TURNSTILES.us.™

SECURING THE U.S. and the GLOBE

HS400 Series Single Full Height Turnstile

Service & Installation Manual

Note: Successful turnstile installation depends on reading this manual.

Important Note: Please keep this service manual after installation. If an installation is done by a construction company or outside installer, please pass this book along to the end user. This book is required for maintenance, troubleshooting, and repairs.

The High-Security Series www.TURNSTILES.us HS427-S • HS430-S

Full-Height Turnstile (Single) • Interior & Exterior Application HS439-S • HS448-S

The most reliable full-height turnstiles available, the High-Security Series units can be engineered to meet all your security and control requirements, and can be created as stand-alone units, or as part of an integrated system. Available in stainless steel, powder coat or a hot-dipped galvanized finish, these units can be fitted for any application with leading edge technology and features.

Controls and Interfaces

- Biometric Integration
- Card Readers
- Electronic/LCD Counters
- Metal Detection
- Fail-Open or Fail-Secure Locking
- Push-Button and Wireless Remotes
- Manual Key Override – both directions
- Indicator Lights

Size Options
(pedestrian clearance):

HS427-S: 27" (686mm)
HS430-S: 30" (782mm)
HS439-S: 39" (991mm)
HS448-S: 48" (1219mm)

304 Stainless, No. 4 Satin finish (shown)

Also available in hot-dipped galvanized or powder coat finishes.

	Depth	Width	Passage Width	Passage Height	Overall Height
	A*	B*	C*	D*	E*
HS427-S	54" 1372mm	62" 1575mm	27" 686mm	84" 2134mm	91" 2311mm
HS430-S	56" 1422mm	66" 1676mm	30" 762mm	84" 2134mm	91" 2311mm
HS439-S	68" 1727mm	84" 2134mm	39" 990mm	84" 2134mm	91" 2311mm
HS448-S	93" 2362mm	106" 2692mm	48" 1219mm	84" 2134mm	91" 2311mm

* See CAD drawings on reverse side.

The High-Security Series www.TURNSTILES.us HS427-S • HS430-S

Full-Height Turnstile (Single) • Interior & Exterior Application HS439-S • HS448-S

Applications:

Ideal for controlling orderly flow of foot traffic in both indoor and outdoor settings

Product Features:

Materials and Finishes available in your choice of:

- Hot dipped galvanized carbon steel
- Polyester enamel on carbon steel (standard color is black/ other colors available upon request)
- Our signature 304 Stainless steel/ No. 4 satin finish

Design & Construction:

- Designed for secure operation with asthetics in mind
- Featuring fully welded exterior components
- Minimal exposed hardware
- Heavy gauge materials meeting ASTM standards

Controller & Access Control Operation:

- Self-centering control head with adjustable hydraulic shock suppression
- Hardened tool steel locking bars, cam and roller assemblies
- Permanently lubricated bearings
- All units are available in clockwise, counter-clockwise or bi-directional passage

Measures:

HS427-S

Size of opening (pedestrian clearance)
HS427-S 27" (686mm)

Arm and Barrier Tubing Sizes
1 1/2" diameter 14 gauge (38mm) - Standard
1 3/4" diameter 14 gauge (44mm) - Optional

Width	Depth
62" (1575mm)	54" (1372mm)

HS430-S

Size of opening (pedestrian clearance)
HS430-S 30" (762mm)

Arm and Barrier Tubing Sizes
1 1/2" diameter 14 gauge (38mm) - Standard
1 3/4" diameter 14 gauge (44mm) - Optional

Width	Depth
66" (1676mm)	56" (1422mm)

Measures: (continued)

HS439-S

Size of opening (pedestrian clearance)
HS439-S 39" (991mm)

Arm and Barrier Tubing Sizes
1 3/4" diameter 14 gauge (44mm)

Width	Depth
84" (2134mm)	68" (1727mm)

HS448-S

Size of opening (pedestrian clearance)
HS448-S 48" (1219mm)

Arm and Barrier Tubing Sizes
1 3/4" diameter 14 gauge (44mm)

Width	Depth
106" (2692mm)	93" (2362mm)

All models:

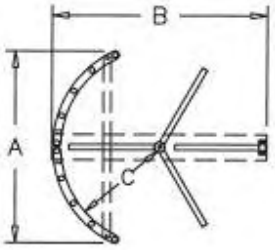
- Overall exterior height 91" (2311mm)
- Pedestrian walk through height 84" (2134mm

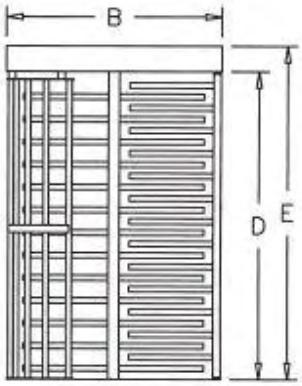
Options:

- Electronic locking module featuring heavy-duty 24 vdc pull-type industrial solenoids and card reader interface
- Available in Fail-Safe (open on power failure) or Fail-Lock (lock on power failure modes)
- Can interface with card readers, computer attendance systems, coin and token acceptors, push buttons, wireless remote controls and metal detectors
- Electronic 6 digit resetable counter with LCD display and ten-year lithium battery
- Vertical Graphic Array (VGA) red x / green arrow
- Additional options available on request

Matching Swing Gate available

(see model HS336 Manual Passage Gate information)





Electrical Specifications:

Command module input 110-240 VAC (2 amp-1 amp) 50-60 Hz; control voltage 24 VDC.
All electrical components are UL recognized and CSA certified.

Standards and Codes:

Austenitic stainless steel:
ASTM A240, A249, A276

Hot rolled steel:
AISI C-1020, AISI C-1018

Hot dipped galvanizing:
ASTM A-143, ASTM A-153-80

Stainless steel fasteners:
ASTM A-320

American Welding Society (AWS) Standard D 1.1

Warranty:

Units are warranted against defects in materials and workmanship for a period of one year from date of delivery. See warranty information for specific details.

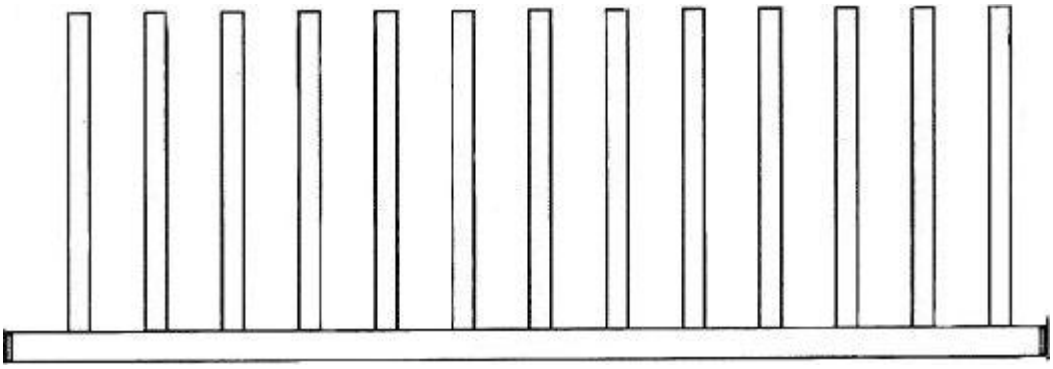
Parts Checklist

Each turnstile should have the following components on the skid (per turnstile).

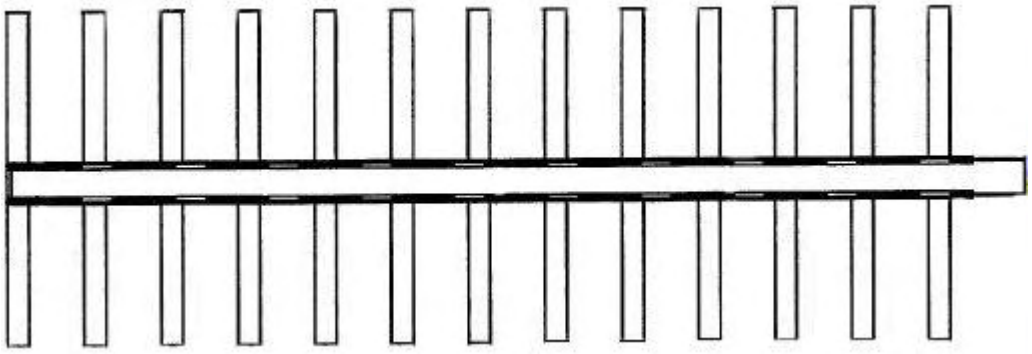
- Mainframe (Main channel with 2 cross arms inside):

- 2x Yokes:

- Barrier:



- Rotor:



- 6500 series control head
- Fastener kit / bearing block/ bearing (fastener list on next page)
- Optional components such as card reader mounting plates, light arrays, counters
- Custom / special components

FASTENER LIST

QTY 10- ½ x 1" SOCKET CAP BOLTS W/ LOCK WASHERS (HS439-GV/PC & HS448-GV/PC ONLY): ARM ASSEMBLIES TO ROTOR

QTY 4 - 3/8 x 1 ½" CARRIAGE BOLTS W/ NUTS, WASHERS & LOCK WASHERS: CONTROL HEAD TO MAIN FRAME

QTY 4 - 3/8 X 1 ½ CARRIAGE BOLTS W/ NUTS: YOKE TO BOX TUBING

QTY 2 - 3/8 X 1 ½ CARRIAGE BOTS W/ NUTS, WASHERS & LOCK WASHERS: BARRIER TO MAIN FRAME

QTY 4 - 3/8 X 3 CARRIAGE BOLTS W/ NUTS, WASHERS & LOCK WASHERS: BOX TUBING TO MAIN FRAME

QTY 6 - 3/8 X 4 WEDGE TYPE ANCHORS W/ NUTS & WASHERS: 4 FOR YOKES TO CONCRETE
2 FOR BARRIER TO CONCRETE

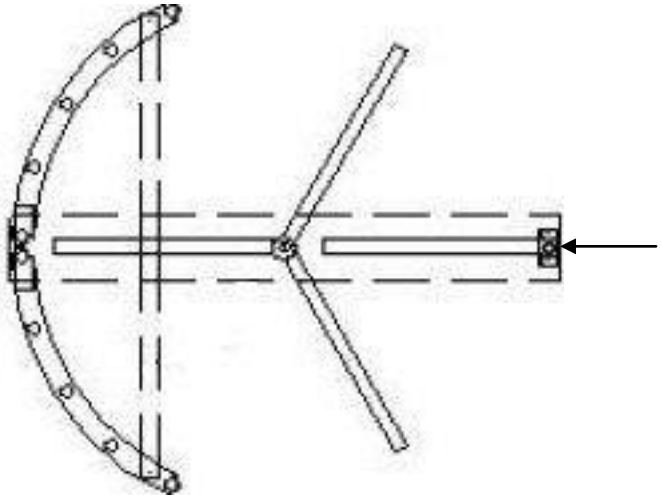
QTY 1 - 5/8 X 4 WEDGE TYPE ANCHOR W/ NUT, BEARING BLOCK & BEARING: CENTER COLUMN MOUNTING
MAKE SURE BEARING IS GREASED

Pre-installation Tips

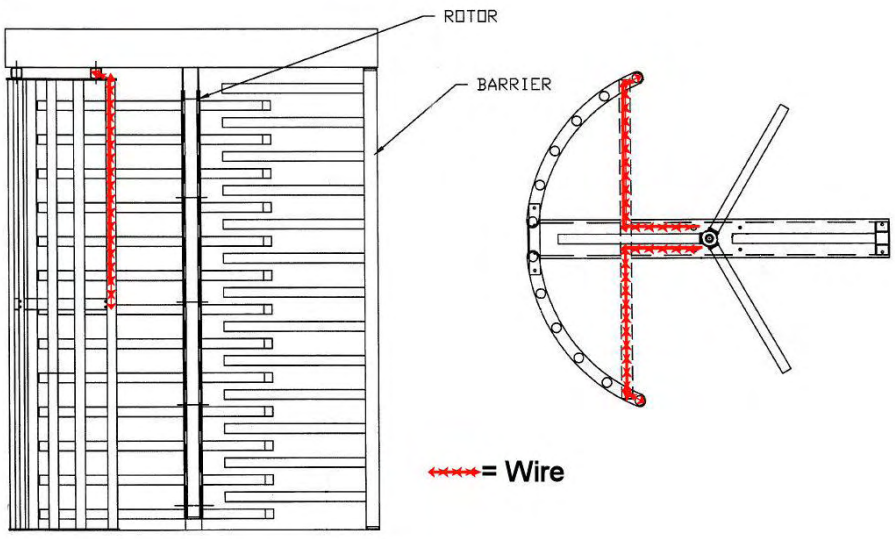
When installing a new turnstile, there are several helpful hints that can be used in order to make the installation go smoothly. It is highly recommended that these are reviewed before installation.

- If pouring a new concrete pad, make certain it is level. If the turnstile is not level, it may not operate correctly. If installing on an existing concrete pad, shim the turnstile so it is level.
- If the turnstile is electronic, pre-plan how it will be wired. We provide several options for running conduit into each turnstile.
  - The end plates on the main frame have punch outs for conduit.

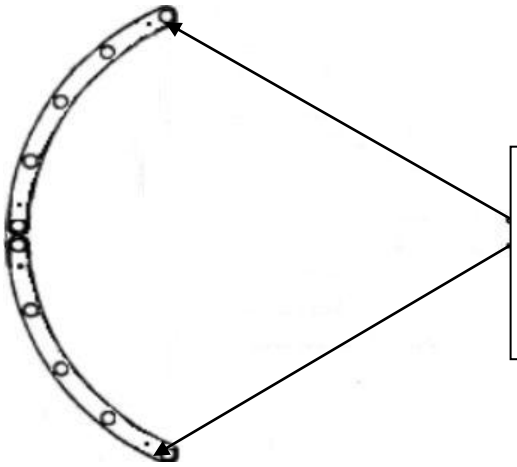
  - The stationary barrier is hollow and has a hole in the top that goes through the mainframe.



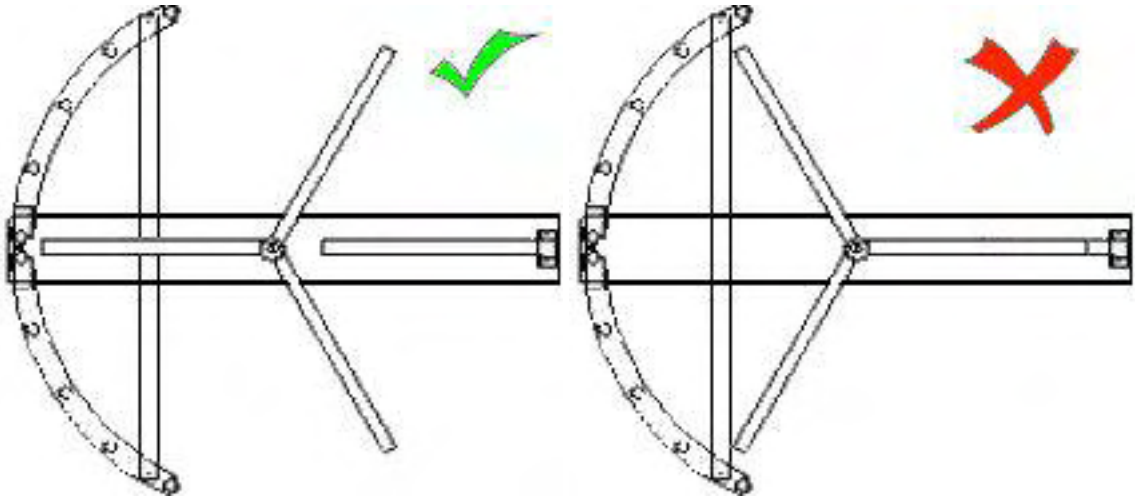
  - If purchased with an optional card reader plate, the suggested method for running the wire is through the yokes, into the cross arms and into the main channel. Use a shielded 2 conductor 22 gauge cable per direction.



