



## Besam SW200i-Fold Door System Install Manual



©All rights in and to this material are the sole property of Besam US. Copying, scanning, alterations or modifications are expressly forbidden without the prior written consent of the applicable company within Besam US Inc. Rights reserved for changes without prior notice.



## Table of Contents

<b>1. SAFETY .....</b>	<b>6</b>
1.1 SAFETY LEGEND .....	6
1.2. SAFETY PRECAUTIONS .....	6
1.3. GENERAL SAFETY PRECAUTIONS .....	7
1.4. INTERFERENCE: ELECTRONIC EQUIPMENT RECEPTION. ....	7
<b>2. INTRODUCTION .....</b>	<b>8</b>
2.1. MANUAL CONTENTS.....	8
2.2. FUNCTIONAL DESCRIPTION.....	8
2.2.1. <i>Pedestrian:</i> .....	8
<b>3. TECHNICAL SPECIFICATION .....</b>	<b>11</b>
3.1. SPECIFICATIONS .....	11
<b>4. INSTALLATION OVERVIEW .....</b>	<b>11</b>
4.1. PRE-INSTALLATION REQUIREMENTS: .....	11
4.2. GENERAL TIPS / SAFETY CONCERNS. ....	11
4.3. SUMMARY INSTALLATION OVERVIEW .....	12
4.4. FASTENING REQUIREMENTS .....	13
4.5. TOOLS REQUIRED .....	13
4.6. INSTALLATION EXAMPLES .....	14
<b>5. INSTALLATION .....</b>	<b>15</b>
5.1. ASSEMBLING AND INSTALLING THE HEADER.....	15
5.2. BOTTOM PIVOT MOUNTING AND ADJUSTMENT .....	17
5.3. DRIVE ARM ATTACHMENT TO DRIVE SHAFT AND ADJUSTMENTS.....	18
5.4. GUIDE TRACK ASSEMBLY AND INSTALLATION .....	19
5.5. INSTALLATION TIPS (TWO PANEL & FOUR PANEL) .....	19
5.5.1. <i>Slide Block/Roller Adjustment</i> .....	19
5.5.2. <i>Carrier "Droop" Adjustment</i> .....	20
5.5.3. <i>Thrust Washer Hinge Locations</i> .....	21
5.6. SIGN PLACEMENT.....	22
5.6.1. <i>Caution and Information Signs</i> .....	22
5.6.2. <i>Labels</i> .....	23
5.7. ACCESSORIES.....	26
5.7.1. <i>ON/OFF/HOLD Open</i> .....	26
5.7.2. <i>Remote and Push Controls</i> .....	26
5.8. HINGE PARTS AND ILLUSTRATION .....	28
5.8.1. <i>SW200i Fold Hinge Parts List</i> .....	28
5.8.2. <i>SW200i Fold Hinge Assemblies</i> .....	29
5.9. ADJUSTING BALL CATCH .....	31
5.10. ADJUSTING MAGNETIC CATCH.....	31
5.11. BREAKOUT SWITCH.....	33
5.12. CABLE CONNECTION .....	33

<b>6.</b>	<b>SW200I FOLD OPERATOR.....</b>	<b>35</b>
6.1.	HOW THE SW200I FOLD WORKS .....	35
6.2.	OPENING.....	35
6.3.	CLOSING.....	35
6.4.	FUNCTIONS ON THE EXTENSION UNIT EXU-SI .....	35
6.4.1.	<i>KILL Function.....</i>	35
6.4.2.	<i>Function of Locks .....</i>	36
6.4.3.	<i>Panic Bar.....</i>	36
6.4.4.	<i>Program Selector (Wall Mounted).....</i>	36
6.4.5.	<i>Impulses.....</i>	36
6.4.6.	<i>OPEN/CLOSE impulse.....</i>	37
6.5.	FUNCTIONS ON THE EXTENSION UNIT EXU-SA.....	37
6.5.1.	<i>Presence impulse approach, door mounted / (DMPS.NS) .....</i>	37
6.5.2.	<i>Presence detection swing-path, door mounted / (DMPS.SS).....</i>	37
6.5.3.	<i>Monitored Safety Sensors.....</i>	38
6.5.4.	<i>Relay Output “ Error Indication” .....</i>	38
<b>7.</b>	<b>ELECTRICAL CONNECTIONS.....</b>	<b>39</b>
7.1.	CONNECTION BOX, SINGLE DOOR .....	39
7.2.	CONNECTION BOX, DOUBLE DOORS .....	40
7.3.	CONTROL UNIT.....	42
7.3.1.	<i>CU-200.....</i>	42
7.3.2.	<i>ARM System Selection.....</i>	44
7.3.3.	<i>Extension Units EXU-SI / EXU-SA.....</i>	45
7.3.4.	<i>Extension Unit EXU-SI.....</i>	46
7.3.5.	<i>Extension Unit EXU-SA.....</i>	47
7.3.6.	<i>Cutting Jumper on the Sync Cable for Double Doors .....</i>	48
7.3.7.	<i>Settings For Double Doors .....</i>	48
<b>8.</b>	<b>START-UP .....</b>	<b>50</b>
8.1.	PRE-ADJUSTMENT CHECKS .....	50
8.2.	ADJUSTING DOOR STOP .....	50
8.2.	AUTO-LEARN - AUTOMATICALLY SETS BACK AND LATCH CHECK (RECOMMENDED).....	52
8.2.1.	<i>Push the LEARN BUTTON (LRN) .....</i>	53
8.2.2.	<i>Double Doors .....</i>	53
8.3.	GENERAL ADJUSTMENT .....	53
8.4.	CONNECTION OF ACTIVATION UNITS AND ACCESSORIES.....	54
<b>9.</b>	<b>CHANGING GROUP OF PARAMETERS .....</b>	<b>55</b>
9.1.	LEARN WITH ADVANCED SETTING OF “BACK-AND-LATCH-CHECK” .....	56
9.2.	REVERT TO DEFAULT VALUES FOR “BACK-AND-LATCH-CHECK” .....	56
9.3.	REDUCING / INCREASING THE “SPRING PRE-TENSION” (SPTE) .....	57
<b>10.</b>	<b>CLASSIFICATION .....</b>	<b>58</b>
10.1.	ENTERING THE PROGRAM MODE (CLASSIFICATION) .....	58
10.2.	IDENTIFY THE CURRENT CLASSIFICATION .....	58

10.3. CHANGING THE CLASSIFICATION ..... 58

10.4. CLASSIFICATION TABLE ..... 58

**11. TROUBLESHOOTING CHECKS FOR CONTROL / OPERATION.....60**

11.1. ERROR INDICATION..... 61

**12. MAINTENANCE PLAN.....62**

**13. ANSI / BHMA A156.10 .....63**

13.1. REQUIREMENTS FOR POWER OPERATED DOORS..... 63

13.2. FOLDING DOORS (SECTION 5) ..... 63

13.3. GUIDE RAILS FOR FOLDING DOORS (SECTION 6)..... 63

13.4. SENSORS (SECTION 8) ..... 64

13.5. KNOWING ACT DOOR ACTIVATION (SECTION 9)..... 64

13.6. ENTRAPMENT PROTECTION (SECTION 10)..... 65

13.7. SIGNAGE (SECTION 11)..... 66

## 1. Safety

### 1.1 Safety Legend

Reading of Manual: All readers of this manual must clearly understand the use of words in this manual pertaining to safety.

In this manual the words:

#### **WARNING**

Warning: Failure to observe the information in this manual may result in personal injury or damage to the equipment.

#### **CAUTION**

Caution: Property damage can result from failure to follow instructions.

#### **NOTE!**

Note: Important step(s) are to be follow or important differences in equipment.

### 1.2. Safety Precautions

#### Warning:

It is important for the safety of persons to follow these instructions.

#### Warning:

To reduce the risk of severe injury or death, material damage and malfunction of the product, the instructions contained in this manual must be strictly observed during installation, adjustments, repairs, and service. Only authorized trained technicians should be allowed to perform these operations.

#### CAUTION:

Improperly adjusted doors can cause injury and equipment damage. Adjust doors for proper operation in accordance with manufacture's instruction and adherence to NFPA 101 Life Safety Code and/or "AHJ" (Authority Having Jurisdiction).

#### **Note!**

Besam follows a policy of advancements in development, Instructions, design, specifications and illustrations, which are contained in this manual, are not binding. Rights are reserved for changes without previous notice.

### 1.3. General Safety Precautions

Do not climb on door parts.

Do not let children play with door (in operation or not) or the fixed controls.

Site acceptance test must be completed before placing door in operation mode.

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. Only Besam-trained technicians should be allowed to carry out these operations as training and certification is required for safety.

### 1.4. Interference: Electronic Equipment Reception.

The equipment complies with the US market FCC Part 15 and European EMC directives provided installed according to installation and Service Manual.

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

Other equipment not fully complying with immunity requirements interference. If other equipment does not fully comply with immunity requirements, interference may occur. However, 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 then on, the user is encouraged to try to correct the interference by one 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

## 2. Introduction

### 2.1. Manual Contents

This manual contains the necessary details and instruction for the installation, maintenance, and service of the SW200i Fold Door package.

The SW200i Fold system uses the SW200i operator, providing a flexible package that can meet a wide array of specification requirements.

Door Application:

The SW200i Fold door package is designed to be both surface mounted to walls and/or flush mounted between two jamb tubes allowing adaption to a wide range of door requirements. It is available in two different configurations (in-fold and out-fold) when concealed. Panel and fold clearances for surface mounted applications should be verified, as some building codes may not permit doors wider than 48" (1219mm). Refer to your local "AHJ" (Authority Having Jurisdiction) for clarification of installation requirements. All configurations are available as two or four door panel packages.

### 2.2. Functional Description

#### 2.2.1. Pedestrian:

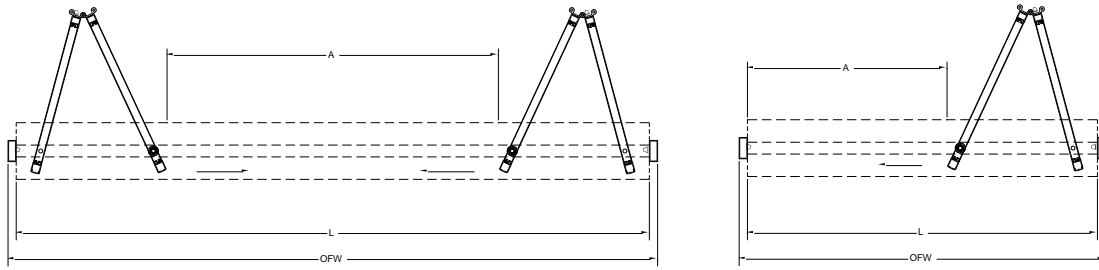
Two types of door configurations are available;

SW200i Fold 4 Panel - consisting of two pairs of door leaves which are folding away from each other to form a single common door opening. The SW200i Fold 4-panel is available as an in-folding or out-folding door.

SW200i Fold 2 Panel - consisting of one pair of leaves, which fold together to one side, forming the door opening. The SWi200 Fold 2 panel is available as in-folding or out-folding, opening left or right.



SW200i Fold 2 and 4 Door Illustration



A= Clear Door Opening

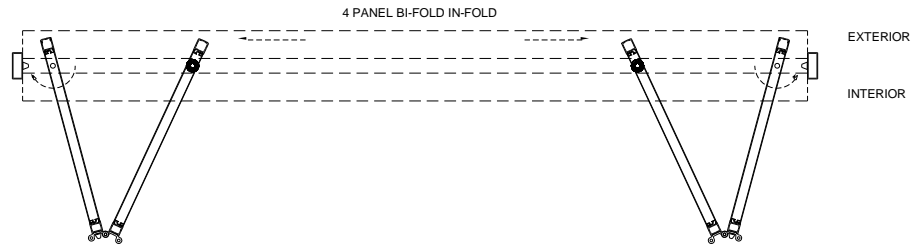
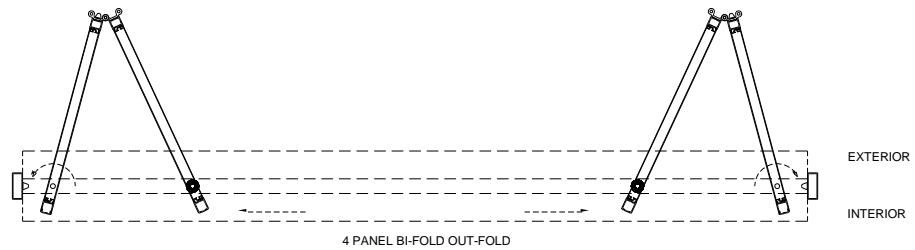
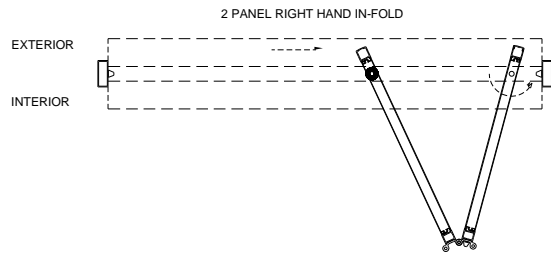
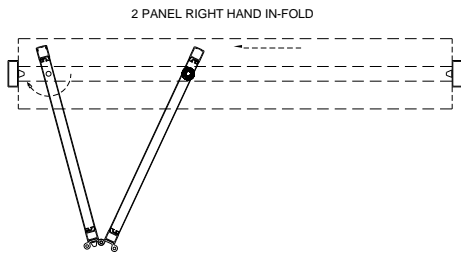
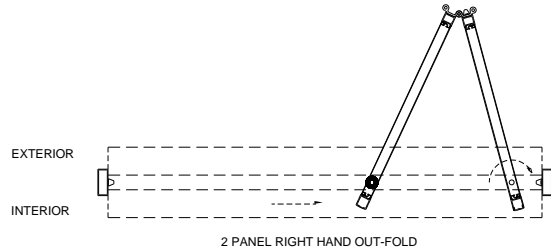
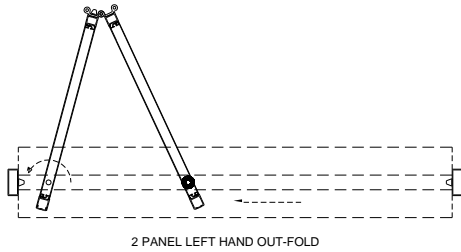
(2 Panel = L (-) 10 1/2 inch), (4 Panel = L (-) 21 inch)

L = Length of Header, OFW = Overall Frame Width

Door Terminology and Handling

Note!

Handing (Left Hand or Right Hand) refers to operator spindle rotation direction



### 3. Technical Specification

#### 3.1. Specifications

Manufacturer:	Besam US Inc.
Address:	1900 Airport Road, US-Monroe, NC 28110
Type:	SW200i
Power supply:	120V AC +10/-15%, 50/60Hz
Power consumption:	max. 300 W
Auxiliary voltage:	24V DC, max. 700mA
Internal control fuse:	2 x T 6.3 AH 250V
Door width:	914-1219 mm (36-48")
Electro-mechanical locking device	Selectable: 12V DC, max. 1200mA / 24V DC, max. 600mA
Door weight:	45 - 315 kg (100 - 700lb.)
Door opening angle:	PUSH: 80° - 110°, with reveal 0 - 305mm (0 - 12")
	PULL: 80° - 110°, with reveal 0 - 130mm (0 - 5 1/8")
	PAS: only 80° - 95° 80° - 95° in a concealed application
Opening time (0° - 80°):	variable between 2 - 12 seconds
Closing time (90° - 10°):	variable between 4 - 12 seconds
HOLD open time:	1, 5-30 seconds
Ambient temperature:	-20°C to +45 °C (-4°F to +113°F)
Relative humidity:	Max. 95%
Drive unit weight:	19.8 lb. (9kg)
This product is to be installed internally.	
Class of protection IP 20.	
Complies with: ANSI/BHMA A156.19, ANSI/BHMA A156.10, UL 325, UL 991, UL 244A, UL 1310, CAN/CSA-C22.2 N0 223-M91 and CAN/CSA-C22.2 N0 247-92	
Approvals:	Third party approvals from established certification organizations valid for safety in use and escape route safety. For details see Declaration of Conformity.

### 4. Installation Overview

#### 4.1. Pre-installation Requirements:

Installer must have knowledge of access to electrical supply and where the power enters the operation assembly housing.

#### 4.2. General Tips / Safety Concerns.

- For enhanced security and vandalism protection, always mount the operator access in the interior of a building whenever possible
- Make sure the power is off before installing, including battery backup if installed

- Make sure all the door panels and the wall is properly reinforced at the installation points
- Inspect the door hinges before installation to ensure that they are in good repair.
- Unpack the operator and make sure that all parts are delivered in accordance with the packing note
- Refer to Fastening Requirements (Table 4.4) for specifications and suggestions

#### 4.3. Summary Installation Overview

The SW200i-Fold door, when installed and set-up correctly, is a safe automatic power door operator. Incorrect set-up can defeat its purpose and create a safety hazard. For safety reasons, never set the door opening or closing speed faster than necessary to handle the traffic situation through your door. Please refer to the ANSI/BHMA A156.10 section in this manual. A correctly adjusted door is a safe door.

This is only a summary of the installation process. Refer to manual contents for detailed information.

