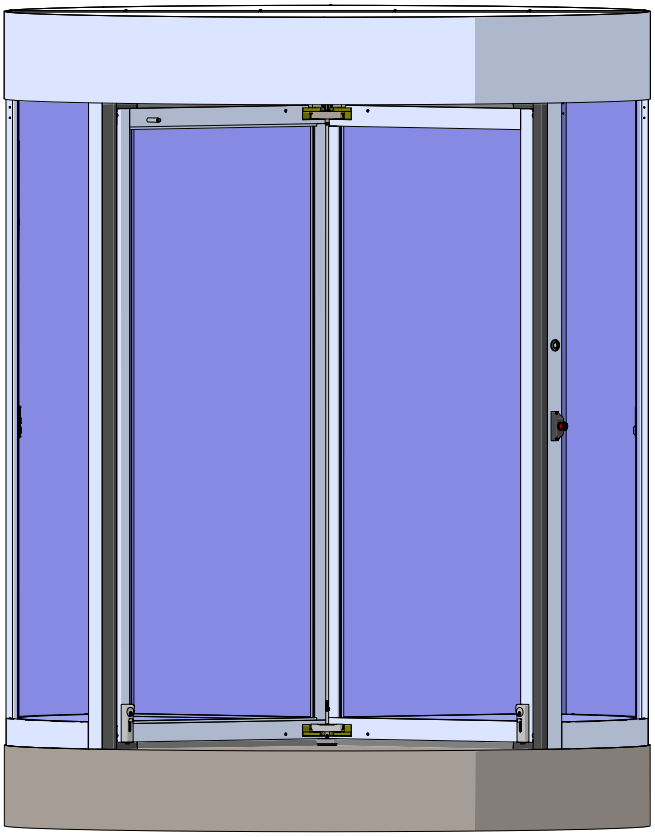
ALVARADO
dormakaba Group



S3 SECURITY REVOLVING DOOR

With Anti-tailgating And Anti-piggybacking

Installation And Setup Manual

RL6000-011 – 04-2022

Table of contents

1 General Information

1.1 Installation Instructions.

This document contains important instructions for installation and operation of Alvarado S3 security revolving doors with anti-tailgating and anti-piggybacking security.

Review these instructions thoroughly prior to installation, and follow them carefully during installation, commissioning, troubleshooting and maintenance.

WARNING

If there are any questions or problems, call your local Alvarado distributor for technical assistance.

1.2 Manual Storage.

This document must be kept in a secure place, and accessible for reference as required. If the door system should be transferred to another facility, insure that this document is transferred as well.

1.3 Dimensions

Unless otherwise specified, all dimensions are given in inches (“).

1.4 Environment

Alvarado S3 security revolving doors are designed to operate on an interior or exterior building application.

1.5 Order Custom Requirements And Optional Equipment.

NOTICE

Revolving door order custom requirements.

- Installation instructions may need to be modified or replaced.
- Installation illustrations may not reflect assembly or part customization.

1.6 Symbols Used In These Instructions.

WARNING

This symbol warns of hazards which could result in personal injury or threat to health.

NOTICE

Draws attention to important information presented in this document.

CAUTION

This symbol warns of a potentially unsafe procedure or situation.

TIPS AND RECOMMENDATIONS

Clarifies instructions or other information presented in this document.

2 Product Description

2.1 2000-S Series

Enclosure	Welded construction	
	Finish	Aluminum, anodized, painted, cladded bronze or stainless steel.
Wings	Bolted construction	
	Finish	Aluminum, anodized, painted, cladded bronze or stainless steel.

2.2 3000-S Series

Enclosure	Fully formed and welded construction	
	Finish	Aluminum, anodized, painted, cladded bronze or stainless steel and wood
Wings	Fully formed and welded construction	
	Finish	Aluminum, anodized, painted, cladded bronze or stainless steel and wood

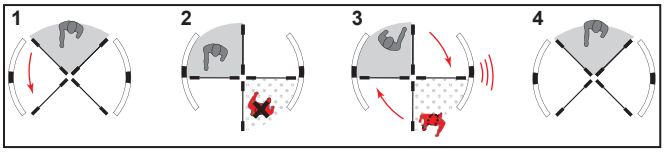
2.3 S3 Security With Anti-tailgating and Anti-piggybacking Overview

2.3.1 Unauthorized access in the opposite direction.

1. **Authorized person** enters compartment leaving secure area.
2. Intruder enters opposite compartment.
3. Sensors detect intruder's presence.
- Door stops.
- Intruder alert sounds.
- Door reverses direction.
- Occupants then exit where they entered from.

4.. **Authorized person** re-enters door compartment, then exits.

Fig. 2.3.1 S3 security – unauthorized access in opposite direction

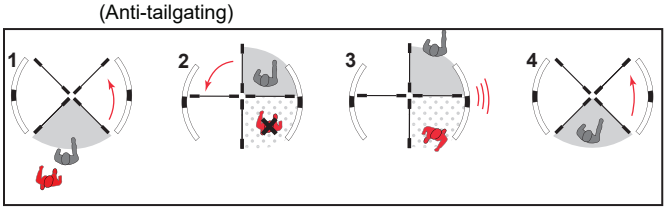


2.3.2 Anti-tailgating.

1. **Authorized person** swipes card and enters door compartment.
2. Intruder enters next available compartment.
3. Sensors detect intruder's presence.
- Door stops.
- Intruder alert sounds.
- Door reverses direction.
- Intruder exits initial door entry point.

4. Authorized person re-enters secured area.

Fig. 2.3.2 S3 security – unauthorized access in next compartment (Anti-tailgating)



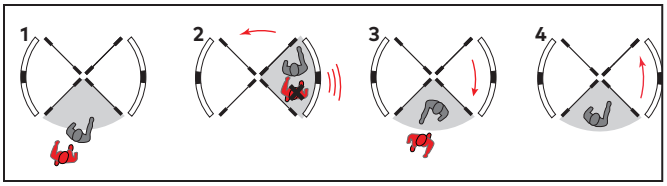
2.3.3 Anti- piggybacking

1. **Authorized person** swipes card and enters door compartment.
- Intruder follows in same compartment.

2. Sensors detect two occupants in same compartment.
3. Door stops.
   Intruder alert sounds.
- Door reverses direction to clear both occupants from the compartment.

4. Authorized person re-enters secured area.

Fig. 2.3.3 S3 security – Anti-piggybacking



2.4 S3 Revolving Door Assembly Overview

Table 2.4.1 S2 revolving door assemblies

1	Center shaft with bookfold lock assembly
3	Wing assembly
4	Enclosure center post
5	Enclosure quarter post/end wall assembly
6	Enclosure base and cover assembly
7	Canopy assembly
8	Enclosure glass
9	Bottom pivot assembly
10	Flush bolt assembly
11	Emergency stop pushbutton assembly
12	Indicator light
13	Push to Reverse switchplate

Fig. 2.4.1 Four wing revolving door assembly, interior view

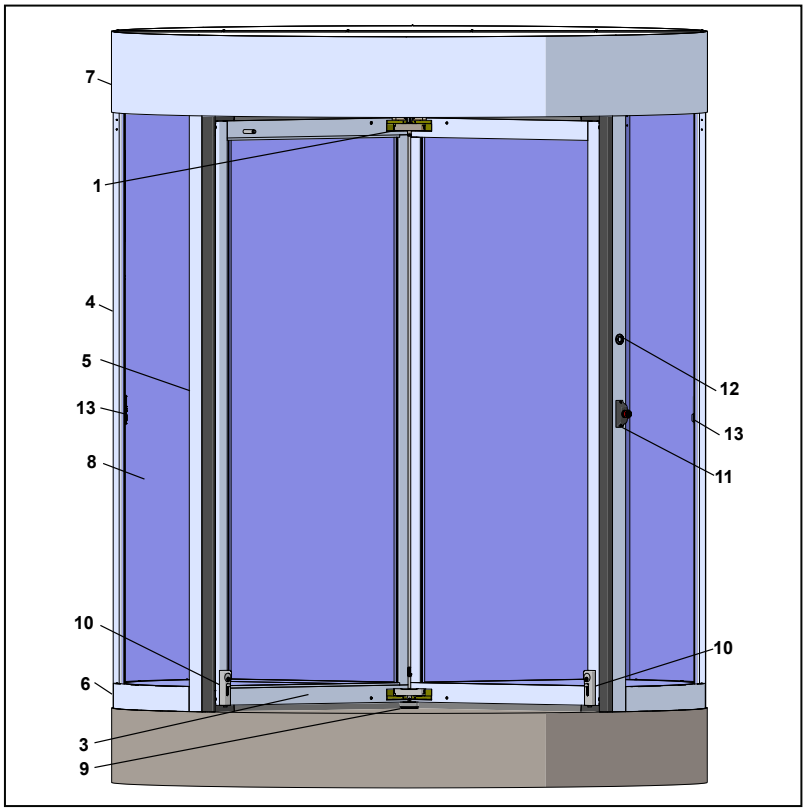


Fig. 2.4.2 Enclosure quarter post/end wall assembly

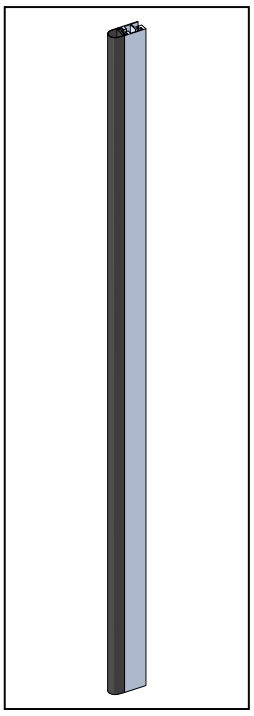


Fig. 2.4.3 Center post

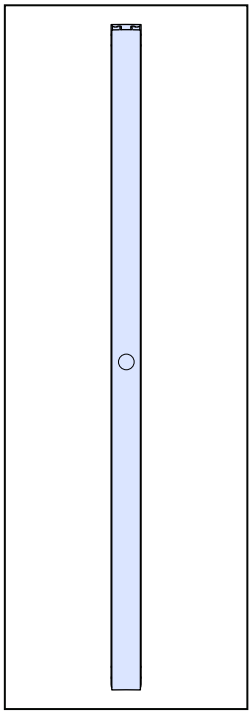


Fig. 2.4.4 Center shaft with bookfold lock assembly

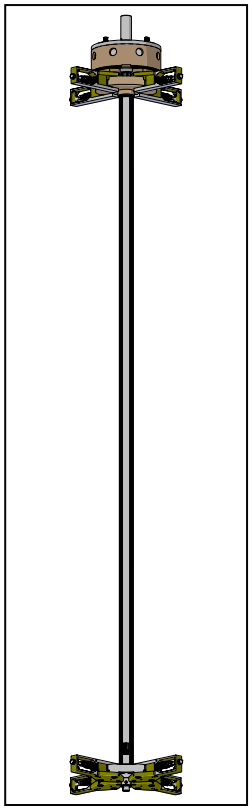


Fig. 2.4.5 Base and cover

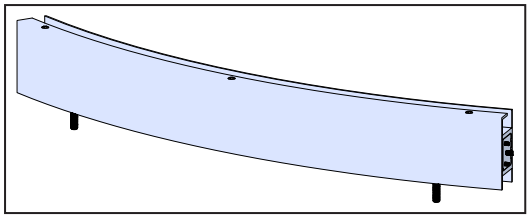


Fig. 2.4.6 Bottom pivot example

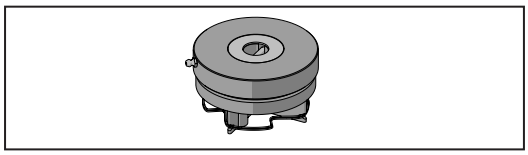


Table 2.4.2 S3 security canopy

1	DS3382	Modular drive assembly (MDS)
2	D8k3500-010	Ingress security sensor
3	D8k3500-010	Egress entry point sensor
4	D8k3500-010	Egress 1 presence sensor
5	DC7009-001	Annunciator
6	DC7030-001	LED light (option)

Fig. 2.4.7 S3 canopy assembly soffit view

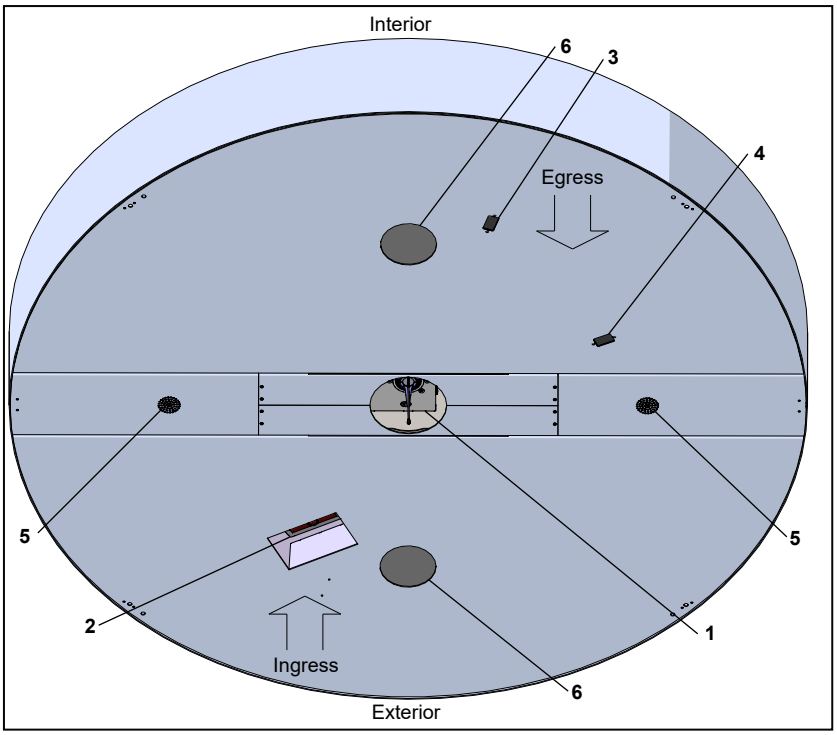


Fig. 2.4.8 Wing assembly example

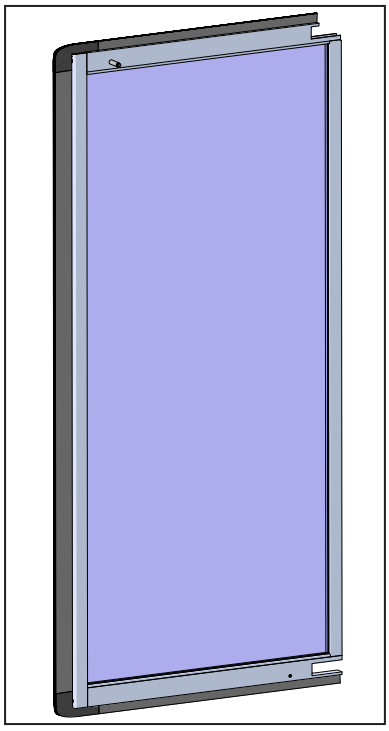
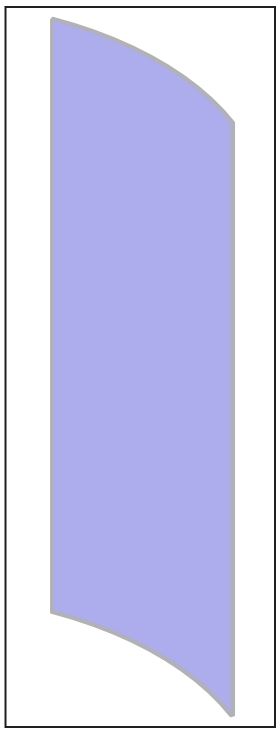


Fig. 2.4.9 Enclosure glass



3 Safety Information

3.1 General Safety Information

3.1.1 Safety instructions

Observe safety warnings as they are presented in this manual.

3.1.2 Safety warnings.

⚠ WARNING

Damage to equipment or incorrect equipment operation may result from an incorrect installation.

⚠ WARNING

Hazard to mechanical processes by use of control settings, elements, or procedures not documented in this manual!

⚠ WARNING

Electric shock hazard!
By use of control elements, settings, or procedures not documented in this manual!

⚠ WARNING

Work on electrical equipment and 115 Vac wiring installation must be performed only by qualified personnel!

⚠ WARNING

Metallic doors must be grounded per national and local codes!

⚠ WARNING

Hand pinch point and crushing hazards!

⚠ WARNING

Crushing hazards!

3.1.3 Residual hazards

⚠ WARNING

After installation, hazards such as minor crushing, impact with limited force, and risk to unsupervised children may exist depending on structural design of door area, type of door, and any safeguards that have been implemented.

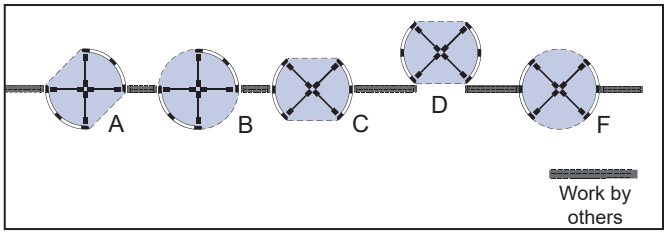
4 S3 Series Models

4.1 S3 Series Model Comparison

Table 4.1.1 S3 series model comparison

	AL2000/AL3000	SS2000/SS3000	BZ2000/BZ3000
Material	Aluminum	Aluminum / Stainless steel	Aluminum / Bronze
Wing configuration	4 wings		
Enclosure diameter	4 wing Minimum ID: 6'6" 4 wing Maximum OD: 8'6" [2590 mm]	ANSI/BHMA A156.27-2019: To limit door mass, the inside diameter added to the height shall not exceed 17ft [5182 mm].	
Door opening height under canopy	7' up to 8' 6" [2590 mm]		
Maximum total wing assembly and center shaft assembly weight	750 pounds aluminum 850 pounds SS	Total weight may vary depending on application.	
Finish	• Clear anodized • Custom anodized • Dark bronze anodized • Painted	• #4 satin • #6 fine satin • Mirror • Non-directional "Jitterbug" • Custom	• Satin and lacquered • Satin no lacquer • Mirror and lacquered • Statuary and lacquered • Custom
Attachment Types	A, B, C, D, F as indicated on the shop drawings. Reference Fig. 4.1.1.		
Enclosure material	• Glass • Aluminum panels	• Glass • Solid metal	• Glass • Solid metal
Enclosure glass	7/16" or 9/16" clear or tinted		
Canopy material	• Aluminum	• Stainless steel	• Bronze
Fascia height	• 12" [305] minimum • 24" [610] maximum		
120 Vac requirements	• Modular Drive System: Reference Para. 27.4, 29.2 • S3 security sensor control hardware: Reference Para. 14.7, 29.2		
120 Vac requirements, canopy lighting (option)	• Canopy lighting: Reference Para. 14.9		

Fig. 4.1.1 S3 security door attachment types



5 User Interfaces

5.1 User Interfaces

5.1.1 Door user interfaces, interior view.

Fig. 5.1.1 S3 door assembly user interfaces, interior view

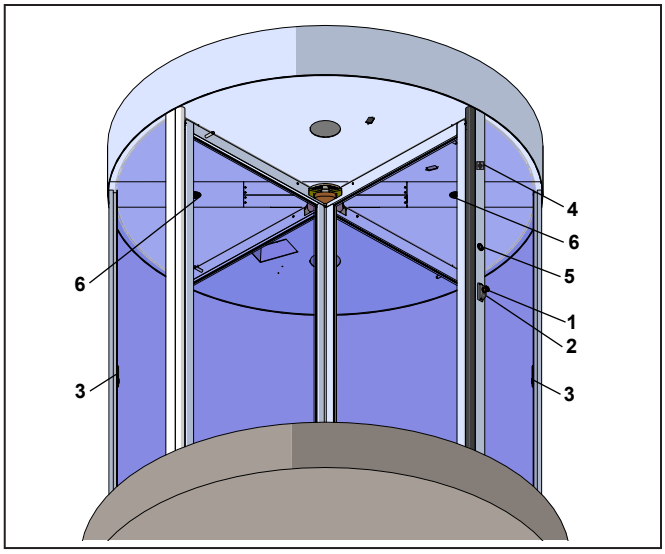


TABLE 5.4.1 Door user interfaces

ID#	Part no.	Function
1	DX3413-010	Switch, Emergency Stop
2	DX3413-020	Housing, Emergency Stop switch
3	DC7004-001	Switch, Push to Reverse
4	DX3399-030	Mode key switch panel assembly
5	DC7007-001	Activation light, interior
6	DC7009-001	Annunciator
7		Card reader, by others

Fig. 5.1.2 Push to Reverse jamb pushplate

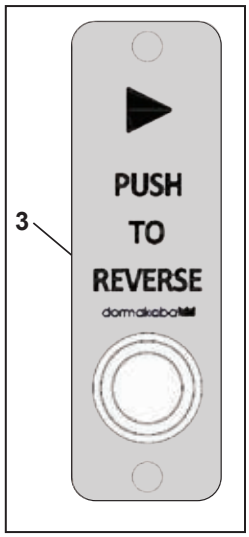


Fig. 5.1.3 Mode key switch

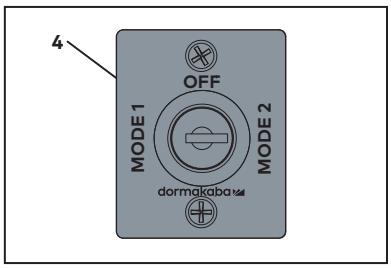


Fig. 5.1.4 Activation light

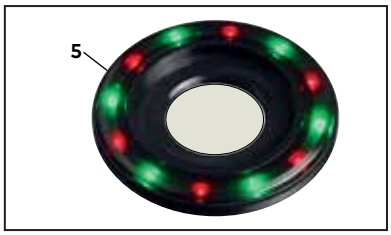


Fig. 5.1.5 Annunciator, canopy mounted

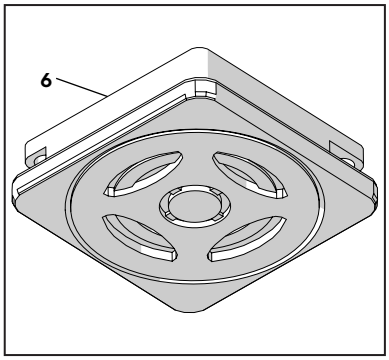
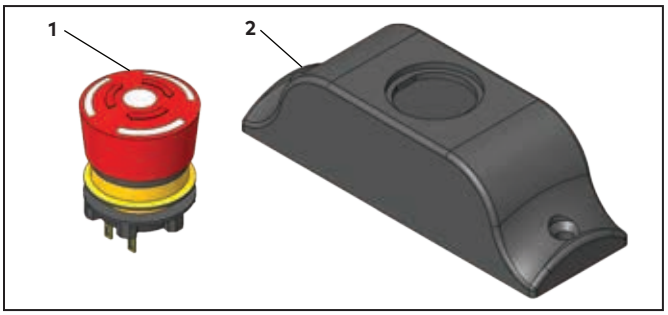


Fig. 5.1.6 Card reader example– by others

Fig. 5.1.7 Emergency stop pushbutton and housing



TIPS AND RECOMMENDATIONS

Mode key switch (4).
Mounted and wired by installer at door installation. Normally placed on right hand post or on the canopy fascia above the indicator on the secure side of the door passage.
Modes:

- Mode 1: Two way security.
- Mode 2: Free egress, security ingress.
- Off: Free wheeling.

TIPS AND RECOMMENDATIONS

Card reader (7).
Card reader and associated building interface panel installed by general contractor.

6 S3 Security Door Overview

6.1 S3 Security Door Control Overview

6.1.1 Security door system.

The security door revolving door system is designed to provide limited access for pedestrian traffic between two separate areas.

NOTICE

Intended use.
Security doors are intended for use only by persons educated in their proper use.

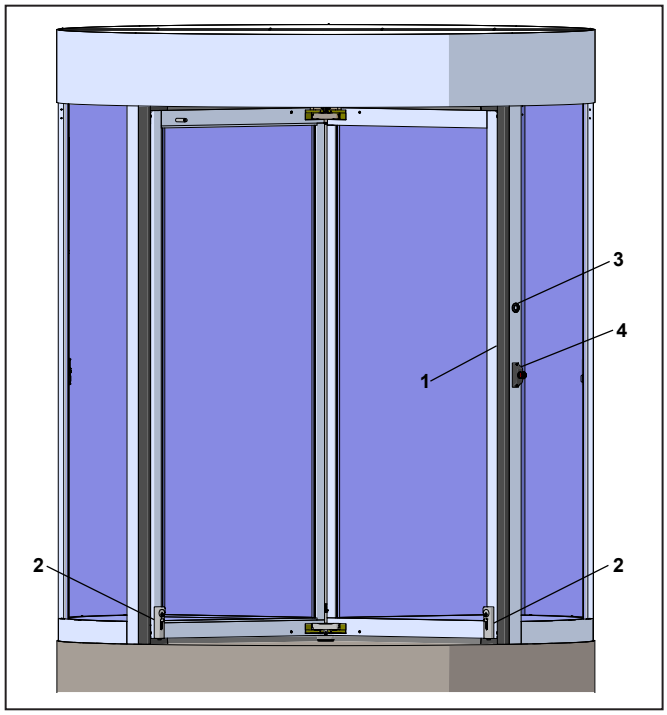
6.1.2 Controls

1. Supply line power.
- 120 Vac, single phase, circuit breaker protection.
2. Powertrain.
- Triple stage helical bevel gearbox coupled with AC motor.
3. Positioning.
- Precision optical encoder.
4. Center shaft locking.
- Fail-safe electric 24 Vdc brake.
5. Passage control.
- Two independent inputs for activation devices, e.g. card readers (supplied by others) and an entry point and presence detection system.

6.1.3 Bookfold lock operation.

1. The wings will be held in their respective positions under normal conditions by an electro-magnetic bookfold lock to maintain building security.

Fig. 6.1.1 S3 security door interior view



1	Enclosure quarter post/end wall, with sensor	**2**	Flush bolt
		3	Indicator light
		4	Emergency stop

2. Bookfold lock released when building fire alarm system signal, emergency stop signal or power failure occurs, allowing the wings to be manually pivoted in the direction of egress.

6.1.4 Manual door operation.

NOTICE

Manual door (no security) operation.
The security revolving door is not intended to be operated manually.
If manual door operation is required, Mode switch (Para. 5.1) must be set to OFF, no security.

6.1.5 Manual wing locking.

1. The two door wings that face the interior when at the Home position (Fig. 6.1.1) are each equipped with a flush bolt that, when engaged, will lock the door and will not permit the automatic function of the controller until released.

6.1.6 Safety.

1. Quarter post/end wall sensors (Fig. 6.1.1) will detect an obstruction between the rotating wings and the leading edge of the enclosure. Sensor shall be active within 2 inches [51 mm] of the floor and at least 60 inches [1520 mm] from the floor. Sensors will pause door operation when the door wing is within approximately 30 degrees of the quarter post.
2. Internal drive current sensors will limit amount of torque used; the motor will stop if the door meets an obstacle.
3. Presence detection system will provide protection against entrapment.

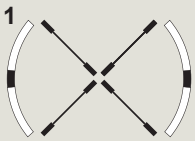
6.1.7 Acceptable door speed.

1. Regulated by ANSI/BHMA A156.27, Section 8.2. Reference Chapter 29, Para. 29.14 for maximum door speeds.

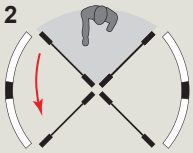
7 S3 Security Door Operation

7.1 S3 Security Door Operation, Standard Passage

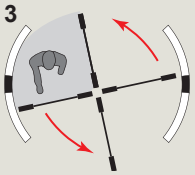
7.1.1 S3 security – standard passage, entry from exterior side of door.



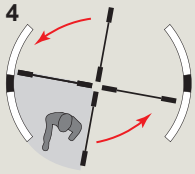
1. Door shall be normally locked in the "X" position.
- Door indicator lights illuminated red.



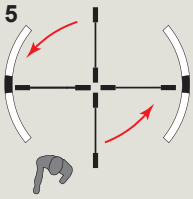
2. Upon receipt of a valid signal from the card reader:
- Door indicator light illuminates green.
- Annunciator voice message will prompt the user to enter the door.



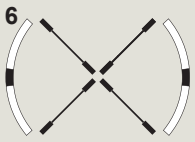
3. When the security sensor detects a user while the door indicator is green, the door will start rotating forward (CCW), or continue rotating if it is already in motion from previous cycle.
- The security sensor detects the person. The controller identifies the validity of the access and allows door to continue the cycle.



4. Person exits the door.



5. Door rotation speed slows down as it nears completion of its cycle and approaches the "X" position.

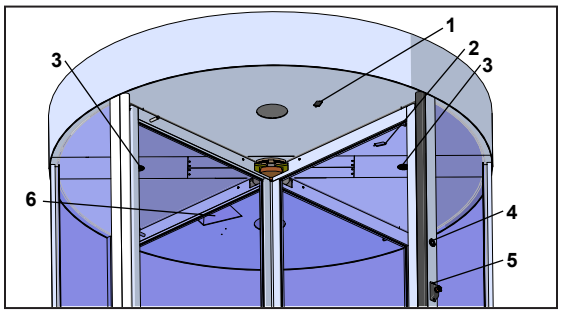


6. At the end of the cycle, the door stops and securely locks at the next ("X") position.
- Door indicator light illuminates red.

Table 7.1.1 S3 security door

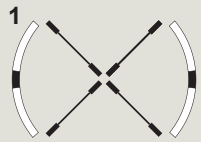
1	Egress entry point sensor
2	Egress 1 presence sensor
3	Annunciator
4	Indicator light
5	Emergency stop
6	Exterior security sensor

Fig. 7.1.1 S3 security door interior view



7.2 S3 Security Door Operation, Unauthorized Entry in Opposite Direction

7.2.1 S3 security, entry from exterior side of door – unauthorized access in the opposite direction.



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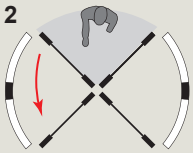

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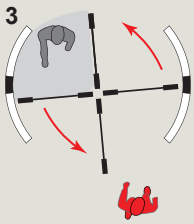

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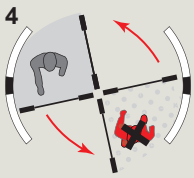
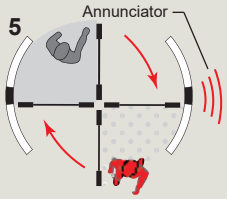
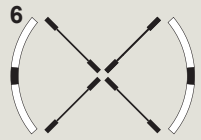


4. Attempted passage through an unauthorized area from the other side of the door without presenting a valid card signal will result in the door being stopped by the drive.



5. The annunciator will inform the user of an unauthorized person and that the door will reverse.
- The door then reverses to the closest ("+") position and stops rotating. Both pedestrians step out of the door.

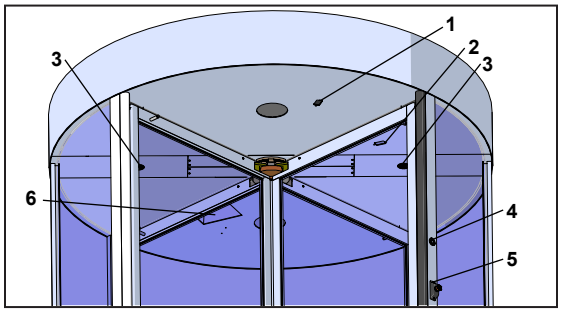


6. When the presence of the unauthorized person at the entrance is no longer detected (Step 5), the door will resume rotating in the forward direction and will securely lock at the next "X" position.
- Door indicator lights illuminated red.

Table 7.2.1 S3 security door

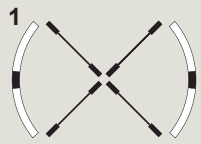
1	Egress entry point sensor
2	Egress 1 presence sensor
3	Annunciator
4	Indicator light
5	Emergency stop
6	Exterior security sensor

Fig. 7.2.1 S3 security door interior view

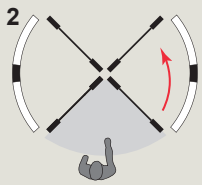


7.3 S3 Security Door Operation, Unauthorized Entry In Next Compartment

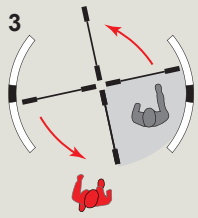
7.3.1 S3 security, ingress from exterior side of door – unauthorized access in the next compartment (anti-tailgating).



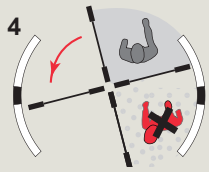
1. Door shall be normally locked in the "X" position.
- Door indicator lights illuminated red.



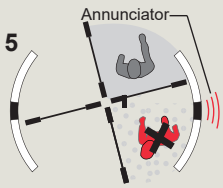
2. Upon receipt of a valid signal from the card reader:
- Door indicator light illuminates green.
- Annunciator voice message will prompt the user to enter the door.



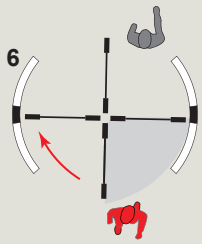
3. When the security sensor detects a user while the door indicator is green, the door will start rotating forward (CCW), or continue rotating if it is already in motion from previous cycle.
- The security sensor detects the person. The controller identifies the validity of the access and allows door to continue the cycle.



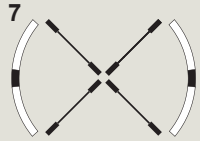
4. Intruder enters next available compartment.



5. Security sensor detects intruder's presence.
- The door stops.
- The annunciator will inform the user of an unauthorized person and that the door will reverse.



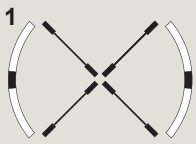
6. The door then reverses to the closest ("+") position and stops, allowing the user to complete the authorized entry and the unauthorized person to clear the secured area.



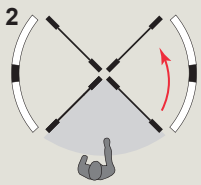
7. When the presence of the unauthorized person at the entrance is no longer detected (Step 6), the door will resume rotating in the forward direction and will securely lock at the next "X" position.
- Door indicator lights illuminated red.

7.4 S3 Security Door Operation, Anti-piggybacking

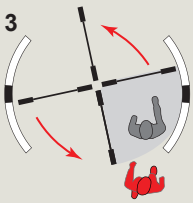
7.4.1 S3 security – Anti-piggybacking



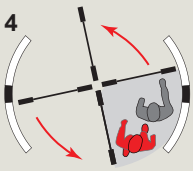
1. Door shall be normally locked in the "X" position.
• Door indicator lights illuminated red.



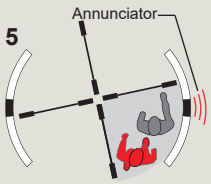
2. Upon receipt of a valid signal from the card reader:
• Door indicator light illuminates green.
• Annunciator voice message will prompt the user to enter the door.



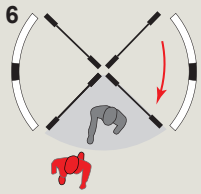
3. When the security sensor detects a user while the door indicator is green, the door will start rotating forward (CCW), or continue rotating if it is already in motion from previous cycle.



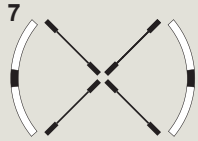
4. Intruder follows in same compartment.



5. Security sensor detects intruder's presence.
• The door stops.
• The annunciator will inform the user of an unauthorized person and that the door will reverse.



6. The door then reverses to the closest ("+") position and stops, allowing both occupants to clear the compartment.

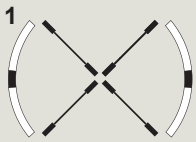


7. When the presence of the unauthorized person at the entrance is no longer detected (Step 6), the door will resume rotating in the forward direction and will securely lock at the next "X" position.
• Door indicator lights illuminated red.

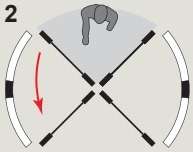
7.5 Security Door Operation, Push to Reverse Buttons

7.5.1 Push to Reverse button operation.

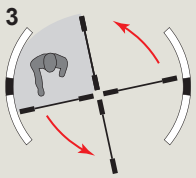
A Push to Reverse button is located on the interior side of each center post.



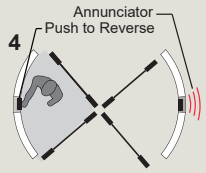
1. Door shall be normally locked in the "X" position.
- Door indicator lights illuminated red.



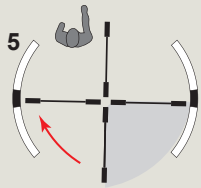
2. Upon receipt of a valid signal from the card reader:
- Door indicator light illuminates green.
- Annunciator voice message will prompt the user to enter the door.



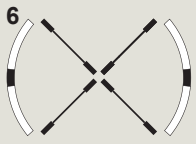
3. When the security sensor detects a user while the door indicator is green, the door will start rotating forward (CCW), or continue rotating if it is already in motion from previous cycle.
- The security sensor detects the person. The controller identifies the validity of the access and allows door to continue the cycle.



4. User presses Push to Reverse button:
- Door stops.
- The annunciator will inform the user that the door will reverse.



5. The door then reverses to the closest ("+") position and stops rotating. User steps out of the door.



6. When the user has exited the revolving door (Step 5), the door will resume rotating in the reverse direction and will securely lock at the next "X" position.
- The controller will not accept new requests to pass while the door is rotating in the reverse direction.
- Door indicators illuminated red.

1 Center post
2 Push to Reverse button

Fig. 7.5.1 Push to Reverse

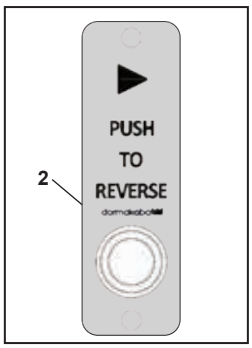
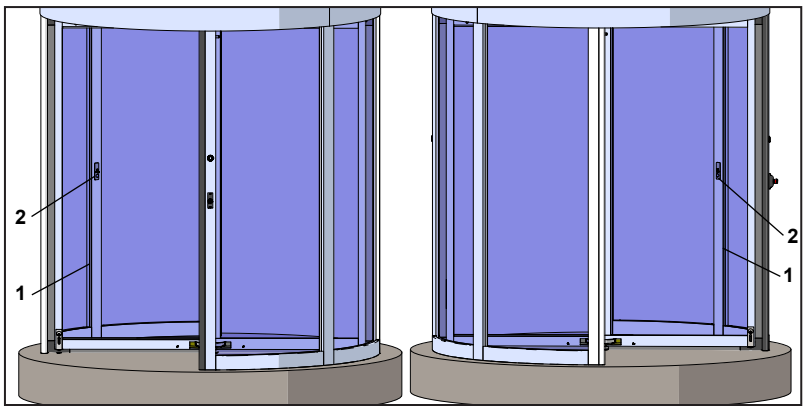


Fig. 7.5.2 S3 security door Push to Reverse buttons, interior view



8 Revolving Door Assemblies and Hardware

8.1 S3 Canopy Assembly

Fig. 8.1.1 S3 security canopy top view, covers removed

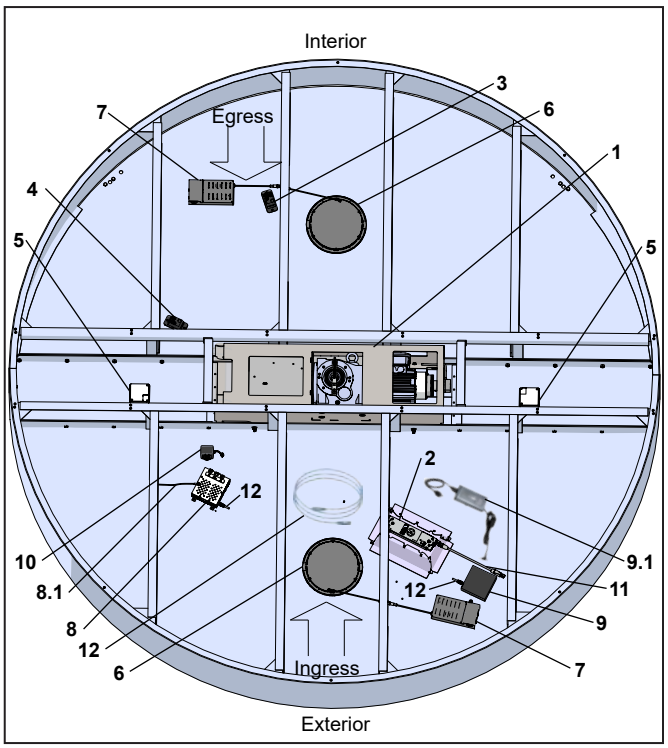


Fig. 8.1.2 S3 security canopy soffit view

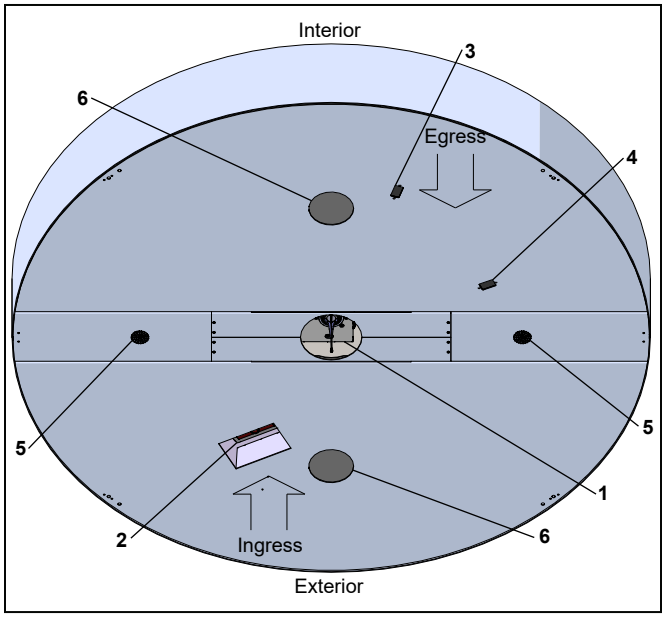


Table 8.1.1 S3 security canopy hardware

1	DS3382	Modular drive assembly (MDS)
2	DX6102-001	Ingress security sensor
3	D8k3500-010	Egress entry point sensor
4	D8k3500-010	Egress 1 presence sensor
5	DC7009-001	Annunciator
6	DC7030-001	LED light (option)
7	DC7032-001	LED driver/junction box (option)
8	DX6101-001	Ingress security sensor control box
8.1	DX0839-010	Grounding wire, 16" long
9	DX6103-001	Network switch
9.1		Network switch 53.7V power supply
10	DX6104-001	5 Vdc power supply, security sensor control box
11	DX6108-001	Ethernet power cable
12		Ethernet cable

TIPS AND RECOMMENDATIONS

Ingress security sensor hardware (items 8 through 12) may be installed in slightly different locations than those shown in Fig. 8.1.1. Reference Para. 14.6, S3 sensor hardware installation.

8.2 Center Shaft And Bookfold Lock Assembly

8.2.1 Bookfold Lock Overview.

1. Bookfold lock is normally engaged (Fig. 8.3.3) significantly increasing the amount of force required to fold the door wings.

2. Bookfold lock is released when:

- Fire alarm is present – open contact to MDS interface board.
- Emergency stop pushbutton activated.
- Power is off.

Fig. 8.2.1 Center shaft assembly with Bookfold lock

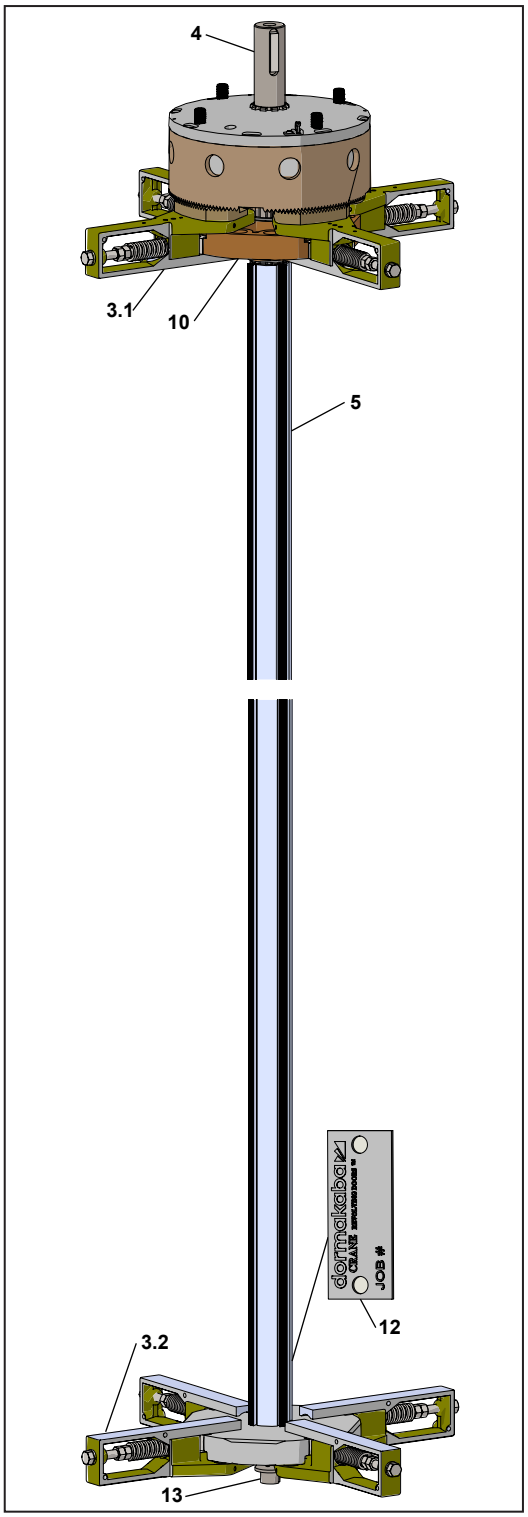


Fig. 8.2.2 Bookfold lock assembly

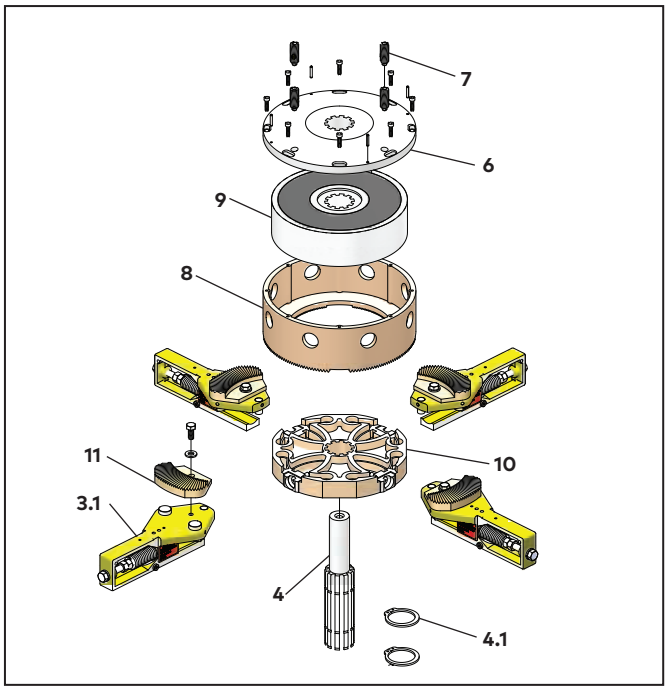


Table 8.2.1 Center shaft assembly with Bookfold lock

2		Bookfold lock assembly
3.1		Top hanger assembly with bookfold lock
3.2	DS6045	Bottom hanger assembly
4	P52 9095	Splined shaft
4.1		Retaining ring
5		Center shaft and shaft cover
6		Bookfold lock cover plate
7	P51 3370	Bookfold spring plunger
8	P51 3310	Bookfold body
9	P51 3380	Bookfold lock coil
10	DS6043	Center shaft disc assembly, 4 wing
11	P51 3350	Serrated plate
12	DD6001	Job number plate
13	H63 2075	Bottom plug

8.3 Bookfold Lock Operation

8.3.1 Building alarm or security interface.

1. Building alarm or security system provides signal (N.C. dry contact) to Interface board.

8.3.2 Bookfold lock operation.

1. Bookfold lock is normally engaged (Fig. 8.3.3) significantly increasing the amount of force required to fold the door wings. Power from the control unit energizes bookfold coil.
- Steel cover plate/Bookfold lock body moves toward electromagnet.
- Bookfold lock body serrations engage hanger serrated plates.

2. When bookfold lock released, steel cover plate/bookfold body is moved away from hanger serrated plates by springs in each of the four spring plungers.

