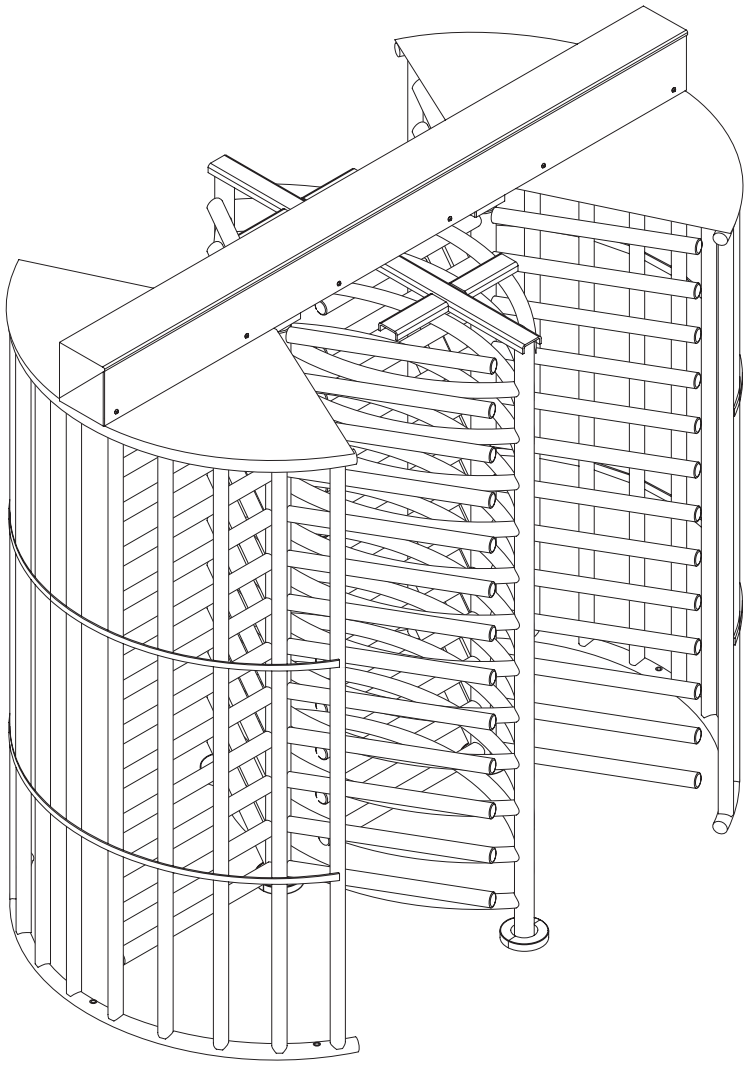
ALVARADO

dormakaba Group

TANDEM MAXIMUM SECURITY TURNSTILE
MINIMAL CONTACT
MSTT-MC



Installation and Operation Instructions

Alvarado Manufacturing Company, Inc.
12660 Colony Street, Chino, CA 91710
Toll Free: (800) 423-4143
Fax: (909) 628-1403
information@alvaradomfg.com
www.alvaradomfg.com

Contents

Safety Precautions

The Full Height Security Turnstile may present a risk to persons and property if it is not installed and/or operated correctly. This manual must be read in its entirety and all safety and operations information must be followed. Note the following precautions:

- Use only skilled individuals to install and service the turnstile.
- DO NOT operate the turnstile if it has been damaged in any manner. If damaged, have the unit repaired or adjusted by a skilled service person before use.
- DO NOT modify or alter the turnstile.
- Have skilled individuals maintain the turnstile according to a proper maintenance schedule.
- In access control applications, train all personnel that will be using the turnstile in the proper method of operation. In addition, properly train new users as they are added to the system.
- DO NOT use non-Alvarado parts to repair a damaged turnstile.
- Closely follow the handling instructions for moving or lifting the turnstile during installation.
- Power off the turnstile before connecting or disconnecting any communication or power wiring to the turnstile.
- The turnstile is not a toy. DO NOT allow children to play on or near the turnstile. DO NOT allow horseplay near the turnstile.

- Utilisez uniquement des personnes qualifiées pour installer et entretenir le tourniquet.
- NE PAS faire fonctionner le tourniquet s'il a été endommagé de quelque façon. S'il est endommagé, faire réparer ou ajuster l'unité avant l'utilisation par un(e) préposé(e) à l'entretien qualifié(e).
- NE PAS modifier ou altérer le tourniquet.
- Le tourniquet doit être maintenu selon un calendrier d'entretien adéquat par des personnes qualifiées.
- Dans les applications de contrôle d'accès, former tout le personnel qui utilisera le tourniquet selon la bonne méthode de fonctionnement. De plus, bien former les nouveaux utilisateurs à leur intégration au système.
- NE PAS utiliser des pièces ne provenant pas du Alvarado pour réparer un tourniquet endommagé.
- Suivez strictement les instructions de manutention pour déplacer ou soulever le tourniquet lors de l'installation
- Éteignez le tourniquet avant de brancher ou de débrancher le câblage de communication ou le câblage d'electricité.
- Le tourniquet n'est pas un jouet. Ne pas laisser les enfants jouer sur ou près du tourniquet. Ne pas se chamailler près du tourniquet.

SAVE THESE INSTRUCTIONS

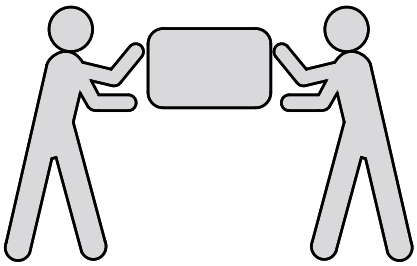
Safety Icons

The following symbols are used throughout the manual to highlight important information and potential risks when installing, servicing or using the turnstiles covered in this manual.

⚠ WARNING — This symbol is used in this manual to warn installers and operators of potential harm. Please read these instructions very carefully.

⚠ CAUTION — This symbol is used in this manual to designate potential conditions that may pose a risk to pedestrians, personnel, property and equipment. Please read these instructions very carefully.

NOTE — This symbol is used in this manual to designate useful information for the installer and operator. Please read these instructions.

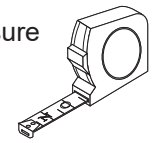
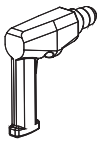
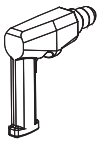
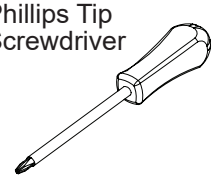
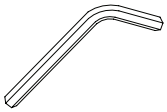
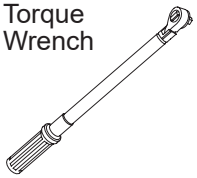
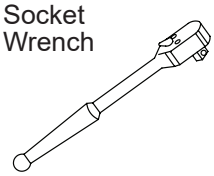
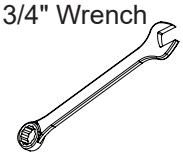
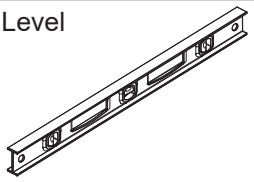
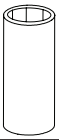
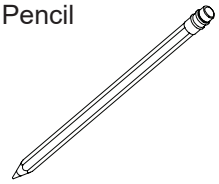
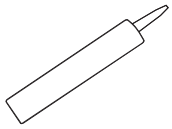
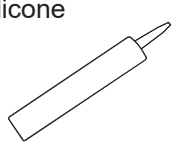
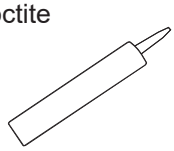


A minimum of two people is required to complete the installation of this product.

☎ For questions, please contact Alvarado at (909) 591-8431, Monday – Friday 7:00am to 4:00 PST. Please read this manual completely before installing or operating the product.

Installation Tools

The following tools may be required during the installation, dependent on the specific product installed. These tools are not provided.

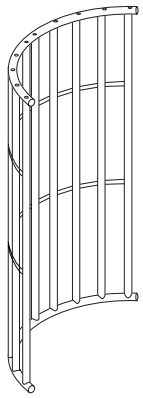
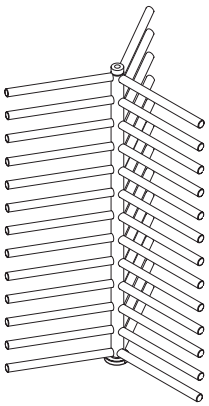
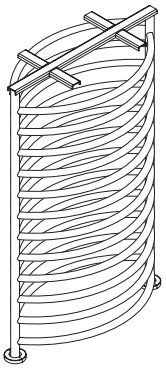
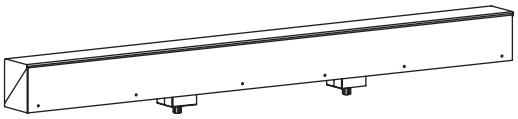
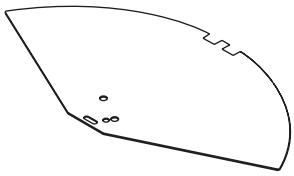
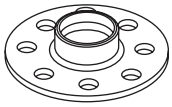
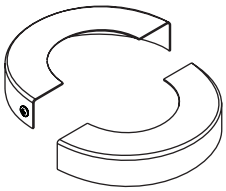
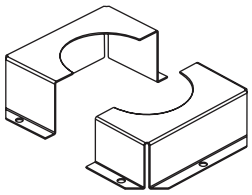
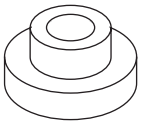
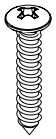
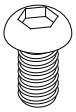
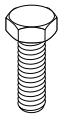
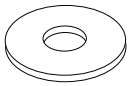
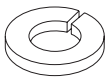
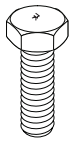
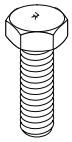
Tape Measure 	Drill 	Hammer Drill 	Chalk Line 	Wire Strippers 	Ladder 
Phillips Tip Screwdriver 	⅛” Allen Wrench 	Torque Wrench 	Socket Wrench 	9/16” Wrench 3/4" Wrench 	Level 
Flat Tip Screwdriver 	9/16” Socket 3/4" Socket 	5/8” Concrete Drill Bit 9/64" Drill Bit 	Pencil 	Grease (see "Lubrication") 	Clear RTV Silicone 
					Blue Loctite 

Parts List

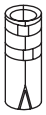
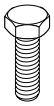
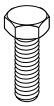
This product is shipped with all required installation hardware and components. Make sure that none of these parts are missing and/or damaged before beginning installation. If there are parts missing and/or damaged, please stop the installation and contact Alvarado.

NOTE The parts list below is for the MSTT-MC. Reference Appendix B & C to see alternate components specific to CPSTT-MC & CLSTT-MC models.

MSTT-MC Illustrated Parts List

 Yoke (Qty 2)	 Roto (Qty 2)	 OV (Qty 1)	 Top Channel (Qty 1)
 Yoke Guard Plate (Qty 2)	 Bottom Bearing Plate (Qty 2)	 Bottom Bearing Cover Halves (Qty 4)	 Top Bearing Cover Halves (Qty 4)
 Bottom Bearing (Qty 2)	 #10 x ¾" Phillips Pan Head Screw (Qty 20)	 10-32 x ½" Allen Head Screw (Qty 12)	 ½" x 1½" Hex Head Bolt (Qty 2)
 ½" Nut (Qty 8)	 ½" Flat Washer (Qty 2)	 ½" Lock Washer (Qty 5)	 ½" x 1" Hex Head Bolt (Qty 2)	 ½" x 2¾" Hex Bolt Head (Qty 4)

Concrete Anchor Package

 ⅜" x 2.00" Concrete Anchors (Qty 24)	 ⅜" x 4½" Anchor Bolt (Qty 6) - Yoke Only	 ⅜" x 2½" Anchor Bolt (Qty 24)	 ⅜" Flat Washers (Qty 24)

NOTE For stainless steel installations, discard the 2½" zinc anchor bolts and ⅜" zinc flat washers packaged with the concrete anchors. Use the supplied 2½" stainless steel anchor bolts and ⅜" stainless steel flat washers.

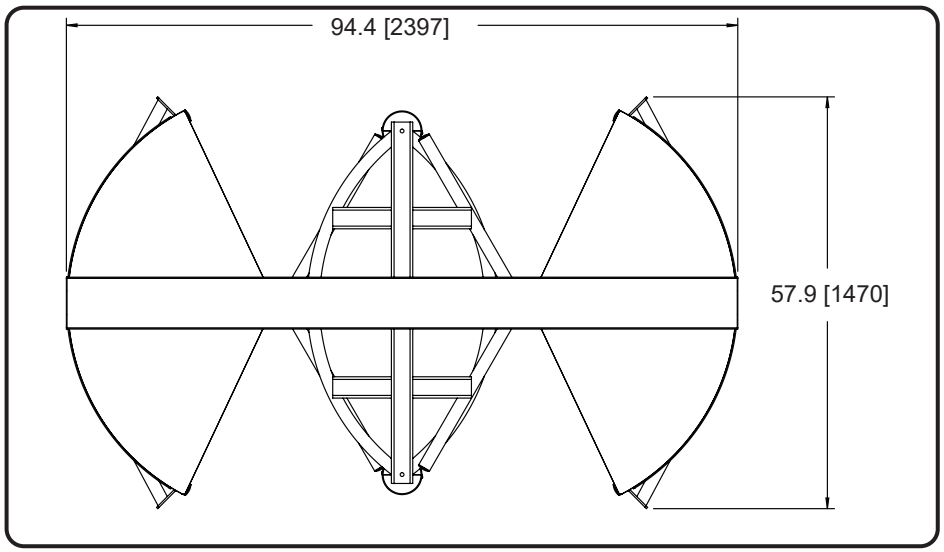
Overview of Installation Requirements

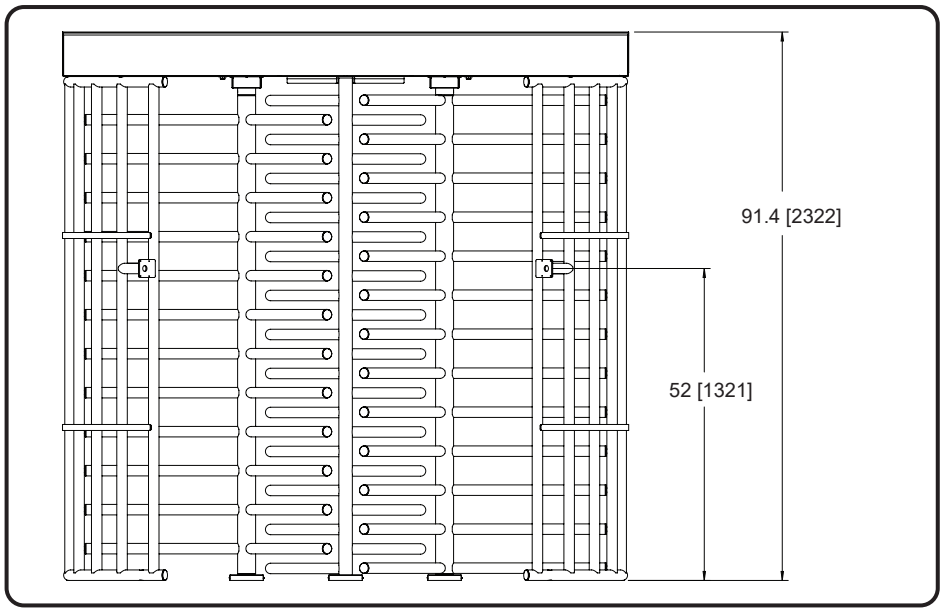
Use only skilled technicians for the site preperation and installation of the turnstile using Alvarado's instructions.

Slab Requirements

Install the turnstile on a 8' x 6' level concrete slab. The slab must be a minimum of 4" thickness. The turnstile may only be installed on concrete. Do not install the turnstile on asphalt.

Space Requirements





Alvarado recommends a minimum of 3" of clearance above the turnstile to facilitate maintenance. The minimum installation width is 64".

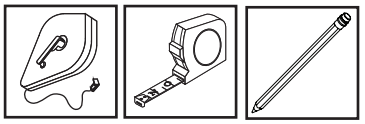
Confirming Orientation

When viewed from the UNSECURED side, the turnstile must be installed with the top channel lid opening towards the SECURED side.

Installation Instructions

NOTE

DIMENSIONS SHOWN ARE FOR THE MSTT.
SEE APPENDIX B AND C FOR OTHER MODELS.



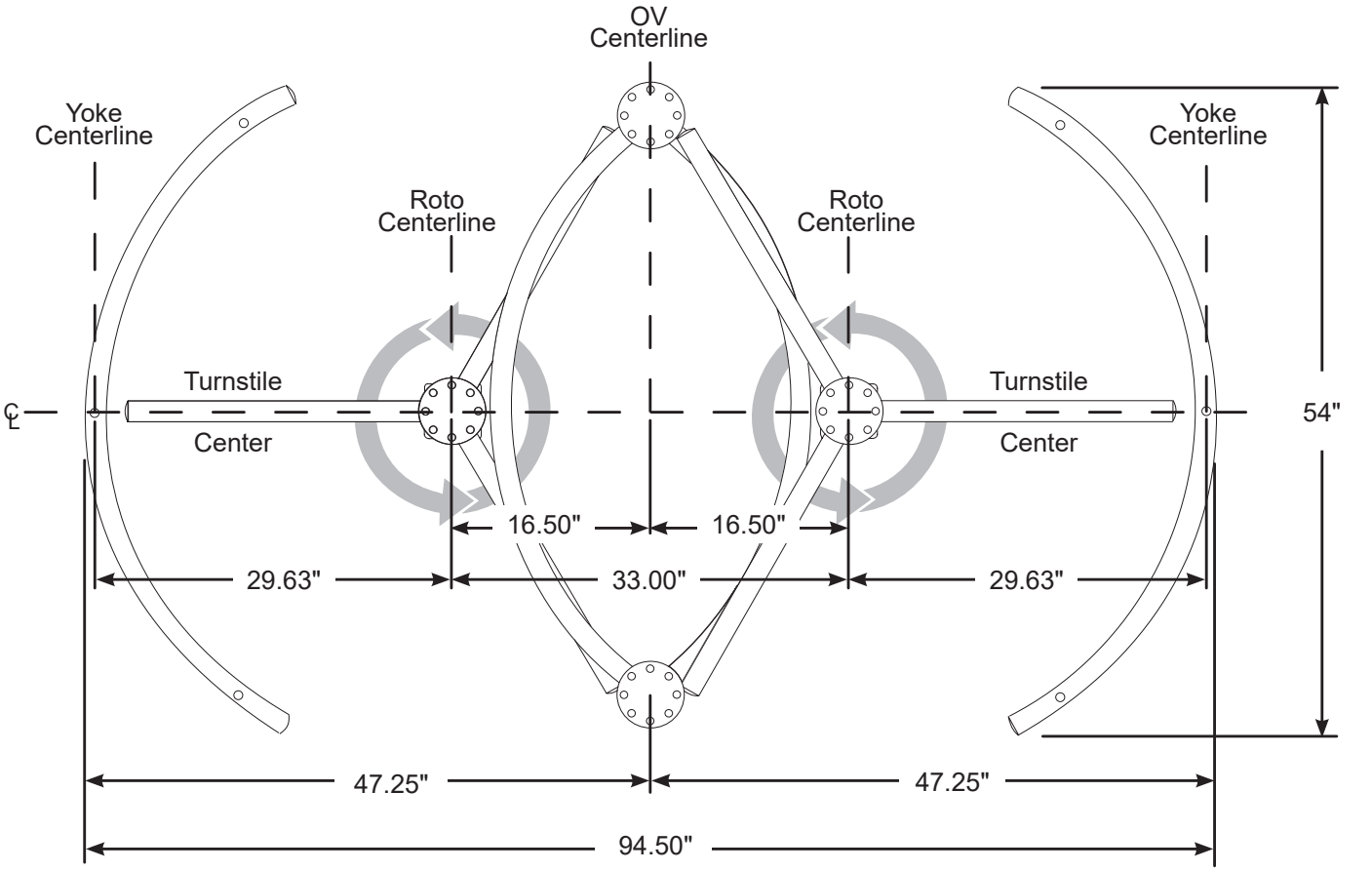
1. Determine where the turnstile will be installed. Consider the overall footprint size of the unit when determining the installation location (Figure 1). Once the installation location has been determined, use a chalk line to mark the centerline of the turnstile.
2. Determine and mark the centerline location for the OV, Rotos and Yokes (Figure 1).