- Establish install height
- Assemble Header to jamb tubes
- Install header/jamb assembly
- Install and adjust doors
- Complete all electrical connections to any other operator assemblies or optional equipment
- Adjust the control unit for optimal and safe performance. (Review ANSI/BHMA-A156.10)
- Apply Safety signage to door(s)
- Train facility manager in operation including all daily check described in Owner's Manual

#### 4.4. Fastening Requirements

Base material	Minimum requirements of wall profile*
Steel	5mm (3/16")**
Aluminum	6mm (1/4")**
Reinforced concrete	min. 50mm (2") from the underside
Wood	50mm (2")
Brick wall	Expansion-shell bolt, min. M6x85, UPAT PSEA B10/25, min. 50mm (2") from the underside

\* Besam minimum recommended requirements. Building Codes may give different specifications.

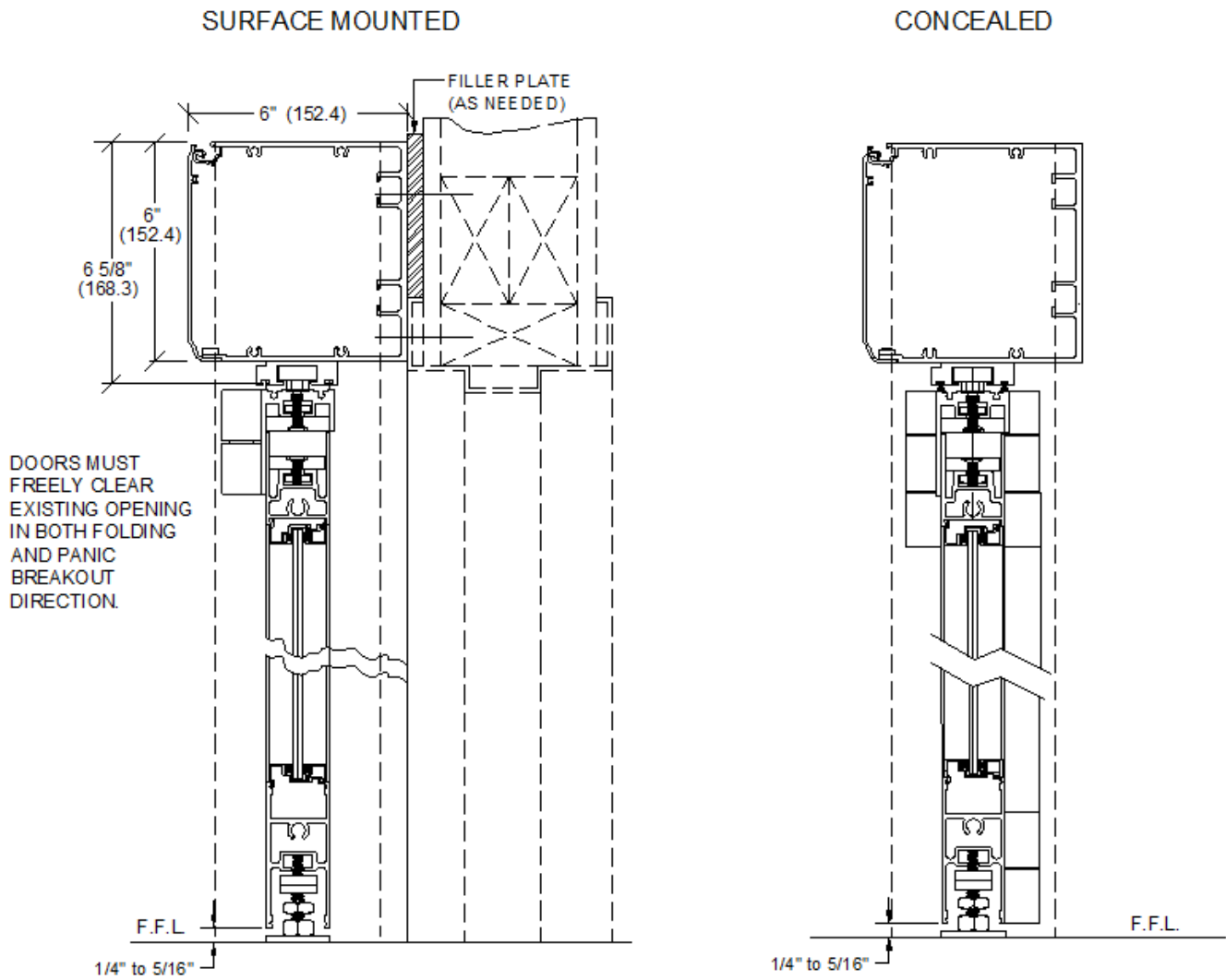
Refer to AHJ (Authority Having Jurisdiction).

\*\* Thinner wall profiles must be reinforced with rivnuts (Part # 30-09-214).

#### 4.5. Tools Required

- Metric Allen Key set
- Spirit Level
- Flat-blade screwdriver (small/medium/large)
- Screwdriver (Philips size 2)
- Torque wrench
- Nut driver, 5mm
- Tape rule
- Power drill and set of drill bits
- Center Punch
- Wire Stripper
- Silicone sealant
- Plumb bob
- Installation and Service Manual (on site)

4.6. Installation Examples



## 5. Installation

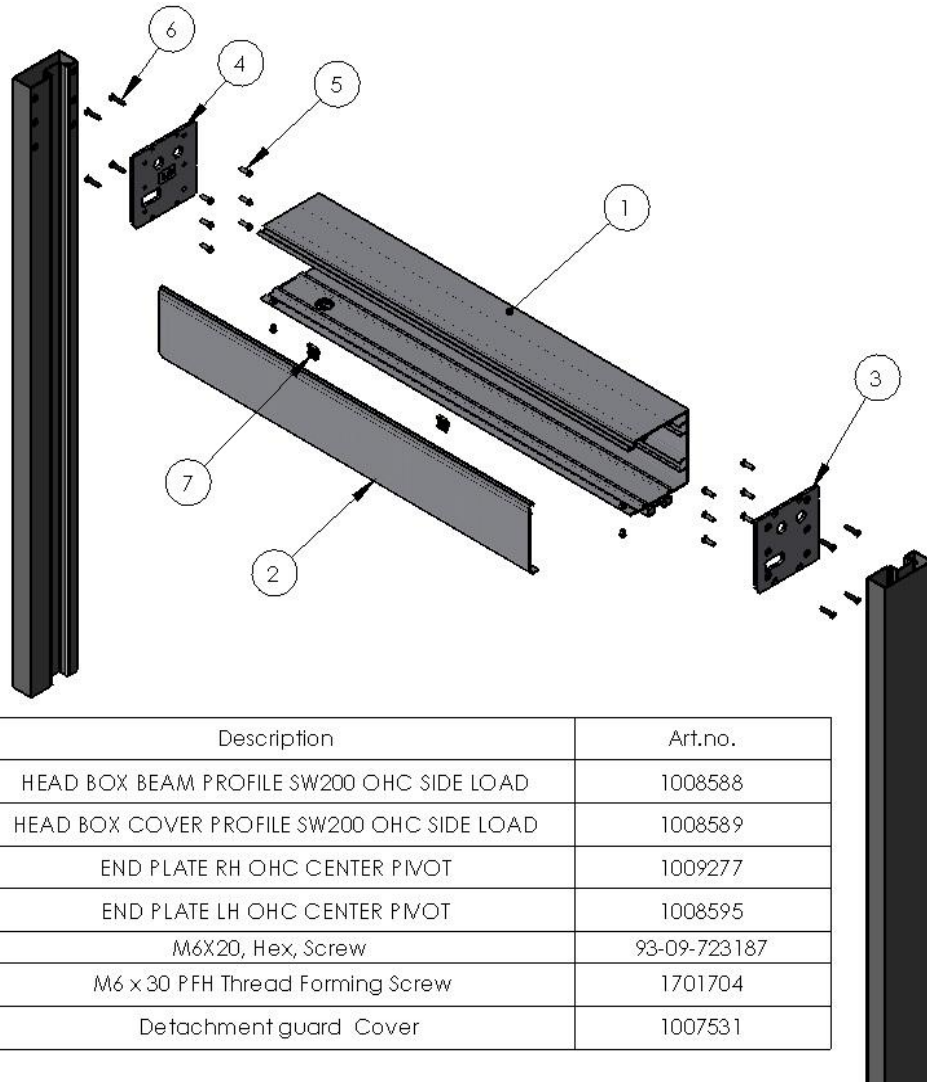
### 5.1. Assembling and Installing the Header

1. Establish operator height and desired operator cover access.

**Note!**

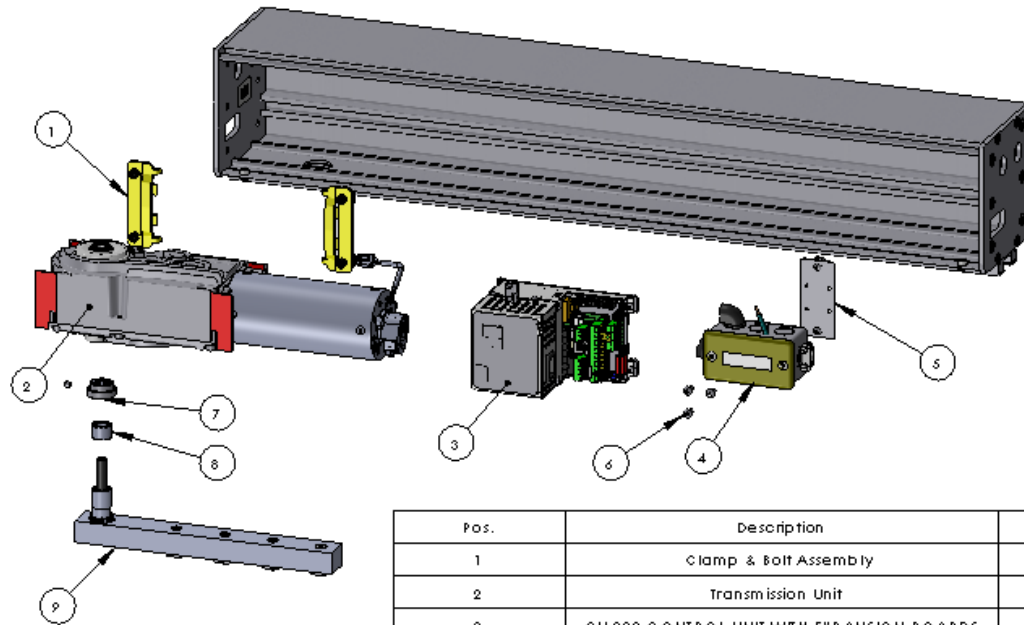
Housing dimensions are 152mm x 152mm (6" x 6").

2. End caps will be installed onto header when received.
3. Position header between jambs. Use (5) M6 X 20 screws per jamb provided and mount jamb to end caps.
4. Install main power and switch wiring into the header housing using access holes. (The wiring can access the housing from either jamb, but should be arranged so that it can easily reach the controller).



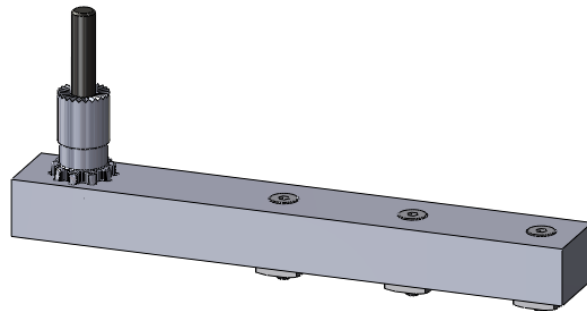
Item	Description	Art.no.
1	HEAD BOX BEAM PROFILE SW200 OHC SIDE LOAD	1008588
2	HEAD BOX COVER PROFILE SW200 OHC SIDE LOAD	1008589
3	END PLATE RH OHC CENTER PMOT	1009277
4	END PLATE LH OHC CENTER PMOT	1008595
5	M6X20, Hex, Screw	93-09-723187
6	M6 x 30 PFH Thread Forming Screw	1701704
7	Detachment guard Cover	1007531

5. Install all components below inside header.



Pos.	Description	Art.no.
1	Clamp & Bolt Assembly	1009035
2	Transmission Unit	1007291
3	CU-200 CONTROL UNIT WITH EXPANSION BOARDS	1008346
4	CONNECTION BOX ASSY CPD FACTORY WIRING	1007504
5	BRACKET KIT OHC JUNCTION BOX	1008614
6	SCREW B O 7045 (MRX) MR X-TT-Z M5X10 FZB 8.8	723196
7	STOP ARM LOCATOR	1007323
8	5/8 S HAFT EXTENSION OHC	1008596
9	OHC ARM KIT	1009345

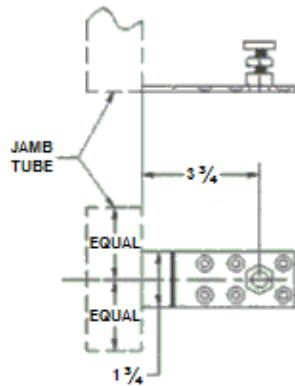
6. For small fold doors, 1010549 arm kit (see below) should be used so arm will fit inside short top rail.





## 5.2. Bottom Pivot Mounting and Adjustment

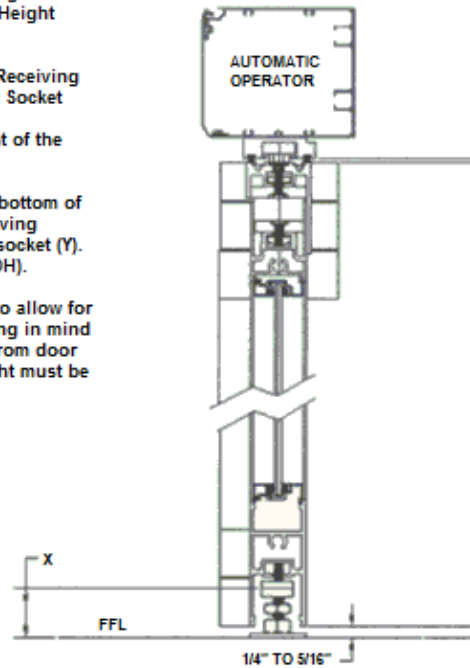
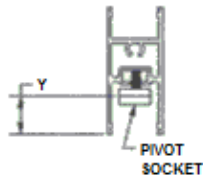
Secure the bottom pivot at the center of the jamb (95.3mm (3<sup>3</sup>/<sub>4</sub>" ) off the edge of the jamb to the center of the pivot). Thread the bottom pivot bearing and lock nut into the assembly. Adjust the pivot height in accordance with the diagram below, and then tighten the lock nut.



Finding the Pivot Height  
 LH = Door Opening Height  
 DH = Door Height  
 X = Pivot Height  
 Y = Door Bottom to Receiving Surface of Pivot Socket

1. Measure the height of the door (DH)
2. Measure from the bottom of the door to the receiving surface of the pivot socket (Y). Subtract (Y) from (DH).
3. Add 1/8" or 3/16" to allow for top clearance (keeping in mind that the dimension from door bottom to door height must be 1/4" to 5/16").

DH = DOOR LEAF HEIGHT  
 LH = DOOR OPENING HEIGHT  
 FFL = FINISHED FLOOR LEVEL  
 L = HEADER LENGTH



### 5.3. Drive Arm Attachment to Drive Shaft and Adjustments

1. Adjust the bottom pivot.
2. Attach the drive arm to the drive shaft in line with the operator's Zero-position and lightly tighten the setscrew.
3. Turn the drive arm 90° in the direction of the breakout side (note, the arm will be very hard to move).
4. Set the drive leaf on the bottom pivot and lean it up to meet the drive arm.
5. Secure the Drive Arm to the top rail with four M6 X 35 flat head machine screws.
6. Loosen the Drive Arm Set Screw and allow the door to settle down onto the Bottom Pivot, and then tighten the setscrew firmly.

#### **Note!**

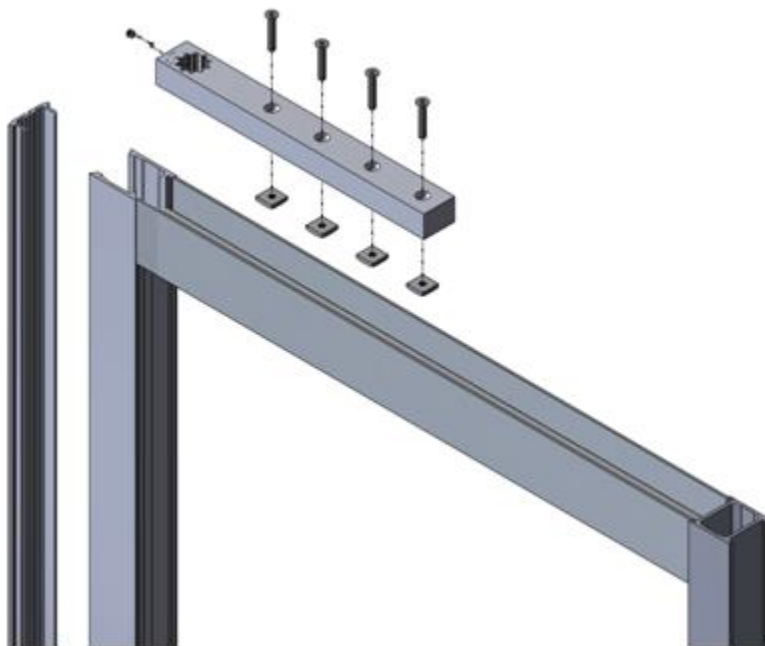
This step is critical. The door may come loose if it is not allowed to self-adjust to the bottom pivot.

7. Level the door by loosening the spacer screws through the adjustment access holes in the drive arm and slide the door to a level position, then securely retighten the spacer screws.

#### **Tip!**

You may wish to temporarily secure the slave leaf to the drive leaf with tape to ease installation.

