

# 425 SERIES AND GRANDVIEW PATIO DOORS

XF & FX

XFF & FFX

F\_XF & FX\_F

FXXF

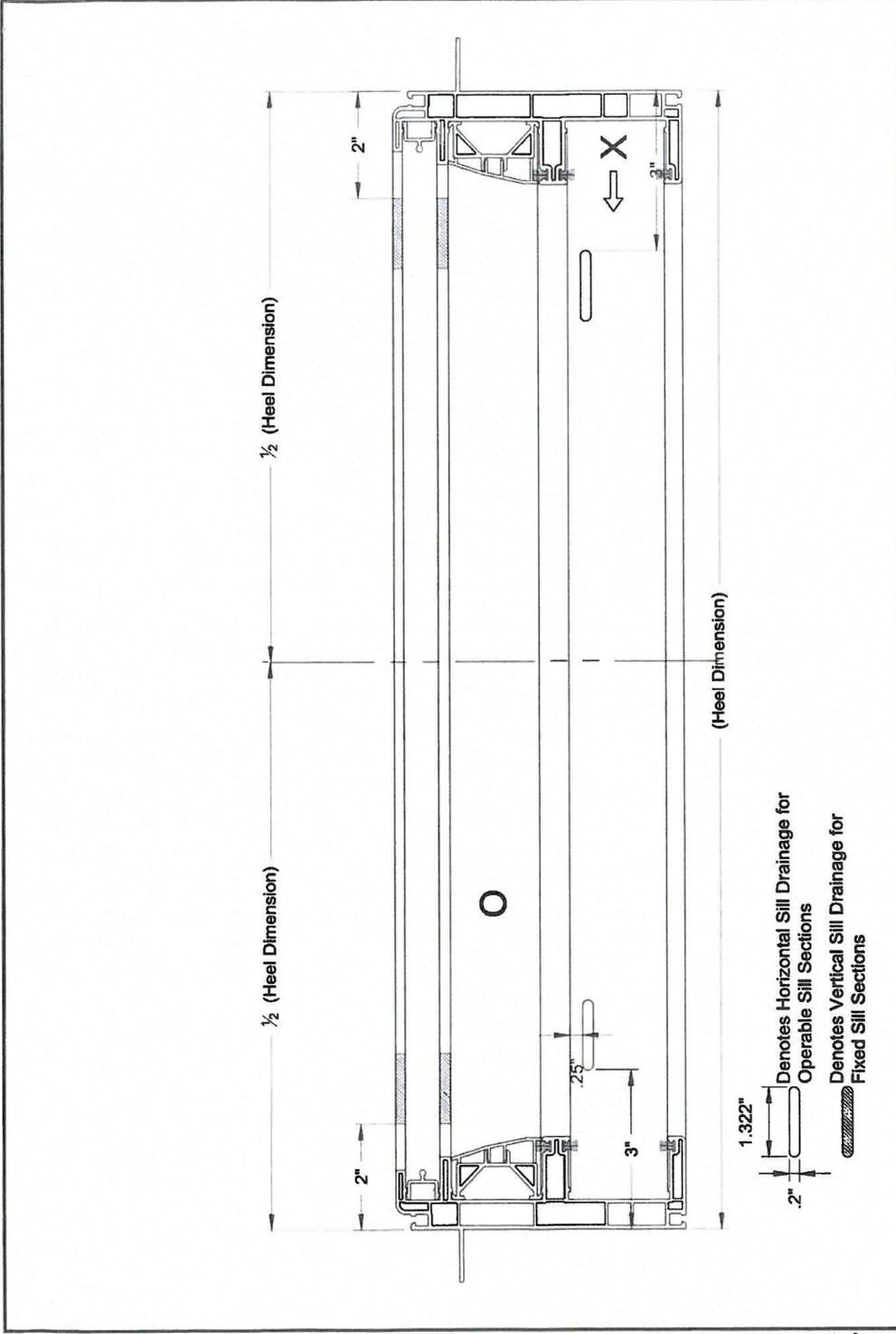
(X)(X)XXF & FXX(X)(X)

## CUTTING

Our 425 series and Grandview patio doors are cut by the Line#2 sawyer on the Pro-Line saw (Pro-Cut DMT- 220P). The cut sizes are taken from the Patio Door production paperwork provided from the office. A ¼" is added by the saw to the cut sizes to account for the loss of length that occurs during the welding process. This is done automatically by the saw (If 36" is entered into the keypad by the operator the cut length will be 36 ¼"). This process is carried out for both the frame (R-1838A and KE-2585) and sashes (KE-2498). The saw and its fixtures need to be cleaned on a regular basis to ensure smooth, accurate operation.