Fig. 8.3.1 Bookfold lock assembly

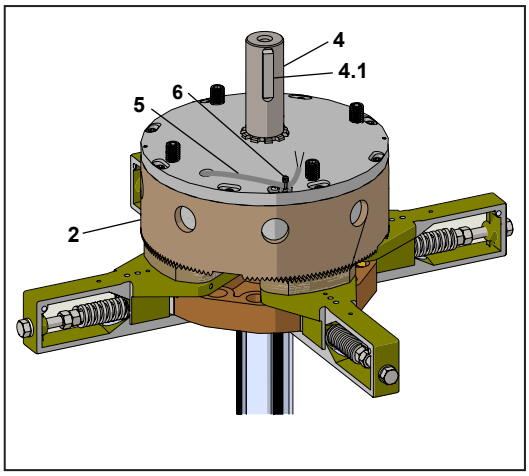


Fig. 8.3.2 Bookfold lock electromagnetic coil

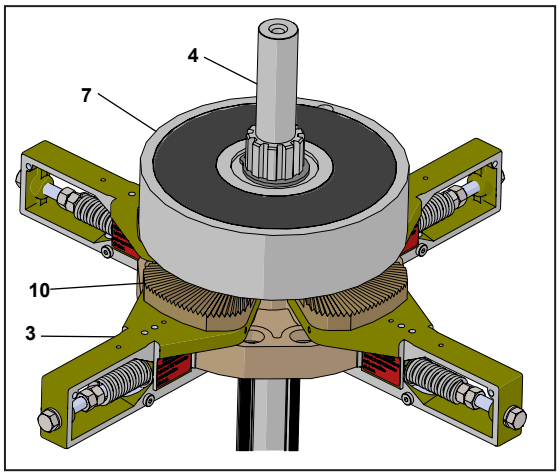
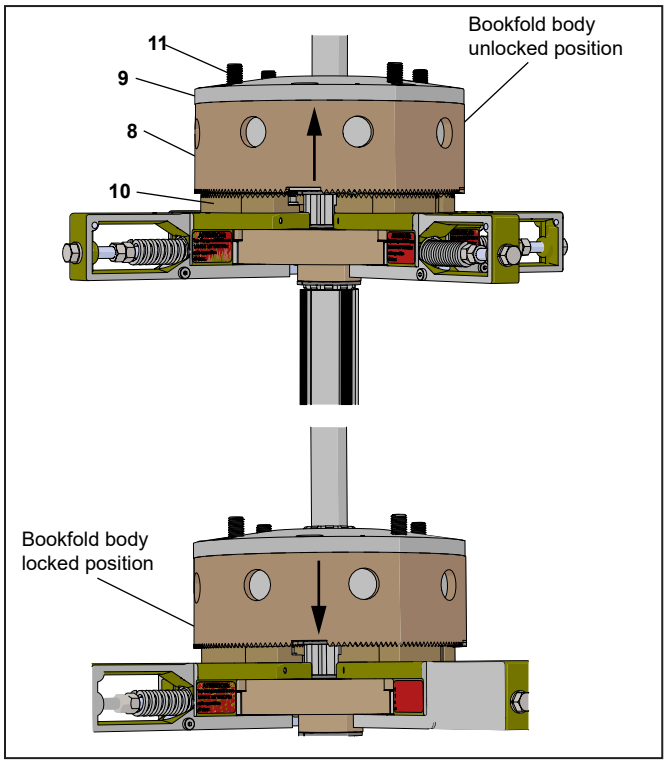


Table 8.3.1 Bookfold lock assembly

2	Bookfold lock assembly
3	Top hanger assembly, bookfold lock
4	Splined shaft
4.1	10 mm key
5	Lock coil wire jacket
6	Wire tie
7	Electromagnetic coil
8	Lock body (brass)
9	Lock body cover plate
10	Hanger serrated plate
11	Steel plunger

Fig. 8.3.3 Bookfold lock body operation



8.4 Bottom Hanger Assembly

Fig. 8.4.1 Bottom hanger assembly DS6045

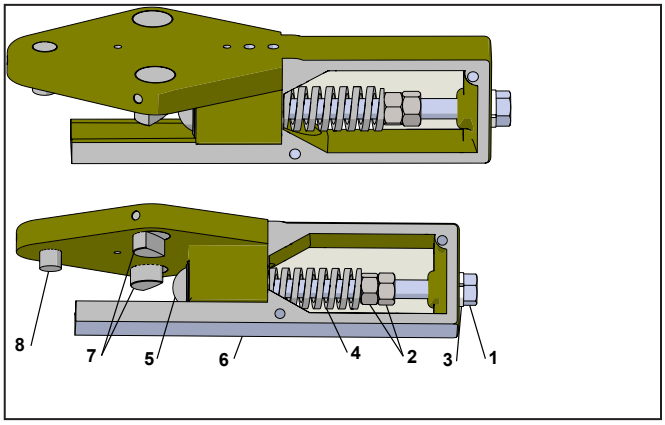


Table 8.4.1 Bottom hanger assembly DS6045

1	H61 0074	3/8" x 4" bolt
2	S23 0760	3/8" hex nut
3	Z24 0702	3/8" high collar lock washer
4	H61 0060	Hanger spring
5	H61 0045	7/8" diameter steel ball
6	DC3454	Hanger body
7		Guide pin
8		Center pin

8.5 Floor Pivot Assemblies For Center Shaft

Fig. 8.5.1 Floor pivot assembly H64 4000

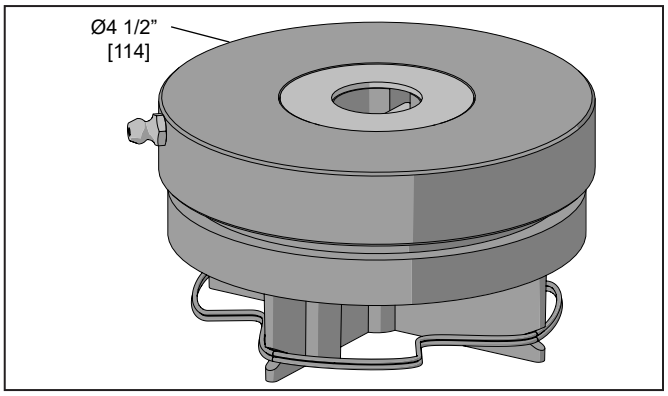
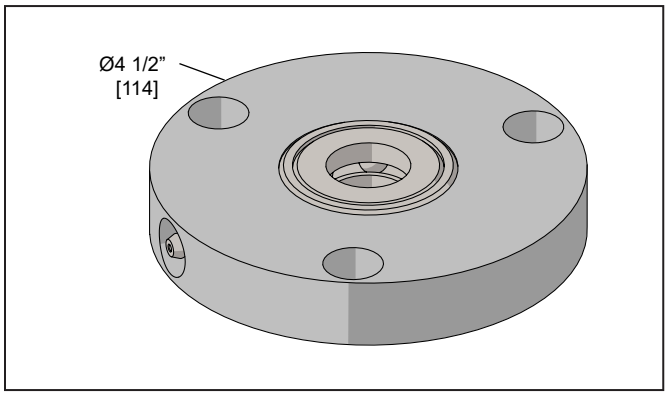


Fig. 8.5.2 Surface mounted floor pivot assembly DS3423-010



8.6 Enclosure Base Assembly

Fig. 8.6.1 Base assembly, aluminum

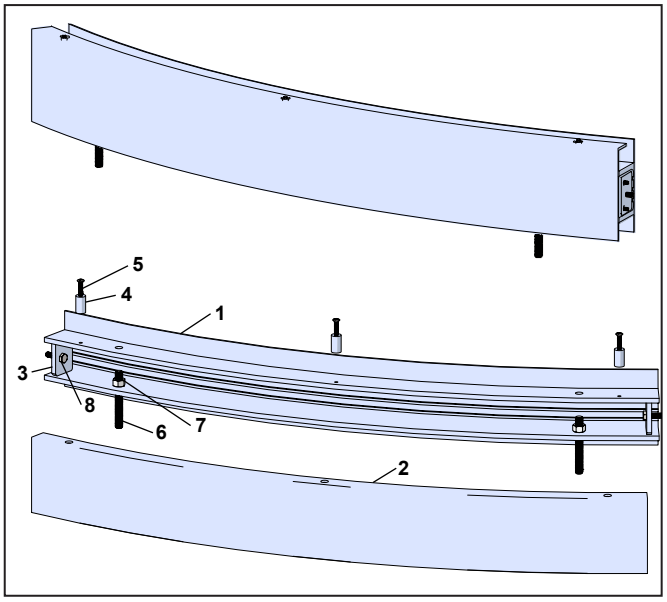


Table 8.6.1 Enclosure base assembly

1	A32 1012	Base bottom
2	A32 1011	Base cover
3	A32 2005	Rail attachment block
4		Base cover support spacer
5	S21 0334	10-24 x 1 1/8" Phillips oval head machine screw
6	Z27 0703	3" stud
7		3/8-16" hex nut
8	S22 0550	1/4-20 x 1" hex head cap screw

8.7 Door Wing Assembly Example

Fig. 8.7.1 Aluminum 4 wing assembly

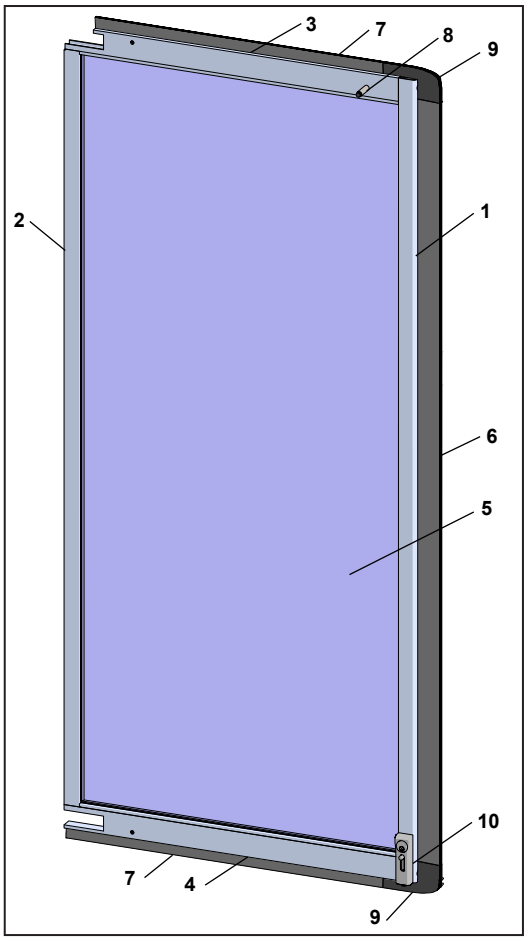
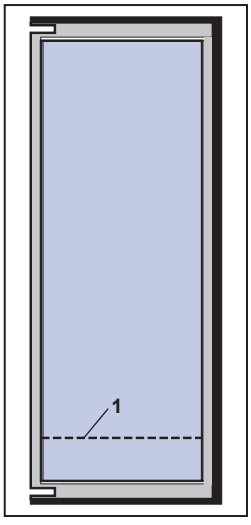


Table 8.7.1 Aluminum 4 wing assembly

1		Wing outer extrusion, flush bolt
2		Wing center extrusion
3		Wing top extrusion
4		Wing bottom extrusion
5		Wing glass
6		Sweep brush vertical
7		Sweep brush horizontal
8		Wing bumper assembly
9		Sweep brush corner
10	H65 3000	Flush bolt

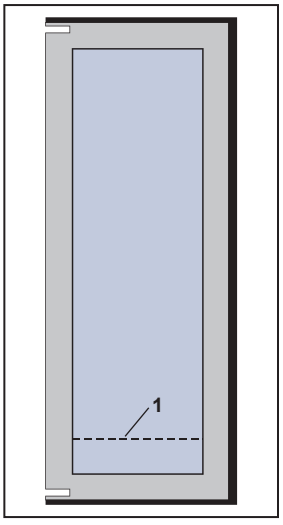
8.8 Door Wing Types

Fig. 8.8.1 Narrow stile



1 Optional tall bottom rail

Fig. 8.8.2 Medium & Wide stile



1 Optional tall bottom rail

Fig. 8.8.3 Patch fitting

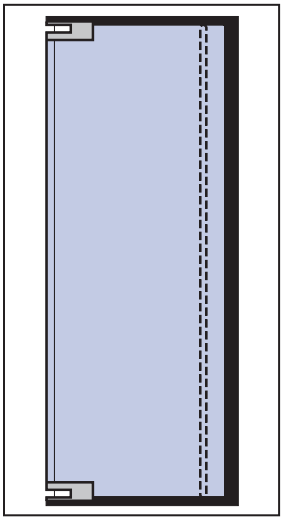
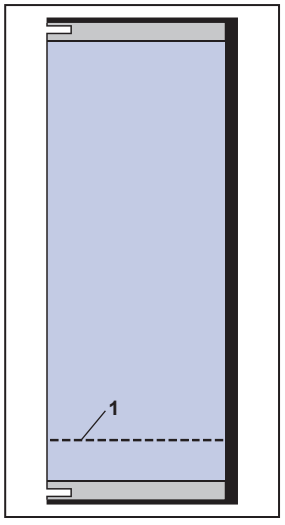


Fig. 8.8.4 Herculite



1 Optional tall bottom rail

8.9 Center Post And Quarter Post/End Wall

Fig. 8.9.1 Center post

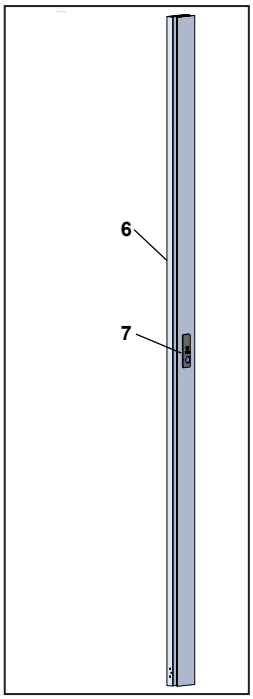


Fig. 8.9.2 Quarter post/ end wall

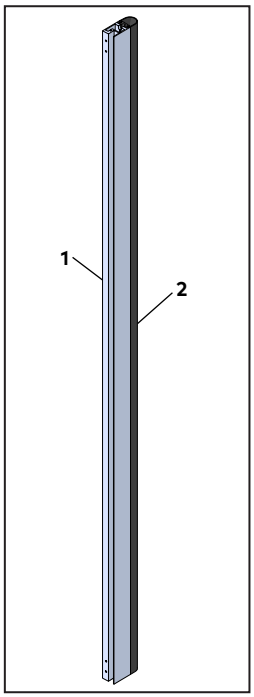


Fig. 8.9.3 Quarter post/end wall leading edge sensor installation

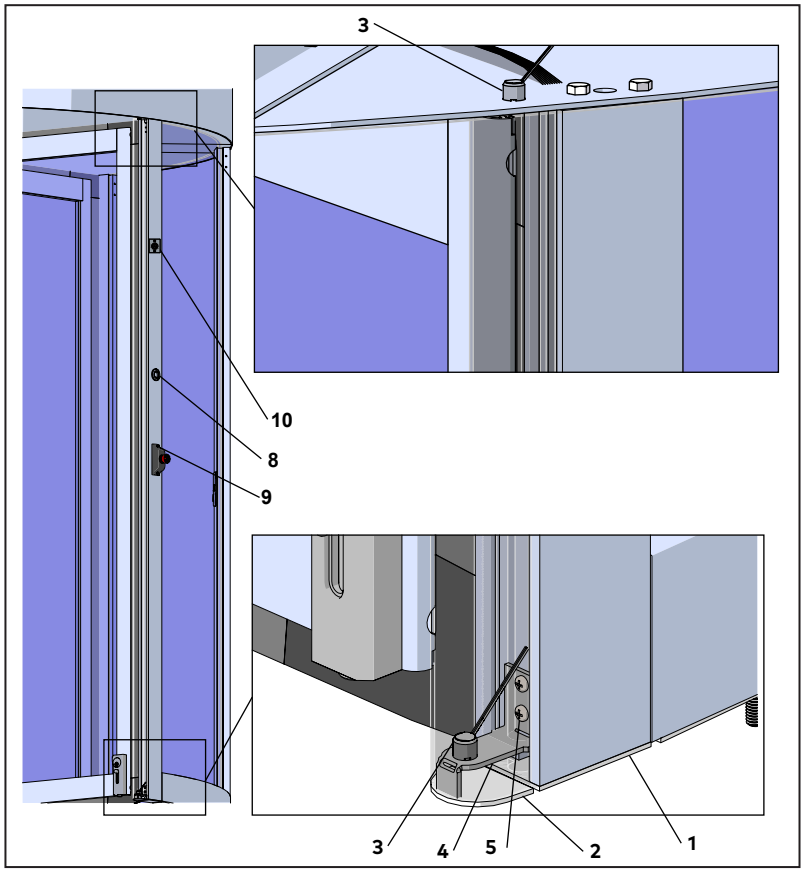


Fig. 8.9.4 End wall receiver assembly

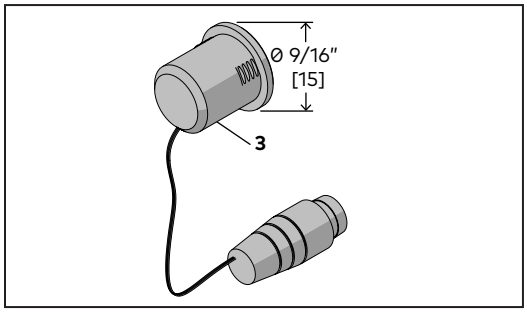


Table 8.9.1 Center post and quarter post/end wall

1	A32 1009	Quarter post/end wall Activation light and Emergency stop installed at installation.
2	M41 0112	Bumper
3	DX3352-010	Bumper (End wall) sensor
4	P54 6510	Bumper sensor bracket
5		0.164 x 5/8" Phillips machine screw
6	A32 1002	Center post
7	DC7004-001	Push to Reverse switch - factory installed. Wired at installation.
8	DS7042-001	Activation light - installed and wired at installation
9	DX3413-010	Emergency stop switch - installed and wired at installation
10	DX3399-030	Mode key switch panel (may be located on canopy fascia)

8.10 Fastener Hardware

Fig. 8.10.1 Canopy section fastening hardware

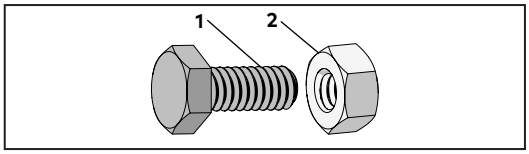


Fig. 8.10.2 Modular drive system (MDS)mounting hardware

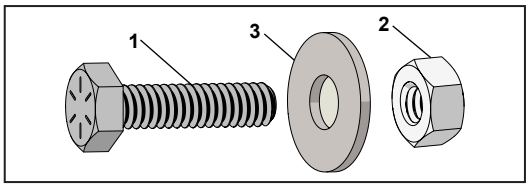


Fig. 8.10.3 Aluminum post to canopy fastening hardware

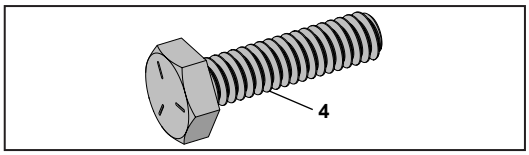


Fig. 8.10.4 Base assembly floor stud

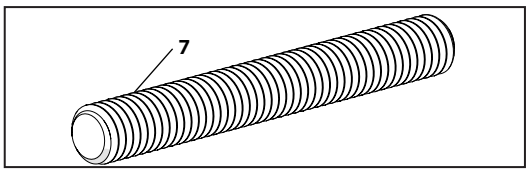


Fig. 8.10.5 Base to post fastening hardware

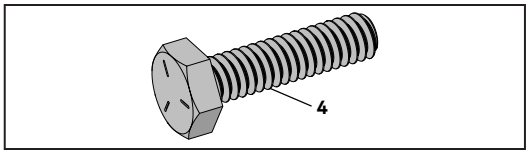
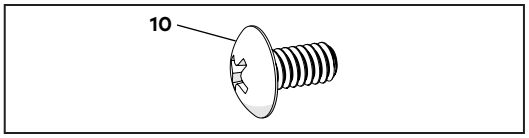


Fig. 8.11.6 Wing attachment hardware



TIPS AND RECOMMENDATIONS

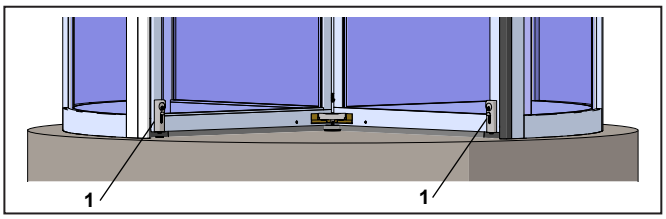
- Fastener hardware is contained in cardboard boxes.
- Boxes are packaged in the center shaft shipping crate.
- Each box is labeled with job number, job name and a description of its contents.

Table 8.10.1 Fastener hardware

1		1/4-20 x 5/8" hex head cap screw
2		1/4-20 hex nut
3		Flat washer, 3/8" ID
4		1/4-20 x 1" hex head cap screw
7	Z27 0703	3/8 x 3" plated stud
11		1/4-20 x 1" hex head cap screw

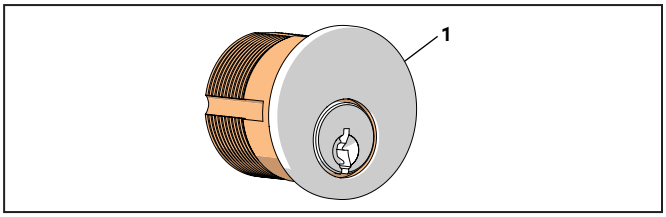
8.11 Flush bolt

Fig. 8.11.1 Flush bolt installation



1 Flush bolt assembly
DS7038-001

Fig. 8.11.2 Concealed lock installation



1 Lock assembly
76019185

8.11.1 Flush bolts.

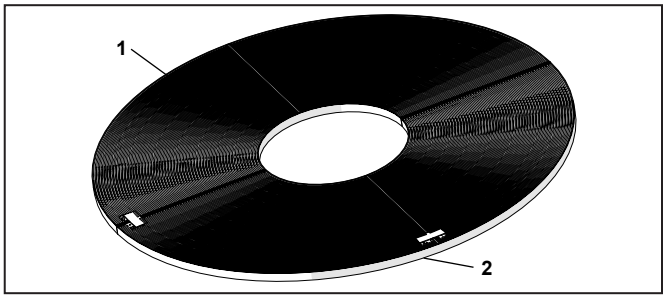
- Two flush bolts are supplied, located in adjacent wing bottom rails for interior locking into floor.
- Flush bolts are factory installed.
- Doors over 7' high, wing locks installed in wing bottom rails unless otherwise specified.

8.11.2 Concealed locks.

- Concealed locks (Fig. 8.11.2) are supplied on herculite type wings (Reference Para. 8.8).

8.12 Optional Assembly, Floor Grill And Pan Assembly

Fig. 8.12.1 Floor grill and pan assembly



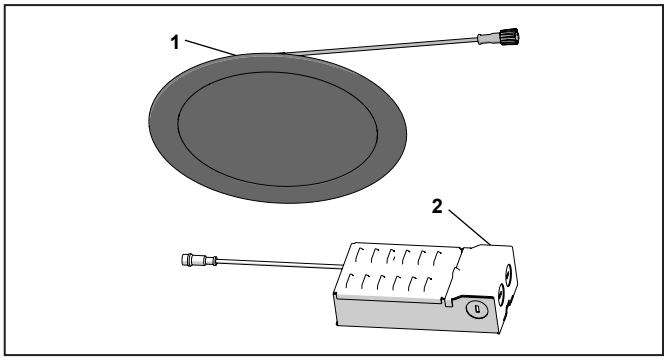
1 Floor grill
2 Pan

8.12.1 Welded floor grilles.

- Fabricated from concentrically rolled bars of 1/4" x 1" stainless steel.
- Integrated into revolving door design.
- Recessed grille pan welded from 12 ga. stainless steel, a drainage fitting can be added.

8.13 Optional Canopy Lights With LED Drivers

Fig. 8.13.1 LED light and driver assembly DS7042-001



1 LED light assembly
DC7030-001
2 LED driver
DC7032-001

8.13.1 Canopy lights.

- Canopy lights are installed in canopy at factory.
- LED drivers are installed in canopy at installation.

8.14 Optional Standby UPS

Fig. 8.14.1 UPS

1 UPS, CyberPower® CP550SLG 9.8" W x 5.8" H x 3.3" D

2 4 Outlets, Battery and surge protected

3 4 Outlets, surge protected

4 Power Off/On button

5 Power cord, 5 feet

8.14.1 Optional standby UPS.

NOTICE

UPS will provide approximately 15 minutes of door run time.

1. Installed in canopy.

- Power cord (5) connected to contractor-supplied and installed 120 Vac receptacle.

2. Four outlets (2) provide battery and surge protected power for:

- Modular drive system (MDS) frequency converter (Chapter 30).
- IRMA Matrix network switch and control box power supplies (Para. 14.6).

NOTICE

CyberPower User's Manual
Reference CyberPower User's Manual for UPS controls, installation, startup and troubleshooting details.

⚠ WARNING

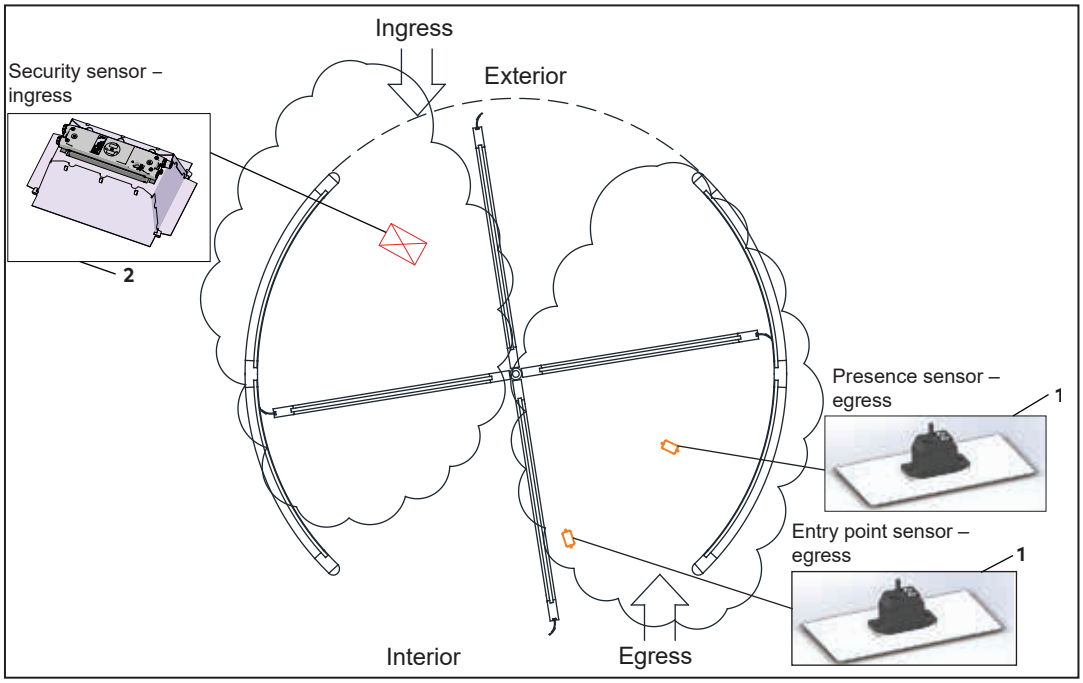
Only authorized, trained personnel should install and setup UPS system.

9 S3 Security Door Sensors

9.1 S3 Canopy Sensor Overview

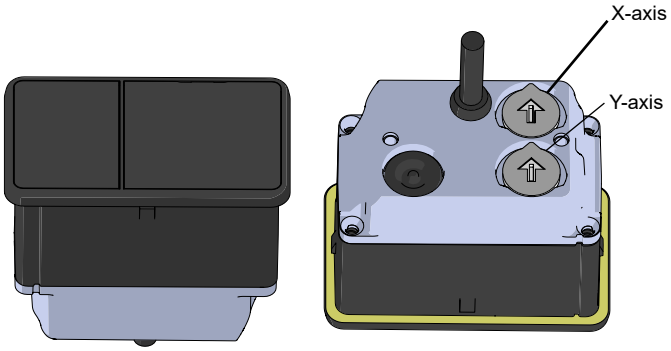
1 Sensor, CEDES, TOFniva D8K3500-010
2 Sensor, security, DX6102-001

Fig. 9.1.1 S3 canopy entry point, security sensors

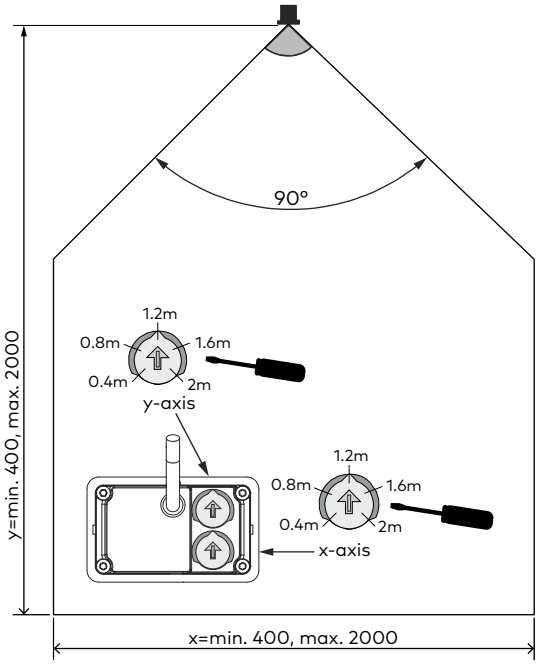


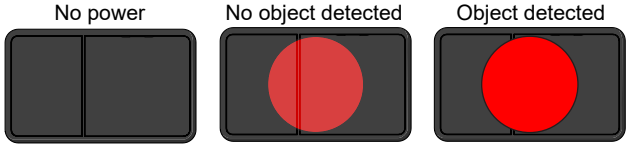
9.2 Egress sensors

Fig. 9.2.1 Canopy egress entry point and presence sensor, CEDES TOFniva



Height (y) and width (x) of sensor pattern must be set during door commissioning. Reference Chapter 26.





LED off	No power.
LED dimmed red	No object detected.
LED bright red	Object detected.

9.3 Ingress security sensor and control hardware

Fig. 9.3.1 Ingress security sensor

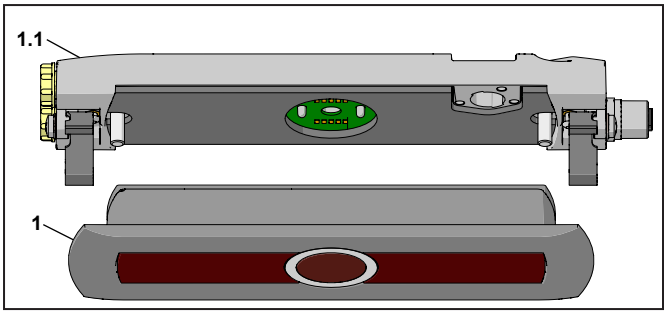


Fig. 9.3.2 IRIS control box assembly and 5 Vdc power supply

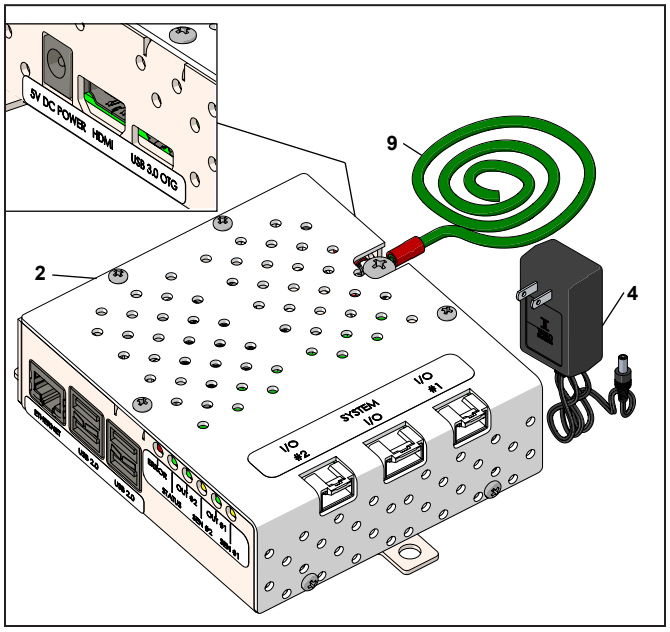


Fig. 9.3.3 Network switch and DC power supply

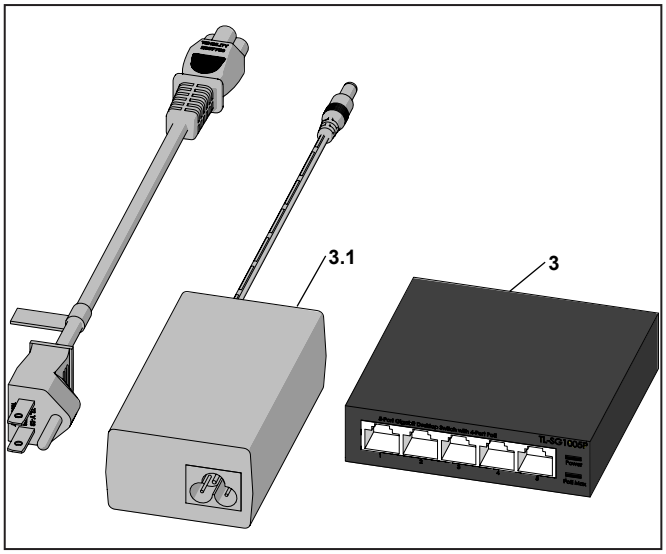


Table 9.3.1 Ingress security sensor hardware

ID#	Part no.	Function
1	DX6102-001	DIST500-F IRMA Matrix flush mount sensor
1.1		sCON-F12 PoE (Power over Ethernet) connector
2	DX6101-001	Control box assembly
3	DX6103-001	Network switch
3.1		DC power supply, network switch
4	DX6104-001	5 Vdc power supply, control box
5	DX6108-001	sCON-S-ETH Sensor PoE (Power over Ethernet) cable
6		Network cable, RJ45 plug to RJ45 plug
7	DX6106-001	Harness, 10 pin security sensor, COM
8	DX6107-001	Harness, 12 pin security sensor, MAIN
9	DX0839-010	Grounding wire, 16"

Fig. 9.3.4 Sensor PoE (power over Ethernet) cable

Fig. 9.3.5 Network cable, 5 feet

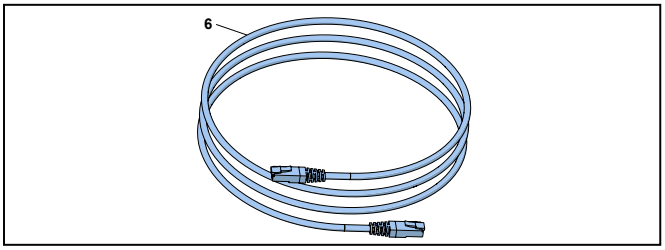


Fig. 9.3.6 Harness, 10 pin, security sensor, COM

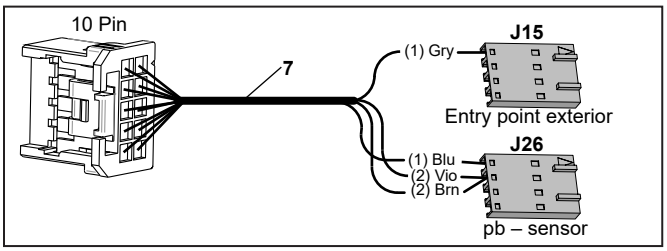
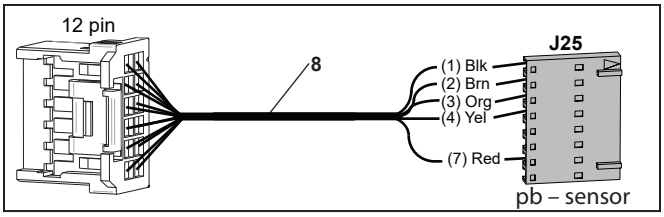


Fig. 9.3.7 Harness, 12 pin, security sensor, MAIN



11 Recommended Tools And Materials

11.1 Recommended Tools

Fig. 11.1.1 Recommended tools

Table 11.1.1 Recommended tools

1	Plumb bob with string.
2	Tape measure
5	Screwdriver, flat blade
6	Screwdriver, Phillips #2, #3
7	Socket wrench and extensions
8	Open end wrench, 9/16"
9	Small insulated flat blade screwdriver
10	Spirit level, 72"
11	Rubber hammer
12	Needle nose pliers
13	Bent glass 9" suction cups (Wood's Pwr-Grip N5450 or equivalent) ASIN# B007IAB3TM
14	Hammer drill
15	Rotary hammer core bit, 5", Bosch or equivalent
16	Cordless drill with drill bit and socket set
17	Razor knife or box cutter
18	Angle grinder with 5" grinding wheel, ASIN# B00EMFOKSC
19	Masonry drill bits, 1 1/4" required for floor strike
20	Manual deburring tool
21	Digital multimeter
22	Force gauge for breakout, Chatillon DG-200, 0 - 200 lbf, or equivalent
23	Portable work lights
24	Wire strippers, 16 AWG to 22 AWG

11.2 Recommended Installation Materials And Installation Hardware

Fig. 11.2.1 Recommended installation materials

Fig. 11.2.2 Recommended installation hardware

Table 11.2.1 Recommended installation Materials

	Description
1	Neoprene setting block assortment, 1/16" to 1/2", CRL, ASIN# B001G0UG1Q
2	Backer rod, 5/8" diameter, 100' roll, CRL
3	Silicone building sealant, 6 cartridges per door. Dow Corning 795 or equivalent. ASIN# B000NY76MI
4	Glazing tape. 1/8" x 3/8", black, single sided, CRL, ASIN# B000WRZCZE
5	Wedgit 5/16" glass centering springs, CRL W516, ASIN# B006JFMQUM
6	White lithium grease - for center shaft assembly, ASIN# B06XY6QK57
7	Posi-Twist Bundle kit, ASIN# B000JP3GB6
8	Rockite quick drying cement, ASIN# B000BO9JRK

Table 11.2.2 Recommended installation hardware

	Description
10	Metaltech wall hauler 2000 series drywall cart, ASIN# BMD2131YGR
11	Genie Hoist, GH-3.8 Portable lift, 300 pound capacity, lift height 12', ASIN# B004QTPJHU
12	Genie material lift, GL-8, 400 pound capacity, lift height 10', 5"
13	Extension ladder, 13'

12 Entrance Opening and Floor Preparation

12.1 Cordon Off Work Area

WARNING

Cordon off installation area for the complete revolving door installation process.

12.2 Entrance Opening

12.2.1 Entrance opening requirements.

1. Documentation:

- Alvarado shop drawing detailing revolving door attachment plan to building and required dimensions (elevation and plan views).

CAUTION

Refer to specific Alvarado Shop Drawing for job!

- Contractor or architect drawings detailing revolving door entrance opening.

2. Verify entrance opening dimensions and associated framing with documentation in (1).

12.2.2 Determine if floor is flat.

1. Use level to check floor flatness.

CAUTION

High spots cannot be above bottom edge of adjacent work that will abut the revolving door enclosure base.

CAUTION

Any floor flatness issues must be resolved before starting door installation.

12.2.3 Determine if floor is level.

1. Using level in 12.2.2, determine if floor is level (parallel to adjacent building work).

NOTICE

All Alvarado warranties are void if door is installed on a floor that is out of level, or if proper clearances are not maintained.

12.3 Revolving door floor surface

13.3.1 Floor surface.

1. Finished floor at revolving door site must be finished, level and flat.

NOTICE

The operation and structural integrity of Alvarado revolving doors depend on their being mounted on a level floor.
Do not proceed if floor is not flat and level.

13 Locate Door Centerpoint, Drill Holes

13.1 Door Building Attachment Plans

13.1.1 Alvarado shop drawings.

NOTICE

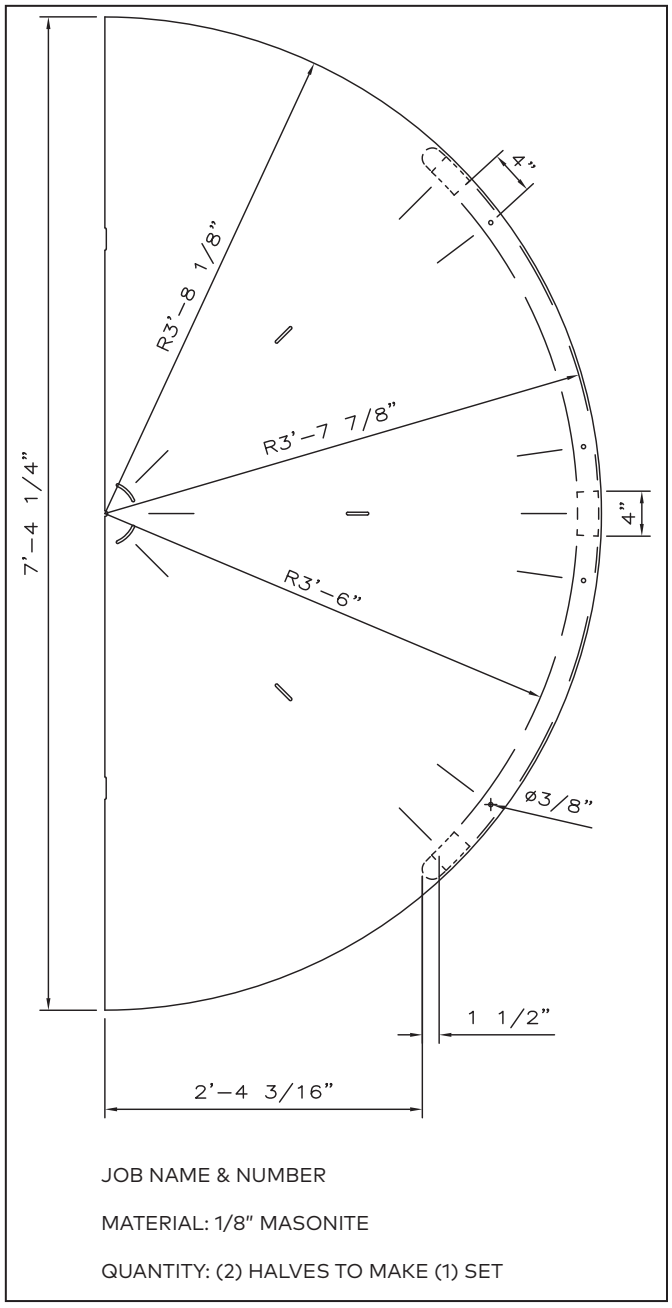
Refer to Alvarado shop drawings for specific attachment plan for job!

13.1.2 General contractor/architect drawings.

- General contractor or architect drawings detailing revolving door center point and building interface.

13.2 Installation Template

Fig. 13.2.1 Full size installation template example



13.2.1 Locate full size installation templates.

TIPS AND RECOMMENDATIONS

Templates for canopy diameters greater than 6'6" I.D. are custom made and cut out of Masonite material to match door conditions.

1. Locate full size templates.

- Templates shipped in canopy shipping crate.

NOTICE

Reference Alvarado shop drawing for template orientation at building attachment.

13.3 Mark Door Position On Floor Using Floor Templates

13.3.1 Position floor templates.

1. Position templates at door centerpoint and orient template to building interface.

CAUTION

Use centerpoint dimensions as shown on Alvarado shop drawings and contractor documentation.

WARNING

Orient floor templates to building interface!
Refer to shop drawings for template to building interface position.

2. Secure template to floor.

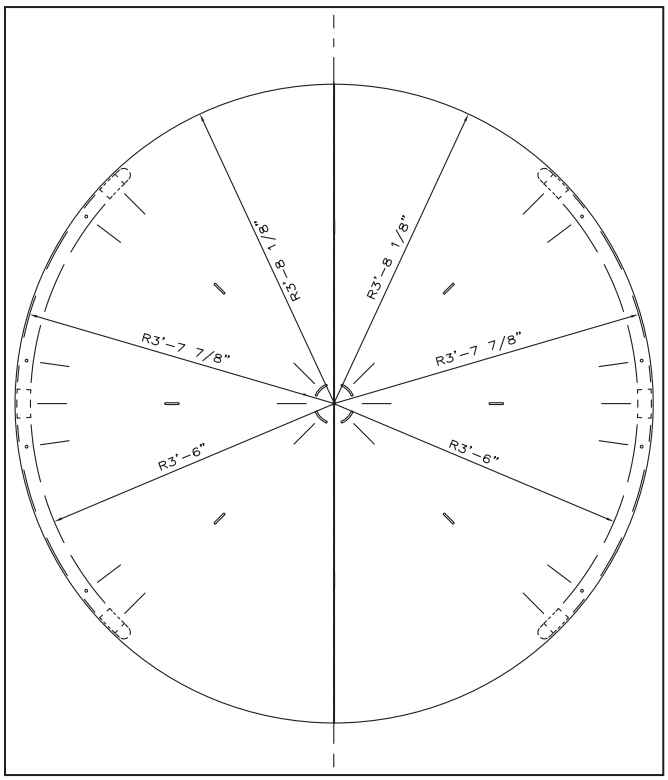
CAUTION

Once templates secured to floor, recheck alignment with door center point and centerlines and/or quarter lines to building interface!

NOTICE

It is good practice to verify template location with general contractor or owner's representative.

Fig. 13.3.1 Templates placed on floor, 7' 4 1/4" OD door example



13.3.2 Mark lines on floor.

1. Draw door centerlines.
2. Mark quarter post and center post centerlines.
3. Mark mounting base stud locations.
4. Trace door outside radius.

13.3.5 Remove template.

1. Remove template.

13.4 Drill Pilot And Anchor Holes For Mounting Base Studs

13.4.1 Drill pilot holes in floor.

WARNING

Protective equipment required!
Risk of injury due to improper drilling.

13.4.2 Drill mounting base pilot holes.

1. Drill pilot holes at each mounting base stud hole location.

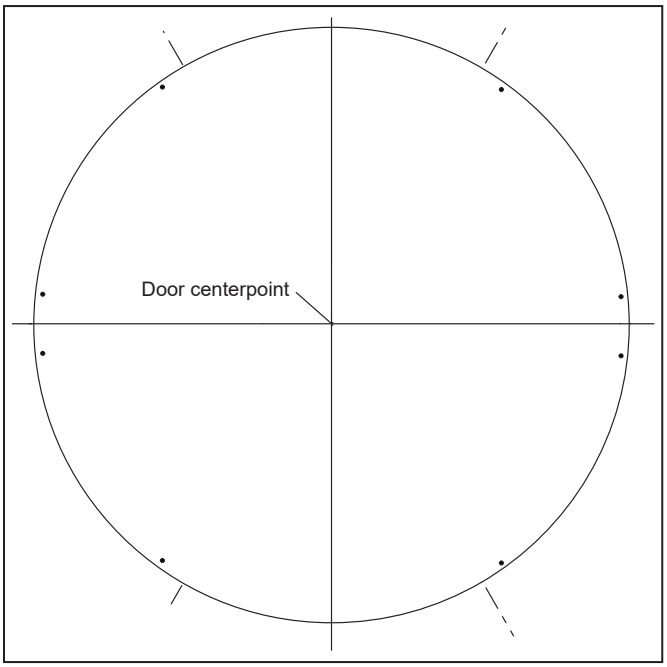
13.4.3 Drill anchor holes in floor.

1. Drill anchor holes at each pilot hole location.

TIPS AND RECOMMENDATIONS

Use 1/2" masonry drill bit with hammer drill.
Drill anchor holes to a depth of 2 1/2".

Fig. 13.4.1 Floor marked with door location and mounting base holes



13.5 Drill Pilot Hole At Door Centerpoint

13.5.1 Drill pilot hole in floor at door centerpoint.

WARNING

Protective equipment required!
Risk of injury due to improper drilling.

1. Drill pilot hole at door centerpoint.

13.6 Installation of floor pivot assembly

NOTICE

Floor pivot assembly installation.
Reference Chapter 19 if floor pivot installation is to be done at this point.

14 Canopy Installation

14.1 3 Piece Canopy Shipped As Single Assembly

14.1.1 Alvarado shop drawings.

NOTICE

Refer to Alvarado shop drawings for canopy detail for job!

Fig. 14.1.1 Canopy assembly, cover view

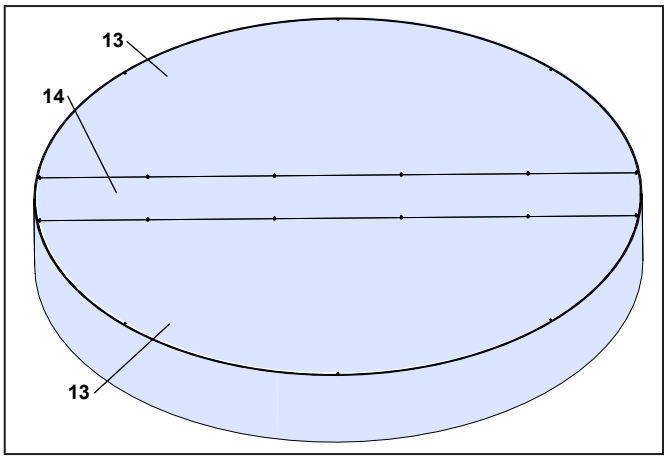


Fig. 14.1.2 Canopy assembly, bottom view

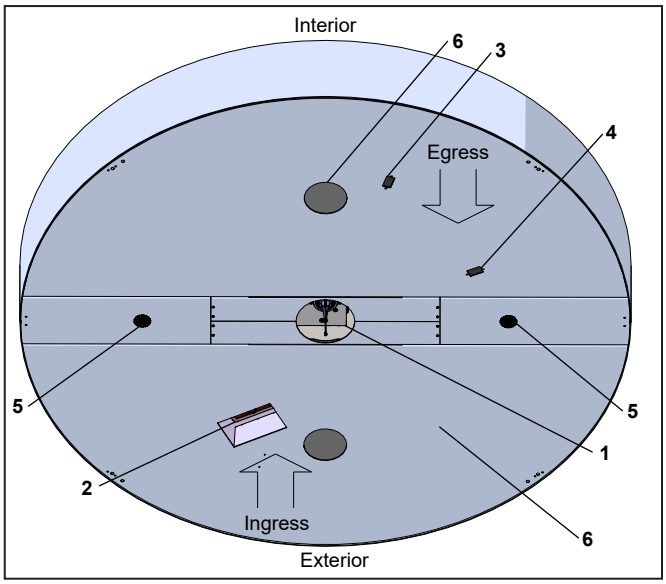


Fig. 14.1.3 Canopy assembly, covers removed

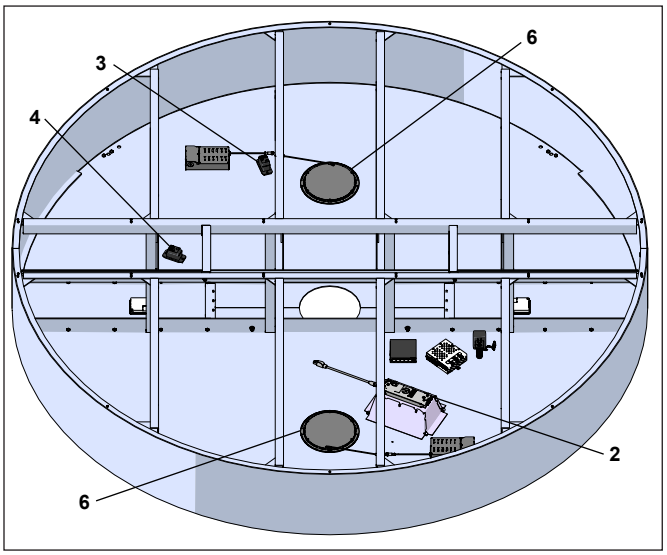
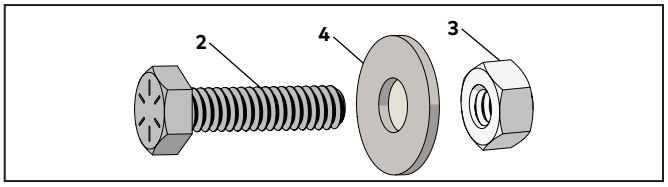


Table 14.1.1 S3 security canopy

1	DS3382	Modular drive system
2	DX6102-001	Ingress security sensor
3	D8k3500-010	Egress entry point sensor
4	D8k3500-010	Egress 1 presence sensor
5	DC7009-001	Annunciator
6	DC7030-001	LED light (option)
13		Cover, outer
14		Cover, inner

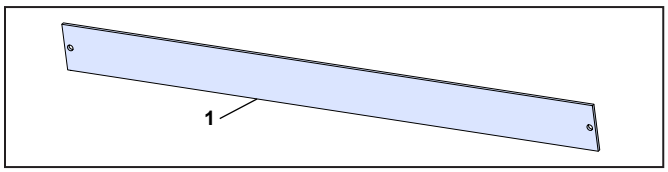
14.2 Modular Drive System (MDS) Canopy Mounting Hardware

Fig. 14.2.1 Modular drive system (MDS)mounting hardware



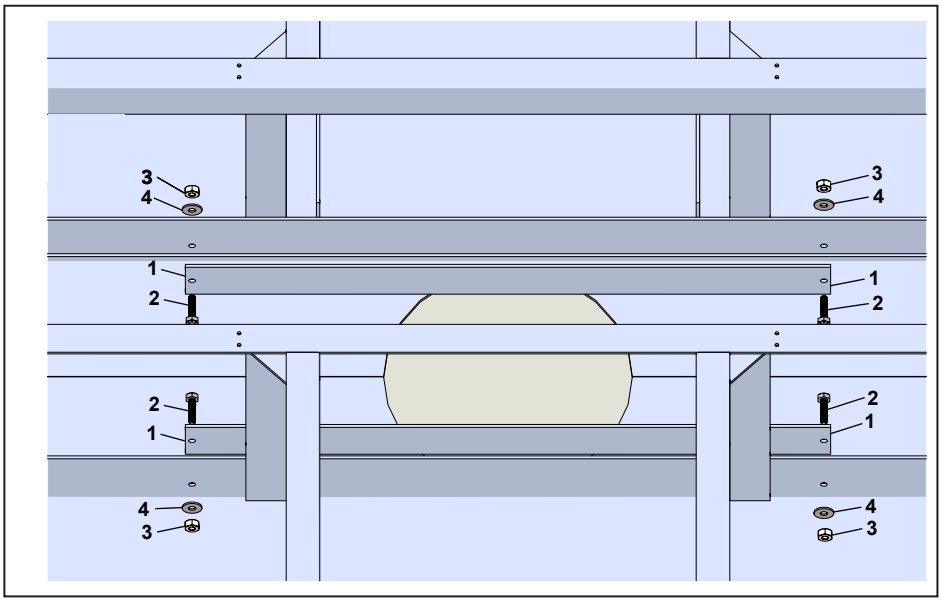
2 1/4-20 x 1" hex head bolt
4 Flat washer, 3/8" I.D.
3 1/4-20 hex nut

Fig. 14.2.2 MDS mounting spacer



1 MDS mounting spacer

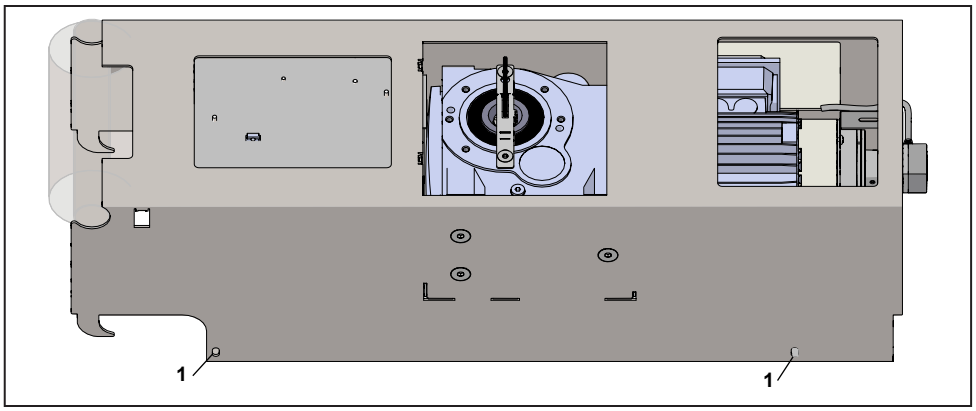
Fig. 14.2.3 Modular drive system mounting hardware in canopy



1 MDS mounting spacer
2 1/4-20 x 1" hex head bolt
3 1/4-20 hex nut
4 Flat washer, 3/8" I.D.

14.3 Modular Drive System (MDS) Assembly

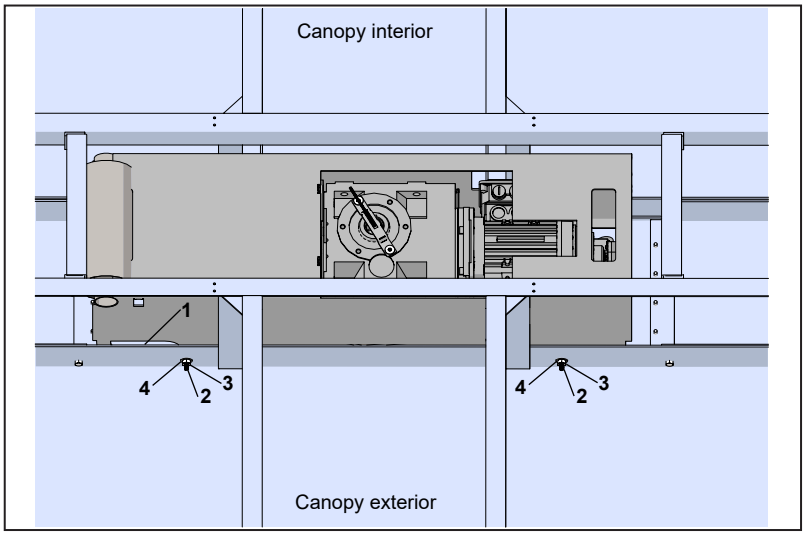
Fig. 14.3.1 Modular drive system (MDS) DS3382



1 MDS mounting hole

14.4 Install Modular Drive System (MDS) Assembly In Canopy

Fig. 14.4.1 Modular drive system (MDS) DS3382 and fastener installation, S3 canopy shown



1 MDS mounting spacer
2 1/4-20 x 1" hex head bolt
3 1/4-20 hex nut
4 Flat washer, 3/8" I.D.

Fig. 14.4.2 Modular drive system (MDS) DS3382 installation in canopy

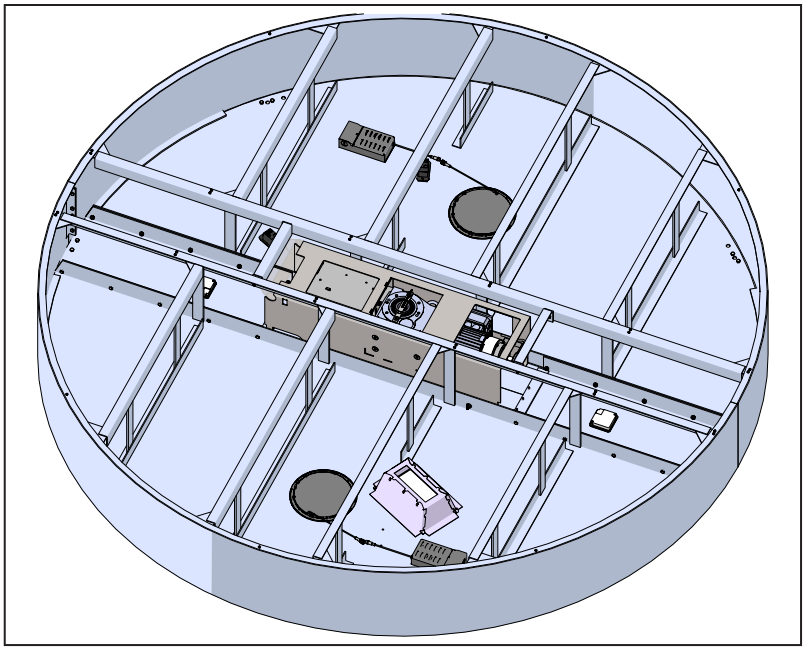
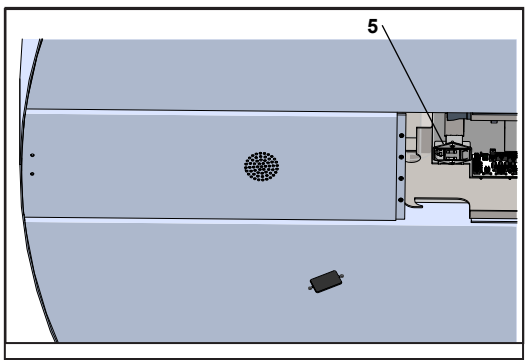


Fig. 14.4.3 Modular drive system (MDS) power outlet

5 MDS power outlet DX7004-001



TIPS AND RECOMMENDATIONS

MDS canopy installation.
It is recommended to install the MDS system in the canopy once canopy has been raised in place (Para. 14.6) unless there is not room above the canopy for top of canopy access.