NOTE

The overall height of the MSTT is 91.5". However, an additional 3" of clearance must be included for service and maintenance.

Mark all center lines prior to installation.

Fig. 1



Bottom Bearing

1. Place the bottom bearing plate over the turnstile and Roto intersecting lines.
2. Mark the center location of all four anchor holes for the bottom bearing plate (Figure 2). Set aside the bottom bearing plate.
3. Using a ⅝" concrete drill bit, drill four anchor holes, 3" in depth, at the center of each marked location (Figure 2).

NOTE

The anchor hole(s) must be clean before installing the anchor bolt(s). If the hole(s) are not clear of debris, the anchor bolt(s) may not tighten correctly.

4. Insert one anchor into each drilled hole (Figure 3). The threaded end of the anchor must be inserted into the hole first. Use a hammer to tap the anchor into place, if needed. Ensure that the anchors are flush with the concrete floor.
5. Place the bottom bearing plate back over the anchor holes and anchor it with four (4) ⅜" x 2½" anchor bolts and flat washers (Figure 4).
6. Use a torque wrench and 9/16" socket to tighten the anchor bolts securely (approx. 40ft-lbs.) (Figure 5).
7. Confirm that the bottom bearing plate is level. Shim as needed.
8. Apply a thick bead of clear RTV silicone around the bottom bearing plate (Figure 5).
9. Repeat Steps 1 through 8 for the second bottom bearing plate.

NOTE

Clear RTV silicone is a low volatile formula and can be used in a variety of applications.

Fig. 2

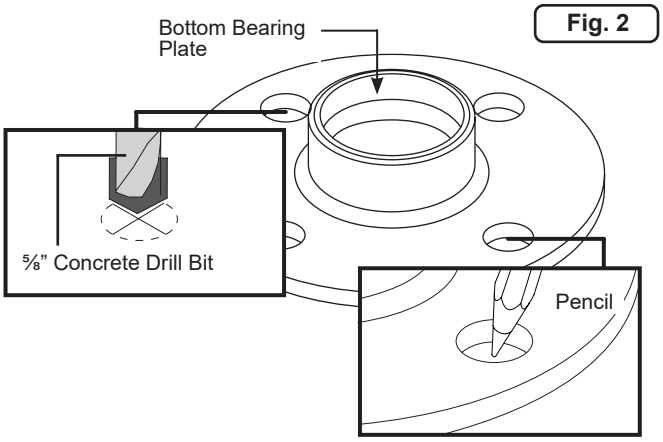


Fig. 3

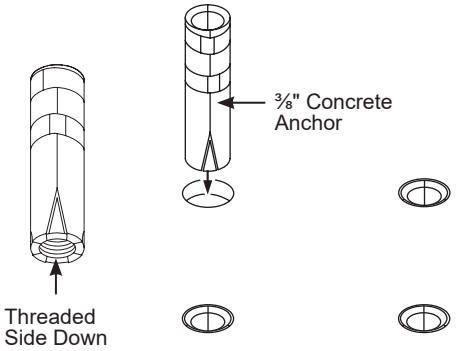


Fig. 4

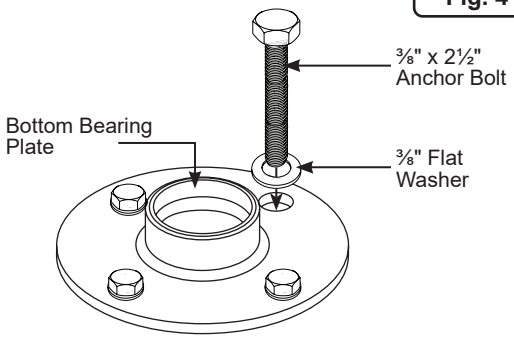
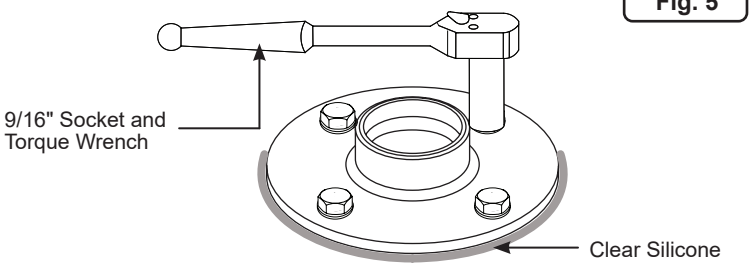


Fig. 5



Yoke

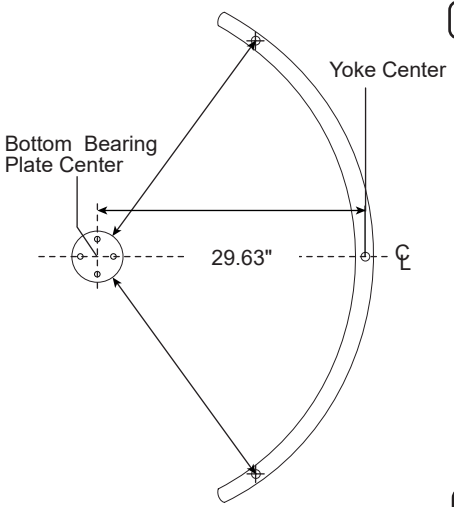
NOTES

Do not use a single Yoke as a template as Yoke dimensions may vary.

NOTE

DIMENSIONS SHOWN ARE FOR THE MSTT SEE APPENDIX B AND C FOR OTHER MODELS.

Fig. 6



1. Reconfirm the centerline location for the Yoke (Figure 6).
2. Using a ⅝" concrete drill bit, drill an anchor hole 3" in depth.

NOTE

The anchor hole(s) must be clean before installing the anchor bolt(s). If the hole(s) are not clear of debris, the anchor bolt(s) may not tighten correctly.

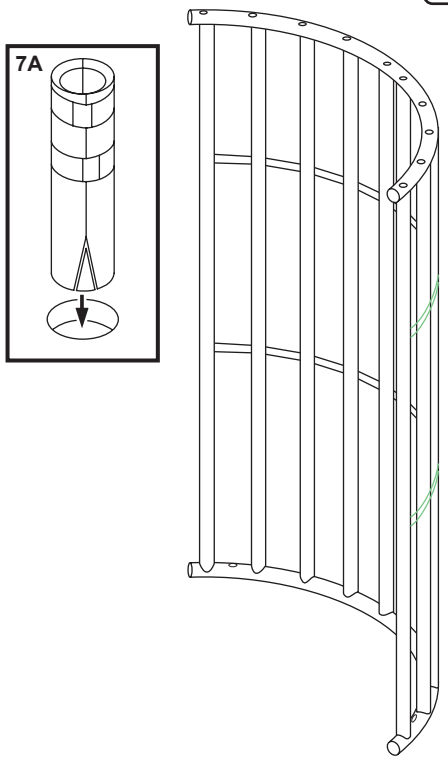
3. Insert one anchor into the drilled hole (Figure 7A). The threaded end of the anchor must be inserted into the hole first. Use a hammer to tap the anchor into place, if needed. Ensure that the anchor is flush with the concrete floor.
4. Place the Yoke back over the anchor hole and anchor it with one ⅜" x 4½" anchor bolt and flat washer .

NOTE

Prior to drilling the remaining anchor holes, use a tape measure and measure the distance from the bottom bearing plate center to the remaining mounting holes on the Yoke (Figure 6). Adjust the Yoke until these two distances are identical. Mark these two locations.

5. Rotate the Yoke to the left. Using a ⅝" concrete drill bit, drill two anchor holes 3" in depth at the center of each marked location.
6. Insert two anchors into the drilled holes (Figure 7A). The threaded end of the anchors must be inserted into the holes first. Use a hammer to tap the anchors into place, if needed. Ensure that the anchors are flush with the concrete floor.
7. Rotate the Yoke back over the anchor holes and anchor it with two ⅜" x 4½" anchor bolt and flat washer (Figure 8).
8. Once the Yoke has been anchored, use a torque wrench and 9/16" socket to tighten the anchor bolts securely (approx. 40ft-lbs.) (Figure 9).
9. Confirm the Yoke is level and plumb. Shim as needed.
10. Repeat Steps 1 through 9 for the second Yoke.

Fig. 7



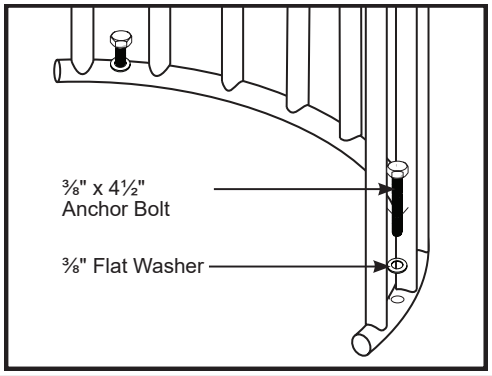


Fig. 8

NOTE

Take care when anchoring turnstiles with powdercoat finishes.

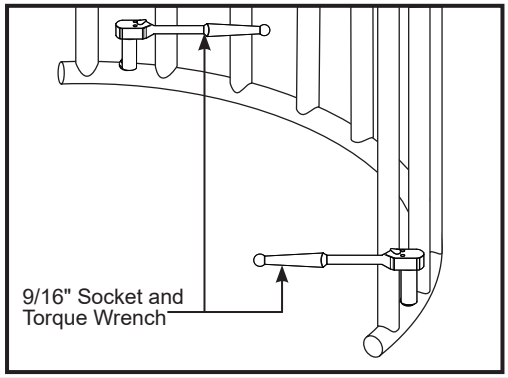


Fig. 9

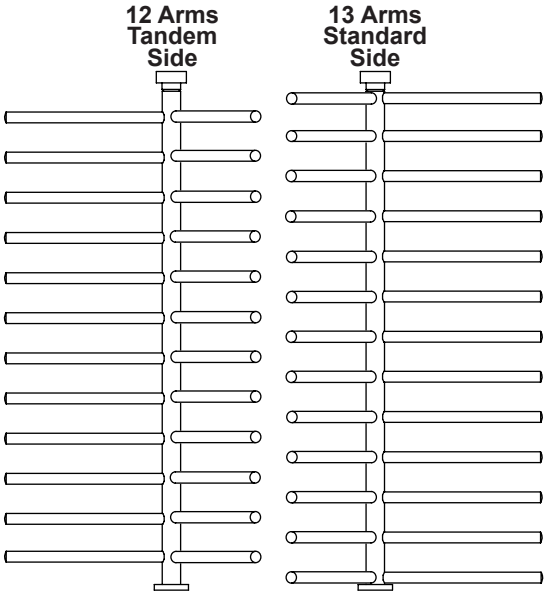
Roto

NOTE

For the MSTT and CLSTT models, the Roto with 13 arms must be installed on the right side and the Roto with 12 arms must installed on the left side, when viewed from the unsecured / entry side (Figure 10).

See Figure B10 in Appendix B for correct CPSTT Roto orientation.

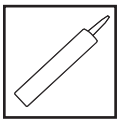
Fig. 10



As viewed from the unsecured / entry side.

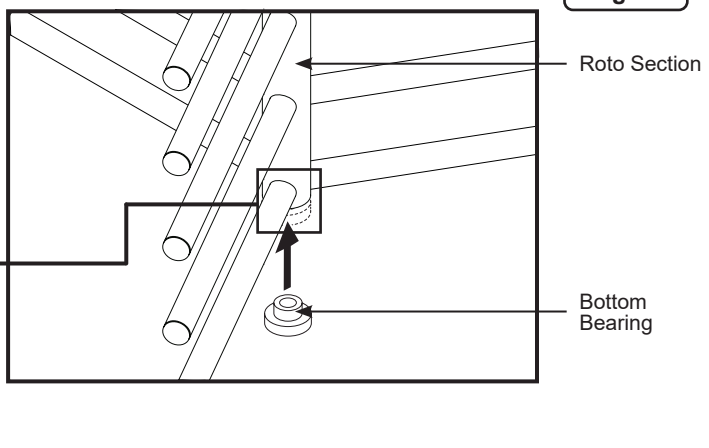
NOTE

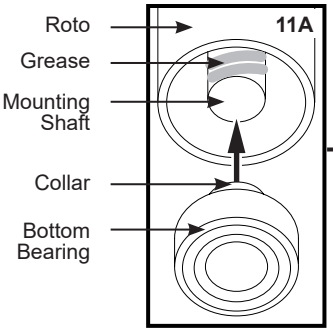
Prior to installing, liberally apply a coating of grease to the shaft, top of the bearing, sides of the bottom bearing plate and inside the bottom bearing plate (layer ¼" to ½" in thickness). Applying grease as indicated will help protect against moisture and foreign matter penetrating the bearing area.



1. Attach the bottom bearing, collar facing up, to the lower end of the Roto (Figure 11) by sliding the bottom bearing onto the mounting shaft (Figure 11A).

Fig. 11

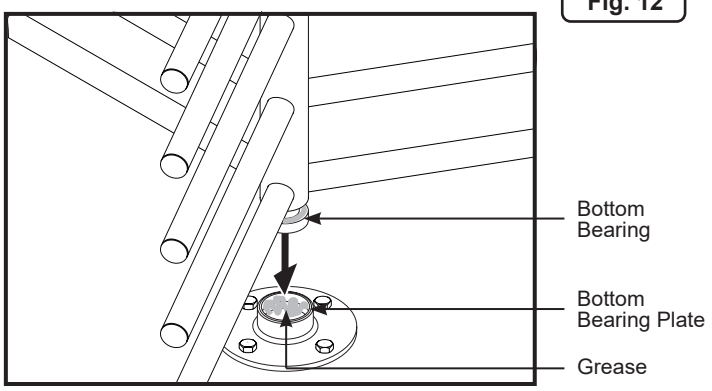




2. Apply grease, as instructed in the note above. Lower the Roto, bottom bearing first, into the bottom bearing plate (Figure 12). Wipe away any excess grease.

3. Repeat Steps 1 and 2 to install the second Roto.

Fig. 12



Top Channel

A minimum of two people is required to complete the installation of the Top Channel.

1. Remove the cover from the Top Channel using a ⅛" Allen wrench (Figure 13).
2. Determine orientation before installing the Top Channel.

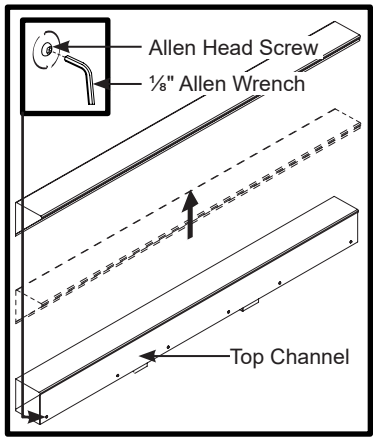


Fig. 13

3. With the help of two assistants, lift the Top Channel up and over Roto, Yoke and OV (Figure 14).

⚠ DANGER

Be sure that the feeder wire and/or any access control wiring is out of the way and is not caught between the Top Channel and the Yoke, Roto or OV.

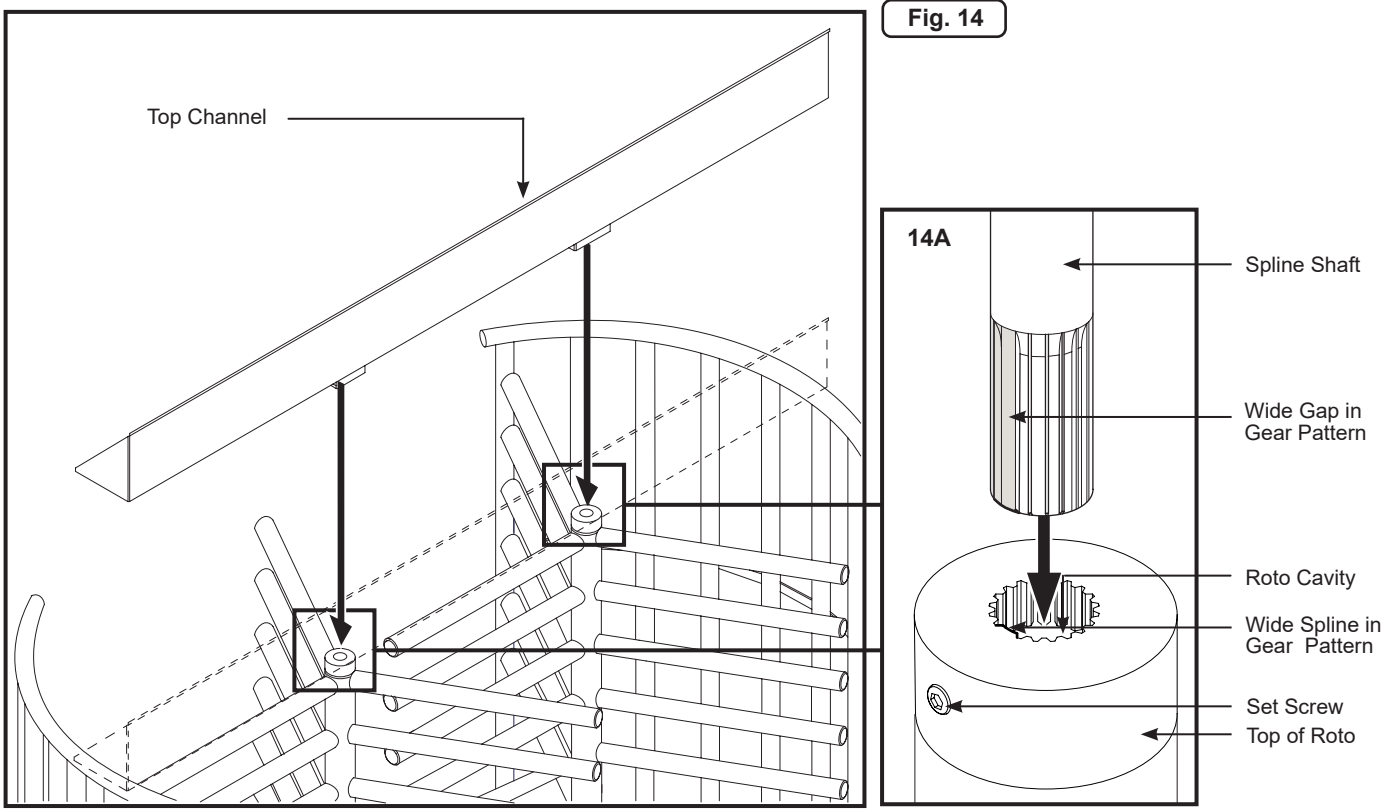
4. Align the Top Channel spline shaft with both Roto cavities and carefully lower the Top Channel spline shaft into each cavity (Figure 14A).

