

Crane 2000LE and 3000LE

In-ground Motion Assist 360 drive and control
with In-ground speed control

Installation Manual

DL6000-005 – 05-2021

| EN |

 **Crane**
dormakaba Group

dormakaba 

Table of contents

1	General information	4		
2	Product description	6	9	In-ground container hardware
2.1	Crane 2000LE series	6	9.1	Motion Assist 360 drive
2.2	Crane 3000LE series.	6	9.2	Motion Assist 360 power supply and control unit
2.3	Door attachment types	6	9.3	Motion Assist 360 control unit connectors
2.4	Revolving door assembly components	6	9.4	Motion Assist 360 control unit to drive cables
2.4	In-ground Motion Assist 360 drive	6	9.5	Motion Assist 360 earth grounding cable
2.5	In-ground speed control	6	9.6	Handheld communication cable
2.6	In-ground case assembly	7	9.7	Screwpack
2.7	Motion Assist 360 function module	7	9.8	Assemblies using screw pack DK6006-001 hardware
2.8	Optional Remote enclosure – Motion Assist 360 power supply and control unit	7	9.9	In-ground container hardware
2.9	Job tag and Identification label	8	10	Assembly
3	Safety information	9	10.1	Safety during assembly
3.1	Safety Warnings	9	10.2	Cordon off work area
4	Operator components	10	10.3	Assembly location
4.1	Mode switch	10	10.4	Preparing finished floor for revolving door assembly
4.2	Mode switch functions	10	10.5	Recommended tools
4.3	Emergency Stop pushbutton	11	11	Installation template
4.3.1	Triggering an Emergency Stop	11	11.1	Door building attachment plan
4.3.2	Start up after an Emergency Stop	11	12	Install leveling plate in pit, install container in pit
4.4	Service panel (option)	12	12.1	Pit location and dimensions
4.5	Wave to Open plate (option)	12	12.2	Position template at door centerpoint and orient to building interface
4.6	Fault LED	12	12.3	Drill holes for mounting base studs
4.7	Operator component locations	13	12.4	Install leveling plate in pit
6	Overall door assembly examples	14	12.5	Orientation of in-ground container in pit
6.1	Four wing door; 10' and greater OD	14	12.6	Conduits in pit for building wiring – overview
6.2	Four wing door; less than 10' OD	14	12.7	Determine in-ground container conduit adapter positions in pit
6.3	Three wing door; 10' and greater OD	15	12.8	Container drain: locate and drill hole for through-wall pipe fitting
6.4	Three wing door; less than 10' OD	15	12.9	Check hole alignment of container covers on container flange
7	Revolving door assemblies	16	12.10	Install cable ties
7.1	Canopy, door ID diameters up to but not including 10 feet	16	12.11	Installation of 115 Vac hole plug
7.2	Canopy, door ID diameters 10 feet and greater	16	12.12	Install in-ground container in pit
7.3	In-ground drive assembly with power supply and control unit DS6022	17	13	Assemble in ground container in pit
7.4	In-ground speed control assembly	17	13.1	Motion Assist 360 power supply and control unit installation options
7.5	Motion Assist 360 assemblies	18	13.2	Install speed control in in-ground container
7.6	Center shaft assemblies	19	13.3	Check speed control shaft alignment
7.8	Hanger assembly	20	13.4	Pour Pour-stone around container in pit
7.9	Bookfold mechanism	20	13.5	Remove transport bolts from Motion Assist 360 drive
7.10	Door wing and posts	21	13.6	Assemble Motion Assist 360 drive to mounting plate
7.11	Enclosure base	21	13.7	Install Motion Assist drive cables
7.12	Deadbolt locks	22	13.8	Install Motion Assist 360 drive mounting bracket assembly into in-ground container
7.13	Fastener hardware	23		
8	Optional assemblies	24		
8.1	Floor grill and pan assembly	24		
8.2	Ceiling lights	24		
8.3	Uninterruptible Power Supply (UPS)	24		
8.4	Remote enclosure – Motion Assist 360 power supply and control unit	25		

13.9	Install Motion Assist 360 power supply and control unit mounting brackets	67	18	4 wing center shaft installation	98
13.10	Assemble Motion Assist 360 power supply to mounting bracket	68	18.1	Remove center shaft assembly from shipping crate	98
13.11	Assemble Motion Assist 360 control unit to mounting bracket	69	18.2	Install container lid, center section assembly	100
13.12	Install cables from Motion Assist 360 power supply to control unit	70	18.3	Install center shaft top adaptor	101
13.13	Install cables from Motion Assist 360 drive to control unit	71	18.4	Install job number tag	101
13.14	Install "S" Motion Assist function module	72	18.5	Install center shaft bottom hanger assembly onto bottom plug	102
14	Canopy installation	74	18.6	Lower center shaft assembly onto bottom hanger assembly	104
17.1	Canopy shipped as single assembly - less than 8 feet OD	74	18.7	Insert top adaptor into canopy top bearing	105
14.2	Canopy shipped in two sections - 8' up to but not including 10' OD	76	18	3 wing center shaft installation	106
14.3	Canopy shipped in two sections - 10' OD and over	78	19.1	Remove center shaft assembly from shipping crate	106
14.4	Raise canopy into place	81	19.2	Install container lid, center section assembly	108
14.5	Canopy LED fixture installation	83	19.3	Install center shaft top adaptor	109
15	Enclosure post installation	84	19.4	Install job number tag	109
15.1	Open post shipping crate	84	19.5	Install center shaft bottom hanger assembly onto bottom plug	110
15.2	Quarter post/end walls and center post assemblies	85	19.6	Lower center shaft assembly onto bottom hanger assembly	112
15.3	Attach aluminum extrusion posts to canopy	86	19.7	Insert top adaptor into canopy top bearing	113
15.4	Attach stainless steel or bronze posts to canopy	87	20	Set initial hanger breakout tension	114
15.5	Enclosure base and post numbering examples	88	20.1	Set hanger initial hanger breakout tension	114
15.6	Operator control hardware installation on quarter posts	89	21	Unpack wing shipping crate	115
16	Enclosure base installation	90	21.1	Unpack wing shipping crate	115
16.1	Enclosure base examples	90	22	Wing installation - AL2000, AL3000	116
16.2	Open base enclosure shipping crate	90	22.1	Install wings onto center shaft hangers	116
16.3	Set 3" studs into floor anchor holes	91	23	Wing installation - SS2000, SS3000	117
16.4	Install aluminum base assemblies and attach base assemblies to aluminum posts	92	23.1	Install wings on center shaft hangers	117
16.5	Install stainless steel or bronze base assemblies and attach base assemblies to stainless steel or bronze posts	94	24	Install floor strikes	118
16.6	Set enclosure level, square and plumb	96	24.1	Install floor strikes	118
17	Wiring interfaces to Motion Assist 360 power supply and control unit	97	25	Install enclosure glass - AL2000, AL3000	119
17.1	Wiring interfaces	97	25.1	Unpack enclosure glass shipping crate	119
			25.2	Prepare bases for enclosure glass	119
			25.3	Install enclosure glass	120
			25.4	Install enclosure base covers	120
			26	Install enclosure glass - SS2000, SS3000	121
			26.1	Unpack enclosure glass shipping crate	121
			26.2	Prepare bases for enclosure glass	121
			26.3	Install enclosure glass	122
			26.4	Install enclosure base covers	122
			27	Check wing breakout force, bookfold operation	124
			27.1	Check breakout force	124
			27.2	Check bookfold operation	125

1 General information

1.1 Installation instructions.

This document contains important instructions for installation of Crane 2000LE and 3000LE series revolving doors with:

- In-ground Motion Assist 360 drive, power supply and control unit
- In-ground speed control
- Optional Remote control enclosure.

NOTICE

Wiring, Setup and Troubleshooting Manual DL6000-014.

Reference DL6000-014 for all wiring, setup and troubleshooting information for in-ground Motion Assist 360.

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 dormakaba.us website.

Manuals are available for review, download, and printing on the dormakaba.us website.

1.4 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

Warns of a potentially unsafe procedure or situation.



TIPS AND RECOMMENDATIONS

Clarifies instructions or other information presented in this document.

1.5 Dimensions

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

1.6 Environment

Crane revolving doors are designed to operate on an interior or exterior building surface.

NOTICE

Revolving door order custom requirements.

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

Revolving door optional equipment.

- Installation instructions and illustrations may not reflect installed optional equipment.

2 Product description

2.1 Crane 2000LE series

2.1.1 Enclosure

- Welded construction.
- Aluminum; anodized finish, painted finish, or cladded.
- Bronze
- Stainless steel

2.1.2 Door wings

- Bolted construction
- Aluminum; anodized finish, painted finish, or cladded.

2.2 Crane 3000LE series.

2.2.1 Enclosure

- Custom
- Fully formed and welded construction.
- Aluminum, stainless steel, bronze, and wood.

2.2.2 Door wings

- Custom
- Fully formed and welded construction.
- Aluminum, stainless steel, bronze and wood.

2.4 In-ground Motion Assist 360 drive

2.4.1 Motion Assist 360 drive system.

- Gearless electromagnetic direct drive system.

2.4.2 Low energy application.

- Uses a "S" Motion Assist function module (GRN).



TIPS AND RECOMMENDATIONS

Reference Para. 2.7 for function module overview.

2.5 In-ground speed control



TIPS AND RECOMMENDATIONS

Reference Para 7.4 for in-ground speed control overview.

2.3 Door attachment types

Fig. 2.3.1 2000LE

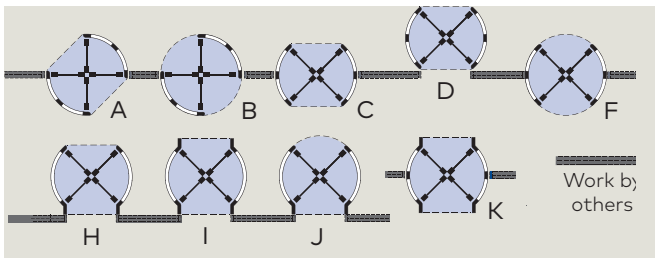
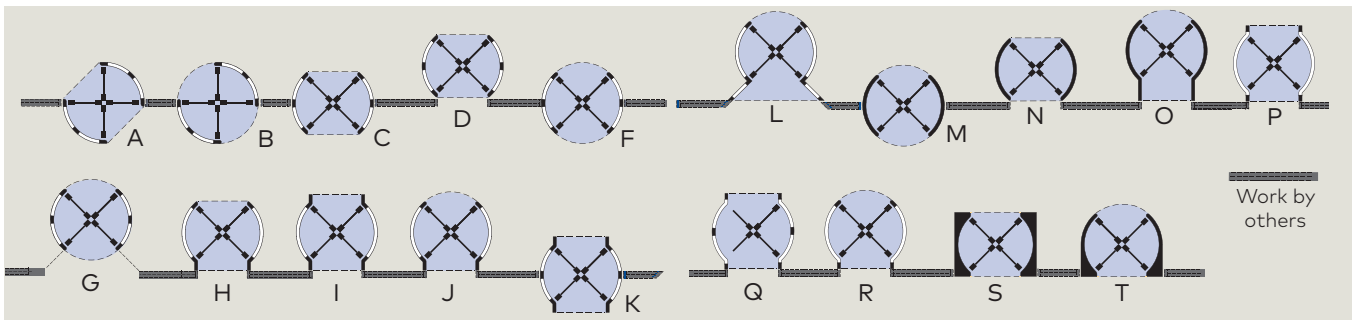
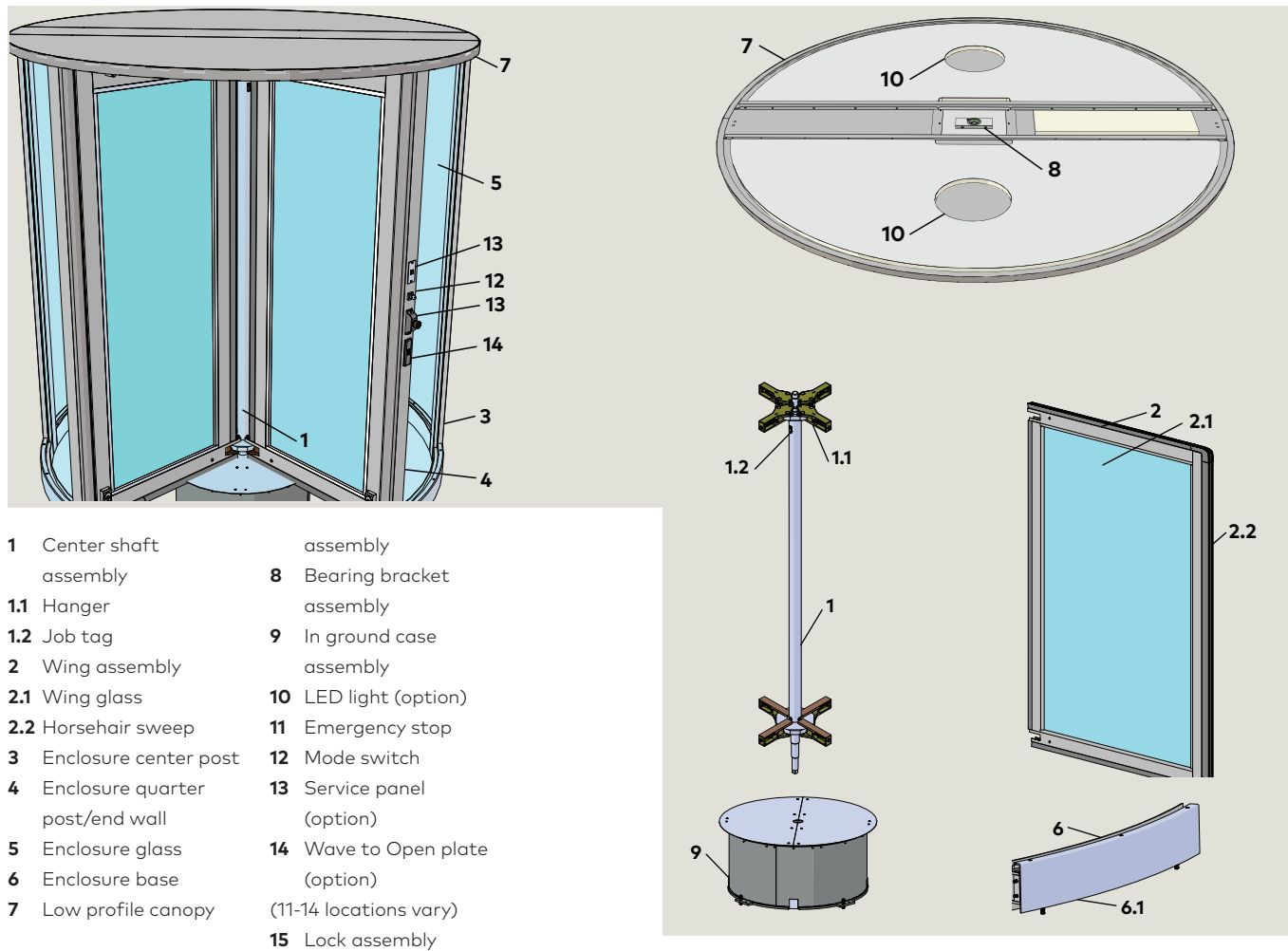


Fig. 2.3.2 3000LE



2.5 Revolving door assembly components

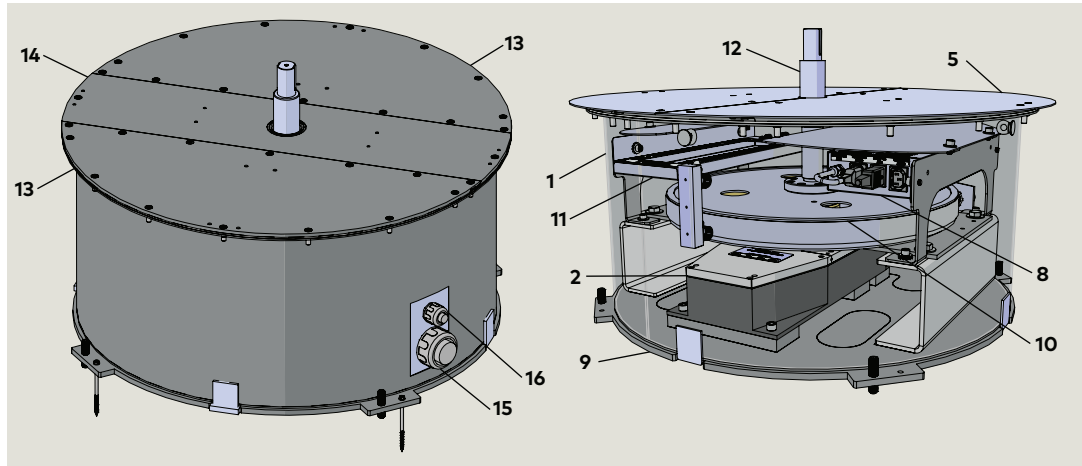
Fig. 2.3.1 Four wing revolving door, interior view assembly example



2.6 In-ground case assembly

Fig. 2.6.1 In ground assembly with Motion Assist 360 drive, power supply and control unit and with in-ground speed control

- 1 Container assembly weldment
- 2 Speed control
- 5 Floor cover plate
- 8 Motion Assist 360 power supply
- 9 Leveling plate assembly
- 10 Motion Assist 360 drive
- 11 Motion Assist 360 control unit
- 12 Bottom plug, in ground
- 13 Outer cover assembly
- 14 Container lid, center section
- 15 Conduit adapter, DC control wiring
- 16 Conduit adapter, 115 Vac wiring



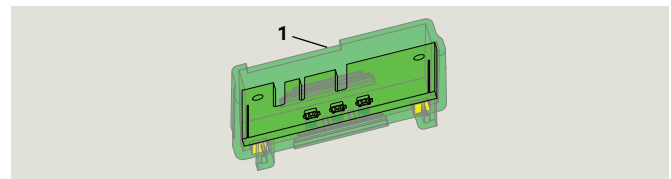
2.7 Motion Assist 360 function module

2.7.1 Motion Assist 360 function module used with 2000LE and 3000LE revolving doors.

The Motion Assist 360 control unit is supplied with a "S" Motion Assist function module.

- Mode switch functions the function module are listed in Para. 4.2.

Fig. 2.7.1 "S" Motion Assist function module



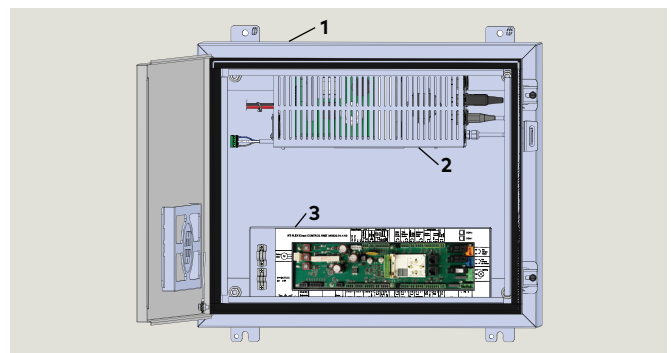
- 1 "S" module (GRN)
 Motion Assist
 DX6003-002

2.8 Optional Remote enclosure – Motion Assist 360 power supply and control unit

2.8.1 Optional Remote enclosure.

Motion Assist 360 power supply and control unit can be located in an optional Remote enclosure.

Fig. 2.8.1 Remote enclosure



- 1 24 x 20 x 7 3/16"
 NEMA 12 enclosure
- 2 Motion Assist 360
 power supply
- 3 Motion Assist 360
 control unit

2.9 Job tag and Identification label

2.9.1 Revolving door job tag.

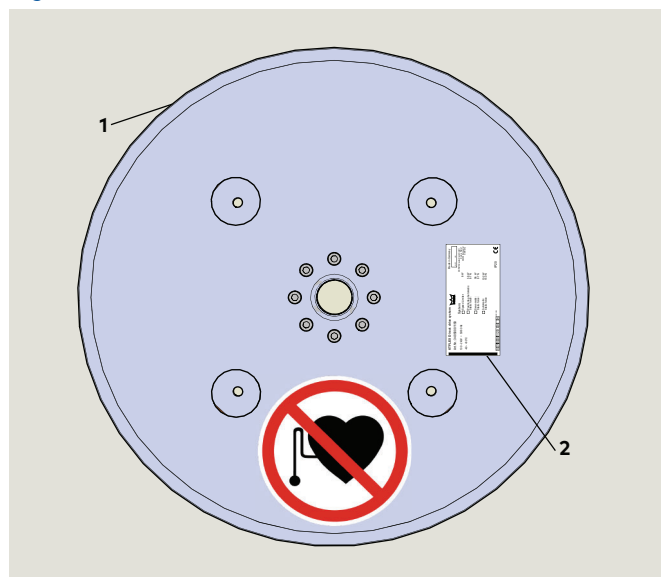
- Located on center shaft.

2.9.2 Motion Assist 360 drive identification label.

Identification label contains the following information:

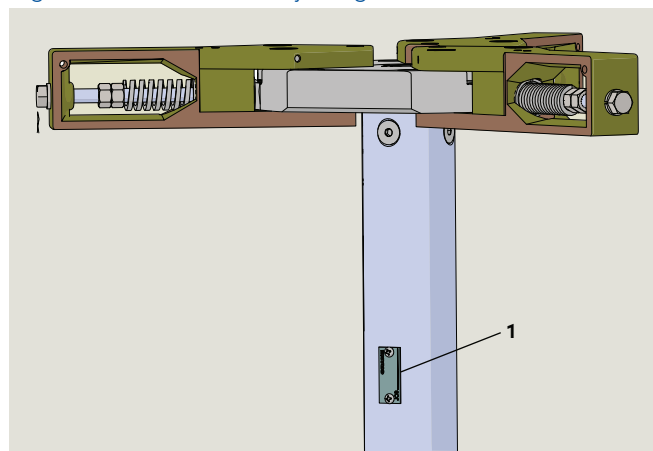
- Name and address of manufacturer.
- Drive system model
- Year of manufacture
- Electrical connection values
- Performance data
- Environmental conditions
- IP protection class
- Designation

Fig. 2.9.1 Motion Assist 360 drive



- 1 Motion Assist 360 drive
- 2 Identification label

Fig. 2.9.2 Center shaft job tag location



- 1 Job tag

Fig. 2.9.3 Job tag

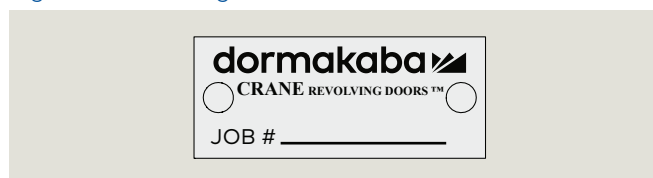
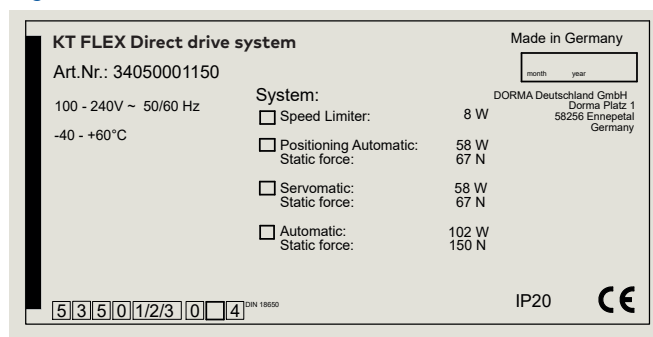


Fig. 2.9.4 Motion Assist 360 identification label



3 Safety information

3.1 Safety Warnings

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

Danger of death from contact with voltage or electrical short circuits!

As a result of missing or defective electrical grounding of the drive system, contact with voltages or electrical short circuits is possible.

- Never put the revolving door into operation without an earth ground connected to the drive grounding terminal (Chapter 13).
- Prior to drive commissioning, drive components must be connected to the grounding terminal (Chapter 13):
 - Controller
 - Power supply unit
 - Drive unit support system



WARNING

Metallic doors must be grounded per national and local codes!



WARNING

Hand pinch point and crushing hazards!



WARNING

Crushing hazards!

3.1.3 Pacemakers and other medical implants warning.



WARNING



This sign is located on the Motion Assist 360 drive (Para. 2.9) and warns of the hazards for people with pacemakers and other active medical implants.

Strong electromagnetic or magnet fields may be present in the vicinity of this sign. These fields may disrupt pacemakers or other medical implants or cause them to malfunction. People wearing pacemakers and other active medical implants should not approach components with this safety warning.

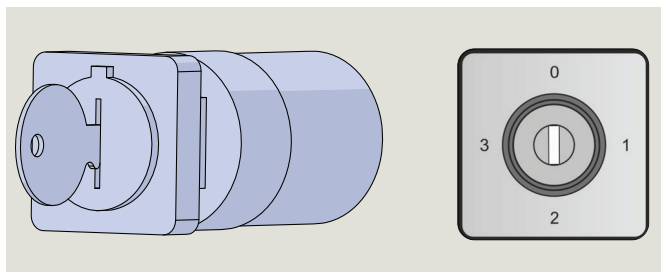


People with pacemakers and other active medical implants should not come within 20 inches [51 cm] of the drive!

4 Operator components

4.1 Mode switch

Fig. 4.1.1 Four position Mode switch with key lock DX6008



4.1.1 Mode switch

- The Mode switch is located inside the building on the leading quarter post or attached separately within sight of the revolving door.
- A key or code secures the Mode switch against unauthorized access.







TIPS AND RECOMMENDATIONS

A Mode switch with code entry will automatically lock itself 60 seconds after the last entry.

4.2 Mode switch functions

4.2.1 Mode switch (low-energy) functions.

Program switch position	Function	S - (Green module) - Motion assist
 0	Off	<ul style="list-style-type: none"> • Revolving door will stay in the home position. • After a set period of time, any internal lighting is switched off.
 1	AUTOMATIC 1	<ul style="list-style-type: none"> • A knowing act (Para. 4.2.3) switch starts rotary movement of the door wings at low energy speed (Para. 4.2.2). • Manually pushing the door starts rotary movement of the door wings at low energy speed. • Revolving door automatically stops in the next starting position as soon as it is no longer manually operated.
 2	AUTOMATIC 2	<ul style="list-style-type: none"> • Door rotates continuously at a low energy speed. • Door can be manually accelerated to low energy speed..
 3	Summer	<ul style="list-style-type: none"> • Revolving door stops at its starting position and the drive is unlocked. • Door wings can be rotated manually. • Bookfold: wings can be folded to the side.

4.2.2 Low energy speed definition - ANSI/BHMA A156.27.

Door speed resulting in a maximum of 2.5 lbf-ft [3.4 Nm] of kinetic energy.

4.2.3 Knowing act definition -ANSI/BHMA A156.27.

A1.18 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.

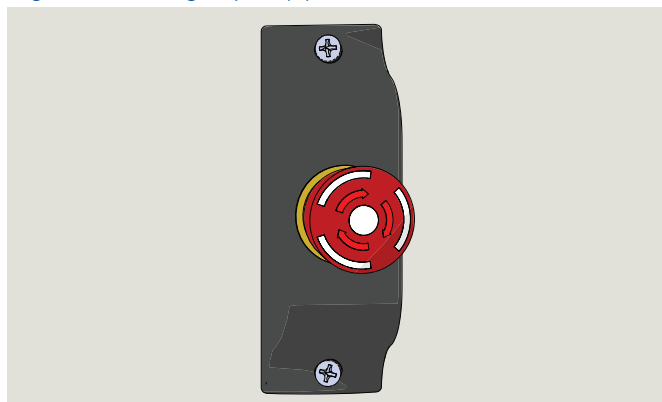


TIPS AND RECOMMENDATIONS

Some symbols and program modes may not be available, depending on the options selected in the order.

4.3 Emergency Stop pushbutton

Fig. 4.3.1 Emergency Stop pushbutton



4.3.1 Triggering an Emergency Stop

4.3.1 Emergency Stop pushbutton locations.

- Building interior on the leading door quarter post.
- Second Emergency stop pushbutton located on the building exterior.

4.3.2 Actuation of Emergency Stop pushbutton.

1. A time delay disconnection of the operator output stage is performed (approximately two seconds).
2. During this time delay the drive performs a fast braking of the door to a standstill.
3. After the time delay the operator output stage is switched off and door can then be turned manually.

4.3.3 Emergency Stop pushbutton reset.

- Emergency Stop pushbutton is reset by pulling and/or turning the button.



WARNING

Risk of injury due to deactivated safety equipment!

After the emergency stop is activated, the drive is unlocked. Safety devices are no longer in operation. This can cause serious injuries if attempts are made to turn the door manually.

- Before turning door manually, check to make sure no one could be injured.
- If people have been locked into the revolving door, carefully turn the door until the people are able to exit the door.
- When turning the door manually, make sure there are no limbs between the closing edges.

4.3.2 Start up after an Emergency Stop

4.3.2.1 Procedure after an Emergency Stop.

1. Cause for the emergency stop has been removed.



WARNING

Risk of injury due to automatic startup of revolving door!

The revolving door can set itself in motion automatically. If there are people in the door, they may be at risk of injury.

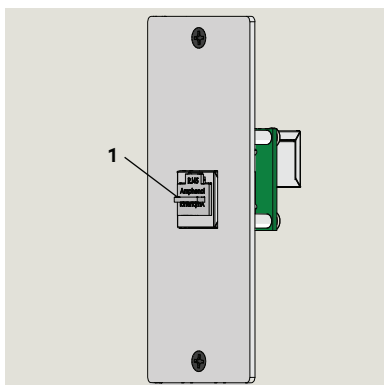
- Release the Emergency Stop button only when there are no longer any people in the revolving door.

2. No people are in or near the revolving door.
3. Reset the emergency stop pushbutton by turning and/or pulling the pushbutton.
4. Door will move to the home position.
5. The revolving door will continue with the current program settings.

4.4 Service panel (option)

Fig. 4.4.1 Service panel
DX4604-08C

1 RJ45 cover



4.4.1 Service panel.

- Service panel for handheld typically located on side of leading quarter post.
- Handheld offers service personnel the option to connect to the Motion Assist 360 drive control unit without the need to remove in-ground container covers for drive control unit access.

4.5 Wave to Open plate (option)

Fig. 4.5.1 Wave to Open
plate
DX3331-001



Fig. 4.5.2 Wave to Open
plate
DX3339-189



4.5.1 Wave to Open plate.

Locations:

- Inside the building on the leading quarter post/end wall or attached separately within sight of the revolving door.
- Building exterior.

Plate starts rotary movement of the door wings at low energy speed (Para. 4.2.2).

CAUTION

Plates must be located per ANSI BHMA A156.27, Power and manually Operated Revolving Pedestrian Doors.

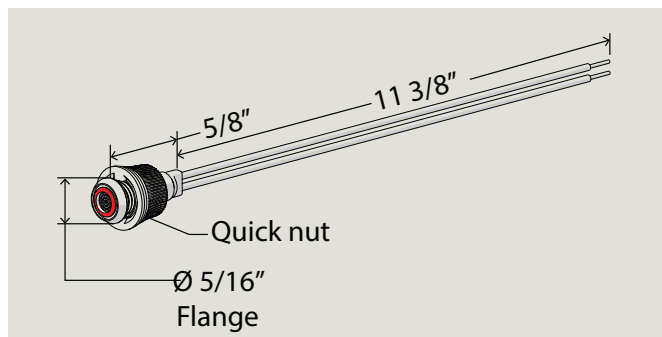


TIPS AND RECOMMENDATIONS

Plate only used with "S" (green) function module, Para. 2.7.

4.6 Fault LED

Fig. 4.6.1 Fault LED



4.6.1 Fault LED.

- Fault LED provides Error number indication.
- Frequency and rate of LED flashes indicates Error number.

4.6.2 Fault LED location

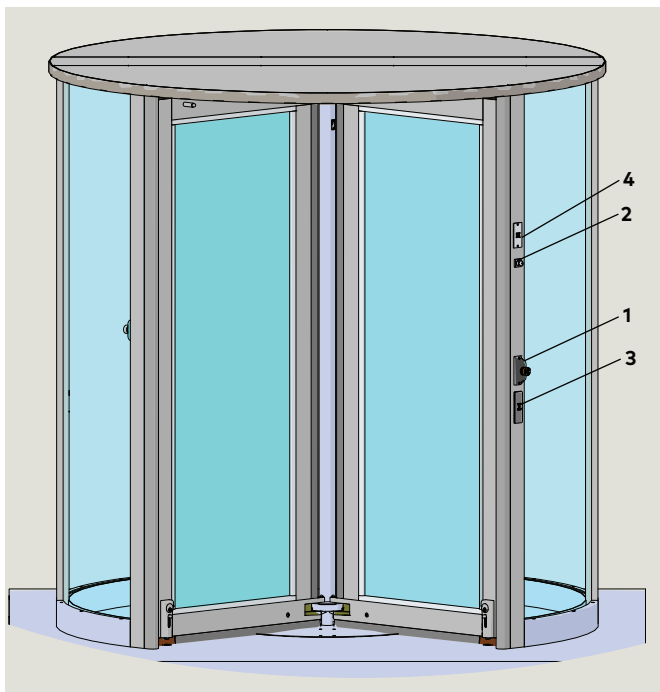
- Field installed above or below Mode switch.

4.6.3 Error number and LED blinking codes.

- First digit of Error number: slowly flashing LED (approximately 1 Hz).
- Second digit of Error number: rapidly flashing LED (approximately 2 Hz).
- Error LED fault code example:
1 x slow and 4 x fast = Error no. 14
(braking distance at safety stop too long).

4.7 Operator component locations

Fig. 4.7.1 Revolving door interior view



- 1 Emergency stop
- 2 Mode switch
- 3 Wave to Open plate (option)
- 4 Service panel (option)



TIPS AND RECOMMENDATIONS

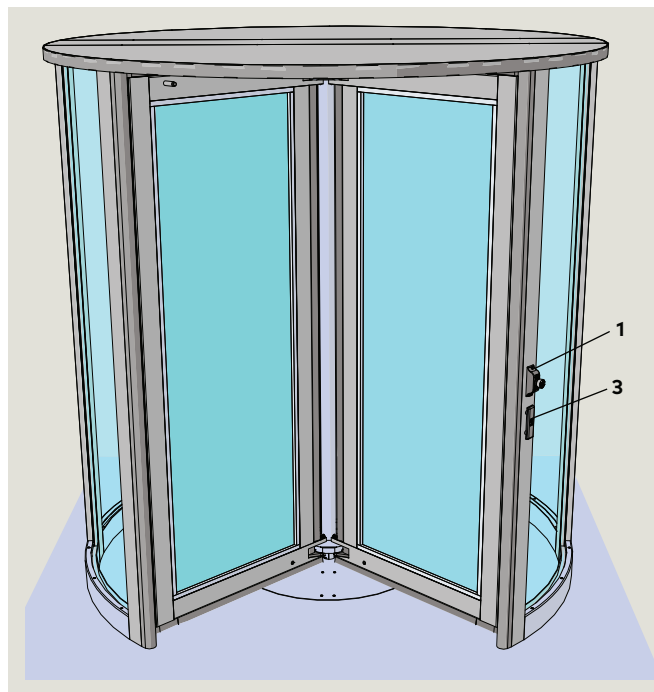
Wave to Open plate option (3) only used with "S" function module (Para. 2.7).



TIPS AND RECOMMENDATIONS

Mode switch, Wave to Open plates and Service panel located on the leading quarter post/end wall or attached separately within sight of the revolving door.

Fig. 4.7.2 Revolving door exterior view



- 1 Emergency stop
- 3 Wave to Open plate (option)



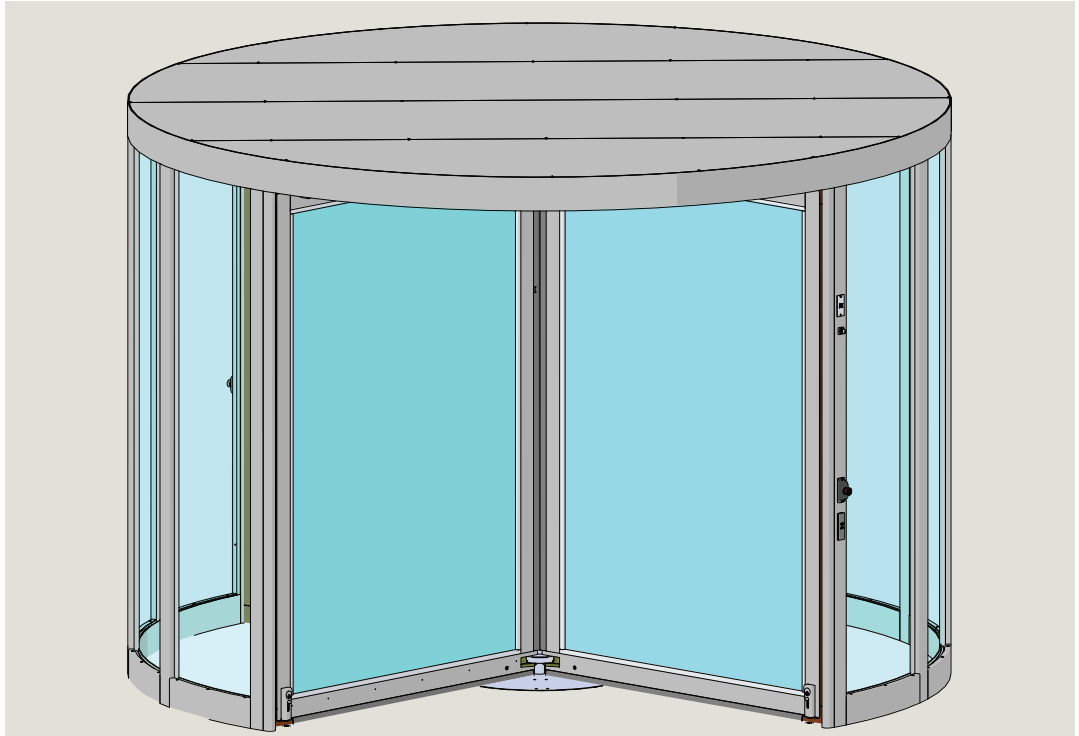
TIPS AND RECOMMENDATIONS

Operator component locations shown in Fig. 4.7.1 and 4.7.2 are examples only. Locations established with customer / architect input.

6 Overall door assembly examples

6.1 Four wing door; 10' and greater OD

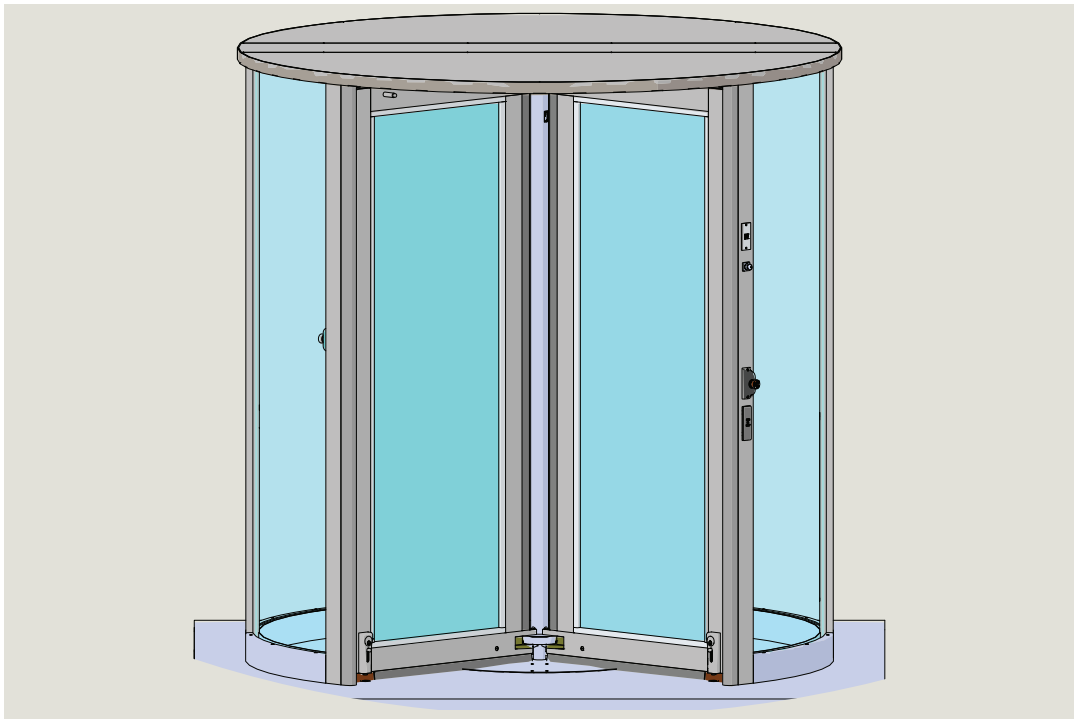
Fig. 6.1.1 4 wing door, 10' and greater OD, interior view



Operator control locations established with customer / architect input.

6.2 Four wing door; less than 10' OD

Fig. 6.2.1 4 wing door, less than 10' OD, interior view

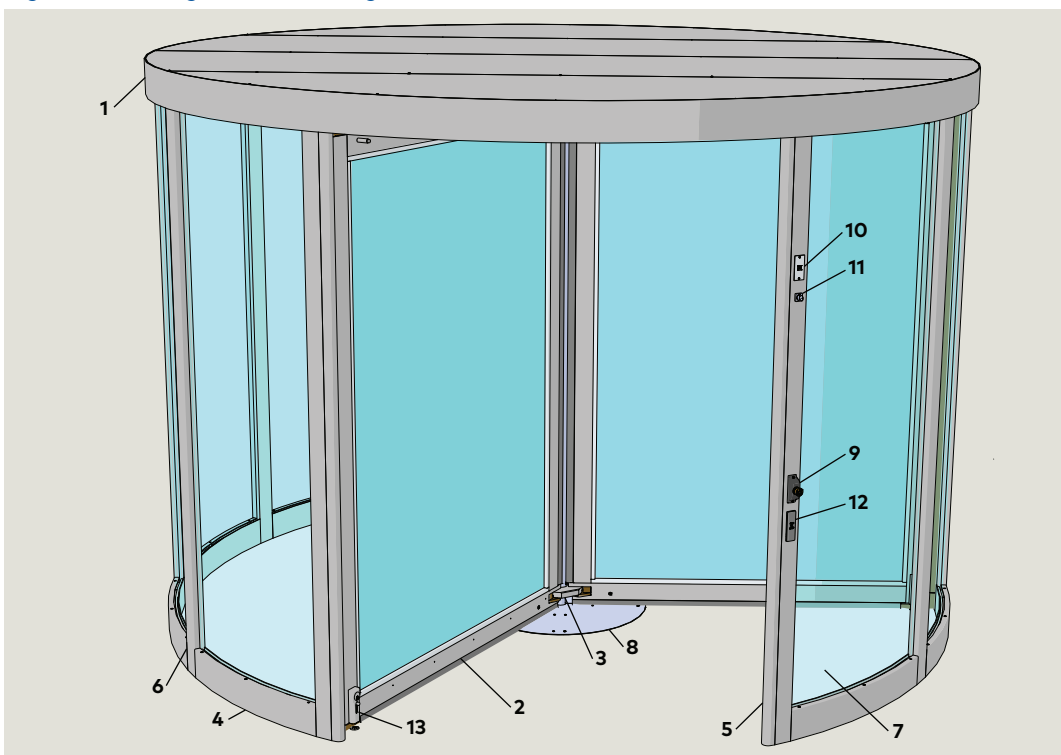


Operator control locations established with customer / architect input.

6.3 Three wing door; 10' and greater OD

Fig. 6.3.1 3 wing door; 10' and greater OD, interior view

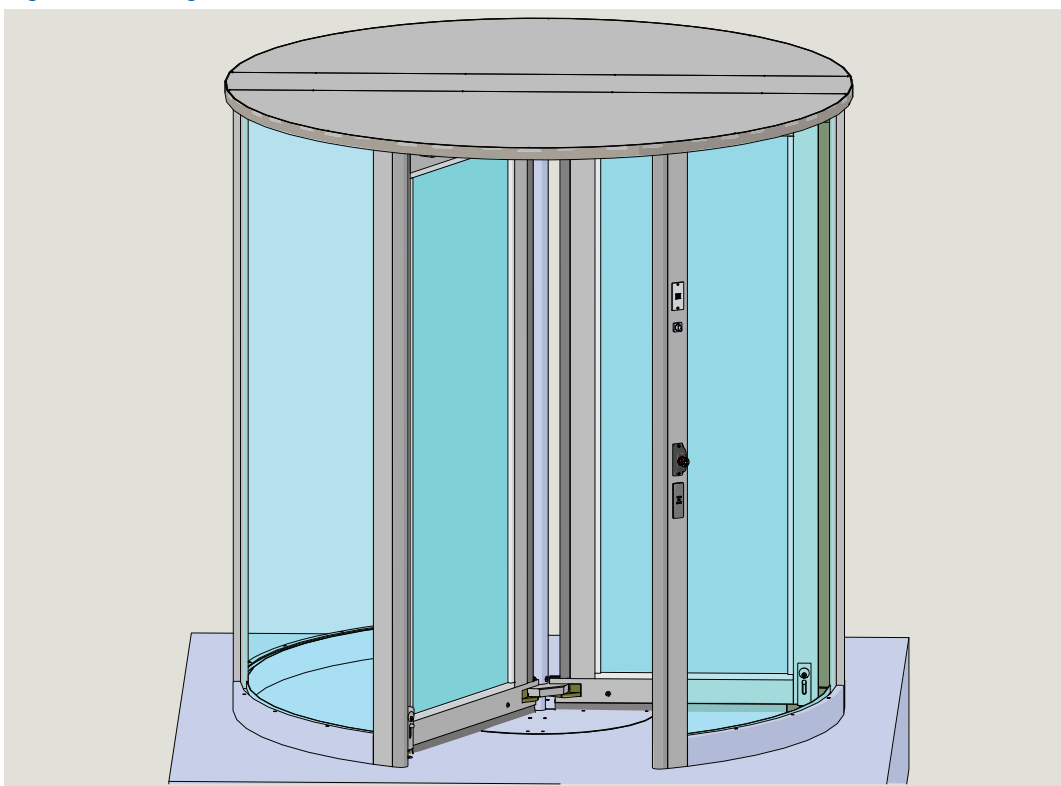
- 1 Canopy assembly
- 2 Wing assembly
- 3 3 wing center shaft assembly
- 4 Base assembly
- 5 Quarter post/End wall
- 6 Center post
- 7 Curved glass
- 8 In ground Motion Assist 360 drive assembly, speed control
- 9 Emergency stop
- 10 Service panel
- 11 Mode switch
- 12 Wave to Open plate (Option with "S" function module)
- 10-12 May be in different locations
- 13 Deadbolt lock



Operator control locations established with customer / architect input.

6.4 Three wing door; less than 10' OD

Fig. 6.4.1 3 wing door, less than 10' OD, interior view



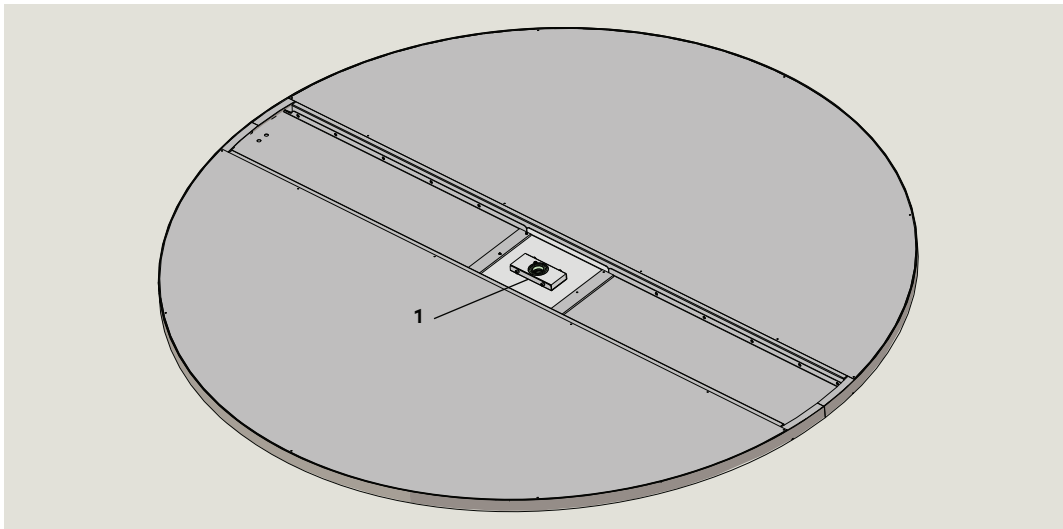
Operator control locations established with customer / architect input.

7 Revolving door assemblies

7.1 Canopy, door ID diameters up to but not including 10 feet

Fig. 7.1.2 7 foot canopy example, inner cover removed

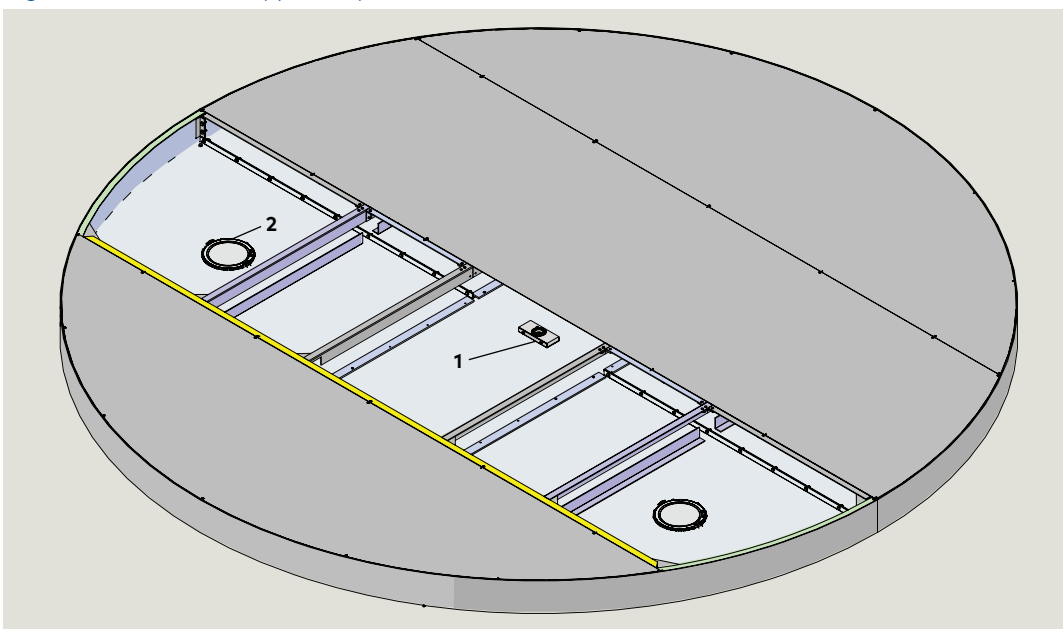
- 1 Bearing assembly



7.2 Canopy, door ID diameters 10 feet and greater

Fig. 7.2.1 12 foot canopy example, inner covers removed

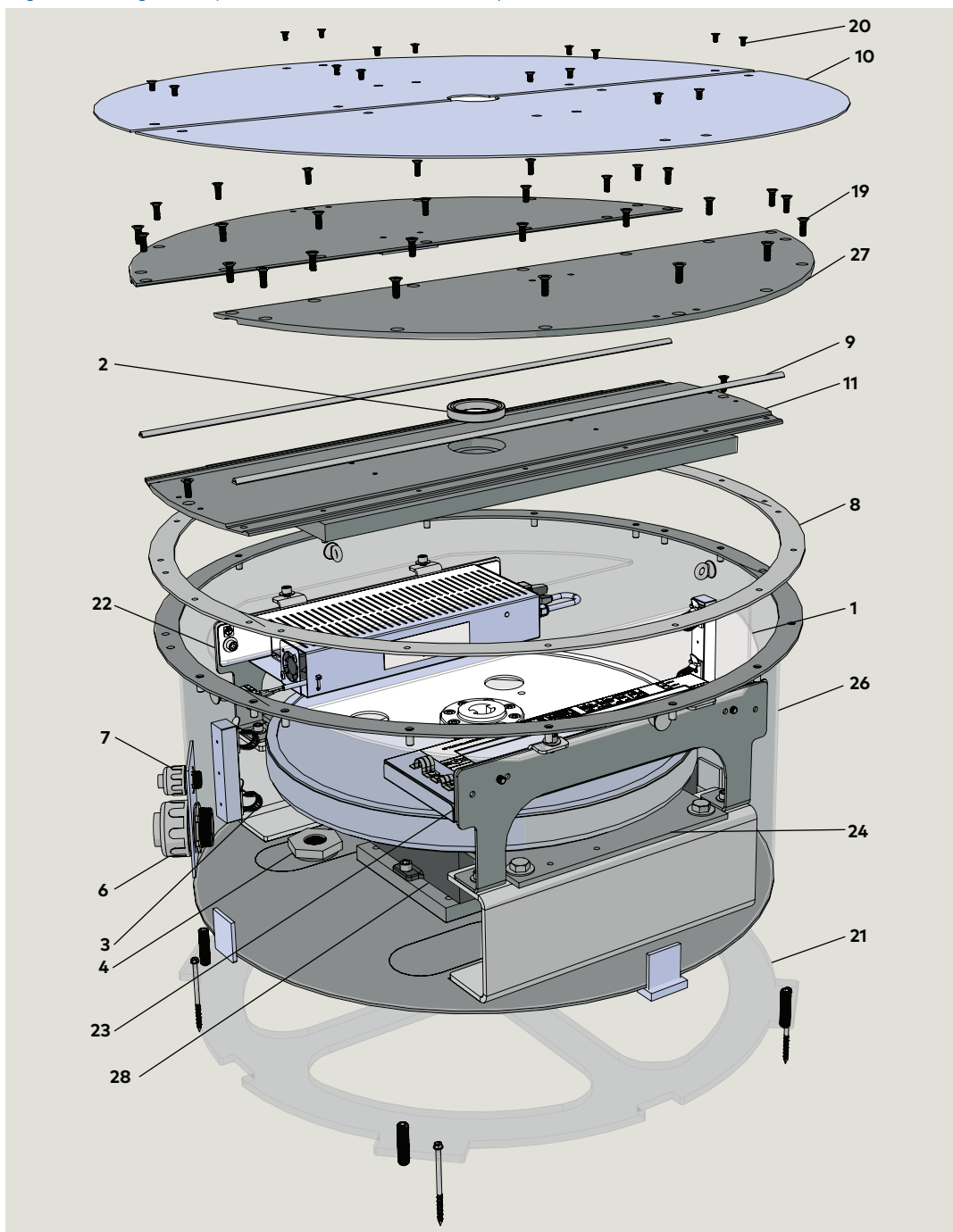
- 1 Bearing assembly
- 2 LED light (optional)



7.3 In-ground drive assembly with power supply and control unit DS6022

Fig. 7.3.1 In-ground speed control and drive assembly

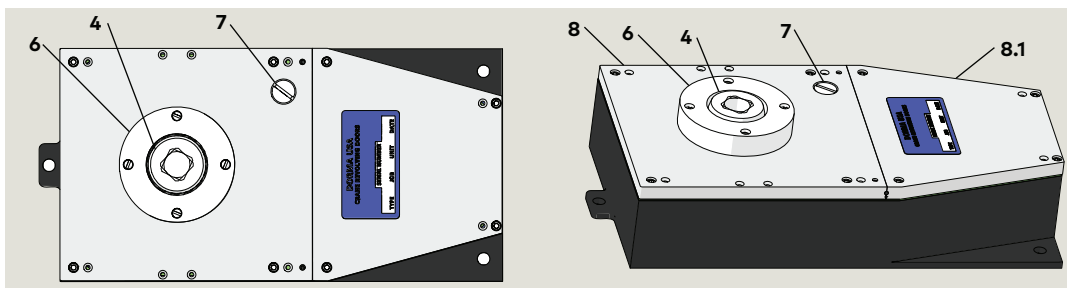
- 1 Control/power supply cover DC6031
- 2 Spring-loaded rotary shaft seal DC6041
- 3 Cable tie DC6042
- 4 Drain fitting DC6043
- 6 Conduit adapter, 1 1/2"
- 7 Conduit adapter, 1/2"
- 8 Flange gasket DC6046
- 9 Foam rubber seal DC6047
- 10 Floor cover plate DC6048
- 11 Container lid - center section DC6049
- 19 1/4-20 x 3/4" sealing FH countersunk screw DF6025-01G
- 20 10-32 x 38" sealing FH countersunk screw DF6026-01G
- 21 Leveling plate assembly DS6014
- 22 Motion Assist 360 Power supply assembly DS6015
- 23 Motion Assist 360 Control unit assembly DS6016
- 24 Drive bracket assembly DS6017
- 26 Container assembly weldment DS6024
- 27 Outer cover assembly DS6033
- 28 In-ground speed control H63 4001



7.4 In-ground speed control assembly

Fig. 7.4.1 In-ground speed control assembly H63-4001

- 4 Drive shaft
- 6 Collar
- 7 1/2 x 3/4" long SFHMS
- 8 1/2" THK subplate
- 8.1 1/2" THK subplate



7.5 Motion Assist 360 assemblies

7.5.1 Drive bracket assembly DS6017.

Fig. 7.5.1 Drive bracket assembly exploded view

- 2 Mounting bracket
DC6024
- 3 Drive flange
DC6025
- 4 M8 x 1.25-30 class 12.9
black oxide SHCS
DF6003-01C
- 5 M10 x 40 mm SHCS
class 12.9
DF6004-01Z
- 6 M10-1.5 18-8 SS nylon
insert locknut
DF6005-01G
- 7 1/2" 18-8 SS flat
washer
- 8 Motion Assist 360
drive DX6010

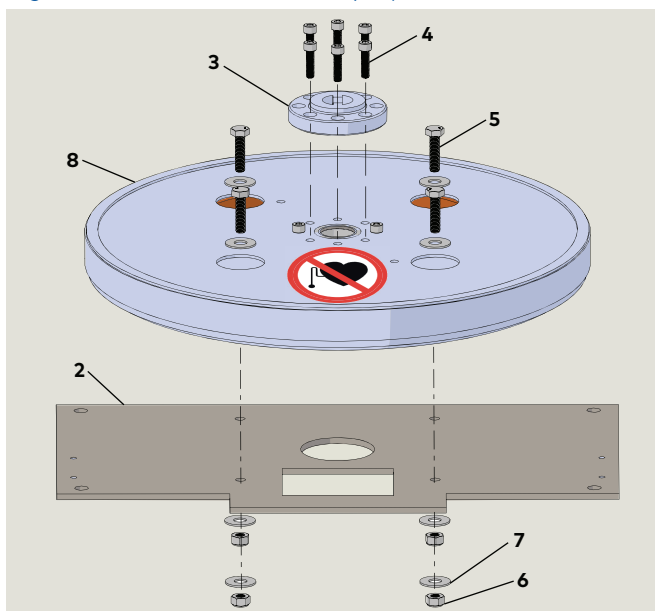
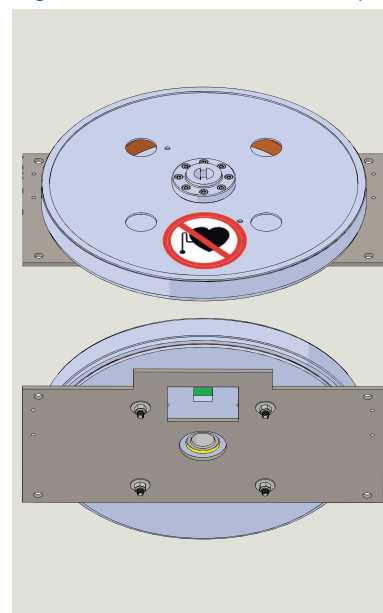


Fig. 7.5.2 Drive bracket assembly



7.5.2 Motion Assist 360 power supply and control unit.

Fig. 7.5.3 Motion Assist 360 power supply and cables

- 1 Power supply
DX6001
- 2 115 Vac power cable
to control unit
- 3 DC power cable to
control unit
- 4 Plug for customer
115 Vac connection