14.4.1 Install MDS in canopy.

WARNING

Use caution while installing modular drive system.

1. Install MDS assembly in canopy.
   - Note orientation of MDS assembly in canopy.
2. MDS mounting spacer (1) is installed on each side of MDS between the MDS and canopy rail (Fig. 14.4.1 and 14.4.2).
3. Fasten MDS to canopy using four sets of fasteners.

14.4.2 120 Vac for MDS power outlet.

1. A 7.5 foot 120 Vac power cord is supplied with the MDS drive system. (Ref. Chapter 26, Fig. 26.1.4).

NOTICE

Building 120 Vac, 1 phase supply for MDS drive system.
General contractor responsibilities:
- Supply dedicated 15 Amp, 120Vac 1 phase circuit for MDS drive system.
- Supply and install 120Vac receptacle for MDS power cord, coordinate with Alvarado installer.

WARNING

Work on electrical equipment and 120 Vac wiring installation must be performed only by qualified personnel!

14.5 Install S3 Security Sensor In Canopy Sensor Mount

14.5.1 Install sensor in sensor mount.

WARNING

Use caution when installing sensor!
Two persons are required.

1. From the canopy soffit side, place the sensor against the sensor mount and hold in place.
• Note the installation orientation of the sensor (Fig. 14.5.1); "Exterior" must face outward.
2. From the canopy interior, align and place the sCON connector against the sensor.
• The label (3) on the sCON connector must face the same direction as the label on the sensor (8).
3. Insert the two M5 x 25 hex drive flat head screws and tighten them manually.
4. Tighten the two screws alternating step by step, using an Allen key.

Fig. 14.5.1 Ingress security sensor

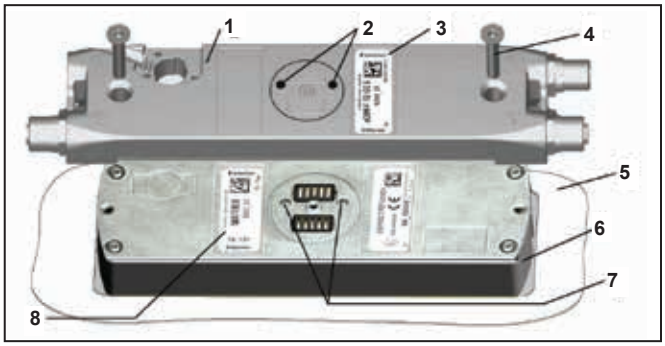


Fig. 14.5.2 Security sensor mount

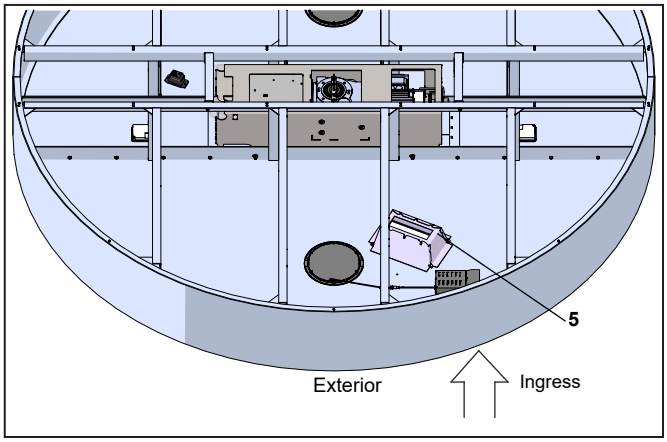


Fig. 14.5.3 Security sensor against sensor mount; canopy soffit view

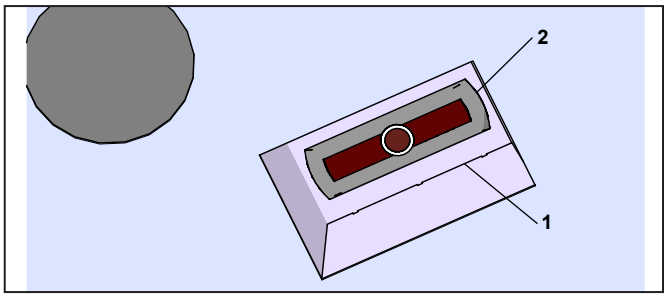


Table 14.5.1 Security sensor hardware

1	DX6102-001	sCON-F-12-PoE connector
2		Marking position of guiding pins on bottom side
3		Label indicating orientation Exterior Interior
4	D7991	M5 x 25 hex drive countersunk head screw
5	DC6102	Canopy sensor mount
6	DX6102-001	IRMA Matrix sensor
7		Guiding holes on sCON connection (rear of sensor)
8		Label indicating orientation Exterior Interior
9	DC6012	Canopy sensor mount

Fig. 14.5.4 Security sensor and sCON connector, canopy view

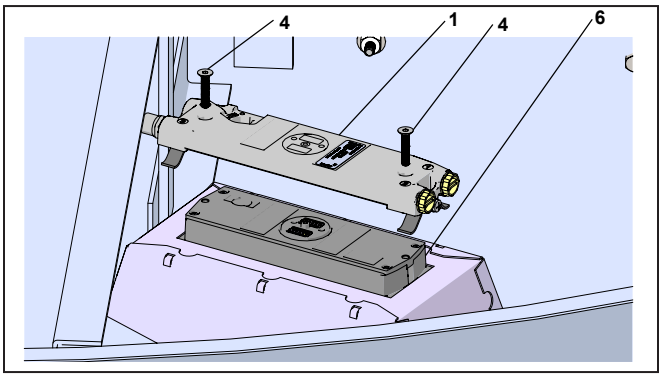
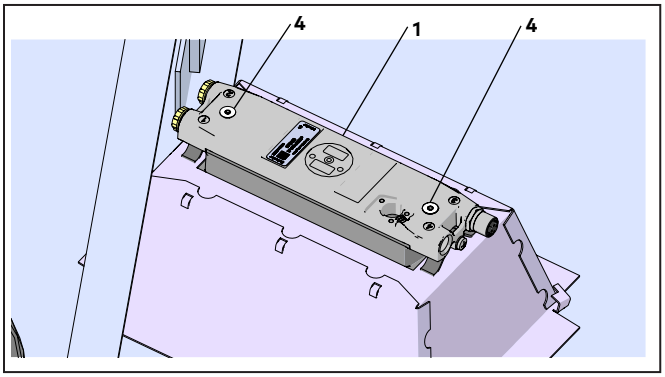


Fig. 14.5.5 Security sCON connector secured to sensor



14.6 Install S3 Security Sensor Control Hardware In Canopy

14.6.1 Install Network switch, control box and sensor PoE cable.

1. Attach M12 end of sensor PoE cable to sCON-F12 PoE connector (Fig. 14.6.1).
2. Place network switch on canopy soffit adjacent to sensor mount (Fig. 14.6.3).
3. Attach Ethernet connector end of sensor PoE cable to PoE Port 1 on Network switch (Fig. 14.6.4).

14.6.2 Attach DC supply connector to Network switch.

1. Attach DC power supply DC connector to power jack on rear of network switch (Fig. 14.6.4).

14.6.3 Attach Network cable to Network switch.

1. Attach Network end cable to Ethernet switch Port #5. (Fig. 14.6.4).

Table 14.6.1 Ingress security sensor hardware

1	DX6102-001	sCON-F12 PoE connector
2	DX6101-001	Control box
3	DX6103-001	Network switch
3.1		Network switch DC power supply
4	DX6103-001	Control box 5Vdc power supply
5	DX6108-001	Sensor PoE (power over Ethernet) cable
14	DC6102	Sensor mount

Fig. 14.6.1 Sensor PoE cable, network cable

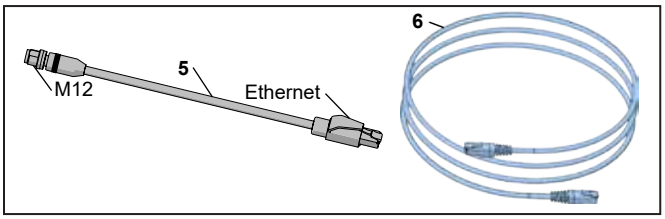


Fig. 14.6.2 Network switch with DC power supply and control box with 5Vdc power supply

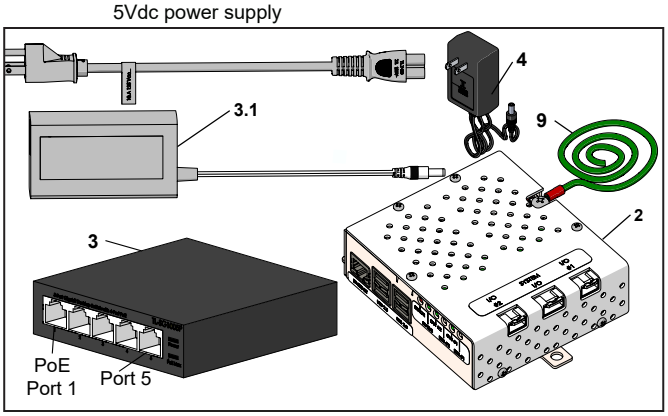


Fig. 14.6.3 Sensor mount, sensor and network switch

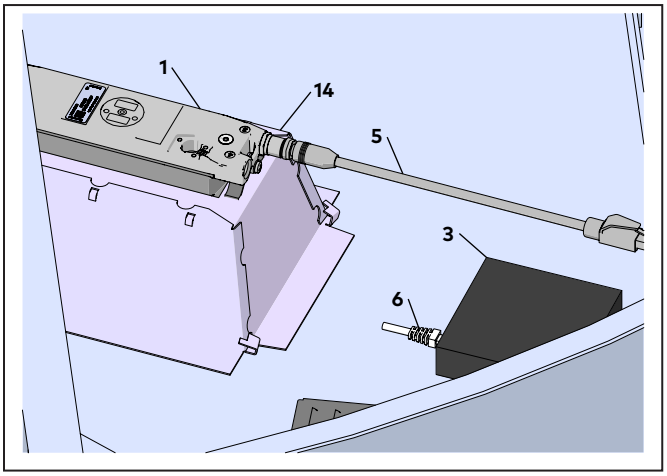
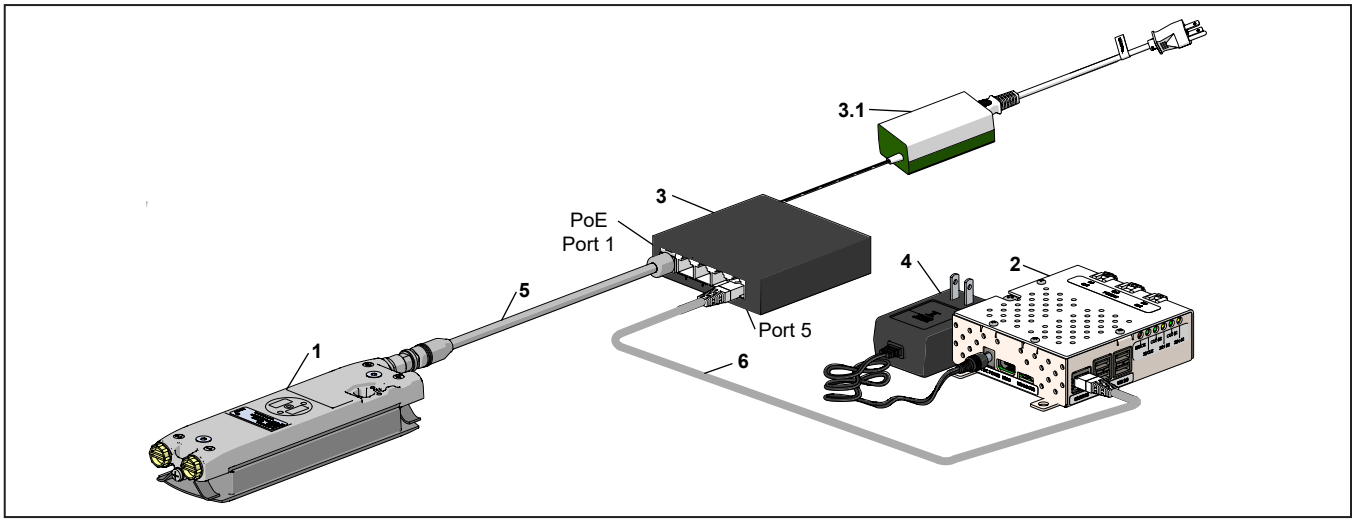


Fig. 14.6.4 Ingress security sensor hardware connection diagram



14.6.4 Install control box in canopy, attach ground wire.

1. Place control box in canopy at approximate location shown in Fig. 14.6.7.
2. Attach ground wire (9) to control box using 10-24 x 3/8" PBHMS on control box (Fig. 14.6.5).
3. Attach ground wire to canopy strap (Fig. 14.6.8).

- Drill hole for 8-32 sheet metal screw in canopy strap at location indicated in Fig. 14.6.8.
- Attach ground wire to canopy strap using 8-32 x 1/2" pan head sheet metal screw.

14.6.5 Attach 5V power supply connector to control box.

1. Attach DC connector from 5V power supply to DC power jack on rear of control box (Fig. 14.6.4).

14.6.6 Attach Network cable to control box.

2. Attach Network cable to Ethernet switch Port #5 (Fig. 14.6.4)

14.6.7 Attach security sensor harnesses to control box.

1. Attach 12 pin MAIN harness to System I/O port on control box.
2. Attach 10 pin COM harness to I/O #1 port on control box

Fig. 14.6.5 Harness assembly to control box Interface board

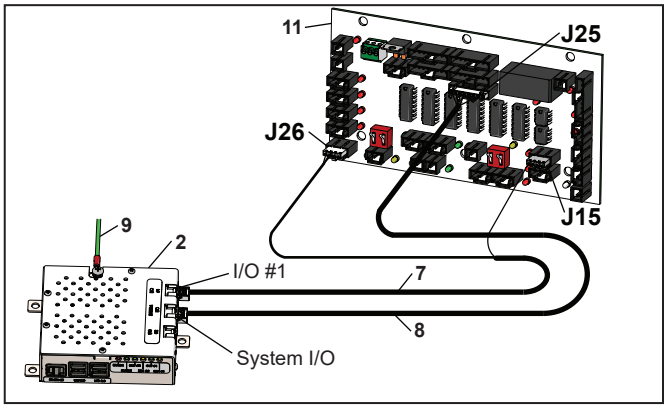


Fig. 14.6.6 Harness, 10 pin, security sensor, COM

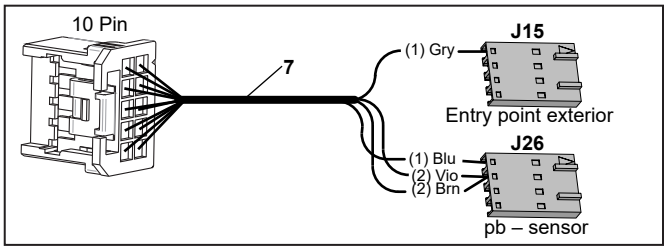


Fig. 14.6.8 Harness, 12 pin, security sensor, MAIN

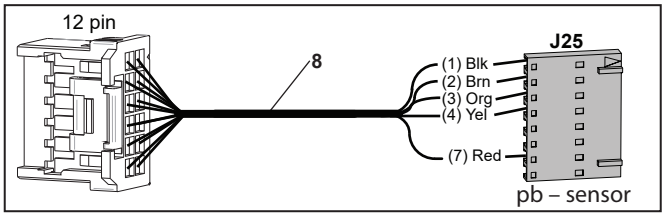


Fig. 14.6.7 S3 security canopy top view, covers removed

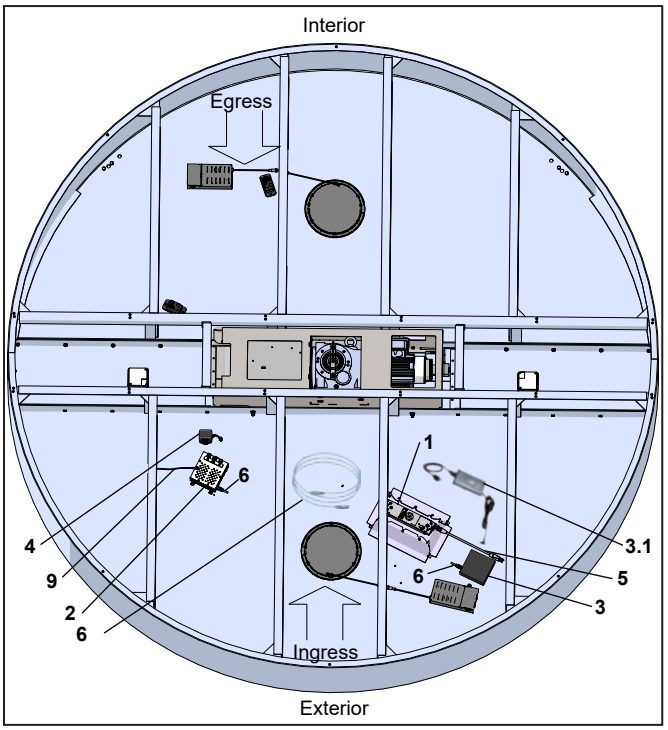


Fig. 14.6.8 Control box ground wire

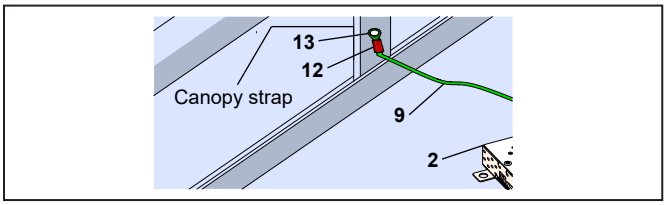


Table 14.6.2 Ingress security sensor hardware

ID#	Part no.	Function
1	DX6102-001	sCON-F12 PoE connector
2	DX6101-001	Control box
3	DX6103-001	Network switch
3.1		DC power supply, network switch
4	DX6104-001	5 Vdc power supply, control box
5	DX6108-001	Sensor PoE cable
6		Network cable, RJ45 plug to RJ45 plug
7	DX6106-001	Harness, 30", 10 pin security sensor, COM
8	DX6107-001	Harness, 30", 12 pin security sensor, MAIN
9	DX0839-010	Grounding wire, 16" long
11	DX3363	MDS Interface board
12		Ring lug
13		8-32 x 1/2" pan head sheet metal screw.

14.8 Install optional UPS system (Para. 8.14).

14.8.1 Optional UPS for Modular drive system (MDS) and S3 Security sensor control box and network switch.

1. If UPS is supplied, place in canopy near S3 control box, reference Para. 14.6, Fig. 14.6.7.

Fig. 14.8.1 UPS

14.9 Raise Canopy Into Place

NOTICE

Lifting equipment requirements will depend on canopy installation height and physical space around door installation location.

WARNING

Lift equipment requirements:

- Load capacity: 300 lb [136 kg]minimum.
- Lifting height: Based on canopy installation height.
- Wheel brakes

WARNING

Cordon off canopy installation area!

14.9.1 Move canopy to approximate door centerpoint.

1. Position canopy at door centerpoint, orienting canopy to building interface (Para. 13.3).

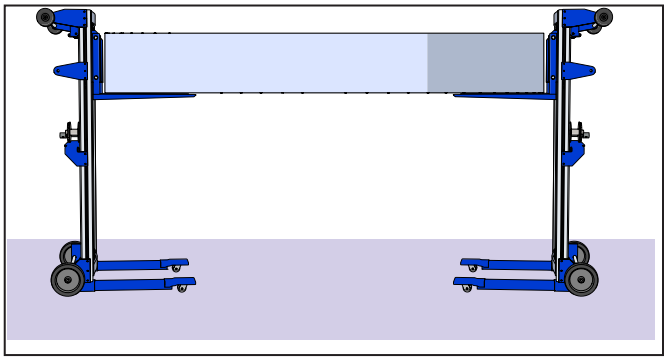
WARNING

A minimum of two persons are required when handling canopy!

WARNING

Use caution when handling canopy!

Fig. 14.9.1 Canopy on lift equipment example



14.9.2 Place canopy on lifts.

1. Place canopy on lifts.

CAUTION

Canopy installation orientation.

1. Identify canopy quarter post mounting hole locations from Crane shop drawings.
2. Orient canopy on lifts based on Crane shop drawing.

CAUTION

When placing canopy assembly on lifts prevent damage to:

- Sensor surfaces.
- Optional lights.
- Soffit surfaces.

CAUTION

Canopy post mounting holes.

Place lift equipment between canopy post mounting hole areas. Reference Chapter 16.

WARNING

Lock lift wheels once lifts are in place!

14.9.3 Raise canopy to installation height.

1. Raise canopy to height for post installation (Chapter 16).

WARNING

Use caution when raising canopy!

14.10 Canopy LED Fixture (Option) Installation

Fig. 14.10.1 LED light fixture DC7030-001

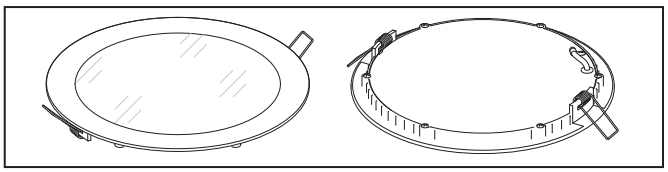
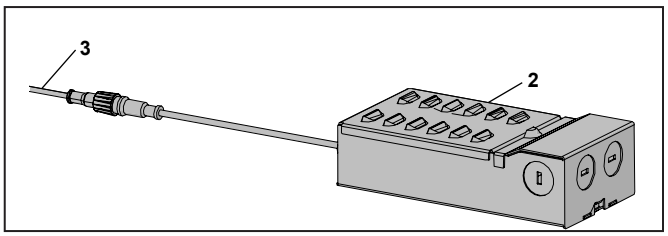


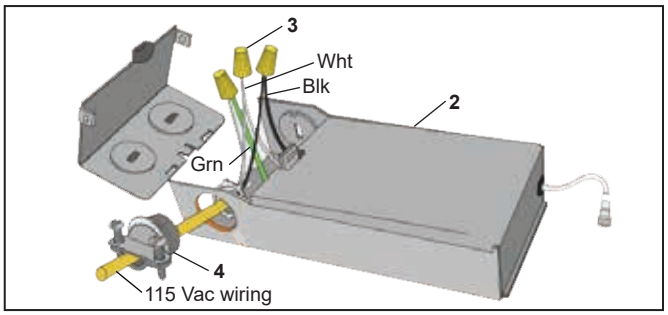
Fig. 14.10.2 LED driver and LED light cable



2 LED driver DC7031-001

3 LED light cable

Fig. 14.10.3 115 Vac wiring to LED driver

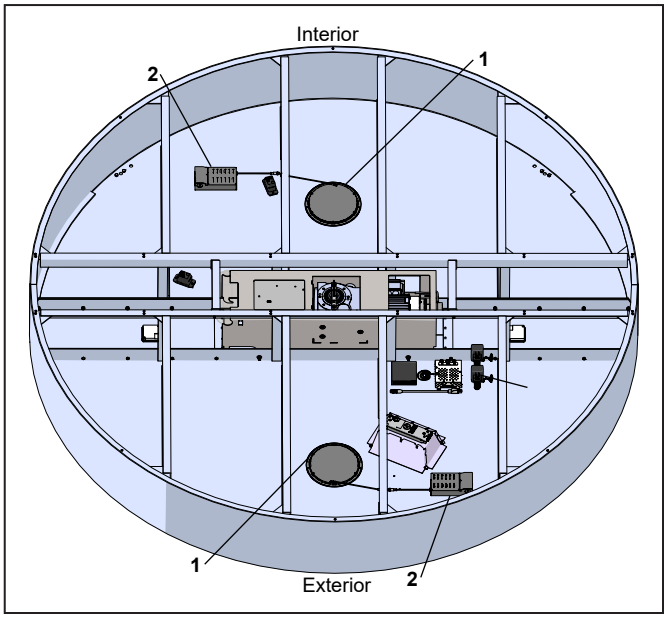


2 LED driver

3 Wire nut

4 NM cable connector or equivalent

Fig. 14.10.4 LED light and driver installation in canopy



1 LED light (option)

2 LED driver (option)

14.10.1 LED light fixtures (option).

- Each light is supplied with an LED driver (Fig. 14.10.2).

14.10.2 LED light installation.

TIPS AND RECOMMENDATIONS

LED lights are factory installed.

14.10.3 LED driver installation.

1. Connect each LED driver cable to its LED light.

14.10.4 120 Vac wiring to each LED driver.

WARNING

Work on 120 Vac wiring must be performed only by qualified personnel!

1. Use 4 conductor 18 AWG cable (Blk, Red, Grn, Wht).

- Cable must be routed from customer 115 Vac distribution panel to LED drivers.

2. For each LED driver, spice cable wires to LED driver 120 Vac wiring inside driver junction box using three wire nuts supplied with driver.

15 Enclosure Center Post Installation

15.1 Open Post Shipping Crate

Fig. 15.1.1 Post shipping crate

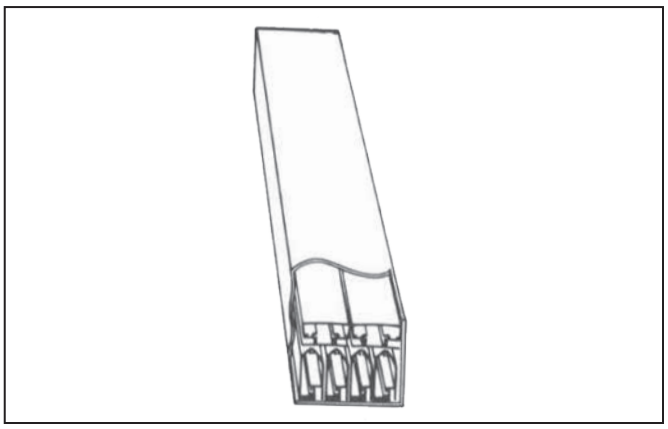
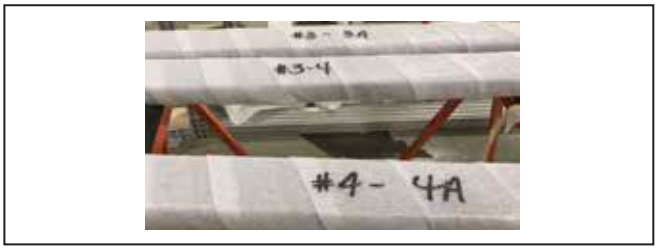


Fig. 15.1.2 Enclosure post numbering



NOTICE

Refer to Alvarado shop drawings for specific post and post installation detail for job!

15.1.1 Center posts and quarter posts.

1. Uncrate center posts and quarter posts/end walls from their shipping crate .

CAUTION

Refer to warning tag on shipping crate regarding unpacking procedure.

2. Center post and quarter post/end wall numbering.

- Each post's wrapping material is marked with numbers (Fig. 15.1.2) indicating where the center posts and quarter posts/end walls are to be located in the door installation.
- Insure post is marked with its location number on the top and bottom of the post. Reference Para. 15.2.

15.2 Quarter Post/End Wall And Center Post Assemblies

15.2.1 Quarter post/end wall and center post assemblies.

1 Quarter post/end wall
2 Bumper
3 Holes for canopy fasteners
4 Tapped holes for base 1/4-20 x 1" SS HHCS
5 Center post
6 Post numbering location
7 Push to Reverse switch plate

Fig. 15.2.1 Quarter post/end wall, with bumper

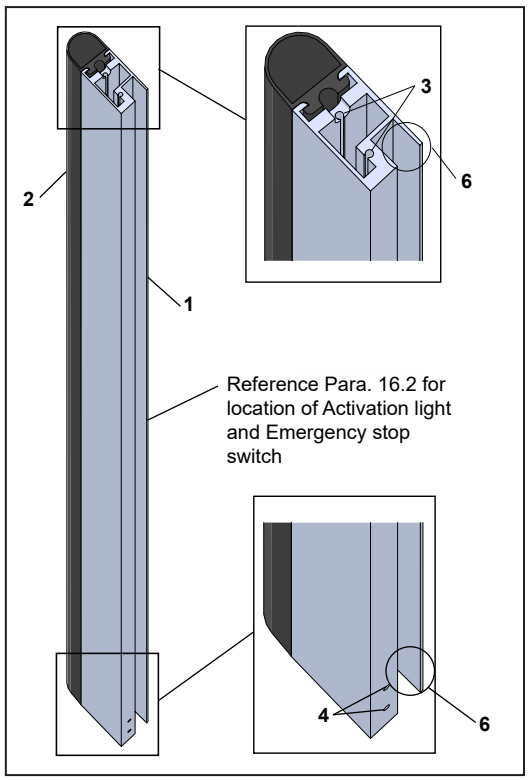
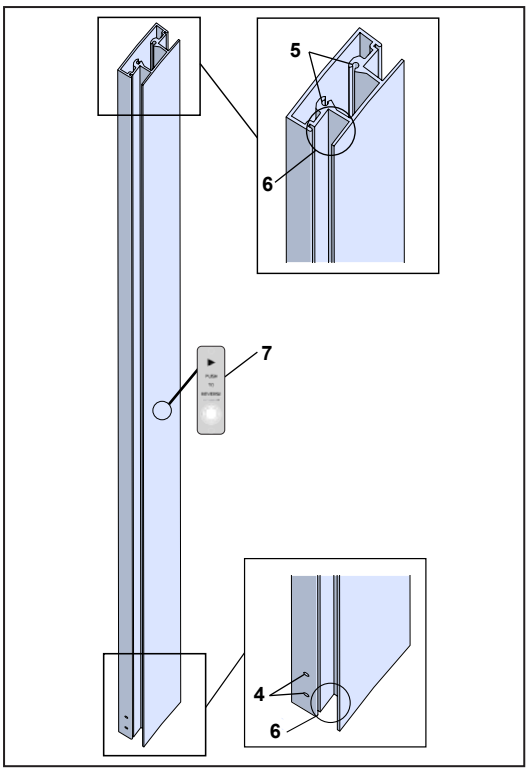
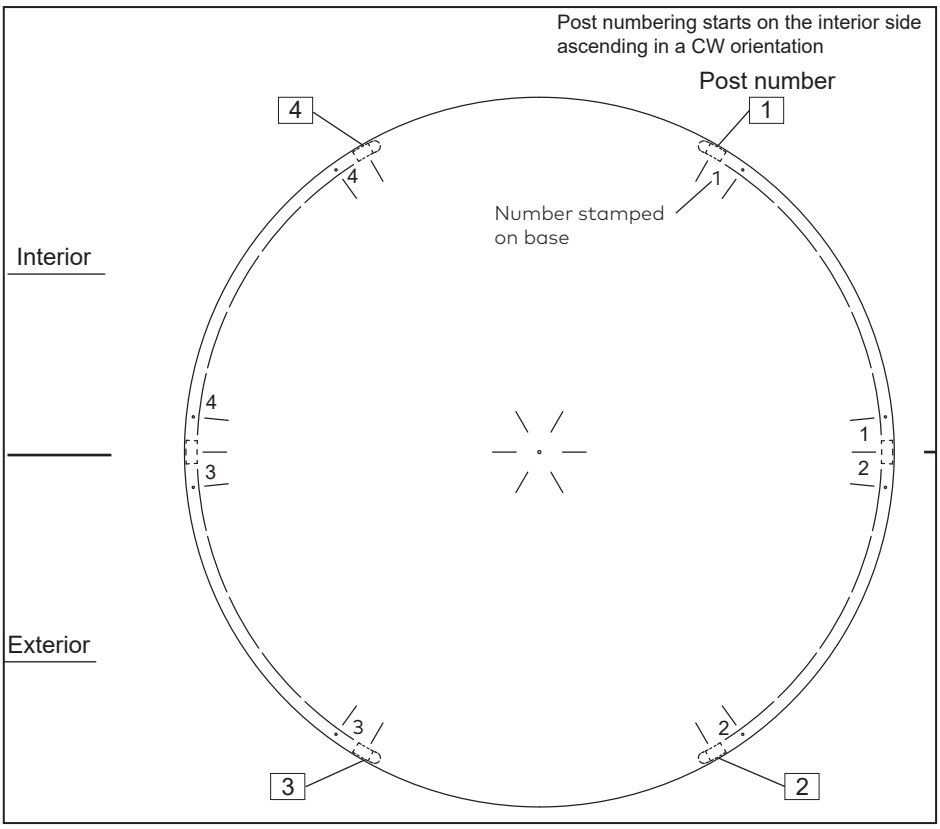


Fig. 15.2.2 Center post



15.3 Enclosure Base And Post Numbering

Fig. 15.3.1 Standard post installation numbering

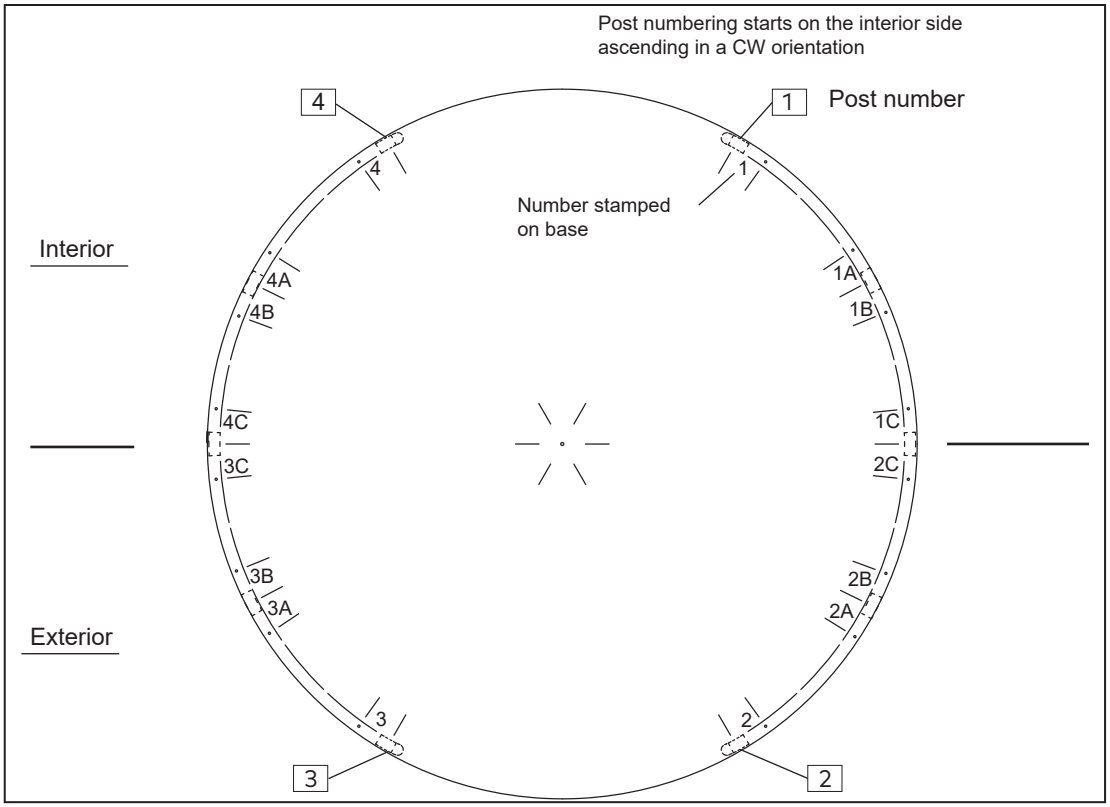


15.3.1 Post numbering, multiple revolving door installation.

Table 15.3.1 Post numbering

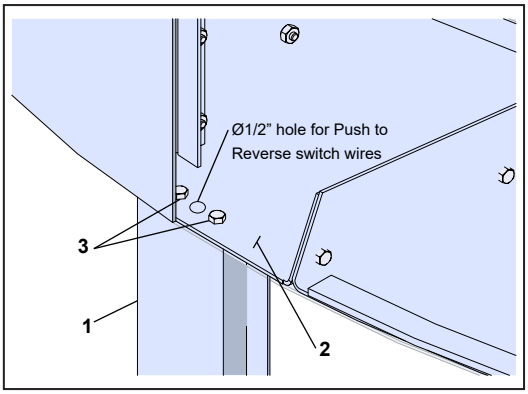
Door 1	Post numbers			
	1	2	3	4
Door 2	Post numbers			
	5	6	7	8
Door 3	Post numbers			
	9	10	11	12
Door 4	Post numbers			
	13	14	15	16

Fig. 15.3.2 Additional center post installation numbering



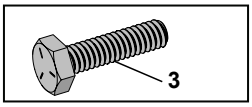
15.4 Attach Center Posts To Canopy

Fig. 15.4.1 Center post fasteners



1 Center post
2 Fascia (shown transparent)
3 1/4-20 x 1" hex head cap screw (Fig. 15.3.4)

Fig. 15.4.2 S22 0550



WARNING

Use caution while working with the posts in the canopy area!

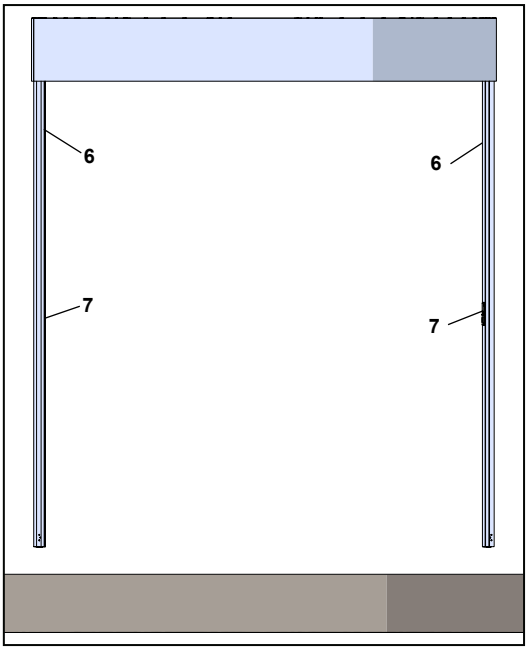
15.4.1 Fasten center posts to canopy.

1. Fasten center posts to canopy using 1/4-20 x 1" hex head screws (Fig. 15.3.4) through soffit holes into posts.

Push to Reverse Switch Wiring.

- Reference Para. 15.5.1

Fig. 15.4.3 Center posts connection to canopy



4 Tapped holes for base 1/4-20 x 1" hex head cap screws
5 Tapped holes for canopy 1/4-20 x 1" hex head cap screws
6 Center post
7 Push to Reverse switch plate

Fig. 15.4.4 Center post

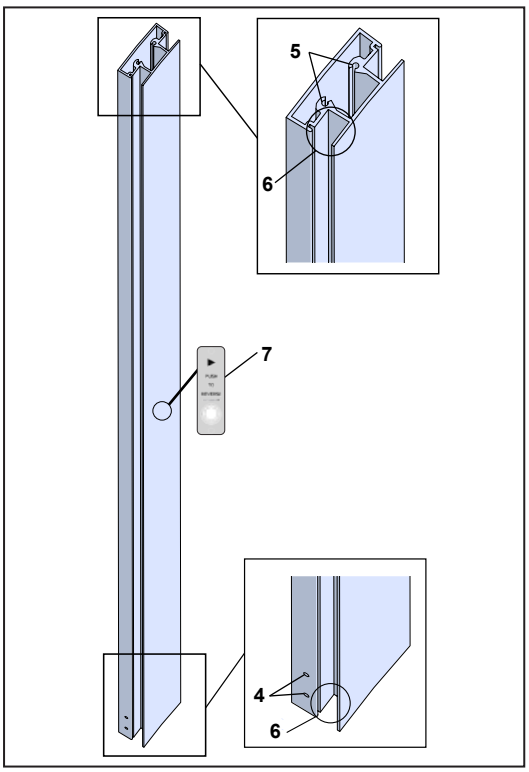
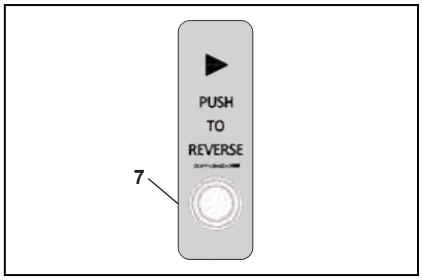


Table 15.4.1 Center post assembly

Fig. 15.4.5 Push to reverse jamb pushplate



15.5 Center Posts Push To Reverse Switch Plate Wiring

15.5.1 Center post push to reverse switch wiring.

1. Push to Reverse pushbutton wiring (Fig. 15.3.5).
2. Route 4 conductor cable from canopy to each push to reverse pushbutton area on center post.

- Plate must be removed, wires attached to plate wiring.

⚠ WARNING

Work on electrical wiring should only be done by qualified personnel!

Fig. 15.5.1 J32 cable assembly, Push to Reverse, Ingress 2

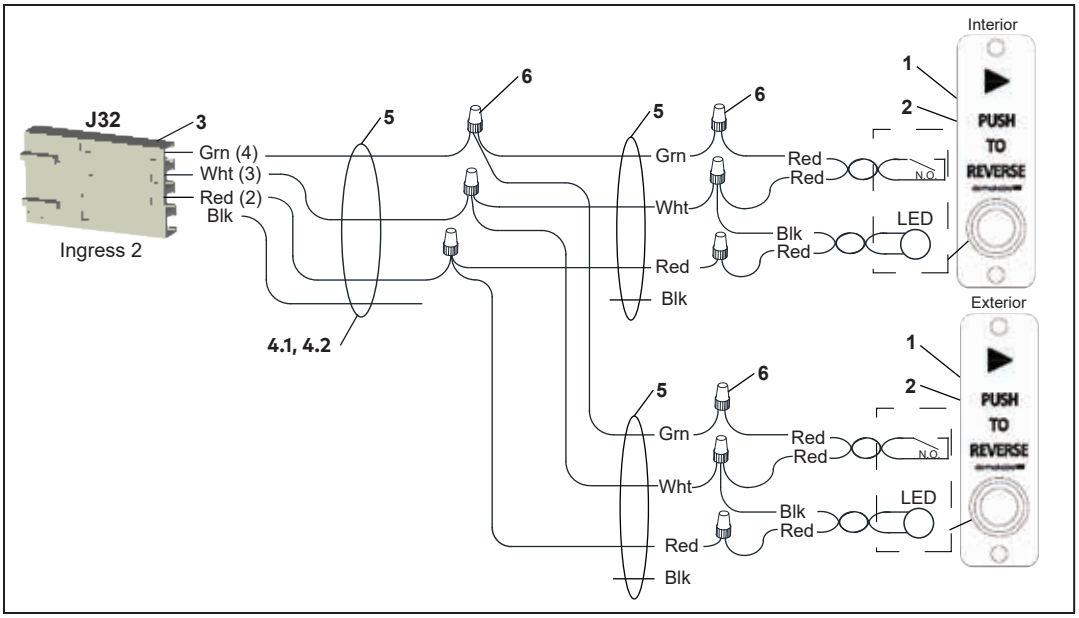


Table 15.5.1 J32 cable assembly, Push to Reverse, Ingress 2

1	DC7004-001	Jamb pushplate
2	DD7024-001	Label, Push to Reverse
3	DS7019-001	J32 Cable assembly, Push to Reverse Ingress 2
3.1	DX7015-003	Connector, 4 pin, FEM
3.2	DX7016-001	Pin, 22-24 Ga., FEM
4.1	DD7024-001	Label, PUSH TO REV INT
4.2	DD7025-001	Label, PUSH TO REV Ext
5	DX7018-003	Cable, 4 conductor
6	DX7020-001	Nut, wire, 16-22 Ga., Blue

16 Enclosure Quarter Post Installation

16.1 Attach Quarter Posts To Canopy

Fig. 16.1.1 Quarter post/end wall fasteners

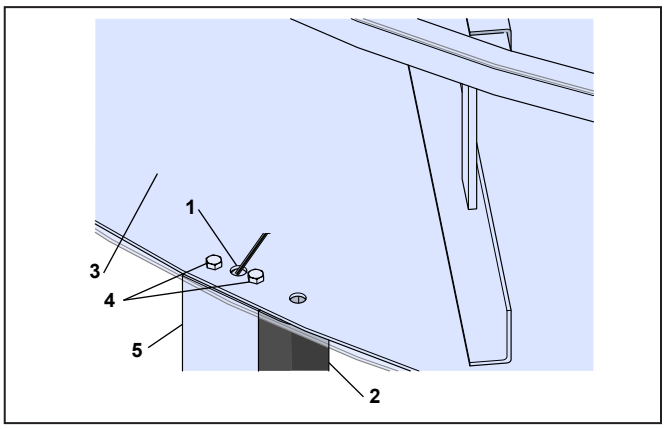


Fig. 16.1.2 Post connections to canopy example

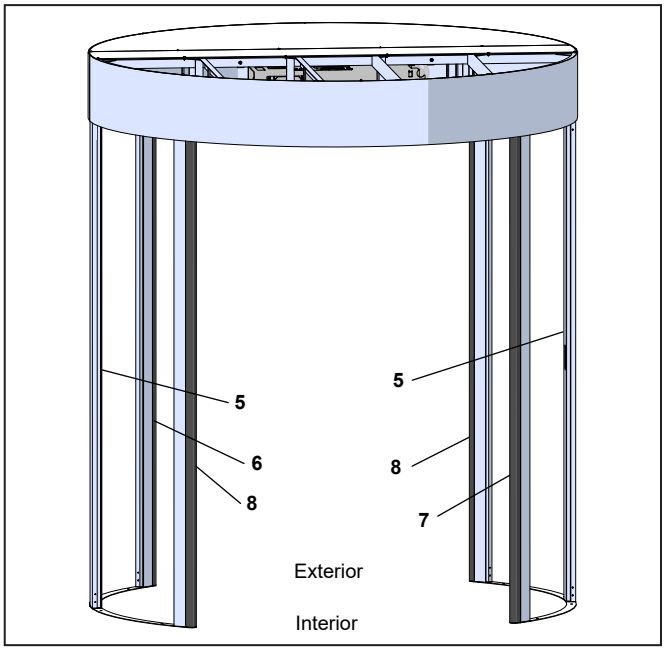
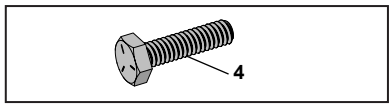


Fig. 16.1.3 1/4-20 hex head cap screw



16.1.1 Quarter post/end wall installation.

CAUTION

Match post number to number in canopy.
Refer to Para. 15.3 for post numbering locations.

1. Security quarter post wiring.

NOTICE

Reference Para. 16.2 for security quarter post/ end wall wiring.

2. Fasten quarter posts/end walls to canopy using 1/4-20 x 1" hex head screws (Fig. 16.1.3) through soffit holes into posts.

TIPS AND RECOMMENDATIONS

Use 7/16" socket or box end wrench for tightening of 1/4-20 x 1" hex head screws.

16.1.2 Quarter post end wall sensor wiring.

- Reference Para. 16.3.

1. Quarter post with end wall sensor: As quarter post is raised in position under canopy, feed sensor extension cable plug through hole in canopy (Fig. 16.1.2).
2. Pull cable through hole as quarter post is raised in position.

Table 16.2.1 Center post and quarter posts

1	Hole for security quarter post switch cables
2	Bumper
3	Fascia (shown transparent)
4	1/4-20 x 1" hex head cap screw
5	Center post with Push to Start switch
6	Exterior security quarter post
7	Interior security quarter post
8	Quarter post

16.2 Security Quarter Post Wiring

Fig. 16.2.1 Interior security quarter post wiring

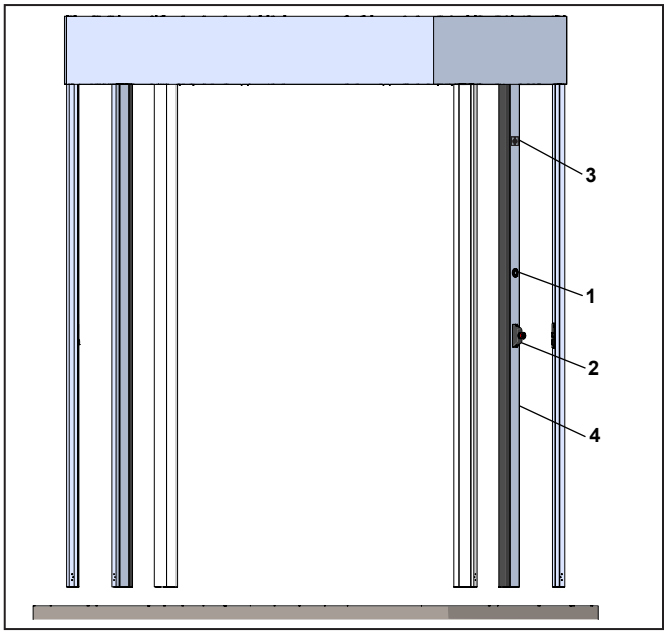


Table 16.2.1 Interior security quarter post: operator interfaces

1	DC7007-001	Activation light, interior
2	DX3413-010	Emergency stop pushbutton
3	DX3399-030	Mode key switch panel
4		Interior security quarter post

Table 16.2.2 Interior security quarter posts: device wiring

1	DC7007-001	Activation light, interior
5	DC7007-001	Activation light, exterior
6	DS7010-001	Cable assembly, activation light
7		Connector, PLC, DQe
2	DX3413-010	Emergency stop pushbutton
8	DS7017-001	J22 Cable assembly, emergency stop
3	DX3399-030	Mode key switch panel
9	DS7024-001	J13 Cable assembly, Mode switch

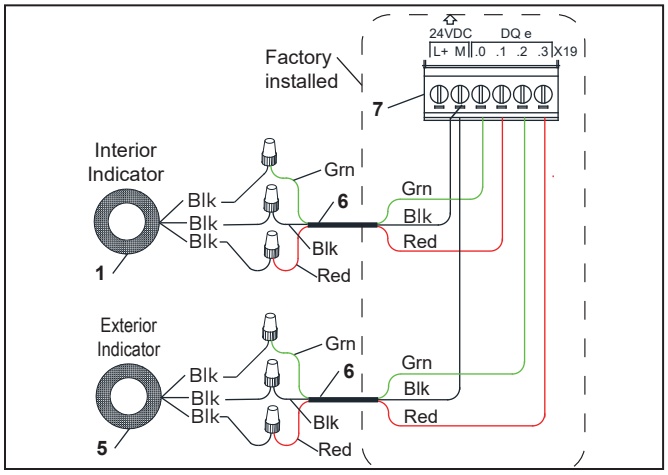
⚠ WARNING

Work on electrical wiring should only be done by qualified personnel!

