



**The Leader in Pedestrian Control Systems
Waist & Full Height Turnstiles and Matching Gates**

HS400 Series Tandem 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.

Important Electrical Information

Installation of the control head mechanism into the turnstile requires a grounding-type outlet receptacle installed inside of the frame or cabinet through the provided conduit access points.

To reduce the risk of electric shock, this equipment has a grounding type plug that has a third (grounding) pin. This plug will only fit into a grounding type outlet. If the plug does not fit into the outlet, contact a qualified electrician to install the proper outlet. Do not change this plug in any way.

Additionally, the MS2-H50 power supply from this appliance must be grounded to the frame of the turnstile. Utilize the green colored grounding screw threaded into the grounding tab located near the power supply along with the provided grounding wire from the power supply to ensure the equipment is proper grounded.

Table of Contents

HS400 Tandem Full Height Data Sheets	4
Tandem Component Identification	6
Fastener List	7
Pre-installation Tips	8
Concrete Pad Sizes	10
Concrete Anchor Installation Instructions	11
Turnstile Installation	12
6500 Series Control Head Information	17
6500 Series Full Height Control Head Parts Breakdown	18
6500 Series Full Height Control Head Parts List	19
6500 Series Control Head Configuration Information	20
6500 Series Control Head Locking Bar Information	21
6500 Series Control Head Dowel Pin Placement	22
6500 Series Control Head Shock Adjustment	23
6500 Series Full Height Control Head Electrical Information	24
6500 Series Full Height Control Head Limit Switch Information	30
6500 Series Control Head and Turnstile Maintenance & Cleaning	32
6500 Series Control Head Testing	33
6500 Series Control Head Troubleshooting	34
Proper Turnstile Usage	36
Warranty Information	37
Appendix: Component Spec Sheets & Custom Documents	

The High-Security Series

Full-Height Turnstile (Tandem) | Interior & Exterior Application

HS427-T | HS430-T

Controlled Access manufactures 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 (304 or 316), carbon steel with powder coating, or hot-dipped galvanized finish. These units can be fitted for any application with leading edge technology and features.

Controls and Interfaces

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



Size Options

(pedestrian clearance):

HS427-T: 27" (686mm)

HS430-T: 30" (782mm)



Optional black or safety orange end caps available.



Hot-dipped Galvanized finish
Also available in stainless steel or power coated finishes.



We're the #1 Choice of Top Architects, Security Pros and Engineers

For two decades, Controlled Access has been the globally trusted name in pedestrian control equipment. Made in Ohio and shipped worldwide, we are the first choice of leading architects, facility managers, security consultants and engineers. Whether your project requires high security full-height turnstiles, waist-high units, or matching ADA accessible gates, Controlled Access is the secure choice. We're experienced in access control systems, from card readers to biometric scanning, to give you the power to control access.

	Depth	Width	Passage Width	Passage Height	Overall Height
	A*	B*	C*	D*	E*
HS427-T	57" 1448mm	94" 2388mm	27" 686mm	84" 2134mm	91" 2311mm
HS430-T	59.1" 1501mm	102" 2591mm	30" 762mm	84" 2134mm	91" 2311mm

* See CAD drawings on reverse side.

CA CONTROLLED ACCESS, INC.

The Leader in Pedestrian Access Control

1636 West 130th Street | Brunswick, Ohio 44212 | Ph: 330.273.6185 | Fax: 330.273.4468 | Toll-Free Ph: 800.942.0829 | Toll-Free Fax: 800.942.0828

E-mail: sales@controlledaccess.com | www.controlledaccess.com

The High-Security Series

Full-Height Turnstile (Tandem) | Interior & Exterior Application

HS427-T | HS430-T

Applications:

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

Design & Construction:

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

Dimensions:

HS427-T

Passage width (pedestrian clearance)
HS427-T 27" (686mm)

Arm and Barrier Tubing Sizes

1 1/2" (38mm) diameter 14 gauge - Standard
1 3/4" (44mm) diameter 14 gauge - Optional
16 gauge - Stainless steel models

Width	Depth
94" (2388mm)	57" (1448mm)

HS430-T

Passage width (pedestrian clearance)
HS430-T 30" (762mm)

Arm and Barrier Tubing Sizes

1 1/2" (38mm) diameter 14 gauge - Standard
1 3/4" (44mm) diameter 14 gauge - Optional
16 gauge - Stainless steel models

Width	Depth
102" (2591mm)	59.1" (1501mm)

All models:

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

Matching Swing Gate available

(see model HS336 Manual Passage Gate information)



HS336 - Back
(stainless steel
with optional
mesh push bar)

Available Finishes:

- Hot dipped galvanized carbon steel
- Carbon steel with powder coating (standard color is black/other colors available upon request)
- Our signature 304 stainless steel, No. 4 satin finish, or 316 stainless

Operation:

6500 Series Control Head, featuring:

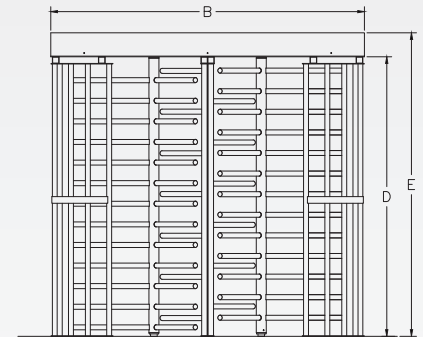
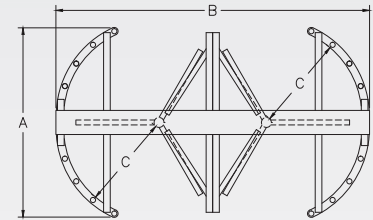
- Auto-indexing (self-centering) with adjustable hydraulic shock suppression
- Hardened tool steel locking bars, cam and roller assemblies
- Permanently lubricated bearings
- Your choice of manual or electronic control on both directions
- Nearly universal integration to any number of access control systems
- Your choice on each electronic direction of locking or unlocking on power failure

Options:

- Card reader mounting plates
- Daylight visible indicator lights
- Bi-directional key overrides
- Lockout bar (padlock not included)
- Decorative arm caps (for galvanized unit)
- Stainless steel overhead full canopy
- Half canopy (covers passageway)
- 8 digit key resettable LCD counter with seven year lithium battery
- Cold weather package, including thermostat controlled heater and insulated mainframe
- Metal detection
- Push button and wireless remotes
- Heel guard arm covers
- Hinged or split covers (for tight clearance installations)
- Additional options available upon request

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.



Dimensions are approximate based on chart on reverse side.

Electrical Specifications:

(per rotor)

Input Voltage: 100-240 VAC

Input Current: 1.3 - .55 A

Frequency: 50/60 Hz

Storage Temperature: -4 to 158°F

Operating Temperature: 32 to 122°F
(Cold weather package available)

Operating Voltage: 24VDC

Operating Current: 1.2 A (typical)

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

All fasteners provided meet IFI ANSI/
ASME Fastener Standards

American Welding Society (AWS)
Standard D 1.1



The 6500 series control head is certified to conform to the following standards: UL Standard 326, UL Subject 2593 and CSA Standard C22.2 #247



Controlled Access, Inc. is a registered ISO 9001:2008 company

CA CONTROLLED ACCESS, INC.

The Leader in Pedestrian Access Control

1636 West 130th Street | Brunswick, Ohio 44212 | Ph: 330.273.6185 | Fax: 330.273.4468 | Toll-Free Ph: 800.942.0829 | Toll-Free Fax: 800.942.0828

E-mail: sales@controlledaccess.com | www.controlledaccess.com

Component Identification

Each tandem full height turnstile should include 4 yokes, a mainframe, 2 rotors, 2 barrier assemblies, 2 control heads (with a fastener kit) and any optional components purchased with the unit. See the diagram below to identify each part. Note that some parts may look slightly different, depending on which model was purchased.

Tandem Component Identification

Using the diagrams below will help to ensure the unit is properly installed.

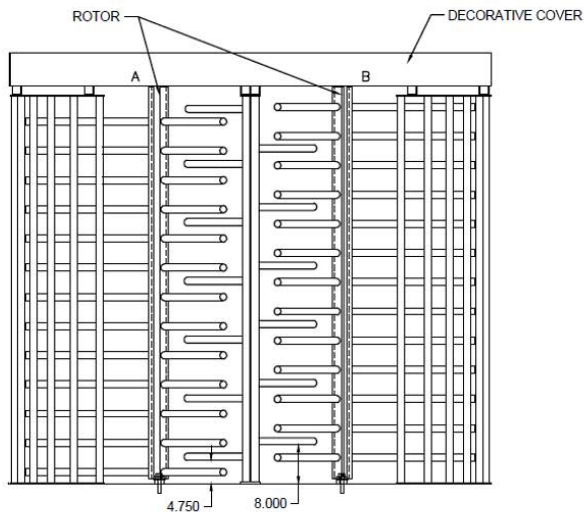
Rotor Identification:

There are two different rotor assemblies.

The bottom side of each rotor has a bearing cup epoxied in. The top side of each rotor has a hex shaped hole insert for the control head.

The arms on Rotor A are lower than the arms on Rotor B.

Install the rotors to the diagram below.



Barrier Identification:

There are two V shaped barrier assemblies.

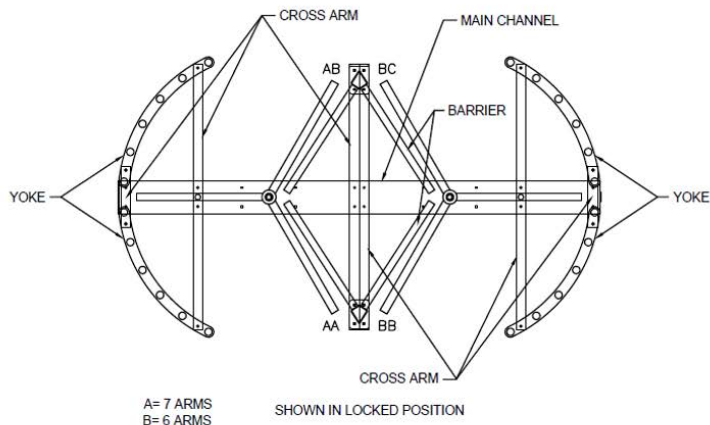
Rows of 7 arms are the A side of the barrier.

Rows of 6 arms are the B side of the barrier.

Each barrier assembly is marked from the bottom.

Use the diagram below for the barrier layout.

When installing, make sure the sticker is face down to the concrete pad.



*Not shown: control heads, fastener kits and optional components.

