MA15 and MA25 UniSlide Assemblies.
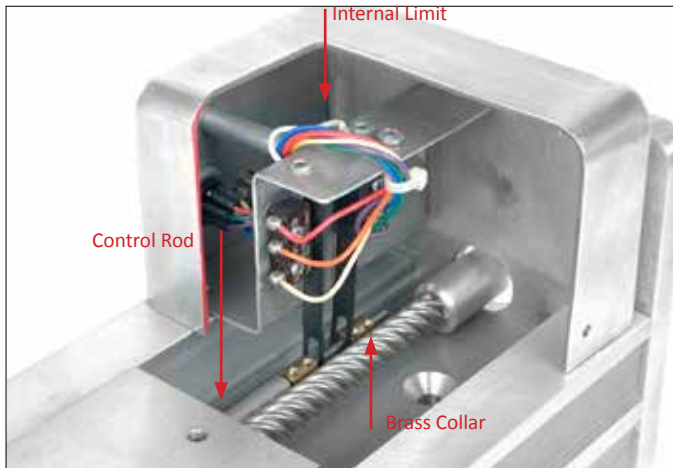
UniSlide® Limits (continued)


Internal Limit

Control Rod

Brass Collar

Internal Limits (MB90 Only - Standard) - They consist of two switches, a control rod mounted along side the lead screw with two moveable brass collars and cover a top an additional 3" of dovetail base as shown. The collars are positioned on the control rod to activate the limits. The internal limits on the MA90 Series UniSlide Assembly are referenced by the letter "J" at the end.

XSlide™ Limits

Fixed Limit

Fixed Limits (Standard) - XSlide Assemblies have two fixed, end-of-travel limit switches built into the end plates. XSlide fixed limit switches are referenced by either a "-21" or "-71" at the end of the model number.
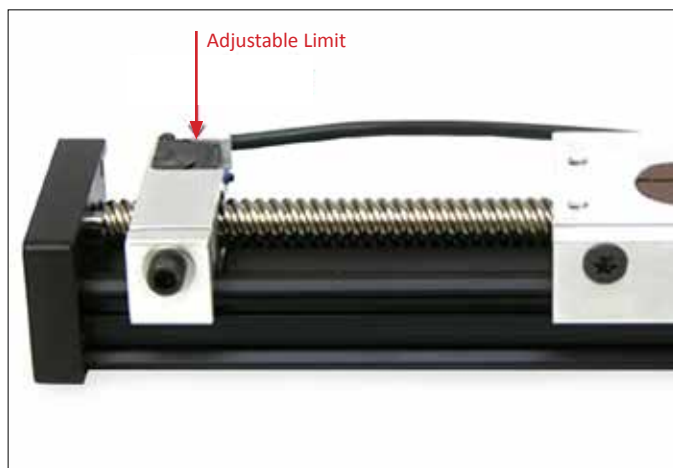
Adjustable Limit

Adjustable Limits (Optional) - Moveable limit switches can be added as an option to motorized XSlide Assemblies. These switches can be used to stop travel within the overall travel distance of the XSlide. When installed the adjustable limits reduce travel distance by 1.2" (3.05 cm). These are ordered as a separate part number (XSW-X-PR).
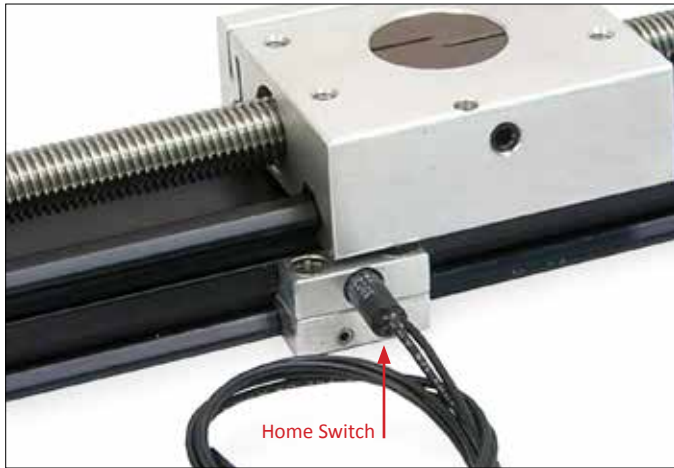
VELMEX, INC.™

Positioning Systems for Science and Industry

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Document: Velmex Limit Switches

01/16 Rev A

XSlide™ Limits (continued)

Home Switch

Magnetic Reed Home Switch (Optional) - A magnetic reed home switch sets a reference point to return the carriage to home (starting) position. This is moveable. Ordered as a separate part number (XSW-M). Commonly used on the XSlide™, a mechanical version is also available for BiSlide® and UniSlide® Assemblies.