- Electronic turnstiles are operated from a provided 24VDC 3 amp power supply. Installing outlet receptacles inside of the main channel through provided conduit access is required.
- Access control devices, such as card readers, push buttons, biometric devices, etc. need to operate on a **normally open dry momentary contact of one second or less**. If your access control device is unable to provide a contact of one second or less, contact TURNSTILES. and ask about an additional one shot timer system to accommodate your existing system.
- When installing a turnstile purchased with card reader plates, pay special attention when working with the curved yoke pieces. One side of the yoke will be drilled specially for card reader plate mounting.



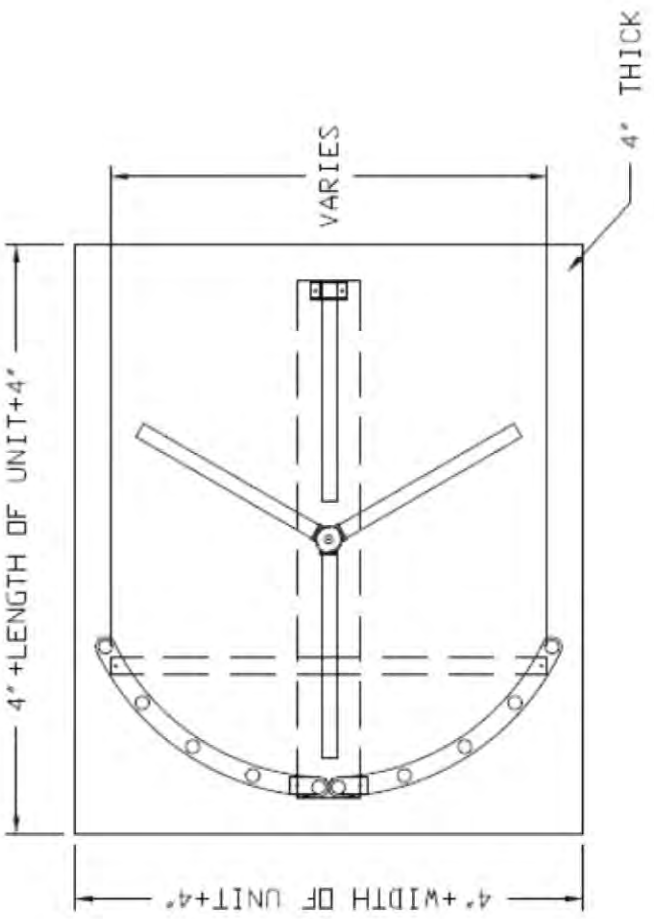
- Proper rotor alignment (left) is important for turnstile operation. Improper rotor alignment (right) can lead to users becoming trapped inside of the turnstile.



- Tools required for installation:
  - Hammer drill
  - 3/8 concrete bit
  - 5/8 concrete bit
  - Hammer
  - Punch
  - Marker
  - Plumb-bob
  - 9/16 wrench
  - 15/16 wrench
  - 1/8 allen wrench
  - Level
  - Grease gun
  - Safety gloves
  - Safety glasses

Concrete Pad Sizes

P.N. CA-FHCONCR



WE SUGGEST 4" OF CONCRETE ON EACH SIDE OF THE UNIT
SEE FORMULAS ABOVE TO CALCULATE SIZES.

CONCRETE PAD SIZES

- ☐ HS427-S LENGTH: 70" WIDTH: 62"
- ☐ HS430-S LENGTH: 74" WIDTH: 64"
- ☐ HS439-S LENGTH: 92" WIDTH: 76"
- ☐ HS448-S LENGTH: 114" WIDTH: 105"
- ☐ HS427-T LENGTH: 102" WIDTH: 62"
- ☐ HS430-T LENGTH: 114" WIDTH: 64"

SCALE: 20=1	APPROVED BY:	DRAWN BY: LC III
DATE: 08/10/05		REVISED:

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CONCRETE PAD FORMULAS

Concrete Anchor Installation

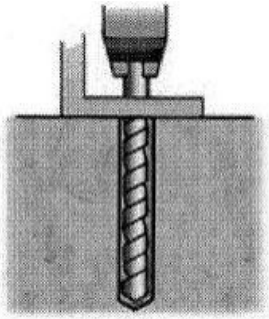
Instructions for Using Wedge Anchors

Determine the appropriate wedge anchor length for your project.

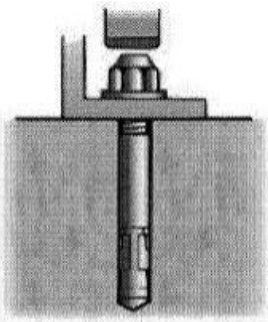
1. 1. Add:
   The thickness of material to be fastened
   -to-
   The minimum embedment required
   -to-
   The thickness of the nut and washer (about one anchor diameter).
2. Once you have determined the appropriate wedge-type-anchor length, drill your hole using a bit with the same diameter, ½" deeper than the anticipated anchor embedment.
3. Clean the drilled hole of any debris.
4. Thread the nut and washer until the nut is flush with the top of the anchor.
5. Hammer it into position (nut and washer flush with the surface of the material).
6. Tighten finger completely and then take an additional 3-5 turns with the wrench.
7. If the anchor spins in the hole, force it up using a screwdriver until the clip binds into the concrete.

Thunderstud® Wedge Anchor Technical Information

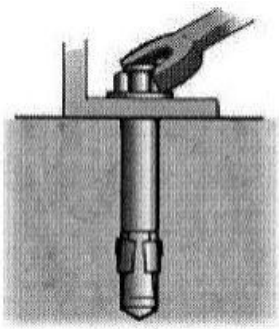
Diam. & Length	Min. Embedment	Thread Length
1/4"	1-1/8"	3/4"
3/8"	1-1/2"	7/8"
3/8"	1-1/2"	1-1/8"
1/2"	2-1/4"	1-1/4"
1/2"	2-1/4"	1-1/4"
5/8"	2-3/4"	2"
5/8"	2-3/4"	2"
5/8"	2-3/4"	2"
3/4"	3-1/4"	2"
3/4"	3-1/4"	2"
3/4"	3-1/4"	2"
7/8"	3-7/8"	2-1/4"
1"	4-1/2"	2-1/4"
1-1/4"	5-1/2"	3-1/4"



1. Drill hole 1/2" to 1" deeper than anchor embedment. Clean hole of debris.



2. With nut threaded past the end of stud, hammer into position.



3. Tighten finger tight plus an additional 3-5 turns with wrench.

Turnstile Installation

Step 1) If needed, pour a level concrete pad at least 4" thick at the schematic on page 9.

Note: A level surface is required for proper turnstile operation.

Step 2) Unpack turnstile(s) and verify all parts are included. Use the parts checklist in the beginning of this book.

Step 3) Unwrap the main channel (Figure A) from cardboard and foam packaging. Remove (4) 10/24 button head screws and take the lid off.

Figure A: Main channel

Step 4) Remove cross arms from the main channel. Using a square, assemble cross arms to the underside of the main channel by using the provided 3" carriage bolts as shown below (Figure B).

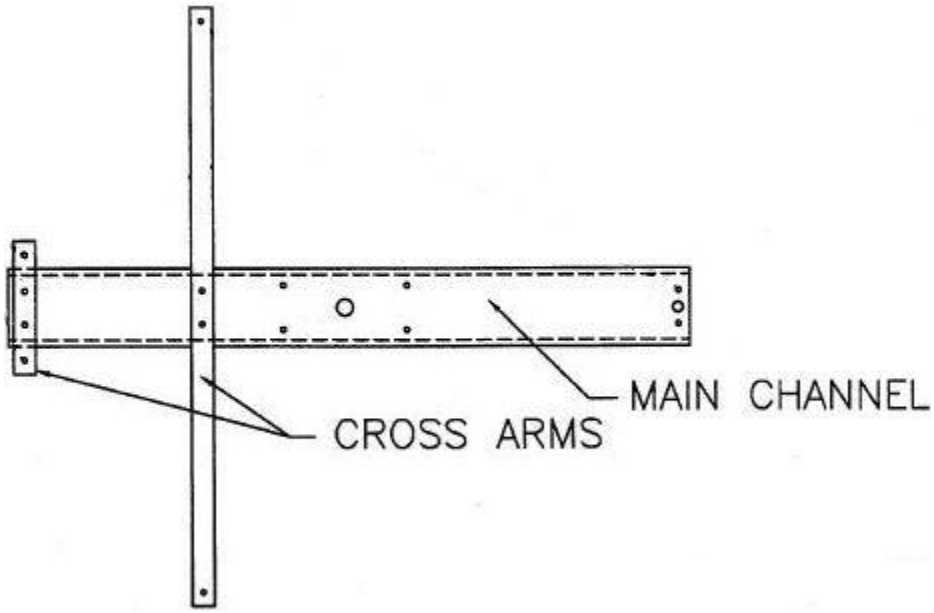


Figure B: Assembled mainframe

Step 5) Utilizing the assembled mainframe, mark holes for the 3/8" concrete anchors to the holes pointed out below (Figure C)

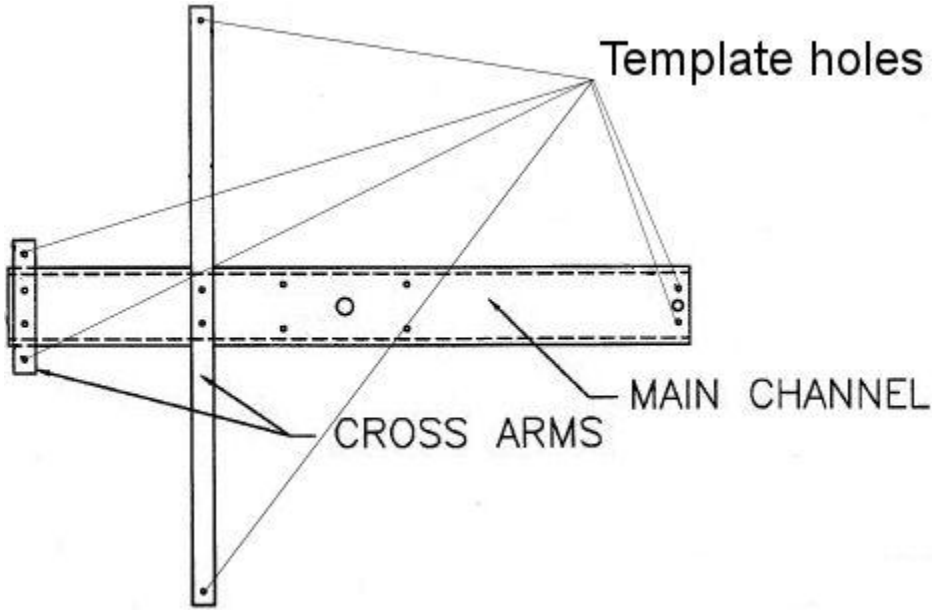


Figure C: Using mainframe as a template to mark holes

Step 6) Drill the two holes for the 3/8" concrete anchors marked from the shorter cross arm (Figure D).

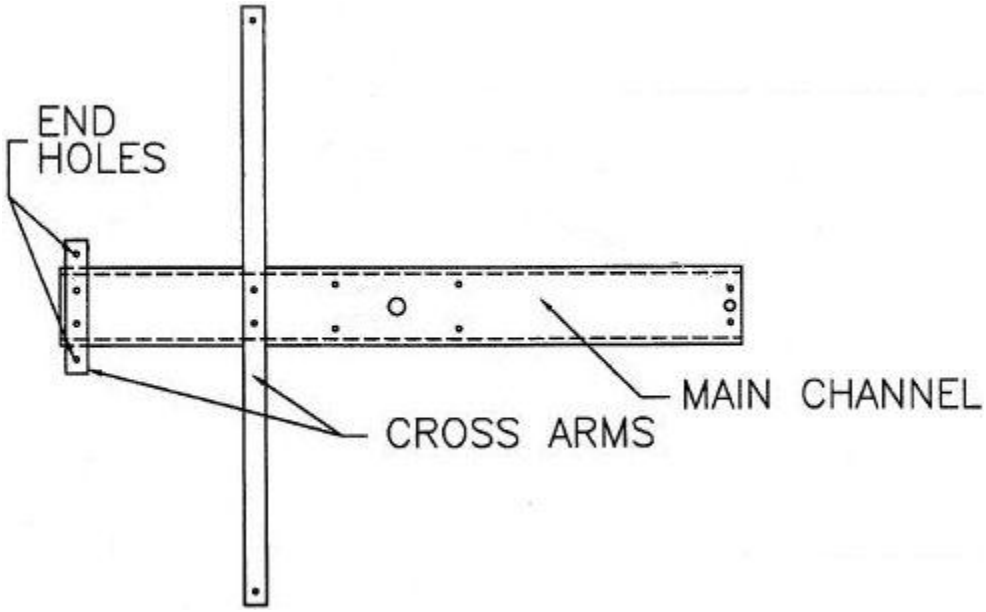


Figure D: Location of the end holes to drill first.

Step 7) Verify squareness of the cross arms to the mainframe and that the holes line up on the concrete to the holes on the cross arms. After certainty of correctness, drill the remaining holes called out on Figure C. Install anchors into holes. Refer to page 10 for concrete anchor installation help.

Step 8) Bolt curved yokes into the concrete (Figure E)

Note: Depending on how the turnstile was ordered, yokes may have holes for mounting card reader plates. These holes should be pointing to the outside of the turnstile.

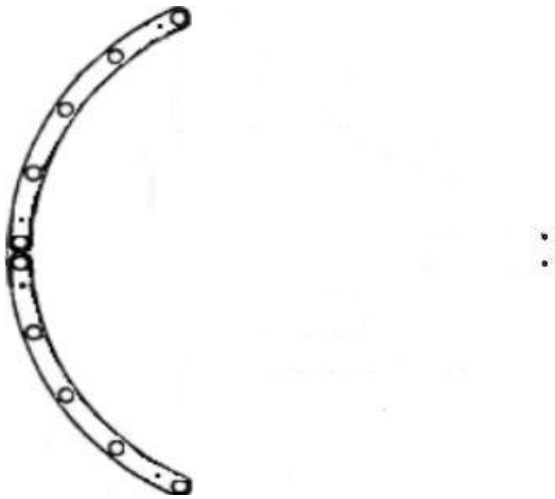


Figure E: Mounting the curved yoke pieces to the concrete.

Step 9) Mount the stationary barrier to the concrete (Figure F)

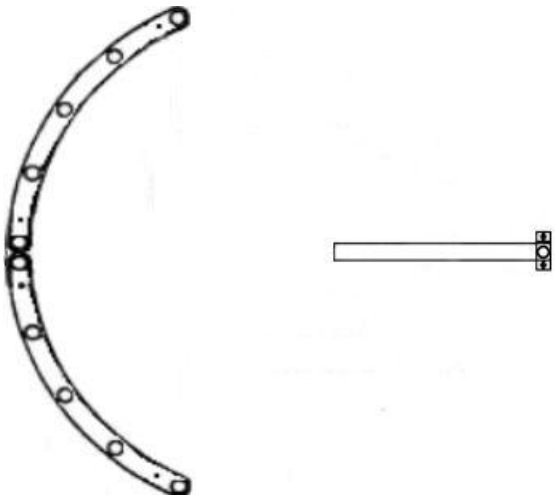


Figure F: Mounting the stationary barrier to concrete.

Step 10) Mount the mainframe on top of yokes and stationary barrier using 1 1/2" carriage bolts (Figure G).

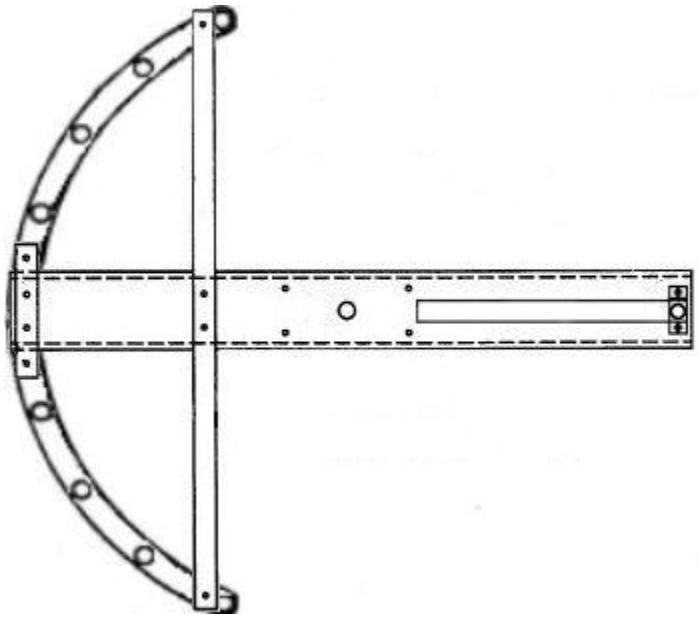


Figure G: Mounting the mainframe on top of the yokes and barrier.