On snap on profile nose rail piece, bend both legs outward on the bottom of the profile so profile will not slide down (stays in place).



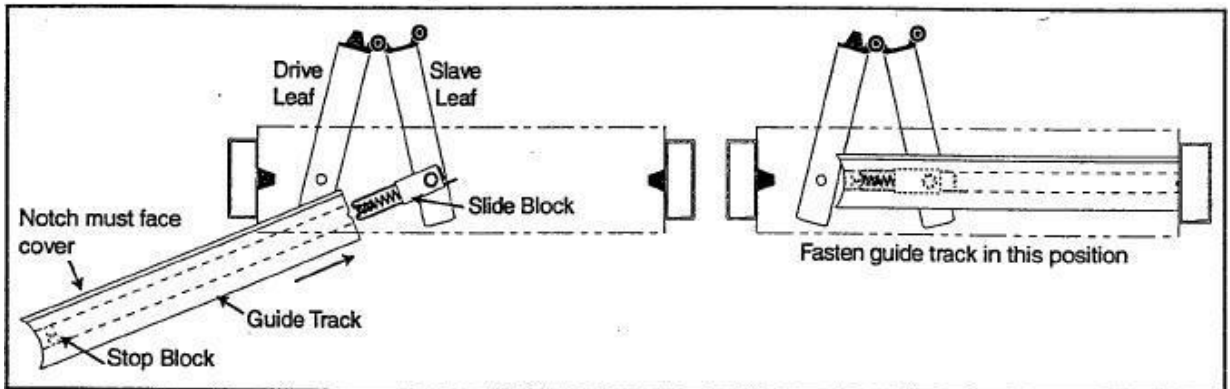
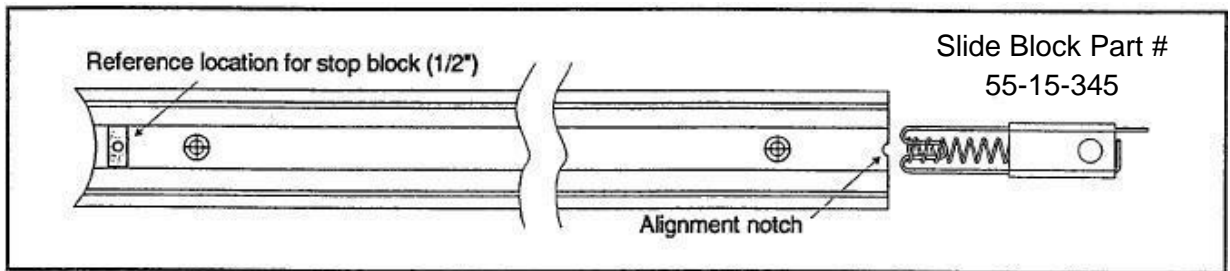
5.4. Guide Track Assembly and Installation

1. Install the Stop Block about 12.7mm (1/2") from the drive shaft end of the Guide Track.
2. Slide the Guide Track over the Slide Block/Roller with the Slide Block (where used) rotated so that the spring end is toward the stop block.
3. Secure the Guide Track to the header with 1/4-20 X 5/8" flat head machine screws.

**Important!**

The upper notch in the Guide Track must face the cover side of the header.

4. If this is a bi-fold installation, repeat Guide Track installation for other leaf set, and then fasten the alignment notches of both Guide Tracks to the header with a M6 screw.
5. Adjust Stop Block(s) as necessary for proper operation of door(s).



RFS014a

5.5. Installation Tips (Two Panel & Four Panel)

5.5.1. Slide Block or Roller Adjustment

Roller Kit Part #  
US15-0513-01

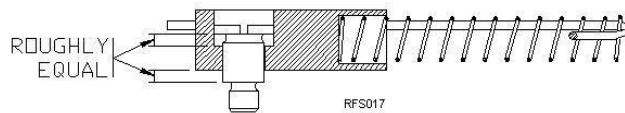


**NOTE**

The Slide Block or Roller are designed so that they float vertically as the door opens and closes. Do not adjust in a manner that it is forced to carry the weight of the door

or premature failure can occur. The correct installation procedure, valid for Slide Blocks and rollers, is as follows:

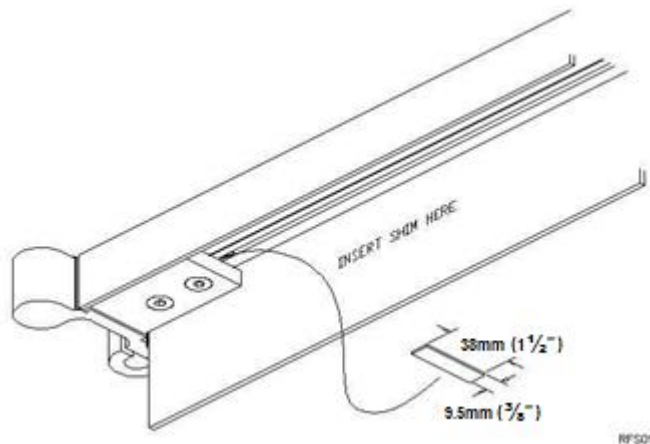
1. With the door fully open, adjust either the Upper Drive Arm shim or lower pivot location so that the Slide Block is still roughly in the middle of its vertical free play. Again, this can be confirmed by lifting up and pulling down on the nose rail.
2. With the door fully closed, adjust either the Upper Drive Arm Shim or Lower Pivot location so that the Slide Block is still roughly in the middle of its vertical free play. Again, this can be confirmed by lifting up and pulling down on the nose rail. The nose rail movement should be approximately equal in both directions.



Slide Block Part #  
55-15-345

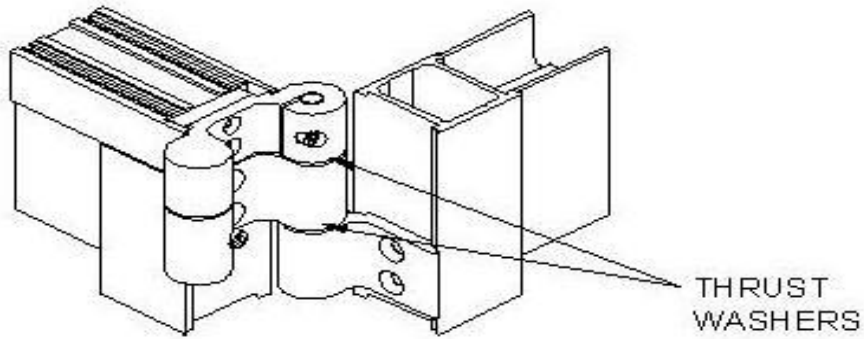
### 5.5.2. Carrier “Droop” Adjustment

Certain field conditions can cause the Carrier to “droop” or sag upon breakout. This condition is evidenced by poor catch alignment or scraping of the Carrier along the top of the upper rail when the door is broken out. The fix for this condition is to insert a thin metal shim between the leading edge of the Carrier “L” Bracket and the Carrier, as shown. Note the alignment of the “L” Bracket to the carrier before loosening the (2) retaining screws. It is possible for poor appearance or re-latching difficulties. It may be necessary to try different shims thicknesses to achieve the best results.

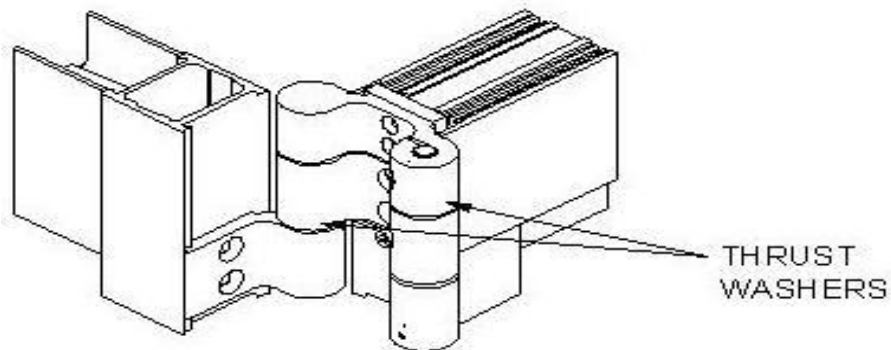


5.5.3. Thrust Washer Hinge Locations

Ensure that the small thrust washers have not fallen out during shipping and handling, early door failure will occur if washers are not installed in the locations shown. The washers are installed in the upper hinge set only and can be ordered (part no. 55-09-045). One washer per joint is applied, as shown below.



OUT-FOLD



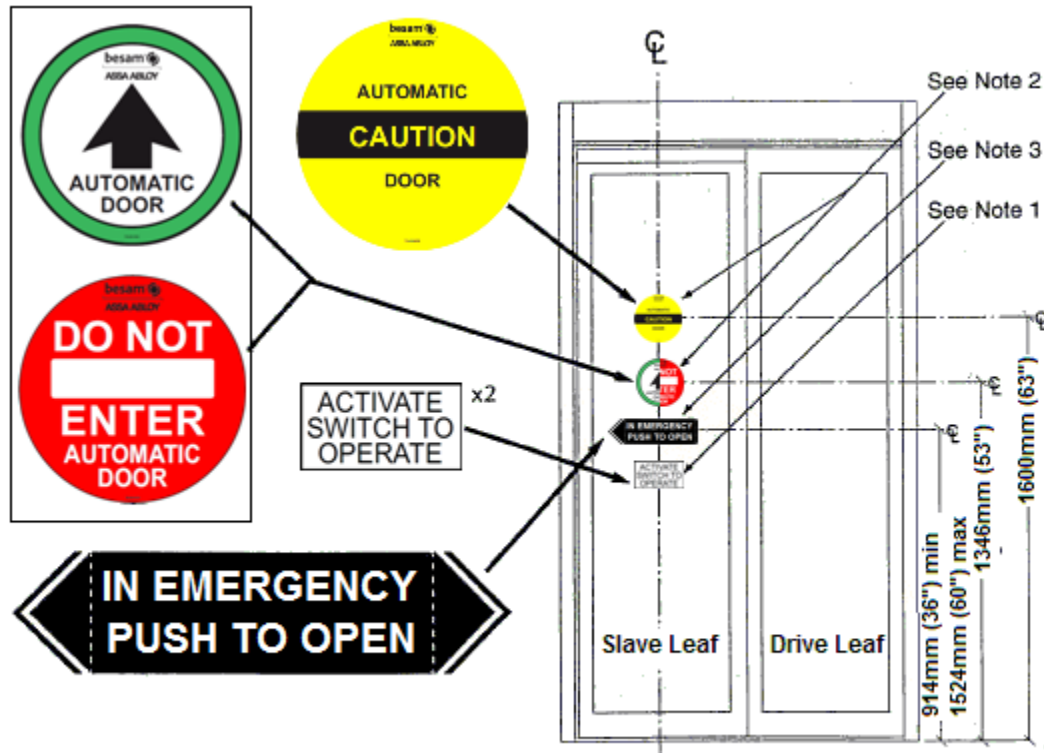
IN-FOLD

RFS019

## 5.6. Sign Placement

### 5.6.1. Caution and Information Signs

ANSI/BHMA standard A156.10 and Besam standards specify that caution signs must be visible to both sides of any power-operated door. In addition to the ANSI standards, Besam strongly recommends that the full sign kit be applied to every installation, in the manner show below. Reference the ANSI/BHMA A156.10 section of this manual and supporting graphics for any additional information.



RFS023

1. When using a wall switch to activate the door, apply this decal to approach side(s) of the door.
2. For all doors, the 'Automatic Caution Door' decal is visible to both sides. For one way traffic doors, apply the 'Automatic Door' with arrow decal to the approach side, with 'Do Not Enter' visible to the non-approach side. For two way traffic doors, adhere 'DO NOT ENTER' sides of arrow decals together, so the DO NOT ENTER sign is not visible, then apply to inside of door with arrow visible to both sides. See ANSI/BHMA section 11.
3. Trim one end of decal so arrow points to nose rail. Must be visible to side from which egress is made.

**Note!**

4. Decals are normally applied to the inside of a clear glass door. If the decals are not clearly visible on the other side due to the condition of the glass (for example, tinted or textured glass), decals should be placed on both sides.
5. In a four panel bi-fold installation, signs should be applied to both slave leaves (centermost).










5.6.2. Labels

5.6.2.1. Product Label P/N 1008999





5.6.2.2. Safety and information labels (shipped with door).

Labels are ordered as a kit. Label Kit P/N: 331007317


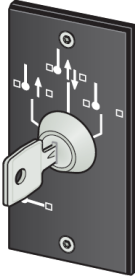

	
<p>Dual Side "AUTOMATIC DOOR / DO NOT ENTER" – Out</p>	<p>Dual Side "AUTOMATIC DOOR / DO NOT ENTER" – In</p>
	
<p>Dual Side "AUTOMATIC DOOR / CAUTION"</p>	<p>Dual Side "Operator designed for disabled people"</p>
	
<p>Push Side "PUSH TO ACTIVATE"</p>	<p>Pull Side "PULL TO ACTIVATE"</p>
	
<p>Dual Side "Activate Switch to Operate"</p>	<p>"Danger"</p>
	
<p>In Emergency Push To Open- Part #19-24-001 Not included in Label Kit</p>	



<div data-bbox="435 621 626 814" data-label="Text"> <p style="text-align: center;">ANNUAL COMPLIANCE INSPECTION</p> <p>Inspected for and complies with ANSI A156. _____</p> <p>DATE: _____</p> <p style="text-align: center;">by AAADM Certified Inspector</p> <p>Number: _____</p> <p style="text-align: center;">#US24-0542-01</p> </div>	<div data-bbox="1062 222 1247 1209" data-label="Complex-Block"> <p style="text-align: center;"><b>SAFETY INFORMATION</b></p> <p style="text-align: center;">Low Energy Swinging Doors</p> <p style="text-align: center;"><b>These minimal safety checks in addition to those in the Owner's Manual, should be made each day and after any loss of electrical power.</b></p> <ol style="list-style-type: none"> <li>1. Activate the door. Door should be open at a slow smooth pace (4 or more seconds), and stop without impact.</li> <li>2. Door must remain fully open for a minimum of 5 seconds before beginning to close.</li> <li>3. Door should close at a slow smooth pace (4 or more seconds), and stop without impact.</li> <li>4. Inspect the floor area. It should be clean with no loose parts that might cause user to trip or fall. Keep traffic path clear.</li> <li>5. Inspect door's overall condition. The appropriate signage should be in good condition.</li> <li>6. Have door inspected by an AAADM certified inspector at least annually.</li> </ol> <p><b>DO NOT USE DOOR if it falls any of these safety checks or if it malfunctions in any way. Call a qualified automatic door service company to have door repaired or serviced.</b></p> <p><b>See Owner's Manual or instructions for details on each of these and other safety items. If you need a copy of the manual, contact the manufacturer.</b></p> <div style="text-align: center;">    </div> <p style="text-align: center;"><b>PLACE COMPLETED ANNUAL COMPLIANCE INSPECTION LABEL HERE</b></p> <p style="text-align: center;">US24-0489-01</p> </div>
<p>"Certified Inspector"</p>	<p>"Safety Information"</p>

5.7. Accessories

5.7.1. ON/OFF/HOLD Open

 <div data-bbox="621 386 751 642" style="border: 1px solid black; padding: 5px; width: fit-content;"> <p><b>AUTOMATIC</b></p> <p>OFF</p> <p><b>HOLD OPEN</b></p> <hr/> <p>OFF</p> <p><b>AUTO</b></p> <p><b>HOLD OPEN</b></p> </div>	
<p>3-position switch                  P/N: 75-15-310 Clear                  P/N: 75-15-310 Black</p>	<p>PS-4C                  P/N: 655845</p>
 <p>For use with PS-4C (P/N: 655845)</p>	
<p>Surface mounting box                  P/N: 655806</p>	

5.7.2. Remote and Push Controls

Remote Receiver



P/N USRD433

Push Plates



P/N: 75-02-107



P/N: 75-02-102



P/N: 75-02-107



P/N: 75-02-108



P/N: 75-02-280

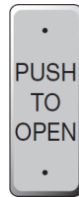
Remote Transmitter Push Plates



P/N: 75-02-273



P/N: 75-02-272



P/N: 75-02-269



P/N: 75-02-270

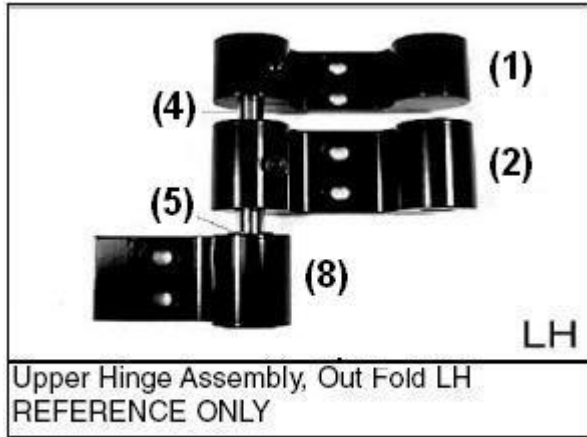
5.8. Hinge Parts and Illustration

5.8.1. SW200i Fold Hinge Parts List

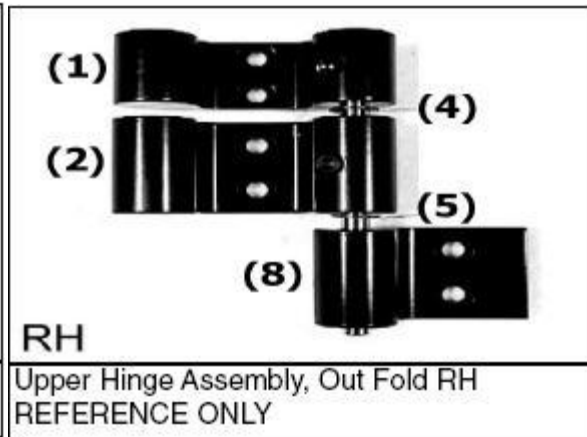
SW200i-Fold Hinge Assembly Part Numbers					
Item	Description	Part #	RH	LH	Notes
1	Bearing Pivot, Carrier	55-15-120	X	X	(Ref Illustration)
2	Bearing Pivot, Double	55-15-121	X	X	(Ref Illustration)
3	Shaft, Pivot, LH	55-15-123		X	(Also, In/Out Fold)
4	Shaft, Long	55-03-040	X	X	
5	Thrust Washer	55-09-045	X	X	(Ref Illustration)
6	Spring, Torsion, RH	55-03-055	X		(Ref Illustration)
	Spring, Torsion, LH	55-03-056		X	(Shown)
7	Cup, Spring	55-04-096	X	X	
8	Bearing Pivot, Single	55-15-122	X	X	(Ref Illustration)
9	Shaft, Pivot, RH	55-15-124	X		Also, In/Out Fold

5.8.2. SW200i Fold Hinge Assemblies

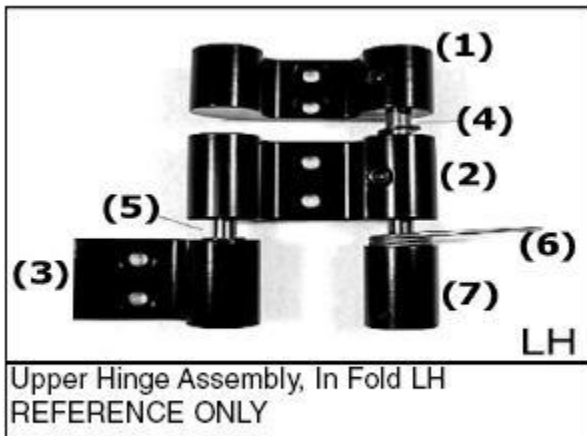
The graphics below each represent a different hinge configuration with identification numbers that relate to the item numbers in the table preceding this page.



