Installation and Service Manual

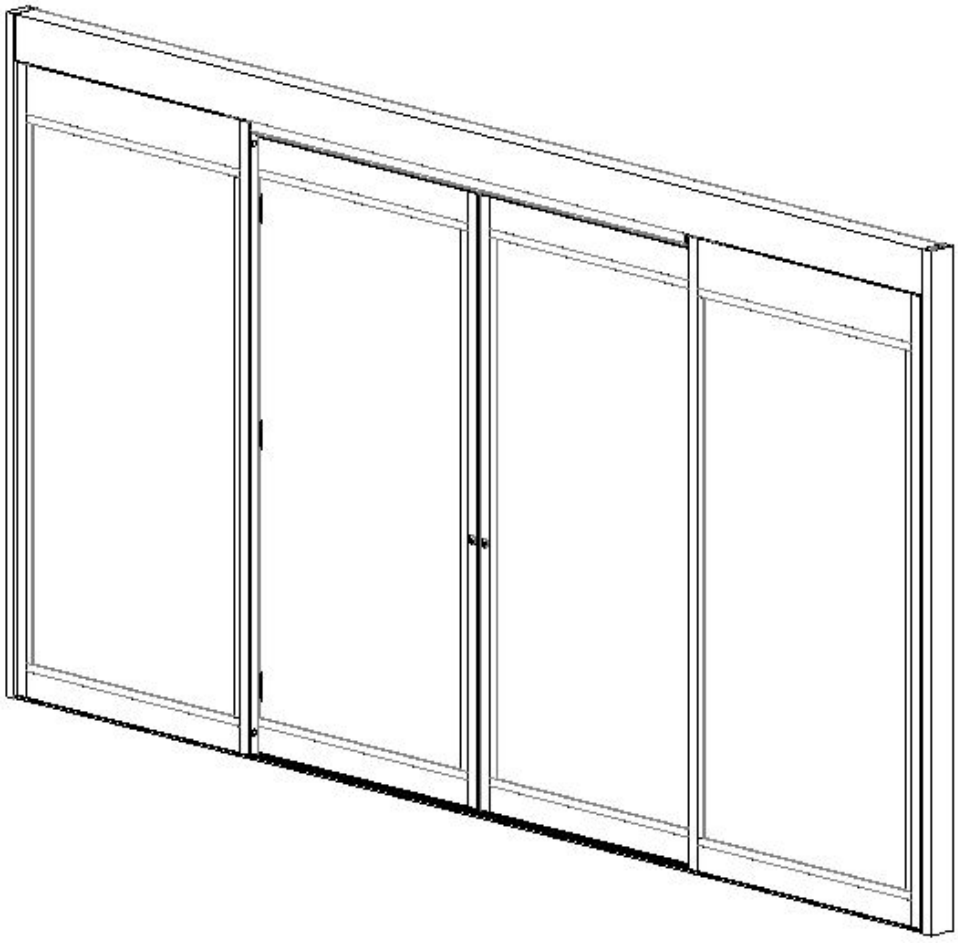
ASSA ABLOY

Sliding Door Operator

ASSA ABLOY SL500 Resilience

ASSA ABLOY Entrance Systems

The global leader in
Door opening solutions



CONTENTS

1 Revision

Following pages have been revised:

Page	Revision 0.0

2 Instructions for safe operation

- Failure to observe the information in this manual may result in personal injury or damage to equipment.
- To reduce the risk of injury of persons - use this operator only with pedestrian doors.
- Do not use the equipment if repair or adjustment is necessary.
- Disconnect supply when cleaning or other maintenance is to be carried out.
- The operator can be used by children age 8 and above, and persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, if they have been given supervision or instruction by a person responsible for their safety concerning safe operator use and the possible hazards involved.
  This does not however prevent those persons to use the door where the operator is installed.
- Cleaning and user maintenance shall not be made by children without supervision.
- Do not let children climb on or play with the door or the fixed/remote controls.
- Make sure that the wall is properly reinforced at the installation points.
- Make sure that the power is off before installing.
- Ensure that the surface is even, particularly when attaching to block or concrete surfaces - level and shim as necessary. (Failure to provide and even surface results in warping the profile making it impossible to snap the filler tube together.)
- Use care that all holes are deburred to prevent electrical shorts.
- In all instances, where work is being done, the area is to be secured from pedestrian traffic, and the power removed to prevent injury.

- Installer must properly ground door package! Improper grounding can lead to risk of personal injury.
- The mains connection must remain isolated until the wiring is completed. Then connect to the supply unit.
- The door set can be operated automatically by sensors or manually by activators.

3 Important information

3.1 Intended use

The ASSA ABLOY SL500 Resilience is designed for an overhead-concealed installation between two vertical jambs or surface applied. The header holds the drive and control units and supports the sliding doors, Sidelites and transom above the operator, if required.

An ASSA ABLOY SL500 Resilience operator ensures all-around safety. It can be combined with the full range of ASSA ABLOY Entrance Systems safety units, such as presence and motion sensors.

It is easy to install for both new construction and retrofit applications and can be adapted to a wide range of overhead concealed or surface applied installations.

For use see Owner's Manual 1018022

3.2 Safety precautions

To avoid bodily injury, material damage and malfunction of the product, the instructions contained in this manual must be strictly observed during installation, adjustment, repairs and service etc. Factory authorized training is required to carry out these tasks safely. Only ASSA ABLOY Entrance Systems-trained technicians should be allowed to carry out these operations.

3.3 Electronic equipment reception interference

The equipment complies with the European EMC directive (US market FCC Part 15), provided installed according to Installation and Service manual.

The equipment may generate and use radio frequency energy and if not installed and used properly, it may cause interference to radio, television reception or other radio frequency type systems.

If other equipment does not fully comply with immunity requirements interference may occur.

There is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient the receiving antenna.
- Relocate the receiver with respect to the equipment.
- Move the receiver away from the equipment.
- Plug the receiver into a different outlet so that equipment and receiver are on different branch circuits.
- Check that protective earth (PE) is connected.

If necessary, the user should consult the dealer or an experienced electronics technician for additional suggestions.

3.4 Environmental requirements

ASSA ABLOY Entrance Systems products are equipped with electronics and may also be equipped with batteries containing materials which are hazardous to the environment. Disconnect power before removing electronics and battery and make sure it is disposed of properly according to local regulations (how and where) as was done with the packaging material.

3.5 Glazing materials

The glazing material for sliding doors shall comply with ANSI Z97.1.

4 Technical specification

Manufacturer:	ASSA ABLOY Entrance Systems Inc.
Address:	1900 Airport Road, Monroe, NC 28110, US
Type:	ASSA ABLOY SL500 Resilience
Main power supply:	100 V AC -10% to 240 V AC +10%, 50/60 Hz, fuse 10 AT (building installation) **Note:** The mains power supply shall be installed with protection and an all-pole mains switch with isolating capability of Category III, at least 1/8" (3 mm) between contacts, shall be installed according to local regulations. These articles are not provided with the door.
Power consumption:	Max. 250 W
Degree of protection:	IP20
Degree of protection, control actuators:	IP54
Auxiliary voltage:	24 V DC, 1 A
Recommended max. door weight:	ASSA ABLOY SL500 Resilience Bi-parting 104” H x 192” W: 400 lb./leaf (180 kg/leaf) Bi-parting 128” H x 192” W: 440 lb./leaf (200 kg/leaf) Single Slide 104” H x 108” W: 420 lb./leaf (190 kg) Single Slide 128” H x 96” W 440 lb./leaf (200 kg/leaf)
Clear opening:	Bi-parting: ASSA ABLOY SL500 Resilience-2: $37^{1/2}$" – $82^{1/16}$" (952 – 2084 mm) Single Slide: ASSA ABLOY SL500 Resilience-R/L: $29^{1/2}$"– $46^{3/16}$"(749 – 1173 mm)
Opening and closing speed:	Variable up to approx. 4.5 ft/sec. (1.4m/s) (ASSA ABLOY SL500 Resilience-2) To be adjusted to comply with ANSI/BHMA A156.10. Note that local codes may vary.
Hold open time:	0-60 s To be adjusted to comply with ANSI/BHMA A156.10. Note that local codes may vary.
Ambient temperature:	-4°F to 130°F (-20 °C to +55 °C)
Relative humidity (non-condensing):	Max. 85%
The ASSA ABLOY SL500 Resilience complies with: ANSI/BHMA A156.10, UL 325, UL 60730, NFPA 79	
For indoor use only	

Note: The glazing material of all doors shall comply with the requirements in the American National Standard Performance Specification and Methods of Test for Safety Glazing Material Used in Buildings, Z97.1.

5 Design and function description

Design

The sliding door operator ASSA ABLOY SL500 Resilience works electromechanically. The motor, control unit, transmission and optional emergency unit and electromechanical locking devices are all assembled in a support beam with an integrated cover. The motor and gear box transmit movement to the door leaves by means of a tooth belt. The door leaf is fitted to a door adapter/carriage wheel fitting and hangs on a sliding track. The guiding at the bottom is carried out by means of floor guides (Full Break-Out).

Safety functions integrated in the operator

To permit safe passage between closing doors, the doors immediately reverse to the open position if an obstruction is detected, then resume their interrupted movement at low speed to check whether the obstruction has disappeared. If an obstruction is detected between opening doors and surrounding walls or interior fittings, the doors immediately stop and then close after a time delay.

5.1 Function

Opening
When an OPENING IMPULSE is received by the control unit the motor starts and transmits movement to the door leaves, which move to the open position.

Closing
The closing starts when no OPENING IMPULSE is received and the HOLD OPEN TIME has run out.

5.2 Microprocessor for precise control

The microprocessor has a routine for self-monitoring, which detects any interference or faulty signals in door operation. If an input signal does not correspond to the preprogramming, the microprocessor automatically takes necessary actions to ensure safe door operation.

5.3 Emergency escape

The ASSA ABLOY SL500 Resilience can be combined with an emergency unit that automatically opens or closes the doors in the event of a power failure and can also be interfaced with the building fire alarm fire alarm or smoke detector. Safety can be further reinforced by incorporating a break-out fitting. This enables the doors and sidelites to swing outwards in an emergency situation by applying a defined pressure at the front edge.

Doors used for emergency escape in buildings such as hospitals and homes for elderly people may not be locked or put in program selection OFF.

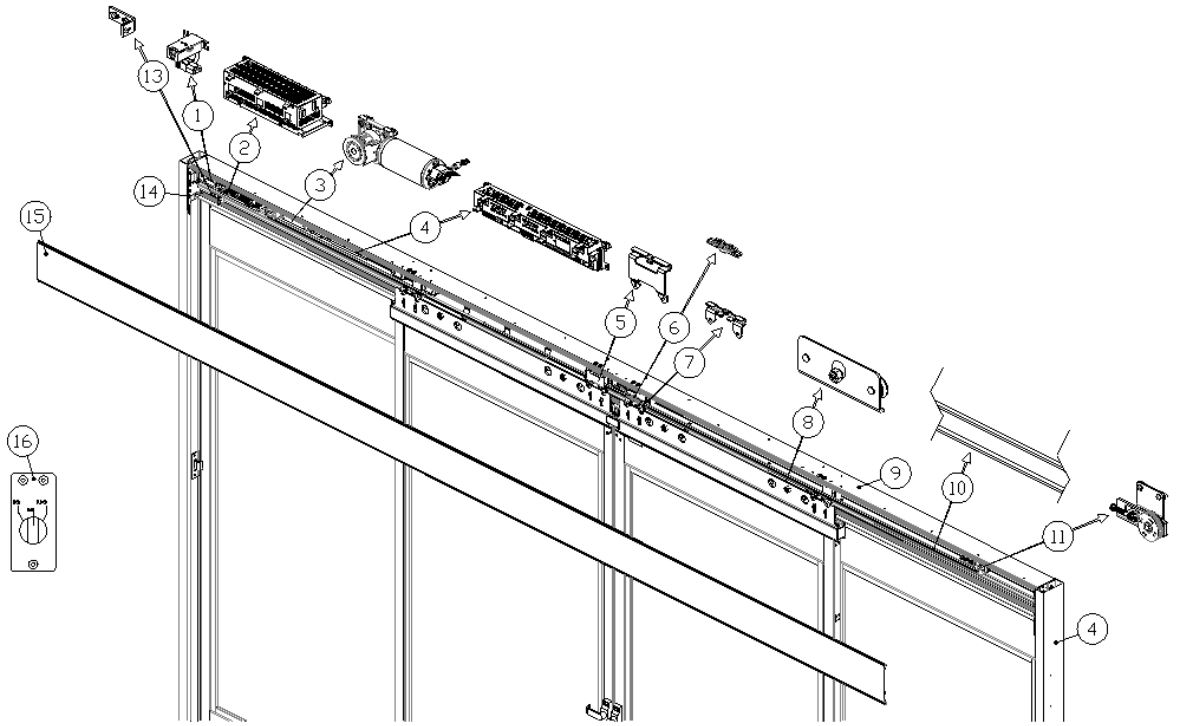
6 Models

ASSA ABLOY Entrance Systems provides several layouts for the ASSA ABLOY SL500 Resilience sliding door system. Operators can be bi-parting or single slide (left or right handed) and sidelites may be installed hinged to Break-out in emergencies. (See illustrations of various layouts in the "Installation Examples" section on page 19.)

All ASSA ABLOY SL500 Resilience systems are ready for installation when delivered. The sidelites and active leaves must be prepared with enclosed hardware. Operators are supplied with all assembly hardware, and jambs have preinstalled threaded insert. (Anchoring fasteners not included.)

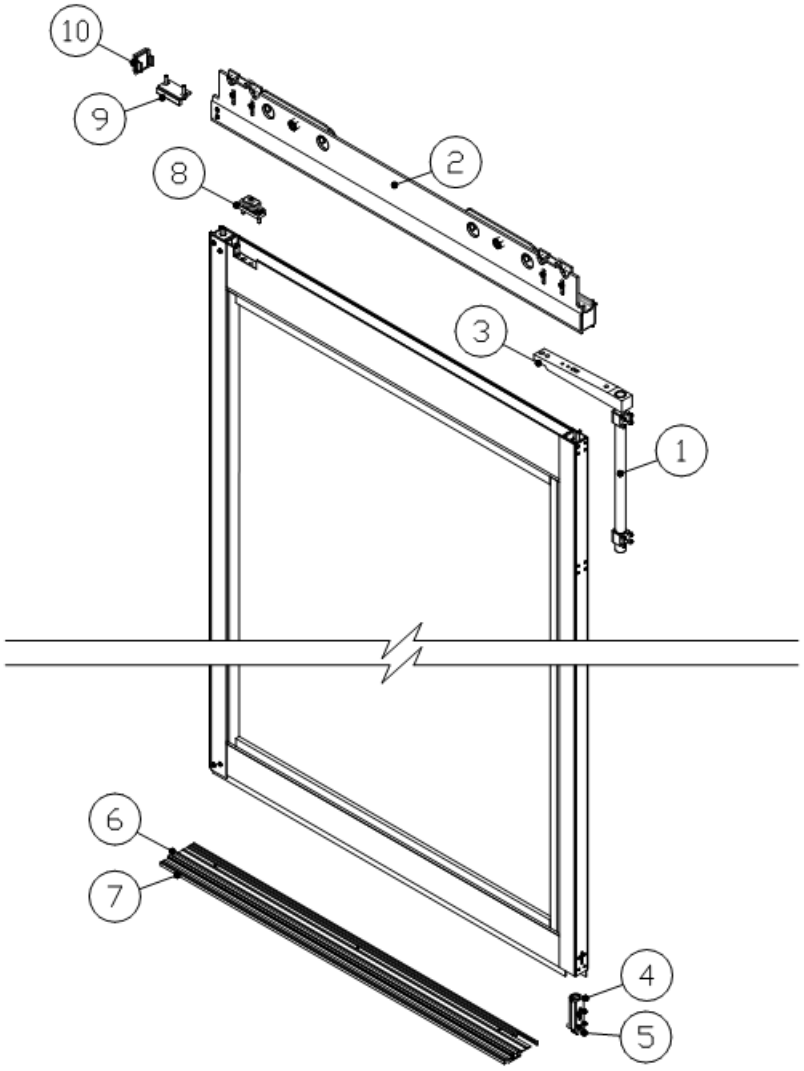
Before installing the ASSA ABLOY SL500 Resilience system, check to see that you have been supplied the correct equipment and that, all necessary tools and hardware are at hand. Also, check the installation site for any factors that might interfere with proper installation. (See "Installation Examples" section on page 19.)

7 Identification



No.	Description	P/N	No.	Description	P/N
1	Mains connection	1008184	9	SL500 Beam	1017783
2	Power supply unit (PSU 150)	1008147	11	Tooth belt	1701406
3	Drive unit	1007035	11	Tension wheel	1007118
4	Main control unit (MCU)	1007773	12	Jamb, Resilience	US01-0931-LLXX
5	Transmission bracket (high)	1007365	13	Resilience Door Stop Assembly	1016967
6	Belt clamp	1006906	14	Resilience Beam End Cap	1016613 (right) 1016614 (left)
7	Transmission bracket (low)	1007364	15	Cover, Resilience	1016073
8	Tandem Carriage Assembly	1016641	16	Standard operation 3-pos mode selector	1009341

7.1 Options

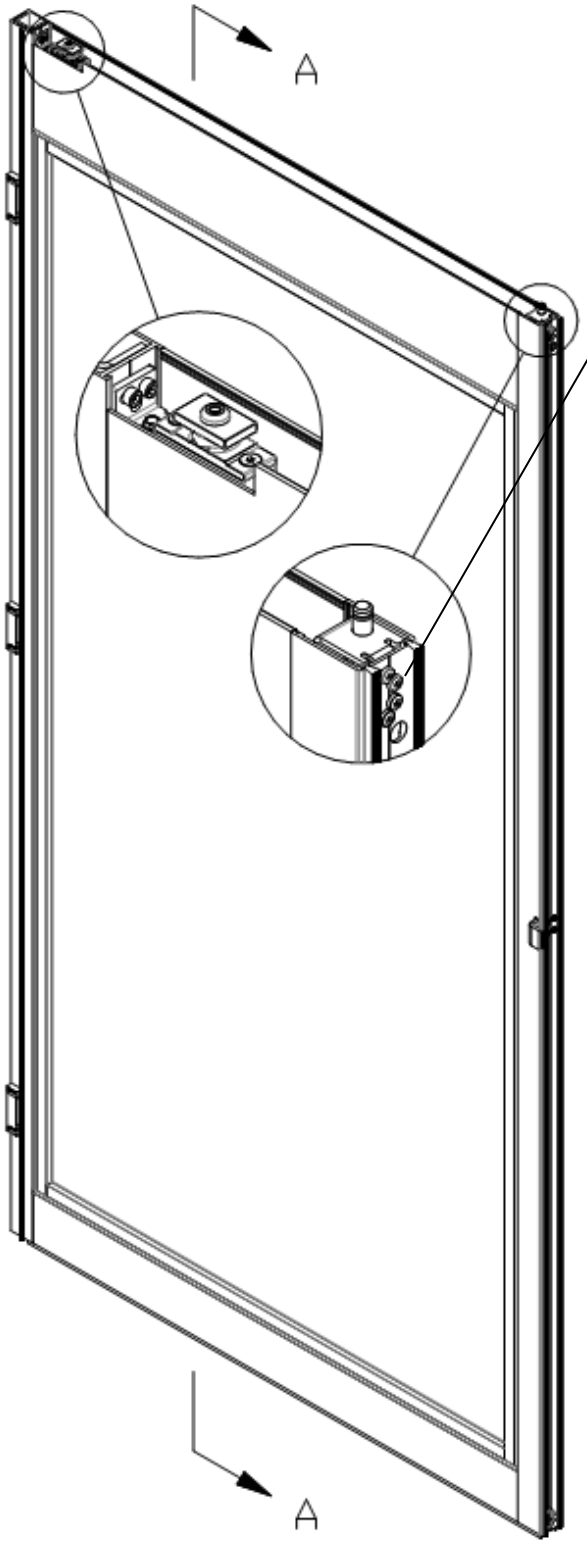


7.1.1 Active Leaf Panic Break-Out System

No.	Description	P/N	No.	Description	P/N
1	Panic Swing Arm (PSA)	1017036	6	Straight Slot Guide Snap-in Insert	1013866
2	Door Carrier	1015669	7	Threshold 4.5”	1013363
3	Anti-Sag Adjuster	_	8	Ball Catch Kit, Sidelite Door Portion, Resilience	1017039
4	Resilience Pin Guide Assembly	1016658	9	Ball Catch Receiver, Carrier Portion	US05-1609-01
5	Resilience Tee Block	1016649	10	Resilience Carrier End Cap Assembly	1008774

7.1.2 Sidelites and Break-Out

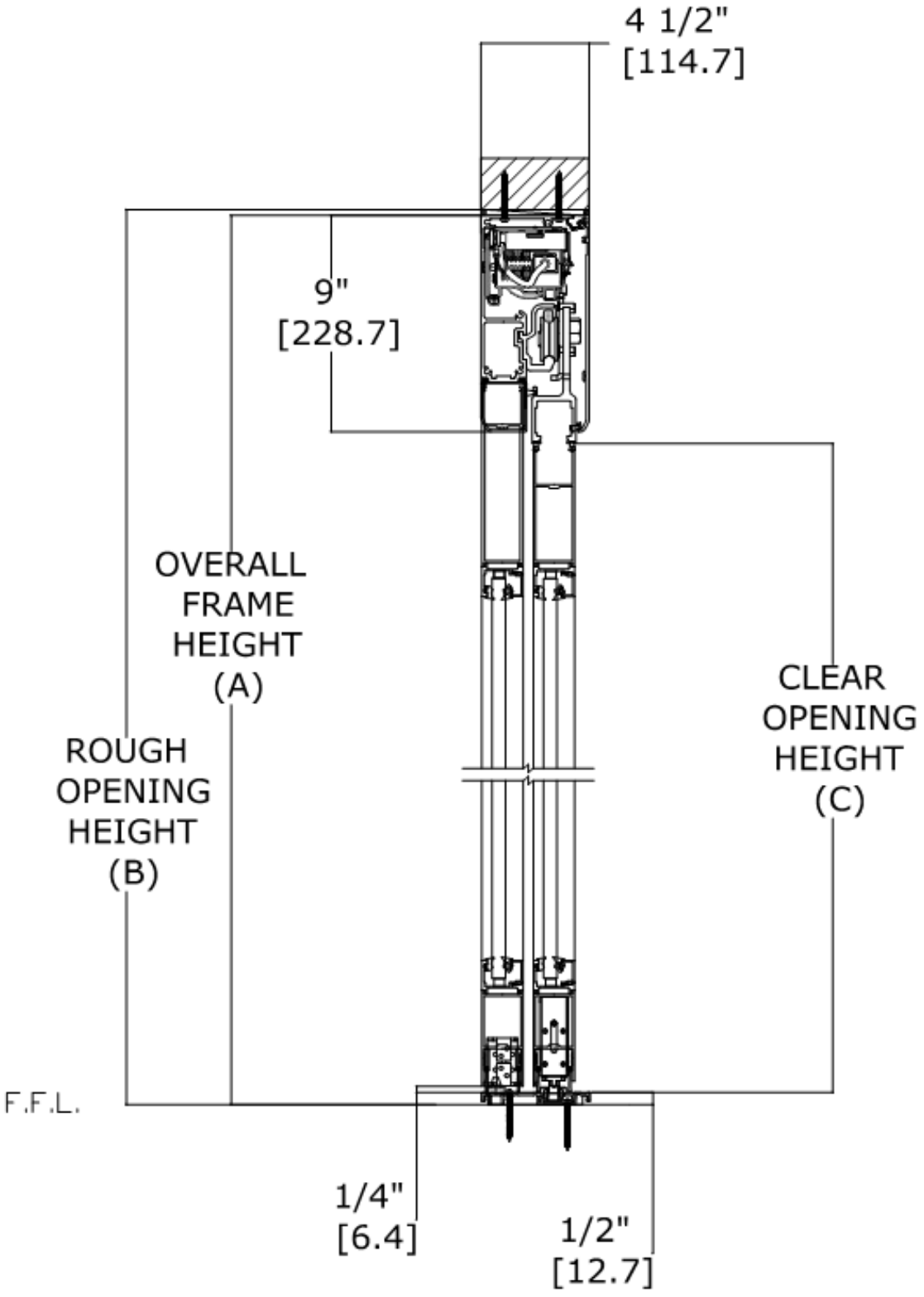
Sidelite, Break-Out (FBO)



Note: Pivot pin must be pushed up fully prior to tightening second screw from top to lock into place

SECTION A-A

8 Space required



9 Pre-Installation

This section will help you to determine the right configuration and preparation for your doors.

a Is this a Concealed Package?

b Is this installation a bi-parting or single-slide?

c If a single slide, what is the handing, left or right? (See "Door Handing" section on page 87).

d Where will power and signal wires enter the operator housing? (Back, End cover.)

e Verify substrate material.

9.1 General tips/Safety concerns

In all instances, where work is being done, the area is to be secured from pedestrian traffic and the power removed to prevent injury.

- It is recommended that two persons install this package. The impact door panels can weigh up to 220 pounds prior glazing. Using approved glass cups to move and set the doors is highly recommended for the safety of the installers and protection of the door panels. This will also ease the installation process and decrease the overall installation time.
- If there are sharp edges after drilling the cable outlets, chamfer the edges to avoid damage to the cables.
- For enhanced security and vandalism protection, always mount the operator access in the interior of a building whenever possible.
- Make sure the ambient temperature is in the range specified in section Technical specification.
- Make sure that the power is off before installing.
- Make sure that the door leaf and the wall are properly reinforced at the installation points.
- Unpack the operator and make sure that all parts are delivered in accordance with the packing note and that the operator is in good mechanical condition.
- Ensure proper material is being used for the door leaves and that there are no sharp edges. Projecting parts shall not create any potential hazards.
- Ensure that entrapment between the driven part and the surrounding fixed parts due to the opening movement of the driven part is avoided. The following distances are considered sufficient to avoid entrapments for the parts of the body identified;
  - for fingers, a distance greater than 1” (25 mm) or less than 5/16” (8 mm)
  - for heads, a distance greater than 7-7/8” (200 mm)
  - for feet, a distance greater than 2” (50 mm)
  - and for the whole body, a distance greater than 19-11/16” (500 mm)
- Danger points shall be safe guarded up to a height of 98-7/16” (2.5 m) from the floor level.
- The operator shall not be used with a doorset incorporating a wicket door.

It is not possible to replace an ASSA ABLOY operator component with a component from a different brand.

10 Mechanical Installation

10.1 Checking

Make sure that the wall is properly reinforced at the installation points.

Check that the wall material has the necessary reinforcements and that the floor is level and smooth.

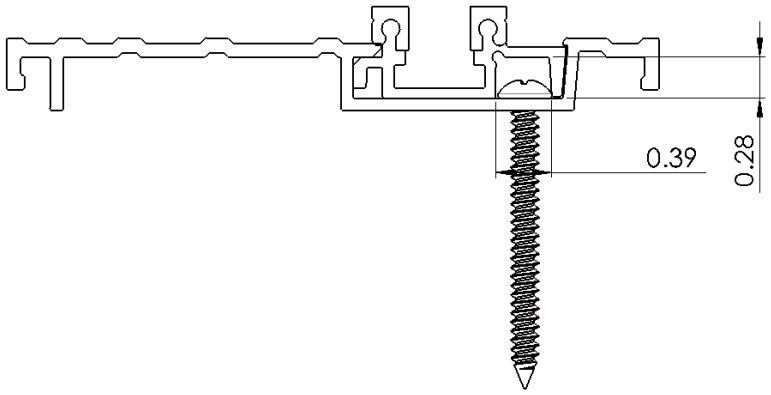
The beam/wall used to fix the support beam must be flat and smooth. If necessary use mounting spacers (up to ¼" thick) behind the support beam to keep it straight.

Adequacy of the existing structural concrete/masonry, wood and metal framing as a main wind force resisting system capable of withstanding and transferring applied product loads is the responsibility of the architect or engineer of record for the project.

All anchoring fasters for the beam, jambs and thresholds are provided by the installer and must meet the minimum requirements for the given substrate material (see table).

Fastening requirements			
Substrate material	**Anchor type**	**Min embed**	**Min edge dist**
Concrete (2.85 ksi Min)	1/4" Elco Ultracon	1 3/4"	2 1/2"
Hollow or Grout-Filled CMU (ASTM C90)	1/4" Elco Ultracon	1 1/4"	2 1/2"
2x Min. Southern Pine Wood (G=0.55)	#14 Grade 5 Wood Screw	1-3/8"	1"
16 Gauge (0.060") Min. Steel Stud, 33ksi Yield Min., Or 1/8" Alum. 6063-Ts Min.	1/4"-14 Hilti Kwik-Flex or ITW Teks Self-Drilling Screw	Full	1/2"

Note: Anchors are flathead at strike locations and round/pan/hex-washer elsewhere. See product approval drawings and documentation for full anchoring diagrams and requirements. Note critical head size requirements, shown below. Typical fasteners are 3/16" x 1-3/4" HWH Elco Ultracon for concrete substrate, #10x2" PH GR 5 Sheetmetal screw for wood substrate.



10.1.1 Test Equipment

a Stopwatch
b Force gauge (50 lb. force range)
c Multimeter

10.1.2 Tools required

a Set of metric box and wrenches
b Spirit level (48" +)
c Tape rule
d Power drill and set of drill bits, Unibit, Hammer drill
e Metric hex key set 8, 6, 5, 4, 3 mm and 2.5 mm
f Screw driver Torx T20, T27
g Flat blade screw driver (small/medium/large)
h #2 Phillips screw driver
i Center punch
j Wire stripper
k Plumb bob
l Silicone sealant
m Pencil
n 18" drill bit extension

Additional mounting hardware not supplied – (see fastening requirements above)

10.2 Installation Overview

This is only a summary of the installation process. See the rest of this manual for detailed information.

a Start by determining the answers to the pre-installation questions.

b First install header to jambs, tilt into place, level and plumb, then secure to rough opening with shims and appropriate fasteners.

c Full Break-Out: mount the pin or threshold guide track.

d Mount the sidelites.

e Mount the moving door panels.

f Adjust all door panels for alignment and smooth manual movement. Adjust all break-outs to comply with applicable building codes.

g Connect tooth belt from drive unit to active door panels.

h Complete all electrical connections to other operators or optional equipment.

i Adjust the control unit for optimal and safe performance, in accordance with current ANSI/BHMA A156.10 specifications.

j Adjust sensor systems for optimal and safe performance in accordance with current ANSI/BHMA A156.10 specifications.