Tandem Fastener List

- QTY 8 - 3/8 X 1 ½ CARRIAGE BOLTS W/ NUTS, WASHERS & LOCK WASHERS: CONTROL HEAD TO MAIN FRAME
- QTY 8 - 3/8 X 1 ½ CARRIAGE BOLTS W/ NUTS: YOKE TO BOX TUBING
- QTY 4 - 3/8 X 1 ½ CARRIAGE BOLTS W/ NUTS, WASHERS & LOCK WASHERS: BARRIER TO BOX TUBING
- QTY 4 - 3/8 X 3 CARRIAGE BOLTS W/ NUTS, WASHERS & LOCK WASHERS: BARRIER TO BOX TUBING
- QTY 12 - 3/8 X 3 CARRIAGE BOLTS W/ NUTS, WASHERS & LOCK WASHERS: BOX TUBING TO MAIN FRAME
- QTY 16 - 3/8 X 4 WEDGE TYPE ANCHORS W/ NUTS & WASHERS: YOKES TO CONCRETE
- QTY 2 - 5/8 X 4 WEDGE TYPE ANCHOR W/ NUTS, BEARING BLOCK & BEARING: CENTER COLUMN MOUNTING
MAKE SURE BEARING IS GREASED

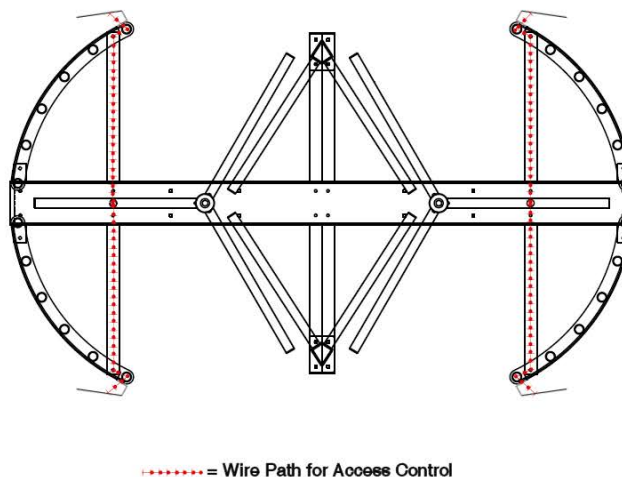
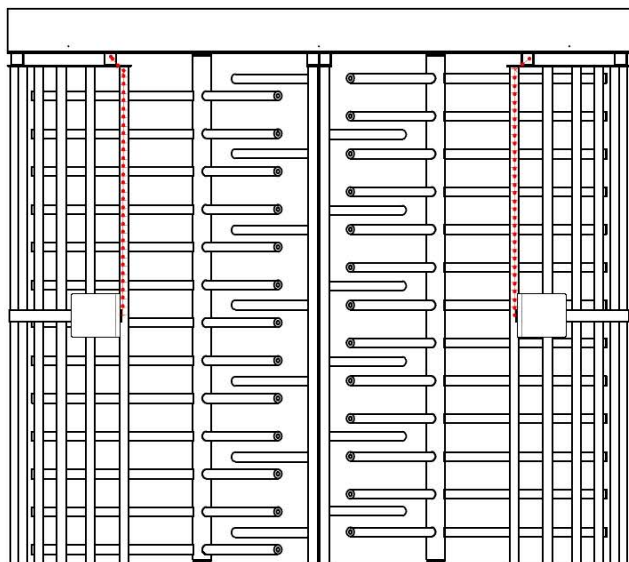
Pre-installation Tips

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.

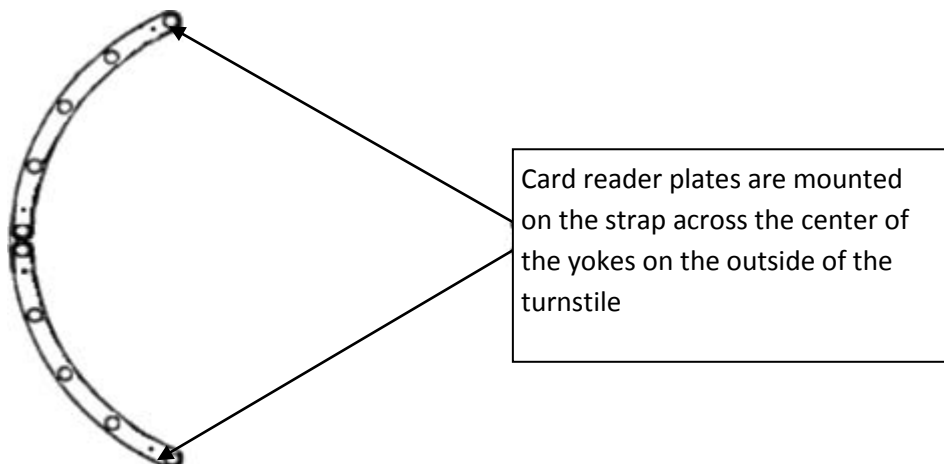


- If purchased with an optional card reader plate, the suggested method for running the wire is through the yokes, into the cross arms and into the main channel. Use a shielded 2 conductor 22 gauge cable per direction.

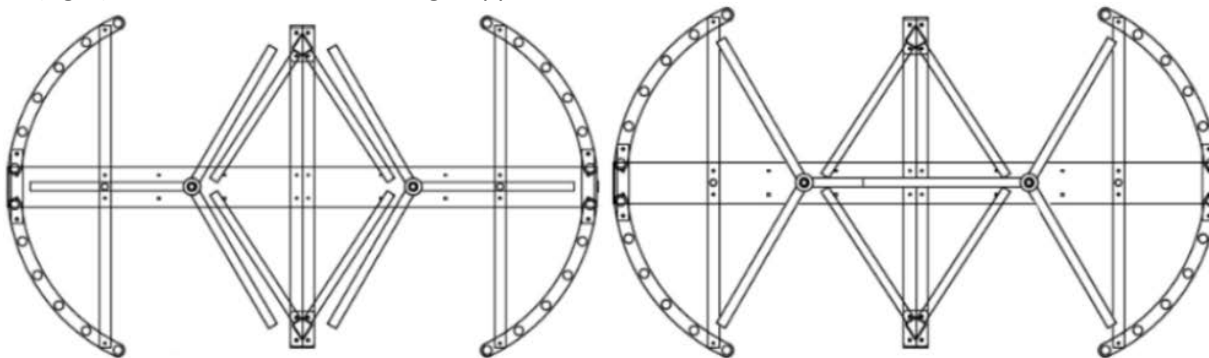


- Electronic turnstiles are operated from a provided 24VDC 2.1 amp power supply. Installing outlet receptacles inside of the main channel through provided conduit access is required.
- Access control devices, such as card readers, push buttons, biometric devices, etc. need to operate on a **normally 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, you can enable an on-board one shot timer (see later in guide).

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.



Correct Alignment

Incorrect Alignment

- Tools required for installation:

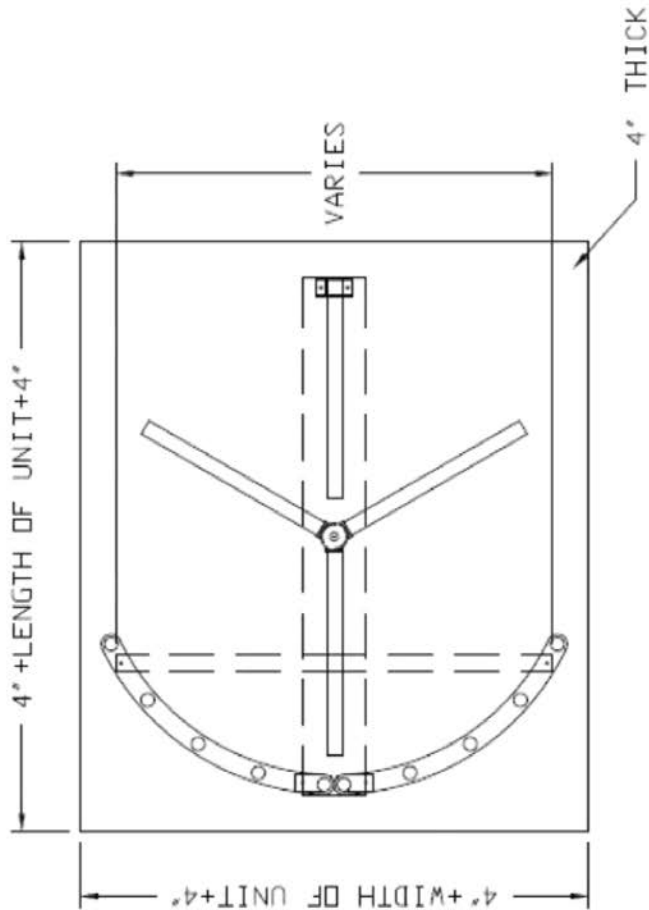
- Hammer drill
- 3/8 concrete bit
- 5/8 concrete bit
- Hammer
- Punch
- Marker
- Plumb-bob
- 9/16 wrench
- 15/16 wrench
- 1/8 allen wrench
- Level
- Grease gun
- Safety gloves
- Safety glasses

Concrete Pad Sizes

P.N. CA-FHCONCR

CONCRETE PAD SIZES

<input type="checkbox"/> HS427-S	LENGTH: 70"	WIDTH: 62"
<input type="checkbox"/> HS430-S	LENGTH: 74"	WIDTH: 64"
<input type="checkbox"/> HS439-S	LENGTH: 92"	WIDTH: 76"
<input type="checkbox"/> HS448-S	LENGTH: 114"	WIDTH: 105"
<input type="checkbox"/> HS427-T	LENGTH: 102"	WIDTH: 62"
<input type="checkbox"/> HS430-T	LENGTH: 114"	WIDTH: 64"



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

SCALE: 20=1

APPROVED BY:

DRAWN BY: LC III

DATE: 08/10/05

REVISED:



**CONTROLLED
ACCESS, INC.**
1515 West 130th Street
Hinckley, Ohio 44233

330-273-6185
FAX 330-273-4468
USA 1-800-942-0829
FAX 1-800-942-0828

CONCRETE PAD FORMULAS

Concrete Anchor Installation

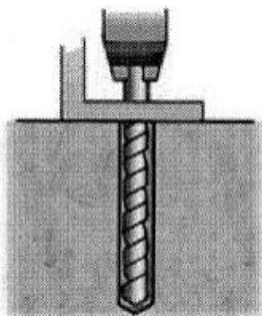
Instructions for Using Wedge Anchors

Determine the appropriate wedge anchor length for your project.