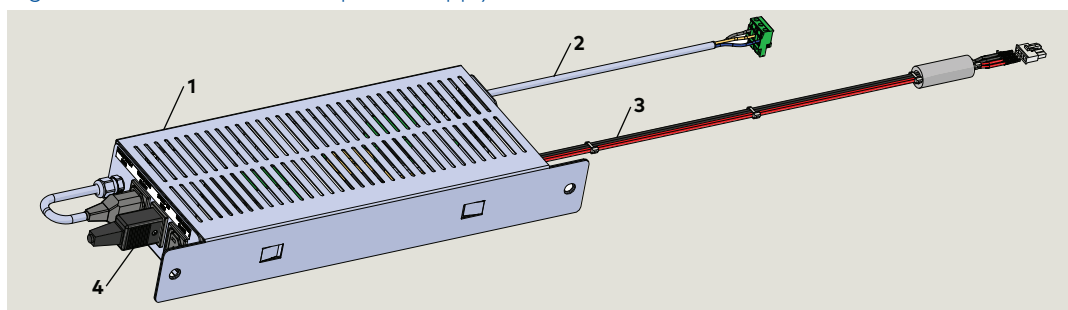
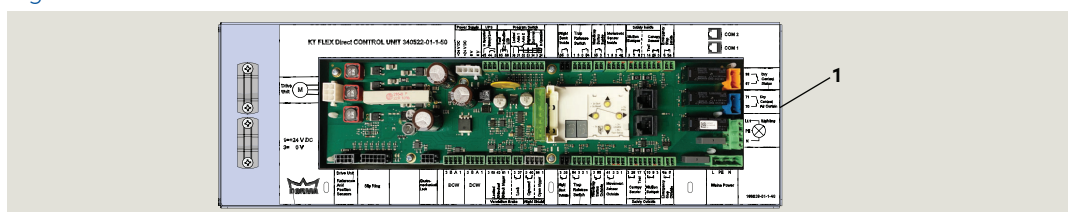


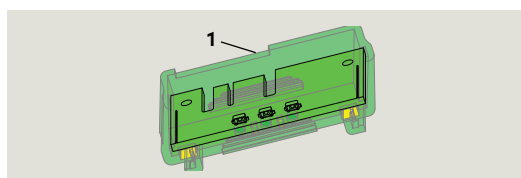
Fig. 7.5.4 Motion Assist 360 control unit

- 1 Control unit
DX6002



7.5.3 Control unit function module.

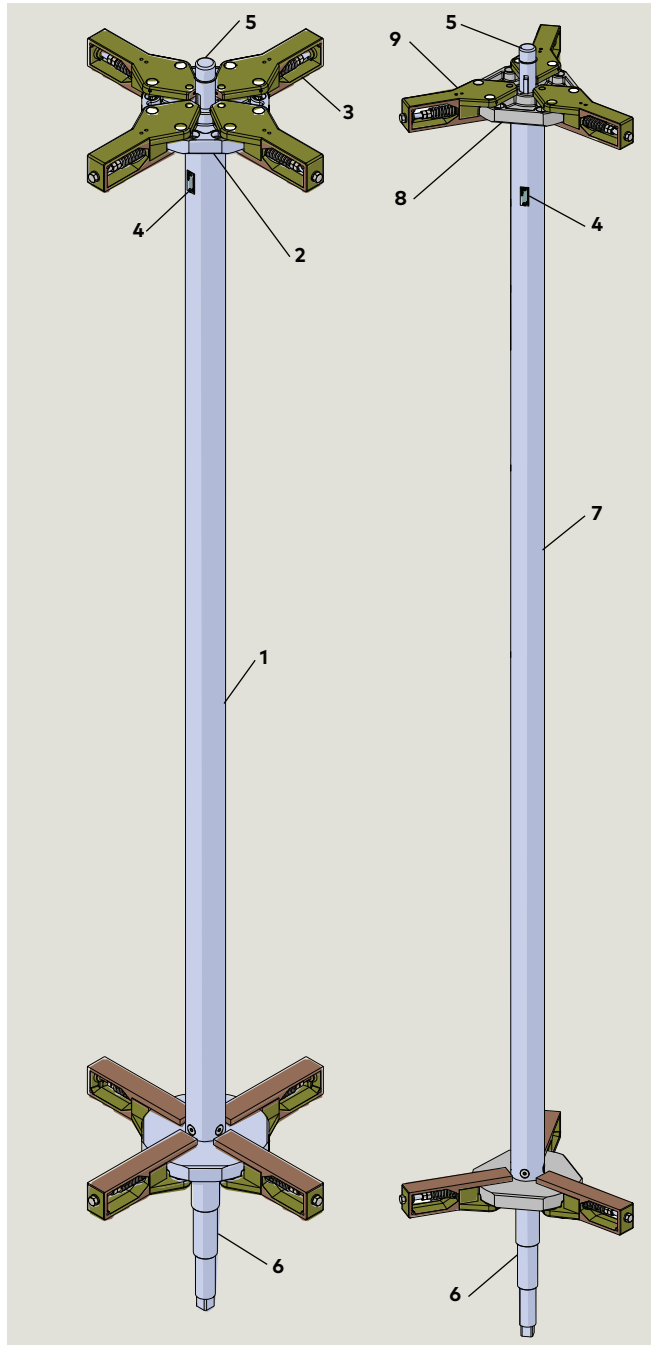
Fig. 7.5.5 "S" function module (Grn)
Motion Assist



- 1 "S" module (GRN)
Power assist
DX6003-002

7.6 Center shaft assemblies

Fig. 7.6.1 Center shaft assemblies
 Four wing Three wing

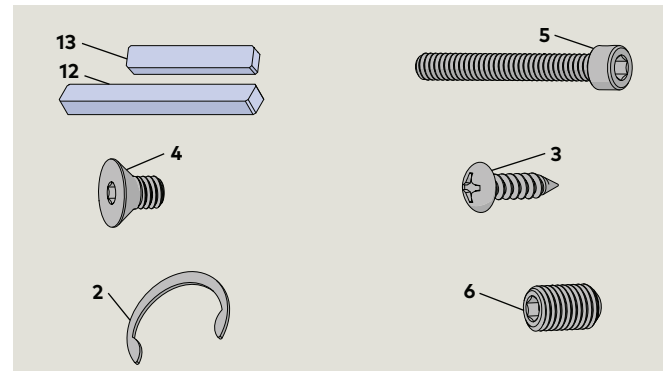


- | | |
|-------------------------|--------------------------|
| 1 Center shaft, 4 wing | 5 Top adaptor |
| 2 4 wing hanger casting | 6 Bottom plug, in-ground |
| 3 (8) hanger assemblies | 7 Center shaft, 3 wing |
| 4 Job number tag | 8 3 wing hanger casting |
| | 9 (6) hanger assemblies |

7.6.1 DK6005-005 screw pack: shaft assembly, in ground drive.

ID	Part #	Description	Qty
Center shaft			
13	DF6006-01Z	Machine key, 1/4" x 5/16" x 2" long, zinc plated carbon steel, undersized stock	2
12	DF6006-02Z	Machine key, 1/4" x 5/16" x 4" long, zinc plated carbon steel, undersized stock	2
5	DF6001-01G	10-24 x 1 1/2" SHS, SS	8
4	DF6002-01Z	5/16 x 1/2" FHSCMS	8
3	DF6008-01G	Sheet metal pan head screw, #6 x 1/2", SS	2
2	DF6029-01C	Side-mount external retaining ring, for 1 1/4" OD shaft, black phosphate	1
6	DF6030-01G	5/16-24 x 1/2" SS cup point set screw	1

Fig. 7.6.2 DK6005-001 screw pack with ID numbers

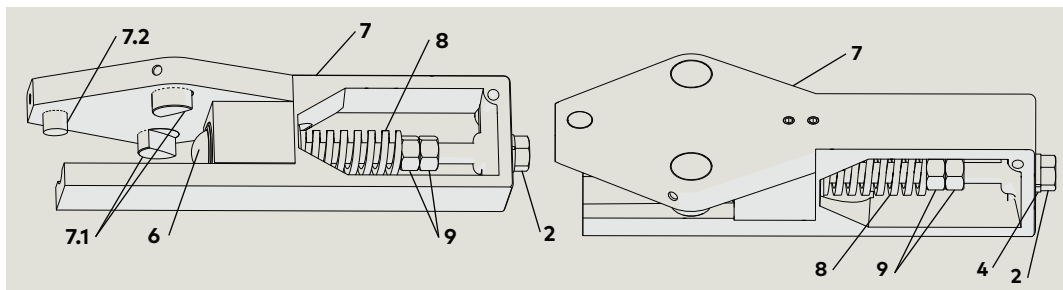


7.8 Hanger assembly

7.8.1 Heavy duty hanger assembly

Fig. 7.8.1 Heavy duty hanger assembly

- 2 3/8" x 4" bolt
H61 0075
- 4 3/8" high collar lock
washer
Z24 0702
- 6 7/8" DIA steel ball
H61 0045
- 7 Heavy duty hanger
body H61 2005
- 7.1 Guide pin
(standard)
- 7.2 Center pin
- 8 Spring



7.9 Bookfold mechanism

Fig. 7.9.1 Bookfold mechanism

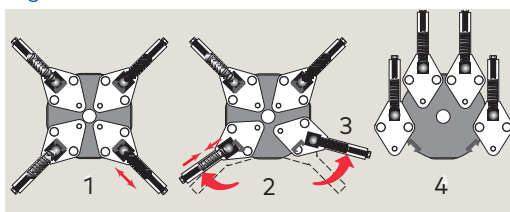
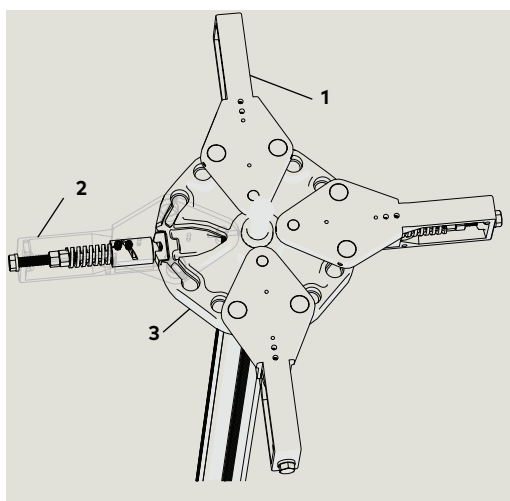


Fig. 7.9.2 4 wing hanger and machine casting assembly

- 1 Hanger assembly
- 2 Hanger assembly
transparent view
- 3 Machine casting



7.9.1 Bookfold mechanism operation

1. During normal operation, hanger spring tension holds wings in radial position by means of steel balls in hangers engaging in detent blocks in center shaft top and bottom discs.
2. Spring tension is field adjusted to meet breakout force requirements as specified in ANSI/BHMA A156.27, Standard for Power and Manual Operated Revolving Pedestrian Doors.
3. Each revolving door wing shall be capable of breakout when a force not more than 130 lb. [578 N] is applied at a point 3 in. [76 mm] from the outer edge of the wing stile and 40 in. [1020 mm] above the floor (ANSI/BHMA A156.27).
4. Excess pressure on wing compresses spring (to breakout force), ball is rotated from detent block.
5. Minimal pressure is then required to continue bookfolding. Wings bookfold either way, providing a clear passage on both sides.

7.10 Door wing and posts

- 1.1 Front stile
- 1.2 Center stile
- 1.3 End rail
- 1.4 End rail
- 1.5 Kick plate
- 1.6 Vertical sweep with felt
- 1.7 Top sweep with felt
- 1.8 Bottom T style weather sweep
- 1.9 Glass
- 3 Aluminum quarter post
- 4 Aluminum center post

Fig. 7.10.1 AL3000 aluminum wing assembly

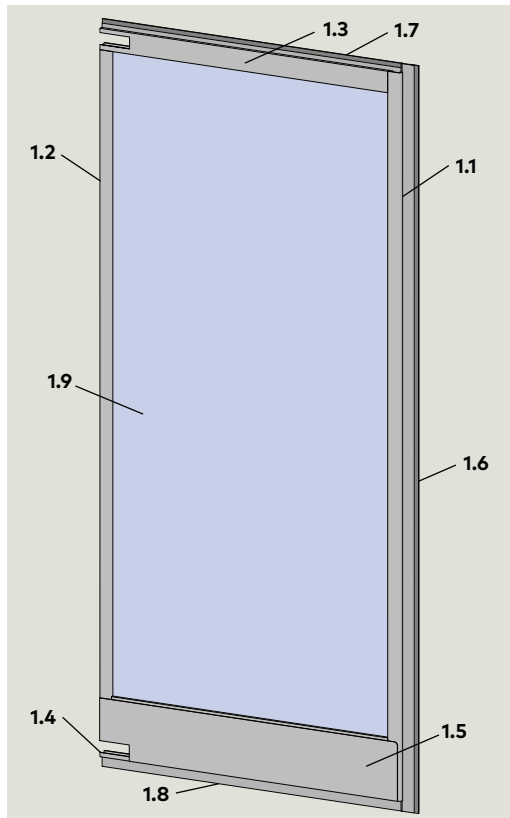
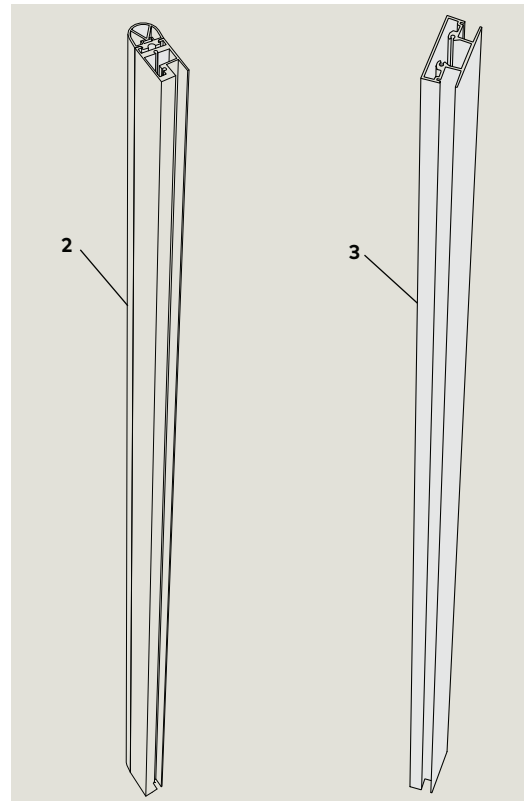


Fig. 7.10.2 Quarter post/end wall and center post



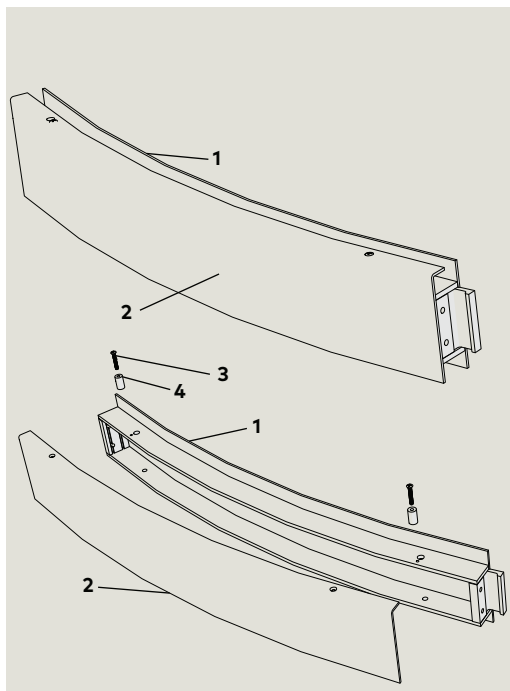
TIPS AND RECOMMENDATIONS

Reference Chapter 5, Technical Information, and Crane shop drawings for quarter post/end wall design.

7.11 Enclosure base

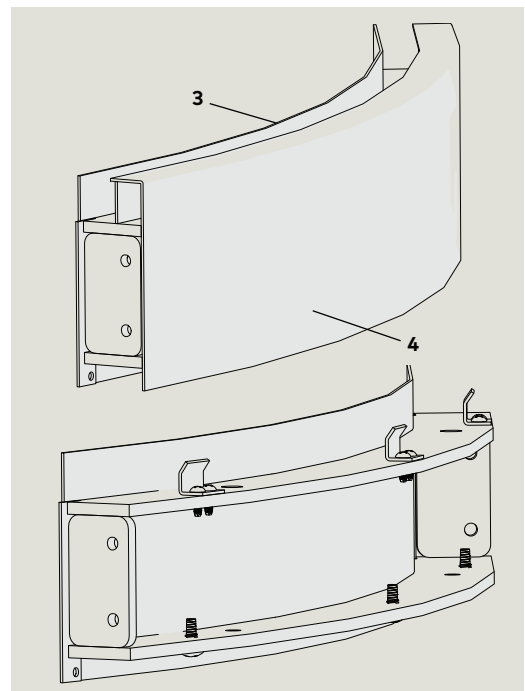
- 1 Aluminum enclosure base assembly
- 2 Fascia
- 3 Stainless steel enclosure base assembly
- 4 Fascia

Fig. 7.11.1 Aluminum enclosure base and fascia assembly



- 1 Aluminum enclosure base assembly
- 2 Fascia
- 3 10-24 x 1 1/4" SS Phillips oval head machine screw S21 0334
- 4 Base support spacer, 1/2" dia, 7/8" long

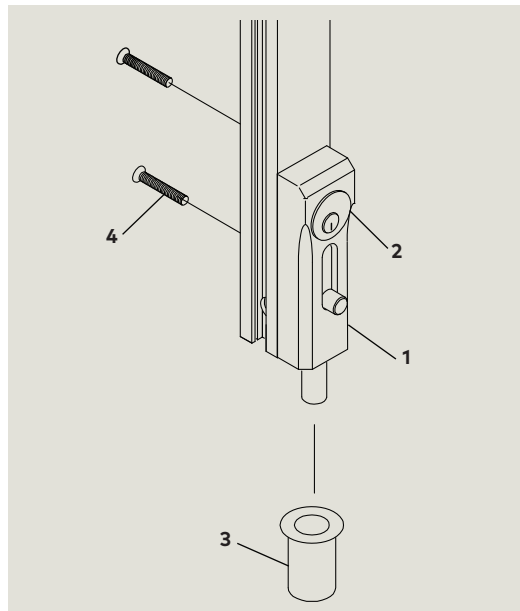
Fig. 7.11.2 Stainless steel enclosure base and fascia assembly



7.12 Deadbolt locks

- 1 Lock assembly
H65 311C
- 2 Lock cylinder
H65 307C
- 3 Floor strike
H65 402C
- 4 1/4-20 x 1 5/8"
POHMS (Phillips oval
head machine screw)

Fig. 7.12.1 Deadbolt lock



7.12.1 Deadbolt locks.



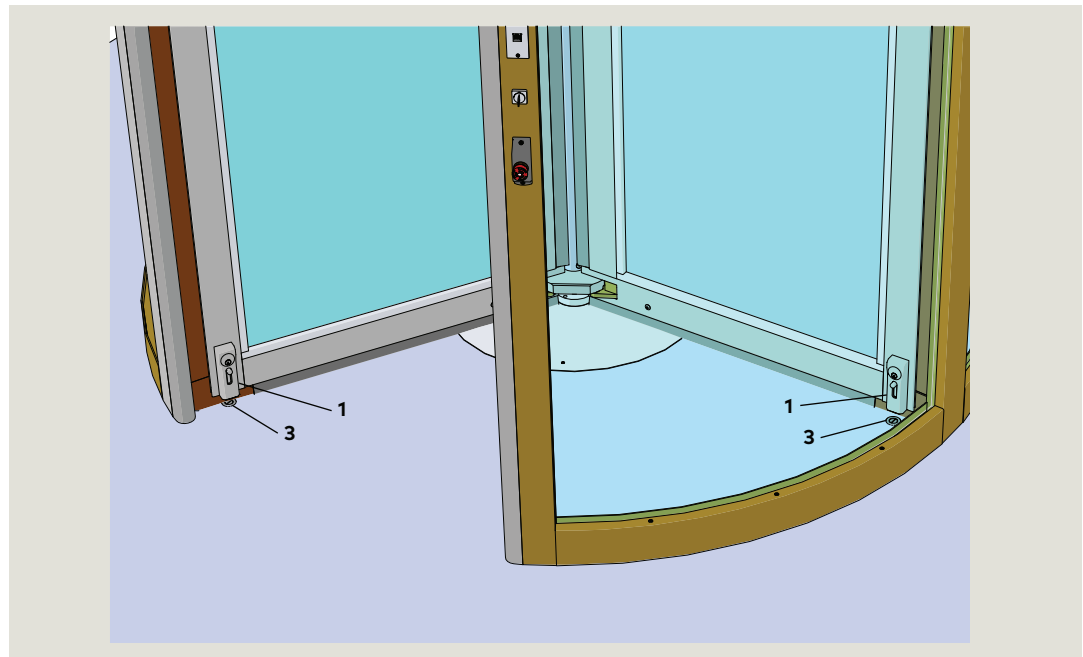
TIPS AND RECOMMENDATIONS

Lock installation location can vary based on door height or door order requirements.

- Two deadbolt locks are supplied, one located on adjacent wing bottom rails for interior locking into floor.
- Surface applied lock, with a full mortise cylinder.
- Locks are factory installed.
- Doors over 7' high, locks installed in bottom rails unless otherwise specified.

Fig. 7.12.2 Interior view, 3 wing door with locks

- 1 Lock assembly
H65 311C
- 3 Floor strike
H65 402C



7.13 Fastener hardware

- 3 1/4-20 x 1" SS hex head cap screw
S22 0550
- 3.1 1/4-20 SS hex nut
S26 1337
- 3.2 1/4-20 x .75 OD zinc coated flat washer
T24 0502
- 4 1/4-20 x 1" hex head thread-cutting screw
S29 0549

Fig. 7.13.1 Canopy fastening hardware

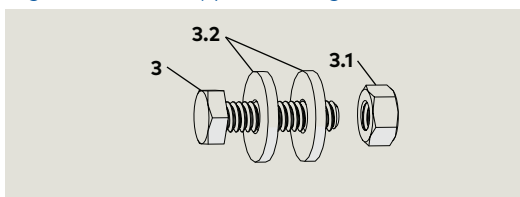


Fig. 7.13.2 Aluminum post to canopy fastening hardware

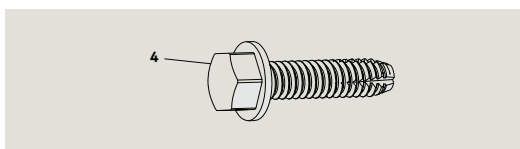
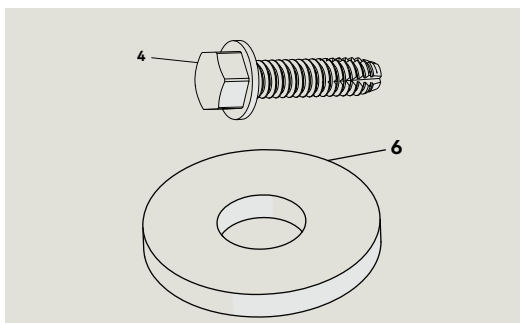
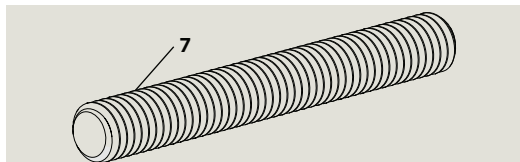


Fig. 7.13.3 Stainless steel post to canopy fastening hardware



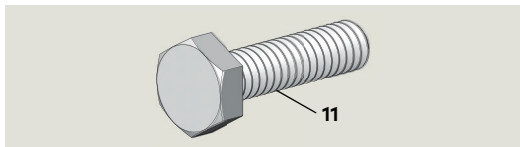
- 4 1/4-20 x 1" hex head thread cutting screw
S29 0549
- 6 1/4-20 x 3/4" OD zinc coated flat washer
T24 0502

Fig. 7.13.4 Base assembly floor stud



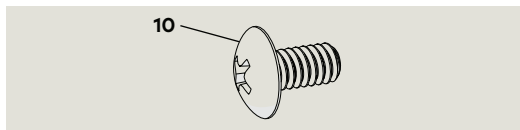
- 7 3/8" x 3" plated stud
Z27 0703

Fig. 7.13.5 Base to post fastening hardware



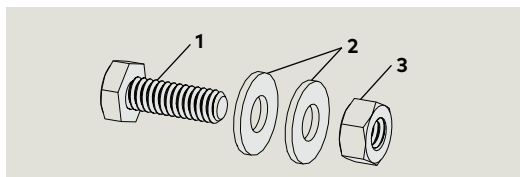
- 11 1/4-20 x 1" SS HHMS
S22 0550

Fig. 7.13.6 Wing attachment hardware



- 10 1/4-20 x 1/2" SS Truss head machine screw
S21 0542
- 10 1/4--20 x 1/2" Bronze Truss head machine screw
B21 0523

Fig. 7.13.7 Canopy attachment hardware



- 1 1/4-20 x 3/4" SS HHMS
- 2 1/4--20 x .75 OD SS flat washer
- 3 1/4--20 SS hex nut
S26 1337



TIPS AND RECOMMENDATIONS

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

7.13.1 Canopy fastening hardware; canopy shipped in two sections.

- Fig. 7.13.1
- Reference Chapter 17.

7.13.2 Aluminum post to canopy fastening hardware.

- Fig. 7.13.2
- Reference Chapter 18.

7.13.3 Stainless steel post to canopy fastening hardware.

- Fig. 7.13.3
- Reference Chapter 18.

7.13.4 Base assembly floor studs.

- Fig. 7.13.4
- Reference Chapter 19.

7.13.5 Base to post fastening hardware.

- Fig. 7.13.5
- Reference Chapter 19.

7.13.6 Wing to center shaft hanger fastening hardware.

- Fig. 7.13.6
- Reference Chapter 26 and 27.

7.13.7 Canopy attachment hardware (split canopies).

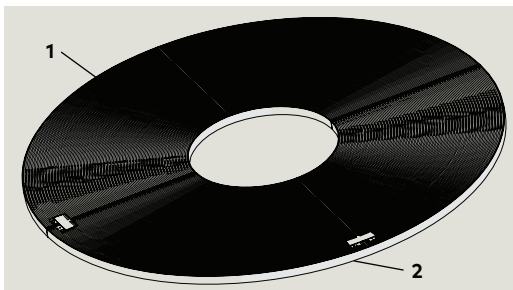
- Fig. 7.13.7
- Reference Chapter 17.

8 Optional assemblies

8.1 Floor grill and pan assembly

Fig. 8.1.1 Floor grill and pan assembly

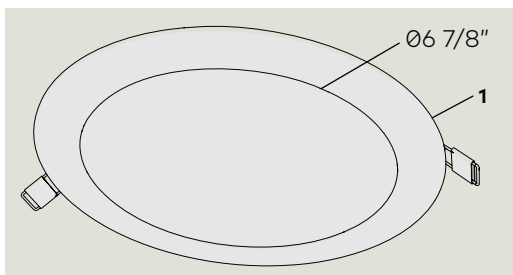
- 1 Floor grill
- 2 Pan



8.2 Ceiling lights

Fig. 8.2.1 LED light fixture

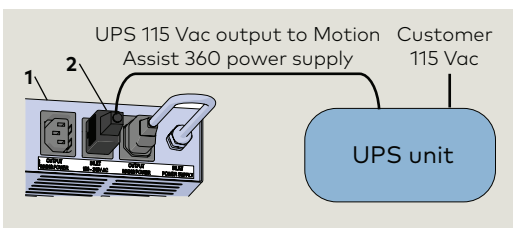
- 1 Aspect
 AL-RL-UTR-9_D
 9" LED recessed
 light, 18 watt
 M70 3020



8.3 Uninterruptible Power Supply (UPS)

Fig. 8.3.1 UPS 115 Vac to Motion Assist 360 power supply

- 1 Motion Assist 360 power supply DX6001
- 2 AC inlet plug, customer connection



8.3.1 UPS AC output connection to Motion Assist 360 power supply.

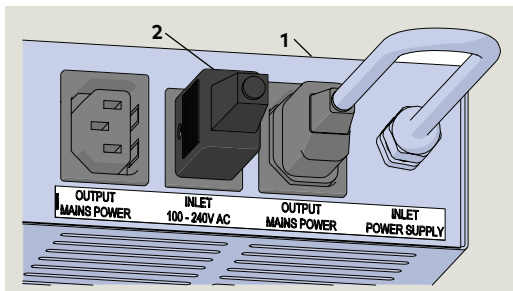
UPS 115 Vac output is wired to 100 - 240 Vac inlet plug on Motion Assist 360 power supply.

8.3.2 UPS power supply units.

UPS Part #	Rating		Maximum time
	VA	Watts	
DX6011-001	1500	900	3 hours
DX6012-001	500	300	1 hour

Fig. 8.3.2 Motion Assist 360 power supply

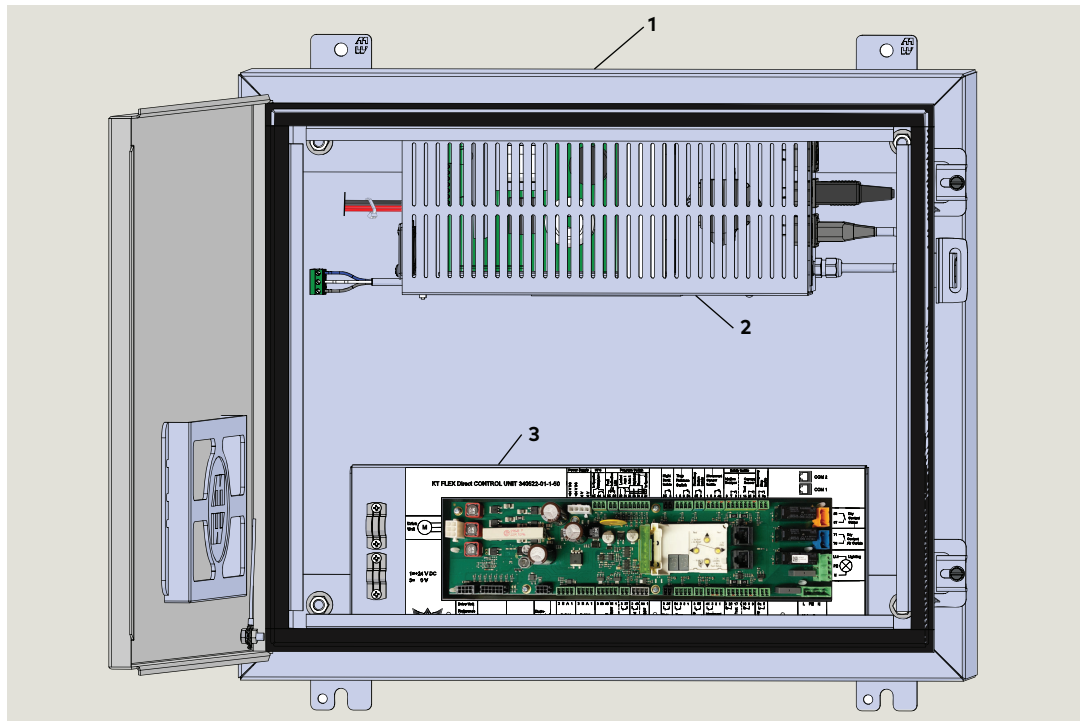
- 1 Motion Assist 360 power supply DX6001
- 2 AC inlet plug, customer connection



8.4 Remote enclosure – Motion Assist 360 power supply and control unit

Fig. 8.4.1 Remote enclosure

- 1 24 x 20 x 7 3/16"
NEMA 12 enclosure
- 2 Motion Assist 360
power supply
- 3 Motion Assist 360
control unit

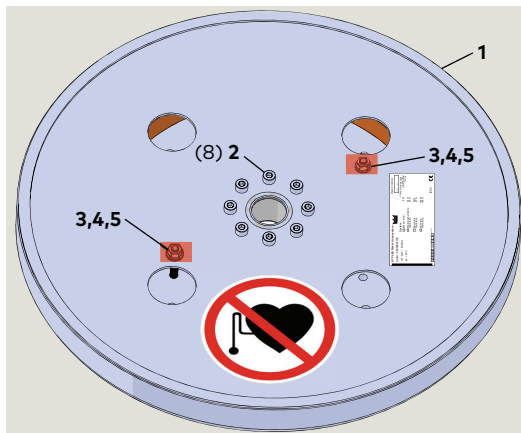


9 In-ground container hardware

9.1 Motion Assist 360 drive

- 1 Drive DX6010
- 2 (8) M8 x 20 mm SHCS, black oxide
- Transport bolts:
- 3 5/16 x 2 1/4" hex bolt
- 4 5/16" hex nut
- 5 5/16" steel flat washer

Fig. 9.1.1 Motion Assist 360 drive



9.2.1 Motion Assist 360 drive.



WARNING

Use caution when unpacking and lifting drive from shipping container!

CAUTION

Refer to any warning tags on shipping container!

9.2 Motion Assist 360 power supply and control unit

- 1 Power supply DX6001
- 2 115 Vac power cable to control unit
- 3 DC power cable to control unit
- 4 Plug for customer 115 Vac connection

Fig. 9.2.1 Motion Assist 350 power supply and cables

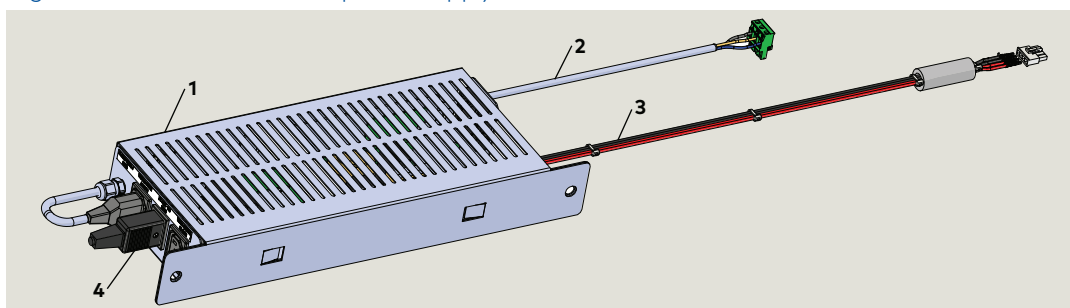
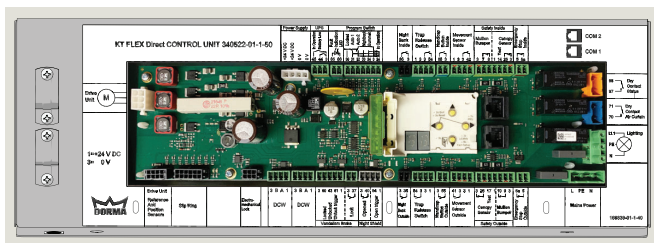


Fig. 9.2.2 Motion Assist 360 control unit DX6002



9.2.1 Motion Assist 360 power supply.

CAUTION

Refer to any warning tags on shipping container!

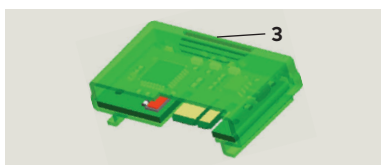
9.2.2 Motion Assist control unit.

CAUTION

Refer to any warning tags on shipping container!

Fig. 9.2.3 "S" (GRN) Motion Assist function module

- 3 "S" GRN Motion Assist DX6003-002



9.3 Motion Assist 360 control unit connectors



TIPS AND RECOMMENDATIONS

All connectors are packaged in a single bag.

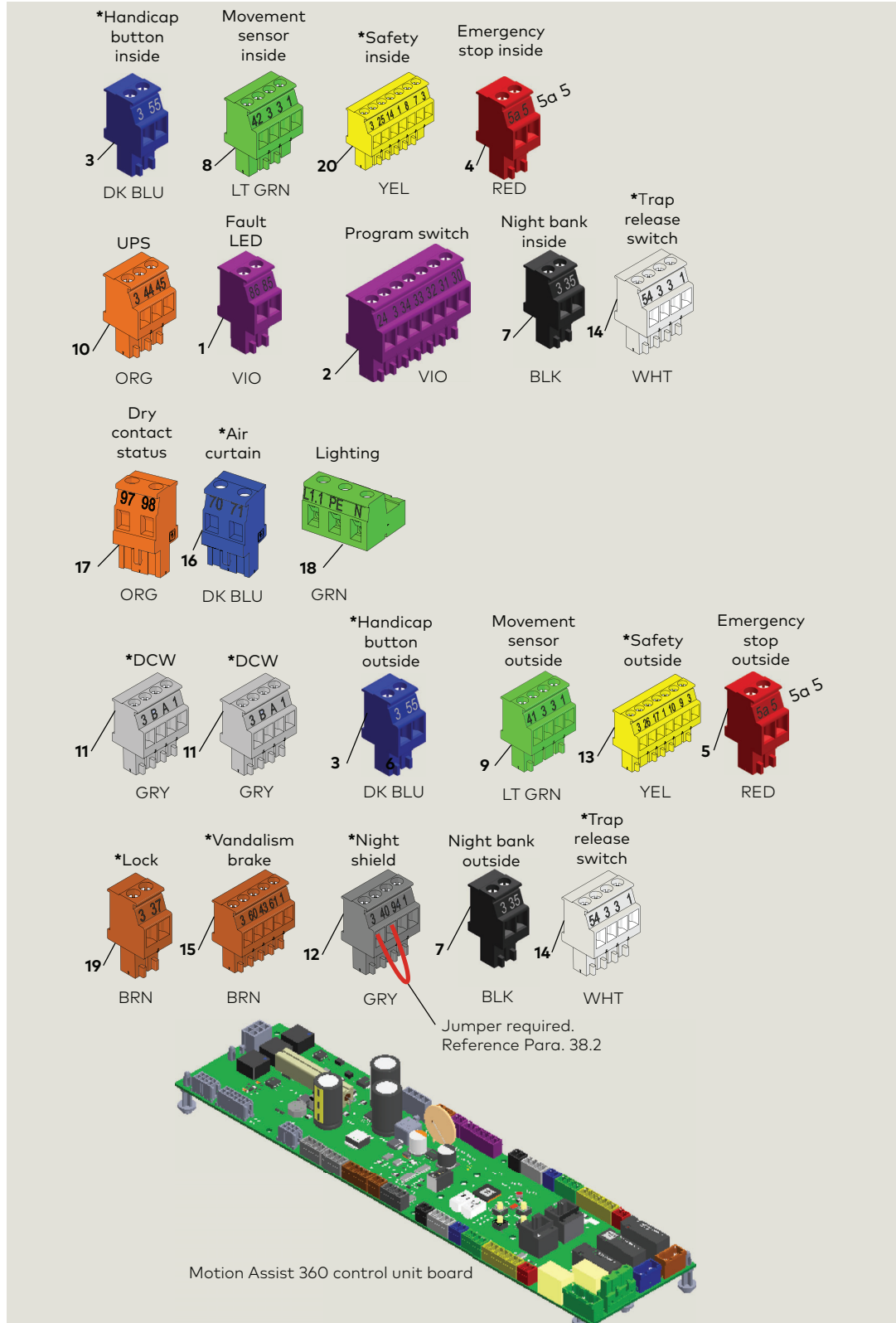


TIPS AND RECOMMENDATIONS

Connectors with an asterisk* before description are not used with "S" Motion Assist module.

Fig. 9.3.1 Motion Assist 360 control unit connectors

- 1 Fault indication LED
16681701170
- 2 Program switch
16681601170
- 3 Handicapped button
16682401170
- 4 Emergency Stop
16682301170
- 7 Night bank
16682201170
- 8 Movement sensor
inside
16681901170
- 9 Movement sensor
outside
16684001170
- 10 UPS
16682701170
- 11 DCW
16681501179
- 12 Night shield
16682001170
- 13 Safety outside
166882001170
- 14 Trap release switch
16682501170
- 15 Vandalism brake
16682601170
- 16 Air curtain
16682801170
- 17 Dry contact status
16683001170
- 18 Lighting
16683101170
- 19 Lock
16683201170
- 20 Safety inside
16681801170



9.4 Motion Assist 360 control unit to drive cables

9.4.1 Remote location of Motion Assist 360 power supply and control unit; extension cables.

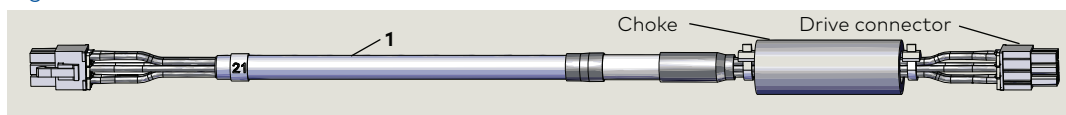
Extension cables: connection from Motion Assist drive cables (Para. 9.4.2 and 9.4.3) to Remote enclosure location.

1. Extension power cable, control unit to drive.
 - DX6016-001 25' extension
 - DX6016-002 50' extension
 - DX6016-003 100' extension
2. Extension Hall sensor cable, control unit to drive.
 - DX6015-001 25' extension
 - DX6015-002 50' extension
 - DX6015-003 100' extension

9.4.2 Power cable, control unit to drive.

- 1 DX6005

Fig. 9.4.1 Power cable, control unit to drive



9.4.3 Hall sensor cable, control unit to drive.

- 1 DX6006

Fig. 9.4.2 Sensor cable, control unit to drive



9.4.4 Remote location of Motion Assist 360 power supply and control unit.

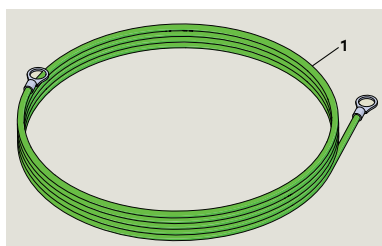
NOTICE

Reference Wiring, Setup and Troubleshooting Manual DL6000-014.

9.5 Motion Assist 360 earth grounding cable

- 1 DX6009
34051101150

Fig. 9.5.1 Earth grounding cable

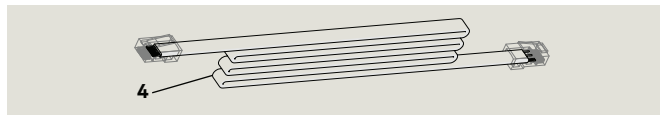


9.5.1 Earth grounding cable

9.6 Handheld communication cable

9.6.1 Handheld communication cable.

Fig. 15.7.1 RJ45 handheld communication cable



TIPS AND RECOMMENDATIONS

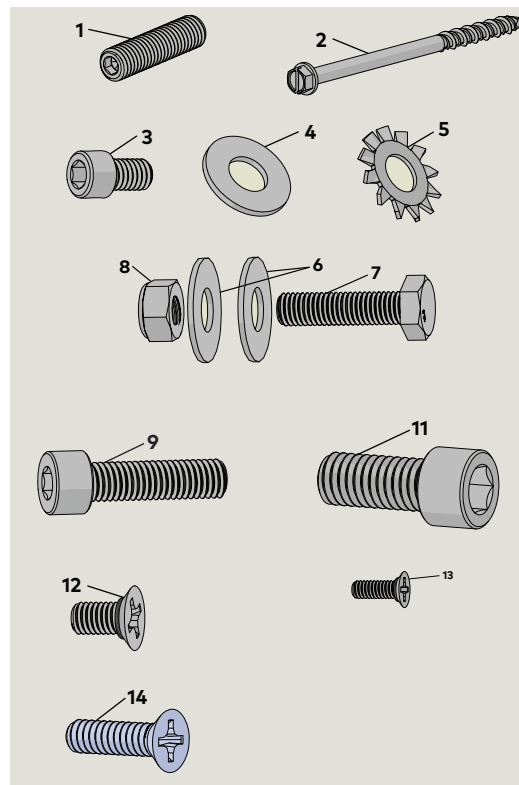
Handheld cable shipped in center shaft shipping crate.

9.7 Screwpack

9.7.1 DK6001-001 screw pack: In ground drive assembly.

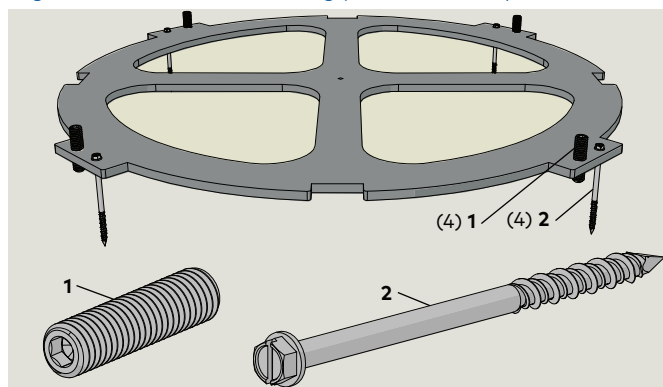
ID	Part #	Description	Qty
Container			
1	DF6028-01G	1/2-13 x 2" Cup-point set screw, SS	4
2	DF6017-01Z	1/4 x 4" Hex-washer head screw for concrete, blue-coated steel	4
3	DF6018-01G	5/16 x 1/2" SHCS, SS	12
4	DF6019-01G	5/16" flat washer, SS	12
5	DF6016-01G	5/16" screw size external-tooth lock washer	3
6	DF6010-01G	Washer, flat, 1 1/4" OD, 0.531" ID, for 1/2" screw, SS	8
7	DF6004-01Z	Hex head cap screw, M10 x 40 mm, class 12.9 zinc, extreme strength	4
8	DF6005-01G	Nylon insert locknut, M10, SS	4
9	DF6003-01C	M8 x 30 mm black oxide class 12.9 SHCS	8
10	DF6021-01G	Hex head bolt, 1/2 x 3/4", SS, fully threaded	4
11	DF6022-01C	3/8 x 7/8" SHCS, black oxide	3
12	DF6026-01G	10-32 x 3/8" sealing flat head screw, SS	16
13	DF6025-01G	1/4-20 x 3/4" sealing flat head screw	30
14	DF6024-01G	#6 x 1/2" Phillips FHS, SS	8

Fig. 9.7.1 DK6001-001 screw pack with ID numbers



9.8 Assemblies using screw pack DK6006-001 hardware

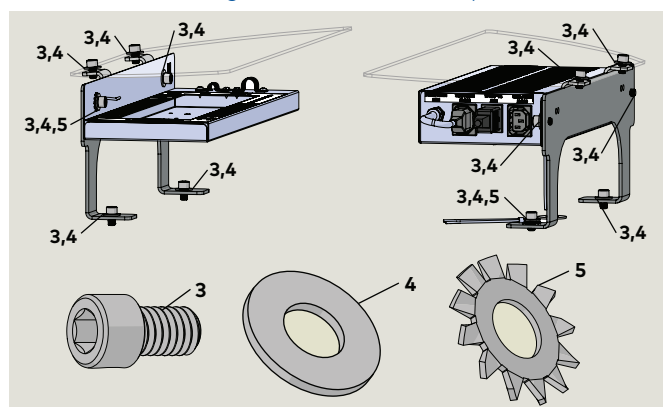
Fig. 9.8.1 Container leveling plate assembly hardware



9.8.1 Container leveling plate hardware.

ID	Part #	Description	Qty
Container leveling plate assembly DS6014 hardware			
1	DF6028-01G	1/2-13 x 2" Cup-point set screw, SS	4
2	DF6017-01Z	1/4 x 4" Hex-washer head screw for concrete, blue-coated steel	4

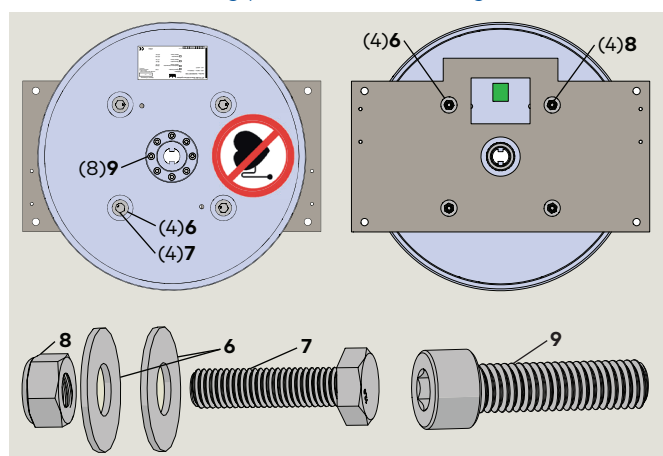
Fig. 9.8.2 Fasteners; power supply and control unit mounting brackets and cover plates



9.8.2 Fasteners for power supply, control unit mounting brackets and cover plates.

ID	Part #	Description	Qty
Fasteners, power supply and control unit mounting brackets and cover plates			
3	DF6018-01G	5/16 x 1/2" SHCS, SS	12
4	DF6019-01G	5/16" flat washer, SS	12
5	DF6016-01G	5/16" screw size external-tooth lock washer	3

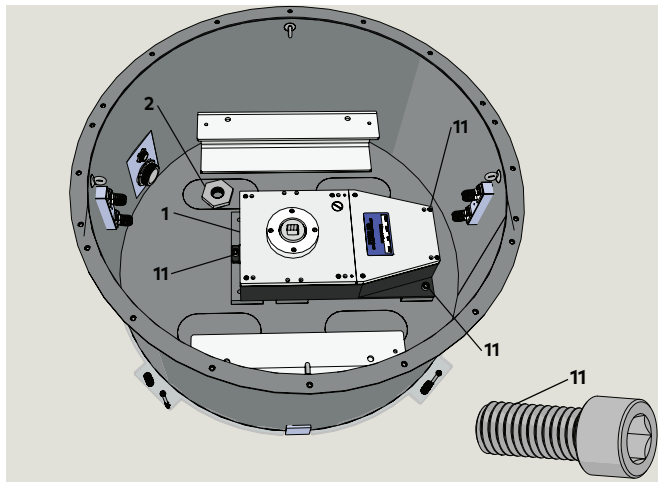
Fig. 9.8.3 Fasteners for Motion Assist 360 drive to mounting plate and drive flange



9.8.3 Fasteners for Motion Assist 360 drive: to mounting plate and drive flange.

ID	Part #	Description	Qty
Motion Assist 360 drive to mounting plate			
6	DF6010-01G	Washer, flat, 1 1/4" OD, 0.531" ID, for 1/2" screw, SS	4
7	DF6004-01Z	Hex head cap screw, M10 x 40 mm, class 12.9 zinc, extreme strength	4
8	DF6005-01G	Nylon insert locknut, M10, SS	4
Drive flange to Motion Assist 360 operator			
9	DF6003-01C	M8 x 30 mm black oxide class 12.9 SHCS	8

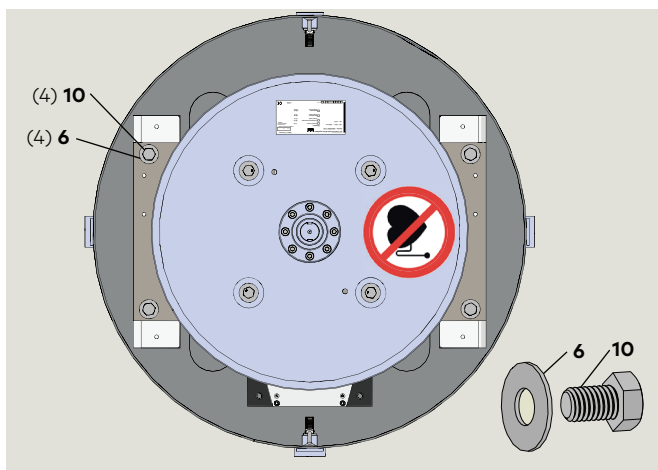
Fig. 9.8.4 Fasteners; In-ground speed control to container assembly



9.8.4 Fasteners for In-ground speed control to container assembly speed control shims.

ID	Part #	Description	Qty
Motion Assist 360 operator mounting plate to U-channel brace			
11	DF6022-01C	3/8 x 7/8" SHCS, black oxide	3

Fig. 9.8.5 Fasteners; Motion Assist 360 drive mounting plate to U-channels

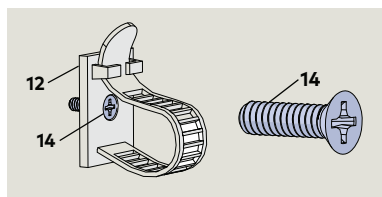


9.8.5 Fasteners for Motion Assist 360 drive mounting plate to U-channels.

ID	Part #	Description	Qty
Motion Assist 360 drive mounting plate to U-channel brace			
10	DF6021-01G	Hex head bolt, 1/2 x 3/4", SS, fully threaded	4
6	DF6010-01G	Washer, flat, 1 1/4" OD, 0.531" ID, for 1/2" screw, SS	4

Fig. 9.8.6 Cable tie fastener

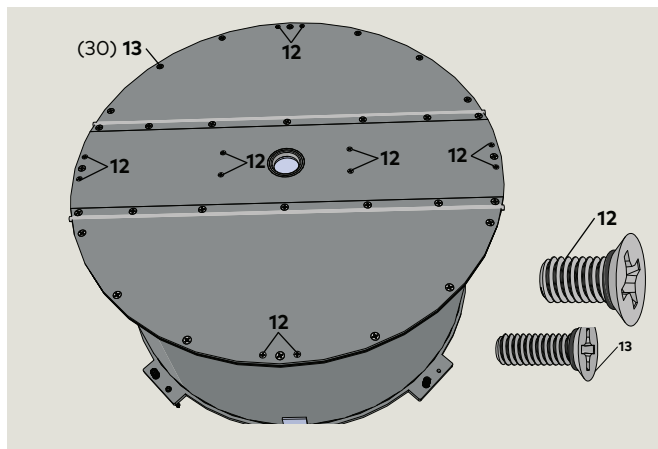
12 DC6042



9.8.6 Cable tie fastener.

ID	Part #	Description	Qty
Wire tie fastener			
14	DF6024-01G	#6 x 1/2" Phillips FHS, SS	8

Fig. 9.8.7 Fasteners; container lids

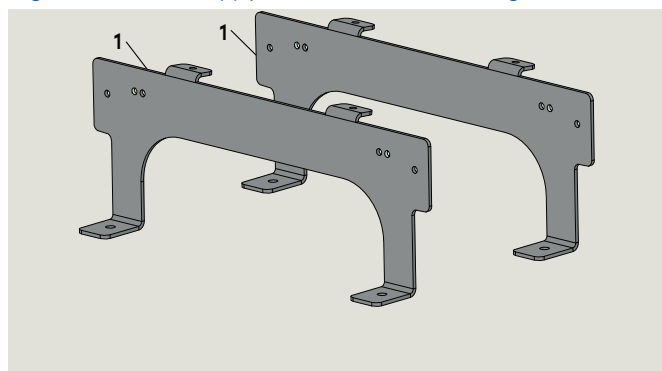


9.8.7 Fasteners for container lids and floor cover plates.

ID	Part #	Description	Qty
Floor cover plate fasteners			
12	DF6026-01G	10-32 x 3/8" sealing flat head screw, SS	16
Container lid fasteners			
13	DF6025-01G	1/4-20 x 3/4" sealing flat head screw	30

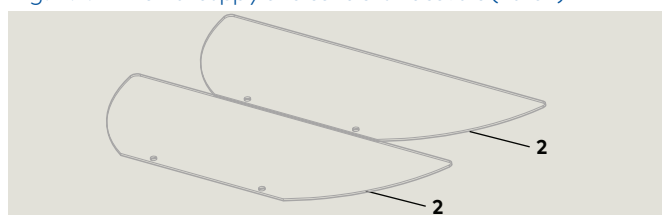
9.9 In-ground container hardware

Fig. 9.9.1 Power supply and control unit mounting brackets



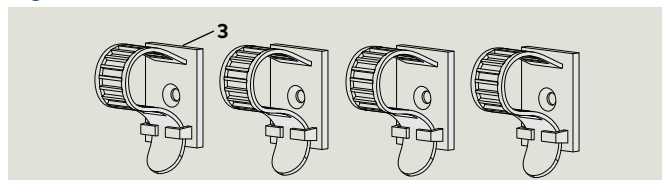
1 DC6023

Fig. 9.9.2 Power supply and control unit covers (Lexan)



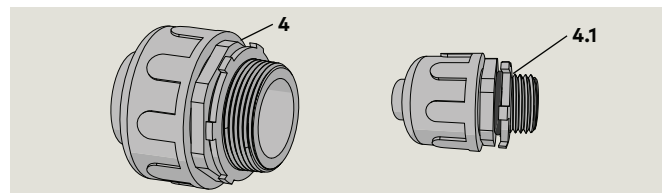
2 DC6031

Fig. 9.9.3 Cable ties



3 DC6042

Fig. 9.9.4 Conduit adapters

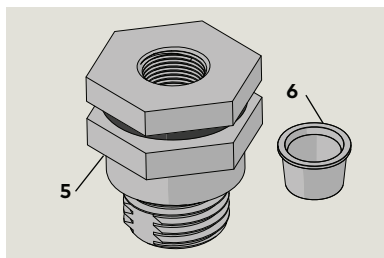


4 1 1/2" liquidtight
conduit adapter for
DC wiring DC6045

4.1 1/2" liquidtight conduit
adapter for 115 Vac
wiring DC6045-002

Fig. 9.9.5 Through-wall pipe fitting,
plug

5 Through-wall pipe
fitting DC6043
6 Drain plug DC6044



9.9.1 In-ground container hardware.

1. (2) Power supply and control unit mounting brackets.
2. (2) Power supply and control unit covers.
3. (4) Cable ties
4. 1 1/2" liquidtight flexible plastic conduit adapter.
- 4.1 1/2" liquidtight flexible plastic conduit adapter.
5. Through-wall pipe fitting
6. Plug
7. 1 1/2" hole plug
8. 1/2" hole plug
- 9.
10. Shaft seal
11. Drive flange
12. Motion Assist 360 drive mounting plate.
13. In-ground speed control.

9.9.2 In-ground container and covers.

1. In-ground container
2. Outer cover assembly
3. Container lid, center section.
4. Container leveling plate.
5. Flange gasket

9.9.3 Remote location of Motion Assist 360 power supply and control unit (Chapter 16).

NOTICE

Fig. 9.9.1 and 9.9.2 hardware not required in in-ground container.