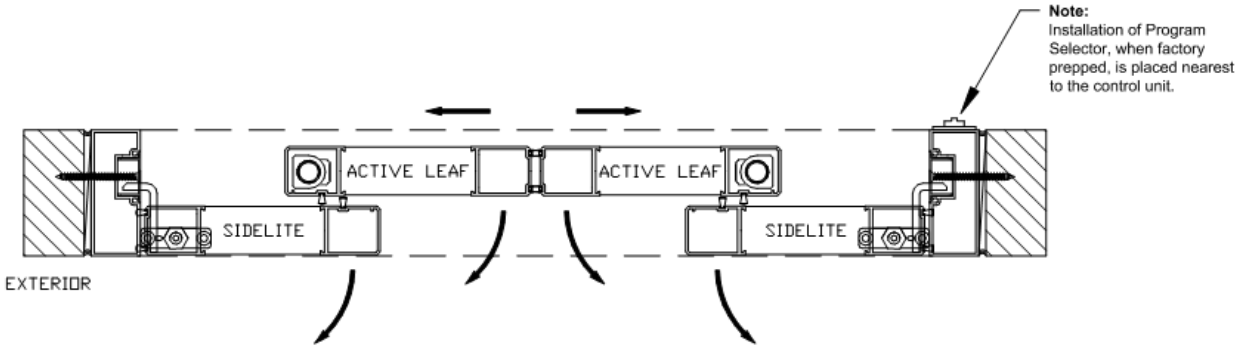
k Apply safety signage to the door(s) in accordance with ANSI/BHMA A156.10.

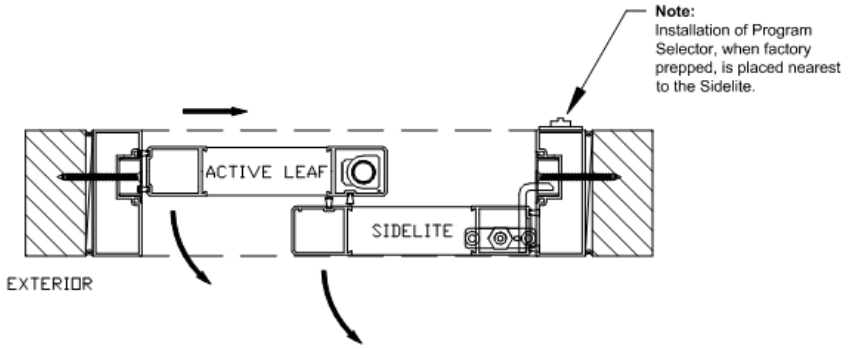
l Train facility manager in operation.

m Explain to the facility manager the daily safety check described in the owner's manual, and leave a copy of the owner's manual with the facility manager.

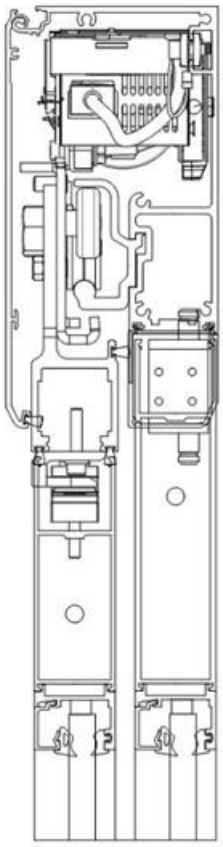
10.3 Installation Examples

10.3.1 Concealed



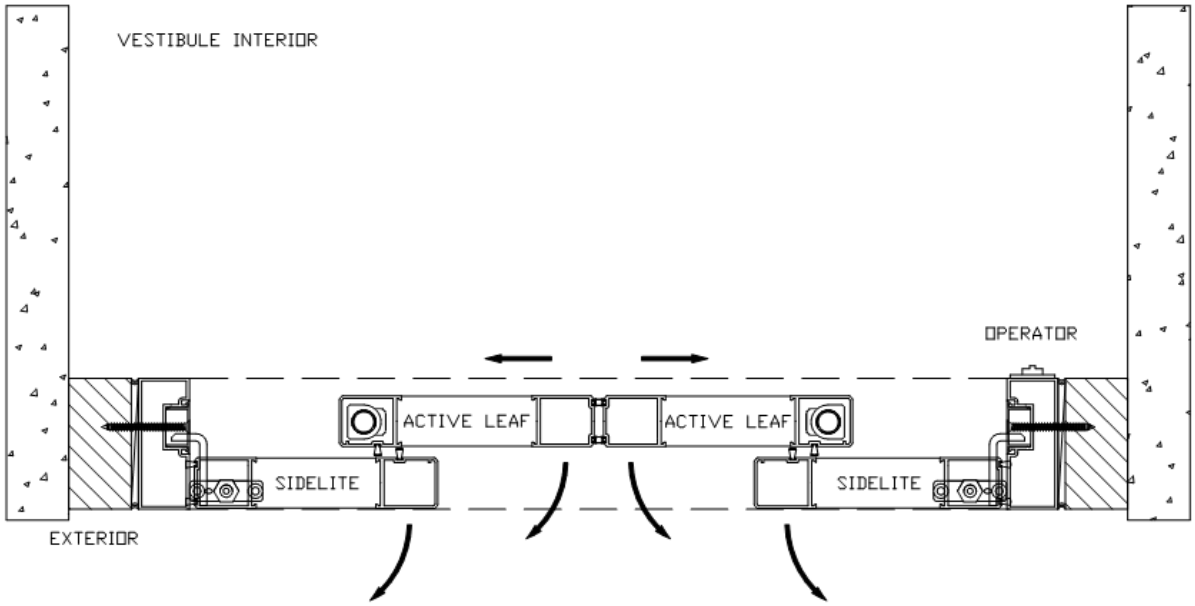


Note:
When factory prep is selected for the Program Selectors, prep will place the switch 74.5" [1892.3mm] from the bottom of the jamb to the center of the switch.



FBO

Breakout in Bi-Part Vestibule
(Half for Single Slide)



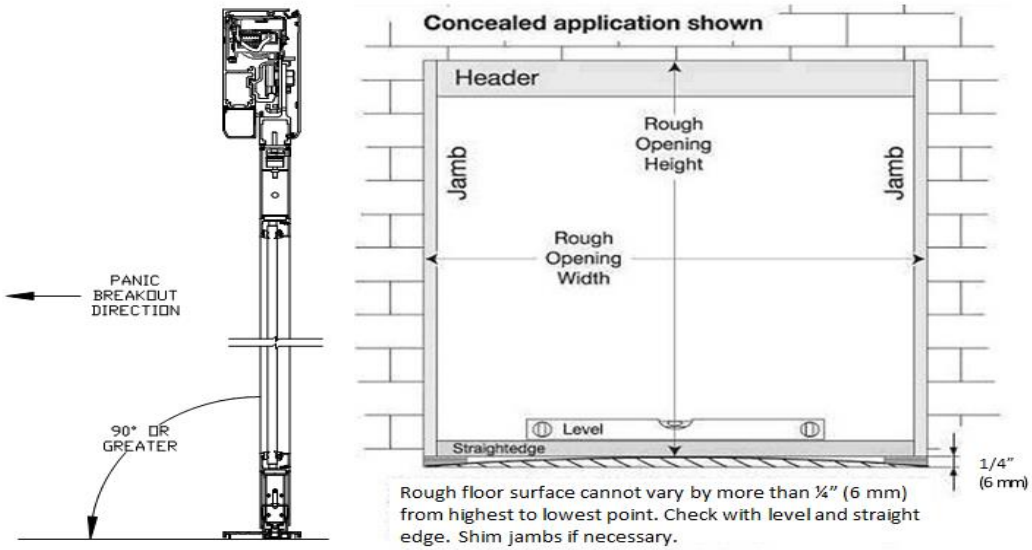
Note: Operator and covers both face interior for ease of access.

10.4 Site Inspection

The rough opening must be plumb and square and the finished floor must not vary by more than 1/4" (6 mm) from the highest to the lowest point. If necessary, have the floor leveled before attempting to install the sliding door system.

It is important to check the floor level within the path of the doors in Break-Out mode. The doors must not encounter any obstruction when broken out. The grade of the floor in the direction of break-out should ideally be 90° or greater, measuring from the highest point of the floor (see below).

For concealed applications the rough opening width should be 1/2" (13 mm) wider than the overall frame width of the sliding door system, and the rough opening height should be 1/4" (6 mm) higher than the overall frame height. For standard installations, the overall frame height will be 104” (2.64 m).



(Overhead Concealed overall frame height is 104 ½” (2.65 m))

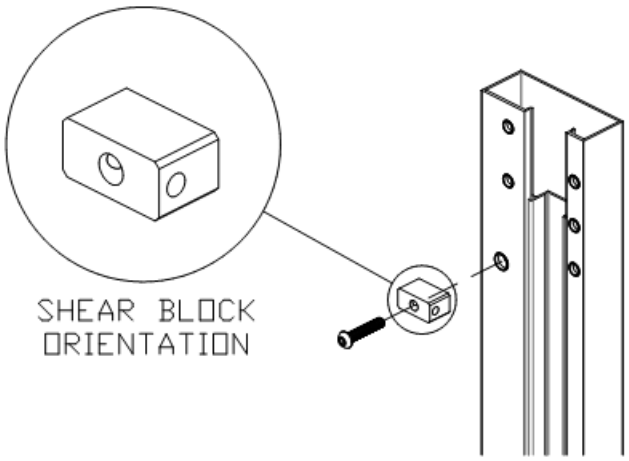
10.5 Installation and Adjustment Processes

10.5.1 Overhead Concealed Mechanical Installation

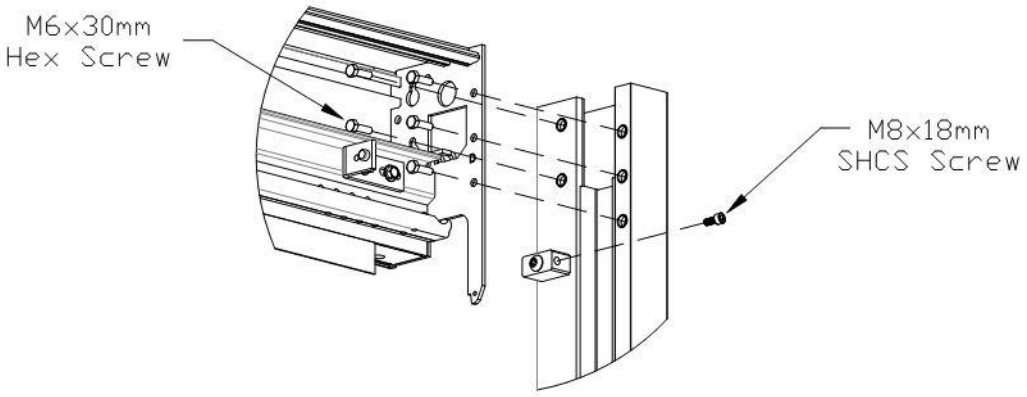
Checking – Marking Out – Fastening

a Mark the center of the rough opening width and the center of the header. (The center marks will be aligned during installation.)

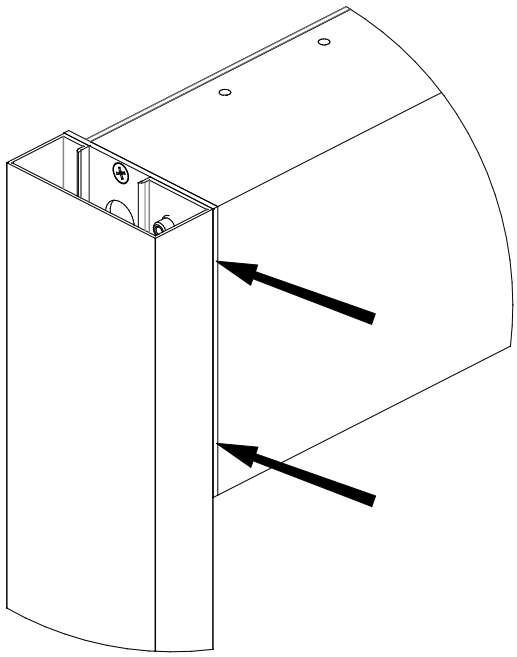
b Install shear block to each jamb using a 5mm hex wrench with supplied M8X40 socket head cap screws. Note: the shear block must be oriented such that the crossed drilled threaded hole is positioned away from the jamb surface, see illustration.



c Mount jambs to beam using five M6x30mm hex head screws and one M8x18mm button head cap screw (to the shear block) per jamb. (ASSA ABLOY Entrance Systems jambs are factory prepared for Header installation.)



d Check that jamb and beam are aligned where indicated below.

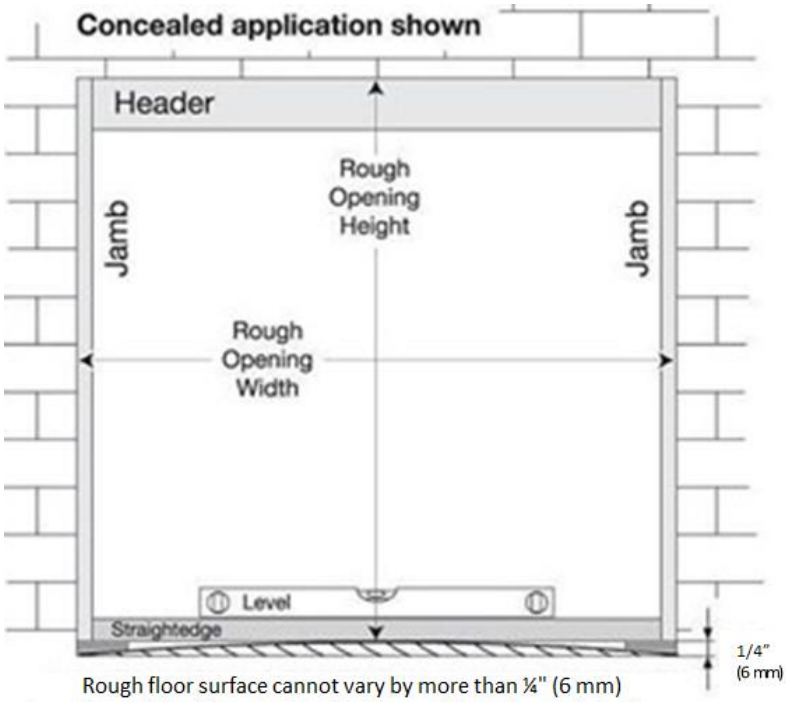


e If the beam to jamb is not properly aligned, loosen the screws and align beam to jamb and retighten screws.

10.5.2 Leveling Header and Jambs

Note: The header and jambs must be square and level to ensure a proper installation! Load bearing shims are required. The maximum allowable shim space is 1/4" (6 mm); shim where space of 1/16” (2 mm) or greater occurs. Shims shall be constructed of high density plastic or better. Shims are not supplied with the door package.

a Inspect the rough door opening, measuring from side to side and using a level, to find areas where shims may be needed. Look for high spots in the floor, if there is a slight rise in the floor at any point then the bottom of the jambs should be set level with the highest point of the floor, with the header leveled across the opening. Also, check the floor in the break-out panel’s swing area for being level. Any high spots will need to be considered when setting header height.



Rough floor surface cannot vary by more than ¼" (6 mm) from highest to lowest point. Check with level and straight edge. Shim jambs if necessary.

b Tilt frame assembly up into rough opening in wall, being careful to pull power through access hole in jamb.

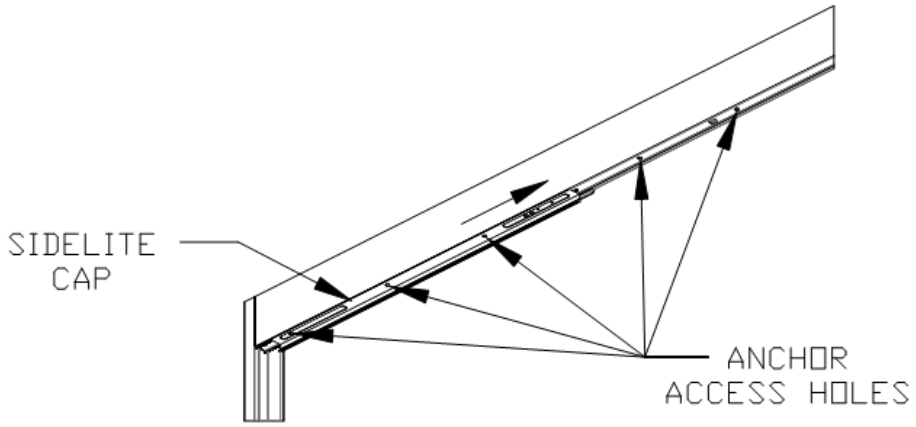
c Start with one jamb. Loosely install the middle anchor, using a level on the outside of the frame to plumb the jamb. Confirm that header is level across opening. Repeat for opposing jamb, loosely installing middle anchor first, then top anchor, and then bottom anchor. Return to first jamb and install remaining top and bottom fasteners loosely.

d Starting with top screws on both jambs, equally shim behind both jambs, leaving equal gaps and centering the package in door opening. Tighten top anchors. Use level on inside of one jamb to determine shim requirements for middle anchor, then shim and tighten. Repeat for bottom anchor. Shim and tighten middle and bottom anchors on other jamb. Install remaining anchors (shim as required) and check for jamb bowing with a straightedge and make corrections as needed.

Note: Anchors located at jamb strike plate locations will be installed in subsequent steps.

e Install header anchors while shimming as required. Move or slide components as needed.

Note: Anchor locations are predrilled and must be accessed via through holes located in underside of header. Sidelite cap moves to allow access to through holes (see illustration).



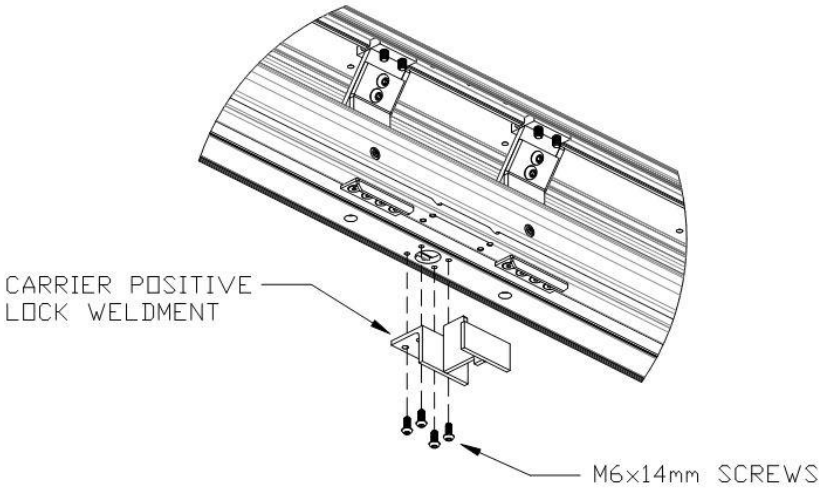
f If the header and jambs are truly square, the top and bottom jamb-to-jamb measurements will be identical and both diagonal measurements will be identical. If necessary, strings can be taped from corner-to-corner on the outside of the jambs. The strings should cross in the center of the door opening, slightly touching each other. If there is a gap between the strings or the strings are pushing against each other, then the package is twisted and needs adjusting.

g Re-align motor and control unit as needed.

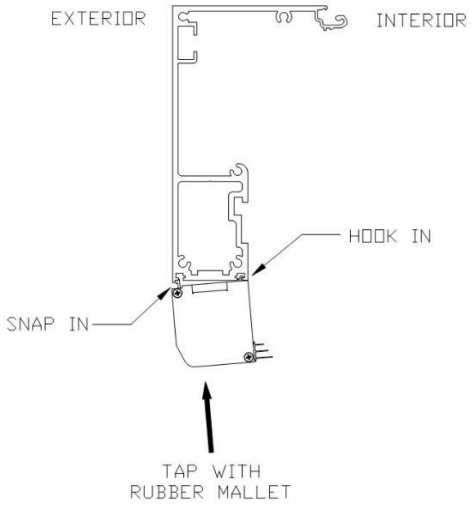
Note: Motor and control unit locations have been pre-marked for easy re-installation.

10.5.3 Installing Beam Ship Loose Items

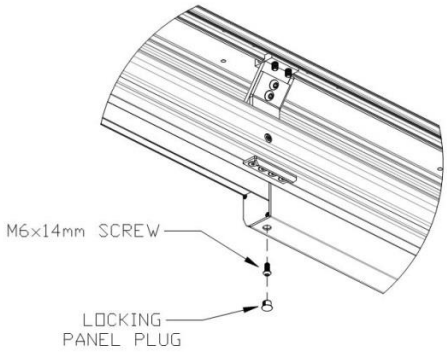
a For bi-part packages, install carrier positive lock weldment at bottom center of header.



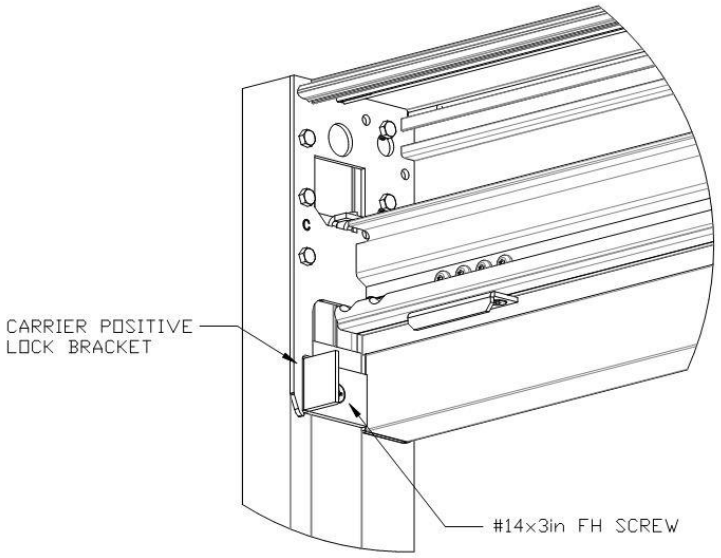
b Install sensor cap by hooking interior side into bottom of header and lightly tapping with a rubber mallet where shown below to allow exterior side to snap in.



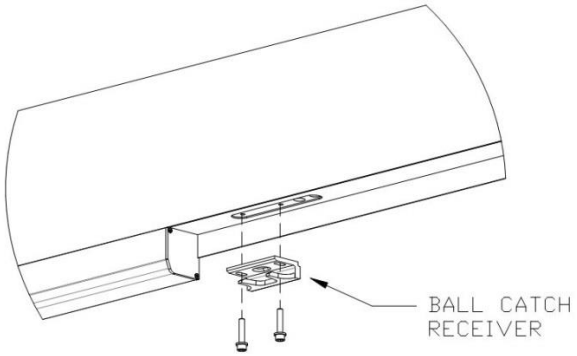
c Attach sensor cap to header with M6x14mm screw on each end. Insert locking panel plugs in sensor cap mounting holes.



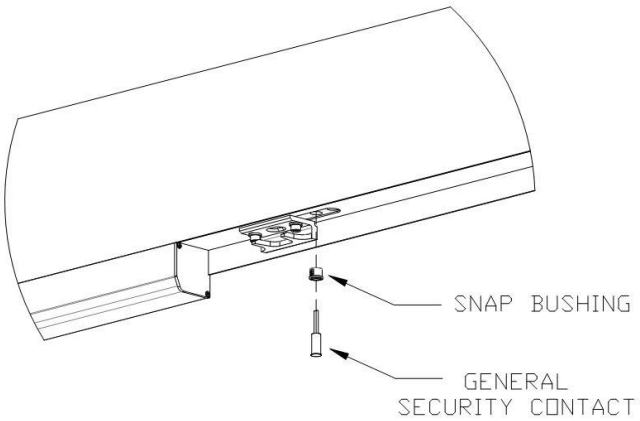
d For single slide packages, install the carrier positive lock bracket on active leaf jamb oriented as shown below, between the sensor cap and beam end plate.



e Install ball catch receiver for each sidelite on bottom of header with provided hardware.



f Insert general security contact into snap bushing and then insert into hole in header next to ball catch receiver. Repeat for second general security contact for bi-part packages.



10.5.4 Fitting the Sidelite Threshold and Pin Guides

The following are installation steps for recess and surfaced mounted pin guide tracks.

Note: The pin guide track is a multi-part system, it is important that all parts are aligned and installed level, to prevent derailment of the floor guide foot when the door is swung out and to provide proper door operation. Anchors must meet requirements as described in table on page 17 and the appropriate product approval documentation.

All screws must be countersunk and/or fully tightened to avoid interference with guide travel.

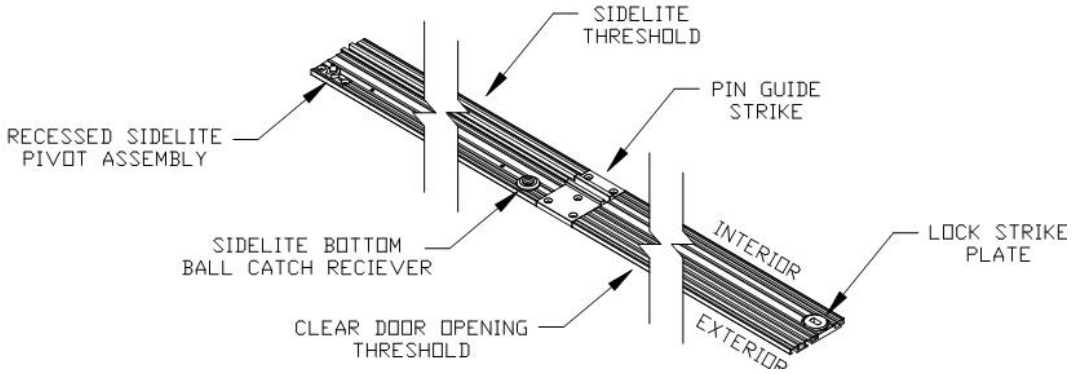
a Inspect the floor for conditions such as high and low spots that can cause the track to twist and rock. High spots (such as small rocks) should be removed.

b Using a chalk line, snap a reference line from jamb to jamb on the side where the pin guide is to be installed.

c Lay sidelite threshold in place with pin guide slot towards interior (see illustration). While standing on threshold and keeping it in line with chalk line, mark holes on substrate to be drilled.

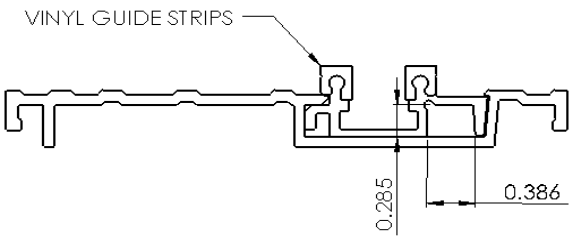
d Secure the threshold to the substrate with required anchors, leveling it with shims as needed. A sealant should be used under the track assembly. To check for proper leveling, measure from the top of the track to the bottom of the header, checking for the same result at each fastener.

e Install pin guide strike adjacent and in line with sidelite threshold (see illustration).



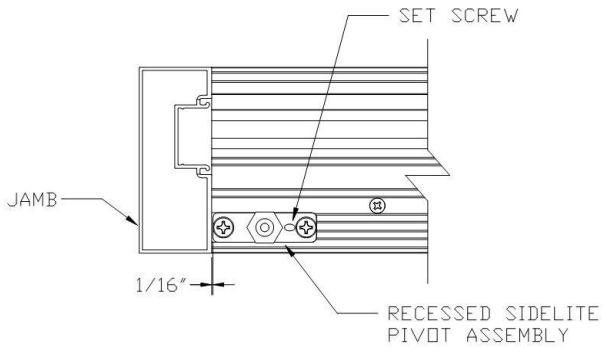
f Insert pin guide into threshold slot and tap into place with a rubber mallet.

Note: The vinyl guide strips must be cut and installed. See illustration.



NOTE: Anchor heads must fit within the dimensions shown to allow installation of the pin guide and filler

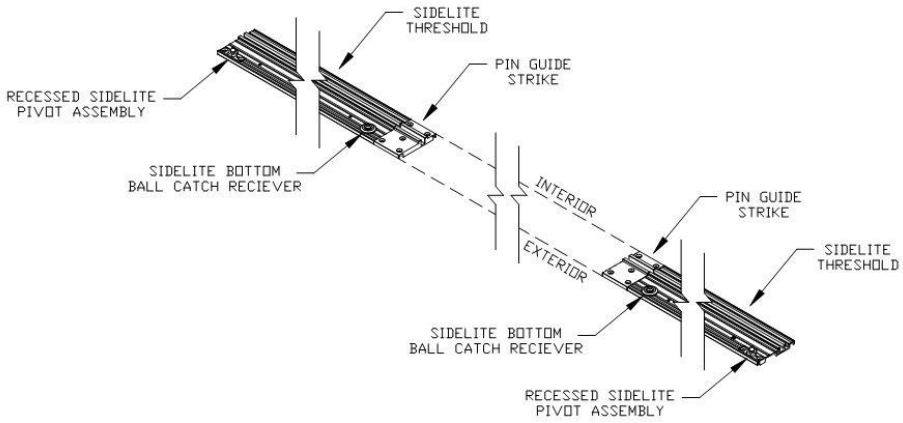
g Install recessed sidelite pivot assembly 1/16” away from jamb, making sure pivot set screw as pointing away from jamb and is accessible. Verify that nylon bearing washer is in place on top of pivot pin.