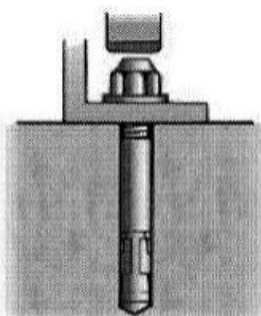
1. Add:
 - to- The thickness of material to be fastened
 - to- The minimum embedment required
 - to- The thickness of the nut and washer (about one anchor diameter).
2. Once you have determined the appropriate wedge-type-anchor length, drill your hole using a bit with the same diameter, $\frac{1}{2}$ " 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

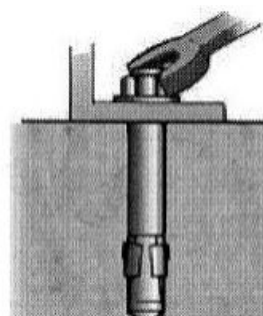
Diam. & Length	Min. Embedment	Thread Length
1/4"	1-1/8"	3/4"
3/8"	1-1/2"	7/8"
3/8"	1-1/2"	1-1/8"
1/2"	2-1/4"	1-1/4"
1/2"	2-1/4"	1-1/4"
5/8"	2-3/4"	2"
5/8"	2-3/4"	2"
5/8"	2-3/4"	2"
3/4"	3-1/4"	2"
3/4"	3-1/4"	2"
3/4"	3-1/4"	2"
7/8"	3-7/8"	2-1/4"
1"	4-1/2"	2-1/4"
1-1/4"	5-1/2"	3-1/4"



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 (6) 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).

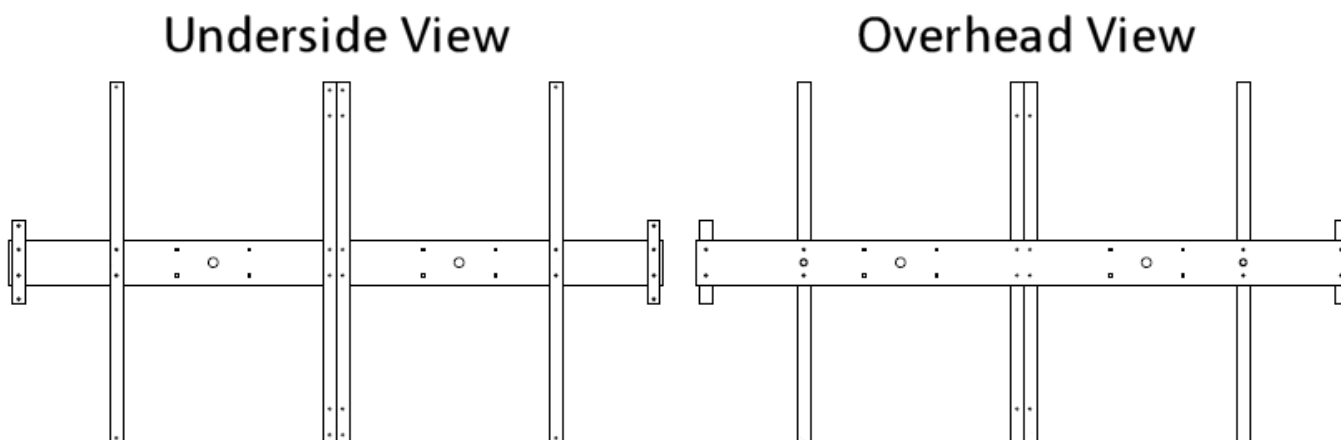


Figure B: Assembled mainframe



Note: Carriage bolts are designed to be hammered into place, so on locations where the hole is round, simply tap the head of the bolt into the hole.

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

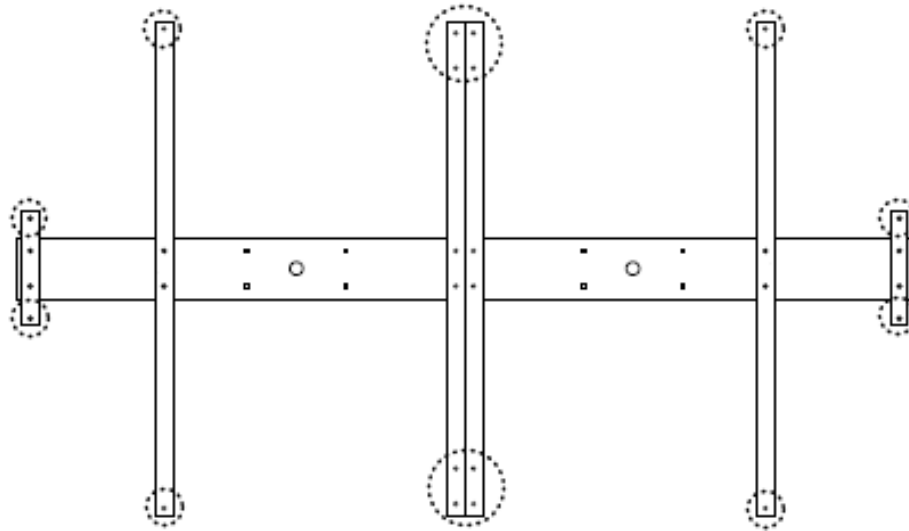


Figure C: Using mainframe as a template to mark holes for concrete anchors (circled dots)

Step 6) Before drilling, verify the cross arms were square to the mainframe by temporarily setting a yoke and a barrier over each set of holes to ensure that the hole patterns match. (Figure D).

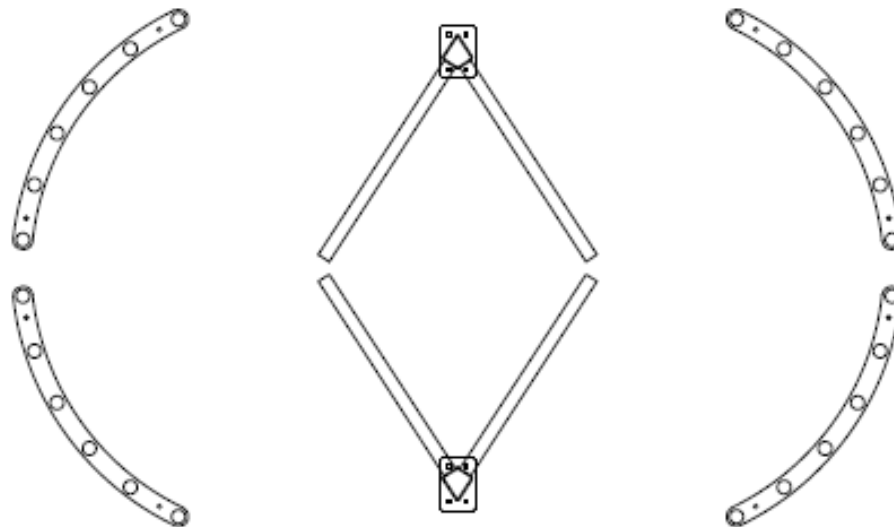


Figure D: Location of the barriers and yokes.

Step 7) Once satisfied with alignment, begin drilling the holes marked with a 3/8 concrete bit. Install anchors according to concrete anchor installation guide on page 11.

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



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



Note: Depending on how the turnstile was ordered, yokes may have two tapped holes with button head screws on one end of the support strap (in the middle of the yoke) for mounting card reader plates. These holes should be oriented to the outside of the turnstile.

Step 9) Before continuing, identify the different rotors and barriers based on the component identification section of this manual (page 6). Once identified, mount the stationary barriers to the concrete (Figure F)

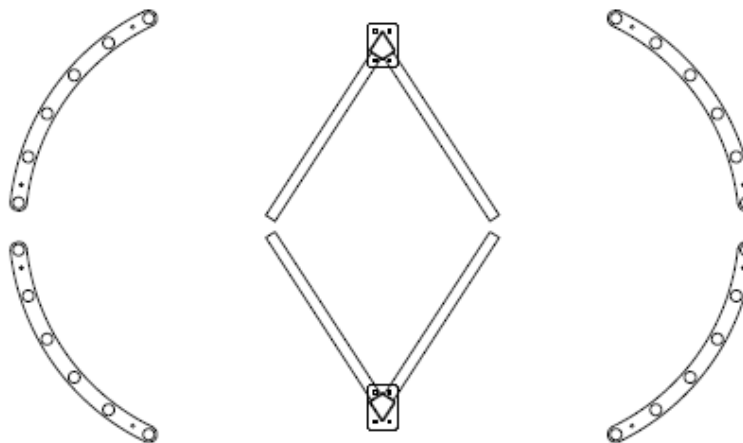


Figure F: Mounting the stationary barriers to concrete.

Step 11) Mount the mainframe on top of yokes and stationary barriers using 1 1/2" carriage bolts (Figure G).

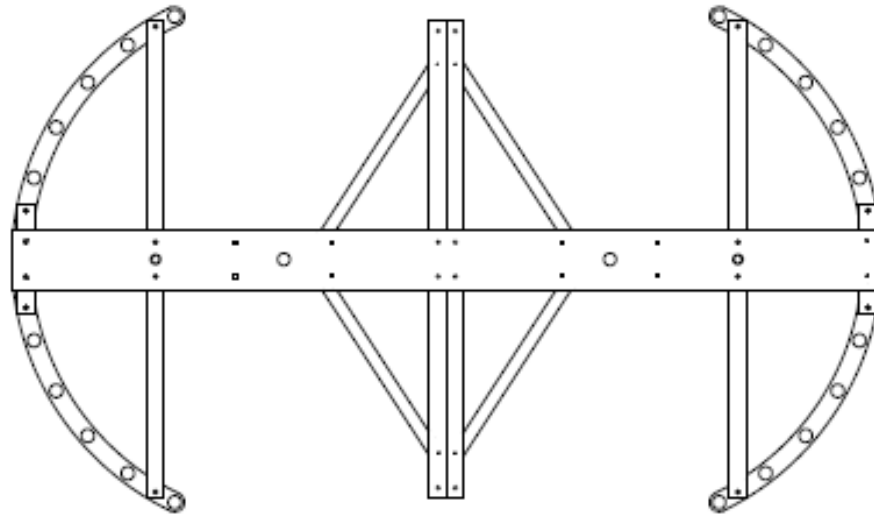


Figure G: Mounting the mainframe on top of the yokes and barrier.

Step 12) Check the levelness of turnstile. If necessary, shim from the floor to make turnstile level.

Step 13) Using a plumb-bob, mark the holes for the bearings and rotors (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.