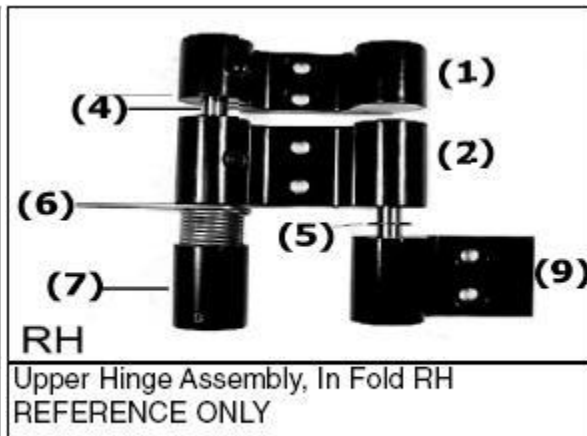
RF026



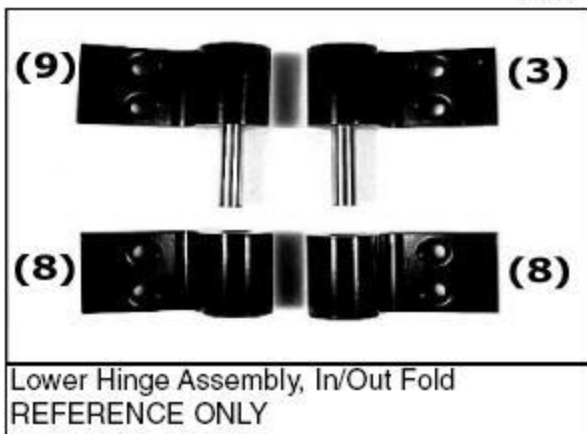
RF027



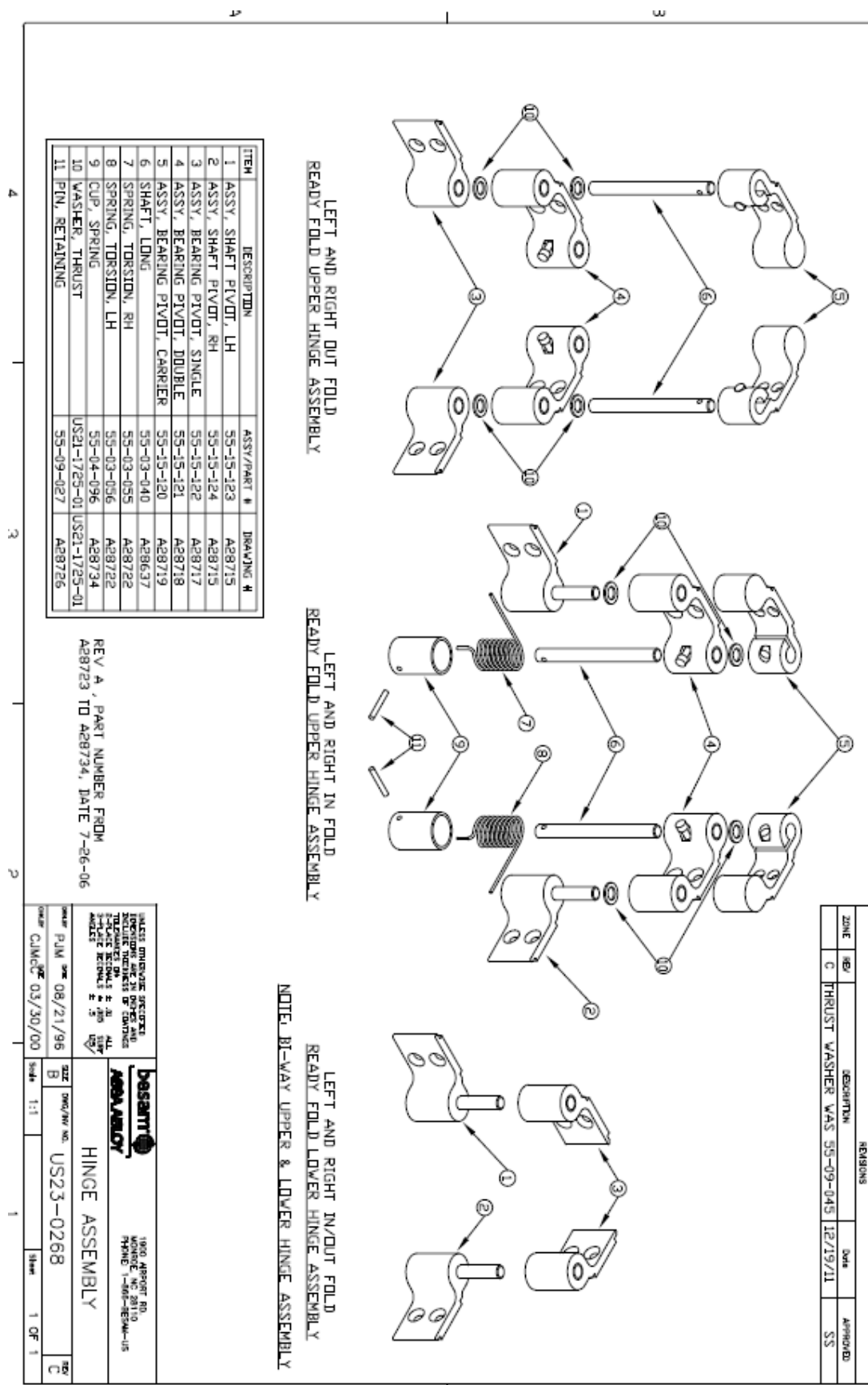
RF028



RF029



RF030



ITEM	DESCRIPTION	ASSY/PART #	DRAWING #
1	ASSY, SHAFT PIVOT, LH	55-15-123	A28715
2	ASSY, SHAFT PIVOT, RH	55-15-124	A28715
3	ASSY, BEARING PIVOT, SINGLE	55-15-122	A28717
4	ASSY, BEARING PIVOT, DOUBLE	55-15-121	A28718
5	ASSY, BEARING PIVOT, CARRIER	55-15-120	A28719
6	SHAFT, LONG	55-03-040	A28637
7	SPRING, TORSION, RH	55-03-055	A28722
8	SPRING, TORSION, LH	55-03-056	A28722
9	CUP, SPRING	55-04-096	A28734
10	WASHER, THRUST	US21-1725-01	
11	PN, RETAINING	55-09-027	A28726

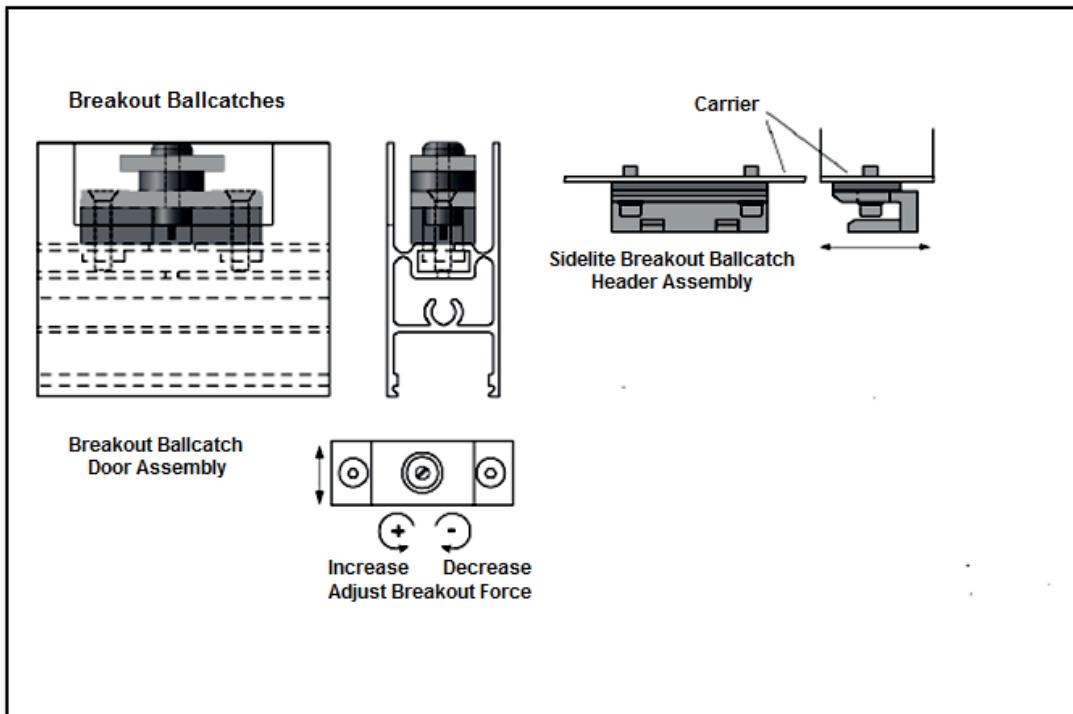
REV A, PART NUMBER FROM  
A28723 TO A28734, DATE 7-26-06

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES AND DECIMALS THEREAFTER UNLESS OTHERWISE SPECIFIED IN THIS DRAWING.			1800 ASPEN RD MONTE VIE, CA 94025 PHONE 1-800-859-4135
DATE	PLN		
08/21/95	08/21/95	<b>HINGE ASSEMBLY</b>	
03/30/00	03/30/00		
SIZE	DWG/REV NO.	1800 ASPEN RD MONTE VIE, CA 94025 PHONE 1-800-859-4135	
B	US23-0268	1800 ASPEN RD MONTE VIE, CA 94025 PHONE 1-800-859-4135	
1:1	1 OF 1	1800 ASPEN RD MONTE VIE, CA 94025 PHONE 1-800-859-4135	

REVISIONS			
ZONE	REV	DESCRIPTION	DATE
C		THRUST WASHER WAS 55-09-045	12/19/11
	SS		

### 5.9. Adjusting Ball Catch

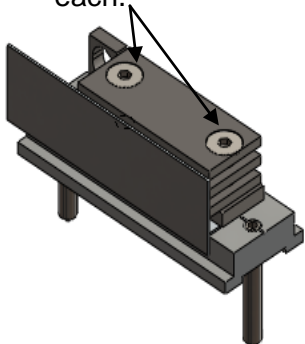
1. Check that the door assembly engages properly with the carrier assembly. Both can be repositioned slightly if necessary.
2. Adjust the tension on the ball catch by turning the adjustment screw, as required by local egress codes. Tension is not to exceed 50 lbs. break out force; see ANSI/BHMA standards at back of manual. Installer must verify that without power, break-out force does not exceed 50 lbs.



### 5.10. Adjusting Magnetic Catch

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

Screws for magnet adjustment, loosen screws 2-3 turns each.

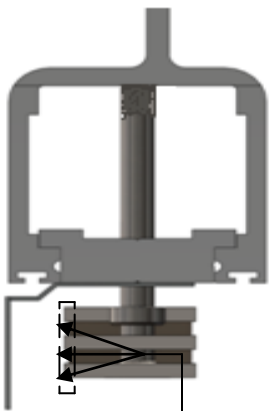


2. Adjust the tension on the magnetic catch by moving the magnets back and forth inside the magnetic catch, as required by local egress codes. Tension is not to exceed 50 lbs. break out force; see ANSI/BHMA standards at back of manual. Installer must verify that without power, break-out force does not exceed 50 lbs.

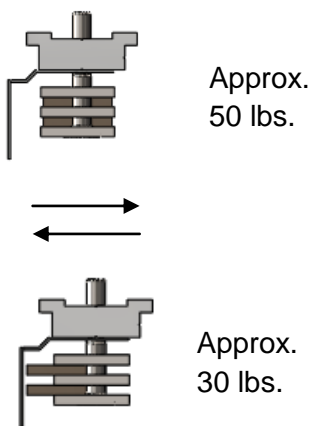
**⚠ Warning!**

Potential hazard of shattering magnets if not handled correctly, use hand and eye protection at all times when working with magnetic catch.

3. Gap between door-header/door-carrier should not exceed 1/8" gap in order for magnetic catch to function properly.
4. Loosen screws shown to adjust magnets. Only loosen screws 2-3 turns each with a 4MM Allen key. Use plastic shim to adjust magnet away from clapper plate. Place plastic shim in center of each magnet and tap shim in order to move magnet. Verify that plates that hold magnets are aligned so each contacts clapper plate at same time while re-tightening screws. Tension of lbs magnetic catch should be able to be adjusted down to approx. 30.



Confirm plates are aligned so each contacts clapper plate at same time.





5.11. Breakout Switch

FOR FIELD RETROFIT  
INSTALL SWITCH  
AS SHOWN

ASSEMBLE AS SHOWN ABOVE FOR L.H. OUT  
AND R.H. IN FOLDING DOORS

15-0140-01 KIT, BREAKOUT SW., FOLDING DOOR

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN INCHES AND  
INCLUDE THICKNESS OF COILS;  
TOLERANCES ON  
8-PLACE DECIMALS .04  
3-PLACE DECIMALS .005  
ALL SURF  
ANGLES 120°

ORDER DGR DTE 10/12/98  
CHKR DRE

SCALE N/A

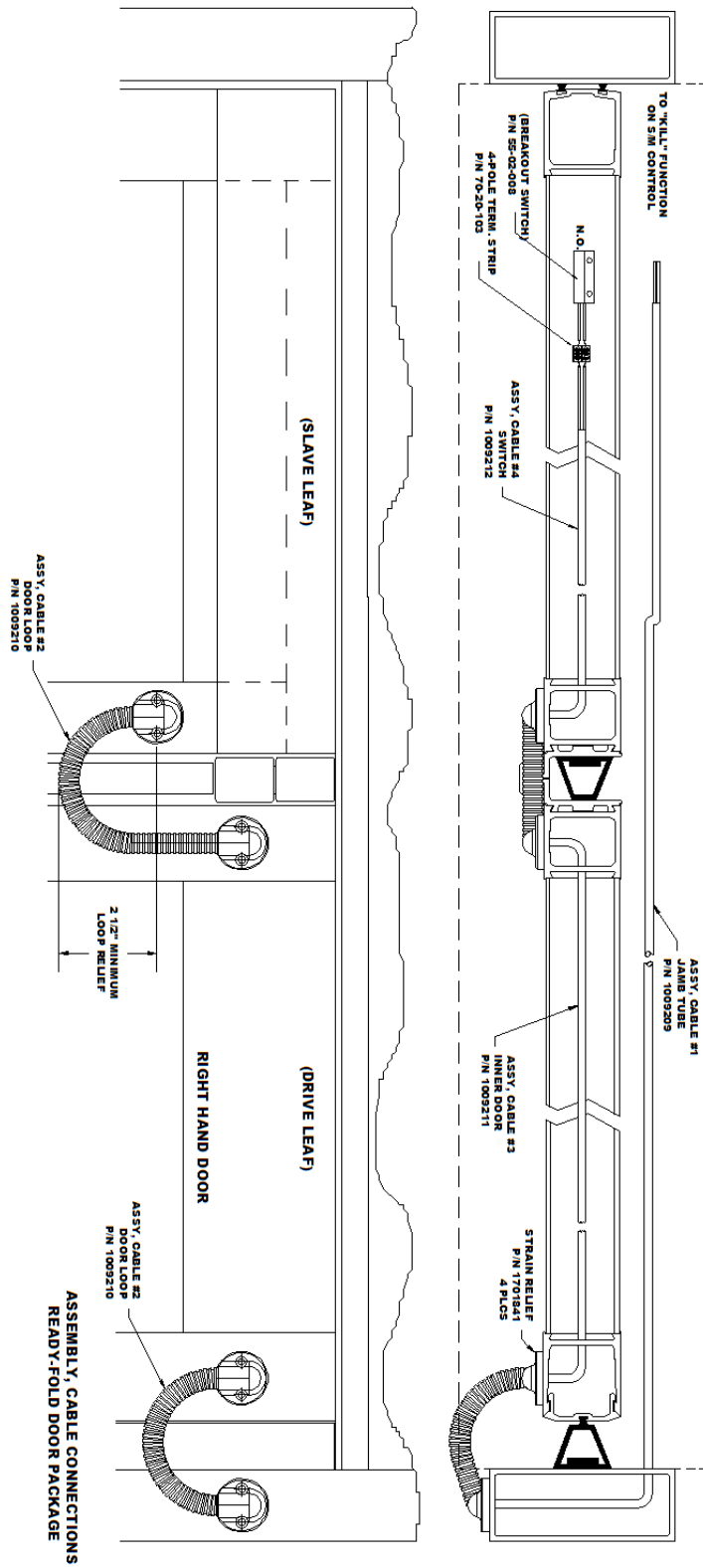
REV A

ASSEMBLE AS SHOWN  
ABOVE FOR R.H. OUT  
AND L.H. IN FOLDING  
DOORS

REVISIONS				
ZONE	REV	DESCRIPTION	Date	APPROVED
A		CABLE CONN. CHG'D, CHART ADDED	6/19/12	SS

SWITCH CONTROL	
PRODUCT	BREAKOUT CONNECTION
SM300/400	COM/ND 19/WHT 20/BLK
SM/MP	COM/ND 6/WHT 7/BLK
SM/900	COM/NC 13/WHT 12/BLK
SM2001	COM/NC 7/WHT 3/BLK

5.12. Cable Connection



## 6. SW200i Fold Operator

### 6.1. How the SW200i Fold Works

The swing door operator SW200i uses a DC motor which is connected to the output shaft by a combination of a bevel gear and spur gears. The arm system that is connected to the output shaft opens the door in a wall mounted application. There is also an adjustable spring mechanism connected to the output shaft. During opening of the door, the clock spring is tensioned by the rotation of the output shaft. During the closing cycle, the accumulated spring force is acting in the closing direction. The spring force can be adjusted so there is appropriate force to close the door when it is operated manually or in case of a power failure.