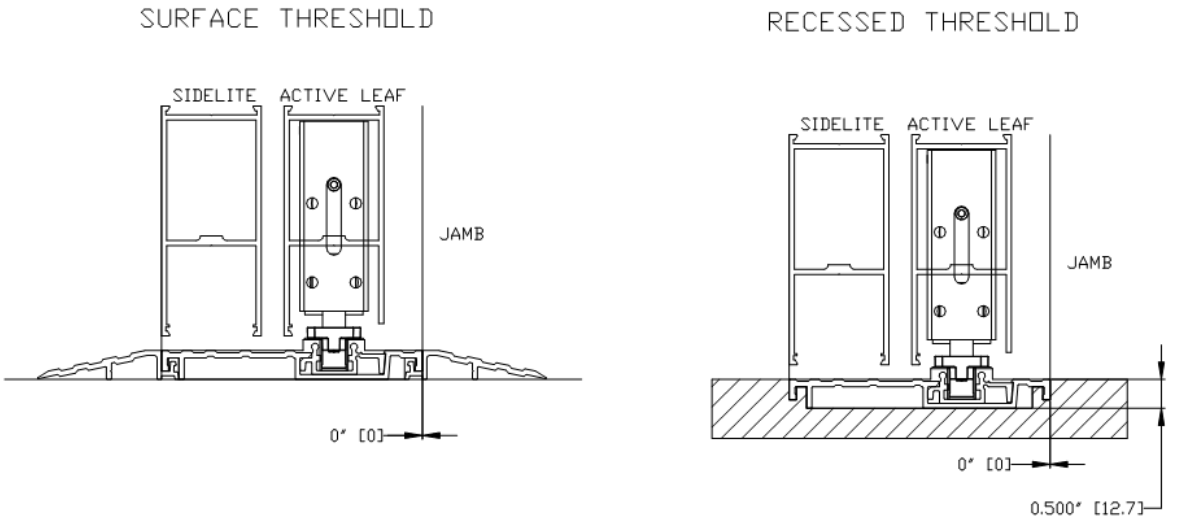


h Install sidelite bottom ball catch receiver at predrilled location on threshold and secure with required anchor.

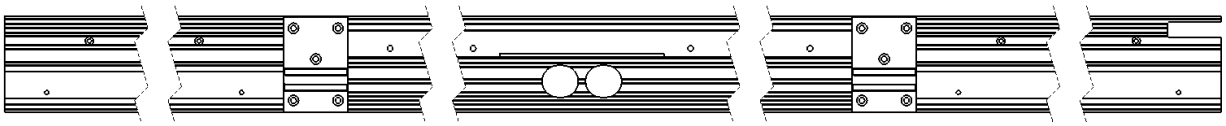
Note: Ensure that ball catch strike fore/aft position locates sidelite parallel to threshold edge.

i For Bi-Part installations repeat previous steps for the opposing sidelite.

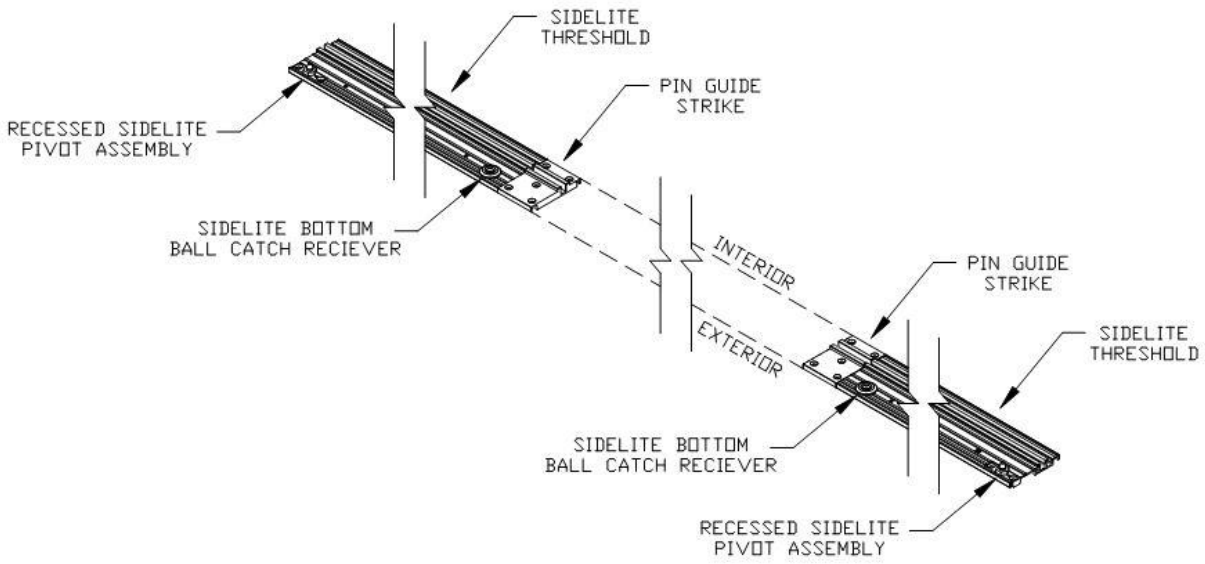




Note: Measurements are based on 4.5" [114.0] width jambs. Jambs are always at finished floor level.



Note: Orientation of CDO threshold is opposite from sidelite portion



10.5.5 Fitting the Jamb Strike Plate and Jamb Filler (Sidelite)

The following are installation steps for the jamb strike plate and jamb filler on the jamb corresponding with the non-active leaf or sidelite, for Bi-Part and Single Slide Full Breakout (FBO) applications.

a Install jamb filler on the jamb corresponding with the sidelite (this supports the location of the jamb strike plate).

b Locate jamb strike plate (without recessed area for latch) in the center opening of jamb filler and secure with required fasteners see table on page 17) .

Note: Jamb strike plate must be oriented as shown in illustration below and screws must be countersunk and fully tightened to avoid interference.

10.5.6 Fitting the Jamb Strike Plate and Jamb Fillers (Active Leaf)

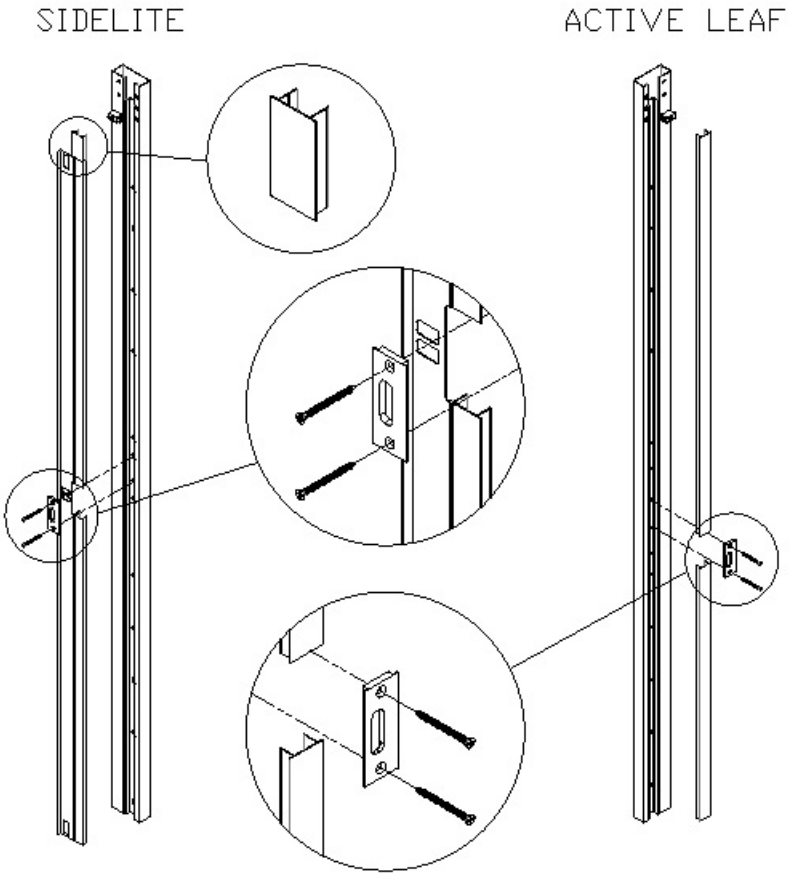
The following are installation steps for the jamb strike plate and jamb fillers on the jamb corresponding with the active leaf, for Single Slide Full Breakout (FBO) applications.

a Install lower jamb filler (short) on jamb corresponding with the active leaf (this supports the location of the jamb strike plate).

b Locate jamb strike plate (with recessed area for latch) atop lower jamb filler and loosely secure with required fasteners (see table on page 17) to allow for adjustment if needed.

c Install top jamb filler (long) above jamb strike plate and final tighten strike plate.

Note: Jamb strike plate must be oriented as shown in illustration below and screws must be countersunk and fully tightened to avoid interference.



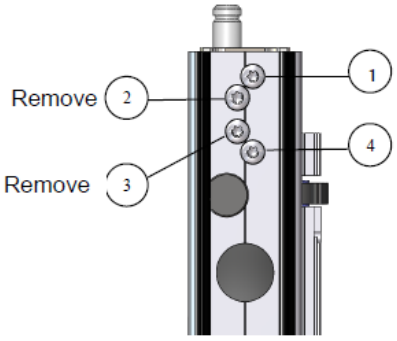
10.5.7 Full Break-Out Sidelite Installation

Note: Remove any glass stop or packing material from the sidelite before installation.

a Verify the thresholds (surface or recessed) are installed and level before installing the sidelites.

b Install pivot block (position with set screw away from jamb). Verify that the nylon bearing washer is in place on top of the pivot pin. Shim 1/16" away from jamb as needed.

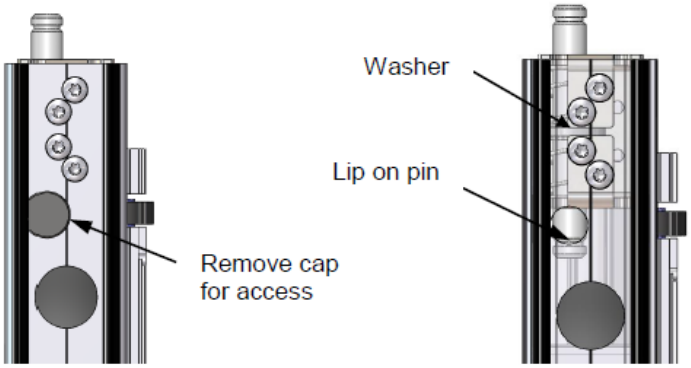
c Remove 2nd and 3rd screws from top in top pivot mounting. The 3rd screw disengages the pin for the shipping position. The 2nd screw is the security screw that will ensure that the pin is fully engaged and locked in place once installed.

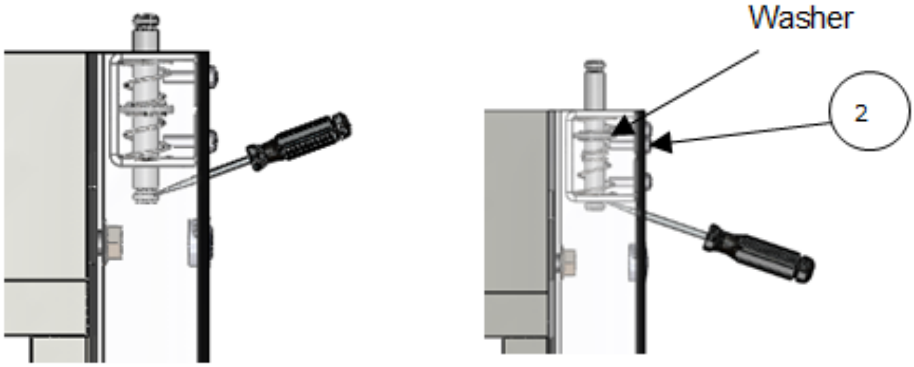


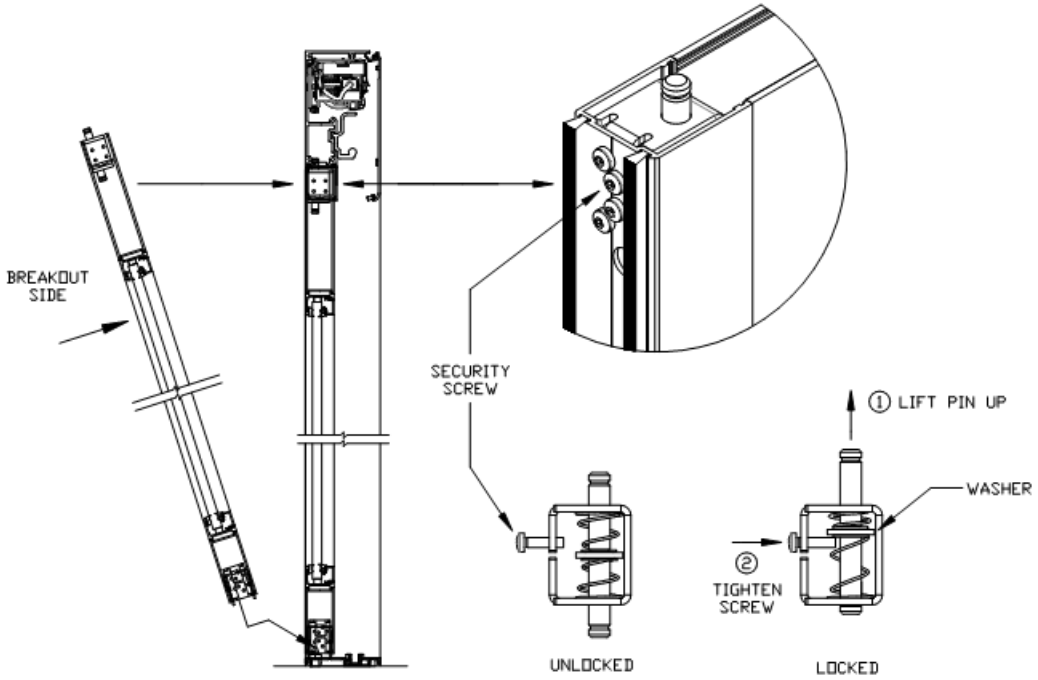
d Set the sidelite on the pivot and tilt it into place. Depress the top spring-loaded pivot pin and line it up with its receiving hole in the header until the shaft pops into place (See illustration).
Note: The sidelite should be positioned perpendicular to door frame during this step.

e Lock pivot pin by removing the screw labeled "2" from the top pivot as shown. Insert a small flat blade screwdriver into the access hole. Locate the groove near the bottom of the spring loaded pin and push up on the pin until the washer in the center of the pin is above the hole for the screw that was removed. While holding the pin in this position, re-install the screw labeled "2".

Note: Pivot pin must be locked immediately after pin pops into place to keep the sidelite from disengaging, to prevent bodily harm or damage to the unit.





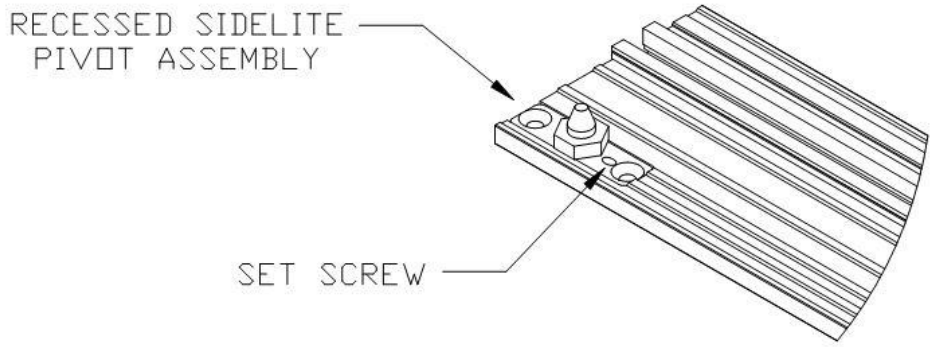


f Adjust sidelite with bottom pivot block. To raise or lower the bottom pivot by loosening the set screw at the side of the floor portion of the pivot and turn the shaft clockwise to lower the sidelite and counter clockwise to raise the sidelite; then retighten the set screw.

Note: There should be no more than 1/8" (3 mm) between the bottom of the header and the top of the sidelite.

10.5.8 Full Break-out Sidelite Adjustment

a Adjust sidelite height with bottom pivot block. Loosen set screw in pivot block and turn pivot clockwise to lower sidelite and counter-clockwise to raise sidelite. Re-tighten set screw.



b If the gap between the header and sidelite is not uniform the top pivot pin may need to be adjusted with provided spacers. To add spacers, the sidelite must be removed by reversing the installation process.

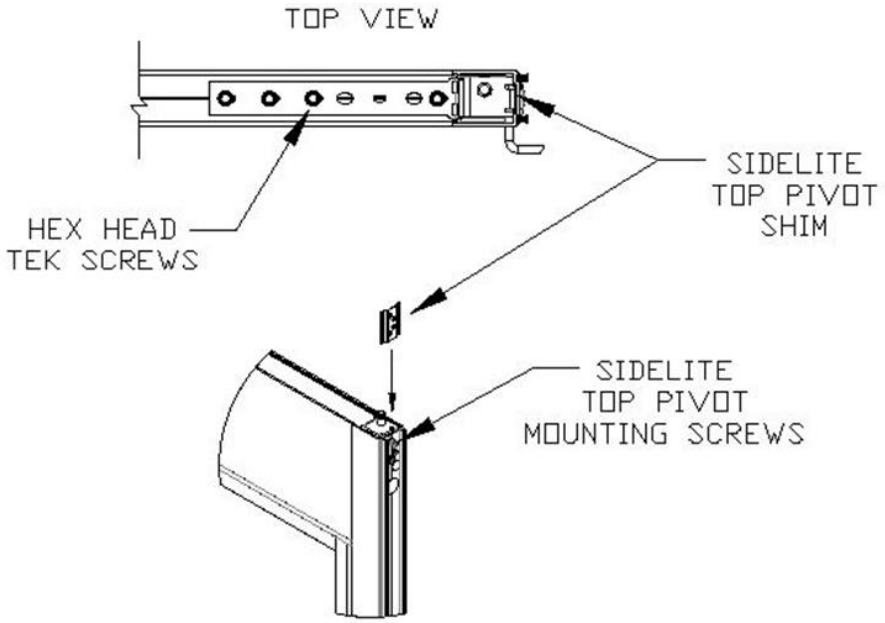
c Remove four sidelite top pivot mounting screws completely.

d Loosen four hex head Tek screws that attach the corner bracket to the top rail.

e Slide top pivot with anti-twist tab assembly away from the heel to allow insertion of sidelite top pivot shim as shown.

f Reattach sidelite top pivot with the previously removed mounting screws; re-tighten the Tek screws as shown.

a Reinstall the sidelite.



b Install ball catch strike at predrilled location on threshold, secure with required anchor and adjust ball catch clearance. (See "Adjusting Ball Catch" under Section 10).

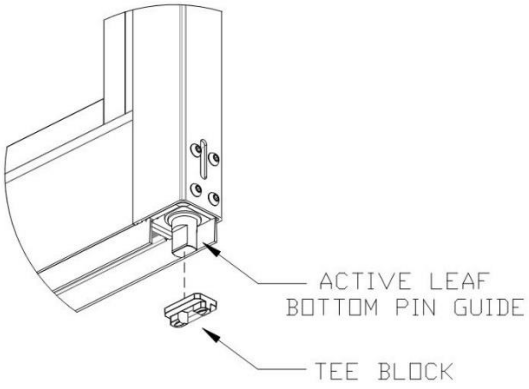
Note: Take care that the ball catch strike fore/aft position locates sidelite parallel to threshold edge.

c Install glass using proper glazing and glass blocking techniques to ensure proper operation of door package. See Glazing and Blocking section for squaring techniques.

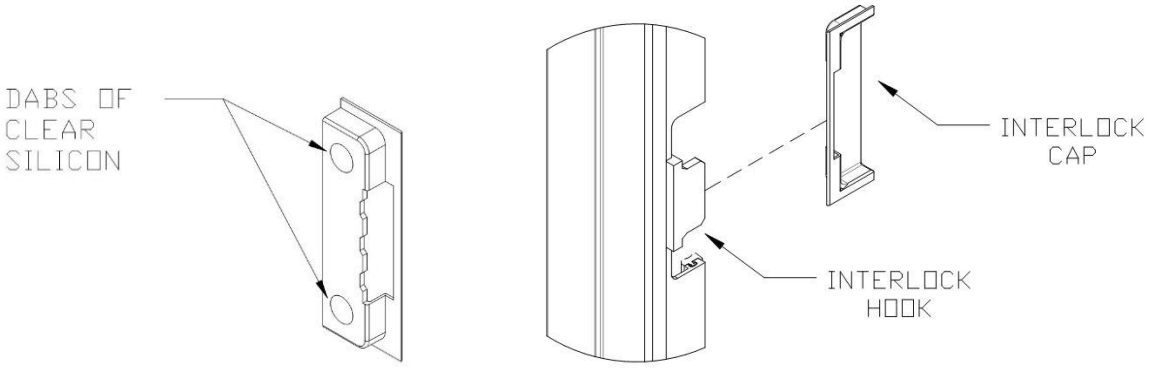
d Verify gaps after glazing and adjust as needed.

10.5.9 Install Active Leaf Ship Loose Items

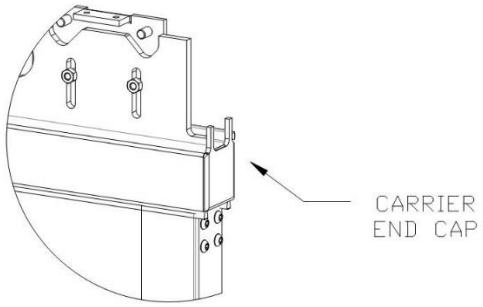
a Install tee block on active leaf bottom pin guide.



b Apply two dime-sized dabs of clear silicone onto back of interlock cap as shown below. Install interlock caps onto interlock hooks. Once in place, press firmly on interlock cap to ensure good adhesion.



c Install carrier end cap on heel end of carrier(s).



10.5.10 Hanging the Active Door Leaves (Full Break-Out)

Note: Glass can be installed before or after hanging with the dry glaze system. See Glazing and Blocking section for squaring techniques.

a Install and/or verify placement of all finish parts such as interlock caps, seals sweeps, etc.

b Install Resilience sensor cap prior to hanging active leaf.

c Wheel brackets are factory adjusted to the fully lowered position and anti-riser are adjusted to fully lowered position. Verify that they are adjusted to fully lowered positions. If adjustment is needed see Active Leaf Door Height Adjustment Section on page 36.

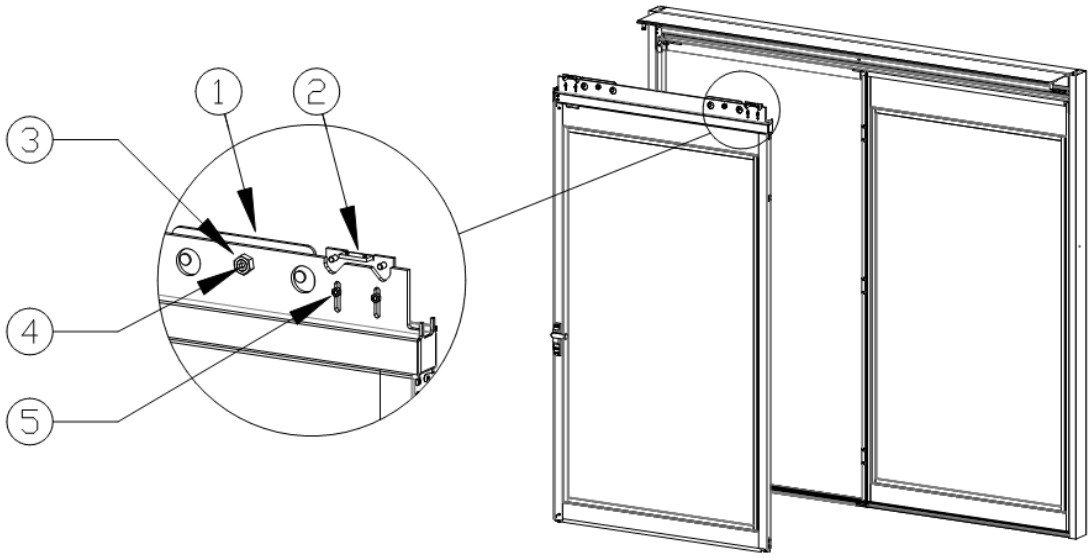
d Position door leaf with the T-block/pivot pin over guide track and lean the door leaf against the frame and lift the wheel fittings over the sliding track.

e Loosen the fastening nuts (3) using a 24mm wrench and let door settle.

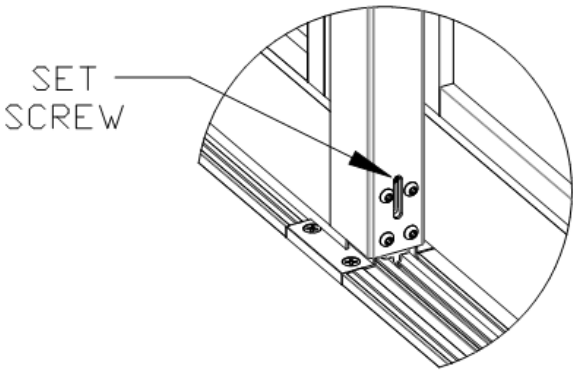
f Adjust carriages (1) with the adjustment screw (4) using an 8mm hex wrench until the door leaf is roughly between 3/4" (19.1 mm) and 5/8" (15.9 mm) above the substrate/floor.

g Tighten the fastening nuts (3) using a 24mm wrench to secure the assembly.

h Loosen M8 nuts (5) using a 10mm wrench to set the anti-risers (2) on each carriage to the “locked” position and re-tighten. See "Anti-Riser Operation" on page 35.



i Using a 3mm hex wrench, loosen and remove the set screw in the pivot pin assembly to release the pivot pin.



CAUTION: SCREW MUST BE REMOVED BEFORE BREAKING OUT DOOR OR PERMANENT DAMAGE WILL OCCUR

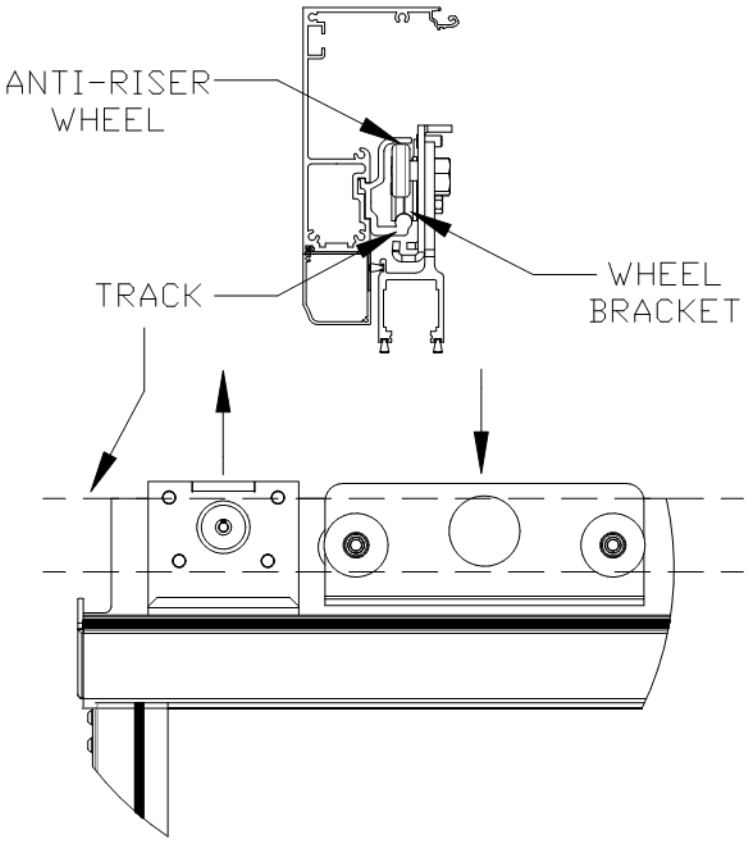
j Fine tune door angle and ball catch engagement by adjusting PSA arm (See PSA Arm Adjustment, section 10).

k For bi-part packages repeat above steps for hanging the second active leaf.

10.5.11 Anti-Riser Operation

a. To lock the anti-riser, loosen nuts and adjust until the roller touches the underside of the track, then back off 1/16" (2 mm).

b. Ensure the anti-riser is level to the track and retighten lock nuts.



10.5.12 PSA Arm Adjustment

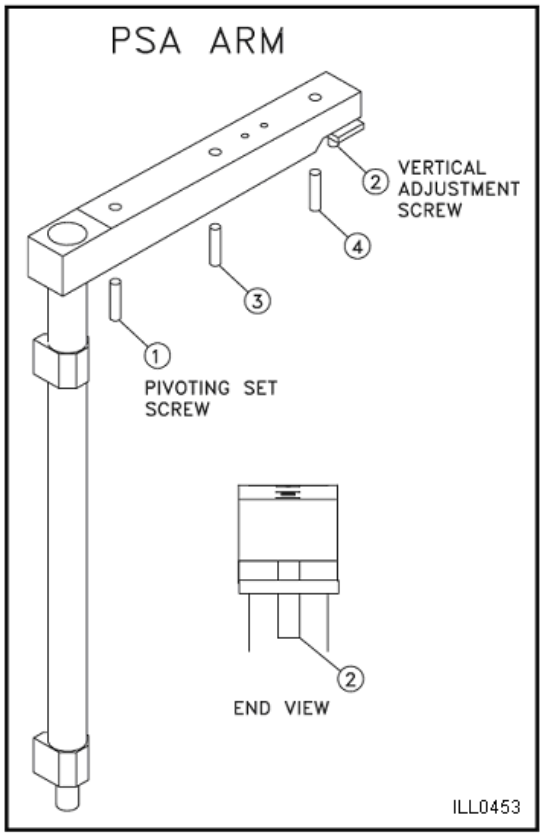
a Open door and lock down screw (1) (pivoting set screw) of PSA arm, and loosen setscrews (3) and (4).

b Adjust screw (2) (PSA vertical adjustment screw) on PSA arm to lift the door and ball catch lead edge into alignment with ball catch receiver.

Note: If the glass has not previously been installed, you will need to recheck alignment once the glass is in place and readjust as necessary.

c Once the adjustment is complete, tighten remaining setscrews (3) and (4) on PSA arm and close the door engaging the ball catch.

d Confirm that the lead edge of the door and lead edge of the carriers are still flush.



