THT-100 ASTG
THT-100 ASTG2
Security Turnstiles

Installation, Operation and Maintenance Manual

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!!! The TRIPLE EXCLAMATION point is intended to alert the user to presence of important operation instructions.

IMPORTANT SAFEGUARDS

"READ CAREFULLY"

1. ***Always disconnect power supply prior to servicing turnstiles***.
2. Heed all written warning in the operating instructions and in the unit.
3. Read, follow, and retain all safety instructions.
4. When replacement parts are required be sure to use replacement parts recommended by the manufacturer or that have the same characteristics as the original part.

SAFETY PRECAUTIONS

1. All access control devices must provide a momentary dry contact of ½ second or less. If access control devices provide a longer dry contact, assure the Pulse Relay option has been ordered and is in place and operational.
2. Do not by-pass, maintain contact closure or otherwise modify the turnstile control system for accomplishing "free entrance" or exiting during normal operation without permission. Doing so may cause faulty or unsafe operation.
3. It is the responsibility of the owner to provide training on the proper use of the turnstile to all intended users. The attached User's Manual should be used as a training tool.
4. Any unauthorized modification or attachment to the turnstile control circuit will void all warranties and liability of the manufacturer.
5. The installer must perform a complete functional test of the turnstile upon completion of the installation process.

SITE PREPARATION

1. Pad size should be 66 inches by 60 inches by 5 inches deep. Concrete should be level and cured prior to drilling anchoring holes. **DO NOT** preset anchors.
2. Shims may be used to adjust for slight variations of the concrete. However, shims must provide stable support for the vertical member that is being shimmed.
3. If mounting to existing concrete surface, be sure the depth, width and length requirements have been met prior to installation.

IINSTALLATION

TOOLS REQUIRED

One	(1)	Hammer
Two	(2)	1/2 in. Wrench, or Equivalent
One	(1)	9/16 in. Wrench, or Equivalent
One	(1)	7/16 in. Socket Wrench
One	(1)	7/16 in. Nut Driver
One	(1)	Concrete Hammer Drill
One	(1)	3/8 in. Masonry Drill
One	(1)	Soft Face Hammer, or Equivalent
One	(1)	3/16 in. Hex Key Wrench
One	(1)	5/32 in Hex Key Wrench
One	(1)	7/32 in. Hex Key Wrench
Three	(3)	1 in. Wooden Blocks (to be used as shims)
One	(1)	5-3/4 in. High Wooden Block (to be used as a shim)
One	(1)	Flat blade screwdriver

After unpacking the turnstile and prior to assembly make sure to inventory all parts received.

Check to ensure the quantities received match with those shown on the material list.

Important: Review the enclosed assembly drawings and familiarize yourself with the various components and their numbers.

MATERIAL LIST

Quantity	Description	Item #
1 each	Lower Shaft and Bearing Assembly	1
3 each	Center Post Retainer Angles	2
3 each	Center Post	3
1 each	Barrier with 1/8 in. Spacer	4
1 each	Passageway Assembly (consists of 3 sections)	5R,5L,5C
1 each	Ceiling Plate	6
1 each	Control Unit with Cover	7
3 each	Radius Snap-Ons	8
2 each	Raceway Tube	9
1 each	Floor Anchor (right)	10R
1 each	Floor Anchor Double (right)	11R
1 each	Floor Anchor (left)	10L
1 each	Floor Anchor Double (left)	11L
15 each	1/4-20 x 2-3/4 in. Hex Head Bolts	

15 each	1/4-20 Nylock Hex Nuts
2 each	5/16-18 x 1-1/2 in. Hex Head Bolts
2 each	5/16 in. Lock Washers
12 each	1/4-20 x 5/8 in. Stainless Steel Button Head Screws
4 each	1/4-20 x 1 in. Stainless Steel Button Head Screws
4 each	1/4 in. Stainless Steel Flat Washers
3 each	3/8-16 x 1 in. Stainless Steel Button Head Screws
5 each	3/8 in. Flat Washers
3 each	3/8-16 Nylock Hex Nut
8 each	3/8 in x 3-3/4 in. Stainless Steel Anchor Bolts
4 each	1/4 in. Lock Washers

Installation Instructions

1. Using drawings supplied as reference, position the lower shaft and bearing assembly (item #1) in desired location.

2. Assemble the three (3) center post (item #3), using the center post retaining angles (item #2) and secure using fifteen (15) 1/4-20 x 2-3/4" hex head bolts and fifteen (15) 1/4-20 Nylock nuts. Tighten nuts finger tight.