### 6.2. Opening

When an opening signal is received by the control unit, the door is opened at the operator-adjusted opening speed. Before the door is fully open at back check, it slows automatically to low speed. The motor stops when the selected door opening angle has been reached. The open position is held by the motor.

If the door is obstructed while opening, it will either stall or stop which can be selected with a

DIP-switch (SOS). Stop on stall is always active in program selector Mode Off.

- Continue on stall - the door will continue to try to open during the hold open time.
- Stop on stall - the door will, even if hold open time has not expired, close after 2 seconds.

### 6.3. Closing

When the hold open time has elapsed, the operator will close the door automatically, using spring force and the motor. The door will slow to low speed at latch check before it reaches the fully closed position. The door is kept closed by spring power or combined with extended closing torque by the motor.

### 6.4. Functions on the Extension Unit EXU-SI

#### 6.4.1. KILL Function

#### **Warning**

In the event that the KILL circuit is activated, all Safety Functions of the door will be overridden causing the door to close even though an object or person may be in the door's path of travel, and therefore may be subject to injury. This mode of operation is most generally used to isolate an area in the event of a fire.

- During KILL, the control will ignore all signals and close door(s) at normal speed.
- If impulse controlled KILL: The operator will resume normal operation after a KILL RESET. When manual RESET, jumper must be removed and reset button connected to terminal No. 8 and Ground.
- If state controlled KILL: When KILL signal is no longer active, operator will resume normal operation.
- The behavior of the lock during KILL depends on the group of parameters. See page 65.
- The KILL input may be connected to either a normally open contact with GND as reference or a normally closed contact with QTST as reference, depending of group of parameters. See Changing group of parameters located later in this manual

### 6.4.2. Function of Locks

- The lock output only works when the function switch is in OFF or EXIT. If no function
- Switch is used, OFF or EXIT must be connected to GND (0 VDC).
- The control has an available output of DC for external locks
- DIP-switches to select 12 or 24 V DC, locked with or without power
- DIP-switch for lock release and potentiometer for opening delay
- DIP-switch for lock kick to overcome binding in the locking device during closing
- Input to unlock signal from lock. Potentiometer for opening delay is to be set to max. As soon as unlock signal is received the door will start to open. The lock output signal shall be active low.
- If the door cannot fully close, the operator will perform a lock retry (once if manually open, twice if automatically open).

### 6.4.3. Panic Bar

Panic bar can be disabled by the relay function on the extension board EXU-SA and an external power supply. Panic bar will then only be active during KILL. See changing group of parameters located later in this manual.

### 6.4.4. Program Selector (Wall Mounted)

Input for OPEN, EXIT and OFF (if no program selector, AUTO is default).

#### **Note:**

In OFF-position the operator will comply with the Low Energy Regulation.

### 6.4.5. Impulses

Input for OUTER impulse, KEY impulse and OPEN/CLOSE impulse.

#### 6.4.6. OPEN/CLOSE impulse

The impulse will open the door and the door will stay open until a new impulse is given. If no impulse is given the door will close after 15 minutes. This can be made infinite by changing group of parameters.

OPEN/CLOSE impulse works only in program selection AUTO. Can be programmed for OFF and EXIT as well

#### 6.5. Functions on the Extension unit EXU-SA

Also see Extension unit EXU-SA located in electrical connection section of this manual

##### 6.5.1. Presence impulse approach, door mounted / (DMPS.NS)

(Door mounted presence sensor, non swing side)

The presence impulse is active during fully open and closing. The sensor is mounted to the approach side of the door. Once the door is closed, the sensor is ignored and will not be active until the next impulse is received.

#### **Note:**

When installed as a pair of doors, the presence impulse signal will re-open both doors. The sensor is not active in program mode OFF or manually opened door (Power Failure Mode or during KILL function).

##### 6.5.2. Presence detection swing-path, door mounted / (DMPS.SS)

(Door mounted presence sensor, swing side)

When a sensor that is mounted on the swing side of a door detects an object, it will send a command to the control unit to stall the door. If the control unit has received a short signal from the sensor and there is still hold open time left on the control unit, the door will continue on its way open if the object has cleared. The inhibit/blanking potentiometer can be adjusted so that the sensor will avoid detecting a wall or object near the full open position. Presence detection has a higher priority than presence impulse.

#### **Note:**

When installed as a pair of doors the presence detection signal will stop both doors, except for double egress doors. The behavior for double egress doors can be changed.

- The sensor is not active in program mode OFF or manually opened door. In this OFF-mode the operator fulfills the Low Energy Standards.

### 6.5.3. Monitored Safety Sensors

Both presence impulse and presence detection can be monitored. If a sensor becomes defective, the operator will not accept any impulses and will then work as a manual door closer.

### 6.5.4. Relay Output “ Error Indication”

A potential free contact COM/NO/NC for external error indication, see “Error indication” Troubleshooting / chart.

- KILL output---NO or NC signal
- Door indication
- Used to indicate an open or closed position of the door. The indication position is set by adjusting the inhibit/blanking potentiometer.
- Panic bar. See Changing Group of Parameter.

## 7. Electrical Connections

### Note:

The installation shall be made according to local codes.

When working in, with or around electrical circuits, all power must be disconnected.

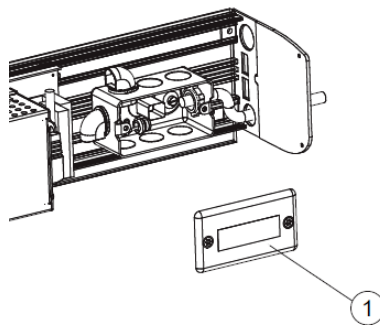
### 7.1 Connection Box, Single Door

Fit the connection box in the back plate as shown below.

### Note:

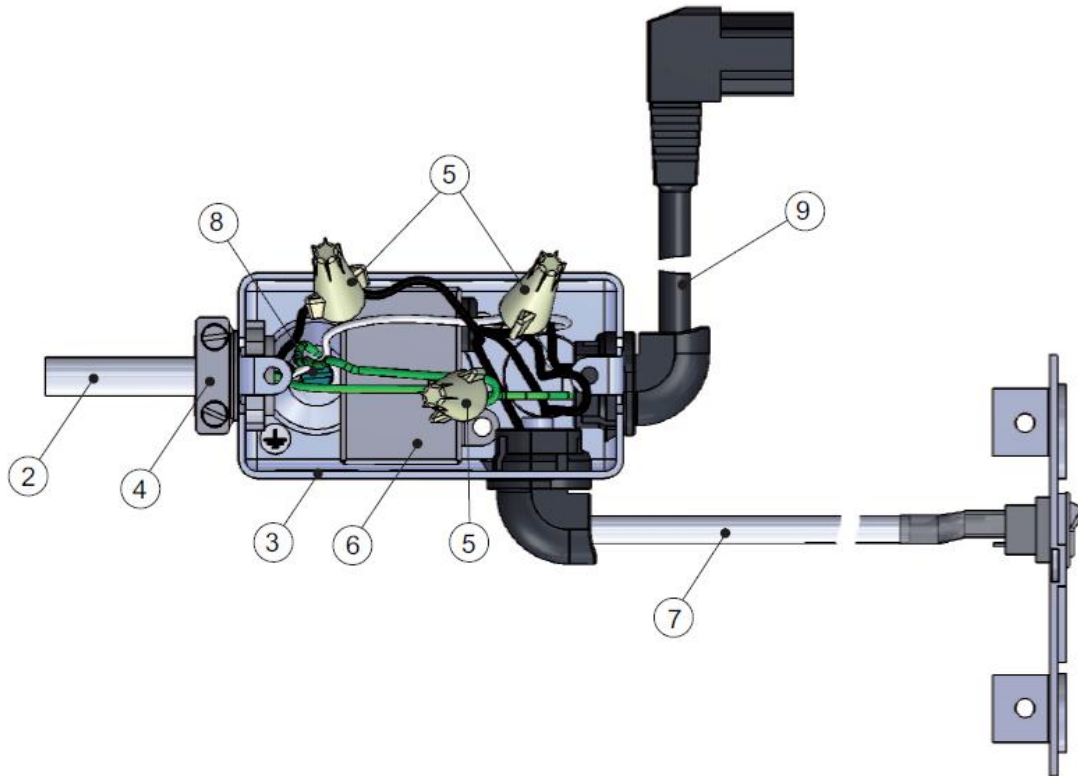
To ensure for sufficient grounding, the square nuts must be turned with the teeth upwards against the box so that they cut through the anodizing in the back plate.

1. Switch off the Electrical Power.
2. Unscrew the lid (1).



3. Strip approximately 5 inches off from the outer insulation of the power installation cable (2).
4. Insert the free end of the power installation cable into the connection box (3) through the metal strain relief (4).
5. For the following connections: Use twist-on wire connectors (“wire nuts”) (5), that are approved for the application. The wires should be stripped according to the instructions for the used wire connector. Be aware, local code shall be followed.
  - Connect the (white) neutral wire of the power installation cable with the AWG18 (white) neutral wire that extends from the CPD metal housing (6).
  - Connect the (black) phase wire of the power installation cable with the free AWG18 (black) wire of the cable of the rocker switch assembly (7).

- Connect the solid green earth wire (8), which is attached to the bottom of the connection box, with the green earth wire of the power installation cable (2), and the green earth wire of the interconnection cable (9).
6. Tuck the slack of the wires into the largest compartment, between the CPD metal housing (6) and the wall of the connection box. Be careful not to place connectors, or excessive loops of wire, on top of the CPD metal housing as they might interfere with the fastening of the cover.
  7. Fasten the lid (1) of the connection box.



## 7.2. Connection Box, Double Doors

### Rebuilding of Master Connection box into Slave Connection Box.

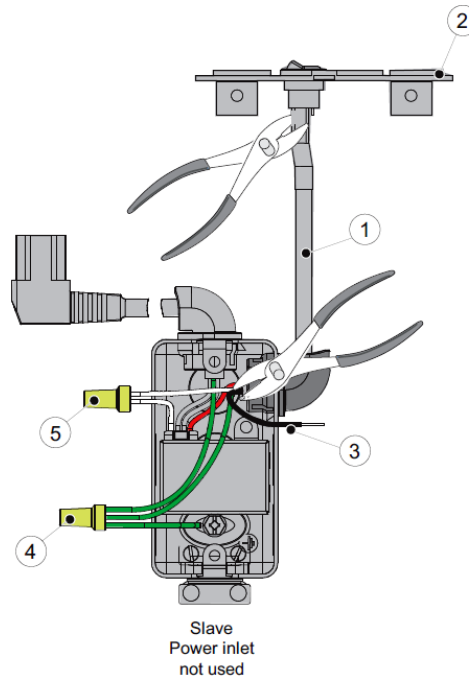
Only one power switch is needed to operate two units. Discard the extra switch and use the extra power wires found in cable (1) to route power between connection boxes.

Leave the black/white/green wires accessible for the electrician in the box tied to the Master control.

1. Remove the covers from both connection boxes.
2. Cut off the Rocker Switch cable (1) close to the switch on the unit intended to be the slave. The Bottom end plate (2) is now obsolete material and is not used in the installation.

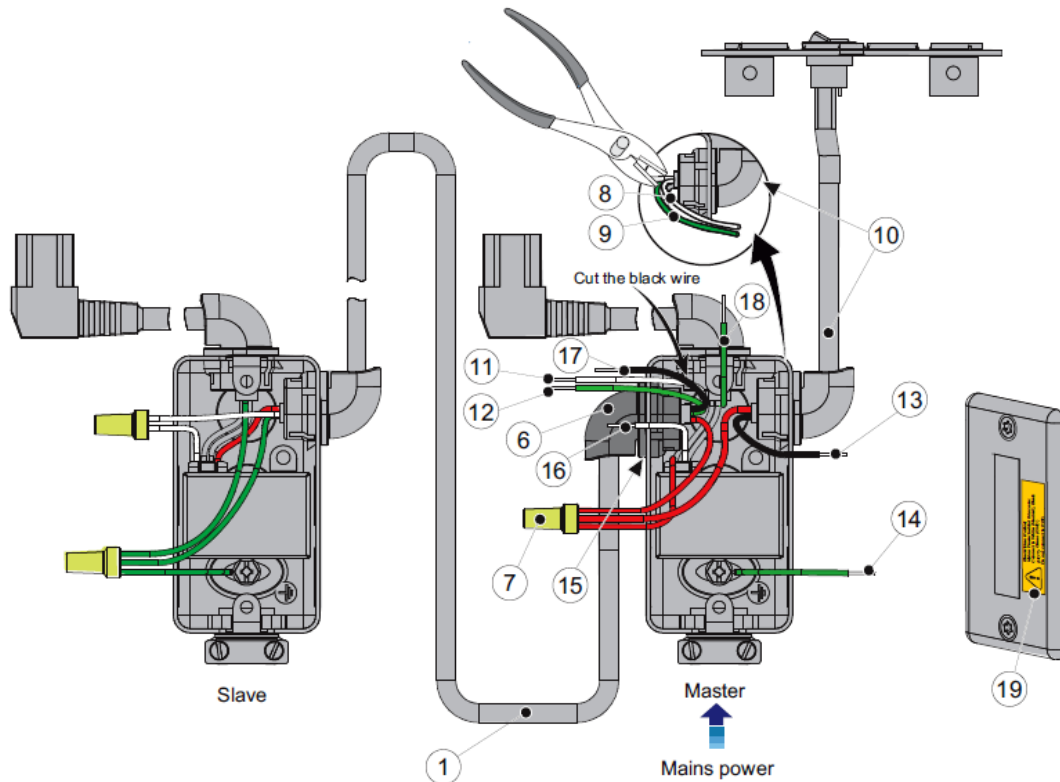


3. Cut off the black wire (3) close to where it exits the cable (1), careful not to nick other wires. This wire will not be used.
4. Connect the three green wires using a wire nut (4).
5. Connect the two white wires using another wire nut (5).
6. Adjust all wires neatly into box and reinstall the cover on the Slave box.



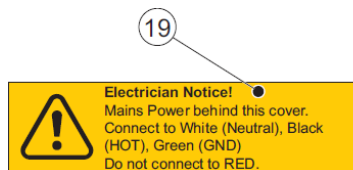
### Assemble Slave Connection Box to Master Connection Box.

7. Remove the knock-out plate of the unused entry (15) in the Master connection box.
8. Insert the cut cable (1) through the new hole. Mount a strain relief (6) around the cable and let it snap into the connection box wall leaving at least 4" of extra cable in the box.
9. Cut the red wire in the Master box, leaving equal legs, and connect the three red wire ends with a wire nut (7).
10. Cut off the white (11) and the green (12) wires from cable (1). Leave these two wires un-connected and cut off the remaining black wire (17) from cable (1).
11. Only the following wires should now be unconnected;
  - white wires (11) + (16) and green earth wires (12) + (14) + (18)
  - black wire (13) from the Rocker Switch cable
12. Refer to Section 7 (Electrical Connection), how to connect the mains power supply cable to the Master Connection box.
13. Place the wires in the Master Connection box. Fasten the covers on both Connection boxes and connect the Interconnection cables to the control unit.