10.5.13 Fitting the Active Leaf Threshold and Lock Strike (Single Slide)

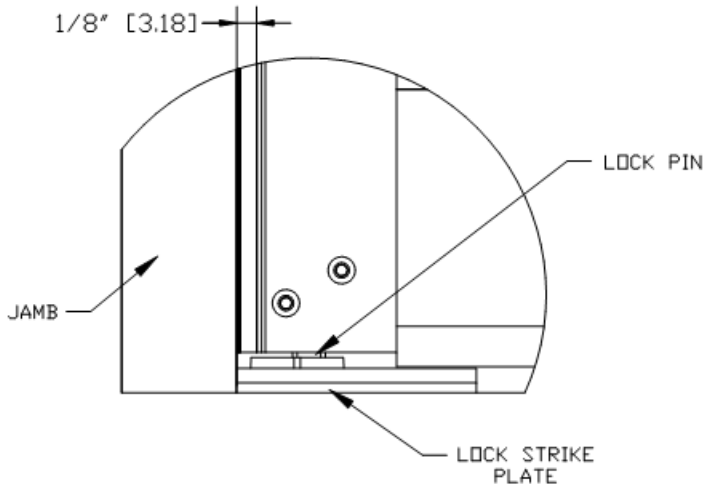
The following are installation steps for floor mounted threshold and lock strike, recess and surfaced mounted.

Note: The floor guide track is a multi-part system, it is important that all parts are aligned and installed level. Anchors must meet requirements as described in table on page 17.

All screws must be countersunk and/or fully tightened to avoid interference with guide travel.

a Place lock strike plate against the jam under active leaf lock pin and lock active leaf to locate. Center the lock strike on lock pin and mark anchor points. See illustration.

Note: Verify that the active leaf is parallel to the jam with a consistent gap not exceeding 1/8” (3 mm).

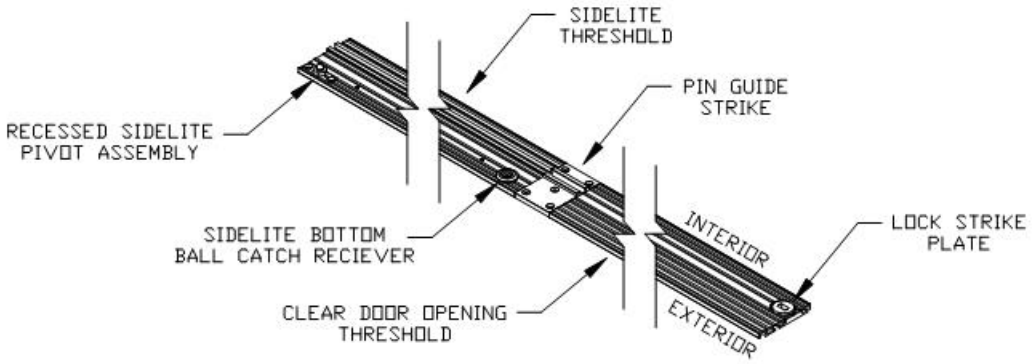


b Secure lock strike plate with required anchors.

c Install the threshold aligning it with chalk line/previously installed sidelite threshold. While standing on the threshold and keeping it in line, mark the holes to be drilled and secure the threshold to the floor with required anchors, leveling it with shims from end to end. If possible, a sealant should be used under the track assembly. To check for proper leveling, measure from the top of the track to the bottom of the header, checking for the same result at each fastener.

Note: The active leaf floor threshold must be positioned with the slot towards the exterior (see illustration).

d Finish by installing threshold slot filler.



10.5.14 Fitting the Active Leaf Threshold and Lock Strike (Bi-Part)

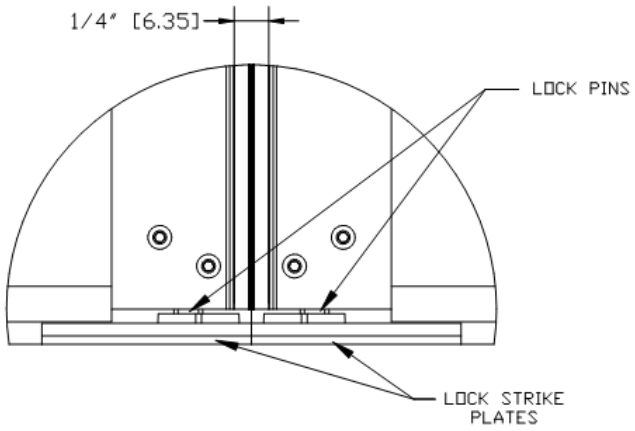
The following are installation steps for floor mounted threshold and lock strike, recess and surfaced mounted.

Note: The floor guide track is a multi-part system, it is important that all parts are aligned and installed level. Anchors must meet requirements as described in table on page 17.

All screws must be countersunk and/or fully tightened to avoid interference with guide travel.

a Bi-part door sets require 2 lock strike plates. Place the lock strike plates back to back in the center of the door opening under each active leaf lock pin and lock active leaf to locate. Center lock strikes around each lock pin and mark anchor points. See illustration.

Note: Verify that the active leaves are parallel to other with a consistent gap not exceeding 1/4" (6 mm).

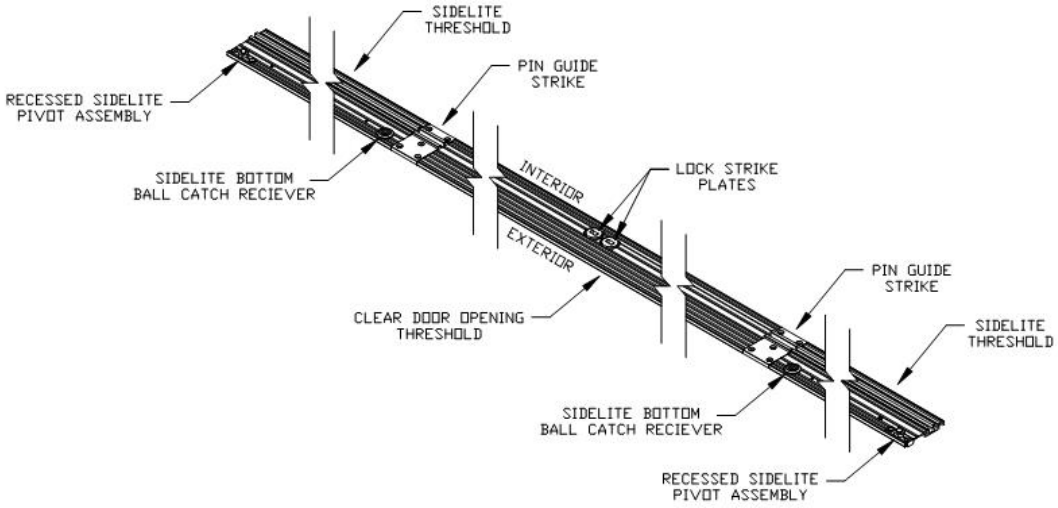


b Secure lock strike plates with required anchors.

c Install the threshold aligning it with chalk line/previously installed sidelite thresholds. While standing on the threshold and keeping it in line, mark the holes to be drilled and secure the threshold to the floor with required anchors, leveling it with shims from end to end. If possible, a sealant should be used under the track assembly. To check for proper leveling, measure from the top of the track to the bottom of the header, checking for the same result at each fastener.

Note: The active leaf floor threshold must be positioned with the slot towards the exterior (see illustration).

d Finish by installing threshold slot filler.


SIDELITE THRESHOLD
PIN GUIDE STRIKE
RECESSED SIDELITE PIVOT ASSEMBLY
SIDELITE BOTTOM BALL CATCH RECIEVER
INTERIOR
LOCK STRIKE PLATES
EXTERIOR
PIN GUIDE STRIKE
CLEAR DOOR OPENING THRESHOLD
SIDELITE THRESHOLD
SIDELITE BOTTOM BALL CATCH RECIEVER
RECESSED SIDELITE PIVOT ASSEMBLY

10.5.15 Height Adjustment

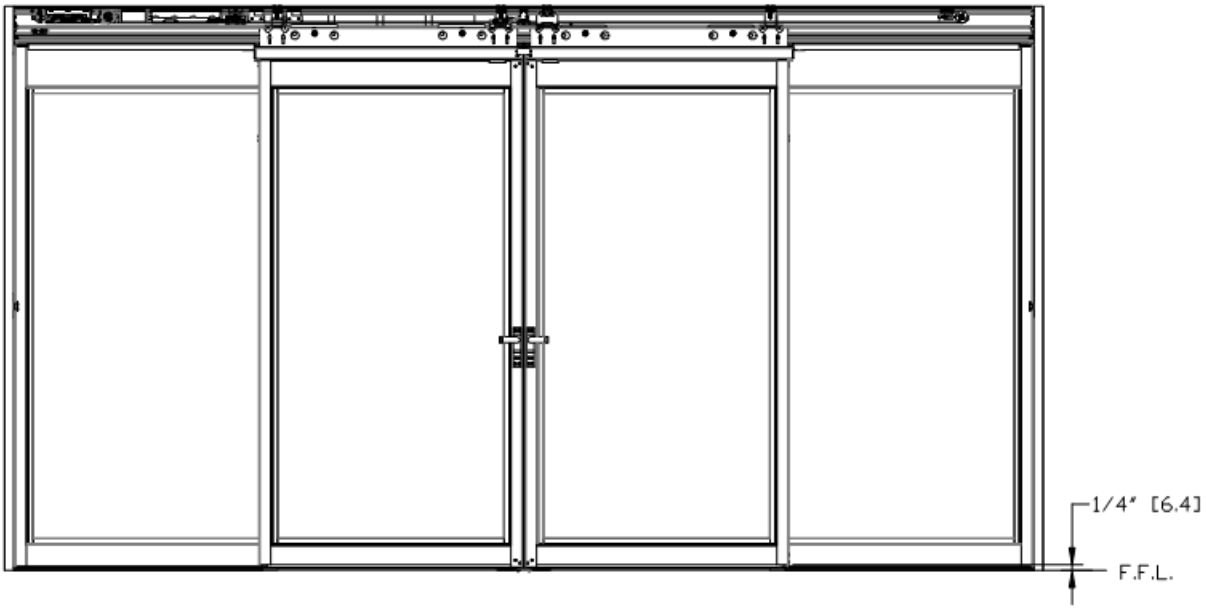
The height adjustment is to be carried out with the vertical adjustment screw as described in section titled, "Hanging the Active Door Leaves (Full Break-Out)" on page 32.

a It is very important that the door leaf hangs vertically after the adjustment and that bi-parting doors are parallel and equal height in the closed position (maximum gap of 1/4” (6 mm) at the bottom or between doors).

b The anti-riser rollers should lightly touch the bottom edge of the door track or resulting increased door open/closing force and may become easily disengaged.

c If a weather brush is used on the lower edge of the door leaf, it should only lightly touch the floor.

d Check that the door leaf is parallel with the sidelites.



FFL = Finished Floor Level (threshold)

Note: Once the door height is adjusted, verify that doors do not exceed a force of 30 pounds (133.5 N) applied in either direction to prevent the door from closing.

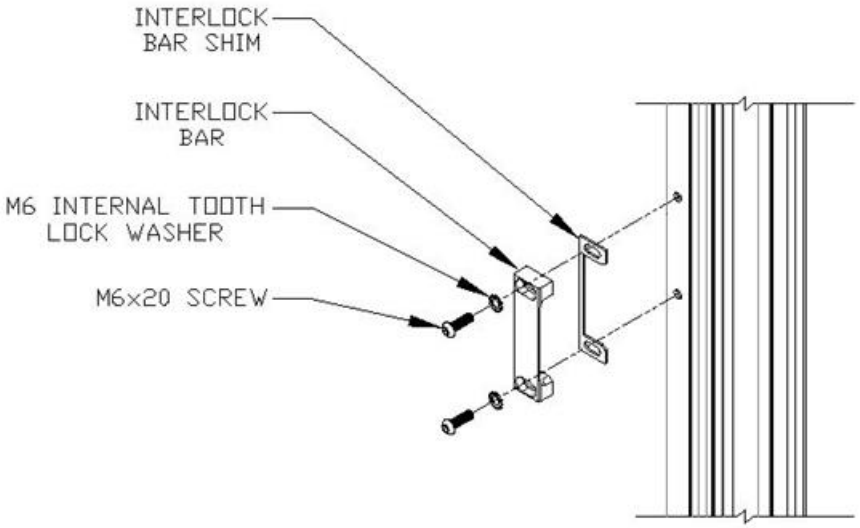
10.5.16 Adjusting Door Interlocks (FBO)

The following steps are for the adjustment of the interlock engagement. Each active leaf and sidelite pair have 3 door interlocks, composed of the interlock hook located on the active leaf and the adjustable interlock bar located on the sidelite.

a Check that the interlock bars are at a distance away from the active leaf to allow interlock hooks to properly engage when doors are closing without any rubbing. If needed, add interlock bar shims.

b To add an interlock bar shim, remove interlock bar by unscrewing two M6x20 screws (per interlock bar) completely, taking care not to lose the M6 internal tooth lock washers.

c Place interlock bar shim between the interlock bar and the sidelite and reassemble to the door rail, tightening screws enough that the interlock bar does not slide freely. Do not fully tighten.

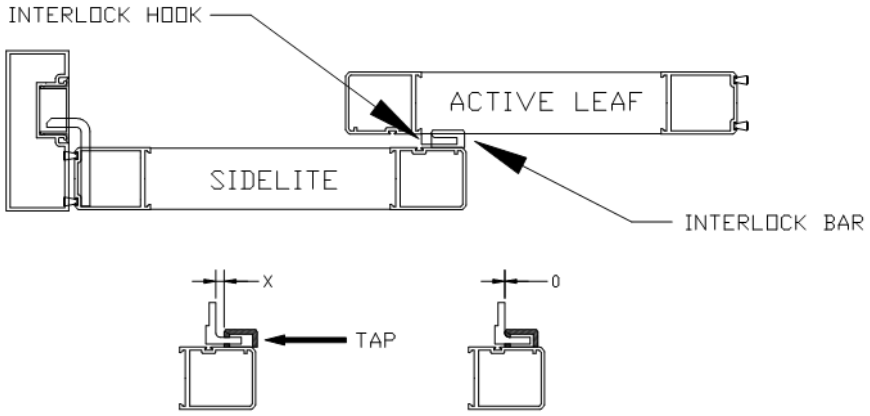


d With a rubber mallet and soft punch tap each (pre-installed) adjustable interlock bar over until it contacts the interlock hook.

Note: This must be done with the doors in the closed and locked position for proper adjustment.

e Open active leaf to disengage interlock hook and break out the sidelite to access interlock bar screws and tighten fully to lock the interlock bar in position.

Note: Take care that the interlock bar doesn't move during tightening. Shim as necessary to prevent the hook and bar from rubbing/causing obstruction during operation.

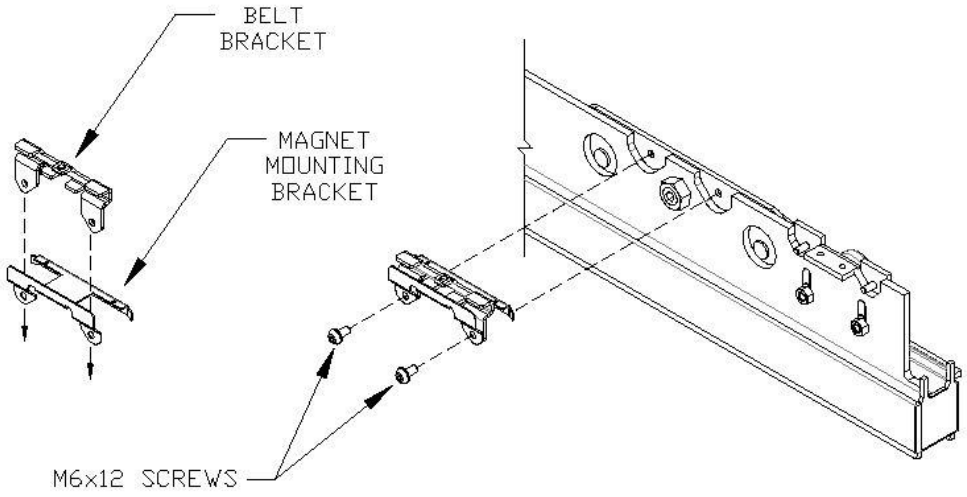


10.5.17 Installation of Door Position Switch and Security Switch bracketry

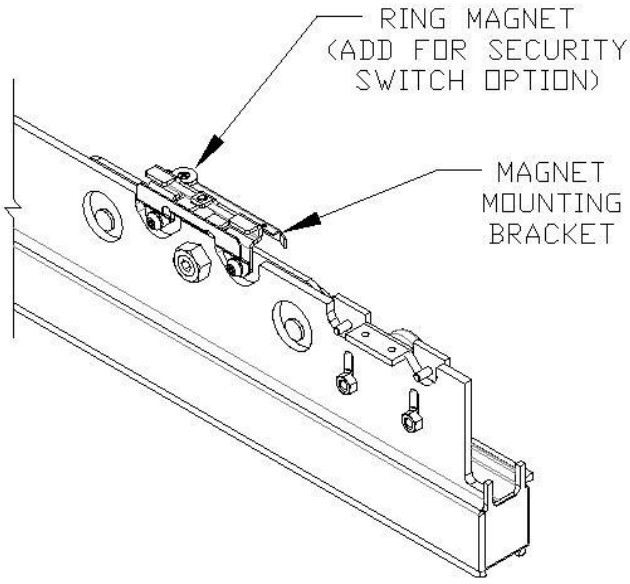
For packages with the Door Position Switch or Security Switch option:

a Place belt bracket in between magnet mounting bracket as shown below and align mounting holes.

b Attach belt bracket and magnet mounting bracket to active leaf wheel bracket using the two provided M6x12 screws.



a For Security Switch option, a ring magnet is installed on the magnet mounting bracket, handed appropriately. Location shown is for bi-part and right-hand, single slide packages.



10.5.18 Attachment /Adjustment of the Cable Tensioner/ Tooth Belt Fitting

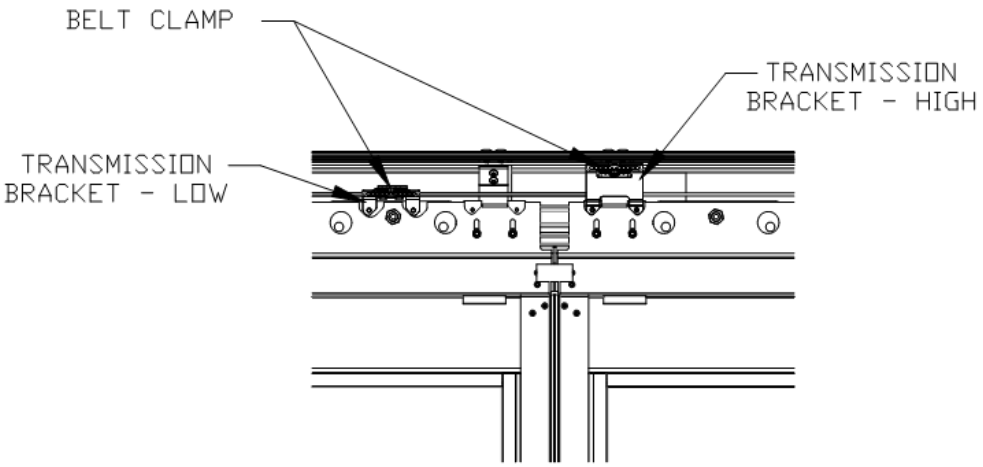
The tooth belt fitting joining the belt ends is factory-mounted to the lower or upper part of the tooth belt, depending on package type.

Bi-parting operators

a Put doors in fully closed position.

b Move the factory installed lower transmission bracket over wheel bracket at leading edge of right-hand active leaf.

Note: Handing of doors determined by viewing from exterior.



e Attach the lower transmission bracket to the carrier using the provided M6 screws.

f Attach upper transmission bracket to anti-riser bracket at leading edge of left hand active leaf using enclosed nuts.

g Orient belt clamp on belt such that it is centered on upper transmission bracket and slide onto belt until it snaps in and is secured. It may be necessary to slightly move centerline slightly to right or to left to find most optimal position for belt clamp.

h Check door panels for proper centering in the fully closed and opened positions.

Single-sliding operators

a Put door in fully closed position.

b For left hand packages, move lower transmission bracket over wheel bracket at trailing edge of active leaf.

c Attach lower transmission bracket to wheel bracket using enclosed screws.

d For right hand packages, move upper transmission bracket over wheel bracket of leading edge of active leaf.

e Attach upper transmission bracket to wheel bracket using enclosed screws.

f Check door panel for fully opened and closed position.

10.5.19 Checking and Adjusting the Belt Tension

If the belt tension has to be corrected, proceed as follows:

a Loosen the screw (1) in the middle of the tension wheel without removing it.

b Turn the adjustment screw (2) to its outmost position.

c Loosen the tension wheel assembly fixing screws (4).

d Tension the belt by pulling the tension wheel assembly by hand as hard as possible. e

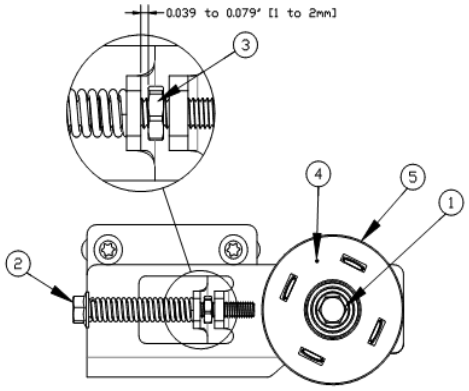
Tighten the tension wheel assembly fixing screws (4) with a **torque of 7 ft-lbf 10Nm)**.

e Tighten the belt tension adjustment screw (2) until there is a gap of approximately .039 to .079 (1-2 mm), but no further, between the lock nut (3) and the edge according to illustration below.

Be sure not to overtighten, otherwise the screw might damage the tension wheel (1).

f Retighten the screw in the middle of the tension wheel (1) with a **torque of 22 ft lbf (30 Nm)**.

Note! Do not make any adjustment on the lock nut (3).

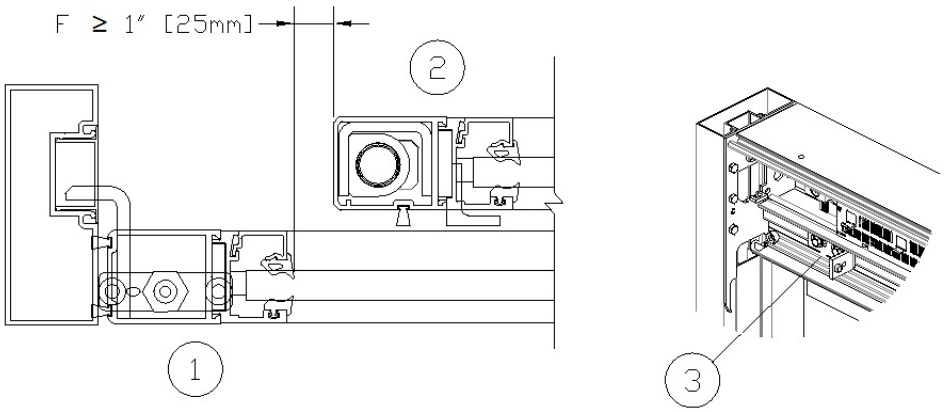


1. Screw
2. Adjustment screw
3. Lock nut
4. Tension wheel assembly fixing screw
5. Tension wheel

10.5.20 Adjustment of the Leading Edge (to Avoid Finger Traps)

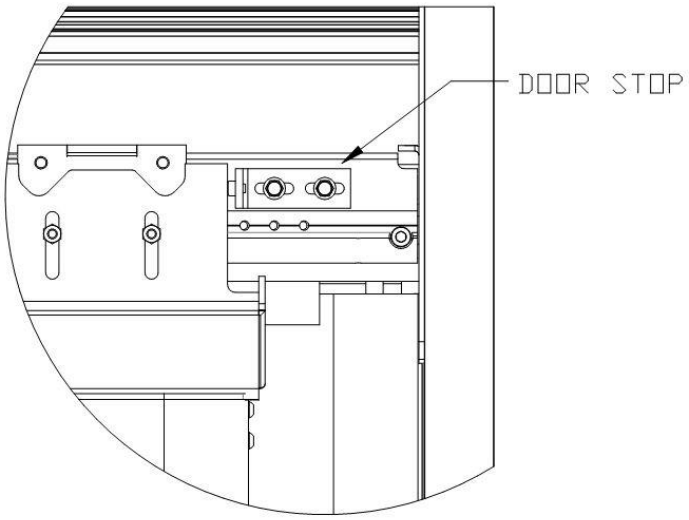
a Push the doors by hand to the desired opening.

Note: The leading edge of the door leaf must not pass the vertical rail of the sidelite leaf, but must stop at least 1" (25 mm) before to avoid finger traps.



F=Safety distance (finger protection)

b Loosen two doorstop mounting screws using a 10mm socket.



c Adjust doorstop against carrier and re-tighten screws.

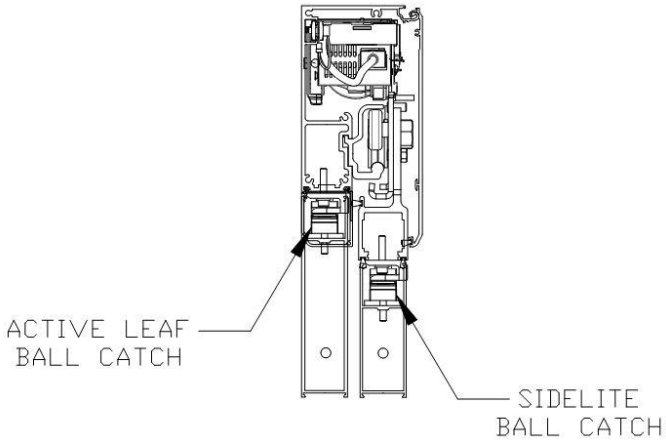
d Check that required opening and finger protection are achieved.

10.5.21 Adjusting Ball Catch (Sidelite)

Check that the sidelite door assembly engages properly with the sidelite header assembly. Both can be repositioned slightly if necessary.

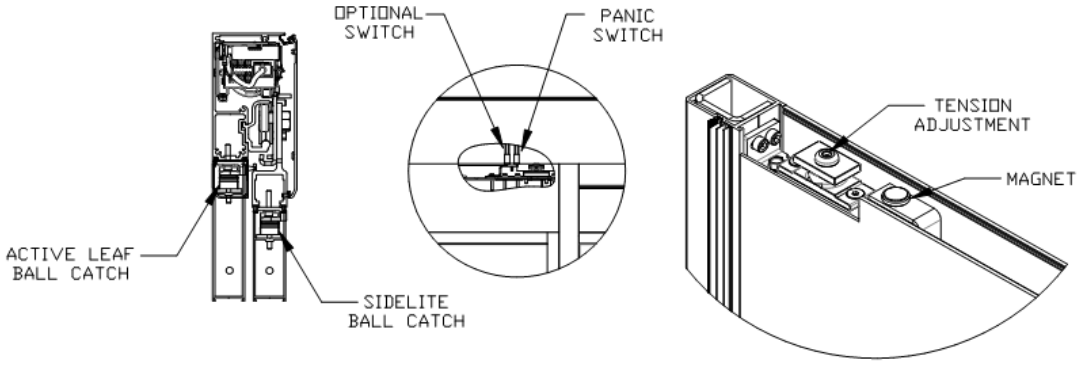
a Loosen sidelite top ball catch assembly mounting screws for left to right adjustment and re-tighten.

b Loosen ball catch receiver on header for front to back adjustment and re-tighten.



c Adjust tension on ball catch to meet local egress codes by turning adjustment screw. Turn screw counter-clockwise to increase tension and clockwise to decrease tension. Tension is not to exceed 50 lbs (222.4 N) break-out force (see ANSI/BHMA standards at back of manual).

A magnetic panic break out switch (bi-parting units have two) shuts the operator off when the sidelite is opened. A ceramic magnet is located in the upper horizontal sidelite rail. The switch(s) are located over the magnet in the bottom face of the beam. The magnet location can be field adjusted by loosening the bracket mounting screw. See Electrical section to wire the break out switches (MCU terminals 1 and 3).

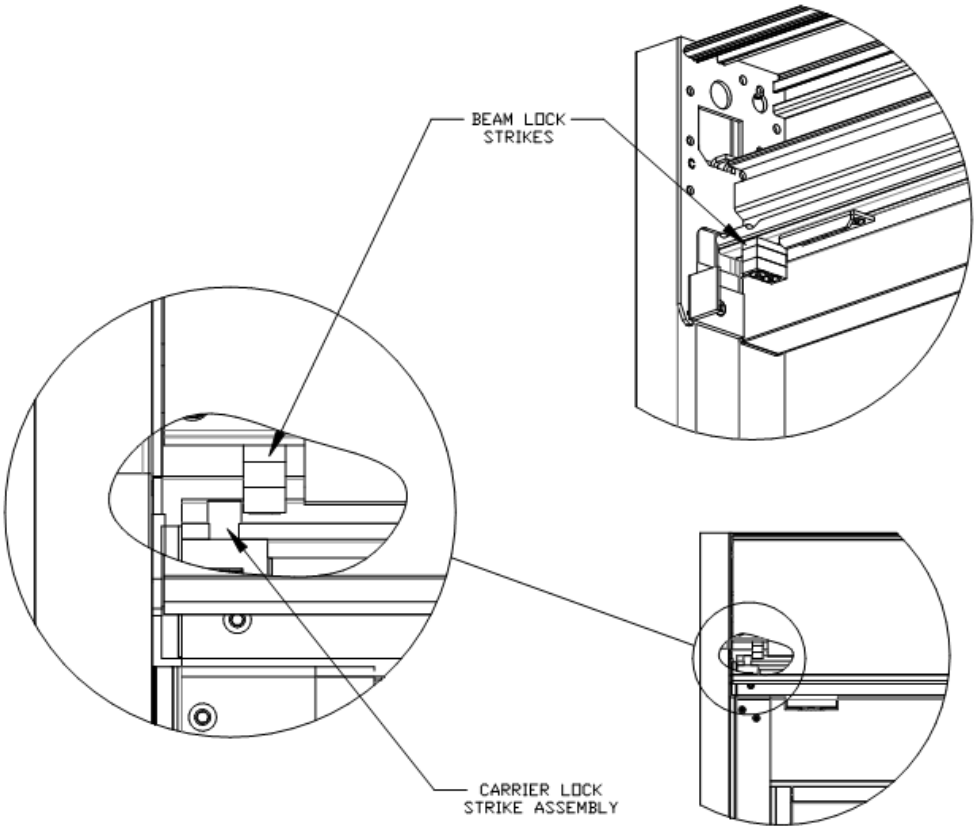


10.5.22 Installing Beam Lock Strikes

a Determine number of beam lock strikes needed for maximum engagement of active leaf top lock pin without interfering with door movement.

