



# model MST

## DESCRIPTIVE SPECIFICATIONS

The MST is the most trusted, secure and reliable full height turnstile available. It is installed in thousands of locations throughout the world and offers key product features and benefits only available from Alvarado.

### COMMON APPLICATIONS

- Perimeter Control/Fence Line Security
- Time & Attendance Integration
- Loss Prevention
- Employee and Visitor Access Control
- Unmanned Point of Entry
- Single Direction Traffic Control/One-Way Exiting

### TYPICAL INSTALLATION SITES

- Military Installations
- Refineries & Power Distribution Centers
- Ports, Harbors & Airports
- Construction Sites
- Correctional Institutions
- Manufacturing & Distribution Centers
- City Parks & Recreation Sites
- Sports Parks, Arenas & Stadiums
- Zoos & Amusement Parks



## FUNCTION

MST turnstiles are designed to control access into and out of facilities. Among its many attributes, the MST comes with self-adjusting, self-centering, speed control. This highly unique feature ensures a consistently even rotation, and smoothly self-centers the turnstile, under all conditions. The MST is suitable for indoor or outdoor use. Contact Alvarado for recommendations on finishes and specific weatherization options for harsh environments.

## AVAILABLE CONFIGURATIONS

### **MST-3 (manual control)**

Using key lock control, the MST-3 can be configured to provide free passage in both directions; free passage in one direction and restricted passage (locked) in the opposite direction; or restricted passage (locked) in both directions.

### **MST-6X (electric lock control)**

Provides separate electric lock controls for both directions. The key lock override controls described in the manual control unit above are included. The MST-6X interfaces with virtually any access control system.

## AVAILABLE FINISHES

### **GALVANIZED**

All exterior steel materials are hot-dip galvanized to ASTM Standards A123 / A153. Galvanized units, like all Alvarado MST's, have stainless steel Top Channel covers.

### **POWDER COATED**

All exterior steel materials are powder coated. Powder coating is available in a variety of colors.

### **STAINLESS STEEL**

All external materials are fabricated from #304 stainless steel polished to a #4 satin finish. Welds are electropolished to ASTM Standard E1558.

## MATERIALS

### **TOP CHANNEL**

The exterior housing is fabricated from 16-gauge #304 stainless steel, regardless of finish. The interior Top Channel frame is a 7" wide U-frame fabricated from 4-gauge powder coated steel. The Top Channel houses the control mechanism and electrical components.

### **YOKE GUARD PLATE (COVER)**

A 16-gauge steel (or #304 stainless steel) sheet securely fastens to the Top Channel & Yoke.

### **YOKE (CURVED SECTION)**

The Yoke is a fully welded single assembly consisting of 10 vertical tubes notched and welded to two upper and lower horizontal tubes. Two 0.1875" x 1" steel straps are welded to the vertical tubes for support. Vertical and horizontal tubes are fabricated from 1.75" OD x 16-gauge steel (or #304 stainless steel) tubing. No external fasteners are used in the construction of the Yoke.

**ROTO (ROTATING SECTION)**

The Roto is a fully welded single assembly consisting of 13 arms per section (total of 39 arms per Roto) notched and welded to a vertical tube. Arms are fabricated from 1.75" OD x 14-gauge steel (or 16-gauge #304 stainless steel) tubing. Arms have either a welded metal cap (powder coated or stainless steel models) or a ribbed, force fit plastic cap (galvanized models). The vertical tube is fabricated from 3" OD x 6-gauge steel (or #304 stainless steel) tubing. No external fasteners are used in the construction of the Roto.

**OV (BARRIER SECTION)**

The OV is a fully welded single assembly consisting of 13 arms notched and welded to a vertical tube. Arms are fabricated from 1.75" OD x 14-gauge steel (or 16-gauge #304 stainless steel) tubing. Arms have either a welded metal cap (powder coated or stainless steel models) or a ribbed, force fit plastic cap (galvanized models). The vertical tube is fabricated from 3" OD x 6-gauge steel (or #304 stainless steel) tubing. No external fasteners are used in the construction of the OV.

**MECHANICAL COMPONENTS & FUNCTIONALITY (ALL MODELS)****HYDRALINE™ SPEED CONTROL & SELF-CENTERING MECHANISM**

HydraLine is Alvarado's revolutionary speed control that self-adjusts to the pushing force of the user to ensure a safe, controlled and quiet rotation. Self-centering automatically corrects under- or over-rotation of the turnstile arms following a passage cycle and automatically returns the arms to the "home" position in a controlled fashion.