NOTE

Apply grease to the end of the spline shaft before inserting.

5. Once the Top Channel is seated firmly in place, use an Allen wrench to tighten both set screws (Figure 14A).
6. Confirm Roto is level and plumb.

Fig. 14



Top Channel (Cont)

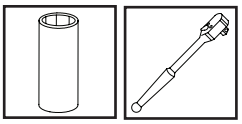
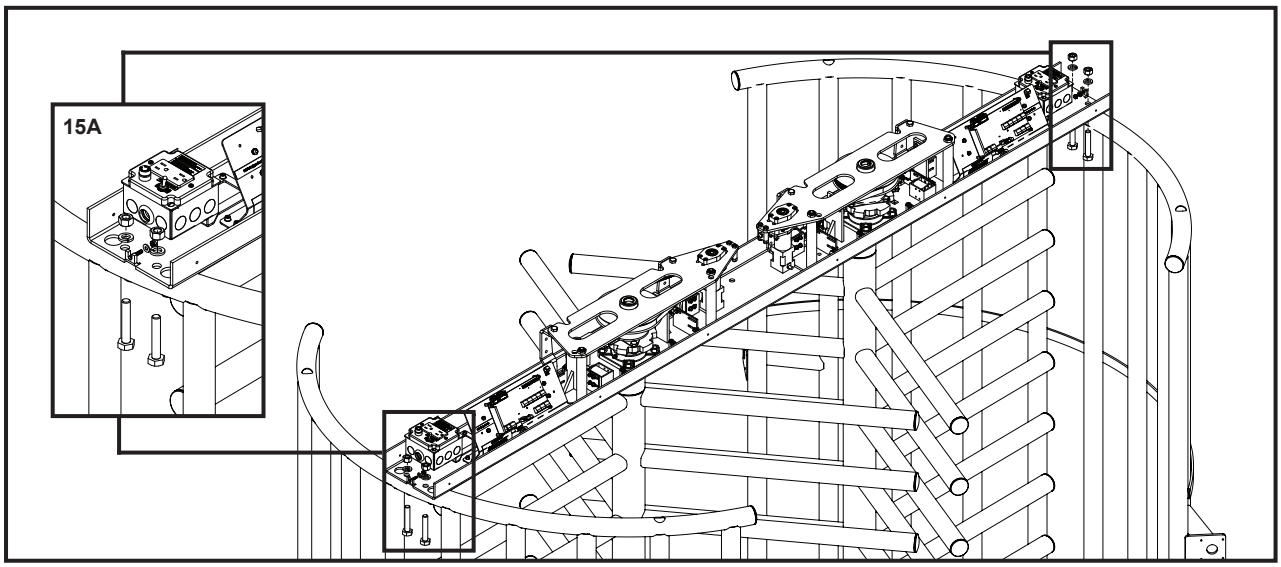


Fig. 15



7. The Top Channel mounting holes are located at each end of the Top Channel (Figure 15).
   A. Yoke - Insert four ½" x 2¾" hex head bolts, from the underside of the Top Channel, up through the mounting holes and secure with four ½" lock washers and four ½" nuts (Figure 15A).
8. Hand tighten the Top Channel mounting hardware at this time.

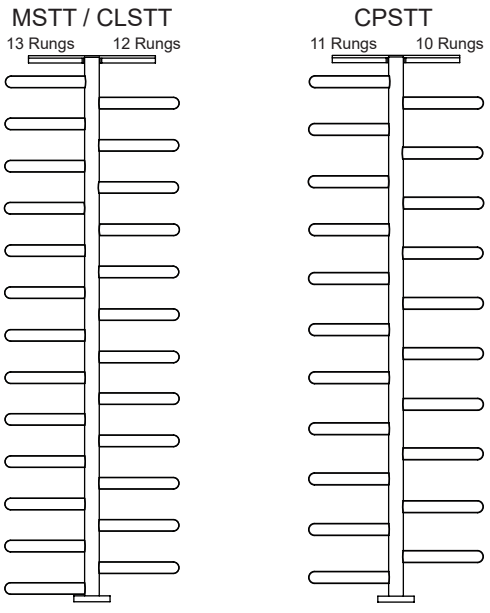
OV

NOTE

For MSTT and CLSTT models, the OV must be installed with 12 rungs facing the right side and 13 rungs the left side (as viewed from the unsecured/entry side; Figure 16).

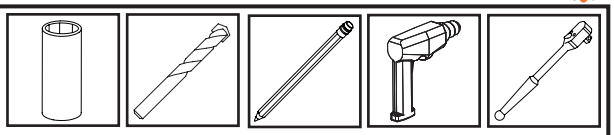
For the CPSTT, the OV must be installed with 10 rungs facing the right side and 11 rungs facing the left side (as viewed from the unsecured/entry side; Figure 16).

Fig. 16



As viewed from the unsecured / entry side.

OV (Cont)



1. Gently slide the OV between the two installed Rotos (Figure 17).

NOTES

Each Roto may need to be slightly rotated while installing the OV. See "Key Override" section if the Roto will not rotate.

When sliding the OV into place, the Top Channel may need to be raised slightly.

2. Align the two mounting holes on the OV with the two mounting holes on the Top Channel.
3. Insert and hand tighten two 1½" mounting bolts and two mounting nuts up through the mounting holes (Figure 17A).
4. Use a pencil and mark the center of all four anchoring holes on both base plates, eight total (Figure 17B).

Fig. 17

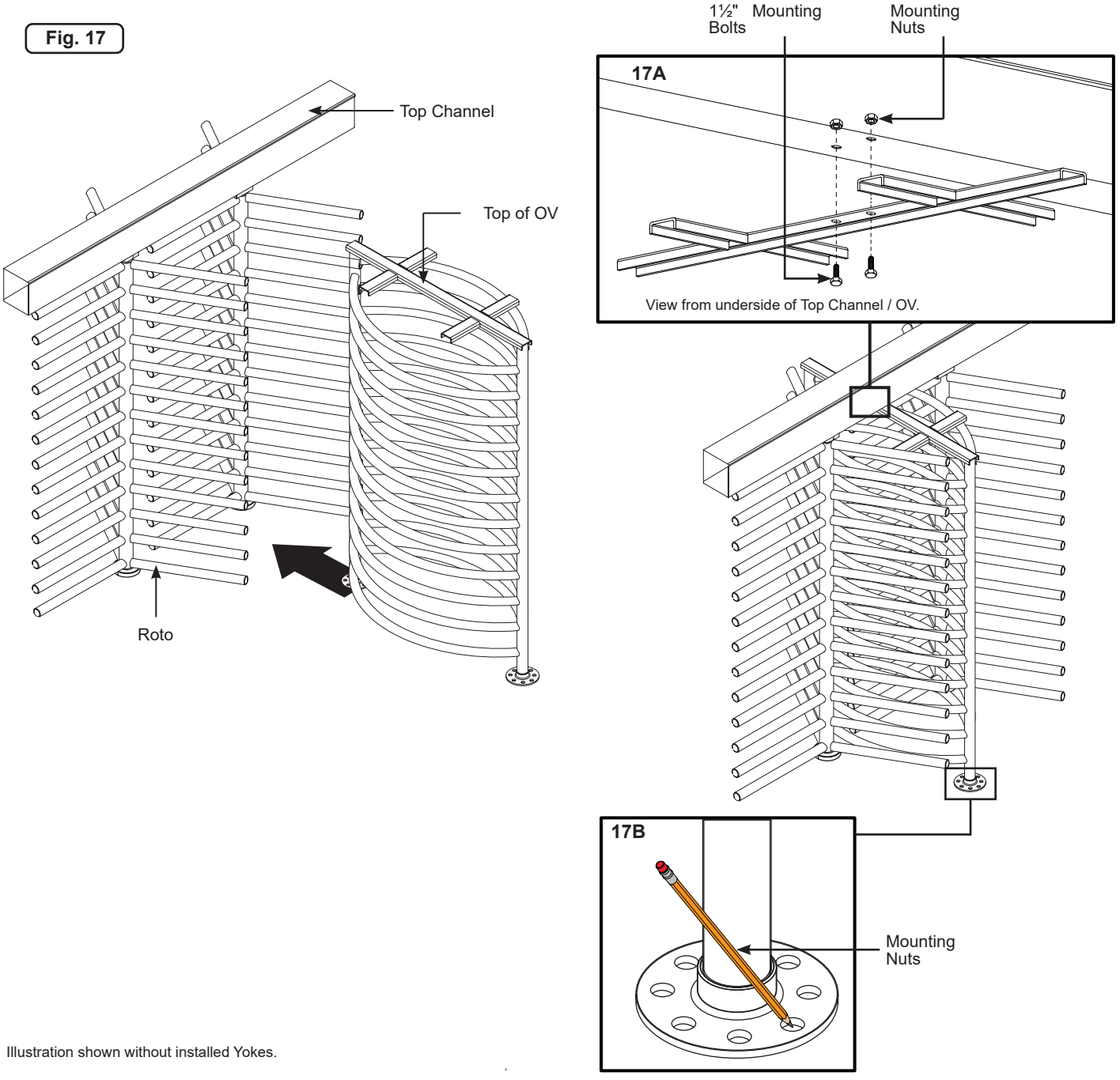
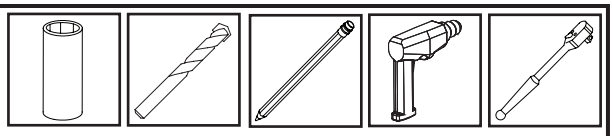


Illustration shown without installed Yokes.

OV (Cont)



5. Remove the mounting hardware that was installed in Step 3.
6. Slide the OV forward, exposing the marked mounting locations.
7. Using a ⅝" concrete drill bit, drill four anchor holes, 3" in depth, at the center of each marked location in Step 4.

NOTES

The anchor hole(s) must be clean before installing the anchor bolt(s). If the hole(s) are not clear of debris, the anchor bolt(s) may not tighten correctly.

8. Insert anchors into the drilled holes. The threaded end of the anchor must be inserted into the hole first. Use a hammer to tap the anchor into place, if needed. Ensure that the anchors are flush with the concrete floor.
9. Slide the OV backward, exposing the marked mounting locations for the remaining base plate.
10. Repeat Steps 7 and 8.
11. Place the OV back over the anchor holes and anchor it with eight ⅜" x 2½" anchor bolts and flat washers (Figure 18).
12. Insert two 1½" mounting bolts and two mounting nuts up through the mounting holes (Figure 17A) Tighten anchor bolts provisionally using a ¾" socket and socket wrench.
13. Confirm OV is level and plumb. Shim as needed.

NOTE

Use only solid shims such as washers to shim small gaps. To shim larger gaps, build up the concrete to fill the space.

14. Once the OV has been anchored, use a socket wrench and 9/16" socket to provisionally tighten all anchor bolts (Figure 18).
15. Apply a thick bead of clear RTV silicone around both base plates.
16. When complete, refer to Figure 19 for correct orientation.

NOTE

Clear RTV silicone is a low volatile formula and can be used in a variety of applications.

Fig. 18

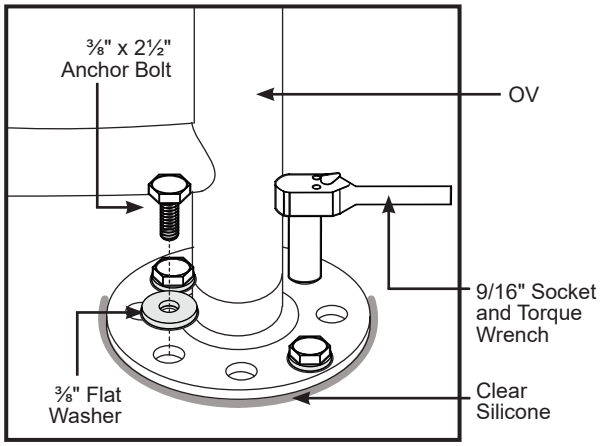
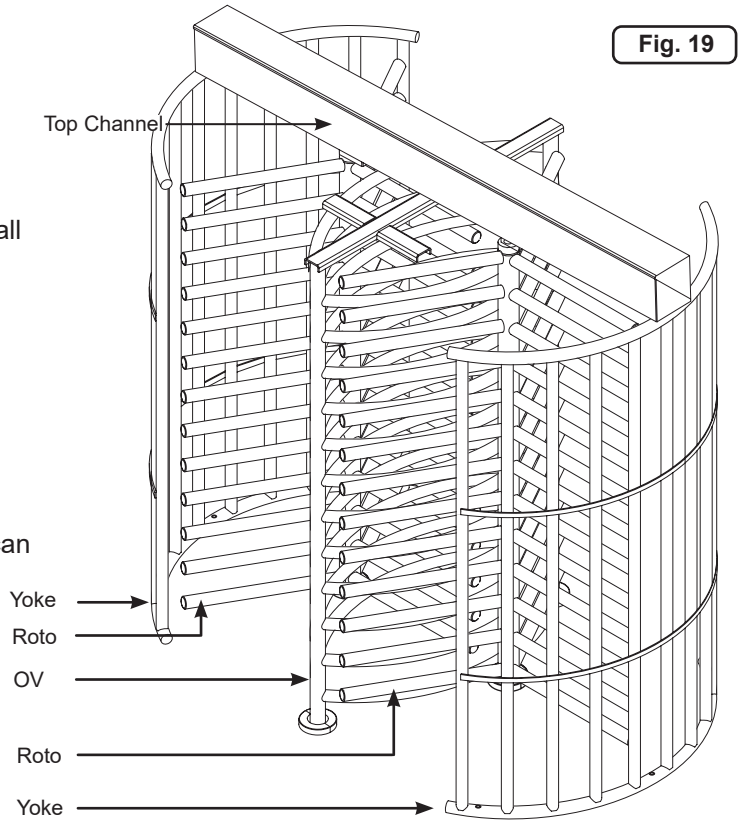


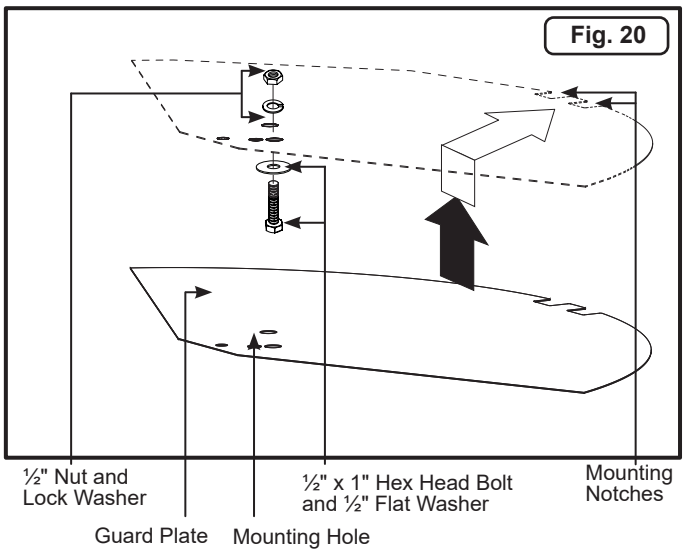
Fig. 19



Guard Plate

1. Slide the wide end of the Guard Plate, (notched end first) between the Top Channel and the top of the Yoke (Figure 20).
2. Insert one ½" x 1" hex head bolt and ½" flat washer, from the underside of the Guard Plate, up through the Top Channel mounting hole and secure with one ½" lock washer and one ½" nut.
3. Finger tighten the Guard Plate mounting hardware at this time.
4. Repeat Steps 1 through 3 for the second Guard Plate installation.

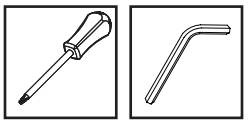
Fig. 20



Bearing Covers

NOTE

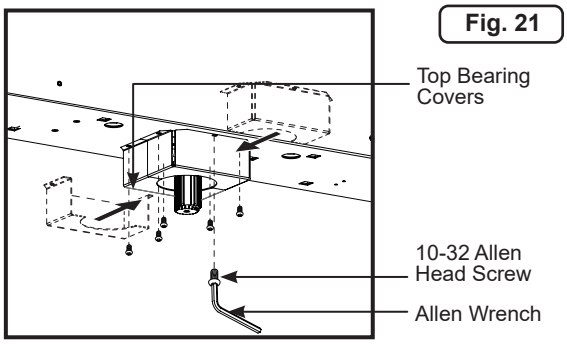
For illustration and clarity purposes only, the bearing cover illustrations are shown without the surrounding sections.



Top Bearing

1. Place the two halves of the top bearing cover over the top bearing and align the mounting holes.
2. Using an Allen wrench, Insert and tighten the six 10-32 x ½" Allen head mounting screws (Figure 21).
3. Repeat Steps 1 and 2 for the second top bearing cover installation.

Fig. 21



Bottom Bearing

1. Place the two halves of the bottom bearing cover over the bottom bearing and align the mounting holes.
2. Using a screwdriver, tighten the two mounting screws (Figure 22).
3. Repeat Steps 1 and 2 for the remaining Roto bottom bearing plate cover and both OV bottom plate covers.

Fig. 22

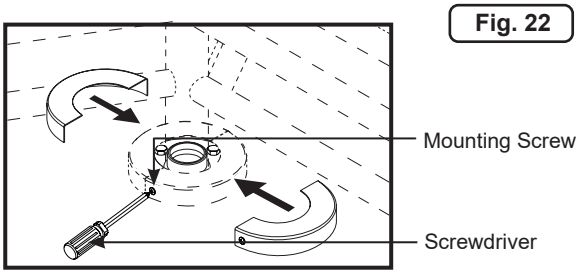
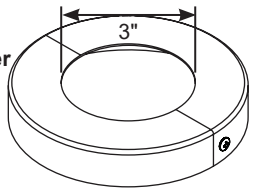


Fig. 22A

Roto Bottom Bearing Cover

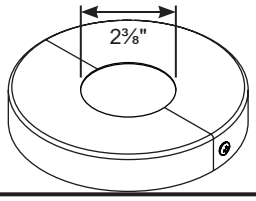


NOTE

The MSTT ships will four base covers (2 pair). The Roto bottom bearing plate has a 3" opening (Figure 22A), while the OV bottom cover plate has a 2⅜" opening (Figure 22B). Please use the appropriately sized cover plate.

Fig. 22B

OV Bottom Plate Cover



Final Mechanical Installation Steps

NOTE

Be sure that the turnstile is level before performing the following step(s).