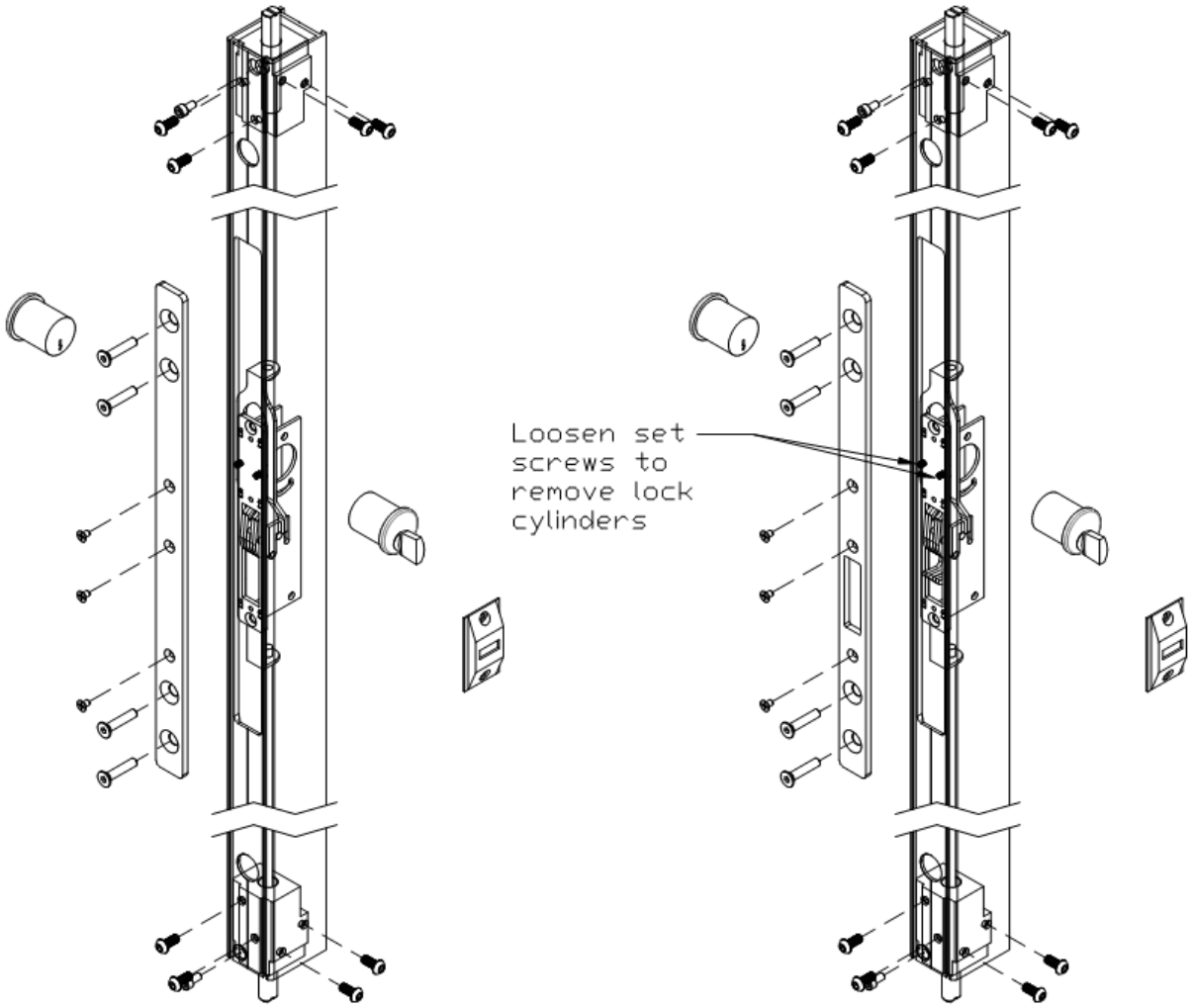
b Install provided strike blocks as determined (see illustration).

c Verify that active leaf opens without interference when unlocked, and engage with strikes when locked.



10.5.23 Manual Lock System Adjustment and Re-Keying

Illustration should be referenced to adjust or re-key lock system as required.

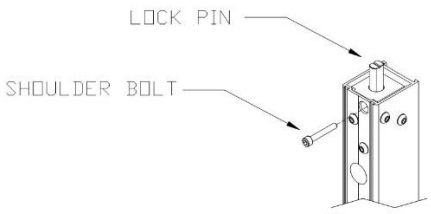


Bi-Part

Single Slide

To adjust lock pins,

a Remove shoulder bolt from pin guide block.



b Screw/unscrew lock pin with flat blade screwdriver to adjust height. Adjust lock pins for maximum engagement without interfering with door travel in unlocked position.

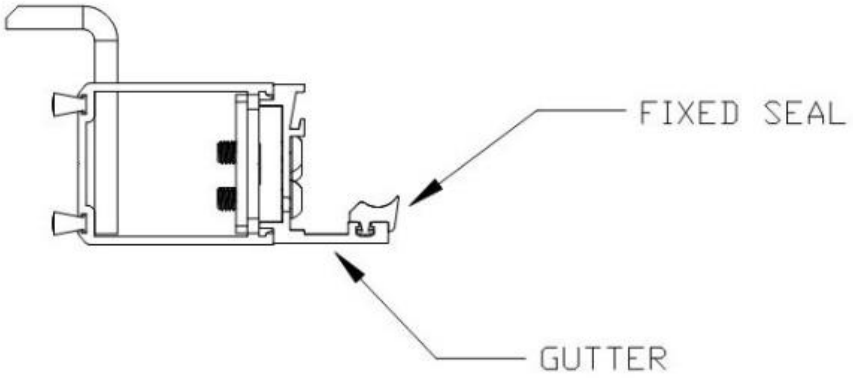
c Orient flat sides of lock pin to face interior and exterior and re-install shoulder bolt.

10.5.24 Glazing and Blocking of Glass

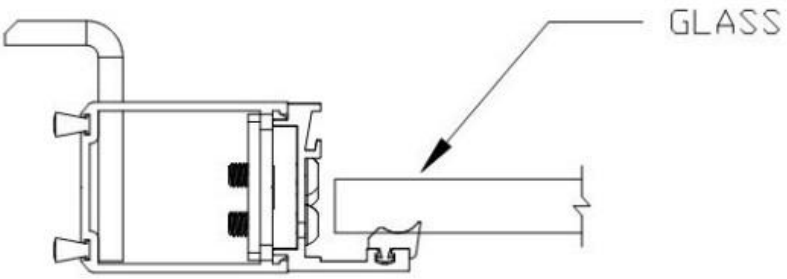
Install glass using the proper glazing tools. Glass blocks are provided to be installed on site.

Note: All corners must be blocked as shown below. If doors are not square, possible malfunction of doors and alignment issues may occur.

a Attach fixed seals to door panel gutters.

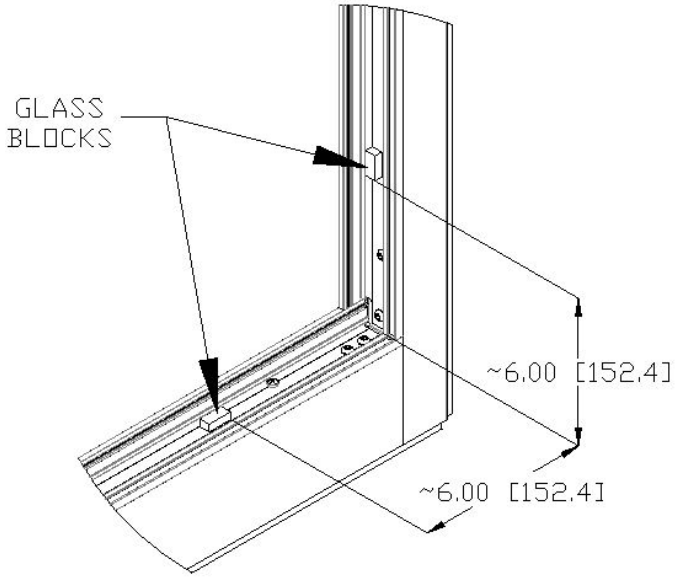


b Place glass into door panel.

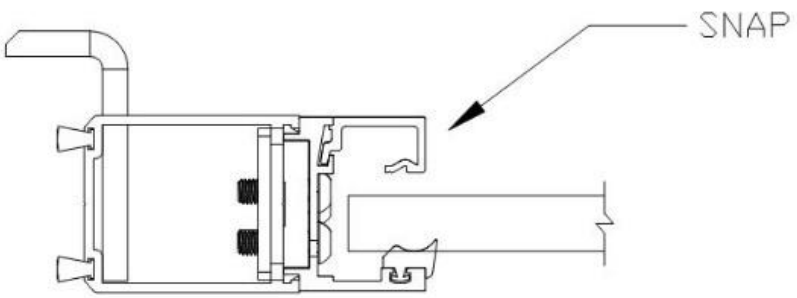


a Block all corners of each piece of glass approximately 6” away from the corners as shown below.

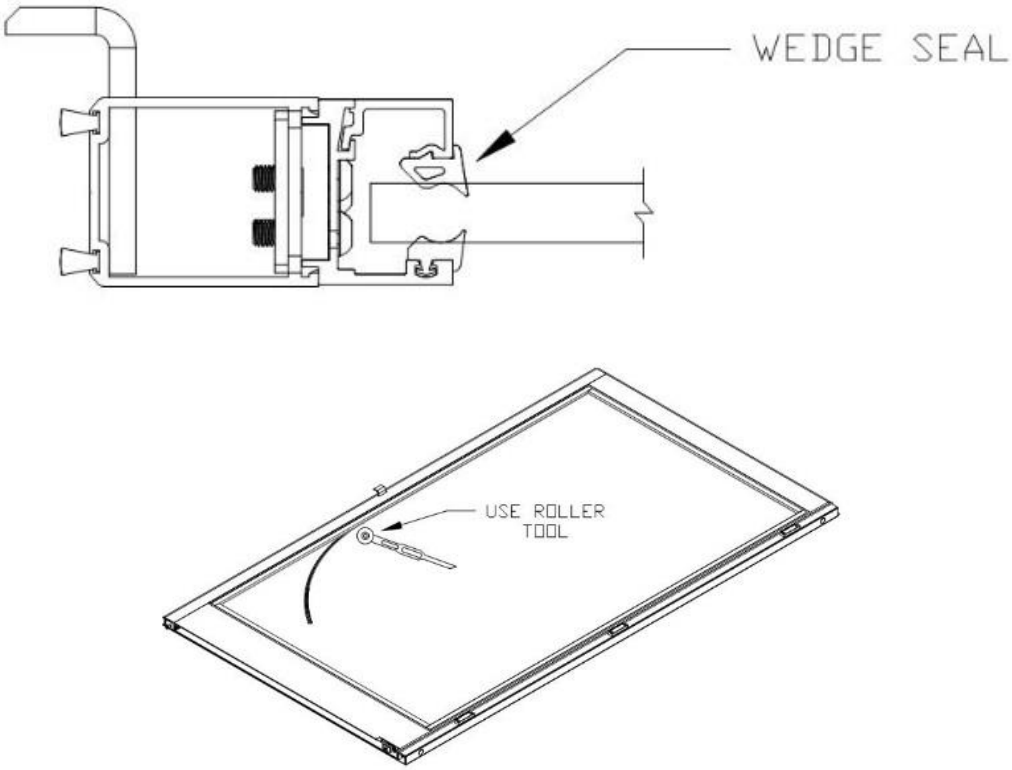
Note: If doors are not square, possible malfunction of doors and alignment issues may occur.



c Install snaps making sure they hook into the gutters and are seated properly.



d Use roller tool to install wedge seals between snaps and glass. For ease of installation, spray wedge seals with a mixture of water and soap to lubricate.



e Trim seals to proper length, making sure to miter all corners for a sealed joint.

f Wipe door panels dry.

10.5.25 Installing/Removing the Cover

In all instances, where work is being done, the area is to be secured from pedestrian traffic, and the power removed to prevent injury.

Cover latching can be achieved when the cover is in the full open position by pressing the cover toward the unit. (Usually when opening the cover, it will latch with little effort, making it appear to be an automatic function.)

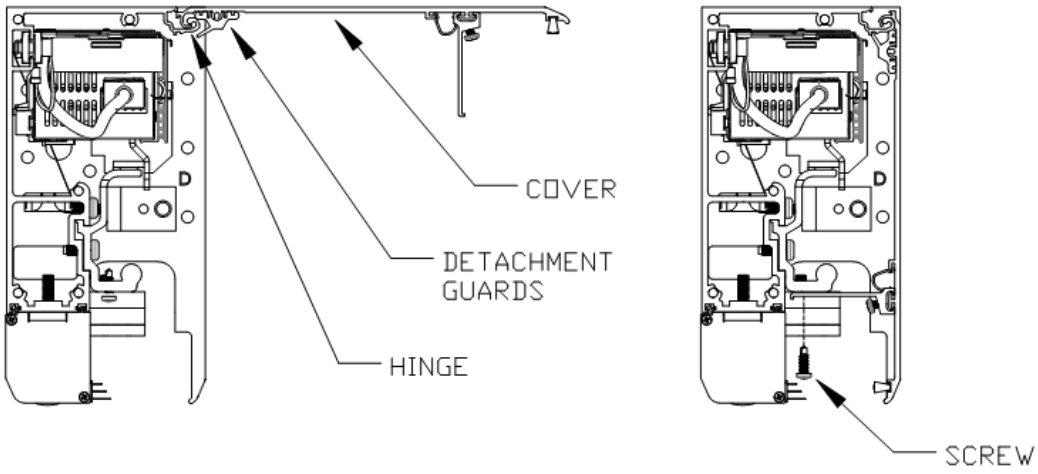
To unlatch the cover, lift slightly, pull and the cover will rotate downward, thereby allowing it to close.

To secure the cover, unlatch and close, then tighten the screws located in each end and/or the center, ensuring that they fall in the slots on the cover latches.

To fully remove the cover, start by uninstalling each detachment guard. Next, disconnect wiring coming from the sensors. Lift cover off of the hinge on the beam.

To install the cover, center the cover on the beam and mate the hinge portion of the cover to the beam. Install the detachment guards equally spaced down the length of the beam. Re-connect any wires that were disconnected.

Close and secure cover with screws, as shown below.



11 Electrical connections

Note: During any work with the electrical connections the **mains power** and the **electrical emergency unit must be disconnected**.

A suitable Lockout is required for OSHA regulation compliance and highly recommended for personal safety.

- If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

Note: Permanent wiring shall be employed as required by local codes.

11.1 Installation

a Open the cover, see section 10.5.2.

b Install but do not connect activation units, presence sensors and accessories.

c Install and connect the mains cables, see section 11.2.

d Carry out Start-up, see section 13.

11.2 Mains connection

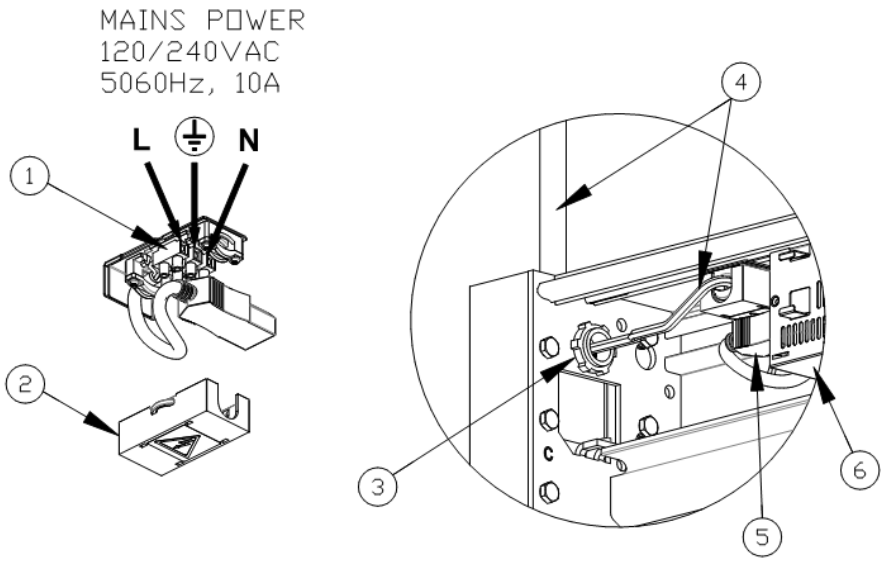
The incoming mains, which is a single phase 50/60 Hz AC voltage between 100 V -10% and 240 V +10% fuse 10 AT, is connected in the mains connection unit.

a Remove the protective lid (2).

b Connect the incoming mains power (4) through the strain relief (3) to the connection block (1) as shown in the illustration below.

c Put the protective lid (2) back in place.

Installer must properly ground door package! Improper grounding can lead to risk of personal injury.

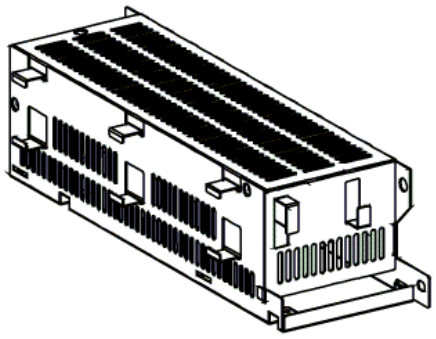


1 Mains connection block
2 Protective lid
3 Strain relief
4 Incoming mains power
5 Mains connection
6 Supply unit

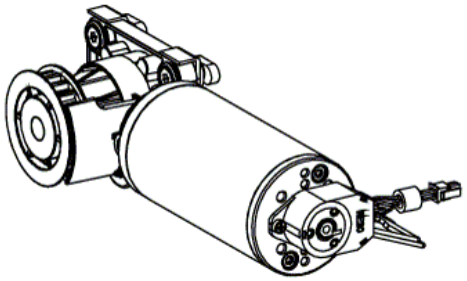
The mains connection (5) must remain isolated until the wiring is completed. Then connect to the supply unit (6).

11.3 Electrical units

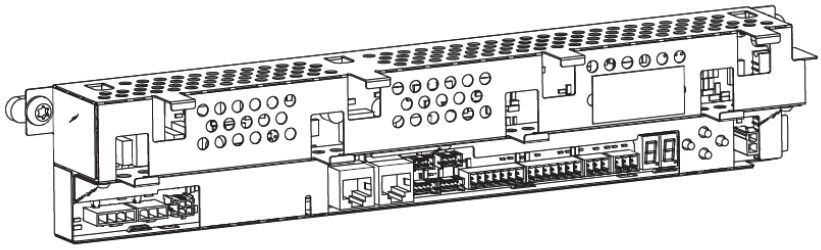
11.3.1 Power supply unit (PSU 150)



11.3.2 Drive unit



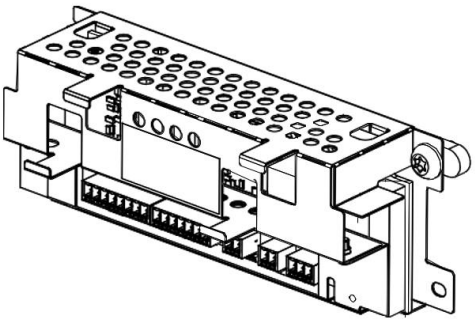
11.3.3 Main control unit (MCU)



The main control unit has the connection for the power supply, drive unit, operation mode selector, activation units, electromechanical lock and batteries. An installer interface with a two digit display and four push buttons is used for function selection, adjustments and for troubleshooting. See section 13.1 for details.

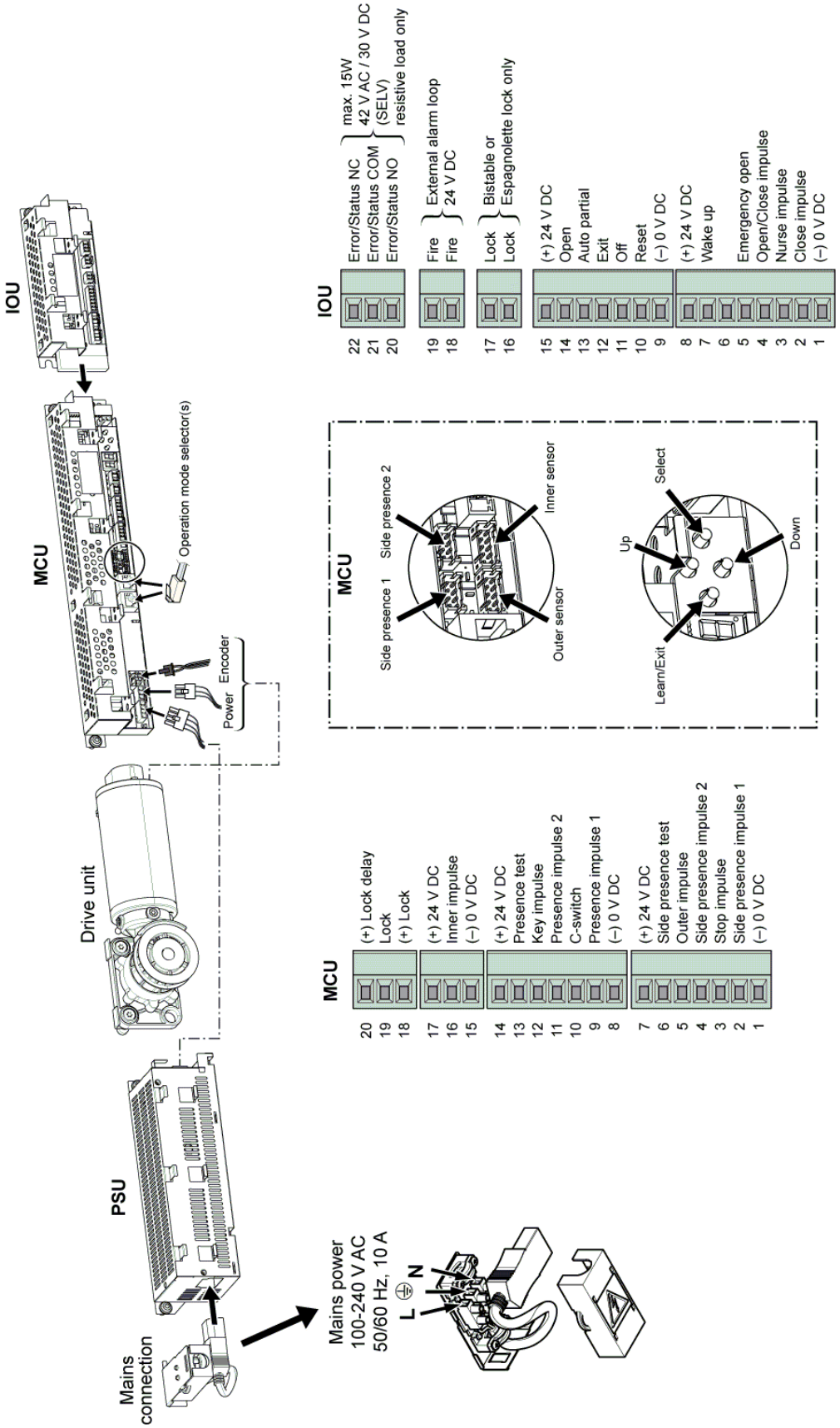
11.3.4 Additional electronic units can be connected for extra functionality

I/0 unit (IOU)



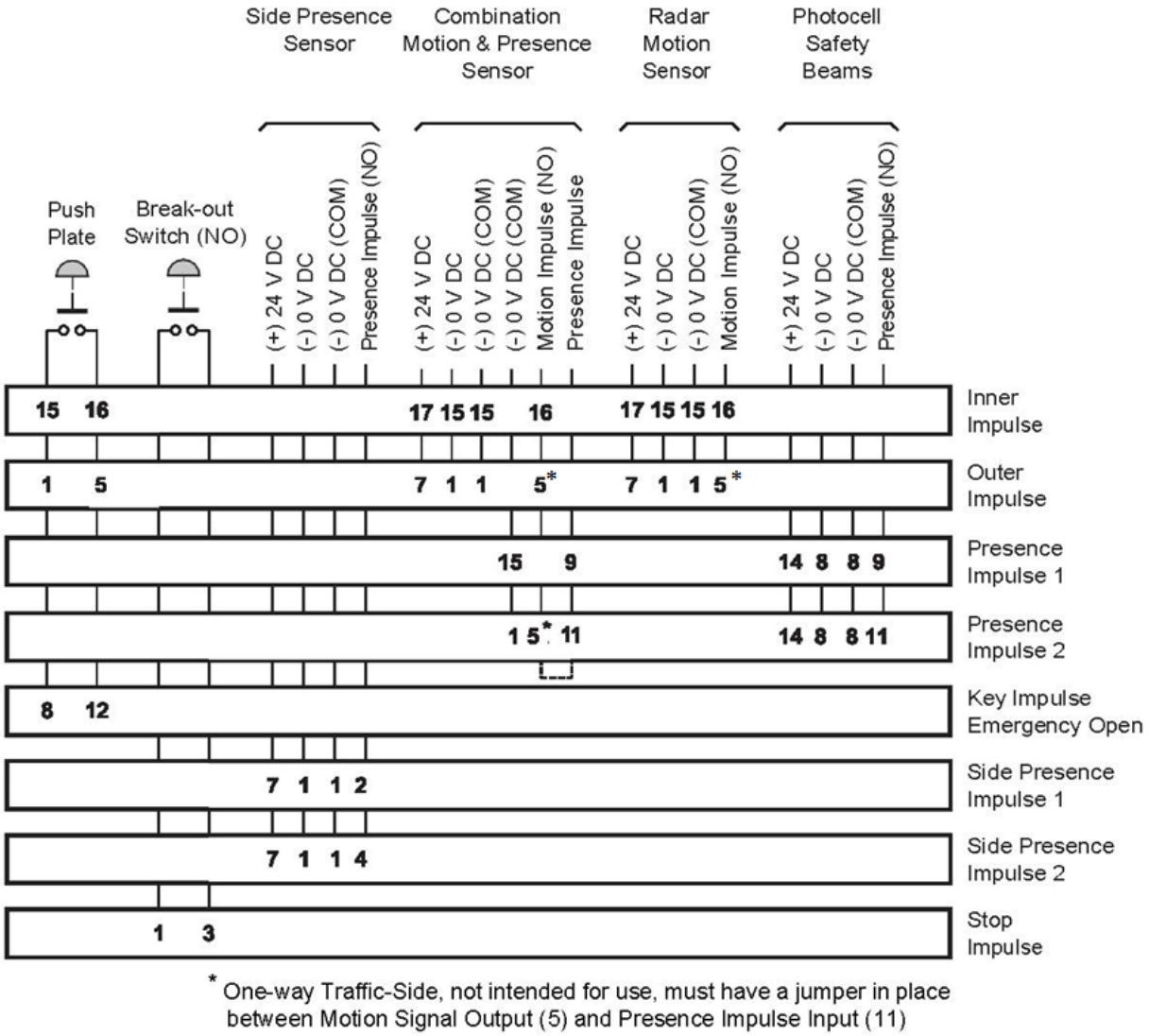
For extra functionality like Close impulse, Nurse impulse, Open/Close impulse, Emergency open impulse (fireman's opening), connection of optional operation mode selector and fire alarm an I/O unit is used. This unit has also a relay output for external error or status indication, maximum 15W, 42VAC / 30 VDC (SELV), resistive load only.

11.3.5 Connection of electrical units



11.3.6 Connection of activation units

See sensor manuals for mounting and adjustments. Protective device shall comply with EN 12978.

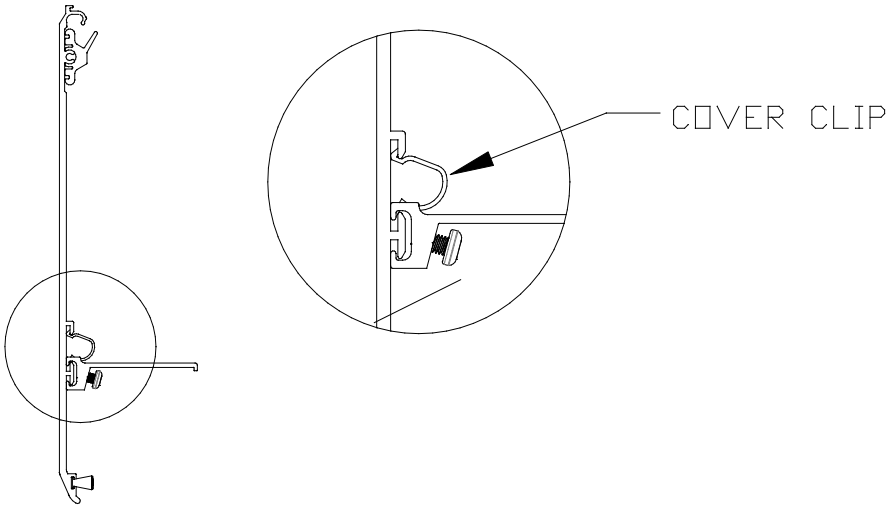


* One-way Traffic-Side, not intended for use, must have a jumper in place between Motion Signal Output (5) and Presence Impulse Input (11)

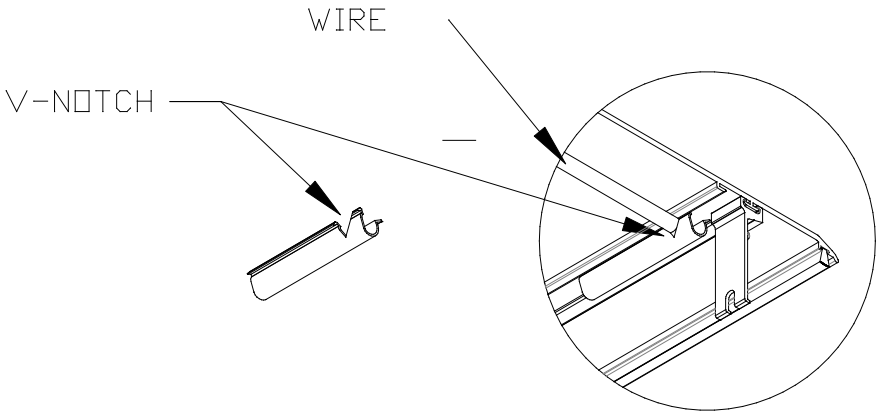
11.3.7 Cover sensor wire routing

Once the sensor on the cover has been installed, protect the sensor wiring along the length of the cover using the cover clips provided.