Step 11) Check the levelness of turnstile. If necessary, shim from the floor to make turnstile level.

Step 12) Using a plumb-bob, mark the hole for the bearing and rotor (Figure H).

Note: This step requires as much precision as possible, or the turnstile may not operate correctly. Do NOT rely on the mainframe as a template for this hole.

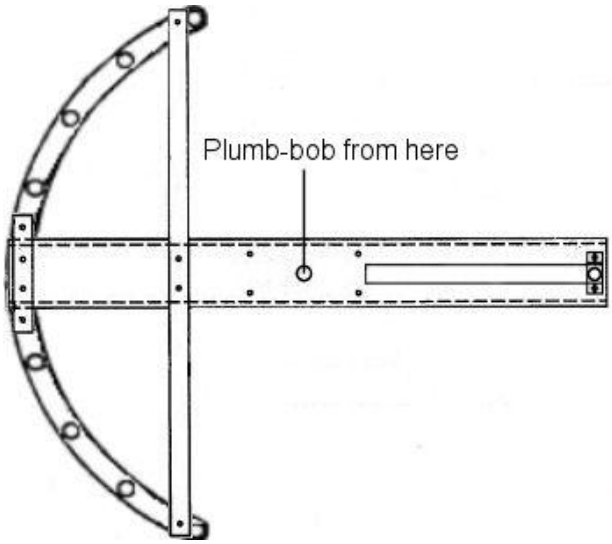


Figure H: Using a plumb-bob to mark hole for rotor placement.

Step 13) In the case of a HS439/448, bolt arm assemblies to the center column using the ½" x 1" socket cap bolts. Make sure they are bolted on the same way as the one already bolted on.

Step 14) Drill a hole for the 5/8" concrete anchor that holds the bearing block (Figure I) and bearing in place. Install the anchor in the concrete. Install bearing block to concrete and add bearing.

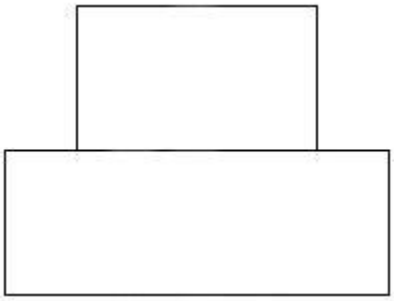


Figure I: The bearing block used to support the bearing and rotor.

Step 15) Place the rotor on top of the bearing block. Make sure that one set of arms on the rotor points in between the two yoke assemblies (Figure J).

Note: Improper rotor alignment will cause users to become trapped inside of the turnstile.

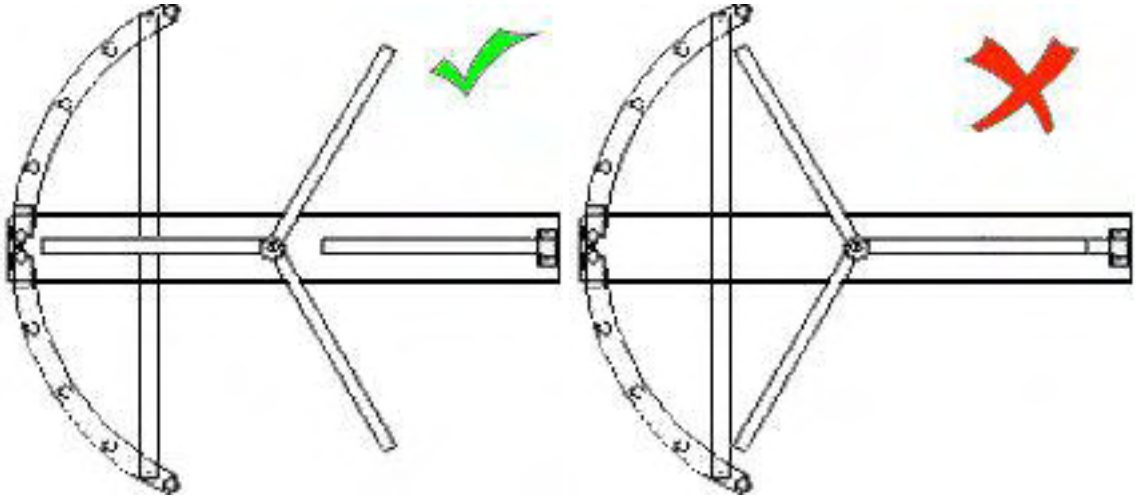


Figure J: Proper rotor alignment (left) vs. improper rotor alignment (right).

Step 16) Slide the control head into the top of the rotor. The control head has a 7/8" (or 1 ¼" for HS439 & HS448 models) hex shaft that inserts into an adaptor on the rotor itself. If turnstile is electronic, point the gold colored power supply towards the side of the turnstile that power is ran to. The control head will function the same whichever way it is installed into the rotor.

Step 17) Bolt the control head to the mainframe using the 1 ½" carriage bolts.

6500 Series Control Head Information

All of our full height turnstiles operate with a mechanism called the 6500 series control head (Figure K). This sturdy and easy to maintain drive for the turnstile has replaced all previous model control heads. It is adaptable to any existing turnstile and comes with each new turnstile purchase. This control head can be configured in multiple ways to accommodate the security requirements of each individual job site.

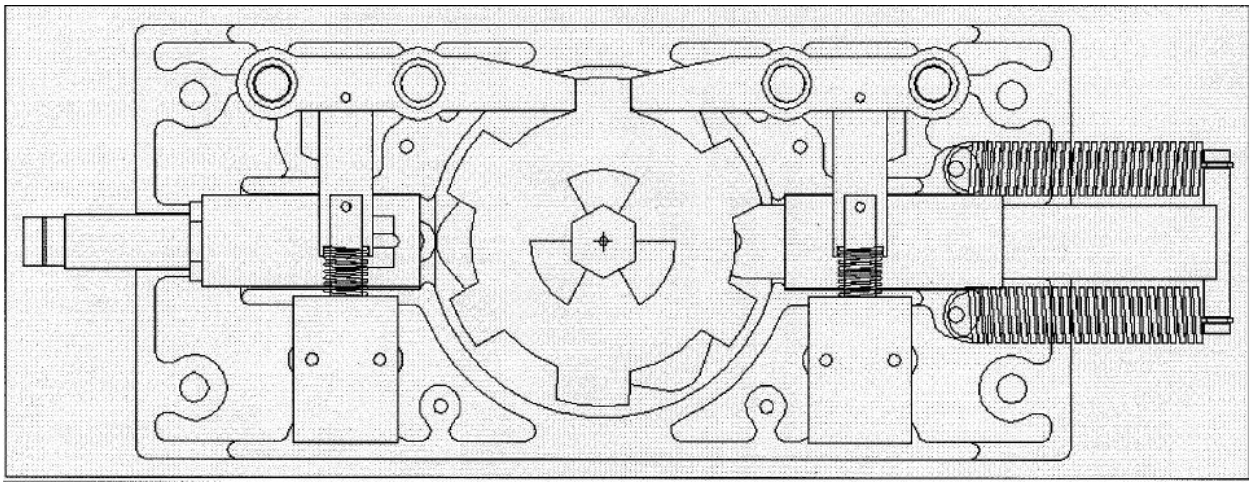


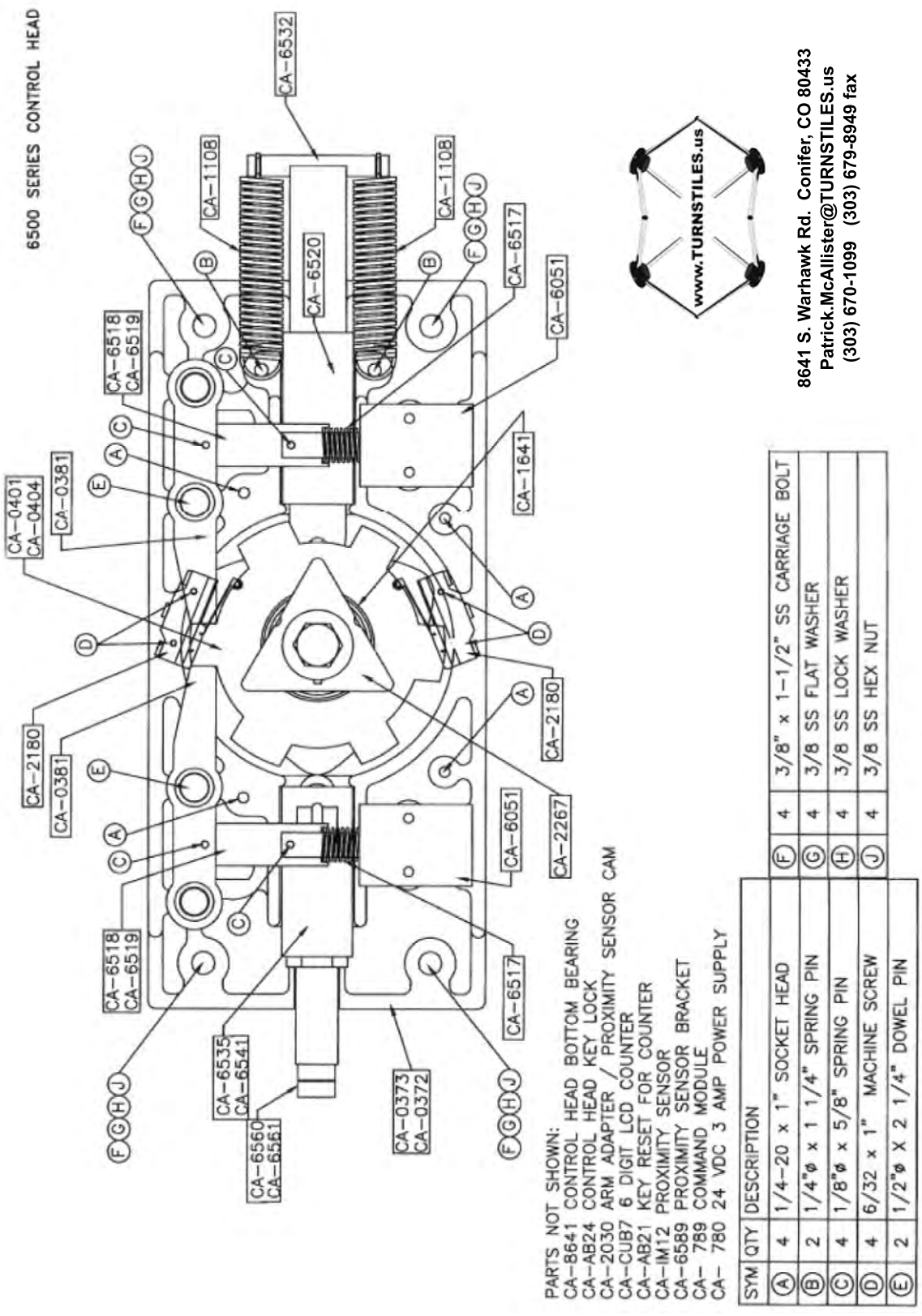
Figure K: An internal view of an electronically controlled two-way 6500 series control head.

While the head can be configured for mechanical (no electronics) operation, the turnstile's security potential is reached in the case of an electronic two way control head. In this instance, each rotational direction is independently unlocked. Configured properly, this control head will allow for one rotation per valid entry request. Our anti-backup cam is designed so that it is impossible to become trapped within the turnstile.

Each control head comes pre-configured to your specific needs based off of a directional sheet that is filled out before shipment. The heads are delivered pre-wired, tested, and adjusted to our factory recommendations. Installation is simple: land inputs from access control devices into the control board and plug the unit's power supply into a standard 110VAC receptacle.

Note: Proper turnstile operation requires a dry, normally open momentary contact (of one second or less). If current access control devices cannot produce a signal length short enough, we can provide one-shot timers for accommodation.

6500 Series Full Height Control Head Parts Breakdown



SYM	QTY	DESCRIPTION
A	4	1/4-20 x 1" SOCKET HEAD
B	2	1/4"ø x 1 1/4" SPRING PIN
C	4	1/8"ø x 5/8" SPRING PIN
D	4	6/32 x 1" MACHINE SCREW
E	2	1/2"ø X 2 1/4" DOWEL PIN
F	4	3/8" x 1-1/2" SS CARRIAGE BOLT
G	4	3/8 SS FLAT WASHER
H	4	3/8 SS LOCK WASHER
J	4	3/8 SS HEX NUT

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6500 Series Control Head Configuration Information

The 6500 series can be configured in a number of different ways. All turnstiles self-center unless otherwise specified.

Free wheel: Turnstile rotates freely in both directions and does not self center.

Manual both ways: Turnstile rotates freely in both directions. This unsecure configuration is used as a means to direct traffic through one area. A lockout bar would allow end user to lock the turnstile with a standard pad lock.

Manual one way: Turnstile rotates in one direction but not the other. This configuration is great for an exit way.

Electronic one way with free exit: Turnstile rotates freely in one direction and requires access credentials for the other. This configuration is suitable for secure entry and unsecure exit.

Electronic one way with no exit: Turnstile requires access credentials for one direction and allows no passage in the other. This configuration is suitable for a secured entryway with an alternate means of exit.

Electronic two way: Turnstile requires access credentials for both directions. This configuration is perfect for locations requiring secured entry and exit passage.

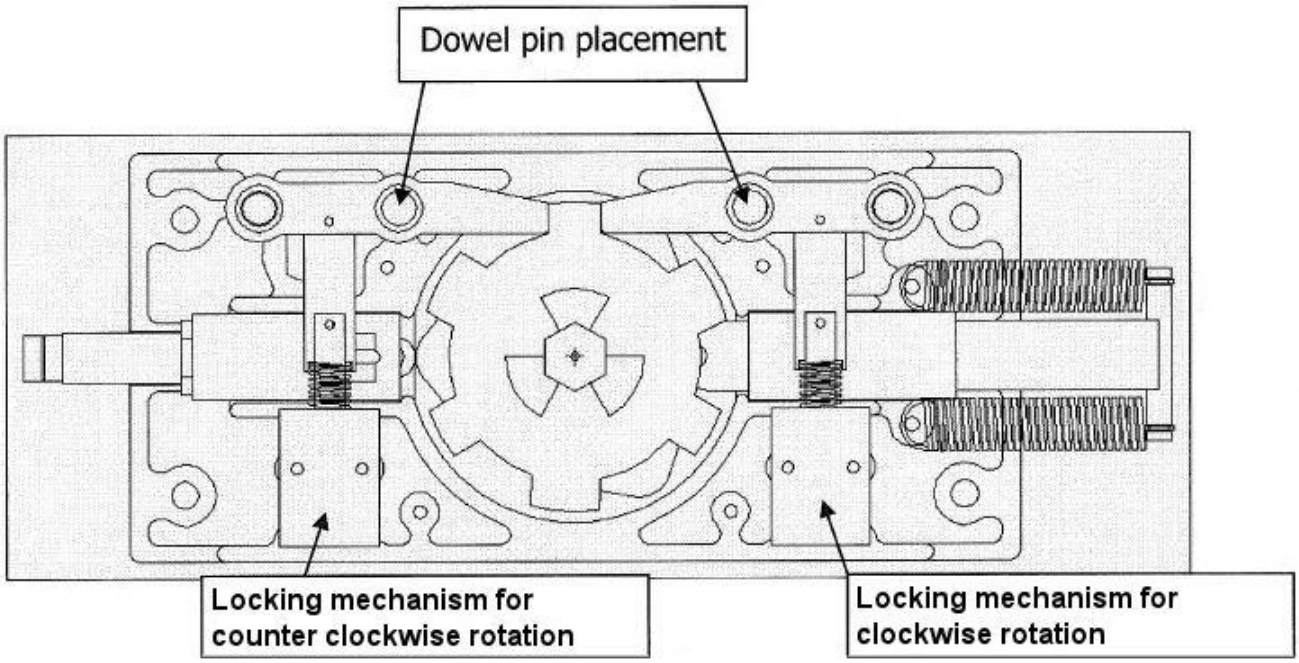
Fail lock: Upon power failure, turnstile will remain locked in one or both directions. This is convertible to fail open by ordering an alternate linkage.