3. Mount center post assembly onto the lower shaft and bearing assembly, aligning holes in bottom of center post with pins on shaft. Use 1 in wooden blocks to stabilize center post assembly.

4. Mount barrier assembly (item #4) on top of the 1/8" spacer plate and position the barrier with respect to drawings. Prop up the barrier by placing a 5-3/4" block under the bottom arm.

!!! Important: Prior to erecting the passageway panels it will be necessary to attach the mounting anchors to each panel.

5. Begin with the center panel (item #5C) and while facing the mounting holes at the bottom of the panel, attach the right and left hand ***double floor*** anchors (items # 11 R & 11 L) using four (4) 1/4-20 x 5/8" stainless steel button head screws, finger tighten.

6. Attach the outside floor mounting anchors (item # 10R & 10L) to the respective right hand and left hand panels (item #5R & 5L) using two (2) 1/4-20 x 5/8" stainless steel button head screws for each, finger tighten.

7. Position the center barrier panel in its respective location as shown on the foundation drawing.

8. Place one end of one barrier side panel 5L or 5R over the top of the ***double floor*** anchor located in the center panel section. Attach 5R or 5L to anchors on 5C using two (2) 1/4-20 x 5/8" stainless steel button head screws. Repeat for the other panel.

Insert a portion of the raceway tubing (item #9) into the corresponding holes located at the top of each panel, making sure equal amounts of the tubing is placed into each panel.

Note: When interconnected the raceway tubing will help to stabilize the passageway assemblies.

9. Once all panels are attached together position the complete passageway with respect to drawings.

10. Once the flat panel sections have been positioned align the ceiling plate (item #6) with the top of the flat panels, making sure the outside edge of the ceiling plate and panel assemblies are flush.

Refer to drawings and secure the ceiling plate to the **outside panels only** using four (4) 1/4-20 x 1" stainless steel button head screws, four (4) 1/4" lock washers, and four (4) 1/4-20 stainless steel flat washers, tighten securely.

Mounting Control Mechanism

11. The cover of the control mechanism (item# 7) must be removed prior to installing the control channel.

Unscrew the bolts from panel and remove the cover from the channel assembly.

Note: The control channel weights approximately 125 pounds.

12. Lift the control channel (item #7) into place on top of the barrier and passageway assembly, making sure the exit side of the control unit is on the exit side of the installation.

Position the control channel so that the alignment pin on the main shaft lines up with the alignment groove in the upper flange. Slowly lower the channel into place.

Note: It may be necessary to shake the center post assembly while lowering the channel in order to fully seat the pins and shaft.

13. After the control channel is fully seated, line up the holes at each end of the channel with the respective holes in the barrier and passageway assemblies.

Attach the control mechanism to the ceiling plate and passageway assembly using two (2) 5/16-18 x 1-1/2” hex head bolts, two (2) 5/16” lock washers, and two (2) **3/8” flat washers**. Finger tighten only.

Attach the control mechanism to the barrier by installing two (2) 3/8-16 x 1” stainless steel button head screws **up through** the barrier into the control channel. Fasten with two (2) 3/8-16 flat washers and two (2) 3/8-16 Nylock hex nuts. Finger tighten only.

14. Fasten the ceiling plate (item #6) to the underside of the control channel using one (1) 3/8 x 16 x 1” stainless steel button head screw, one (1) 3/8 lock washer and one (1) 3/8 x 16 Nylock nut. Finger tighten only.

15. Position the control channel on the passageway assembly so that the end of the control channel is 1/8” from the edge, then tighten all nuts and bolts on the top portion of the turnstile.

16. Adjust each mounting bracket at the bottom of the passageway assembly to ensure the edges are square and as flush as possible with the aluminum mullion. Tighten securely.

17. Tighten all remaining nuts and bolts, *then refer to foundation drawing, align, square and level turnstile.

*When tightening the three (3) center posts, use a 7/16” **socket** on the Nylock nuts and a 7/16” **nut driver** on the bolt head. This will allow for installation of the radius snap ons.

Note: If spacers are required for leveling any of the turnstile sections, the material used for spacers can not be corrosive or cause oxidation to the turnstile materials it comes in contact with.

Drill through mounting brackets, bearing plate and barrier. Secure using stainless steel anchor bolts supplied.

18. After the turnstile is secured to the foundation, it is advisable to steady it by securing it's sides to fence posts, walls, etc. **Failure to do so may result in faulty operation.** This can be accomplished by bolting or clamping the turnstile to the supporting structure.