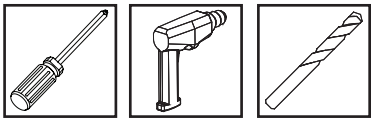
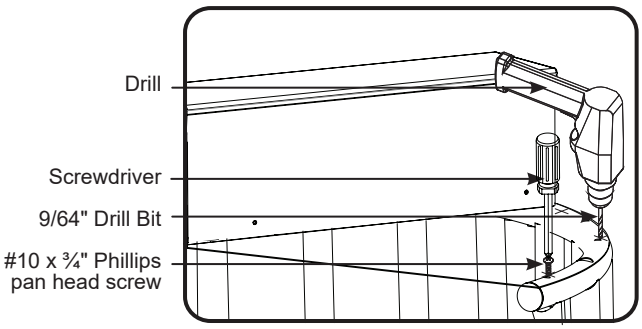


Fig. 23

1. The anchor bolts (22 total) and the Top Channel mounting bolts should be tightened to 40 ft-lbs using a torque wrench and appropriate sockets.
2. Using a drill and 9/64" drill bit, pre-drill six holes through the guard plate and into the Yoke (three along each side of the Yoke).
3. Insert and tighten six #10 x ¾" Phillips pan head screws (Figure 23).

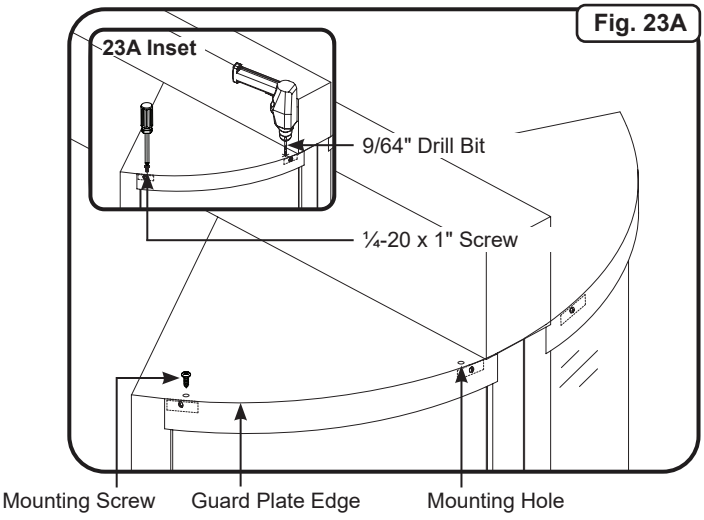


CPST-T and CLST-T Installations

1. With the guard plate in place, use a pencil and mark each screw location. Each location should line up with the upper mounting channel mounting screw (Appendix B - B9), 3/4" from the edge of the guard plate.
2. Using a drill and 9/64" drill bit, pre-drill four holes (two for each side of the Yoke).
3. Insert and tighten four #10 x ¾" Phillips pan head screws (Figure 23B inset).

4. Test the Roto for binding when it is functional. If there is binding, loosen the mounting hardware and adjust as needed.
5. Test the Roto for binding. If no binding occurs, retighten all mounting hardware.
6. Repeat all previous steps for the second Guard Plate installation.

Fig. 23A



Key Override Operation

The key override is used to change the turnstile passage mode between the following modes :

- Controlled
- Free-Pass - FP
- No-Pass - NP

See *Testing Turnstile Operation* section for passage mode details.

Key overrides are installed in the top channel, on either side of each roto. [Figure 24]

The key has 3 positions [Figure 24A]:

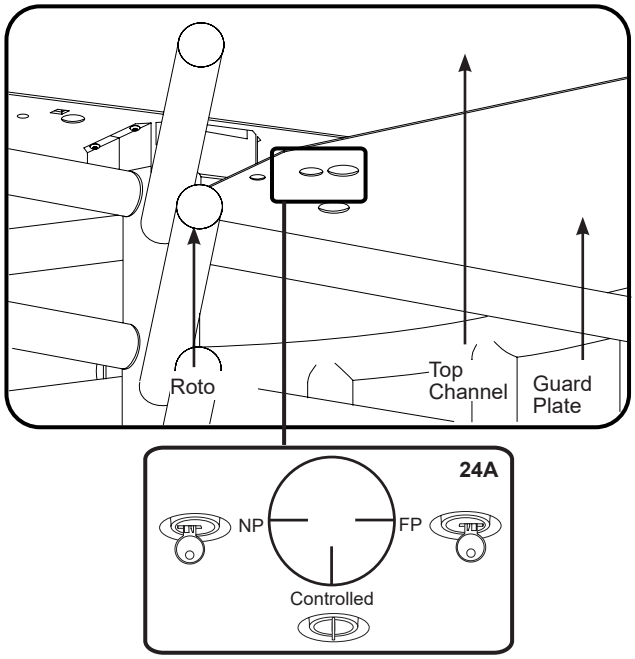
- Left - No-Pass Mode
- Center - Controlled Mode
- Right - Free-Pass Mode

1. Set each direction to the appropriate passage mode.

NOTE

Remove keys when complete and store in a safe location.

Fig. 24



Conduit Instructions

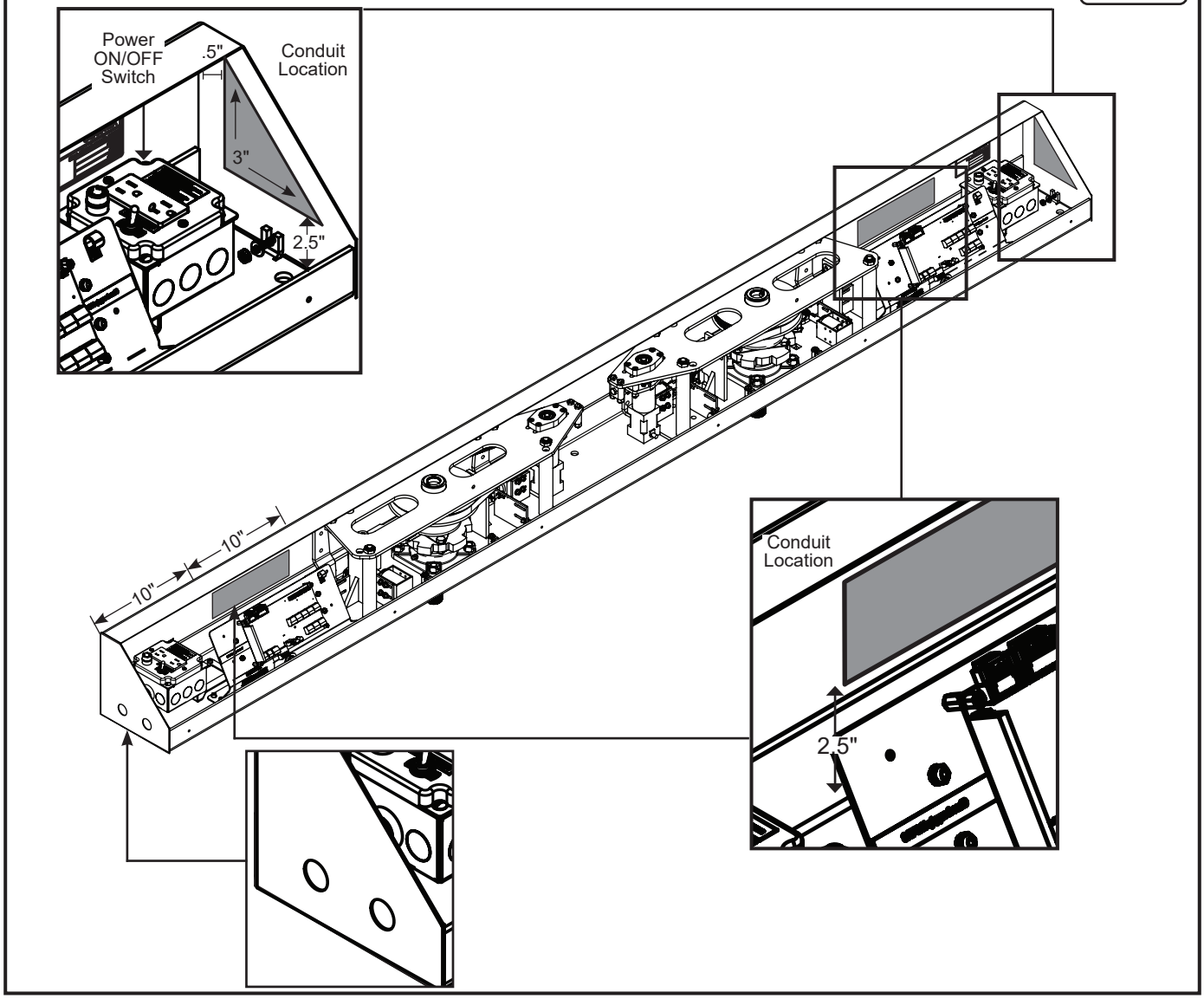
The installer can run power primary conduit to any of the locations shown in (Figure 25). Separate conduit can be run to each side of the Top Channel lid, or conduit can be run to one side of the Top Channel lid and with connecting conduit between the two junction boxes. Conduit must be run to each junction box.

NOTES

Punch conduit hole at least 2.5" from the bottom of the Top Channel lid.

After completing primary and access control wiring, plug all unused routing holes in the Top Channel.

Fig. 25



Electrical Wiring Instructions

⚠ WARNING Run permanent AC power wires to the unit. Primary side of transformer DC resistance is rated at 2.6 ohms. Use a licensed electrician to perform this procedure adhering to all local electrical codes.

NOTE

In the event the transformer needs to be replaced, it must be replaced with Alvarado P/N 10-3008A (110V) or 10-3003F (220V) as specified in UL File BP20972, Projects 4787469780, 4787461699.

Use a licensed electrician for the following steps.

1. Make sure the power switch is in the OFF position. If it is not, move the toggle switch to the OFF position (Figure 26).
2. Using a screwdriver, remove the cover of the junction box.
3. Locate the power wires inside the junction box.
4. Run the primary power wires, coming in from either side of the top channel, through the knock-out.

NOTE

The junction box housing has circular knock-outs on the side of the box. Remove the most appropriate knock-out.

Both junction boxes will need to be wired for power. The easiest way to accomplish this is to wire the two junctions boxes together. The junction boxes must be wired in series. It is strongly recommended that a licensed electrician perform this step.

5. Secure primary power wires to the provided pig-tail in the junction box and secure with wire nuts. See Figures 26 & 26A for 110V & 220V configurations.
6. Tuck the excess wire into the junction box and re-attach the junction box cover. Repeat Steps 1-5 for remaining junction box.
7 . Once power has been established, route the access control wires.

NOTE

If your model was purchased with the option of having a card reader installed, please refer to the installation instructions that come packaged with the card reader mounting plate.

Fig. 26 110-120VAC (3A Fuse)

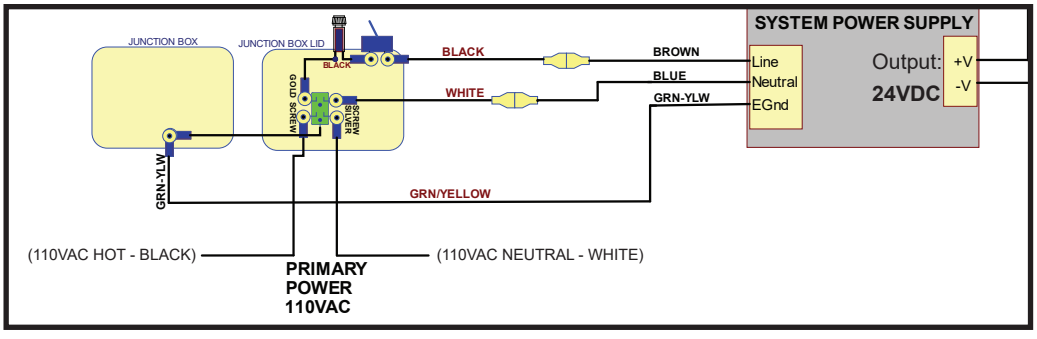
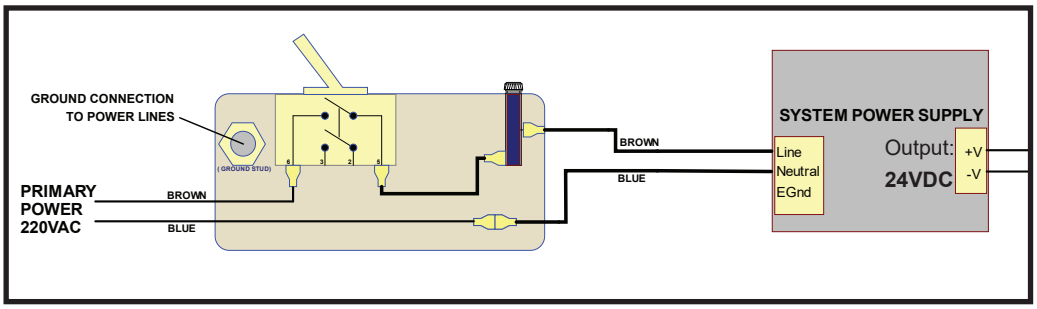
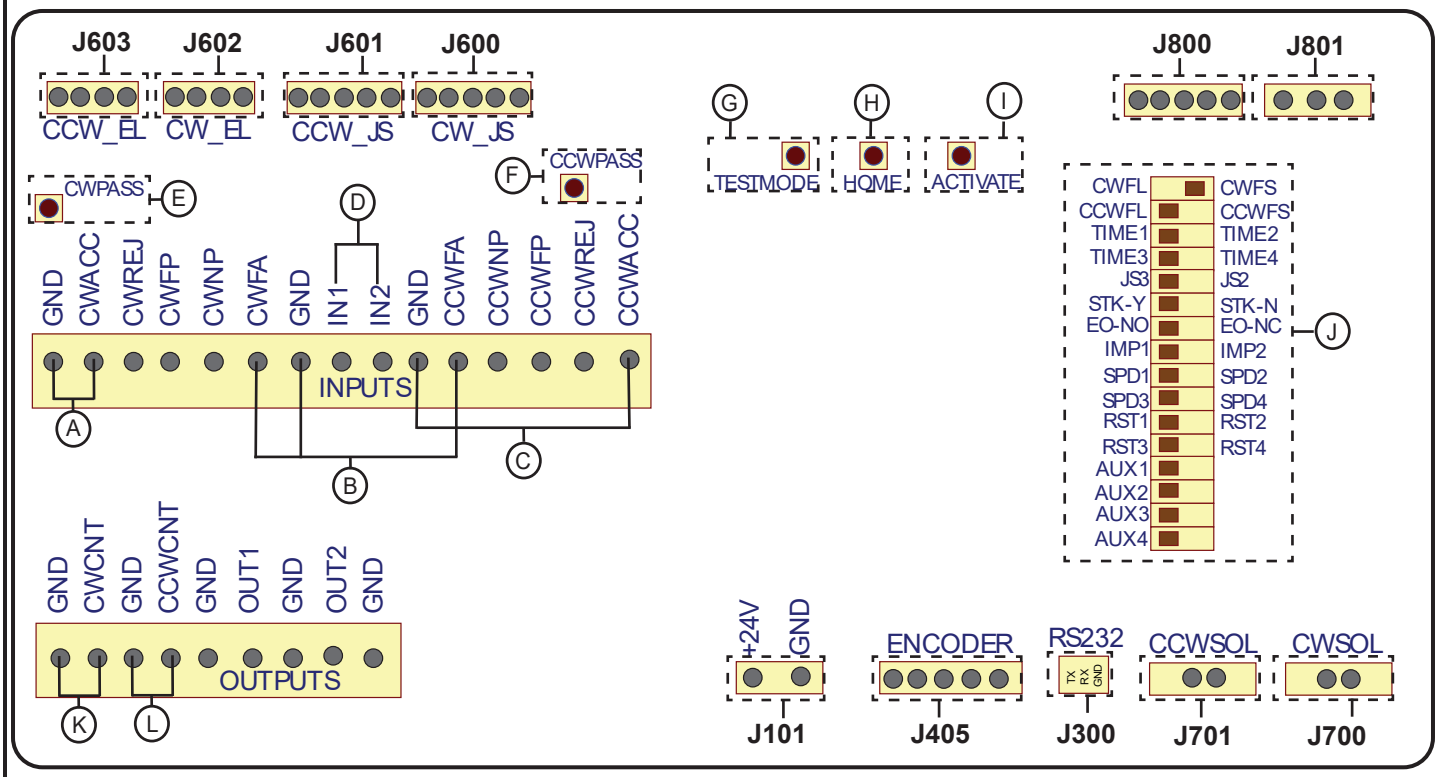


Fig. 26A 220-240VAC (3A Fuse)



Turnstile Control Board Layout

Fig. 27



Item	Description
A	Access Control Activation - Clockwise
B	Fire Alarm System Connection - Clockwise / Counterclockwise
C	Access Control Activation - Counterclockwise
D	Activation Sensor Inputs
E	Clockwise Test Activation Switch
F	Counterclockwise Test Activation Switch
G	Test Mode Switch
H	Home Position Switch
I	Activation Switch
J	DIP Switches - See *DIP Switch Description* section for details
K	Passage Count Output - Clockwise
L	Passage Count Output - Counterclockwise

Terminal Descriptions

Item	Name	Description	Explanation
J603	CCW_EL	Connection for EL Lights - Counterclockwise	If red/green status lights are used, the green light signifies that the turnstile is ready to accept an activation for the Counterclockwise direction. When CCWNP connection is closed, the red light will be illuminated and signifies that the turnstile will not accept an activation. Refer to description of CCWNP.
J602	CW_EL	Connection for EL Light - Clockwise	If red/green status lights are used, the green light signifies that the turnstile is ready to accept an activation for the clockwise direction. When CWNP connection is closed, the red light will be illuminated and signifies that the turnstile will not accept an activation. Refer to description of CWNP.
J601	CCW_JS	Connection for Activation Lights (JS2 / JS3) - Counterclockwise	Connection for JS2 / JS3 activation lights - Counterclockwise.
J600	CW_JS	Connection for Activation Lights - Clockwise	Connection for JS2 / JS3 activation lights - Clockwise.
J800	--	Motor Hall Effect Sensor	Critical for Motor operation.
J801	--	Motor Phase Power	Critical for Motor operation.
D	CWPASS	Allows user to test turnstile activation - clockwise	Simulates a contact short to CWACC/GND. If the CWSOL fires after depresssing button & re-locks after a single Clockwise rotation of the roto or upon access timeout, the turnstile is functioning correctly in the Clockwise direction.
E	CCWPASS	Allows users to test turnstile activation - Counterclockwise	Simulates a contact short to CCWACC/GND. If the CCWSOL fires after depresssing button & re-locks after a single Counteclockwise rotation of the roto or upon access timeout, the turnstile is functioning correctly in the Counterclockwise direction.
F	TESTMODE	Allows users to enter Test Mode to set Home Position	Press and hold for 3s to enter Test Mode - confirmed by a solid green LED. Press and hold again for 3s to exit Test Mode - confirmed by a flashing green LED.
G	HOME	Allows users to set the Home Position once in Test Mode.	While in Test Mode, this button sets the rotos Home Position. Press once while in Test Mode to confirm manually set Home Position.
H	ACTIVATE	Allows Tech Support to verify turnstile function.	Diagnostic use only - To be used only on the advice from Alvarado Technical Support.
A	GND	Ground wire connecton from the access control system.	Ground wire connection from the access control system.
A	CWACC	"Card Authorized" input connection from the access control system - Clockwise	Accepts the signal from access control system to unlock turnstile in the Clockwise direction for a single rotation. Signal must be a N.O. dry contact 0.5s to 2s in duration
INPUTS	CWREJ	"Card Reject" input connection from the access control system - Clockwise	Used for access control system feedback to signal via JS2 / JS3 lights that the credential presented is unauthorized for the Clockwise direction. Turnstile remained locked.
INPUTS	CWFP	Connection to place the turnstile in "Open" status - Clockwise	Providing a continuous dry contact places the Clockwise direction in an "Open" mode. Roto will free-spin in the Clockwise direction.
INPUTS	CWNP	Connection to place the turnstile in locked "Closed" status - Clockwise	Providing a continuous dry contact places the Clockwise direction in a locked "Closed" Mode. A signal to CWACC is ignored to deny access in the Clockwise direction. If EL Lights are installed (Item J602), the red light will be illuminated continuously.
B	CWFA	Connection for Fire Alarm System - Clockwise	Reserved for use with a Fire Alarm System - places the Clockwise direction in an "Open" Mode upon receipt of a continuous dry contact. Roto will free-spin in the Clockwise direction.