Fig. 9.9.6 In-ground container conduit hole plugs

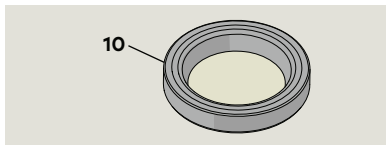


7 1 1/2" hole plug
DC6050-002

8 1/2" hole plug
DC6050-001

10 Shaft seal DC6041

Fig. 9.9.7 Shaft seal



11 Drive flange DC6025

Fig. 9.9.8 Drive flange

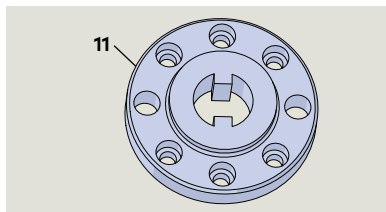
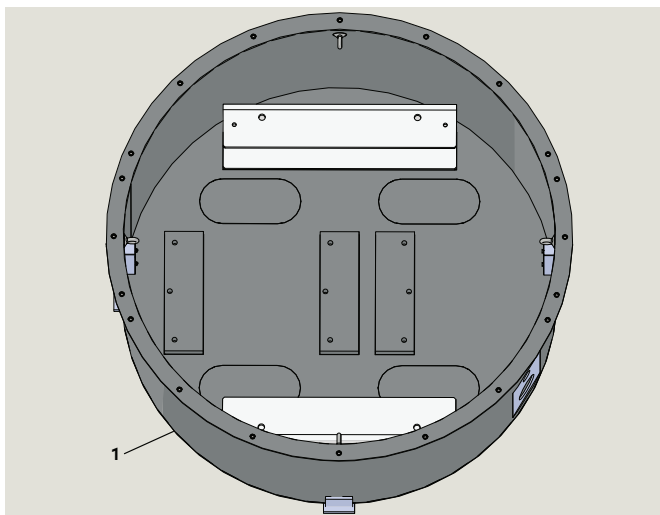
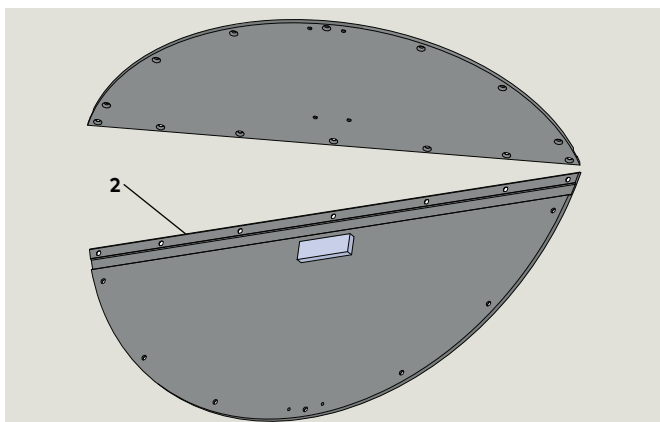


Fig. 9.9.9 Container assembly weldment



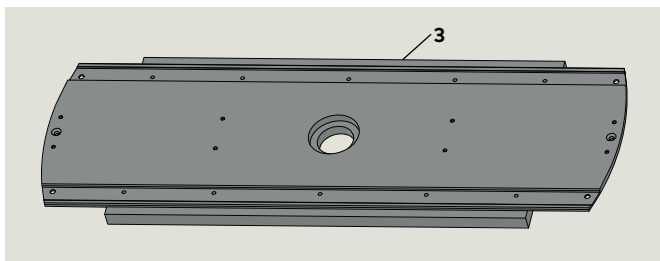
1 DS6024

Fig. 9.9.10 Outer cover assembly



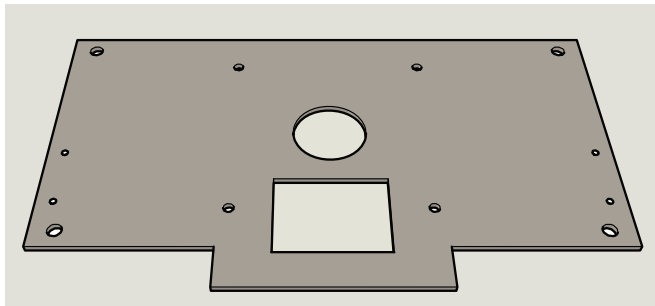
2 DS6033

Fig. 9.9.11 Container lid, center section



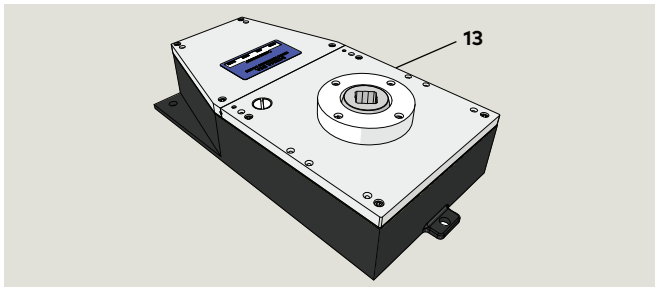
3 DC6049

Fig. 9.9.12 Motion Assist 360 drive mounting plate



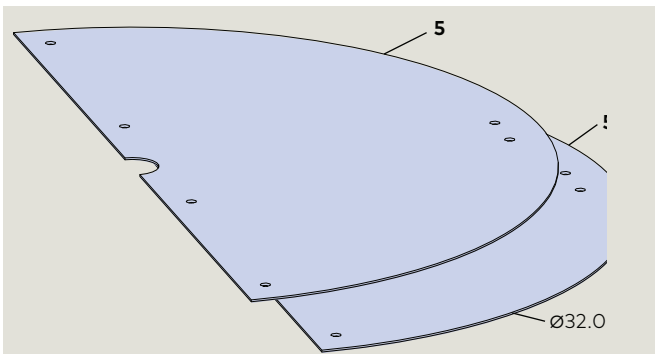
12 DC6024

Fig. 9.9.13 In-ground speed control



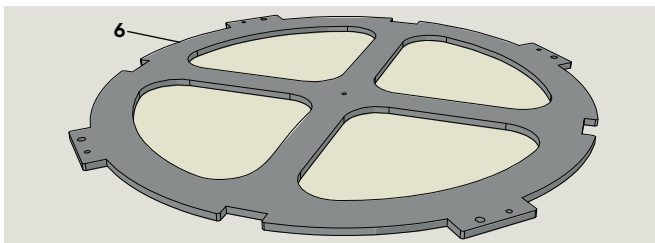
13 H63-4001-FSC

Fig. 9.9.14 Floor cover plate



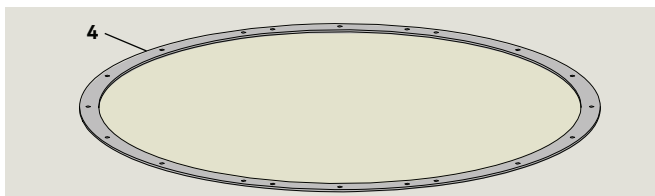
5 DC6048

Fig. 9.9.15 Container leveling plate



6 DC6022

Fig. 9.9.16 Flange gasket



4 DC6046

10 Assembly

10.1 Safety during assembly

10.1.1 Assembly



WARNING

Incorrect assembly can put lives at risk!

If assembly does not take place in an approved area or if supplied materials and components are used for purposes other than to assemble the revolving door, this can lead to serious injury and significant material damage.

- Assemble revolving door in approved area only.
- Use only materials and components supplied for assembly of the revolving door.
- Never construct or configure the revolving door other than as described in this document.
- Never use equipment for assembly other than that described in this document.
- Do not install the revolving door over soft flooring (e.g. carpeting).
- Never affix additional objects to the revolving door or suspend objects from it.
- Never use replacement parts not approved by the manufacturer.

10.1.2 Electrical cables.



WARNING

Life-threatening danger due to electricity!

Operator, controller and power supply are energized. Touching the components poses an immediate risk of death from electric shock.

- When laying cables, ensure that the insulation is not damaged.
- Immediately Replace components or cables with damaged insulation.
- Do not place or set down loads on cables.

10.2 Cordon off work area



WARNING

Cordon off revolving door assembly location for the complete revolving door installation process.

10.1.3 Heavy loads.



WARNING

Risk of injury from heavy loads!

Manual lifting of heavy components can lead to injury.

- Use appropriate equipment such as lift trucks and other lifting devices.
- Never lift alone.

10.1.4 Adequate lighting.



WARNING

Risk of injury due to inadequate lighting during assembly!

Inadequate or nonexistent lighting at the assembly location can lead to personal injury.

- Always insure there is adequate lighting at the assembly location.
- Never carry out assembly with defective or missing lighting at the installation location.

10.1.5 Sharp edges and pointed corners.



WARNING

Risk of injury on sharp edges and pointed corners!

Sharp edges and pointed corners on components can cause abrasions and cuts.

- When handling sharp or pointed components, wear protective gloves and safety shoes.
- Handle components carefully and properly.
- When transporting components, take into account the component weight.

10.3 Assembly location

10.3.1 Assembly location documentation.

1. Documentation:
 - Crane shop drawing detailing revolving door attachment plan to building and required dimensions (elevation and plan views).

CAUTION

Refer to specific Crane Shop Drawings for job!

- Contractor or architect drawings detailing revolving door assembly location.

2. Crane Installation template (Ref. Chapter 11).
3. Verify assembly location and associated framing with documentation in (1).

10.4 Preparing finished floor for revolving door assembly

10.4.1 Preparing finished floor.

NOTICE

The operation and structural integrity of Crane revolving doors depend on their being mounted on a level floor.

Do not proceed if floor is not flat and level.

- Floor surface should be smooth without cracks or crevasses.

NOTICE

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



WARNING

Risk of injury due to improper leveling!

If finished floor is not leveled before assembly, faults can occur during subsequent operation of the revolving door. This can lead to dangers that can cause serious injury and significant material damage.

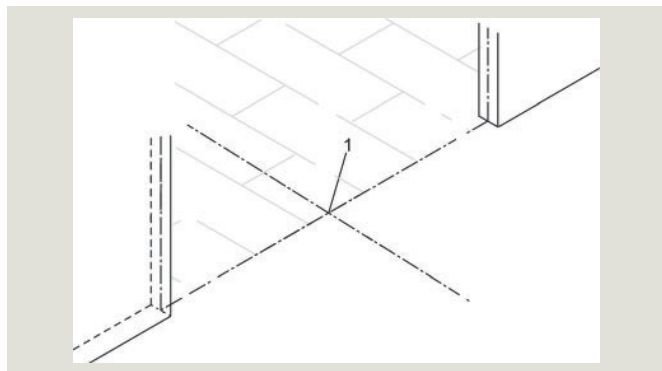
CAUTION

Material damage due to improper leveling!

Laser leveling device with stand:
Improper positioning of the stand or leveling staff may lead to measurement errors when leveling. Measurement errors can lead to incorrect assembly of the revolving door. This will result in material damage.

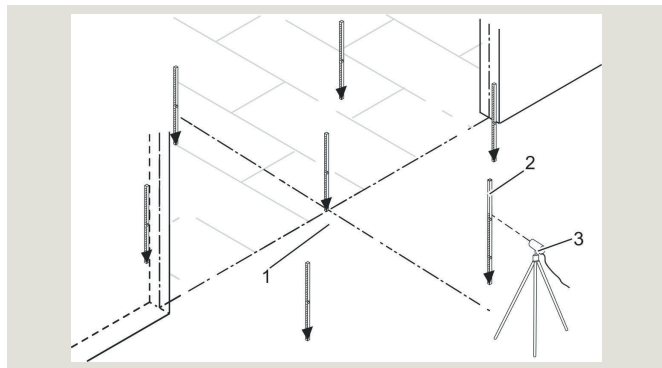
- Before leveling, ensure that the stand is securely positioned on the floor and cannot wobble or tilt.
- Before leveling, ensure that the laser leveling device is aligned horizontally on its stand.
- Always position the leveling staff vertically during leveling.
- After leveling, note the tolerance of ± 2 mm (1/16") for the individual measured value to the reference value.

Fig. 9.4.1 Center of revolving door axis



1 Axis center

Fig. 9.4.2 Laser level measuring points



1 Axis center

3 Laser leveling device

2 Leveling staff

9.4.2 Check level of finished floor.



TIPS AND RECOMMENDATIONS

Check floor level procedure in Para. 9.4.2 is a recommendation.

1. Position leveling device horizontally in front of assembly surface (Fig. 9.4.2).
2. Position leveling staff vertically at any point on assembly floor surface to select a reference point.



TIPS AND RECOMMENDATIONS

The reference point (step 2) is used for the following measurements.

3. Measure reference point and note reading.
4. Take measurements at a minimum of 6 different points, as shown in Fig. 9.4.2 and note readings.
5. Compare measurement points with reference value. The deviation tolerance is 1/16" [2 mm].

CAUTION

If measurements are outside of the deviation tolerance, the finished floor must be reworked or re-prepared by the building contractor.

9.4.3 Mark center of revolving door axis.

CAUTION

Material damage due to incorrect marking of revolving door axis center!

Inaccurate marking of the center of the axis of the revolving door on the assembly surface can lead to subsequent discrepancies during assembly. This can result in faults and material damage.

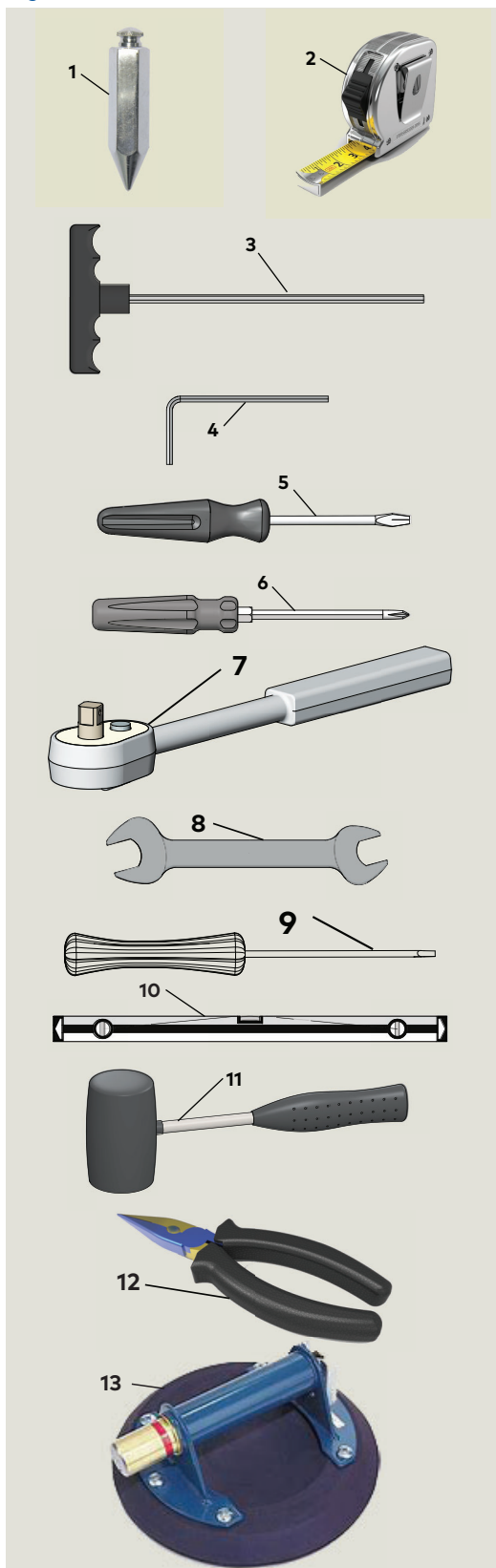
- Always accurately mark the axis center.
- Always use the supplied drilling template to mark hole locations.

1. Go to Chapter 10, Installation Template.

10.5 Recommended tools

Fig. 12.5.1 Recommended tools

- 1 Plumb bob
- 2 Tape measure
- 3 T-handle hex key, 1/8", 5/32"
- 4 Hex keys, 1/16"
- 5 Screwdriver, flat blade
- 6 Screwdriver, Phillips, #2, #3
- 7 Socket wrench and extension
- 8 Open end wrench, 9/16"
- 9 Screwdriver, flat blade, M2 (1/16 to 3/32")
- 10 Spirit level, 72"
- 11 Rubber hammer
- 12 Needle nose pliers
- 13 Hand-held vacuum cup (2)



10.5.1 Recommended tools.

1. Plumb bob with string
2. Tape measure
3. T handle hex key, 1/8", 5/32"
4. Hex key, 1/16"
5. Screwdriver, flat blade
6. Screwdriver, Phillips #2, #3
7. Socket wrench and extension
8. Open end wrench, 9/16"
9. Screwdriver, flat blade, M2 (1/16 to 3/32")
10. Spirit level, 72"
11. Rubber hammer
12. Needle nose pliers
13. Vacuum concave suction cup (10") for lifting enclosure glass.

Other tools not shown:

14. Laser level (optional)
15. Hammer drill and/or other tools for drilling floor.
16. Cordless drill with torque clutch
17. Sockets used with cordless drill or socket wrench:
 - 5/16", 7/16
18. Hex keys used with cordless drill or socket wrench:
 - 1/8", 5/32", 1/16", 6 mm
19. Razor knife or box cutter
20. Masonry drill, 1/2" (depending on floor) and 1 1/4" for floor strike.
21. Tools for floor anchors
22. Force gauge for breakout
23. Manual deburring tool
24. 90 degree countersink

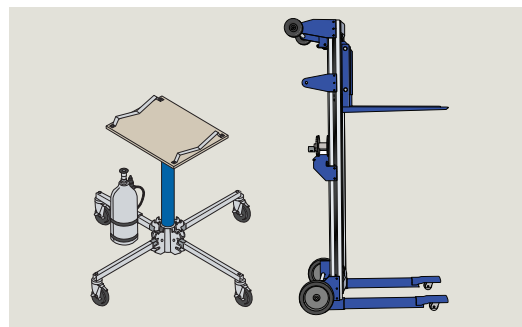
10.5.2 Ladders

- Step ladders of required height.

10.5.3 Material lifts

- Suitable material lifts for canopy installation.0

Fig. 12.5.2 Material lifts



11 Installation template

11.1 Door building attachment plan

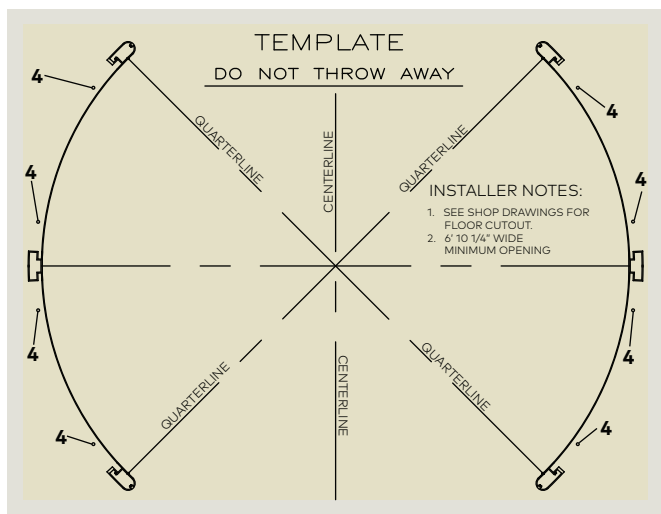
11.1.1 Required documentation.

NOTICE

Refer to specific Crane Shop Drawings for job!

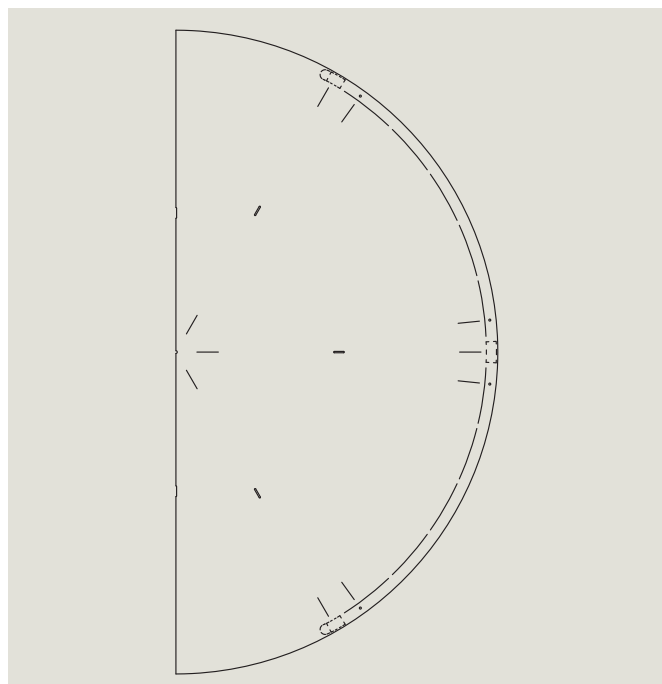
- Contractor or architect drawings detailing revolving door center point and building interface.

Fig. 11.1.1 Full size cardboard installation template



- 4 Stud hole locations in enclosure base

Fig. 11.1.3 Full size installation template; 10' OD, 3 wing door example



11.1.2 Locate full size installation template.

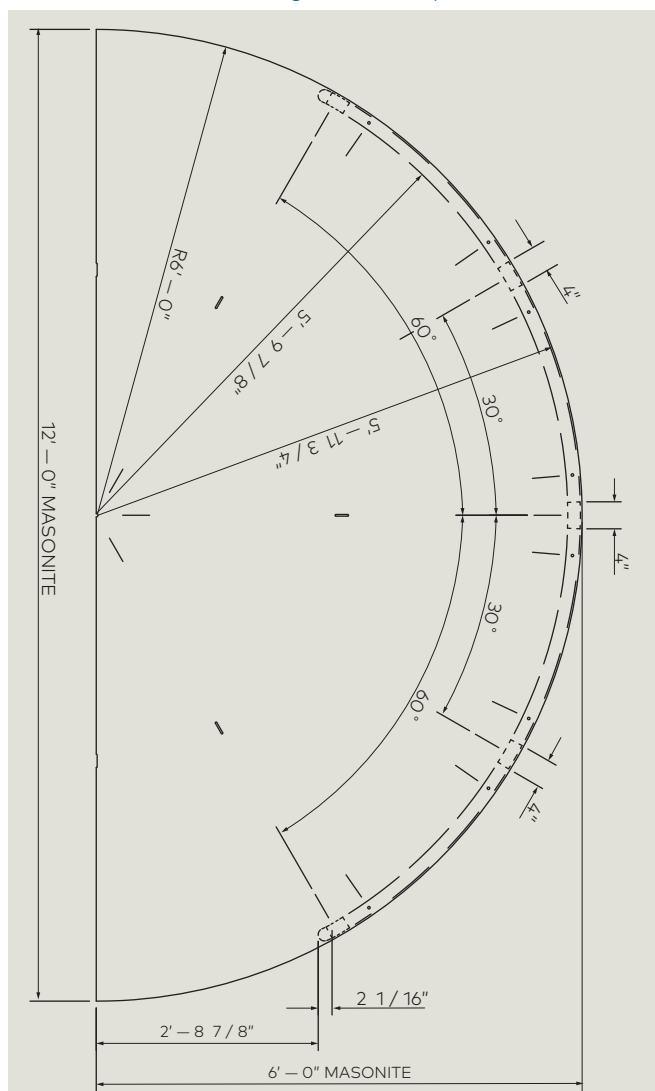


TIPS AND RECOMMENDATIONS

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

- Locate full size template.
 - Template shipped in canopy shipping crate.
- Reference Crane shop drawing for template orientation at building attachment.

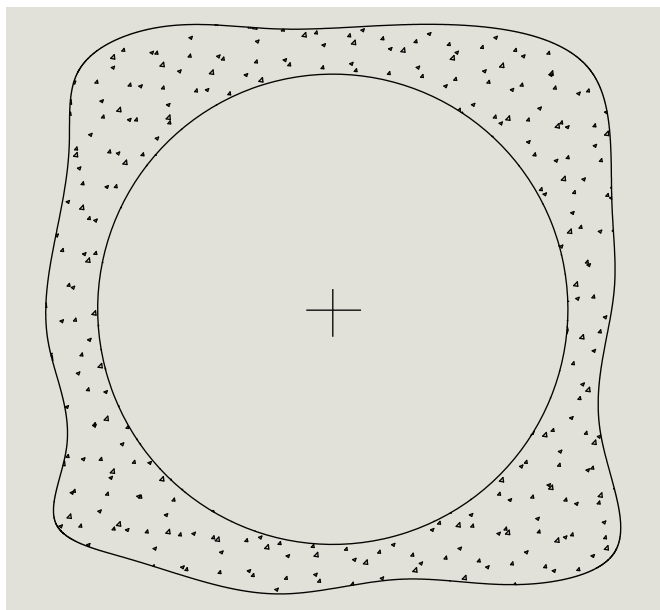
Fig. 11.1.2 Full size installation template; 12' OD, 3 wing door example



12 Install leveling plate in pit, install container in pit

12.1 Pit location and dimensions

Fig. 12.1.1 Pit for in-ground drive assembly location



NOTICE

Refer to specific Crane shop drawing for in-ground drive assembly floor installation detail.

12.1.1 Verify door centerpoint in pit.

1. Using shop drawings, verify pit is centered at door centerpoint.

12.1.2 Verify pit dimensions for drive assembly.

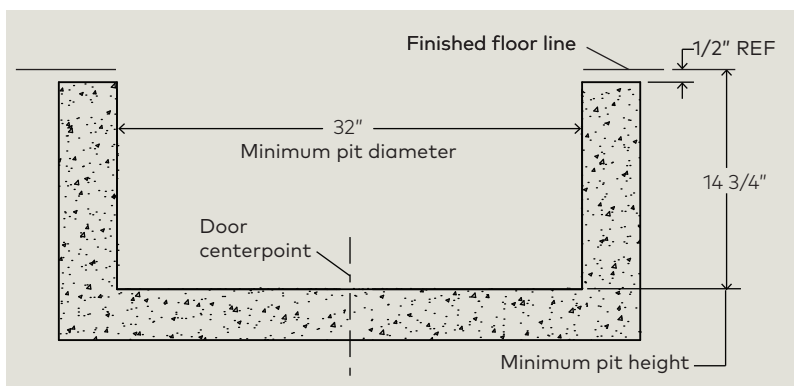
1. Verify minimum pit dimensions (Fig. 12.1.2).

NOTICE

Pit centerpoint and/or pit dimension issues.

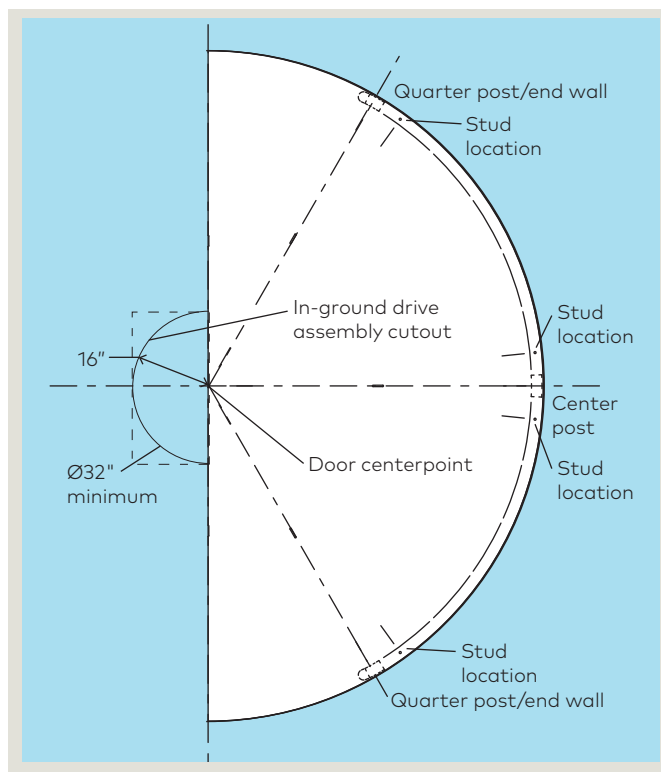
Resolve any pit door centerpoint location or pit dimension issues with building contractor before proceeding.

Fig. 12.1.2 Minimum pit dimensions



12.2 Position template at door centerpoint and orient to building interface

Fig. 12.2.1 Template placed on floor



12.2.1 Position floor template.

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

NOTICE

Door centerpoint dimensions.

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



WARNING

Orient floor template to building interface!

Refer to shop drawings for template to building interface position.

2. Secure template to floor.

NOTICE

Recheck template alignment.

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

NOTICE

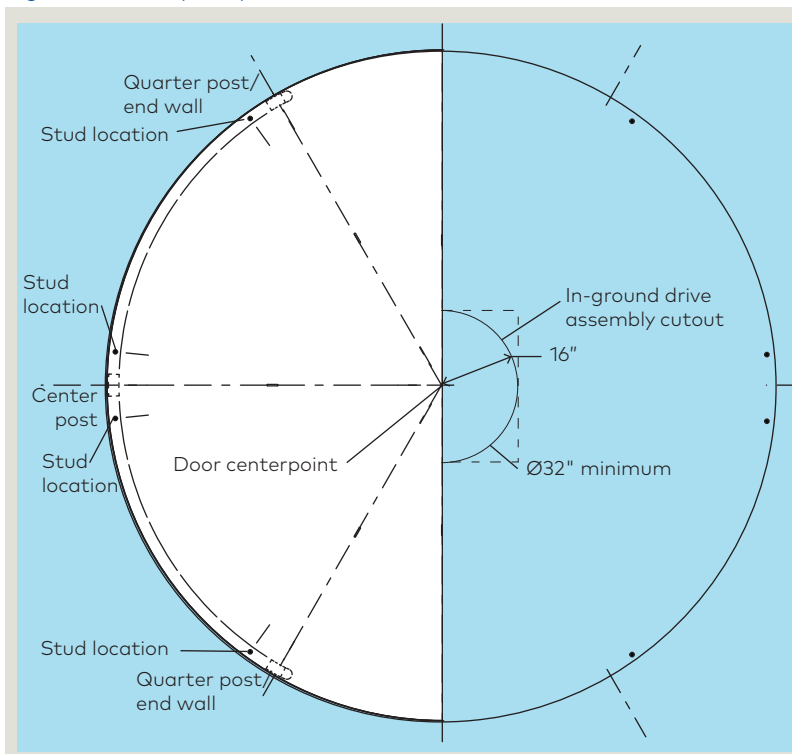
Verify template location with building contractor.

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

12.2.2 Mark lines on floor.

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

Fig. 12.2.2 Template position reversed on floor



12.2.3 Reverse template position on floor.

1. Recheck that template is at door centerpoint and is aligned with building interface.
2. Secure template to floor.

12.2.4 Mark lines on floor.

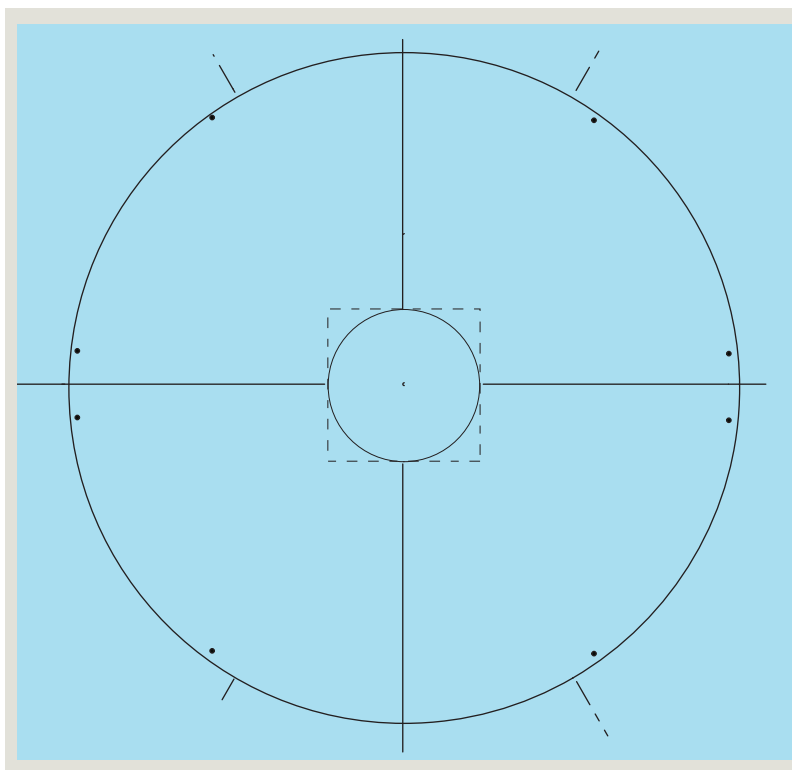
1. Draw door centerlines.
2. Mark quarter post and center post lines.
3. Mark mounting base stud locations.
4. Trace door outside radius.

12.2.5 Remove template.

1. Remove template.

12.3 Drill holes for mounting base studs

Fig. 12.3.1 Floor marked with door location and mounting base holes



12.3.1 Drill pilot holes in floor.



WARNING

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

12.3.2 Drill mounting base pilot holes.

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

12.3.3 Drill anchor holes in floor.

1. Drill anchor holes at each pilot hole location.

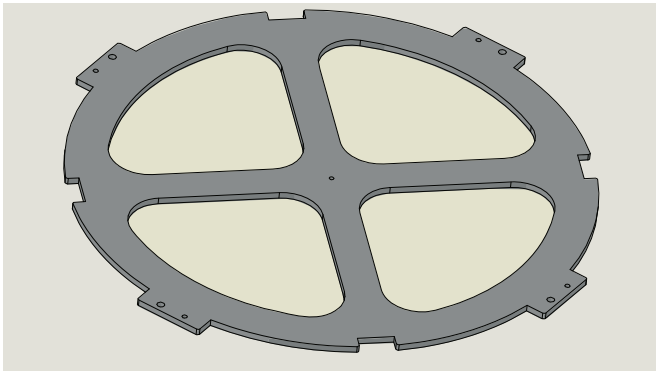


TIPS AND RECOMMENDATIONS

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

12.4 Install leveling plate in pit

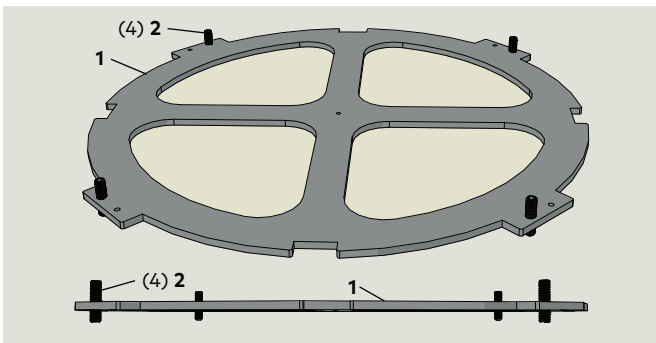
Fig. 12.4.1 Leveling plate DC6022



12.4.1 Install set screws in leveling plate.

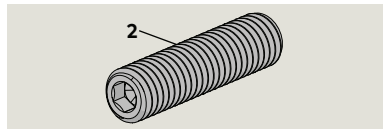
1. Install four set screws DF6028 in leveling plate.
- Install set screws to an equal depth of 5/8" below leveling plate (Fig. 12.4.4).

Fig. 12.4.2 Leveling plate with set screws installed



- 1 Leveling plate DC6022
- 2 1/2-13 x 2" Cup-point set screw, SS DF6028-01G

Fig. 12.4.3 Set screw DF6028-01G



- 2 1/2-13 x 2" Cup-point set screw, SS DF6028-01G

Fig. 12.4.4 Set screw depth

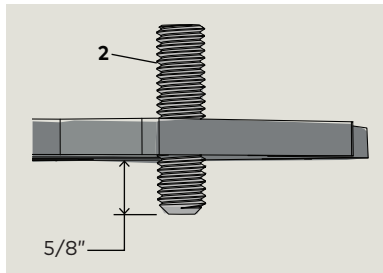


Fig. 12.4.5 Leveling plate installation

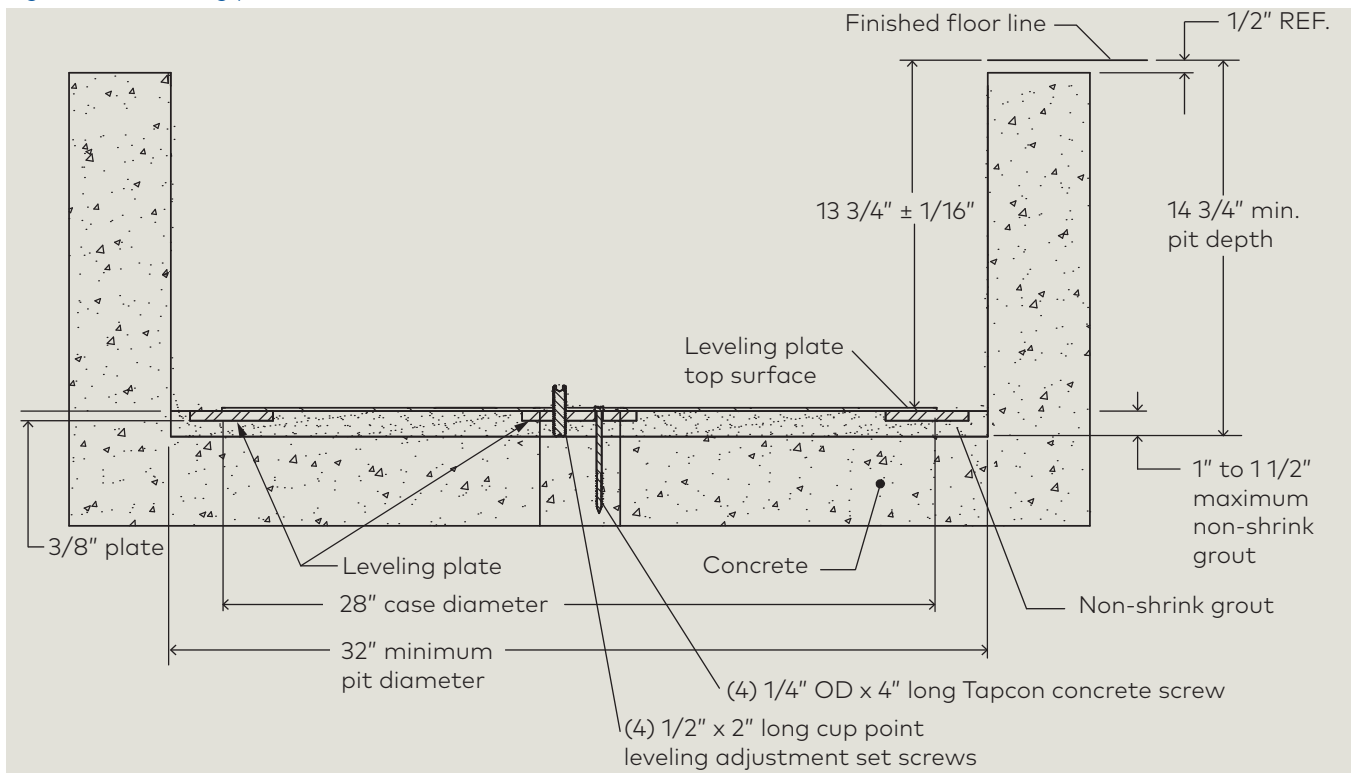
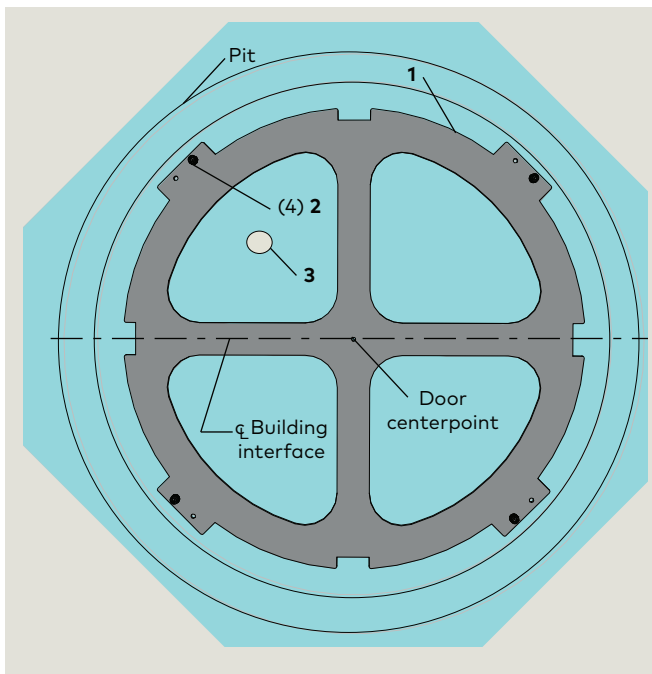


Fig. 12.4.6 Leveling plate in pit example



- 1 Leveling plate DC6022
- 2 1/2-13 x 2" Cup-point set screw, SS DF6028-01G
- 3 Pit drain pipe or tube location example

12.4.2 Check pit dimensions, clean dirt and debris from pit.

NOTICE

- Pit must be free of all dirt and debris.
- Minimum pit dimensions are shown in Fig. 12.4.5.

12.4.3 Place leveling plate in pit, locate at door centerpoint.

NOTICE

- Orient leveling plate parallel to building interface as shown in Fig. 14.4.6.
- Orientation in pit may be different than that shown in Fig. 14.4.6.

Leveling plate centerpoint must be positioned at door centerpoint.

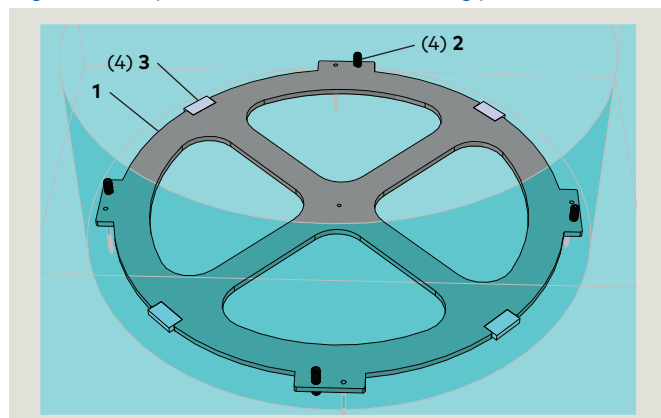
12.4.4 Level and adjust height of leveling plate.

NOTICE

- Adjust four set screws (2) to obtain a leveling plate height (top surface) of 13 3/4" to finish floor line (Fig. 12.4.5).
- Check leveling plate for level.

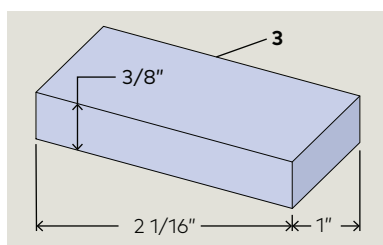
Recheck that leveling plate is at door centerpoint and is parallel to building interface.

Fig. 12.4.7 Spacer block installed on leveling plate



- 1 Leveling plate
DC6022
- 2 1/2-13 x 2" Cup-point set screw, SS
DF6028-01G
- 3 Spacer block, by installer

Fig. 12.4.8 Spacer block reference dimensions



12.4.5 Install spacer blocks in leveling plate.

1. Install four spacer blocks (Fig. 12.4.8) in leveling plate cutouts (Fig. 12.4.9).
 - It is recommended to use foam backing strips.
 - Leveling plate cutout width: 2".

Leveling plate cutouts are for container anti-rotate tabs.

12.4.6 Pour non-shrink grout around leveling plate.

1. Pour non-shrink grout until grout is flush or slightly below top surface of leveling plate.

NOTICE

Pit drain.

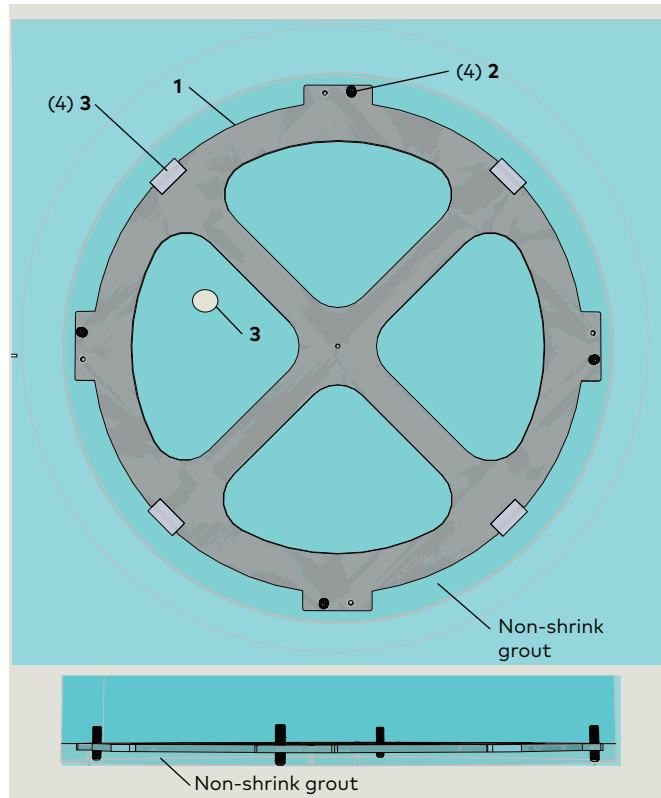
- If pit drain tube or pipe is present, block off pit drain area from grout.

NOTICE

Non-shrink grout installation.

- Use non-shrink grout.
- Insure leveling plate is not moved during the grout pouring process.
- Top surface of leveling plate must be free of grout.
- **Recheck plate level during and after grout pouring process.**

Fig. 12.4.9 3/8" thick spacer blocks installed



- 1 Leveling plate
DC6022
- 2 1/2-13 x 2" Cup-point set screw, SS
DF6028-01G
- 3 Pit drain pipe or tube location example

2. Let grout cure per manufacturer's instructions.

12.4.7 Remove spacer blocks from leveling plate.

1. Once grout has cured, remove spacer blocks from leveling plate cutouts.

NOTICE

Leveling plate cutouts.

- Insure cutouts are completely free of grout.

Fig. 12.4.10 3/8" spacer blocks removed from leveling plate

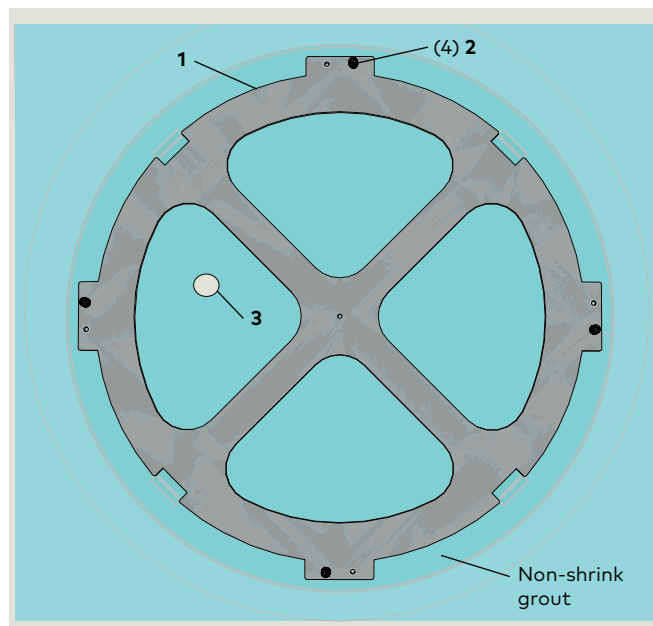
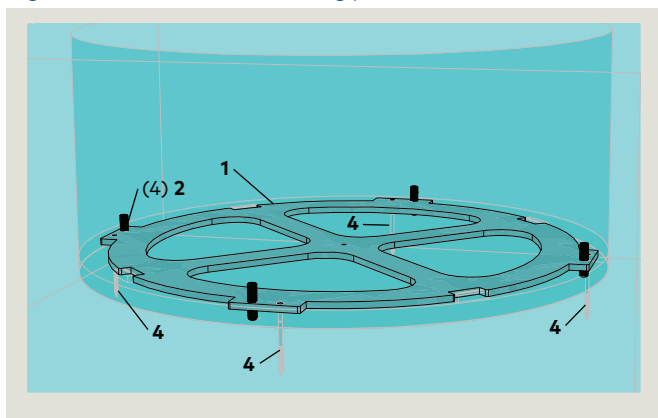
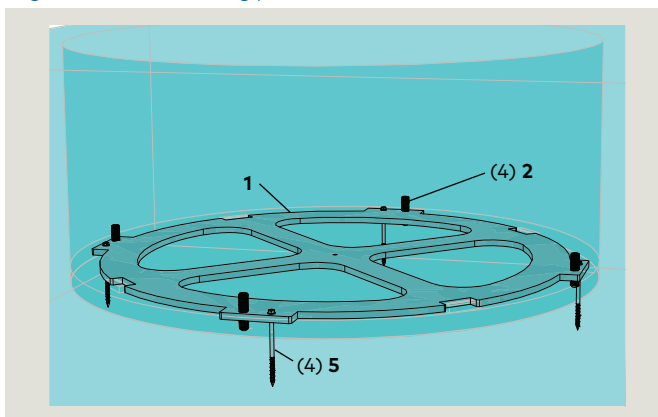


Fig. 12.4.11 Holes for mounting plate anchor screws



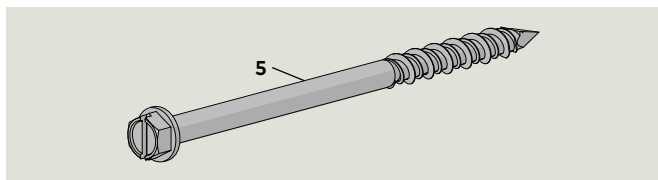
- 1 Leveling plate
DC6022
- 2 1/2-13 x 2" Cup-point set screw, SS
DF6028-01G
- 4 Tapcon anchor screw hole

Fig. 12.4.12 Mounting plate anchor screws installed



- 1 Leveling plate
DC6022
- 2 1/2-13 x 2" Cup-point set screw, SS
DF6028-01G
- 5 Tapcon anchor screw

Fig. 12.4.13 Anchor screw



- 5 1/4 x 4" Hex-washer head screw for concrete, blue-coated steel
DF6017-01Z

12.4.8 Drill holes in pit for Tapcon anchor screws.

1. Drill hole in pit at each of the four leveling plate anchor screw locations.
 - Use drill bit 3/16" x 5 1/2" long.

12.4.9 Install Tapcon anchor screws.

1. Install Tapcon anchor screws through mounting plate holes into anchor screw holes.

NOTICE

Recheck level and door centerpoint.

Recheck leveling plate level and door centerpoint during and after anchor screw installation.

12.5 Orientation of in-ground container in pit

Fig. 12.5.1 Container lids parallel to building interface

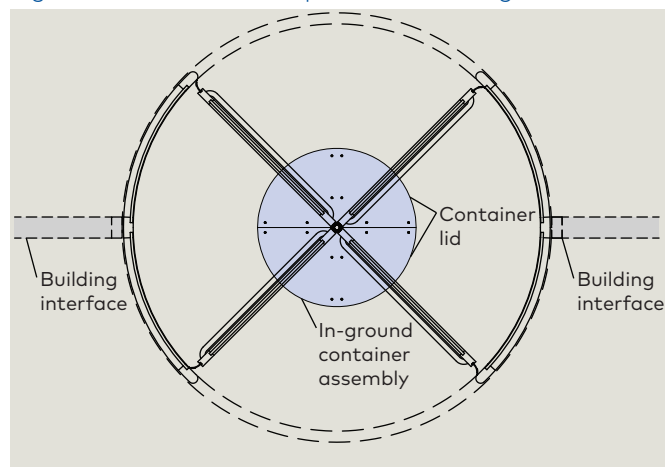


Fig. 12.5.2 In-ground container orientation example

- 1 Container lid
- 2 1/2" conduit adapter, 115 Vac wiring
- 3 1 1/2" conduit adapter, DC wiring

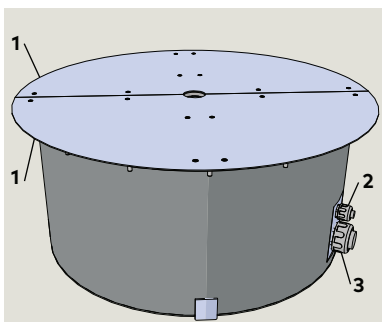
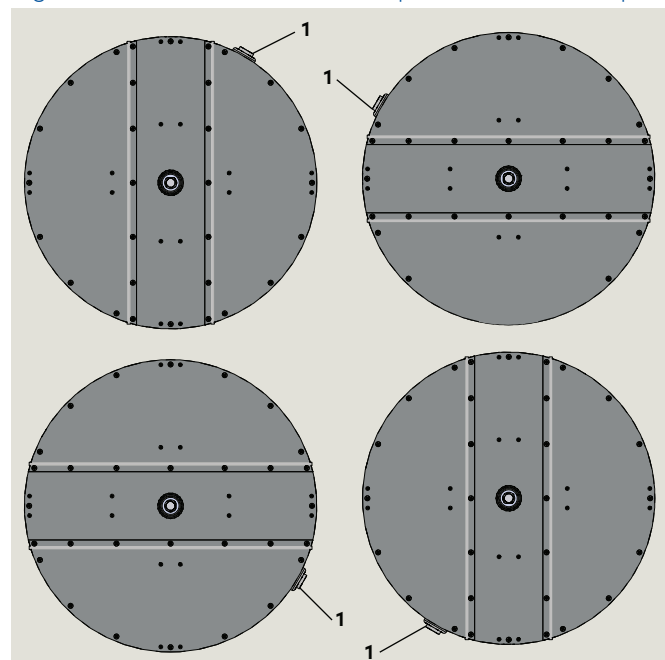


Fig. 12.5.3 Container conduit adapter orientations in pit



- 1 Conduit adapter

12.5.1 In-ground container orientation in pit.

NOTICE

Joint between container lids must be parallel with building interface.

12.5.2 Building conduits to container conduit adapters positioning.

To meet Para. 12.5.1 requirement, container can be placed in one of four positions in pit for interfacing container conduit adapters to building conduits (Fig. 12.5.3).

12.5.3 Determining container orientation - container conduit adapters entrance location.

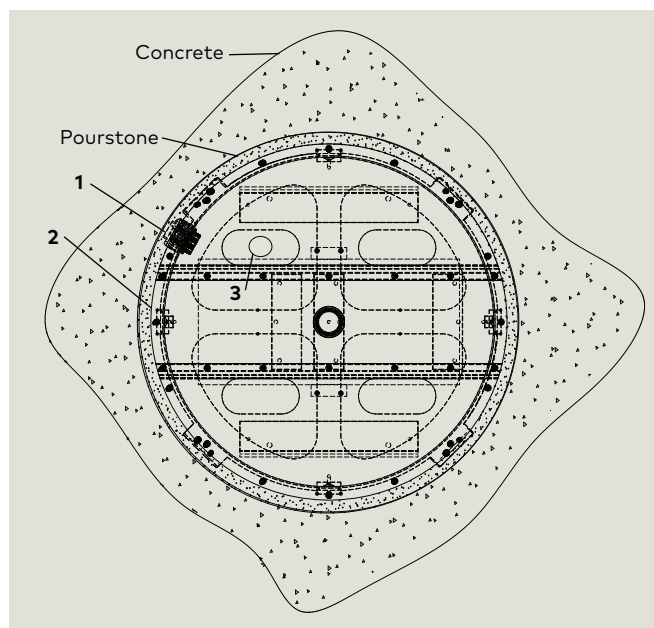
- Reference Para. 12.7 to determine container orientation for building conduit interfaces to both conduit adapters.



TIPS AND RECOMMENDATIONS

Orientation of container conduit adapters in pit must be determined before locating position of through-wall pipe fitting for container drain (Reference Para. 12.9).

Fig. 12.5.4 Container conduit adapters - orientation in pit example



- 1 Conduit adapters
- 2 Container lid
- 3 Pit drain tube or pipe location example

12.6 Conduits in pit for building wiring – overview

Fig. 12.6.1 Conduit adapter locations on in ground drive assembly

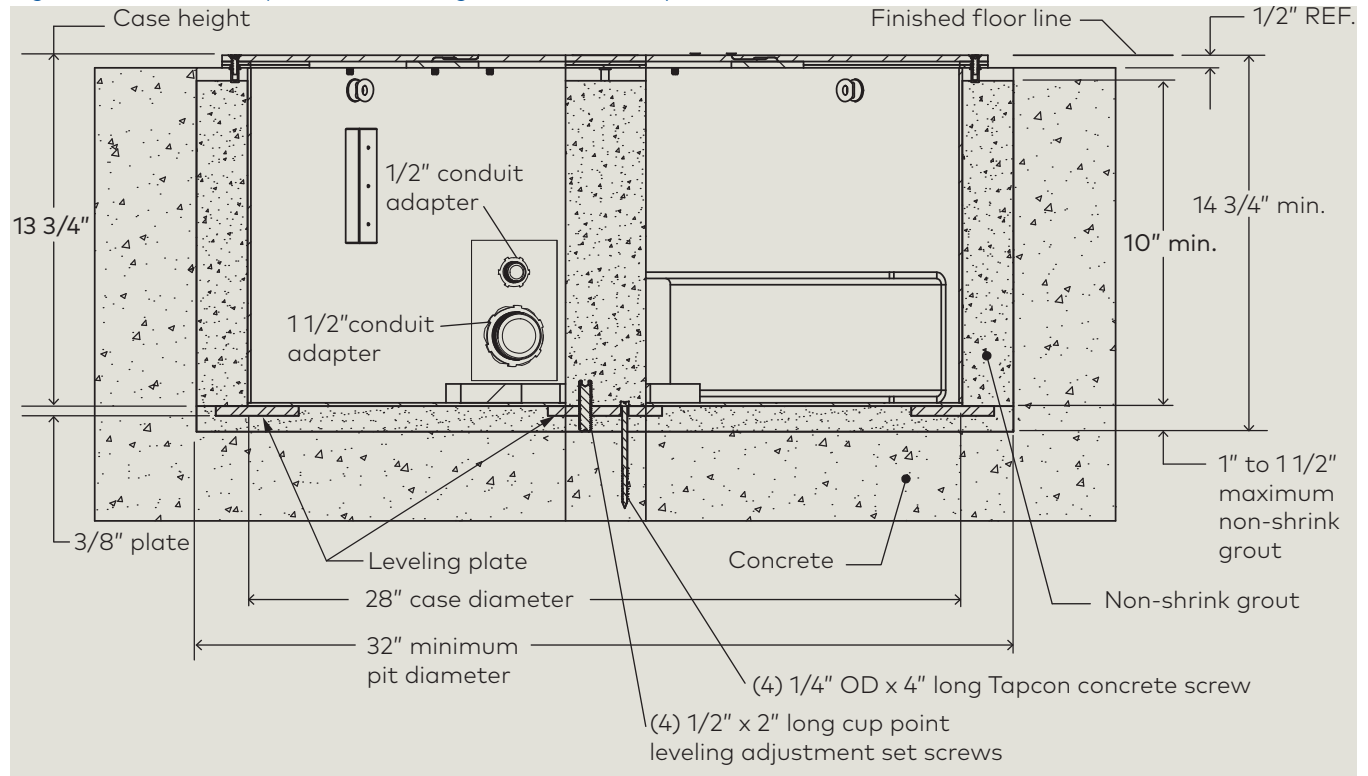


Fig. 12.6.2 In-ground drive assembly flexible conduit adapter

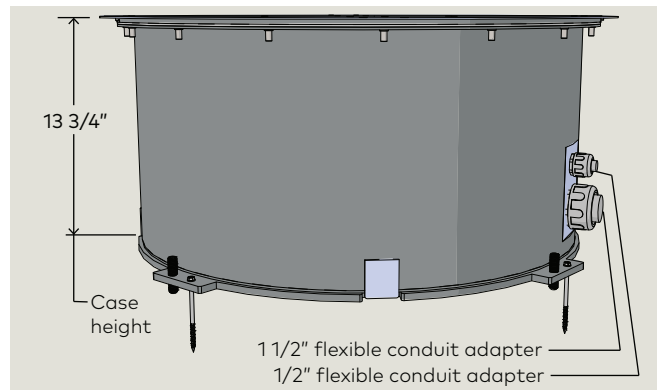
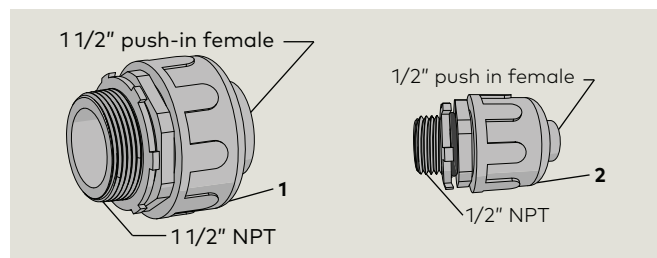


Fig. 12.6.3 Liquid-tight conduit adapters



- | | |
|---|---|
| <p>1 1 1/2" liquidtight conduit adapter
DC6045-001</p> | <p>2 1/2" liquidtight conduit adapter
DC6045-002</p> |
|---|---|

12.6.1 Building conduits for wiring into in-ground container.

NOTICE

Orientation of in-ground container for building conduits determined in Para. 12.5.

NOTICE

Building conduits for wiring to container must be installed in floor to the pit prior installation of in-ground drive assembly into pit.

12.6.2 Container provisions for building conduits.

- DC wiring: 1 1/2" liquid-tight conduit adapter is supplied for interfacing to building liquid-tight flexible conduit.
- AC wiring: 1/2" liquid-tight conduit adapter is supplied for interfacing to building liquid-tight flexible conduit.