Fail open: Upon power failure, turnstile will remain unlocked in one or both directions. This is convertible to fail lock by ordering an alternate linkage.

Key override: This option is for a location that the security requirements may change. The key override option is not intended for everyday use. Should you require an additional lockdown feature on your turnstile, a better option is a lockout bar (Figure L) with a pad lock.

Figure L: Optional lockout bar

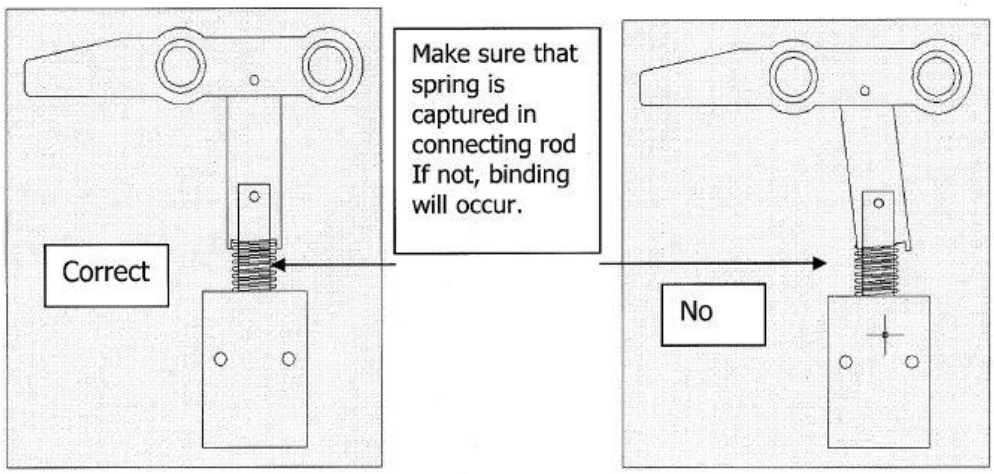
6500 Series Control Head Locking Bar Information



Any number of configurations is possible on the 6500 series control head. In the case of an electronic two way head, two independent locking mechanisms are in place. The diagram above shows that the locking bar to the left locks the turnstile in the counter clockwise direction and the locking bar on the right locks the turnstile in the clockwise position. A circuit board or key override is needed to lock or unlock each direction.

If removing the locking bar becomes necessary for any reason, two methods can be used. The easiest method is to punch the dowel pin out from the bottom side of the control head. This releases the locking bar from the casting. An alternate approach would be to remove the (4) ¼-20 socket head cap screws from the casting and remove the lid.

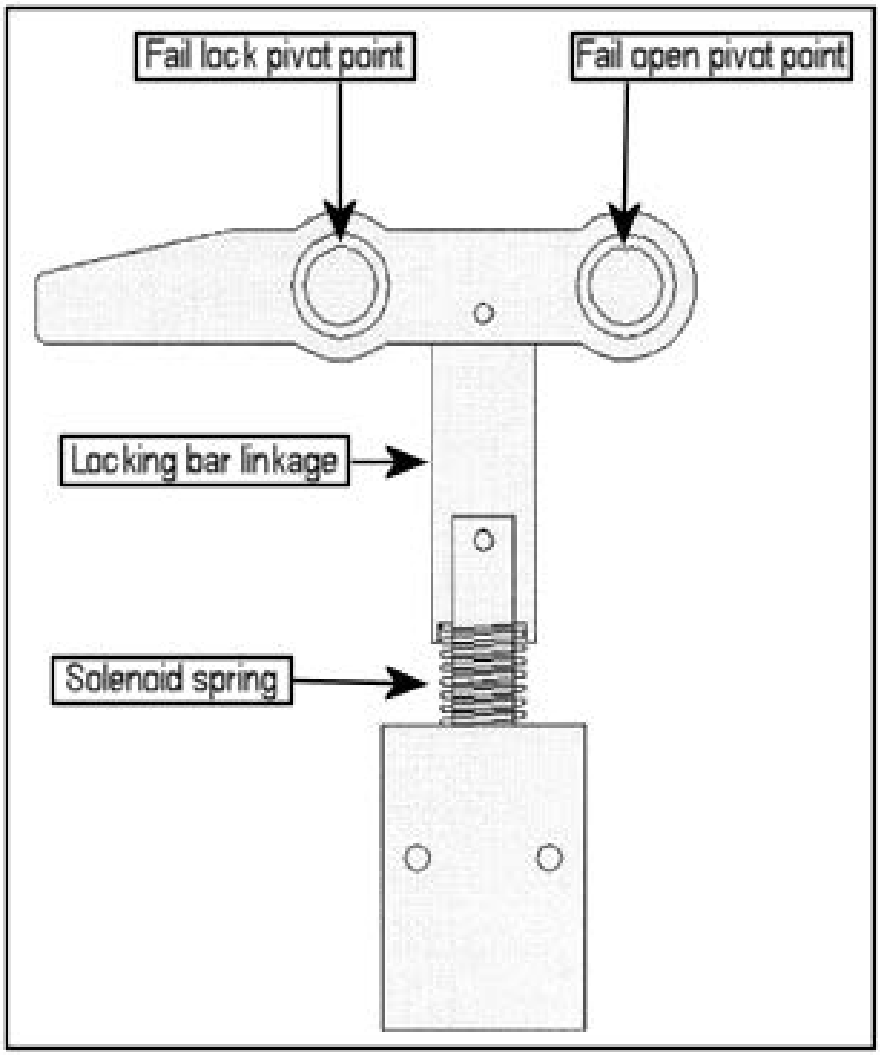
When installing or replacing the locking bars into the control head, be sure to take special care to align the solenoid spring (shown below).



Dowel Pin Placement

Each solenoid can independently be set for fail open or fail lock operation (refer to page 19 for more information). Control heads are preconfigured before shipment. To change fail open to fail lock or vice versa, the alternate locking bar linkage is required. A new locking bar assembly, which includes the locking bar itself with a linkage, may be purchased instead for simpler installation.

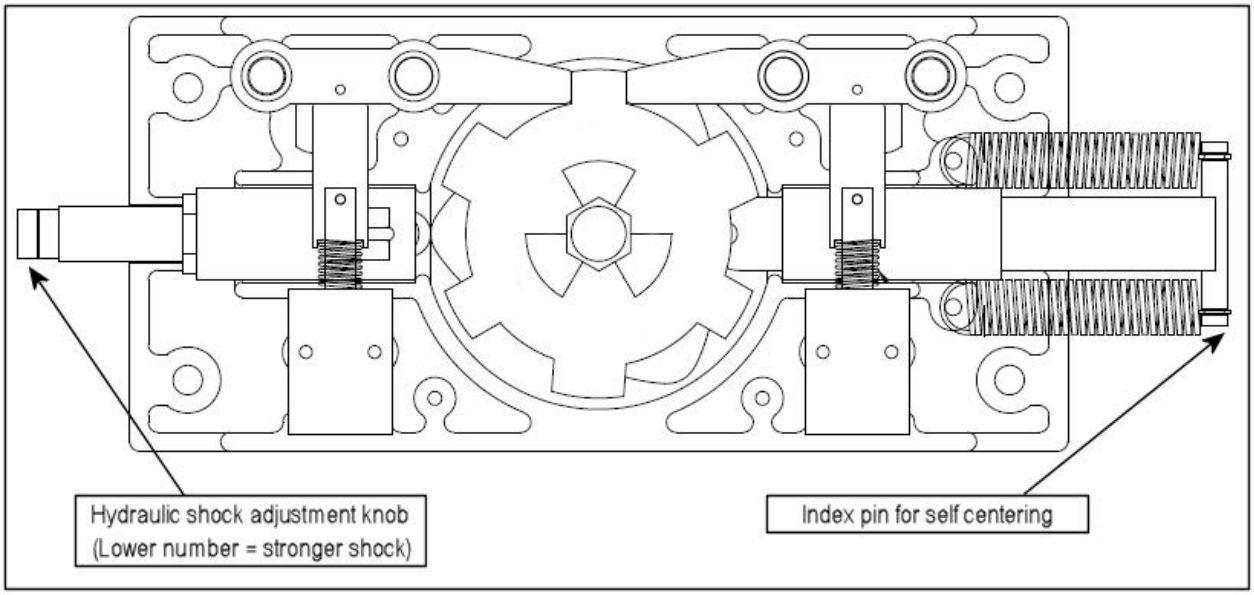
Description	Part Number
Fail open linkage	6518
Fail lock linkage	6519
Fail open locking bar assembly	0382
Fail lock locking bar assembly	0383



6500 Series Control Head Shock Adjustment and Replacement

Our turnstiles come with hydraulic shocks in order to alleviate wear on the control head. These shocks allow the turnstile to return to the center position without slamming into place. Although we adjust these in the factory, different environments may require additional field adjustment.

The shock is located adjacent to the index pin. To adjust the shock, loosen the set screw pointed upwards and adjust the dial. A lower number yields more shock, whereas a higher number yields less shock. The factory setting for a standard full height turnstile ranges between 0 and 1.



Should the shock need replaced, be sure not to fully thread the shock into the shock housing. Instead, thread the shock until it no longer spins, and then back the shock out approximately 1 ½ - 2 turns until the set screw is facing up. Lock down the shock with the provided nut, and then make field adjustments to the shock strength.

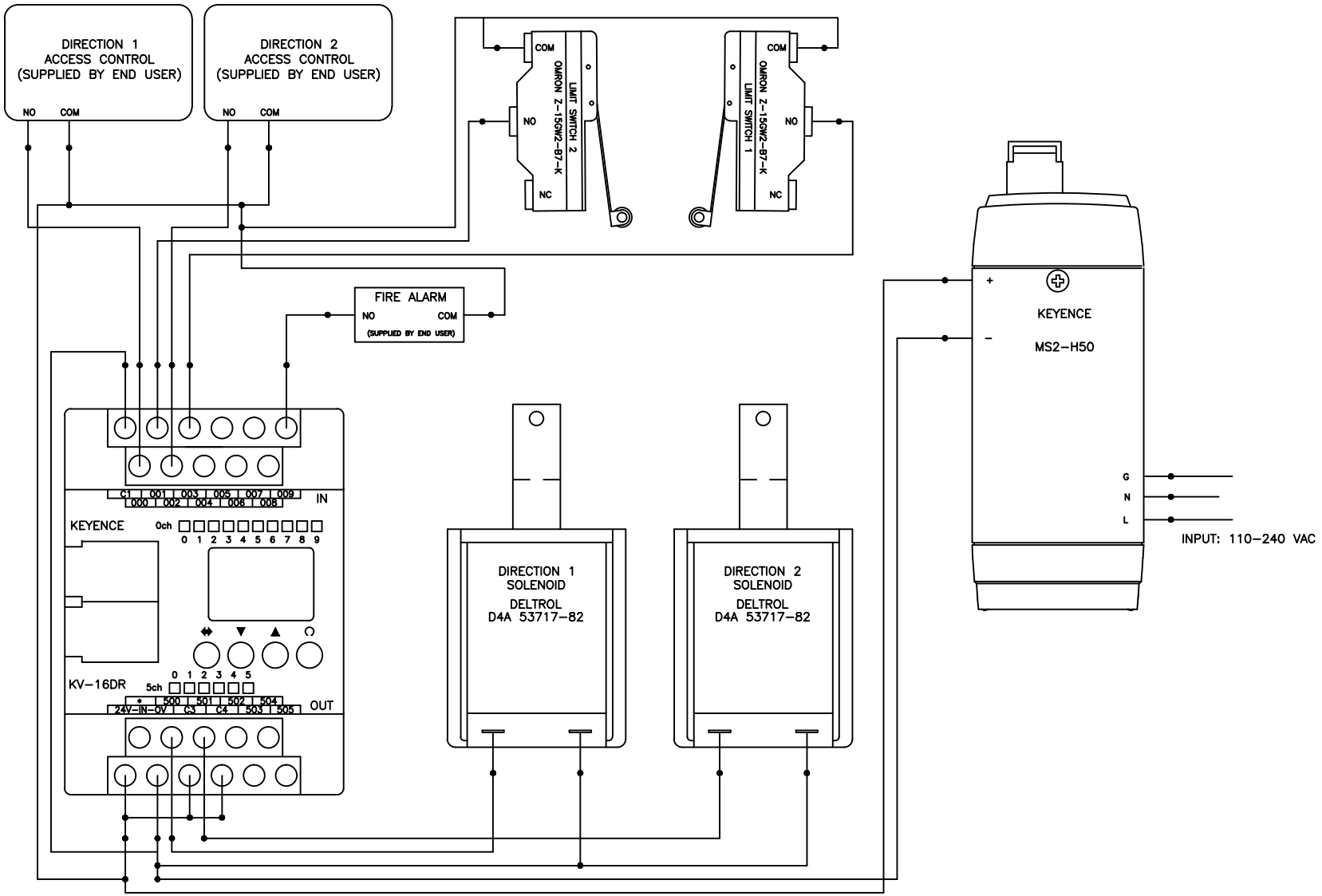
6500 Series Full Height Control Head Electrical Information

Each electronically controlled turnstile comes with a power supply, a circuit board, limit switches (or proximity sensors) and solenoids. The standard power supply, part number 0780, operates on 110 VAC and has an output of 24 VDC at 3 amps. The standard power supply has a regular outlet plug, so running conduit into the mainframe with an outlet receptacle is required. Alternate power supplies are available for 220 VAC applications.

The control board (port label shown below) offers two independent directional inputs. On a full height turnstile, clockwise rotation is controlled by the ENT. INPUT ports. Counter clockwise rotation is controlled by the EXT. INPUT ports. A momentary, normally open dry contact (of one second or less) is required to trigger each direction. If existing equipment does not have the capability to produce this type of signal, a one-shot timer can be purchased.

A diagram showing the port layout of the 789 Control Board.

Note: Access control devices need to provide a momentary, normally open dry contact of one second or less. A longer signal can cause more than one person to be able to pass through the turnstile. If you are unable to provide a contact of one second or less, ask us about a one-shot timer.


DIRECTION 1
ACCESS CONTROL
(SUPPLIED BY END USER)
NO COM
DIRECTION 2
ACCESS CONTROL
(SUPPLIED BY END USER)
NO COM
COM
NO
NC
OMRON Z-15GW2-B7-K
LIMIT SWITCH 2
COM
NO
NC
OMRON Z-15GW2-B7-K
LIMIT SWITCH 1
FIRE ALARM
NO COM
(SUPPLIED BY END USER)
KEYENCE
MS2-H50
+
-
G
N
L
INPUT: 110-240 VAC
C1 001 003 005 007 009
000 002 004 006 008
IN
KEYENCE
0ch
0 1 2 3 4 5 6 7 8 9
KV-16DR
5ch
0 1 2 3 4 5
500 501 502 504
24V IN 0V C3 C4 503 505
OUT
DIRECTION 1
SOLENOID
DELTROL
D4A 53717-82
DIRECTION 2
SOLENOID
DELTROL
D4A 53717-82

11/1/12

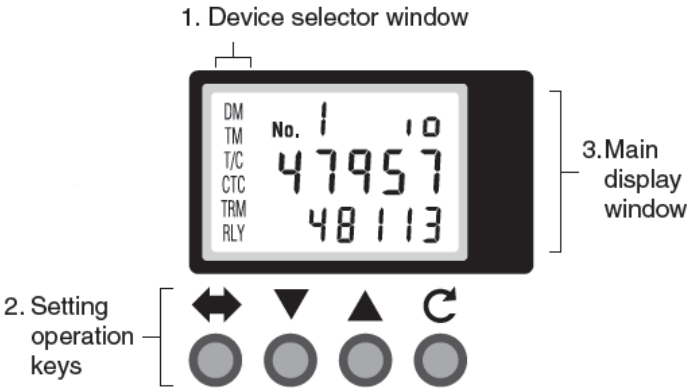
6500 Series Full Height Control Head Wiring Legend

Note: This is a multipurpose control board. Not all functions are used. All outputs on the right side of this legend are 24 VDC+. Use the INPUT 24V- port on the left side to provide negative polarity to light arrays and solenoids. Removing the jumpers above the light contacts will provide a dry contact for integration into existing systems.