16.2.1 Interior security quarter post, operator interfaces.

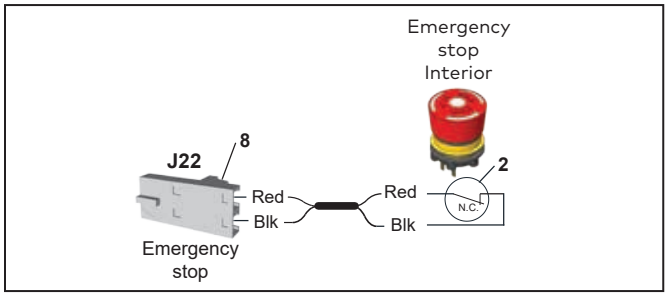
1. Activation light.
- Shipped separately, installed and wired at installation.
- Wiring routed through quarter post into canopy.

Fig. 16.2.2 Activation light wiring



2. Emergency stop switch.
- Shipped separately, installed and wired at installation.
- Wiring routed through quarter post into canopy.

Fig. 16.2.3 Emergency stop pushbutton wiring



3. Mode switch panel.
- Shipped separately, installed and wired at installation. May be installed at a different location.
- Wiring routed through quarter post into canopy.

Fig. 16.2.4 Mode switch wiring

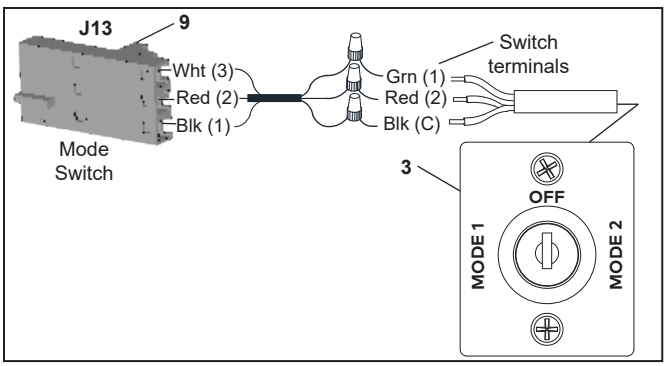


Fig. 16.2.5 Exterior security quarter post wiring

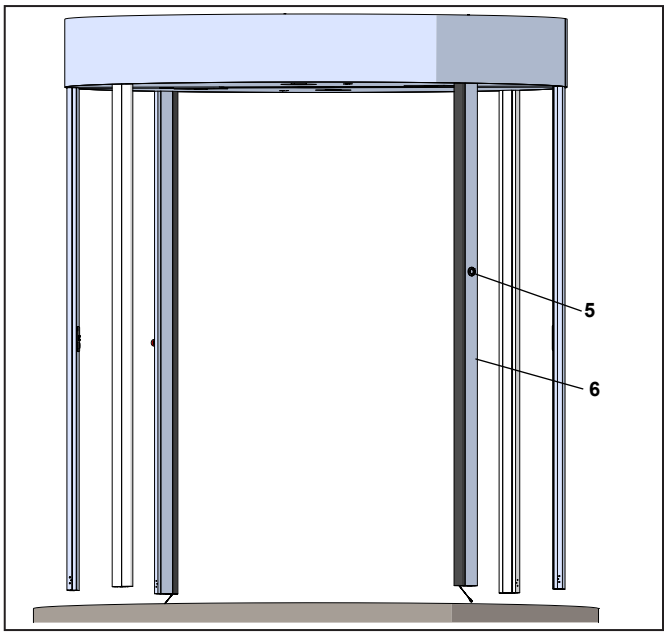


Table 16.2.3 Exterior security quarter post: operator interface

5	DC7007-001	Activation light, exterior
6		Exterior security quarter post

16.2.2 Exterior security quarter post, operator interfaces.

1. Activation light.

- Shipped separately, installed and wired at installation.
- Wiring routed through quarter post into canopy.
- Wiring: Reference Fig. 16.2.5.

16.3 Security Quarter Post/End Wall Installation And Wiring

16.3.1 Security quarter post/end wall installation.

1. Two security quarter post/end walls are supplied, one for egress (interior side of door), and one for ingress (exterior side of door).
2. Position the two security post/end walls as shown in Fig. 16.3.1.

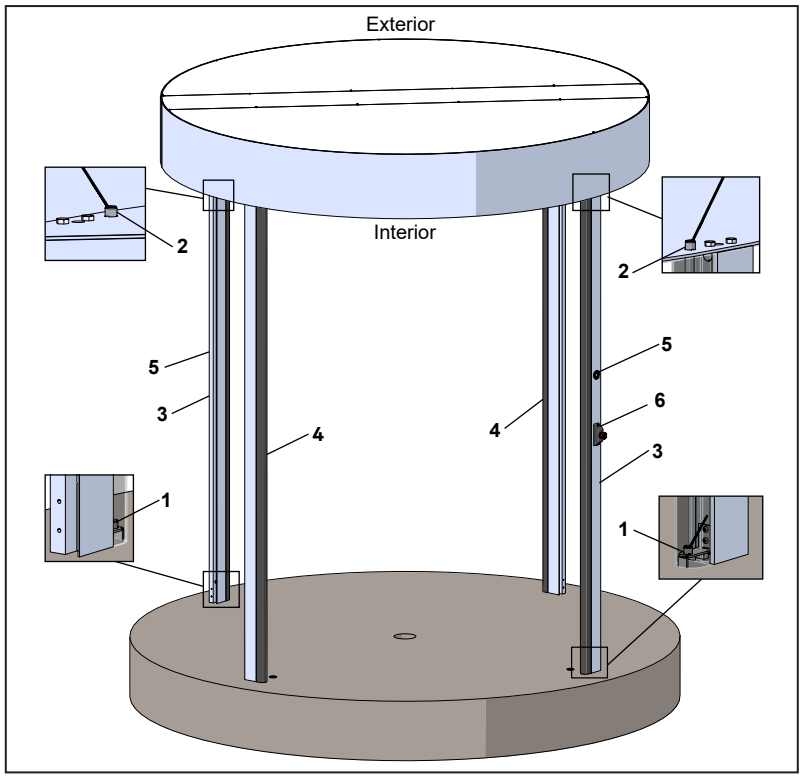
16.3.2 ELS300 transmitter.

1. ELS300 transmitter with bracket is factory installed (Fig. 16.3.2).
2. Extension cable: connect extension cable plug to plug on end of transmitter cable.

16.3.3 Sensor extension cable and quarter post installation.

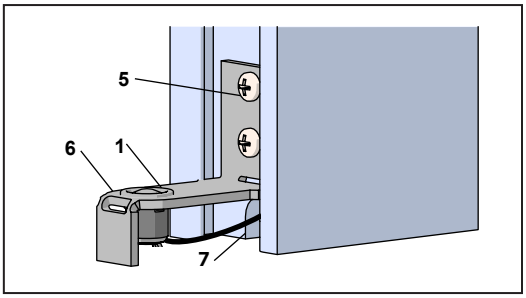
1. Route extension cable through quarter post.(Fig. 16.3.1).
2. When quarter post is installed, extension cable plug must be routed through access hole in canopy adjacent to bolts securing quarter post to canopy (Fig.16.3.2).

Fig. 16.3.1 Security quarter post/end wall with end wall sensors, activation lights and Emergency stop switch



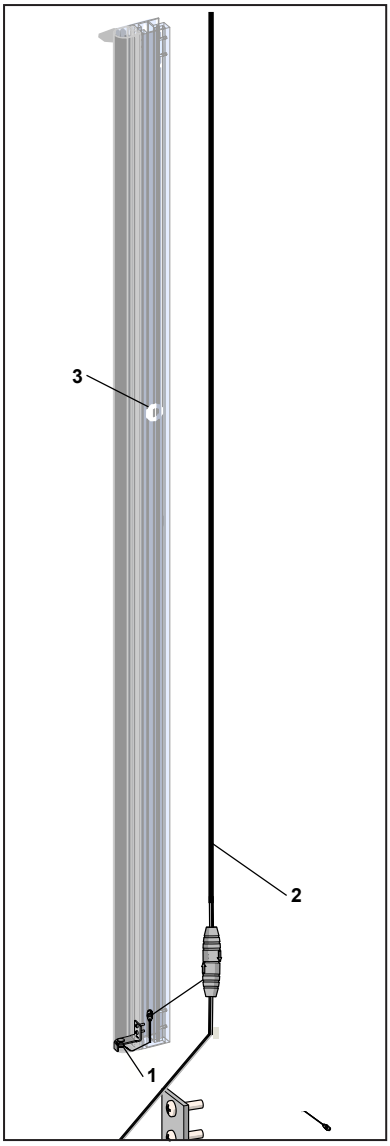
1 ELS 300 transmitter DX3352-010
2 ELS 300 receiver DX3352-020
3 Security quarter post/ end wall with safety edge transmitter
4 Quarter post/end wall
5 Activation light DS7042-001
6 Emergency stop switch DX3413-010 Located at installation

Fig. 16.3.2 End wall sensor transmitter mounting



1 ELS 300 transmitter DX3352-010
5 .164-32 x 5/8" PPHMS
6 Bumper sensor bracket P54 6510
7 Slot in quarter post for cable

Fig. 16.3.3 End wall sensor transmitter wiring



1 ELS 300 transmitter DX3352-010
2 M8 x 4 transmitter cable, 5m length, DX3352-030

17 Enclosure Base Installation

NOTICE

Refer to Alvarado shop drawings for specific base installation detail for job!

NOTICE

Stainless steel base installation.
Refer to Alvarado shop drawings for stainless steel base installation detail.

17.1 Open Base Enclosure Shipping Crate

Fig. 17.1.1 Base enclosure crates

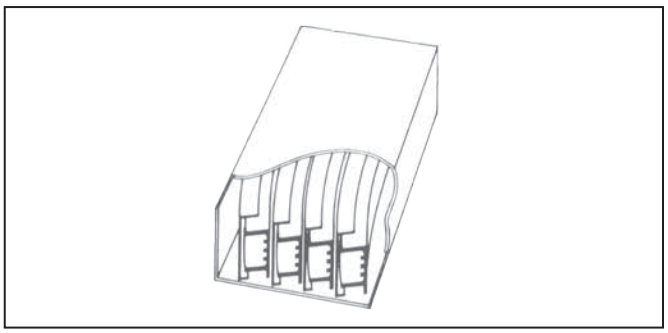
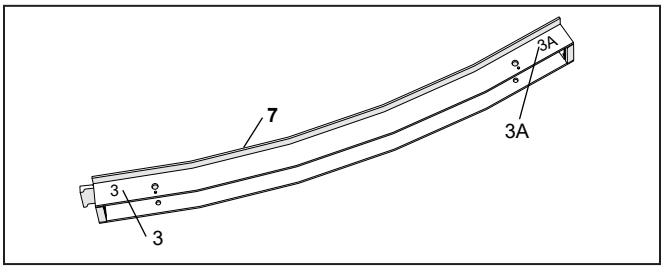


Fig. 17.1.2 Enclosure base shipping crate

Fig. 17.1.3 Enclosure base numbering



7 Enclosure base assembly with location numbers

17.1.1 Unpack enclosure base assemblies from shipping crate.

1. Uncrate enclosure base assemblies from their shipping crate.

CAUTION

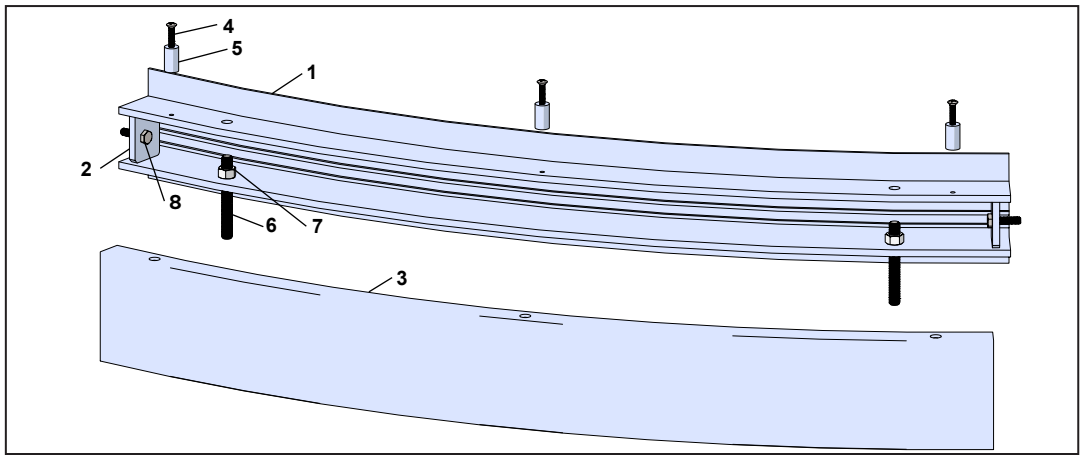
Refer to warning tag on shipping crate regarding unpacking procedure.

2. Enclosure base numbering:

- Enclosure base wrapping material is marked with two numbers indicating where the base is to be located in the door installation (Fig. 17.1.2).
- The numbers are stamped on the base (Fig. 17.1.3).
- Insure base numbers match those on wrapping material.

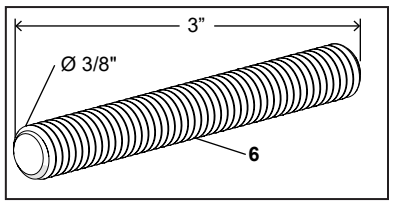
17.2 Base Assembly Installation

Fig. 17.2.1 Aluminum enclosure base and fascia assembly example



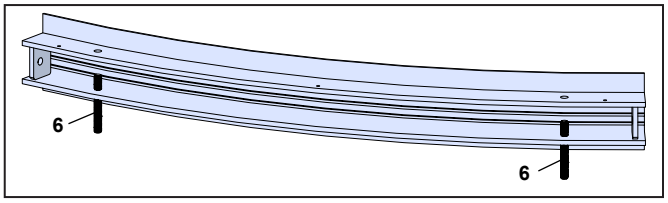
1 Enclosure base
2 Attachment block, base to post
3 Cover
4 10-24 x 1 1/4" SS Phillips oval head machine screw S21 0334
5 Base support spacer, 1/2" dia, 7/8" long
6 3/8" x 3" stud Z27 0703
7 3/8" hex nut
8 1/4-20 x 1" SS hex head machine screw S22 0550

Fig. 17.2.2 3" stud



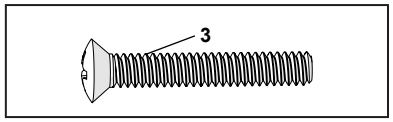
6 3/8" x 3" stud Z27 0703

Fig. 17.2.3 Aluminum mounting base with 3" studs installed



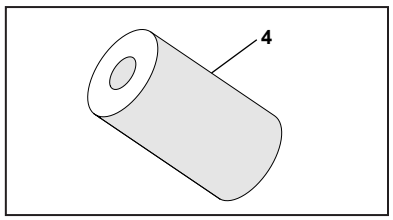
6 3/8" x 3" stud Z27 0703

Fig. 17.2.4 S21 0334



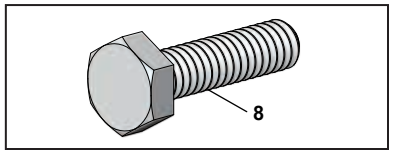
3 10-24 x 1 1/4" SS Phillips oval head machine screw S21 0334

Fig. 17.2.5 Spacer



4 Base support spacer, 1/2" dia, 7/8" long

Fig. 17.2.6 HHMS



8 1/4-20 x 1" SS hex head machine screw S22 0550

17.2.1 Remove cover from each base enclosure assembly.

1. Remove Phillips oval head screws and spacers from each base enclosure.
2. Remove cover from each base enclosure.

TIPS AND RECOMMENDATIONS

Number cover and mounting base (matching set).

WARNING

Use caution working in door installation area.
Lift equipment in place under canopy.

17.2.2 Prepare stud anchor holes.

- Stud anchor holes drilled in Para. 13.4

1. Use vacuum or blower to remove any dust or debris.

17.2.3 Thread two 3" studs into each base assembly.

1. Thread two 3" studs into the mounting holes of each base (Fig. 17.2.3), leaving 3/4" above bottom base rail.

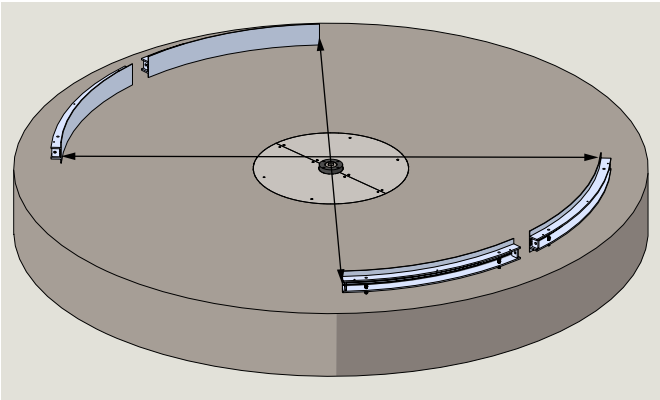
17.2.4 Dry fit each base assembly to the floor.

1. Place each base section on the floor, checking stud depths in the floor stud mounting holes.

CAUTION

Enclosure base numbers must match adjacent post numbers.

Fig. 17.2.7 Bases installed on floor



17.2.5 Verify door inside diameter.

1. Verify inside diameter at opposite quarter posts and at center posts.

17.2.6 Remove bases.

1. Remove bases from floor.

17.2.7 Partially fill anchor holes with anchoring epoxy.

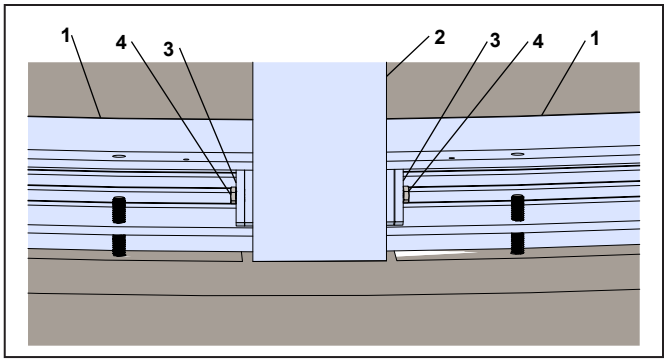
1. Use an anchoring epoxy such as Quikrete high strength anchoring epoxy.

17.2.8 Reinstall base assemblies

1. Reinstall bases on floor, inserting base studs into anchor holes.

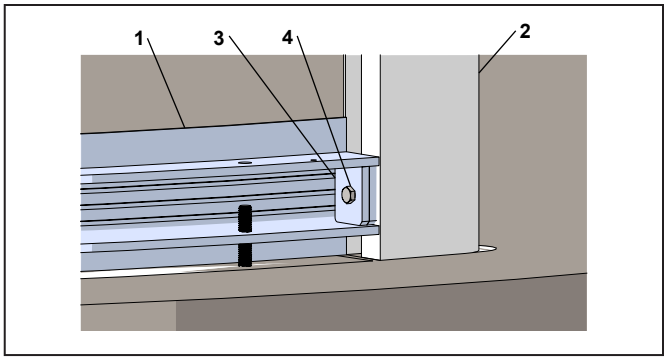
17.3 Lower Canopy And Post Assembly; Fasten Posts To Bases

Fig. 17.3.1 Bases attached to center post



1	Base assembly A32 1012	**3**	Rail to base attachment block A32 2005
2	Center post A32 1002	**4**	1/4-20 x 1" SS HHMS S22 0550

Fig. 17.3.2 Base attached to quarter post



1	Base assembly A32 1012	**3**	Rail to base attachment block A32 2005
2	Quarter post A32 1004	**4**	1/4-20 x 1" SS HHMS S22 0550

17.3.1 Lower canopy and post assembly.

WARNING

Use caution when lowering assembly!

1. Carefully lower assembly until base mounting holes line up with mounting holes in posts.

CAUTION

Monitor post alignment with mounting bases as assembly is lowered.

17.3.2 Fasten the two center post to their adjoining base assemblies.

1. Fasten each center post to each of its adjacent bases using a 1/4 x 1" SS hex head machine screw.

- Snug, do not tighten fasteners.

17.3.3 Fasten the four quarter post to their adjoining base assemblies.

1. Fasten each quarter post to its base using a 1/4 x 1" SS hex head machine screw.

- Snug, do not tighten fasteners.

TIPS AND RECOMMENDATIONS

Use 7/16" socket or box end wrench for tightening of hex head machine screws.

17.4 Set Enclosure Level, Square And Plumb

Fig. 17.4.1 Checking enclosure posts for plumb and square

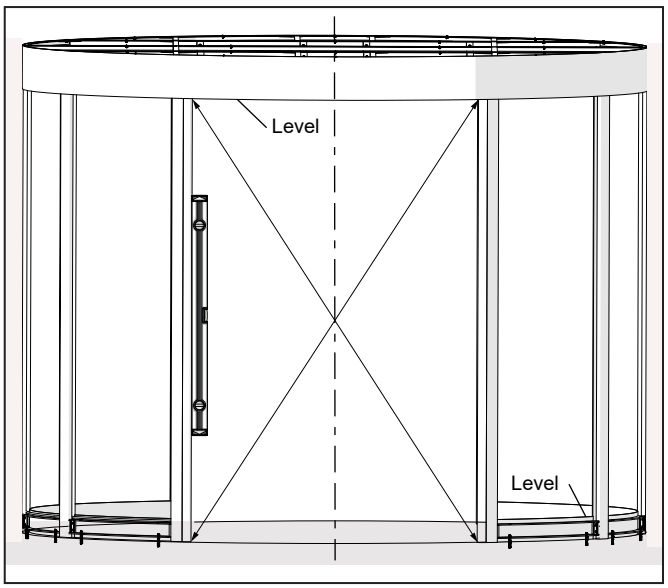
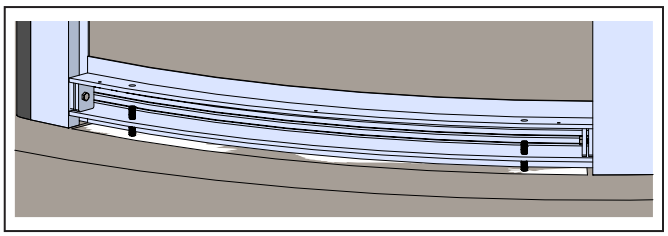


Fig. 17.4.2 Base assembly



17.4.1 Shim each base assembly as required.

CAUTION

Shim each base assembly with horseshoe shims as required to obtain level, square and plumb door installation.

CAUTION

Check revolving door to building interface!

WARNING

Using plumb bob with string, verify center of canopy is plumb with centerline of floor pivot assembly.
Reference Chapter 13, installation template.

18 Center Shaft Shipping Crate

18.1 Unpack Center Shaft Shipping Crate

Fig. 18.1.1 Center shaft shipping crate

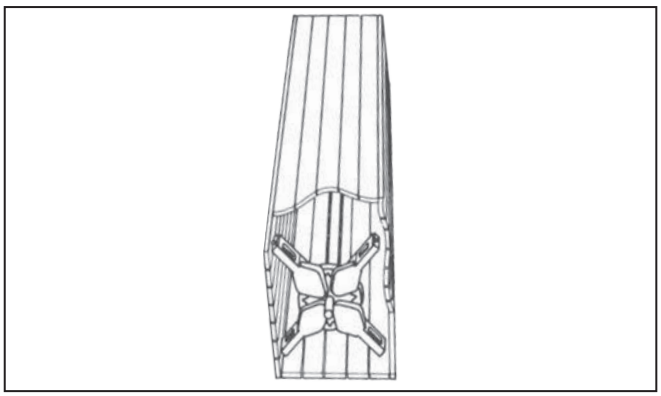
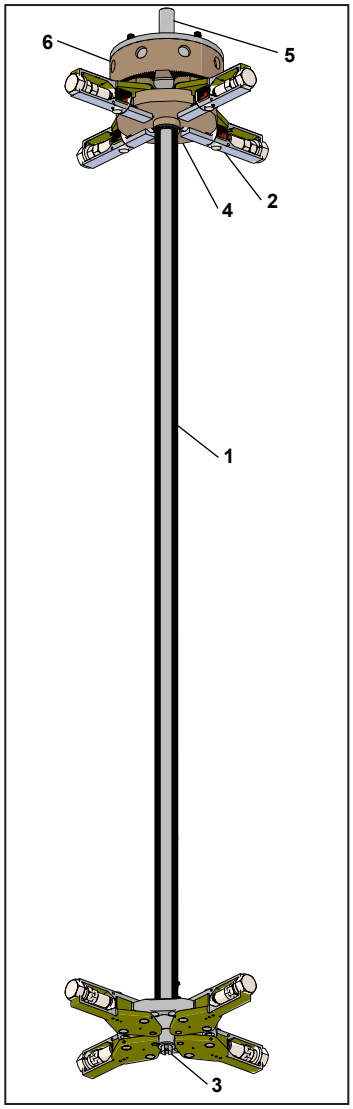


Fig. 18.1.2 4 wing center shaft assembly

1 Center shaft
2 Hanger assembly H
3 Bottom plug
4 4 wing machine casting
5 Splined shaft
6 Bookfold lock assembly



18.1.1 Crane shop drawings.

NOTICE

Refer to Alvarado shop drawings for center shaft installation detail for job!

18.1.2 Uncrate center shaft assembly from shipping crate.

CAUTION

Refer to warning tag on shipping crate regarding unpacking procedure

18.1.3 Unpack center shaft assembly.

1. Uncrate 4 wing center shaft assembly.

18.1.4 Remove floor pivot assembly from its carton.

- Floor pivot assembly
- Surface mounted floor pivot assembly.

Fig. 18.1.3 Floor pivot assembly H64 400X

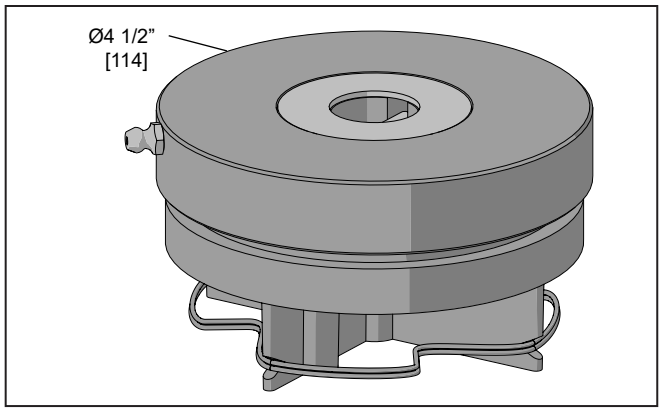
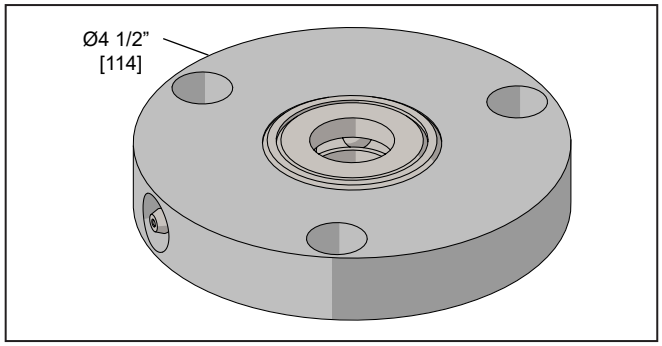


Fig. 18.1.4 Surface mounted floor pivot assembly DS3423-010



19 Install Floor Pivot Assembly

19.1 Install Floor Pivot Assembly

Fig. 19.1.1 Floor pivot assembly

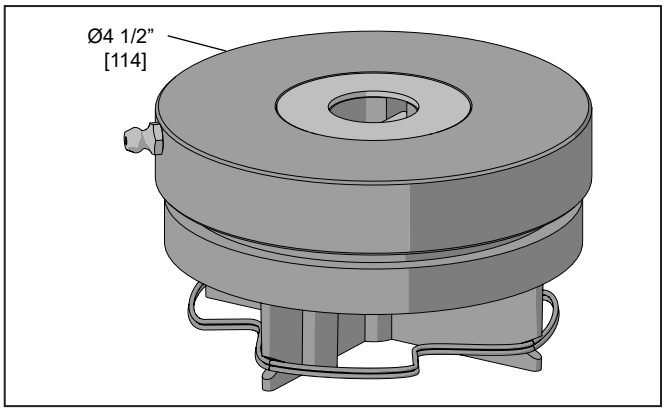
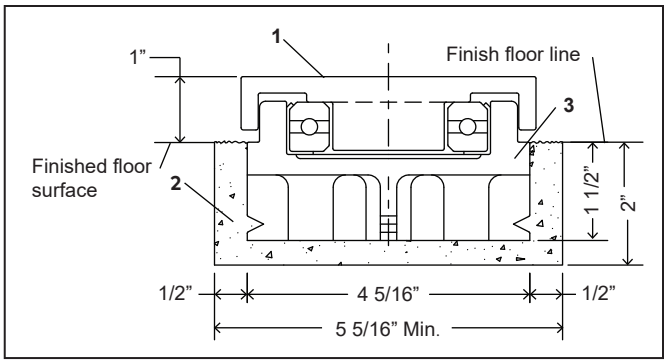


Fig. 19.1.2 Floor pivot assembly installed in floor



1 Plastic pivot top
2 Quik-Rok® fast setting cement
3 Floor pivot assembly H64 4000

19.1.1 Alvarado shop drawings.

NOTICE

Refer to Alvarado shop drawings for specific floor pivot installation and center shaft installation detail for job!

19.1.2 Install floor pivot assembly.

1. Mark floor cutout for floor pivot assembly at door centerpoint.

NOTICE

General contractor note: provide minimum Ø5 5/16” x 2” deep cutout to accept floor pivot bearing.

2. Position pivot assembly in floor cutout:
- Using plumb bob with string, center floor pivot assembly under canopy overhead manual speed control drive shaft centerpoint.
- Shim under plastic pivot bottom to obtain 1" height of floor pivot bearing above finished floor surface.

TIPS AND RECOMMENDATIONS

Refer to Alvarado shop drawing for floor pivot assembly to canopy soffit height.

NOTICE

Floor pivot assembly must be level and at speed control drive shaft centerpoint..

3. Fill floor pivot assembly cutout to finish floor level with non-shrink grout (Fig. 19.1.2).

CAUTION

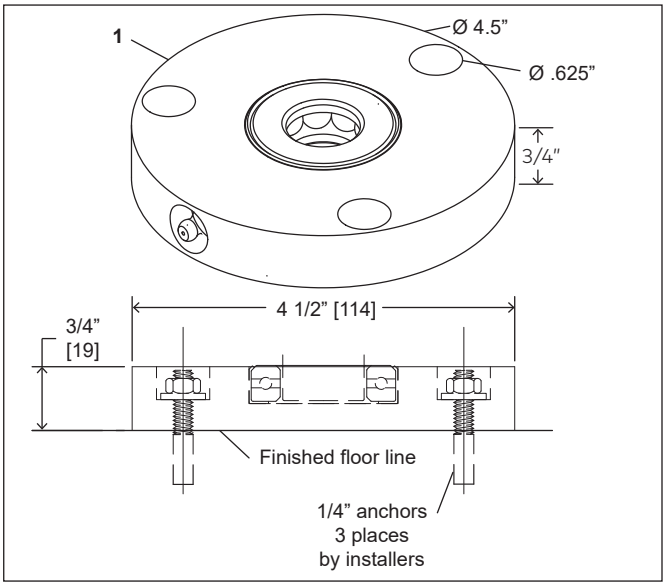
Use non-shrink grout. Follow manufacturer's directions.

19.1.3 Grease floor pivot.

1. Grease floor pivot using grease gun with multipurpose grease.

19.2 Install Surface Mounted Floor Pivot Assembly

Fig. 19.2.1 Floor surface-mounted bottom pivot assembly



3 Surface mounted pivot assembly

19.2.1 Install floor surface-mounted pivot assembly.

NOTICE

Refer to Alvarado shop drawings for specific floor pivot detail for job!

1. Position pivot assembly at door centerpoint.
2. Mark 3 holes for 1/4" floor anchors (Fig. 20.1.5).
- Using plumb bob with string, check that pivot assembly is at speed control drive shaft centerpoint.
3. Drill 3 holes for 1/4" floor anchors.
4. Install anchors.
5. Install 3 fasteners through bottom pivot assembly mounting holes and into floor anchors.

NOTICE

Floor pivot assembly must be level and at speed control drive shaft centerpoint..

- Shim under plastic pivot bottom to obtain floor plastic pivot top to canopy soffit height.

TIPS AND RECOMMENDATIONS

Refer to Alvarado shop drawing for floor pivot assembly to canopy soffit height.

19.2.2 Grease floor pivot.

1. Grease floor pivot using grease gun with multipurpose grease.

19.3 Check Floor Pivot Centerpoint And Pivot Bearing To Canopy Height

Fig. 19.3.1 Canopy MDS drive shaft centerpoint

1 Modular drive system shaft
2 Plastic pivot top
3 Plastic pivot bottom
4 Canopy soffit

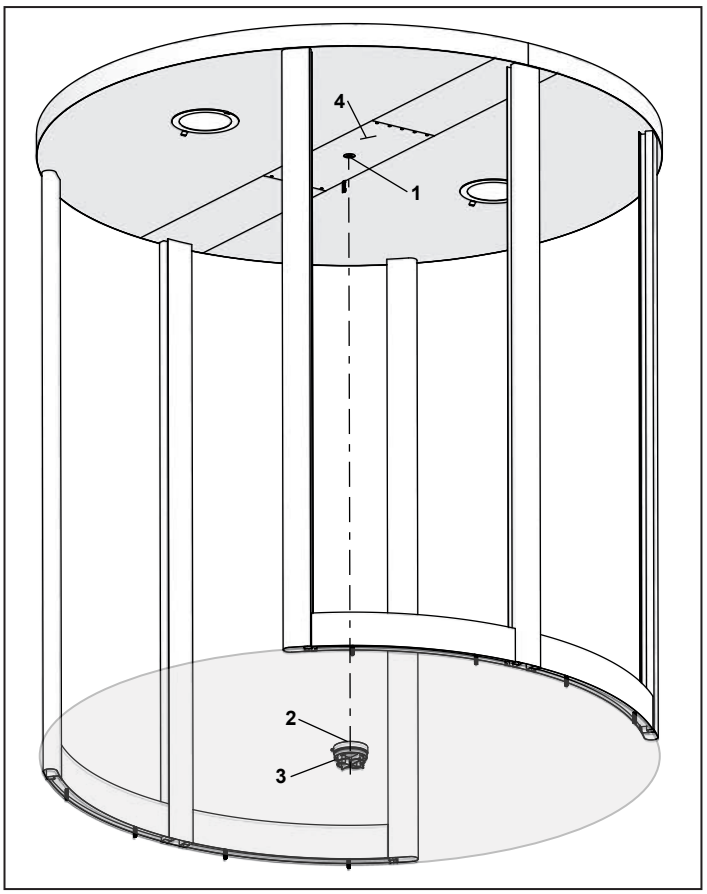
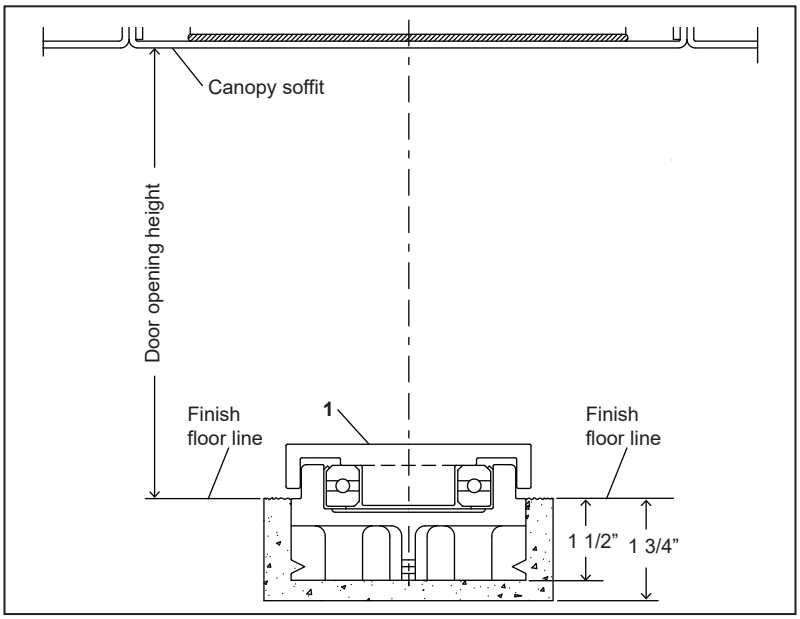


Fig. 19.3.2 Floor pivot bearing to canopy soffit height

1 Floor pivot bearing

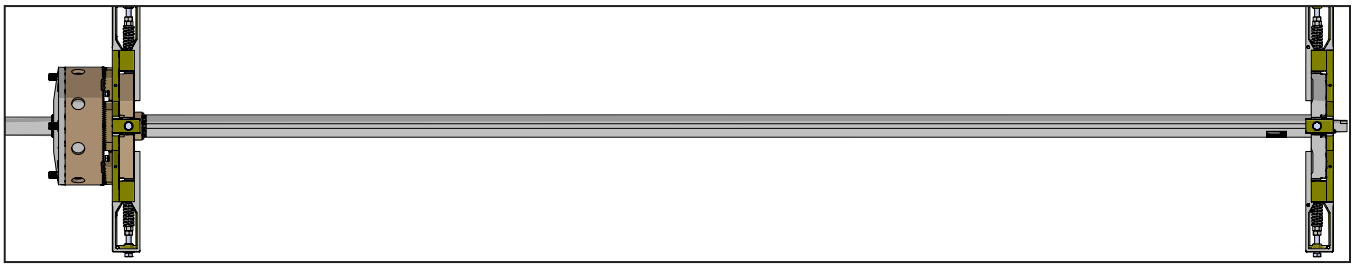


TIPS AND RECOMMENDATIONS

Refer to Alvarado shop drawing for floor pivot assembly to canopy soffit height.

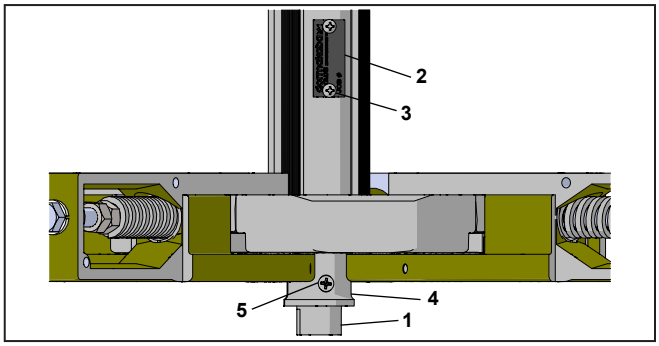
20 Install Center Shaft

Fig. 20.2.1 Center shaft assembly with bookfold lock



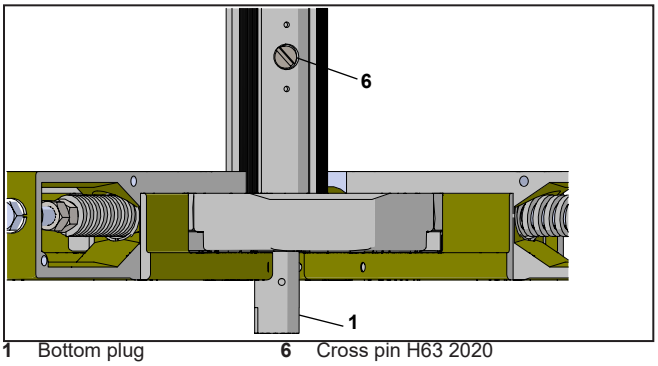
20.1 Retract Center Shaft Bottom Plug

Fig. 20.1.1 Nameplate, job number tag



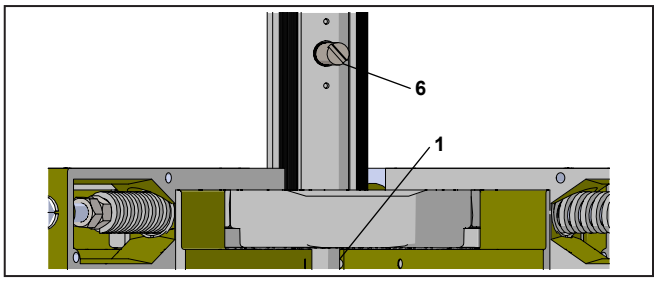
1	Bottom plug H63 2075	**4**	Collar, half, 1 inch
2	Nameplate DD6001-001	**5**	8-32 SS Phillips flat head machine screw
3	6-32 x 1/2"SS PPHS DF6008-01G		

Fig. 20.1.2 Nameplate, half collars removed



1	Bottom plug	**6**	Cross pin H63 2020 7/16" x 1 7/16"

Fig. 20.1.3 Bottom plug retracted



1	Bottom plug	**6**	Cross pin H63 2020

WARNING

Use caution when lifting and positioning center shaft assembly!

WARNING

Risk of injury from heavy loads!
The center shaft is lifted and moved during assembly. Improper lifting and transport operations may cause accidents with serious injuries and material damage.

- Two persons are always required to lift or move the center shaft assembly.

20.1.1 Remove collars from bottom plug.

1. Remove two 8-32 FHMS and two half collars from bottom plug,

20.1.2 Remove nameplate.

1. Remove two 6-32 x 1/2" Phillips machine screws securing nameplate/job number tag.
2. Remove tag and set aside screws and tag.

CAUTION

Nameplate/job number tag must be retained and reinstalled after installation of center shaft. Refer to Para. 20.3.

20.1.3 Retract bottom plug.

1. Loosen cross pin.
2. Move bottom plug until surface flush with hangers (Fig. 20.1.3).
3. Snug cross pin against bottom plug.

20.2 Install Center Shaft Splined Shaft Into Gearbox Drive Shaft

Fig. 20.2.1 Center soffits removed from canopy

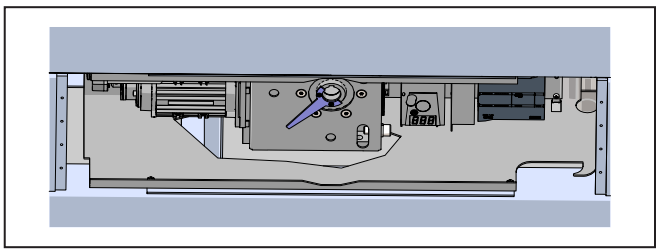
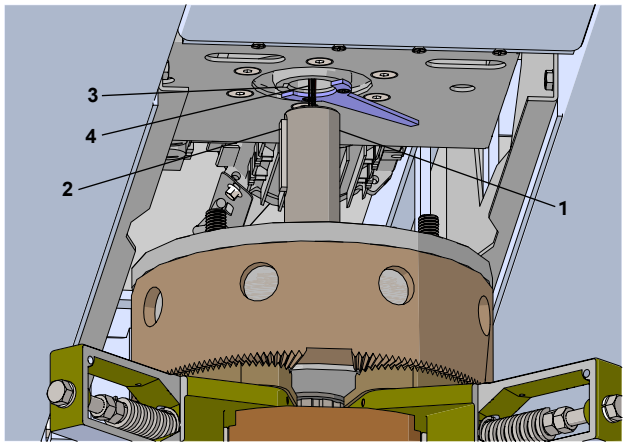
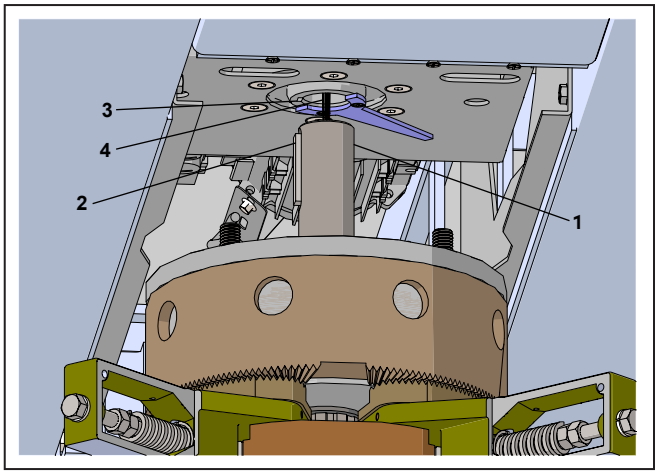


Fig. 20.2.2 Center shaft positioned under gearbox drive shaft



1 Splined shaft
2 3/8" x 3/8" x 1 3/4" Key
3 Gearbox drive shaft keyway
4 Slip ring wires

Fig. 20.2.3 Slip ring wires routed through splined shaft



1 Splined shaft
4 Slip ring wires
5 Hole in splined shaft for slip ring wires
6 Org and Brn slip ring wires

20.2.1 Installation overview.

1. Center shaft top spline shaft is inserted into gearmotor assembly drive shaft.
   - Gearmotor drive shaft has a keyway with key installed in the keyway groove.
   - Splined shaft has a keyway.
2. Center shaft is positioned vertically below gearmotor drive shaft so that the keyways are aligned (Fig. 20.2.2).
3. Slip ring wires are routed through hole in splined shaft. As center shaft is raised vertically under gearbox drive, the orange and brown slip ring wires are fed into the hole at the top of the splined shaft. The two wires exit at a hole in the side of the splined shaft (Fig. 20.2.3).
4. The two slip ring wires are connected to bookfold lock coil wires. Wire nuts connect the two wires from bookfold loick coil to the two slip ring wires (Fig. 20.2.4).
5. Splined shaft is then raised into gearmotor drive shaft.
6. Bottom plug is then lowered into floor pivot bearing and cross pin threaded into bottom plug hole.

Fig. 20.2.4 Slip ring and bookfold lock coil wiring

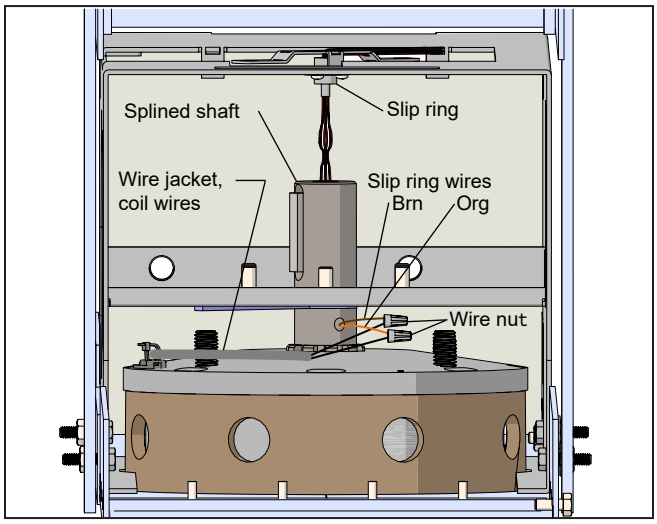
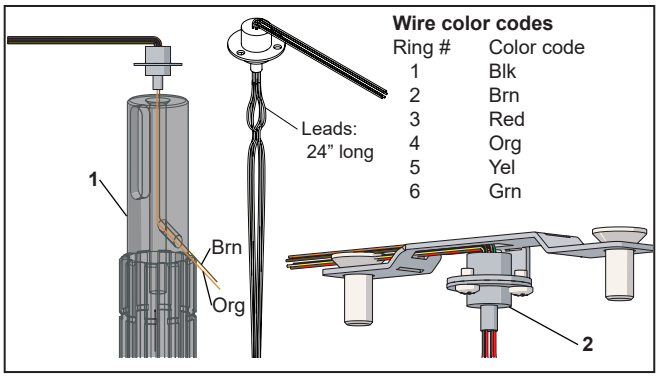


Fig. 20.2.5 Slip ring assembly, splined shaft wires



1 Splined shaft
2 DX3373-010

20.2.2 Center shaft bottom plug.

NOTICE

Retract center shaft bottom plug.
Center shaft bottom plug must be retracted (Para. 20.1).

20.2.3 Remove canopy soffits.

1. Remove the eight 0.19 -24 x 3/4" FHMS securing the canopy center soffits to the canopy.
2. Remove the canopy center soffits (Fig. 20.2.1)

20.2.4 Raise center shaft assembly under gearbox drive shaft.

WARNING

Use caution when lifting and positioning center shaft assembly!

WARNING

Risk of injury from heavy loads!
The center shaft is lifted and moved during assembly. Improper lifting and transport operations may cause accidents with serious injuries and material damage.
- Two persons are always required to lift or move the center shaft assembly.

3. Move center shaft assembly under canopy and position assembly vertically under gearbox drive shaft. Reference Para. 20.2.5 for slip ring wires.

CAUTION

Use caution that splined shaft does not contact canopy soffits!

20.2.5 Route slip ring wires through splined shaft.

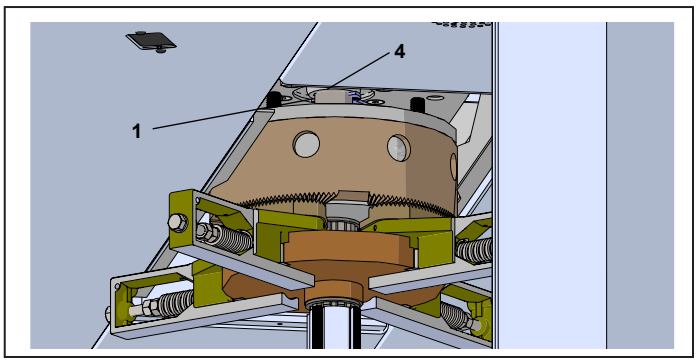
1. Route slip ring orange and brown wires through hole in top of splined shaft. Wires exit in a hole at the side of the splined shaft (Fig. 20.2.3, 20.2.4).

20.2.6 Align center shaft splined shaft key with gearbox drive shaft keyway.

1. Rotate center shaft to align center shaft key with keyway in gearbox drive shaft (Fig. 20.2.2).

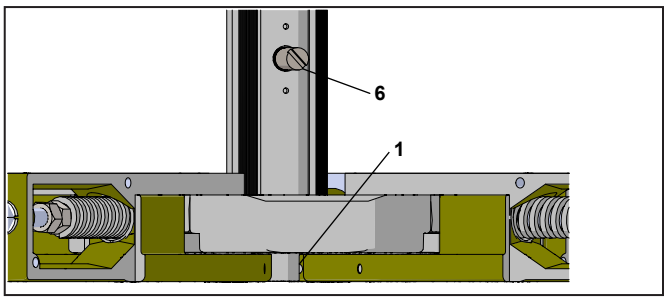
20.2.7 Move center shaft splined shaft into gearbox drive shaft.

Fig. 20.2.6 Center shaft splined shaft installed in gearbox drive shaft



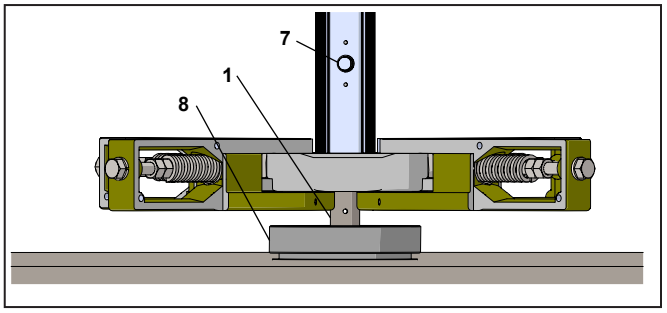
20.3 Install Bottom Plug Into Floor Bearing

Fig. 20.3.1 Bottom plug retracted



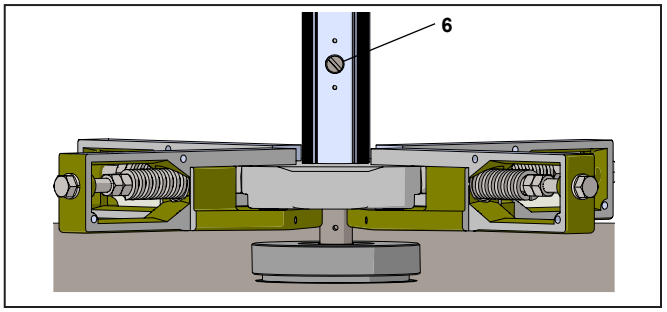
1 Bottom plug
6 Cross pin H63 2020

Fig. 20.3.2 Bottom plug inserted into floor bearing



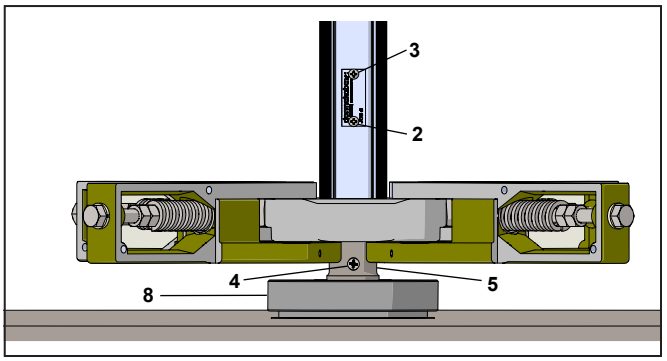
1 Bottom plug
7 Bottom plug and center shaft holes for cross pin aligned
8 Floor bearing

Fig. 20.3.3 Cross pin installed



6 Cross pin H63 2020

Fig. 20.3.4 Bottom plug installed in floor bearing



2 Nameplate DD6001-001
3 6-32 x 1/2"SS PPHS DF6008-01G
4 Collar, half, 1 inch
5 8-32 x 1/2" PFHMS SS
8 Floor bearing

20.3.1 Lower bottom plug into floor pivot bearing.

1. Remove bottom plug cross pin (Fig. 20.3.1).
2. Lower bottom plug into floor bearing until hole in bottom plug lines up with hole in center shaft (Fig. 20.3.2).