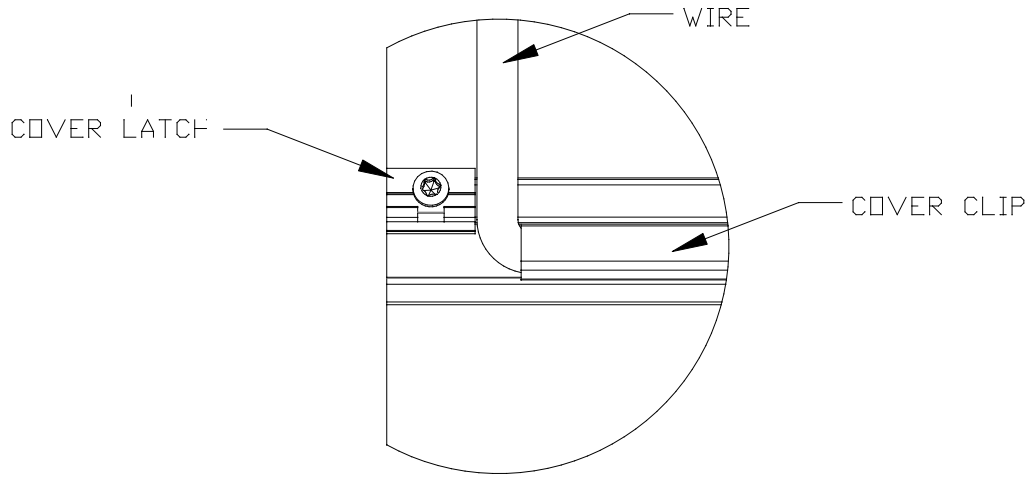
a Space clips no further than 2” (50mm) apart.



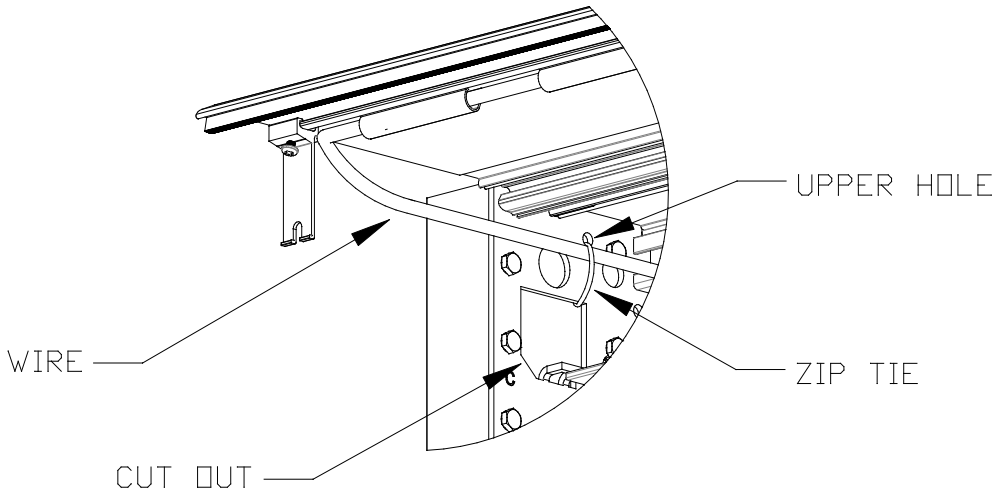
b Locate a clip as shown where the sensor wire comes through the cover. Cut a v-notch in this clip the same size of the wire approximately ½” (12mm) from the end, run the wire through this notch and then down through the clip. Ensure that the length of wire between this notch and where it comes out from the cover is tight and lies next to the cover.



c Locate a clip as shown spaced approximately ¼" (6mm) away from the end cover latch and run the wire between this clip and the cover latch to the beam.



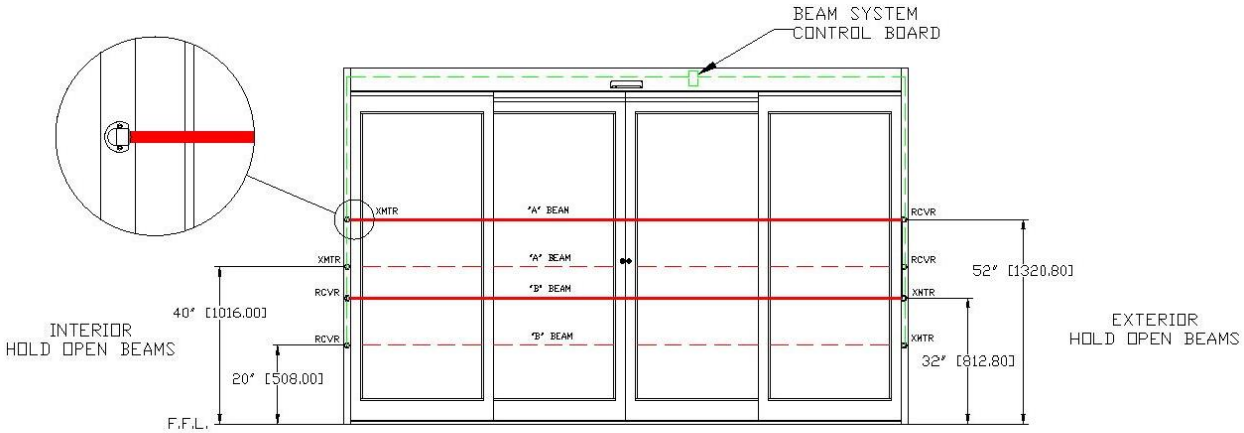
d Once the wire is ran into the beam, zip tie the wire to the jamb mounting plate as shown- through both the small, upper hole on the backside of the 7/8" (22mm) main power hole and the cutout.

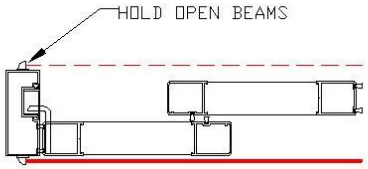


e Run the sensor wire to the main control along the back wall of the beam using the factory installed rectangular plastic cable holders.

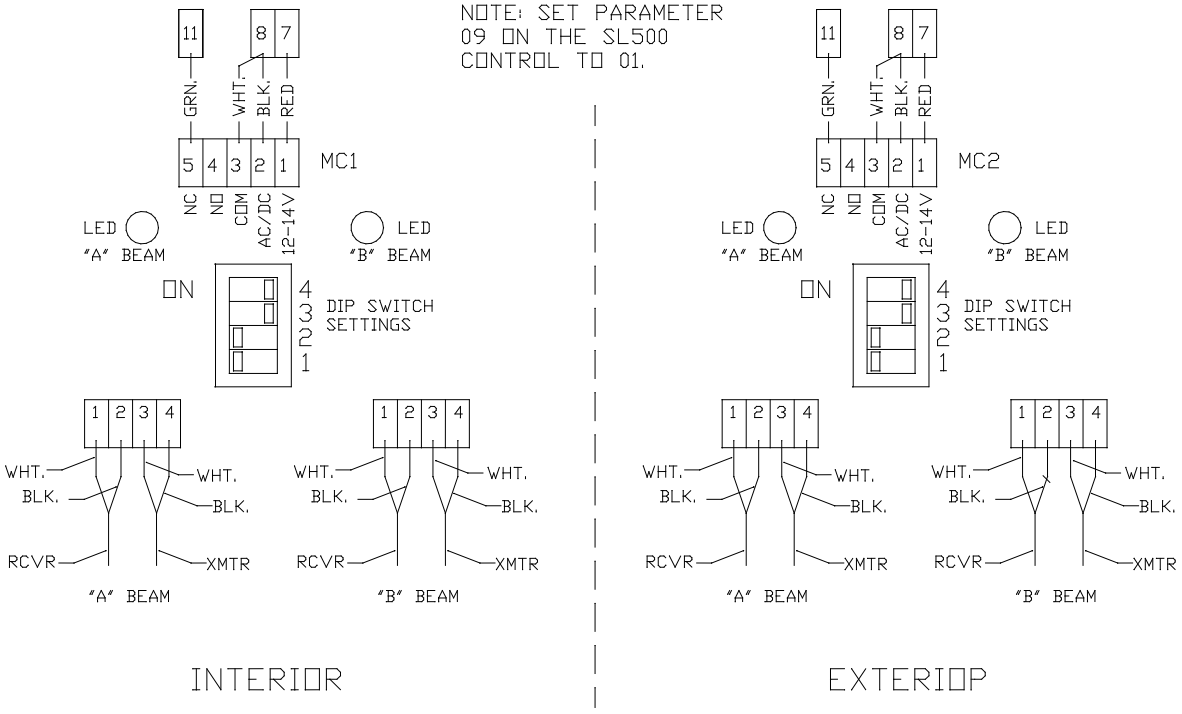
f Close and open the cover to ensure that the wire does not come into the path of any moving parts.

12 Break Out/Safety – Hold Beam Connection Diagram





HOLD OPEN BEAM APPLICATION
KIT #US15-0136-01



13 Start-Up

a Start-up and adjustment must be carried out in the following order when the operator is installed.

Connect the mains plug to the control unit.

b Push the Learn button for 2 seconds before making any connection into the terminals. Release the Learn button when there is a flashing "L" in the display.

c The Learn cycle starts 2 seconds after the Learn button is released.

d When the Learn is finished the display can show different parameters that could not be set automatically during the Learn cycle. These parameters shall be entered by the installer. See section 13.2.

e Give a Push and Go and see that the door runs as expected.

f Disconnect the power and connect all accessories such as well-adjusted sensors, breakout switches, lock and batteries.

g Connect the mains plug to the control unit.

h Check that the sensors are in standby mode, deactivated, and there is no traffic in the door opening.

i Push the Learn button and make a Learn. In the second Learn all the accessories and sensors shall be Learned into the control unit.

j Check the door movement by giving an impulse on the operator.

k If necessary adjust the door speed parameters to the required speeds.

l Check that the installation complies with valid regulations and requirements from the authorities.

13.1 Adjustments and selection of special operating functions

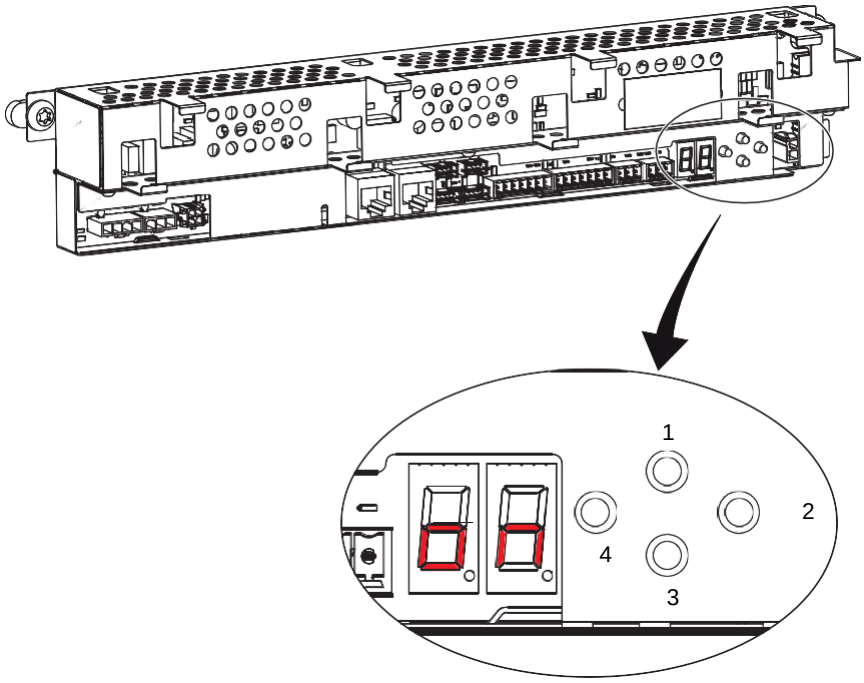
The main control unit has a two-digit display that shows text and/or digits. On the right side of the display are four push buttons. The display can show 4 different modes:

a Parameter mode. In Parameter mode the display shows parameters from 00 to C6. A parameter controls different behavior in the operator.

b Value mode. In Value mode the display shows values from 00 - 99. A value sets how a parameter shall act.

c Error mode. Error mode shows what error group and error code that is active.

d Status mode. Status mode shows what impulses that are active in to the MCU.



'on' = Operation OK

1 Up (to step up in parameter or value menu)

2 Select (enters into parameter or value menu and program a value into memory)

3 Down (to step down in parameter or value menu)

4 Learn/Exit (Learn has 3 functions, 1 quick Learn, 2 Normal Learn, 3 default setting, Exit jumps out from value menu without saving or parameter menu)

Up and Down buttons steps between the different parameters or values.

Select steps from the standby mode into the parameter mode or steps from the parameter mode into the value change mode. In the value change mode, pushing Select, will program the selected value into the selected parameter and step back to the parameter mode.

Learn/Exit button initiate a Learn of the control unit if the MCU is in the standby mode. Learn/Exit button will exit the value programming mode and enter the parameter mode without saving the value. Learn/Exit button will exit the parameter mode and enter the standby mode.

Fingers may be trapped by the belt transmission bracket. Set the program selector to OPEN before doing any configurations with the buttons.

Active error

E1 = flashing letter E followed by a digit displays an active error (1-9). The digit shows the main type of error. The display switches between this main error and a two digit number to specify the error.

If several errors are active they are displayed in a sequence. Errors are cleared by turning off and on the mains power. For a detailed description of errors, see Troubleshooting on page 81.

13.2 The Learn function can be one of three different types

1 Push the Learn/Exit button for **more than one and less than two** seconds, then each connected electronic module is recognized.

2 Push the Learn/Exit button for **more than two seconds** and the display flashes L. A complete Learn cycle will start after 2 seconds when the Learn/Exit button is released. The complete Learn cycle includes the Learn in point no. 1.
The following accessories/parameters are automatically detected and set during the Learn cycle.

Accessory/Parameter	Parameter number
Adjustment of closing speed according to ANSI/BHMA A156.10 standard.	02
Electromechanical lock and which type	05, 06, 98
Controlling of connected sensors output, NO/NC	07, 08, 27, 28, 46
If the sensors are monitored or not	09, 16, 29, 66, 91
Battery and battery size	41
Espagnolette lock parameters	43, 44, 90, 93
Measuring of clear opening width	59
Power supply type	64
Calculation of door weight	68
Calculation of friction in the system.	69
Second inner impulse	93

When the Learn cycle has ended the door will stay closed. If there are some parameters that couldn't be configured automatically during the Learn cycle the door will open. The display will show first a "P" and then what parameter that couldn't be auto configured, e.g. whether the door is bi-parting or single sliding (parameter 67 Door Type). These parameters have to be configured by the installer.

1 Push the right button, Select, to start editing parameters.

2 Push the Select button once again and the value of this parameter is shown while flashing.

3 Push the Up or Down buttons to select the value.

4 Push the Select button to confirm and program the selected value.

5 Continue to configure the rest of the unLearned parameters.

6 Push the Learn/Exit button for more than two seconds and the display shows 'on'. After two seconds delay the door closes and is ready for operation or for further adjustments.

3 Push the Learn/Exit button for more than **ten seconds** and the operator returns to default factory set parameters. After 2 seconds the display starts to flash an L and after another 8 seconds the display shows “de” for default setting.

13.3 Display test and configuring of parameters

a When the display shows "on", push the Select button and each of the two display windows make a rotating test pattern.

b Verify that all seven segments of the two display windows are lit during the test. If not, there is a risk of misjudgment of the digits shown in a defective display.

c When the display test is finalized the display shows two steady digits indicating the first parameter.

d Push the Up or Down buttons to select the parameter to adjust.

e Push the Select button again to read out the shown value of the selected parameter. The value is shown as two flashing digits.

f Push the Up or Down buttons to adjust the value in the allowed range.

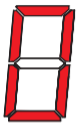
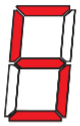
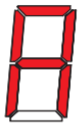
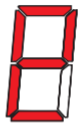
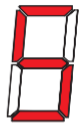
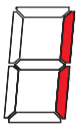
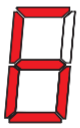
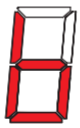
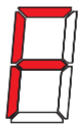
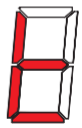
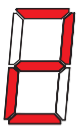
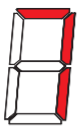
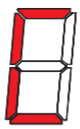
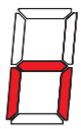
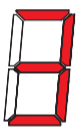
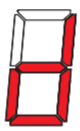
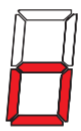
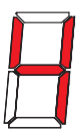
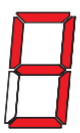
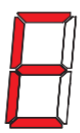
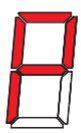
g When the correct value is selected push the Select button again and value will be programmed into the MCU memory.

h Push the Exit button once and leave value editing **without** making any changes. i

Push Exit button once again to leave parameter selection. The display shows **'on'**.
It is also possible to return to normal operation **'on'** by waiting three minutes without pushing any button.

Note: The value is programed into the MCU when pushing select regardless if the value is changed or not. When a value is programmed into the MCU that parameter is excluded from the Learn cycle. If a new Learn is made the programmed parameter will remain unchanged.

To have the parameters included in the Learn cycle again you have to make a default setting of the MCU, (see above).

Display	Actual	Display	Actual	Display	Actual	Display	Actual	Display	Actual
	0		5		A		e		S
	1		6		b		F		t
	2		7		C		n		
	3		8		d		o		
	4		9		E		P		

13.4 Status indication on the display

Select status indication by setting parameter 5E = 01.

The display shows the different impulses that are active. The status viewing starts with showing St as for Status, then one or many numbers representing the different active impulses in to the operator.

The different impulses are:

00 = Key impulse

01 = Inner impulse

02 = Outer Impulse

03 = Synchronization impulse

04 = Interlock in impulse

05 = Presence impulse 1

06 = Presence impulse 2 Side

07 = Presence impulse 1 Side

08 = Presence impulse 2

09 = Stop impulse

10 = Emergency open impulse

13 = Close command

14 = Nurse impulse

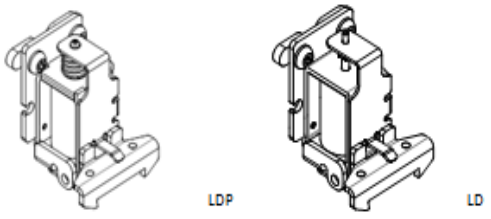
24 = Push and Go impulse

25 = Open-Close impulse

28 = Fire impulse

47 = Interlock Disable

13.5 Description of parameters

Main control board parameters			
No.	**Parameter Name**	**Value (Default value)**	**Description**
00	High Speed Opening	(2.3 (70))	Sets the maximum opening speed. Unit cm/s.
01	Low Speed	(2.3 (70))	The low speed is self-adjusting to optimal operation if this parameter is set to max. Depending on authority or installation requirements the low speed, low speed distance opening and/or closing can be further reduced. Unit cm/s
02	High Speed Closing	(0.43 (13))	Sets the maximum closing speed. Unit cm/s.
03	Hold Open Time	(02)	The general hold open time for Inner and Outer impulses. Unit seconds.
04	Key Hold Open Time	(07)	Hold open time for Key impulse. Unit seconds.
05	Lock Configuration (main control)	00-05 (00)	Never LD in escape routes! LDP = locked **with** power (fail safe) LD = locked **without** power (fail secure)  LDP LD
	No lock	00	No lock
	LDP	01	LDP = Locked with power. Only used with US lock.
	LD	02	LD = Locked without power. Only used with US lock.
	LDP LE	03	LDP LE = Locked with power low energy. Used with EU lock.
	LD LE	04	LD LE = Locked without power low energy. Used with EU lock.
	Not to be used	05	Not to be used
06	Lock release	00-01 (00)	If “Lock Release” is On, the door will apply force in the closing direction when the lock is unlocking. This is made to prevent a lock from being stuck in locked position when opening. Should be set to On when an electromechanical lock is installed.
	Off	00	
	On	01	
07	Presence Impulse 1 Configuration	00-01 (00)	This parameter determines if a presence impulse is normally open (NO) or normally closed (NC).
	NO	00	Normally open
	NC	01	Normally closed
08	Presence Impulse 2 Configuration	00-01 (00)	This parameter determines if a presence impulse is normally open (NO) or normally closed (NC).
	NO	00	Normally open
	NC	01	Normally closed

Main control board parameters			
No.	**Parameter Name**	**Value (De-fault value)**	**Description**
09	Presence Impulse Monitoring	00-02 units (00)	Presence impulse monitoring is a demand to be activated in escape routes according to EN 16005 or DIN 18650 if the door travels faster than adjusted according to PRA-0004.
	No monitoring of presence impulse	00	Set to “00” if no monitoring of Presence impulse sensors is required or if no presence impulse sensors are installed.
	Presence impulse 1	01	Set to “01” if one Presence impulse sensor shall be monitored (if only one sensor is used this sensor has to be connected to MCU TB:9, Presence impulse 1).
	Presence impulse 1 and 2	02	Set to “02” if two Presence impulse sensors shall be monitored.
10	Emergency Unit Monitoring	00-02 (00)	The emergency unit will be tested by shutting of the power to the MCU and open the door with the emergency unit. The test is never done in operation mode selection OPEN and normally not in OFF, if not parameter 37 “Emergency Action In OFF Mode”, is set to On, see below. Authorities can demand that the emergency unit is monitored on a regular basis, see parameter 40 “Emergency Unit Test Interval” below. Half an hour before this time has elapsed the following outer impulse generates an emergency opening test. If there is no outer impulse within the next half hour, the operator control unit generates the opening impulse by itself (“ghost impulse”). The test is also always performed after a Reset and after changing operation mode selection from a position where a test is not done to a position where the test is a demand.
	Off	00	
	Convenience Monitoring	01	(01) is a simpler one-channel monitoring, this can be done with both MCU and MCU-ER. Convenience monitoring can also be used when monitoring the Convenience battery parameter 38. It will only indicate empty battery.
	Redundant monitoring	02	(02) is a redundant two-channel monitoring that is a demand for escape route according to: EN 16005 or DIN 18650. The redundant two-channel monitoring requires the MCU- ER control unit.
11	Partial Open Position	00-99 % (70)	Sets the “winter opening” size. Note: Must be 99 (= 100%) in escape routes. Unit % of COW.
12	Opening Direction	00-01 (00)	When changing this parameter and "Emergency Unit Monitoring" parameter 10 = 02. Remember to also set the Escape jumpers correctly, see section 11.3.6.
	CW	00	
	CCW	01	The tension wheel lock can only work in one opening direction, CW and cannot be used in CCW.
13	Hold Force	00-60 N (0.0 (00))	Adjustment of the force used to keep the door in closed position (ND motor max 30 N, HD and DD motor max 60 N). Unit N.

Main control board parameters			
No.	**Parameter Name**	**Value (Default value)**	**Description**
15	Run Program	01-05(05)	Performance adjustment. Sets how fast or slow the door shall accelerate or break.
	Smooth	01	For light doors.
	Max Performance	05	For heavy doors.
16	Inner Impulse (motion) Monitoring	00-01 (00)	According to EN 16005 or DIN 18650 it is a demand to have Inner impulse monitoring = On in escape routes. When inner impulse monitoring is selected C-switch is disabled.
	Off	00	Disables monitoring
	On	01	Enables monitoring
17	OuterImpulse(motion)Monitoring	00-01 (00)	If the escape route is in the direction of the outer sensor it is a demand to have outer impulse monitored according to EN 16005 or DIN 18650. When outer impulse monitoring is selected C-switch is disabled.
	Off	00	Disables monitoring
	On	01	Enables monitoring
20	Partial Hold Open Time	00-60 sec (02)	Hold open time for Inner & Outer impulses with operation mode selection PARTIAL and for the Nurse impulse. Unit seconds.
21	Push & Go Hold Open Time	00-60 sec (02)	Hold open time after a Push & Go. Unit seconds.
22	Auto Width Activation Time	00-60 sec (10)	Auto width activation time is available if parameter 61=01 "Auto Width" is selected. If the door has not closed during the auto width activation time and the door is open or opening the door will open to full open door. Unit seconds.
23	Auto Width Resume Time	00-60 sec (10)	When the door has been closed during the auto width resume time, the next opening impulse will open the door to partial open position. Only available if parameter "Auto Width" 61=01. Unit seconds.
24	Jam Hold Time	00-10 sec (02)	Sets how long time the door shall be stopped when a jam is detected during opening and also the time until the door can restart after a Stop impulse. Unit seconds.

Main control board parameters			
No.	**Parameter Name**	**Value (Default value)**	**Description**
25	Interlock Disable Time	00-60 sec (00)	The parameter controls the time that interlock is valid. Only active if "Interlock Function" parameter 6A = 01.
		00	If the time is set to 00, interlock is always active.
		01-60	The "Interlock Disable Time" starts to count down the moment a valid opening impulse is made on the first door. If the first door does not close during the "Interlock Disable Time" the second door is not interlocked anymore and will also open. When both doors are closed Interlock Disable Time will be reset. Unit seconds.
26	Presence Hold Open Time	00-60 sec (02)	Hold open time for Presence impulses 1 & 2. At least 2 sec to meet ANSI demand. Unit seconds.
27	Side Presence Input 1 Configuration	00-01 (00)	Parity of side presence sensor.
	NO	00	Normally open
	NC	01	Normally closed
28	Side Presence Input 2 Configuration	00-01 (00)	Parity of side presence sensor.
	NO	00	Normally open
	NC	01	Normally closed
29	Side Presence Impulse monitoring	00-02 units (00)	
	No monitoring of Side Presence impulse	00	Set to “00” if no monitoring of Side Presence impulse sensors is required or if no Side Presence impulse sensors are in- stalled.
	Side Presence impulse 1	01	Set to “01” if one Side Presence impulse sensor shall be monitored (if only one sensor, it has to be connected to MCU TB:2, Side Presence impulse 1).
	Side Presence impulse 1 and 2	02	Set to “02” if two Side Presence impulse sensors shall be monitored.
30	Side Presence Activation Distance	00-99 dm (0.0 (00))	
		00	If value 00 is selected an activated side presence impulse will slow down the door to safe speed during the entire door opening, from fully closed to fully open.
		01-99	01-99 dm is counted from open position. The side presence impulse can only be activated the last decimeters entered in this parameter. (This is an inhibit signal for side presence). In an escape route the door has to open to 80% within 3 sec. after an inner impulse. Unit dm.