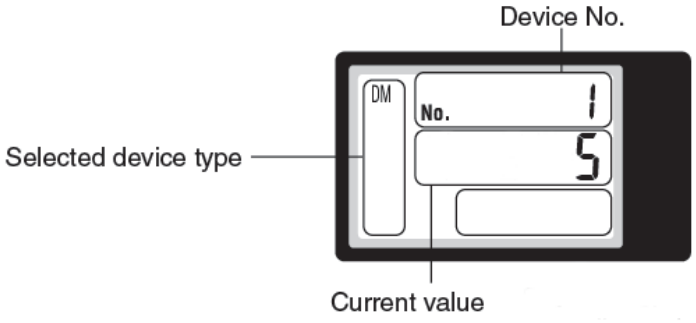
Timer controls length of time for person to enter	**ENT TIMER**	**FAIL LOCK**	Enter fail lock Solenoid 24 vdc+
		FAIL OPEN	Enter fail open Solenoid 24 vdc+
Timer controls length of time for person to exit	**EXT TIMER**	**ENT SOL COM**	Not Used
Timer controls length of alarm to sound	**ALARM TIMER**	**ENT LIGHT NO**	Status light 24 vdc+
		ENT LIGHT NC	Status light 24 vdc+
Contact closer of these two terminals by push button or card reader unlocks turnstile clockwise	**ENT INPUT +** **ENT INPUT -**	**ENT LIGHT COM**	Not Used
		FAIL LOCK	Exit fail lock Solenoid 24 vdc+
Contact closer of these two terminals by limit switch on control head relocks after one person enters	**LIM SWITCH 1+** **LIM SWITCH 1-**	**FAIL OPEN**	Exit fail open Solenoid 24 vdc+
		EXT SOL COM	Not Used
Contact closer of these two terminals by push button or card reader unlocks turnstile counter clockwise	**EXT INPUT +** **EXT INPUT -**	**EXT LIGHT NO**	Status light 24 vdc+
		EXT LIGHT NC	Status light 24 vdc+
Contact closer of these two terminals by limit switch on control head relocks after one person exits	**LIM SWITCH 2+** **LIM SWITCH 2-**	**EXT LIGHT COM**	Not Used
		ALARM OUTPUT NO	Cover alarm 24 vdc+
NOTE- If only one limit switch exits install jumper wire to LIM SWITCH 1+ and LIM SWITCH 2+		**ALARM OUTPUT NC**	Not Used
		ALARM OUTPUT COM	Not Used
Contact closer of these two terminals by cover tamper switch turns alarm on	**ALARM INPUT +** **ALARM INPUT -**		
		ANTI SOL NO	Anti-backup solenoid Fail open 24 vdc+
18 to 30 vdc power supply input and one leg from all solenoids attached to vdc -	**INPUT 24 V +** **INPUT 24 V -**	**ANTI SOL NC**	Anti-backup solenoid Fail lock 24 vdc+
		ANTI SOL COM	Not Used

Overview of the Access Window

On the logic controller, an access window is available to change and adjust many different values. Each value is referred to as a “device”. The window comprises of 3 primary areas: The device selector window, operation keys, and the main display window.



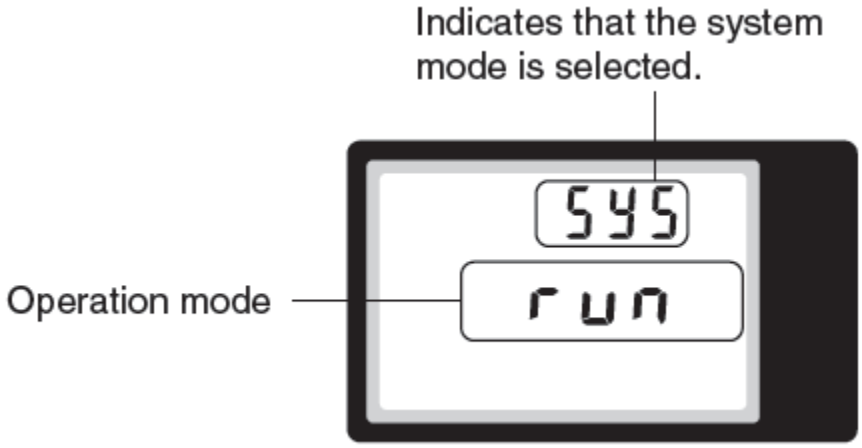
Although the logic controller is capable of many functions, all of the devices that the control head operates from are accessed in “Device Mode”. When device mode is active, the display screen will show DM in the top left corner.



That being said, it is possible to stray from the device mode settings. In the selected device type section of the access window, DM, TM, T/C, CTC, TRM, and RLY are all possible selections to load. Again, we are only using DM (device mode) with the 6500 series control head.

Should you find that you accidently have loaded any other selected device type, simply press ⬌to scroll until you have once again loaded the DM type.

In addition to the device mode window, system mode can be accessed as well.



Although under normal circumstances you should never encounter this window, if by accident you should happen to come across it, simply press the up or down arrow until the window reads “run”. Press and hold the ↻ button for 3 seconds, and the display will return to device mode.

Additionally, should for any reason the display lettering become red instead of green, you will need to access system mode to run the program in this fashion. Holding the ⇔ key while pressing up and down allows you to change between system mode and device mode. A third mode, which will display TRM on the left side of the screen, can also be accessed. Cycle through until the appropriate mode is displayed.

Finally, it is possible to lock the keypad. Should you inadvertently do so, press and hold the ⇔ button and an arrow key together for 3 seconds to unlock the keypad again.

6500 Series Control Head Installation

To reduce the risk of electrical shock, do NOT hard wire the power supply directly into input voltage. Only power this turnstile from a grounding-type receptacle. Should the turnstile be installed without a grounding-type receptacle, contact a qualified electrician to install one for you.

Waist High Installation:

New waist high turnstile already have the 6500 Series Control Head mounted in place.

However, should the need to replace the control head arise, follow these steps:

- Remove the arm assembly from the turnstile by unbolting the 3x 5/16-18 button head cap screws.
- Remove the lid from the cabinet. Some models have a lock and key system while others are secured with 10/24 button head cap screws located on the sides.
- Unplug the control head from the grounded receptacle located inside of the cabinet.
- Unbolt the 4x 5/16-18 carriage bolts holding the control head assembly in place.
- Pull the control head out of the cabinet and disconnect any access control inputs from the control board.
- Place the new control head on top of the cabinet and connect the access control inputs to the new control board (see wiring diagram).
- Insert the control head into the cabinet with the locking bars facing upwards towards you and bolt it into place with the 4x 5/16-18 carriage bolts.
- Ground the new power supply to the cabinet.
- Plug in the control head to the grounded outlet receptacle.
- Install arm assembly onto arm adapter with the 3x 5/16-18 button head cap screws.
- Test functionality of turnstile. Adjust hydraulic shock as needed.
- Reinstall lid.

Full Height Installation:

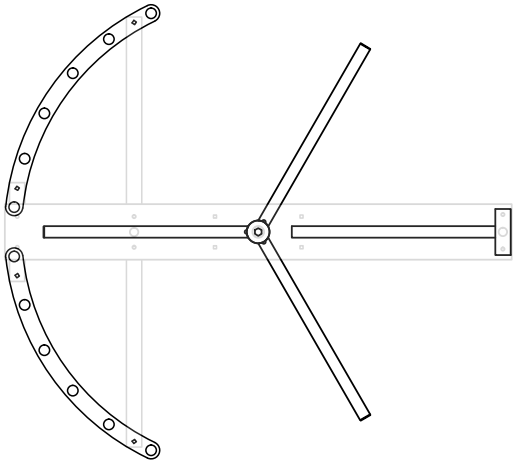
- Remove the cover from the mainframe by removing the 10/24 truss head screws.
- If applicable, remove the existing control head from the mainframe:
    - Unplug the existing control head from the grounded outlet receptacle.
    - Unbolt the 4x 3/8-16 carriage bolts holding the head in the main channel.
    - Disconnect access control inputs from the existing control board.
    - Pull the control head assembly straight up. The shaft will also come out after about 4".
- Install the control head into the hex insert on the rotor so that the rotor is properly aligned with one set of arms in between the two yokes (see rotor alignment information).
- Bolt the control head into the main channel with the 4x 3/8-16 carriage bolts.
- Connect access control inputs to new control board (see wiring diagram).
- Ground the power supply to the frame utilizing the provided grounding tab located near the control head.
- Plug the control head into a grounded outlet receptacle.
- Test functionality of turnstile. Adjust hydraulic shock as needed.
- Replace the cover of the mainframe using the 10/24 truss head screws.

Single Full Height Turnstile Rotor Alignment

Mounting a new 6500 Series Control Head is very simple. Unbolt the existing control head from whatever turnstile it is installed in and mount the new one in its place. The 6500 Series Control Head is backwards compatible with nearly every turnstile we have ever made on it's own. In units that the hole pattern does not match, an adapter plate is provided to make installation just as simple.

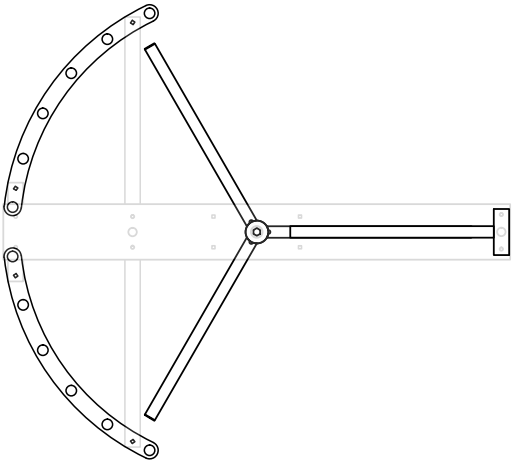
Installing a 6500 Series Control Head into a full height turnstile requires a little extra attention to detail when installing. The rotor itself needs to be properly aligned within the passage way before installing the control head or it will not function as intended. One set of arms on the rotor of the unit needs to be pointing in the center of the two half-moon yoke assemblies, not meshed together with the stationary barrier's arms. See diagram below.

Correct Alignment



Rotor has one set of arms in between two half-moon yokes in home position. Arms are not meshed with stationary arms on the barrier.

Incorrect Alignment



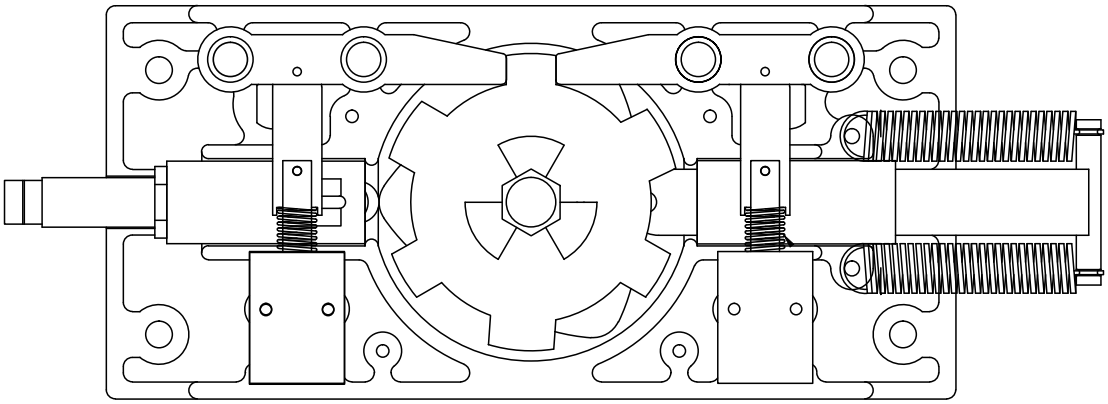
Rotor should **NOT** have one set of arms meshed with stationary arms on barrier with the other two sets of arms pointing to the outsides of the half-moon yokes.

Note: Failure to properly align the rotor can cause inconsistent operation and the **possibility to become trapped within the turnstile** in some scenarios. If the rotor was installed incorrectly, the solution is to fix the rotor alignment. Do not adjust access control or logic controller settings to accommodate the improper alignment.

Simply remove the four carriage bolts holding the 6500 Series Control Head to the mainframe, pull up on the control head to remove it as one assembly, spin the rotor to the correct position, then reinstall the control head into the mainframe.

6500 Series Control Head Mechanical Information

All of our turnstiles and ADA gates operate with a mechanism called the 6500 series control head. This sturdy and easy to maintain drive for the turnstile has replaced all previous model control heads. It is adaptable to any existing turnstile and comes with each new turnstile purchase. This control head can be configured in multiple ways to accommodate the security requirements of each individual job site.

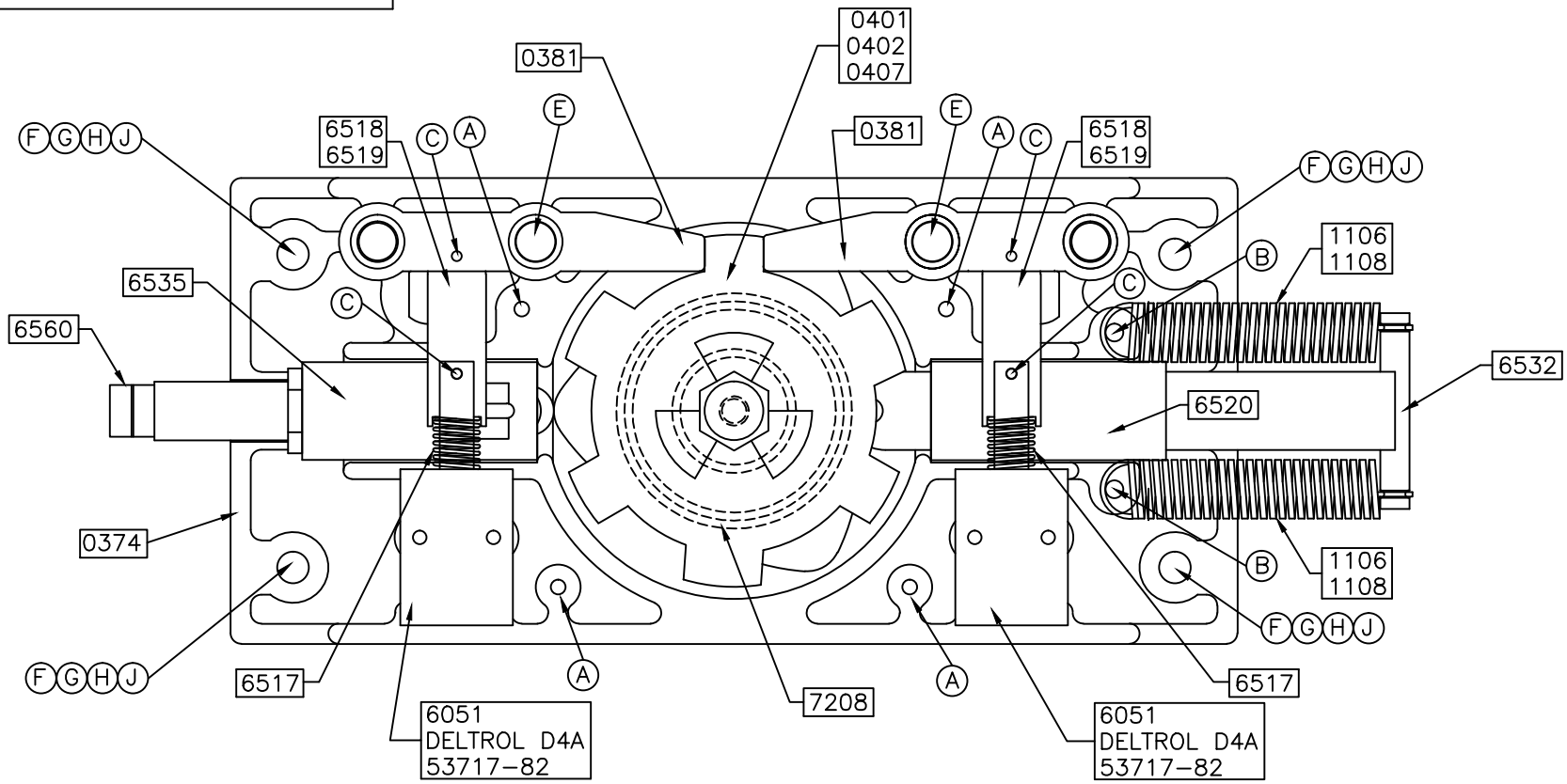


An internal view of an electronically controlled two way 6500 series control head.