Mechanical home switches can be added to UniSlide and BiSlide linear stages. Switches used in this manner require an additional controller.

Rotary Table Limits/Home Switch

Home Switch

Magnetic Home Switch (Optional) – A magnetic reed home switch sets and returns the carriage to home (starting) position on Velmex Rotary Tables. Ordered as a separate part number (3-934-RR).

2 Zero Reference Switches
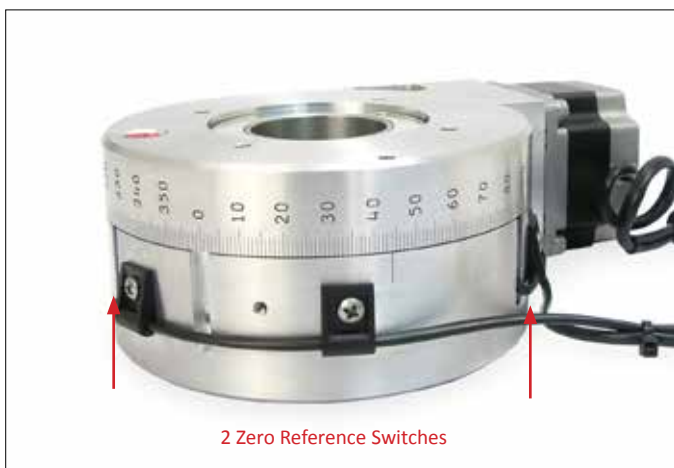
Limit Switches (Optional)– Using two zero-reference (home) switches on a Rotary Table creates limits that restrict travel to a specific degree arc.

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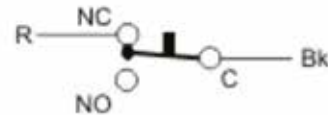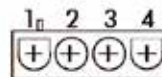| Velmex Product | Available Limit Switches | | | Home Switch |
	Adjustable	Fixed, End-of-Travel	Internal	
BiSlide® Assemblies	Standard	N/A	N/A	Optional* (Mechanical)
UniSlide® MA15 Series	Optional	Optional (Outboard)	N/A	Optional* (Mechanical)
UniSlide® MA25 Series	Optional	Optional (Outboard)	N/A	Optional* (Mechanical)
UniSlide® MA40 Series	Optional	Optional	N/A	Optional* (Mechanical)
UniSlide® MA60 Series	Optional	Optional	N/A	Optional* (Mechanical)
UniSlide® MB90 Series	Optional	Optional	Standard	Optional* (Mechanical)
UniSlide® XY Tables	Optional	Optional	N/A	N/A
XSlide™ Assemblies	Optional	Standard	N/A	Optional* (Magnetic)
Rotary Tables	N/A	N/A (Can be produced with 2 zero reference home switches)	N/A	Optional (Magnetic)
*Requires an additional control other than VXM™ Controller				

Limit Switch Wiring for VXM™ Controller

Amp1-480703-0 (mates with:1-480702-0)
*Negative direction on VXM controllers
Connector on Switch Harness are wired on the normally closed (NC) terminals.

CAUTION: The VXM puts 24VDC on the limit switches. Do not connect limit inputs to any +5V logic devices.

BiSlide® Assembly
Fixed Limits

MOTOR (OPTIONAL)

COUPLING / BEARING COVER

2.18"

2.57"

2.15"

A

2.44"

1.86"

MOTOR PLATE

3.03" 2.65"

LIMIT SWITCH CONNECTOR

A

END PLATE

ADJUSTABLE LIMIT SWITCHES
(STANDARD ON MOTOR DRIVEN MODELS)

UniSlide® Assembly
Adjustable Limits

MOTOR PLATE

BEARING BLOCK

LIMIT SWITCH

LIMIT SWITCH

TOP PLATE

CAM

ADJUSTMENT KNOB

0.250"

LIMIT SWITCHES

0.75"

1.3"

UniSlide® Assembly - MB90
Internal Limits

LIMIT SWITCH CONNECTOR

Standard
Limit Switch
Assembly J

LIMIT SWITCH
LIMIT SWITCH BRACKET
LIMIT ROD & COLLAR