Main control board parameters			
No.	**Parameter Name**	**Value (Default value)**	**Description**
31	Sensor Type	00-01 (01)	Select type of monitoring for the combined sensors. Choose between 1-wire (00) or 2-wire (01) monitoring.
	1-wire monitoring	00	1-wire monitoring, combined sensors have only one test input for monitoring for both presence and impulse field.
	2-wire monitoring	01	2-wire monitoring, the sensor has separate monitor inputs for both presence and impulse. When 2-wire monitoring is selected the C-Switch function is switched to inner/outer impulse monitoring if monitoring is selected, see parameter 16 and 17.
32	Active Brake on Stop	00-01 (01)	
	Off	00	The door will freewheel until it stops.
	On	01	The operator will brake the doors actively during 1 sec. on a Stop impulse.
33	Push & Go in EXIT Mode Selection	00-01 (00)	
	Off	00	Push & GO **is not** active in OFF and EXIT mode selection.
	On	01	Push & GO **is** active in OFF and EXIT mode selection.
34	Hold Force in EXIT and OFF Mode Selection	00-01 (00)	With an electromechanical lock this hold force can be unnecessary.
	Off	00	
	On	01	
35	Toggle Operation Mode Selector after Stop	00-01 (01)	In operation mode selection OFF the mode must be changed before normal operation after a Stop impulse.
	Off	00	
	On	01	
36	Emergency Action	00-01 (01)	Fire closing or Emergency opening.
	Closing	00	The door will **close** on fire impulse or power failure.
	Opening	01	The door will **open** on fire impulse or power failure.
37	Emergency Action in OFF Mode	00-01 (00)	Decides if “Emergency Action” shall be performed also in mode selection OFF (= opens also in the middle of the night).
	Off	00	
	On	01	
38	Convenience battery	00-01 (00)	When this parameter is set to On (01), with a 24V (UPS) battery the operator will continue its normal operation in case of mains power failure. Monitoring will be made if parameter 10 is set to Convenience Monitoring (01). Not approved in escape routes!
	Off	00	
	On	01	

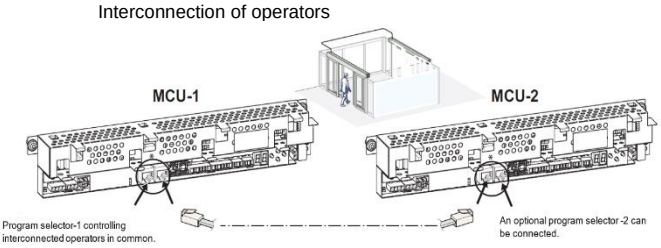
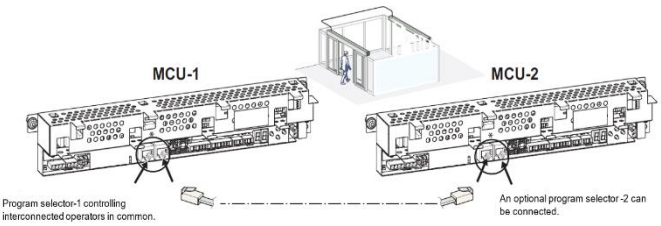
Main control board parameters			
No.	**Parameter Name**	**Value (Default value)**	**Description**
39	Battery Wake-up	00-01 (00)	The parameter controls how the door is acting on Key impulse or Battery wake up in mode selection OFF without mains power. The parameter "Emergency Action In OFF Mode" (37) must also be set to Off (00).
	Open	00	If "Battery Wakeup" is set to Open (39 = 00) the impulse is opening the door fully and stop there.
	Open/Close	01	If "Battery Wakeup" is set to Open/Close (01) and parameter "Emergency Action" (36) is set to Opening (01) the impulse is opening the door fully, remains open for the time set by parameter "Key Hold Open Time" (04) and will then close, lock and disconnect the battery.
3A	Lock Door After Fire Closing	00-02(00)	The parameter sets how the lock will react when an active fire closing impulse is activated.
	Follow Mode Selector	00	
	Always Unlock	01	
	Always Lock	02	
40	Emergency Unit Test Interval	04-23 hours (04)	The time set in this parameter controls the maximum time until the next automatic test of the emergency unit is performed. Unit hour.
41	Battery Type	00-02 (00)	What type of battery that is mounted in the operator is identified during the Learn.
	No battery	00	
	12V	01	After power failure, doors will either open once or close once.
	24V	02	After power failure, doors cycle open and closed until battery drains.
42	Remain Locked at Stop	00-01 (01)	The parameter sets how the lock shall act when Stop impulse is activated (for example break-out).
	Off	00	The locked door will be unlocked when Stop impulse is activated.
	On	01	The locked door remains locked when Stop impulse is activated.
43	Opening Delay For Lock	00-99 sec x 0.1 (00)	The time the opening is delayed (0.0-9.9 sec) after an opening impulse is given in operation mode selections OFF and EXIT. Unit s.
44	Exit Lock	00-01 (01)	This parameter controls the electro-mechanical lock in the operation mode selector setting EXIT.
	Off	00	The electromechanical lock **is not** locked in EXIT.
	On	01	The electromechanical lock **is** locked in EXIT.
45	Stop Function	00-01 (01)	When this parameter is set to On (01) the Stop impulse is enabled, otherwise it is disabled.
	Off	00	
	On	01	

Main control board parameters			
No.	**Parameter Name**	**Value (Default value)**	**Description**
46	Stop Configuration	00-01 (00)	Configuration of the Stop impulse. Choose between normally open (NO) or normally closed (NC) Stop impulse.
	NO	00	Normally open
	NC	01	Normally closed
47	C-Switch Configuration	00-01 (01)	Configuration of "C-Switch" (electronic limit switch) output, NO (00) or NC (01).
	NO	00	Normally open
	NC	01	Normally closed
48	C-Switch Activation Distance	00-99 dm (0.33 (01))	The C-Switch is an open collector output. The value in the parameter decides how far one door leaf shall travel from closed position before the c-switch change state. Unit dm.
49	Opening Max Force	02-19 N x10 (33.7 (15))	The force applied from the operator to the door leaf during opening. Unit N.
4A	Close Kick Force	00-19 N x10(42.7 (19))	The force applied from the operator to the door leaf during the close kick. Unit N.
50	Closing Max Force	02-19 N x10 (29.2 (13))	The force applied from the operator to the door leaf during closing. Unit N.
51	Push & Close	00-01 (00)	When this parameter is set to On (01) the motor will in operation mode selections OFF or EXIT try to close the door with the force selected by parameter 50 "Closing Max Force", if someone tries to open it manually. Push & Close is also known as "poor man's lock".
	Off	00	
	On	01	
52	Push & Close Timeout	00-99 sec x10 (60)	Adjustable time for how long time the door will continue to "fight back" when someone is trying to force it open. Unit s.
53	Operator Type	00-02 (00)	
	Slider	00	
	Prison Cell Door (PCD)	01	The operator is not available at the moment.
	UniTurn	02	When ASSA ABLOY SL500 is mounted in a ASSA ABLOY UniTurn.

Main control board parameters			
No.	**Parameter Name**	**Value (Default value)**	**Description**
54	Service needed Operating Hours	00-60 h x1000 (00)	Set time before yellow LED in operation mode selector will start flashing. To clear the service needed indication you have to push both up and down arrow on the MMI at the same time for 5 seconds when the display shows on. After 5 s the display will show SE during another 5 s, release the up and down buttons. While the display shows SE press Select button and the counters Operating hours and Operating cycles will be set to zero. Unit hour X 1000.
55	Service Needed Opening Cycles	00-50 cycles x100.000 (00)	Set number of openings before yellow LED in operation mode selector will start flashing. To clear the service needed indication you have to push both up and down arrow on the MMI at the same time for 5 seconds when the display shows on. After 5 s the display will show SE during another 5 s, release the up and down buttons. While the display shows SE press Select button and the counters Operating hours and Operating cycles will be set to zero. Unit cycles X 100.000.
56	Service Needed Locking Cycles	00-50 cycles x10.000 (00)	Set number of lockings before yellow LED in operation mode selector will start flashing. This parameter cannot be zeroed by MMI interface. The parameter has to be increased to the next level of service interval. Unit cycles X 10.000.
57	Low Speed Distance, Opening	00-99 cm (3.9 (10))	“Creep speed” distance during opening. Unit cm.
58	Low Speed Distance, Closing	00-99 cm (3.9 (10))	“Creep speed” distance during closing. Unit cm.
59	Open Position	00-99 dm (9.8 (30))	Opening width of one door leaf. The parameter shall be set automatically by performing a Learn cycle. Unit dm.
5A	Uniturn jam detection distance	00-20 cm	The door will not reopen for jam detection during closing within the configured distance. Unit cm.
5B	Robbery function	00-01 (00)	Lock for robbery functionality is not yet available.
	Off	00	
	On	01	

Main control board parameters			
No.	**Parameter Name**	**Value (Default value)**	**Description**
5C	Pharmacy open 1 position	00-99 cm (50)	Lock for pharmacy functionality is not yet available. The door will open the configured distance when a Pharmacy impulse 1 is given. The distance is calculated on one door leaf. This parameter is active when parameter "Pharmacy Function" (9C) is set to On. Unit cm.
5D	Pharmacy open 2 position	00-99 cm (30)	Lock for pharmacy functionality is not yet available. The door will open the configured distance when a Pharmacy impulse 2 is given. The distance is calculated on one door leaf. This parameter is active when parameter "Pharmacy Function" (9C) is set to On. Unit cm.
5E	Status indication	00-01 (00)	The operator shows the status indication on the LED display of the MCU. See section 13.5 for more information.
	Off	00	
	On	01	
5F	Default programming	00-01	Default programming sets the parameters to the factory default values.
	Off	00	It is **not** possible to perform a default programming from the MMI.
	On	01	It is possible to perform a default programming from the MMI.
60	Learn	00-01 (01)	Sets the possibility to perform a Learn cycle.
	Off	00	It is **not** possible to perform a Learn cycle from MMI.
	On	01	It is possible to perform a Learn cycle from MMI.
61	Auto Width	00-01 (01)	If this function is selected (01) and the operation mode selection is AUTO PARTIAL. the door will open from partial open width to full open width, if an opening impulse is given and the door has not closed during the time selected in parameter 22 “Auto Width Activation Time”. Must **not** be used in escape routes.
	Off	00	Partial Open.
	On	01	Auto Width.
62	Partial Function	00-01 (00)	With this function the door can be selected to be partially opened or partially closed (see below 63 “Partial Closed Position”).
	Opened	00	Partial Open or Auto Width.
	Closed	01	Partial Closed Position, (Auto Airing).

Main control board parameters			
No.	**Parameter Name**	**Value (Default value)**	**Description**
63	Partial Closed Position	00-30 cm (11.8 (03))	"Partial closed position" (Auto airing function) can be obtained by selecting "Partial Function" (62) Closed (01). An airing position of the door can be set between 0-30 cm measured from the closed position on one door leaf. The operation mode selector is to be set to AUTO PARTIAL and the closed position of the doors will then be the "Partial Closed Position". Unit cm.
64	Power Supply Type	00-02 (01)	50 / 150 / 75 W power supply depending on desired performance and installed power supply.
	50W	00	
	150W	01	
	75W	02	
65	Sustainable Drive Mode	00-01 (00)	The electromechanical lock will never lock in Exit mode selection even if parameter 44 is set to On (01). The (+) 24 V DC to accessories like sensors is turned off when the mode selector is in Off and the door is closed. Motor power is limited to 75 W even if parameter 71 is set to a higher value.
	Off	00	
	On	01	
66	Stop Impulse Monitoring	00-01 (00)	Monitoring enables (01) or disables (00) monitoring of the Stop impulse. Stop impulse is not allowed in escape route, unless break out system is used.
	Off	00	
	On	01	
67	Door Type	00-01 (00)	To be able to adapt closing speeds according to UL regulation door type has to be selected.
	Single sliding	00	
	Bi-parting	01	
68	Door weight	01-40 kg x10 (882 (40))	Will be estimated during the Learn but can also be altered manually. Unit kg x 10.
69	Friction	00-99 N (0.0 (00))	The friction when moving the door is automatically measured during a Learn. The friction for the different performance levels are: Standard not more than 30N. High not more than 50N. Exceptional not more than 70N. Unit N.

Main control board parameters			
No.	**Parameter Name**	**Value (De-fault)**	**Description**
6A	Interlock Function	00-01 (00)	Interconnection cable or IOU needed  Maximum cable length 500 m. Length over 30 m, use a straight-through shielded twisted pair (STP/FTP) cable.
	Off	00	
	On	01	
6b	Synchronizing Function	00-01 (00)	Interconnection cable needed  Maximum cable length 500 m. Length over 30 m, use a straight-through shielded twisted pair (STP/FTP) cable.
	Off	00	
	On	01	
6C	External Bus Device ID	01-99 (01).	In a chain of interconnected operators one of them has to be the **main** operator. This operator shall have the value 01. Up to two operation mode selectors can be connected to the chain of interconnected operators. Both of the operation mode selectors are configured in the **main** MCU. All other interconnected operators shall have different values in this parameter. This to make every operator unique.
6d	Extended Hold Open Time Function	00-01 (00).	+ 5 sec. hold open time on doors often reopening during closing.
	Off	00	
	On	01	
6E	MMI access code	00-01 (01)	If this parameter is set to single push (00) the parameters are not locked and when set to the four pushes code (01) the possibility to adjust parameters call for a special enabling code (select, Learn/exit, Learn/exit, select) before altering parameters into the MCU / MCU-ER will be possible.
	One push	00	
	Four pushes	01	

6F	MCU-OMS group	01-10 (00)	This parameter groups MCU with OMS. Units with the same value are in the same group. Units in the same groupSs listen to each other.

Motor control parameters			
No.	**Parameter Name**	**Value (Default)**	**Description**
70	Motor Type	00-01 (01) (01)	Depending on desired performance.
	Normal Duty	00	
	Heavy Duty	01	
71	Max Motor Power	03-15 W x10 (15)	The max amount of power the motor can be supplied with. Max motor power will not deliver more power to the motor then parameter (64) "Power supply type" is put to. Unit W x 10.
72	Motor Over-temperature Recovery Value	95	Do not alter, shall always be 95! For authority use only.

I/O Board parameters			
No.	**Parameter Name**	**Value**	**Description**
90	Function Select IOU-TB:3	00-03 (01)	
	No function	00	
	Nurse function	01	The door will open to partial opening in operation mode selections EXIT, AUTO and AUTO PARTIAL.
	LDE up	02	Espagnolette lock. Sets input to LDE lock up.
	Interlock out	03	When configuring for interlock also set parameter 6A = 01
91	Function Select IOU-TB:4	00-04 (01)	
	No function	00	
	Open/Close Function	01	One impulse opens the door the next impulse closes the door. Available in OMS mode EXIT, AUTO, PARTIAL.
	Interlock disable function	02	Disables interlock, both doors can be open at the same time.
	Sensor test output	03	Sets inner impulse monitoring for the second inner impulse on the IO unit. Set also parameter 93 = 3.
	Interlock in	04	When configuring for interlock also set parameter 6A = 01.
92	Open/Close Timeout	00-60 min (00)	The time set in this parameter controls when a door shall start closing automatically if left open by an Open/Close impulse. 00 min = no automatic closing. Unit minutes.
93	Function Select IOU-TB:2	00-03 (01)	
	No function	00	
	Close function	01	Close impulse is selected. This impulse will immediately close the door, even during opening, and remain closed as long as the Close impulse is active. The electro-mechanical lock will lock the closed door. Parameter “Inner Impulse Monitoring” must **not** be set to On to prevent unintended closing of an escape route door.
	LDE down	02	Espagnolette lock. Sets input to LDE lock down.
	Inner impulse	03	When two inner impulses are to be used. Sets input to inner impulse 2.
94	Fire Impulse Function	00-01 (00)	Depending on configuration in Emergency Action (36), the door will open or close on fire impulse. Fire impulse override presence impulse. At closing, the door will not reopen on jam.
	Off	00	Fire impulse disabled.
	On	01	Fire impulse enabled.
95	Emergency Open Impulse Function	00-01 (01)	Fireman’s opening.
	Off	00	
	On	01	
96	Emergency Open Impulse Configuration	00-01 (00)	Configures the button used for Fireman’s opening.
	NO	00	Normally open
	NC	01	Normally closed

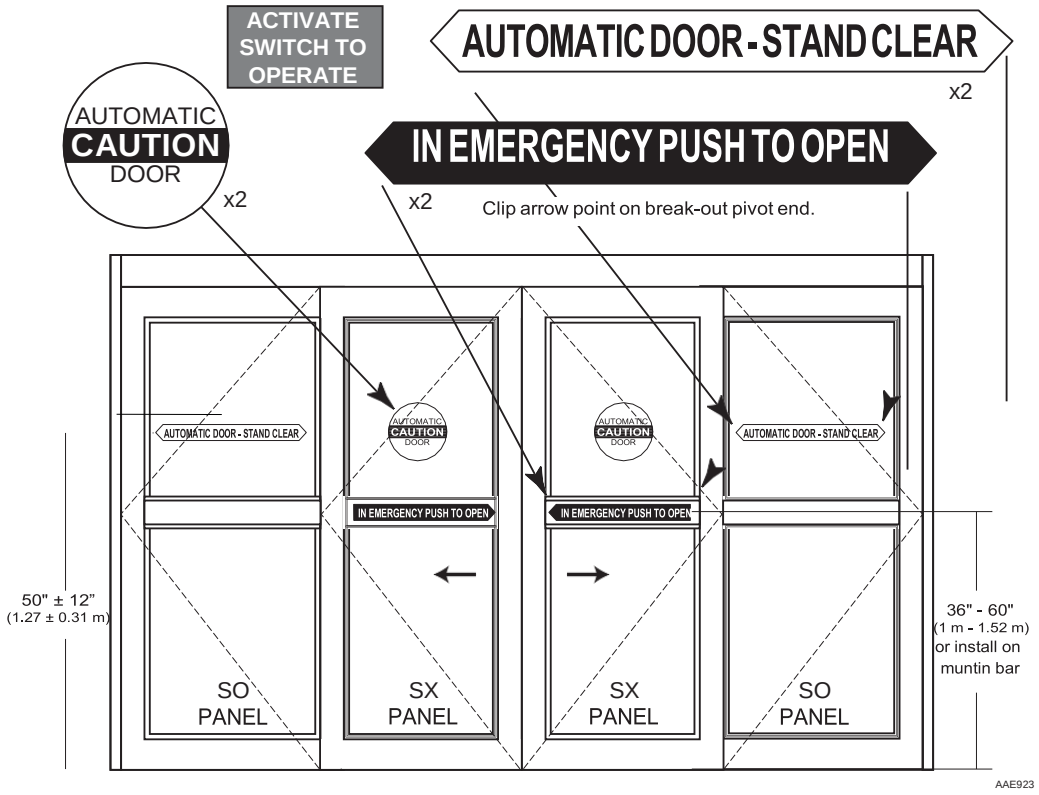
I/O Board parameters			
No.	**Parameter Name**	**Value**	**Description**
97	Operation Mode Selector Function	00-01 (00)	Switch / timer / relay / ”old” operation mode selector (5-wire).
	Off	00	
	On	01	
98	Lock Configuration	00-03 (00)	LDB = locked with power and bistable, LDE = espagnolette lock. Both can be used as **night lock** of escape routes.
	No lock	00	No lock
	Bi-stable lock	01	LDB = locked with power and bistable
	Espagnolette lock	02	LDE = espagnolette lock
	Bi-stable lock Unislide	03	LDB = locked with power and bistable
	Not to be used	04	Not to be used
99	Function Select IOU-TB:6	00-02 (01)	Possibility to disable Sustainable drive mode or to disable Mode Selector with this function through I/O board pin 6.
	No function	00	
	Sustainable Disable	01	Disables Sustainable drive mode. It is possible to disable sustainable drive mode. As long as TB:6 is active the operator will run with full power.
	Mode Selector Disable	02	Disables Mode Selector. When parameter is set to value 02 the OMS is locked. IOU and PSK-6U are not affected. If an impulse is given on IOU TB:6 the indication LED on OMS will be steady red during 15 seconds and it is possible to change mode selection.
9A	Priority of the I/O operation mode selector	25-99(30)	The lower the number is the higher the priority.
9B	Choose group of the I/O operation mode selector	00-10(01)	This controls which MCU that looks at which OMS. It is possible to group different OMS to different MCU. MCU and OMS with same group number listens to each other. If value 00 is selected the IOU mode selector controls all operators.
9C	Pharmacy function	00-01(00)	Lock for pharmacy functionality is not yet available.
	Off	00	
	On	01	

Escape route parameters			
No.	**Parameter Name**	**Value**	**Description**
A0	Escape Route Motor Configuration	01-02 (01)	Single motor or double motor depending on authority demand.
	1-motor	01	
	2-motor	02	

14 Signage

ANSI/BHMA standard 156.10 and ASSA ABLOY Entrance Systems standards specify that caution signs must be affixed to both sides of any power operated pedestrian door. With double doors, signs should be applied to each door. Sliding doors with swinging (Break-out leaves) shall be provided with signs reading “IN EMERGENCY PUSH TO OPEN”. The signs shall have red backgrounds with contrasting letters one-inch high minimum. The signs shall read horizontally and be located adjacent to the lock strike on a centerline 36” (1 m) minimum and 60” (1.52 m) maximum from the floor, applied to the side appropriate for egress. ANSI/BHMA A156.10. The sign “AUTOMATIC DOOR” with letters 1/2” (12 mm) high minimum will be applied to the active leafs, visible from both sides. If switch activated, use “AUTOMATIC DOOR - ACTIVATE SWITCH TO OPERATE”.

Note: The kit decals are double-sided and normally will only need to be applied to one side of a clear glass door. If the decals are not clearly visible on the other side due to the condition of the glass (e.g., tinted or textured glass), the decals should be placed on both sides.



Check that all required signage is applied and intact. Mandatory indicates that the signage is required by European directives and equivalent national legislation outside the European Union.

15 Accessories

15.1 Interconnection cable

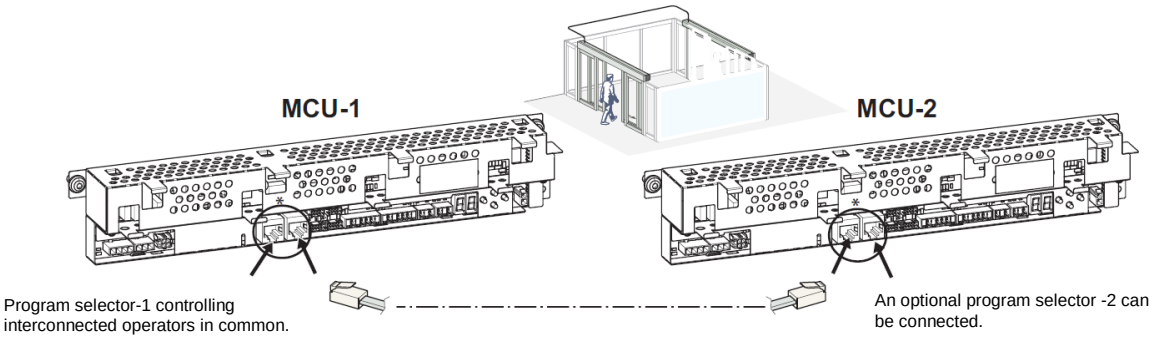
Interconnection cable is used for interlocking or synchronization.

Operators can communicate with each other by connecting an interconnection cable between the operators.

Cable connection:

Pin 1 to pin 1

Pin 8 to pin 8



15.2 Program selectors

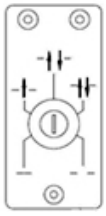
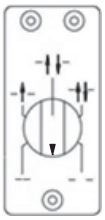
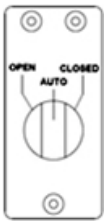
15.2.1 Program Selectors and Functions

The functions of the door are selected with mechanical or key Program Selectors:

a 5 Position with Key uses 1/2" spacer or can be surface mounted

b 5 Position Mechanical Switch, flush or surface mounted.

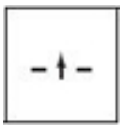
c 3 Position Mechanical Switch, flush or surface mounted.

5 Pos Switch (Key)	5 Pos Knob Switch	3 Pos Knob Switch
		

Program Selector Functions

OFF (Closed)

The inner and outer activation units are disconnected. The door s locked if an electro-mechanical locking device has been installed. The door can be opened with an emergency push-button/key switch (if installed).



EXIT (One Way Traffic)

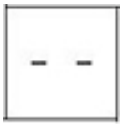
Passage through doorway from one side only. The door is locked if an electro-mechanical locking device has been attached. The door can be opened with an activation to INNER IMPULSE 2 or KEY IMPULSE 6.

*AUTO

Two-way traffic, normal operation of the door. The door can be opened with the inner and outer activation units and with an emergency push- button/key switch (if installed).

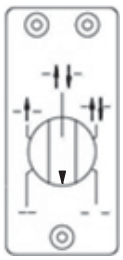
AUTO partial

Two-way traffic. The door can be opened partially with the inner and outer activation units and with an emergency push-button/key switch (if installed).



OPEN

The door is permanently held open.

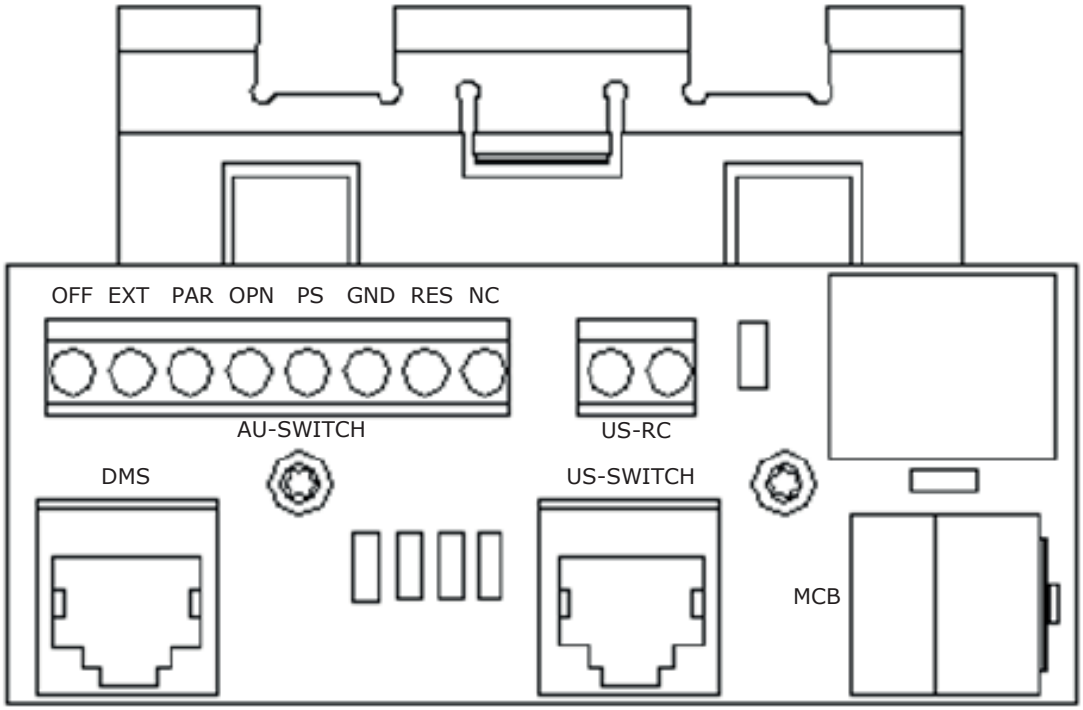


RESET

Momentarily (5 seconds), set the Program Selector as shown and then place at "AUTO" or "OFF" position. The operator makes a system test of the battery, electro-mechanical lock, watchdog relay and closed position. It also reads FS switch settings, CSW distance and Time Delay. After closing, the operator is reset and ready for normal operation again.

* 3-pos switch is selectable between AUTO and EXIT functionality at the AUTO position by removing the jumper on the back side of the switch.

15.3 Accessory board



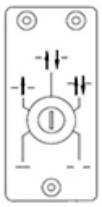
The labelling on the accessory board is as follows:

DMS	Digital Mode Selector
US-SWITCH	Knob/Key Switch MCB
	Main Control Board AU-
SWITCH	Auxiliary Switch
US-RC	Remote Control/Night Mode [1]
OFF	Off (makes doors inactive)
EXT	Exit only (1 Way traffic)
PAR	Partial Opening
OPN	Open (Keeps doors open)
PS	Program selector including resistor
GND	Ground
RES	Reset (Resets package)
NC	Not Connected

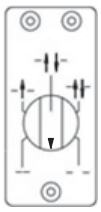
Note: Remote Control/Night Mode, requires a normally open dry contact. The circuit must be closed for Night Mode.

15.4 Program selector options

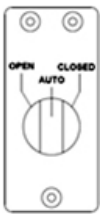
Program Selectors



5 Pos Switch (Key)
US15-1500-06



5 Pos Knob Switch
US15-1500-04

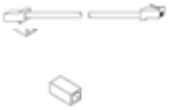


3 Pos Knob Switch
US15-1500-05

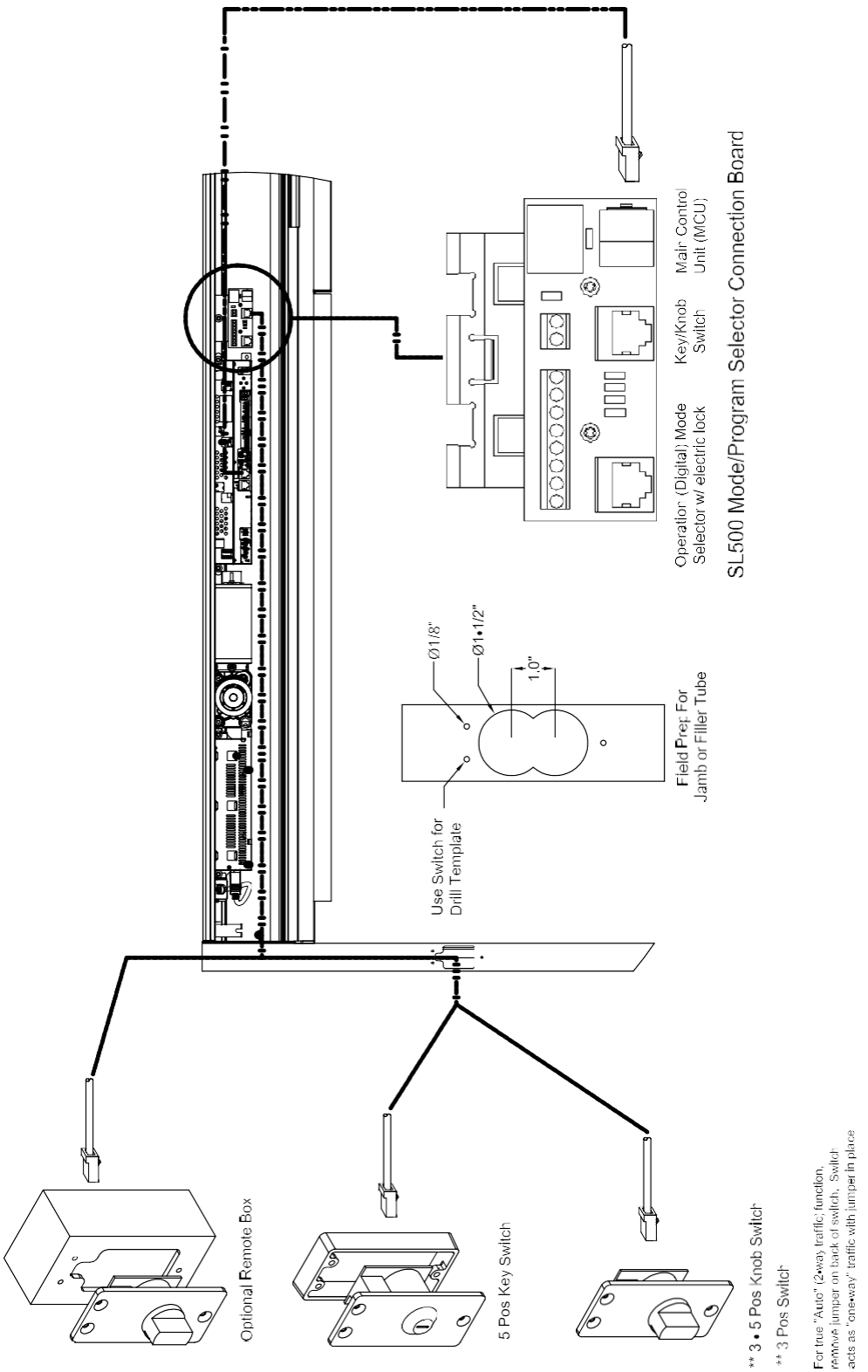
Spacer
US15-1500-03 Spacer Kit, Switch also part of Kit
US15-1500-06 5 Pos Key Sw Kit

Vinyl Decal
US24-1500-51 Vinyl Decal, obtained with kits
US15-1500-04 (5 Pos Knob Sw Kit) and US15-1500-06 (5 Pos Key Sw Kit)

Optional Remote Box
US15-1500-07 Remote Switch Box Kit, also contains
US15-1500-02 PS Extension Kit (8ft Cable RJ45 & Cable Coupler)



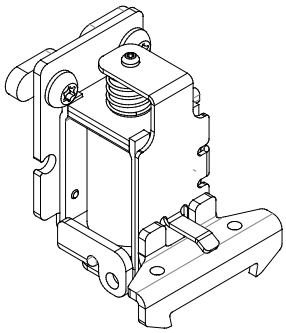
PS Extension Kit
US15-1500-02 PS Extension Kit (8ft Cable RJ45 & Cable Coupler)


SL500 Mode/Program Selector Connection Board
Operation (Digital) Mode Selector w/ electric lock
Key/Knob Switch
Main Control Unit (MCU)
Ø1/8"
Ø1•1/2"
1.0"
Field Prep For Jamb or Filler Tube
Use Switch for Drill Template
Optional Remote Box
5 Pos Key Switch
** 3 • 5 Pos Knob Switch
** 3 Pos Switch
For true "Auto" (2•way traffic) function, remove jumper on back of switch. Switch acts as "oneway" traffic with jumper in place

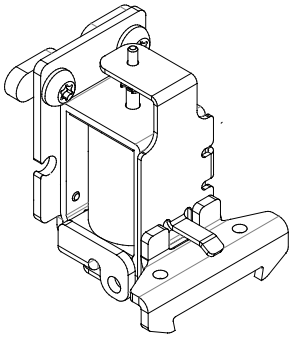
15.6 Electrical locks

Note: The espagnolette lock is at the moment not allowed to mount in escape routes.