- If using in-ground floor pivot bearing, rotate center shaft until slot in bottom plug is aligned with cross pin in floor bearing.

3. Thread cross pin into bottom plug and tighten.

20.3.2 Install nameplate/job number tag and collars.

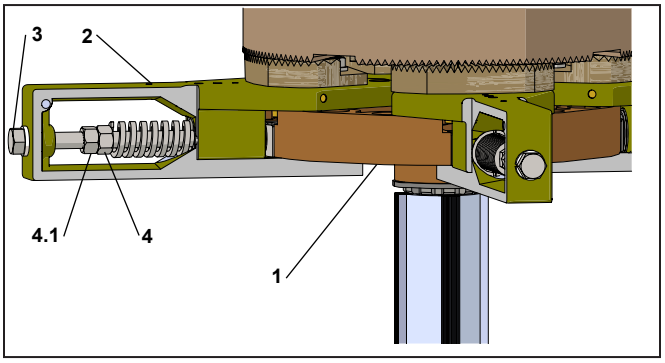
1. Install nameplate/job number tag using two 6-32 x 1/2"SS Phillips pan head screws (Fig. 20.3.4).
2. Install two half collars onto bottom plug. Fasten using two 8-32 x 1/2" Phillips flat head screws (Fig. 20.3.4).

21 Initial Hanger Breakout Tension

21.1 Initial Hanger Breakout Tension

Fig. 21.1.1 Center shaft with all hangers installed

Fig. 21.1.2 Hanger breakout tension adjustment



1 4 wing disc assembly
2 Hanger assembly
3 H bolt, .375x 4"
H61 0075
6 .375-16 hex nut
6.1 .375-16 hex nut

21.1.1 Breakout tension.

1. Initial hanger tension is set at factory.

NOTICE

Breakout force.
Once wings are installed (Chapter 22), hanger breakout tension must be measured and adjusted as required to meet ANSI/BHMA A156.27 Para. 10.2, Breakout Force Requirements.

- Reference Chapter 25, Check Wing Breakout Force, Bookfold Operation.

22 Install Wings

22.1 Unpack Wing Shipping Crate

Fig. 22.1.1 Wing and glass shipping crate

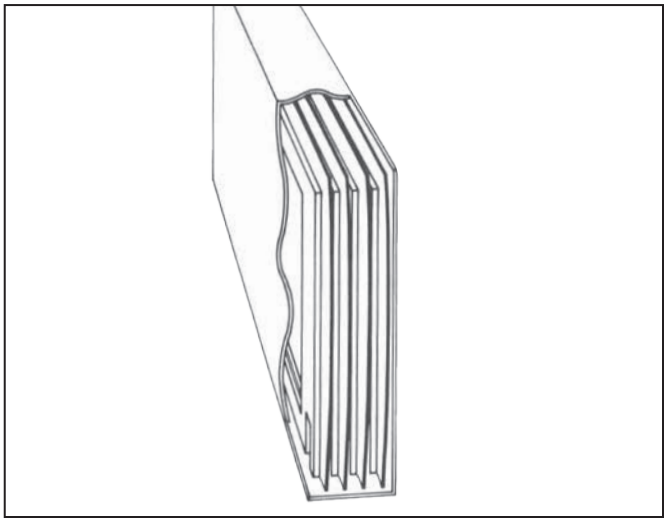
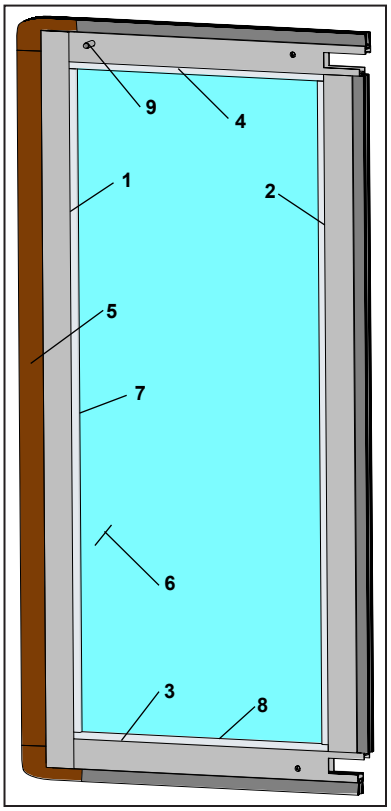


Fig. 22.1.2 Wing assembly example



1. Lock stile
2. Center stile
3. Bottom rail
4. Top rail
5. Horsehair sweep (example)
6. Glass
7. Vertical glass stop, one side of wing only
8. Horizontal glass stop, one side of wing only
9. Bumper, wing bumper side only

22.1.1 Alvarado shop drawings.

NOTICE

Refer to Alvarado shop drawings for specific wing and wing installation details for job!

22.1.2 Unpacking shipping crate.

1. Uncrate wing assemblies and glass from shipping crate.

CAUTION

Refer to warning tag on shipping crate regarding unpacking procedure.

CAUTION

Use caution when handling wing assemblies and glass to prevent scratching or damage to wing or glass surfaces.

WARNING

Use caution while working with wing assemblies and glass!

WARNING

Risk of injury due to improper handling of wing assemblies and glass!

- At least 2 people are required to lift and transport wing assemblies and glass!

22.2 Install Wings Onto Center Shaft Hangers

Fig. 22.2.1 First wing installation

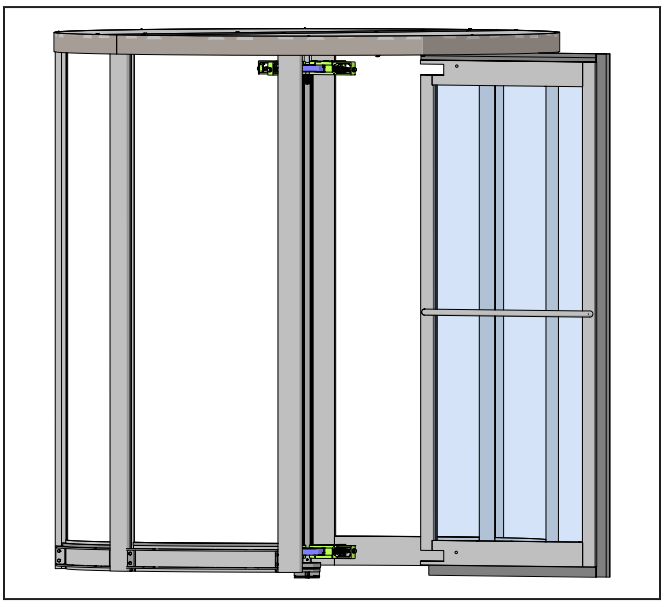
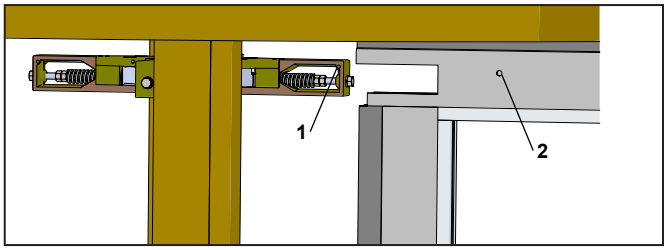


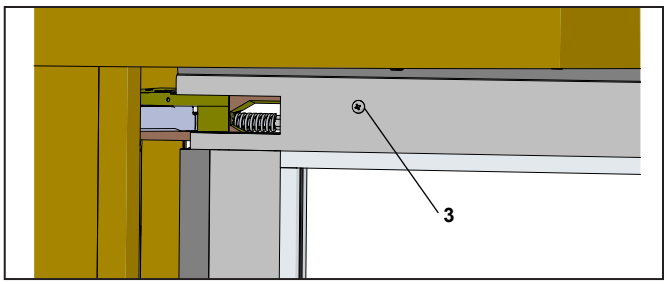
Fig. 22.2.2 Wing and hanger mounting holes



1 Hanger mounting hole, both sides

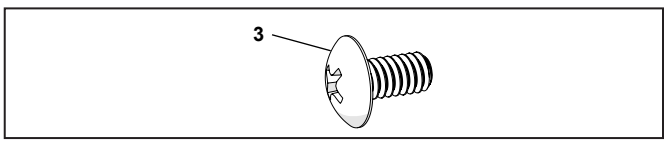
2 Wing mounting hole, both sides

Fig. 22.2.3 Wing and hanger mounting holes



3 .25-20 x 1/2" Truss head machine screw

Fig. 22.2.4 Truss head machine screw



3 .25-20 x 1/2" SS Truss head machine screw
S21 0542

22.2.1 Install first wing on center shaft hangers.

CAUTION

Use caution when handling wing assemblies to prevent scratching or damage to wing or glass surfaces.

CAUTION

Match each wing with its hanger number.

WARNING

Use caution installing wing assemblies!

WARNING

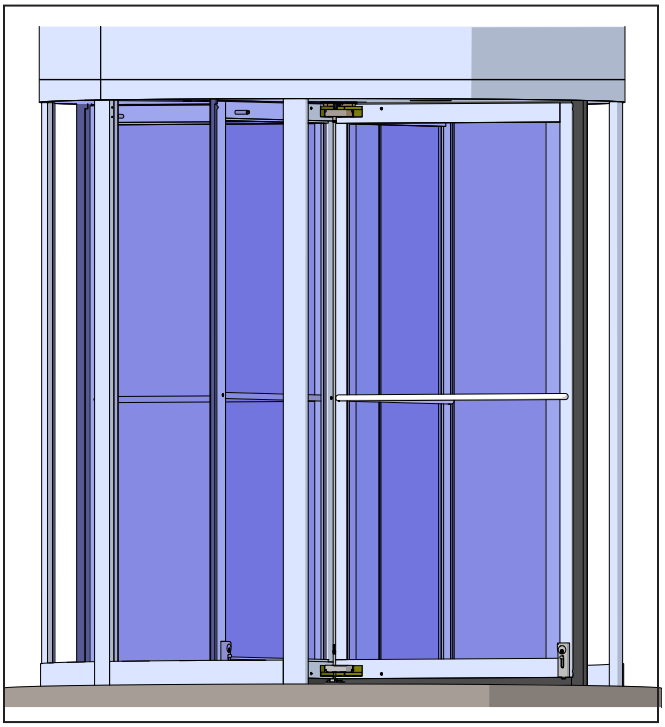
Risk of injury due to improper handling of wing assemblies!
At least two people are required to lift and transport wing assemblies.

1. Slide wing over top and bottom hangers.
2. Secure wing to top hanger with two truss head machine screws.
3. Secure wing to bottom hanger with two truss head machine screws.

22.2.2 Install remaining wings on center shaft hangers.

1. Install remaining wings.

Fig. 22.2.5 Wing installed on hangers



23 Install Floor Strikes

23.1 Install Floor Strikes

Fig. 23.1.1 Floor strike H65 4020

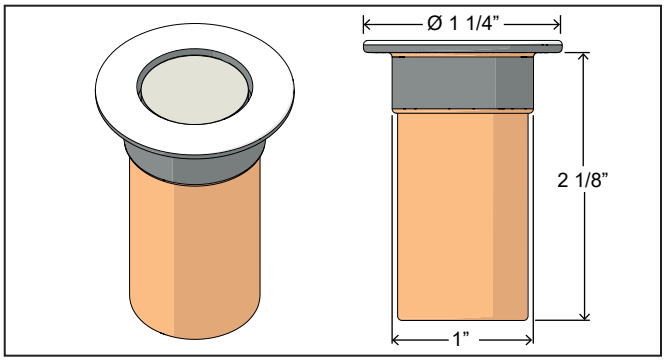


Fig. 23.1.2 3 wing door home position

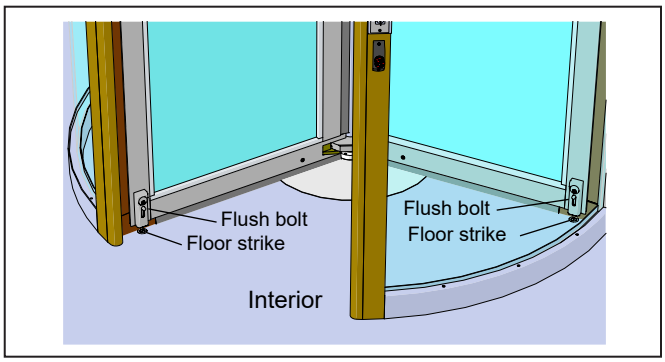


Fig. 23.1.3 Flush bolt in home position

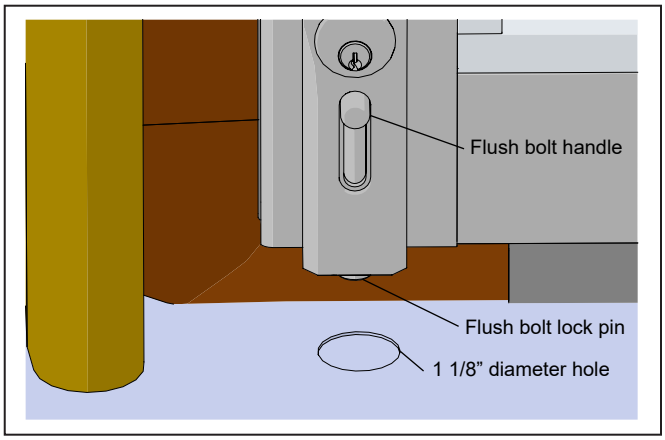
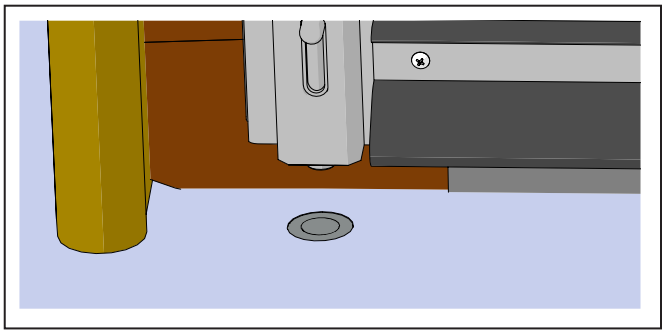


Fig. 23.1.4 Floor strike installed



23.1.1 Home position.

1. Rotate wings to home position.

23.1.2 Mark floor strike hole locations.

1. Move flush bolt handle down until pin contacts floor surface.
2. Mark circumference of pin on floor.

- Flush bolt pin diameter: 5/8"

3. Raise flush bolt handle.
4. Mark centerpoint of wing lock pin on floor.
5. Repeat steps 1 through 4 for second wing lock.

23.1.3 Drill floor strike holes in floor.

1. For concrete floors, drill 1 1/8 inch diameter hole in floor to a depth of 2".

- Use hammer drill with masonry bit.

CAUTION

Drill must be perpendicular to floor.

2. Repeat step 1 for second floor strike.

23.1.4 Clean any dirt and debris from floor strike holes.

CAUTION

Insure floor strike holes are clear of dirt and debris.

1. Use a vacuum or blower to remove any debris inside each hole.
2. Check each hole; use a brush to dislodge any remaining debris.
3. Use vacuum or blower to remove any remaining debris.

23.1.5 Install floor strikes.

1. Fill hole with grout.

- Use a grout such as QUIKRETE® FastSet™ non-shrink grout.

2. Place floor strike in hole.
3. Tap floor strike into place using wood block or other material to prevent surface damage to strike.
4. Clean excess grout from floor area around strike.

CAUTION

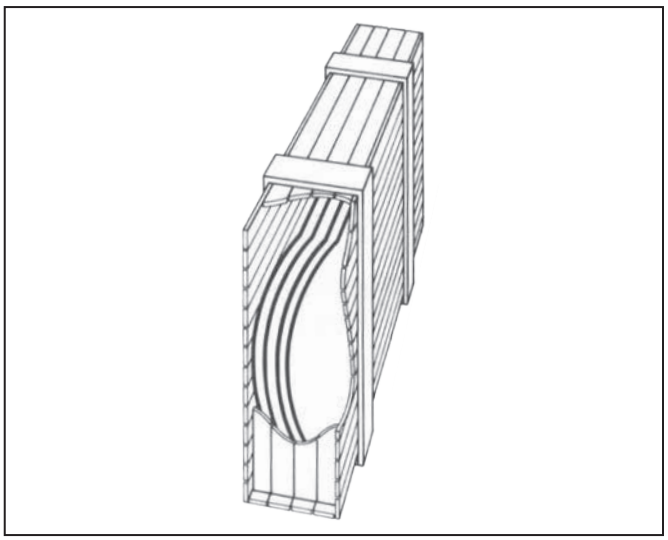
Note manufacturer's cure time for grout before walking on strikes or using wing locks.

5. Repeat steps 1 through 4 for second floor strike.

24 Install Enclosure Glass

24.1 Unpack Enclosure Glass Shipping Crate

Fig. 24.1.1 Enclosure glass shipping crate



24.1.1 Alvarado shop drawings.

NOTICE

Refer to Alvarado shop drawings for specific enclosure glass and glass installation details for job!

24.1.2 Unpack shipping crate.

1. Uncrate enclosure glass from shipping crate.

CAUTION

Refer to warning tag on shipping crate regarding unpacking procedure.

CAUTION

Use caution when handling glass to prevent scratching or damage to glass surfaces.

CAUTION

Handle curved glass with care. Do no exert force on the glass pieces.

WARNING

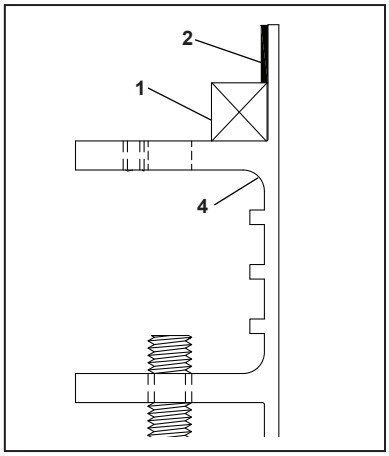
Use caution while working with enclosure glass!

- Clean glass surfaces prior to transporting.
- Always lift and transport glass with aid of vacuum suction cup lifting tools.
- At least two people are required to lift and transport glass.

24.2 Prepare Bases For Enclosure Glass

Fig. 24.2.1 Glazing block and tape AL3000

1 Gazing block
2 Glazing tape
4 Enclosure base



CAUTION

Reference Alvarado shop drawings for glazing detail at enclosure base and at canopy.

24.2.1 Install glazing blocks.

1. Install glazing blocks in enclosure bases.

TIPS AND RECOMMENDATIONS

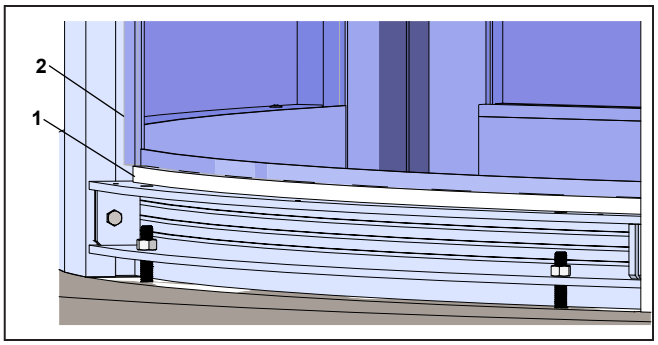
Glazing block (glass thickness) and 1/8" thick glazing tape supplied by installer.

24.2.2 Install glazing tape.

1. Install compressed 1/8" thick glazing tape on enclosure base walls above glazing block.4

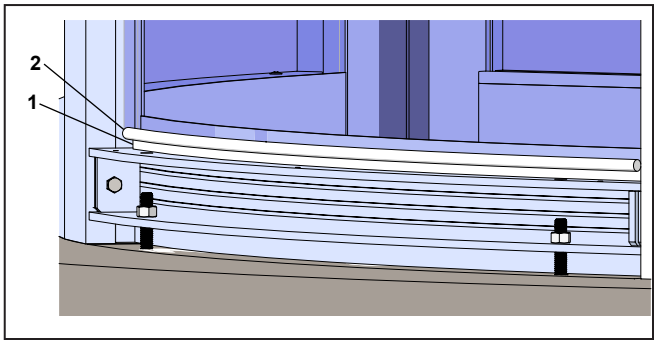
24.3 Install Enclosure Glass

Fig. 24.3.1 Glass set in base enclosure



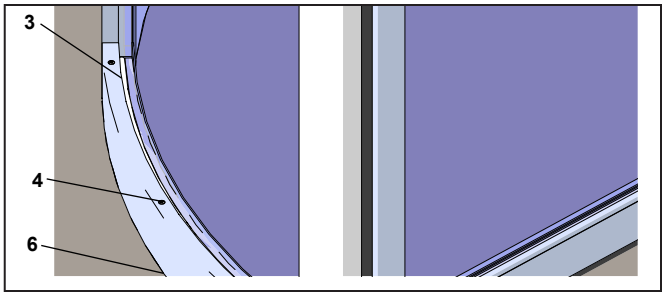
1 Glazing block **2** Enclosure glass

Fig. 24.3.2 Backer rod installed



1 Glazing block **3** Backer rod

Fig. 24.3.3 Base cover installed



4 10-24 x 1 1/4" POHMS
5 Base support mounting
6 Base cover (shown transparent

24.3.1 Set first glass piece into place.

WARNING

Hand pinch point and crushing hazards!

1. Set enclosure glass into place, centering the glass between the vertical posts. Ground top edge of glass next to canopy.

24.3.2 Install backer rod and enclosure base cover.

1. Install backer rod against glass and glazing block.
2. Install base cover using three POHMS and base support mounting spacers.

24.3.3 Install remaining enclosure glass.

1. Install remaining enclosure glass per paragraphs 24.3.1 through 24.3.2

24.3.4 Complete glazing of enclosure glass.

1. Finish enclosure glazing.

25 Check Wing Breakout Force, Bookfold Operation

25.1 Check Breakout Force

25.1.1 Breakout force.

NOTICE

ANSI/BHMA A15.27
Para. 10 Breakout force requirements.
Each revolving door wing shall be capable of breakout when a force of no more than 130 lb. [570 N] is applied at a point 3 inches [76 mm] from the outer edge of the outer wing stile and 40 inches above the floor.

Fig. 25.1.1 Wing in bookfold position

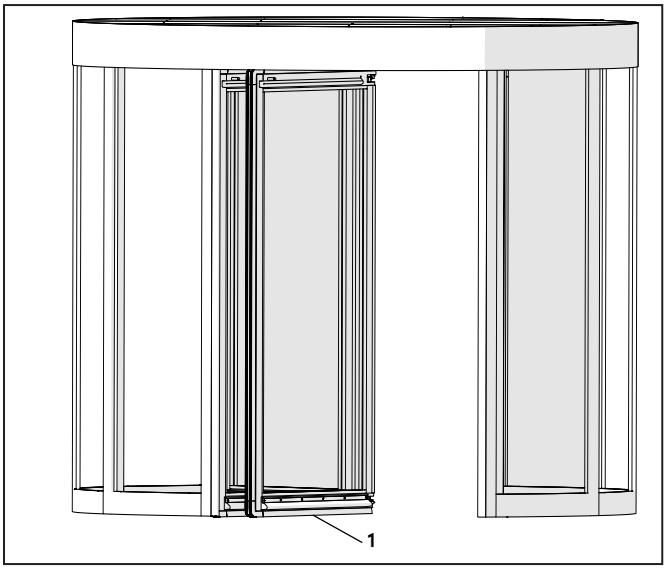
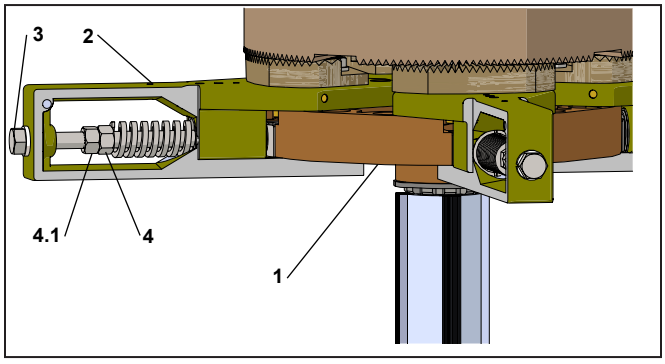


Fig. 25.1.2 Hanger tension adjustment



1 4 wing disc assembly
2 Hanger assembly
3 H bolt, .375x 4"
H61 0075
6 .375-16 hex nut
6.1 .375-16 hex nut

25.1.2 Check breakout force on first wing..

1. Block one door wing. Push an adjacent wing with a force gauge until breakout occurs. Note breakout force.
2. If hanger breakout force adjustment is required, refer to Para. 25.1.3.

25.1.3 Hanger breakout force adjustment.

1. Remove wing from hangers.

CAUTION

Make the same tension adjustment to both upper and lower hangers .

- Use open end 9/16" box wrench for tension adjustment.
- Monitor number of hex nut turn adjustments made so that the same number of adjustments can be made on the lower hanger.

- **Increase hanger tension:**
- Turn hex nut (6) CW to tension spring.
- Use two 9/16" wrenches to both lock hex nuts in place.
- Repeat same tension adjustment on lower hanger.

- **Decrease hanger tension:**
- Turn hex nut 6.1 CCW to allow reduced tension adjustment.
- Turn hex nut (6) CCW to reduce decrease tension on spring.
- Use two 9/16" wrenches to both lock hex nuts in place.
- Repeat same tension adjustment on lower hanger.

2. Reinstall wing and repeat breakout force test.
3. Repeat tension adjustment until breakout force requirements in Para. 25.1.1 are met.

25.1.4 Remaining wings.

1. Check breakout force on each of the remaining wings.
2. Adjust breakout force as required on each wing to meet requirements in Para. 25.1.1.

Fig. 25.1.3 Door wing in breakout position

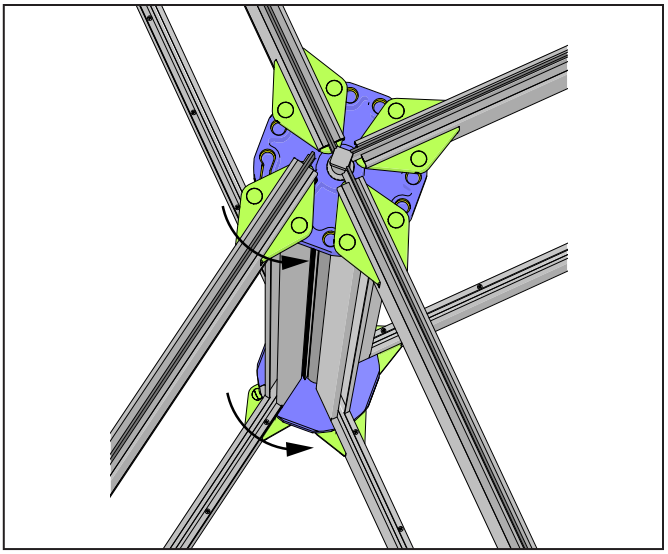
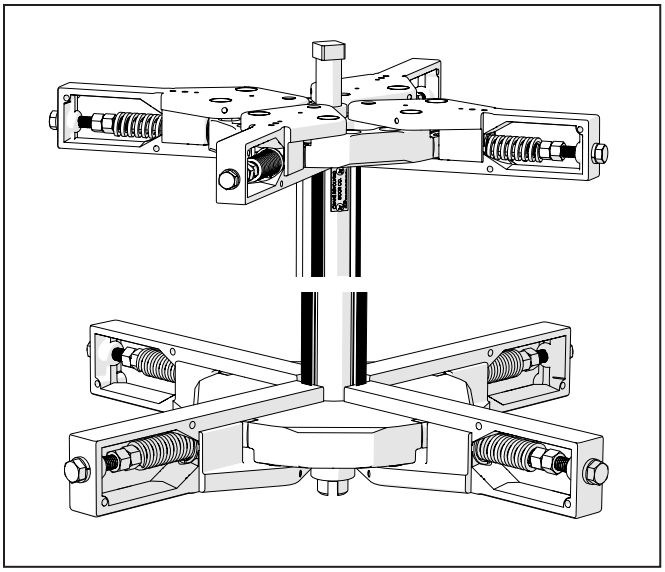


Fig. 25.1.4 Center shaft top and bottom hangar assemblies

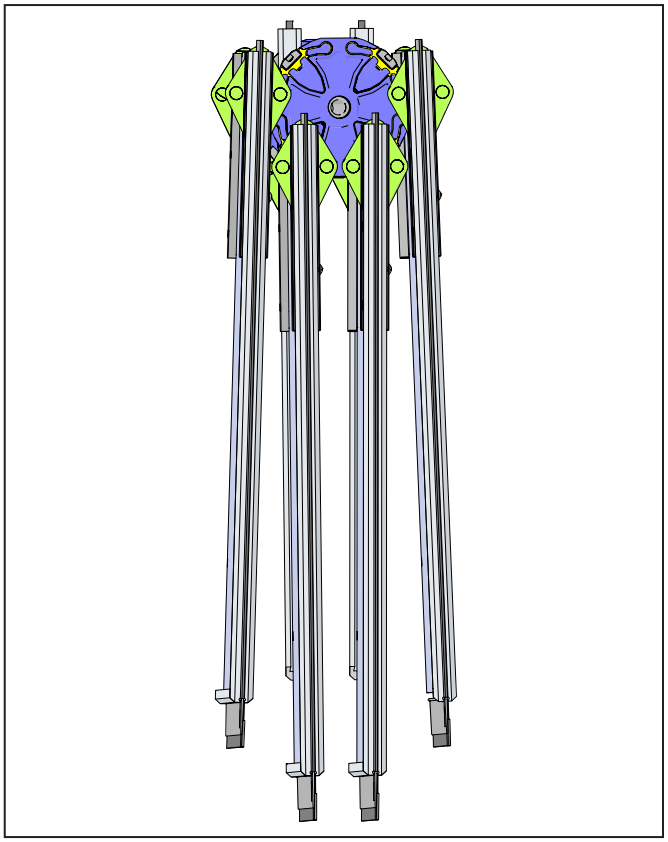


25.2 Check Bookfold Operation

25.2.1 Check wing bookfold operation

1. Check bookfold operation on all wings.

Fig. 25.2.1 Door wings in bookfold position



26 Modular Drive System DS3382-020

26.1 Modular Drive System Assembly

Fig. 26.1.1 MDS assembly DS3382-020

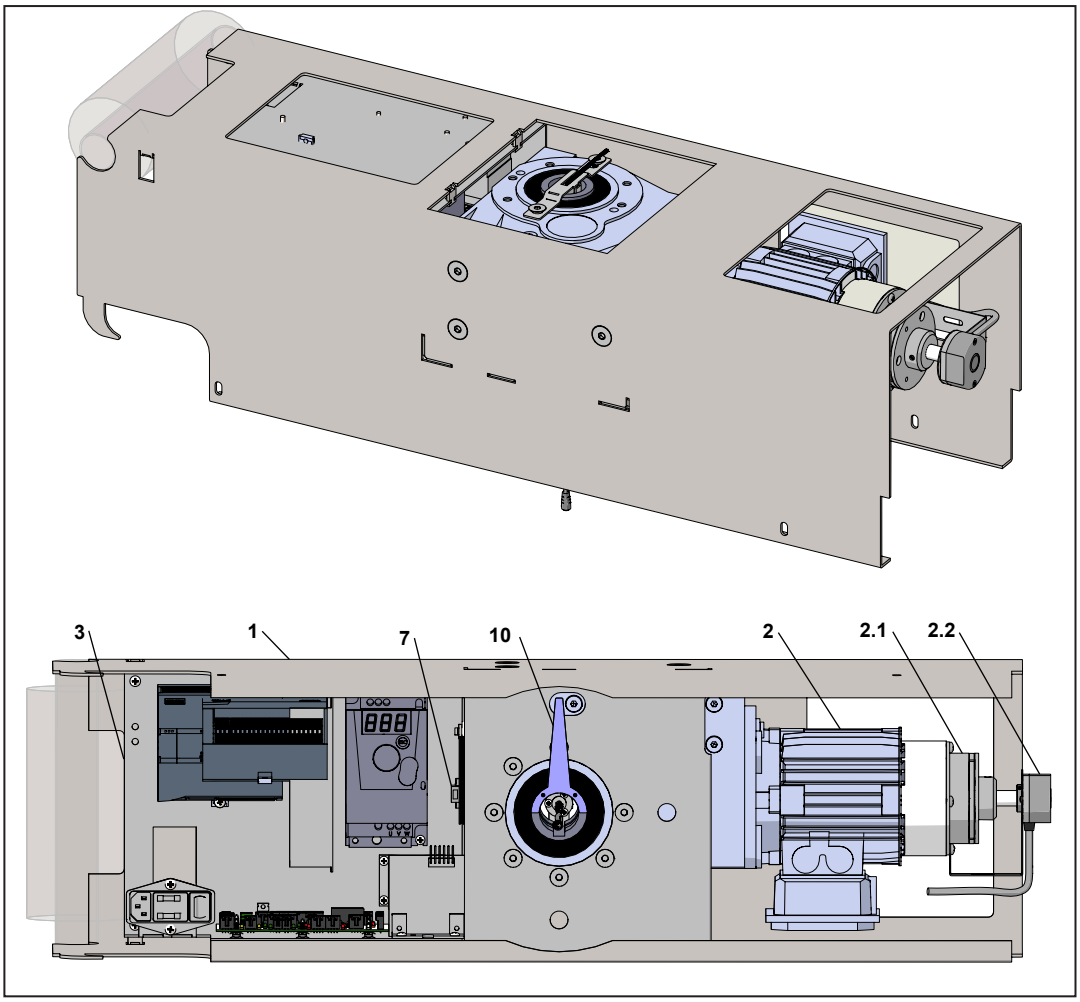


Fig. 26.1.2 MDS assembly DS3382-020

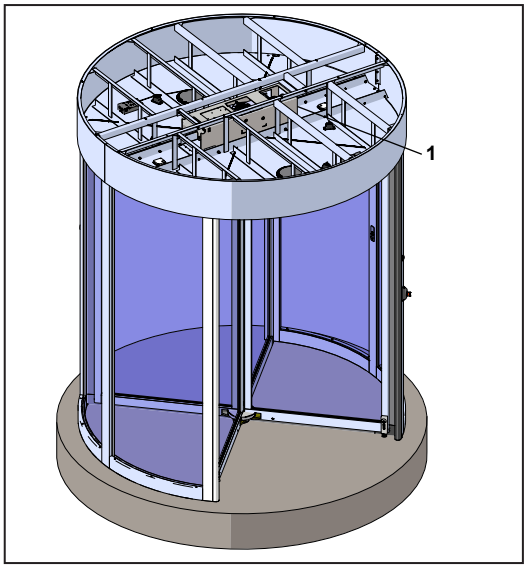


Table 26.1.1 MDS assembly DS3382-020

ID#	Part no.	Function
1	DS3382-020	Modular drive system (MDS) assembly
3	DX3371-0x0	Electric mounting assembly , MDS-A with bookfold lock
2		Assembly, gearmotor
2.1	DS3580-010	Brake, electromagnetic
2.2	DX3372-020	Encoder
7	DX3374-010	Index sensor, Opto
10	DC3376-010	Pulse arm

Fig. 26.1.3 MDS assembly DS3382-020 exploded view

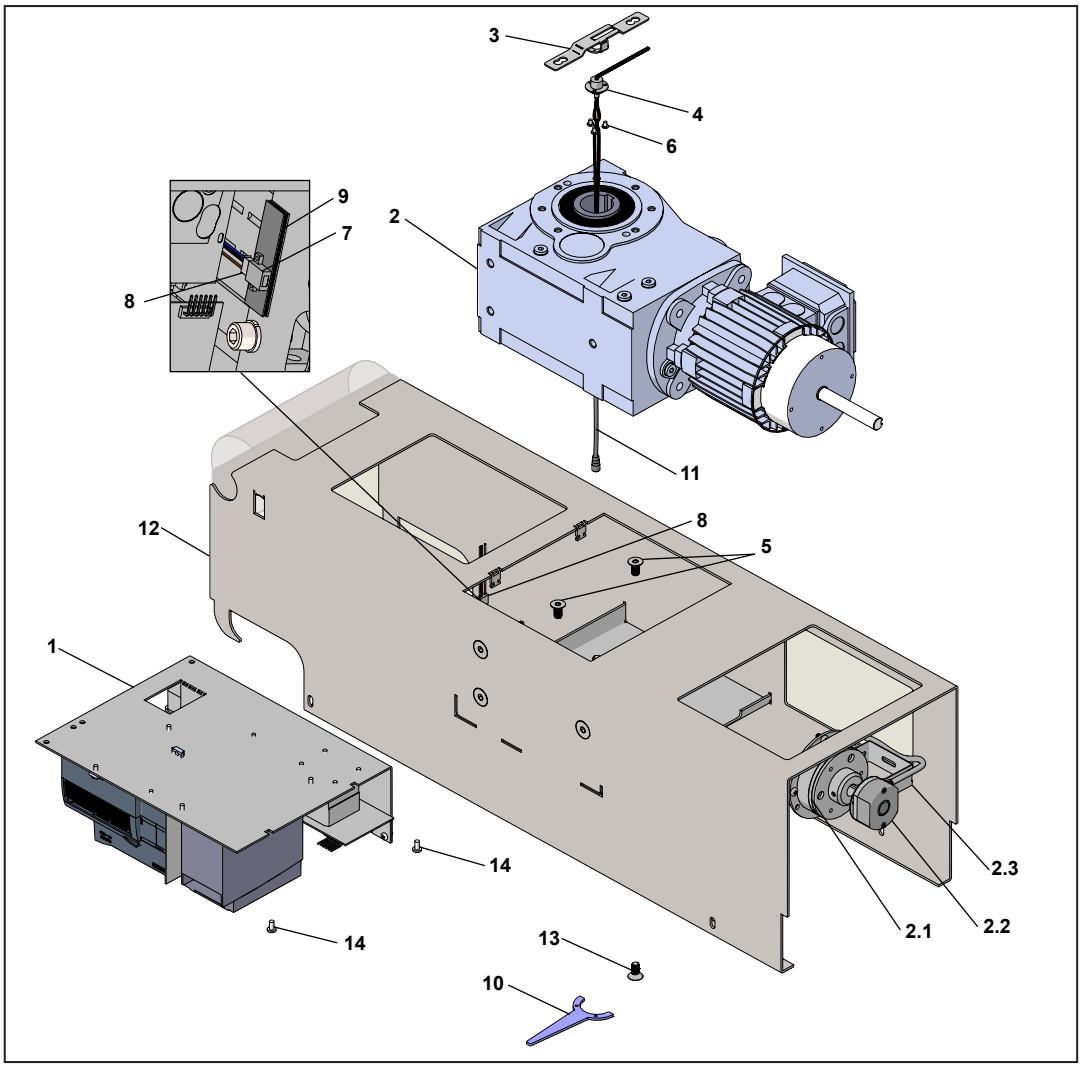


TABLE 26.1.2 MDS assembly DS3382-020 parts list

ID#	Part no.	Function
1	DX3371-0x0	Electric mounting assembly , MDS-A with bookfold lock
2		Assembly, gearmotor, Nord
2.1	DS3580-010	Brake, electromagnetic
2.2	DX3372-020	Encoder
2.3	DC7001-001	Bracket, encoder mount
3	DC3375-01G	Slip ring holder
4	DX3373-010	Slip ring
5		Slip ring holder M8 x 20 mm SFHMS
6		4-40 x 3/16" Phillips PHMS
7	DX3374-010	Index sensor, Opto
8	DX3353-010	Connector, optical sensor, Opto

ID#	Part no.	Function
9	DC3103-010	Velcro with adhesive back
10	DC3376-010	Pulse arm
11	DX3405-0_0	4 pin extension cable, M8 x4, 10 meter, male and female connectors, cable cut in half
12	DS3381-020	Assembly, module weld
13		M8 x 1.25 hex drive flat head screw
14		019-24 x 3/8" PHMS

Fig. 26.1.4 Electric mounting assembly, MDS-A, DX3371-020

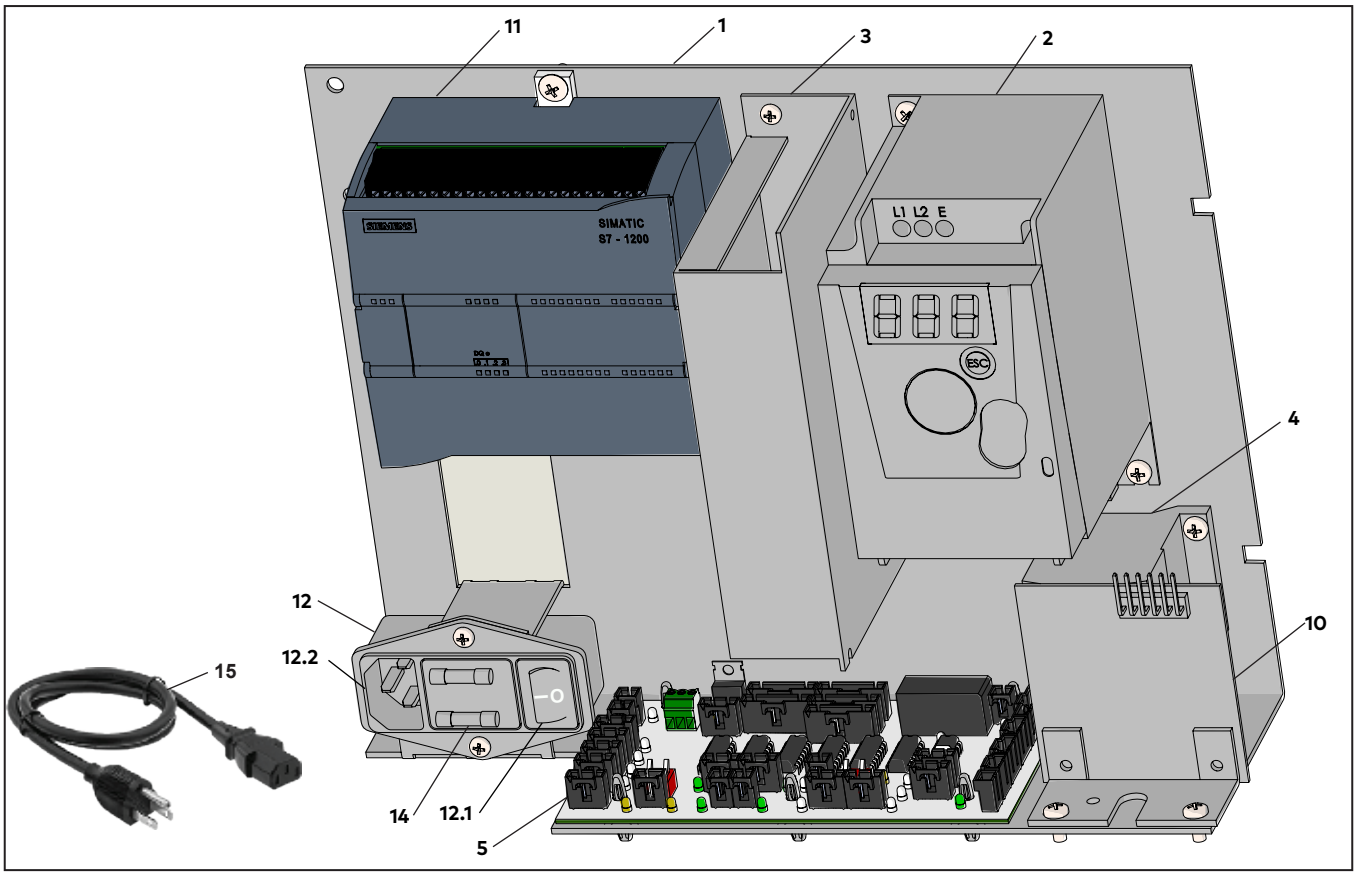


TABLE 26.1.3 Electric mounting assembly, MDS-A, DX3371-020 parts list

ID#	Part no.	Function
1	DC3383-010	Electric board bracket
2	DX3364-020	Drive, variable frequency
3	DX7003-001	Power supply, 24 Vdc
4	DX3366-010	Overload relay K1
5	DX3363-020	Interface board
10	DX7002-001	Board, control, bookfold
11	D8X3579-020	PLC, Siemens
12	DX7004-001	Power entry module
12.1		On/off switch
12.2		120 Vac receptacle
14	DX7006-001	Fuse, 7A
15	DX7007-001	120 Vac cord, power outlet

26.2 Wiring, Control/Drive DS7002-001

Fig. 26.2.1 Drive cable assemblies, Power entry module, PLC and power supply

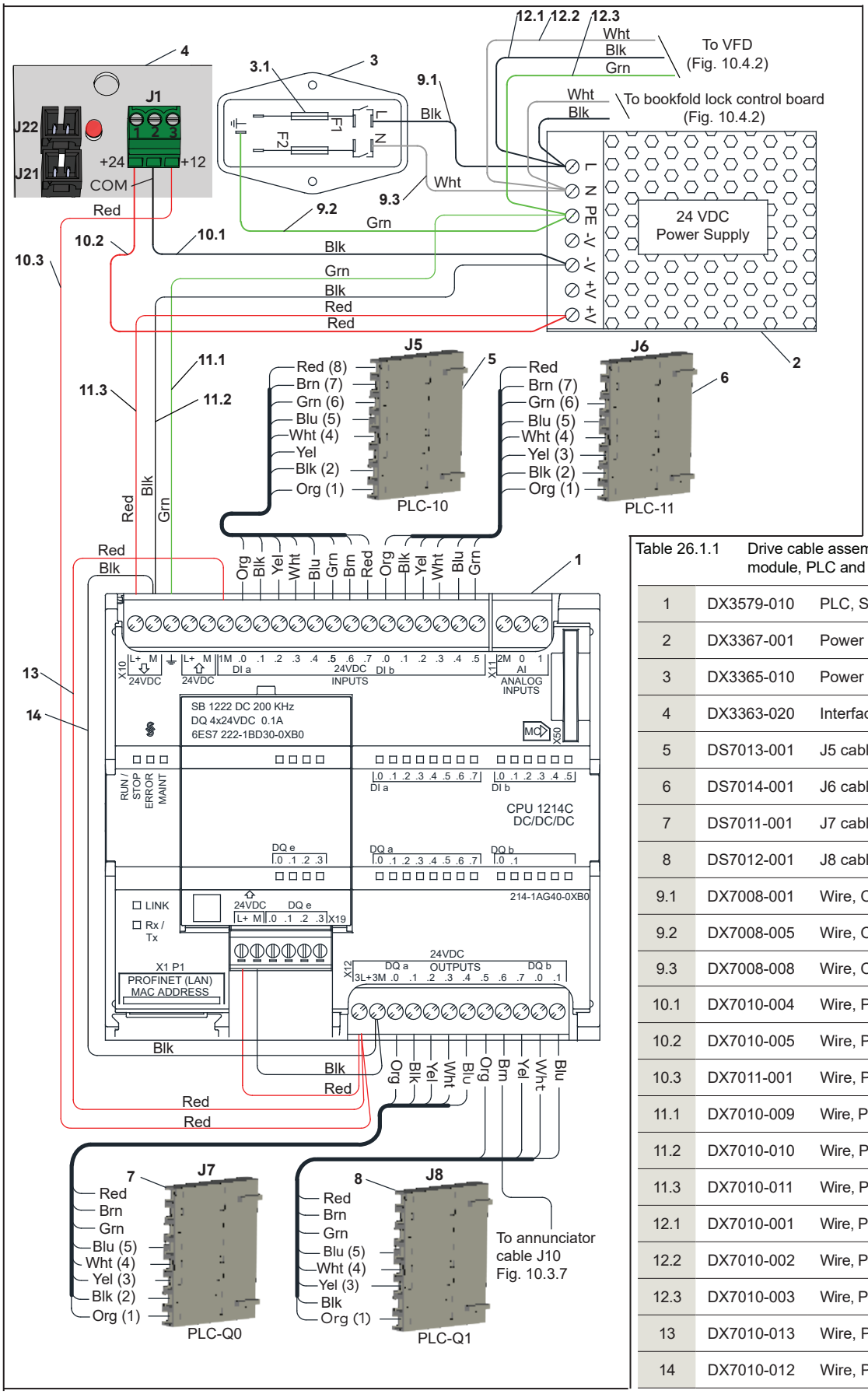


Table 26.1.1 Drive cable assemblies, Power entry module, PLC and power supply

1	DX3579-010	PLC, Siemens
2	DX3367-001	Power supply, 24 Vdc
3	DX3365-010	Power entry module
4	DX3363-020	Interface board, MDS
5	DS7013-001	J5 cable assembly, PLC, 8 wire
6	DS7014-001	J6 cable assembly, PLC, 8 wire
7	DS7011-001	J7 cable assembly, PLC, 8 wire
8	DS7012-001	J8 cable assembly, PLC, 8 wire
9.1	DX7008-001	Wire, On/Off control, black
9.2	DX7008-005	Wire, On/Off control, green
9.3	DX7008-008	Wire, On/Off control, white
10.1	DX7010-004	Wire, Power supply to J1, black
10.2	DX7010-005	Wire, Power supply to J1, red
10.3	DX7011-001	Wire, PLC to J1, red
11.1	DX7010-009	Wire, Power supply to PLC, green
11.2	DX7010-010	Wire, Power supply to PLC, black
11.3	DX7010-011	Wire, Power supply to PLC, red
12.1	DX7010-001	Wire, Power supply to VFD, black
12.2	DX7010-002	Wire, Power supply to VFD, white
12.3	DX7010-003	Wire, Power supply to VFD, green
13	DX7010-013	Wire, PLC top to bottom, red
14	DX7010-012	Wire, PLC top to bottom, black

Fig. 26.2.2 Drive cable assemblies, drive, relay, bookfold lock and motor

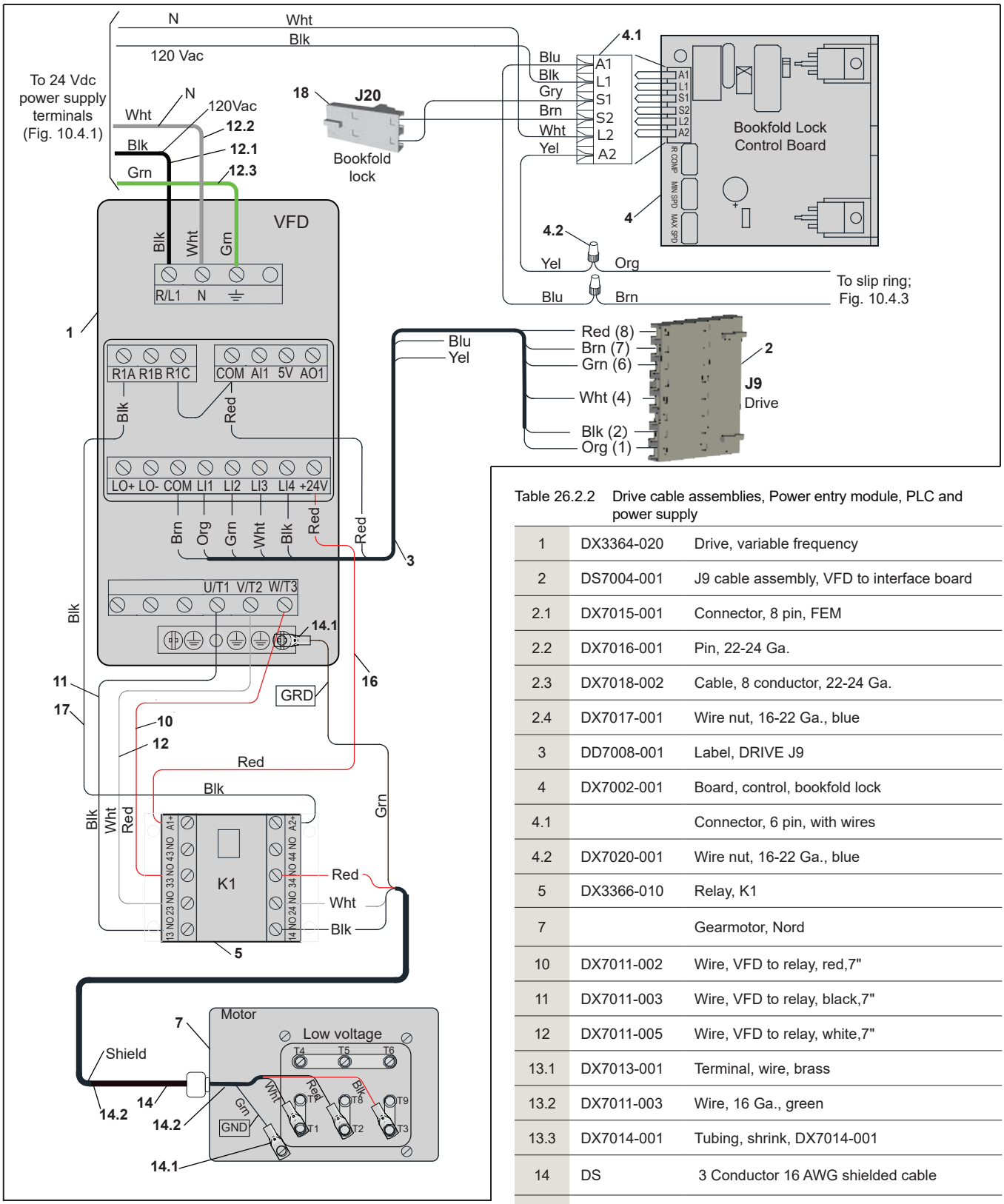


Table 26.2.2 Drive cable assemblies, Power entry module, PLC and power supply

1	DX3364-020	Drive, variable frequency
2	DS7004-001	J9 cable assembly, VFD to interface board
2.1	DX7015-001	Connector, 8 pin, FEM
2.2	DX7016-001	Pin, 22-24 Ga.
2.3	DX7018-002	Cable, 8 conductor, 22-24 Ga.
2.4	DX7017-001	Wire nut, 16-22 Ga., blue
3	DD7008-001	Label, DRIVE J9
4	DX7002-001	Board, control, bookfold lock
4.1		Connector, 6 pin, with wires
4.2	DX7020-001	Wire nut, 16-22 Ga., blue
5	DX3366-010	Relay, K1
7		Gearmotor, Nord
10	DX7011-002	Wire, VFD to relay, red,7"
11	DX7011-003	Wire, VFD to relay, black,7"
12	DX7011-005	Wire, VFD to relay, white,7"
13.1	DX7013-001	Terminal, wire, brass
13.2	DX7011-003	Wire, 16 Ga., green
13.3	DX7014-001	Tubing, shrink, DX7014-001
14	DS	3 Conductor 16 AWG shielded cable
14.1	DX	Ring lug
15	DD7008-001	Label, DRIVE
16	DX7011-002	Wire, VFD to K1 relay, red
17	DX7011-003	Wire, VFD to K1 relay, black
18	DS7005-001	J20 Bookfold lock cable to interface board