NOTICE

Building contractor responsibilities:

- Plan routing of building liquid tight flexible conduits in pit to container conduit adapter locations.
- Terminate conduits into liquid-tight conduit adapters Reference Para. 12.13.

12.7 Determine in-ground container conduit adapter positions in pit

Fig. 12.7.1 Container orientation example 1

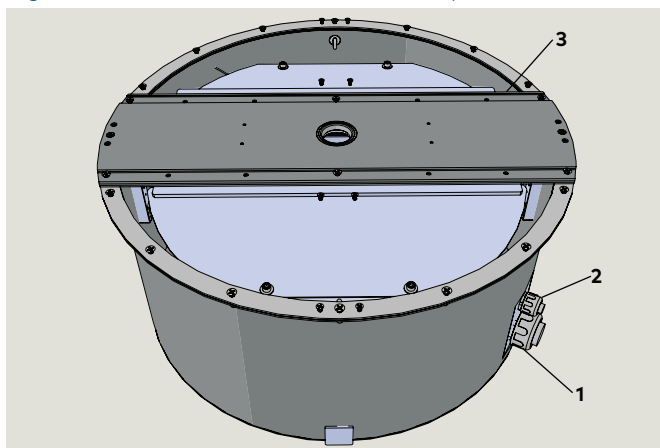
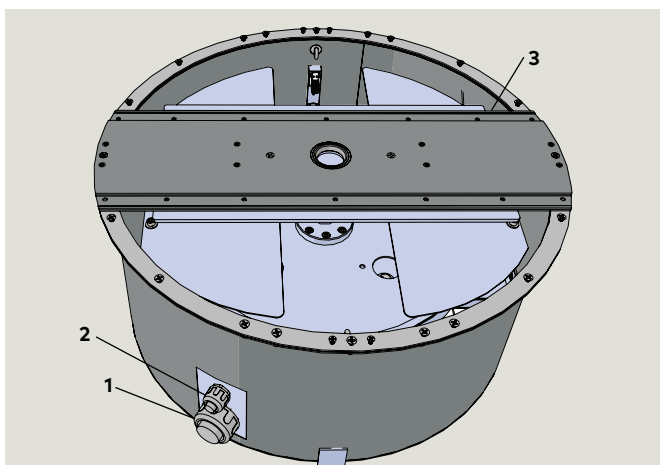
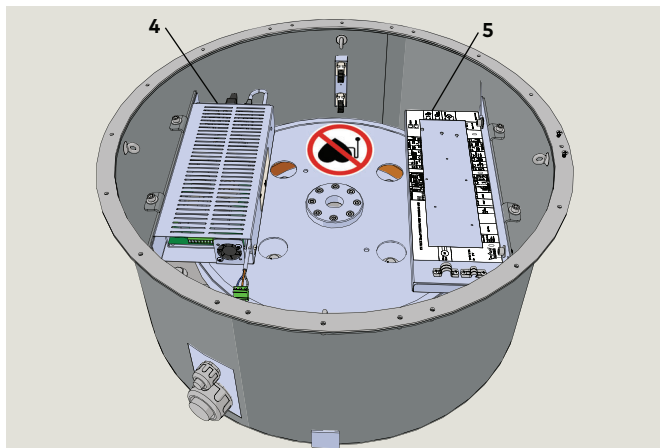


Fig. 12.7.2 Container orientation example 2



- 1 1 1/2" conduit adapter, DC wiring
- 2 1/2" conduit adapter, 115 Vac wiring
- 3 Container lid, center section weldment

Fig. 12.7.3 Container with Motion Assist 360 power supply and control unit example



NOTICE

115 Vac conduit not required into container if Motion Assist 360 power supply and control unit (Fig. 12.12.3) are installed in Remote enclosure (Para. 13.1).

12.7.1 In-ground container conduit adapter orientation for building conduits.

NOTICE

Joint between container lids must be parallel with building interface.

Reference Para. 12.5.

12.7.2 Building contractor responsibilities.



TIPS AND RECOMMENDATIONS

Wiring interfaces to in-ground container. Reference Wiring, Setup and Troubleshooting Manual DL6000-014.

NOTICE

Building conduits.

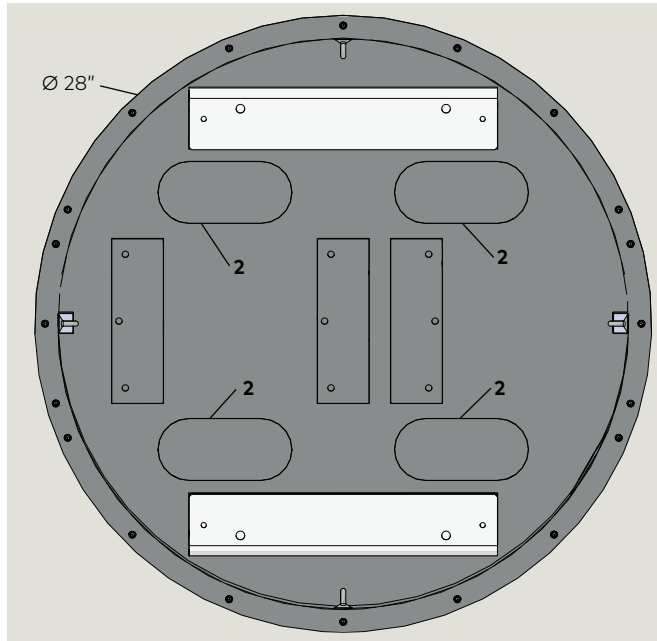
- Review orientation of container in pit with dormakaba technician (Para. 12.5).
- Plan routing of building liquid tight flexible conduits to container conduit adapter entrance location.
- Building conduits for container 1 1/2" and 1/2" conduit adapters must be installed into pit prior to installation of container assembly.
- Terminate conduits into liquid-tight conduit adapters (Para. 12.13).

12.7.3 Container provisions for building conduits.

- DC wiring: 1 1/2" liquid-tight conduit adapter (Para. 12.6) is supplied for interface to building liquid-tight flexible conduit.
- 115 Vac wiring: 1/2" liquid-tight conduit adapter (Para. 12.6) is supplied for interface to building liquid-tight flexible conduit.

12.8 Container drain: locate and drill hole for through-wall pipe fitting

Fig. 12.8.1 Container drain pipe fitting locations



- 2 Locations for drain piping
- 1 Through-wall pipe fitting DC6043

Fig. 12.8.2 Through-wall pipe fitting

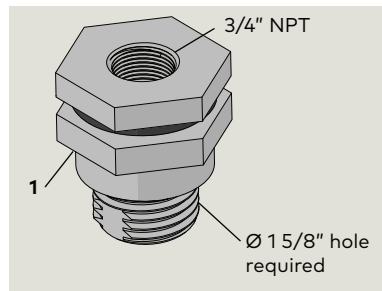
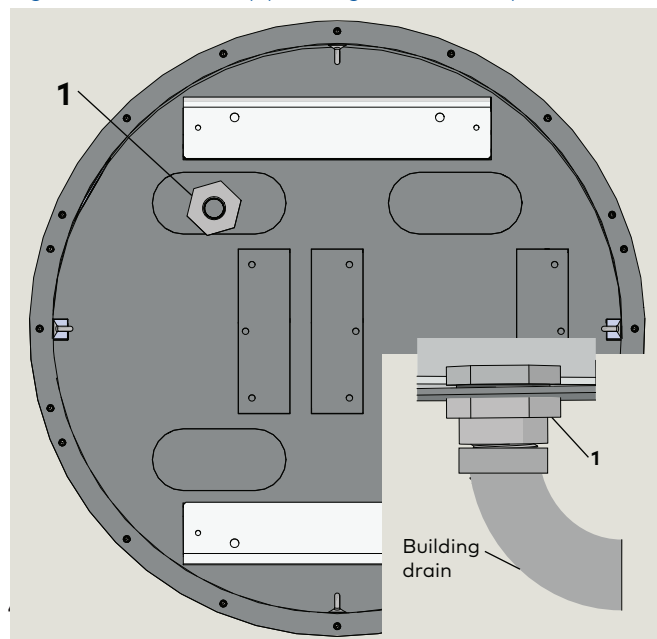


Fig. 12.8.3 Container pipe fitting location example



- 5 Motion Assist 360 control unit

Reference Fig. 12.8.4 and 12.8.5 for drain hole location dimensions from in-ground container / leveling plate centerpoint.

NOTICE

Container position for conduit adapter entrance in pit must be determined prior to locating through-wall pipe fitting for container drain.

Reference: Para. 12.7.

NOTICE

Customer drain pipe or hose.

Customer must provide a drain pipe or hose for connection to the supplied container through-wall pipe fitting (Fig. 12.8.2).

CAUTION

Building drain piping to container must be installed in pit prior to installation of in-ground container into pit.

12.8.1 Container provisions for drain.

1. Four areas are provided in container for through-wall pipe fitting (Fig. 12.8.1).

NOTICE

Review with building contractor:

- 1) Container orientation in pit (Para. 12.5).
- 2) Drain area locations in container.
- 3) Required container orientation for conduit entry (Para. 12.7).
- 3) Through-wall pipe fitting.

12.8.2 Determine location of pipe fitting.

1. Determine location of through-wall pipe fitting in bottom of container.

NOTICE

Drain piping connection to container through-wall pipe fitting.

Building contractor must route building drain piping to the selected container drain area and provide interface to the through-wall pipe fitting.

12.8.3 Drill hole for through-wall pipe fitting.

1. Drill 1 5/8" diameter hole at container floor location selected for in-ground through-wall pipe fitting. Ref. Fig. 12.8.4 and 12.8.5.

Fig. 12.8.4 In-ground container drain hole locations template

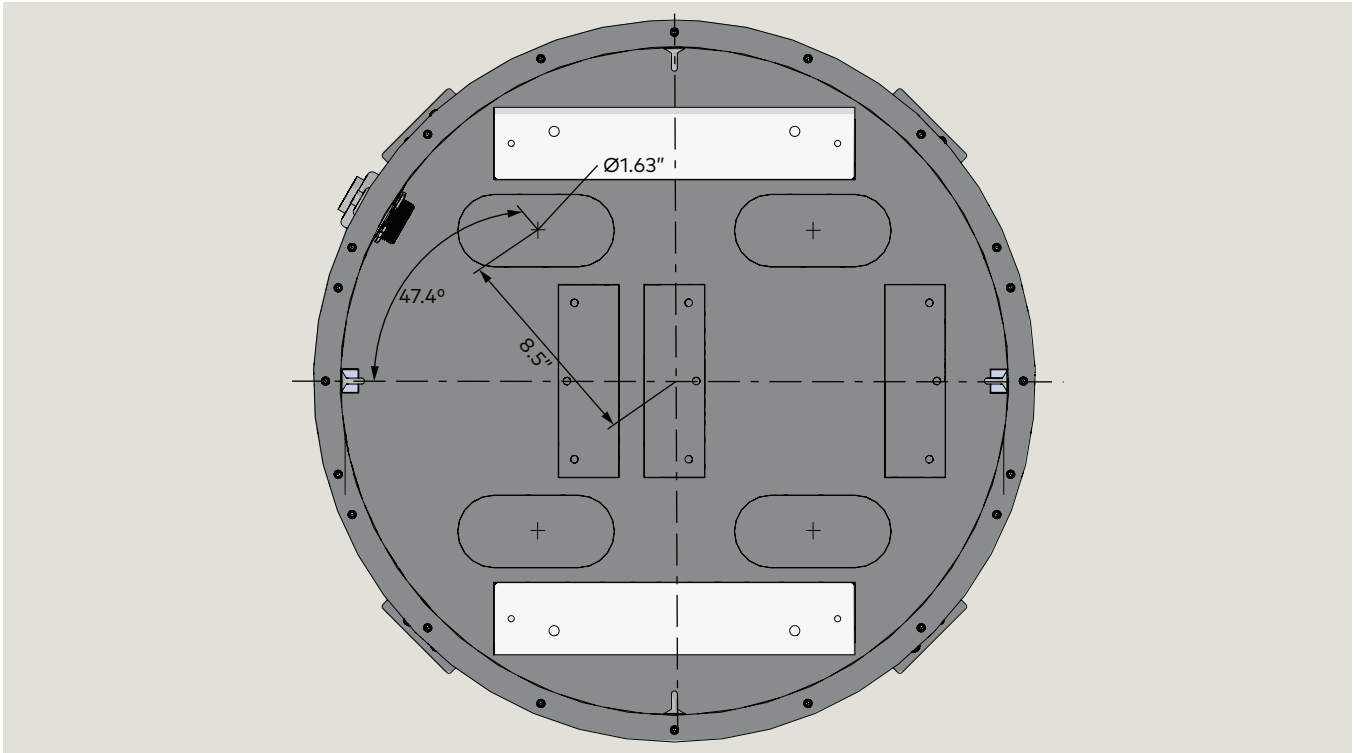
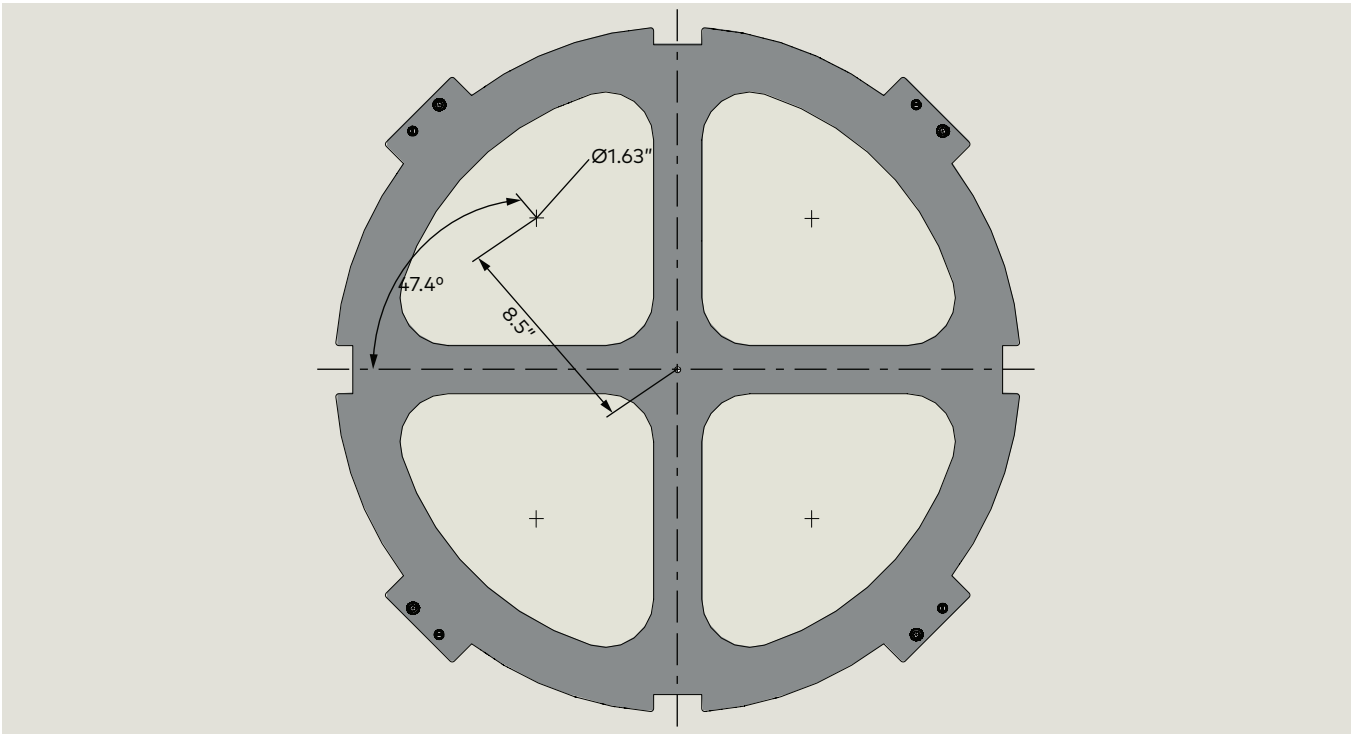


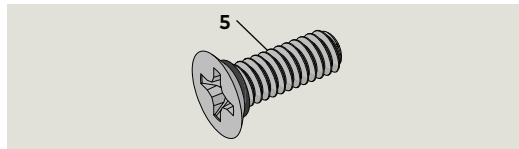
Fig. 12.8.5 Leveling plate drain hole locations template



12.9 Check hole alignment of container covers on container flange

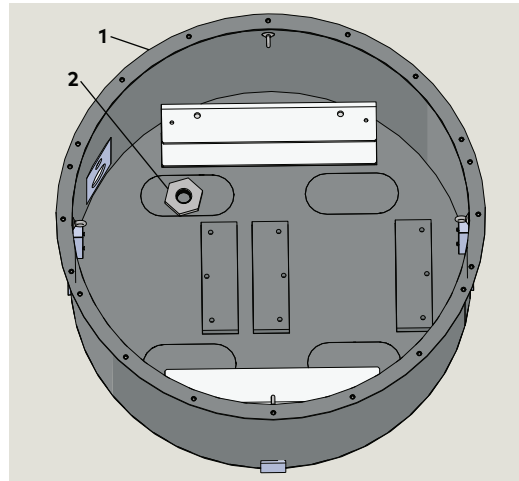
- 5 1/4-20 x 3/4" sealing FHS DF6025-01G

Fig. 12.9.1 DF6025-01G



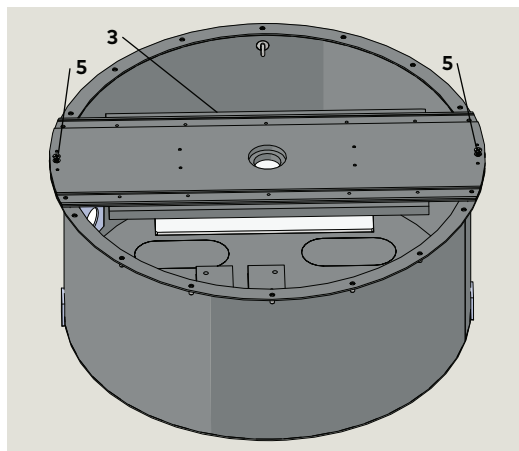
- 1 Container DS6024
 - 2 Through-wall pipe fitting DC6043
- May be in a different location**

Fig. 12.9.2 In ground container



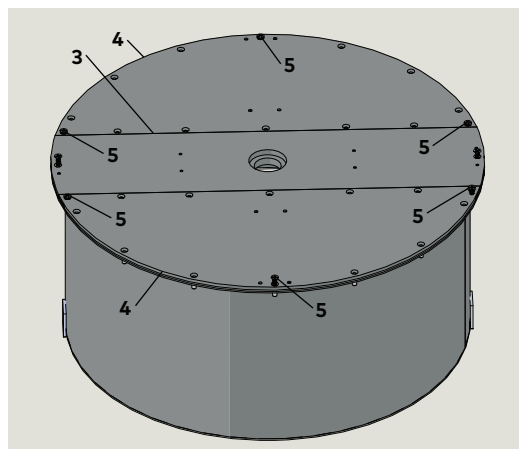
- 3 Center section container lid DS6049
- 5 1/4-20 x 3/4" sealing FHS DF6025-01G

Fig. 12.9.3 Center section container lid



- 3 Center section container lid DS6049
- 4 Outer cover assembly DS6033
- 5 1/4-20 x 3/4" sealing FHS DF6025-01G

Fig. 12.9.4 Outer cover assemblies



1

TIPS AND RECOMMENDATIONS

It is recommended that steps outlined in Para. 12.9 be done prior to proceeding with container installation and assembly.

12.9.1 Check fit of center section container lid.

1. Place center section container lid on container flange.
2. Check center section container lid hole alignment with container flange holes.
3. Install two flat head screws (Fig. 12.9.3) to validate alignment of all center section container lid holes.

12.9.2 Check fit of outer cover assemblies.

1. Place first outer cover assembly on container flange.
2. Check outer cover assembly hole alignment with center section container flange holes.
3. Install three flat head screws (Fig. 12.9.4) to validate alignment of all outer cover assembly holes.
4. Repeat steps 1 through 3 for second outer cover assembly.

12.9.3 Remove all flat head screws and covers.

1. Remove all flat head screws from the two outer covers and the center section container lid.
2. Remove covers and center section container lid.

NOTICE

If there are any cover hole alignment issues with the container flange, contact Crane to resolve these issues before proceeding with container assembly.

12.10 Install cable ties

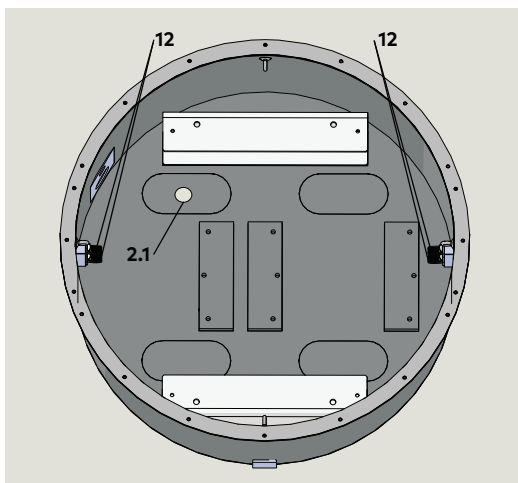
- 2.1 Hole for through-wall pipe fitting
May be in a different location

12 Cable tie DC6042

14 #6 x 1/2" Phillips FHS, SS
 DF6024-01G

12 Cable tie DC6042

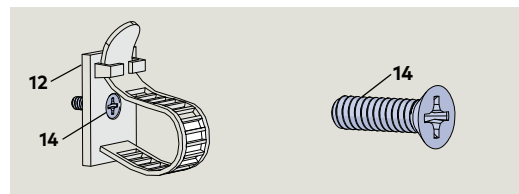
Fig. 12.10.1 (4) cable ties



12.10.1 Install four cable ties in container.

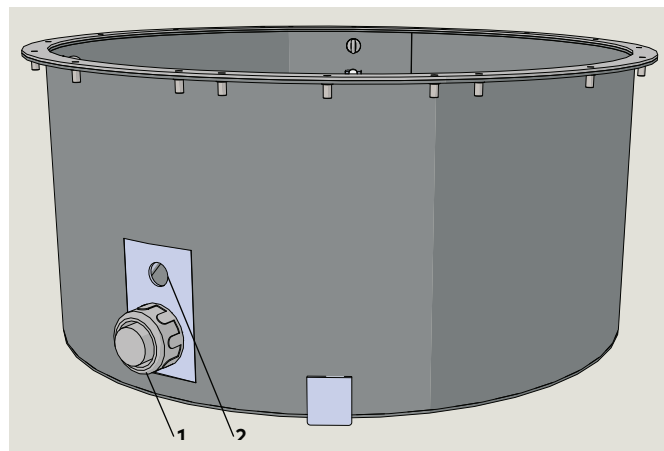
1. Install four cable ties in container using #6 x 1/2" Phillips FHS.

Fig. 12.10.2 Cable tie and fastener



12.11 Installation of 115 Vac hole plug

Fig. 12.11.1 In-ground container; 115 Vac conduit hole



1 1 1/2" conduit adapter; DC wiring

2 Hole for 1/2" conduit adapter, 115 Vac wiring

12.11.1 Install hole plug for 1/2" conduit hole.

NOTICE

- 115 Vac is not required in the in-ground container when Motion Assist 360 power supply and control unit are located remotely (Para. 13.1).
- 1/2" conduit hole in the in-ground container must be plugged with 1/2" submersible hole plug DC6050-001. This hole plug requires a 1" knockout

Fig. 12.11.2 1/2" hole plug DC6050

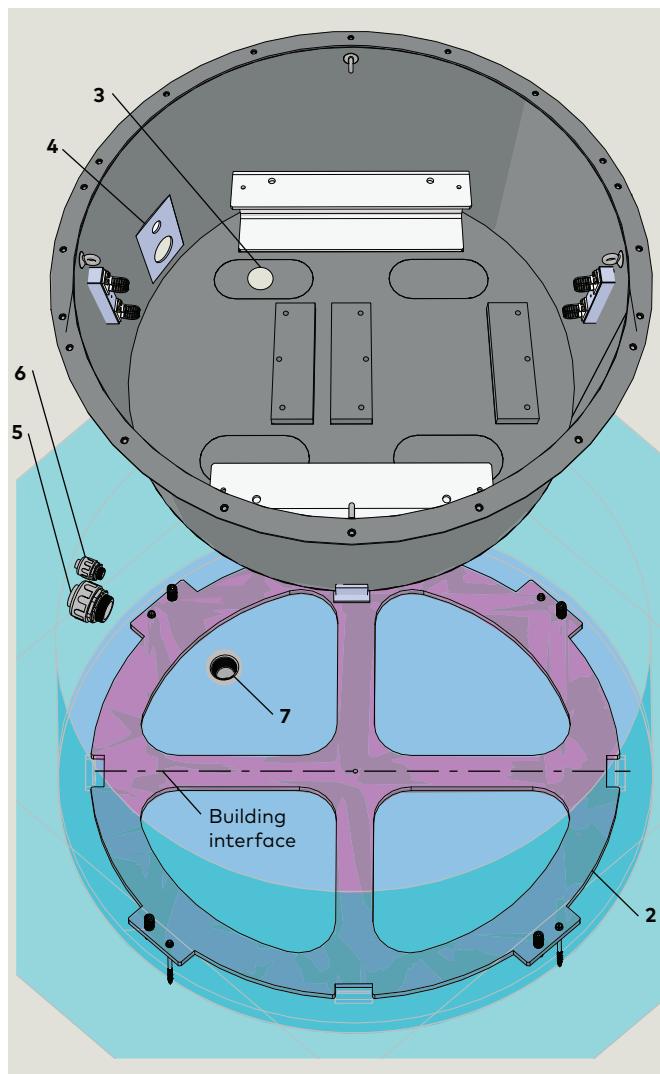
- 1 Fitting
 2 Gasket
 3 Nut



This page left intentionally blank.

12.12 Install in-ground container in pit

Fig. 12.12.1 In-ground container above pit example



- | | |
|--|-------------------------------------|
| 2 Leveling plate
DC6022 | 5 DC wiring conduit
adapter |
| 3 Hole for through-wall
pipe fitting DC6043 | 6 115 Vac wiring
conduit adaptor |
| 4 Conduit adapter
mounting plate | 7 Customer drain
piping |

12.12.1 Pit preparation.

1. Pit must be prepared for in-ground container installation as outlined in Para. 12.4; Install leveling plate in pit.

12.12.2 Leveling plate.

CAUTION

- Leveling plate must be installed as outlined in Para. 12.4; Install leveling plate in pit.
- Insure leveling plate top surface is clean.
- Insure the four leveling plate slots are free of grout.

12.12.3 Container orientation in pit.

NOTICE

Container orientation requirements in pit:

- Building conduit interfaces (Para. 12.7).
- Pit drain interface(Para. 12.8).
- Container lids parallel with building interface (Para. 12.5).

12.12.4 Install container assembly in pit.



WARNING

Use caution when working with container assembly.

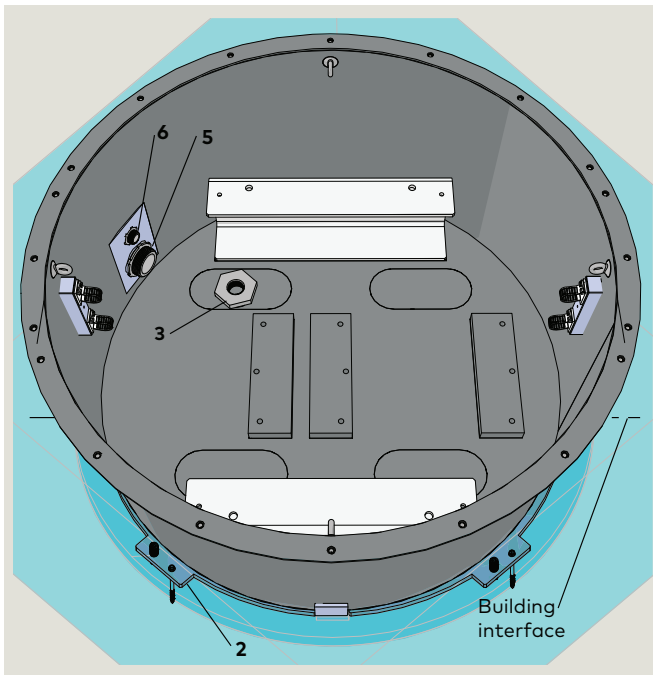
- Container has four eyebolts that can be used with lifting equipment.
1. Align container with pit interfaces.
 2. Insert conduit adapters (flexible conduits installed in adapters by customer) into container adapter plate. Tighten conduit adapter locknuts.
 - Plug 1/2" adapter plate hole if 1/2" conduit not used (Para. 12.12).
 3. Insert through-wall pipe fitting through hole in bottom of container and thread into customer drain fitting and tighten.
 4. Align anti-rotate tabs with slots in leveling plate (Fig. 12.12.1) and lower container into pit.
 5. Finish lowering container into pit.

NOTICE

Anti-rotate tabs.

- Container anti-rotate tabs must be completely lowered into leveling plate slots (Fig. 12.12.2).

Fig. 12.12.2 Container in pit orientation example



- | | |
|------------------------------------|----------------------------------|
| 1 Container | 5 DC wiring conduit adapter |
| 2 Leveling plate DC6022 | 6 115 Vac wiring conduit adaptor |
| 3 Through-wall pipe fitting DC6043 | |

12.12.5 Verify container is level.

NOTICE

Verify container is level.

Once container lowered onto leveling plate, verify container is level.

13 Assemble in ground container in pit

13.1 Motion Assist 360 power supply and control unit installation options

Fig. 13.1.1 In-ground container assembly with Motion Assist 360 drive, power supply and control unit

- 1 Motion Assist 360 control unit DX6002
- 2 Motion Assist 360 power supply DX6001
- 3 Cover
- 4 Mounting bracket,
- 5 Bottom plug DC6030
- 6 Motion Assist 360 drive DX6010
- 7 Container lid, center section DC6049

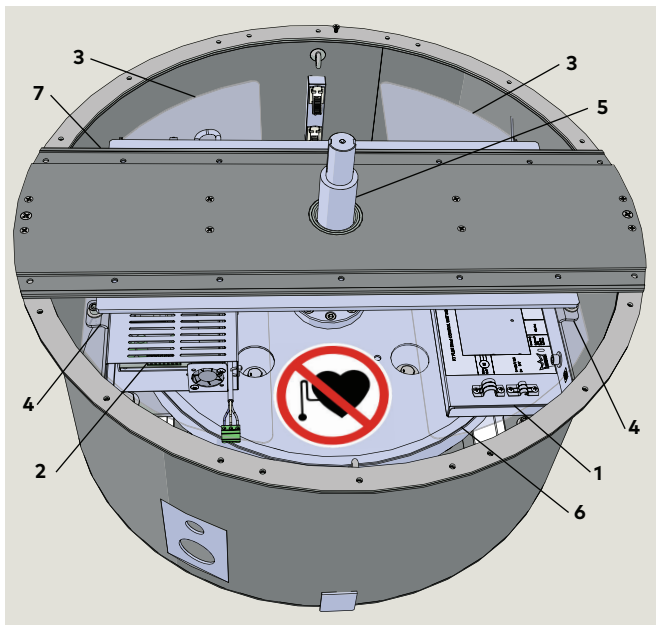
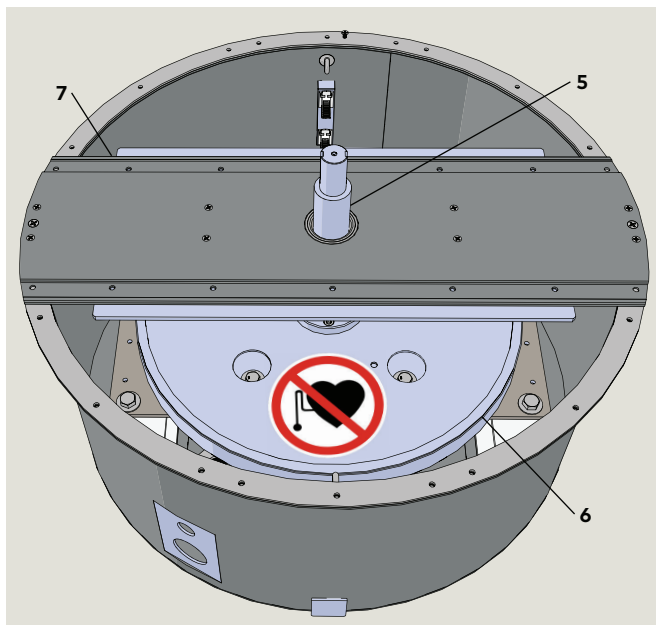


Fig. 13.1.2 In-ground container assembly with Motion Assist 360 drive

- 5 Bottom plug DC6030
- 6 Motion Assist 360 drive DX6010
- 7 Container lid, center section DC6049



13.1.1 Motion Assist 360 power supply and control unit installation in in-ground container.

- Reference Fig. 13.1.1.
- Follow all installation steps in Chapter 13.

13.1.2 Motion Assist 360 power supply and control unit installation in optional Remote enclosure.

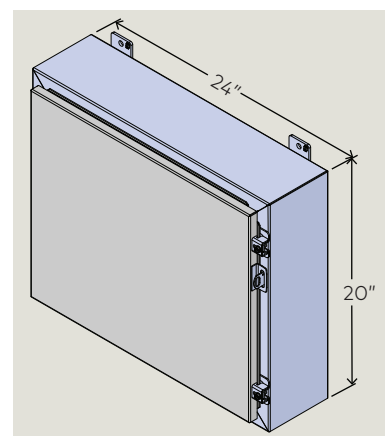
- Reference Fig. 13.1.2, 13.1.3.
- In-ground container installation steps not required are noted in Chapter 13.

NOTICE

Remote enclosure.

Refer to Wiring, Setup and Troubleshooting Manual DL4616-014 for Remote enclosure assembly and installation.

Fig. 13.1.3 Remote enclosure for Motion Assist 360 power supply and control unit

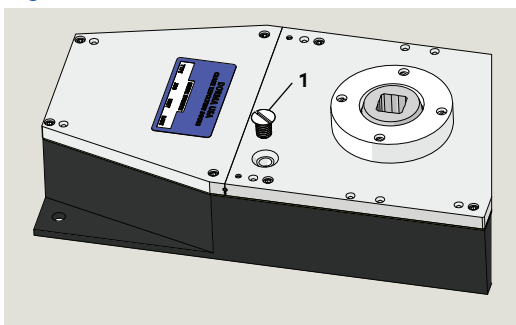


This page left intentionally blank.

13.2 Install speed control in in-ground container

- 1 1/2" slotted flat head machine screw - undercut

Fig. 13.2.1 Oil fill hole



13.2.1 Add oil to speed control gearcase.

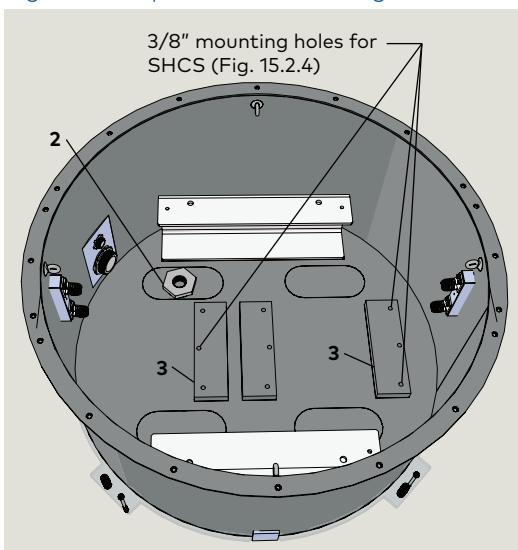
1. Oil fill hole: remove 1/2" slotted flat head machine screw (1) from sub plate.
2. Pour entire contents of bottle into oil fill hole.
3. Replace machine screw.

CAUTION

Oil must be added to floor speed control.
 22 oz. bottle of multigrade synthetic oil is supplied.

- 2 Through-wall pipe fitting DC6043
May be in a different location
- 3 Speed control shim

Fig. 13.2.2 Speed control mounting holes

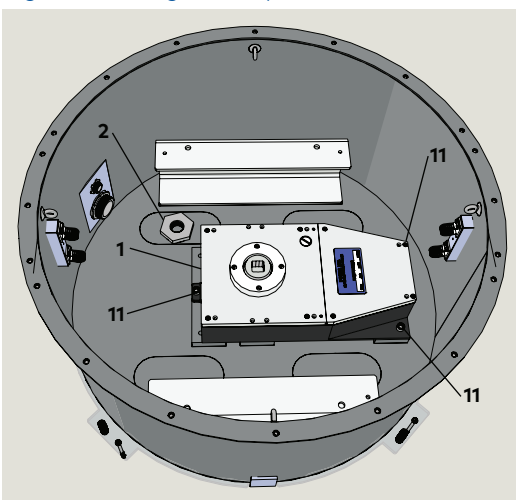


13.2.2 Install speed control in container.

1. Fasten in-ground speed control to container speed control shims using three 3/8 x 7/8" SHCS.
 - Snug but do not tighten SHCS.

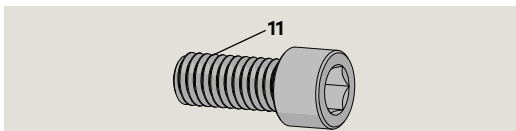
- 1 H63-4001-FSC
- 2 Through-wall pipe fitting DC6043
May be in a different location
- 11 3/8 x 7/8" SHCS, black oxide DF6022-01C

Fig. 13.2.3 In-ground speed control



- 11 3/8 x 7/8" SHCS, black oxide DF6022-01C

Fig. 13.2.4 3/8 x 7/8" SHCS



13.3 Check speed control shaft alignment

Fig. 13.3.1 Bottom plug DC6030

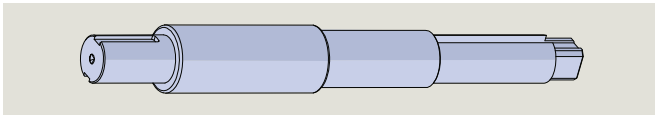
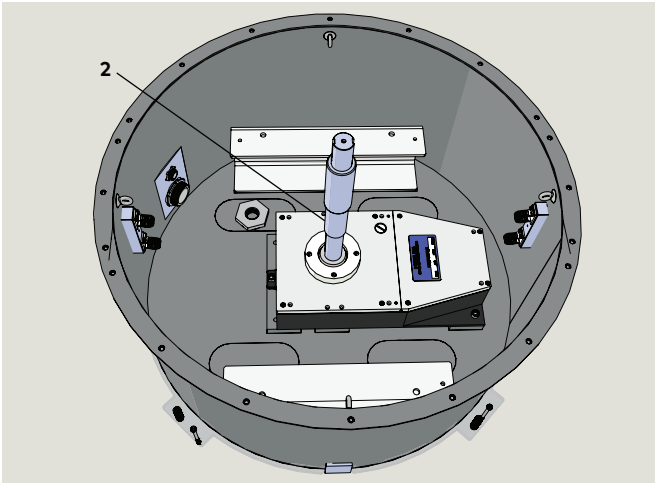
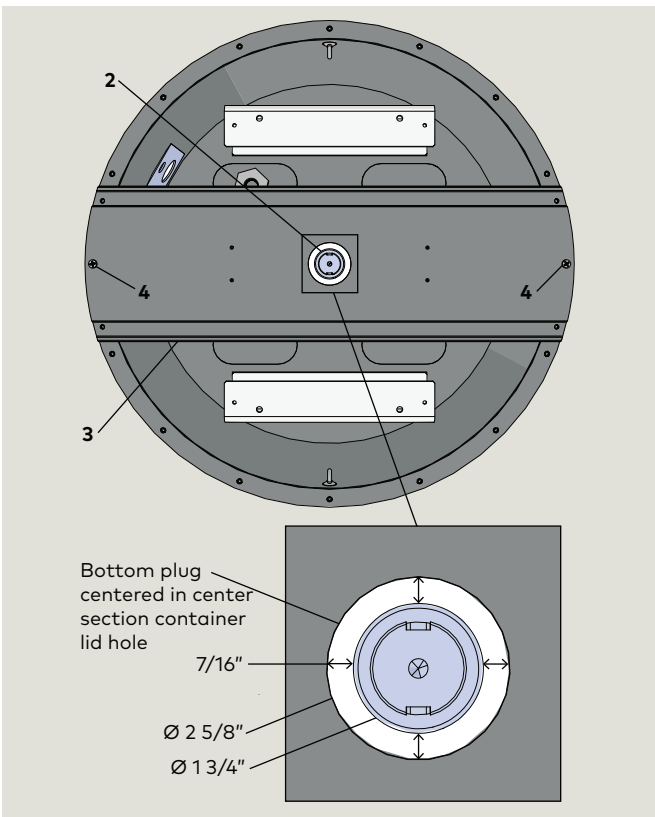


Fig. 13.3.2 Bottom plug installed in speed control drive shaft



2 Bottom plug DC6030

Fig. 13.3.3 Center section container lid installed on container



2 Bottom plug DC6030 4 1/4-20 x 3/4" sealing
 3 Center section FHS DF6025-01G
 container lid DC6049

13.3.1 Check speed control drive shaft alignment.

NOTICE

If bottom plug cannot be centered in the center section container lid hole, contact Crane to resolve this issue before proceeding with further container assembly.

Check drive shaft alignment with center section container lid hole for bottom plug.

1. Insert bottom plug into speed control drive shaft.
2. Install center section container lid and fasten with two flat head screws DF6025-01G.
3. Check bottom plug alignment in center section container lid hole.

NOTICE

Bottom plug checks.

- Bottom plug must be centered in center section container lid hole (Fig. 13.3.3).
- Bottom plug must be plumb.



TIPS AND RECOMMENDATIONS

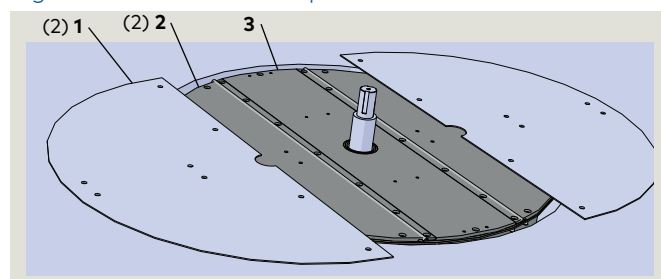
- Center section container lid hole diameter: 2 5/8".
 - Bottom plug shaft diameter at hole 1 3/4".
 - Distance from shaft to container lid hole: 7/16"
-
- Speed control mounting hole diameter is 7/16" so slight adjustment is possible.
4. Once bottom plug centered in hole, tighten the three 3/8 x 7/8" SHCS (Fig. 13.2.3).

NOTICE

Insure that the three 3/8 x 7/8" SHCS are securely tightened.

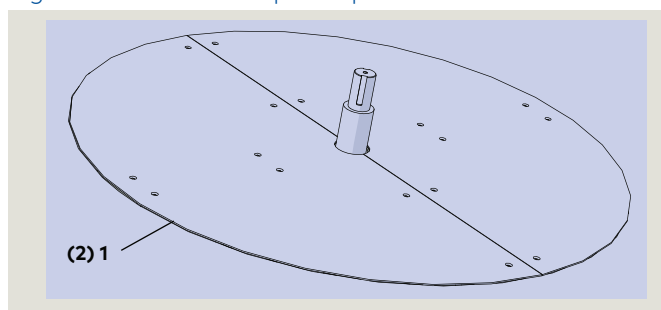
13.4 Pour Pour-stone around container in pit

Fig. 13.4.1 Container lids placed on container



- | | |
|--|---|
| 1 Floor cover plate
DC6048 | 3 Container lid, center
section weldment
DS6018 |
| 2 Container lid, outer
section DC6027 | |

Fig. 13.4.2 Floor cover plates placed on container



- | |
|-------------------------------|
| 1 Floor cover plate
DC6048 |
|-------------------------------|

Fig. 13.4.3 Container in pit

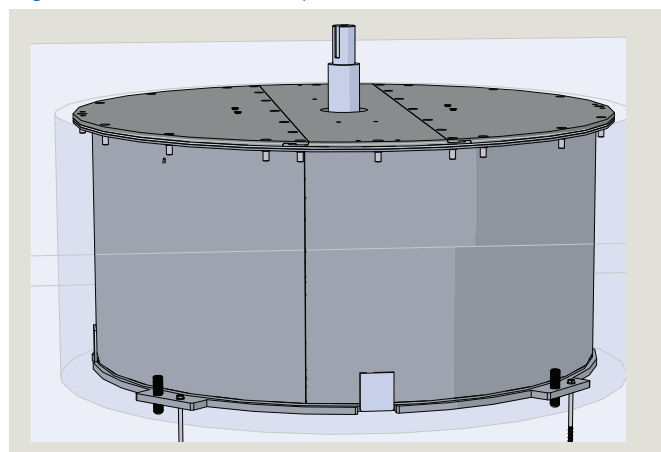
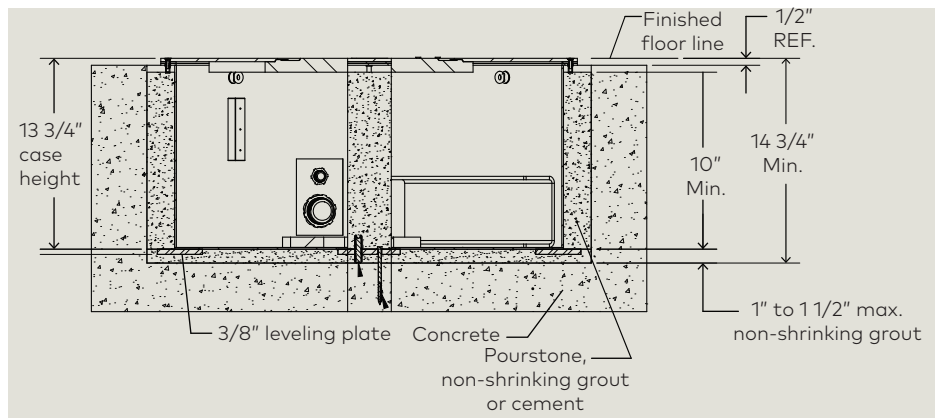


Fig. 13.4.4 Pour-stone around container



13.4.1 Verify floor cover plates are flush with finished floor.

1. Place center section container lid on container and secure with two 1/4-20 x 3/4" sealing FHS.
2. Place two outer cover assemblies on container.
3. Place two floor cover plates over container lids.



TIPS AND RECOMMENDATIONS

Do not fasten outer cover assemblies or floor cover plates to container flange.

4. Verify floor cover plates are flush with finished floor.

NOTICE

Do not pour pour-stone around case until any issues with container cover plates and finished floor flush are resolved.

13.4.2 Remove the two floor cover plates.



TIPS AND RECOMMENDATIONS

Container lids can also be removed.

13.4.3 Pour pour-stone in pit around container case.

1. Fill pour-stone around container to 1/2" below container flange (Fig. 13.4.4).



TIPS AND RECOMMENDATIONS

Cover container lids with cardboard during pour-stone fill process.

NOTICE

- Follow manufacturer's directions for mixing, application and curing.
- Follow directions regarding eliminating air pockets.

13.5 Remove transport bolts from Motion Assist 360 drive

Fig. 13.5.1 Motion Assist 360 drive top view, transport bolts, nuts and washers

- 1 Motion Assist 360 drive
- 2 Transport bolts: M8 hex bolt
- 3 M8 hex nut
- 4 M8 steel flat washer

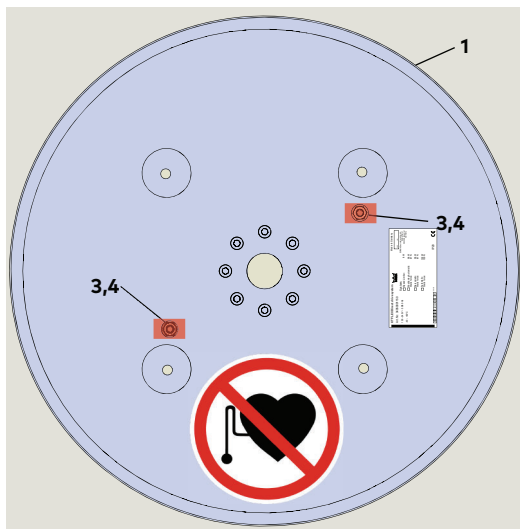
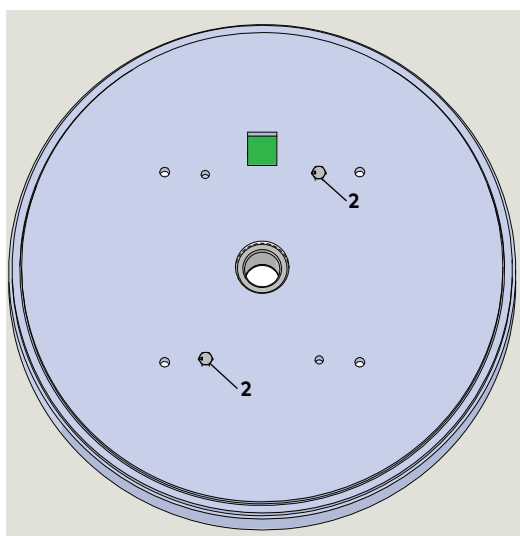


Fig. 13.5.2 Motion Assist 360 drive bottom view, transport bolts



13.5.1 Remove transport bolts.

1. Remove two transport bolts from Motion Assist 360 drive..

 - Transport bolts are secured on operator drive side with (2) hex nuts.



WARNING

Use caution when lifting and positioning Motion Assist 360 drive!



WARNING

Transport bolts must be removed from operator prior to installation!

- Transport bolts are used to prevent drive rotation during shipment.
- Use caution when handling drive once bolts have been removed! Drive is free to turn!

13.6 Assemble Motion Assist 360 drive to mounting plate

Fig. 13.6.1 Motion Assist 360 drive with (8) M8 x 20 mm SHCS

- 1 Motion Assist 360 drive
- 2 M8 x 20 mm SHCS, black oxide

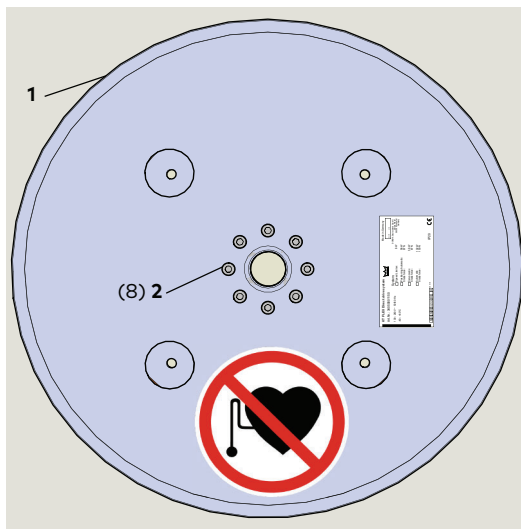


Fig. 13.6.2 M8 x 20 mm SHCS

- 2 M8 x 20 mm SHCS, black oxide

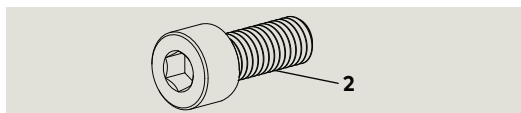


Fig. 13.6.3 Motion Assist 360 drive with (2) M8 x 20 mm SHCS

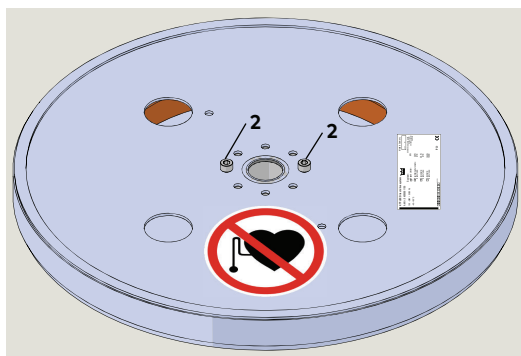


Fig. 13.6.4 Drive flange

- 4 Drive flange DC6025

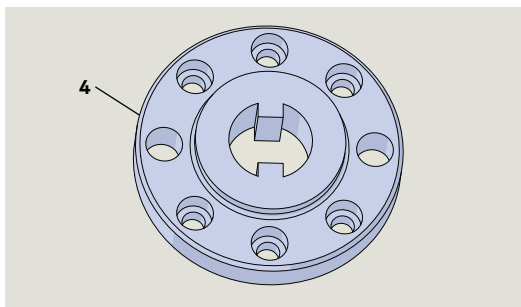
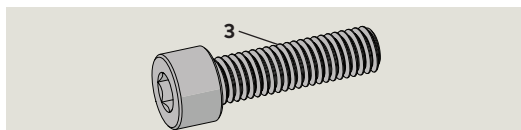


Fig. 13.6.5 M8 x 30 mm SHCS

- 3 M8 x 30 mm SHCS, black oxide DF6003-01C



WARNING

Use caution when lifting and positioning Motion Assist 360 drive!

13.6.1 Remove (8) M8 SHCS

Drive is shipped from factory with eight M8 x 20 mm SHCS installed.

1. Remove six of the eight M8 x 20 SHCS leaving two M8 x 20 SHCS at 180 degrees to each other (Fig. 13.6.3).



TIPS AND RECOMMENDATIONS

Use socket wrench with 6 mm hex key socket.

13.6.2 Install drive flange.

1. Install drive flange on drive using six M8 x 30 mm SHCS (Fig. 15.6.5).

13.6.3 Check tightening torque on M8 SHCS.

1. Use torque wrench to check tightening torque on the eight M8 SHCS (Fig. 13.6.6).



WARNING

Danger from incorrect screw tightening torque!

If drive flange mounting screws are tightened with an incorrect tightening torque, components may detach causing injuries and material damage.

- Never exceed the maximum specified screw tightening torque.
- Contact dormakaba for further information.

13.6.4 Maximum screw tightening torque.

Screw diameter	Maximum permissible screw tightening torque
M8	15.5 Nm
	10 ft-lb

Fig. 13.6.6 Drive flange with eight M8 SHCS

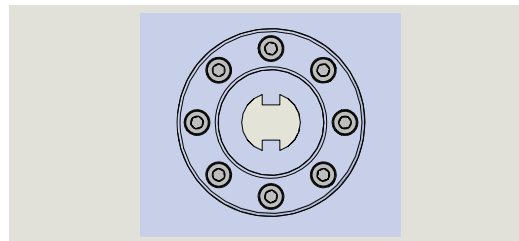
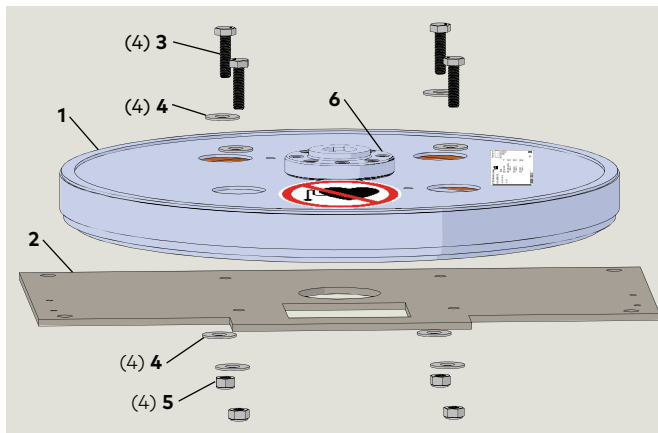
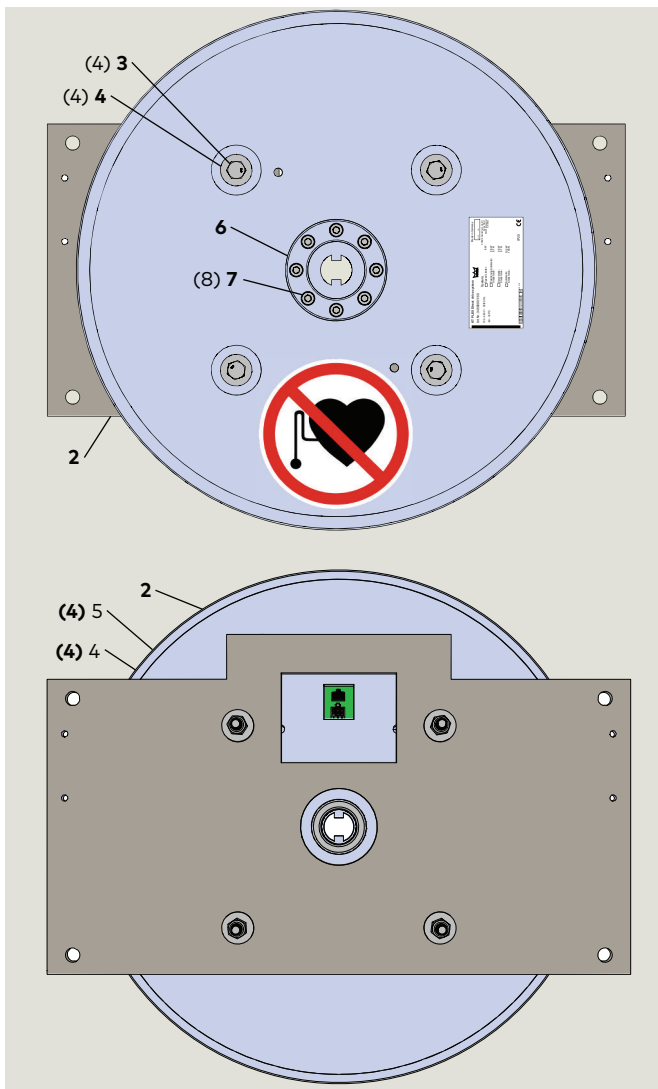


Fig. 13.6.7 Motion Assist 360 drive and mounting plate hardware



- | | |
|--------------------------------------|-------------------------------------|
| 1 Motion Assist 360 drive DX6010 | 4 1.25" OD x .531 ID SS flat washer |
| 2 Drive mounting plate DC6024 | 5 M10 18-8 SS nylon insert locknut |
| 3 M10 x 40 mm HHCS, extreme strength | 6 Drive flange |
| | 7 M8 x 30 mm SHCS DF6003-01C |

Fig. 13.6.8 Drive secured to mounting plate



WARNING

Use caution when lifting and positioning Motion Assist 360 drive!



WARNING

Use caution when handling drive!
 Drive is free to turn!

13.6.5 Attach Motion Assist 360 drive to mounting plate.

NOTICE

Drive must be positioned on mounting plate with cable receptacles located in mounting plate cutout (Fig. 13.6.8).

Reference Screw Pack DK6006-001, Para. 9.7.

1. Attach drive to mounting plate using:

- (4) M10 x 40 mm SHCS
- (8) 1.25" OD SS flat washer
- (4) M10 18-8 SS nylon insert locknut.



TIPS AND RECOMMENDATIONS

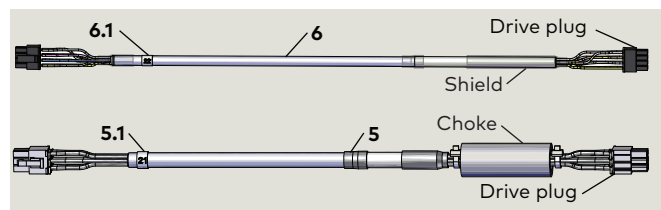
Use socket wrench with 16 mm socket.