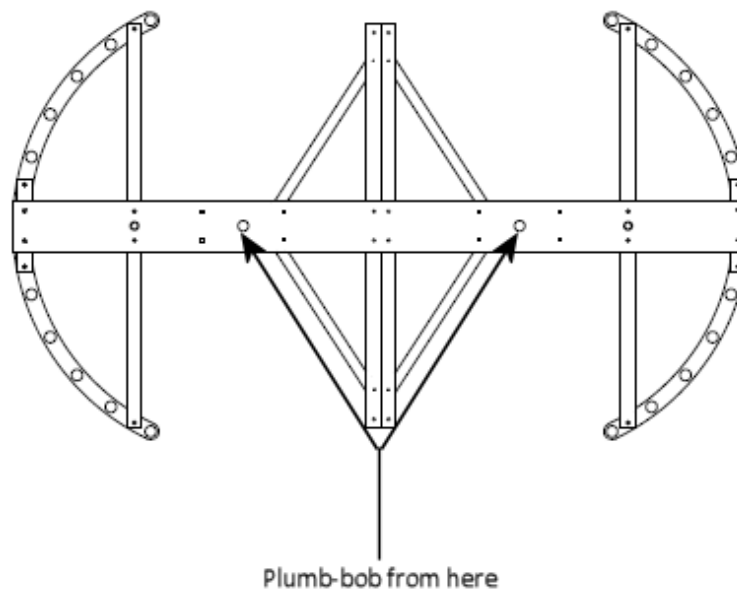


Figure H: Using a plumb-bob to mark holes for rotor placement.

Step 14) Drill holes for the 5/8" concrete anchors that hold the bearing blocks (Figure I) and bearings in place. Install the anchors in the concrete. Install bearing blocks to concrete and add bearings.

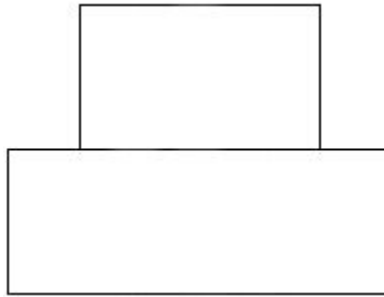


Figure I: The bearing blocks used to support the bearings and rotors.

Step 15) Place the rotors on top of the bearing blocks. 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.

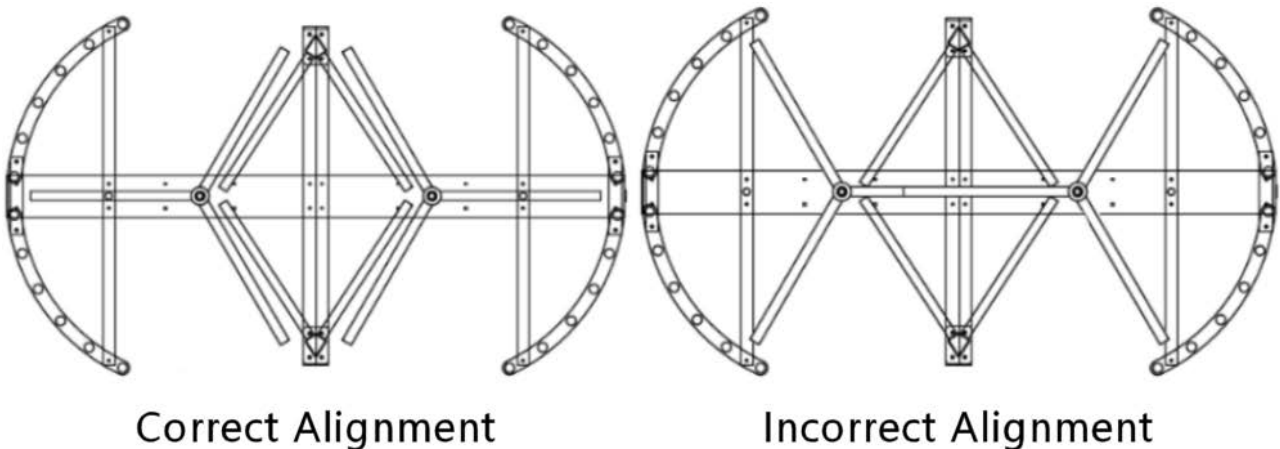


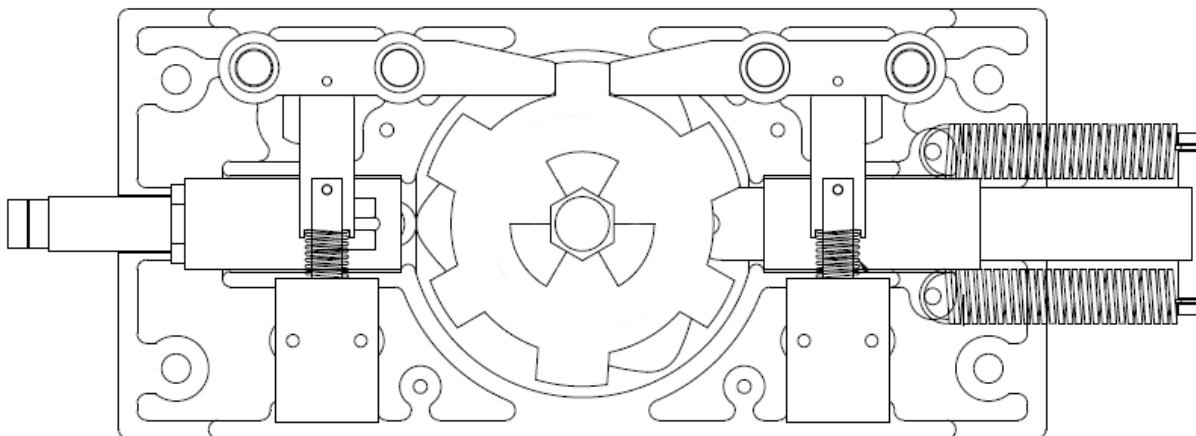
Figure J: Proper rotor alignment (left) vs. improper rotor alignment (right).

Step 17) Slide the control heads into the tops of the rotors. The control heads have 7/8" hex shafts that insert into adaptors on the rotors. If the turnstile is electronic, mount the control heads with the power supplies towards the side of the turnstile that power is ran to. The control heads will function the same whichever way it is installed into the rotor, but each head might be configured differently.

Step 18) Bolt the control heads to the mainframe using the 1 1/2" carriage bolts.

6500 Series Control Head 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.

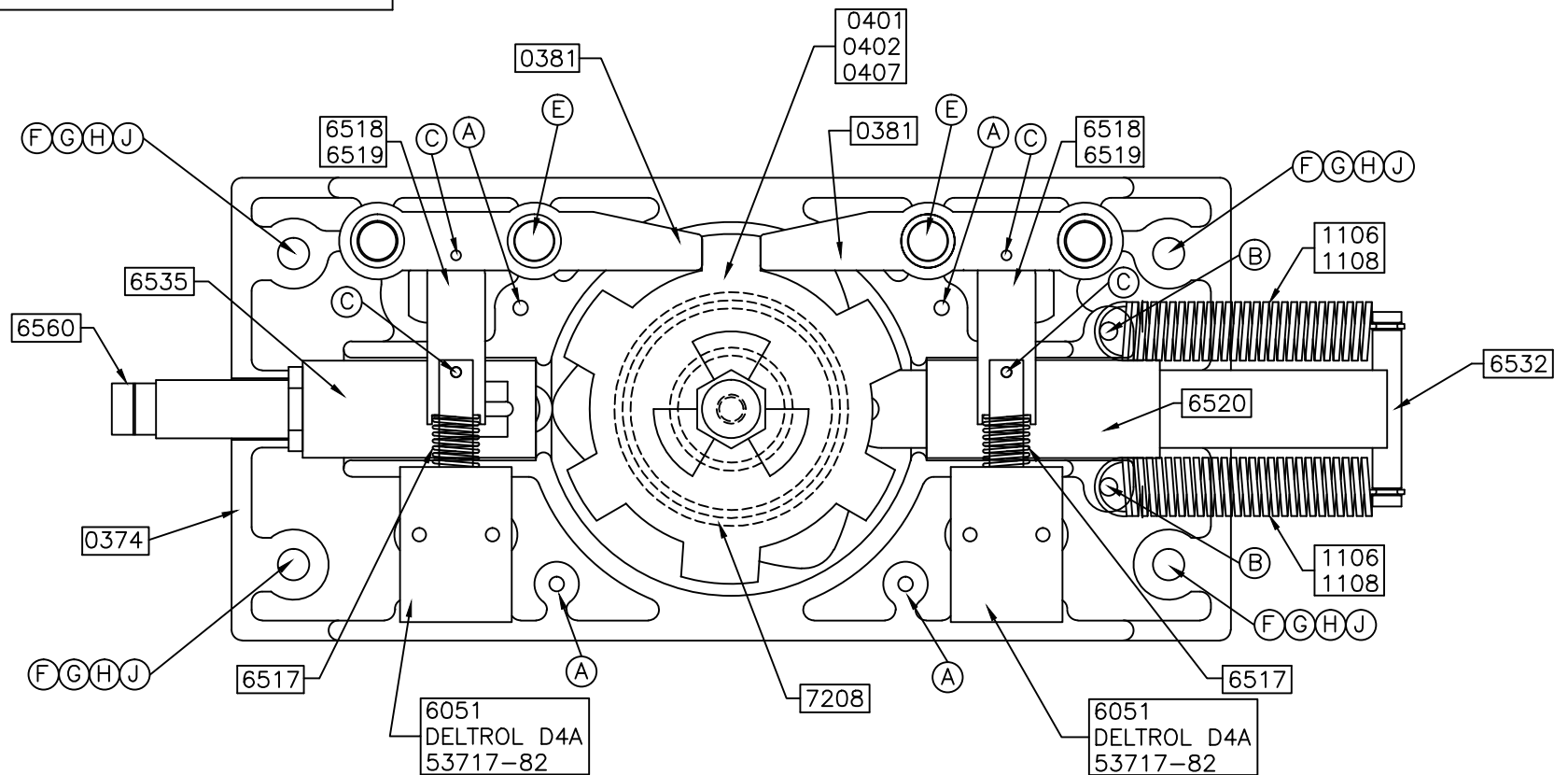
While the head can be configured for mechanical (no electronics) operation, the turnstile's security potential is reached in the case of an electronic two way control head. In this instance, each rotational direction is independently unlocked. Configured properly, this control head will allow for one 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 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: connect inputs from access control devices into the logic controller and plug the unit's power supply into a 110-240VAC receptacle. The power supply will automatically set itself to function on your local voltage and convert it to 24VDC.



Note: Proper turnstile operation requires a dry, normally open momentary contact closure (of one second or less).