Fig. 26.2.3 Drive cable assemblies, gearmotor and bookfold lock

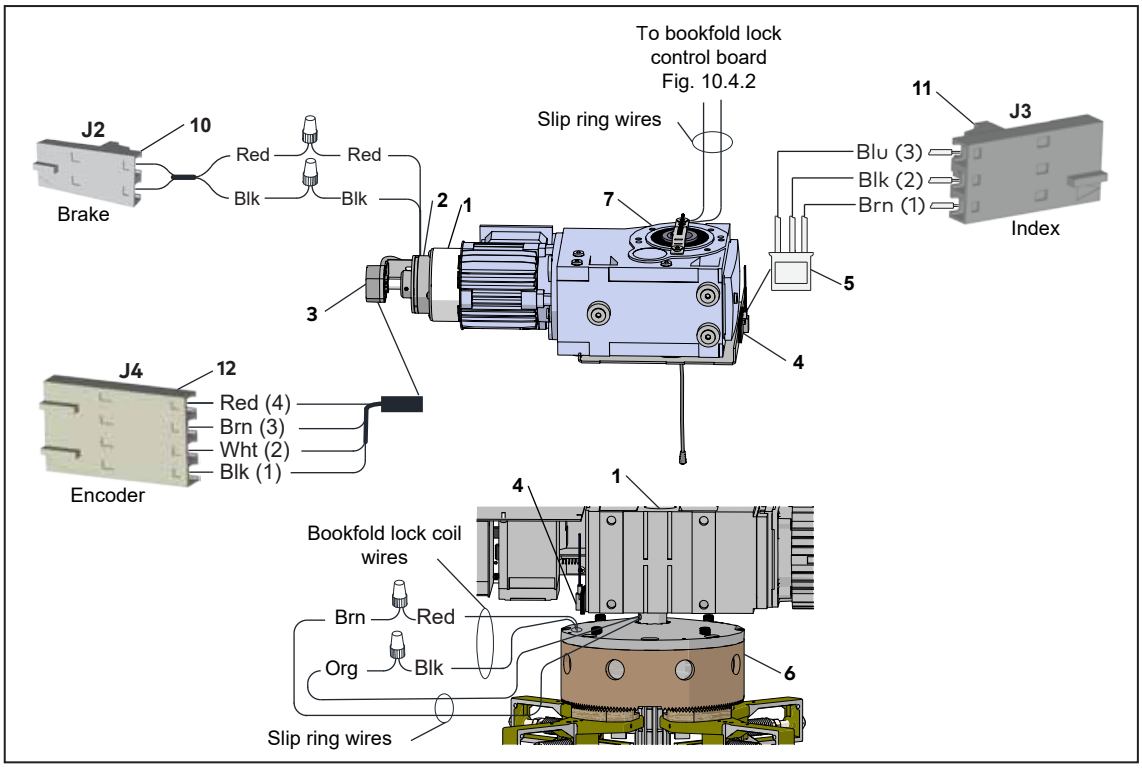


Table 26.2.3 Drive cable assemblies, gearmotor and bookfold lock

1		Assembly, gearmotor
2	DS3580-010	Brake, electromagnetic
3	DX3372-020	Encoder
4	DX3374-010	Index sensor, Opto EE SPY-402
5	DX3353-010	Connector, index sensor, Opto EE-1003
7	DX3373-010	Slip ring
10	DS7008-001	J2 brake cable assembly
11	DS7007-001	J3 index cable assembly
12	DS7006-001	J4 encoder cable assembly

27 Interface Board

27.1 Interface Board Cable Receptacles And LEDs

Fig. 27.1.1 Interface board receptacles

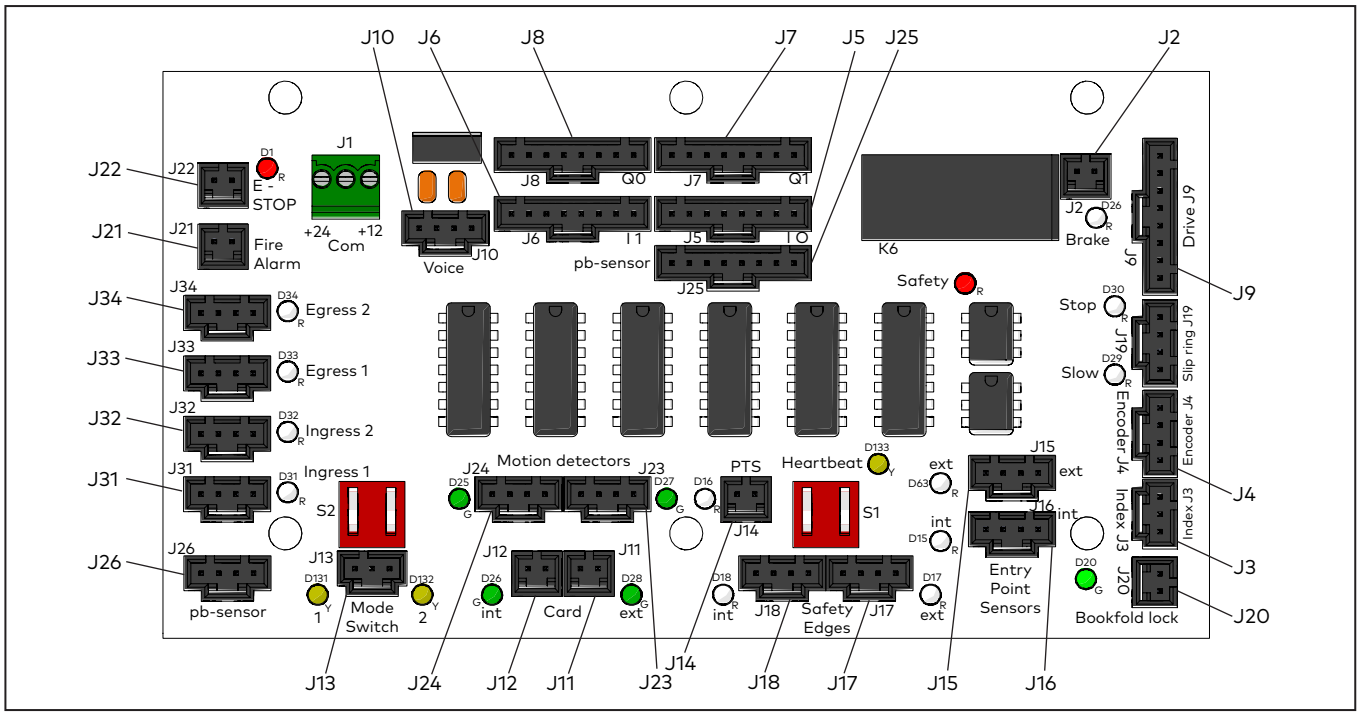


Table 27.1.1 Cable assemblies

Interface board connector	Cable assembly	Description
J2	DS7008-001	Brake
J3	DS7007-001	Index
J4	DS7006-001	Encoder
J5	DS7013-001	PLC, I 0
J6	DS7014-001	PLC, I 1
J7	DS7013-001	PLC, Q 0
J8	DS7012-001	PLC, Q1
J9	DS7016-001	Drive
J10	DS7009-001	Annunciator
J11	DS7025-001	Card reader, exterior
J12	DS7025-001	Card reader, interior
J13	DS7024-001	Key switch mode
J14		Not used
J15	DX6106-001	pb sensor, exterior (10 pin harness)
J16	DS7029-001	Entry point sensor, interior
J17	DS7026-001	Safety (Leading) edge sensor, exterior
J18	DS7027-001	Safety (Leading) edge sensor, interior
J20	DS7005-001	Bookfold lock
J21	DS7040-001	Fire alarm
J22	DS7017-001	Cable assembly, emergency stop
J25	DX6107-001	pb sensor, ingress (12 pin harness)
J26	DX6106-001	pb sensor, ingress (10 pin harness)
J31	DS7021-001	Presence sensor, ingress 1
J32	DS7019-001	Push to reverse buttons, ingress 2
J33		Not used
J34		Not used

Fig. 27.1.2 Interface board LEDs

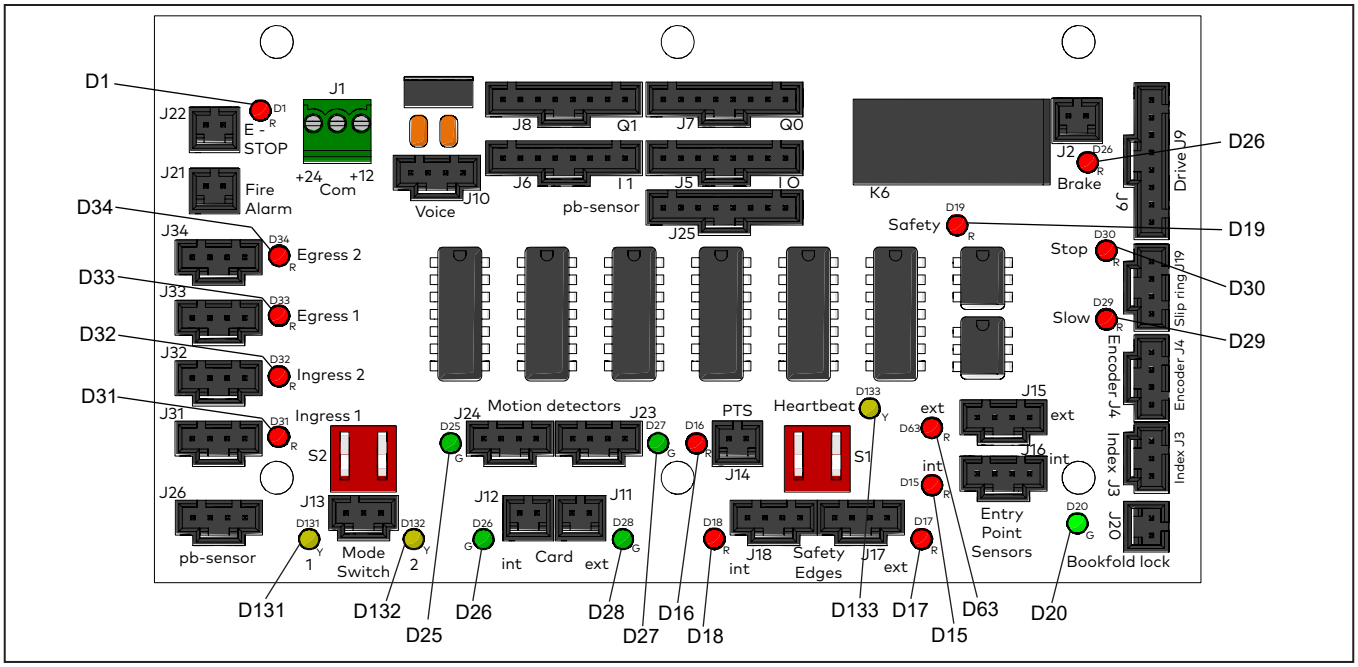


Table 27.1.2 Interface board LED functions

LED #	Color	Function	Indication when illuminated
D1	Red	E-Stop	E-stop circuit closed, Fire Alarm circuit closed.
D15	Red	Entry point sensor, interior (egress)	Sensor circuit active (sensing object).
D16	Red	PTS (Push to slow button)	Not used.
D17	Red	End wall (Safety edge) sensor, exterior	End wall sensor not activated. LED off when edge is pressed.
D18	Red	End wall (Safety edge) sensor, interior	End wall sensor not activated. LED off when edge is pressed.
D19	Red	Safety	Safety stop (End wall) sensors permit door rotation.
D20	Green	Bookfold lock	Bookfold lock engaged.
D25	Green	Motion detector, interior	Not used.
D26	Green	Card reader, interior	Card reader circuit closed.
D27	Green	Motion detector, exterior	Not used.
D28	Green	Card reader, exterior	Card reader circuit closed.
D29, D30	Red	Core slow, stop sensors	Not used
D31	Red	Not used	Not used
D32	Red	Push to Reverse button	Button pressed
D33	Red	Presence (safety) sensor, egress 1	Presence sensor active (sensing object
D34	Red	Not used	
D62	Red	Brake	Motor brake engaged.
D63	Red	pb- sensor exterior (ingress)	Sensor circuit active (sensing object).
D131	Yellow	S2 DIP switch; Mode 1	DIP switch: Mode circuit #1 is closed Does not correspond to Mode switch 1.
D132	Yellow	S2 DIP switch, Mode 2	DIP switch: Mode circuit #2 is closed Does not correspond to Mode switch 2.
D133	Yellow	Heartbeat	PLC program is running.

28 Cables external to Modular Drive System

Fig. 28.1.1 Cable assemblies external to MDS

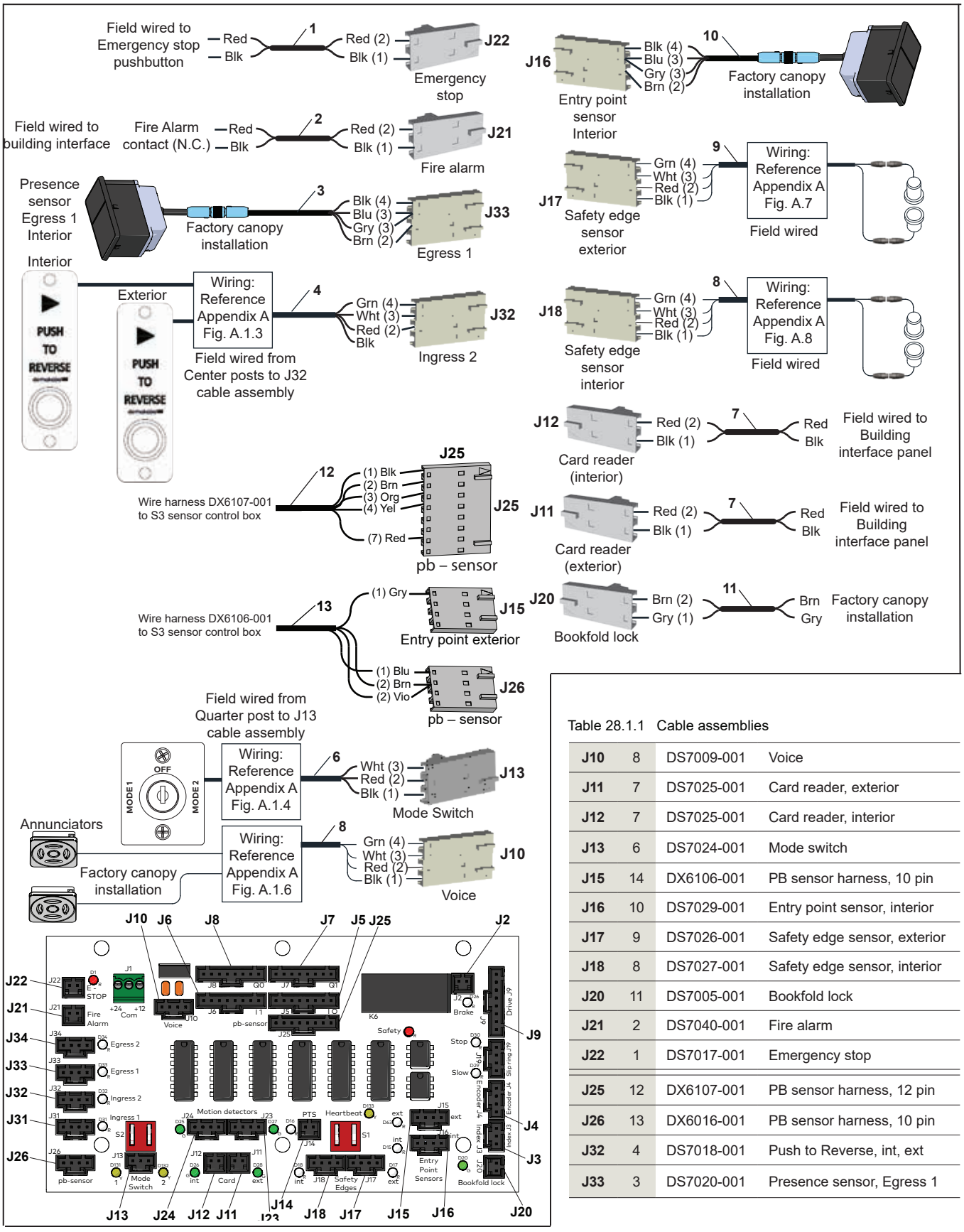


Table 28.1.1 Cable assemblies

J10	8	DS7009-001	Voice
J11	7	DS7025-001	Card reader, exterior
J12	7	DS7025-001	Card reader, interior
J13	6	DS7024-001	Mode switch
J15	14	DX6106-001	PB sensor harness, 10 pin
J16	10	DS7029-001	Entry point sensor, interior
J17	9	DS7026-001	Safety edge sensor, exterior
J18	8	DS7027-001	Safety edge sensor, interior
J20	11	DS7005-001	Bookfold lock
J21	2	DS7040-001	Fire alarm
J22	1	DS7017-001	Emergency stop
J25	12	DX6107-001	PB sensor harness, 12 pin
J26	13	DX6016-001	PB sensor harness, 10 pin
J32	4	DS7018-001	Push to Reverse, int, ext
J33	3	DS7020-001	Presence sensor, Egress 1

29 MDS-S3 Commissioning Instructions

29.1 Interface Board Plug Connections And DIP Switch Setup Prior To Power ON and Commissioning

Table 29.1.1 Entry, presence and security sensor cables disconnected

J15	DX6106-001	pb (piggyback) sensor harness, 10 pin
J16	DS7029-001	Entry point sensor, interior
J17	DS7026-001	End wall sensor, exterior
J18	DS7027-001	End wall sensor, interior
J25	DX6107-001	pb (piggyback) sensor harness, 12 pin
J26	DX5106-001	pb (piggyback) sensor harness, 10 pin
J33	DS7020-001	Presence sensor, egress 1

Table 29.1.2 Bookfold lock control cable disconnected

J20	DS7005-001	Cable assembly, bookfold lock

Table 29.13 Control cables connected

J10	DS7009-001	Voice
J11	DS7025-001	Card reader, exterior
J12	DS7025-001	Card reader, interior
J13	DS7024-001	Mode switch
J21	DS7040-001	Fire alarm cable - closed circuit
J22	DS7017-001	Emergency Stop button (s)
J32	DS7019-001	Push to Reverse, ingress 2

TIPS AND RECOMMENDATIONS

Reference Appendix D for Interface Board detail with device connections.

29.1.1 Disconnect sensor cable plugs.

1. Disconnect sensor cables referenced in Table 29.1 from Interface board.

29.1.2 Disconnect bookfold lock plug J20.

1. Disconnect bookfold lock control circuit J20 referenced in Table 29.2 from Interface board.

29.1.3 Disconnect slip ring plug J19.

CAUTION

Slip ring plug J19 (Fig. 29.1) must be disconnected from Interface board.

29.1.4 Connect control cable plugs to Interface board.

1. Connect cables referenced in Table 29.3 to Interface board.

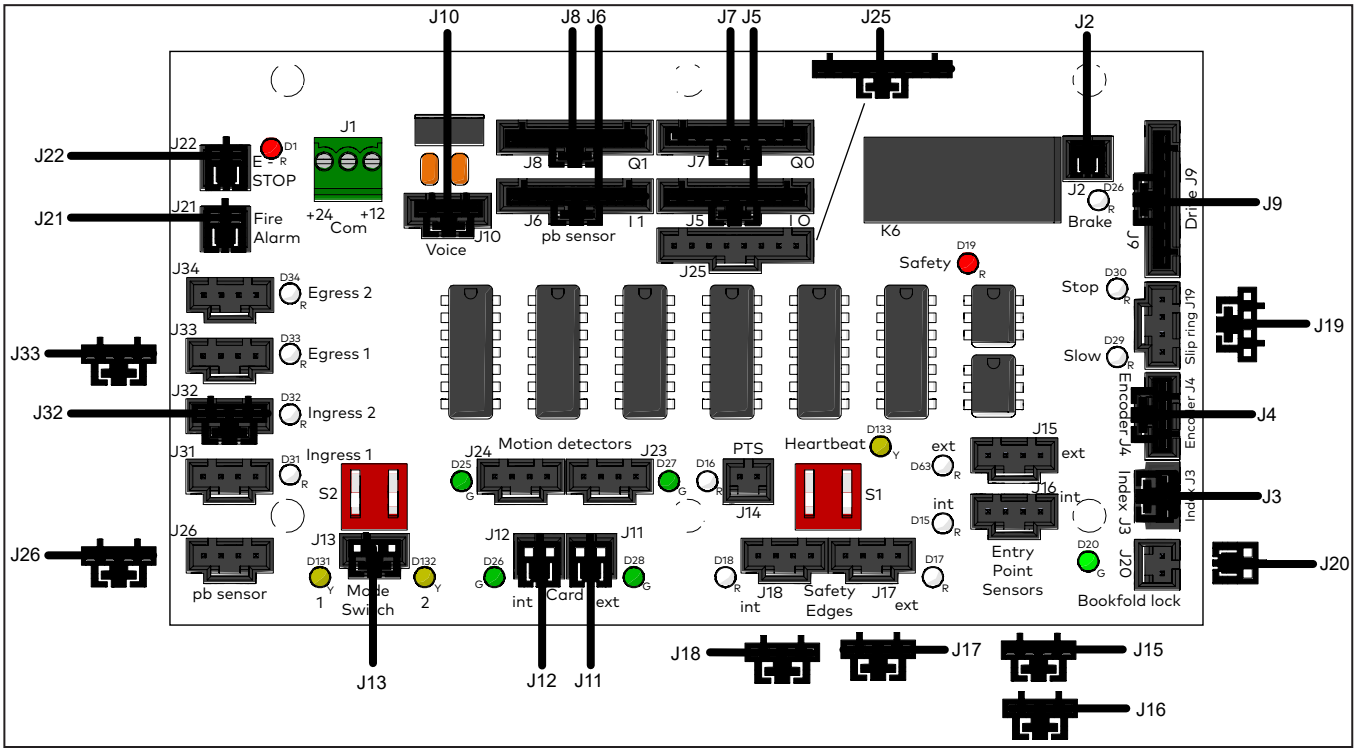
29.1.5 Set S2 interface board mode switches (Fig. 29.1).

1. Set both Interface board S2 Mode DIP switches UP.

29.1.6 Set S1 interface board safety edge switches (Fig. 29.1).

1. Set both Interface board S1 Safety Edge" DIP switches DOWN.

Fig. 29.1.1 Interface board cable connections



29.2 General Contractor 120 Vac Wiring To Canopy

WARNING

Work on electrical equipment and 120 Vac wiring installation must be performed only by qualified personnel!

- Receptacle installation must meet National Electrical Code and all local codes.

29.2.1 120 Vac receptacle for Canopy Modular Drive System (MDS) and S3 security sensor control hardware. Reference:

- **Para. 14.4, Install Modular Drive System (MDS) in canopy**
- **Para. 14.7, ingress security sensor connection diagram.**

NOTICE

Building 120 Vac, 1 phase supply for MDS drive system.
General contractor responsibilities:

- Supply dedicated 15 Amp, 120Vac 1 phase circuit and receptacle for MDS drive system, S3 security sensor network switch and control box.

NOTICE

Optional 115 Vac UPS system. Para. 8.14.
Power cords for MDS system (Para. 29.3) and both Network switch and control box (Para. 29.10) will plug into UPS Battery and Surge Protected Outlets (Para. 8.14).

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Fig. 29.2.1 S3 security canopy top view, covers removed

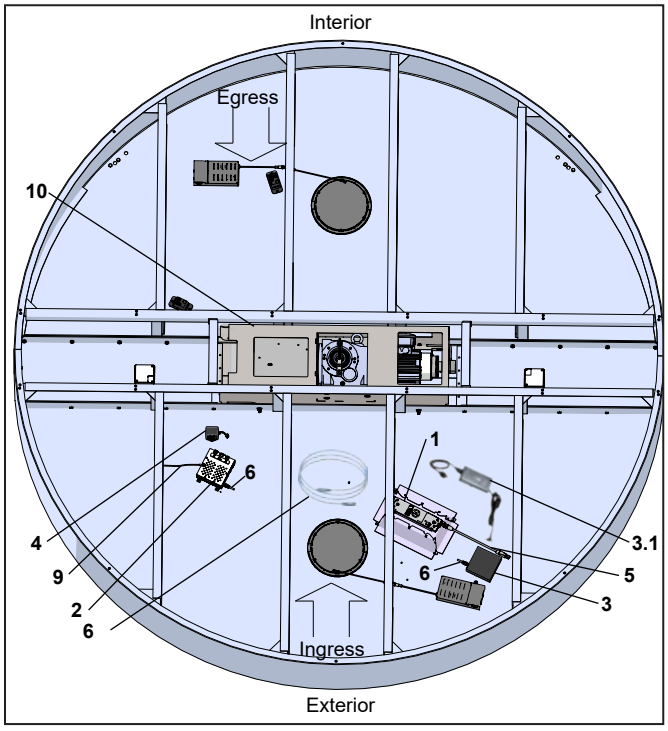


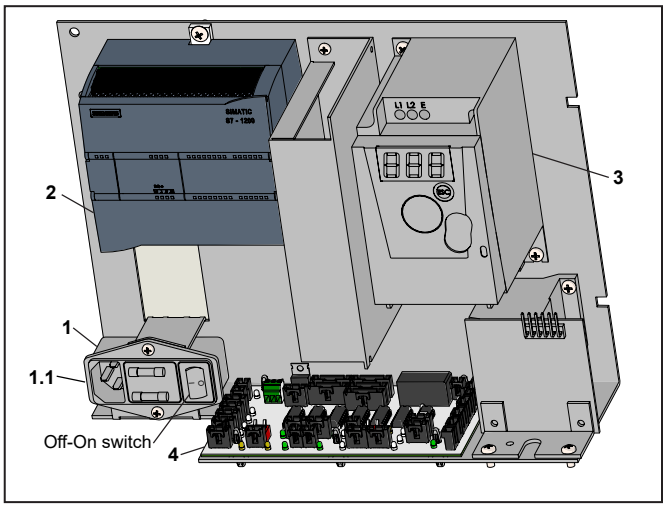
Table 29.2.1 Ingress security sensor hardware

ID#	Part no.	Function
1	DX6102-001	IRIS Matrix Poe sensor assembly
2	DX6101-001	IRIS control box assembly
3	DX6103-001	Network switch
3.1		53.5 Vdc power supply, network switch
4	DX6104-001	5 Vdc power supply, IRIS control box
5	DX6108-001	SRD sensor Ethernet power cable
6		Network cable, RJ45 plug to RJ45 plug
9	DX0839-010	Grounding wire, 16" long
10	DS3382	Modular drive system (MDS)

29.3 Initial Power On

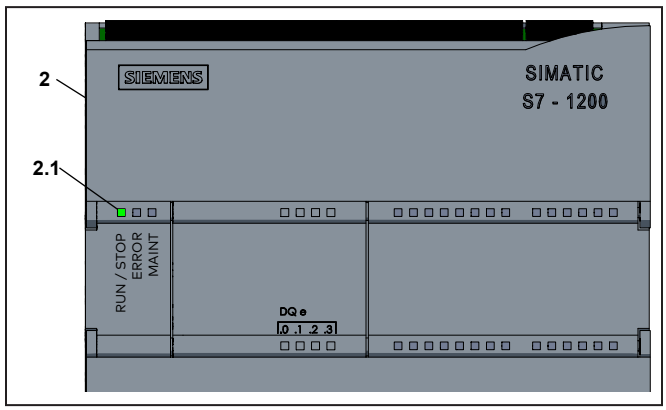
Fig. 29.3.1 115 Vac power cord DX7007-001

Fig. 29.3.2 Electric mounting assembly



1 Power entry module DX3365-010
1.1 120 Vac receptacle
2 PLC, Siemens DX3579-020
3 Drive, variable frequency, Schneider DX3364-020
4 MDS interface board DX3363-010

Fig. 29.3.3 Siemens PLC RUN/STOP LED



2 PLC, Siemens DX3579-020
2.1 RUN / STOP

Table 29.3.1 RUN/STOP Indicator CPU operating mode

Yellow	Indicates STOP mode
Green	Indicates RUN mode
Flashing	Indicates STARTUP mode

WARNING

Insure door area is clear of tools, other objects and personnel before connecting power to MDS electric mounting assembly receptacle.

Door rotation occurs after the power up process (Para. 29.3.3).

29.3.1 Connect power cord, turn power on.

1. Emergency Stop pushbutton pushed in.
2. Connect power cord to power entry module connector (Fig. 29.3.2-1) and general contractor-supplied 115 Vac receptacle **(Optional UPS, Reference Para. 29.2)**.
3. Turn power entry connector rocker switch ON.

29.3.2 Confirm power up of following devices.

1. PLC powered up.
- RUN/STOP LED should be GREEN. (Fig. 29.3.3).
2. Frequency converter powered up (Fig. 29.3.2).
- Displays r d y.

NOTICE

If R u n displayed instead of r d y.
- Open front panel of frequency converter, press and hold Stop/Reset button for several seconds until "n s t" is displayed.
- Wait for frequency converter to reboot; r d y should be displayed.

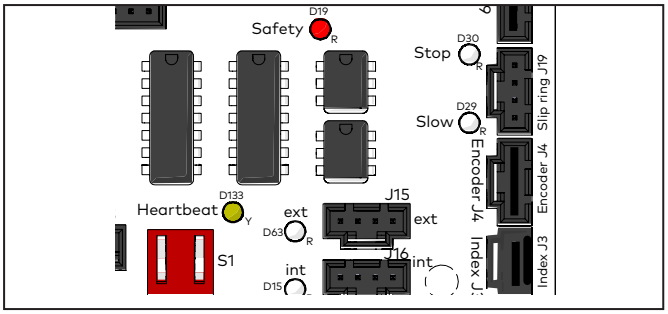
3. Yellow "Heartbeat" LED D133 on the Interface board is flashing rapidly (Fig. 29.3.4).
4. Red "Safety" LED D19 on the Interface board is ON (Fig. 29.3.4).

29.3.3 Door rotation.

1. Release Emergency stop pushbutton.

1. After a slight delay, door will automatically start to rotate in a CCW direction.
2. Door will rotate several revolutions and then stop.
- Stopping point of wings may not be at the desired Home position.

Fig. 29.3.4 Interface board Safety LED D19, Heartbeat LED D133



29.4 Check Card Reader Interface Operation

Table 29.4.1 Card reader cables

J11	DS7025-001	Card reader, exterior
J12	DS7025-001	Card reader, interior

Fig. 29.4.1 J11 and J12 card reader cable assemblies

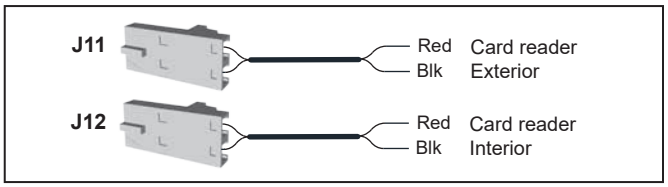


Fig. 29.4.2 Interface board card reader LEDs, J11 and J12

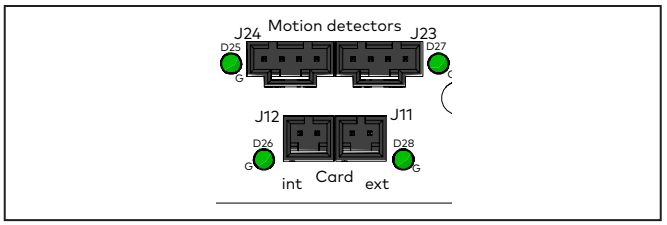


Fig. 29.4.3 Interior indicator light

1 Interior indicator light

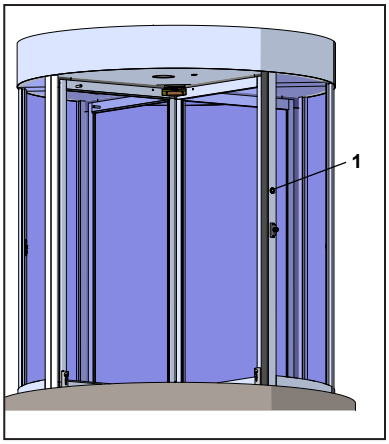
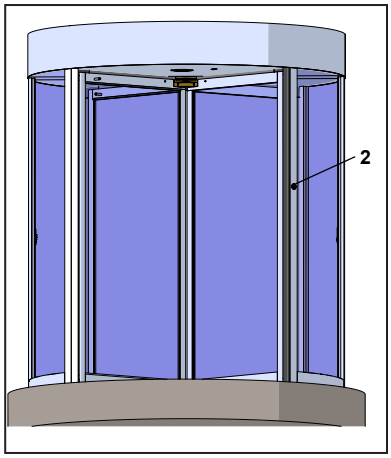


Fig. 29.4.4 Exterior indicator light

2 Exterior indicator light



29.4.1 Interior and exterior card reader cables.

TIPS AND RECOMMENDATIONS

Card reader installation.

- Installation may be done by general contractor.
- Installation of building access control panel and interface to card readers may occur after door is installed.
- If card readers not installed, testing card reader interfaces will be done by shorting the two wires in each cable together to simulate a card reader closer.
- Insure card reader pulse is as short as possible.

1. Press the EStop button.
2. Connect interior and exterior card reader cables referenced in Table 29.4.1. to the interface board (Fig. 29.4.2).
3. Route card reader cables to the door area where the card readers will be installed.

- Insure that insulation has been stripped from the wire ends on each of the two cables.

29.4.2 Test J12 interior card reader interface.

1. Confirm that closing the circuit of J12 Interior card reader circuit:

- Turns on LED light D26 on the Interface board (Fig. 29.4.2).
- Turns the interior quarter post indicator light from RED to GREEN.
- Causes the annunciators to sound the "Please enter the door" message.

29.4.3 Test J11 exterior card reader interface.

1. Confirm that closing the circuit of J11 exterior card reader circuit:

- Turns on LED light D28 on the Interface board (Fig. 29.6.2).
- Turns the exterior quarter post indicator light from RED to GREEN.
- Causes the annunciators to sound the "Please enter the door" message.

29.4.4 "Home" position adjustment.

1. Follow the Home position adjustment procedure to make the door stop against the quarter posts. Reference Para. 29.5.

29.5 Home Position Adjustment

Fig. 29.5.1 Revolving door wings - home position

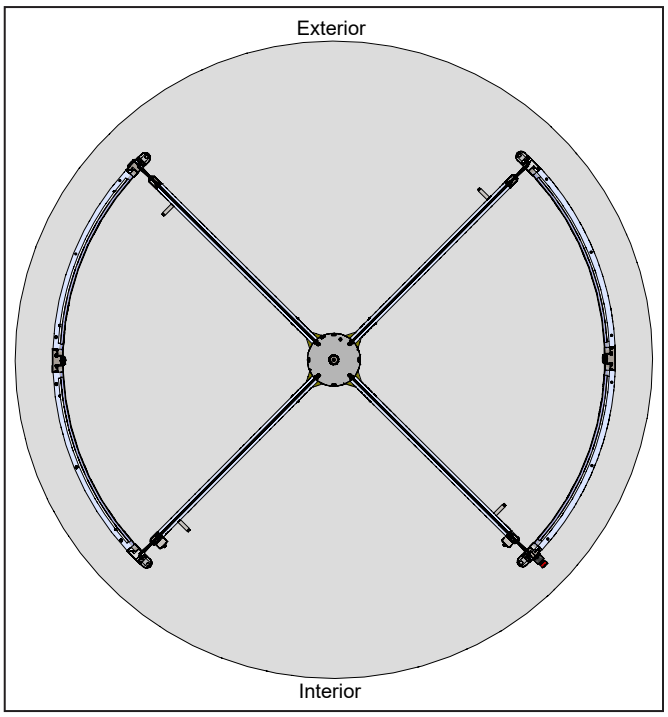


Fig. 29.5.2 Interface board Mode DIP switch S2

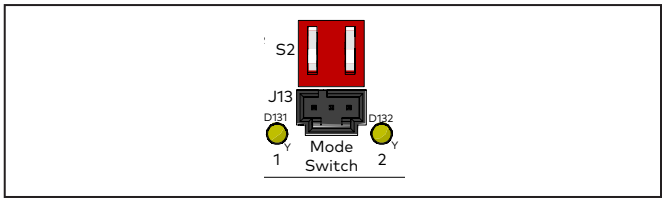
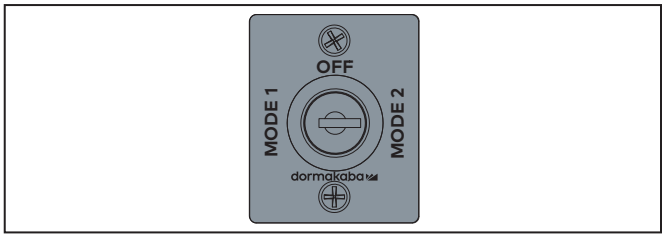


Fig. 29.5.3 Mode key switch



29.5.1 Home position adjustment.

WARNING

Insure door area is clear of objects and personnel before initiating door rotation.

1. If the "HOME" position is not where the door is required to rest, its position needs to be adjusted.
2. Set Mode key switch into the "MODE 1" position.
3. Press the Emergency stop pushbutton.
4. Set both "MODE" DIP switches on the Interface board (Fig. 29.5.2) DOWN.
5. Manually rotate the door to the desired stop position.
6. Release the Emergency Stop pushbutton.

- The door will rotate several times and then stop at the "HOME" position.

7. Swipe **interior card reader**, or if not connected, momentarily jump card reader wires together.

- The door will rotate coming to rest at the newly set stop ("HOME") position.

TIPS AND RECOMMENDATIONS

Depending on the conditions and parameter settings, the "HOME" position might need to be set slightly short of the desired "HOME" position.

8. Repeat steps 5 and 6 until the stop position is satisfactory.

29.6 Interior Entry Point Sensor Setup And Door Operation

29.6.1 Interior entry point sensor setup.

1. Press the Emergency stop pushbutton in.
2. Connect interior entry point sensor cable (Table 29.6.1) J16 to the interface board (Fig.29.1).

• See next page for sensor adjustment.

Fig. 29.6.1 Canopy top view - interior entry and presence sensors

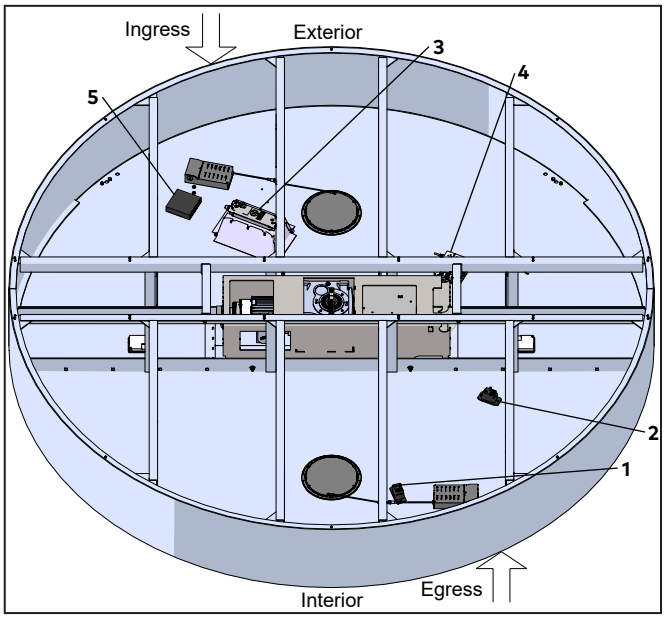


Fig. 29.6.2 Canopy soffit view - interior entry and presence sensors

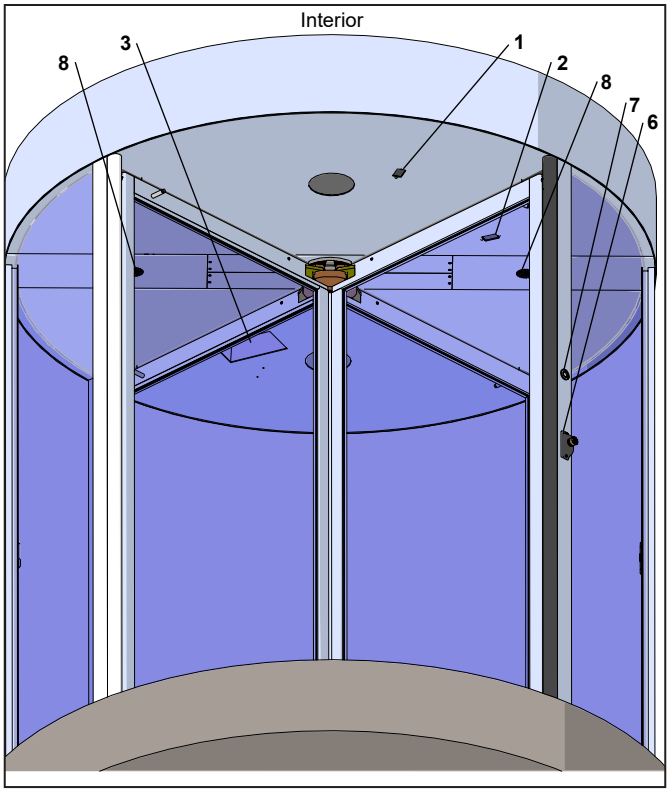


Table 29.6.1 Entry and presence sensors and cable numbers

1	D8k3500-010	Entry point sensor, interior, J16
2	D8k3500-010	Egress 1 presence sensor, J33
3	DX6102-001	Ingress security sensor, J15, J25, J26
4	DX6101-001	Security sensor control box
5	DX6103-001	Security sensor Network switch
6	DX3413-010	Emergency stop pushbutton
7	DC7007-001	Indicator light
8	DC7009-001	Annunciator

Fig. 29.6.3 Entry point sensor adjustments

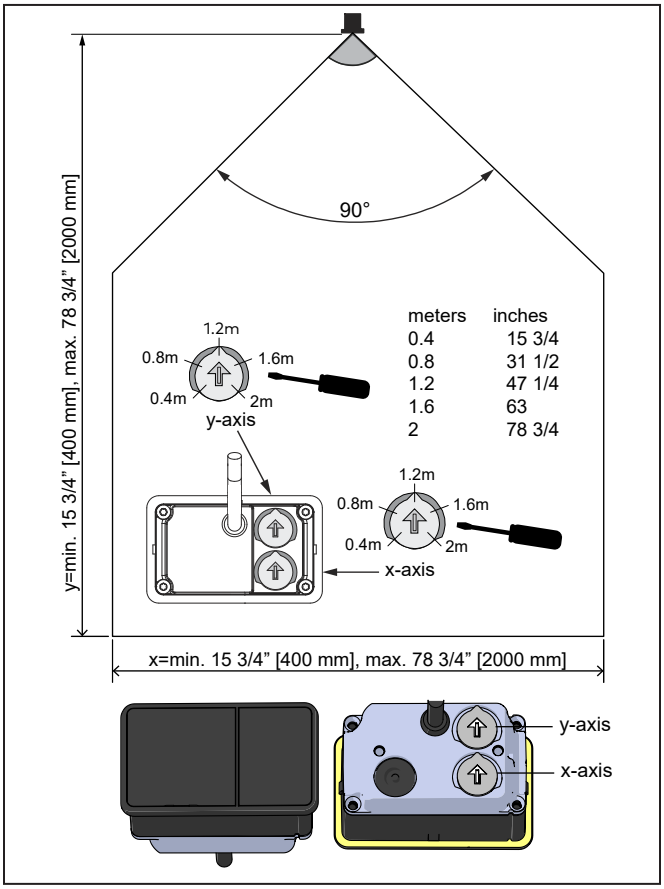
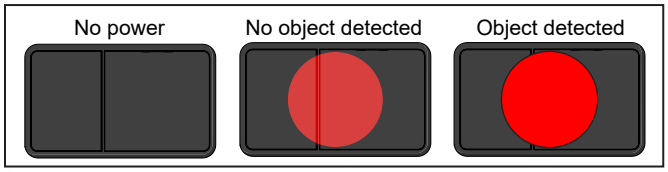


Fig. 29.6.4 Entry point sensor LED status



LED off	No power.
LED dimmed red	No object detected.
LED bright red	Object detected.

2. Adjust the width and depth of the detection field.

WARNING

Entry point sensor adjustment.
Only authorized, trained personnel should commission the TOFniva sensors.
- Reference CEDES TOFniva Installation and Operation Manual.

- Set the end of the detection field at least 12" above the floor.
- The door panel should not activate the sensor if the door panel is 2" or further away from the sensor in either direction.
- Minimum distance from edge of sensor detection field (x-axis) to center of door is 12".

29.6.2 Release the Emergency stop button.

WARNING

Insure door area is clear of objects and personnel before initiating door rotation.

1. The door will rotate if necessary and lock at the home position.

29.6.3 Interior Entry point sensor test.

1. Activate the interior card reader.
2. Interior Indicator light should turn green.
3. The annunciators should sound the "Please enter the door" message.
4. Walk into the door to activate the interior entry point sensor. Do not walk through the door.
- The door will rotate half a turn and lock at the Home position.

Fig. 29.6.5 Canopy soffit view, egress entry point and presence sensor patterns

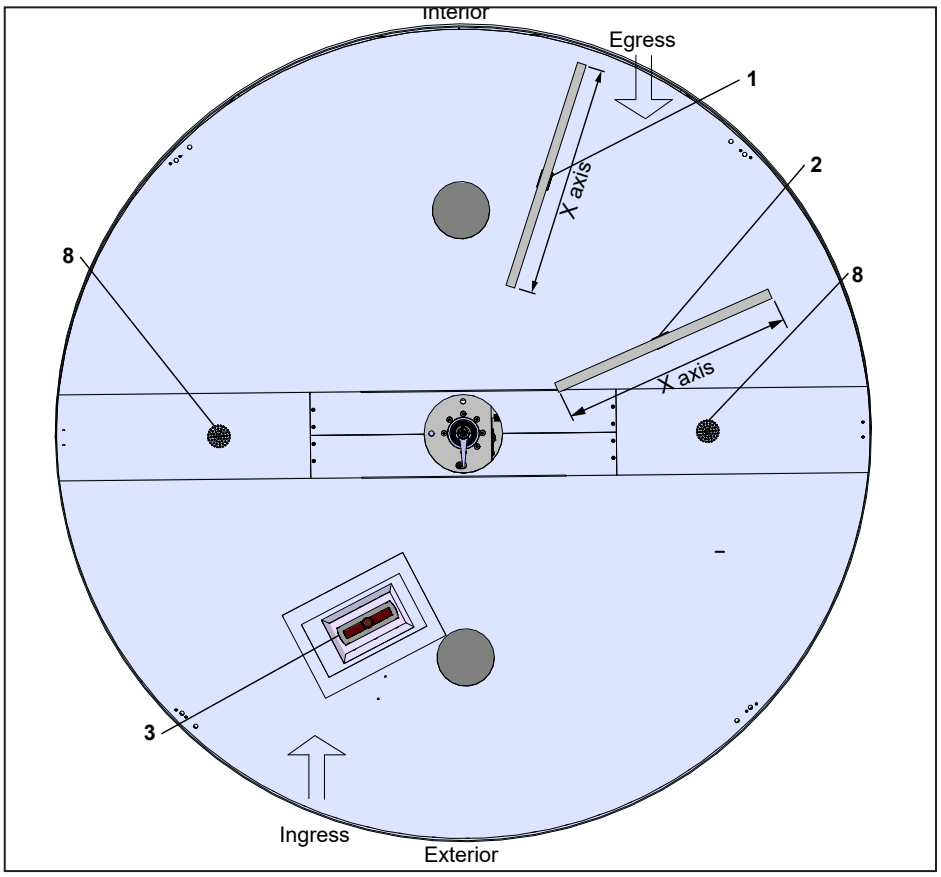


Table 29.6.2 Canopy soffit view hardware

1	D8k3500-010	Entry point sensor, interior, J16
2	D8k3500-010	Egress 1 presence sensor, J33
3	DX6102-001	Ingress security sensor, J15, J25, J26
8	DC7009-001	Annunciator

29.7 Check Push To Reverse Door Operation

Fig. 29.7.1 J32 Push to Reverse, ingress 2

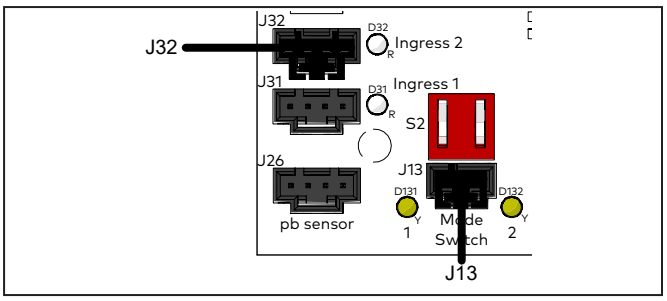


Fig. 29.7.2 Push to reverse, egress

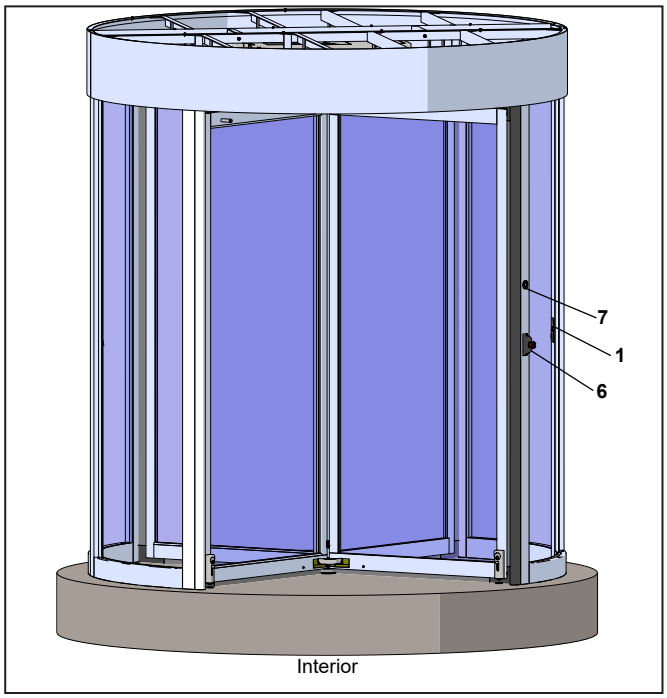
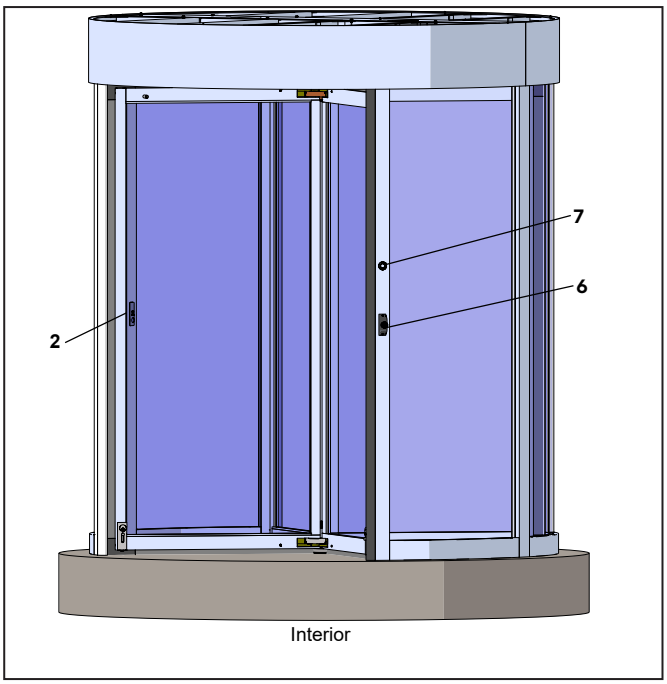


Fig. 29.7.3 Push to reverse, ingress



29.7.1 "Push to Reverse" button cable J32.

Reference Para. 15.5 and Appendix A, Fig. A.1.3 for center post Push to Reverse switch wiring.

Table 29.7.1 J32 Push to Reverse button cable

J32	DS7019-001	Push to Reverse, ingress 2

- Both push to Reverse switches wire to the J32 plug.

29.7.2 Test Push to Reverse button door operation, interior (egress) Fig. 29.7.2.

WARNING

Insure door area is clear of objects and personnel before initiating door rotation.