13.6.6 Torque requirements for M10 fastening hardware.

Screw diameter	Maximum tightening torque
M10	25 Nm
	18.5 ft-lb

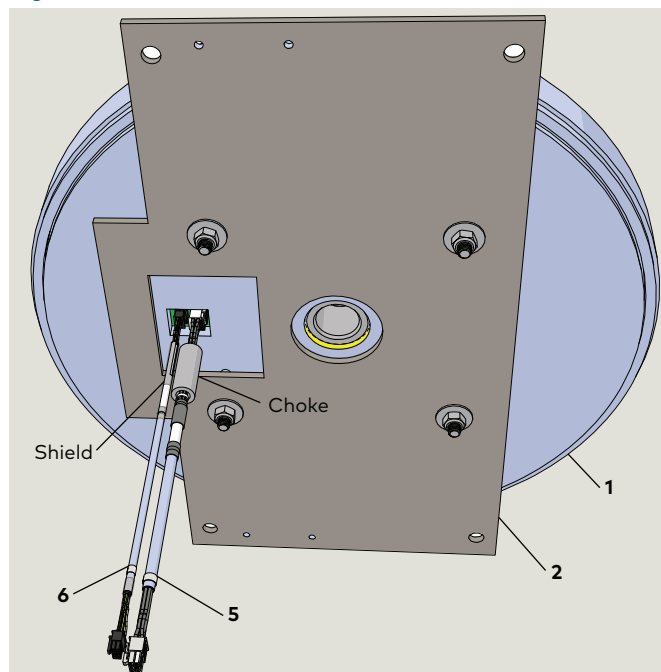
13.7 Install Motion Assist drive cables

Fig. 13.7.1 Motion Assist 360 drive cables



- | | |
|---|---|
| 5 Power cable (21), control unit to drive DX6005 | 6 Hall sensor cable (22), control unit to drive DX6006 |
| 5.1 Cable number tag (21) | 6.1 Cable number tag (22) |

Fig. 13.7.2 Motion Assist 360 drive cables installed



- | | |
|---|---|
| 1 Motion Assist 360 drive | 6 Hall sensor cable (22), control unit to drive DX6006 |
| 2 Mounting plate | |
| 5 Power cable (21), control unit to drive DX6005 | |

13.7.1 Install Motion Assist 360 drive cables.



TIPS AND RECOMMENDATIONS

Connect cables (Fig. 13.7.1) to their Motion Assist 360 drive sockets prior to installation of drive into in-ground container assembly.

- Restricted access to operator sockets once operator assembly is installed in container.

1. Install power cable plug into Motion Assist 360 drive power cable socket.

NOTICE

- Install plug at choke end of cable into operator socket (Fig. 13.7.2).
- Insure cable plug is fully inserted in operator socket and locked in place.

2. Install Hall sensor cable plug at shield end of cable (Fig. 13.7.2) into Motion Assist 360 drive Hall sensor socket.

NOTICE

- Insure cable plug is fully inserted in operator socket and locked in place.



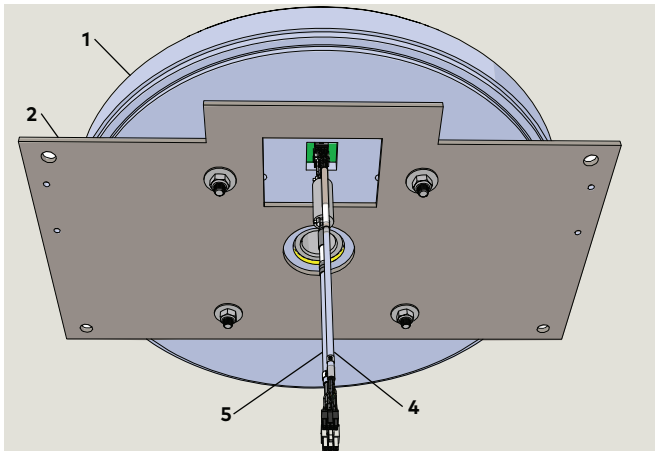
TIPS AND RECOMMENDATIONS

Install sensor cable orientated as shown in Fig. 13.7.2.

- Install plug at cable end with number tag (22) (Fig. 13.7.1) at Motion Assist 360 control unit.

13.8 Install Motion Assist 360 drive mounting bracket assembly into in-ground container

Fig. 13.8.1 Mounting bracket assembly orientation



- | | |
|---------------------------|--------------------------|
| 1 Motion Assist 360 drive | 5 Power cable (21) |
| 2 Mounting plate | 6 Hall sensor cable (22) |

Fig. 13.8.2 Mounting plate fasteners

- | |
|--|
| 13 Washer, flat,
1 1/4" OD, 0.531" ID |
| 14 Hex head bolt, 1/2 x
3/4", SS |

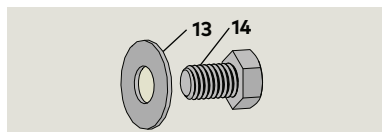
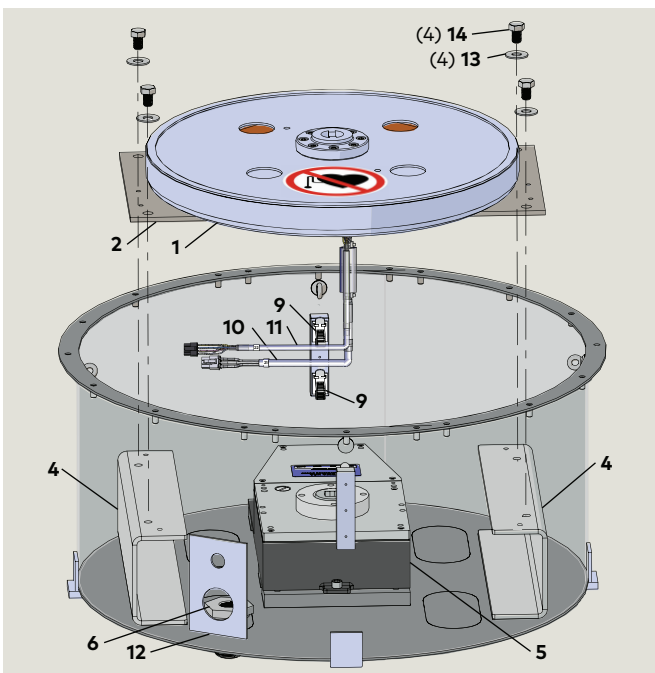


Fig. 13.8.3 Container and mounting bracket assembly



- | | |
|----------------------------------|--|
| 1 Motion Assist 360 drive DX6010 | 9 Cable ties |
| 2 Mounting plate DC6024 | 10 Power cable (21) |
| 3 Drive flange DC6025 | 11 Hall sensor cable (22) |
| 4 U-channel | 12 Conduit adapter mounting plate |
| 5 Speed control | 13 Washer, flat,
1 1/4" OD, 0.531" ID |
| 6 Drain pipe fitting | 14 Hex head bolt, 1/2 x
3/4", SS |

13.8.1 Remove bottom plug from speed control.

1. Remove bottom plug from speed control, (Ref. Para. 13.3) to facilitate installation of drive mounting bracket assembly.

13.8.2 Install Motion Assist 360 drive mounting bracket assembly onto container U-channels.



WARNING

- Use caution when lifting and positioning Motion Assist 360 drive mounting bracket assembly!
- Use caution when handling drive! Drive is free to turn!

1. Lower drive mounting bracket assembly onto container U-channels.



TIPS AND RECOMMENDATIONS

Position mounting bracket assembly for installation into container with mounting bracket orientated as in Fig. 13.8.1 and speed control orientated as shown in Fig. 13.8.3.

CAUTION

Prevent damage to cables; keep cables at side of container as assembly is lowered.

2. With 1 1/4" OD flat washer on each hex head bolt, thread four 1/2" x 3/4" hex head bolts through mounting plate slots into U-channel mounting holes
3. Snug bolts, do not tighten.
4. Secure cables to cable ties (9).

Fig. 13.8.4 Container and mounting bracket assembly

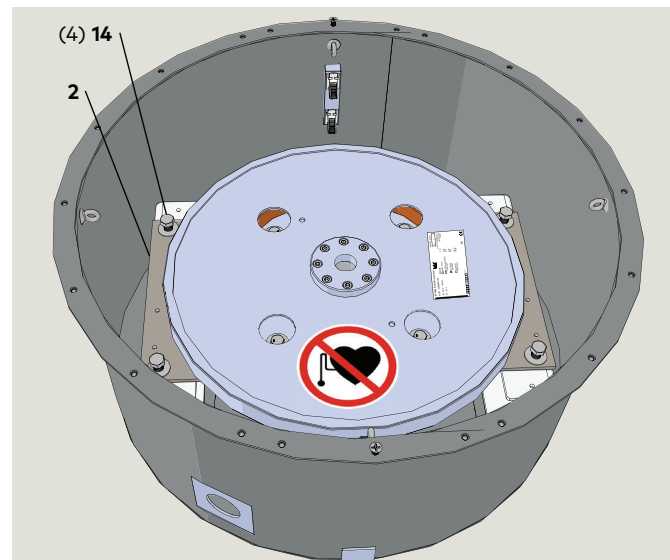
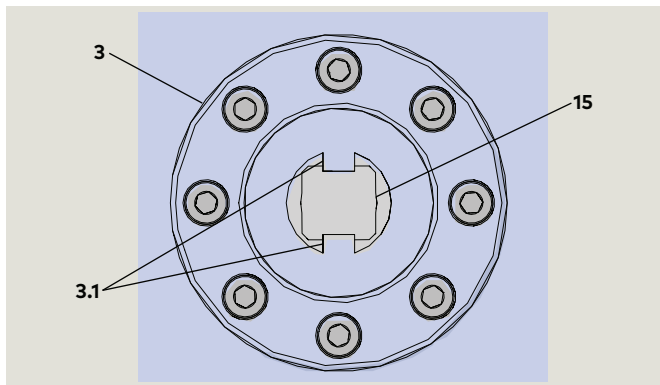


Fig. 13.8.5 Drive flange and in-ground speed control drive shafts



- 3 Drive flange DC6025
- 15 In-ground speed control drive shaft
- 3.1 Flat in drive shaft hole

Fig. 13.8.6 Bottom plug DC6030

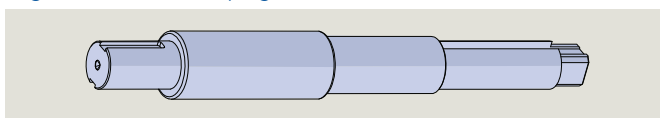
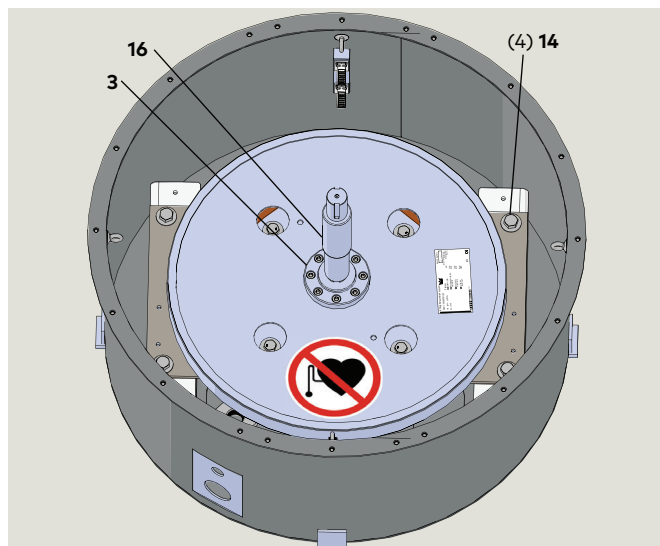
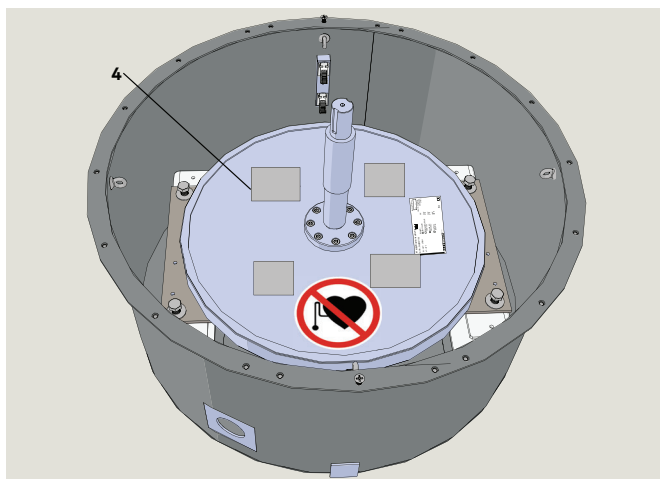


Fig. 13.8.7 Bottom plug installation



- 3 Drive flange DC6025
- 16 Bottom plug DC6030
- 14 Hex head bolt, 1/2 x 3/4", SS

Fig. 13.8.8 Tape installation



13.8.3 Align operator and speed control drive shafts.

1. Rotate operator to so that drive flange keys are aligned with in-ground speed control drive shaft (Fig. 13.8.5).

13.8.4 Install bottom plug.

1. Adjust mounting plate position and operator rotary position as required to install bottom plug (Fig. 13.8.5).
2. Install bottom plug through drive shaft adapter drive shaft hole and into in-ground speed control drive shaft.



TIPS AND RECOMMENDATIONS

Bottom plug lubrication.

Lubricate bottom plug with grease or Vaseline to facilitate plug installation through Motion Assist 360 drive and into in-ground speed control drive shaft.

NOTICE

Once installed, check bottom plug for plumb.

13.8.5 Tighten hex bolts

1. Tighten the four 1/2" x 3/4" hex bolts.

13.8.6 Install foil tape over Motion Assist 360 drive mounting holes.

1. Install tape over drive mounting holes (Fig. 13.8.8).
 - Use foil tape; must have minimum temperature range of -35 to +175° F.

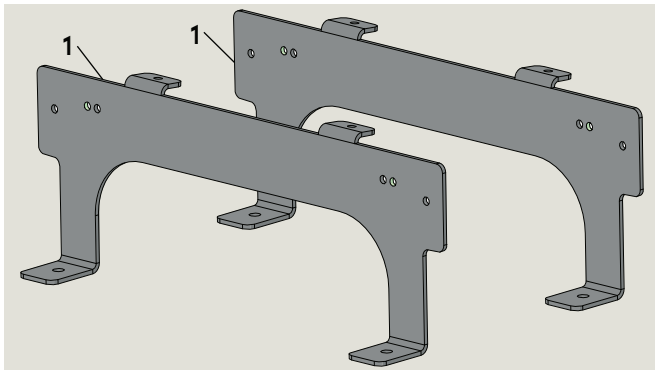


TIPS AND RECOMMENDATIONS

Tape installation to prevent moisture from entering Motion Assist 360 drive.

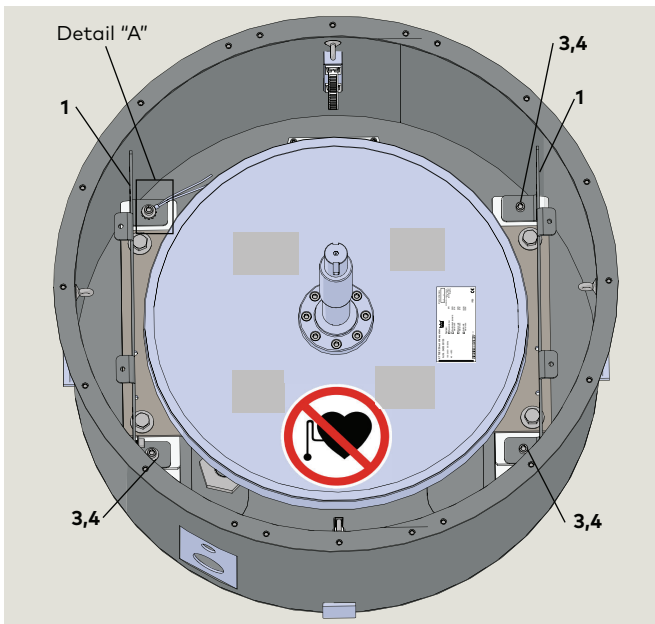
13.9 Install Motion Assist 360 power supply and control unit mounting brackets

Fig. 13.9.1 Power supply and control unit mounting brackets



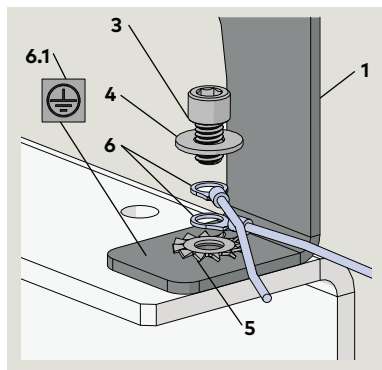
- 1 Mounting bracket
DC6023

Fig. 13.9.2 Mounting brackets installed in container



- 1 Mounting bracket
DC6023
- 3 5/16 x 1/2" SHCS,
SS, DF6018-01G
- 4 5/16" flat washer, SS,
DF6019-01G
- 5 5/16" screw size
external-tooth lock
washer DF6016-01G
- 6 DX6009 earth
grounding cable
- 6.1 Earth ground label

Fig. 13.9.3 Detail "A"



NOTICE

Remote installation of Motion Assist 360 power supply and control unit.:

- Mounting bracket installation (Para. 13.9) not required.

13.9.1 Install Motion Assist 360 power supply and control unit mounting brackets in container.

1. Install power supply mounting bracket using fasteners shown in Fig. 13.9.2 and 13.9.3 "Detail A"
2. Affix earth ground label adjacent to fastener in "Detail A"..



TIPS AND RECOMMENDATIONS

DX6009 earth grounding cables (6):

- One for connection to power supply.
 - One for connection to control unit.
- Reference Para. 13.10 and 13.11.

3. Install control unit mounting bracket using fasteners shown in Fig. 13.9.2.

Fig. 13.9.4 Earth grounding cable

- 6 Earth grounding
cable DX6009
- 6.1 Earth ground label

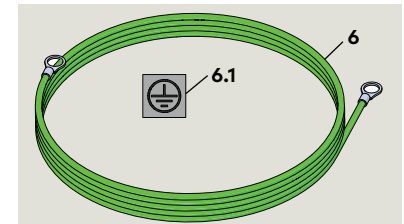
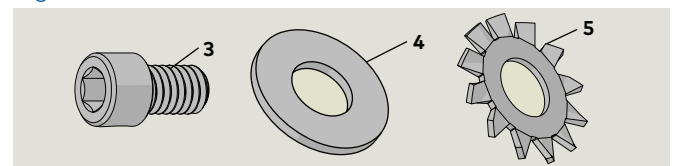


Fig. 13.9.5 Fasteners



- 3 5/16 x 1/2" SHCS,
SS, DF6018-01G
- 4 5/16" flat washer, SS,
DF6019-01G
- 5 5/16" screw size
external-tooth lock
washer DF6016-01G

13.10 Assemble Motion Assist 360 power supply to mounting bracket

Fig. 13.10.1 Motion Assist 360 power supply DX6001

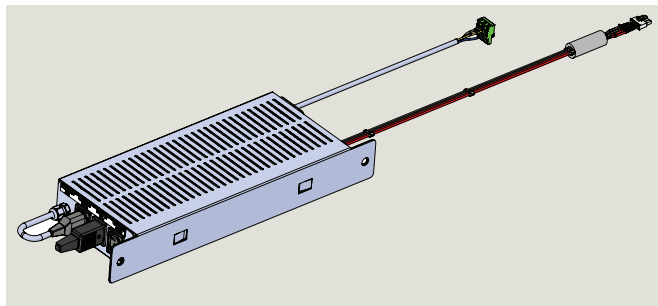
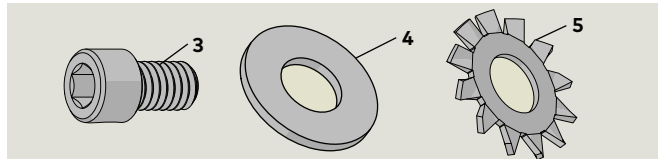
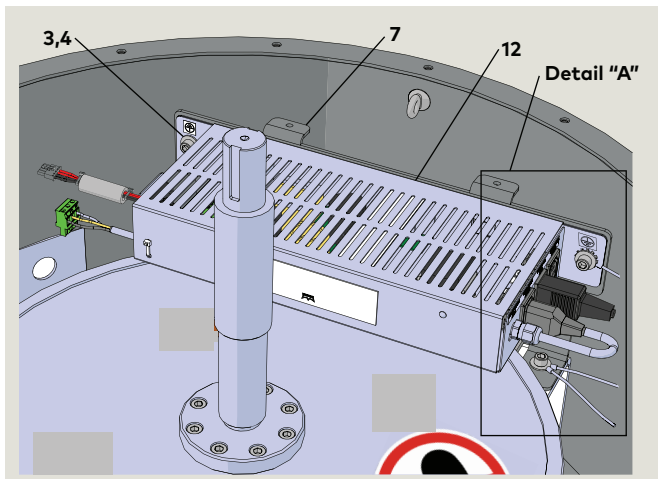


Fig. 13.10.2 Fastener hardware, power supply mounting



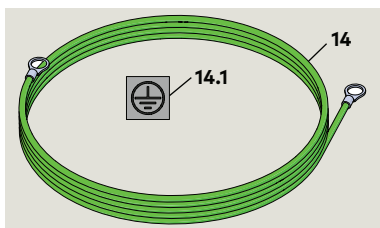
- | | |
|--|--|
| <p>3 5/16 x 1/2" SHCS, SS
DF6018-01G</p> <p>4 5/16" flat washer, SS
DF6019-01G</p> | <p>5 5/16" screw size
external-tooth lock
washer DF6016-01G</p> |
|--|--|

Fig. 13.10.3 DX6002 power supply and mounting bracket



- | | |
|---|--|
| <p>7 Power supply
mounting bracket</p> | <p>12 Power supply
DX6002</p> |
|---|--|

Fig. 13.10.4 DX6009



- | |
|---|
| <p>14 Earth ground cable
assembly DX6009</p> <p>14.1 Earth ground label</p> |
|---|

NOTICE

Remote installation of Motion Assist 360 power supply and control unit:

- Para. 13.10 assembly not required.

13.10.1 Attach Motion Assist 360 power supply to mounting bracket.

1. Attach power supply to mounting bracket assembly using fastener hardware shown in Fig. 13.10.2.

13.10.2 Earth ground cable attachment.

1. Reference Fig. 13.10.5, Detail "A".



TIPS AND RECOMMENDATIONS

Reference Para. 13.9: Earth ground cable DX6009 ring lug installed during mounting bracket installation on container U-channel.

2. Attach ring lug at opposite end of earth ground cable to control unit as shown in Fig. 13.10.5, Detail "A".



TIPS AND RECOMMENDATIONS

Secure earth ground cable to side of container; use cable ties as required.

13.10.3 Install earth ground label.

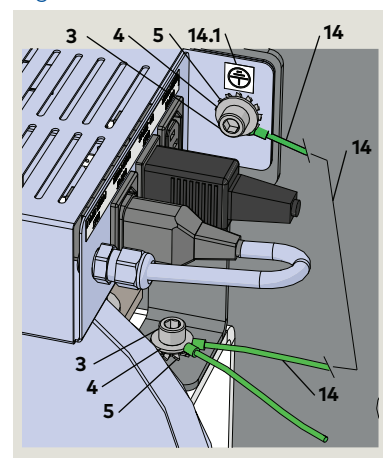


TIPS AND RECOMMENDATIONS

Earth ground labels included with DX6009 earth ground cable assembly.

1. Affix earth ground label at location detailed in Fig. 13.10.5.

Fig. 13.10.5 Detail "A"



- | |
|---|
| <p>3 5/16 x 1/2" SHCS, SS
DF6018-01G</p> <p>4 5/16" flat washer, SS
DF6019-01G</p> <p>5 5/16" screw size
external-tooth lock
washer DF6016-01G</p> <p>14 Earth ground cable
assembly DX6009</p> <p>14.1 Earth ground label</p> |
|---|

13.11 Assemble Motion Assist 360 control unit to mounting bracket

Fig. 13.11.1 Motion Assist 360 control unit DX6002

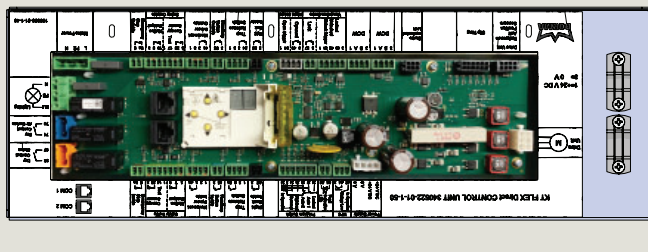
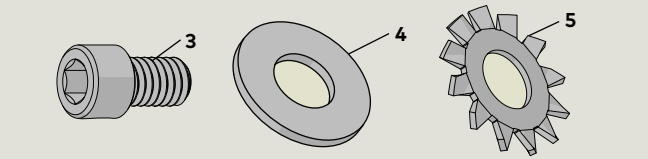
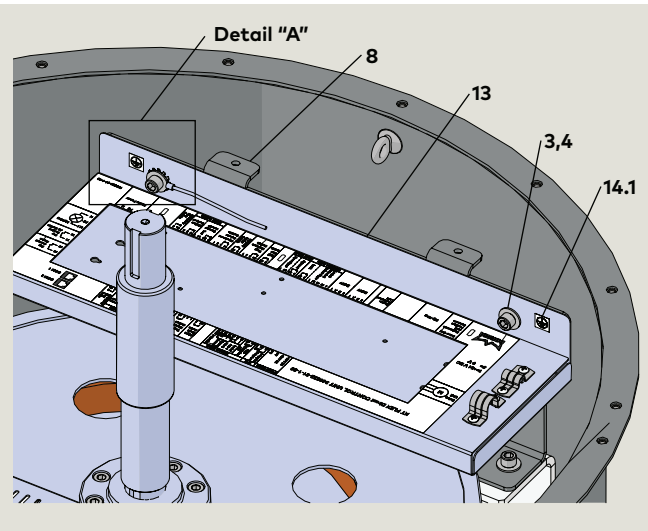


Fig. 13.11.2 Fastener hardware, power supply mounting



- | | |
|--|--|
| <p>3 5/16 x 1/2" SHCS, SS
DF6018-01G</p> <p>4 5/16" flat washer, SS
DF6019-01G</p> | <p>5 5/16" screw size
external-tooth lock
washer DF6016-01G</p> |
|--|--|

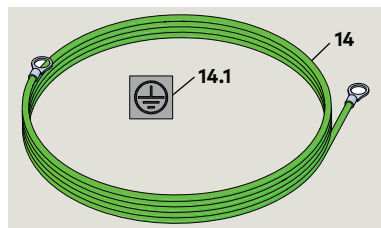
Fig. 13.11.3 DX6002 control unit and mounting bracket



- | | |
|---|--------------------------------------|
| <p>8 Control unit
mounting bracket</p> | <p>13 Control unit DX6002</p> |
|---|--------------------------------------|

- 14** Earth ground cable
assembly DX6009
- 14.1** Earth ground label

Fig. 13.11.4 DX6009



NOTICE

Remote installation of Motion Assist 360 power supply and control unit:

- Para. 13.11 assembly not required.

13.11.1 Attach Motion Assist 360 control unit to mounting bracket.

1. Attach control unit to mounting bracket assembly using fastener hardware shown in Fig. 13.12.3.

13.11.2 Earth ground cable attachment.

1. Reference Fig. 13.11.5, Detail "A".



TIPS AND RECOMMENDATIONS

Reference Para. 13.9: Earth ground cable DX6009 ring lug installed during mounting bracket installation on container U-channel.

2. Attach earth ground cable ring lug at opposite end of cable to control unit as shown in Fig. 13.11.5, Detail "A".



TIPS AND RECOMMENDATIONS

Secure earth ground cable to side of container; use cable ties as required.

13.11.3 Install earth ground label.



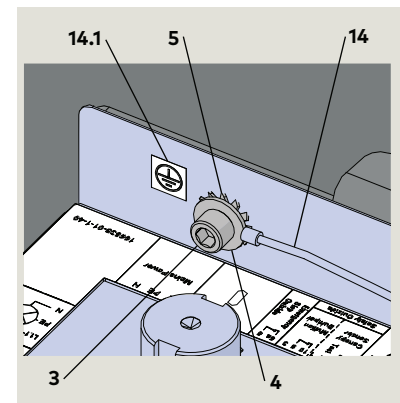
TIPS AND RECOMMENDATIONS

Earth ground labels included with DX6009 earth ground cable assembly.

1. Affix earth ground label at location detailed in Fig. 13.11.5.

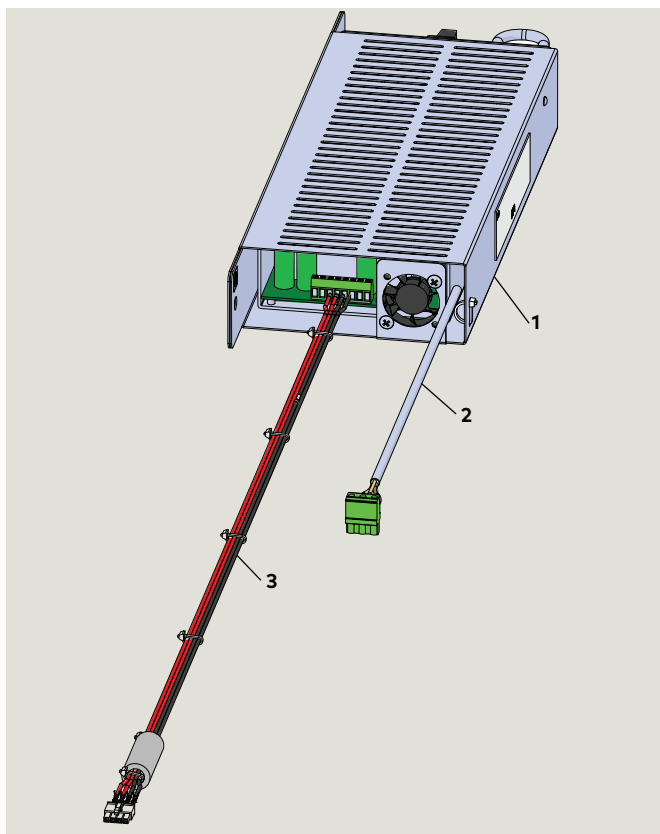
Fig. 13.11.5 Detail "A"

- | |
|---|
| <p>3 5/16 x 1/2" SHCS,
SS
DF6018-01G</p> <p>4 5/16" flat washer, SS
DF6019-01G</p> <p>5 5/16" screw size
external-tooth lock
washer DF6016-01G</p> <p>14 Earth ground cable
assembly DX6009</p> <p>14.1 Earth ground label</p> |
|---|



13.12 Install cables from Motion Assist 360 power supply to control unit

Fig. 13.12.1 DC power cable installed



NOTICE

Remote installation of Motion Assist 360 power supply and control unit:

- Cable installation (Para. 13.13) not required.

13.12.1 Connect 115 Vac cable.

1. Insert 115 Vac cable (2) plug into mains power receptacle (5) on control unit.

NOTICE

- Insure plug is fully inserted and locked in receptacle.
- Use container cable tie to secure cable; loop and tie wrap excess cable as required.

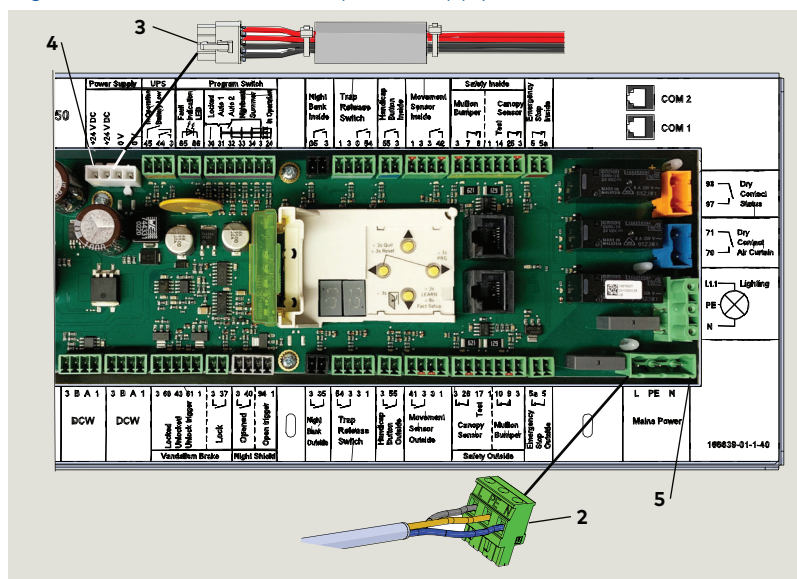
13.12.2 Install DC power cable.

1. Insert DC power cable (3) plug into power supply receptacle (4) on control unit.

NOTICE

- Insure plug is fully inserted and locked in receptacle.
- Use container cable tie to secure cable; loop and tie wrap excess cable as required.

Fig. 13.12.2 Control unit DC power supply cable connections



- | | |
|--------------------------|------------------------------------|
| 1 DC power supply DX6001 | 4 Power supply receptacle |
| 2 115 Vac cable | 5 Mains power (115 Vac) receptacle |
| 3 DC power cable | |

13.12.3 115 Vac and DC cable routing in in-ground container.

NOTICE

- Cables must be secured to side of container.
- **Cables must not be in contact with Motion Assist 360 drive!**

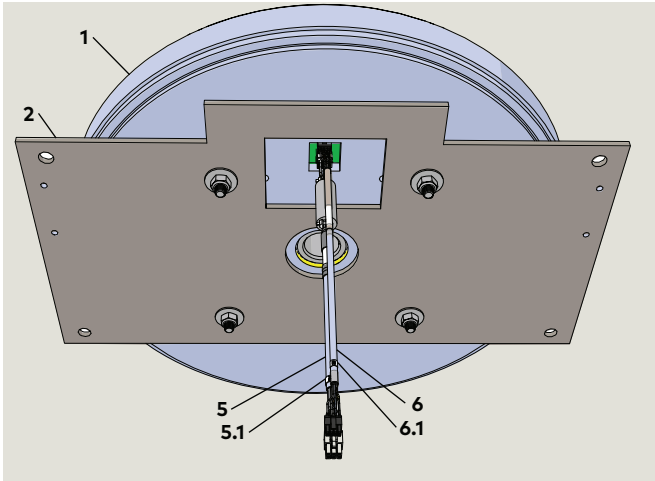
13.13 Install cables from Motion Assist 360 drive to control unit

NOTICE

Remote installation of Motion Assist 360 power supply and control unit:

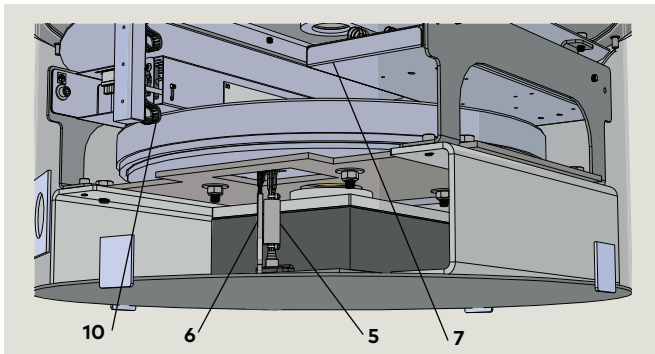
- Cable installation (Para. 13.13) to control unit not required.

Fig. 13.13.1 Motion Assist 360 cables



- | | |
|---------------------------|---------------------|
| 1 Motion Assist 360 drive | 5.1 Cable tag (21) |
| 2 Mounting plate | 6 Hall sensor cable |
| 5 Power cable | 6.1 Cable tag (22) |

Fig. 13.13.2 Motion Assist 360 drive cables in container



- | | |
|---------------------|----------------|
| 5 Power cable | 7 Control unit |
| 6 Hall sensor cable | |

13.13.1 Connect operator Hall sensor cable.

1. Insert Hall sensor cable (6) plug into Drive Unit Reference and Position Sensors receptacle (8) on control unit.

NOTICE

- Insure plug is fully inserted and locked in receptacle.
- Use container cable tie to secure cable; loop and tie wrap excess cable as required.
- **Cable must not be in contact with Motion Assist 360 drive!**

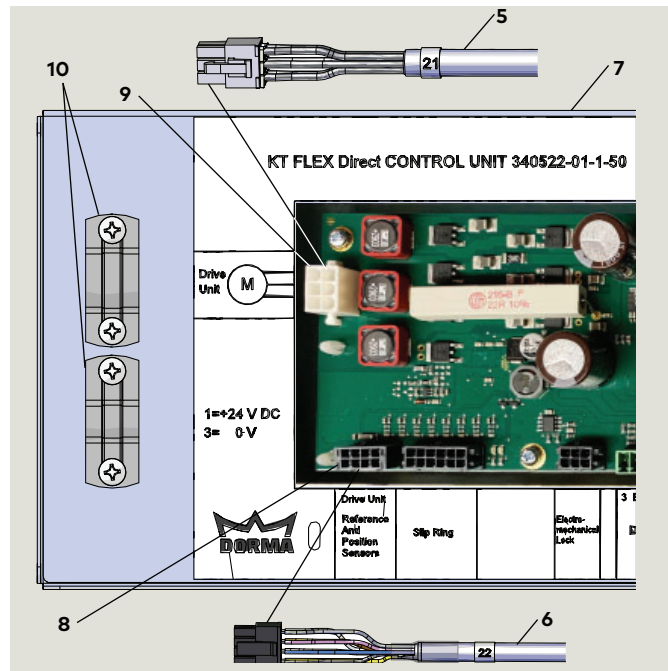
13.13.2 Connect operator power cable.

1. Insert power cable (5) plug into Drive Unit motor receptacle (9) on control unit.

NOTICE

- Insure plug is fully inserted and locked in receptacle.
- Use container cable tie to secure cable; loop and tie wrap excess cable as required.
- **Cable must not be in contact with Motion Assist 360 drive!**

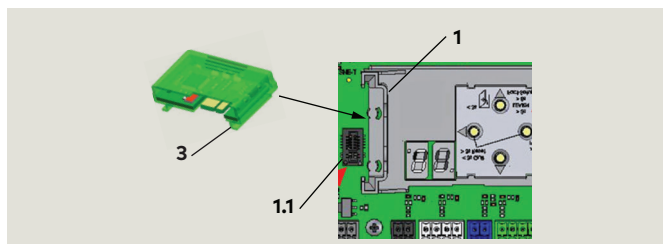
Fig. 13.13.3 Motion Assist 360 control unit and operator cables



- | | |
|----------------------------------|-------------------------------------|
| 5 Power cable | 8 Drive Unit Hall sensor receptacle |
| 6 Hall sensor cable | 9 Drive Unit power cable receptacle |
| 7 Motion Assist 360 control unit | 10 Cable clamp |

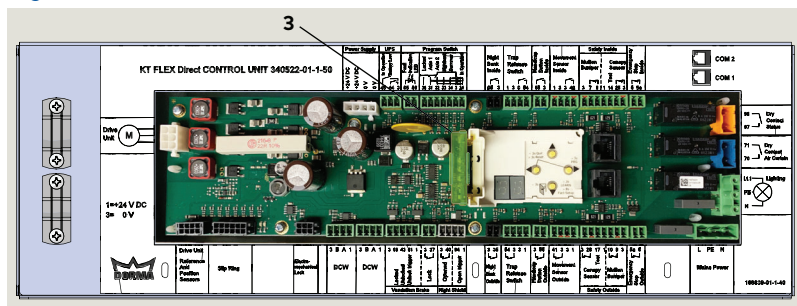
13.14 Install "S" Motion Assist function module

Fig. 13.14.1 "S" function module installation



- 1 Function module slot
- 1.1 Function module socket
- 3 "S" function module (GRN) power assist DX6003-002

Fig. 13.14.2 Control unit with function module



- 3 "S" function module (GRN) power assist DX6003-002

NOTICE

Remote installation of Motion Assist 360 power supply and control unit:

- Module installation in Remote enclosure.

13.14.1 Install "S" function module supplied with Motion Assist 360 hardware.

1. Insert "S" function module into control unit function module slot and socket.
- "S" function module (GRN): Motion Assist.

This page left intentionally blank.

14 Canopy installation

17.1 Canopy shipped as single assembly - less than 8 feet OD

Fig. 14.1.1 Canopy assembly, cover side

- 1 Cover, outer section
- 2 Cover, center section

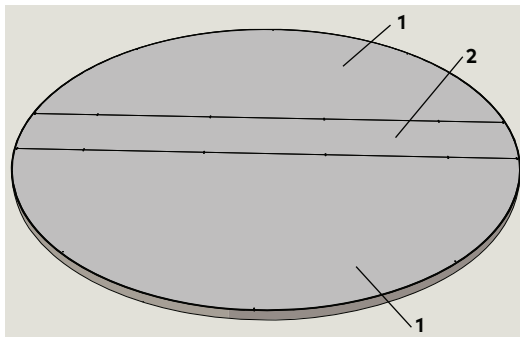
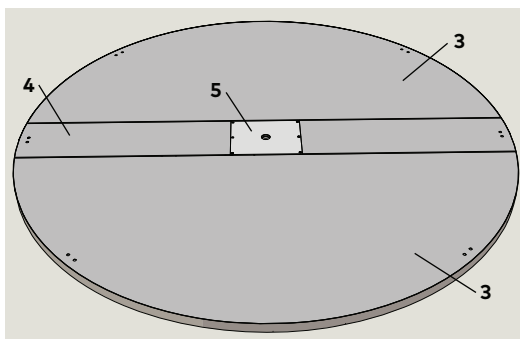


Fig. 14.1.2 Canopy assembly, soffit side

- 3 Soffit, outer section
- 4 Soffit, center section
- 5 Bearing assembly DS6028



Reference Crane shop drawings.

NOTICE

Paragraph 14.1 outlines typical unpacking steps and canopy views for canopy shipped in one section, less than 8' OD.

Refer to Crane shop drawings for job canopy assembly documentation and fastener hardware.

NOTICE

Canopy construction may vary from illustrations.

NOTICE

- Three piece canopies 8' but less than 10' OD are shipped in two sections. Reference Para. 14.2.
- Four piece canopies 10' OD and over are shipped in two sections. Reference Para. 14.3.

14.1.1 Uncrate canopy shipping crate.

1. Uncrate canopy shipping crate.

CAUTION

Refer to warning tag on shipping crate regarding unpacking procedure.

NOTICE

Installation template (Chapter 11) shipped in canopy shipping crate.

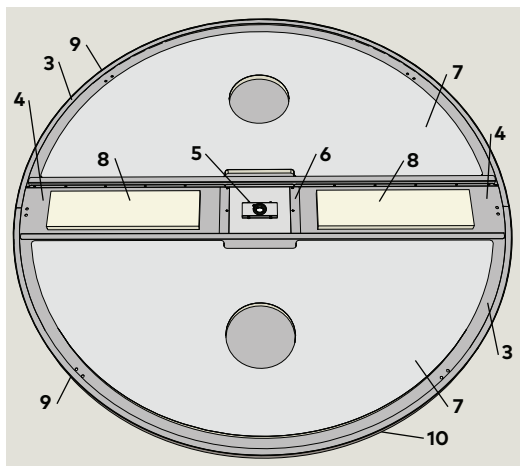


WARNING

Use caution when lifting and positioning canopy assembly!

- 3 Soffit, outer section
- 4 Soffit, center section
- 5 Bearing assembly DS6028
- 6 Center muntin mounting plate
- 7 Honeycomb cap
- 8 Honeycomb
- 9 Top canopy cover mounting bracket
- 10 Outer cladding

Fig. 14.1.3 Canopy with covers removed



CAUTION

Place canopy assembly on elevated smooth surface.

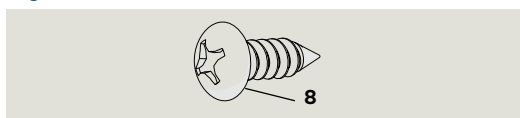
- Prevents damage to optional lights.
- Prevents damage to soffit surfaces.

17.1.2 Remove outer and center top covers.

1. Remove all #8 x 1/2" Phillips pan head sheet metal screws (Fig. 14.1.4) securing top covers to canopy.
2. Remove two outer section and inner section covers and set aside.

- 8 #8 x 1/2" Phillips pan head sheet metal screw S21 0210

Fig. 14.1.4 #8 x 1/2" PPHMS

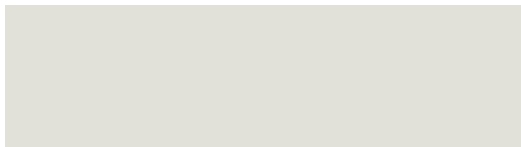


TIPS AND RECOMMENDATIONS

Mark all covers with their location on canopy so that they can be reinstalled in their original positions.

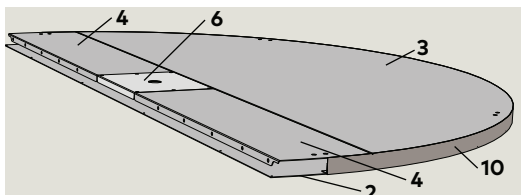
14.2 Canopy shipped in two sections - 8' up to but not including 10' OD

Fig. 14.2.1 Canopy outer and center sections, cover side



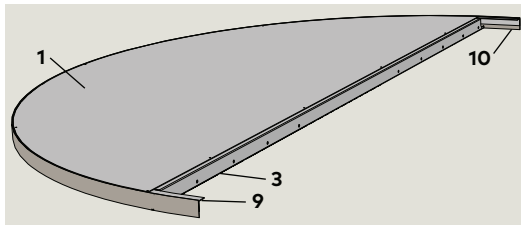
- 1 Cover, outer section
- 2 Cover, inner section
- 3 Soffit, outer section
- 4 Soffit, center section
- 5 Bearing assembly DS6028
- 6 Center muntin mounting plate
- 9 Top canopy cover mounting bracket
- 10 Outer cladding

Fig. 14.2.2 Canopy outer and center sections, soffit side



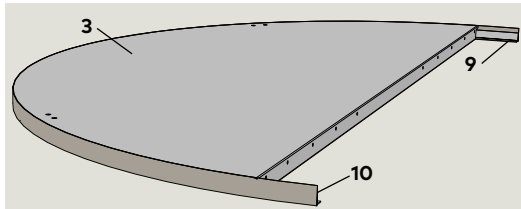
- 1 Cover, outer section
- 3 Soffit, outer section
- 9 Top canopy cover mounting bracket
- 10 Outer cladding

Fig. 14.2.3 Canopy outer section, cover side



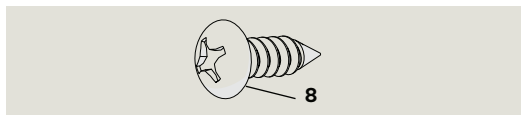
- 3 Soffit, outer section
- 9 Top canopy cover mounting bracket
- 10 Outer cladding

Fig. 14.2.4 Canopy outer section, soffit side



- 8 #8 x 1/2" Phillips pan head sheet metal screw S21 0210

Fig. 14.2.5 #8 x 1/2" PPHMS



Reference Crane shop drawings.

NOTICE

Paragraph 14.2 outlines typical assembly steps and canopy views for a two section canopy, 8' up to but not including 10' OD.

Refer to Crane shop drawings for job canopy assembly documentation and fastener hardware.

NOTICE

Canopy construction may vary from illustrations.

14.2.1 Uncrate canopy shipping crates.

1. Uncrate canopy shipping crates.

CAUTION

Refer to warning tag on shipping crates regarding unpacking procedure.

NOTICE

Installation template (Chapter 11) shipped in canopy shipping crate.



WARNING

Use caution when lifting and positioning canopy assemblies!

CAUTION

Place canopy assemblies on elevated smooth surface.

- Prevents damage to optional lights.
- Prevents damage to soffit surfaces.

Fig. 17.2.6 Canopy outer and center sections, covers off

- 3 Soffit, outer section
- 4 Soffit, center section
- 5 Bearing assembly DS6028
- 6 Center muntin mounting plate
- 7 Honeycomb cap
- 8 Honeycomb, center section
- 9 Top canopy cover mounting bracket
- 10 Outer cladding
- 11 Honeycomb, outer section

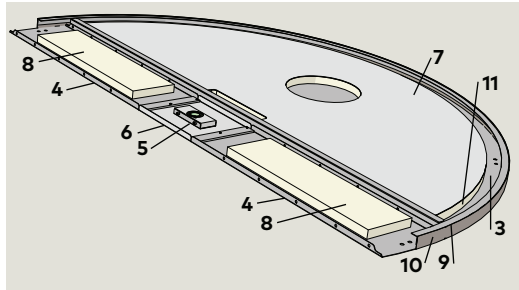


Fig. 14.2.7 Canopy outer section, cover off

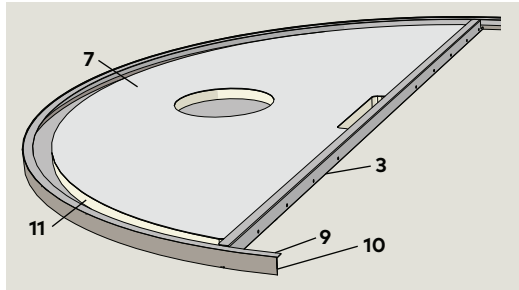


Fig. 14.2.8 Soffit fastener hardware

- 1 1/4-20 x 3/4" SS HHCS S22 0550
- 2 5/8" OD SS flat washer
- 3 1/4-20 SS hex nut S26 1337

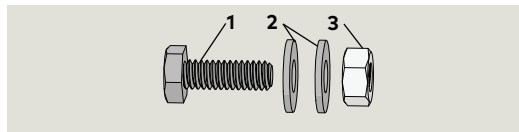


Fig. 14.2.9 Canopy sections positioned for fastening together

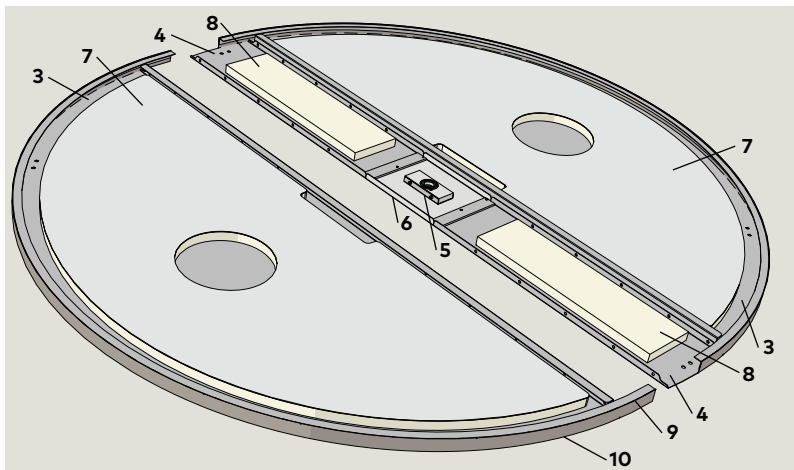
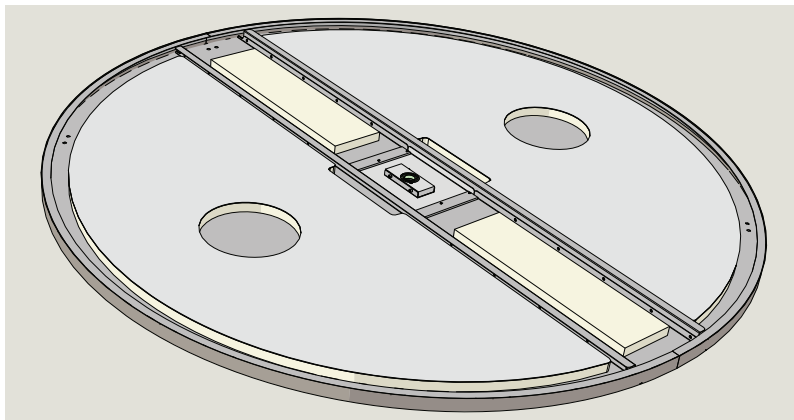


Fig. 14.2.10 Canopy sections fastened together



14.2.2 Remove cover(s) from each canopy section.

1. Remove all #8 x 1/2" Phillips pan head sheet metal screws (Fig. 14.2.5) securing top cover(s) to canopy sections.
2. Remove two outer section and the inner section covers and set aside.



TIPS AND RECOMMENDATIONS

Mark all covers with their location on canopy so that they can be reinstalled in their original positions.

14.2.3 Fasten canopy sections together.



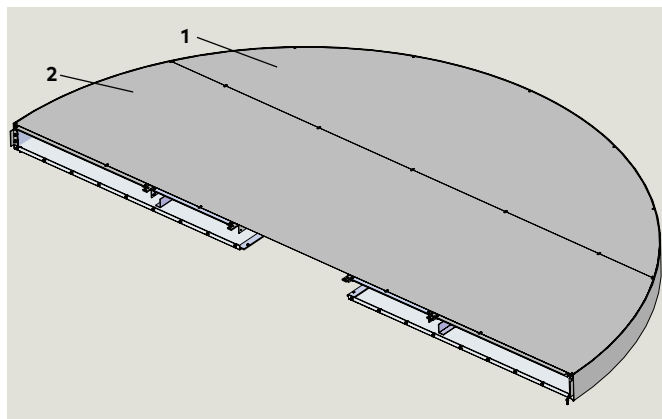
WARNING

Use caution when lifting and positioning canopy assemblies!

1. Position canopy sections (Fig. 14.2.9).
2. Fasten canopy soffit sections together using fastener hardware in Fig. 14.2.8.

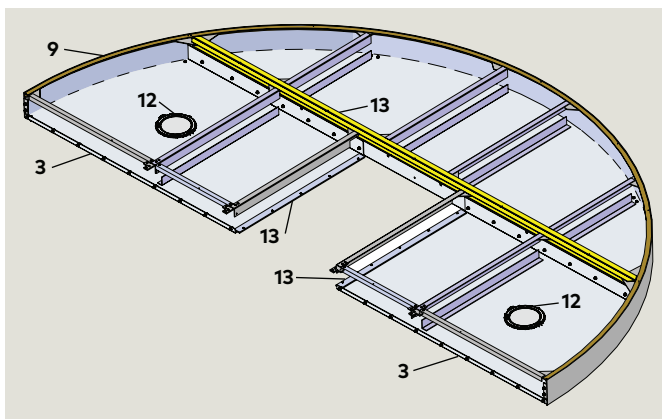
14.3 Canopy shipped in two sections - 10' OD and over

Fig. 14.3.1 Canopy section



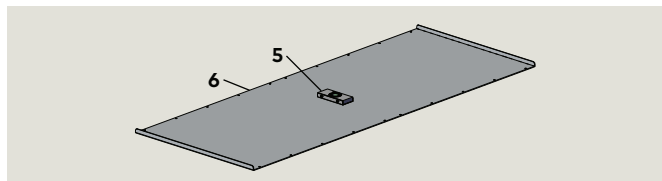
- 1 Cover, outer section
- 2 Cover, center section

Fig. 14.3.2 Canopy section, covers off



- 3 Soffit, center section
- 9 Top canopy cover mounting bracket
- 12 LED light (optional)
- 13 Center muntin mounting

Fig. 14.3.3 Center muntin with bearing assembly



- 5 Bearing assembly DS6028
- 6 Center muntin mounting plate

- 8 #8 x 1/2" Phillips pan head sheet metal screw S21 0210

Fig. 14.3.4 #8 x 1/2" PPHMS



NOTICE

Paragraph 14.3 outlines typical assembly steps and canopy views for a two section canopy, 10' OD and over. **Refer to Crane shop drawings for job canopy assembly documentation and fastener hardware.**

NOTICE

Canopy construction may vary from illustrations.

14.3.1 Uncrate canopy shipping crates.

1. Uncrate canopy shipping crates.

CAUTION

Refer to warning tag on shipping crates regarding unpacking procedure.

NOTICE

Installation template (Chapter 11) shipped in canopy shipping crate.



WARNING

Use caution when lifting and positioning each canopy assembly!

CAUTION

Place each canopy assembly on elevated smooth surface.

- Prevent damage to optional lights.
- Prevent damage to soffit surfaces.

17.3.2 Remove covers.

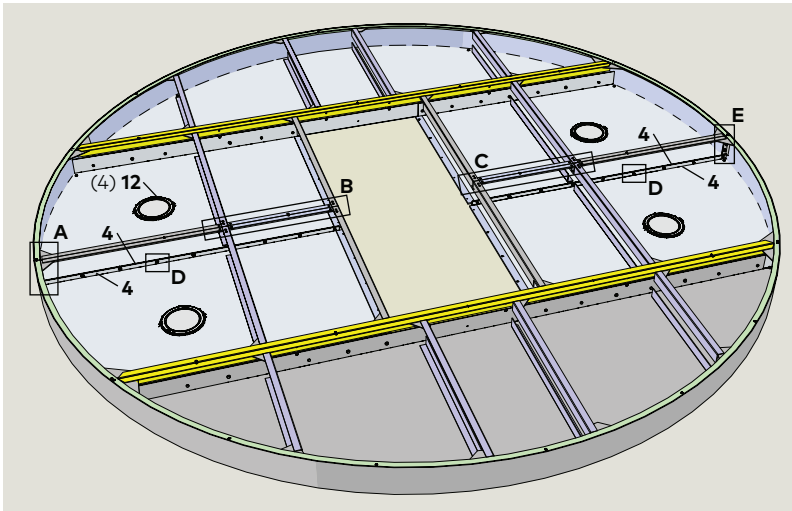
1. Remove all pan head screws (Fig. 14.3.4) securing outer and inner covers to each canopy section.
2. Remove covers and set aside.



TIPS AND RECOMMENDATIONS

Mark covers with their location on canopy for reinstallation in their original positions.

Fig. 14.3.5 Canopy sections fastened together



- A View "A"
- B View "B"
- C View "C"
- D View "D"
- E View "E"
- 4 Inner soffit, outer section
- 12 LED light (optional)

14.3.3 Fasten canopy sections together.



WARNING

Use caution when lifting and positioning each canopy assembly!

CAUTION

Fastener hardware tightening.

- Hand secure all fastener hardware in steps 1, 2 and 3.
- Once all fasteners and attachment plates have been installed, tighten nuts and screws.

Steps 1 and 2 use fastener hardware in Fig. 14.3.10.

1. Fasten inner soffits together. Reference Fig. 14.3.8, View "D" (typical view)
2. Fasten fascia angle brackets together. Reference Fig. 14.3.6, View "A" and Fig. 14.3.7, View "E".

Step 3 uses fastener hardware in Fig. 14.3.11.

3. Fasten canopy cover supports and brackets to attachment plates (Fig. 14.3.9). Reference Fig. 14.3.12, View "B" and Fig. 14.3.13, View "C".