Note: Each installation may have different requirements for securing the turnstile sides. Because of this, the factory does not provide hardware. The installer must decide the best method of securement and then select the appropriate mounting hardware.

19. To install radius Snap-On's (item #8), position as shown on drawing and tap into place using a rubber mallet (you should hear them snapping into the angles).

20. Replace the control unit cover.

21. Ensure all anchors and attachment bolts are tight. The overall turnstile stability must be sound and rigid.

!!! Important: Remove protective film from polycarbonate panels as soon as possible upon completion of the installation. Prolonged exposure to direct sunlight could cause the film to be extremely difficult to remove.

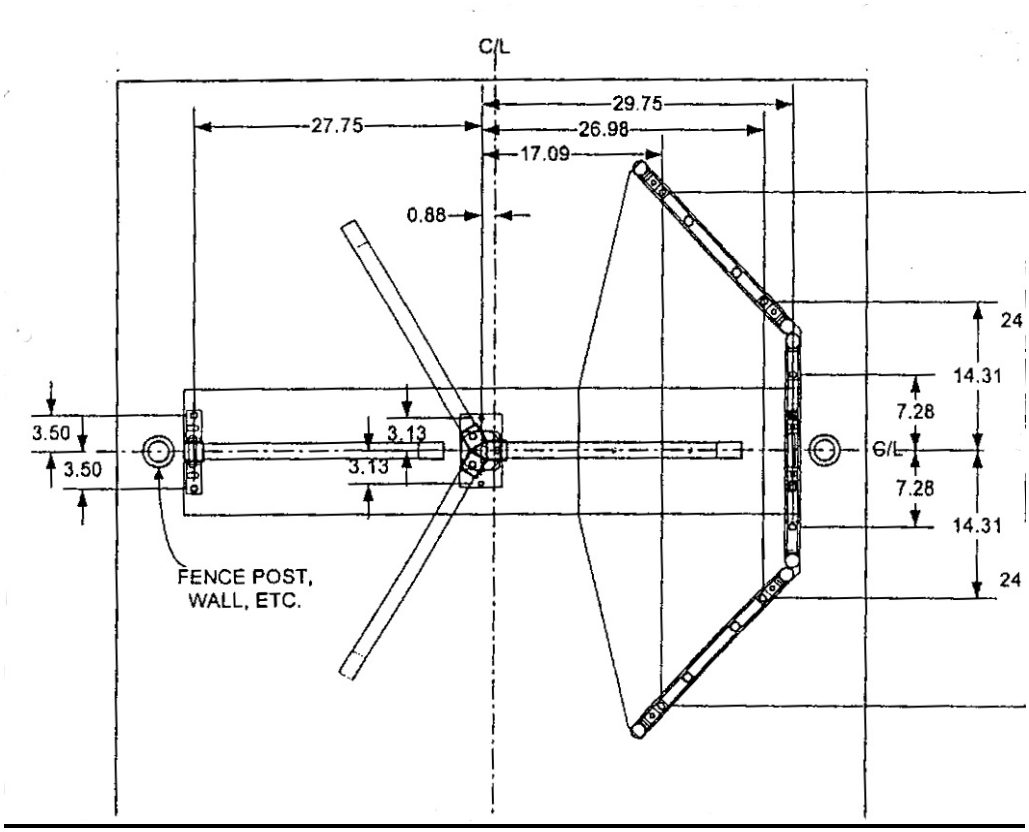
ELECTRICAL CONDUIT

All external wiring must be brought into the control mechanism assembly located at the top of the turnstile.