While the head can be configured for mechanical (no electronics) operation, the turnstile's security potential is reached in the case of an electronic two way control head. In this instance, each rotational direction is independently unlocked. Configured properly, this control head will allow for one rotation per valid entry request. Our anti-backup cams are designed so that it is impossible to become trapped within the turnstile when properly installed.

Each control head comes preconfigured to your specific needs based off of a directional sheet that is filled out before shipment. The heads are delivered pre-wired, tested and adjusted to our factory recommendations. Installation is simple: connect inputs from access control devices into the logic controller and plug the unit's power supply into a 100-240 VAC (single phase) receptacle. The power supply will automatically set itself to function on your local voltage and convert it to 24VDC.

TOP CASTING REMOVED



ALL ELECTRICAL COMPONENTS UL CERTIFIED

6500 SERIES CONTROL HEAD BOTTOM ASSEMBLY

NOTE:
ALL WIRE AWG 18 GAUGE 300 VAC
UL 1007/1569

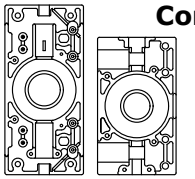
SYM	QTY	DESCRIPTION
Ⓐ	4	1/4–20 x 1" SOCKET HEAD
Ⓑ	2	1/4"ø x 1 1/4" SPRING PIN
Ⓒ	4	1/8"ø x 5/8" SPRING PIN
Ⓔ	2	1/2"ø X 2 1/4" DOWEL PIN

WAIST HIGH UNITS		
Ⓕ	4	5/16 x 1–1/2" SS CARRIAGE BOLT
Ⓖ	4	5/16 SS FLAT WASHER
Ⓗ	4	5/16 SS LOCK WASHER
Ⓙ	4	5/16 SS HEX NUT

FULL HEIGHT UNITS		
Ⓕ	4	3/8" x 1–1/2" SS CARRIAGE BOLT
Ⓖ	4	3/8 SS FLAT WASHER
Ⓗ	4	3/8 SS LOCK WASHER
Ⓙ	4	3/8 SS HEX NUT

Complete control heads are available upon request. Contact us for pricing details.

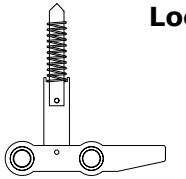
Control Head Castings



0373 - Bottom Casting
$ 250.00

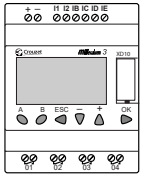
0372 - Top Casting
$ 250.00

Locking Bar Assemblies



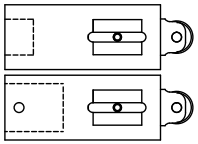
0382 - Fail Open Assembly
$ 104.00

0383 - Fail Lock Assembly
$ 104.00



0740 - Logic Controller (XD10)
$ 319.00

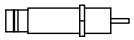
Shock Housing Assemblies



6535 - WH/427/430/T80/ADA
$ 215.00

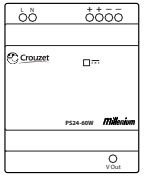
6541 - 439/448/P60/HD
$ 305.00

Hydraulic Shock Absorbers



6560 - WH/427/430/T80/ADA
$ 217.00

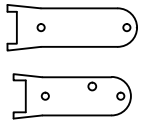
6561 - 439/448/P60/HD
$ 314.00



0750 - 24VDC Power Supply (60 W)
w/ NEMA 5-15 Drop Cord
$ 230.00

0381 - Locking Bar Casting
w/ Oil Impregnated Bushings
$ 50.00

Locking Bar Linkages



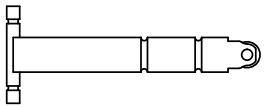
6519 - Fail Open
$ 14.00

6518 - Fail Lock
$14.00

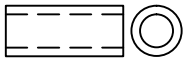
Solenoid Springs

6510 - Fail Open Spring
$ 11.00

6016 - Fail Lock Spring
$ 11.00

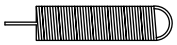


6532 - Index Pin
$151.00



6520 - Index Pin Tubing
$ 38.00

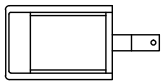
Indexing Springs



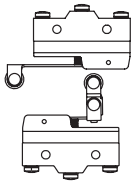
1106 - Waist High (Light) $ 8.00

1108 - Full Height (Heavy) $ 8.00

07 - ADA (Extra Heavy) $ 8.00



6051 - Solenoid
Deltrol D4A53717-82
$ 76.00

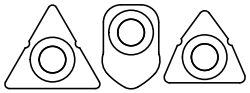


Limit Switches

2180 - Standard
(Z-15GW2-B7-K) $ 26.00

1700 - One Way
(BZ2RW825-A2) $ 63.00

Limit Switch Cams



2267 - Standard $ 35.00

2268 - ADA $ 35.00

2269 - One-Way $ 35.00

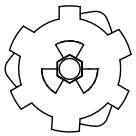
Control Head Bearings

7208 - Bottom Casting (6007RSNR)
$ 7.00

1641 - 1” ID for HD Top Castings
& All Pre-2018 Tops (1641-2RSNR)
$ 9.00

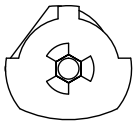
1640 - 7/8” ID for Standard Duty
Top Castings (1640-2RSNR)
$ 7.00

Cam Assemblies



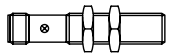
0401 - 427/430/T80/WH (7/8 Hex)
$ 301.00

0407 - 439/448/P60/HD (1.25" Hex)
$ 331.00

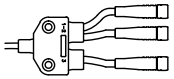


0402 - ADA (Must specify model)
$ 264.00

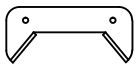
Proximity Sensor & Accessories



7211 - 24VDC PNP Prox. Sensor
w/ M12 Connector (Sick 1040763)
$ 104.00



0766 - 3 Branch M12 Splitter
$ 170.00



6589 - Turnstile Prox. Bracket
w/ 3x Mounts - LH, RH & Home
$13.50

6500 Series Control Head Configurations

The 6500 Series Control Head can be configured in a number of different ways. All units operating with the 6500 Series Control Head self-center with a spring driven indexing pin and hydraulically shock to the home position to prevent damage or injury.

Various configurations are available to suit the needs of any environment. These include:

Manual both ways: Unit rotates freely in both directions. This unsecured configuration is used as a means to direct traffic through one area. Full height turnstiles can be also be purchased with an out of service lockout bar which would allow the end user to lock the turnstile with a standard pad lock.

Manual one way: Turnstile rotates in one direction but not the other. This is often used for egress only areas.

Electronic one way with free exit: Unit rotates freely in one direction but requires some form of access control in the other. This is a typical installation in many facilities that want to control who is entering but want egress to be free flowing.

Electronic one way with no exit: Turnstile is locked in both directions at all times, but in one direction can be unlocked with access control. Typically, this would be installed in scenarios where there is an alternate means of exiting the facility.

Electronic two way: Turnstile requires access control for both entering and exiting a facility. This configuration offers the highest level of security and also flexibility for installations.

Fail lock: Upon power failure, an electronically controlled direction would remain locked. This offers a high level of security but typically is not a good idea for egress unless alternate methods of exiting are available. Unless equipped with key overrides, this is can be easily converted to fail open by ordering alternate parts. This is also known as fail secure.

Fail open: Upon power failure, an electronically controlled direction would remain open. This is the most common configuration as it allows for secure access controlled passage in normal situations but in power outages it free wheels. Unless equipped with key overrides, this can be easily converted to fail lock by ordering alternate parts. This is also known as fail safe.

Key overrides: This option is available on either electronic or manual two way models. It can allow for a quick reconfiguration of free flowing passage or locking in either direction. The key override option is not intended for constant every day use. Should you require an additional lock-down feature on your turnstile, a better option (on a full height turnstile) is an out of service lockout with a standard pad lock. Note that the key override option makes conversion between fail lock and fail open very difficult to accomplish and also may not be available for some turnstile or gate models.

6500 Series Control Head Locking Bar Information

The 6500 Series Control Head is built to order based on a direction set up sheet sent with each quote. This sheet defines how each direction of passage functions.

Direction 1 is defined as clockwise rotation on a full height or with the cabinet on the right for waist high. Direction 2 is defined as counter-clockwise rotation on a full height or with the cabinet on the left for waist high.

Possible configurations include: no passage, free passage (manual), fail lock and fail open. Fail lock and fail open are not field reversible without additional components.

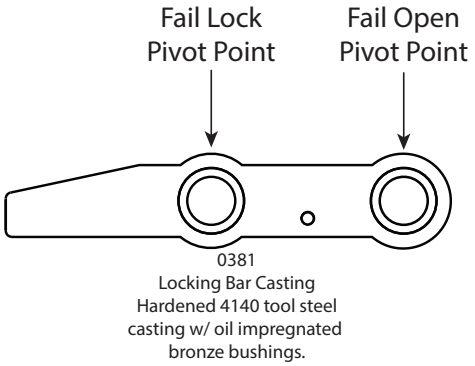
"No passage" directions include a fail lock locking bar assembly as well as an unwired solenoid. This adds the appropriate parts to the control head to prevent it from rotating in that direction.

"Free passage" (or manual) directions remove the solenoid and locking bar assembly, allowing the cam to spin freely.

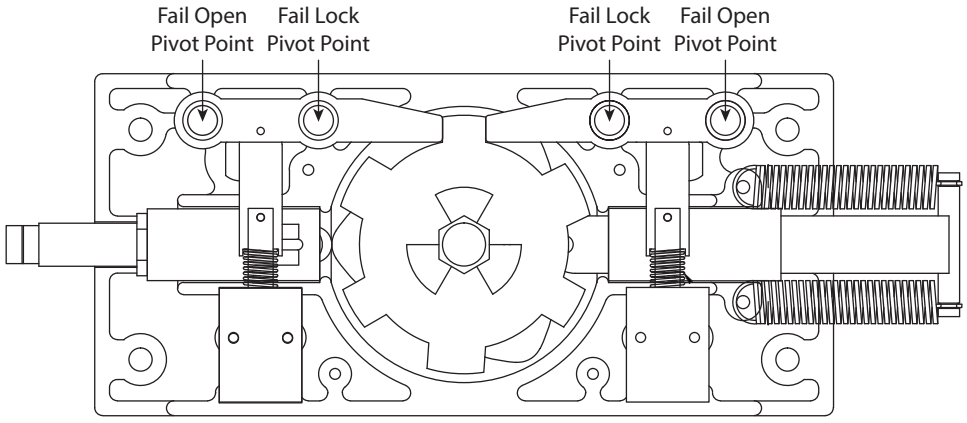
Each direction has a pair of holes on the locking bar and control head casting. These holes act as pivot points for the locking bar casting. The inner holes are fail lock and outer holes are fail open. A .5" dowel pin slides through the entire assembly to hold everything in place.

Alternate linkages and springs are needed to convert a direction's power failure status.

If optional key overrides are included, it becomes much more difficult to re-arrange the configuration. Typically it is best to send the control head into the factory to reconfigure any key override equipped head to ensure everything is done correctly.



0381
Locking Bar Casting
Hardened 4140 tool steel
casting w/ oil impregnated
bronze bushings.



Direction 2 Solenoid Direction 1 Solenoid

6500 Series Control Head Locking Bar Information (Continued)

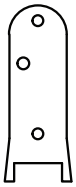
The 6500 Series Control Head can be reconfigured from fail lock to fail open and vice versa. Extra components are required to do so.

If a control head has key overrides, we suggest sending it in for factory reconfiguration.

Locking bar assemblies are held together with 1/8" spring pins. Extracting these pins and reinstalling them can be tricky, so for convenience we also offer entire locking bar assemblies.

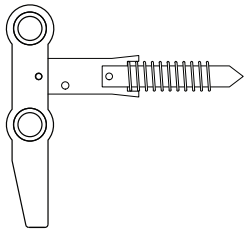
Replacing an entire locking bar assembly is simple, punch the .5" dowel pin from the pivot point through the head casting (via a small hole in the bottom casting for this purpose), pull out the old locking bar assembly and replace it with the new one.

If changing from fail lock to fail open or vice versa, install dowel pin in alternate hole.

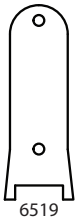


6518
Fail Lock Linkage
These have an approximate length of 2.25" and also include an extra hole the key override option.

6010
Fail Lock Solenoid Spring
These look the same as the fail open, but are actually much lighter in force
Wire diameter is .032".
This spring was also used on the 6100 Series Control Head.

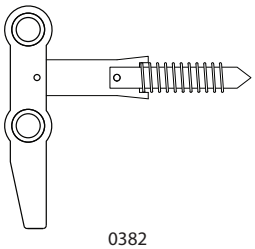


0383
Fail Lock Locking Bar Assembly
Includes locking bar casting w/ oil impregnated bushings, solenoid spring, locking bar linkage, and solenoid plunger.



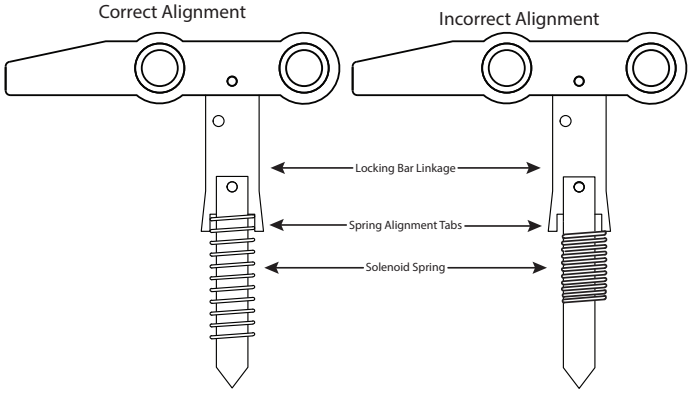
6519
Fail Open Linkage
These have an approximate length of 2.5" and do not have the extra hole for the key override option.

6510
Fail Open Solenoid Spring
These look similar to fail lock, but are actually stronger in force.
Wire diameter is .041".



0382
Fail Open Locking Bar Assembly
Includes locking bar casting w/ oil impregnated bushings, solenoid spring, locking bar linkage, and solenoid plunger.

Make sure solenoid spring is between alignment tabs on linkage or the assembly may bind when pivoting.

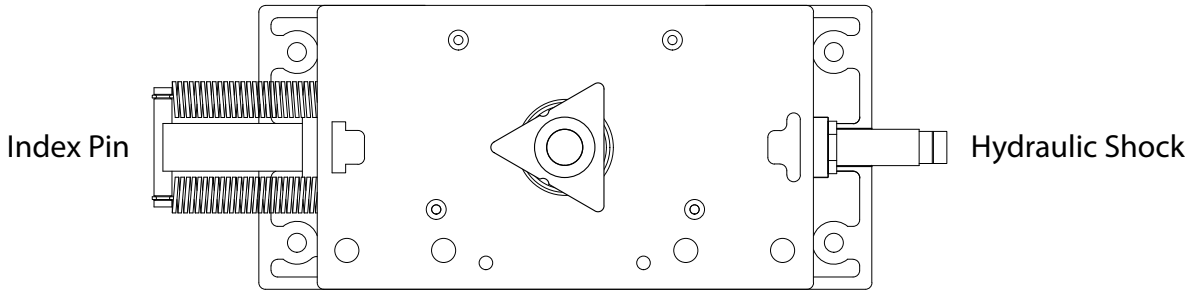


6500 Series Control Head Hydraulic Shock Information

The 6500 Series Control Head utilizes a spring loaded index pin for auto-centering the cam while a hydraulic shock offers counter resistance to slow the rotation down.