**Note:**

Connect the sync cable (Kit No. 1008552) in between the two control units and apply an "Electrician Notice" label (19) to the cover of the Master mains power connection box.



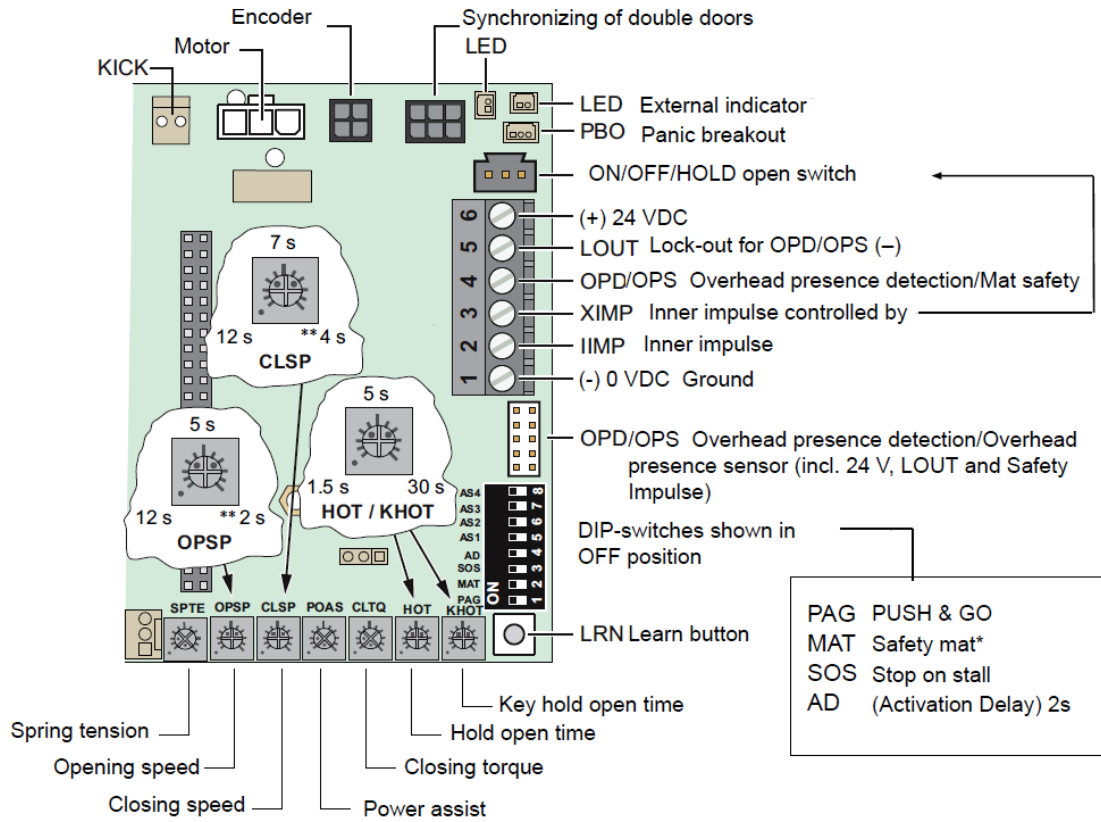
**Tip:** For convenience tape together 1" from the ends of the following wire combinations in the Master mains power connection box: Whites (11) + (16), Greens (12) + (14) + (18), Black should be a single wire.

7.3. Control Unit.

7.3.1. CU-200

**Note!**

The CU-200 can be equipped with extension units, EXU-SI and/or EXU-SA, depending on the functions required.



\* After changing MAT dip switch a new LEARN must be carried out.

\*\* With heavier doors the time will increase.

7.3.2. ARM System Selection

Factory set arm configuration is PUSH 210mm (8¼”), if other is required:

Select arm configuration on the DIP-switches according to the table below.

Type of Arm System	Spindle Location (hinge to outgoing spindle)	ON=1 OFF=0			
		AS 1 DIP 5	AS 2 DIP 6	AS 3 DIP 7	AS 4 DIP 8
Pushing	PUSH, 210mm (8¼”)	0	0	0	0
Pushing	PUSH, 95mm (3¾”)	1	0	0	0
Pushing	PUSH, 70mm (2¾”)	0	1	0	0
		1	1	0	0
		0	0	1	0
		1	0	1	0
		0	1	1	0
Concealed (Outfold & Infold)		1	1	1	0
Pulling PULL	PULL, 210mm (8¼”) Reveal 0-65mm (0-2 9/16”)	0	0	0	1
Pulling PULL	PULL, 210mm (8¼”) Reveal 65-130mm (2 9/16-5½”)	1	0	0	1
Pulling PULL/PAS	PULL, 95mm (3¾”) Reveal 0-65mm (0-2 9/16”) PULL, 70mm (2¾”) Reveal 0-65mm (0-2 9/16”)	0	1	0	1
Pulling PULL/PAS	PULL, 95mm (3¾”) Reveal 65-130mm (2 9/16-5½”) PULL, 70mm (2¾”) Reveal 65-130mm (2 9/16-5½”)	1	1	0	1
Sliding Push	PULL, 210mm (8¼”) Distance (Reveal + Door Thickness + Hinge) = 75-130mm (2 15/16-5½”)	1	0	1	1
Sliding Push/Offset Pivot	PULL, 95mm (3¾”) Distance (Reveal + Door Thickness + Hinge) = 0-80mm (0-3½”)	0	1	1	1

**Note!**

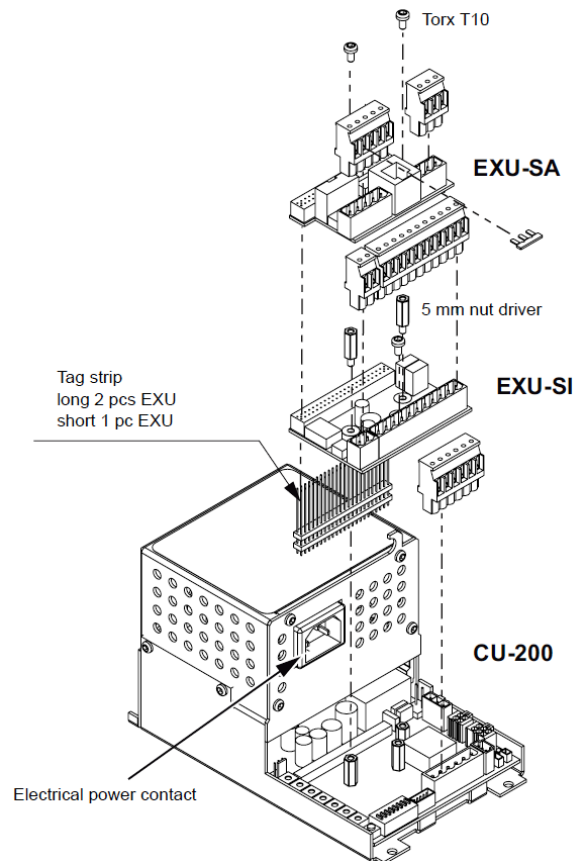
All concealed fold packages will use the same concealed dip switch setting shown above!

After changing any system selection a new LEARN must be carried out.

### 7.3.3. Extension Units EXU-SI / EXU-SA

#### Installation

To extend the functions, the extension units can be mounted on top of the control unit CU-200, separately or combined.



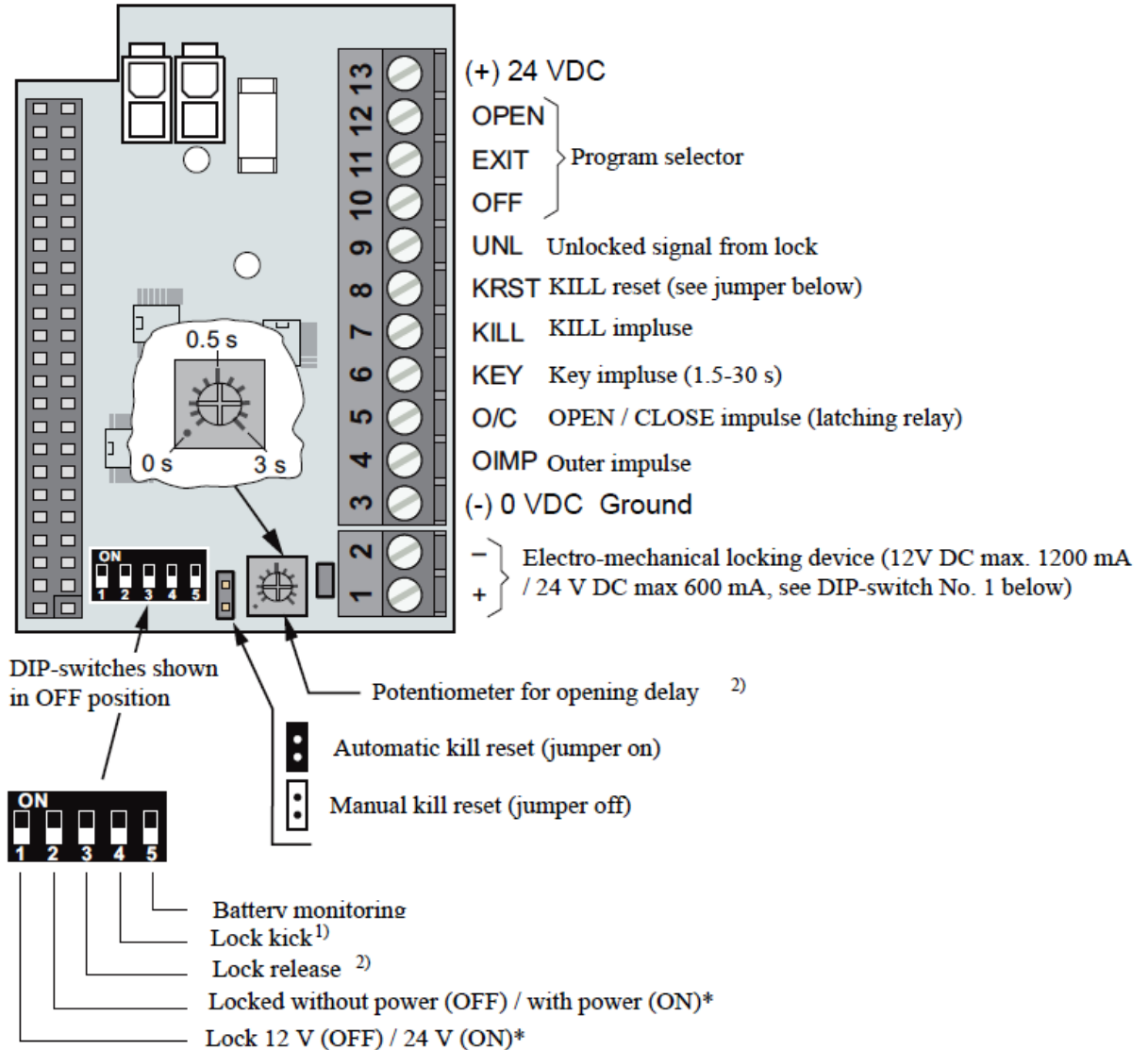
#### Note!

After changing/ replacing an extension unit, a new Learning Instruction class must be carried out.

7.3.4. Extension Unit EXU-SI

**Functions**

This extension unit has inputs for electro-mechanical lock, program selector, batteries, KILL function, OPEN/CLOSE, KEY opening, and outer impulse.



1. Independent of switch position (ON /OFF), the “latch check” complies with the ANSI 156.19 requirements.
  - Position OFF: Smooth closing, to be used on doors without lock.
  - Position ON: More powerful closing, to be used on doors with lock, to overcome binding in the locking device.
2. If the switch is set to ON, the LOCK RELEASE is active during the opening delay time set by the potentiometer.

- For PAIR OF DOORS installations, the LOCK RELEASE works in sequence: First the MASTER then the SLAVE.

**Note!**

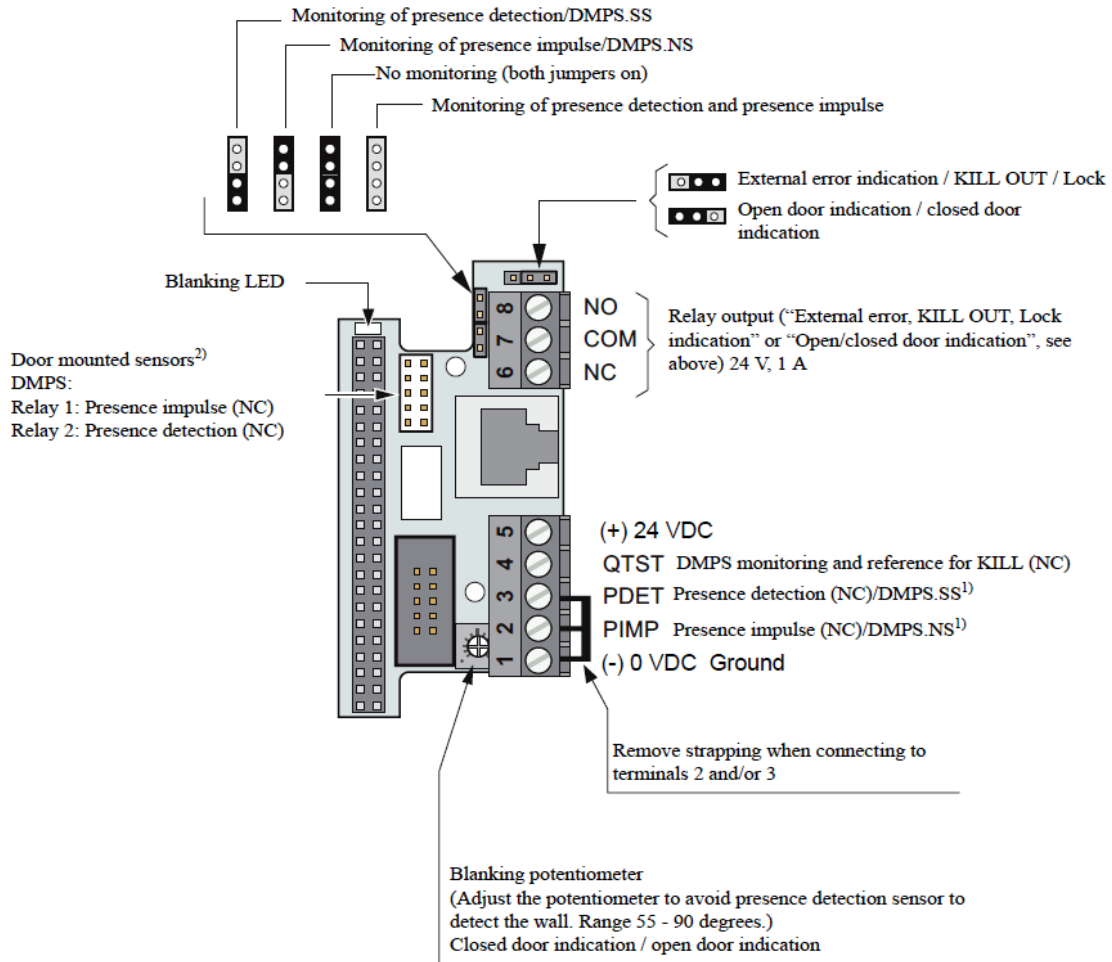
Lock only functions when Program Selector is in OFF or EXIT.

\* After changing any system selection a new LEARN must be carried out.

7.3.5. Extension Unit EXU-SA

This extension unit has inputs for door mounted sensors, which can give presence impulse on approach side and/or presence detection on swing path side. Relay output for error indication or door indication is also integrated.

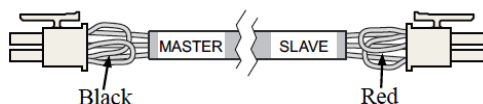
Functions



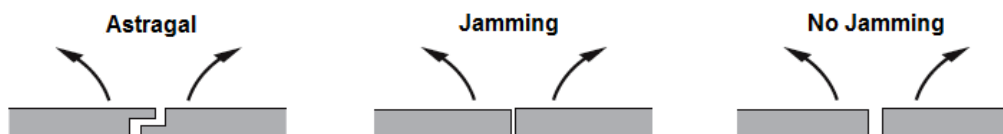
7.3.6. Cutting Jumper on the Sync Cable for Double Doors

**Note!**

Connect a cable between Master CU TB1 (GND) and Slave CU TB1 (GND).



Function		Door Design		Cut the Jumper with Color	
Opening	Closing	Astragal	Jamming	Master Side	Slave Side
Synchronous	Synchronous	No	No	-	-
Synchronous	Asynchronous	Yes	No	Black	-
Asynchronous	Asynchronous	Yes	Yes	-	Red
Double Egress		-	-	Black	Red



7.3.7. Settings For Double Doors

Function	Settings on the	
	MASTER	SLAVE
<b>Common</b>		
Program Selection	X	
Opening Time	X	
Closing Time	X	
Hold Open Time	X	
Close / Continue To Open When The Door Is Obstructed	X	
Pag On/Off	X	
Sos On/Off	X	
Level Of Power Assist	X	(X)*
Extended Closing Torque	X	(X)*
OPD/OPS Impulse Or Mat Logic Impulse	X	
<b>Individual</b>		
Lock/Unlock Signal Voltage	X	X
Locked Without/With Power	X	X
Lock Release Enable/Disable	X	X
Open Delay Time	X	X
Lock Kick Enable/Disable	X	X

\* For "Double egress doors," these functions must be set separately for MASTER and SLAVE as the arm systems as well as the air pressure may be different.