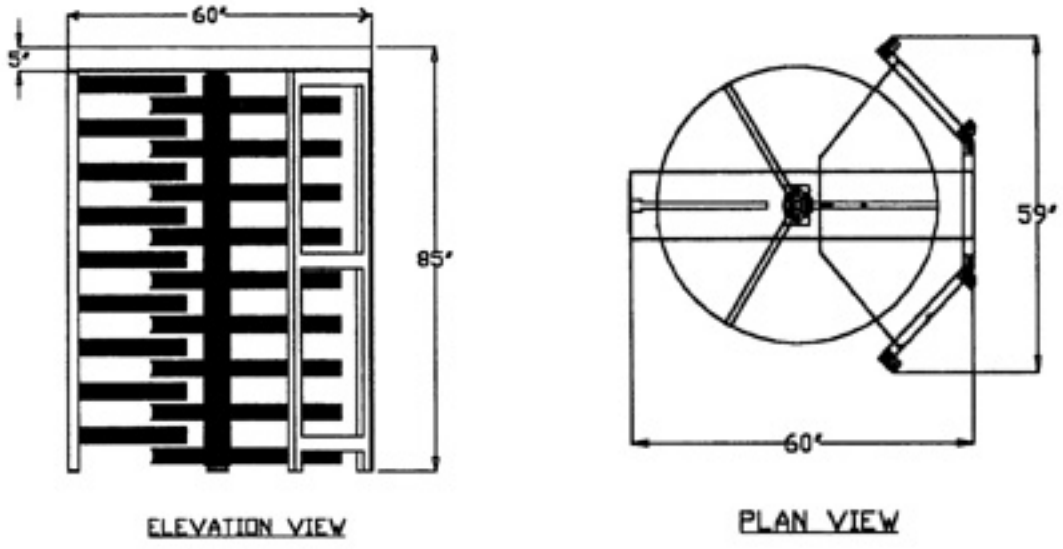
Run conduit containing the necessary power and control wiring up either side of the turnstile or along the top rail of the fence line. If the installation is indoors it is acceptable to bring the conduit down from the ceiling.