## SASH AND FRAME PREP

A number of processes need to be done to the frame and sash components before the welding can take place. The frame sill will need to have the drainage paths milled into it and the webbing in between the chambers will need to be cut at a 45° and removed to allow water to drain through the exterior of the frame. The amount of drain holes and their position will change depending on the size and configuration.



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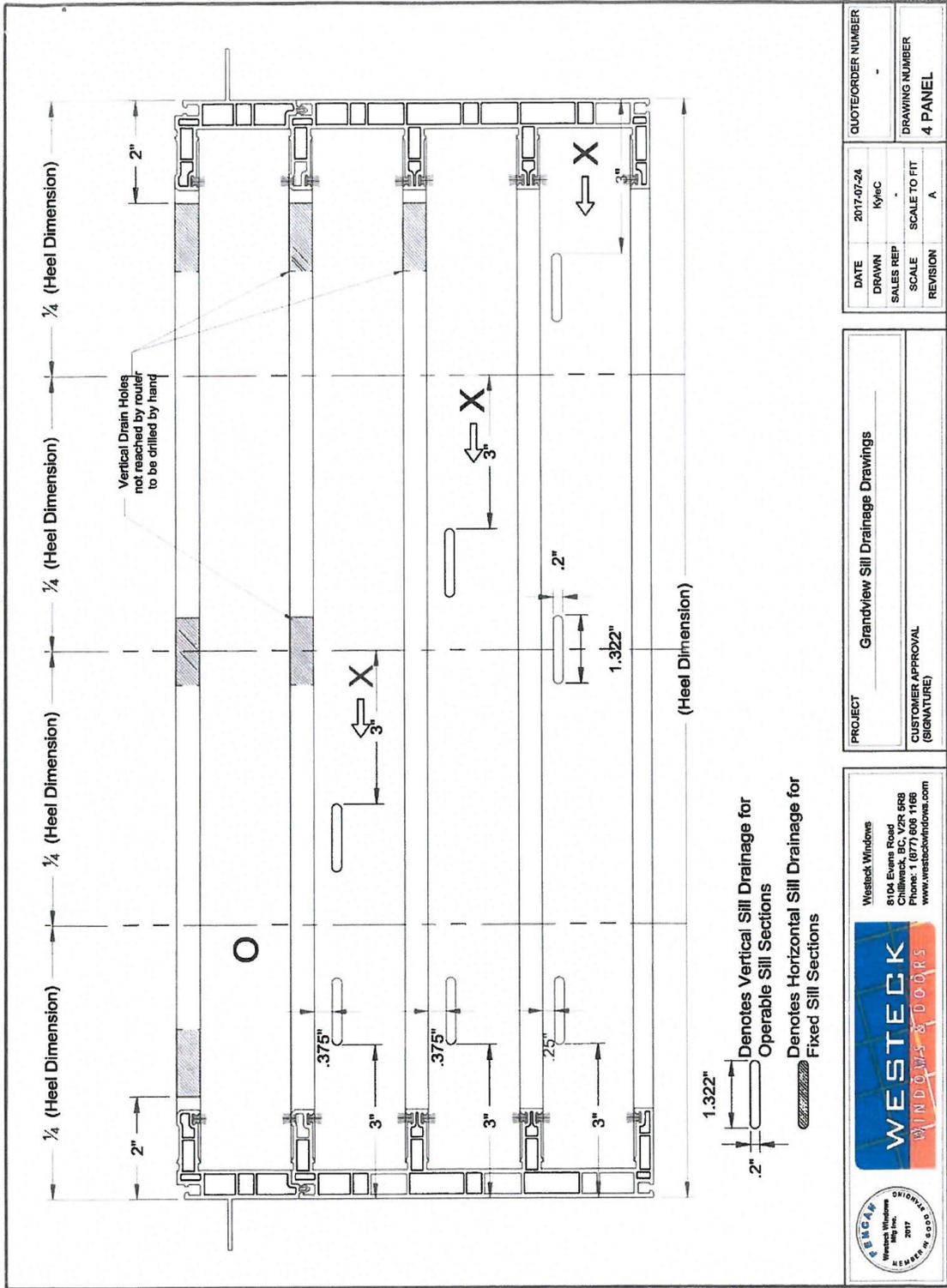
DATE	2017-07-24	QUOTE/ORDER NUMBER	
DRAWN	KJMC	DRAWING NUMBER	2 PANEL
SALES REP		SCALE	SCALE TO FIT
REVISION	A		