- 1 1/4-20 x 3/4" SS HHCS S22 0550
- 2 5/8" OD SS flat washer
- 3 1/4-20 SS hex nut S26 1337
- 5 10-24 x 3/4" SS PFHS S21 0326
- 6 Attachment plate DC6006
- 11 1 x 1" aluminum angle
- 16 Canopy cover support
- 17 Bracket

Fig. 14.3.6 View "A"

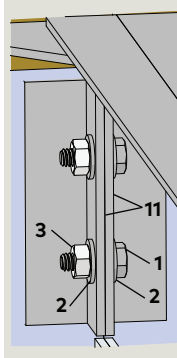


Fig. 14.3.7 View "E"

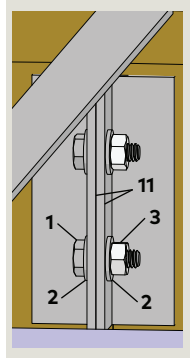


Fig. 14.3.10 Fastener hardware

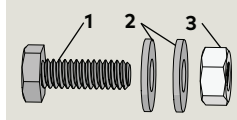


Fig. 14.3.11 Attachment plate fastener hardware

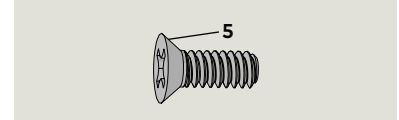


Fig. 14.3.8 View "D" (typical)

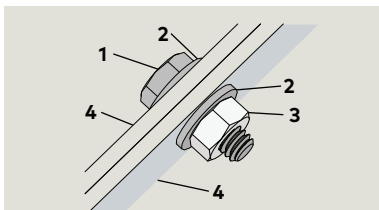
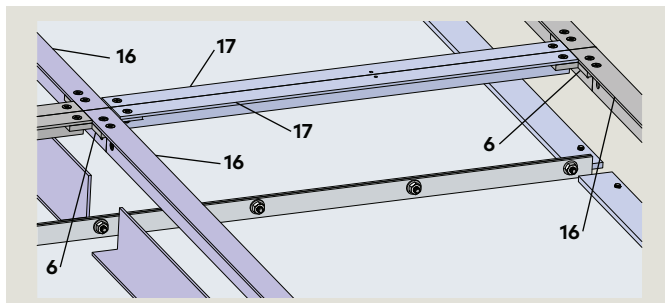


Fig. 14.3.12 View "B"



- 1 1/4-20 x 3/4" SS HHCS
- 2 5/8" OD SS flat washer
- 3 1/4-20 SS hex nut S26 1337
- 4 Inner soffit, outer section
- 6 Attachment plate DC6006
- 16 Canopy cover support
- 17 Bracket
- 18 L bracket

Fig. 14.3.9 Attachment plate

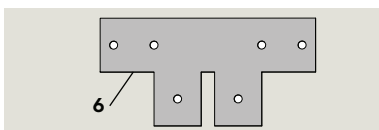


Fig. 14.3.13 View "C"

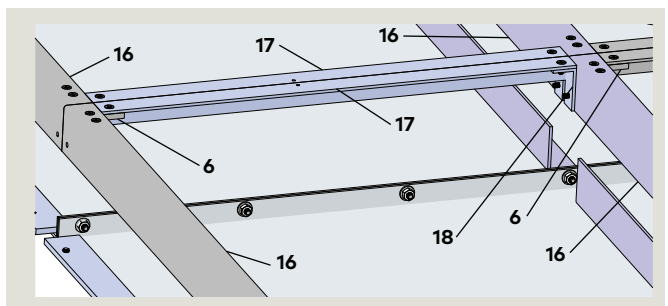
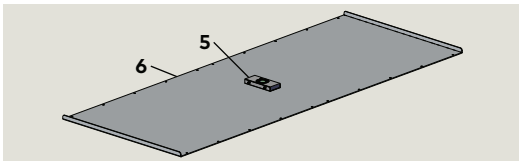


Fig. 14.3.14 Center muntin with bearing assembly

- 5 Bearing assembly DS6028
- 6 Center muntin mounting plate



14.3.4 Fasten center muntin assembly to canopy.



WARNING

Use caution when lifting and positioning canopy assembly!

1. Fasten center muntin mounting plate to canopy using Phillips oval head fastener (Fig. 14.3.17).

Fig. 14.3.15 Canopy muntin installed, cover side view

- 5 Bearing assembly DS6028
- 6 Center muntin mounting plate

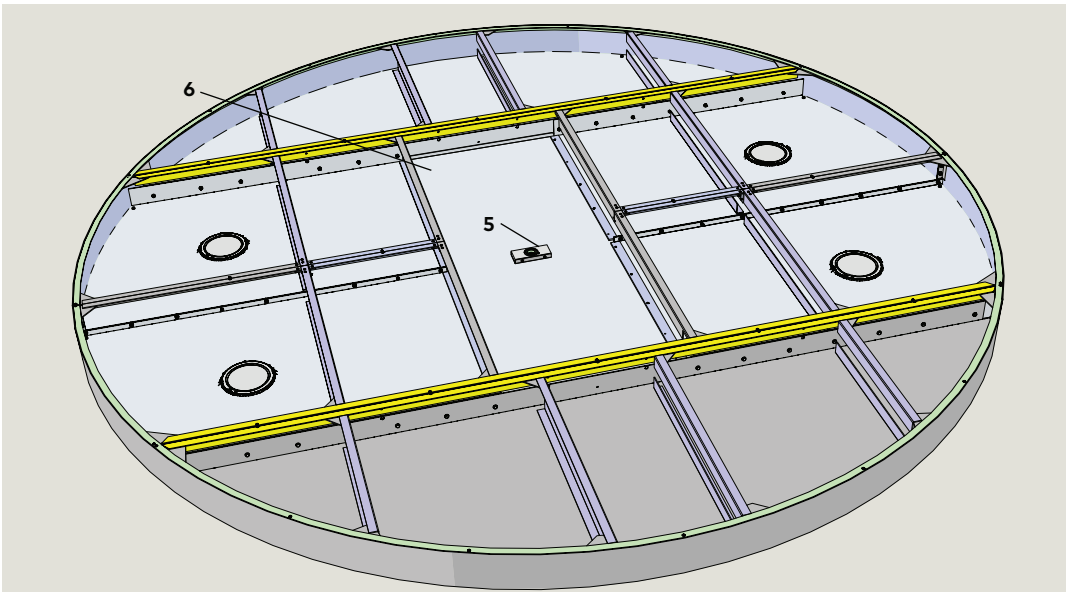


Fig. 14.3.16 Canopy muntin installed, soffit side view

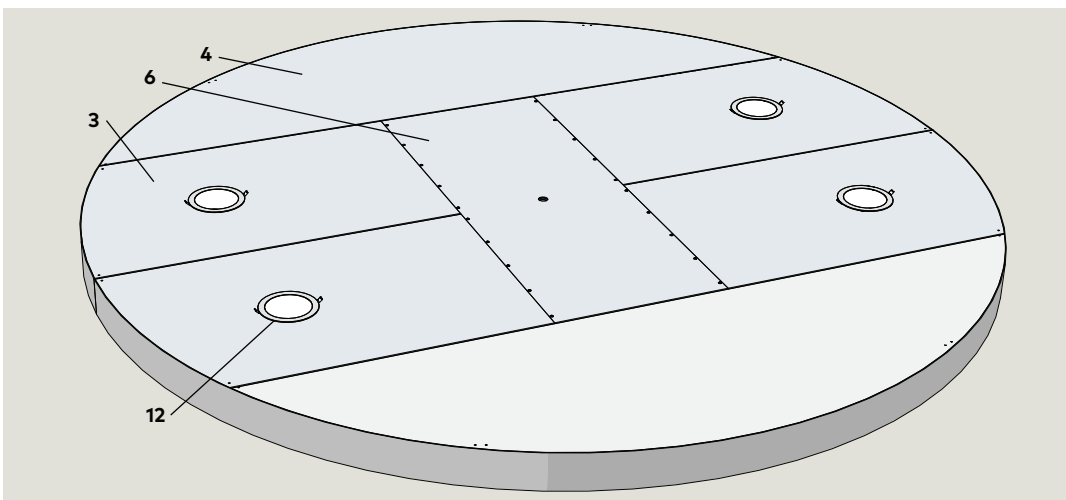
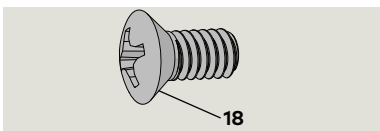


Fig. 14.3.17 PHOHS

- 18 1/4-20 x 1/2" Phillips oval head screw



14.4 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!

14.4.1 Move canopy to approximate door centerpoint.

1. Position canopy at door centerpoint (Reference Para. 14.4.4), orienting canopy to building interface (Fig. 14.4.2).



WARNING

A minimum of two persons are required when handling canopy!



WARNING

Use caution when handling canopy!

14.4.2 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 optional lights.
- Prevent damage to soffit surfaces.

CAUTION

Canopy post mounting holes.

Place lift equipment between canopy post mounting hole areas.



WARNING

Lock lift wheels once lifts are in place!

14.4.3 Raise canopy to installation height.

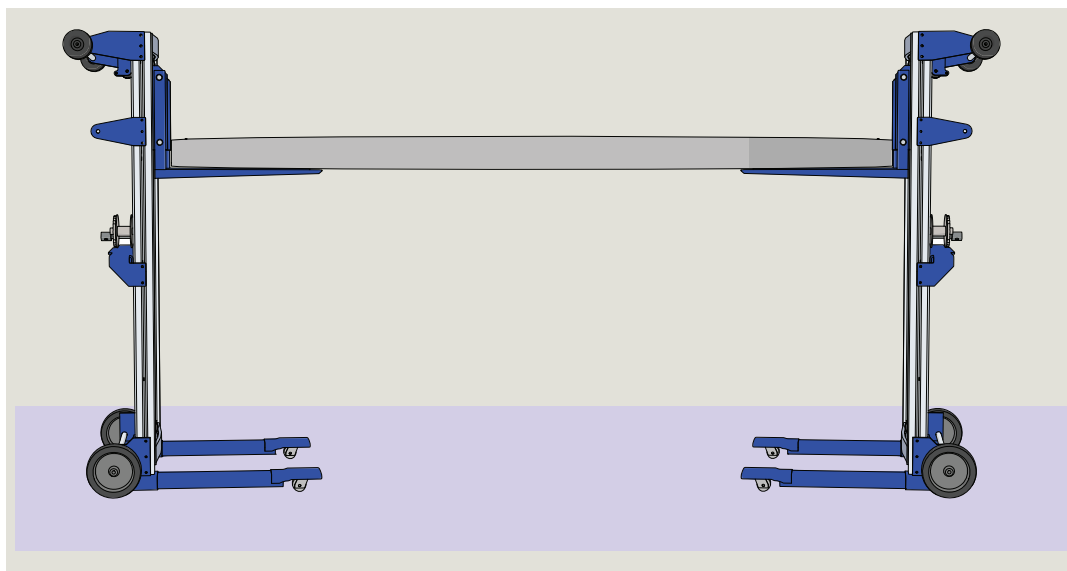
1. Raise canopy to height for post installation (Chapter 15).



WARNING

Use caution when raising canopy!

Fig. 14.4.1 Canopy on lift equipment example



14.4.4 Plumb centerline of canopy top bearing with in-ground container bottom plug.

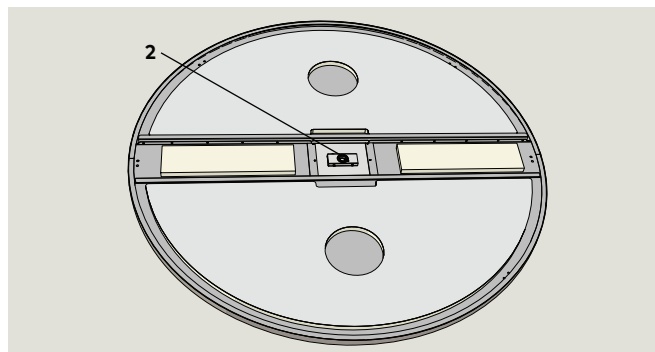
NOTICE

Plumb canopy bearing.

Using plumb bob line, position canopy so top bearing centerline is plumb with in-ground container bottom plug centerline (Fig. 14.4.6).

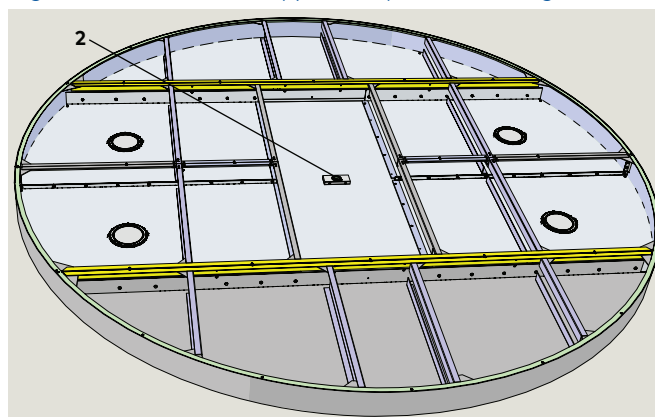
Top bearing centerline must be plumb with bottom plug centerline.

Fig. 14.4.4 7 foot canopy



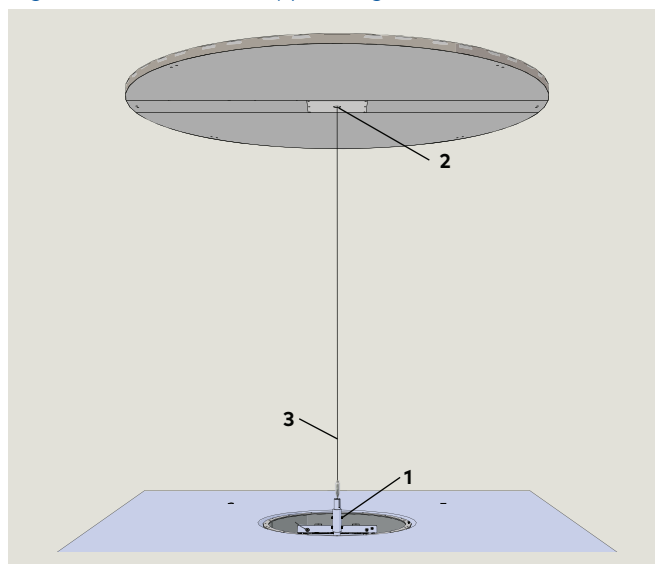
2 Top bearing

Fig. 14.4.5 12 foot canopy with optional LED lights



2 Top bearing

Fig. 14.4.6 Plumb canopy to in-ground container



1 Bottom plug
2 Top bearing
3 Plumb line

14.5 Canopy LED fixture installation

Fig. 14.5.1 LED light fixture

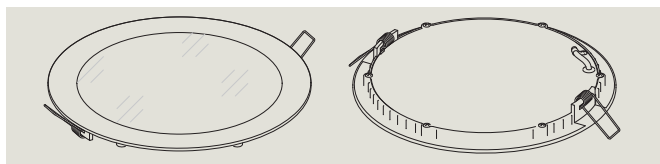


Fig. 14.5.2 7 foot canopy with two LED lights

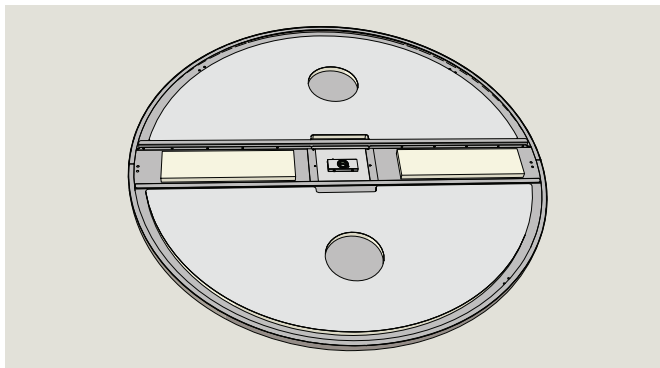
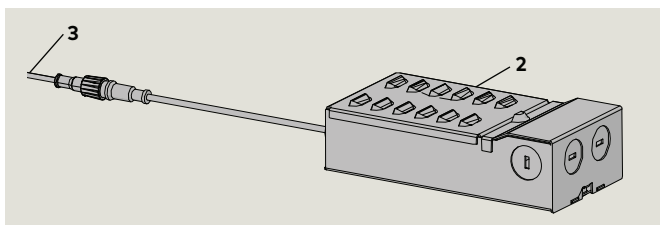
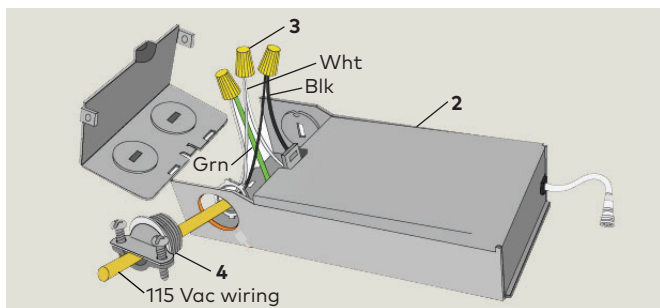


Fig. 14.5.3 LED driver and extension cable



- 2 LED driver
- 3 Extension cable

Fig. 14.5.4 115 Vac wiring to LED driver



- 2 LED driver
- 3 Wire nut
- 4 NM cable connector or equivalent

14.5.1 LED light fixtures (option).

- Each light is supplied with an LED driver (Fig. 14.5.3).

14.5.2 LED light installation.



TIPS AND RECOMMENDATIONS

LED lights are factory installed.

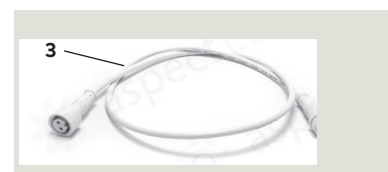
14.5.3 LED driver installation.



TIPS AND RECOMMENDATIONS

Due to their height, LED drivers must be located outside of canopy. Install extension cable from each light to its LED driver.

Fig. 14.5.5 LED driver extension cable



- 3 Extension cable; 2, 5, 10 and 25 foot lengths

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

14.5.4 115 Vac wiring to each LED driver.



WARNING

Work on 115 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 In-ground container Motion Assist 360 control unit to location of LED drivers.
2. For each LED driver, splice cable wires to LED driver 115 Vac wiring inside driver junction box using three wire nuts supplied with driver.

14.5.5 115 Vac connection at Motion Assist 360 control unit in remote enclosure.

1. Route 115 Vac cable to Motion Assist 360 control unit in remote enclosure.
2. Secure cable to canopy.
3. Connect cable wires to Motion Assist 360 control unit lighting connector.

15 Enclosure post installation

15.1 Open post shipping crate

Fig. 15.1.1 Post shipping crate

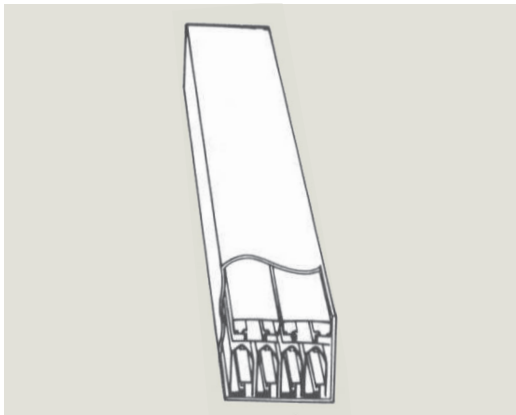
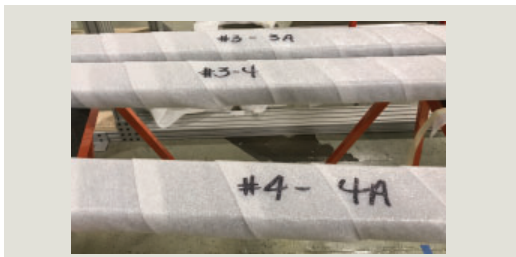


Fig. 15.1.2 Enclosure post numbering



15.1.1 Center posts and quarter posts.

1. Uncrate center posts and quarter posts 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 post/end walls are to be located in the door installation.
 - Insure each post is marked with its location number on the top and bottom of the post.



TIPS AND RECOMMENDATIONS

Refer to Para. 15.5 for enclosure post and base numbering examples.

15.2 Quarter post/end walls and center post assemblies

15.2.1 Quarter post/end wall and center post ,aluminum extrusion

- 1 Quarter post/end wall
- 2 Neoprene shell
- 3 Holes for canopy fasteners
- 4 Tapped holes for base 1/4-20 x 1" SS HHCS
- 5 Center post
- 6 Post numbering location

Fig. 15.2.1 Quarter post/end wall, neoprene shell

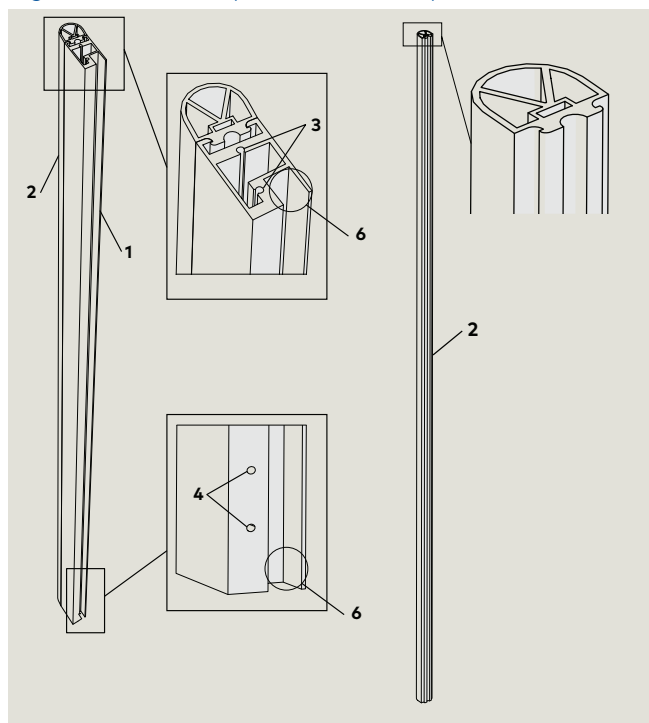
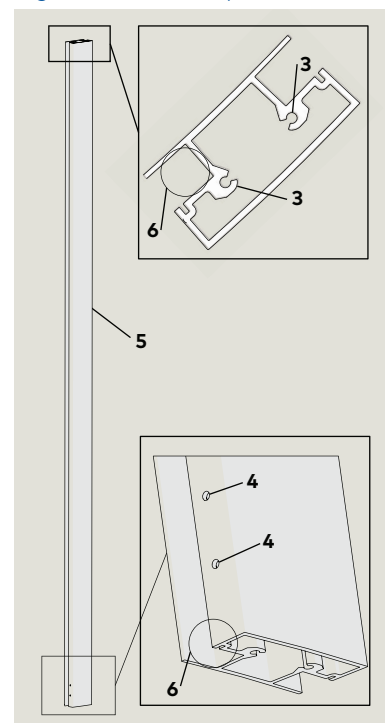


Fig. 15.2.3 Center post



15.2.2 Quarter post/end wall and center post, stainless steel or bronze

- 1 Quarter post/end wall
- 2 1/4-20 tapped hole
- 3 Holes for canopy fasteners
- 5 Center post
- 6 1/4" steel post block
- 7 1/4-20 tapped hole
- 8 1/4" steel post block
- 9 Post numbering location

Fig. 15.2.2 Quarter post/end wall

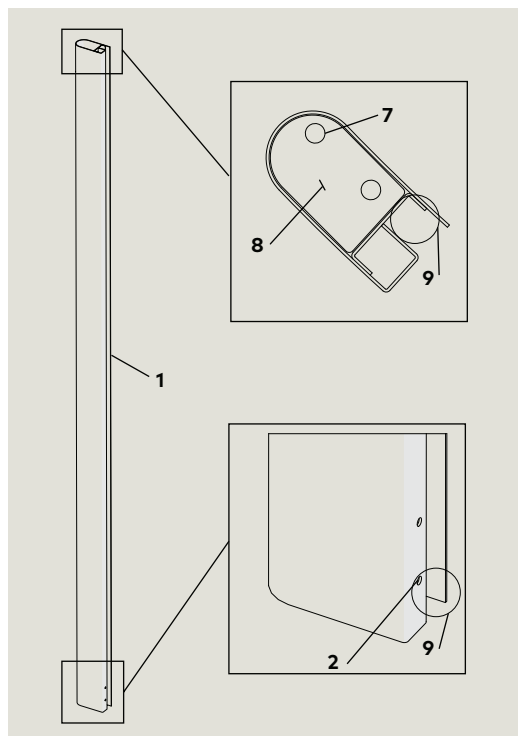
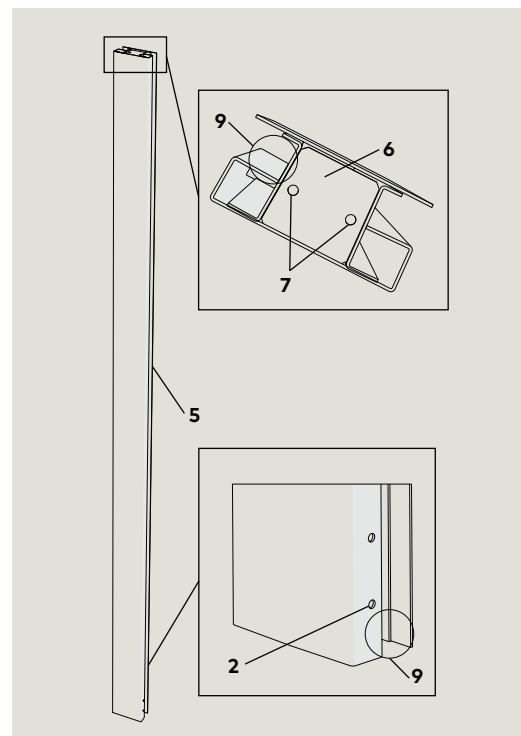


Fig. 15.2.4 Center post



15.3 Attach aluminum extrusion posts to canopy

Fig. 15.3.1 Center post fasteners

- 1 Aluminum center post/end wall
- 2 Top cover support
- 3 Fascia
- 4 1/4-20 x 1" hex head thread-cutting screw (Fig. 16.4.4)
- 5 Gusset
- 6 Top support bracket
- 7 Soffit

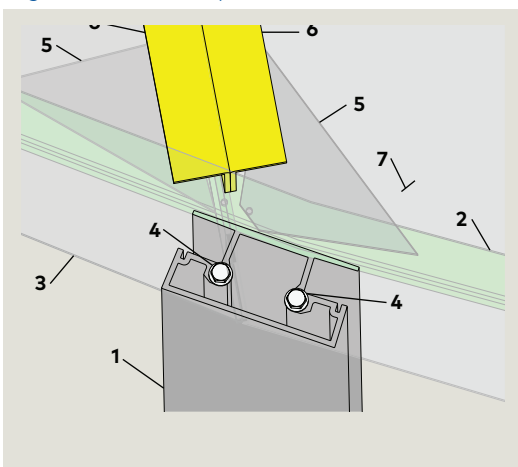


Fig. 15.3.2 Quarter post/end wall fasteners

- 1 Aluminum quarter post/end wall
- 1.1 Neoprene shell
- 2 Top cover support
- 3 Fascia
- 4 1/4-20 x 1" hex head thread-cutting screw (Fig. 18.4.4)
- 5 Gusset
- 6 Top support bracket
- 7 Soffit

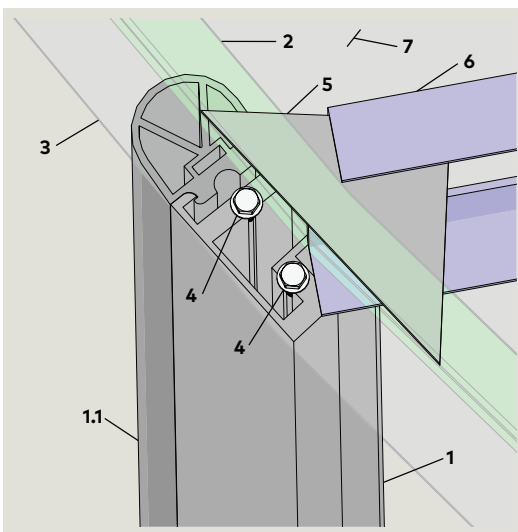


Fig. 15.3.3 Post connections to canopy example

- 5 Quarter post/end wall
- 6 Center post

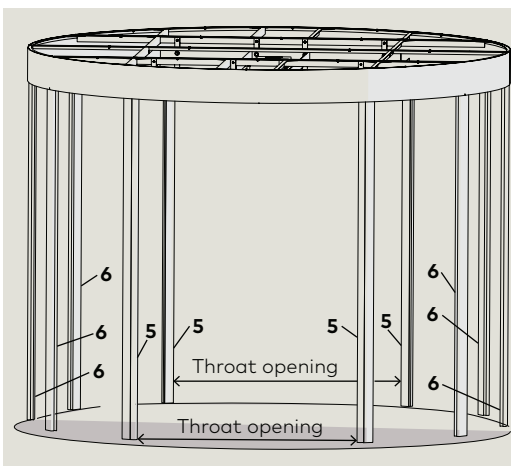
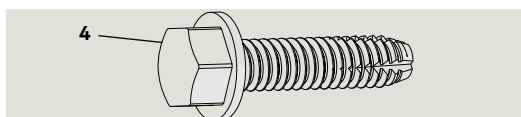


Fig. 15.3.4 1/4 -20 x 1" hex head thread-cutting screw

- 4 1/4-20 x 1" hex head thread-cutting screw



NOTICE

Control hardware installation on quarter post.

Reference Para. 15.6, Operator control hardware installation on quarter post.

- Accommodation for DC wiring to in-ground container from quarter post must be in place prior to quarter post installation.
- Building contractor responsibility.**

15.3.1 Fasten posts to canopy.



WARNING

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



WARNING

Use caution while working with posts in the canopy area!

1. Fasten posts to canopy using 1/4-20 x 1" hex head thread-cutting screws through soffit holes into posts.
- Reference Para. 7.13 Fastener hardware.

CAUTION

Refer to Para. 15.5 for post numbering locations.



TIPS AND RECOMMENDATIONS

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



TIPS AND RECOMMENDATIONS

Hex head screws packaged in center shaft shipping crate

15.3.2 Operator control hardware installation on quarter post.

CAUTION

Refer to Para. 15.6 for control hardware installation on quarter post.

15.4 Attach stainless steel or bronze posts to canopy

Fig. 15.4.1 Fastening center post

- 1 Center post, stainless steel
- 2 Soffit, center section
- 3 Fascia
- 4 Top canopy cover mounting bracket
- 5 Honeycomb cap
- 6 1/4-20 x 3/4" OD SS flat washer
- 7 1/4-20 x 1" hex head thread cutting screw (Fig. 15.2.3)

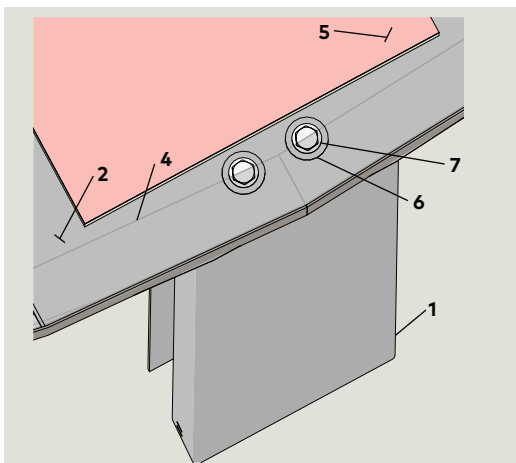


Fig. 15.4.2 Fastening quarter post/end wall

- 1 Quarter post/end wall stainless steel
- 2 Soffit, outer section
- 3 Fascia
- 4 Top canopy cover mounting bracket
- 5 Honeycomb cap
- 6 1/4-20 x 3/4" OD SS flat washer
- 7 1/4-20 x 1" hex head thread cutting screw

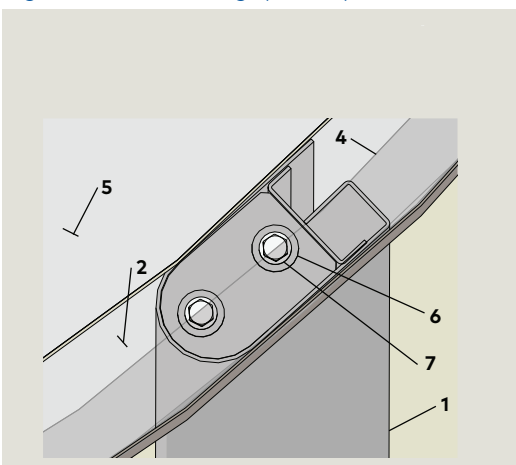


Fig. 15.4.3 1/4 -20 x 1" hex head thread-cutting screw

- 7 1/4-20 x 1" hex head thread cutting screw

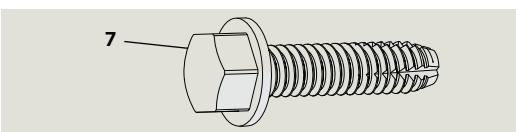
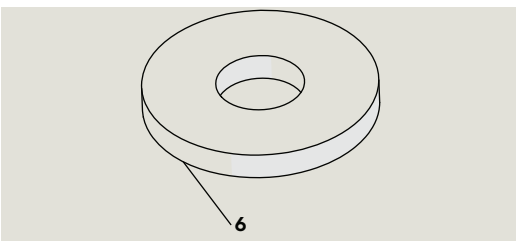


Fig. 15.4.4 1/4 -20 x 3/4" OD SS flat washer



NOTICE

Control hardware installation on quarter post.

Reference Para. 15.6, Operator control hardware installation on quarter post.

- Accommodation for DC wiring to in-ground container from quarter post must be in place prior to quarter post installation.

Building contractor responsibility.

15.4.1 Fasten posts to canopy.

1. Fasten posts to canopy using 1/4-20 x 1" hex head thread-cutting screws through soffit holes into posts.
- Reference Para. 7.13 Fastener hardware



TIPS AND RECOMMENDATIONS

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

CAUTION

Refer to Para. 15.5 for post numbering locations.



WARNING

Use caution while working with posts in canopy area!



TIPS AND RECOMMENDATIONS

Hex head screws packaged in center shaft shipping crate

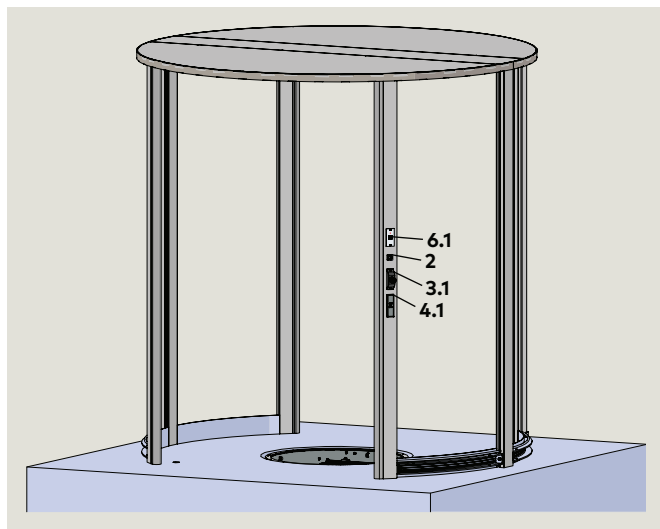
15.4.2 Operator control hardware installation on quarter post.

CAUTION

Refer to Para. 15.6 for control hardware installation on quarter post.

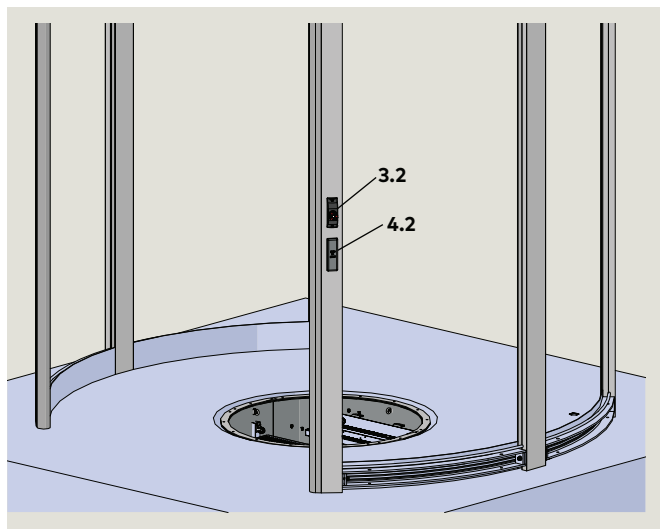
15.6 Operator control hardware installation on quarter posts

Fig. 15.6.1 Operator control hardware, interior



- | | |
|---|---------------------------------|
| 2 Mode switch
DX6008 | 4.1 Wave to Open
(option) |
| 3.1 Emergency Stop
pushbutton DX3413 | 6.1 Service Panel
DX4604-31C |

Fig. 15.6.2 Operator control hardware, interior



- | |
|---|
| 3.2 Emergency Stop
pushbutton DX3413 |
| 4.2 Push to Start (option) |

15.6.1 Verify canopy plumb.



WARNING

Use plumb bob to verify center of canopy is plumb with centerline of in-ground bottom plug.
Ref: Para. 14.4.4.

15.6.2 Operator control hardware.

1. Figures 15.6.1 and .2 detail operator control hardware that may be installed on the quarter posts.
2. Locations of operator control hardware must be reviewed with site contractor or owner.

15.6.3 Wiring installation.

Reference Wiring, Setup and Troubleshooting Manual DL6000-014 for wiring detail.

16 Enclosure base installation

16.1 Enclosure base examples

Fig. 16.1.1 Aluminum enclosure base, four inch sightline

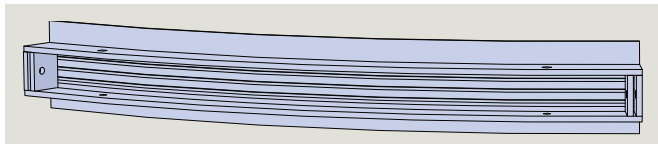
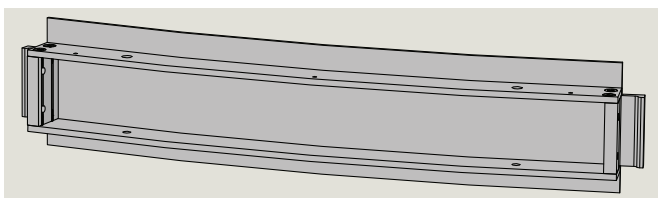


Fig. 16.1.2 Aluminum enclosure base, greater than four inch sightline



16.1.1 Enclosure base designs.



TIPS AND RECOMMENDATIONS

Enclosure base design for specific order:
Reference Crane shop drawings.

16.2 Open base enclosure shipping crate

Fig. 16.2.1 Base enclosure crates

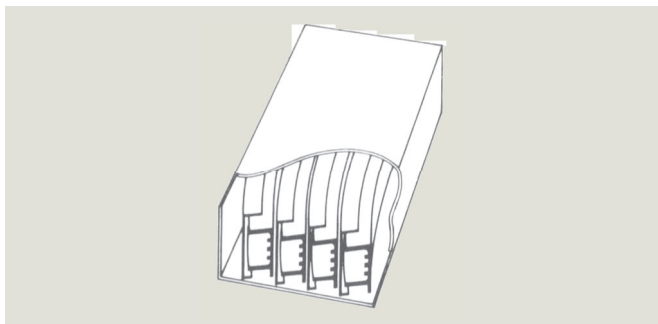


Fig. 16.2.2 Enclosure base shipping crate



16.2.1 Unpack enclosure base assemblies from shipping crate.

1. Uncrate enclosure base assemblies from their shipping crate.

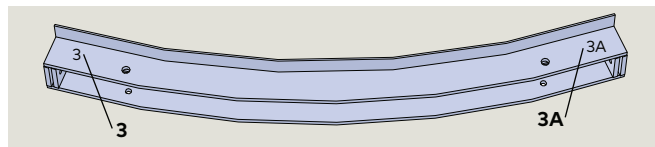
CAUTION

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. 16.2.2).
- The numbers are stamped on the base (Fig. 16.2.3).
- Insure base numbers match those on wrapping material.

Fig. 16.2.3 Enclosure base numbering



16.3 Set 3" studs into floor anchor holes

Fig. 16.3.1 3" studs in floor anchor holes, 7 foot OD door example

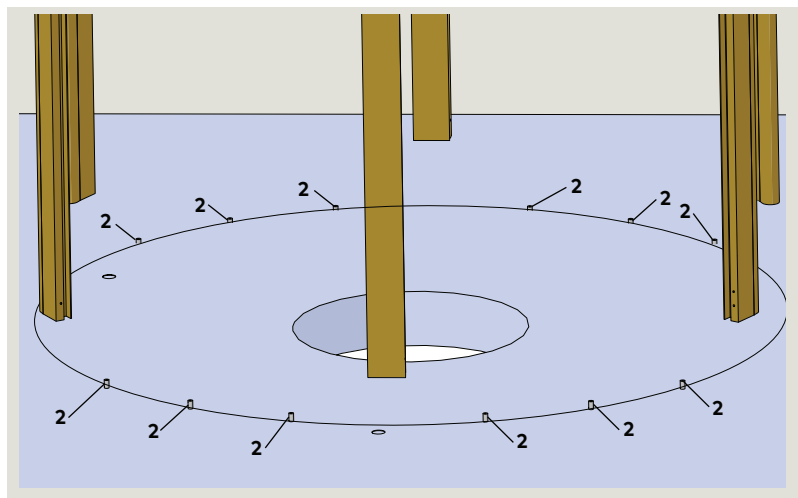


Fig. 16.3.2 3" stud

- 2 3/8 x 3" stud
Z27 0703

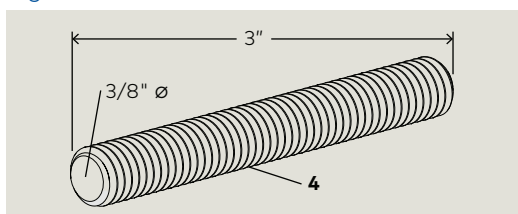


Fig. 16.3.3 Floor stud installation

- 2 3/8 x 3" stud
Z27 0703

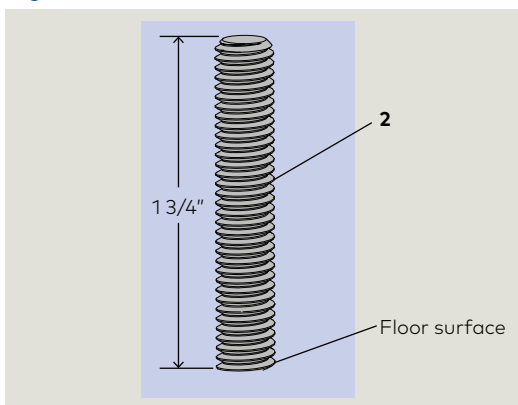
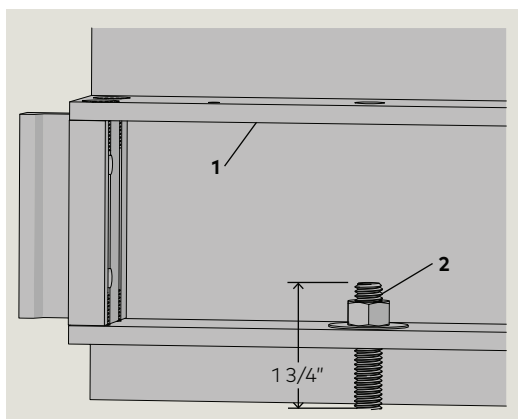


Fig. 16.3.4 Mounting base example with stud installation

- 1 Mounting base
- 2 3/8 x 3" stud
Z27 0703



16.3.1 Prepare stud anchor holes for anchoring epoxy.

CAUTION

Insure anchor holes are clear of dirt and debris.

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

16.3.2 Anchoring epoxy.

1. Use an anchoring epoxy such as Quikrete high strength anchoring epoxy.
 - Follow manufacturer's directions.

16.3.3 Partially fill anchor holes with anchoring epoxy.

1. Partially fill each anchor hole with epoxy to 1/2 to 2/3 of hole depth.

16.3.4 Set studs into anchor holes.

1. Set each stud into its anchor hole.

CAUTION

Set stud to a depth of 1 1/4", leaving 1 3/4" above floor surface. (Fig. 16.3.3).

16.3.5 Allow epoxy to cure.

1. Allow epoxy to fully cure before installing bases.

CAUTION

Follow manufacturer's directions on curing time.

- Colder temperatures may increase curing time.

16.4 Install aluminum base assemblies and attach base assemblies to aluminum posts

Fig. 16.4.1 Enclosure base and fascia assembly

- 1 Enclosure base
- 2 Fascia
- 3 10-24 x 1 1/4" SS Phillips oval head machine screw S21 0334
- 4 Base support spacer, 1/2" dia, 7/8" long
- 5 Base numbering example
- 7 3/8" x 3" stud Z27 0703
- 8 1/4-20 x 1" SS hex head machine screw S22 0550

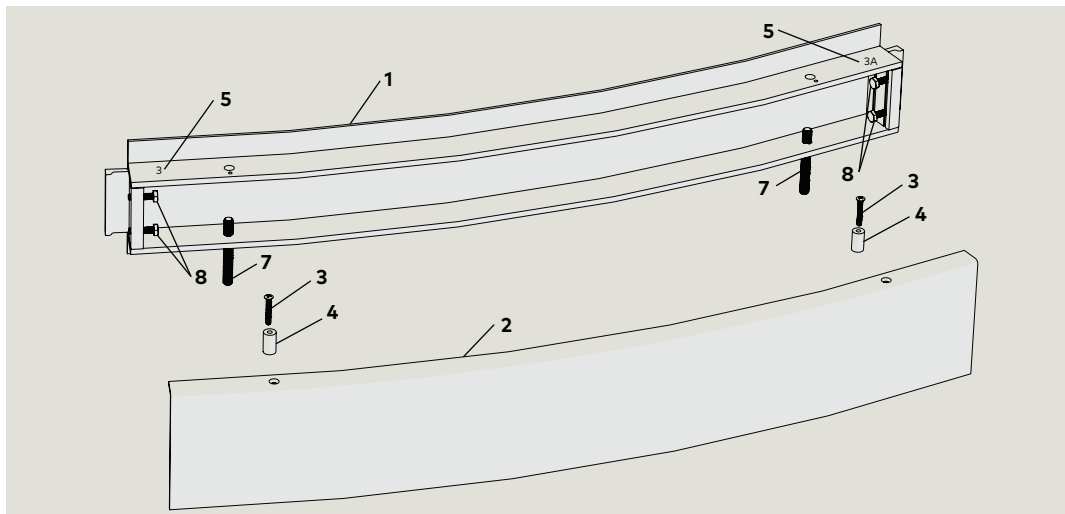


Fig. 16.4.2 S21 0334

- 1 Enclosure base
- 3 10-24 x 1 1/4" SS Phillips oval head machine screw S21 0334
- 4 Base support spacer, 1/2" dia, 7/8" long
- 7 3/8" x 3" stud Z27 0703
- 9 3/8" hex nut for 3/8" stud
- 10 Flat washer for 3/8" stud

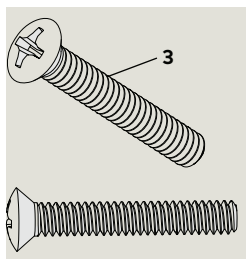


Fig. 16.4.5 Spacer

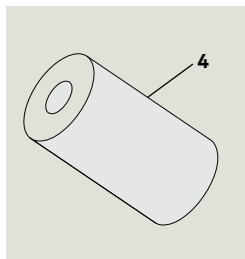


Fig. 16.4.3 Flat washer

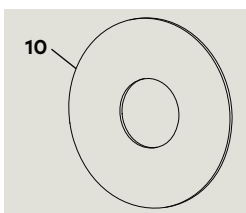


Fig. 16.4.6 3/8" hex nut

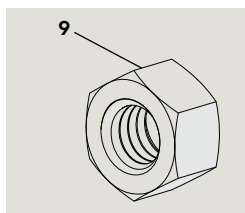
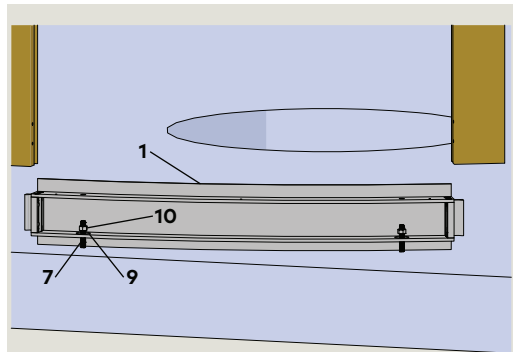


Fig. 16.4.4 Base installed over 3" studs

- 7 3/8" x 3" stud Z27 0703
- 9 3/8" hex nut for 3/8" stud
- 10 Flat washer for 3/8" stud
- 12 Posts



TIPS AND RECOMMENDATIONS

Base hardware packaged in center shaft shipping crate.

16.4.1 Remove fascia from each base enclosure assembly.

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



TIPS AND RECOMMENDATIONS

Number fascia and mounting base (matching set)



WARNING

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

16.4.2 Install enclosure bases.

1. Lower each base over its anchor studs.. Reference Para. 15.5 for numbering examples.

CAUTION

Enclosure base numbers must match adjacent post numbers.

2. Install flat washer over each 3/8" anchor stud.
3. Thread 3/8" hex nut onto each stud. Do not tighten.

Fig. 16.4.7 Enclosure base to center post fastening

- 1 Enclosure base assembly
- 2 Center post
- 3 1/4-20 x 1" SS hex head machine screw S22 0550
- 4 5/8" OD flat washer, SS

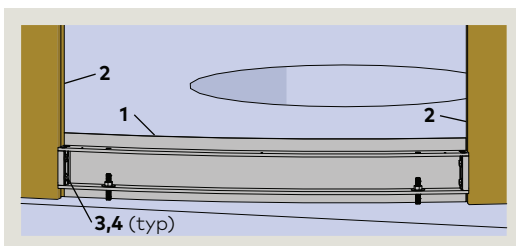


Fig. 16.4.8 S22 0550

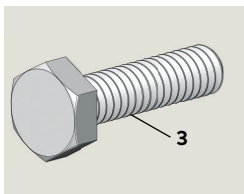
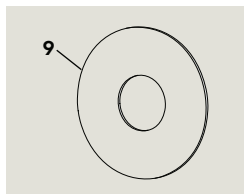


Fig. 16.4.12 Flat washer



- 3 1/4-20 x 1" SS hex head machine screw S22 0550
- 4 5/8" OD flat washer, SS

Fig. 16.4.9 Center post 1/4-20 tapped holes

- 2 Center post
- 3 1/4-20 x 1" SS hex head cap screw S22 0550
- 5 1/4-20 tapped holes

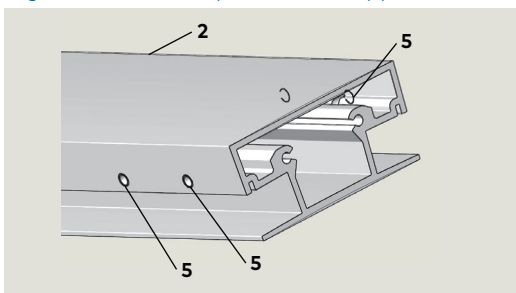


Fig. 16.4.10 Enclosure base attachment to aluminum extrusion post

- 1 Enclosure base assembly
- 2 Center post

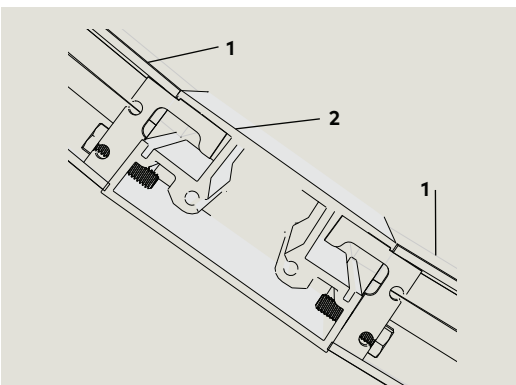
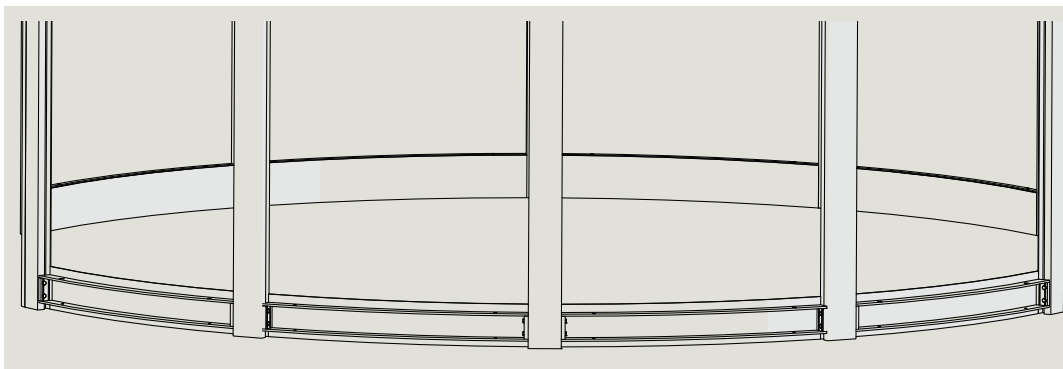


Fig. 16.4.11 Base assemblies fastened to posts



16.4.3 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.

16.4.4 Fasten each base assembly to its adjoining posts.

1. Fasten each base assembly to its posts using .25 x 1" SS hex head machine screws and 5/8" OD flat washers.



TIPS AND RECOMMENDATIONS

Hex head cap screws and washers packaged in center shaft shipping crate.

2. Insert flat washer onto HHCS and thread HHCS into 1/4-20 tapped holes in posts.



TIPS AND RECOMMENDATIONS

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

16.4.5 Go to Para. 16.6, Set enclosure level, plumb and square.

16.5 Install stainless steel or bronze base assemblies and attach base assemblies to stainless steel or bronze posts

- 1 Enclosure base
- 2 Fascia
- 3 1/4" thick steel plate
- 4 1/4-20 tapped hole for base assembly to post HHMS (11)
- 5 Base fascia mounting bracket
- 6 Base fascia mounting bracket
- 7 Holes for 3/8 x 3" stud
- 8 8-32 x 1/2" thread cutting Phillips pan head machine screw
- 9 .25 x 5/8" SS Phillips truss head machine screw (special) S21 0538
- 10 Support bar
- 11 1/4-20 x 1" SS hex head machine screw S22 0550

Fig. 16.5.1 Enclosure base / fascia assembly

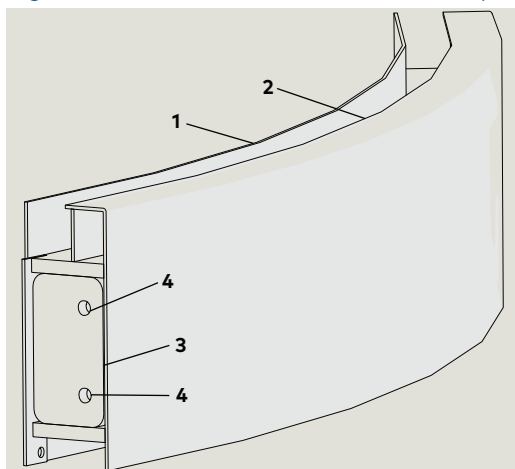


Fig. 16.5.2 Phillips PSCS

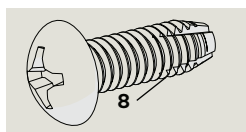


Fig. 16.5.5 S21 0538

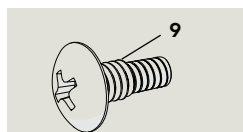


Fig. 16.5.3 Fascia

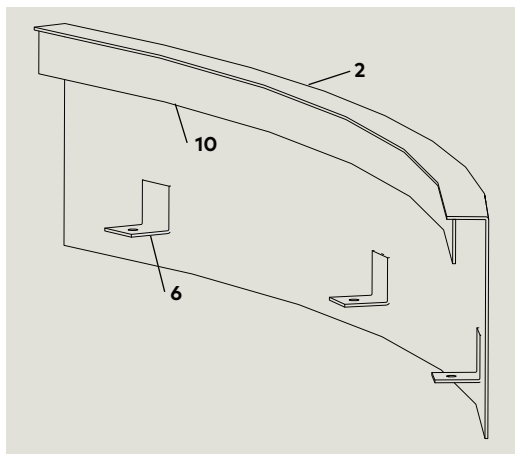
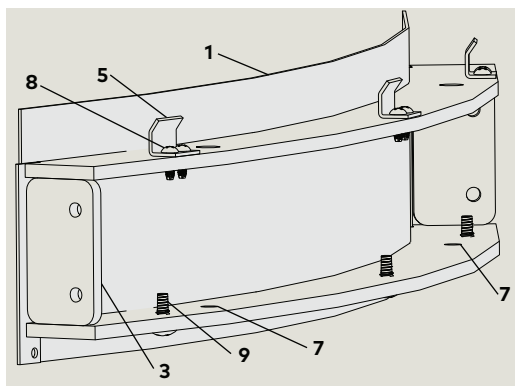


Fig. 16.5.4 Enclosure base assembly

- 7 3/8" x 3" stud Z27 0703
- 9 3/8" hex nut for 3/8" stud
- 10 Flat washer for 3/8" stud



TIPS AND RECOMMENDATIONS

Base hardware packaged in center shaft shipping crate.

16.5.1 Remove fascia from each base enclosure assembly.

1. Remove fascia from each base enclosure.



TIPS AND RECOMMENDATIONS

Number fascia and mounting base (matching set)



WARNING

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

16.5.2 Install enclosure bases.

1. Lower each base over its anchor studs. Reference Para. 15.5 for numbering examples.

CAUTION

Enclosure base numbers must match adjacent post numbers.

2. Install flat washer over each 3/8" anchor stud.
3. Thread 3/8" hex nut onto each stud. Do not tighten.

Fig. 16.5.6 Flat washer

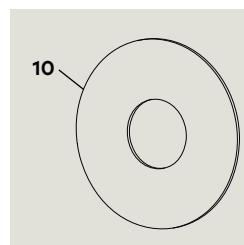
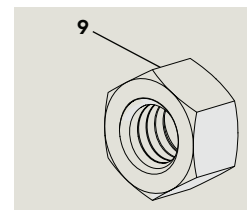
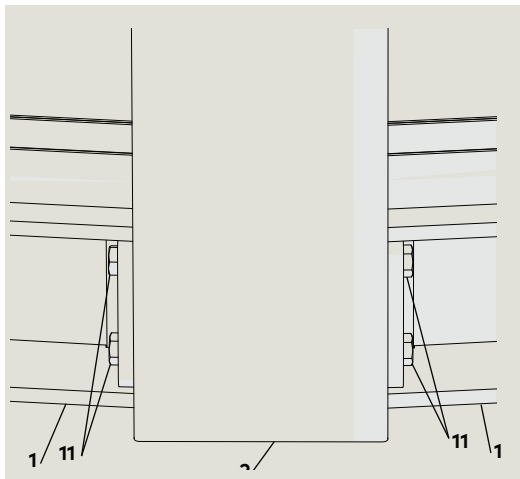


Fig. 16.5.7 3/8" hex nut



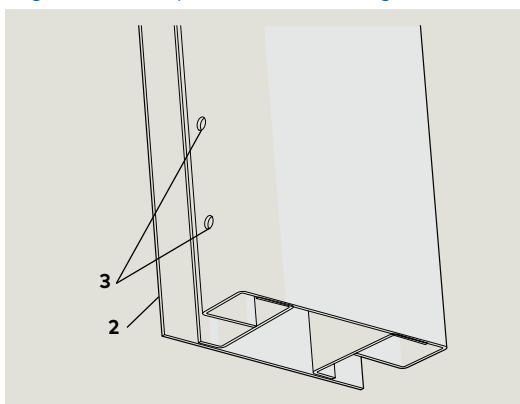
- 1 Enclosure base
- 2 Center post
- 11 1/4-20 x 1" SS hex head machine screw S22 0550

Fig. 16.5.8 Enclosure base attachment to SS post



- 2 Center post
- 3 Base mounting holes

Fig. 16.5.9 SS post base mounting holes



- 1 Enclosure base
- 2 Center post
- 11 1/4-20 x 1" SS hex head machine screw S22 0550

Fig. 16.5.10 Enclosure base attachment to SS post

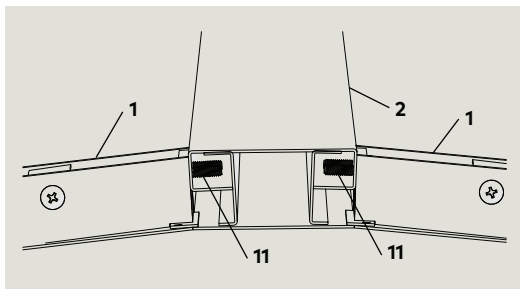
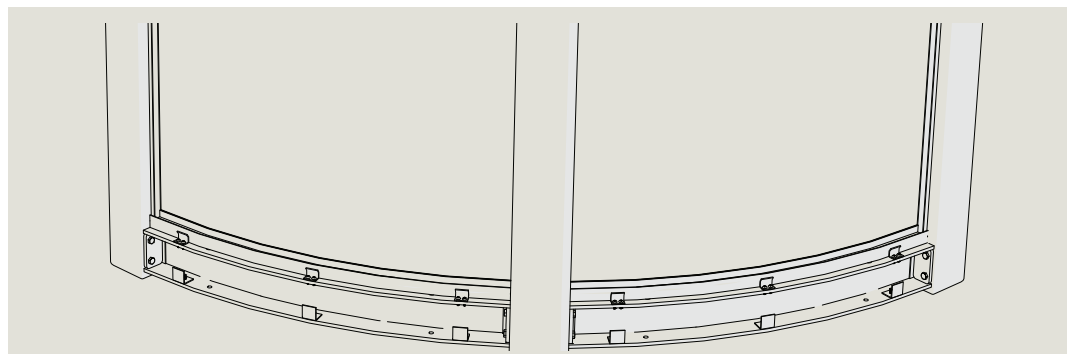


Fig. 16.5.11 Base assemblies fastened to posts



16.5.3 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.