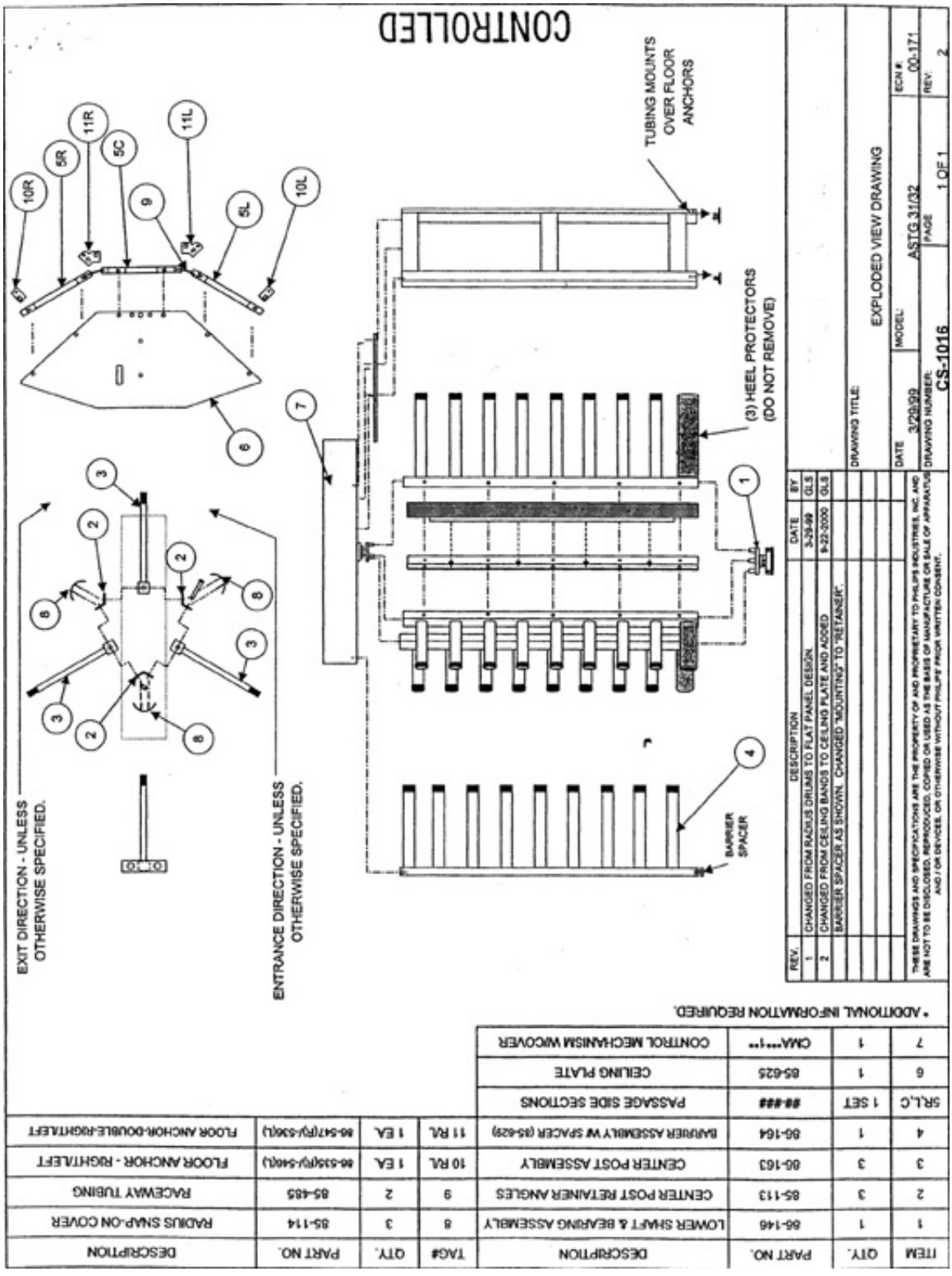
Caution

Do not allow any metal shavings to drop on or around the controller as well as any control and power wiring connections! Note: On the aluminum types of turnstiles, control wiring can be brought through the hollow portions of the barrier head assembly.



THT-100ASTG Footprint Drawing





ITEM	QTY.	PART NO.	DESCRIPTION
1	1	66-146	LOWER SHAFT & BEARING ASSEMBLY
2	3	85-113	CENTER POST RETAINER ANGLES
3	3	66-163	CENTER POST ASSEMBLY
4	1	66-164	BARRIER ASSEMBLY W/ SPACER (85-629)
SR.L.C	1 SET	#####	PASSAGE SIDE SECTIONS
6	1	85-625	CEILING PLATE
7	1	CMA******	CONTROL MECHANISM W/COVER

TAG#	QTY.	PART NO.	DESCRIPTION
8	3	85-114	RADIUS SNAP-ON COVER
9	2	85-455	RACEWAY TUBING
10 RL	1 EA.	66-539(R)-540(L)	FLOOR ANCHOR - RIGHT/LEFT
11 RL	1 EA.	66-547(R)-536(L)	FLOOR ANCHOR-DOUBLE/RIGHT/LEFT

Exploded View THT-100ASTG

Turnstile Operation

Full Height (THT-100 Type)

A Full height Security Turnstile is a large, heavy piece of equipment which must be used properly. The objective is to allow only authorized personnel into a restricted area (for units with access control) or to control or limit access to personnel only (mechanical non-locking units). To withstand vandalism and attempts to improperly penetrate into the secured area, the turnstile must be rigidly and durably constructed. The following guidelines must be followed to insure safe, orderly passage:

1. Present proper identification to the access control device. Identification will be verified and the access control will release the turnstile for passage (for that direction only). Generally, a “click” is heard when the unit unlocks.. Lights on the access control device or on the turnstile may also indicate an “open” or unlocked status.
2. The user enters the rotor area and should grasp an arm with both hands and push the rotor assembly forward. While continuing to push the rotor, the individual should walk forward following the turnstile rotation.
3. Continue holding the rotor arm until passage has been made and the individual has “cleared” the turnstile and the rotor has turned the complete amount and the individual is now on the secure (inside) the facility. Release the arm of the rotor as you exit the rotor area of the turnstile. If you release the arms prematurely, the self centering system will complete the rotation of the rotor assembly to the locked position and will result in “bounce” of the rotor section. .
4. Passage through the turnstile should be at a controlled, slow, walking pace. Running or pushing the arms at a rapid rate is never acceptable.
5. When properly used the turnstile is a valuable and extremely safe piece fo equipment. It is best to insure that all persons using the turnstile have been trained on the use and operation of the turnstile. Educated usage will facilitate ease of use and eliminate fears and concerns of turnstile usage.

TURNSTILE MAINTENANCE MANUAL

Structure

Periodic cleaning (every 2-3 weeks) of the stainless steel parts with a stainless steel cleaner* (we recommend type AHC 16 clear, no-toxic) will maintain original finishes. (Note wear rubber gloves when using cleaner).

Mechanism

Every three months remove channel cover and apply a light coat of oil (Shell type 10W-40) to centering mechanism, locking pawls and springs. DO NOT OIL SOLENOID PLUNGERS.

Apply a light coat of grease similar to Chemsearch Escort type, petroleum-based to main and shock absorber gears.

Every 5 years disassemble the rotor assembly and then remove the lower flange and thrust bearing from the bottom plate. Clean the bottom plate and lower flange. Clean and repack the lower thrust bearing with fresh grease, lithium-based NLGI class III. Replace the bearing, followed by the lower flange, and then reassemble the rotor assembly.

NOTE: Reseal Cover After Opening (if applicable).

Electrical

TURN OFF POWER BEFORE DOING ANY MAINTENANCE!