**INDASPLINE™ - CAM AND SHAFT ASSEMBLY**

The cam and shaft assembly consists of a stainless steel, investment cast lobed cam welded to a splined shaft. The splined shaft fits into a reciprocal splined coupling in the top of the Roto, creating a solid non-slip connection that ensures very precise movement and reduces mechanism wear. Our design makes it mechanically impossible to improperly install the Roto (rotating section) of the turnstile.

**TURNSTILE LOCKING CONTROL**

The locking and unlocking of the unit is controlled with stainless steel lock arms that are moved into the appropriate locked or unlocked position by continuous duty rated solenoids and spring assemblies. There is independent control of each rotational direction.

**ENCLOSED BEARING ASSEMBLIES**

The cam and shaft assembly rotates in a bearing assembly consisting of two outdoor rated precision bearings. The lower bearing is protected by a sheet metal cover.

**CARD READER PLATE RECEIVERS**

All 6X models come with card reader plate receivers on both entry and exit sides of the Yoke. Card reader adapter plates are available to fit virtually any commercially available reader (see Options).

**ELECTRICAL COMPONENTS & FUNCTIONALITY (MST-6X MODELS)****TURNSTILE CONTROL BOARD**

The Alvarado Turnstile Controller (ATC) controls activation and turnstile functions. Activation for either direction of operation is achieved by supplying a momentary dry contact of any duration to the ATC.

**REMOTE UNLOCKING**

Each ATC accepts inputs from a continuous dry contact emitting device to bypass the access control system and allow the MST-6X to be remotely unlocked in the electrically controlled direction(s).

**OPTO-INTERRUPTOR DETECTION ASSEMBLY**

Rotation of the turnstile is detected by an internal opto-interruptor assembly. No mechanical microswitches are used in the operation of the turnstile.

**ADJUSTABLE TIMED DELAY AUTO RE-LOCK**

This feature adjusts the time a user is allowed to pass through the turnstile after activation, before the turnstile automatically relocks. There are multiple adjustment settings, or the timed delay auto re-lock feature may be disabled.

**INDEPENDENT TURNSTILE TESTING**

The turnstile control board allows the unlocking function to be tested independently of the access control system. This is ideal for troubleshooting.

**FAIL-LOCK/FAIL-SAFE CONFIGURATION**

The default configuration for MST-6X turnstiles is fail-lock (entry)/fail-safe (exit). Other configurations are available. Field changes can be accomplished quickly and easily by a qualified technician without replacing the Top Channel.

**OUTPUTS****FEEDBACK / TURNSTILE ROTATION COUNT**

The ATC provides a double pole, single throw, relay in each direction of operation when a rotation occurs. This signal serves as “feedback” to the access control provider, indicating a rotation has occurred, or as a “count” to an external counting system.

**OPTIONS****RED/GREEN ACTIVATION LIGHTS\***

Available for use with the MST-6X. A red and green LED array located in the Top Channel is configured to function in the following manner:

**Red Light** - An illuminated red light indicates the turnstile is locked and ready for card presentation.

**Green Light** - An illuminated green light indicates the access system has provided the ATC with an activation indicating an “authorized” card has been presented. When the green light illuminates, the turnstile will unlock.

**RED/GREEN/YELLOW ACTIVATION LIGHTS\***

Available for use with the MST-6X. A red, green and yellow LED array located in the Top Channel is configured to function in the following manner:

**Red Light** - An illuminated red light indicates the access system has provided the ATC with an activation indicating that an “unauthorized” card has been presented. The turnstile will remain locked.

**Green Light** - An illuminated green light indicates the access system has provided the ATC with an activation indicating an “authorized” card has been presented. When the green light illuminates, the turnstile will unlock.

**Yellow Light** - An illuminated yellow light indicates the turnstile is locked and ready for card presentation.

\*Photos depicting light options may be found at [www.alvaradomfg.com](http://www.alvaradomfg.com)

**OPEN/CLOSED STATUS LIGHTS\***

Red and green LEDs are available to indicate whether the turnstile is open or closed. LEDs are installed in the Top Channel for easy visibility. This option is used in conjunction with remote unlocking (see electrical functionality).

**FAIL-SAFE/FAIL-SAFE OPERATION**

Both sides of the turnstile will unlock upon loss of power and provide free passage in both directions. The MST-6X unit is supplied in a fail-lock (entry)/fail-safe (exit) mode as default.

**FAIL-LOCK/FAIL-LOCK OPERATION**

Both sides of the turnstile will remain locked upon loss of power. Key overrides (which are standard) can still be used to unlock the turnstile. The MST-6X unit is supplied in a fail-lock (entry)/fail-safe (exit) mode as default.