PROJECT	Grandview Sill Drainage Drawings
CUSTOMER APPROVAL (SIGNATURE)	

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 8104 Empire Road  
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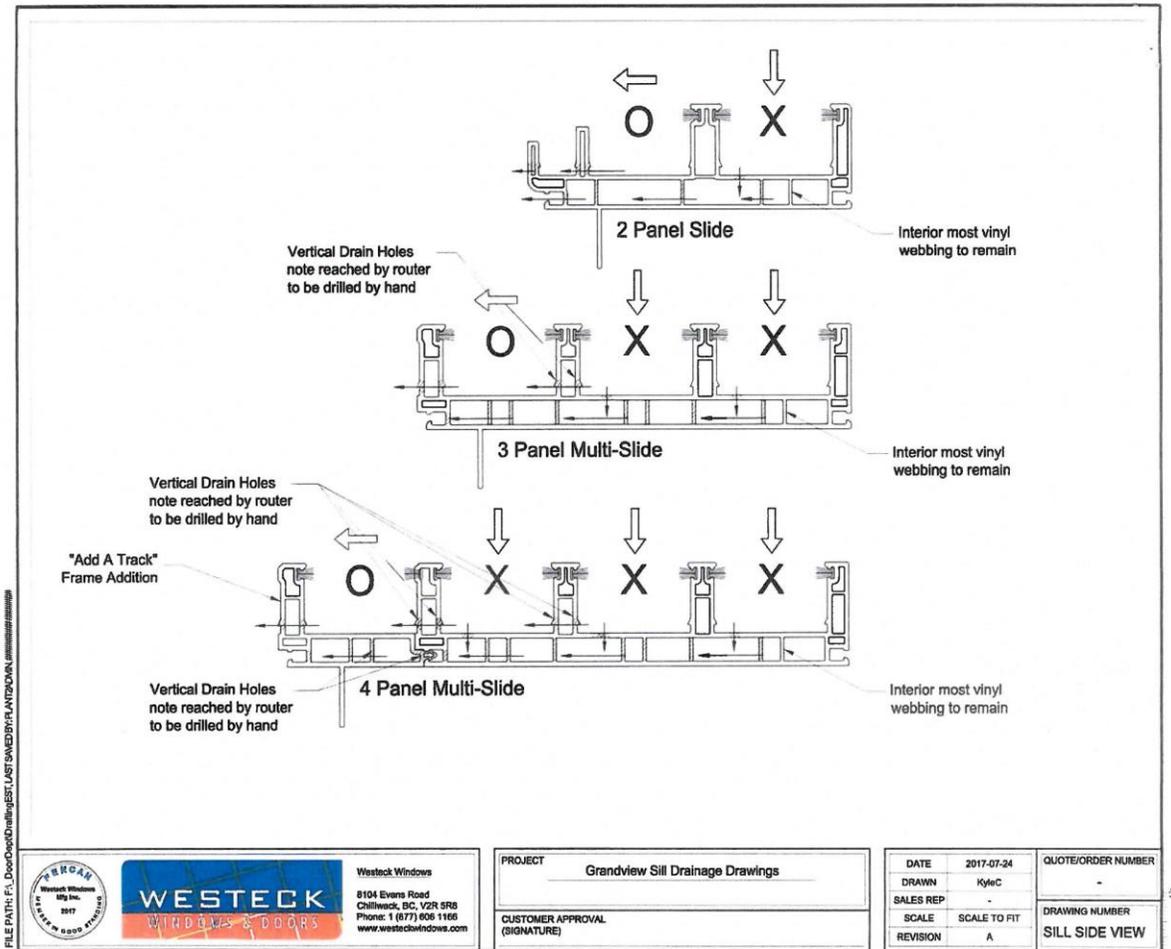


DATE	2017-07-24	QUOTE/ORDER NUMBER	
DRAWN	Kj/cC	DRAWING NUMBER	4 PANEL
SALES REP		SCALE TO FIT	A
REVISION			

PROJECT	Grandview Sill Drainage Drawings
CUSTOMER APPROVAL (SIGNATURE)	

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The Grandview patio door system uses a fiberglass reinforcement in the panel profile (KE-2498). The fiberglass reinforcement is cut to length using a wet saw. The length is taken from a cut sheet provided by the production administration staff. The reinforcement is secured in place with #8 x 3/4" flathead TEK screws. Two each in the top and bottom. Three each in the sides.