Terminal Descriptions (Cont)

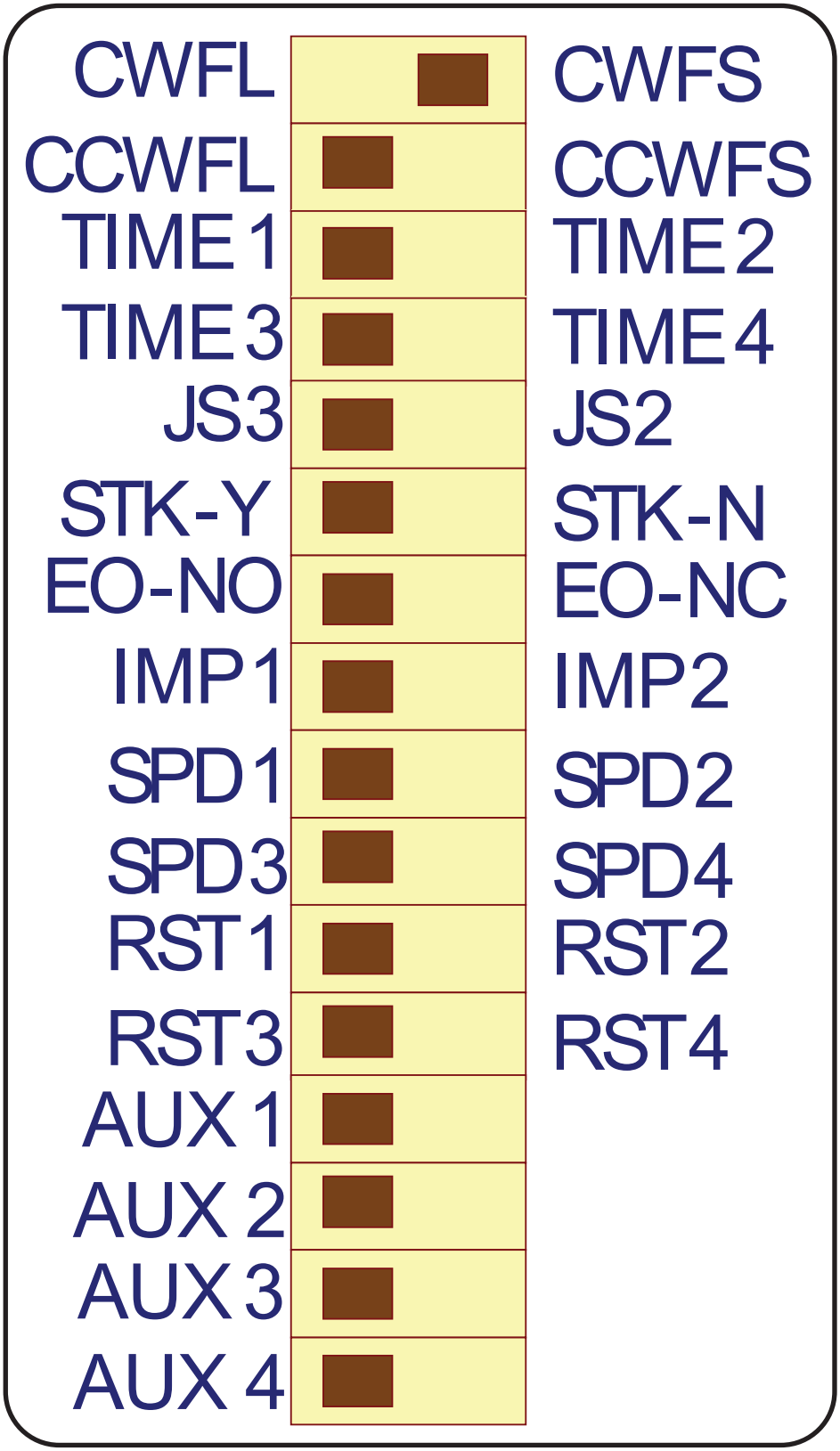
B	GND	Ground wire connecton from the access control system.	Ground wire connection from the access control system.
INPUTS	IN1	Touchless Activation Sensor - Counterclockwise	Reserved for use with touchless activation sensor - Counterclockwise direction
INPUTS	IN2	Touchless Activation Sensor - Clockwise	Reserved for use with touchless activation sensor - Clockwise direction
C	GND	Ground wire connecton from the access control system.	Ground wire connection from the access control system.
B	CCWFA	Connection for Fire Alarm System - Counterclockwise	Reserved for use with a Fire Alarm System - places the Counterclockwise direction in an "Open" Mode upon receipt of a continuous dry contact.
INPUTS	CCWNP	Connection to place the turnstile in locked "Closed" status - Counterclockwise	Providing a continuous dry contact places the Counterclockwise direction in a locked "Closed" Mode. A signal to CCWACC is ignored to deny access in the Counterclockwise direction. If EL Lights are installed (Item J603), the red light will be illuminated continuously.
INPUTS	CCWFP	Connection to place the turnstile in "Open" status - Counterclockwise	Providing a continuous dry contact places the Counterclockwise direction in an "Open" mode. Roto will free-spin in the Counterclockwise direction.
INPUTS	CCWREJ	"Card Reject" input connection from the access control system - Counterclockwise	Used for access control system feedback to signal via JS2 / JS3 lights that the credential presented is unauthorized for the Counterclockwise direction. Turnstile remained locked.
C	CCWACC	"Card Authorized" input connection from the access control system - Counterclockwise	Accepts the signal from access control system to unlock turnstile in the Counterclockwise direction for a single rotation. Signal must be a N.O. dry contact 0.5s to 2s in duration
J700	CWSOL	Solenoid VDC Connection - Clockwise	Connection for Clockwise Solenoid. Universal polarity.
J701	CCWSOL	Solenoid VDC Connection - Counterclockwise	Connection for Counterclockwise Solenoid. Universal polarity.
J300	RS232	RS232 Serial Port (Diagnostic Use Only)	Programming port for diagnostic use only. Not applicable to end users.
J405	ENCODER	Position Encoder	Relays positional data from the roto to the board.
J101	+24V / GND	+24VDC Power Input	Accepts +24VDC from the transformer for turnstile operation.

Terminal Descriptions (Cont)

J	GND	Ground wire connection to the access control system.	Ground wire connection to the access control system.
J	CWCNT	Contact closure output upon complete Clockwise rotation	Provides feedback to the access control system that a Clockwise passage has been completed. Default contact length: 300ms.
K	GND	Ground wire connection to the access control system.	Ground wire connection to the access control system.
K	CCWCNT	Contact closure output upon complete Counterclockwise rotation	Provides feedback to the access control system that a Counterclockwise passage has been completed. Default contact length: 300ms.
Inputs	GND	Ground wire connection to the access control system.	Ground wire connection to the access control system.
Inputs	OUT1	Unused	--
Inputs	GND	Ground wire connection to the access control system.	Ground wire connection to the access control system.
Inputs	Out2	Unused	--
Inputs	GND	Ground wire connection to the access control system.	Ground wire connection to the access control system.
I	--	Settings DIP Switches	See DIP Switch Description.

DIP Switch Layout

Fig. 28



***DIP switches shown in their default configuration. Tandem control board will have the opposite FL / FS DIP settings.**

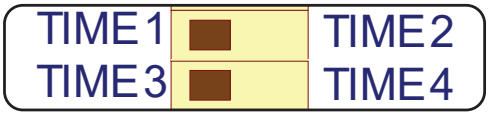
DIP Switch Description

Left / On	Switch Position	Switch Position	Right / Off
Configures solenoid control for the Clockwise direction to Fail-Lock. Power is applied to the solenoid to release lock arm upon activation signal.	**CWFL**	**CWFS**	Configures solenoid control for the Clockwise direction to Fail-Safe. Power is applied to solenoid to maintain lock position; power is removed to release the lock arm upon activation signal.
Configures solenoid control for the Counterclockwise direction to Fail-Lock. Power is applied to the solenoid to release lock arm upon activation signal.	**CCWFL**	**CCWFS**	Configures solenoid control for the Counterclockwise direction to Fail-Safe. Power is applied to solenoid to maintain lock position; power is removed to release the lock arm upon activation signal.
See chart below for timeout period lengths available.	**TIME1**	**TIME2**	See chart below for timeout period lengths available.
See chart below for timeout period lengths available.	**TIME3**	**TIME4**	See chart below for timeout period lengths available.
Set switch to the left when using Red / Yellow / Green Activation Lights	**JS3**	**JS2**	Set switch to the right when using Red / Green Activation Lights
Set switch to the left to enable activation "stacking" - allowing the turnstile to accept multiple activations quickly.	**STK - Y**	**STK - N**	Set switch to the right to disable activation "stacking" - allowing a single activation at a time.
Configures Fire Alarm System Connection (CWFA & CCWFA) terminals as Normally Open (N.O.)	**E.O - N.O**	**E.O - N.C**	Configures Fire Alarm System Connection (CWFA & CCWFA) terminals as Normally Cosed (N.C.)
Unused	**IMP1**	**IMP2**	Unused
See chart below for speed settings available.	**SPD1**	**SPD2**	See chart below for speed settings available.
See chart below for speed settings available.	**SPD3**	**SPD4**	See chart below for speed settings available.
For Diagnostic Use Only	**RST1**	**RST2**	For Diagnostic Use Only
For Diagnostic Use Only	**RST3**	**RST4**	For Diagnostic Use Only
Unused	**AUX1**		Unused
Unused	**AUX2**		Unused
Unused	**AUX3**		Unused
Unused	**AUX4**		Unused

Access Time-out Period Control Switch Settings

TIMED DELAY RESET TIMER	LEFT (OFF)	RIGHT (ON)
5 seconds	--	T2 / T4
10 seconds	T3	T2
15 seconds	T1	T4
20 seconds (Default)	T1 / T3	--

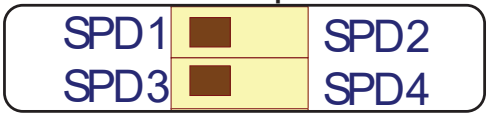
Default Time-Out Period - 20 Seconds



Rotation Speed Settings

SPEED SETTINGS	LEFT (OFF)	RIGHT (ON)
Slow	--	SPD2 / SPD4
Medium	SPD3	SPD2
Fast	SPD1	SPD4
Default - Slow	SPD1 / SPD3	--

Default Rotation Speed - Slow



Initial Power Up Sequence

⚠ WARNING Ensure turnstile passage way is clear of obstructions before applying power.

When power is first applied, the turnstile may rotate up to 3x though the turnstile will not be ready for an activation until the Home position has been set.

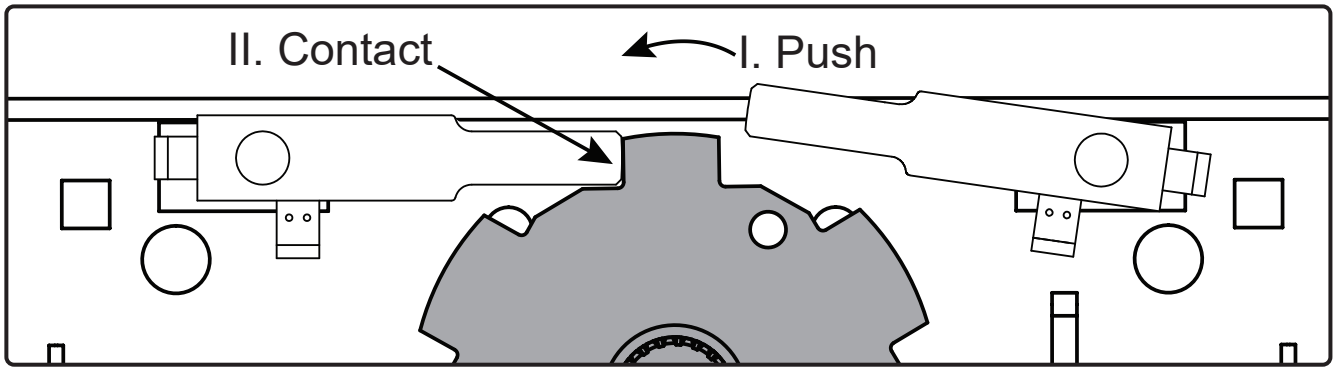
Setting Home Position

Follow the procedures below to set the Home Position on both Rotos:

1. On the control board, press and hold the button labeled "Test Mode" for 3 seconds.
   Test Mode is confirmed by a solid green D2 LED and one lockarm moving to the closed position.

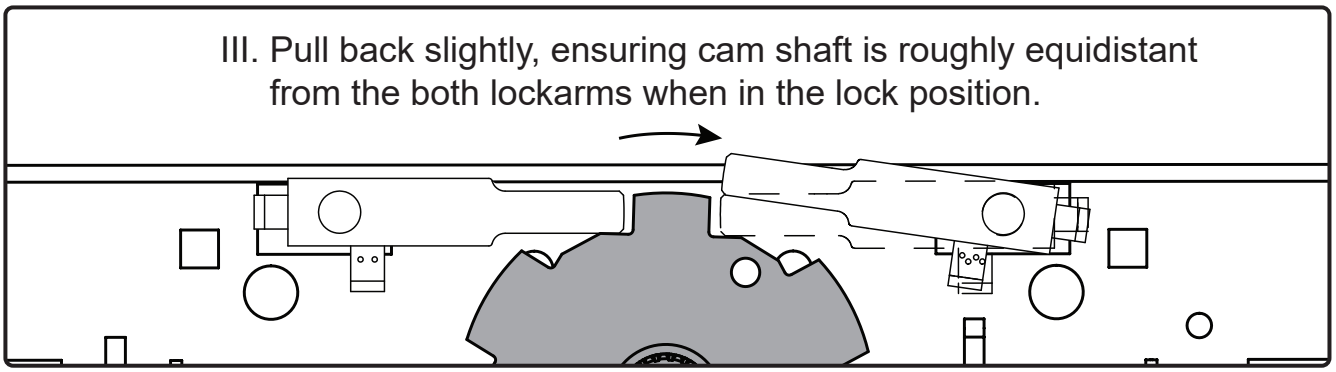
2. With the D2 LED solid: grip the roto then push it towards the lockarm until it touches then pull back slightly (approx. 2-3mm) and hold it in position. [Figure 29 & 29A]

Fig. 29



*Components not shown for clarity.

Fig. 29A



*Components not shown for clarity.

3. While holding the roto in position, press the button labeled "Home". Ensure button is fully depressed until it clicks.

4. While still holding the roto in position, press and hold "Test Mode" for 3 seconds then release the roto.
   The D2 LED will resume flashing once Test Mode has been exited.

5. The roto will rotate 3x then lock in the Home position. Repeat Steps 1-4 for the Tandem roto.

Typical Power Up Sequence

Once the MSTT-MC has been installed and the Home Positions have been set, the typical power up sequence will have the rotos spin 3x then lock into position, ready for immediate use.

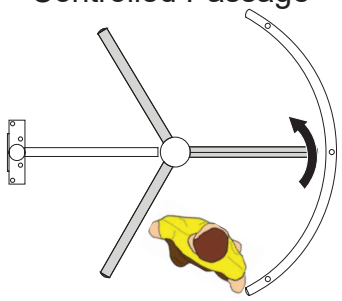
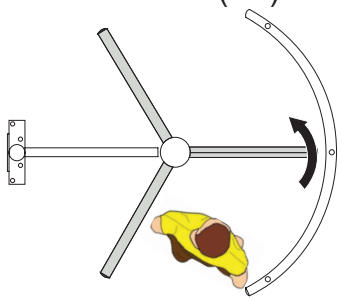
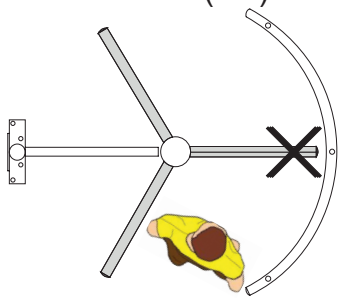
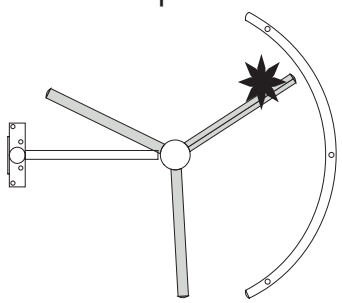
Testing Turnstile Operation

Perform the following turnstile functionality tests to validate turnstile operation.

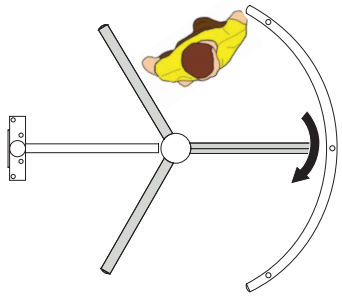
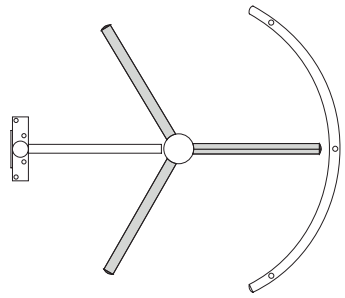
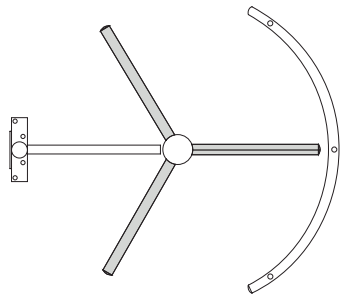
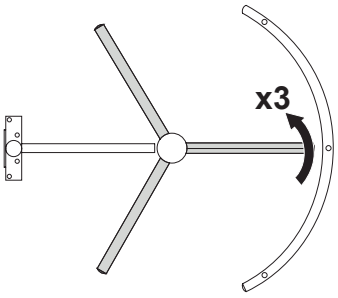
The following is assumed (Controlled Passage mode tests only):

- The access control system is operational and all access control wiring to the turnstile is connected.
- Valid access control credentials are on hand to activate the turnstile.

If valid access control credentials are not available, use the test buttons (CWPASS & CCWPASS) located on the control board to simulate an activation. See *Turnstile Control Board Layout* section for button location.