### **Note!**

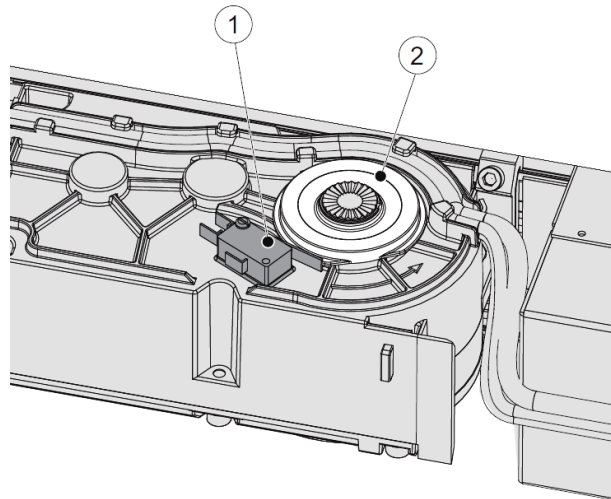
- Locks on the MASTER and SLAVE doors must be connected to the control unit (CU) on the corresponding operator.
- Inner and outer impulses can be connected to either MASTER or SLAVE CU or both.
- The OPD/OPS is to be connected to the MASTER CU except for “Double egress,” where each OPD/OPS must be connected to corresponding CU.
- Door leaf mounted sensors must always be connected to corresponding CU.

## 8. Start-up

### 8.1. Pre-adjustment Checks

The spring pre-tension is **factory set to 360°** and is normally not necessary to adjust. If adjustment has to be carried out, see “Reducing / Increasing the “Spring Pre-Tension” (SPTE)” (Paragraph 10.1)

Check and adjust the micro switch (1), controlling the lock kick, by turning the black plastic cam (2) when power is off.

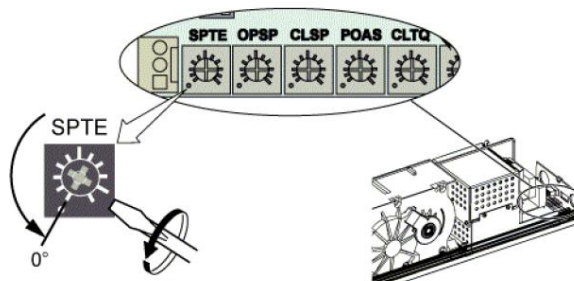


### 8.2. Adjusting Door Stop

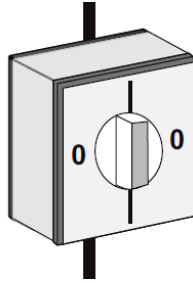
1. Close the door.



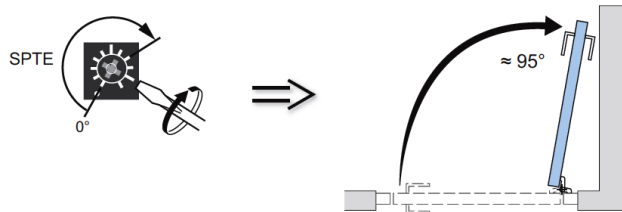
2. Turn the Potentiometer SPTE to 0° (if not already on 0°).



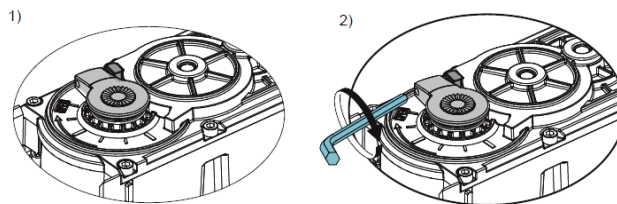
3. Switch on the electrical power (the operator will find its closed position) and make sure the LED is on.



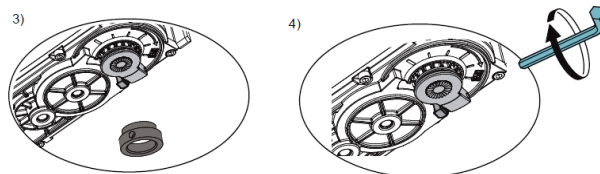
4. Open the door to required open position, plus approx. 15mm ( $\frac{5}{8}$ " ), by turning the potentiometer SPTE on the CU-200, clockwise.



5. When stop arm is on top of the operator, lift the door stop arm up and mount it on the splines, as close as possible to the stop block 1). Fine-adjust if necessary with the screw on the stop arm 2).



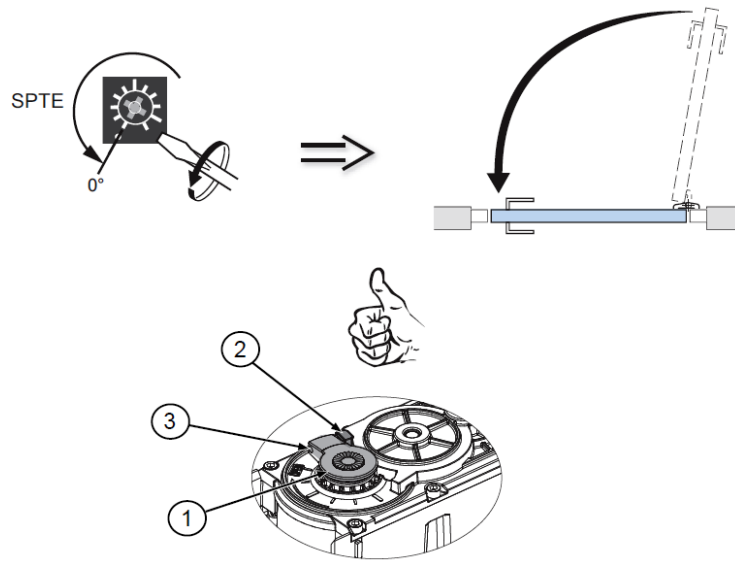
6. When stop arm is on the bottom of the operator, loosen the stop ring and the stop arm. Mount the stop arm on the splines, as close as possible to the stop block 3). Mount the stop ring. Fine-adjust if necessary with the screw on the stop arm 4).



7. Close the door by turning the potentiometer SPTE to 0° and let the door close.

### Note!

Impulses are not accepted if SPTE is more than 0°.



1. Door Stop Arm
2. Stop Block
3. Fine-Adjustment Screw

## 8.2. Auto-learn - Automatically sets back and latch check (recommended)

This learning is performed by pushing the LEARN BUTTON (LRN).

- Before the learning procedure starts, make sure that the door has been properly closed i.e., not by force.
- A new learn must be carried out in following situations
  - If any of the parameters SPRING PRE-TENSION, CLOSING TORQUE (CLTQ) and LOCK RELEASE (DIP-switch No. 3 on EXU-SI) are changed after performing a learn.
  - If any of the arm system DIP-switches are changed.
  - If any changing of the MAT-dip.
  - When replacing any of the extension units.
  - When changing of Locked with/without power.
  - When changing of Lock 12/24 V.
- Learn can be carried out with activation units and locks connected.
- The back-check will be automatically adjusted to 10° and 1 second before open position.
- The latch-check will be automatically adjusted to 10° and 1.5 seconds before closed position.



### 8.2.1. Push the LEARN BUTTON (LRN)

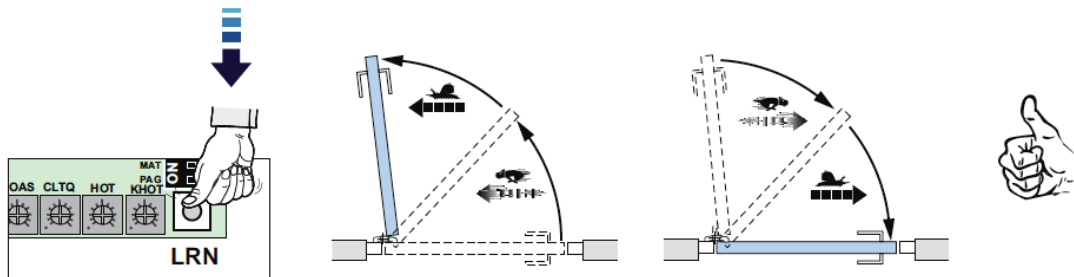
**⚠️** Remain clear of swing path of door, as door may open and close rapidly. The door has no safety during auto-learn cycle.

When the LEARN button is pressed the status LED starts to blink and will not stop until LEARN is concluded.

#### **Note!**

Do not touch the door during the auto-learn cycle.

The LEARN cycle starts with sensor detection, during which the door will stand still. When the door starts moving the spring tension and door inertia are measured and the door open and close position is saved. When the LEARN is concluded the back-check, latch-check, opening time and closing time are calculated. The changed settings affect the behavior of the installation and must be verified.



### 8.2.2. Double Doors

For double doors, the MASTER door must be learned first and thereafter the SLAVE door. When the SLAVE door is learned, the MASTER door will open up to fully open position during the learning phase of the SLAVE door.

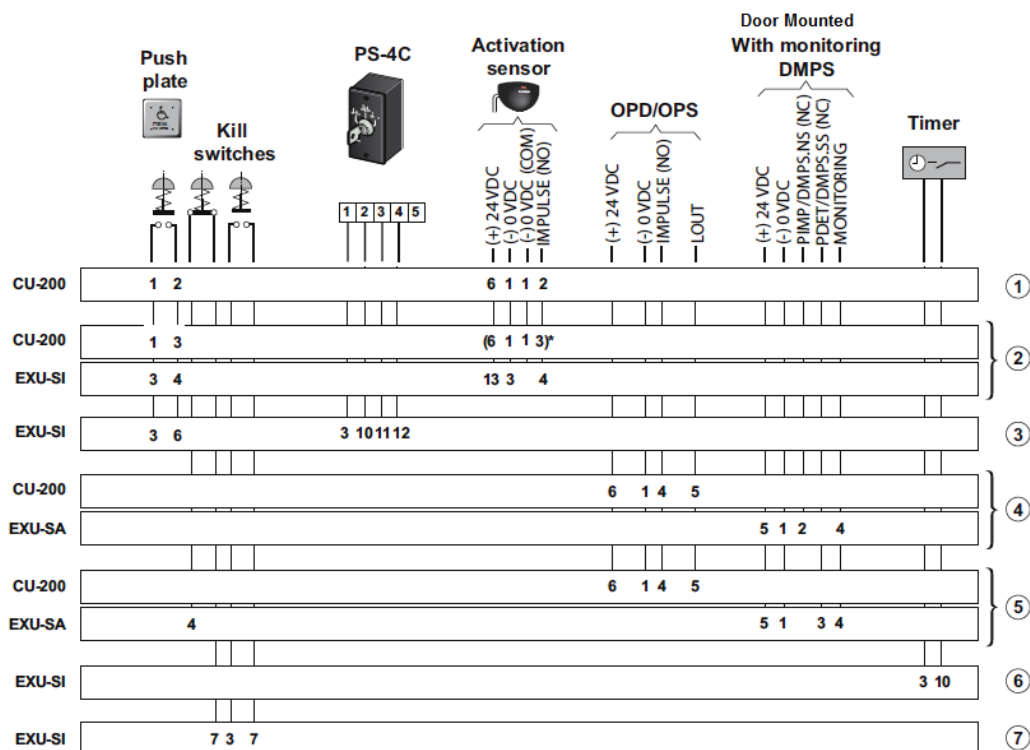
The doors can also be learned separately before connecting the sync cable. In case of astragal doors and separate learning, the MASTER door must be held open before the SLAVE door learn is carried out.

### 8.3. General Adjustment

1. Set the hold open time with the potentiometer on the control unit.

2. Adjust the opening speed (OPSP) to comply with ANSI A156.19. Turning clockwise increases the speed. Refer to Table under ANSI / BHMA A156.19 (LOW ENERGY APPLICATION) in this manual.
3. Adjust the closing speed (CLSP) to comply with ANSI A156.19. Turning counter-clockwise decreases the speed. Refer to Table under ANSI / BHMA A156.19 (LOW ENERGY APPLICATION) in this manual.
4. Connect the required activation units.
5. Check that the installation complies with AHJ (Authority Having Jurisdiction).

#### 8.4. Connection of Activation Units and Accessories



- ① Inner impulse
- ② Outer impulse
- ③ Key impulse
- ④ Presence impulse/DMPS.NS
- ⑤ Presence detection/DMPS.SS
- ⑥ Off
- ⑦ Kill impulse
- \* Standard

## 9. Changing Group of Parameters

1. Disconnect the electrical power contact.
2. Press the LEARN BUTTON (LRN) and keep it depressed.
3. Connect the electrical power contact.
4. Watch the ERROR LED.



5. Release the LEARN BUTTON after the 5 seconds (LED is out).  
The ERROR LED flashes a number of short flashes that corresponds to the parameter group number (see table). After a short pause the LED will repeat the group number, and so on.
6. Pushing the LEARN BUTTON once, increases the parameter group number.  
When the highest parameter group number is reached it will start with number 1 (default) again.
7. Push the button until you get the requested parameter group.
8. Disconnect the electrical power contact.
9. Next time the electrical power is connected, the operator will use the new group of parameters.

Parameter /Group	OPEN/CLOSE HOLD OPEN TIME	KILL Mode	OBSTRUCTION Mode	DOUBLE EGRESS Mode	LOCK RETRY	OPEN/CLOSE Impulse	KILL Impulse Configuration	Relay
1 (default)	15 minutes	Locked during KILL	Door Closer	Separate Presence Detection	On	In AUTO Mode	Normally Open	Error Indication
2	Infinite	Locked during KILL	Door Closer	Separate Presence Detection	On	In AUTO Mode	Normally Open	Error Indication
3	15 minutes	Locked during KILL	Door Closer	Separate Presence Detection	On	In AUTO Mode	Normally Open	Error Indication
4	15 minutes	Lock follows program selector during KILL	Door Closer	Separate Presence Detection	On	In AUTO Mode	Normally Open	Error Indication
5	15 minutes	Locked during KILL	Reverses when Obstructed	Separate Presence Detection	On	In AUTO Mode	Normally Open	Error Indication
6	15 minutes	Locked during KILL	Door Closer	Common Presence Detection**	On	In AUTO Mode	Normally Open	Error Indication
7	15 minutes	Locked during KILL	Door Closer	Separate Presence Detection	Off	In AUTO Mode	Normally Open	Error Indication
8	15 minutes	Locked during KILL	Door Closer	Separate Presence Detection	On	In OFF, EXIT and AUTO Mode	Normally Open	Error Indication
9	15 minutes	Lock follows program selector during KILL*	Door Closer	Separate Presence Detection	On	In AUTO Mode	Normally Closed Monitored	Error Indication
10	15 minutes	Locked during KILL	Reverses when Obstructed	Separate Presence Detection	On	In AUTO Mode	Normally Open	Error Indication
11	15 minutes	Locked during KILL	Door Closer	Separate Presence Detection	On	In AUTO Mode	Normally Open	KILL Out
12	15 minutes	Unlocked during KILL	Door Closer	Separate Presence Detection	On	In AUTO Mode	Normally Closed Monitored	KILL Out
13	15 minutes	Unlocked during KILL	Door Closer	Separate Presence Detection	On	In AUTO Mode	Normally Closed Monitored	KILL Out
14	15 minutes	Locked during KILL	Door Closer	Separate Presence Detection	On	In AUTO Mode	Normally Closed Monitored	Lock
15	Infinite	Unlocked during KILL	Reverses when Obstructed	Separate Presence Detection	On	In AUTO Mode	Normally Open	Lock
16	Infinite	Locked during KILL	Reverses when Obstructed	Separate Presence Detection	On	In OFF, EXIT and AUTO Mode	Normally Closed Monitored	Lock

\* The lock unlocks at impulse during KILL in EXIT mode.  
 \*\* Please consider that use of Push And Go together with Common presence detection may cause stop in traffic flow.  
 1) If set to REVERSES WHEN OBSTRUCTED, the operator re-opens when obstructed, similar to a presence impulse.  
 In the default setting, if there is a bind with the strike plate when the door is closing the door will try to close two extra times in automatic operation, OFF or EXIT mode and once extra in manual operation. This function can be switched off (see "Lock retry" above).  
 Note: When changing group of parameters, normally only the master control must be configured in a double door application. When changing from or to group seven, both MASTER and SLAVE must be configured.

### 9.1. LEARN with Advanced Setting of “Back-and-Latch-Check”

See the prerequisites for performing a “learn” under the heading “Auto-learn-automatically sets back and latch check (recommended)” in section 9.2.

1. Push the button once or twice as for auto-setting.
2. Stop the door at the fully open position.
3. Stop the door at required latch-check.
4. The door reverts to the open position.
5. Stop the door at the required back check.
6. Remove the stop.
7. The door reverts to closed position.

### 9.2. Revert to Default Values for “Back-and-Latch-Check”

1. Disconnect the electrical power contact.
2. Press the LEARN BUTTON and keep it depressed.
3. Connect the electrical power contact.
4. Watch the ERROR LED.





5. Release the LEARN BUTTON after 3 seconds (LED is out).
6. The BACK CHECK, LATCH CHECK, and OPEN POSITION have now reverted to default values.
7. Disconnect the electrical power contact.
8. Next time the electrical power is connected, the operator will use the default values.

### 9.3. Reducing / Increasing the “Spring Pre-Tension” (SPTE)

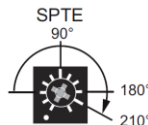
The spring pre-tension is factory set to 360° and is normally not necessary to adjust. If adjustment has to be carried out, the electrical power must be switched on during spring pretension and learn, see below.

Make sure the potentiometers "Extended closing torque" (CLTQ) and "Power assist" (POAS) are set to 0°.