TOP CASTING REMOVED



ALL ELECTRICAL COMPONENTS UL CERTIFIED

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

CA CONTROLLED
ACCESS, INC.
1636 West 130th Street
Brunswick, Ohio 44212

6500 SERIES CONTROL HEAD BOTTOM ASSEMBLY

SYM	QTY	DESCRIPTION
(A)	4	1/4-20 x 1" SOCKET HEAD
(B)	2	1/4"φ x 1 1/4" SPRING PIN
(C)	4	1/8"φ x 5/8" SPRING PIN
(E)	2	1/2"φ X 2 1/4" DOWEL PIN

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

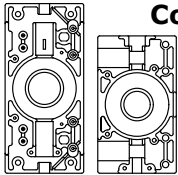
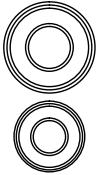
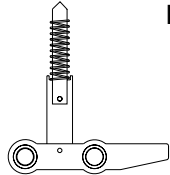
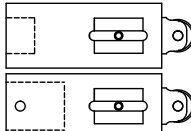
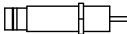


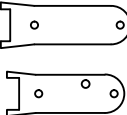

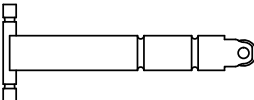
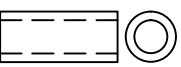

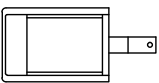
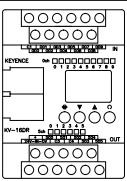
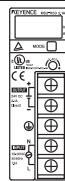
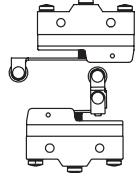
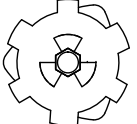
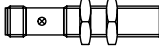
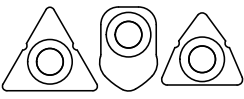
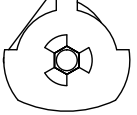
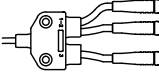
FULL HEIGHT UNITS			
(F)	4	3/8" x 1-1/2" SS CARRIAGE BOLT	
(G)	4	3/8 SS FLAT WASHER	
(H)	4	3/8 SS LOCK WASHER	
(J)	4	3/8 SS HEX NUT	



Controlled Access, Inc.
 1636 W. 130th St.
 Brunswick, OH 44212

Phone: (800)942-0839
 Fax: (800) 942-0828
 Web: www.controlledaccess.com
 Email: sales@controlledaccess.com

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

 <p>Control Head Castings</p> <p>0373 - Bottom Casting \$184.47</p> <p>0372 - Top Casting \$184.47</p>	 <p>Control Head Bearings</p> <p>7208 - Bottom Casting (6007RSNR) \$5.16</p> <p>1641 - Top Casting (1641-2RSNR) \$6.21</p>	 <p>Locking Bar Assemblies</p> <p>0382 - Fail Open \$76.36</p> <p>0383 - Fail Lock \$76.36</p>
 <p>Shock Housing Assemblies</p> <p>6535 - WH/427/430/T80/ADA \$158.88</p> <p>6541 - 439/448/P60 \$166.86</p>	 <p>Hydraulic Shock Absorbers</p> <p>6560 - WH/427/430/T80/ADA \$160.20</p> <p>6561 - 439/448/P60 \$232.33</p>	 <p>2030 - Waist High Arm Adapter \$59.47</p>
 <p>0381 - Locking Bar Casting w/ Oil Impregnated Bushings \$36.75</p>	 <p>Locking Bar Linkages</p> <p>6519 - Fail Open \$10.30</p> <p>6518 - Fail Lock \$10.30</p>	 <p>Solenoid Springs</p> <p>6510 - Fail Open \$7.57</p> <p>6016 - Fail Lock \$7.57</p>
 <p>6532 - Index Pin \$111.44</p>	 <p>6520 - Index Pin Tubing \$27.70</p>	 <p>Indexing Springs</p> <p>1106 - Waist High (Light) \$5.47</p> <p>1108 - Full Height (Heavy) \$5.47</p> <p>1107 - ADA (Extra Heavy) \$5.47</p>
 <p>6051 - Solenoid Deltrol D4A53717-82 \$55.89</p>	 <p>6789 - Logic Controller (KV-16DR) \$210.00</p>	 <p>0781 - Power Supply (24VDC, 50 Watt) w/ NEMA 5-15 power cable & bracket (specify model type for bracket) \$167.37</p>
 <p>Limit Switches</p> <p>2180 - Standard (Z-15GW2-B7-K) \$19.05</p> <p>1700 - One Way (BZ2RW825-Aw) \$46.20</p>	 <p>Cam Assemblies</p> <p>0401 - 427/430/T80/WH (7/8 Hex) \$222.24</p> <p>0407 - 439/448/P60 (1 1/4" Hex) \$245.20</p>	 <p>Proximity Sensor & Accessories</p> <p>7211 - 24VDC PNP Prox. Sensor w/ M12 Connector (Sick 1040763) \$76.50</p>
 <p>Limit Switch Cams</p> <p>2267 - Standard \$25.75</p> <p>2268 - ADA \$25.75</p> <p>2269 - One-Way \$25.75</p>	 <p>0402 - ADA (Must specify model) \$195.48</p>	 <p>0766 - 3 Branch M12 Splitter \$125.07</p> <p>6589 - Turnstile Prox. Bracket w/ 3x Mounts - LH, RH & Home \$10.00</p>

6500 Series Control Head Configuration Information

The 6500 series can be configured in a number of different ways. All turnstiles operating with the 6500 series control head self center and hydraulically shock to the home position to prevent damage or injury.

Manual both ways: Turnstile rotates freely in both directions. This unsecure configuration is used as a means to direct traffic through one area. Full height turnstiles can be purchased with a lockout bar which 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. This can also be known as fail secure.

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. This can also be known as fail safe.

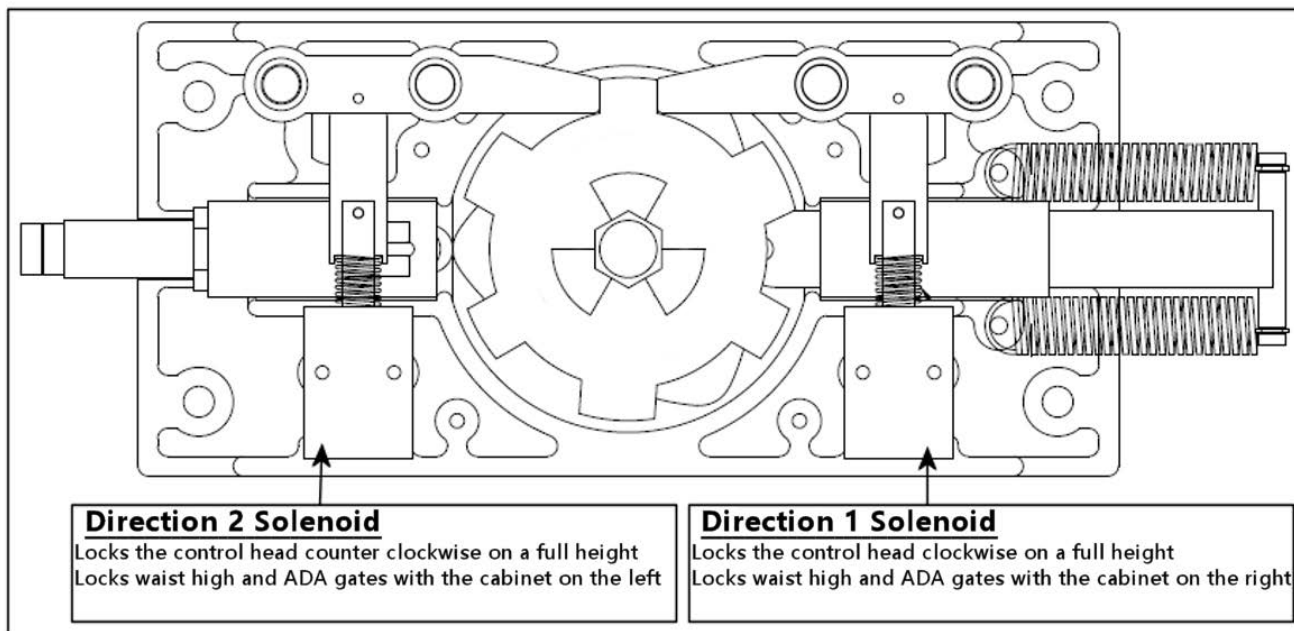
Key override: This option is for a location that the security requirements may change. The key override option is not intended for everyday use. Should you require an additional lockdown feature on your turnstile, a better option is a lockout bar (Figure L) with a standard pad lock.



Figure L: Optional lockout bar

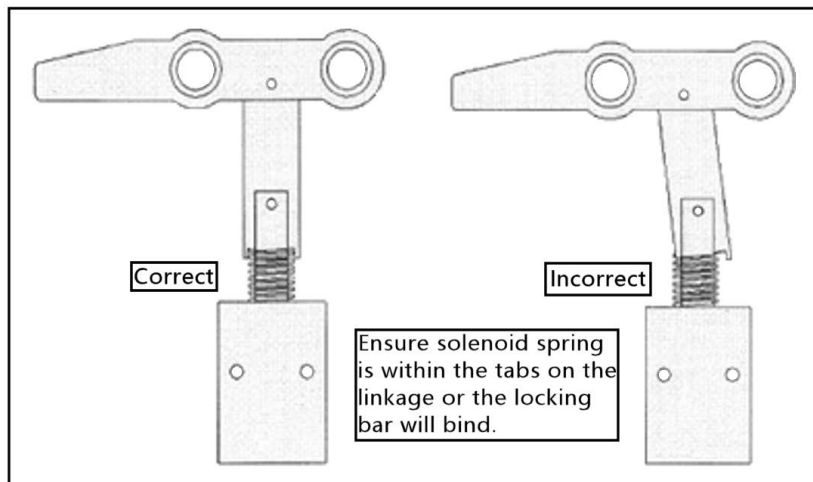
6500 Series Control Head Locking Bar Information

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 following diagram indicates which direction unlocks from which locking mechanism. A logic controller or key override is needed to unlock the control head in each direction it is configured to lock in.



If removing the locking bar becomes necessary for any reason, two methods can be used. The easiest method is to punch the ½" 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.

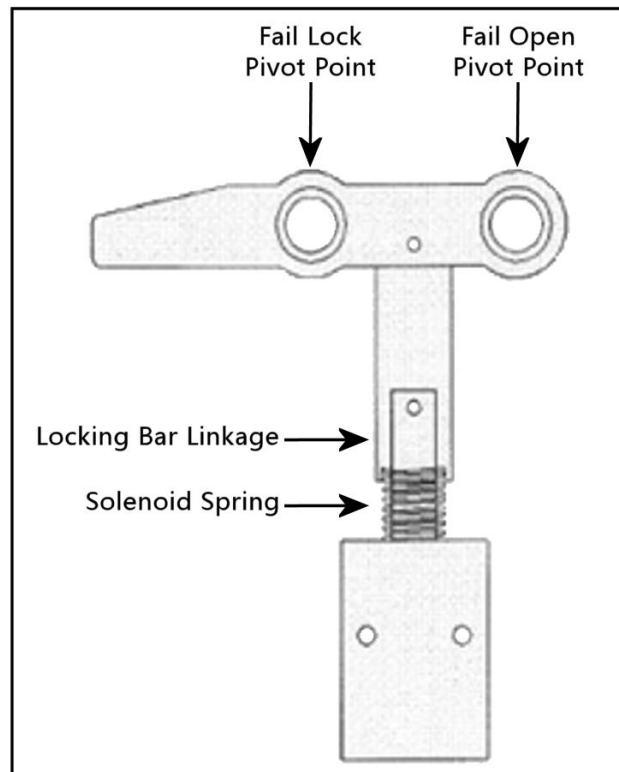
When installing or replacing the locking bars into the control head, be sure to take special care to align the solenoid spring (shown below) or it will not pivot properly.