Function	Test Procedure	Turnstile Response
Controlled Passage 	• Provide an activation. • Enter the turnstile & lightly press on the roto to initiate rotation. • Complete the passage.	• Roto will complete rotation as user walks through. • Roto will reset to the Home position after passage. • OPTIONS: Activation Lights (JS) change from RED to GREEN; lights reset after passage.
Free-Pass (FP) 	• Enter the turnstile & lightly press on the roto to initiate rotation. • Complete the passage.	• Roto will complete rotation as user walks through. • Roto will reset to the Home position after passage. • OPTIONS: Activation Lights (JS) are constantly illuminated GREEN.
No-Pass (NP) 	• Provide an activation. • Enter the turnstile & lightly press on the roto. • Verify turnstile remains locked.	• Turnstile remains locked. • OPTIONS: EL & Activation Lights (JS) illuminated constantly RED.
Impact 	• Provide an activation. • Lightly press on the roto to initiate rotation. • Mid-passage, use your hand to firmly PULL the arms towards you BRIEFLY. • Immediately step out of the turnstile.	• Roto will stop for 2s. • Roto will attempt to resume activation. • Cycle will repeat until obstruction is cleared. • OPTIONS: Activation Lights (JS) will change back from GREEN to RED.

Testing Turnstile Operation (Cont.)

Function	Test Procedure	Turnstile Response
Emergency Override 	• Provide (or remove, if N.C.) a sustained dry contact to CWFA / CCWFA. • Enter the turnstile & lightly press on the roto to initiate rotation. • Complete the passage.	• Roto will free-spin in the direction receiving the sustained dry contact (CWFA / CCWFA) • Roto will remain in free-spin until contact is removed (or reestablished, if N.C). • OPTIONS: Activation Lights (JS) will flash green.
Loss of Power 	• Turn J-Box toggle switch to OFF. • Push the roto from each direction.	• Push the roto from each direction, confirm either happens: • if Fail-Lock: Remains locked. • if Fail-Safe: Is unlocked and allows passage.
Card Reject 	• Provide a contact short to CWREJ & CCWREJ.	• Turnstile remains locked. • OPTIONS: Activation Lights (JS) remain illuminated RED.
Stacking 	• Using the control board test buttons, CWPASS & CCWPASS, provide 3x activations within 2s of each other. • Lightly press on the roto to initiate rotation. • Repeat 2x.	• Roto continues the rotation, completing the passage. • Roto will continue to rotate until the remaining "stacked" credentials are allowed passage then re-lock.

User Activation and Passage Instructions

Print and distribute this page to inform users how to properly operate the turnstile.

NOTES

- Always walk slowly through the turnstile
- Always use caution when using the turnstile

Follow the steps below on how to use the turnstile.

1. The turnstile should always be in the “Home” position before access is requested (i.e. an access control card is presented to the card reader). (Figure 30).

2. Request access (i.e. present an access control card to the card reader) to activate the turnstile. The following dsigns will confirm the turnstile has received the activation:

   - The solenoid will “fire” and produce a click-type sound.

   - If applicable, the User Status Light will turn green.

3. Immediately step into the turnstile and lightly press on the roto. The roto will automatically rotate as you complete the passage. Stay near the Yoke and take short steps. Once you have traveled through the passage area move out of the way of the turnstile arms.

⚠ CAUTION

Never grab the Roto arm at point "A" and pull it in front of you. This would result in the Roto completing the rotation and re-locking before you are through the turnstile.

⚠ CAUTION

After completing the passage, the turnstile arms will continue to rotate; completing the 120 degree rotation. Taking long strides can cause the arm following you to strike your heels; Foam Heel and Arm guards are available.

4. Step completely out of the turnstile.

⚠ CAUTION

If a user does not enter the turnstile before the defined time-out period elapses, the turnstile will relock. The user will be required to provide an addtional access request (ex: card swipe).

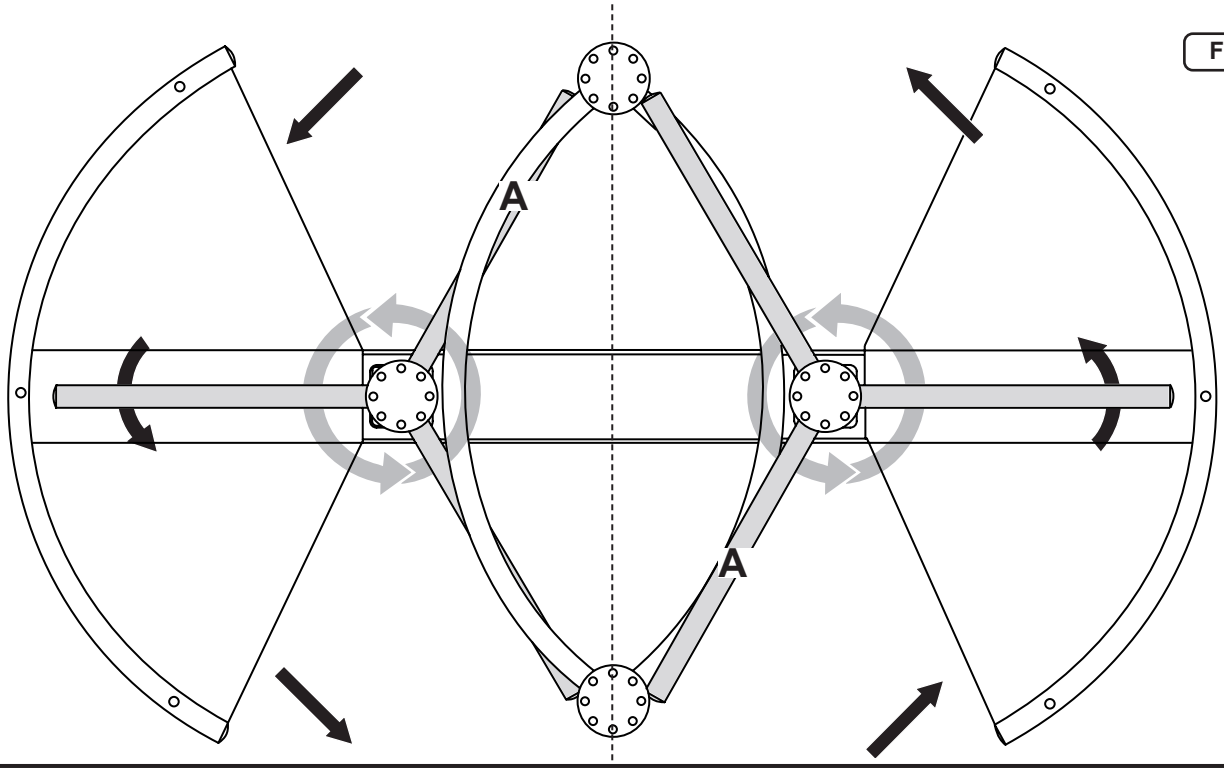


Fig. 30

Post-Installation Checklist

1. Electrical
   - ☐ Validate that electrical connections meet local code requirements.

2. Operation
   - ☐ Validate Key Override Operation.
   - ☐ Ensure Key Overrides are in proper operational positions.
   - ☐ Ensure Home positions are set.
   - ☐ Validate turnstile operation in conjunction with the installed access system. Perform multiple activations and rotations in each direction.
   - ☐ Ensure that desired outputs are attached and operational.

3. Attachment
   - ☐ Check that mounting bolts and screws are secure and tightened per the requirements in this manual.
   - ☐ Top and bottom bearing covers are installed.
   - ☐ Top channel cover is in place.

4. Finish
   - ☐ Stainless Steel (Uncoated) – wipe down the entire turnstile with clean water or use the Alvarado recommended commercial products (see Cleaning and Maintenance Section).
   - ☐ Stainless Steel (units with optional coating) – wipe down entire turnstile with clean water.
   - ☐ Hot Dipped Galvanized – wipe down the stainless steel Top Channel as indicated above. Repair any damaged galvanized areas with zinc-rich paint following the manufacturer's instructions. An explanatory document describing the ASTM recommended repair process is available from the American Galvanizer Association website.
   - ☐ Powdercoated - wipe down entire turnstile with clean water. Repair areas that may have been damaged during the installation process. Touch up paint can be purchased from Alvarado.
   - ☐ Acrylic - wipe down acrylic surfaces with Alvarado recommended commercial products (see Cleaning and Maintenance Section).

5. User Instructions
   - ☐ Train responsible personnel on turnstile operation.
   - ☐ Provide the User Activation and Passage Instructions contained in this manual to responsible personnel.

6. Manual Handoff
   - ☐ Provide this manual to responsible personnel.

Cleaning and Maintenance

The frequency of interior maintenance will depend on how often the turnstile is used, the type of personnel using the turnstile and the environment. Installed turnstiles should be inspected once during the first 30 days after installation. Thereafter, follow the maintenance schedule on the following pages. This schedule is based on what we would call a typical installation – which is a temperate climate where weekly use is up to 7500 activations. If use exceeds this threshold, personnel are abusive to the turnstile or the turnstiles are installed in harsh outdoor environments (such as coastal areas, chemical or refinery plants, very hot or cold locations, or extremely dusty environments), consider increasing the frequency of maintenance to a level suitable for your application.

Galvanized Finishes

A hot dipped galvanized finish is an industrial coating designed to provide corrosion protection. Aesthetic considerations are secondary. Finish irregularities are a natural result of the hot dipped galvanizing process. The appearance of a hot dipped galvanized coating can vary depending on the size and shape of the coated object, as well as from piece to piece or section to section within the same piece. Various appearances for hot dipped galvanized steel (all acceptable under appropriate ASTM standards) include bright and shiny, spangled or mottled, matte gray, or a combination of various conditions. In most instances the appearance of hot dipped galvanized material has no effect on the primary purpose of the finish (corrosion protection) and over time and exposure to the environment, all galvanized finishes will take on a uniform matte gray appearance.

Periodic cleaning of galvanized finishes is recommended. To clean galvanized finishes use a neutral (non-alkaline) detergent, such as a car shampoo, clean warm water and soft brush. Abrasive cleaners, steel wool and chemical cleaning products should not be used. Rinse the surface after cleaning.

Damaged galvanized areas can be treated or touched up with zinc-rich paint. Use an organic cold galvanizing compound following the manufacturer’s instructions. An explanatory document describing the ASTM recommended repair process is available from the American Galvanizer Association website.

Stainless Steel Finishes

Stainless steel is a corrosion resistant chromium/nickel alloy steel that is strong and durable. However, it is not rustproof, particularly in harsh environments. In addition to actual damage, stainless steel can appear to rust when contaminated through contact with carbon steel. This contact can come from tools, adjacent mild steel, fasteners, particulate or through contact with hard water (which can leave spotting and staining on stainless steel). The most common method of contamination in windy, dusty and/or industrial environments is from steel and mineral particles that “land” on the stainless material. Mild steel naturally adheres to a stainless steel surface (due to iron-to-iron affinity). Grained material and weld areas are common areas where foreign particles are trapped. In all these cases, it is generally the steel residue, not the stainless material itself, which rusts initially. Left untreated, however, damage to the stainless surface itself can occur.

Regular cleaning is the best way to maintain any stainless steel finish. The goal of a cleaning program should be to clean the surface, keeping the stainless steel's protective chromium oxide layer intact. The frequency of cleaning will depend on the environment.

Regular cleaning can be accomplished by rinsing the stainless steel surface with fresh water to wash away accumulated chemicals, materials and particulates. Wipe dry with a clean cloth. Especially try to clean equipment immediately after contact with chlorides (chlorine powder, salt melt, seawater, etc.).

For embedded deposits a neutral detergent, such as a car shampoo, clean warm water and a soft brush can be used. Rinse the surface after cleaning. Never use steel wool. MAAS also makes an excellent stainless steel cleaner in a spray form, MAAS Stainless Steel & Chrome Cleaner, available from the MAAS website (www.maasinc.com). All the products listed below can also be used for general cleaning.

Cleaning and Maintenance (Cont)

Stainless Steel Finishes (Cont)

For stubborn stains, heavy spotting and rust, our #1 recommendation is MAAS Metal Polish (in the liquid form). This is hands down the best product we have used. Follow the manufacturer's directions but in brief: (1) wipe down excess dirt from the turnstile; (2) apply polish to the metal; (3) polish in the direction of the grain with a super fine (0000) or fine (000) synthetic steel wool (depending on the level of tarnish); (4) wipe clean; (5) repeat steps 2 - 4 until clean. MAAS Metal Polish (liquid) is available from the MAAS website (www.maasinc.com). Synthetic steel wool can generally be found at home improvement centers or online at Amazon.com. Again, never use steel wool.

Another product that is good is a product called Hope's Perfect Sink (www.hopecompany.com). The Perfect Sink product can be purchased at Lowe's, OSH and Amazon.com. Follow the directions on the bottle.

Rusted surfaces and even damaged pitted surfaces can generally be cleaned with the MAAS product but highly damaged areas may require chemical passivation. To chemically passivate stainless steel, Alvarado recommends the use of a citric acid product, CitriSurf2310, available from Stellar Solutions (www.citrisurf.com). This product is especially formulated to clean and passivate stainless steel and can be used in the field. Follow the manufacturer's directions.

Even with periodic cleaning, it is possible that periodic chemical passivation will be required to maintain stainless steel in especially difficult environments.

Powder Coat Finishes

To clean the powder coat finish, use a neutral detergent, such as a car shampoo, and rinse with clean water. In the event that the powder coat finish is chipped, and bare metal is showing, seal the area as soon as possible. If the area is not sealed, the underlying metal will rust, which could eat away the powder coat and cause flaking. Touch up paint is available from Alvarado.

Acrylic Finishes

Use cleaning products that are specifically recommended for use on acrylic surfaces. We recommend two products:

- Brillianize
- Novus #1

The two recommended products will clean the material and leave a greaseless shine that will repel dust and resist fingerprints. DO NOT use scouring compounds or chemical cleaners like Windex that contain ammonia or alcohol. Using a soft cloth, clean the acrylic surfaces according to the instructions provided with the recommended cleaning product. DO NOT SCRUB THE ACRYLIC!

Lubrication

It is recommended that the following lubricants be used when lubricating the MSTT turnstile.

Dow Corning
MolyKote G-0010 Multipurpose Grease
(-20° to +300°)

DuPont
Teflon Non-Stick Dry-Film Lubricant (Bottle)
(-100° to +480°)

NOTE

For installations in extreme cold locations, we recommend using Molykote 33 Extreme Application Grease (-100° to +400°) in lieu of the MolyKote G-0010.

Items/Points of Contact	Maintenance	Lubricant	Inspect Every...	Replace Every...
Lock Arms and Bolts	Check the lock arm(s) and the lock arm bolt(s). If the lock arm does not move freely, clean and oil the lock arm(s) and bolt(s). If the lock arm bolt is loose, apply a thread locking compound such as Blue Loctite to the threads, tighten and re-test. The lock arm should move freely, except for the pressure of the return spring.	DuPont Teflon Non-Stick Dry-Film Lubricant	6 Months	As required
Springs	Inspect and replace worn or damaged springs. Lubricate spring contact points using DuPont Teflon Non-Stick Dry-Film Lubricant lubricant. **NOTE**: Use only Alvarado springs and only the springs designated for the location and use purpose. Turnstile springs are not interchangeable and should be used in designated locations only.	DuPont Teflon Non-Stick Dry-Film Lubricant	6 Months	1 years
Main Cam & Shaft Bearings	Lubricate the two grease fittings on the upper and lower top channel bearings using the recommended grease and a grease gun.	MolyKote G-0010 Multipurpose Grease	6 Months	As required
Solenoids	Clean the solenoid plunger and solenoid cavity area using alcohol wipes and alcohol moistened Q-tips. Apply a light coating of DuPont Teflon Non-Stick Dry-Film Lubricant on the solenoid plunger.	Alcohol ONLY	6 Months	2 years
Optical Sensors	Clean & inspect the alignment of the optical sensors. To clean, an alcohol moistened Q-tip works well. The cam tag should rotate freely between the sensors and should travel at approximately ¾ of the depth of the sensors. Loosen and adjust using the sensor mounting screws.	None	6 Months	As required
Electrical Wiring	Inspect all electrical wires and contacts for exposure to metal parts that may lead to a short.	None	6 Months	As required
Self-Centering Mechanism	Clean and lubricate the two slide rods using DuPont Teflon Non-Stick Dry-Film Lubricant with a tube extension applicator.	DuPont Teflon Non-Stick Dry-Film Lubricant	6 Months	As required

Lock Arms and Bolts (Figure 31)

If the lock arm does not move freely, or is loose, detach the return spring from the lock arm and use a 5/16" Allen wrench to remove the lock arm bolt. Use DuPont Teflon Non-Stick Dry-Film Lubricant to lubricate the bushings on the top and bottom side of the lock arm. Apply blue Loctite thread locking compound to the lock arm mounting bolt. Tighten the bolt to a torque rating of 35 ft-lb. and check the lock arm for action. The lock arm should move freely, except for the pressure of the return spring.

If the lock arm mounting bolt is loose, follow the directions above, ensuring that blue Loctite thread locking compound is applied to the lock arm mounting bolt threads before re-installing the lock arm mounting bolt. After tightening the bolt the lock arm should move freely, except for the pressure of the return spring.

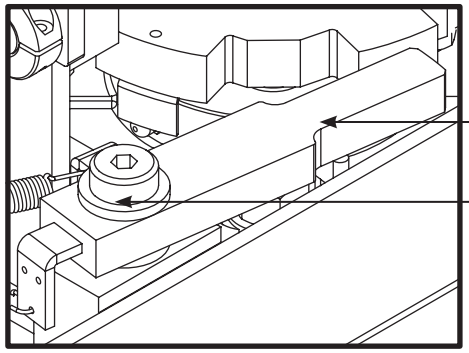


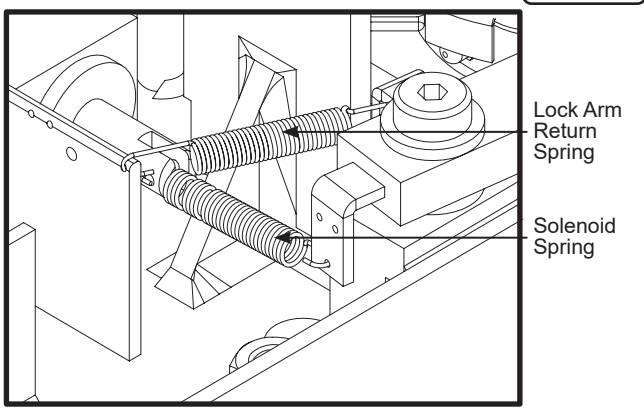
Fig. 31

Lubrication (Cont)

Springs (Figure 32)

Lubricate spring contact points with DuPont Teflon Non-Stick Dry-Film Lubricant. Place lubricant on spring body by adding 1 drop on contact points.