16.5.4 Fasten each base assembly to its adjoining posts.

1. Fasten each base assembly to its posts using .25 x 1" SS hex head machine screws and 5/8" OD flat washers.



TIPS AND RECOMMENDATIONS

Hex head cap screws and washers packaged in center shaft shipping crate.

2. Insert flat washer onto HHCS and thread HHCS into 1/4-20 tapped holes in posts.



TIPS AND RECOMMENDATIONS

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

16.6 Set enclosure level, square and plumb

Fig. 16.6.1 Checking enclosure posts for plumb and square

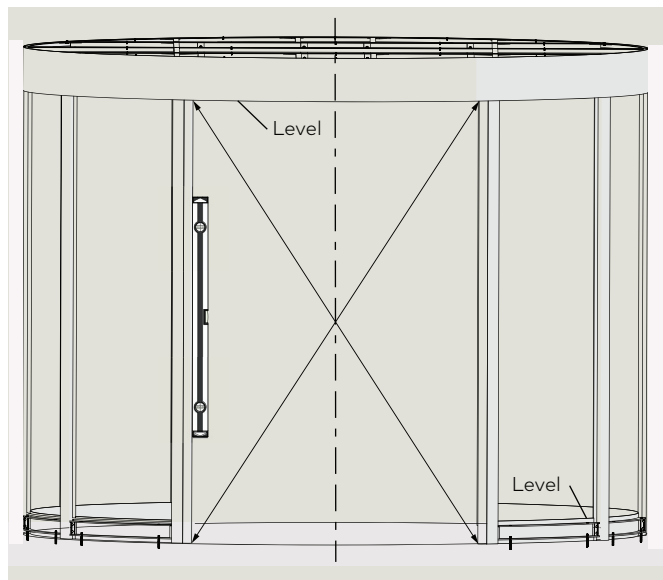


Fig. 16.6.2 Base assembly



16.6.1 Shim each base assembly as required.

NOTICE

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

NOTICE

Check revolving door to building interface!



WARNING

Use plumb bob with string to verify center of canopy is plumb with centerline of in-ground bottom plug.
Ref: Para. 14.4.4.

16.6.2 Snug all base anchor stud hex nuts.

1. Snug all base anchor stud hex nuts. Do not over tighten.

17 Wiring interfaces to Motion Assist 360 power supply and control unit

17.1 Wiring interfaces

Fig. 17.1.1 Door interior

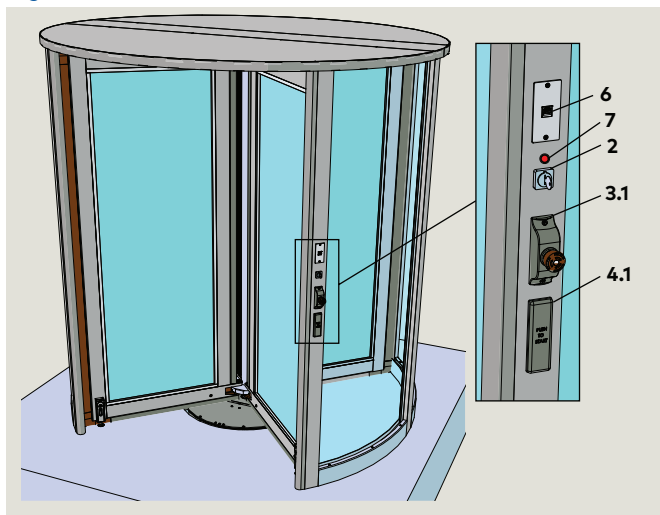
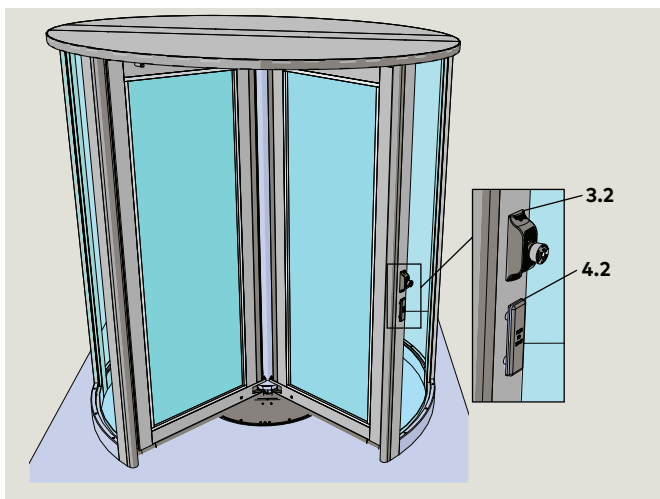


Fig. 17.1.2 Door exterior



TIPS AND RECOMMENDATIONS

Reference Wiring, Setup and Troubleshooting Manual DL6000-014 for wiring interface diagrams.

- Motion Assist 360 power supply and control unit located in in-ground container.
- Motion Assist 360 power supply and control unit located in Remote enclosure.

17.1.1 Motion Assist 360 control unit interface wiring.

Ref. #	Cable	Wires
1 1/2" DC liquid tight flexible conduit		
2	Mode switch**	6 conductor 18 AWG cable
3.1	Emergency Stop (interior)	2 Conductor 18 AWG cable
3.2	Emergency Stop (exterior)	2 Conductor 18 AWG cable
4.1	Wave to Open** (interior) (option)	2 Conductor 18 AWG cable
4.2	Wave to Open** (exterior) (option)	2 Conductor 18 AWG cable
5.1	Night bank (interior) (option)	2 conductor 18 AWG cable
5.2	Night bank (exterior) (option)	2 conductor 18 AWG cable
7	Fault LED**	2 conductor 20 AWG cable
6	Service panel** (option)	3 conductor 18 AWG cable

**Panel location may be adjacent to door.

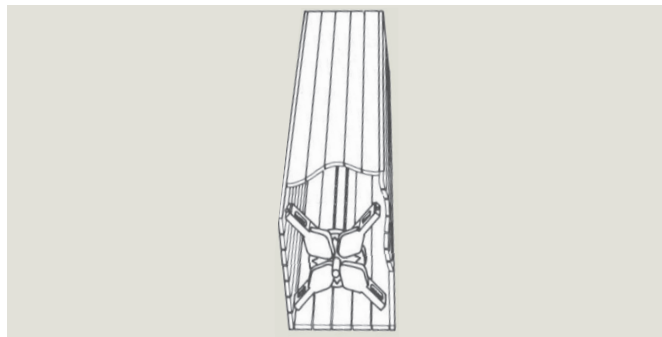
17.1.2 115 Vac wiring.

Ref. #	Cable	Wires
1/2" 115 Vac liquid tight flexible conduit		
1	Canopy lighting (option)	(3) 18 AWG
7	Customer 115 Vac	(3) 14 AWG
7.1	Customer earth ground	(1) 12 AWG

18 4 wing center shaft installation

18.1 Remove center shaft assembly from shipping crate

Fig. 18.1.1 Center shaft shipping crate



TIPS AND RECOMMENDATIONS

3 wing center shaft installation.

Reference Chapter 19.

18.1.1 Unpack center shaft assembly from shipping crate.

CAUTION

Refer to warning tag on shipping crate regarding unpacking procedure.

Fig. 18.1.2 4 wing center shaft assembly DS6020

- 1 Hanger assembly, heavy duty
- 2 Side-mount external retaining ring, for 1 1/4" OD shaft
- 6 Top adaptor set screw
- 7 Bottom plug
- 8 Top adaptor
- 9 4 wing heavy duty disc assembly
- 10 3 wing heavy duty disc assembly
- 11 Center shaft
- 12 Machine key, 1/4" x 5/16" x 4" long
- 15 Job number tag

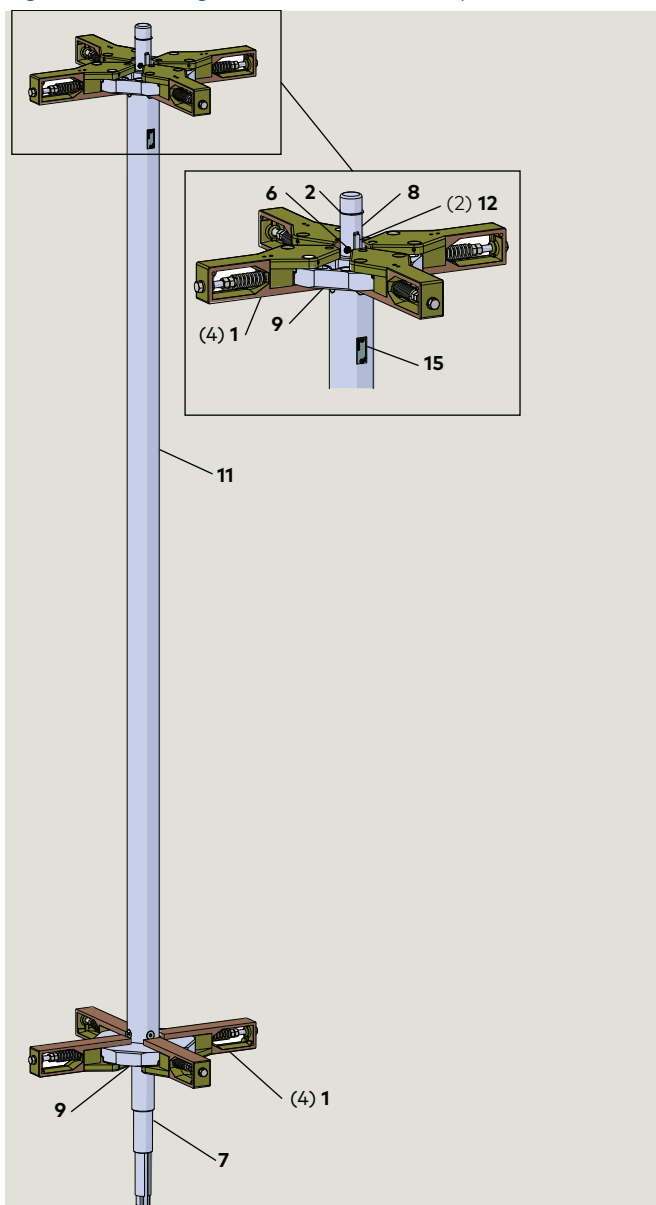
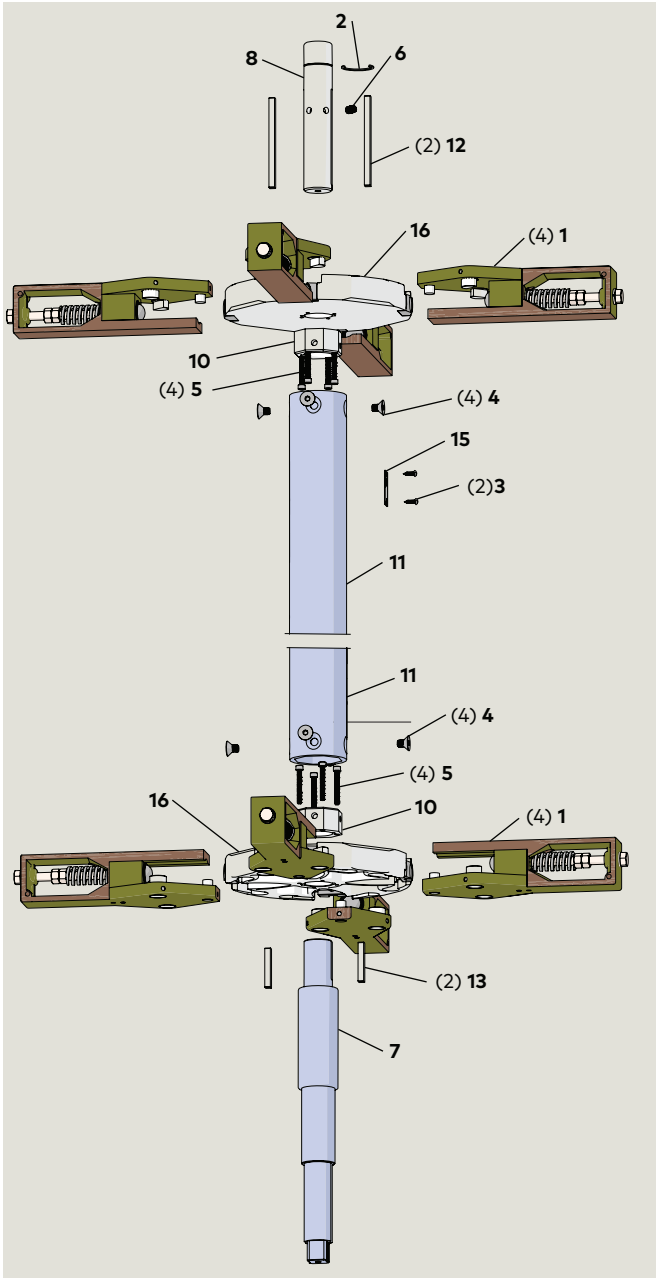


Fig. 18.1.3 Four wing center shaft assembly (exploded view)



- 1 Hanger assembly DS2964-03C
- 7 Bottom plug DC6030
- 8 Top adaptor DC6029
- 10 Shaft coupler DC6007
- 11 Center shaft DC6002
- 15 Job number tag DD3475
- 16 4 wing hanger disc assembly DC6021

18.1.2 Center shaft screwpack.

1. Screwpack DK6005-001.
 - DK6005-001 same for both 3 wing and 4 wing doors, and for different ca canopy heights.

ID	Part #	Description	Qty
Machine keys			
12	DF6006-02Z	Machine key, 1/4" x 5/16" x 4" long, zinc plated carbon steel, undersized stock	2
13	DF6006-01Z	Machine key, 1/4" x 5/16" x 2" long, zinc plated carbon steel, undersized stock	2
Shaft coupler screws			
5	DF6001-01G	10-24 x 1 1/2" SHCS, SS	8
Center shaft attachment screws			
4	DF6002-01Z	5/16 x 1/2" FHSCMS	8
Job tag screws			
3	DF6008-01G	Sheet metal pan head screw, #6 x 1/2", SS	2
External retaining ring			
2	DF6029-01C	Side-mount external retaining ring, for 1 1/4" OD shaft, black phosphate	1
Top adaptor set screw			
6	DF6030-01G	5/16" x 1/2" SS cup point set screw	1

Fig. 18.1.4 Machine keys, 1/4 x 5/16 "

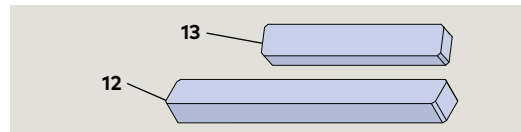


Fig. 18.1.5 10-24 x 1 1/2" SHCS



Fig. 18.1.6 5/16 x 1/2" FHSCS

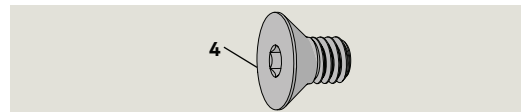


Fig. 18.1.7 #6 x 1/2" Phillips pan head screw

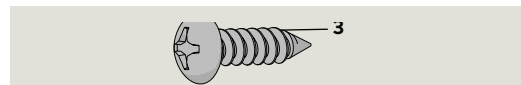


Fig. 18.1.8 External retaining ring

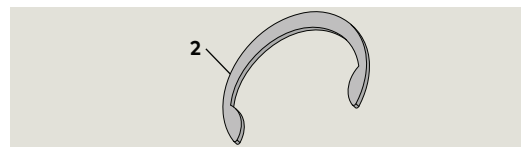
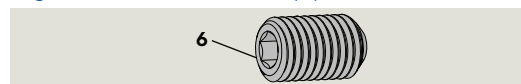
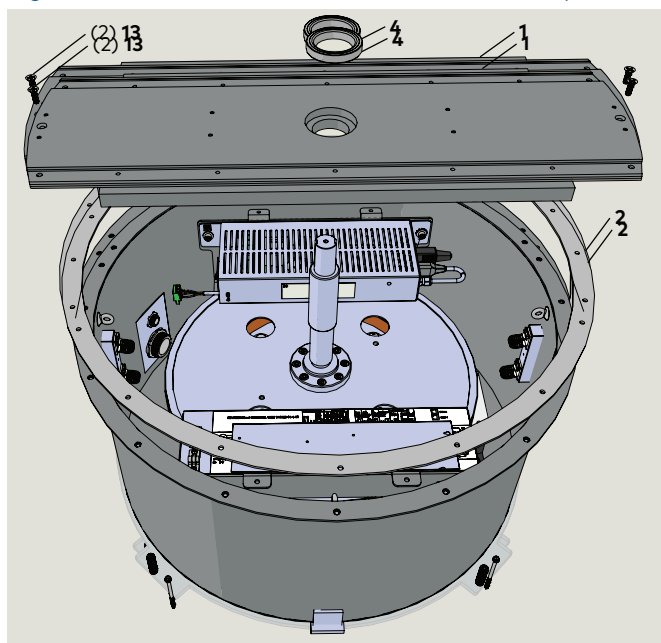


Fig. 18.1.9 5/16" x 1/2" cup point set screw



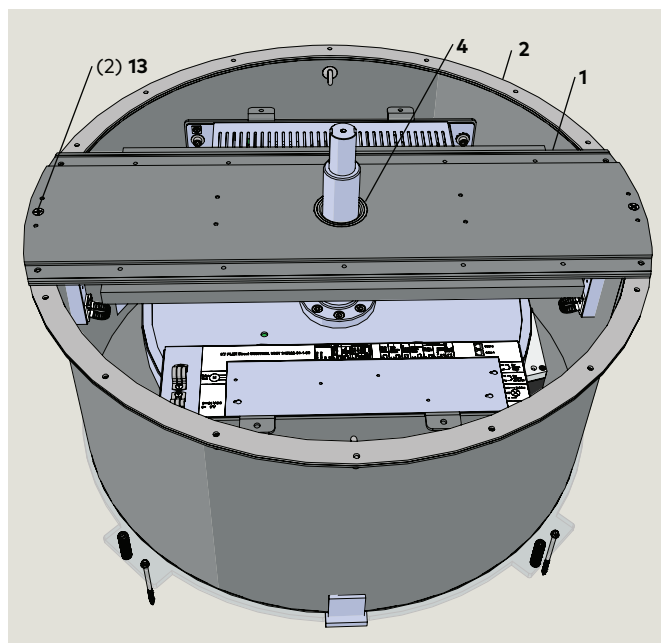
18.2 Install container lid, center section assembly

Fig. 18.2.1 Container lid, center section assembly



- | | |
|--|---|
| 1 Container lid, center section DS6049 | 4 Rotary shaft seal DC6041 |
| 2 Flange gasket DC6046 | 13 1/4-20 x 3/4" sealing flat head screw DF6025-01G |

Fig. 18.2.2 Center section container lid installed on in-ground container example



- | | |
|--|---|
| 1 Container lid, center section DC6049 | 4 Rotary shaft seal DC6041 |
| 2 Flange gasket DC6046 | 13 1/4-20 x 3/4" sealing flat head screw DF6025-01G |



WARNING

MODE switch must be in Off position.

18.2.1 Place flange gasket onto container lid.

1. Place flange gasket (2) onto container flange.
2. Align holes in flange gasket with holes in container flange.

18.2.2 Install rotary shaft seal.

1. Apply silicone based lubricant with a soft brush on:
 - Bottom plug surfaces
 - Shaft seal
2. Press-fit rotary shaft seal into center section container lid recessed hole.

18.2.3 Install center section container lid assembly.

1. Carefully lower center section container lid over bottom plug and onto flange gasket.

NOTICE

Container lid, flange gasket and center section container lid hole alignment.

- Insure center section container lid, flange gasket and container flange holes are aligned before installing fasteners.

NOTICE

Center section container lid, assembly installation on in-ground container.

Locate assembly on in-ground container per:

- Para. 12.5; Orientation of in-ground container in pit.
- Para. 12.7.; Determine in-ground container conduit adapter positions in pit..

Fig. 18.2.3 DF6025-01G

- 13 1/4-20 x 3/4" sealing flat head screw DF6025-01G

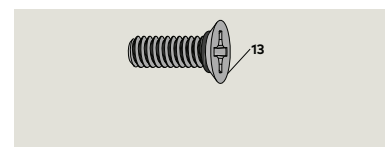
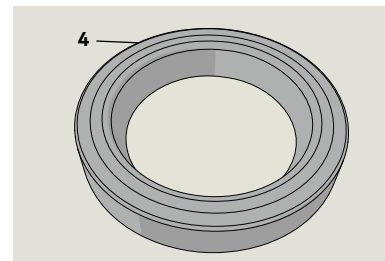


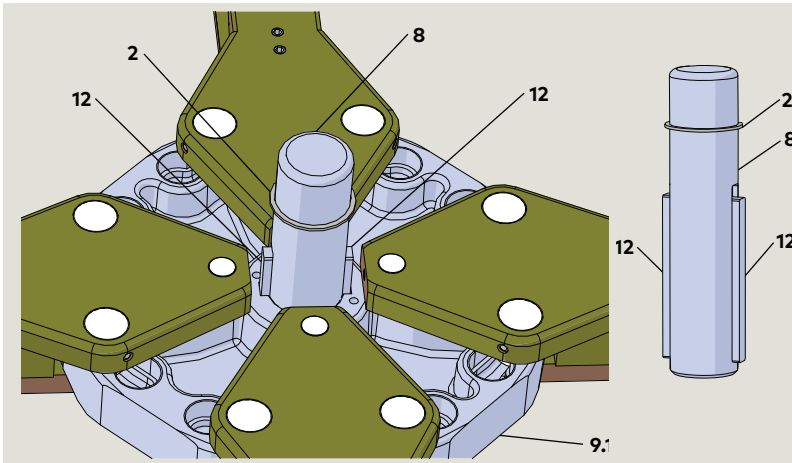
Fig. 18.2.4 Rotary shaft seal

- 4 Rotary shaft seal DC6041



18.3 Install center shaft top adaptor

Fig. 18.3.1 Center shaft top adaptor



- | | | |
|---|----------------------------------|--|
| 1 Hanger assembly
DS2964-03C | 8 Top adaptor DC6029 | 12 Machine key, 1/4" x
5/16" x 4" long,
DF6006-02Z |
| 2 External retaining
ring DF6029-01C | 9.1 4 wing hanger disc
DC6021 | |

18.3.1 Assemble top adaptor.

1. Insert external retaining ring (2) into top adaptor slot.

18.3.1 Install center shaft top adaptor.

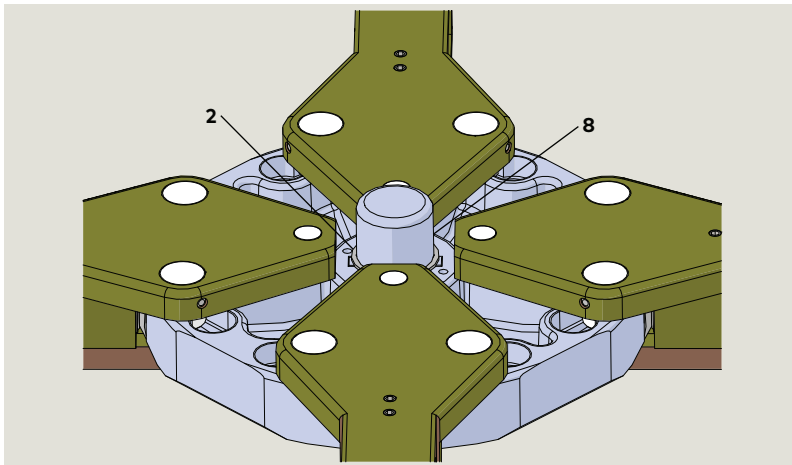
1. Insert machine keys (12) into top adaptor slots
2. Slide top adaptor assembly into hanger disc (9.1) and shaft coupler (10).
3. Move top adaptor until external retaining ring (2) is flush with hanger disc (Fig.18.3.2).
4. Install and tighten four 5/16 x 1/2" FHSCS (4)



TIPS AND RECOMMENDATIONS

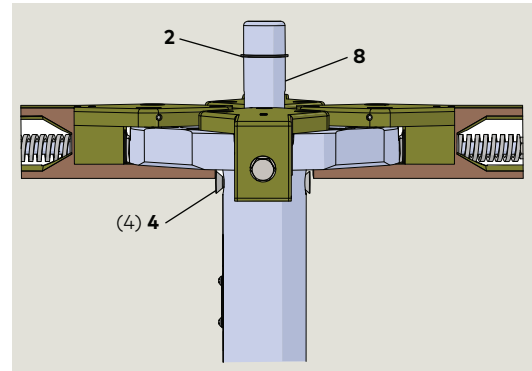
Machine keys (12) are contained within top adaptor slots (Fig. 18.3.3).

Fig. 18.3.2 Top adaptor retracted



- | | |
|---|----------------------|
| 2 External retaining
ring DF6029-01C | 8 Top adaptor DC6029 |
|---|----------------------|

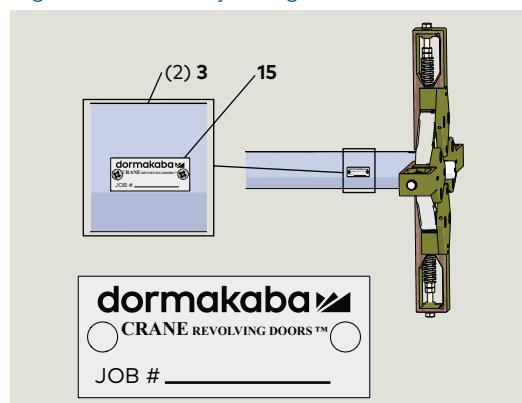
Fig. 23.3.3 Center shaft attachment screws



18.4 Install job number tag

Fig. 18.4.1 Crane job tag

- | | |
|--|-------------------|
| 3 Sheet metal #6 x 1/2"
pan head screw, SS,
DF6008-01G | 15 Job number tag |
|--|-------------------|

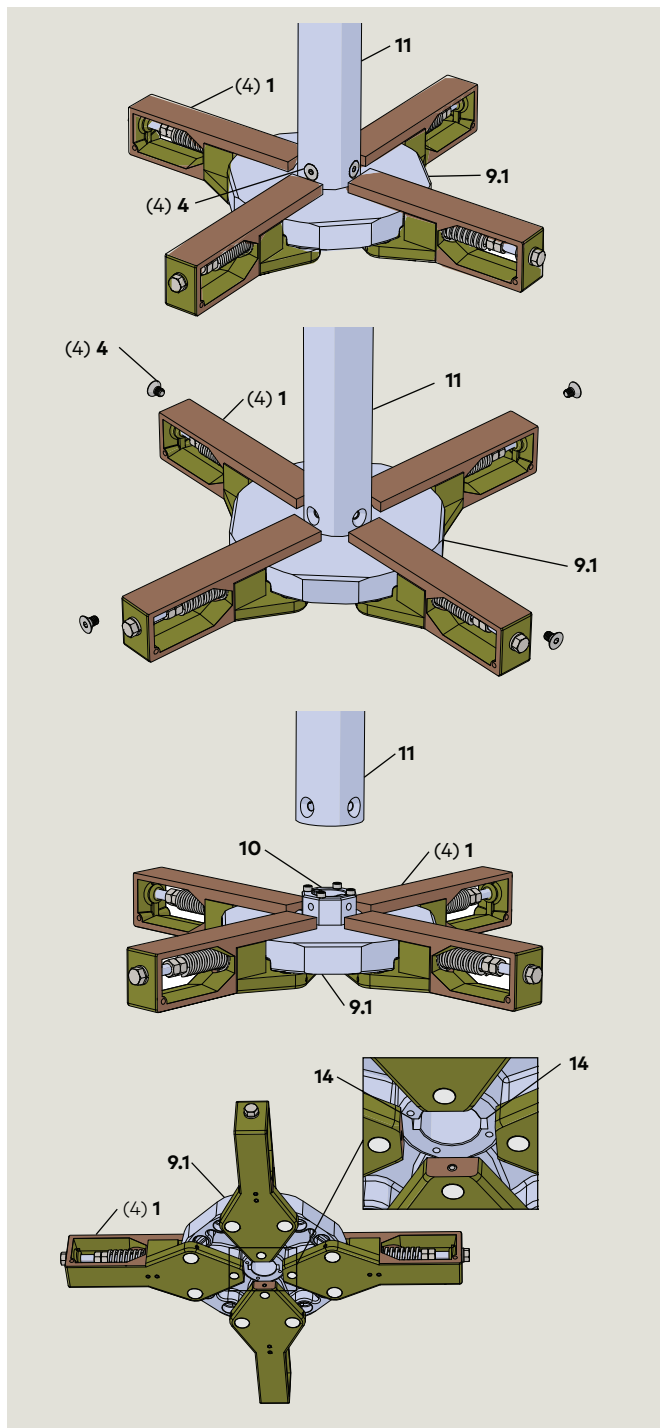


18.4.1 Install job number tag.

1. Install job number tag on center shaft using two #6 x 1/2" sheet metal screws.

18.5 Install center shaft bottom hanger assembly onto bottom plug

Fig. 18.5.1 Bottom hanger disc assembly removed from center shaft



- | | |
|---|----------------------------|
| 1 Heavy duty Hanger assembly
DS2964-03C | 10 Shaft coupler
DC6007 |
| 4 5/16 x 1/2" FHSCMS
DF6002-01Z | 11 Center shaft
DC6002 |
| 9.1 4 wing heavy duty hanger disc assembly DC6021 | 14 Keyway |



TIPS AND RECOMMENDATIONS

It is recommended to install in-ground container covers before installing center shaft.

- 18.5.1 Use plumb bob to verify centerpoint of canopy top bearing is plumb with bottom plug centerpoint.**

NOTICE

Verify canopy centerpoint is plumb with in-ground container bottom plug.

- Any issues with plumb must be resolved before continuing.

- 18.5.2 Remove bottom hanger assembly from center shaft.**



TIPS AND RECOMMENDATIONS

To facilitate keyway/machine key alignment when lowering center shaft onto bottom plug, it is recommended to first install the bottom hanger disc assembly onto the bottom plug, then install the remainder of the center shaft assembly.



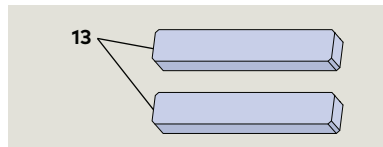
WARNING

Use caution when lifting and positioning center shaft assembly!

- Remove four 5/16 x 1/2" FHMS securing bottom hanger disc assembly to center shaft.
- Remove bottom hanger disc assembly

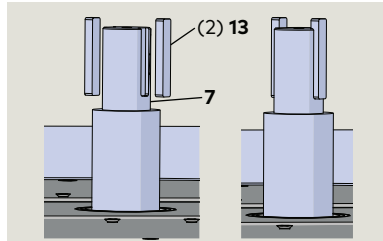
- 13 Machine key, 1/4" x 5/16" x 2" long, zinc plated carbon steel, undersized stock DF6006-01Z

Fig. 18.5.3 Machine keys



- 7 Bottom plug
- 13 Machine key, 1/4" x 5/16" x 2" long, DF6006-01Z

Fig. 18.5.4 Machine keys



18.5.3 Install bottom hanger assembly onto bottom plug.

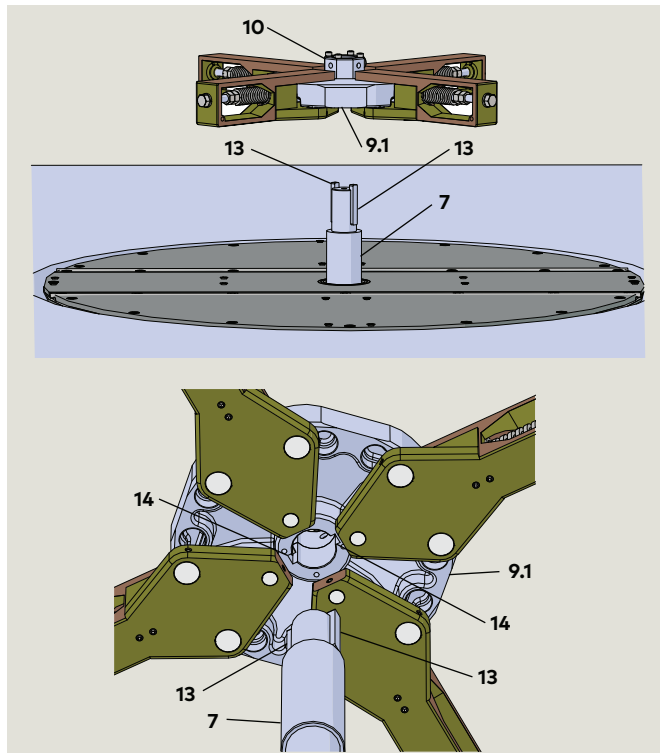
1. Insert machine keys (13) into slots in bottom plug (7).
 - Note
2. Align keyways (14) in bottom hanger assembly with machine keys and lower assembly onto bottom plug.
 - Machine keys must be held in place while hanger assembly is lowered onto bottom plug.



WARNING

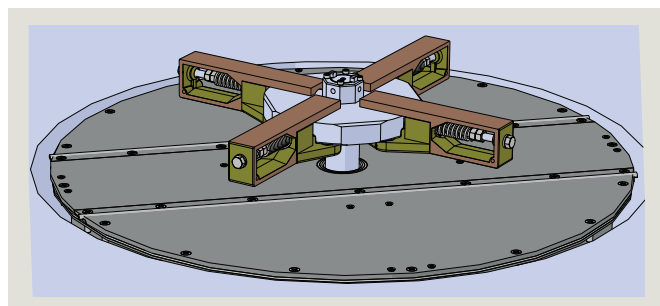
Use caution when lowering hanger assembly onto bottom plug.

Fig. 18.5.5 Bottom hanger assembly and bottom plug



- 7 Bottom plug
- 9.1 4 wing heavy duty hanger disc assembly DC6021
- 10 Shaft coupler DC6007
- 13 Machine key, 1/4" x 5/16" x 2" long, DF6006-01Z
- 14 Keyway

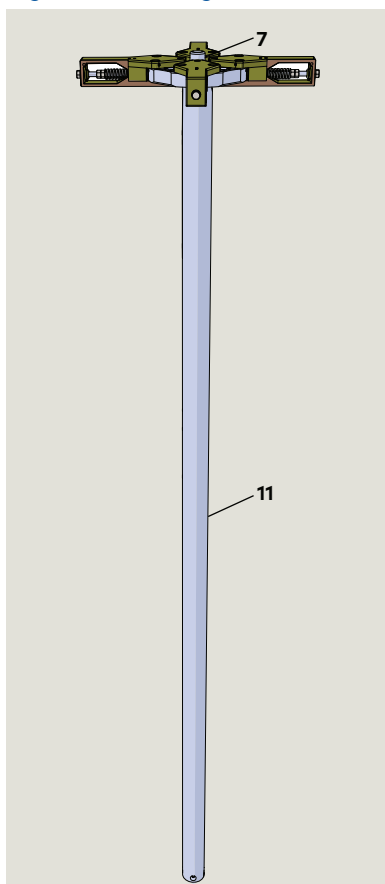
Fig. 18.5.6 Bottom hanger assembly installed on bottom plug



18.6 Lower center shaft assembly onto bottom hanger assembly

- 7 Top adaptor
- 11 Center shaft

Fig. 18.6.1 4 wing center shaft



18.6.1 Raise center shaft to vertical position.



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.

NOTICE

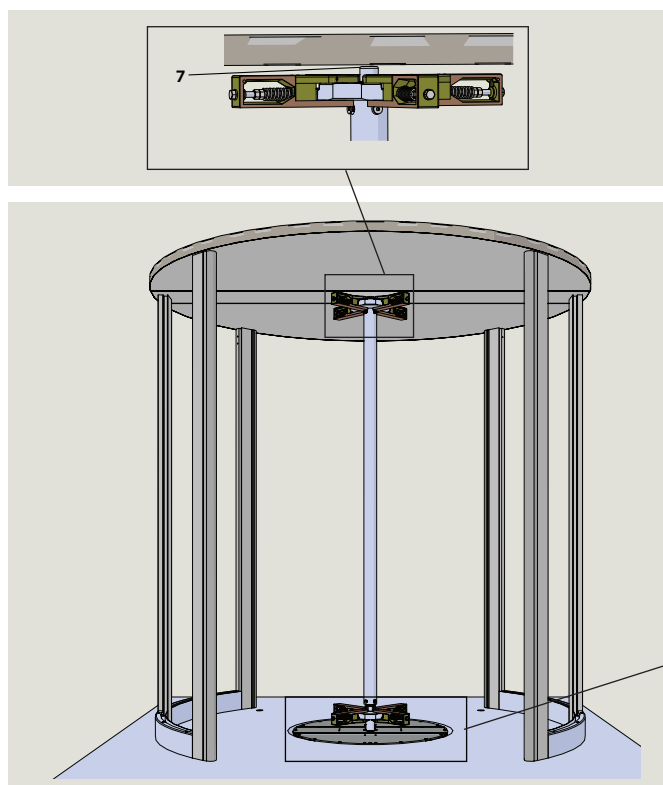
Top adaptor must be retracted (Ref. Para. 18.2).

1. Raise center shaft assembly and position center shaft over bottom hanger assembly shaft coupler (10).

NOTICE

Insure top adaptor does not contact canopy top bearing assembly.

Fig. 18.6.2 Top adaptor below canopy top bearing assembly



18.6.2 Lower center shaft assembly onto bottom hanger assembly shaft coupler.



WARNING

Always insert center shaft vertically into shaft coupler.

1. Rotate center shaft assembly as required to align center shaft bottom mounting holes with holes in shaft coupler.
 - Insure top and bottom hanger assemblies are aligned with each other.
2. Lower center shaft onto shaft coupler.

Fig. 18.6.3 Center shaft assembly placed above bottom hanger assembly

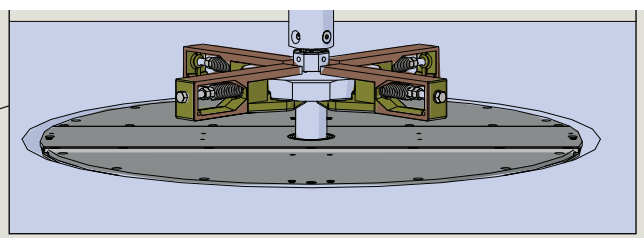
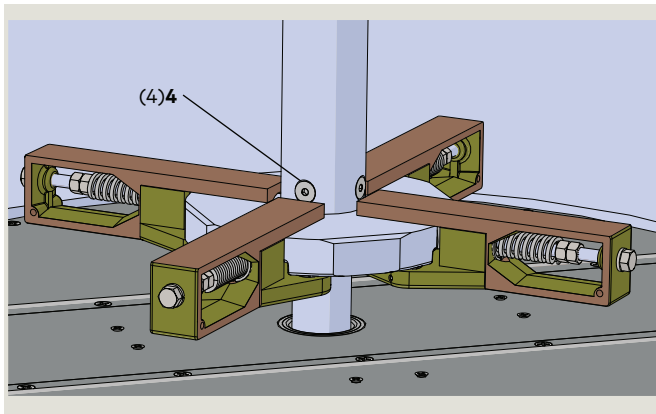
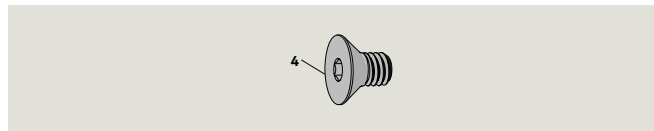


Fig. 18.6.4 Center shaft secured to bottom hanger assembly shaft coupler



3. Install four 5/16 x 1/2" FHMS to secure center shaft to bottom hanger assembly shaft coupler.

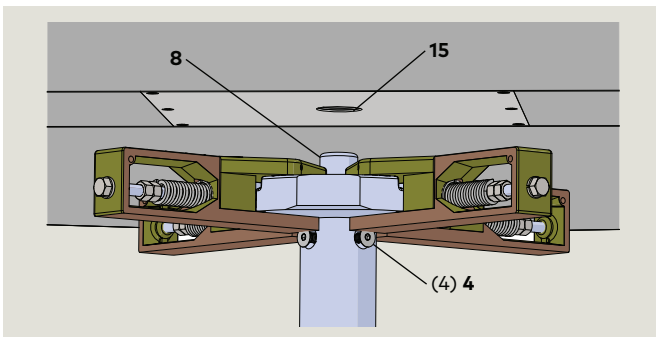
Fig. 18.6.5 5/16 x 1/2" FHSCS



- 4 5/16 x 1/2" FHSCMS
DF6002-01Z

18.7 Insert top adaptor into canopy top bearing

Fig. 18.7.1 Top adaptor retracted into center shaft



- 4 5/16 x 1/2" FHSCMS
DF6002-01Z
- 8 Top adaptor DC6029
- 15 Top bearing assembly

18.7.1 Raise top adaptor into canopy top bearing.

1. Loosen four 5/16 x 1/2" FHSCMS securing top adaptor to center shaft.
2. Raise top adaptor into canopy top bearing.

18.7.2 Tighten flat head screws

1. Tighten flat head screws to secure center shaft to top adaptor.

18.7.3 Install top adaptor set screw.

1. Thread set screw into top adaptor (Fig. 23.6.3).until it bottoms out.

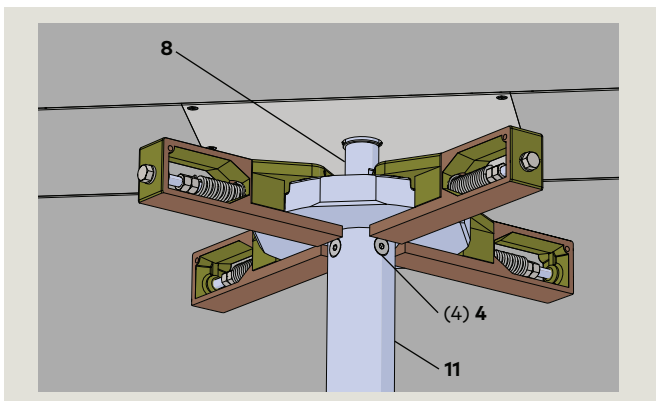
18.7.4 Rotate center shaft assembly.

NOTICE

Check center shaft rotation.

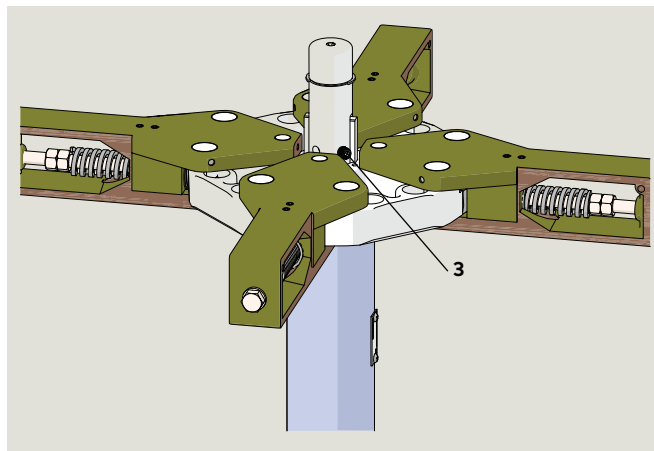
- Shaft should rotate freely.

Fig. 18.7.2 Top adaptor inserted into canopy top bearing



- 4 5/16 x 1/2" FHSCMS
DF6002-01Z
- 8 Top adaptor DC6029
- 11 Center shaft

Fig. 18.7.3 Top adapter set screw

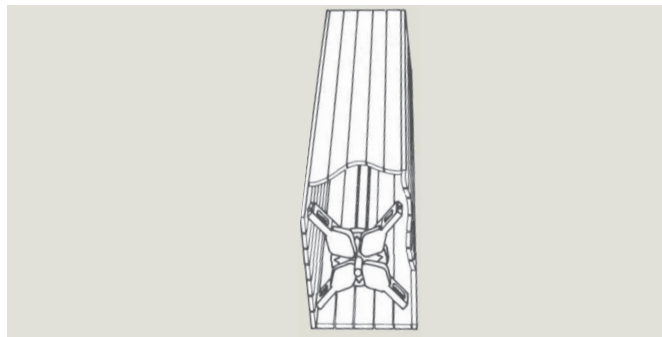


- 3 5/16-24 x 1/2" SS cup
point set screw
DF6030-01G

18 3 wing center shaft installation

19.1 Remove center shaft assembly from shipping crate

Fig. 19.1.1 Center shaft shipping crate



TIPS AND RECOMMENDATIONS

4 wing center shaft installation.
 Reference Chapter 18.

19.1.1 Unpack center shaft assembly from shipping crate.

CAUTION

Refer to warning tag on shipping crate regarding unpacking procedure.

Fig. 19.1.2 3 wing center shaft assembly DS6021

- 1 Hanger assembly, heavy duty
- 2 Side-mount external retaining ring, for 1 1/4" OD shaft
- 6 Top adaptor set screw
- 7 Bottom plug
- 8 Top adaptor
- 9 4 wing heavy duty disc assembly
- 10 3 wing heavy duty disc assembly
- 11 Center shaft
- 12 Machine key, 1/4" x 5/16" x 4" long
- 15 Job number tag

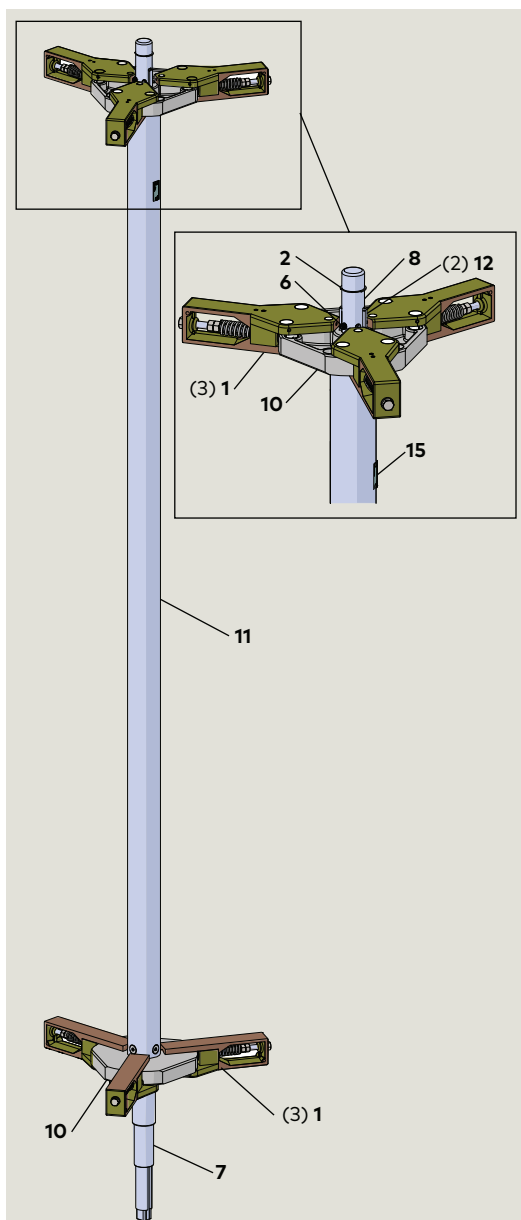
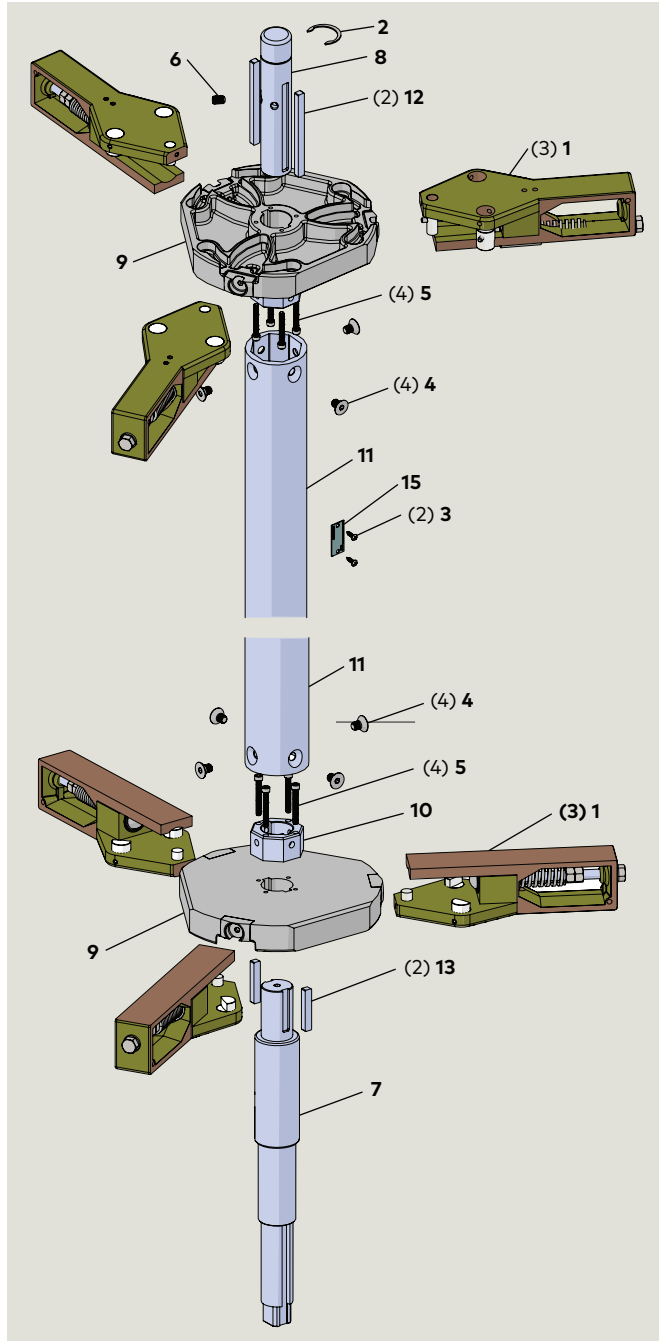


Fig. 19.1.3 Three wing center shaft assembly (exploded view)



- 1 Hanger assembly DS2964-03C
- 7 Bottom plug DC6030
- 8 Top adaptor DC6029
- 9 3 wing hanger disc assembly DC6020
- 10 Shaft coupler DC6007
- 11 Center shaft DC6002
- 15 Job number tag DD3475

19.1.2 Center shaft screwpack.

1. Screwpack DK6005-001.
 - DK6005-001 same for both 3 wing and 4 wing doors, and for different ca canopy heights.

ID	Part #	Description	Qty
Machine keys			
12	DF6006-02Z	Machine key, 1/4" x 5/16" x 4" long, zinc plated carbon steel, undersized stock	2
13	DF6006-01Z	Machine key, 1/4" x 5/16" x 2" long, zinc plated carbon steel, undersized stock	2
Shaft coupler screws			
5	DF6001-01G	10-24 x 1 1/2" SHCS, SS	8
Center shaft attachment screws			
4	DF6002-01Z	5/16 x 1/2" FHSCMS	8
Job tag screws			
3	DF6008-01G	Sheet metal pan head screw, #6 x 1/2", SS	2
External retaining ring			
2	DF6029-01C	Side-mount external retaining ring, for 1 1/4" OD shaft, black phosphate	1
Top adaptor set screw			
6	DF6030-01G	5/16" x 1/2" SS cup point set screw	1

Fig. 19.1.4 Machine keys, 1/4 x 5/16 "

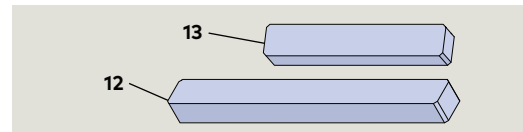


Fig. 19.1.5 10-24 x 1 1/2" SHCS



Fig. 19.1.6 5/16 x 1/2" FHSCS

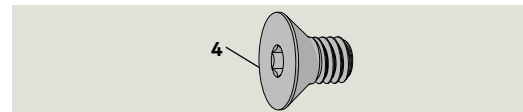


Fig. 19.1.7 #6 x 1/2" Phillips pan head screw

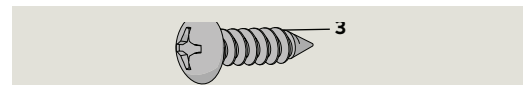


Fig. 19.1.8 External retaining ring

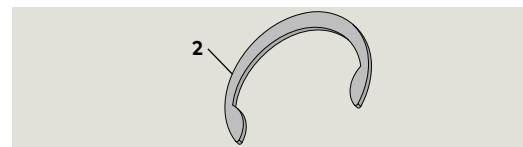
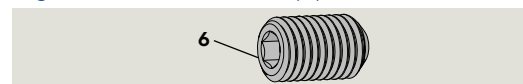
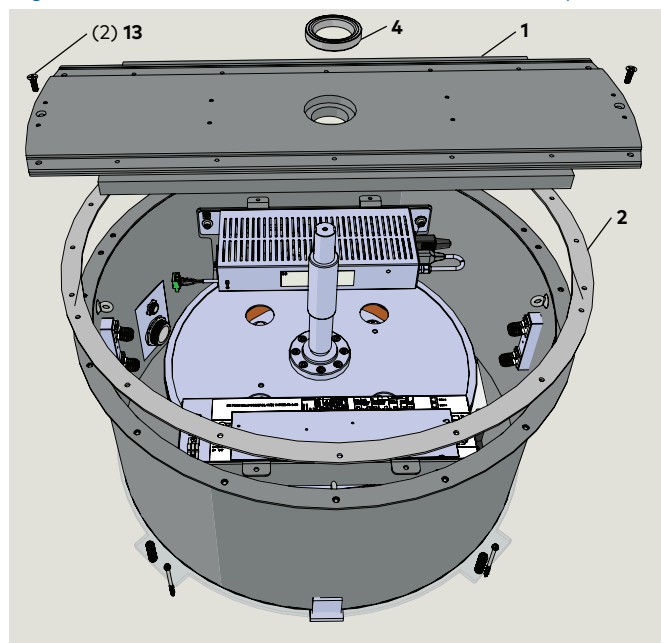


Fig. 19.1.9 5/16" x 1/2" cup point set screw



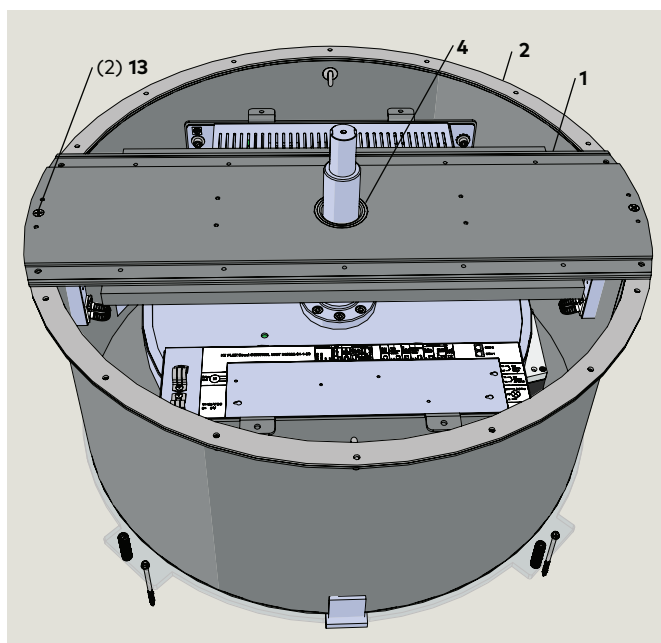
19.2 Install container lid, center section assembly

Fig. 19.2.1 Container lid, center section assembly



- | | |
|--|---|
| 1 Container lid, center section DS6049 | 4 Rotary shaft seal DC6041 |
| 2 Flange gasket DC6046 | 13 1/4-20 x 3/4" sealing flat head screw DF6025-01G |

Fig. 19.2.2 Center section container lid installed on in-ground container example



- | | |
|--|---|
| 1 Container lid, center section DC6049 | 4 Rotary shaft seal DC6041 |
| 2 Flange gasket DC6046 | 13 1/4-20 x 3/4" sealing flat head screw DF6025-01G |



WARNING

Mode switch must be in Off position.

19.2.1 Place flange gasket onto container lid.

1. Place flange gasket (2) onto container flange.
2. Align holes in flange gasket with holes in container flange.

19.2.2 Install rotary shaft seal.

1. Apply silicone based lubricant with a soft brush on:
 - Bottom plug surfaces
 - Shaft seal
2. Press-fit rotary shaft seal into center section container lid recessed hole.

19.2.3 Install center section container lid assembly.

1. Carefully lower center section container lid over bottom plug and onto flange gasket.

NOTICE

Container lid, flange gasket and center section container lid hole alignment.

- Insure center section container lid, flange gasket and container flange holes are aligned before installing fasteners.

NOTICE

Center section container lid, assembly installation on in-ground container.

- Locate assembly on in-ground container per:
- Para. 12.5; Orientation of in-ground container in pit.
 - Para. 12.7, Determine in-ground container conduit adapter positions in pit..

Fig. 19.2.3 DF6025-01G

- 13 1/4-20 x 3/4" sealing flat head screw DF6025-01G

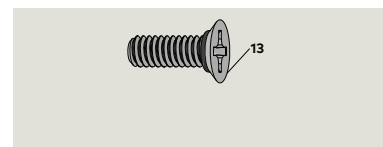
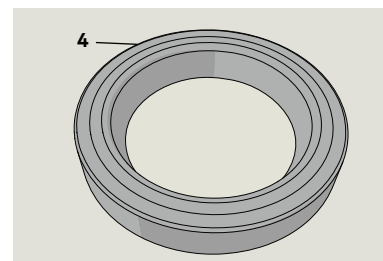


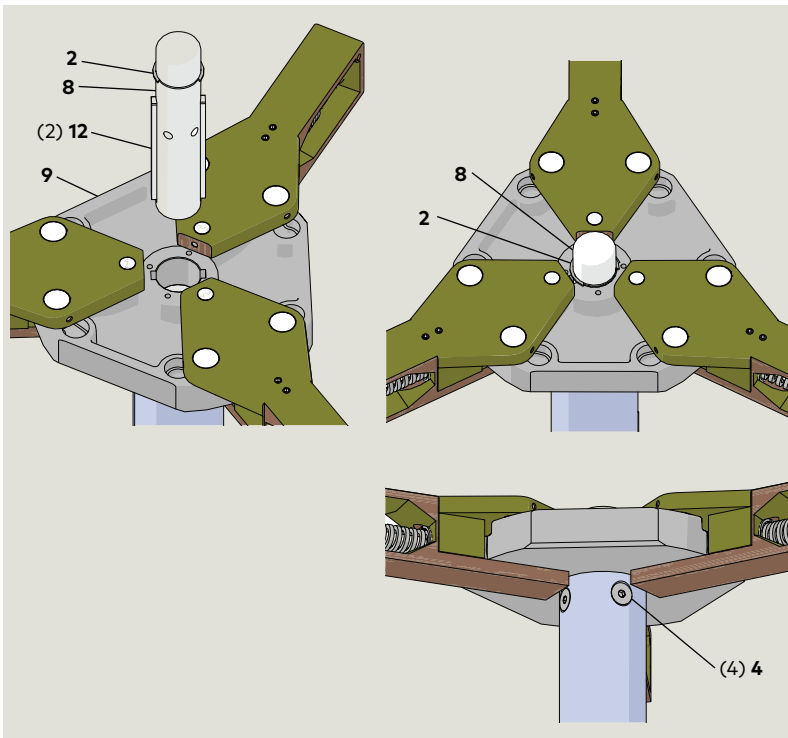
Fig. 19.2.4 Rotary shaft seal

- 4 Rotary shaft seal DC6041



19.3 Install center shaft top adaptor

Fig. 19.3.1 Center shaft top adaptor installation



- | | |
|--|--|
| 2 External retaining ring DDF6029-01C | 9 3 wing hanger disc assembly DC6020 |
| 8 Top adaptor DC6029 | 12 Machine key, 1/4" x 5/16" x 4" long DF6006-02Z |

19.3.1 Assemble top adaptor.

1. Insert external retaining ring (2) into top adaptor slot.

19.3.2 Install center shaft top adaptor.

1. Insert machine keys (12) into top adaptor slots
2. Slide top adaptor assembly into hanger disc (9 or 9.1) and shaft coupler (10).
3. Move top adaptor until external retaining ring (2) is flush with hanger disc (Fig. 23.3.3).
4. Install and tighten four 5/16 x 1/2" FHSCS (4)



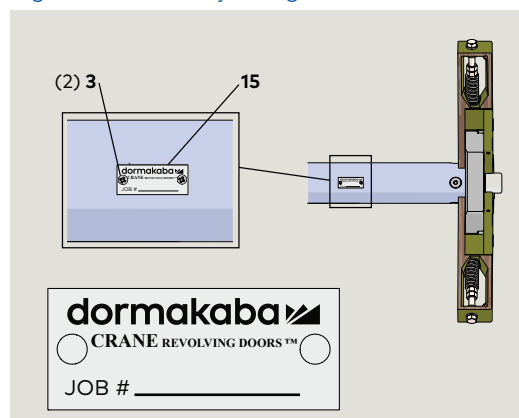
TIPS AND RECOMMENDATIONS

Machine keys (12) are contained within top adaptor slots.