Power Failure State Configuration (Fail Lock / Fail Open)

Each direction on a control head can be independently configured to open or lock upon power failure. The fail status configuration is based on the pivot point used on the locking bar as well as the linkage and solenoid spring used. Control heads are preconfigured in our factory before shipment based on a direction sheet filled out by the end user. In the event a fail status field change is needed, a different linkage and spring will be required (the part numbers are noted in a table below). Control heads can also be returned to the factory for reconfiguration for a fee of parts plus approximately 1 hour of labor if desired.

Description	Part Number
Fail lock linkage	6518
Fail open linkage	6519
Fail open solenoid spring	6510
Fail lock solenoid spring	6016



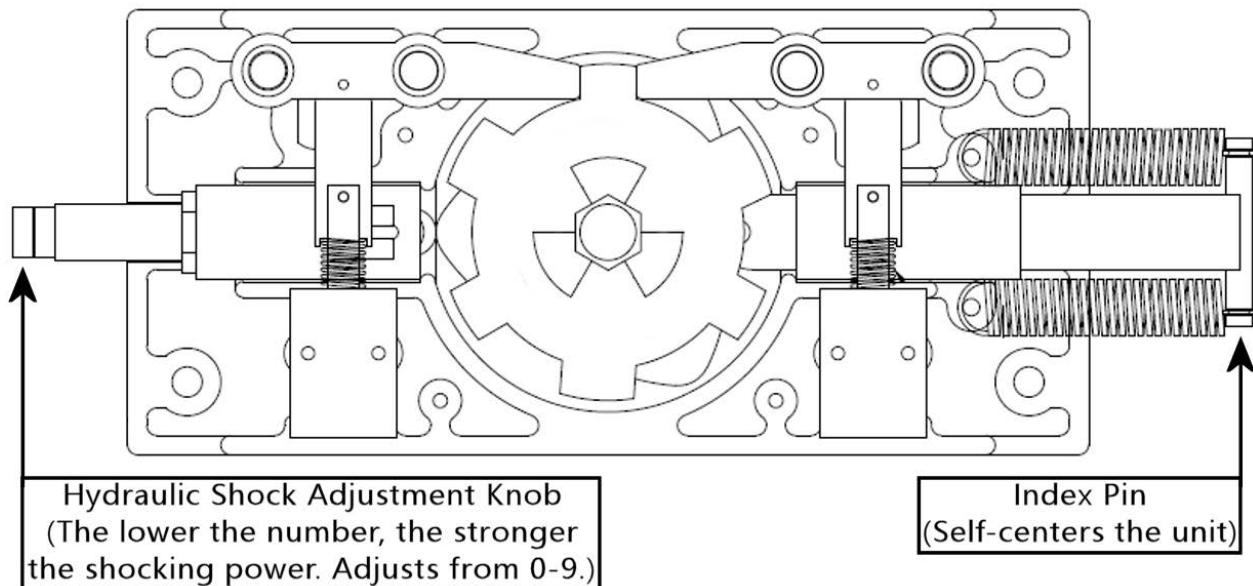
Note: As a reference, it may be important to know that some vendors use different terms for fail status. Fail open is also known as fail safe, while fail lock is also known as fail secure.

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. The set screw points at the current setting. A lower number yields more shock, whereas a higher number yields less shock. The table below indicates approximate shock settings for each type of product. Individual installations may vary.

Product	Approximate Shock Setting
Full Height	0-2
Waist High	5-6
ADA Gate	4-5

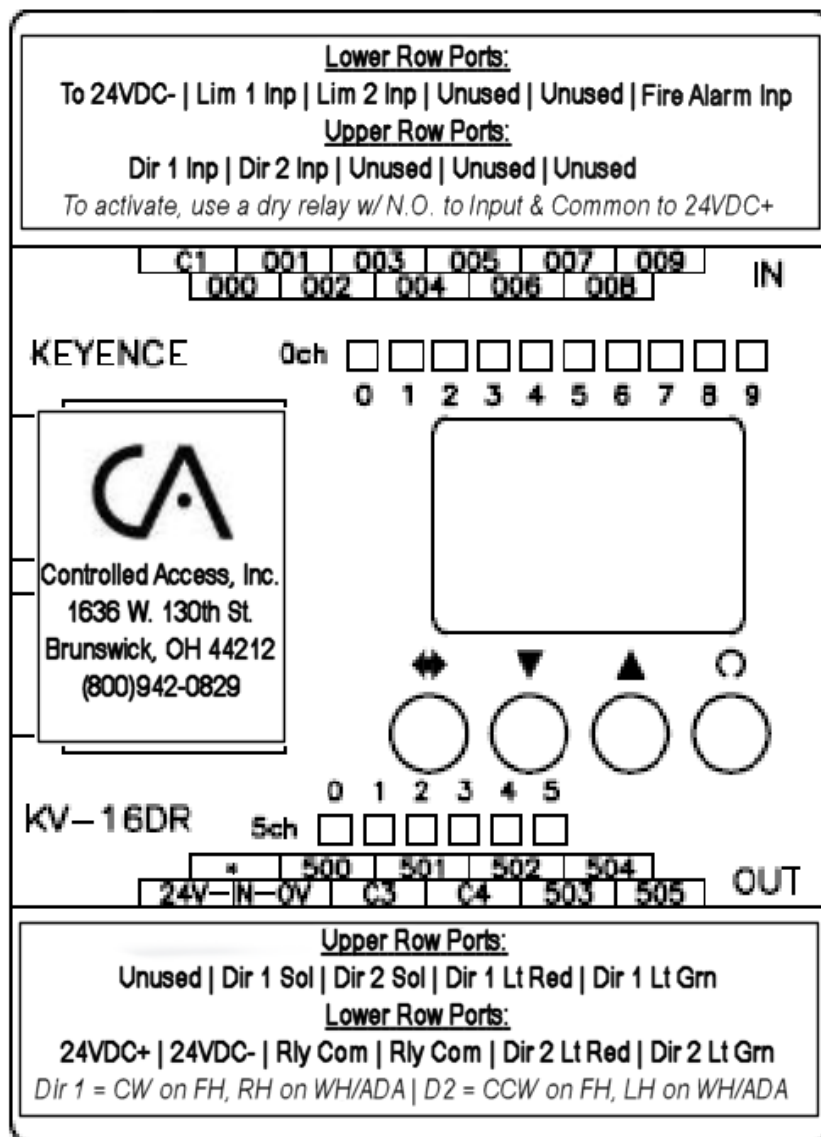


Should the shock need replaced, be sure not to fully thread the shock into the shock housing. Instead, thread the shock until it no longer spins, and then back the shock out approximately 1 ½ - 2 turns until the set screw is facing up. Lock down the shock with the provided nut, and then make field adjustments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

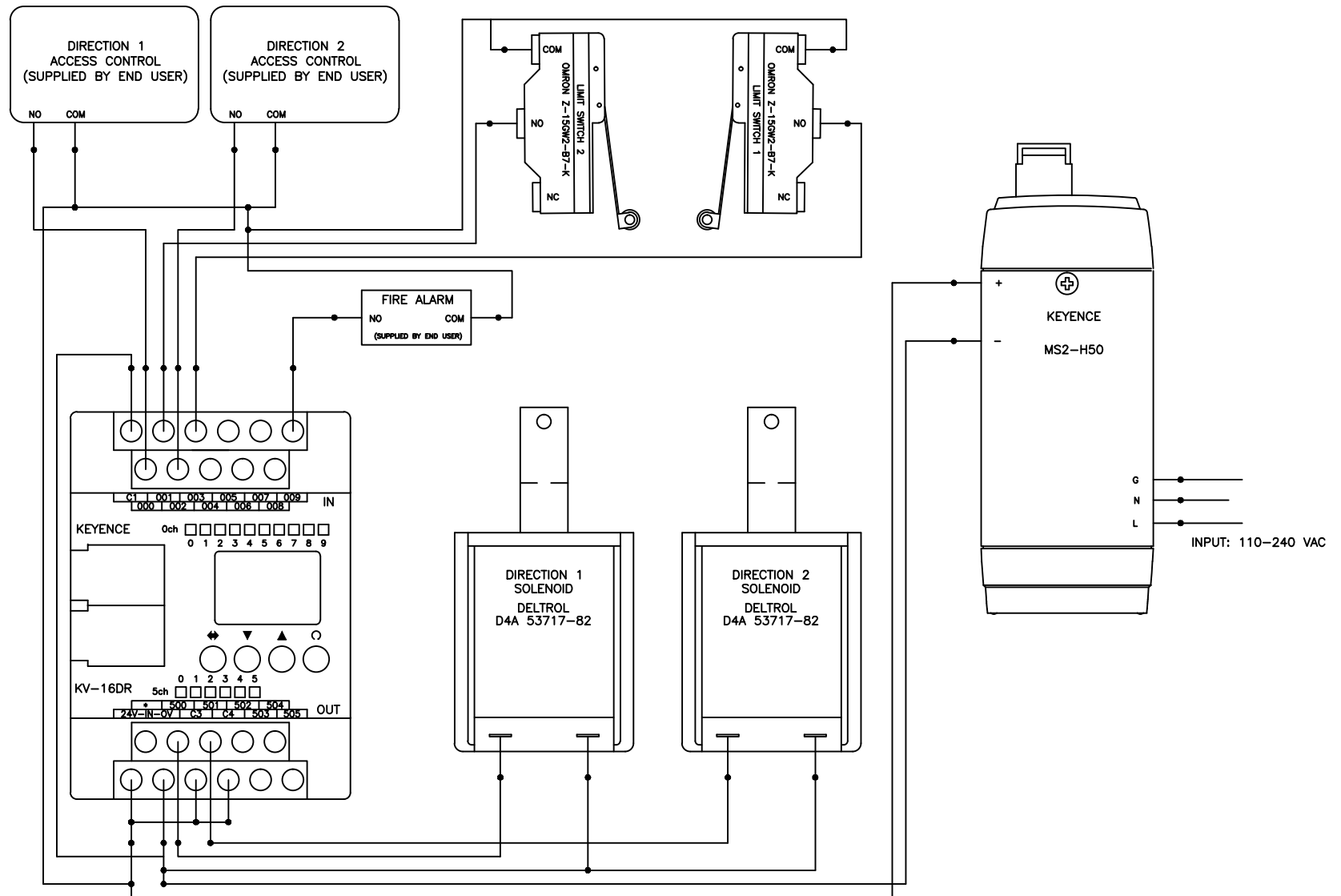
Some larger model turnstiles use an alternate, heavier shock. They adjust in the exact same fashion, but instead of being held in place with a nut, a ¼-20 set screw is used in the shock housing.