Locked with power (LDP), locked without power (LD).



LDP (Fail Safe) P/N: 1008354



(Fail Secure) P/N: 1008167

15.7 Motion sensors

Motion and presence sensors, see separate manuals or installation drawings.

15.8 Night mode

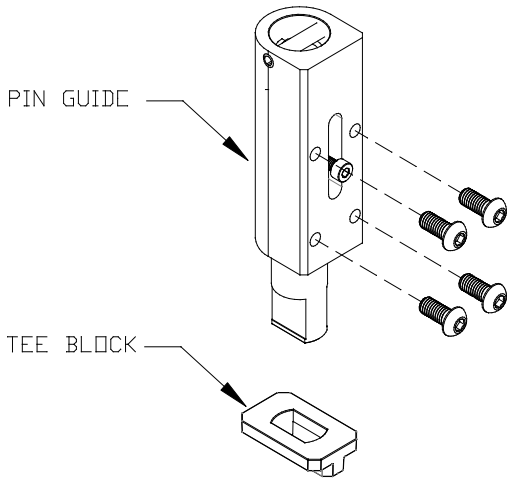
Remotely put door into exit only via an automated system. Requires a NO contact.

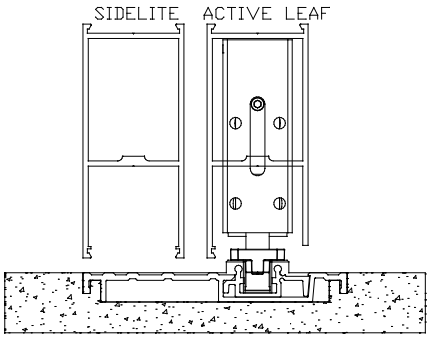
15.9 Bottom Guide Systems

The Full Break Out (FBO) pin guide has two options for guide tracks, including:

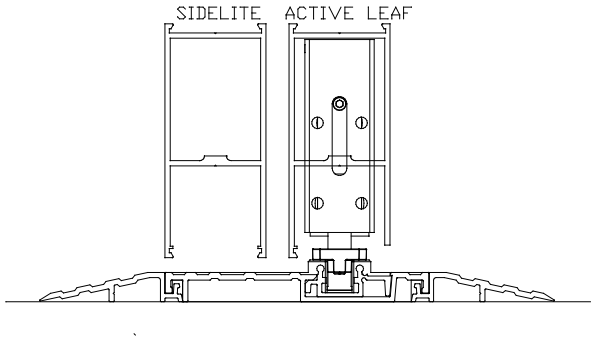
- Recessed track (flush with floor level)
- Surface threshold

See Installation Requirements section for guide installation.



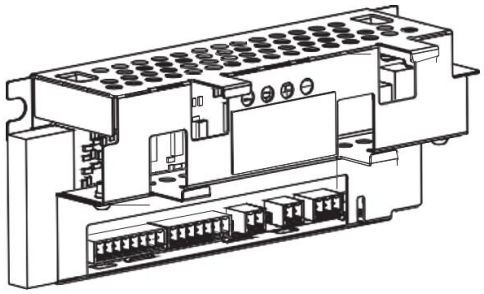


RECESSED THRESHOLD
AND TRACK (PIN GUIDE)



SURFACE THRESHOLD
AND TRACK (PIN GUIDE)
WITH OPTIONAL LEAD-UPS

Extra functionality that requires an I/O-unit (IOU):



I/0 unit (IOU) P/N:
1007779

15.10 Open / Close function

One button impulse, will alternate between Open and Close. The door will stand open until next impulse or can after an adjustable time delay automatically start to close even if a new impulse is not received.

15.11 Fire alarm connection

Used to emergency open or fire close the door with mains power on.

15.12 Nurse function

Used mostly in combination as a Nurse - Bed function. Nurse opens the door to partial open position, and bed (connected to inner or outer impulse) opens to full open position.

Nurse works in operation mode selections Exit, Auto.

The Nurse impulse has the same hold open time as partial open.

15.13 Remote Exit mode

Remotely put door into Exit via a remote system, like timer. Requires a N/O contact.

15.14 Emergency open impulse

Used to give opening (fireman's opening) impulse to the door in any operation mode selector setting. With electrical emergency unit also during power failure.

16 Troubleshooting

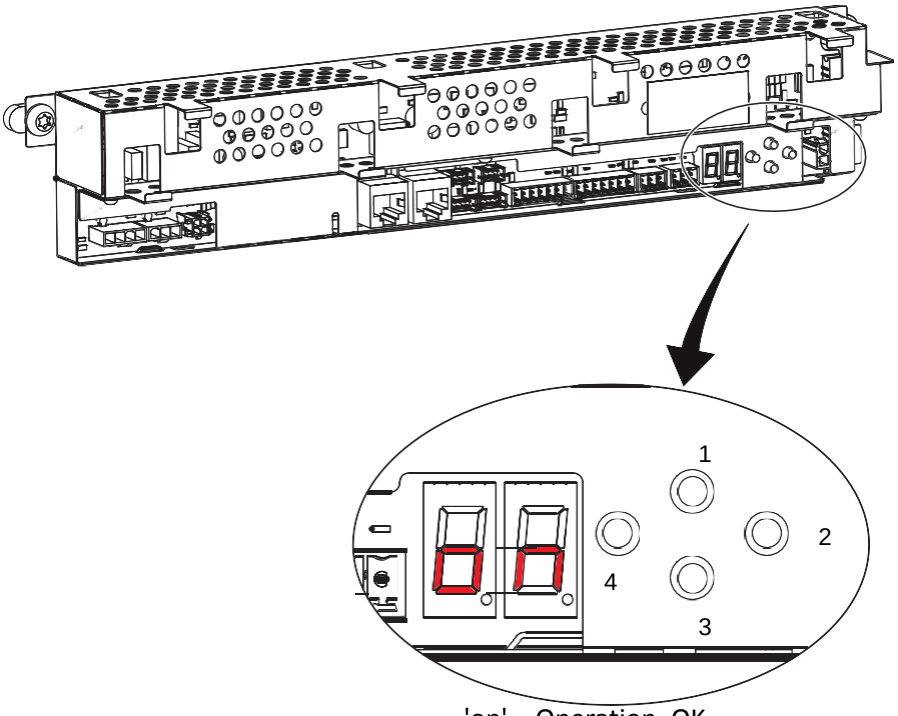
Before starting the troubleshooting, check that the operation mode selector setting is correct. Start the troubleshooting by checking the mechanical and electrical parts of the operator in the following order.

The electromechanical parts are fixed in the support beam. To replace these components, the complete unit is to be loosened and replaced.

16.1 Main control unit display

The main control unit is equipped with a two digit display for error indication.

- During normal operation the display shows **'on'**.
- If the display is extinguished check the mains power, power supply cable and perform a RESET. If the problem remains replace the main control unit or the power supply.
- When an error is active the display is alternating between a main error type (e.g. E4) and a second two digit number specifying the error more in detail (e.g. 03). If several errors are active they will be displayed in sequence. On each electronic unit there is also a green light emitting diode (LED). An extinguished or flashing LED is indicating that this unit is failing.



'on' = Operation OK

16.2 Mechanical checking and remedies

Disconnect the mains power and batteries (if fitted). Unlock all mechanical locks. Pull the door leaf manually and check that the door can be easily moved over the entire sliding track/floor guide. If the door leaf stops or is hard to move, the reason may be sand, stones, rubbish, etc. in the floor guide.

The door leaf may also be jamming on the floor or on the weather proofing brush strips. Clean the floor guide, adjust the door leaf height/depth or take other necessary measures (e.g. replacement of worn parts until the door leaf is running smoothly when manually operated).

16.3 Error description and remedies

Main error: E1 Sensor Error		
Detailed error	**Reason**	**Remedy**
19 Inner Impulse Error	The control unit doesn't get a test answer, from the activation unit.	Make sure that the monitoring output is connected and the connections are OK.
		Replace the monitored inner activation unit.
20 Fire Impulse Error	The control unit doesn't get a test answer, from the fire alarm.	Make sure that the fire alarm connections are OK.
29 Outer Impulse Error	The control unit doesn't get a test answer, from the activation unit.	Make sure that the monitoring output is connected and the connections are OK.
		Replace the monitored outer activation unit.
30 Stop Impulse Error	The control unit doesn't get a test answer, from the stop impulse.	Make sure that the monitoring output is connected and the connections are OK.
31 Side Presence Impulse Error	The control unit doesn't get a test answer, from the activation unit.	Make sure that the monitoring output is connected and the connections are OK.
		Replace the side presence activation unit.
32 Presence Impulse Error	The control unit doesn't get a test answer, from the activation unit.	Make sure that the monitoring output is connected and the connections are OK.
		Replace the presence activation unit.

Main error: E2 Emergency Unit Error		
Detailed error	**Reason**	**Remedy**
21 Emergency Unit Error	The battery voltage drops due to low capacity.	Charge or replace the battery.
	The battery voltage measurement is wrong.	Replace the escape route unit (if present), otherwise replace the main control unit.
25 Battery Error	The battery is disconnected, short circuited or the internal thermal fuse in the battery is defective. The charging current is out of specification.	Make sure that the cables are OK and connected.
		Charge or replace the battery.
		Replace the main control unit.
26 Emergency Action Time-out	The door is prevented its emergency unit test within a stated time, due to high friction or jammed door.	Make sure that the door can open to the fully open position.

Main error: E3 Electronic Unit Error		
Detailed error	**Reason**	**Remedy**
00 RAM Error	Internal RAM memory error.	RESET, and if the problem remains, replace the electronic unit having a flashing or extinguished LED.
01 ROM Error	Internal ROM memory error.	RESET, and if the problem remains, replace the electronic unit having a flashing or extinguished LED.
02 EEPROM Error	Serious internal EEPROM memory error.	RESET Download a Default parameter set and perform a RESET. If the problem remains, replace the main control unit?
05 Ambient Temperature Error	Ambient temperature measurement is wrong.	RESET, and if the problem remains, replace the main control unit.
06 Break Chopper Error	Not possible to activate break Chopper.	RESET, and if the problem remains, replace the main control unit.
08 A/D Converter Error	The internal A/D converter is broken.	RESET, and if the problem remains, replace the electronic unit having a flashing or extinguished LED.
10 Register Error	Internal register error.	RESET, and if the problem remains, replace the electronic unit having a flashing or extinguished LED.

Main error: E3 Electronic Unit Error		
Detailed error	**Reason**	**Remedy**
11 OS Error	Internal program error.	RESET, and if the problem remains, replace the electronic unit having a flashing or extinguished LED.
14 Lock Current Error	The lock is defective.	Check that the correct lock is installed, and if the problem remains, replace the lock.
		RESET, and if the problem remains, replace the main control unit.
17 Hardware Watchdog Error	It is not possible to disable the motor bridge.	RESET, and if the problem remains, replace the main control unit.
18 EEPROM Critical Write Error	Internal write EEPROM memory error. This error mainly occurs when it is impossible to change a configuration parameter.	RESET, and if the problem remains, replace the main control unit.
22 24 V Over Current Error	The auxiliary 24 V output is overloaded.	RESET, and if the problem remains, check the connected sensors and other 24 V accessories.
		RESET, and if the problem remains, replace the electronic unit having a flashing or extinguished LED.
23 Lock Circuit Error	It is not possible to disconnect the lock with the lock relay.	RESET, and if the problem remains, replace the main control unit.
24 Learn Error	The Learn cycle has timed out.	Make sure that the door can make a full open/close cycle. Check for high friction or jammed door and then make a new Learn.
27 LDB/LDE Lock Error	The LDB or LDE lock is defective.	Check that the correct lock is installed; the limit switches are working and if the problem remains, replace the lock.
33 Flash Code Error	Serious internal programming error.	RESET, and if the problem remains, replace the main control unit.
34 Output Enable Error	Test of safety related circuits failing.	RESET, and if the problem remains, replace the main control unit.
35 Link Voltage Error	The internal link voltage measurement is wrong.	RESET, and if the problem remains, replace the main control unit.
41 Brake Chopper Error	The brake chopper measurement is wrong.	RESET, and if the problem remains, replace the main control unit.

Main error: E4 Motor / Encoder Error		
Detailed error	**Reason**	**Remedy**
03 Encoder Error	The encoder, encoder cable, or motor cable is damaged.	Make sure that the encoder cable and the motor cable are connected.
	Wrong motor type is selected.	Check Motor Type configuration.
04 Motor Current Error	The motor cable or the encoder cable is damaged.	Make sure that the encoder cable and the motor cable are connected.
	Wrong motor type is selected.	Check Motor Type configuration.
09 Encoder Cable Error	The encoder cable is damaged.	Make sure that the encoder cable is connected, otherwise replace the encoder cable.

Main error: E5 Lock Error		
Detailed error	**Reason**	**Remedy**
07 Lock Failure	The lock or something else was preventing the door from opening the first 14 mm from closed position.	Make sure that the lock is operating without friction.
		Make sure that Hold Force and Lock Release parameters are set correctly.

Main error: E6 Communication Error		
Detailed error	**Reason**	**Remedy**
12 Motor Control Communication Error	Motor control processor disconnected from the internal bus.	RESET, and if the problem remains, replace the main control unit.
13 Door Control Communication Error	Door control processor disconnected from the internal bus.	RESET, and if the problem remains, replace the main control unit.
36 Escape Route Communication Error	Escape route unit processor disconnected from the internal bus.	RESET, and if the problem remains, replace the escape route control unit.
37 I/O Communication Error	I/O control unit disconnected from the internal bus.	RESET, and if the problem remains, replace the I/O control unit.
51 Web Communication Error	Web control unit disconnected from the internal bus.	RESET, and if the problem remains, replace the Web control unit.
52 Hi-O Communication Error	Web Hi-O unit disconnected from the internal bus.	RESET, and if the problem remains, replace the Hi- O control unit.
53 Operation Mode Selector Communication Error	Operation mode selector disconnected from the external bus.	RESET, check connections, and if the problem re- mains, replace the operation mode selector.
54 External Communication Error	The external bus is malfunctioning.	RESET, and if the problem remains, replace the main control unit.

Main error: E7 Motor Temperature High		
Detailed error	**Reason**	**Remedy**
16 Motor Temperature High	The duty cycle of the door is too high for the current Speed settings and Hold Open Time.	If the motor is warm, put the door in operation mode OPEN and wait for at least 1 minute. Reduce Speeds and increase Hold Open Time parameters.
	The heavy-duty motor is replaced by a normal duty motor.	Put the door in operation mode selection OPEN and wait for at least 5 minutes.

Main error: E8 Non-Critical Error		
Detailed error	**Reason**	**Remedy**
49 EEPROM Non-Critical Write Error	The main control unit cannot write error log or event log information to the EEPROM memory.	RESET, and if the problem remains, replace the main control unit if it is important to read logged information.
50 EEPROM Access Error	The EEPROM queue is full.	Too many Events to log. Reduce the number of events to log in the Event Log configuration.

16.4 After remedy or replacement, the operator has to be checked as follows:

a Study the door movement, adjust the functions to the values required for a smooth door operation and make sure to comply with local regulations.

b Check that correct functions and values have been selected for the installed accessories.

c Check that the installation complies with valid regulations and requirements from the local authorities.

d Clean the cover and the doors.

17 Service/Maintenance

Regular inspections shall be made according to national regulations and product documentation by an ASSA ABLOY Entrance Systems-trained and qualified technician. Regular scheduled maintenance should be in accordance with national requirements and product documentation. This is especially important when the installation concerns a fire-approved door or a door with an emergency opening function.

As with all other electro-mechanical products, an automatic door requires regular maintenance and service. It is essential to know the importance of regularly scheduled maintenance to have a reliable and safe product.

Regular service and adjustments will ensure a safe and proper operation of an automatic door unit.

17.1 Service

a Remove dust and dirt from the operator. Dirt on the bottom guide track and roller track should be removed with methylated spirits. If necessary replace the sliding track.

b None of the parts need lubrication.

c The tooth belt must be kept dry and clean. Check the belt tension.

d Check that all nuts and bolts are tightened well.

e Adjust, if necessary, the door leaf speed, the HOLD OPEN TIME and the door leaf position to comply with valid regulations and requirements.

f Check that the function of emergency escape units always is operational.

g If an electromechanical lock, LDP (locked with power) or LDB (bi-stable), is installed check the function as follows:

- Set the operation mode selector to EXIT. The door should open and close without any sound from the lock.
- Set the operation mode selector to OFF. Make sure the door cannot be opened by pulling the door leaf in the opening direction.
- When the operation mode selector is set back to EXIT, two clicking sounds (LDB) or one clicking sound (LDP) indicate that the lock is unlocked. The door should then open and close without any sound from the lock.

17.2 Planned Maintenance Checklist

- Measure / Adjust Speeds – Measure to ANSI/BHMA A156.10 and local codes; adjust if necessary (Open time - 1.5 seconds or longer).
- Measure / Adjust Forces – Measure to ANSI/BHMA A156.10 and local codes; adjust if necessary.
- Measure / Adjust Time Delays – Measure to ANSI/BHMA A156.10 and adjust if necessary.
- Check Functioning – Mats, Sensors, Operator/Control, and Push Plates per device checklist.
- Check Signage – Are all signs in place, readable, and in good condition?
- Check Door Hinging / Mechanical Soundness – all attachments, covers, arms, crash bars, etc.
- Check Finger Guards, Glass and Glass Stops, Trip Hazards, Rails, Sharp Edges.
- Check Emergency Egress (if so equipped).
- Check all wiring for good connections, proper insulation and clearance from moving parts.
- Check Battery Backup if equipped.
- Go through Daily Safety Checklist with facility manager.
- Visually check door for operation.
- Check activation and threshold detection devices.
- Check for tripping hazards.
- Check door function switch.
- Check for proper operation of lock assembly.
- Check for loose glass stops or damaged glass.
- Check all panels for damaged or loose weather stripping.
- Check panic latches for proper release force.
- Check panic circuit operation for operator cut off or spring return.
- Check bottom guide assembly for proper adjustment and for excessive wear.
- Remove access cover, check motor and gear box for leakage and noise.
- Inspect drive pulleys and belt for proper alignment.
- Clean hanger rollers and repair or replace if damaged. Adjust roller height if necessary.
- Inspect anti-riser for damage and/or binding.
- Ensure that all wiring in the header is properly routed and protected from any moving parts.
- Reinstall and secure access cover and recheck the complete door operation.
- Clean door, glass and header thoroughly.

Note, on the Planned Maintenance Review, any recommendations to improve door performance and reliability and review with customer.

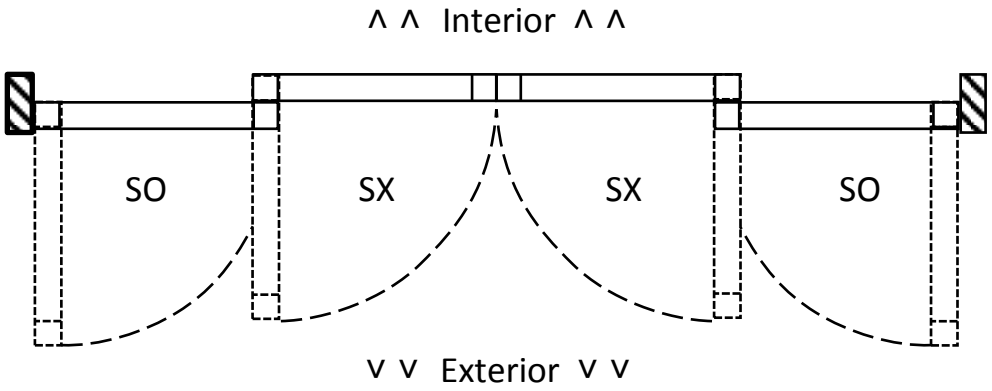
ASSA ABLOY Entrance Systems recommends having your door inspected annually by an AAADM certified inspector.

18 Door Handing & Layout

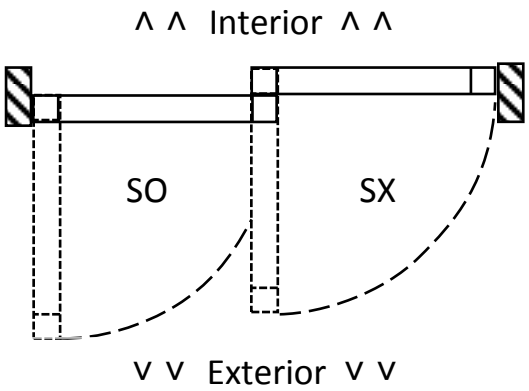
18.1 Door Handing (Automatic Door Industry)

Sliding door handing is referenced from the exterior side of the door opening. Bi-parting sliders are not handed.

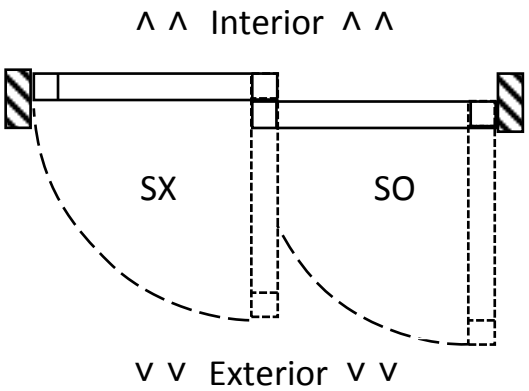
ASSA ABLOY SL500 Resilience -2 with breakout sidelites



ASSA ABLOY SL500 Resilience -1, left hand



ASSA ABLOY SL500 Resilience -1, right hand



19 ANSI/BHMA A156.10 (2017), Standard for Power Operated Pedestrian Doors

From American National Standard for power-operated pedestrian doors. Please refer to full standard if necessary, obtainable through BHMA at (212) 297-2122. All figures referred to below can be found in the full standard. Excerpts reprinted with BHMA permission.

19.1 Sliding Doors

Automatic Sliding Doors are flat panels that slide horizontally or linearly. These systems have a variety of configurations. No matter what the configuration or system, automatic sliding doors shall include sensors, or control mats and signage for the safety and convenience of the user.

For control mats, joining of control mats and performance requirements of control mats, refer to the full ANSI/BHMA standard.

Motion sensors shall detect a 28" (710 mm) minimum high person or equivalent and moving at a rate of 6" (150 mm) per second towards the center of the door within the detection areas described.

Presence sensors shall detect a stationary 28" (710 mm) minimum high person or equivalent within the detection areas described for a minimum of 30 seconds.

8.1.1 **Activating zones** for swinging, sliding and folding doors shall have a minimum **width** equal to the width of the clear opening measured at 8" (203 mm) and 30" (762 mm) perpendicular from the face of the closed door(s). The length from the face of the door shall be 43" (1092 mm) minimum measured at the center of the clear opening. Detection shall be effective to within 5" (127 mm) from the face of the door measured at the center of the clear opening. **Exception:** If the 43" (1092 mm) activating zone length is not practical due to physical or environmental conditions, it shall be permissible to be reduced to 30" (762 mm), along with an additional sign visible from the side the zone has been reduced on, stating "AUTOMATIC CAUTION DOOR" as described in 11.2.3.

8.1.4 Monitoring Automatic sliding, swinging, and folding door systems shall include a means to verify each presence sensor's functionality, and the interface between the automatic door control system and each presence sensor as required in 8.2.2, 8.3.2, and 8.4.2 and, where applicable, in Section 9. A detected fault shall cause automatic operation to cease until the fault is corrected. At a minimum, monitoring shall occur once prior to closing. (See Appendix E-6)

8.3 Sliding Doors

8.3.1 Sliding doors shall have an activating zone as defined in 8.1.1.

8.3.2 A presence sensor shall be used to detect a person fully in the space between two non-overlapping activating zones for the width of the clear opening as follows:

8.3.2.1 If photoelectric beams are used (See Figure A-18A):

(1) A minimum of four photoelectric beams shall be installed on each side of the sliding door. The beams' location shall alternate from side to side. The lowest beam shall be installed 6 to 28" (150 to 710 mm) from the floor and the other three at spacing between 6 to 12" (150 to 305 mm) apart with the top beam at 45 to 55" (1143 to 1397 mm) from the floor. The photoelectric beam area of detection shall extend across the clear door opening (See Figure A-18A); and

(2) The beams shall be installed within 3" (76 mm) from the centerline of the slide door; and

(3) The beams shall remain active from fully open to within 6" (150 mm) of closed; and

(4) The door shall remain fully open for 2.5 seconds minimum after loss of detection.

8.3.2.2 If an overhead presence sensor is used through the door opening it (See Figure A-18B.):

(1) Shall detect a 28" (710 mm) minimum high person and extend out a minimum of 5" (127 mm) from the face of the door on each side; and

(2) The detection zone shall remain active from open to within 6" (150 mm) of closed, or shall have an overhead presence sensor active area within 3" (76 mm) from the face of the door or, a minimum of two photoelectric beams on one side of the door, with the lower beam installed 6 to 28" (150 to

710 mm) and top beam 45 to 55” (1143 to 1397 mm) from the floor. (See Figure A-18B.)

(3) If beams are required they shall be installed within 3” (76 mm) from the centerline of the slide door and remain active from fully open to within 6” (150 mm) ofclosed.

(4) The door shall remain fully open for 1.5 seconds minimum after loss of detection.

8.3.2.3 If overhead presence sensors are installed on each side of the sliding door opening (See Figure A-18C.):

(1)They shall not have an inactive area more than 5” (127 mm) extending out from the face of the door. If the inactive area exceeds 3” (76 mm) from the face of the door, it shall have a minimum of two photoelectric beams on one side of the door, with the lower beam installed 6 to 28” (150 to 710 mm) and top beam 45 to 55” (1143 to 1397 mm) from the floor; and

(2)The detection zone shall remain active from open to within 6” (150 mm) of closed.

(3)If beams are required they shall be installed within 3” (76 mm) from the centerline of the slide door and remain active from fully open to within 6” (150 mm) of closed.

(4)The door shall remain fully open for 1.5 seconds minimum after loss of detection.

8.3.2.4 If photoelectric beams are used on one side of the door and an overhead presence sensor is installed on the opposite side of the sliding door opening (See Figure A-18D):

(1)A minimum of two photoelectric beams shall be installed on one side of the door with the lower beam installed 6 to 28” (150 to 710 mm) and top beam 45 to 55” (1143 to 1397 mm) from the floor; and

(2)The beams shall be installed within 3” (76 mm) from the centerline of the slide door; and

(3) The overhead presence sensor installed on the side opposite the beams shall not have an inactive area more than 5” (127 mm) extending out from the face of the door; and

(4)The beams and overhead presence sensor must remain active from fully open to within 6” (150 mm) of closed; and

(5)The door shall remain fully open for 2.5 seconds minimum after loss of detection.

8.3.3 Sliding doors used for one way traffic shall be provided with a secondary activating zone on the side not intended for approach. The secondary activating zone shall extend a minimum of 24” (610 mm) from the face of the door and be effective to within 5” (127 mm) from the face of the door measured at the center of the door opening. The zone shall have a minimum width equal to the width of the clear opening measured at 8” (203 mm) perpendicular from the face of the closed door.

10. Entrapment Protection

10.1 Sliding Doors

10.1.1 A sliding door shall be adjusted so that the **closing speed** is 1 ft/s (0.305 m/s) maximum per leaf to latch check for doors weighing up to and including 160 lbs (71 kg):
For doors weighing more than 160 lbs (71 kg): $V = \sqrt{(161/W)}$ where:

V = Velocity in ft/s

W = Weight of Door in lbs

10.1.2 **Latch check** shall occur for sliding doors at no less than 2” (50 mm) from the closed position of each sliding door leaf.

10.1.3 A **stopped** sliding door shall not require more than 30 lbf (133.5 N), measured at the leading edge, to prevent it from closing at any point in the closing cycle.

10.1.4 Sliding doors provided with a **break away device** shall require no more than a 50 lbf (222.4 N) applied 1” (25 mm) from the leading edge of the lock stile for the break out panel to open. Break away devices (swinging panels) for doors that slide on the egress side of an opening must interrupt automatic operation when used in the break out mode. Break away devices incorporating swing out sidelites shall interrupt automatic operation when used in the break out mode.

10.1.5 Sliding doors utilizing **sensors or control mats** shall remain fully open a minimum of 1.5 seconds after loss of detection, unless otherwise specified within this standard.

10.1 Entrapment Protection measures shall be taken under neutral air conditions.

11 Signage

For Signage, see full standard.

ASSA ABLOY Entrance Systems is a leading supplier of entrance automation solutions for efficient flow of goods and people. With our globally recognized product brands Besam, Crawford, Megadoor and Albany, we offer products and services dedicated to satisfying end-user needs for safe, secure, convenient and sustainable operations.
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ASSA ABLOY Entrance Systems

Tel: (704) 290 5520
specdesk.na.entrance@assaabloy.com
assaabloyentrance.us • assaabloyentrance.ca