Check wires for damage or loose connections. Clean electrical connections with 32N184 Relay and Contact Cleaner if necessary.

Check adjustment of the sensors and correct if operating improperly. Gap between sensor and disc should not exceed 1/8".

Any replacement of components should be accomplished by re-installing exactly as previously connected and verified via wiring connection diagram. For example, main control board wires should be replaced on new board exactly same as on old board. A total of 4 mounting screws are used.

NOTE: Reseal Cover After Opening (if applicable).

NO SPECIAL TOOLS ARE REQUIRED TO PERFORM MAINTENANCE.

Parts Replacement

Specific parts replacement steps are described in the sections which follow.

NOTE: Reseal Cover After Opening (if applicable).

Modular Control Board Replacement:

6. Loosen each terminal screw and pull out each wire that is connected to the board, noting the location of each so they can be restored after replacement. Note that the other control board can be used as a model when replacing the wire connections later.
7. Unscrew each of the screws securing the board and lift out the board.
8. Ensure that the replacement board is jumpered to match the board being replaced. Locate the replacement board in the same location as the board previously removed and insert each of the fastening screws. Tighten each screw securely.
9. Re-insert each of the wire leads into the matching terminals as per the board removed and tighten the corresponding terminal screws securely.

Solenoid Replacement:

When replacing the solenoid be sure to note and afterwards restore the distance maintained by the solenoid stroke limiter located near the front of the solenoid plunger.

1. Locate the ends of the solenoid lead wires at the control board terminals and loosen the terminal screws in order to remove the solenoids wire leads.

The solenoid outer body can be replaced while leaving the solenoid centre plunger in place so that the stroke limiter does not need to be re-adjusted as follows:

2. This is accomplished by unscrewing the hex nut securing the solenoid body located at the front of the solenoid bracket and then sliding the body of the solenoid back off of the plunger, away from the bracket.
3. When replacing the body removed in the previous step, remove the solenoid body from a new replacement unit in a similar fashion by unfastening its hex nut and sliding the new body off its plunger. Slide the new body over the already installed plunger and re-fasten the solenoid hex nut.
4. Skip to step 5 below.

OR

The complete solenoid assembly can be replaced as follows:

2. Disengage the solenoid plunger from the existing solenoid.

3. Unscrew the two screws holding the solenoid bracket and lift the complete solenoid out, leaving the stroke limiter bracket in place.

4. Install the new solenoid by inserting the solenoid plunger into the new solenoid and refastening the two mounting screws, ensuring that the stroke limiter gap is restored as noted above.

5. Insert the ends of the new solenoid lead wires into the control board terminals and tighten the terminal screws in order to secure the solenoids wire leads.

Main Gear Replacement:

1. To remove the main gear, loosen the locking screw located at the top of the main gear and lift the gear from the shaft. Take note of the timing marks referencing the correct position of the main and shock gears.
2. To replace the main gear align the new gear shaft opening as keyed to the shaft while also taking care to mesh the gears teeth with the shock absorber gear teeth, and lower the gear onto the shaft.

3. Securely tighten the main gear locking screw.

4. Before use, apply lubricant to the new main gear.

Ratchet Assembly Replacement:

1. Remove the main gear, sensor disc, and position sensors (sensor wires need not be disconnected) as described in the removal/replacement steps described elsewhere for those parts, noting locations for later reassembly.
2. To make the following steps easier, the manual override keys can be used to manually withdraw both locking pawls away from the ratchet assembly. The complete upper enclosure cover should also be removed to facilitate the following steps.
3. Securely brace the turnstile rotating tree at the top before proceeding with the following steps, as the top shaft support will be removed.
4. Loosen, but do not remove, the four top nuts and lock washers securing each corner of the top plate. Take care to capture the threaded studs and lower nuts if they are not held in place and then complete the removal of the four top nuts and lock washers.
5. Loosen the set screws on the support bearing on the top plate and carefully lift the top plate up off of the center shaft and set aside for later replacement. Note that the nylon centering disc will exert sideways pressure against the roller bearings mounted on the bottom of the ratchet assembly and assistance may be required to hold back the centering disc to facilitate the following steps. This pressure may be relieved by partial rotation of the rotor assembly

causing the main springs to compress. Then, insert a wooden block between the compressed main springs and the auxiliary guide blocks. This will keep the springs compressed and allow easy removal of the ratchet.