6500 Series Control Head Electrical Information

Each electronic control head comes with a power supply, a programmable logic controller (PLC), limit switches (or 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.



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, an onboard signal converter will automatically change the signal length to .1 seconds. However, the ability to hold the relay open is lost while that feature is active.



11/1/12

CA CONTROLLED
ACCESS, INC.
1636 West 130th Street
Brunswick, Ohio 44212

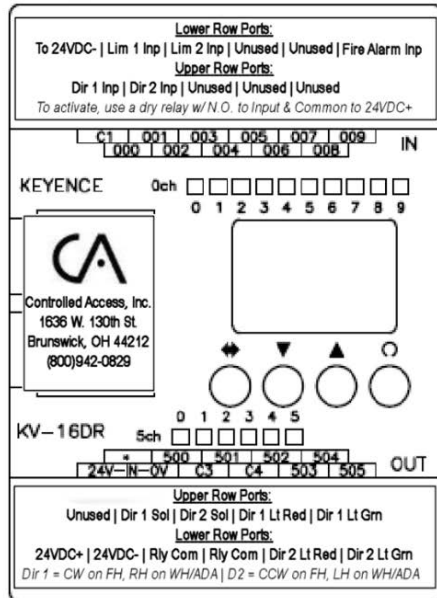
330-273-6185
FAX 330-273-4468
USA 1-800-942-0829
FAX 1-800-942-0828

STANDARD WIRING DIAGRAM

6500 Series Control Head Wiring Legend

Since each control head comes pre-wired, only access control and fire alarm should need to be connected to the board. If you are unable to fit wires for access control on the 24VDC+ input on the board, the voltage can be picked up directly from the power supply or from the relay commons (C3 & C4) on the board (C4 may not have voltage depending on options purchased. There will be a red jumper to C4 if there is). You may also run a jumper from 24VDC+ to any unused input to give additional contacts if needed.

6789 Wiring Legend



Definitions:

- Direction 1: Clockwise on a full height, right hand cabinet on waist high or ADA gate.
- Direction 2: Counter-clockwise on a full height, left hand cabinet on waist high or ADA gate.
- Limit 1: Cancels direction 1 activation.
- Limit 2: Cancels direction 2 activation.
- Fire Alarm: Unlocks *controlled* directions while active.

Inputs are triggered with 24VDC+ (PNP). Use dry normally open relays to activate. 24VDC+ to the common leg and the directional input to the normally open terminal.

Disconnect power before wiring!

Input Side (Above display):

- C1: Jump to 24VDC-
- 000: Direction 1 Input
- 001: Limit Switch 1 Input
- 002: Direction 2 Input
- 003: Limit Switch 2 Input
- 004: Not Used
- 005: Not Used
- 006: Not Used
- 007: Not Used
- 008: Not Used
- 009: Fire Alarm Input

Output Side (Under display):

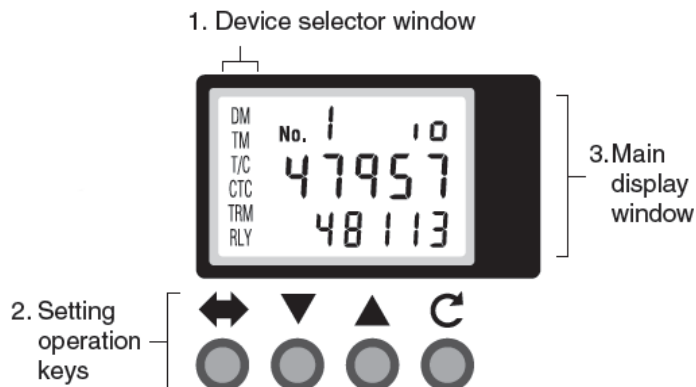
- *: Not Used
- 24V-IN: 24VDC+ from Power Supply
- 0V: 24VDC- from Power Supply
- C3: Common for 500-501 Outputs (Jumper to 24VDC+)
- C4: Common for 502-505 Outputs (Jumper to 24VDC+)
- 500: Direction 1 Solenoid
- 501: Direction 2 Solenoid
- 502: Direction 1 Status - Locked
- 503: Direction 1 Status - Unlocked
- 504: Direction 2 Status - Locked
- 505: Direction 2 Status - Unlocked



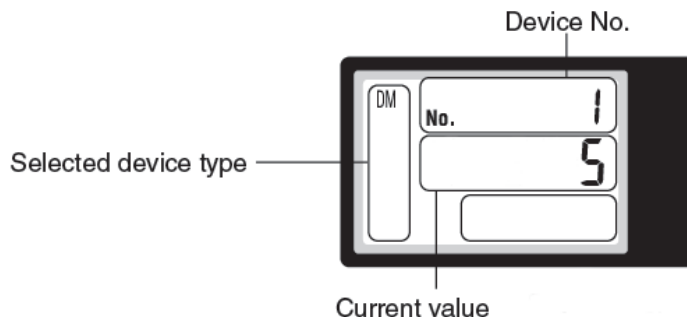
Note: Directional status outputs are unaffected by optional key overrides as the override occurs outside of the logic controller.

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.



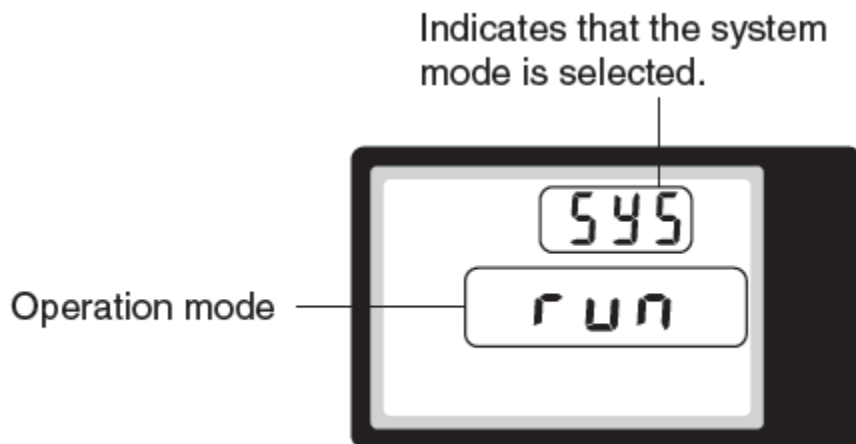
Although the logic controller is capable of many functions, all of the devices that the control head operates from are accessed in “Device Mode”. When device mode is active, the display screen will show DM in the top left corner.



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 accidentally 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 **C** 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.

Device Settings of the 6500 Series Control Head

While working within device mode, two primary values should be considered. On the top of the display, the selected device is shown. The 6500 series control head settings can be adjusted with devices 0 – 7.

Pressing the up or down arrows allow you to select which device you wish to modify. Pressing and holding the **C** key for 3 seconds loads the modification window. While modifying, the digits on the window begin to flash. Pressing **↔** will move the cursor in a digit. Select the correct digit to modify, then use the arrows to change the value. Once finished, hold the **C** button for 3 seconds and your adjustment will save.

Should a value inputted not fall within the specified range of the device being modified, the value will automatically adjust to the highest possible value. A description of each device setting is:

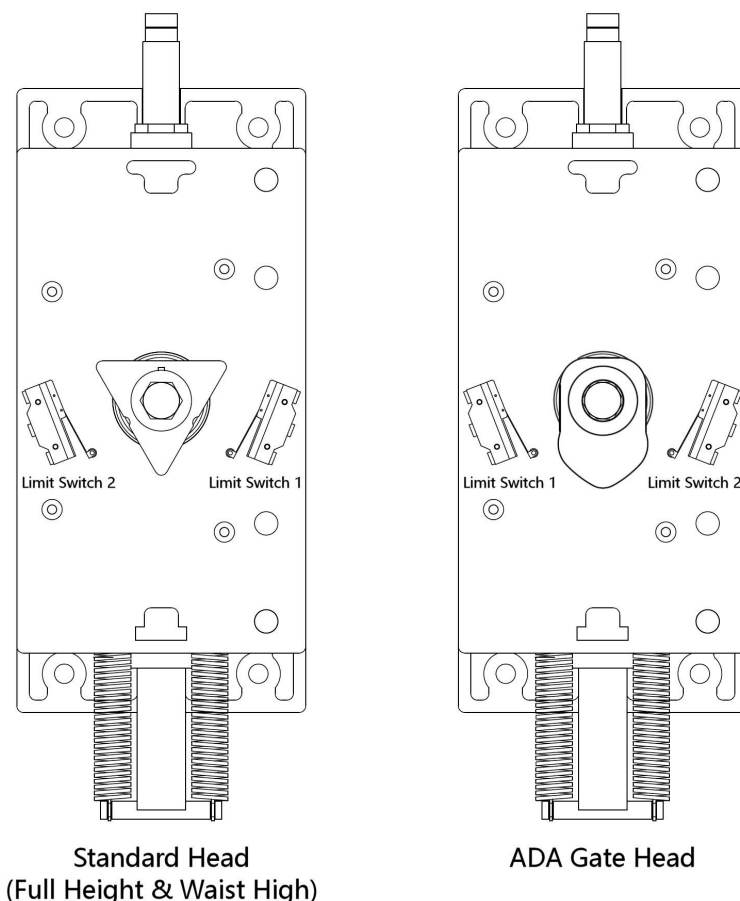
- **DM0:** Timer value for Direction 1. The range of this setting is 1 – 60 seconds. This is how long the direction will remain open for if a user does not pass through the direction. The default setting is 7 seconds.
- **DM1:** Timer value for Direction 2. The range of this setting is 1 – 60 seconds. This is how long the direction will remain open for if a user does not pass through the direction. The default setting is 7 seconds.
- **DM2:** Direction 1 fail status. This determines when the solenoid receives power and is preconfigured based on each individual order. 0 means the direction is fail lock & 1 means the direction is fail open. This setting is not affected by factory reset.
- **DM3:** Direction 2 fail status. This determines when the solenoid receives power and is preconfigured based on each individual order. 0 means the direction is fail lock & 1 means the direction is fail open. This setting is not affected by factory reset.
- **DM4:** Direction 1 one-shot timer: This setting determines whether or not the access control input length is ignored and converted to a .1 second pulse internally. Enabling this allows the turnstile to ignore access control from allowing too many users pass through the turnstile. Disabling it allows access control to hold the direction open. 0 means the one-shot timer is inactive & 1 means the one-shot timer is active.
- **DM5:** Direction 2 one-shot timer: This setting determines whether or not the access control input length is ignored and converted to a .1 second pulse internally. Enabling this allows the turnstile to ignore access control from allowing too many users pass through the turnstile. Disabling it allows access control to hold the direction open. 0 means the one-shot timer is inactive & 1 means the one-shot timer is active.
- **DM6:** Direction 1 multi-swipe: This setting allows more than one access control request to be processed at a time to allow a faster flow of traffic. The range is 1-3. As each access control request is processed, each rotation subtracts from the total, allowing a constant flow of traffic. Most installations would benefit from a value of 2, which is the default setting.
- **DM7:** Direction 2 multi-swipe: This setting allows more than one access control request to be processed at a time to allow a faster flow of traffic. The range is 1-3. As each access control request is processed, each rotation subtracts from the total, allowing a constant flow of traffic. Most installations would benefit from a value of 2, which is the default setting.