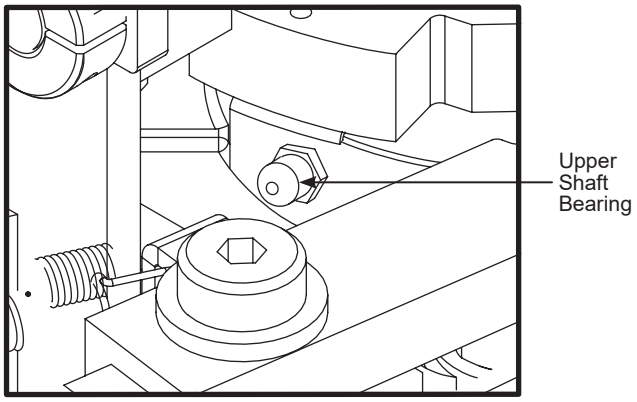
Fig. 32



Main Cam and Upper Shaft Bearing (Figure 33)

Lubricate the grease fitting on the upper shaft bearing using the recommended grease and a grease gun.

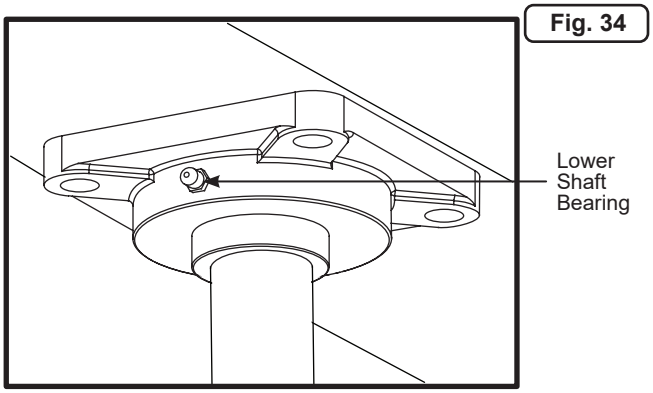
Fig. 33



Main Cam and Lower Shaft Bearing (Figure 34)

Lubricate the grease fitting on the lower shaft bearing using the recommended grease and a grease gun.

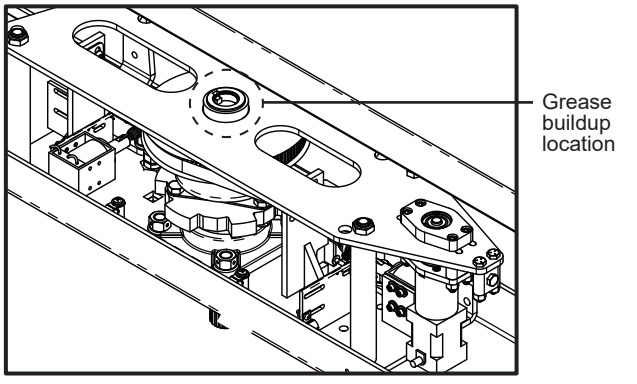
Fig. 34



NOTE

Over time, excess grease may get pushed up and accumulate in the circled area - this is normal. Any potential staining of the metal should be expected due to prolonged exposure to grease; this does not affect performance. [Figure 43]

Fig. 35



Troubleshooting

If the steps listed in this section do not resolve the issue, contact Techncial Support.

Fail-Lock direction will not unlock

Power Issues

Cause	Solution	Reference
Control board has no power	1. Ensure primary power input contacts (J101) on the control board terminals are secure and tight. 2. Verify power supply 24VDC output. 3. Check the primary power fuse; replace if blown.	Fig. 26 / 26A / 27

Mechanical Issues

Cause	Solution	Reference
Incorrect springs	Verify that the springs on your unit are identical to the springs used in the illustration.	Fig. A1
Springs attached incorrectly	Verify that the springs are attached correctly and in the correct mounting holes. Mounting hole locations on unit should match the locations that are shown in the illustration.	Fig. A1
Lock arm binding or sticking	Clean and lubricate (see "Lubrication" section). If the lock arm is still binding, contact Technical Support.	Fig. 31
Solenoid plunger is binding	1. Check for and remove any debris from the solenoid plunger and cavity area. 2. Use an alcohol-moistened cotton swab to clean the solenoid plunger. Do not use water to lubricate the solenoid plunger. The solenoid is designed for dry operation.	Fig. A1
Key Override will not function	Confirm key override leads are connected to the appropriate control board terminals.	See *Terminal Description.*

Electronic Issues

Cause	Solution	Reference
Access Control / Control Board	1. Disconnect all access control wires from control board 2. Press the activation test buttons and note if lock arm unlocks. 3. If the lock arm unlocks, then the turnstile is operating correctly. The issue is lies with the access control system. 4. If the lock arm remains locked, Use a wire jumper to short the access control terminals. Replace control board if lock arm remains locked.	Fig. 27

Fail-Lock direction will not re-lock

Mechanical Issues

Cause	Solution	Reference
Incorrect springs	Verify that the springs on your unit are identical to the springs used in the illustration.	Fig. A1
Springs attached incorrectly	Verify that the springs are attached correctly and in the correct mounting holes. Mounting hole locations on unit should match the locations that are shown in the illustration.	Fig. A1
Lock arm binding or sticking	Clean and lubricate (see "Lubrication" section). If the lock arm is still binding, contact AlvaradoTechnical Support.	Fig. 31
Solenoid plunger is binding	1. Check for and remove any debris from the solenoid plunger and cavity area. 2. Use an alcohol-moistened cotton swab to clean the solenoid plunger. Do not use water to lubricate the solenoid plunger. The solenoid is designed for dry operation.	Fig. A1
Key Override will not function	Confirm key override leads are connected to the appropriate control board terminals.	See *Terminal Description.*

Electronic Issues

Cause	Solution	Reference
Access Control / Control Board	1. If the Fire Alarm connection is used, verify that CWFA & CCWFA are not being provided with a continuous dry contact. 2. Verify Emergency Override DIP switch is set according to the building fire relay (N.O. / N.C.).	Fig. 27 / 28

Troubleshooting (Cont)

Fail-safe direction will not unlock

Power Issues

Cause	Solution	Reference
Control board has no power	1. Ensure primary power input contacts (J101) on the control board terminals are secure and tight. 2. Verify power supply 24VDC output. 3. Check the primary power fuse; replace if blown.	Fig. 26 / 26A / 27

Mechanical Issues

Cause	Solution	Reference
Incorrect springs	Verify that the springs on your unit are identical to the springs used in the illustration.	Fig. A1
Springs attached incorrectly	Verify that the springs are attached correctly and in the correct mounting holes. Mounting hole locations on unit should match the locations that are shown in the illustration.	Fig. A1
Lock arm binding or sticking	Clean and lubricate (see "Lubrication" section). If the lock arm is still binding, contact Technical Support.	Fig. 31
Solenoid plunger is binding	1. Check for and remove any debris from the solenoid plunger and cavity area. 2. Use an alcohol-moistened cotton swab to clean the solenoid plunger. Do not use water to lubricate the solenoid plunger. The solenoid is designed for dry operation.	Fig. A1
Key Override will not function	Confirm key override leads are connected to the appropriate control board terminals.	See *Terminal Description.*

Electronic Issues

Cause	Solution	Reference
Access Control / Control Board	1. Disconnect all access control wires from control board 2. Press the activation test buttons and note if lock arm unlocks. 3. If the lock arm unlocks, then the turnstile is operating correctly. The issue is lies with the access control system. 4. If the lock arm remains locked, Use a wire jumper to short the access control terminals. Replace control board if lock arm remains locked.	Fig. 27

Troubleshooting (Cont)

Fail-safe direction will not re-lock

Mechanical Issues

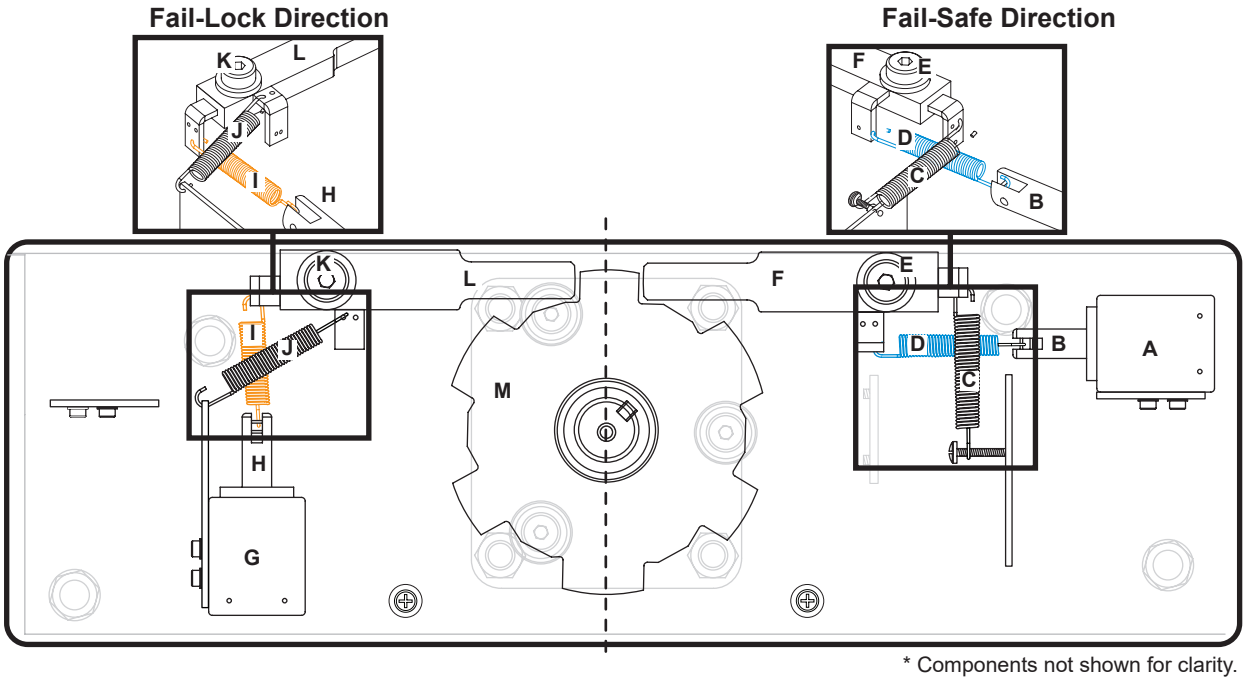
Cause	Solution	Reference
Incorrect springs	Verify that the springs on your unit are identical to the springs used in the illustration.	Fig. A1
Springs attached incorrectly	Verify that the springs are attached correctly and in the correct mounting holes. Mounting hole locations on unit should match the locations that are shown in the illustration.	Fig. A1
Lock arm binding or sticking	Clean and lubricate (see "Lubrication" section). If the lock arm is still binding, contact AlvaradoTechnical Support.	Fig. 31
Solenoid plunger is binding	1. Check for and remove any debris from the solenoid plunger and cavity area. 2. Use an alcohol-moistened cotton swab to clean the solenoid plunger. Do not use water to lubricate the solenoid plunger. The solenoid is designed for dry operation.	Fig. B1
Key Override will not function	Confirm key override leads are connected to the appropriate control board terminals.	See *Terminal Description.*

Electronic Issues

Cause	Solution	Reference
Access Control / Control Board	1. If the Fire Alarm connection is used, verify that CWFA & CCWFA are not being provided with a continuous dry contact. 2. Verify Emergency Override DIP switch is set according to the building fire relay (N.O. / N.C.).	Fig. 27 / 28

Appendix A - Changing Fail-Safe / Fail-Lock

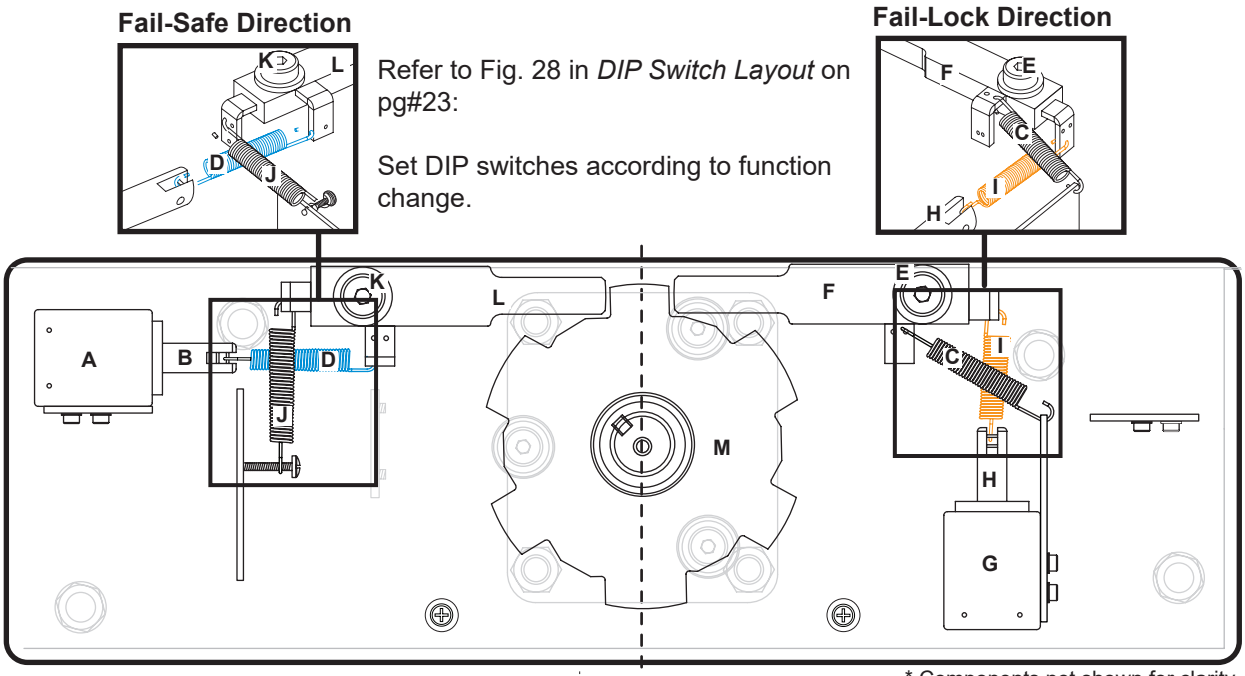
Fig. A1 **Standard Side Default Configuration / Tandem Side Reverse Configuration: CW - Fail-Lock / CCW - Fail-Safe**



* Components not shown for clarity.

A	Solenoid (Fail-Safe position)	I	Solenoid Spring (Fail-lock)
B	Solenoid Plunger	J	Return Spring
C	Return Spring	K	Lock Arm Mounting Bolt
D	Solenoid Spring (Fail-safe)	L	Lock Arm
E	Lock Arm Mounting Bolt	M	Cam Shaft
F	Lock Arm		
G	Solenoid (Fail-Lock position)		
H	Solenoid Plunger		

Fig. A2 **Standard Side Reverse Configuration / Tandem Side Standard Configuration: CW - Fail-Safe / CCW- Fail-Lock**



Refer to Fig. 28 in *DIP Switch Layout* on pg#23:

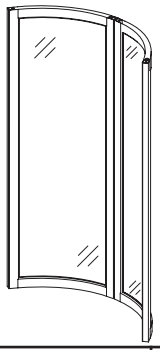
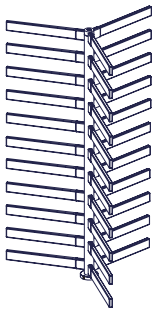
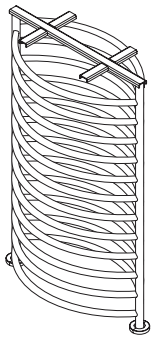
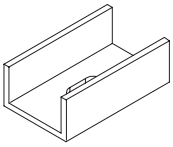
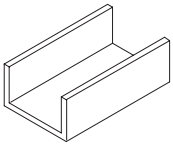
Set DIP switches according to function change.

* Components not shown for clarity.

Appendix B - CPSTT Installation

These instructions are for installing the Yoke section of the CPSTT. When complete, please refer back to the "Roto Installation" section.

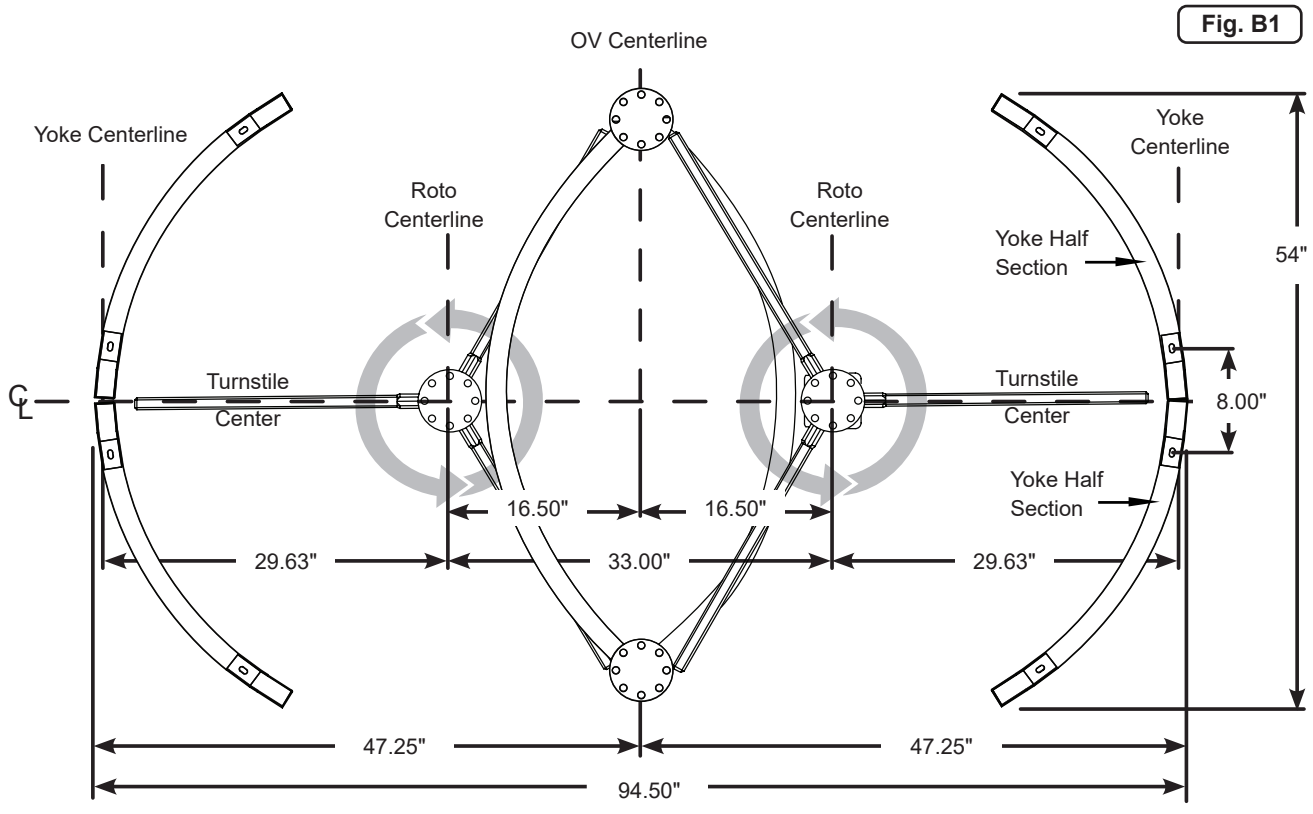
CPSTT Illustrated Parts List

Yoke Assemblies (Qty 4) 	Roto (Qty 2) 	OV (Qty 1) 	
Yoke Mounting Channel - Lower (Qty 8) 	Yoke Mounting Channel - Upper (Qty 8) 	1/4-20 x 1" Mounting Screws (Qty 12) 	#10 x 3/4" Mounting Screws (Qty 20) 
			Floor Template

1. Determine where the turnstile will be installed. Consider the overall footprint size of the unit when determining the installation location (Figure B1).