1. Loosen the door stop arm. Remove if fitted on the topside, slide down if fitted on the bottom.
2. Turn the potentiometer for spring pre-tension (SPTE) clockwise until the door opens to 45°.
3. Loosen the drive arm fixing screw.
4. Moving the door towards open position reduces the tension, or:  
Moving the door towards closed position increases the tension.
5. Tighten the drive arm
6. Turn the potentiometer SPTE to 0°.
7. Open the door to required open position, plus approx. 15 mm (5/8"), by turning the potentiometer SPTE clockwise.
8. Mount the door stop arm as close as possible to the open door stop block, fine-adjust with the screw if necessary.
9. Turn the potentiometer SPTE to 0°.
10. Push the LEARN BUTTON.
11. Let the door do the learn cycle without touching it.

#### Note!

Max. allowable spring pre-tension is 720°. Over-tension may damage the spring or overheat the motor.



## 10. Classification

### 10.1. Entering the Program Mode (Classification)

On the master control unit.

- Disconnect the mains plug.
- Press the LEARN BUTTON while connecting the mains plug.
- Watch the ERROR LED.



- Release the LEARN BUTTON after the second 5s have passed.

### 10.2. Identify the Current Classification

The ERROR LED flashes an amount of short flashes that correspond to the classification number.

After a short pause the LED will repeat the classification number and so on.

### 10.3. Changing the Classification

If you push the LEARN BUTTON once, the classification number will increase. When you have reached the highest classification number it will start at number one again.

- Push the button until you get the requested classification.
- Disconnect the mains plug.

Next time you connect the mains the operator will use the new classification.

### 10.4. Classification Table

Classification	1	2
	Full Power	Low Energy (Default)
Standard	ANSI 156.10	ANSI 156.19 (and DIN 18650-2)
Opening Speed	2-12s	Automatic Limitation, 3-12s
Closing Speed	4-14s	Automatic Limitation, 4-12s

The fastest setting of Opening Speed and Closing Speed are automatically limited to the value in the table, and can only be reduced.

If the Low Energy classification is used the operator will automatically follow the speed limitation in ANSI 156.19 (and DIN 18650-2).

The learn procedure must be carried out after a change of the classification setting.

Speed settings according to Table I in ANSI /BHMAA156.19  
(LOWENERGYAPPLICATION)

## 11. Troubleshooting Checks for Control / Operation

Fault	Possible Reasons Why	Remedies/Explanations
The door does not open & The motor does not start	Control switch is set to OFF	Change the setting of the control switch
	Electrical power power is missing	Check the electrical power power switch
	Activation unit does not function	Strap impulse inputs
	Presence detection is activated	Check that there are no objects in the detection zone
	KILL activated	Deactivate KILL
The door does not open & The motor starts	Potentiometer SPTE not turned to 0°	Turn SPTE to 0°
	Mechanical lock is locked	Unlock the lock
	Something jammed beneath the door	Remove object
	Electric striking plate is binding	Select lock release Adjust striking
The door does not close	Arm system has come loose	Turn potentiometer SPTE until the door-stop hits the stop-block. Put the door in required open position. Tighten the arm system. Turn SPTE to 0°
	Control switch is set to HOLD	Change the setting of the ON/OFF/HOLD open switch
	Presence impulse is activated	Remove objects in the detection zone
The operator has unknown spring pretension	Something jammed beneath the door	Remove object
	Too many adjustments carried out	a Turn up the potentiometer SPTE until it is
		b Remove the door stop and the arm system
		c Unplug the electrical power and let spring
		d Unplug the motor plug
		e Mount the drive arm from the arm system and
		f Loosen the arm
		g Connect the motor plug
		h * Turn the SPTE pot to 180° and wait until the
		i Connect the electrical power. The operator
j Mount the door stop against the closing stop		
k Turn down SPTE to 0° - operator is now factory		
l Turn to section 12 to adjust open stop position		

\* Adjusting the SPTE before power up increase the SPTE range 4 times i.e. 180° on the SPTE will tension the spring 2 turns = 720°. Adjusting to zero during power on will reset range of SPTE.

## 11.1. Error Indication

- During normal operation the ERROR LED on the control unit is illuminated.
- An extinguished LED indicates that there is no electrical power.
- A flashing light on the LED indicates that the operator is out of function (see table below)
- An audible warning signal can be achieved by using the accessory board AIU. It is connected to the 24 VDC and plugged into the EXU-SA relay output terminal.

LED flash frequency	Reason	Remedy
One 0.3s flash, 10s pause etc.	Kill impulse is active	Make a kill reset, reset kill switch or reset fire alarm
One 0.3s flash, 2s pause etc.	+ 24 V DC external error	Check for short circuit
Two 0.3s flash, 2s pause etc.	Sensor monitoring error	Check for broken monitored sensor
Three 0.3s flash, 2s pause etc.	Control unit defective	Replace control unit
Four 0.3s flash, 2s pause etc.	Encoder error	Check the encoder cable.
		Open and close the door manually and thereafter check the automatic function. If the operator is still out of function replace the drive unit.
Five 0.3s flash, 2s pause etc.	Locking device defective	Check for e.g. short circuit in the locking device
	EXU-SI board defective	Replace EXU-SI board
Six 0.3s flash, 2s pause etc.	Sync cable not connected or defective (double door only)	Connect the sync cable
		Replace the sync cable
Seven 0.3s flash, 2s pause etc.	SLAVE control unit defective (double door only)	Check the flash frequency on the SLAVE LED and take necessary measures in accordance with this table.
Eight 0.3s flash, 2s pause etc.	Motor overheated	Wait for the motor to cool down
Nine 0.3s flash, 2s pause etc.	Blocked door and constant impulse	Toggle impulse
Ten flashes	Settings have been made that requires a new learn or the learn has failed	Check set up
		Make a new learn

### Note:

If you receive an 11 flash error, the breakout switch is active. To correct, reset breakout switch.

## 12. Maintenance Plan

Regular inspections shall be made according to national regulations by a trained and qualified person. The number of service occasions shall be in accordance with national requirements. This is especially important when the installation concerns a fire-approved door or a door with an emergency opening function. Refer to Besam Pro-Active Care option services to learn more about service possibilities!

As with all other technical products, an automatic door needs maintenance and service. It is essential to know the importance of maintenance to have a reliable and safe product.

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

The table below shows the recommended interval, in months, when to replace parts during preventive maintenance.

Part	Part Number	Cycles/hour in operation			Abusive Environment
		<10	<100	>100	
PUSH arm service kit	330000271 SI/BK	24	12	6	6
PULL arm service kit	330000272 SI/BK	24	12	6	6
Stop arm kit	330000276	24	12	6	6
Micro switch kit	330000275	24	12	6	6
Adaptor kit	330000270	24	12	6	6
Transmission unit	331007291	60	60	60	60
Connection box kit	331007504 BK	60	60	60	60
Control unit CU-200with EXU-boards	331008346	60	60	60	60

## 13. ANSI / BKMA A156.10

### 13.1. REQUIREMENTS FOR POWER OPERATED DOORS

From American National Standard for power-operated pedestrian doors. Please refer to full standard if necessary, obtainable through BHMA at (212) 661-4261. All figures referred to below can be found in the full standard. Excerpts reprinted with BHMA permission.

Important: Always obtain and adjust to latest issue of the Standard.

### 13.2 Folding Doors (Section 5)

5.1. Automatic folding doors are comprised of two or more separate panels, of which one panel swings, and the other panel slides in a guide. Because of the number of leaves involved, see Figure A-14 for definitions of FX and FS panels.

5.2. Automatic folding doors include a variety of configurations, including:

- a single folding door folding in or out, left-hand or right-hand
- a pair of doors simultaneously folding in or out, left-hand and right-hand

5.3. No matter what the configuration or system, automatic folding doors shall include guide rails, sensors or control mats, and signage for the safety and convenience of the user according to the following:

### 13.3. Guide Rails for Folding Doors (Section 6)

6.2.1 A guide rail shall be installed for each FS panel on the folding side of each door and shall project beyond the fold open position not less than: 305mm (12"), for two-way traffic or one-way traffic approaching the fold side or 125mm (5"), for one-way traffic approaching the non-fold side.

**Exception:** A wall separator is permitted to be used in a place of a rail, provide that it meets the criteria in 6.2.2 through 6.2.5.

6.2.2 A guide rail shall be 72mm (30") high minimum measured from the finished floor surface.

6.2.3 A guide rail shall have a panel or divider to inhibit access to the protected area.

6.2.4 There shall be 152mm (6") maximum clearance between the rail and the door in the fully open position or between the rail and the leading edge of the door at the point in its arc of travel when it is closest to the rail. There shall be a minimum clearance of 51mm (2"). between the rail at the hinge side and the door in the fully open position.

6.2.5 Free standing guide rails shall have a maximum clearance between the rail and jamb (or other adjacent surface) of 152mm (6”).

## 13.4 Sensors (Section 8)

### 8.1 General Requirements for Sensors

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 203mm (8”) and 72mm (30”) perpendicular from the face of the closed door(s). The length from the face of the door shall be 109mm (43”) minimum measured at the center of the clear opening. Detection shall be effective to within 127mm (5”) from the face of the door measured at the center of the clear opening.

8.1.2 Motion sensors shall detect a 711mm (28”) minimum high person, moving at a rate of 152mm (6”) per second minimum toward the center of the door within the detection areas described.

8.1.3 Presence sensors shall detect a stationary 711mm (28”) minimum high person within the detection areas described for a minimum of 30 seconds.

## 13.5. Knowing Act Door Activation (Section 9)

9.1 Swinging, Sliding, and Folding Doors Use of an activating device which requires a knowing act to activate the automatic door shall meet the following requirements:

9.1.1 Be installed in a location within view of the automatic door; and

9.1.2 Have an installation height of a minimum of 914mm (36”) and a maximum of 1219mm (48”); and

9.1.3 Be located a maximum distance of 3.7m (12’) from the center of the door, and remain accessible from the swing or fold side when the door is opened and shall not be located in a position where the user would be in the path of the moving door; and

9.1.4 The door shall remain fully open for a minimum of five seconds after release of the knowing act device; and

9.1.5 The door shall be equipped with a safety zones, time delays, and guide rails as required in this standard for the type door and detection system selected.

9.1.5.1 Swinging (except double egress), sliding, and folding doors shall be equipped with a secondary activating zone as follows:



- 
- (1) Sliding doors required for one or two way traffic requires a secondary activating zone on each side the door.
  - (2) Swinging and folding doors for one or two way traffic only require the secondary activating zone on the non-swing or non-fold side of the door.
  - (3) The secondary activating zone (s) shall extend a minimum of 610mm (24") from the face of the door and be effective to within 127mm (5") from the face of the door measured at the center of the door opening. The secondary activating zone shall have a minimum width equal to the clear door opening. The secondary activating device for sliding and folding doors shall be deactivated when the door(s) is (are) within 152mm (6") of the fully closed position. The secondary activating zone for swinging doors must remain active while the door is closing and shall be deactivated within the last 10 degrees of closing.

## 13.6. Entrapment Protection (Section 10)

### 10.3 Folding Doors

10.3.1 **Opening time** of a folding door to back check shall not be less than 1.5 seconds.

10.3.2 The force required to prevent a stopped power operated folding door in the last 10 degrees of the opening, from moving in the direction of opening shall not exceed 180N (40lbf) measured 25mm (1") from the leading edge of the FS leaf.

10.3.3 Folding 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.

10.3.4 A folding door shall be adjusted so that the closing speed to latch check is a maximum of 287mm/s (1ft/s) measured at the leading edge.

10.3.5 **Latch check** shall occur for folding doors at no less than 51mm (2") from the closed position measured per FX leaf.

10.3.6 A folding door shall not close through the last 51mm (2") in less than 1.5 seconds for each FX leaf.

10.3.7 A **stopped** folding door shall not require more than 30 lbf (133 N), measured at the leading edge of the FX panel, to prevent it from closing from fully opened to latch check.

10.3.8 Folding doors provided with a **break away device** shall require no more than 222N (50lbf) applied 25mm (1") from the edge of the lock stile to open. When the door(s) is (are) opened in the break out mode, powered operating components excluding spring power shall not operate the doors.

10.3.9 The opening at hinge side of a center pivoted folding door shall be: a) Less than 6mm ( $\frac{1}{4}$ " ) wide with the door in any position, or b) At least 19mm ( $\frac{3}{4}$ " ) wide with the door in any position. A door that does not comply with the above is acceptable if provided with a **finger guard**.

### 13.7. SIGNAGE (Section 11)

Consistent with section 2.2.1 of ANSI Z535.4, the "signage and warnings" guidelines of A156.10 are recognized, industry-specific standards that predate the adoption of Z535.4 and are not replaced by the standards set forth therein.

11.1 All swinging, sliding and folding **doors** shall be equipped with signage visible from both sides reading, "AUTOMATIC DOOR" with letters 13mm ( $\frac{1}{2}$ " ) high minimum. The sign described in Figures B-1, B-3, B-5 shall be permitted to be used to satisfy this requirement. (See graphics at end of this section.)



### 11.4 Folding Doors (See Appendix Figures B-5 & 6)

11.4.1 For one way traffic folding doors, an arrow sign, shall be visible from the approach side of a folding door mounted on the door at a height 58 in. + 5 in. from the floor to the center line of the sign on the FX panel. The sign shall conform to the sign described in paragraph 11.2.1. On the non-approach side the international "DO NOT ENTER" sign as described in paragraph 11.2.2 shall be visible. If folding doors are being used in pairs, each FX panel is required to have signs.

11.4.2 Folding doors serving both egress and ingress shall be marked with an arrow sign as described in paragraph 11.2.1, visible from the non fold side and the fold side shall be marked with the "AUTOMATIC CAUTION DOOR" sign as described in paragraph 11.2.3.



11.4.3 Folding doors shall be provided with signs as described in paragraph 11.3.1, mounted on the FX panel applied to the side appropriate for egress and a “DO NOT ENTER” sign as described in paragraph 11.2.2 shall be applied to the appropriate sides of the FX panel as determined by traffic flow.



**11.5 Knowing Act Doors** (See Appendix Figures B-1 & 3 & 5)

11.5.1 The door shall have signage which says “Automatic Door” along with other required signage visible from each side of the door. In addition, the door shall have signage that says “Activate Switch to Operate” on the side of the door having the Knowing Act switch. Each sign in 13mm (½”) high minimum letters.

FIGURE B-5 (Ref. 11.)  
SIGNAGE FOR AUTOMATIC FOLDING DOORS

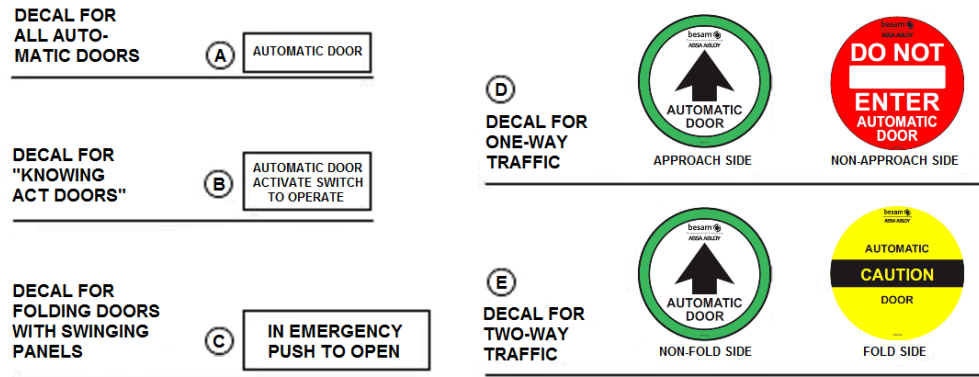
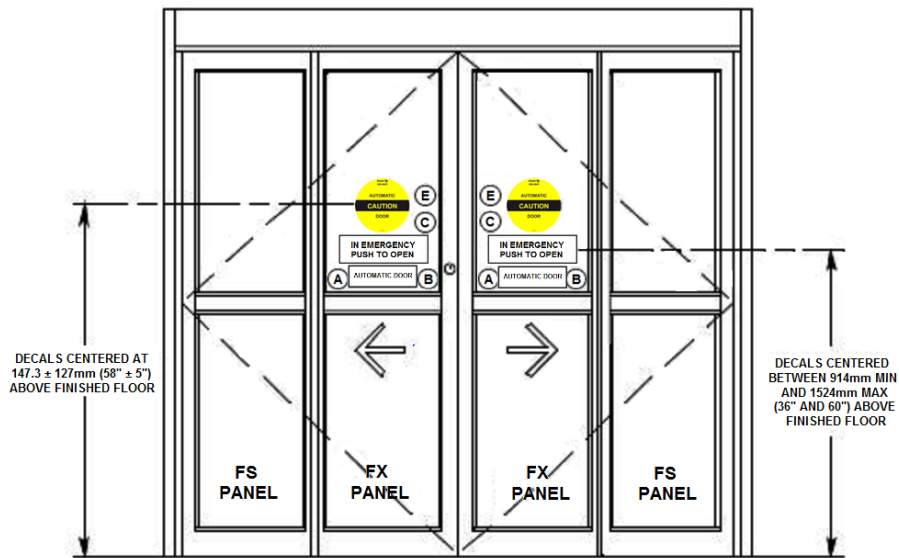


FIGURE B-6 (Ref. 11.)  
INTERIOR VIEW (FOLD SIDE) - TYPICAL FOLDING DOOR WITH APPROPRIATE SIGNAGE FOR TWO WAY TRAFFIC.



RFS045









**Besam Entrance Solutions**  
**1900 Airport Road**  
**Monroe, NC 28110**  
**Tel: (704) 290-5520, Fax: (704) 290-5544**