6. Note the position of the ratchet disc so that the replacement assembly can be similarly aligned.

7. Loosen the set screws holding the main shaft of the ratchet assembly to the main bearing. With assistance, carefully lift the complete ratchet assembly up out of the upper assembly main bearing.
8. With assistance, lower the new ratchet assembly into the main bearing, holding back the nylon centering disc as needed. Be sure to align the ratchet assembly in the same orientation as the ratchet assembly removed previously, while also properly engaging the top of the rotating tree upper flange. Tighten main bearing set screws onto the shaft of the ratchet assembly.

9. With assistance, carefully lower the top plate with its top bearing centered onto the main shaft of the ratchet assembly, lining up the plate corner holes with the four corner stud locations. Tighten the support bearing set screws onto the shaft.

10. Insert the four corner studs through the top plate and secure with the lock washers and nuts removed previously. Check that the alignment of all parts is nominally as they were before replacement and then tighten all nuts securely. Rotate rotor assembly and remove wooden block. This will engage the self-centering spring assembly and return the turnstile rotor to the home position.

11. Replace the sensor disc, position sensors and the main gear as described in the removal/replacement steps described elsewhere for those parts.

12. If the manual override keys were used to manually withdraw the locking pawls, they should be turned to re-engage the locking pawls. Check that the locking pawls engage the ratchet notches as per the maintenance instructions and adjust if required.

13. The upper enclosure cover should be replaced and secured.

Upper Bearing Replacement:

1. Remove the main gear and sensor disc as described in the removal/replacement steps described elsewhere for those parts.
2. Remove the screws fastening the upper bearing to the top plate, loosen the set screws and slide the bearing up off the main shaft.
3. Carefully slide the replacement bearing down the top shaft and re-install the

screws into the top plate. Securely tighten all screws.

4. Replace the main gear and sensor disc as described in the removal/replacement steps described elsewhere for those parts.

Top Assembly Main Bearing Replacement:

1. Securely brace the turnstile rotating tree at the top before proceeding with the following steps, as the top shaft support will be removed.

2. Remove the main gear, sensor disc, position sensors (sensor wires need not be disconnected), top plate and ratchet assembly as described in the removal/replacement steps described elsewhere for those parts.

3. Loosen, but do not remove, the screws securing the main bearing to the top channel. Take care to capture the fasteners from below if they are not held in place. Complete the removal of the screws fastening the main bearing to the top channel and remove the main bearing.

4. Position the replacement main bearing, aligning the mounting holes, and re-install the screws into the top channel. Securely tighten all screws.

5. Carefully replace the ratchet assembly, top plate, sensor disc, position sensors, and main gear as described in the removal/replacement steps described elsewhere for those parts.

Locking Pawl Replacement:

1. Remove the main gear, sensor disc, and position sensors (sensor wires need not be disconnected) as described in the removal/replacement steps described elsewhere for those parts.

2. Carefully lift the top plate up off of the center shaft as described in the removal/replacement steps described for the plate under “Ratchet Assembly Replacement”.

3. Carefully note the orientation of the locking pawl, pawl spring and attached linkage for later reassembly. Disengage the solenoid locking pawl link from the short shaft attached to the pawl and then lift the pawl up off of the top plate stud, taking care to retain the pawl spring for the replacement following below.

4. Slide the new pawl down over the top plate stud in the same orientation as the pawl removed above, replacing the pawl spring and re-attaching the solenoid locking pawl link to the short shaft attached to the pawl.

5. Replace the top plate as described in the removal/replacement steps described for the plate under “Ratchet Assembly Replacement”.

6. Check that the locking pawls engage the ratchet notches as per the maintenance instructions and adjust if required.

7. Replace the sensor disc, position sensors and the main gear as described in the removal/replacement steps described elsewhere for those parts.

Locking Pawl Spring Replacement:

1. Carefully note the orientation of the locking pawl spring for later reassembly. Remove the associated locking pawl as described in the removal/replacement steps for “Locking Pawl Replacement”.

2. Lift the pawl spring up off of the top plate stud.

3. Slide the replacement spring down onto the top plate stud, orienting it the same as the spring removed in the previous step.

4. Replace the pawl removed above, ensuring that the spring engages the pawl and spring post in the same way as the spring that was removed previously.

5. Complete the reassembly as described in the removal/replacement steps for “Locking Pawl Replacement”.

Shock Absorber Replacement:

1. Ensure that the turnstile is rotated so that the shock absorber main arm is in its centre position before proceeding in order to avoid excessive force from the shock absorber during the replacement process. The adjustment nuts at the end of the long linkage arm may also be adjusted to allow the arm to centre with deflection pressure removed.