   Once the installation location has been determined, use a chalk line to mark the centerlines.

Fig. B1



NOTE

The overall height of the CPSTT is 91.5". However, an additional 3" of clearance must be added for service and maintenance.

Yoke Installation

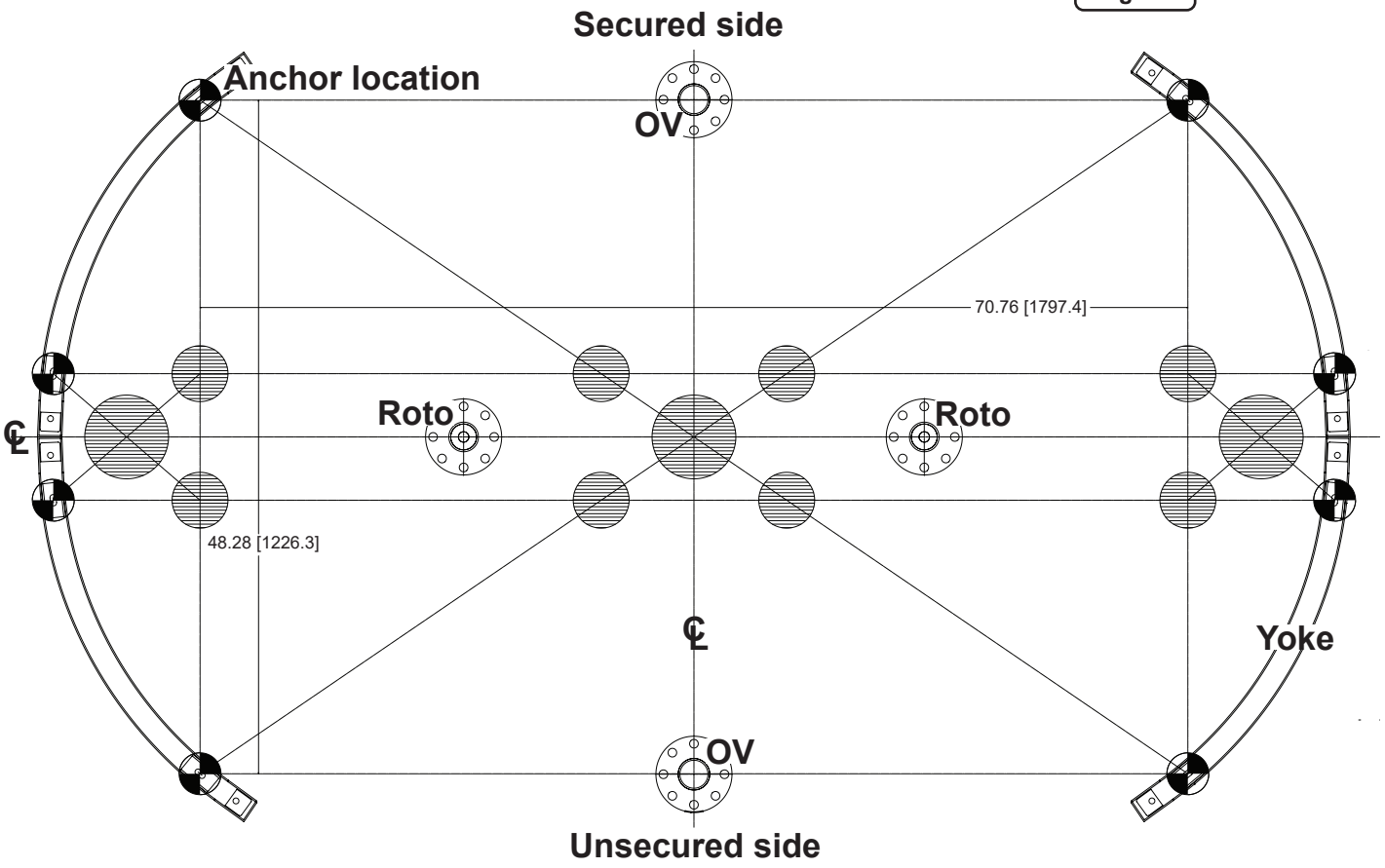
2. Lay the floor template over the installation location while aligning the centerlines - ensure the template is properly positioned to fill the space available and is orientated correctly. [Figure B2]

3. Using a ⅝" concrete drill bit, drill an anchor hole 3" in depth at the center of each marked location on the template.

NOTES

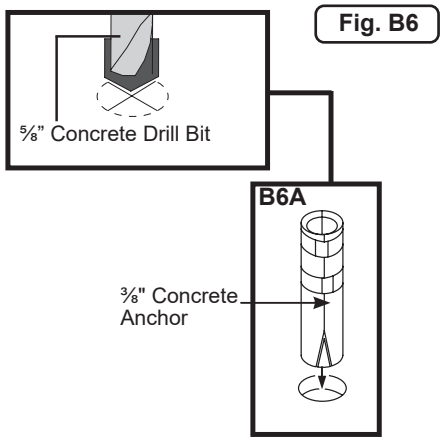
The anchor hole(s) must be clean before installing the anchor bolt(s). If the hole(s) are not clear of debris, the anchor bolt(s) may not tighten correctly.

Fig. B2

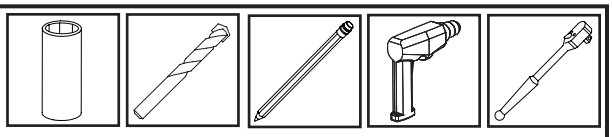


4. Insert one anchor into the drilled hole (Figure B6). The threaded end of the anchor must be inserted into the hole first. Use a hammer to tap the anchor into place, if needed. Ensure that the anchor is flush with the concrete floor.

Fig. B6



Yoke Installation (Cont)



8. Place one lower mounting channel over a mounting hole. Insert and tighten one ⅜" x 2½" anchor bolt and at washer. Use a socket wrench and 9/16" socket to tighten the bolts (Figure B7). Repeat this step for the remaining lower mounting channels and mounting hardware.
9. Position 2 Yoke assemblies over the lower mounting channels. Verify that the Yoke assemblies are flush with each other. If the assemblies are flush with each other, then proceed to Step 10. If they are not, remove the Yoke assemblies and realign the lower mounting channels.
10. Use a torque wrench and tighten the anchor bolts to 40 ft-lbs.
11. Place the Yoke assemblies over the lower mounting channels.
12. Locate the two holes on the bottom of each Yoke assembly. Use a 9/64" drill bit and pro-drill the mounting holes.
13 Secure each section to the lower mounting channel with a ¼-20 x 1” screw (Figure B8).
14. Repeat Steps 9 through 13 for the second Yoke installation.

Fig. B7

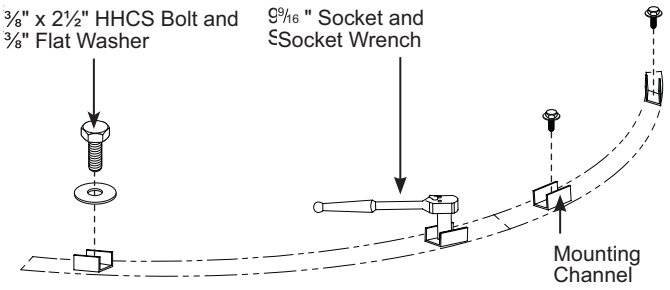
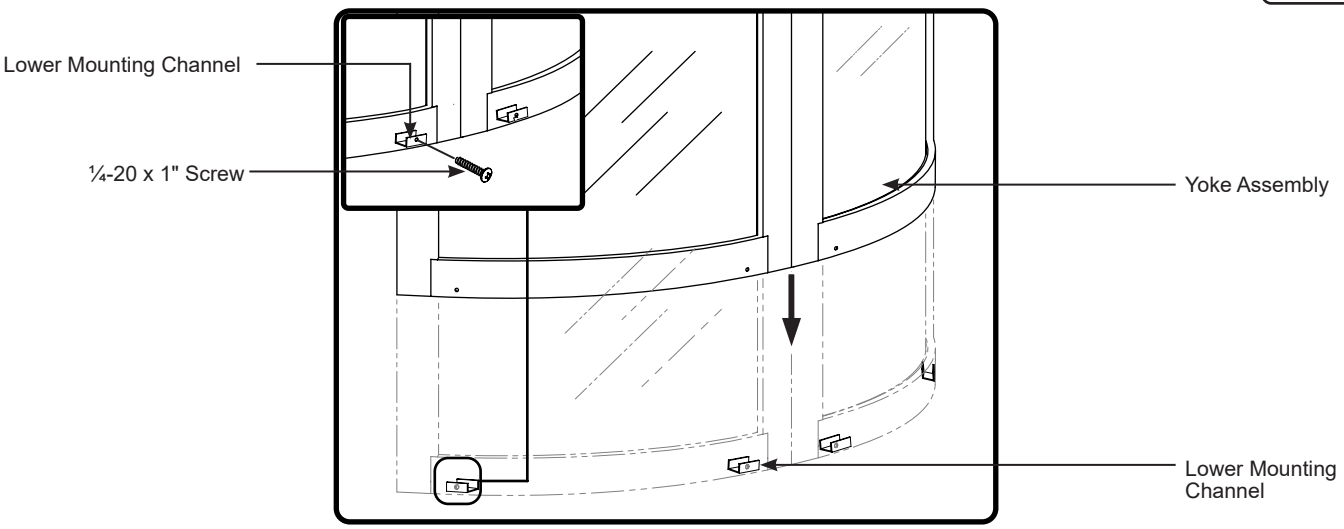


Fig. B8



Yoke Installation (Cont)

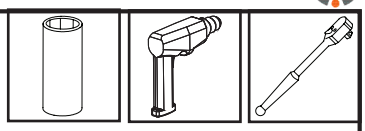
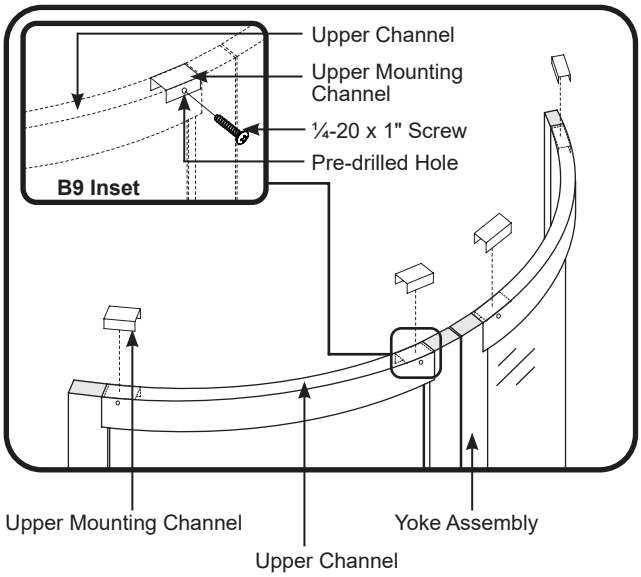


Fig. B9

Yoke Upper Mounting Channel Installation

1. Place each upper mounting channel inside the Yoke upper channel (Figure B9). Align mounting channel with the pre-drilled hole (Figure B9 - Inset) .
2. Use a 9/64" drill bit and pre-drill a mounting hole into the center of each upper mounting channel.
4. Secure each upper mounting channel to the Yoke using a ¼-20 x 1” screw (Figure B9-Inset).
5. Tighten each screw using a Phillips head screwdriver.
6. Repeat Steps 1 through 5 for the second Yoke installation.



⚠ IMPORTANT

For the CPSTT, the Roto with 11 arms must be installed on the right side and the Roto with 10 arms must installed on the left side, when viewed from the unsecured/entry side. (Figure B10).

When complete, continue on to the ***Roto Installation*** section.

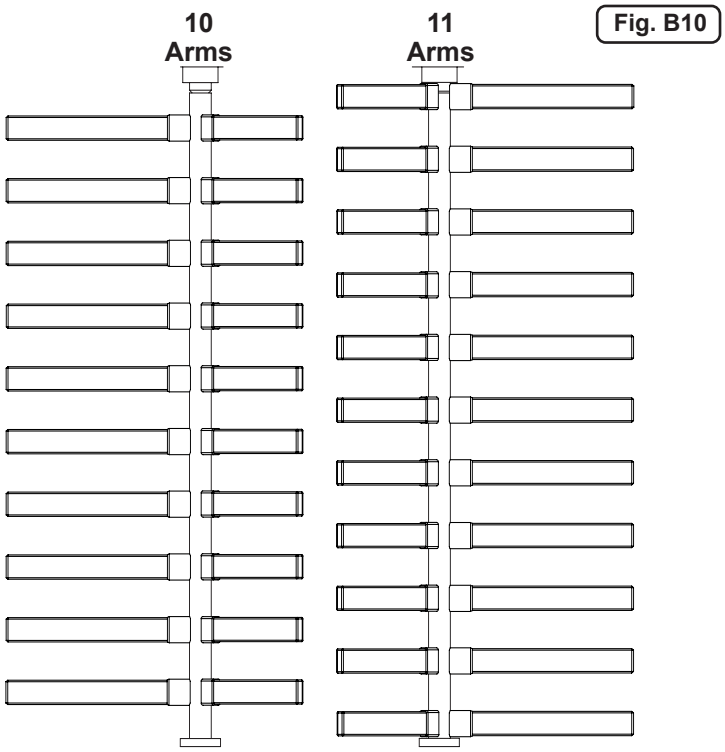
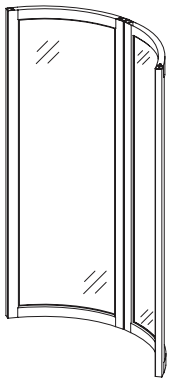
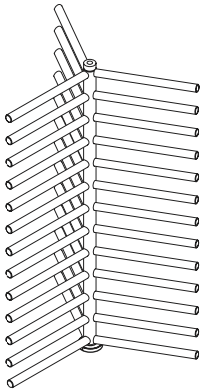
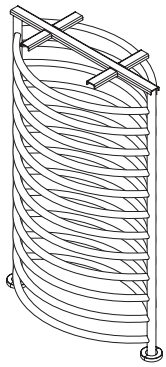
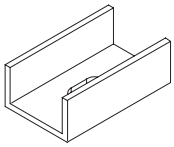
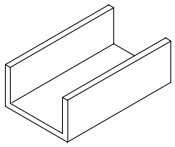


Fig. B10

Appendix C - CLSTT Installation

These instructions are for installing the Yoke section of the CLSTT. When complete, please refer back to the "Roto Installation" section.

CLSTT Illustrated Parts List

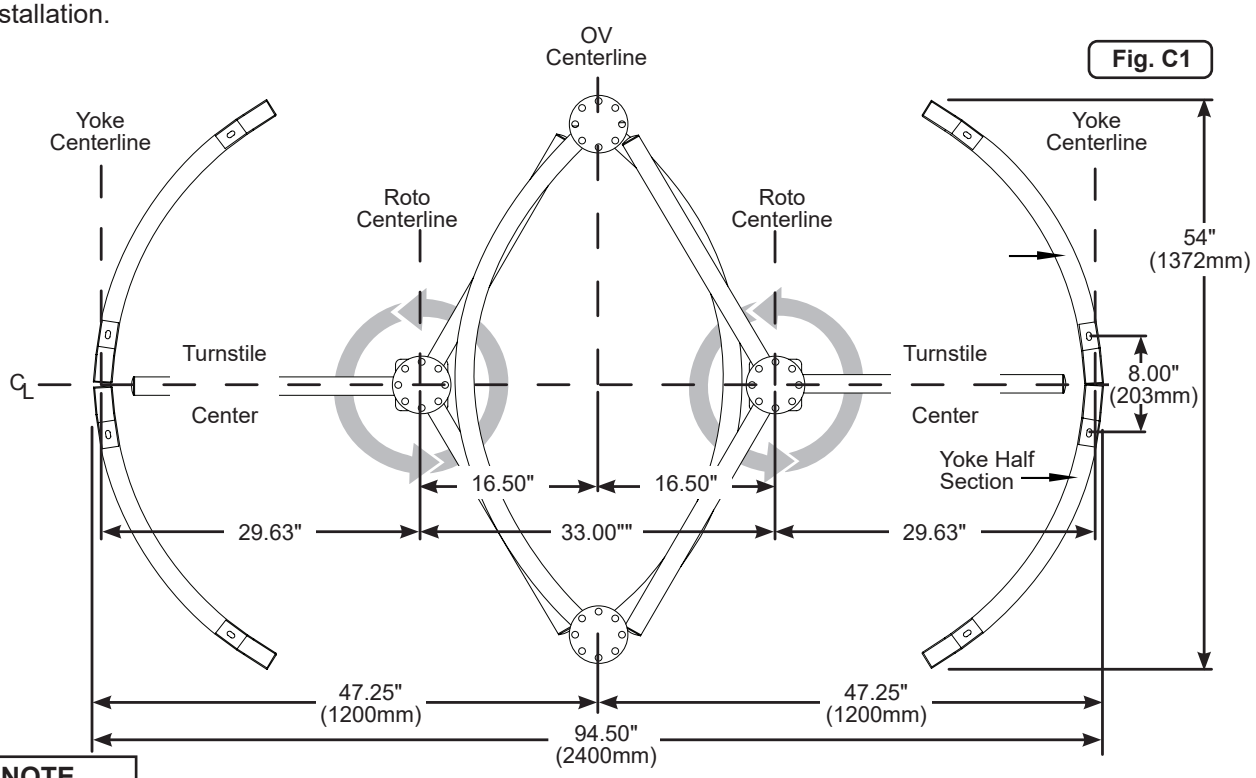
 Yoke (Qty 2)	 Roto (Qty 2)	 OV (Qty 1)
Yoke Mounting Channel - Lower (Qty 8) 	Yoke Mounting Channel - Upper (Qty 8) 	1/4-20 x 1" Mounting Screws (Qty 12) #10 x 3/4" Mounting Screws (Qty 20)
Floor Template		

1. Determine where the turnstile will be installed. Consider the overall footprint size of the unit when determining the installation location (Figure C1). Once the installation location has been determined, use a chalk line to mark the centerline of the turnstile.

Yoke Installation

Follow the steps shown in Appendix B (Figures B1 - B9). When complete, refer to the ***Roto Installation*** to continue the installation.

Fig. C1



NOTE

The overall height of the CLSTT is 91.5". However, an additional 3" of clearance must be added for service and maintenance.

Revision History

Revision	Date	Author	Description
1-0	4/23/2021	C. Maynez	Initial Document Creation
1-1	8/26/2024	C. Maynez	Updated to corporate branding & top channel conduit images.

Alvarado Manufacturing Company, Inc.
12660 Colony Street, Chino, CA 91710
Toll Free: (800) 423-4143
Fax: (909) 628-1403
information@alvaradomfg.com
www.alvaradomfg.com