- **DM9:** Direction 1 Count: Displays how many valid rotations were made in direction 1. This has a max value of 60,000 and will reset to 0 once that number is reached. This will not count fire alarm, hold open or key override rotations. This count is for maintenance and repair logging purposes.
- **DM10:** Direction 2 Count: Displays how many valid rotations were made in direction 2. This has a max value of 60,000 and will reset to 0 once that number is reached. This will not count fire alarm, hold open or key override rotations. This count is for maintenance and repair logging purposes.

Additionally, scrolling downward past DM0 will allow you access to **DM1999**, which resets all settings to factory defaults (except for solenoid fail status settings). Choose any value greater than 0 to perform the factory reset.

6500 Series Full Height Control Head Limit Switches

Limit Switch Placement



Direction 1 is canceled by limit switch 1 and direction 2 is canceled by limit switch 2. As the unit rotates, both limit switches are triggered. However, only the limit switch designated for that direction is utilized to relock the unit. The switch is triggered towards the end of the rotation. Once it is triggered, the locking mechanism returns to the locked position, but users may still proceed until the home position is reached.

A minor exception to this is in the case of an ADA swing gate. The limit switch is triggered towards the beginning of the swing, which allows the locking bar to prevent the gate from over swinging. In this instance, the limit switches are designated backwards from those on a standard turnstile. Refer to the above diagram to illustrate which is which.



Note: The control head will not operate properly if the limit switches and top cam are not adjusted properly or altered from factory shipment.

6500 Series Control Head & Turnstile Maintenance & Cleaning

To ensure long life on any turnstile, the following maintenance is recommended.

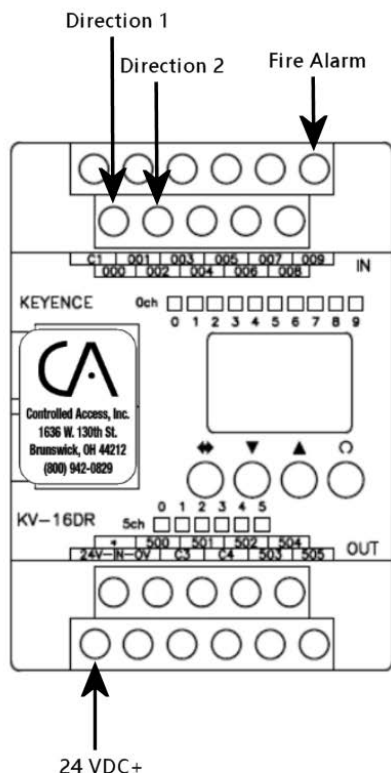
- Annual
 - If you have a full height turnstile: On the bottom of each rotor, you should find a grease fitting. Utilize this fitting to re-grease the bearing that the rotor rests on.
 - Make sure all nuts are securely fastened on all parts of the turnstile.
 - On the control head, remove the index pin and apply white lithium grease. Use 3 in 1 oil on the index pin roller. The index pin is easily removed from the control head by disconnecting the springs from it.
- Bi-annual
 - Remove the lid from the control head. Clean any debris and apply grease to the shock roller assembly. Use 3 in 1 oil on the shock piston roller.
 - Apply 3 in 1 oil to the bronze bushing on the locking bars.
 - Inspect control head parts for wear and tear, replace parts as needed.
 - Reassemble control head. Using a removable strength (blue) thread sealer (such as Loctite 242 or 243) on the head bolts will help the control head remain sturdy.
- Cleaning
 - Galvanized turnstiles can be cleaned with soap and water. Galvanized finish may fade in color over time, but this is normal.
 - Powder coated turnstiles should be cleaned with a non-abrasive cleanser such as Formula 409. Be sure to inspect for chips on the powder coating and touch them up, or the exposed steel may rust.
 - Stainless steel turnstiles should be polished with a stainless steel wax or polish. **In harsh environments, such as facilities near the ocean or within a chemical plant, stainless steel turnstiles should be waxed with a simple car wax to prevent surface discoloration on an annual basis.** Discoloration and surface rust can be easily removed with a rust penetrating product, such as P.B. Blaster, along with non-scratching scouring pads.

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.



Note: The recommended time frames are assuming a maximum of 75000 passages per year. Turnstiles with heavier traffic should be maintained more frequently.

6789 Control Board Testing Procedures



To test whether or not your control head is functioning properly...

- Unplug power supply from outlet.
- Disconnect access control and fire alarm system from inputs 000, 002, and 009.
- Plug power supply back in.
- Using a length of 18 gauge wire, momentarily touch the 24VDC+ screw terminal with one end and input 000 with the other. The solenoid should engage.
- Trigger limit switch 1 and the unit should relock. It will also relock when the timer expires.
- Repeat this step with 24VDC+ and input 002. The alternate solenoid should engage.
- Trigger limit switch 2 and the unit should relock.
- If desired, test the fire alarm input by jumping and holding input 009 to 24VDC+ and both directions should unlock.

** If the unit was ordered with "no passage" in a direction, it will not be activated by either the directional input or the fire alarm.*

6500 Series Control Head Troubleshooting

Symptom	Cause	Solution
Turnstile does not unlock.	Power supply is not receiving input voltage.	Verify outlet receptacle installed in mainframe is operating correctly and that the power supply is plugged in.
	Loose wiring from power supply to logic controller.	Refer to pages 24-26 for wiring information.
	Power supply is not producing voltage.	Check output voltage from power supply. It should be 24VDC.
	Logic controller program is not running. This can be determined by the color of the lettering on the logic controller display screen. If it is red, it is not running.	Refer to the "Overview of the Access Window" section on page 27 and "run" the program.
	Access control device malfunction.	Disconnect access control from circuit board. Momentarily jump directional inputs. If the turnstile works properly, contact manufacturer of access control device.
	Control head requiring maintenance.	Refer to page 32.
More than one person can get through turnstile.	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 1 second or less.
	Loose wiring to the logic controller from limit switches.	Refer to pages 24-26 for wiring information.
	Limit switches are broken.	Inspect limit switches for breakage, replace as needed.
	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 30 for more information.
Unable to hold direction open to allow multiple people to pass through the turnstile.	One-shot timers are enabled.	Disable the one shot timer settings on the logic controller. Be sure that your access control output is one second or less during regular secure operation or extra people may be able to pass through.

People are becoming trapped inside of the turnstile.	Rotor was installed backwards.	Refer to step 15 on page 16.
Turnstile only rotates 30 degrees.	Limit switches wired incorrectly.	Refer to pages 24-26 for wiring information and page 27 for limit switch placement.
	Top 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 31 for top cam information.
Unit remains unlocked until access control is presented.	Fail open / fail lock configuration is wrong.	Change fail open / fail lock mode on each direction as appropriate.
Turnstile is slamming into the closed position.	Shock either needs adjusted or replaced.	Refer to page 23 for more information.
Turnstile is not centering properly.	Shock needs adjusted.	Refer to page 23 for more information.
	Binding in control head.	See next troubleshooting hint.
Turnstile seems to be binding mechanically.	Rotor is not plumb / turnstile body is not level.	Refer to the installation instructions for more information.
	Control head requires maintenance.	Refer to page 32 for more information.
Turnstile rotating the wrong direction.	Improperly filled out direction sheet.	In some cases, the control head can be reconfigured in the field to operate as needed. Refer to pages 17-22 for information about how the control head operates. If needed, control heads can be returned to the factory for reconfiguration for a fee of labor plus parts (if required). Please contact us before returning a control head in this instance.
	Directional inputs wired incorrectly.	Refer to wiring legend for direction port explanations on page 26.
Turnstile fails lock when needed to fail open or vice versa.	Improperly filled out direction sheet.	Refer to page 22 for more information. Additional parts will be required to convert operation. The control head can be returned for reconfiguration for a fee of labor plus parts (if required). Please contact us before returning a control head in this instance.
Other problems.		Please contact us for any other issues.

Proper Turnstile Usage

The 6500 series turnstile 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 swipe the card. Do not push on the arms of the rotor until after access control device is engaged and a click sound from the mainframe is heard. This sound is the locking mechanism engaging.



Note: Turnstile will not unlock if pressure is being applied to the rotor. The unit will unlock after pressure is released; however, it is a better practice to wait until the click sound is heard before pushing the rotor.

- After requesting access with access control devices, proceed through turnstile immediately. Waiting too long could cause the turnstile to time-out mid rotation, forcing the user to back out of the turnstile. Factory timer settings are at 7 seconds. While these timers are adjustable for up to 60 seconds, we recommend 7-10 seconds because if someone chooses to swipe and walk away from the turnstile, another person would not be able to pass through without credentials. The limit switches on the control head override the directional timers.
- 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 other direction. Allow people who are waiting an opportunity to pass through the turnstile.
- Avoid rotating the rotor on a full height before walking through on a valid entry request. This will cause the rotor to 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.



**The Leader in Pedestrian Control Systems
Waist & Full Height Turnstiles and Matching Gates**

Warranty Information

Seller warrants the goods against defective workmanship and materials provided that Buyer notify Seller within one (1) year after receipt by Buyer of the goods of any claim under this Warranty. The liability of Seller shall be limited to replacing or repairing defective goods returned by Buyer and delivered to the factory of the Seller, transportation charges prepaid.

Replaced or repaired goods will be redelivered freight repaid to the address of Buyer shown hereon. Except for the Warranty contained herein, there shall be no other warranties, such as warranties of fitness and merchantability or otherwise express or implied, written or verbal, and Seller shall not be liable for consequential damages in any event.