1. Release the Emergency stop button.
2. Swipe card reader, or if not connected, momentarily jump card reader wires together.
   - Door indicator light turns green.
   - Annunciator voice message prompts user to enter door.
3. Walk in door
   - Door motion starts.
4. Press "Push to Reverse" button.
   - Door stops.
   - Annunciator informs user that door will reverse.
   - The door reverses and stops at the "+" position.
5. User exits door.
6. Once system detects user has exited the revolving door, the door will resume rotating in the CCW direction and will stop at the next "X" Home position.

29.7.3 Test Push to Reverse button door operation, exterior (ingress) Fig. 29.7.3.

1. Repeat steps 1 through 5 in Para. 29.7.2.

Table 29.6.3 Door hardware, push to reverse buttons

1	DS7019-001	Push to reverse button, egress, J32
2	DS7019-001	Push to reverse button, ingress, J32
6	DX3413-010	Emergency stop pushbutton
7	DC7007-001	Indicator light
8	DC7009-001	Annunciator

29.8 Check End Wall Leading Edge Sensor Operation

Table 29.8.1 Leading edge sensor cables

J17	DS7026-001	Leading edge sensor, ingress
J18	DS7027-001	Leading edge sensor, egress

Fig. 29.8.1 Leading edge (safety) sensor cables and S1 DIP switch

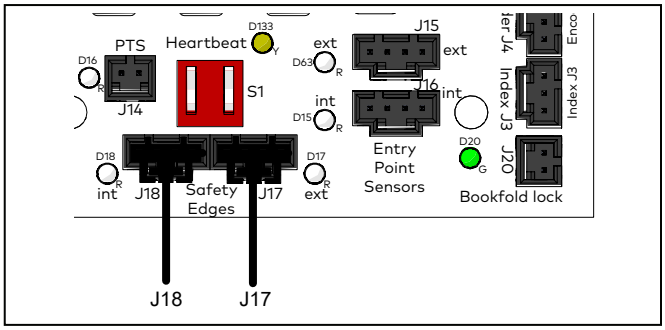
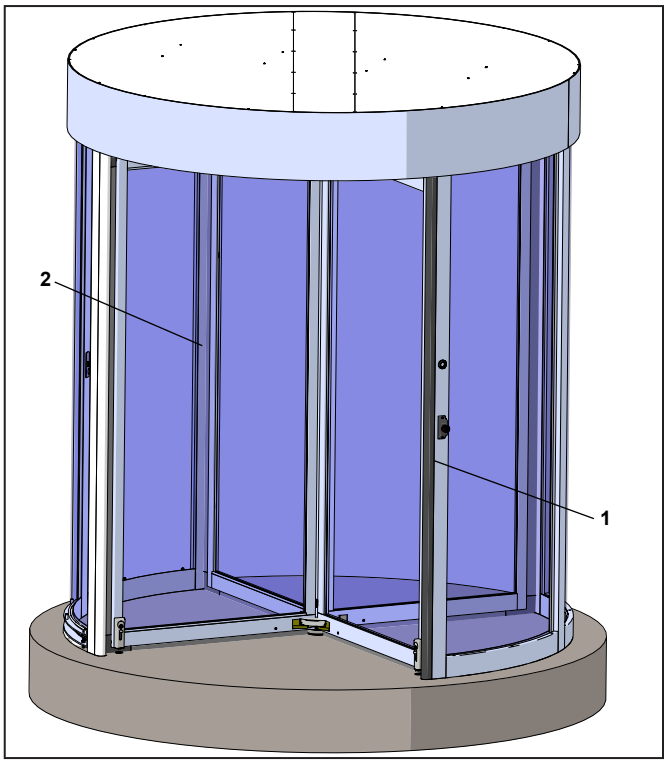


Fig. 29.8.2 Security quarter post/end walls with sensors



1 Interior security quarter post/end wall with safety edge transmitter

2 Exterior security quarter post/end wall with safety edge transmitter

29.8.1 Leading edge sensors.

Reference Para. 16.3 and Appendix A, Fig. A.7 and A.8 for end wall sensor installation and wiring.

26.8.2 Connect leading edge sensor cables.

1. Press the Emergency stop button.
2. Connect both leading edge sensor cables to the Interface board (Table 29.8.1, Fig. 29.8.1).

29.8.3 Set Interface board Safety Edge DIP switch S1.

1. Set both "Safety Edges" S1 DIP switches on the Interface board UP (Fig. 29.8.1).
2. Make sure the LED lights D18 and D17 on the Interface board for both interior and exterior leading edge sensors are ON (Fig. 29.8.1).

29.8.4 Verify sensor and Interface board LED operation.

1. Confirm that depressing quarter post safety edge rubber shell causes the corresponding LED light on the interface board to turn OFF.
   - Adjust the bottom leading edge sensor holders if necessary. Reference Para. 16.3.
2. Confirm that both red "Safety" LED lights on the Interface board are ON when quarter post safety edge rubber shells are not activated (Fig. 29.8.1).

29.8.5 Verify door operation, interior leading edge sensor.

WARNING

Insure door area is clear of objects and personnel before initiating door rotation.

1. Release the Emergency stop button.
2. Swipe card reader, or if not connected, momentarily jump card reader wires together.
   - Door indicator light turns green.
   - Annunciator voice message prompts user to enter door.
3. Walk in door
   - Door motion starts.
4. Depress interior leading edge rubber shell.
   - Door rotation will stop when the wing is within approximately 30 degrees of the quarter post/end wall.
5. Release interior leading edge rubber shell.
   - Door rotation will resume after a slight delay.

29.8.6 Verify door operation, exterior leading edge sensor.

- Repeat steps 1 through 5 in Para. 29.8.5.

29.9 Interior Presence Sensor Setup And Door Operation

29.9.1 Interior presence sensor setup.

1. Press the Emergency stop pushbutton in.
2. Connect interior presence sensor cable (Table 29.9.1) J33 to the interface board (Fig.29.1).

• See next page for sensor adjustment.

Fig. 29.9.1 Canopy top view - interior entry and presence sensors

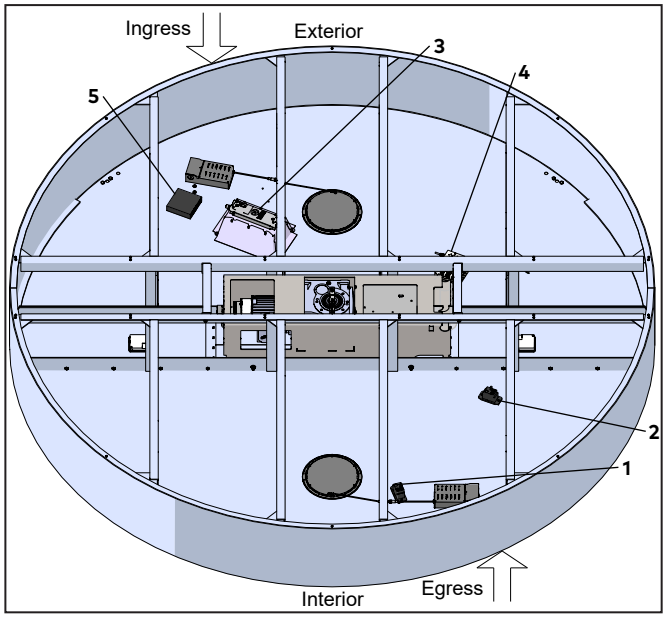


Fig. 29.9.2 Canopy soffit view - interior entry and presence sensors

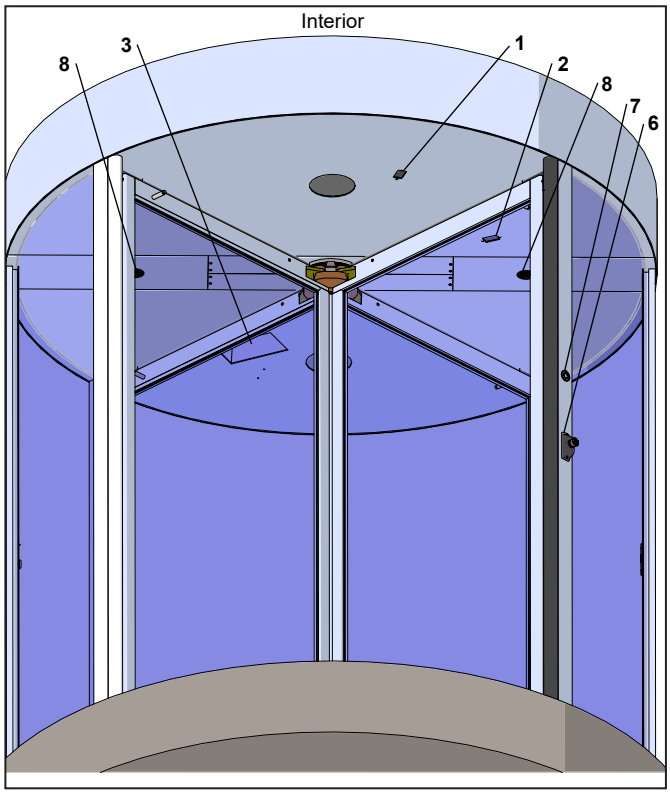


Table 29.9.1 Entry and presence sensors and cable numbers

1	D8k3500-010	Entry point sensor, interior, J16
2	D8k3500-010	Egress 1 presence sensor, J33
3	DX6102-001	Ingress security sensor, J15, J25, J26
4	DX6101-001	Security sensor control box
5	DX6103-001	Security sensor Network switch
6	DX3413-010	Emergency stop pushbutton
7	DC7007-001	Indicator light
8	DC7009-001	Annunciator

Fig. 29.9.3 Entry point sensor adjustments

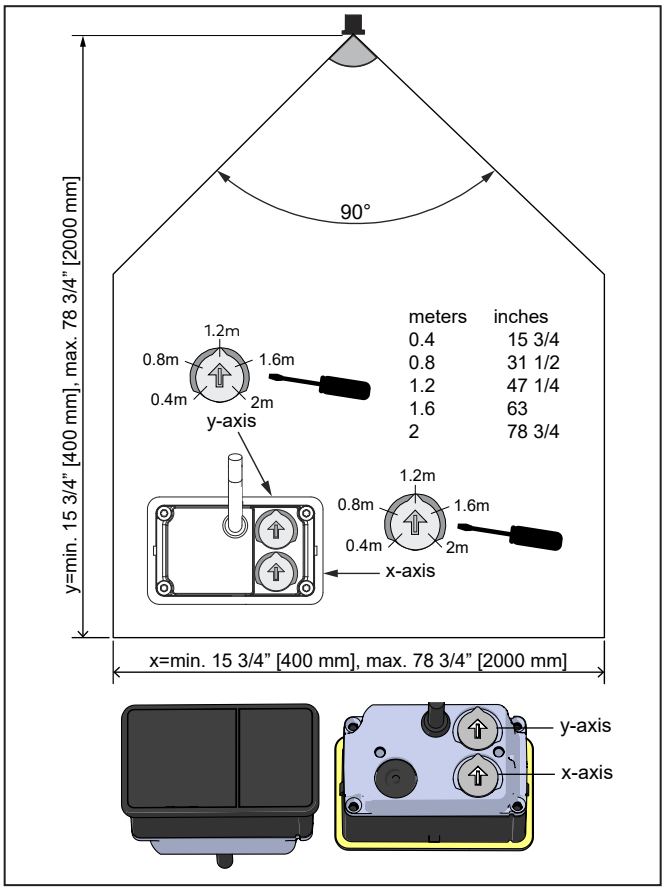
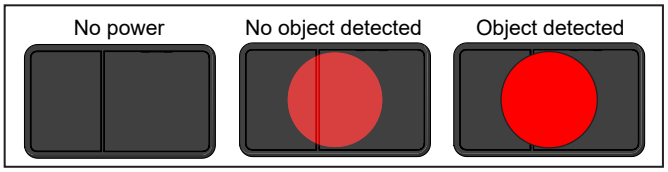


Fig. 29.9.4 Entry point sensor LED status



LED off	No power.
LED dimmed red	No object detected.
LED bright red	Object detected.

29.9.1 Egress presence sensor setup (continued).

2. Adjust the width and depth of the detection field per the sensor's instruction manual.

WARNING

Presence sensor adjustment.
Only authorized, trained personnel should commission the TOFniva sensors.

- Reference CEDES TOFniva Installation and Operation Manual.

- Set the end of the detection field at least 12" above the floor.
- The door panel should not activate the sensor if the door is 2" or further away from the sensor in either direction.
- Minimum distance from edge of sensor detection field (x-axis) to center of door is 12".

29.9.2 Test S2 security door standard operation.

WARNING

Insure door area is clear of objects and personnel before initiating door rotation.

1. Turn the key switch to MODE 1 (two-way security).
2. Release the Emergency stop button.
3. Test door operation from the interior (egress) side.

- Reference Chapter 6, Para. 6.1 for Security Door Standard Passage .

29.9.3 Test S2 security door anti-tailgating operation, interior (egress) side. Two people are required for this test.

1. Reference Chapter 6, Para. 6.3, S2 Security Door Operation, Unauthorized Entry in Next Compartment.

Fig. 29.9.5 Canopy soffit view, egress entry point and presence sensor patterns

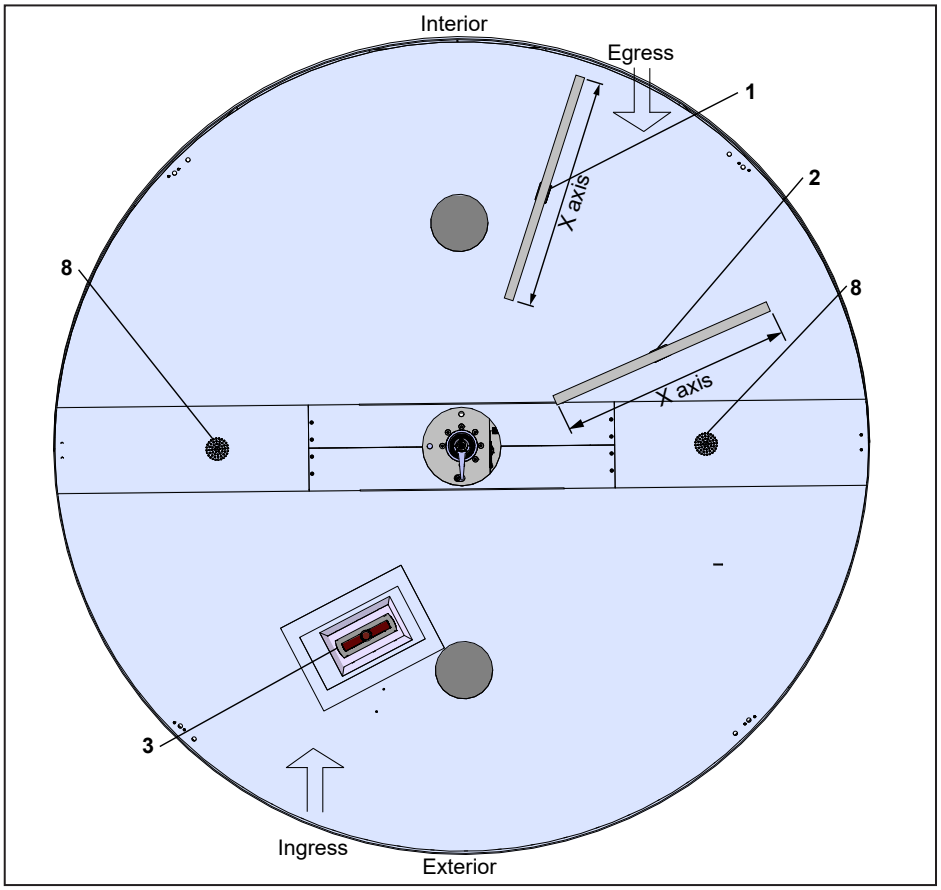


Table 29.9.2 Canopy soffit view hardware

1	D8k3500-010	Entry point sensor, interior, J16
2	D8k3500-010	Egress 1 presence sensor, J33
3	DX6102-001	Ingress security sensor, J15, J25, J26
8	DC7009-001	Annunciator

29.10 Exterior Security Sensor Setup And Door Operation

29.10.1 Exterior security sensor cable connections.

1. Press the Emergency stop pushbutton in.
2. Connect following cables from IRIS control box assembly (2) to MDS interface board (11):

- Harness, 10 pin security sensor, COM (7), Fig. 29.10.1
- Harness, 12 pin security sensor,MAIN (8), Fig. 29.10.1

Fig. 29.10.2 Wiring diagram, S3 IRIS control box to Interface board

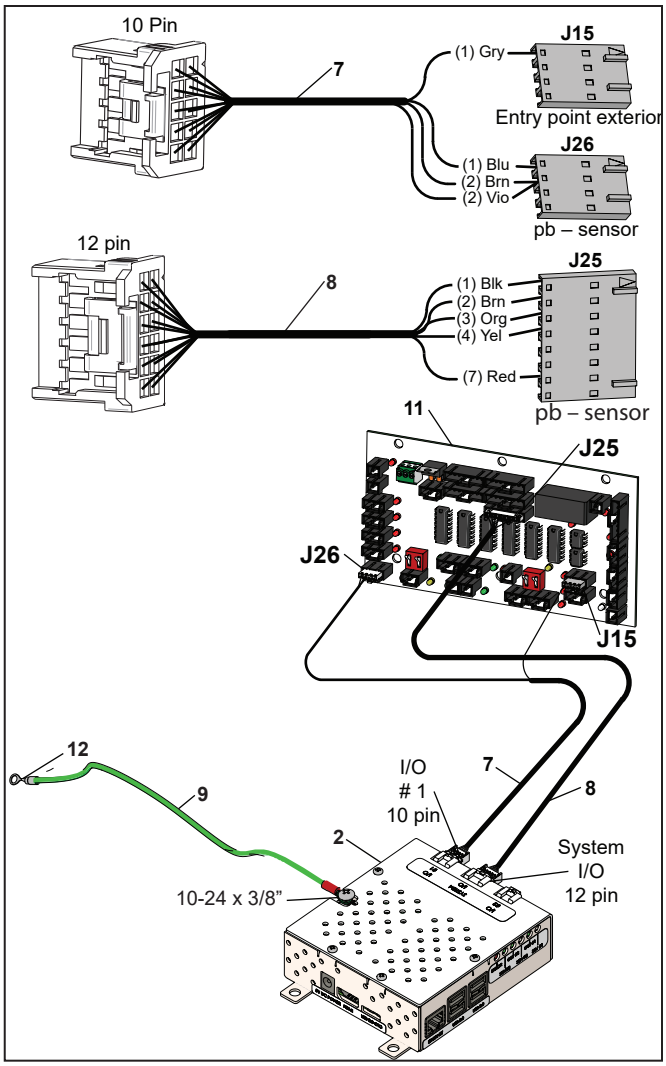


Fig. 29.10.1 S3 security canopy top view, covers removed

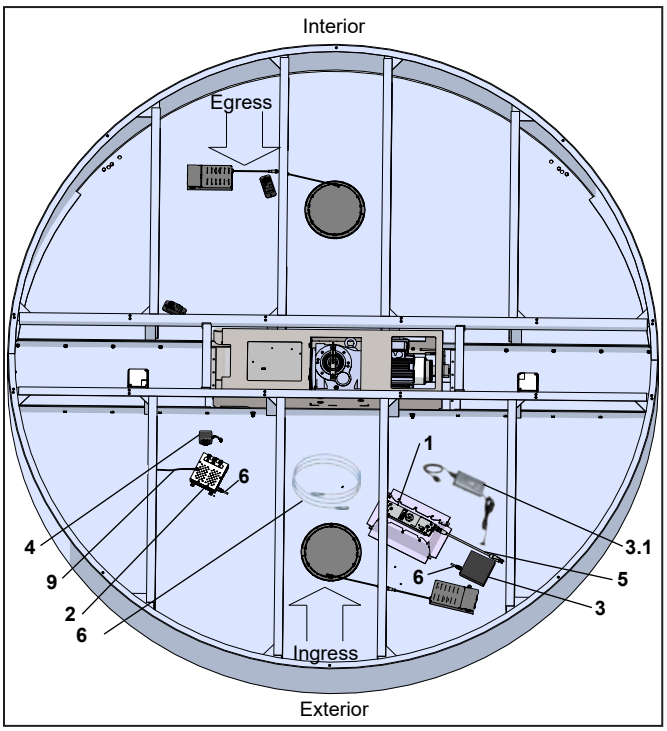


Table 29.10.1 Ingress security sensor hardware

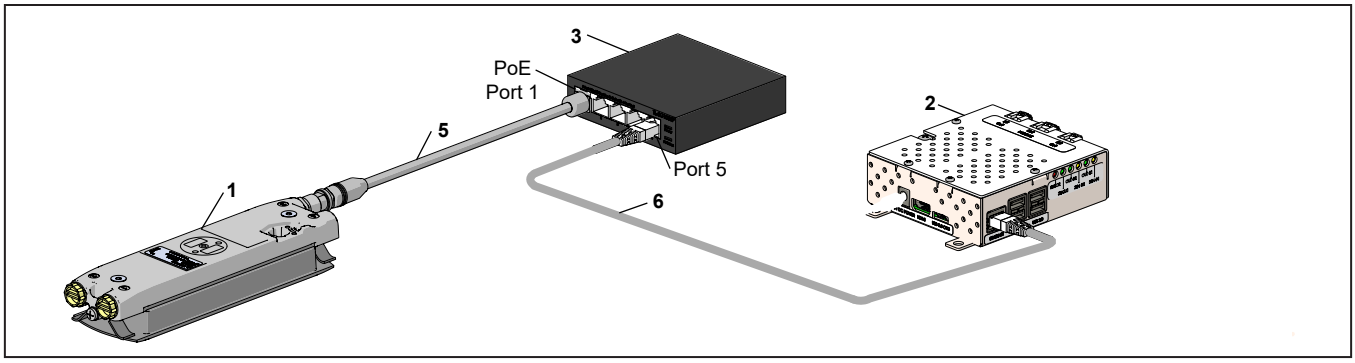
ID#	Part no.	Function
1	DX6102-001	IRMA Matrix sensor assembly
2	DX6101-001	Control box assembly
3	DX6103-001	Network switch
3.1		DC power supply, network switch
4	DX6104-001	5 Vdc power supply, control box
5	DX6108-001	SRD sensor Ethernet power cable
6		Network cable, RJ45 plug to RJ45 plug
7	DX6106-001	Harness, 10 pin security sensor, COM
8	DX6107-001	Harness, 12 pin security sensor, MAIN
9	DX0839-010	Grounding wire, 16" long
11	DX3363	MDS Interface board
12		Ring lug

29.10.2 Verify S3 sensor control network connections.

- Reference: Fig. 29.10.2).

1. Verify Ethernet power cable (5) is connected to PoE Port 1 of Network switch (3).
2. Verify network cable (5) is connected to Port 5 of Network switch and Ethernet port on IRIS control box assembly.

Fig. 29.10.2 Sensor hardware network connections



29.10.3 Connect control box 5 Vdc power supply to 115 Vac receptacle.

1. Press the Emergency stop pushbutton in.
2. Connect control box 5 Vdc power supply plug to contractor supplied 115 Vac receptacle (Para. 29.2). **(Optional UPS, Reference Para. 29.2)**

29.10.4 Connect S3 Network switch 53.5 Vdc power supply to 115 Vac receptacle.

1. Connect IRIS network switch 53.5 Vdc power supply plug to contractor supplied 115 Vac receptacle (Para. 29.2) **(Optional UPS, Reference Para. 29.2)**

Table 29.10.2 Ingress security sensor hardware

ID#	Part no.	Function
1	DX6102-001	IRMA Matrix sensor assembly
2	DX6101-001	Control box assembly
3	DX6103-001	Network switch
3.1		DC power supply, network switch
4	DX6104-001	5 Vdc power supply, control box
5	DX6108-001	Sensor Ethernet power cable
6		Network cable, RJ45 plug to RJ45 plug
7	DX6106-001	Harness, 10 pin security sensor, COM
8	DX6107-001	Harness, 12 pin security sensor, MAIN
9	DX0839-010	Grounding wire, 16" long

Fig. 29.10.3 IRIS control box 5 Vdc power supply

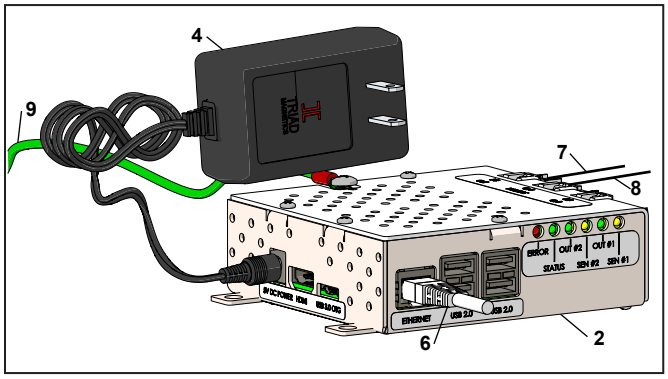
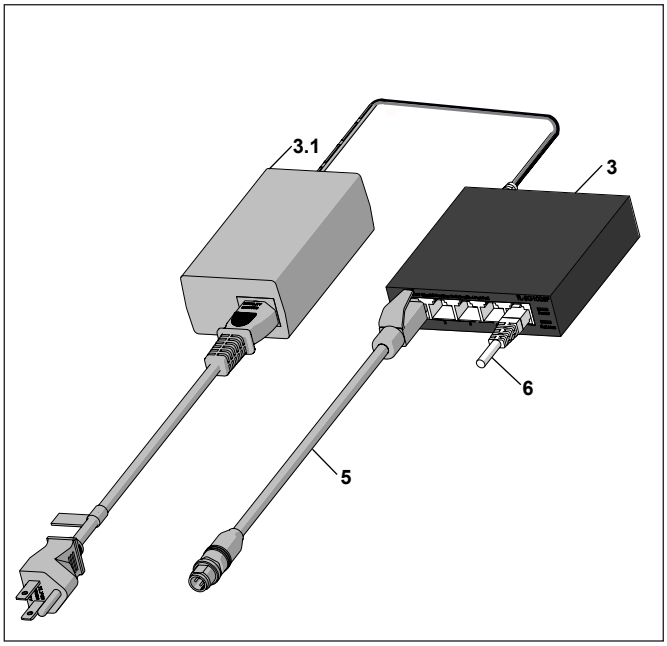


Fig. 29.10.4 Network switch 53 5 Vdc power supply adapter



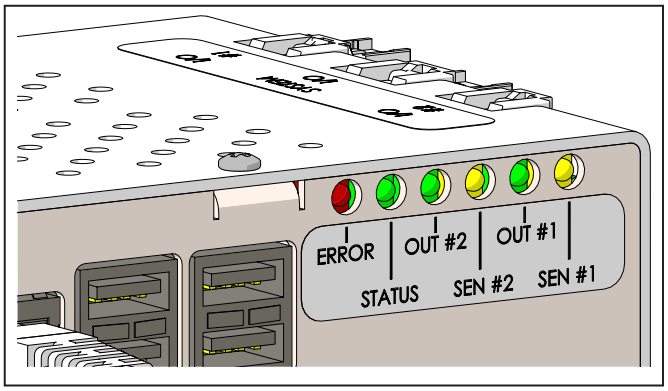
29.10.5 Turn MDS power switch on (Para 29.3).

1. Turn MDS power switch on.

29.10.6 IRMA Matrix security sensor and control box power up.

1. Sensor IR lights illuminate (Fig. 29.10.6).
2. Status LED.
- Illuminates green when power on.
3. Control box single board computer (SBC).
- It will take approximately a minute for the control box SBC to boot up; the operating system is Windows.
4. SENS#1 LED:
- Illuminates Yellow (on steady) after initialization complete.
5. SENS#2 LED:
- Illuminates Yellow (on steady) after initialization complete.

Fig. 29.10.5 IRMA Matrix sensor control box status LEDs



TIPS AND RECOMMENDATIONS

The control box SBC will automatically boot up after a power outage.

29.10.7 Control box SBC error (Error red LED ON).

NOTICE

SBC error.

- The MDS drive will not see any signals from the IRMA Matrix sensors; the drive will not react.
- The door will remained locked.

Fig. 29.10.6 Ingress security sensor

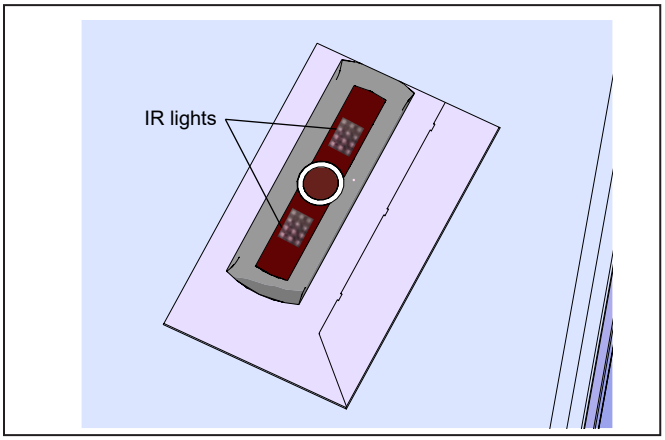


Table 29.10.3 IRIS control box status LEDs

LED		Function	LED Status	Description
SEN#1	Yel	TOF Sensor Status #1	ON	TOF initialization complete
			Blinking at 1 Hz	TOF initialization
			OFF	TOF error
SEN#2	Yel	TOF Sensor Status #2	ON	TOF initialization complete
			Blinking at 1 Hz	TOF initialization
			OFF	TOF error
Error	Red	Operation/Error Status	ON	SBC error condition
OUT#1	Grn	Output Control Box Status#1	OFF	No person detected
			ON	1 person detected
			Blinking at 2 Hz	More than 1 person detected
			Blinking at 4 Hz	Suspicious
OUT #2	Grn	Output Control Box Status#2	OFF	No person detected
			ON	1 person detected
			Blinking at 2 Hz	More than 1 person detected
			Blinking at 4 Hz	Suspicious
STATUS	Grn	Operation/Error Status	ON	Power On

29.10.8 IRMA Matrix security sensor functions.

1. Sensor will function as an ingress entry and presence sensor to initiate door movement when entering the door compartment after credential authorization.

Security functions. Sensor also detects ingress piggybacking, tailgating and, with egress sensors, entry into the opposite side compartment.

29.10.9 Test S3 security door standard operation, exterior side of door

WARNING

Insure door area is clear of objects and personnel before initiating door rotation.

1. Turn the key switch to MODE 1 (two-way security).
2. Release the Emergency stop button.
3. Test door operation from the exterior (ingress) side.

- Reference Chapter 6, Para. 6.1 for Security Door Standard Passage .

29.10.10 Test S3 security door operation. Two people are required for these tests.

NOTICE

Check anti-tailgating and anti-piggybacking operation both on the exterior (ingress) side and the interior (egress) side.

1. Reference Chapter 6, Para. 6.2, S3 Security Door Operation, Unauthorized Entry in Opposite Direction.
2. Reference Chapter 6, Para. 6.4, S3 Security Door Operation, Unauthorized Entry in Next Compartment.
3. Reference Chapter 6, Para. 6.5, S3 Security Door Operation, Anti-piggybacking.

Fig. 29.10.7 Canopy soffit view, egress entry point and presence sensor patterns and ingress security sensor

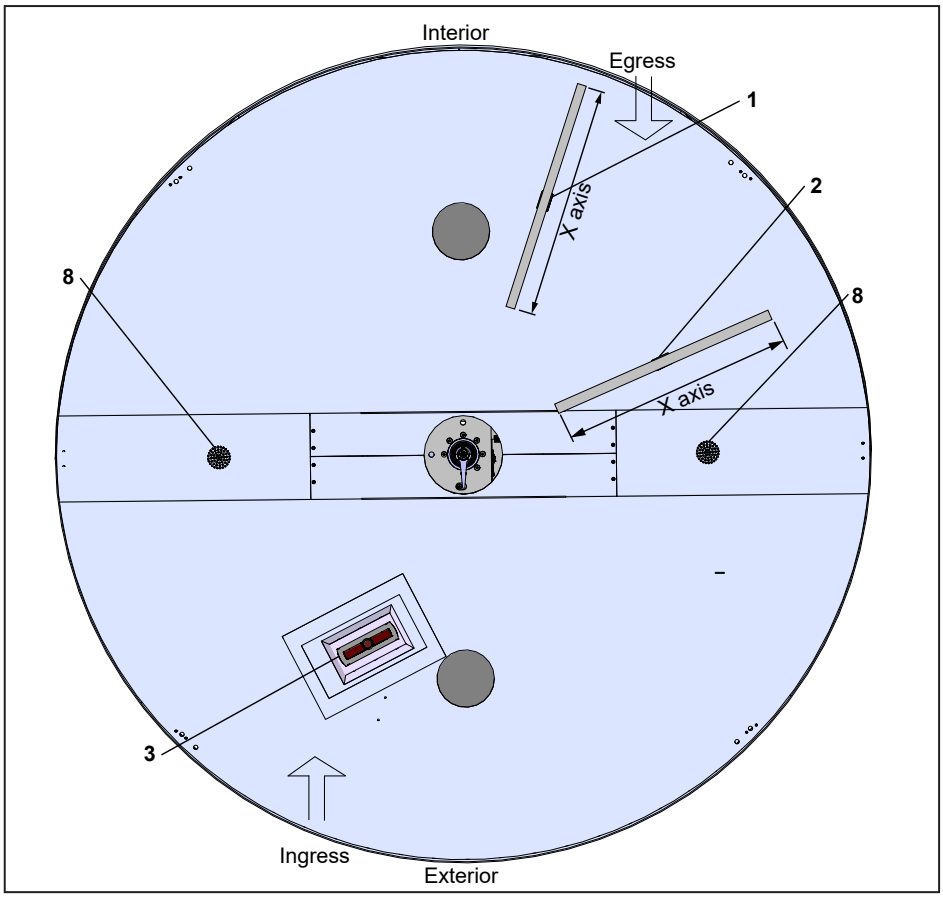
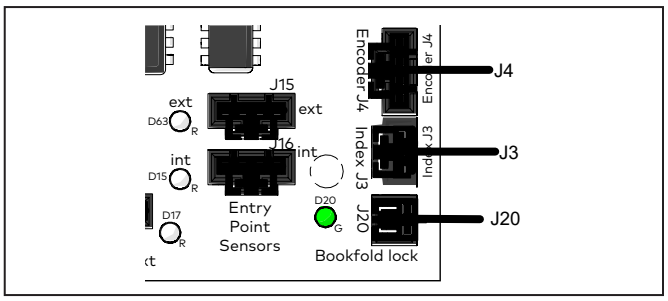


Table 29.10.4 Canopy soffit view hardware

1	D8k3500-010	Entry point sensor, interior, J16
2	D8k3500-010	Egress 1 presence sensor, J33
3	DX6102-001	Ingress security sensor, J15, J25, J26
8	DC7009-001	Annunciator

29.11 Check Bookfold Lock Operation

Fig. 29.11.1 Interface board, J20, Bookfold lock



29.11.1 Connect J20 bookfold lock plug to interface board.

TIPS AND RECOMMENDATIONS

Bookfold lock disengaged.
With J20 plug disconnected, bookfold lock is disengaged (Fig. 29.11.2).

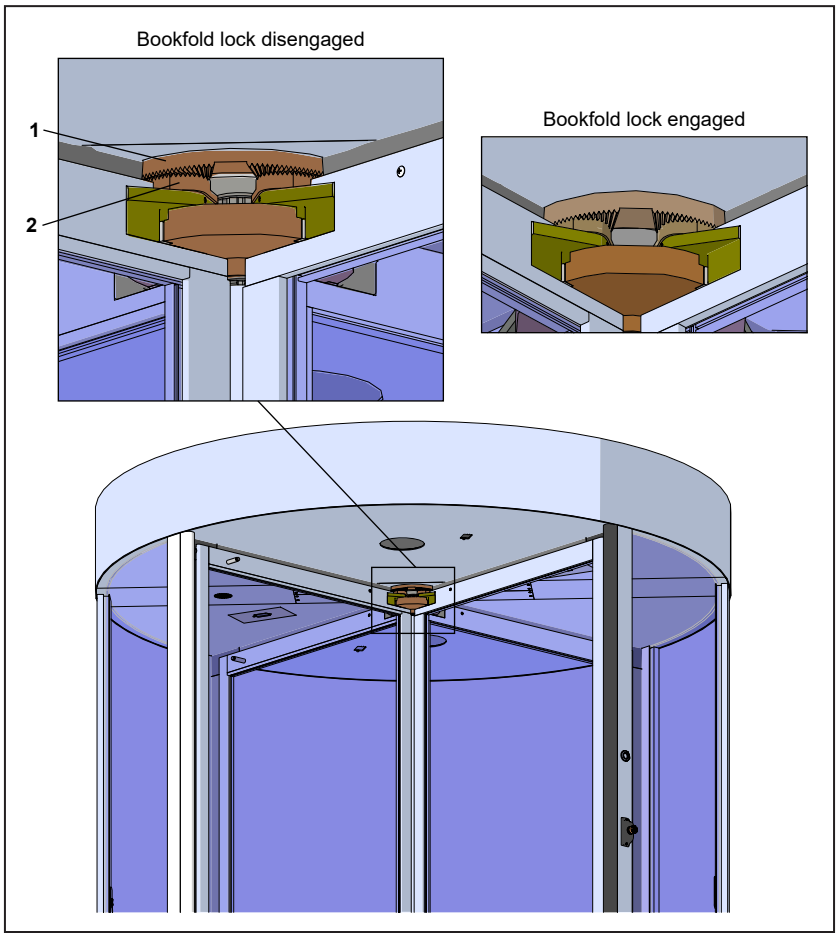
1. Press the Emergency Stop pushbutton.
2. Connect J20 plug to J20 receptacle on Interface Board (Fig.29.11.1).

29.11.2 Test bookfold lock operation.

1. Release Emergency Stop pushbutton.

- Bookfold lock will engage (Fig. 29.11.2).

Fig. 29.11.2 Bookfold lock operation

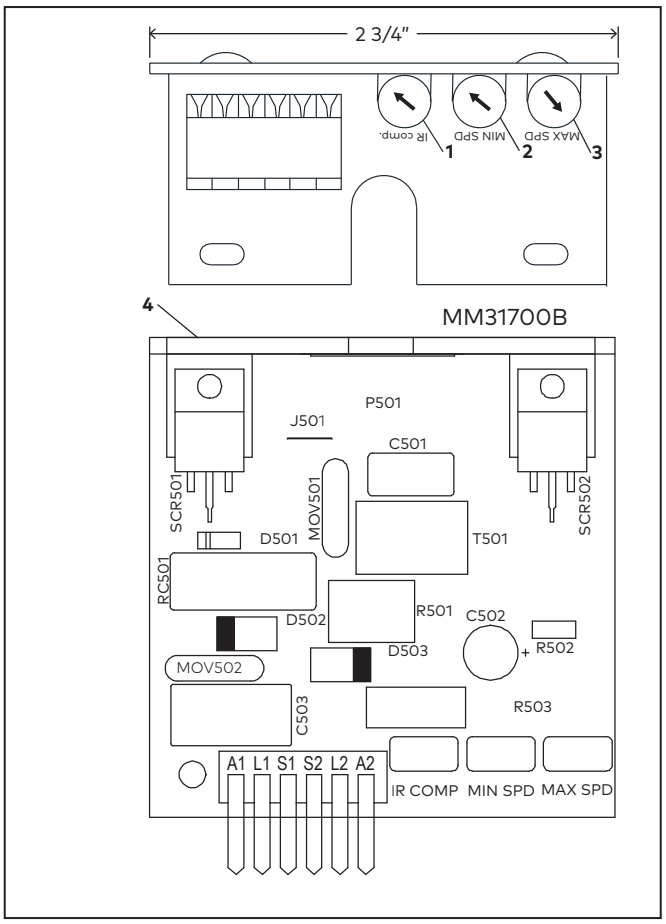


1 Bookfold lock body

2 Hanger serrated plate

29.12 Bookfold Lock Drive

Fig. 29.12.1 Bookfold lock drive



29.12.1 Drive board, bookfold lock control.

TIPS AND RECOMMENDATIONS

Reference Chapter 26, Fig. 26.1.4, Modular Drive System, for Bookfold lock drive location.

WARNING

Electric shock hazard!
The drive is not isolated from earth ground. Circuit potentials are at 115 Vac above earth ground.

- Avoid direct contact with the printed circuit board or with circuit elements to prevent the risk of serious injury or fatality.
- Use a non-metallic screwdriver for adjusting the calibration trimpots (Fig. 29.16.1).

29.12.2 Drive board potentiometer factory settings

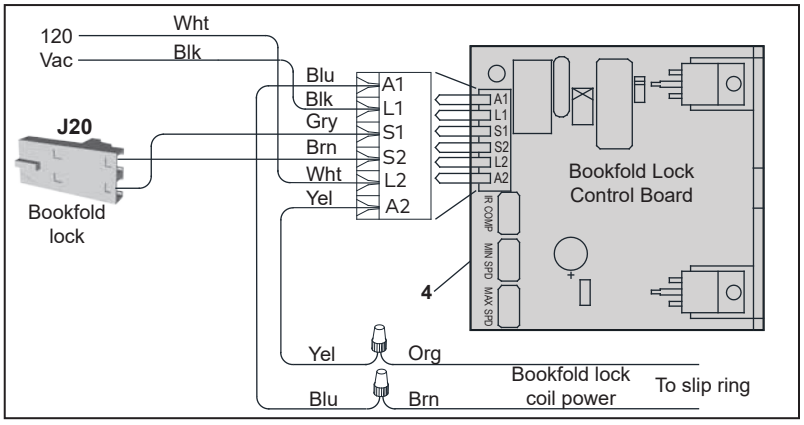
Table 29.12.1 Drive board potentiometer settings

IR COMP	At minimum (CCW).
MIN SPD	At minimum (CCW).
MAX SPD	At maximum (CW).

TIPS AND RECOMMENDATIONS

Bookfold lock drive to bookfold coil wiring.
Reference Para. 20.2 for center shaft bookfold lock wiring.

Fig. 29.12.2 Bookfold lock drive interface



29.13 Adjust Frequency Converter Parameters As Required

WARNING

Frequency converter adjustments
Only authorized, trained personnel should adjust the frequency converter parameters.

Table 29.13.1 Frequency converter parameters

Parameter	Function	Factory Setting
rPt	**Ramp menu**	
ACC	Acceleration	3 sec.
dEC	Deceleration	0.5 sec.
PSS	**Preset speed menu**	
SP2	Speed Forward Fast	30 Hz*
SP4	Speed Forward Slow	15 Hz*
SP5	Speed Reverse	15 Hz*
CLI	**Current limitation menu**	
CL1	Current limit at Forward and Reverse	0.9
CL2	Current limit at Forward Slow	0.7
	Fault	
FCS	Factory/recall customer parameter set	nO**

* Speed (RPM) = Frequency (Hz) / 7.27.
** Set to Inl 1 to restore parameters.

29.13.1 Adjust frequency converter parameters.

TIPS AND RECOMMENDATIONS

Frequency Converter Parameter Adjustment Overview.
Reference Chapter 30, Frequency Converter.

1. Use the frequency converter parameter chart (Table 29.13.1) to adjust parameters for proper speed, acceleration, deceleration and torque.

- The transition from high to low speed must be smooth.

NOTICE

Maximum Revolving Door Speed Settings.
Reference Para. 29.15 for maximum revolving door speed settings based on door diameter.

29.13.2 Home position.

1. Make sure the door stops at Home position consistently.
2. If needed, repeat the "Home" position adjustment procedure in Para. 29.5.

29.14 Back Pressure Adjustment

29.14.1 Adjusting motor torque limit.

1. If the door presses too hard against an obstacle, the motor's torque limit needs to be adjusted in the Frequency converter.
2. Lower the value of "Current limit" parameters.
3. If the motor does not generate enough torque to rotate the door, the value of one of these parameters will need to be increased.

29.15 Maximum Revolving Door Speed Settings, SP2, SP4 Parameters

Table 29.15.1 Revolving door speed settings – maximum allowable speed per ANSI/BHMA A156.27 Para. 8

Door diameter	Function	4 wing aluminum	4 wing cladded
6'	Maximum speed (RPM)	5.5	4.8
	Measured time per revolution (s)	10.9	12.5
	SP2 – speed forward fast (Hz)	39	34
	SP4 – speed forward slow / SP5 – Reverse speed (Hz)	19	17
6' 6"	Maximum speed (RPM)	5	4.3
	Measured time per revolution (s)	12.0	14.0
	SP2 – speed forward fast (Hz)	36	31
	SP4 – speed forward slow / SP5 – Reverse speed (Hz)	18	15
7'	Maximum speed (RPM)	4.5	3.9
	Measured time per revolution (s)	13.3	15.4
	SP2 – speed forward fast (Hz)	32	28
	SP4 – speed forward slow / SP5 – Reverse speed (Hz)	16	14
7' 6"	Maximum speed (RPM)	4.1	3.5
	Measured time per revolution (s)	14.6	17.1
	SP2 – speed forward fast (Hz)	29	25
	SP4 – speed forward slow / SP5 – Reverse speed (Hz)	14	12
8'	Maximum speed (RPM)	3.8	3.3
	Measured time per revolution (s)	15.8	18.2
	SP2 – speed forward fast (Hz)	27	23
	SP4 – speed forward slow / SP5 – Reverse speed (Hz)	13	11
8' 6"	Maximum speed (RPM)	3.5	3
	Measured time per revolution (s)	17.1	20
	SP2 – speed forward fast (Hz)	25	21
	SP4 – speed forward slow / SP5 – Reverse speed (Hz)	12	10

29.16 Check Mode 2 Security Door Operation

Fig. 29.16.1 Mode key switch, Mode 2 selected

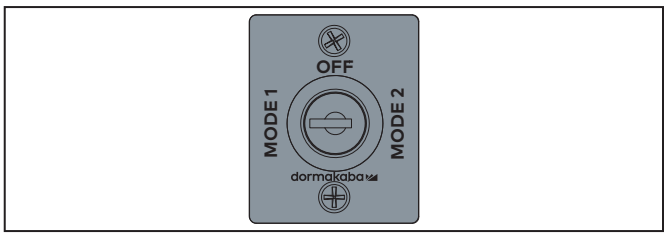


Fig. 29.16.2 Interior indicator light

1 Interior indicator light

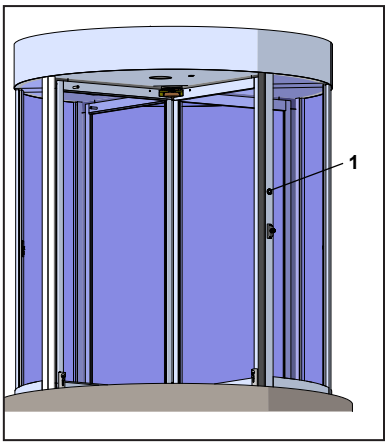
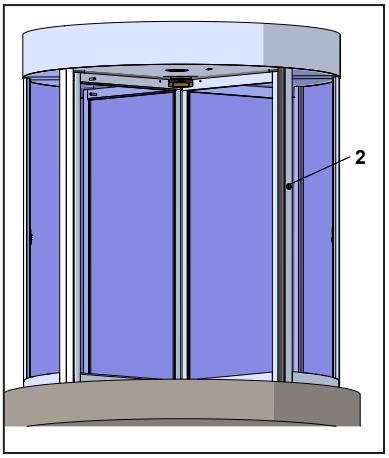


Fig. 29.16.3 Exterior indicator light

2 Exterior indicator light



29.16.1 Check Mode 2 security door operation.

1. Turn the key switch to MODE 2 (one-way security).
   - Mode 2 is free egress, security ingress.
2. Confirm that the exterior quarter post indicator light is RED.
3. Confirm that the interior quarter post indicator light is GREEN.
   - Door egress: the door should start rotating on activation of the interior Entry point sensor without the need to activate the interior card reader.
4. Door ingress: check that exterior entry requires valid card entry and security sensor detection before door will rotate.

Fig. 29.16.4 Canopy top view - entry, presence and security sensors

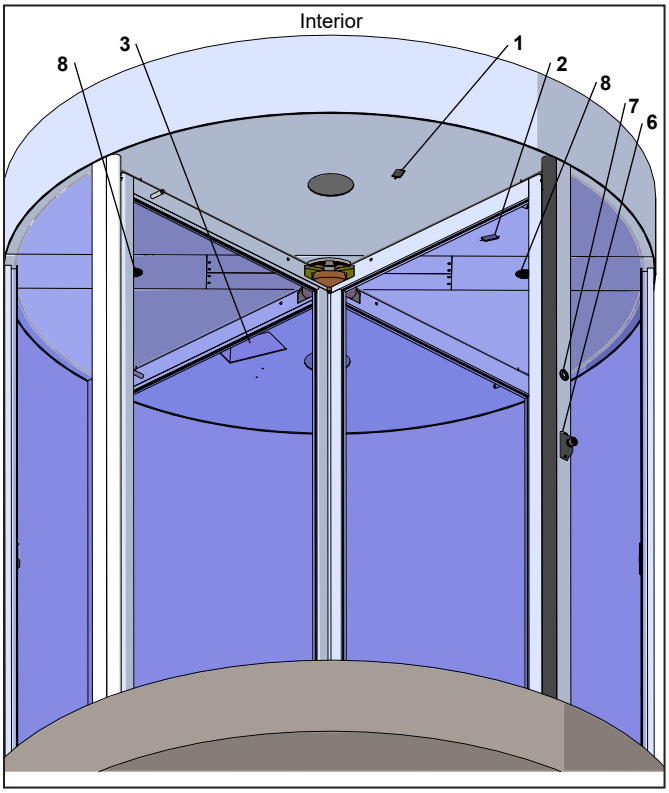


Table 29.9.1 Entry and presence sensors and cable numbers

1	D8k3500-010	Entry point sensor, interior, J16
2	D8k3500-010	Egress 1 presence sensor, J33
3	DX6102-001	Ingress security sensor, J15, J25, J26
4	DX6101-001	Security sensor control box
5	DX6103-001	Security sensor Network switch
6	DX3413-010	Emergency stop pushbutton
7	DC7007-001	Indicator light
8	DC7009-001	Annunciator

30 Frequency Converter

30.1 Overview

Fig. 30.1.1 Schneider frequency converter DX3364-020

30.1.1 Motion parameters.

1. All door motion parameters (e.g. speed, acceleration, deceleration) are set by the Frequency Converter.
2. Typical parameters are set at factory to a best known work value.
3. Additional adjustments will be required during the installation. Reference Para. 30.6 for maximum allowable door speeds based on door diameter.

30.1.2 Installation and operation manual.

1. Refer to the Schneider frequency converter User Manual for further adjustments.

WARNING

Frequency converter adjustments

Only authorized, trained personnel should adjust the frequency converter parameters.

30.1.2 Parameter adjustment.

1. Momentarily press the Jog dial on the face of the frequency converter and then rotate the dial until "COnF" appears on the display.
2. Momentarily press the dial again and then rotate the dial to select the parameter to adjust.
3. Momentarily press the dial to view the value of the parameter.
4. Momentarily press the dial, then rotate the dial to change the value of the parameter.
5. Momentarily press the dial after the adjustment to confirm the new parameter value.
6. To return to the main display, press the "ESC" button.

30.1.2 Restore factory parameters.

1. To restore the factory parameters, set the parameter "FCS" to the value "INI 1" and confirm by holding the dial pressed in for 3 seconds.

30.2 Frequency Converter Drive Display and Key Settings

Fig. 30.2.1 Frequency drive display and key functions

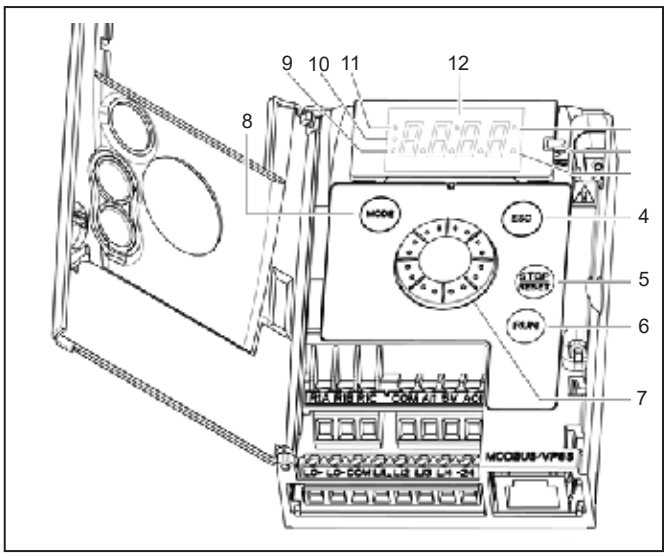


Table 30.2.1 Frequency drive display and key functions

4	ESC button	Exits a menu or parameter, or aborts the displayed value to return to previous value in memory.
5	Stop/Reset button	Stops the motor.
6	Run button	Starts running in LOCAL configuration.
7	Jog dial	-Acts as a potentiometer in LOCAL configuration. -For navigation when turned CW or CCW. -And for selection/validation when pushed.
8	Mode button	Switches between the control/programming modes.
9	Configuration Mode LED	
10	Monitoring Mode LED	
11	Reference Mode LED	
12	4 x 7 segment displays	

30.3 Frequency Converter Menu Structure

30.3.1 Menu structure.

1. Access to menus and structures is possible through three modes:

- Reference r E F
- Monitoring N o n
- Configuration C o n f

2. Switching between these modes is possible at any time using the Mode key or Jog Dial.

3. The first press on Mode key moves from current position to the top of the branch. A second press moves to the next mode.