Set properly, the shock will allow a turnstile or gate to self-center while rotating smoothly without slamming.

Some turnstile models use a different shock than others. Waist highs and smaller full heights use a .75" diameter shock (Enidine brand) while larger full heights use a 1" diameter shock (ACE Controls brand).



Enidine Brand Shocks:

Setting:
Loosen the set screw on the head of the dial and turn the knob. The dial can be set between 0 and 8. The higher the number, the stronger the shock is. Tightening the set screw can alter the shock strength so a good habit is to loosen the set screw, turn the dial, tighten the set screw then test your setting. Repeat until satisfied.

Replacement:
Thread the new shock into the shock housing as far as it will turn while the cam is in the home position. Once it bottoms out, thread the shock back out 1.5 - 2 turns until the numbers on the dial are facing upright. Some models may require an additional turn or two outward if the arm does not self center on even the lowest setting.

ACE Controls Brand Shocks:

Setting:
Loosen the set screw located on the end of the shock itself before the dial. The dial can be set between 0-8 and the set screw acts as indicator for the dial. The lower the number, the stronger the shock is.

Replacement:
Thread the new shock into the housing as far as it will turn while the cam is in the home position. Once it bottoms out, thread the shock back out 1.5-2 turns until the set screw pointer is facing upright. Fasten the shock into the housing by snugging the 1/4-28 set screw into the bronze housing (snugly, but do not over tighten or the brass might start to tare).

Failure to turn the shock back out after threading it in all of the way will likely cause the part to wear out very quickly.

6500 Series Control Head Electrical Information

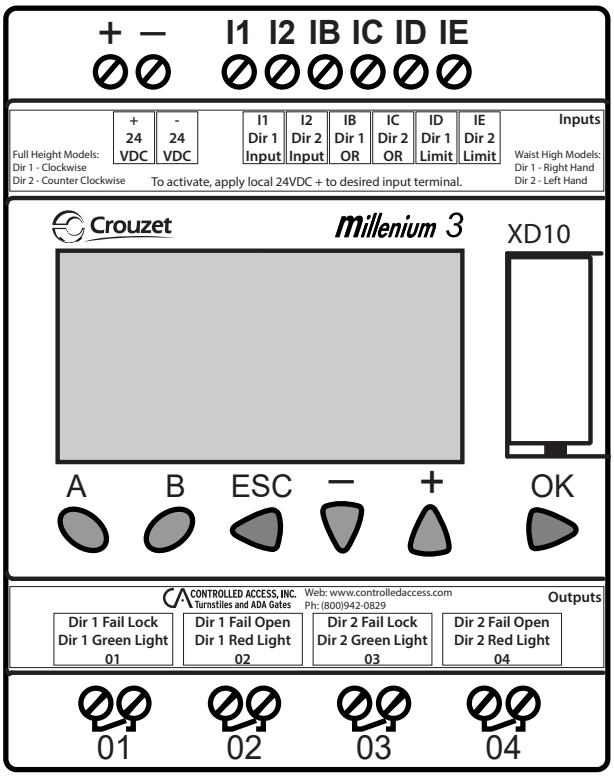
Each electronic control head comes with a power supply, a programmable logic controller (PLC), limit switches (or optionally, proximity sensors) and solenoids. For safety purposes, it is recommended that you read all literature on the electrical components before attempting to install the control head into a turnstile.

The 6500 Series Control Head is on the third generation of electronic components. The new XD10 logic controller is a direct replacement of both the 0789 control board and 6789 (Keyence KV-16DR) logic controller.

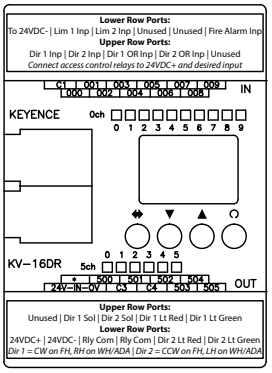
The latest enhancements provide a broader temperature range for outdoor installations (-4 to 131F) as well as a user friendly text based interface with a daylight visible display. With this also comes some new features such as on board testing buttons, turnstile statistics / information, etc.

While the wiring may be different, there are very few exceptions to when this board is compatible with installed products. If an installation has the old 0789 circuit board (PCB) and has the optional proximity sensor upgrade, new proximity sensors will need to be purchased. This is because the 0789 board had NPN inputs while the XD10 (and the KV-16DR) have PNP inputs.

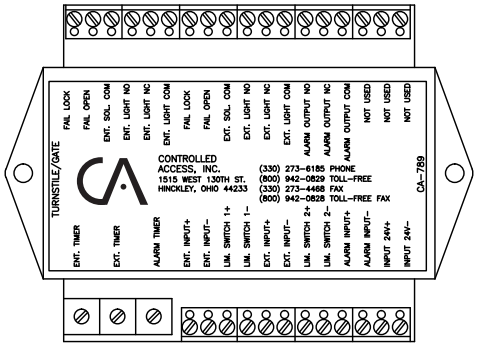
The new PLC still requires relay contact closures for inputs just like all previous generations, so any installation is compatible in one way or another. If assistance is needed with understanding how to convert the wiring from access control to the new logic controller, please view this manual or call our technical support department for assistance.



XD10 Logic Controller
0740

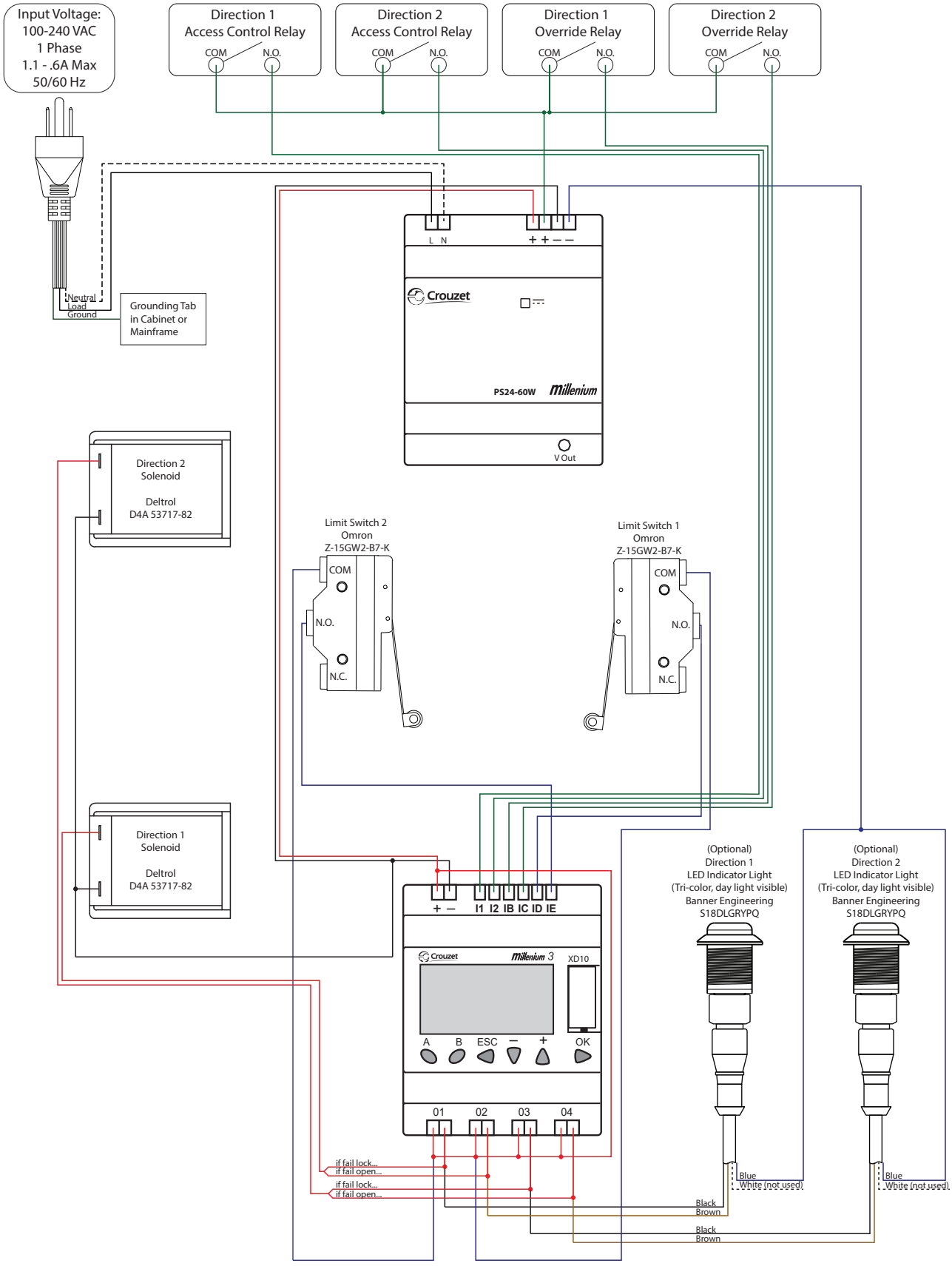


KV-16DR Logic Controller
6789

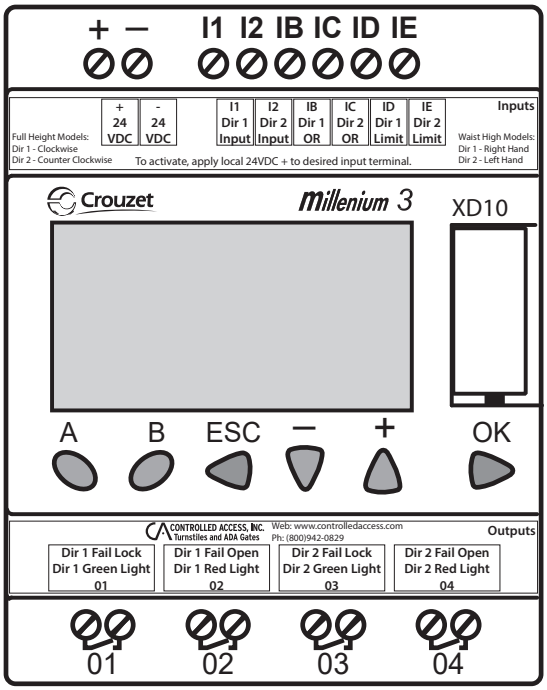


Control Board
0789

6500 Series Control Head w/ XD10 Controller Standard Wiring Diagram



6500 Series Control Head w/ XD10 Controller Standard Wiring Legend



General definitions:

Direction 1 - Clockwise on full height turnstiles or cabinet on right for waist high turnstiles & ADA gates.
Direction 2 - Counter clockwise on full height turnstiles or cabinet on left for waist high turnstiles & ADA gates.
Limit - A switch or sensor designed to detect rotation and lock the unit after a rotation.
Fail Lock - Upon power failure, the direction is designed to remain locked.
Also known as Fail Secure.
Fail Open - Upon power failure, the direction is designed to remain opened.
Also known as Fail Safe.

Each unit is built to order, preconfigured to function as specified at the time the order is placed. Some or all of the information listed may not be relevant to the installation.

Inputs are triggered with local 24VDC + (also known as PNP or sourcing).
Connect relay output from access control device to turnstile by terminating 24VDC + to relay common and the desired input to the relay's normally open terminal.

Be sure to disconnect power before wiring the board for safety.

Note: directional status outputs (lights) are unaffected by optional key overrides as the override occurs outside of the logic controller.

Input descriptions:

24VDC + Positive output from the 24VDC power supply connects here.
24VDC - Negative output from the 24VDC power supply connects here.

I1 - Direction 1 Input - Unlocks direction 1 for either one rotation or until the timer expires. Standard access control should terminate here.
I2 - Direction 2 Input - Unlocks direction 2 for either one rotation or until the timer expires. Standard access control should terminate here.

IB - Direction 1 Override - Holds direction 1 unlocked for duration of contact closure. Mainly for fire alarms and other temporary overrides.
IC - Direction 2 Override - Holds direction 2 unlocked for duration of contact closure. Mainly for fire alarms and other temporary overrides.

ID - Limit 1 Input - Cancels Direction 1 activation if triggered before timer expires, re-locking the unit after one rotation.
IE - Limit 2 Input - Cancels Direction 2 activation if triggered before timer expires, re-locking the unit after one rotation.

Output descriptions:

All 4 relay outputs have individual commons. 24VDC+ is distributed to each relay common to operate the turnstile. It is OK to add extra wires to these relay commons to distribute voltage to other devices.

01 - Output 1 - Dual purpose output for Direction 1. If the direction is fail lock, it's solenoid would connect here. If equipped with an indicator light, the green leg would connect here. Output switches from OFF to ON when directional input is triggered.

02 - Output 2 - Dual purpose output for Direction 1. If the direction is fail open, it's solenoid would connect here. If equipped with an indicator light, the red leg would connect here. Output switches from ON to OFF when directional input is triggered.

03 - Output 3 - Dual purpose output for Direction 2. If the direction is fail lock, it's solenoid would connect here. If equipped with an indicator light, the green leg would connect here. Output switches from OFF to ON when directional input is triggered.

04 - Output 4 - Dual purpose output for Direction 2. If the direction is fail open, it's solenoid would connect here. If equipped with an indicator light, the red leg would connect here. Output switches from ON to OFF when directional input is triggered.

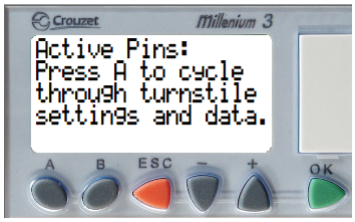
Indicator light information:

Green Light - An indicator to inform pedestrians that they are allowed to pass through the unit. Uses black output wire from light's cable.
Red Light - An indicator to inform pedestrians that the unit is locked or that pedestrians require credentials to enter. Uses brown output wire from light's cable.
As a side note, indicator lights purchased from Controlled Access, Inc. can also be wired to glow ***yellow***. If desired, this can be used instead of red with the unused white wire on the light's cable to indicate to pedestrians they require credentials to enter. This is especially handy for multi-lane installations in which some directions are "no passage" instead of "controlled passage". Likewise, green lights can also be wired to a red light output to constantly glow green to indicate "free passage".

6500 Series Control Head w/ XD10 Controller Standard Turnstile Settings

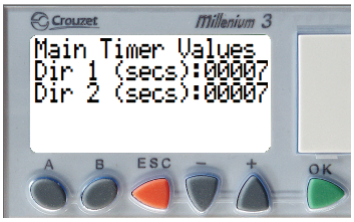
The XD10 logic controller on the 6500 Series Control Head has a text based menu screen to adjust settings and view statistics of the turnstile. Pressing the A button will cycle to each of the screens available on the device. Pressing B from any screen listed will return to the Home Screen.

Home Screen



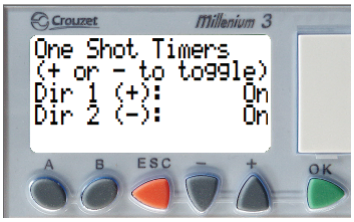
This screen is at the start of the menu cycle. The top section will give a read out of inputs that are currently receiving voltage. The display will return to this screen after cycling through all windows, 5 minutes of inactivity or pressing the B button.

Timer Values Screen



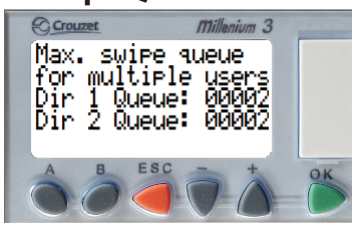
This screen allows for the each directional timer to be modified. Select which value you wish to edit by pressing the + & - key. Press OK to select the value then press + or - to modify. Save by pressing the OK button again. Each timer can have a value of 1 - 60 seconds. The timer will be canceled upon rotation of unit.

One-Shot Timers Screen



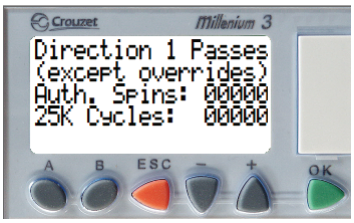
This screen allows for the two one-shot timer settings to be enabled or disabled. This setting prevents access control from holding open a direction on the standard direction inputs. Toggle Direction 1 by pressing + and Direction 2 by pressing -. This should be set to "On" in almost every installation.