19.4 Install job number tag

Fig. 19.4.1 Crane job tag

- | |
|---|
| 3 Sheet metal #6 x 1/2" pan head screw, SS, DF6008-01G |
| 15 Job number tag |

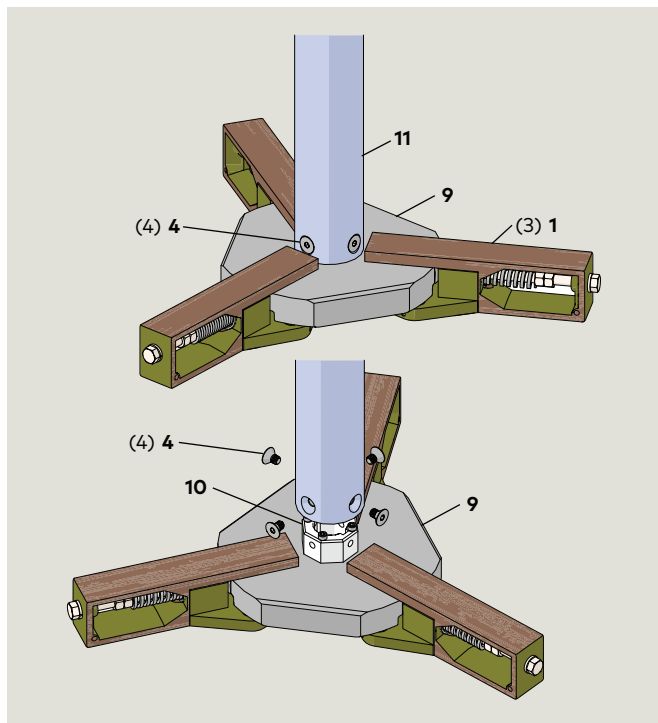


19.4.1 Install job number tag.

1. Install job number tag on center shaft using two #6 x 1/2" sheet metal screws.

19.5 Install center shaft bottom hanger assembly onto bottom plug

Fig. 19.5.1 Bottom hanger disc assembly removed from center shaft



- | | |
|---|-----------------------------------|
| 1 Heavy duty Hanger assembly
DS2964-03C | 10 Shaft coupler
DC6007 |
| 4 5/16 x 1/2" FHSCMS
DF6002-01Z | 11 Center shaft
DC6002 |
| 9 3 wing disc assembly
DC6020 | |



TIPS AND RECOMMENDATIONS

It is recommended to install in-ground container covers before installing center shaft.

19.5.1 Verify centerpoint of canopy top bearing is plumb with bottom plug centerpoint.

NOTICE

Using plumb bob, verify canopy centerpoint is plumb with in-ground container bottom plug.

- Any issues with plumb must be resolved before continuing.

19.5.2 Remove bottom hanger assembly from center shaft.



TIPS AND RECOMMENDATIONS

To facilitate keyway/machine key alignment when lowering center shaft onto bottom plug (Fig. 19.5.2), it is recommended to first install the bottom hanger disc assembly onto the bottom plug, then install the remainder of the center shaft assembly (Para. 19.6).



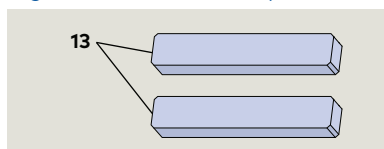
WARNING

Use caution when lifting and positioning center shaft assembly!

1. Remove four 5/16 x 1/2" FHMS securing bottom hanger disc assembly to center shaft.
2. Remove bottom hanger disc assembly

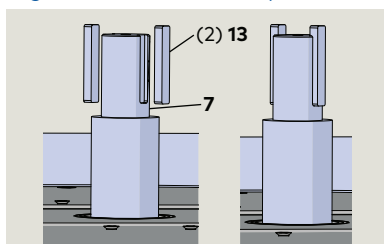
- 13 Machine key, 1/4" x 5/16"x 2" long, zinc plated carbon steel, undersized stock DF6006-01Z

Fig. 19.5.2 Machine keys



- 7 Bottom plug
- 13 Machine key, 1/4" x 5/16"x 2" long, DF6006-01Z

Fig. 19.5.3 Machine keys



19.5.3 Install bottom hanger assembly onto bottom plug.

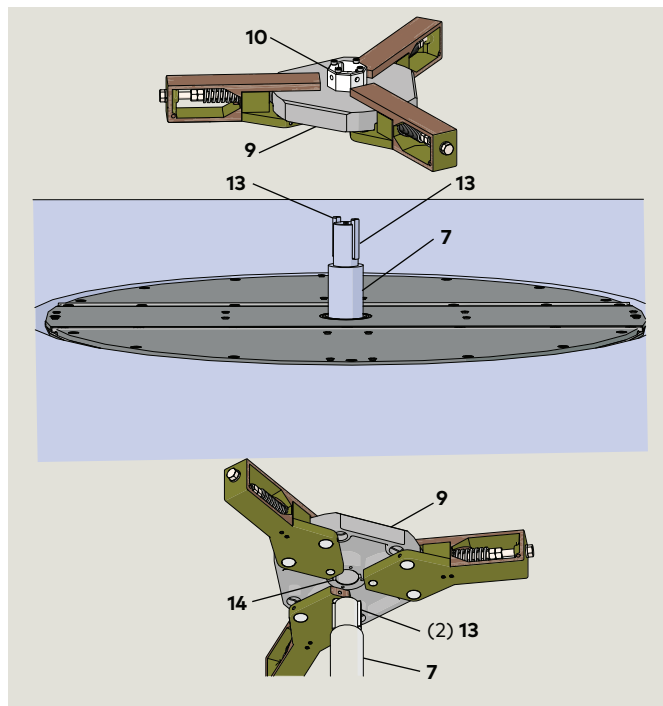
1. Insert machine keys (13) into slots in bottom plug (7).
 - Note
2. Align keyways (14) in bottom hanger assembly with machine keys and lower assembly onto bottom plug.
 - Machine keys must be held in place while hanger assembly is lowered onto bottom plug.



WARNING

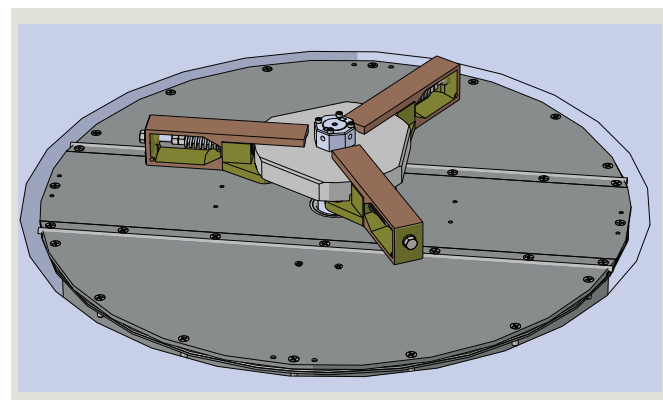
Use caution when lowering hanger assembly onto bottom plug.

Fig. 19.5.4 Bottom hanger assembly and bottom plug



- 7 Bottom plug
- 9 3 wing disc assembly DC6020
- 10 Shaft coupler DC6007
- 13 Machine key, 1/4" x 5/16"x 2" long, DF6006-01Z
- 14 Keyway

Fig. 19.5.4 Bottom hanger assembly installed on bottom plug



19.6 Lower center shaft assembly onto bottom hanger assembly

- 3 Top adaptor
- 11 Center shaft

Fig. 19.6.1 3 wing center shaft

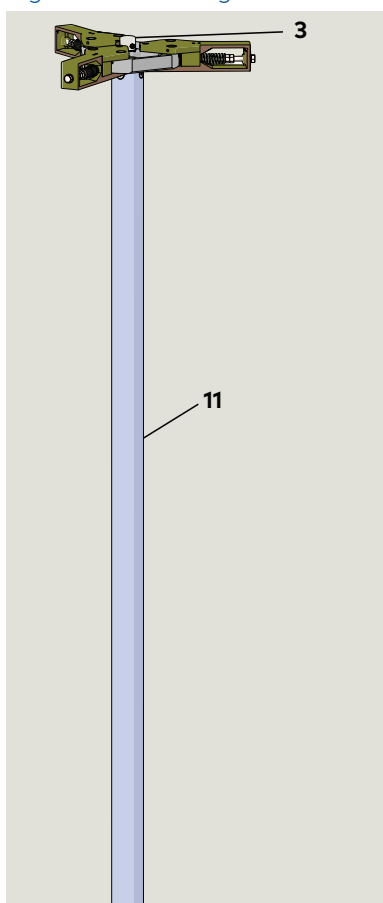
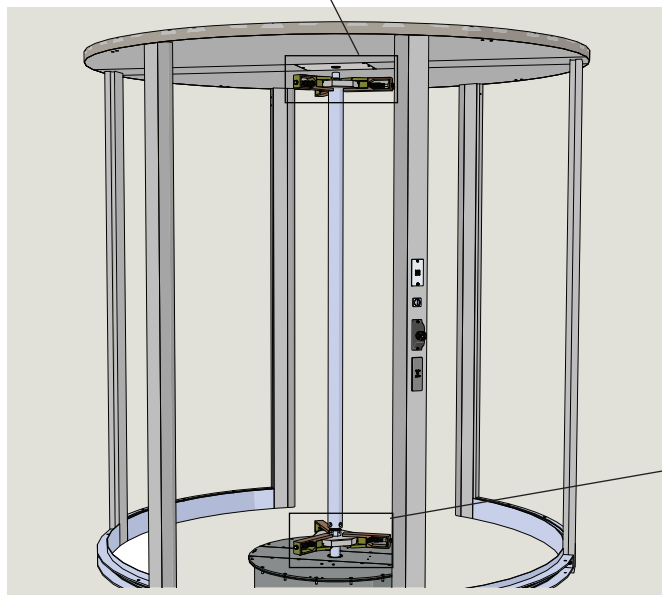
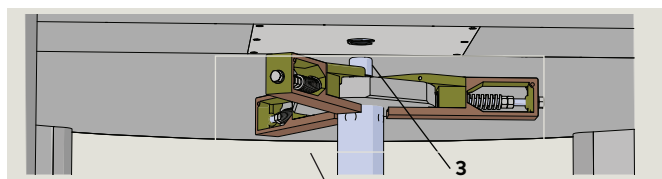


Fig. 19.6.2 Center shaft top adaptor retracted, positioned below top bearing assembly



19.6.1 Raise center shaft to vertical position.



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.

NOTICE

Top adaptor must be retracted (Ref. Para. 19.2).

1. Raise center shaft assembly and position center shaft over bottom hanger assembly shaft coupler (10).

NOTICE

Insure top adaptor does not contact canopy soffit surfaces.

19.6.2 Lower center shaft assembly onto bottom hanger assembly shaft coupler.



WARNING

Always insert center shaft vertically into shaft coupler.

1. Rotate center shaft assembly as required to align center shaft bottom mounting holes with holes in shaft coupler.
 - Insure top and bottom hanger assemblies are aligned with each other.

Fig. 19.6.3 Center shaft assembly placed above bottom hanger assembly

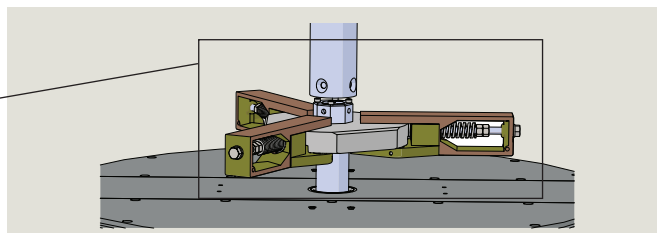
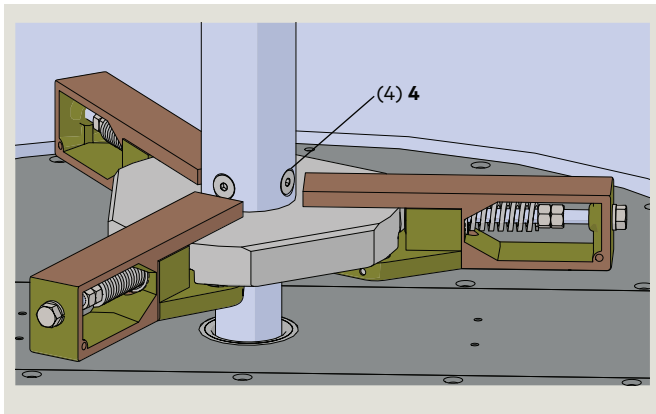
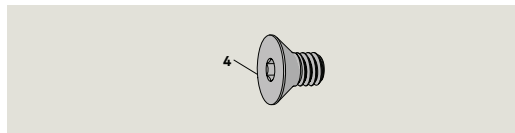


Fig. 19.6.4 Center shaft secured to bottom hanger assembly shaft coupler



2. Lower center shaft onto shaft coupler.
3. Install four 5/16 x 1/2" FHMS to secure center shaft to bottom hanger assembly shaft coupler.

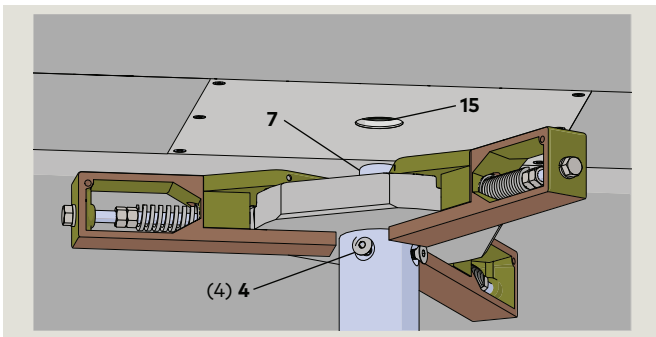
Fig. 19.6.5 5/16 x 1/2" FHSCS



- 4 5/16 x 1/2" FHSCMS
 DF6002-01Z

19.7 Insert top adaptor into canopy top bearing

Fig. 19.7.1 Top adaptor retracted into center shaft



- 4 5/16 x 1/2" FHSCMS 15 Top bearing assembly
 DF6002-01Z
 7 Top adaptor

19.7.1 Raise top adaptor into canopy top bearing.

1. Loosen four 5/16 x 1/2" FHSCMS securing top adaptor to center shaft.
2. Raise top adaptor into canopy top bearing.

19.7.2 Tighten flat head screws

1. Tighten flat head screws to secure center shaft to top adaptor.

19.7.3 Install top adaptor set screw.

1. Thread set screw into top adaptor (Fig. 24.6.3) until it bottoms out.

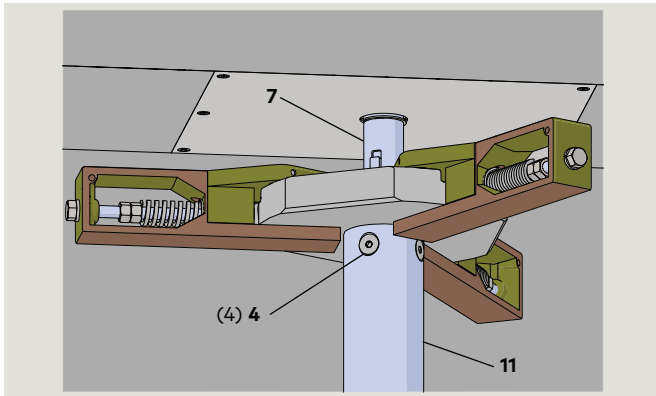
19.7.4 Rotate center shaft assembly.

NOTICE

Check center shaft rotation.

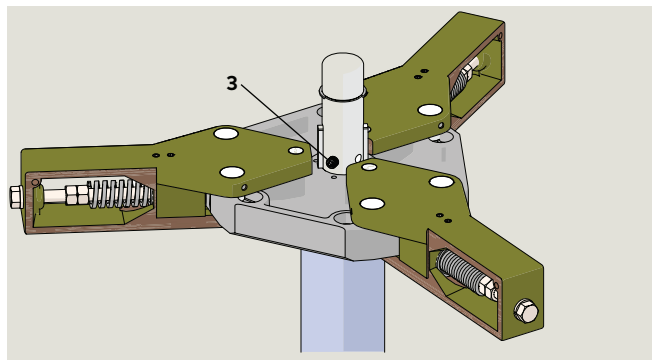
- Shaft should rotate freely.

Fig. 19.7.2 Top adaptor inserted into canopy top bearing



- 4 5/16 x 1/2" FHSCMS 11 Center shaft
 DF6002-01Z
 7 Top adaptor

Fig. 19.7.3 Top adaptor set screw



- 3 5/16-24 x 1/2" SS cup
 point set screw
 DF6030-01G

20 Set initial hanger breakout tension

20.1 Set hanger initial hanger breakout tension

Fig. 20.1.1 Center shaft installed

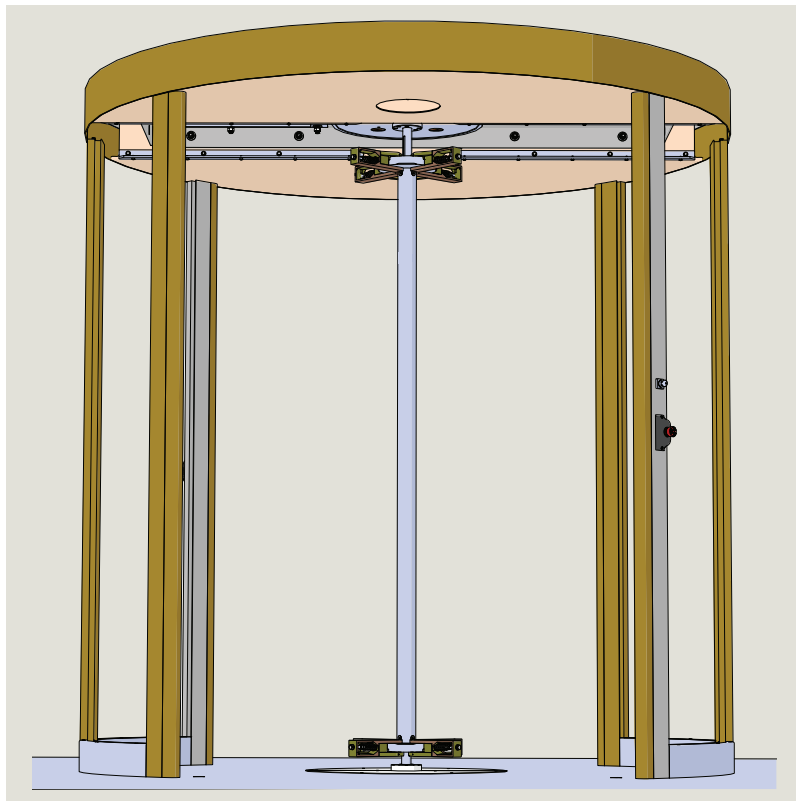
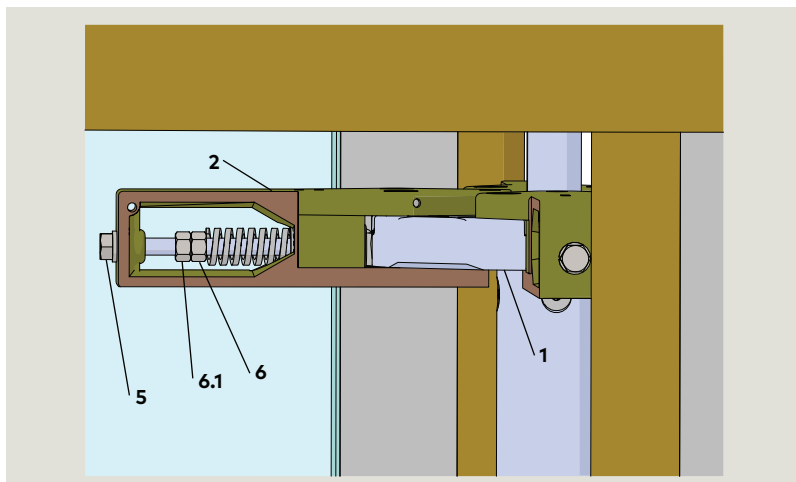


Fig. 20.1.2 Breakout tension adjustment



- | | | | |
|---|----------------------|-----|------------------------------|
| 1 | 4 wing disc assembly | 5 | H bolt, .375x 4"
H61 0075 |
| 2 | Hanger assembly | 6 | .375-16 hex nut |
| | | 6.1 | .375-16 hex nut |

20.1.1 Breakout tension.

CAUTION

Breakout tension is not preset.

Breakout tension:

- Must be checked by installers once wings are installed.
- Must be set to meet building conditions to conform to ANSI/ BHMA A156.27 breakout force requirements.

Reference: Chapter__.

20.1.2 Initial breakout hanger tension.

1. Loosen hex nut (6.1) and hex nut (6) away from spring.
2. Turn hex nut (6) so that it is finger tight against spring.
3. Using open end 9/16" box wrench, turn hex nut 4 turns CW to tension spring.
4. Turn hex nut (6.1) until it is against (6).
5. Use 9/16" wrenches to lock hex nuts in place.

NOTICE

Reference Chapter__ for breakout force check after wings are installed. Further adjustment of spring tension on all hangers may be required to achieve required wing breakout force.

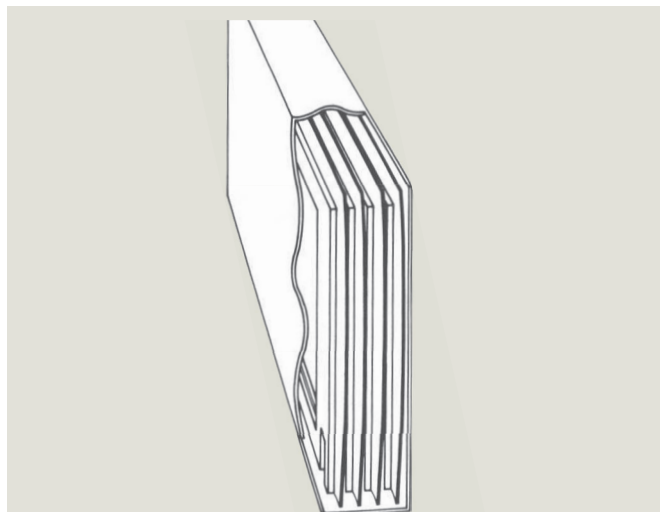
20.1.3 Remaining hangers.

1. Repeat hanger tension adjustment for remaining hangers.

21 Unpack wing shipping crate

21.1 Unpack wing shipping crate

Fig. 21.1.1 Wing assemblies shipping crate



21.1.1 Unpacking shipping crate.

1. Uncrate wing assemblies from shipping crate.

CAUTION

Refer to warning tag on shipping crate regarding unpacking procedure..

CAUTION

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

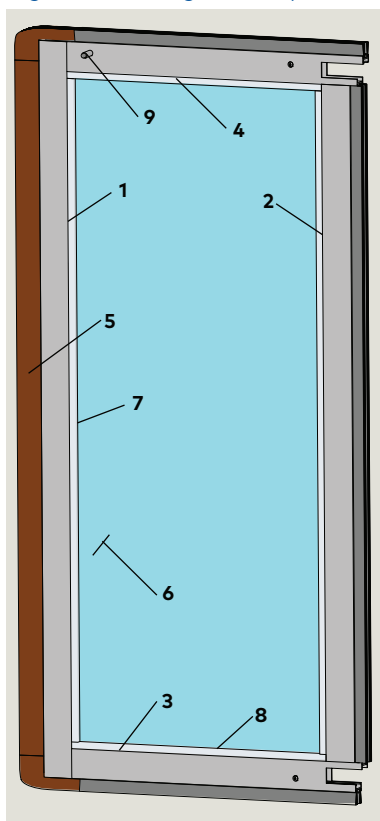


WARNING

Use caution while working with wing assemblies!

Fig. 21.1.2 Wing assembly

- 1 Extruded aluminum center stile
- 2 Extruded aluminum lock stile
- 3 Extruded aluminum bottom rail
- 4 Extruded aluminum 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



WARNING

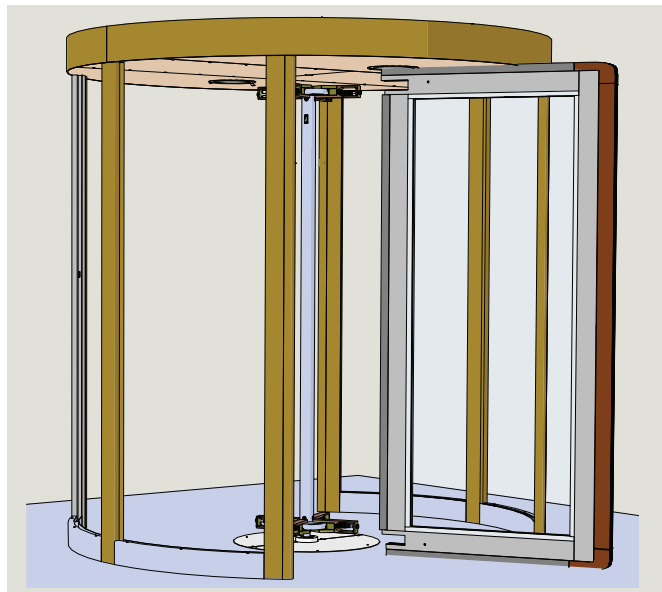
Risk of injury due to improper handling of wing assemblies and glass!

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

22 Wing installation - AL2000, AL3000

22.1 Install wings onto center shaft hangers

Fig. 22.1.1 First wing installation



22.1.1 Install first wing on center shaft hangers.

CAUTION

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

CAUTION

Match each wing with its hanger number.



WARNING

Use caution installing wing assemblies!

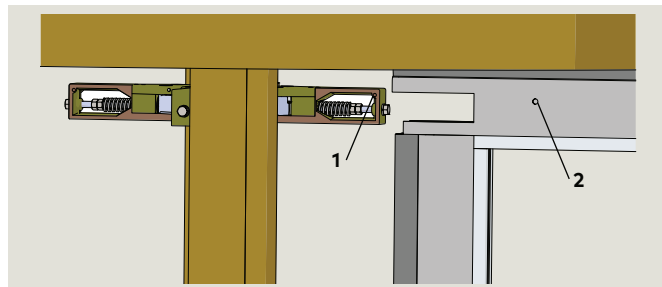


WARNING

Risk of injury due to improper handling of wing assemblies!

- At least two people are required to lift and transport wing assemblies.

Fig. 22.1.2 Wing and hanger mounting holes



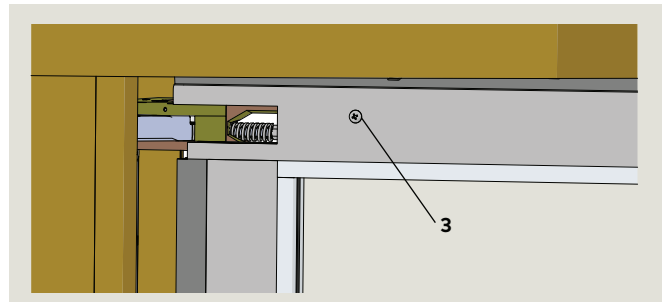
- 1 Hanger mounting hole, both sides 2 Wing mounting hole, both sides

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.

22.1.2 Install remaining wings on center shaft hangers.

1. Install remaining wings.

Fig. 22.1.3 Wing and hanger mounting holes



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

Fig. 22.1.4 Truss head machine screw

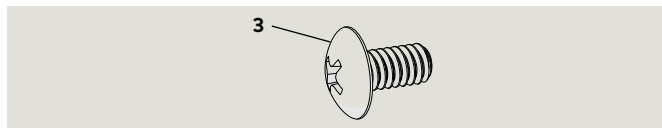
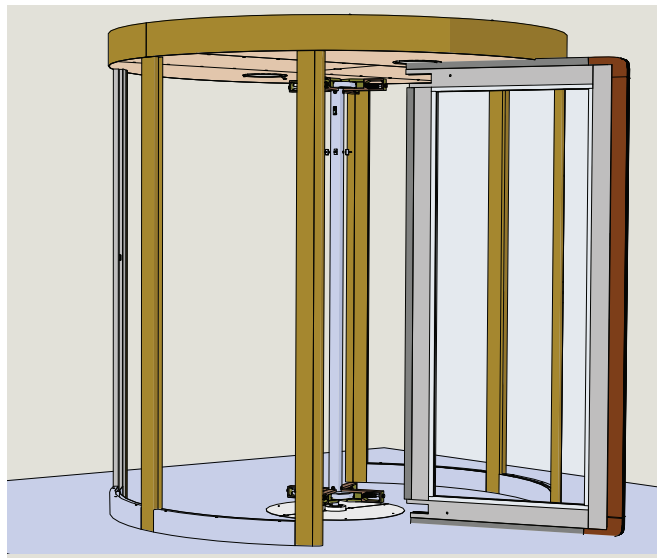


Fig. 22.1.5 Wing installation on hangers

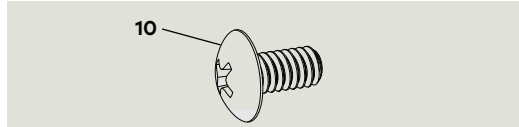


23 Wing installation - SS2000, SS3000

23.1 Install wings on center shaft hangers

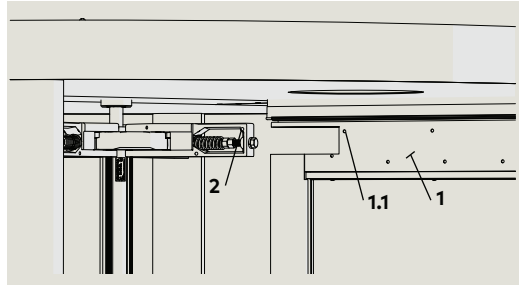
- 1 .25-20 x 1/2" Truss head machine screw

Fig. 23.1.1 Truss head machine screw



- 1 Top rail reinforcement, push bar side
- 1.1 3/16" DIA hole
- 2 1/4-20 UNC hole in hanger

Fig. 23.1.2 Top hanger, wing mounting holes



- 2 1/4-20 UNC hole in hanger
- 3 Bottom rail reinforcement, push bar side
- 3.1 3/16" DIA hole

Fig. 23.1.3 Bottom hanger, wing mounting holes

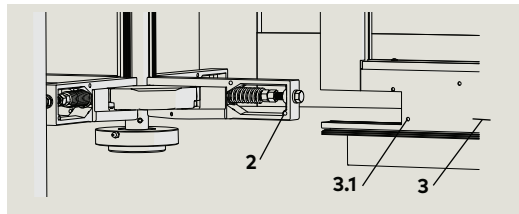
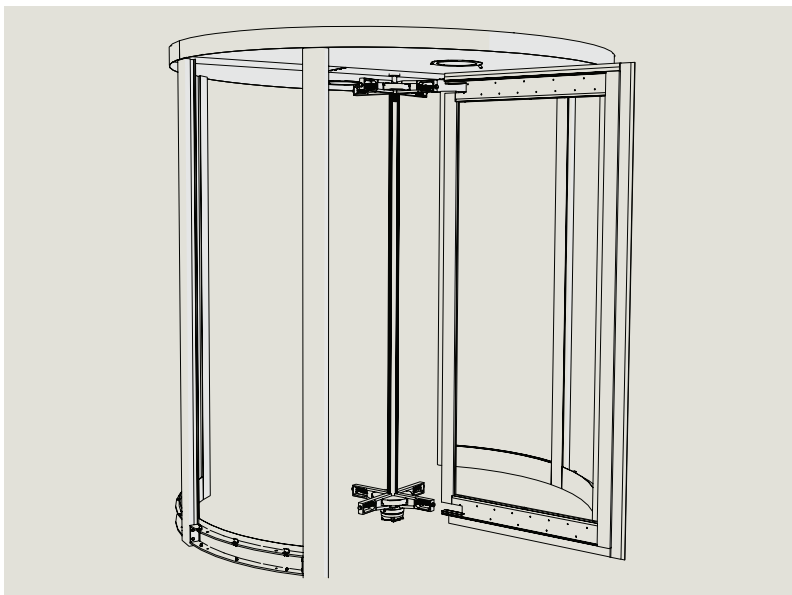


Fig. 23.1.4 Mounting wing to upper and lower hangers



23.1.1 Install first wing on hangers.

CAUTION

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

CAUTION

Match each wing with its hanger number.



WARNING

Use caution while working with wing assemblies and glass!



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.

23.1.2 Install remaining wings on center shaft hangers.

1. Install remaining wings.

23.1.3 Replace top and bottom rail skins.

1. Replace top and bottom rail skins.

24 Install floor strikes

24.1 Install floor strikes

Fig. 24.1.1 Floor strike H65 4020

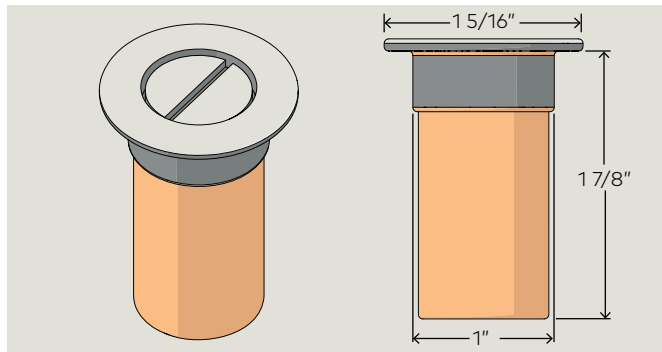


Fig. 24.1.2 3 wing door home position

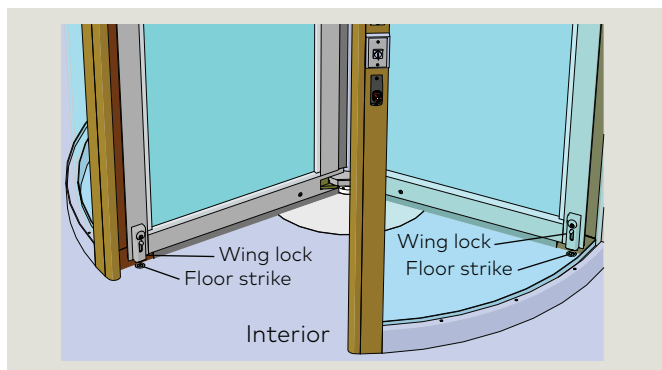


Fig. 24.1.3 Wing lock in home position

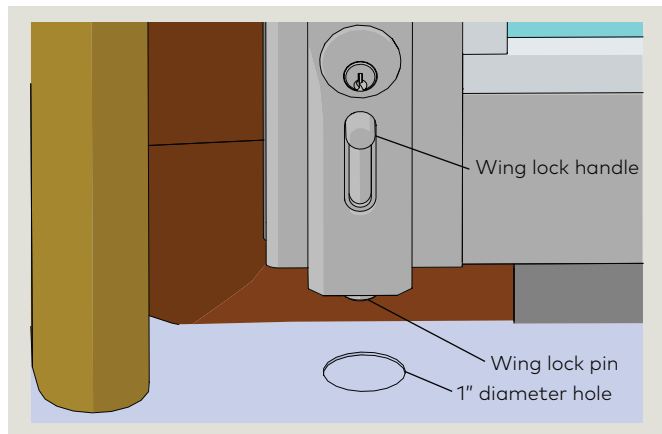
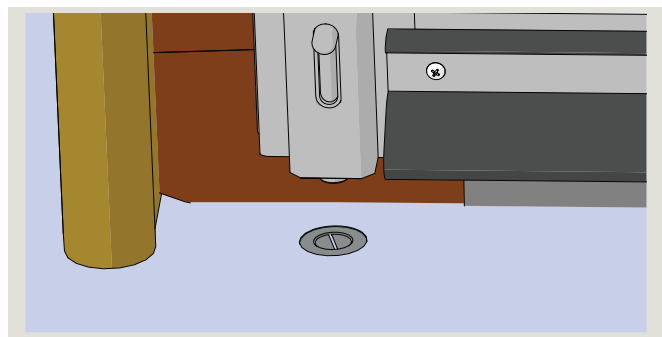


Fig. 24.1.4 Floor strike installed



24.1.1 Home position.

1. Rotate wings to home position.

24.1.2 Mark floor strike hole locations.

1. Move wing lock handle down until wing lock pin contacts floor surface.
 - Wing lock pin diameter: 5/8"
2. Mark circumference of pin on floor.
3. Raise wing lock handle.
4. Mark centerpoint of wing lock pin on floor.
5. Repeat steps 1 through 4 for second wing lock.

24.1.3 Drill floor strike holes in floor.

1. For concrete floors, drill 1 1/4 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.

24.1.4 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.

24.1.5 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

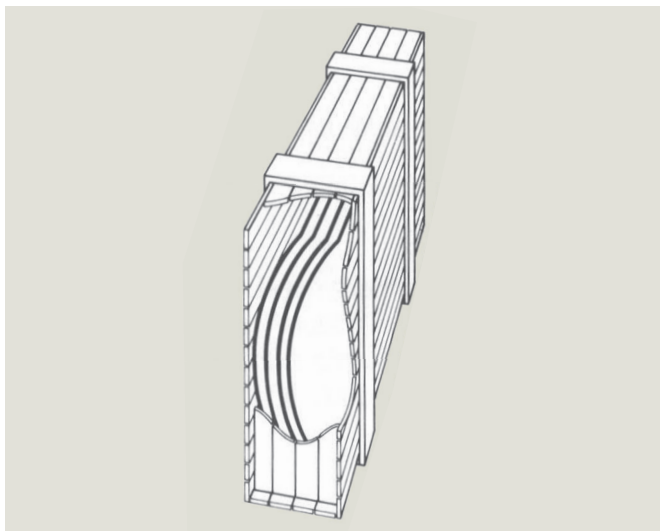
Note manufacturer's cure time for grout before walking on strikes or using wing locks.

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

25 Install enclosure glass - AL2000, AL3000

25.1 Unpack enclosure glass shipping crate

Fig. 25.1.1 Enclosure glass shipping crate



25.1.1 Unpack shipping crate.

1. Uncrate enclosure glass from shipping crate.

CAUTION

Refer to warning tag on shipping crate regarding unpacking procedure (Ref. Chapter 11).

CAUTION

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

CAUTION

Handle curved glass with care. Do not exert force on the glass pieces.



WARNING

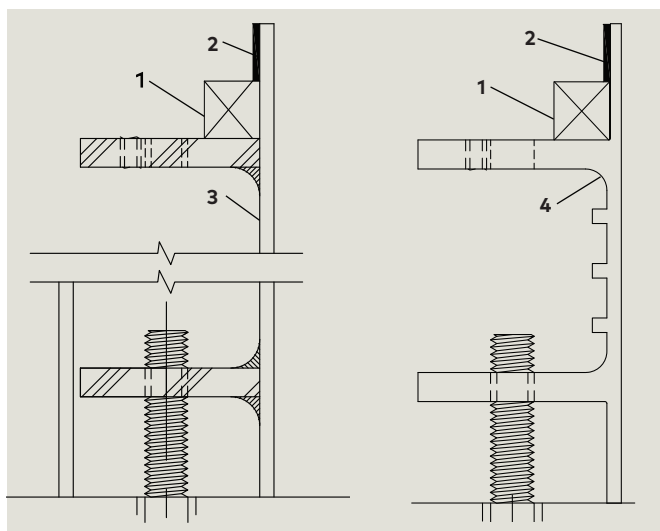
Use caution while working with enclosure glass!

- 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.

25.2 Prepare bases for enclosure glass

Fig. 25.2.1 Glazing block and tape
 AL3000

AL2000



25.2.1 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 Crane.

25.2.2 Install glazing tape.

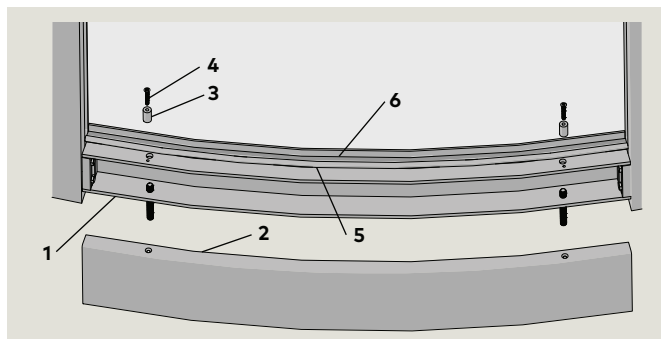
1. Install compressed 1/8" thick glazing tape on enclosure base walls above glazing block.

NOTICE

Reference Crane shop drawings for glazing detail at enclosure base.

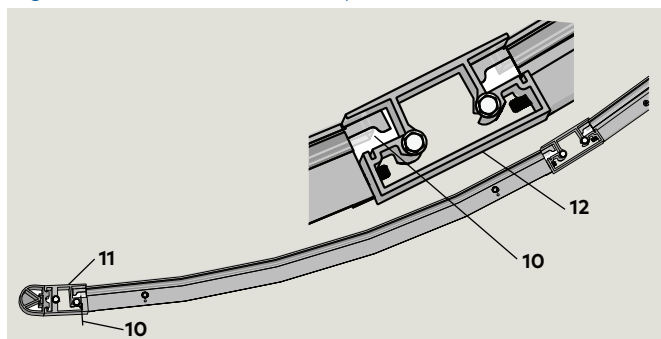
25.3 Install enclosure glass

Fig. 25.3.1 Glass set in base enclosure



- | | |
|--------------------------------------|----------------------------------|
| 1 Enclosure base assembly | 4 10-24 x 1.25" SS POHMS S210334 |
| 2 Enclosure base fascia | 5 Backer rod |
| 3 Base cover support mounting spacer | 6 Glazing block |

Fig. 25.3.2 Glass centered in posts, overhead view



- | | |
|------------------|-----------------|
| 10 Edge of glass | 11 Quarter post |
| | 12 Center post |

Fig. 25.3.3 AL2000 base assembly

- | | |
|--------------------------------------|------------------------------|
| 1 2 piece extruded aluminum base | 5 Glazing block |
| 2 Enclosure base cover | 6 Backing rod |
| 3 Base cover support mounting spacer | 7 1/8" thick glazing tape |
| 4 10-24 x 1.25" SS POHMS S210334 | 8 Curved glass |
| | 9 Glazing compound by others |

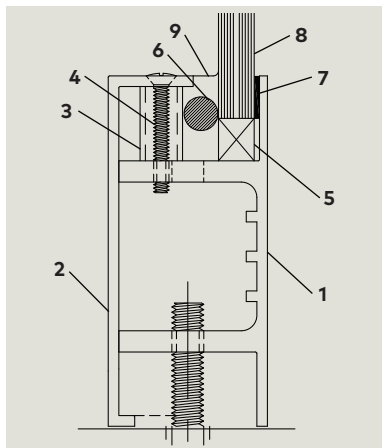
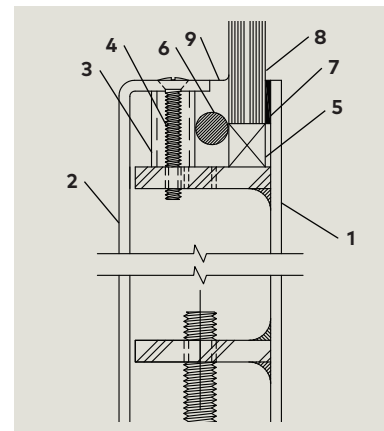


Fig. 25.3.4 AL3000 base assembly

- | | |
|--------------------------------------|------------------------------|
| 1 2 piece formed aluminum base | 5 Glazing block |
| 2 Enclosure base cover | 6 Backing rod |
| 3 Base cover support mounting spacer | 7 1/8" thick glazing tape |
| 4 10-24 x 1.25" SS POHMS S210334 | 8 Curved glass |
| | 9 Glazing compound by others |



25.4 Install enclosure base covers

25.3.1 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.

25.3.2 Install backer rod and enclosure base cover.

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

25.3.3 Install remaining enclosure glass.

1. Install remaining enclosure glass per paragraphs 25.2.1 and 25.3.2

25.3.4 Complete glazing of enclosure glass.

1. Finish enclosure glazing.

NOTICE

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

25.4.1 Install enclosure base covers.

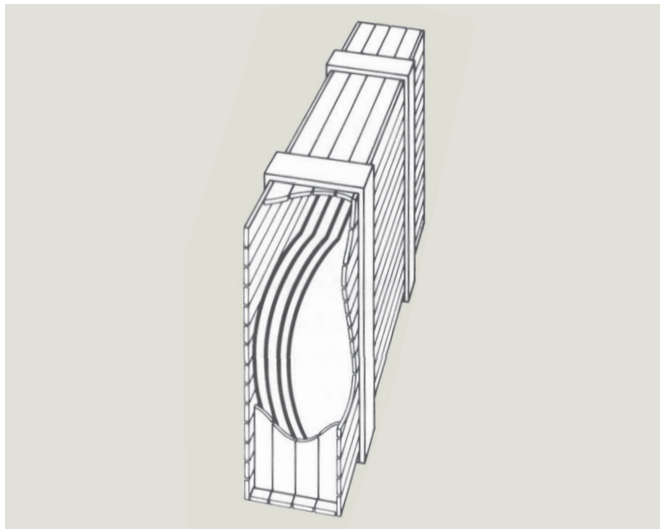
25.4.1 Install enclosure base covers.

1. Install enclosure base covers using hardware in Fig. 25.3.3.

26 Install enclosure glass - SS2000, SS3000

26.1 Unpack enclosure glass shipping crate

Fig. 26.1.1 Enclosure glass shipping crate



26.1.1 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 not exert force on the glass pieces.



WARNING

Use caution while working with enclosure glass!

26.2 Prepare bases for enclosure glass

Fig. 26.2.1 Base enclosure glazing block and tape installed

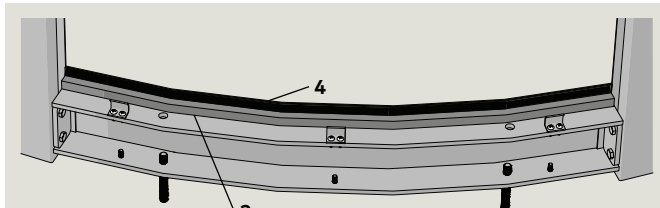
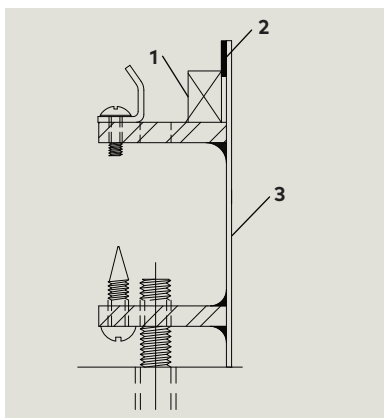


Fig. 26.2.2 SS2000 and SS3000 glazing block and tape

- 1 Glazing block
- 2 Compressed 1/8" thick glazing tape
- 3 2 piece formed SS base with with 1/4" steel reinforcement bars



CAUTION

Handle curved glass with care. Do not exert force on the glass pieces.

CAUTION

Reference shop drawings for glazing detail.

26.2.1 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 Crane.

26.2.2 Install glazing tape.

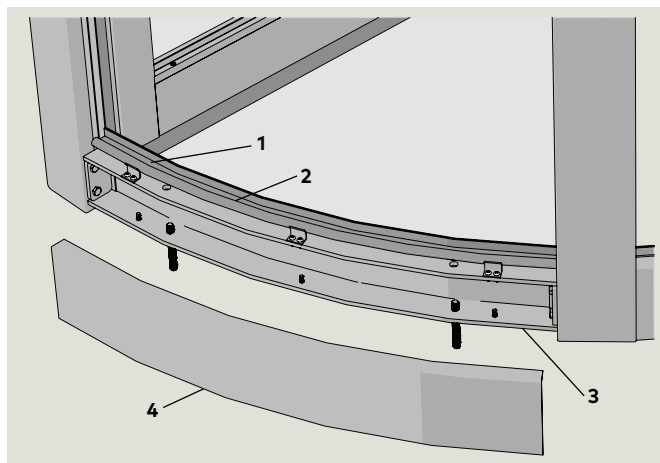
1. Install compressed 1/8" thick glazing tape on enclosure base walls above glazing block.

NOTICE

Reference Crane shop drawings for glazing detail at enclosure base.

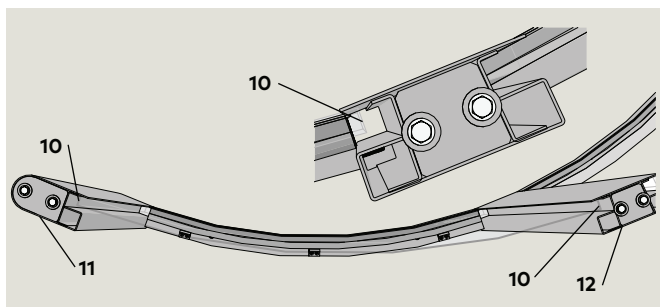
26.3 Install enclosure glass

Fig. 26.3.1 Glass set in base enclosure



- | | |
|------------------------------|-------------------------|
| 1 Glazing block | 4 Enclosure base fascia |
| 2 Backer rod | |
| 3 SS enclosure base assembly | |

Fig. 26.3.2 Glass centered in posts, overhead view



- | | |
|------------------|-----------------|
| 10 Edge of glass | 11 Quarter post |
| | 12 Center post |

26.3.1 Set first glass piece into place.



WARNING

Use caution while working with enclosure glass!

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

26.3.2 Install backer rod and enclosure base cover.

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

26.3.3 Install remaining enclosure glass.

1. Install remaining enclosure glass per paragraphs 26.2.1 and 26.3.2

26.3.4 Complete glazing of enclosure glass.

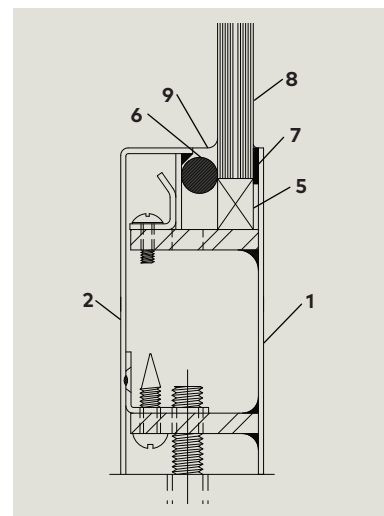
1. Finish enclosure glazing.

NOTICE

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

Fig. 26.3.3 SS2000 and SS3000 base assembly

- 1 2 piece formed SS base with 1/4" steel reinforcements
- 2 Enclosure base cover
- 5 Glazing block
- 6 Backing rod
- 7 1/8" thick glazing tape
- 8 Curved glass
- 9 Glazing compound by others



26.4 Install enclosure base covers

26.4.1 Install enclosure base covers.

1. Install enclosure base covers (Fig. 26.3.3).

This page left intentionally blank.

27 Check wing breakout force, bookfold operation

27.1 Check breakout force

27.1.1 Breakout force.

Set breakout force based on prevailing conditions at the door opening.

NOTICE

ANSI/BHMA A156.27
Para. 10 Breakout force requirements.
Each revolving door wing shall be capable of breakout when a force of not more than 130 lb. [578 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.

27.1.2 Initial breakout hanger tension.

- Initial hanger bookfold tension set in Chapter 20.
- Reference Para. 7.6 for bookfold operation overview.

27.1.3 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. 27.1.4.

27.1.4 Hanger breakout force adjustment.

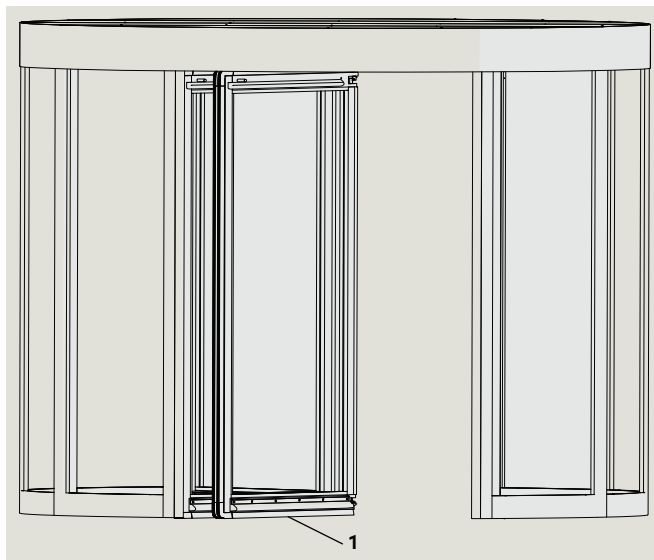
1. Remove wing from hangers.

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.

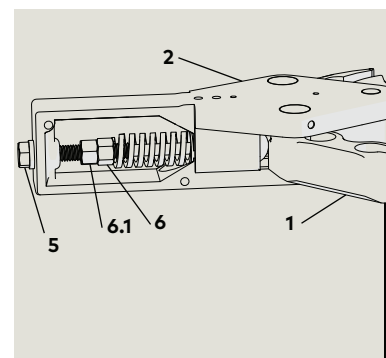
Fig. 27.1.1 Wing in bookfold position



1 Wing breakout

Fig. 27.1.2 Hanger tension adjustment

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

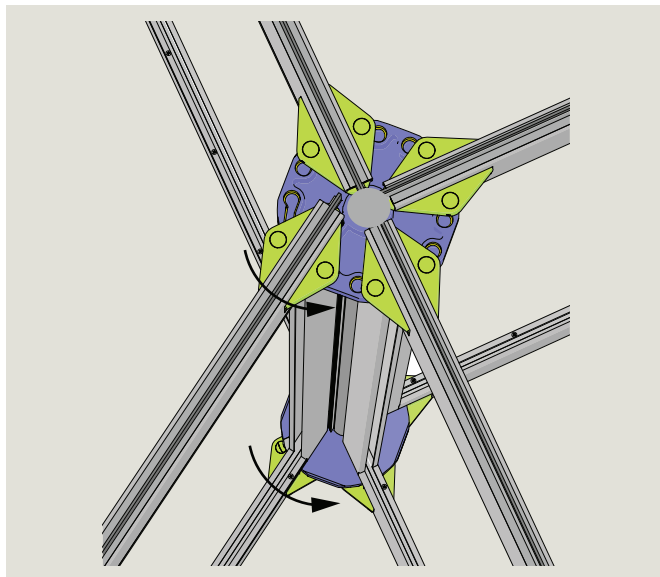


- **Decrease hanger tension:**
 - Turn hex nut 6.1 CCW to allow reduced tension adjustment.
 - Turn hex nut (6) CCW to reduce decrease tension on spring.
 - Use two 9/16" wrenches to both lock hex nuts in place.
 - Repeat same tension adjustment on lower hanger.
2. Reinstall wing and repeat breakout force test.
 3. Repeat tension adjustment until breakout force requirements in Para. 27.1.1 are met.

27.1.5 Breakout force, 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. 27.1.3

Fig. 27.1.3 Door wing in breakout position

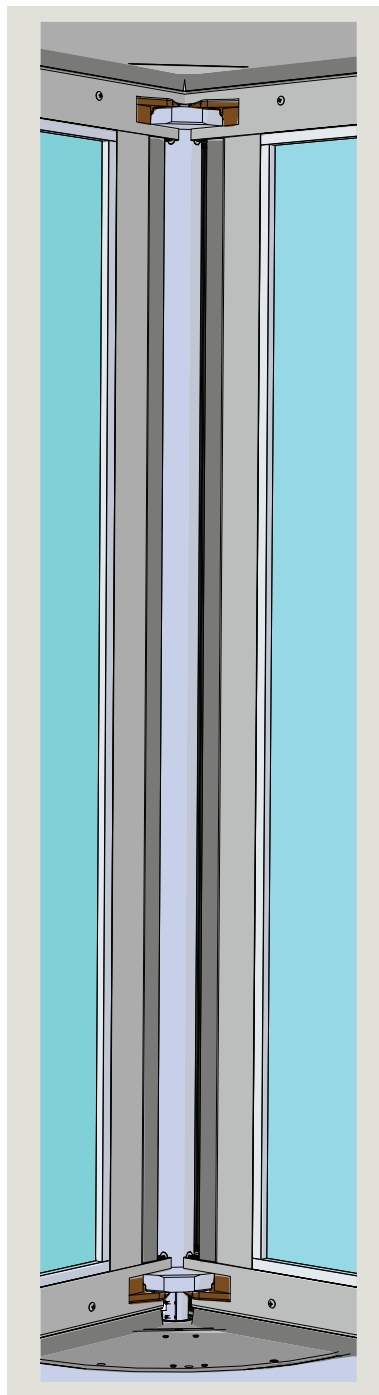


1. Repeat tension adjustment until breakout force requirements in Para. 27.1.1 are met.

27.1.5 Breakout force, 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. 27.1.3

Fig. 27.1.4 Wing assemblies

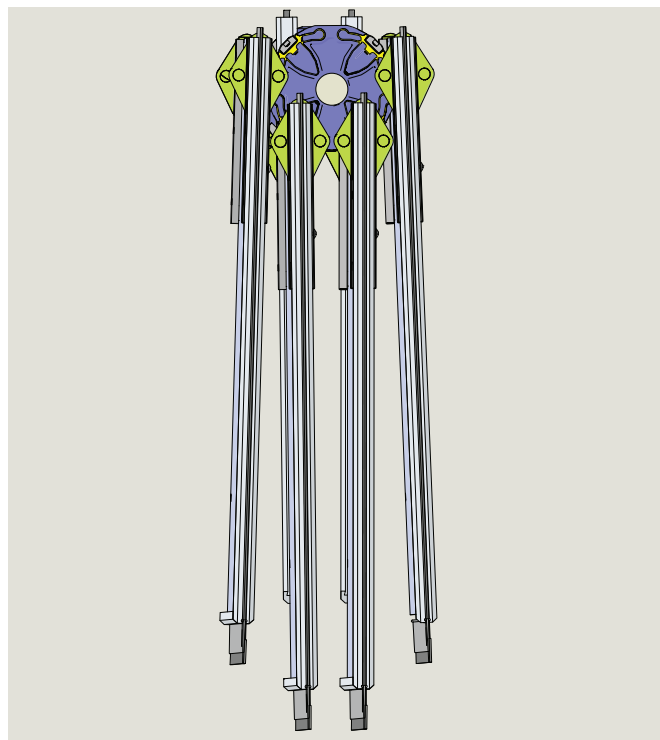


27.2 Check bookfold operation

27.2.1 Check wing bookfold operation

1. Check bookfold operation on all wings.

Fig. 27.2.1 Door wings in bookfold position



www.dormakaba.us

dormakaba
DORMA USA, Inc.
1 Dorma Drive, Drawer AC
Reamstown, PA 17567
USA
T: 717-336-3881
F: 717-336-2106