30.4 Monitoring mode Mon

Table 30.4.1 Product status parameter s t a t, displays the state of the drive and motor

r d y	Drive ready	
r u n	Drive running	
A C C	Acceleration	Last 6 segments to right of code also indicate direction and speed.
d E c	Deceleration	
d C b	DC injection braking in progress	
C L ,	Current Limit	The last 4 segments located on the right down of display are blinking
n S t	Freewheel stop control	
a b r	Auto-adapted deceleration	
C E L	Controlled stop on mains phase loss	
t u n	Auto tuning in progress	
F S t	Fast stop	
n L P	No line power	Refer to manual
F r F	Drive is running and using the withdrawal reference L F F	
r E N	Remote configuration	
L o C	Local configuration	

31 Maintenance

31.1 Center Shaft Assembly Floor Pivot Bearing

Fig. 31.1.1 Floor mounted pivot bearing

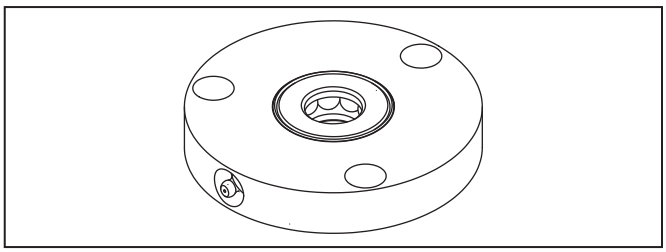
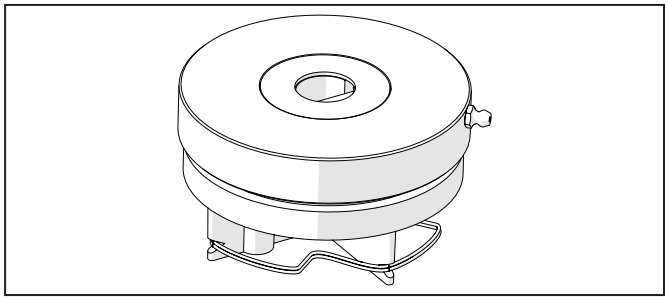


Fig. 31.1.2 In-ground pivot bearing



31.1.1 Pivot bearing lubrication.

1. Grease pivot bearing semiannually.

TIPS AND RECOMMENDATIONS

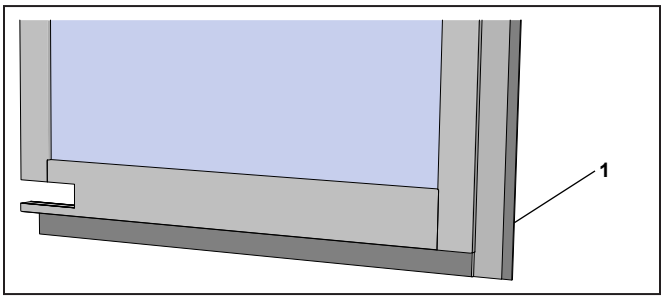
Use general multipurpose grease.

31.1.2 Cleaning pivot bearing/center shaft

1. Clean surface area at pivot bearing/center shaft of dirt and debris as required.

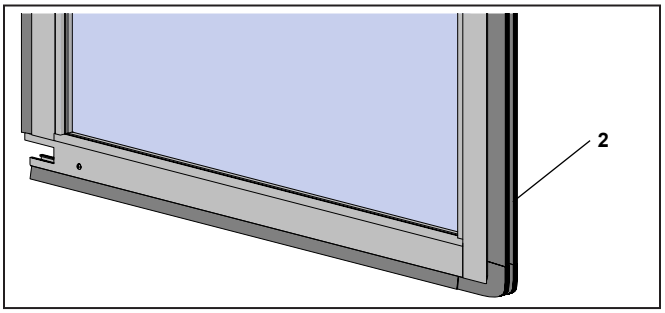
31.2 Weathersweeps

Fig. 31.2.1 T-style weathersweep



1 T-style weathersweep

Fig. 31.2.2 Horsehair weathersweep



2 Horsehair weathersweep

31.2.1 Weathersweep maintenance.

NOTICE

Reducing or trimming the size of the bottom sweep makes the sweep more rigid and voids all warranties.

1. Inspect condition of sweeps.

- Recondition horsehair sweeps if possible using conditioner.

2. Replace weathersweeps as required.

- Contact the Crane company for replacement weathersweeps.

31.3 Cleaning Surfaces

31.3.1 Aluminum

1. Dust and grime can be removed by regular cleaning.
- Use a mild, non-abrasive soap or cleaning solution and water.
- After cleaning, surfaces should be wiped dry with a clean absorbent material.

2. Tar and built-up dirt can be removed with solvent cleaners such as turpentine if followed by a soap and water cleaning and fresh water rinse.

NOTICE

Avoid acid or alkali cleaners; they may attack the anodized finish.

- After cleaning, surfaces should be wiped dry with a clean absorbent material.

31.3.2 #4 stainless steel

1. For routine cleaning, use soap, ammonia, or detergent and water.
- Always working in the direction of the grain, rub with a sponge or rag.
- Rinse with water, wipe dry.

2. Stubborn dirt or grime can be removed with a quality commercial stainless steel cleaner.

31.3.3 Mirror finish stainless steel

NOTICE

Mirror finishes require very special care. Abrasive cleaners and cloths should never be used.

1. Use only mild soap and water or glass cleaner.
- After cleaning, surfaces should be wiped dry with a clean absorbent material.

31.3.4 Bronze

NOTICE

To insure proper maintenance, consult a professional bronze finisher and establish a regular metal cleaning program.

1. Bronze finishes are protected during shipping and installation by a shop coat of lacquer.

NOTICE

Lacquer can be damaged by ammonia in window cleaners, or by acids from masonry cleaners. Protect doors from these cleaners.

NOTICE

Doors must be inspected and worked after installation by a qualified bronze finisher.

31.3.5 Painted finishes

1. Any mild non-abrasive soap or mild solvent can be used for cleaning.

NOTICE

Strong solvents may dissolve paint. Test any solvent first.

2. Wax can be used to protect the finish.

Appendix A - Cable Assemblies

NOTICE

All plugs are shipped from factory fully assembled and wired.

Fig. A.1 J11 cable assembly, card reader, egress

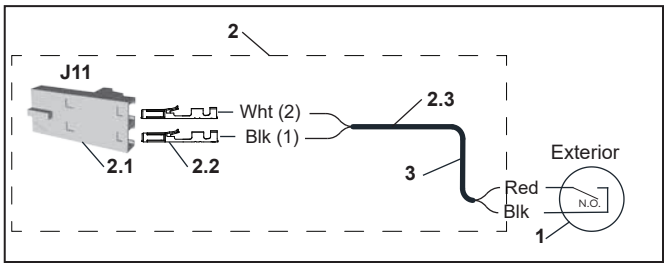


Table A.1 J11 cable assembly, card reader, egress

1		Card reader, N.O. contact
2	DS7025-001	Cable assembly, card reader J11/J13 2 wire
2.1	DX7015-002	Connector, 2 pin, FEM
2.2	DX7016-001	Pin, 22-24 Ga., FEM
2.3	DX7018-002	Cable, 22-24 Ga., 10' length
3	DD7010-001	Label, CARD READER J11

Fig. A.2 J12 cable assembly, card reader, ingress

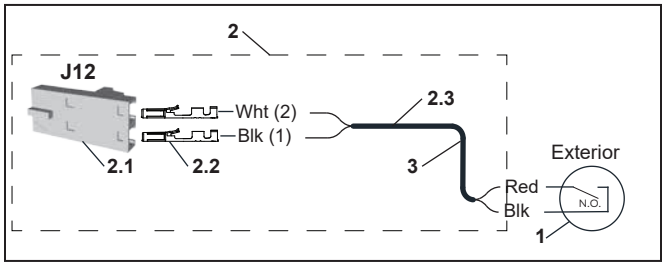


Table A.2 J12 cable assembly, card reader, ingress

1		Card reader, N.O. contact
2	DS7025-001	Cable assembly, card reader J11/J13 2 wire
2.1	DX7015-002	Connector, 2 pin, FEM
2.2	DX7016-001	Pin, 22-24 Ga., FEM
2.3	DX7018-002	Cable, 22-24 Ga., 10' length
3	DD7011-001	Label, CARD READER J12

Fig. A.3 J16 Cable assembly, entry point sensor, internal

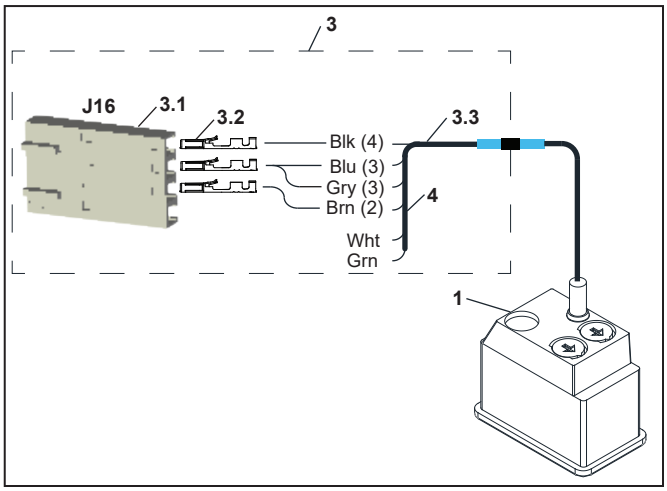


Table A.3 J16 Cable assembly, entry point sensor, egress

1	d8K3500-010	Sensor, TOFniva
2	DS7020-001	Cable assembly, entry sensor, internal J16
2.1	DX7015-003	Connector, 4 pin, FEM
2.2	DX7016-001	Pin, 22-24 Ga., FEM
2.3		Connection cable, M8 x 1, 6 pin, 2 meters
4	DD7014-001	Label, ENTRY POINT J16

Fig. A.4 J33 Cable assembly, presence sensor egress 1

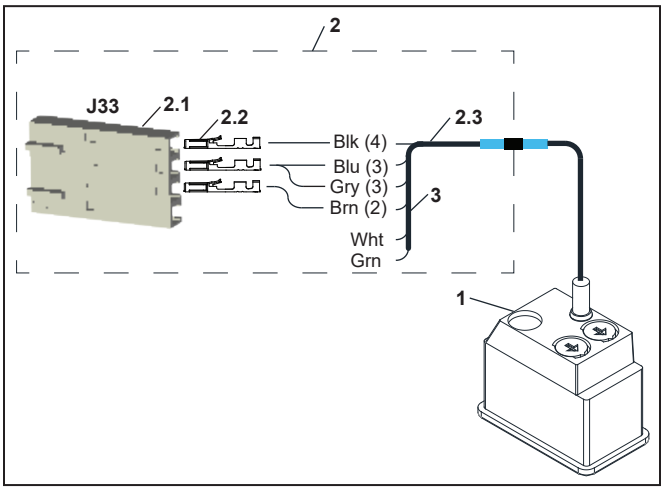


Table A.4 J33 Cable assembly, presence sensor egress 1

1	d8K3500-010	Sensor, TOFniva
2	DS7020-001	Cable assembly, presence sensor, egress 1, J33
2.1	DX7015-003	Connector, 4 pin, FEM
2.2	DX7016-001	Pin, 22-24 Ga., FEM
2.3		Connection cable, M8 x 1, 6 pin, 2 meters
3	DD7023-001	Label, PRES SENSOR OUT J33

Fig. A.5 J25 harness assembly, 12 pin security sensor, MAIN DX6107-001

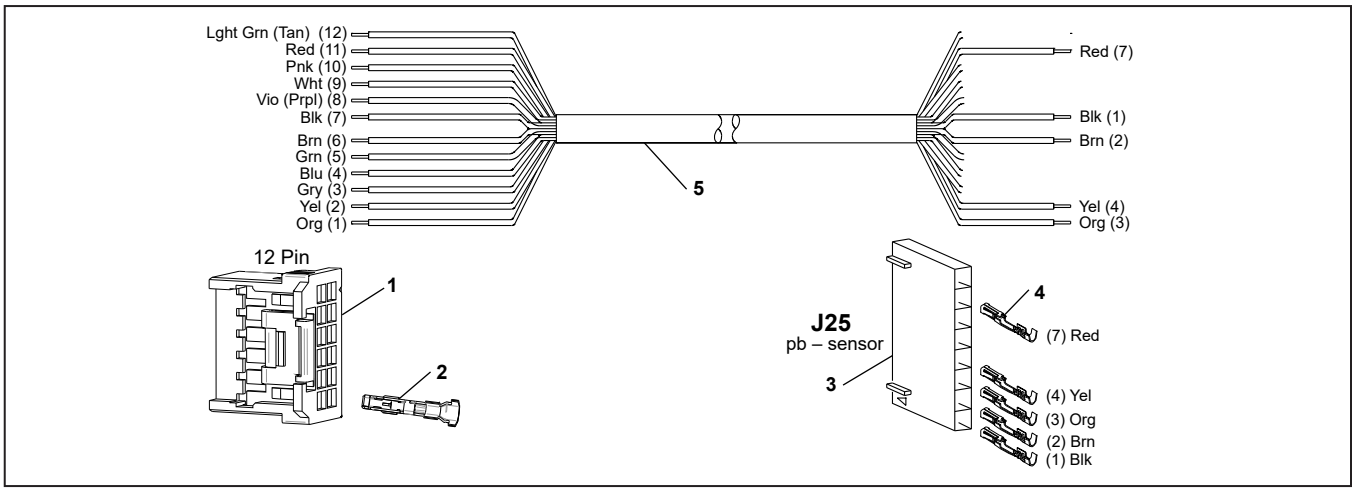


Table A.5 J25 harness assembly, 12 pin, security sensor, MAIN DX6107-001

1		Housing, Molex, 12 positions, 5016471000
2		Crimp terminal, Molex, 5016471000
3	DX7015-001	Housing, Molex, 8 positions 50-57-9408
4	DX7016-001	Crimp terminal, 22-24 Ga., FEM
5		Cable, 12 Cond., 22 AWG
6		Label, SECURITY MAIN, J25

Fig. A.6 J15, J26 harness assembly, 10 pin security sensor, COM, DX6106-001

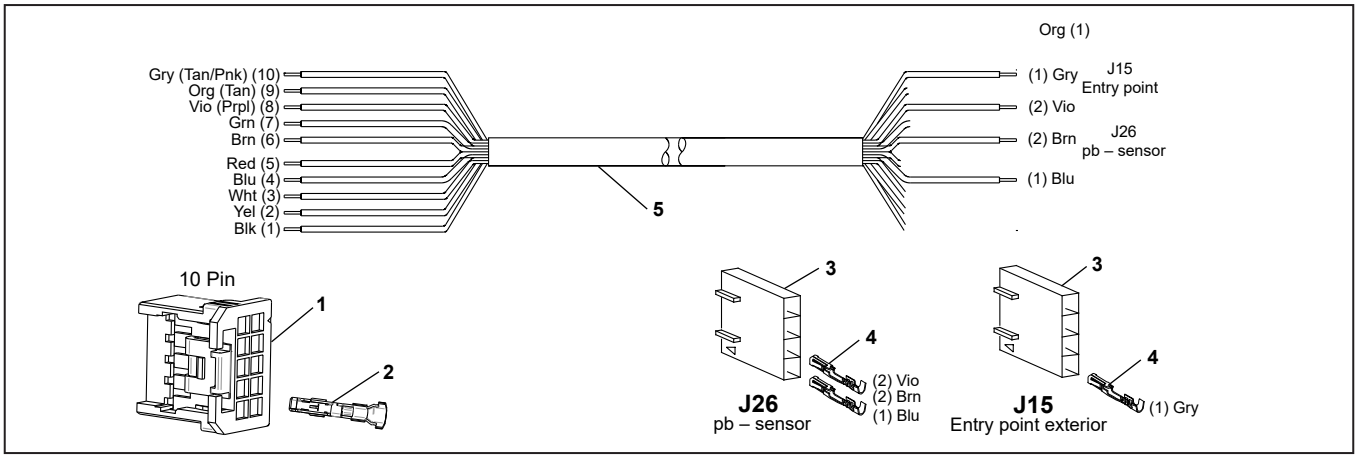


Table A.6 J15, J26 harness assembly, 10 pin, security sensor, COM DX6106-001

1		Housing, Molex, 10 positions, 5016461000
2		Crimp terminal, Molex, 5016471000
3	DX7015-003	Housing, Molex, 4 positions 50-57-9404
4	DX7016-001	Crimp terminal, 22-24 Ga., FEM
5		Cable, 12 Cond., 22 AWG
6		Label, pb SENSOR J26
7	DD7013-001	Label, ENTRY POINT J15

Fig. A.7 J17 Cable assembly, safety edge sensor, exterior

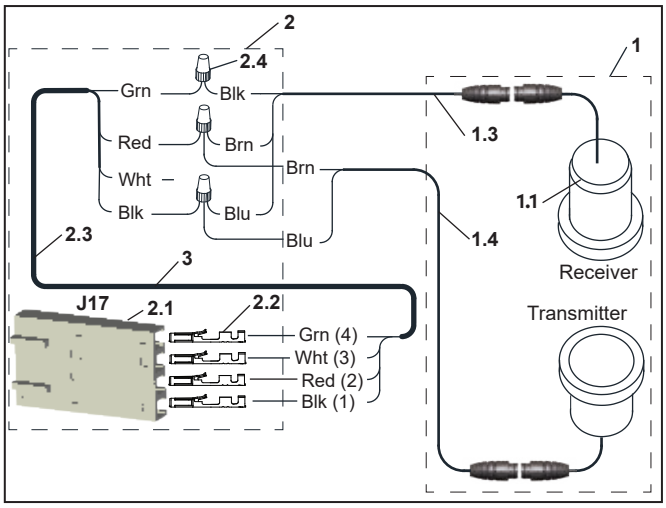


Fig. A.8 J18 Cable assembly, safety edge sensor, interior

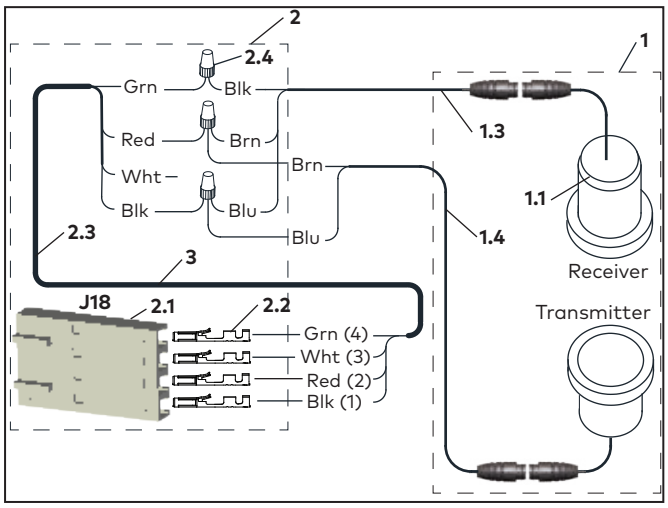


TABLE A.7 J17 Cable assembly, safety edge sensor, exterior

1	DK3447-010	Through-beam sensor, CEDES ELS-300
1.3	DK3352-040	Receiver cable, 5 M
1.4	DK3352-030	Transmitter cable, 5 M
2	DS7026-001	J17 Cable assembly, safety edge, 4 wire
2.1	DX7015-003	Connector, 4 pin, FEM
2.2	DX7016-001	Pin, 22-24 Ga., FEM
2.3	DX7018-003	Cable, 4 wire, 22-24 Ga.
2.4	DX7020-001	Nut, wire, 16-22 Ga., Blue
3	DD7015-001	Label, SAFETY EDGE J17

TABLE A.8 J18 Cable assembly, safety edge sensor, exterior

1	DK3447-010	Through-beam sensor, CEDES ELS-300
1.3	DK3352-040	Receiver cable, 5 M
1.4	DK3352-030	Transmitter cable, 5 M
2	DS7027-001	J18 Cable assembly, safety edge, 4 wire
2.1	DX7015-003	Connector, 4 pin, FEM
2.2	DX7016-001	Pin, 22-24 Ga., FEM
2.3	DX7018-003	Cable, 4 wire, 22-24 Ga.
2.4	DX7020-001	Nut, wire, 16-22 Ga., Blue
3	DD7016-001	Label, SAFETY EDGE J18

Fig. A.9 J20 cable assembly, bookfold lock,

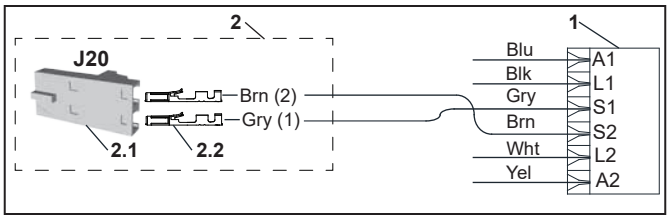


Table A.9 J20 cable assembly, bookfold lock,

1	DX7002-001	Board, control, bookfold lock
2	DS7005-001	J20 Cable assembly, bookfold lock
2.1	DX7015-002	Connector, 2 pin, FEM
2.2	DX7016-001	Pin, 22-24 Ga., FEM
3	DD7017-001	Label, COLLAPSE LOCK J3

Fig. A.10 J2 cable assembly, brake

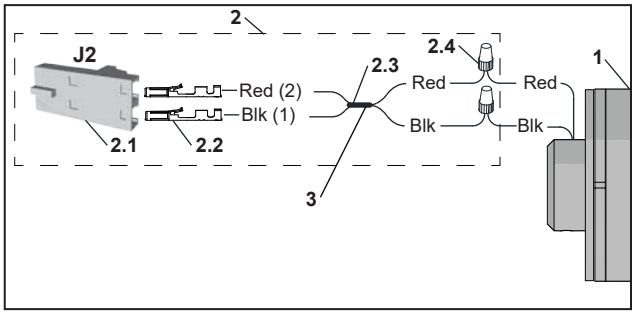


Table A.10 J2 cable assembly, brake

1	DS3580-010	Brake, electromagnetic
2	DS7008-001	J2 Cable assembly, brake
2.1	DX7015-002	Connector, 2 pin, FEM
2.2	DX7016-001	Pin, 22-24 Ga., FEM
2.3	DX7018-002	Cable, 2 conductor, 2' length
2.4	DX7020-001	Wire nut, 16-22 Ga., Blue
3	DD7001-001	Label, BRAKE J2

Fig. A.11 J3 cable assembly, index

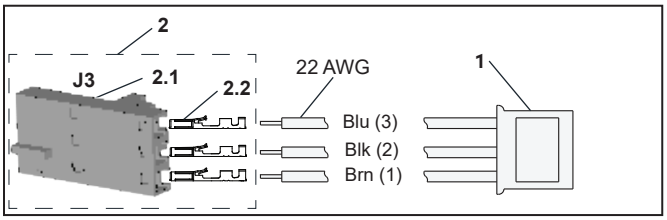


Table A.11 J3 cable assembly, index

1	DX3353-010	Connector, optical sensor, Opto EE-1003, with 10' cable
2	DS7007-001	Cable assembly, index J3
2.1	DX7015-004	Connector, 3 pin, FEM
2.2	DX7016-001	Pin, 22-24 Ga., FEM
3	DD7002-001	Label, INDEX J3

Fig. A.12 J4 cable assembly,encoder

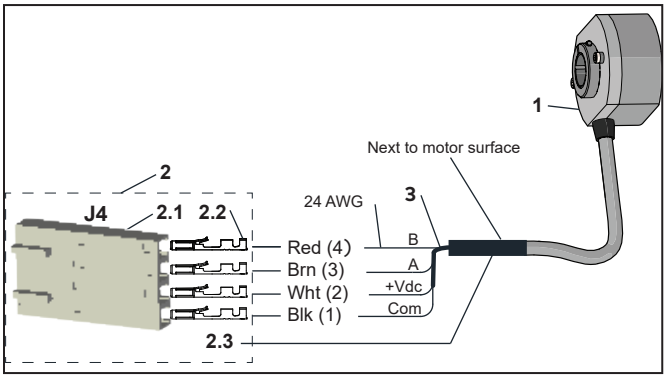


Table A.12 J4 cable assembly,encoder

1	DX3372-020	Encoder
2	DS7006-001	J4 Cable assembly, encoder
2.1	DX7015-003	Connector, 4 pin, FEM
2.2	DX7016-001	Pin, 22-24 Ga., FEM
3		Encoder cable, 3" length
3	DD7003-001	Label, ENCODER CBL J4

Fig. A.13 J21 cable assembly, building fire alarm

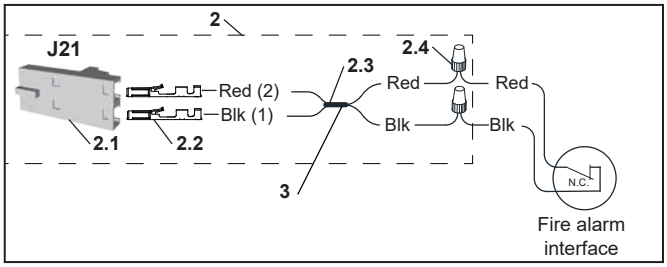


Table A.13 J21 cable assembly, building fire alarm

1		Fire alarm, N.C. contact
2	DS7040-001	J21 cable assembly, fire alarm
2.1	DX7015-002	Connector, 2 pin, FEM
2.2	DX7016-001	Pin, 22-24 Ga., FEM
2.3	DX7018-002	Cable, 2 conductor, 10' length
2.4	DX7020-001	Wire nut, 16-22 Ga., Blue
3	DD7028-001	Label, FIRE ALARM J21

A.1 Operator Interface Cable Assemblies

NOTICE

All plugs are shipped from factory fully assembled.

Fig. A.1.1 J22 cable assembly, Emergency stop

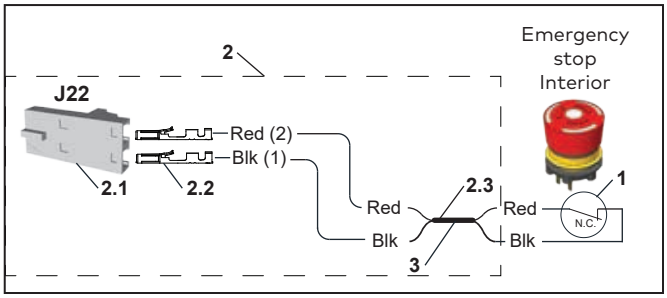


Table A.1.1 J22 cable assembly, Emergency stop, one Emergency stop button

1	DX3413-010	Emergency stop switch
2	DS7017-001	J22 Cable assembly, Emergency stop
2.1	DX7015-002	Connector, 2 pin, FEM
2.2	DX7016-001	Pin, 22-24 Ga., FEM
2.3	DX7018-002	Cable, 2 conductor, 12' length
3	DD7019-001	Label, EMERGENCY STOP J22

Fig. A.1.3 J32 cable assembly, Push to Reverse, Ingress 2

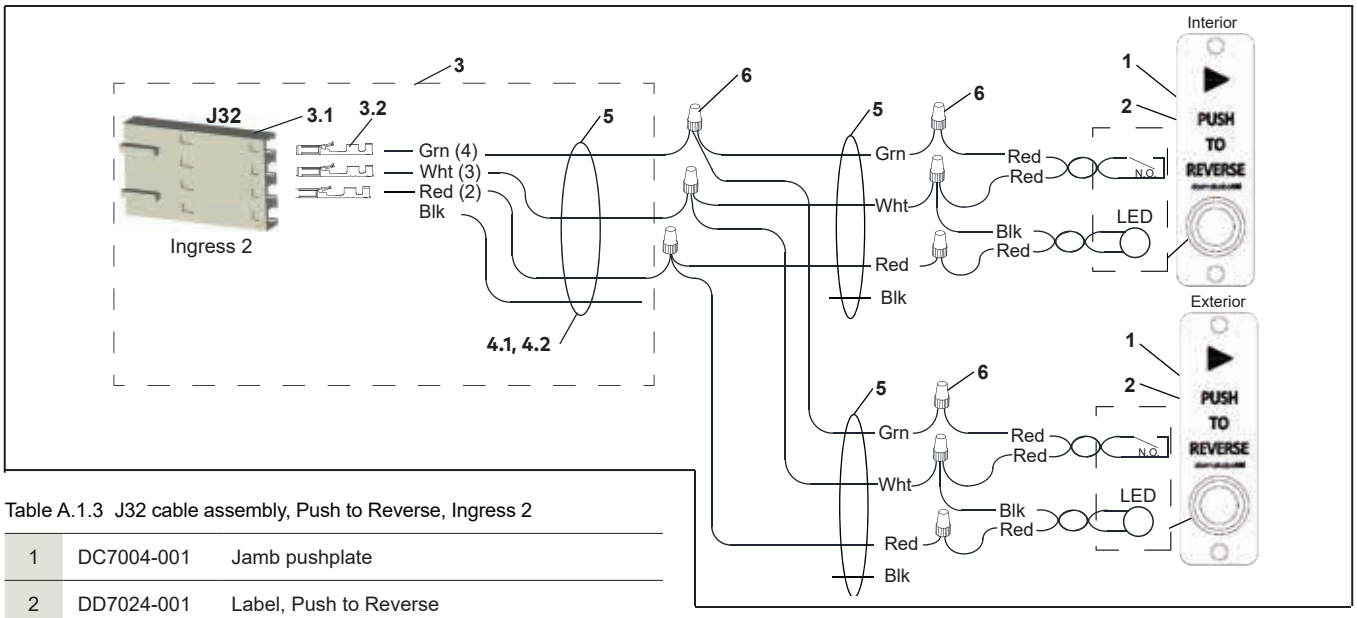


Table A.1.3 J32 cable assembly, Push to Reverse, Ingress 2

1	DC7004-001	Jamb pushplate
2	DD7024-001	Label, Push to Reverse
3	DS7019-001	J32 Cable assembly, Push to Reverse Ingress 2
3.1	DX7015-003	Connector, 4 pin, FEM
3.2	DX7016-001	Pin, 22-24 Ga., FEM
4.1	DD7024-001	Label, PUSH TO REV INT
4.2	DD7025-001	Label, PUSH TO REV Ext
5	DX7018-003	Cable, 4 conductor
6	DX7020-001	Nut, wire, 16-22 Ga., Blue

Table A.1.4 J13 cable assembly, Key switch mode

1	DX3399-030	Assembly, Mode key switch with plate
1.1	DC7022-001	Plate, Mode key switch
	DD7012-001	Label, Mode key switch
2	DS7038-001	Assembly, lock mechanism
1.3	DX7015-003	Connector, 4 pin, FEM
3	DS7024-001	J13 cable assembly, key switch, 3 wire
3.1	DX7015-004	Connector, 3 pin, FEM
3.2	DX7016-001	Pin, 22-24 Ga., FEM
4	DD7012-001	Label, KEY SWITCH J13
5	DX7020-001	Wire nut, 16-22 Ga., Blue

Fig. A.1.4 J13 cable assembly, Key switch mode

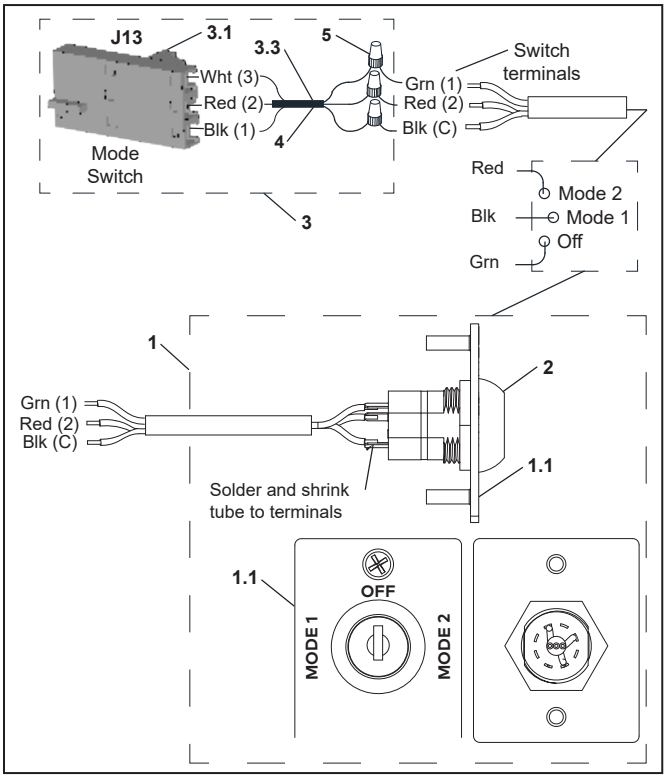


Table A.1.5 Cable, activation light assembly, PLC interface

1	DC7007-001	Assembly, indicator light
2	DX7018-003	Cable, 4 conductor
3	DX7020-001	Wire nut, 15-22 Ga., Blue
4		Label
11	DX3579-010	PLC, Siemens

Fig. A.1.5 Cable, activation light assembly, PLC interface

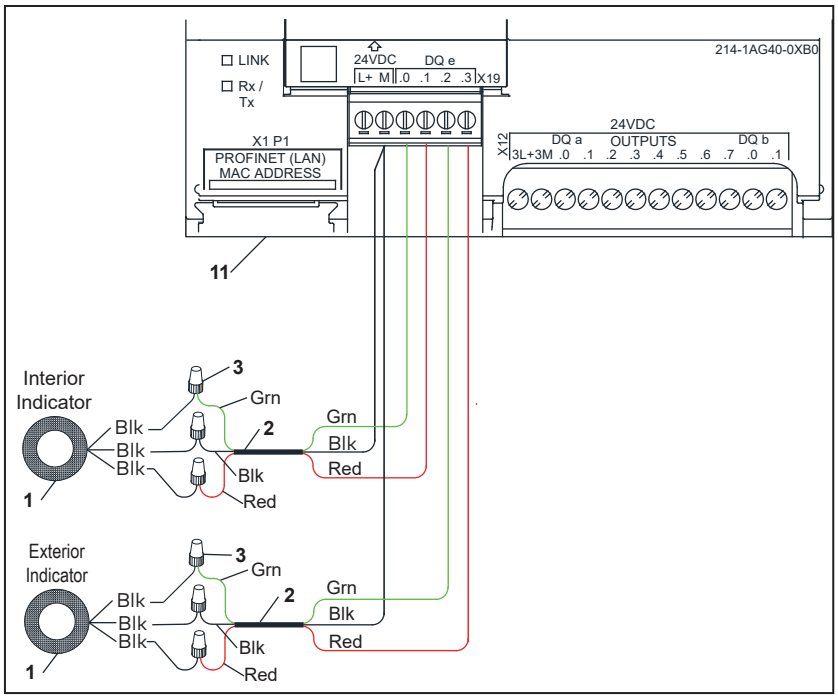


Fig. A.1.6 Cables, annunciator – two annunciators in canopy, PLC interface

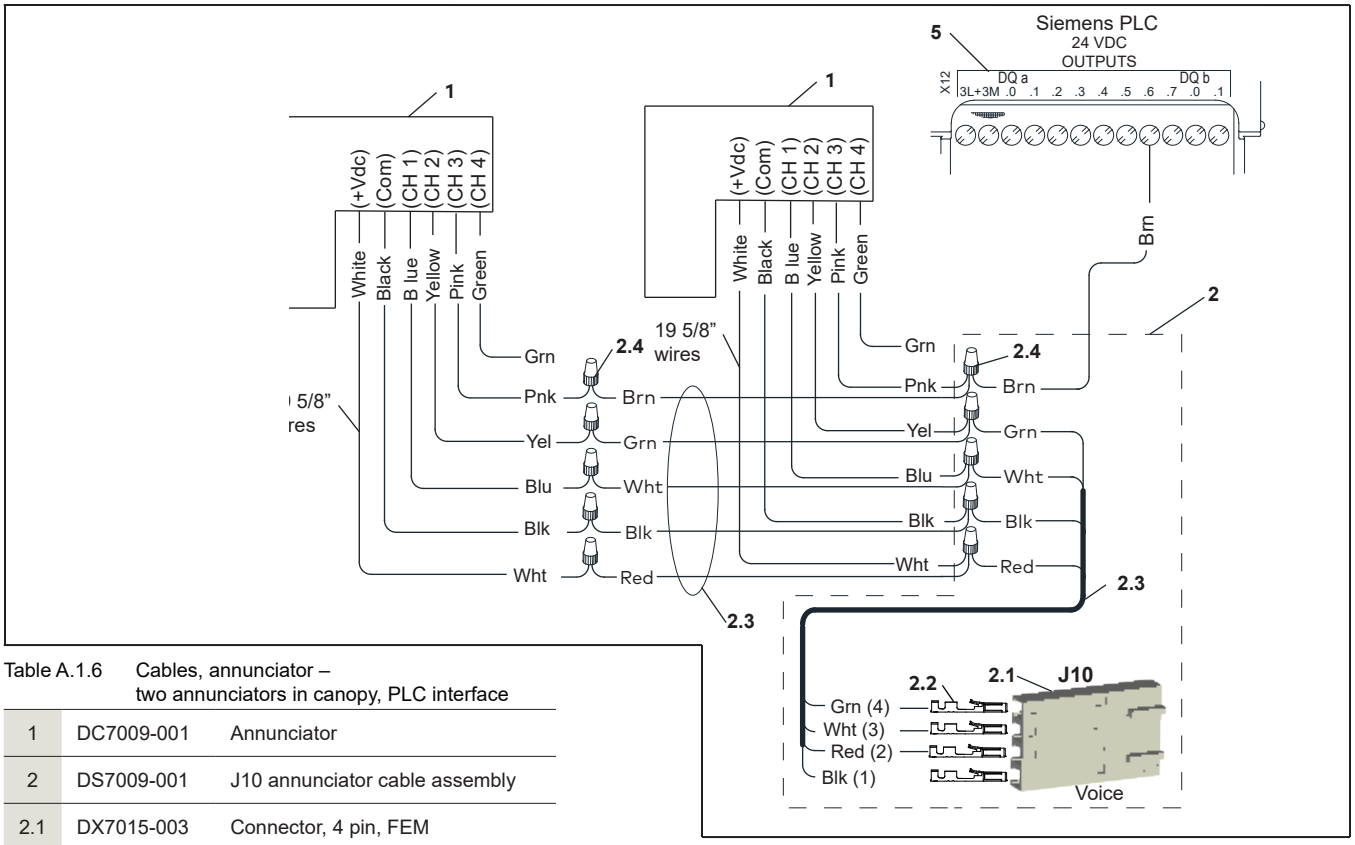


Table A.1.6 Cables, annunciator – two annunciators in canopy, PLC interface

1	DC7009-001	Annunciator
2	DS7009-001	J10 annunciator cable assembly
2.1	DX7015-003	Connector, 4 pin, FEM
2.2	DX7016-001	Pin, 22-24 Ga., FEM
2.3	DX7018-001	Cable, 6 conductor
2.4	DX7020-001	Wire nut, 16-22 Ga. blue
4	DD7009-001	Label, ANNUNCIATOR J10
5	DX3579-010	PLC, Siemens

Appendix B - Molex Connector Hardware And Terminal Installation

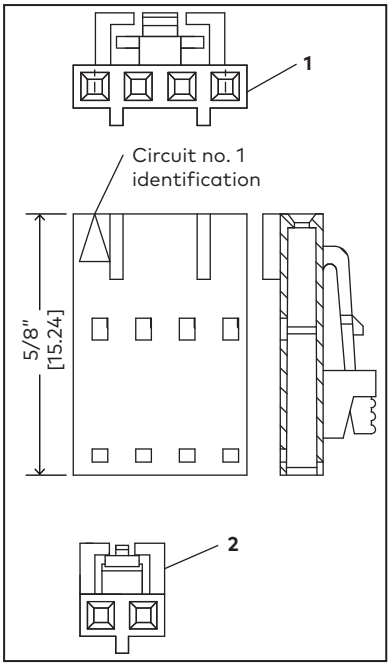
B.1 Molex Connector Hardware

B1.1 Connector housings.

Fig. B.1.1 Molex connector housings

1 Housing, 4 pin,
Molex 50-57-9404
DX7022-002

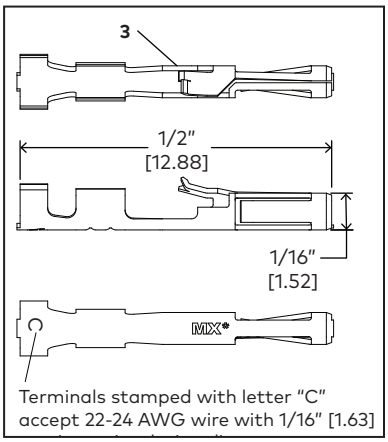
2 Housing, 2 pin,
Molex 50-57-9402
DX7022-003



B1.2 Crimp terminal

Fig. B.1.2 Molex crimp terminal, female

3 Crimp terminal, female
Molex 16-02-0102
DX7023-001



B.2 Molex Crimp Terminal Installation Hardware

B2.1 Hand crimp tool.

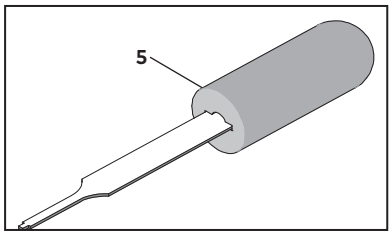
Fig. B.2.1 Molex hand crimp tool

4 Hand crimp tool
Molex 638118700

B2.2 Crimp terminal insertion tool.

Fig. B.2.2 Molex crimp terminal, female

5 Insertion tool
Molex 11020022



B.3 Molex Crimp Terminal Installation Into Housing

B3.1 Crimp terminal installation.

Fig. B.3.1 Crimp terminal installation into housing

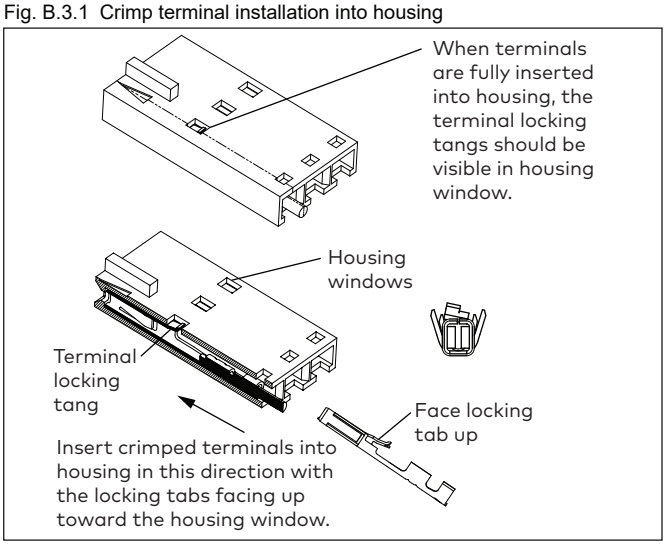
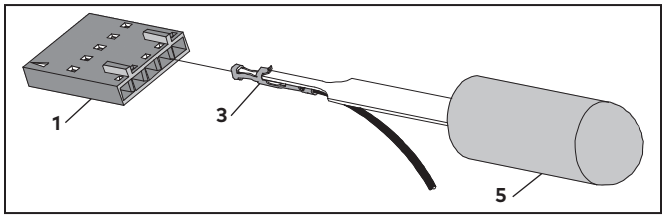


Fig. B.3.2 Molex insertion tool and crimp terminal



1 Housing, 4 pin, DX7022-002

3 Crimp terminal, female DX7023-001

5 Insertion tool Molex 11020022

CAUTION

Wire stripping, wire crimping into crimp terminal and crimp terminal insertion into housing.

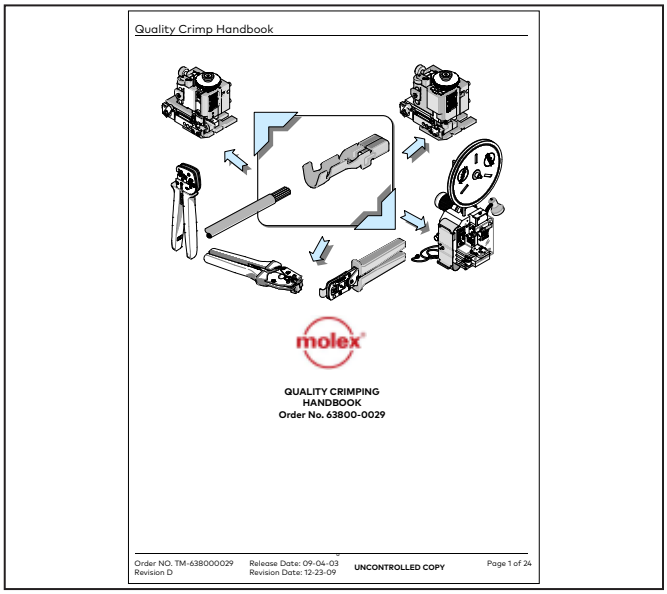
Personnel must have experience with procedures in Molex Quality Crimping Handbook 63800-0029 (Ref: Para. D3.2).

- Wire stripping.
- Proper use of Molex crimp tool and crimp terminal insertion tool.

1. Crimping wire into crimp terminal.
2. Insertion of crimp terminal into connector housing.

B3.2 Quality Crimping Handbook.

Fig. B.3.3 Molex Quality crimping handbook 63800-0029



Appendix C - Definitions

C.1 Revolving Door Definitions, From ANSI/BHMA A156.27 Appendix

C1.1 **Active area -** An area where sensors detect the presence of motion

C1.2 **Automatic door operator** - A power operated door mechanism that is attached to a revolving door for the purpose of mechanically opening the door upon receipt of an activating signal (also called a power door operator).

C1.3 **Automatic home positioning** - Manual revolving doors with automatic home positioning are small 3 or 4 wing revolving doors that utilize a low energy operator or mechanism to return the doors to the home position once a person exits the door and the door stops rotating.

C1.4 **Automatic door speed** - The rate at which an automatic revolving door rotates measured in revolutions per minute (RPM). The three classifications are:

Standard speed- the maximum allowable RPM for a revolving door.
Slow speed- One half of standard speed.
Low energy speed- Door speed resulting in maximum of 2.5 lbf-ft of kinetic energy.

C1.5 **Bookfold position** - When each wing has been released from its fixed position permitting wings to pivot in the direction of egress

C1.6 **Bottom rail** - The lower horizontal member of the door wing.

C1.7 **Breakout** - A process whereby wings and/or door panels can be pushed open manually for emergency egress.

C1.8 **Canopy**- A he area above the wings and enclosure comprised of a ceiling (soffit), fascia (cladding), and roof (cover).

C1.9 **Center shaft** - The rotating center, 12 inches [305 mm] or less in diameter, of revolving doors to which the wings are attached.

C1.10 **Clearance** - The minimum gap around the wing to the ceiling, enclosure, and floor, not including the weather stripping, at any point in its rotation.

C1.11 **Control** - A unit containing electrical components for automatic control of door operation and overload protection.

C1.12 **Control mat** - A presence sensing device that detects pressure from people or objects to give an activating signal to the automatic revolving door.

C1.13 **Core** - The rotating central portion, greater than 12 inches [305 mm] in diameter of a large diameter revolving door to which the wings are attached.

C1.14 **Enclosure** - The walls in which the wings operate. Also known as Drum.

C1.15 **Entry point sensor** - A presence sensor designed to detect a person in the area between the outer leading edge of the enclosure wall and the approaching outer leading edge of the wing

C1.16 **Fascia** - The vertical surfaces of the canopy.

C1.17 **Home position** - The desired at-rest position for a revolving door.

- Home position "X" - the (4 wing) stops in the (X) position with all four wings in contact with the entrance wall posts.
- Home position "+" - the (4 wing) stops in the (+) position with two wings in contact with the center mullions and two wings in the middle of the throat opening.
- Home position "Y" - the (3 wing) stops in the (Y) position with two wings in contact with the entrance wall posts and one wing in contact with the wall center mullion.

C1.18 **Knowing act** - Consciously activating a switch with the knowledge of what will happen such as starting, slowing or stopping a revolving door. Switching devices may include wall or jamb-mounted contact switches such as push plates, fixed contact switches and controlled access devices such as keypads, card readers, and key switches.

C1.19 **Manual operation** - The capability of rotating the revolving door by a person applying a force to a door wing.

C1.20 **Manual speed control** - A device used to regulate manual revolving door speed by making it difficult to push the door beyond the maximum allowed RPM.

C1.21 **Motion sensor** - A sensor designed to detect the movement of a person or equivalent a the point of entry to the door that gives an activating signal to the power operated door.

C1.22 **Obstruction force** - The maximum static force the door is allowed to apply to a person or object measured at the outside edge of the rotating wing.

C1.23 **Power operated door** - A revolving door with a power operated mechanism that is attached to it for the purpose of mechanically opening the door upon receipt of an activating signal (also called Automatic Door).

C1.24 **Peripheral speed** - The rotating speed of a revolving door measured at the outer edge of the wing.

C1.25 **Presence sensor** - A sensor designed to detect the presence of a stationary person in the vicinity of the doorway and give a signal to the power operated door.

C1.26 **Push bar** - A bar attached to the wing upon which pressure is applied to set a manual revolving door in motion. A push bar is not required on automatic doors.

C1.27 **Push to slow device** - A knowing act switch used to create an activating signal to cause reduction of speed of the revolving door.

C1.28 **Safety glass** - Comprised of either fully tempered or laminated glass or other safety rated glazing to prevent injuries from breakage.

C1.29 **Sensor** - A device that detects motion or presence of a person or object.

C1.30 **Small vehicular** - Carts used to transport persons or objects.

C1.31 **Stile** - A vertical edge member of the door wing.

C1.32 **Throat opening** - The width between the enclosure side walls that creates the entry point.

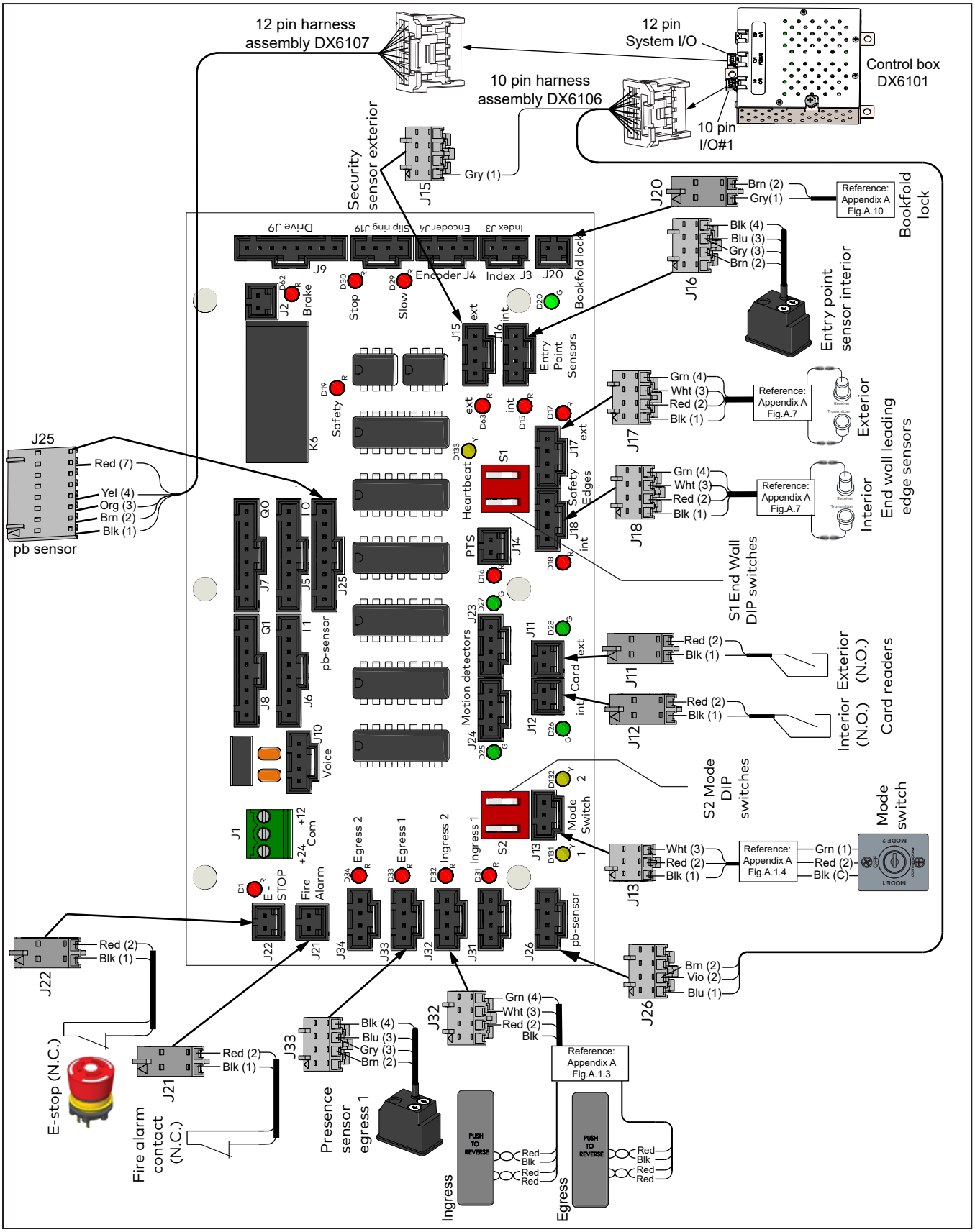
C1.33 **Trained traffic** - People trained in the safe use and operation of a particular automatic door installation.

C1.34 **Weather stripping** - The material used to fill a clearance.

C1.35 **Wing** - A panel which rotates within and seals the enclosure.

Appendix D - MDS Interface Board

Fig. D.1 Interface board with devices, S3 security door



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