Swipe Queue Screen



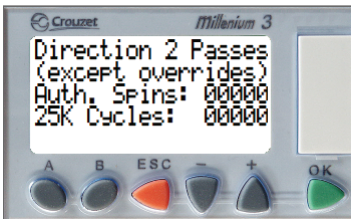
This screen defines the maximum number of access control requests the unit will allow in queue. Each value can be set from between 1 (for maximum security) to 3 (for fast paced passage). The default is 2. The method to change these settings is the same as the Timer Values Screen.

Direction 1 Counts Screen



This screen gives statistics about how many times direction 1 was activated and cycled. Since there is a limit to how many counts can be displayed, after 25000 cycles the first counter resets and adds to the second counter.

Direction 2 Counts Screen

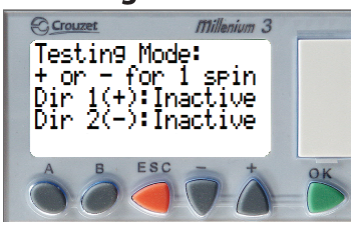


This screen gives statistics about how many times direction 2 was activated and cycled. Since there is a limit to how many counts can be displayed, after 25000 cycles the first counter resets and adds to the second counter.

General Info Screen

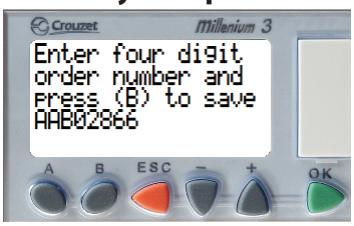
This screen displays when the PLC was initiated, the order number it was activated for (except for any revision suffixes which are not needed for order lookup), and the PLC software version.

Testing Mode Screen



While this screen is active, the unit can be tested with push buttons to simulate access control inputs. See the page dedicated to testing for more information.

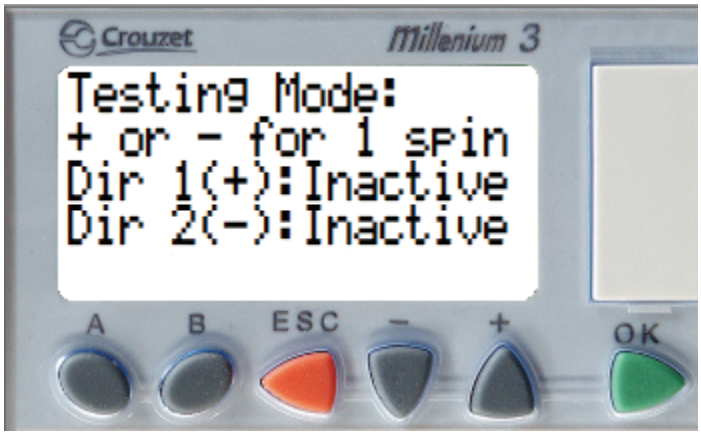
Factory Setup Screen



This screen should only appear when first set up in the factory or if something occurs to totally reset the logic controller. If this manages to occur and the order number (if known), enter it as a value then press B to save.

6500 Series Control Head w/ XD10 Controller Standard Turnstile Testing

The XD10 logic controller on the 6500 Series Control Head can be activated by contact closures between 24VDC+ and the relevant input. New technology allows for simpler on-board testing as well. To diagnose issues with the unit, press A on the keypad to cycle between screens until the testing mode screen appears.



Testing mode simulates valid access control inputs based on the settings defined on the other menu screens. The unit should unlock for the duration of the directional timer or until the unit is rotated. If the button is pressed twice, it should allow two rotations or time out based on the mult-swipe setting. If the button is held and the one shot timers are disabled, the unit will continue to remain open until the button is released and another rotation or timeout occurs.

With the testing mode screen open, press and release + to activate in direction 1. The unit should unlock and allow one rotation. If the unit successfully functions this way, repeat the same for direction 2 by pressing the - button.

If everything is functioning properly from the menu test but not with access control, either access control is not connected properly, is normally closed instead of normally open, or is not properly configured. Contact a security integrator for assistance with help with the access control system.

If the unit successful unlocks but does not re-lock upon rotation, try to manually trigger the appropriate limit switch for the direction that is not working correctly. If this helps, it is likely that the limit switch is not properly being triggered by the limit switch cam. Either adjust the height of the limit switch cam or tweak the lever on the limit switch a bit closer to the limit switch cam's tip.

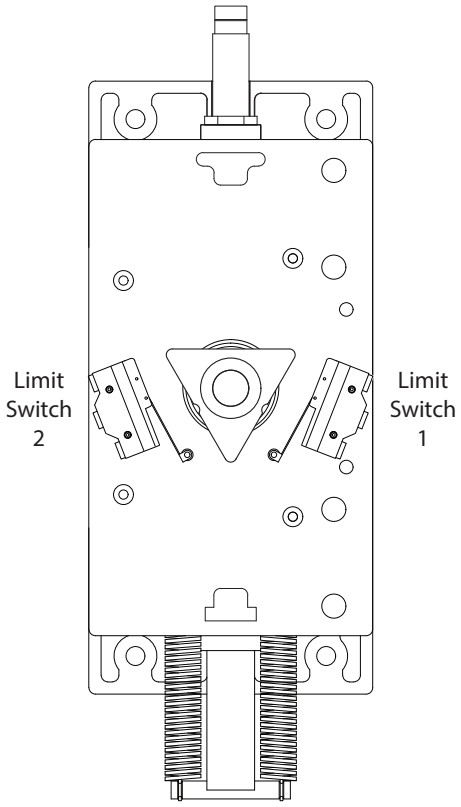
If the unit does not successfully re-lock after manually triggering the limit switch, ensure that it is wired properly. Return to the home screen and press / hold the limit switch. If the switch is being held but the "Active Pins" display does not include the switch being held, it may be necessary to replace the switch. Note that there is a short delay from when the switch is triggered to when the display will register it as active, however this is normal.

If there are other issues with operation, check out the troubleshooting guide for additional diagnostic procedures or call Controlled Access, Inc. for assistance.

6500 Series Control Head Limit Switch Information

Electronically controlled 6500 Series Control Heads utilize limit switches (or optionally, proximity sensors) in order to detect rotation. Depending on the type of unit (turnstile or ADA gate), the limit switch for a direction may be on the left or the right hand side of the control head.

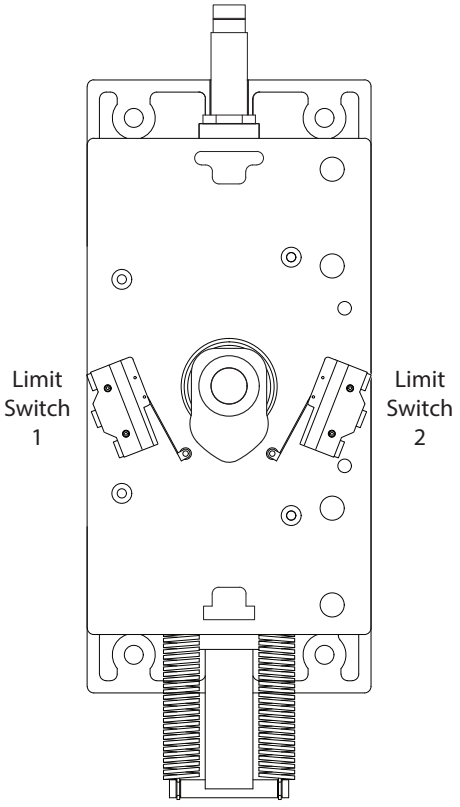
Turnstile Control Head



Turnstile control heads use a triangular shaped limit switch cam. One point of the triangle needs to be facing the index pin (bar with two springs) when the cam is in the home position. The two indents in the sides of the triangle are for jigging purposes. It does not matter which point is facing to the springs.

The limit switch for direction 1 is on the right and the limit switch for direction 2 is on the left. In this configuration, the first limit switch triggered does not affect the unit. The second switch triggers after the half-way point of the rotation, which draws in the solenoid. This allows the rotation to go to home but prevents the rotor from backing in the other direction.

ADA Gate Control Head



ADA Gate control heads use an oblong lobe shaped limit switch cam. The point of the lobe needs to be facing the index pin (bar with two springs) when the cam is in the home position.

The limit switch for direction 1 is on the left and the limit switch for direction 2 is on the right. In this configuration, the limit switch relevant to the swing is triggered after the cam leaves home position, which re-engages the locking bar. The cam is still free to move until it swings back to the home position.

Options and configurations may alter the quantity or layout of the limit switches. Some examples of this would be electronically controlled one direction turnstiles, turnstiles with counters and turnstiles equipped with home position switches.

Maintenance & Cleaning

To ensure long life on any turnstile, the following maintenance is recommended. Note: these figures are assuming a maximum 75000 passages per year. Turnstiles with heavier traffic should be maintained more frequently.

Annual Servicing

- Secure all nuts & bolts throughout each model. This includes concrete anchors, carriage bolts holding together mainframes, and the bolts holding the control head assembly together.
- Remove the index pin assembly from the control head by disconnecting the two extension springs & apply white lithium grease. Use 3-in-1 oil on the index pin roller.
- If the unit is a High Security series full height turnstile, add grease to the rotor's roller bearing by utilizing the grease fitting fastened into the bottom of the rotor.

Bi-annual Servicing

- Disassemble the control head by removing the 4x socket head cap screws holding the top casting to the bottom casting (and the triangular limit switch cam if equipped).
- Clean any loose debris / grease from the inside of the casting.
- Inspect internal components for wear and replace as needed.
- Apply 3-in-1 oil to the bronze bushings on the locking bar assemblies and shock piston.
- Apply white lithium grease to the shock piston where it enters the bronze housing.
- Reassemble the control head assembly, using removable strength (typically blue) thread sealer (such as Loctite 243) on the head bolts to ensure the assembly stays together.

Cleaning

- Galvanized surfaces can be cleaned with soap and water. The finish may dull over time, but this is normal.
- Powder coated surfaces should be cleaned with a non-abrasive cleaner such as Formula 409. Inspect finish for chips and touch up as needed or the exposed steel may rust.
- Stainless steel surfaces should be polished with a stainless steel wax or polish. Contrary to common belief, stainless steel is not rust proof. Exposure to certain chemicals and harsh environments such as ocean air or chemical plants may cause surface corrosion. Minor discoloration can be removed with a rust penetrating product (such as PB Blaster) along with non-scratching scouring pads. Severe cases of contamination may require the use of specialty products. We have had great success with products such as Stellar Solutions' Citrisurf 2310 Rust Remover and Passivation Solution.
- The decorative solid surface tops on our Executive models, Beacon models and some PassThru models should be polished with furniture polish (such as Scott's Liquid Gold Wood Cleaner). Allowing the product to soak into the material for a few minutes easily restores the surface's luster.
- Polycarbonate plastic should only be cleaned following the plastic manufacturer's recommendations. **DO NOT USE ANY PRODUCTS THAT INCLUDE AMMONIA OR OTHER HIGH PH PRODUCTS.** If the model purchased includes polycarbonate plastic, see the section of the manual dedicated to cleaning it (starting on the next page). Failure to use appropriate cleaning methods will cause aesthetic and structural damage to the plastic which will not be covered under the warranty.

Control heads can be removed from the turnstile and shipped to the factory at any time for repairs and maintenance. Please include contact information so we can call to discuss any issues your control head may have. Please note that any repairs that cost under $500.00 will require a credit card payment before being returned.

6500 Series Control Head w/ XD10 Controller Troubleshooting

Symptoms	Causes	Solutions
Turnstile does not power up or logic controller's display cycles on and off.	Power supply is not receiving input voltage.	Verify outlet receptacle installed in mainframe / cabinet is operating correctly and that the power supply is plugged in.
	Power supply is not producing 24VDC voltage, but is receiving AC.	Remove + lead from power supply output. If output voltage resumes, there is a short circuit in the wiring. If not, the power supply is faulty. Replace power supply.
	Short circuit in the wiring as determined in previous step.	Refer to pages 13-15 for wiring information.
	Loose wiring from power supply to logic controller.	
	Short circuit in the wiring.	
	Solenoid(s) burnt out (will occur if main AC voltage is connected directly to solenoid).	If wiring is correct, try to disconnect the solenoids from outputs 01 - 04. If system stops cycling, replace faulty solenoid.
	Solenoid tabs grounded out against control head casting after being reassembled from maintenance or reconfiguration.	Disassemble control head casting and flip solenoids so that the tabs with wires are facing away from the center of the control head casting.
Turnstile powers up but does not respond.	Solenoid (-) wire(s) not properly terminated.	Ensure solenoid negative wires are properly terminated to 24VDC- input and that the 3 wire splice (if equipped) is properly crimped.
	Improper wiring from access control to logic controller.	Ensure one leg of access control output relay is connected to 24VDC + and the other to the desired input.
	Access control device malfunction.	Disconnect access control from logic controller. Preform testing procedures on page 16. If the turnstile works properly, contact manufacturer of access control device.

6500 Series Control Head w/ XD10 Controller Troubleshooting

Symptoms	Causes	Solutions
More than one person can get through turnstile.	Access control device output connected to override inputs.	Wire access control to I1 or I2 with one-shot timer enabled.
	Access control device output set too long.	This can be avoided by enabling the one-shot timers built into the logic controller program. If this is undesirable, ensure the output from the access control system is one second or less.
	Loose wiring to the logic controller from limit switches.	Refer to pages 13-15 for wiring information.
	Limit switches are broken.	Inspect limit switches for breakage, replace as needed.
	Control head requires maintenance.	Refer to page 18 for more information.
	Limit switches are missing the triangular top cam.	Adjust the top cam to the proper height and/or tweak the triggers on the limit switch. Refer to page 17 for more information.
People are becoming trapped inside of the turnstile (Full Height models)	Rotor was installed backwards.	Refer to page 4 installation for visual diagram on how to install rotor properly.
Turnstile only rotates 30 degrees.	Limit switches wired incorrectly.	Refer to pages 13-15 for wiring information and page 17 for limit switch placement.
	Limit switch cam is misaligned.	The top cam should have one point facing the control board. If this is not the case, readjust the top cam. Refer to page 17 for top cam information.
Unit remains unlocked until access control is presented.	Fail open / fail lock configuration is wired incorrectly.	Refer to pages 13-15 for wiring information.
Turnstile is slamming into the closed position.	Shock either needs adjusted or replaced.	Refer to page 12 for more information.
Turnstile is not centering properly.	Shock needs adjusted.	
	Binding in control head.	Ensure mainframe is level and the rotor is plumb. Shim the unit from the floor if necessary.
Turnstile seems to be binding mechanically.	Rotor is not plumb / turnstile body is not level.	

Proper Turnstile Usage

The 6500 Series Control head is easy to use. There are a few things that users should be trained on and informed of.

- In the case of an electronic turnstile, approach the unit and present access control credentials. Do not push on the arms of the rotor until after the access control device successfully unlocks the turnstile. A sturdy click sound will be heard from the main channel when the solenoid pulls the locking bar open.

- Note that the turnstile will not unlock if the rotor or arm is being pushed on before access control activates the solenoid. The unit should unlock once pressure is released but it is a better practice to wait until the unit is unlocked before pushing on the rotor.

- Once access has been granted, proceed through the turnstile immediately. Waiting too long could cause the rotor to time out mid-rotation, forcing the user to back out of the turnstile. There are timer settings for adjusting how long it takes for this to occur. The default time provided is 7 seconds. The reason for this is in case somebody swipes and walks away without passing through.

- Walk at a reasonable pace through the turnstile. Do not slam the rotor through the rotation. This can be unsafe and may cause unnecessary wear and tear to the control head.

- Try to be respectful of users wanting to pass through the opposite direction. Allow people who are waiting an opportunity to pass through the turnstile.

- Avoid rotation the rotor of a full height without being in the passage. This will cause the rotor to re-lock before you have a chance to pass through the turnstile.

- Piggybacking : More than one user trying to squeeze through the turnstile on one rotation should be avoided. Large bags and carts should be brought through an alternate means of entrance.