2. Remove the top nut securing the shock absorber rod end to the shock absorber main arm and carefully lower the linkage onto a temporary elevated support so that the linkage or rod ends are not bent.

3. Unscrew both shock absorber mounting screws and remove the shock absorber assembly.

4. Ensure that the arm on the replacement shock absorber is securely attached and that it matches that of the removed shock absorber. Install the replacement shock absorber by securely tightening the two shock absorber mounting screws.

5. Lift the shock absorber linkage and insert the vertical threaded rod end up through the bottom opening in the end of the replacement shock absorber arm. Fasten the top nut onto the vertical threaded end of the rod end and tighten securely.

6. Turn the adjustment nuts at the end of the long linkage arm to remove any play in the linkage and centre the shock absorber arm.

7. Adjust the metering screw on the shock absorber to obtain the desired damping of the turnstile rotation.

Shock Absorber Gear or Bearing Replacement:

1. Ensure that the turnstile is rotated so that the shock absorber main arm is in its centre position before proceeding in order to avoid excessive force from the shock absorber during the replacement process. The adjustment nuts at each end of the long linkage arm may also be adjusted to allow the arm to centre with deflection pressure removed.

2. Unfasten the adjustment nut at the gear end of the long linkage arm and carefully lower the linkage onto a temporary elevated support so that the linkage or rod ends are not bent.

3. Disengage the rod end from the gear and set aside the rod end.

4. Note the position of the small shock absorber gear so that the replacement can be installed in the same orientation. While supporting the small shock absorber gear from below, unscrew the mounting screw from the top of the gear bridge and then remove the gear.

5. Remove the small gears thrust bearing and transfer it to the new replacement gear if the bearing is to be reused. If the bearing is being replaced, remove the old bearing from the gear and insert the new bearing in its place.

6. Align the gear in the same orientation as when the gear was previously removed, carefully meshing the gear teeth with those of the large main gear. Thread the gear retaining screw from the top of the gear bridge down into the center of the replacement gear and then tighten it securely.
7. Reconnect the rod end to the gear and then lift the linkage arm and reattach it to the rod end.
8. Turn the adjustment nuts at the ends of the long linkage arm to remove any play in the linkage and centre the shock absorber arm.
9. Before use, apply lubricant to the replacement part.

Centering Disc Replacement:

1. WARNING: *Exercise caution when working with assemblies associated with the self centering slide springs due to the spring forces.* Fasten one large C-clamp to span the main slide guide block and one of the auxiliary slide guide blocks. Repeat using a second clamp for the other auxiliary slide glide block. Alternately tighten each C-clamp so that the two springs are compressed evenly and the nylon centering disc is pulled away from the roller bearings under the ratchet assembly. Alternatively the turnstile may be unlocked and partially turned so as to compress the springs to the maximum extent and then the C-clamps may be secured spanning the slide blocks to retain the spring's compression. The turnstile can then be returned to the home position.
2. Carefully remove the three cap screws securing the nylon centering disc to the slide assembly, being careful not to release the c-clamps, and then remove the nylon disc.
3. Locate the replacement nylon disc as per the one removed and then re-install the three cap screws. Tighten all three screws securely, being careful not to disturb the c-clamps.
4. Alternately loosen each C-clamp so that the two springs are released slowly and evenly, until the nylon centering disc again contacts the roller bearings under the ratchet assembly. Adjust if necessary to ensure smooth self-centering.

Self-centering Main Spring Replacement:

1. WARNING: *Exercise caution when working with assemblies associated with the self centering slide springs due to the spring forces.* Use a spring clamp or other suitable clamp to span the spring being replaced and securely clamp the spring so that it cannot expand when the slide guide block is removed.
2. Loosen, but do not yet remove, the two top nuts securing the spring's auxiliary slide block. Take care to capture the carriage bolts from below the channel and then complete the removal of the two top nuts and lock washers.
3. Slide the auxiliary slide glide block off of the slide.
4. Slide the clamped spring off of the slide and carefully loosen and then remove the clamp from the spring.
5. Use the spring clamp to compress the replacement spring similar to the spring being replaced and then slide the new spring onto the slide up against the main slide glide block.
6. Slide the auxiliary slide glide block onto the slide and align the blocks mounting holes over the corresponding mounting holes in the channel. Insert the carriage bolts through the block and secure each bolt with a lock washer and nut. Tighten each nut securely.
7. Carefully loosen and remove the spring clamp.

NOTES