**CARD READER ADAPTER PLATES**

6"x6" adapter plate fits most card readers and allows mounting to reader mounting posts on 6X models. Custom plates are available. Contact Alvarado for more information.

**READER PLATE RECEIVER COVER**

A small aluminum plate used to cover an unused reader plate receiver.

**OUT OF SERVICE LOCK BRACKET**

Enables the turnstile to be secured with a padlock when the turnstile is out of service.

**HEEL/ARM GUARDS**

Padded sleeves for arms at pushing level or for lower Roto arms. Heel/Arm guards are packaged three to a set.

**ELECTRIC LOCK CONTROL UPGRADE (MODEL MST-3 UNITS ONLY)**

All Model MST-3 units are convertible to electric lock control. MST-3 Top Channel frames include brackets and insertion holes to allow for easy field retrofit by a qualified technician.

**220VAC**

A 220VAC, 50-60 Hz transformer is substituted for the standard 110VAC transformer. 220VAC units bear CE marking, except for battery backup capability which is not available on CE marked units.

**PUSH BUTTON ASSEMBLY**

Unlocks the turnstile for one passage with a stainless steel push button assembly.

**BATTERY BACKUP**

A trickle charge battery system is installed in the Top Channel to provide limited duration operation if primary power to the turnstile is lost. Not available on CE marked units.

**TOP CHANNEL STABILIZER**

A Top Channel stabilizer can be provided to increase rigidity between the OV and the Top Channel.

**INTERFACE COMMUNICATION OPTIONS**

Alternate communications methods are available, including serial and TCP/IP. Contact Alvarado for more information.

**DUST PROTECTION**

Additional protection measures are added to the Top Channel for extremely dusty installation environments. Contact Alvarado for more information.

\*Photos depicting light options may be found at [www.alvaradomfg.com](http://www.alvaradomfg.com)

**SHIPPING & SITE PREPARATION**

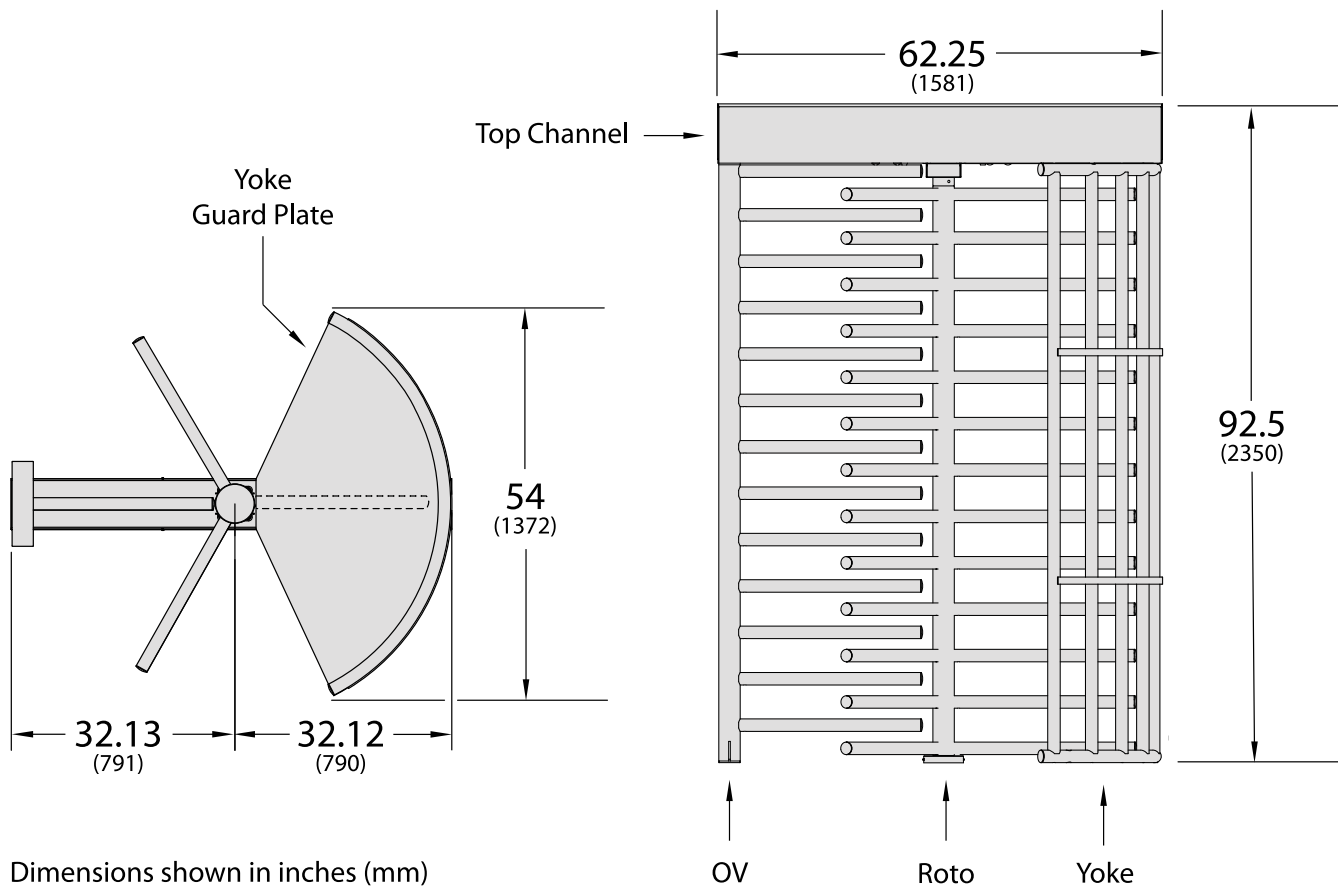
**SHIPPING**

MST turnstiles are shipped in five main sections: the Top Channel, the Yoke, the Roto, the OV and the Yoke Guard Plate. Each section is fabricated as a sub-assembly for easy installation.

**SITE PREPARATION**

All turnstiles must be installed on a firm foundation in a manner that allows the required power and activation signal cabling to be pulled into the Top Channel. Optional conduit may be run through the OV base. The recommended slab platform is 72" square by 4" deep, level concrete. Concrete anchors, bolts and washers are included with each turnstile. Installation should be performed by a skilled installer following Alvarado's directions and instructions. Detailed drawings and installation manuals are available online.

**TECHNICAL DIMENSIONS**



ELECTRICAL	
	DESCRIPTION
TRANSFORMER	110VAC, 50-60 Hz. Low voltage primary power of 10 VAC or 13.5 VDC may also be supplied by connecting power directly to each ATC.
POWER REQUIREMENTS	Max power consumption is 65W per turnstile with all available electrical options.
OPERATIONAL VOLTAGE	Primary power is stepped down and rectified for low voltage 12VDC/5VDC operation.
ON/OFF SWITCH	An on/off switch is located on each power junction box inside the MST-6X Top Channel. A visible green LED is illuminated on the ATC when the power is "on."
POWER RECEPTACLES	The power junction box inside the MST-6X Top Channel includes two 110VAC power receptacles providing a convenient way for installers or technicians to power tools or equipment used during installation and maintenance of the MST-6X.
SURGE PROTECTION	Each ATC uses a ceramic varistor for transient voltage suppression up to 80 amps for low voltage AC inputs. Control signal lines are protected by bi-directional transient voltage suppression diodes up to 600W per input. This combination provides superior lightning and surge protection.
BI-DIRECTIONAL SOLENOID DRIVERS	Each ATC provides one solenoid driver per rotation direction.

WEIGHT, DIMENSIONS, ENVIRONMENT		
	STANDARD	METRIC
PRODUCT WEIGHT	550 lbs.	250 kg
SHIPPING WEIGHT*	750 lbs.	341 kg <small>*Includes weight of shipping crate(s).</small>
HEIGHT	92.50"	2350 mm
WIDTH	62.25"	1581 mm
DEPTH	54.13"	1375 mm
OPERATING TEMPERATURE	-20° to 150° F	-29 to 66° C
STORAGE TEMPERATURE	-30° to 160° F	-34 to 71° C
RELATIVE HUMIDITY	0-90% (non condensing)	--

## WARRANTY

For a period of one year from the date of purchase, Alvarado will replace or repair, at Alvarado's option, any products or parts which are defective in materials or workmanship, provided recommended installation and maintenance procedures are followed. This warranty is void if damage is due to improper installation, maintenance or use. This warranty is limited to parts only, and does not cover labor or shipping charges incurred in connection with the removal or replacement of warranted products or parts.

This warranty is expressly made in lieu of any and all other warranties, expressed or implied, including, but not limited to implied warranties of merchantability and fitness for a particular purpose. Alvarado shall not be liable for any loss or damage, directly or indirectly, arising from the use of purchased products. In no event shall Alvarado be liable to buyer for consequential damages, special damages, incidental damages, loss of use, business interruption, loss of profits, or damages of any kind arising out of the use or inability to use a purchased product. In NO event shall Alvarado be liable for damages which exceed the purchase price of a covered product.