Note: Doors ordered with the Max Thermal performance option have polyurethane foam fill inside the fiberglass reinforcement.

Note: Reinforcement is not required in the head and sill of panels with a width of less than 30".

Two holes will need to be milled into the sill of each active or semi-active panel for the attachment of the wheels (Anthony Innovations SS4640DPSA). This is done using a copy router located in the reinforcement and prep area. The wheels will then be attached to the sill of the active and semi-active panels through the bottom of the glazing channel with two 1/4-10 x 3/4" Flathead machine screws each.

There are two handle options for the Grandview door. The standard for the 425 dual slide patio door frame is the North American style positive action lock. The premium handle is the low-profile European

style lock, always used for multi slide systems. Each handle requires a different milling shape and location. This is accomplished using the copy router located in the Line #2 prep area. (Part #'s for both handle options are listed below in the Sash and Fixed Panel assembly)

## WELDING

Welding is done on the Line#2 Sturtz 4-point welder (*SMI-HSM-PDS*) or the 2-point welder located in the Patio Door department. Most doors are welded on the Sturz 4-point welder, only oversize (any frame wider than 130" or taller than 100") Patio Doors are welded on the 2-point welder.

Using the Sturtz 4-point welder involves entering the size of the frame and placing the components into the welder. The welding sequence is activated and all four corners are welded together simultaneously. This is where all of the sashes are also welded together. The welding plates and fixtures must be cleaned at regular intervals to ensure that the welder continues to operate properly and accurately. A maintenance form is provided and it is required that the operator conduct the routine maintenance, fill out the form and hand it into the supervisor at the end of the week.

The 2-point welder is used to weld together frames larger than what the 4-point welder can handle. Many of our Grandview multi-slide patio doors get to be very wide. First the correct fixtures are selected and affixed into place on the welder. There is a handle with a trigger style button on the right-hand welding head. This welding head is adjustable and will unlock and become moveable when the trigger button is depressed. The welding head is moved to approximately the size of the window or door. The first piece is placed in between the two welding heads. The "Program Forward" button is pressed to bring up alignment plates. The moveable head is adjusted to the correct width. The "Program Forward" button is pressed again to bring the rear clamps down. The next length is placed into the left welding head and pressed against the alignment plate. While holding the next piece in place, press the "Program Forward" button to bring down the front/left clamp. The next length is placed into the right welding head and pressed against the alignment plate. While holding the next piece in place, press the "Program Forward" button to bring down the front/right clamp. Now that everything is in place a quick check of each welding head is performed to make sure everything is in the correct place. (This is the last opportunity to make changes if necessary.) The "Weld Start" buttons are pressed at the same time and the welding sequence begins, melting the ends of the vinyl pieces and then pushing them together. A maintenance form is provided and it is required that the operator conduct the routine maintenance, fill out the form and hand it into the supervisor at the end of the week.

After it is welded, depending on its size and frame type (Single or Multi-slide) it will either be taken to the corner cleaner or to the production tables in the Patio Door department to be cleaned by hand.

When a four panel multi-slide patio door is ordered, the welding process takes place in two parts. A three panel, multi-slide frame is welded together, corner cleaned and then measured for to determine the frames exact size. That size is given to the Pro-Line Saw operator and an add-a-track profile (KE-2586) is cut and sent to the welder. The welding process for this profile is the same as the other components of the 425 and Grandview patio doors.

## CORNER CLEANING/PREPERATIONS BEFORE FRAME GOES INTO SQUARING RACK

If the frame or sash has been welded on the Sturtz 4-Point Welder, the frames are sent to the Sturtz Corner Cleaner (*SMI-CNC-2K-30-F*). The corner cleaner, using a mill blade and a scarf tool, will remove the excess material left during the welding process. This process is done two corners at a time. After which the operator checks the frame to make sure there was no over-trimming, exposing any of the inner chambers. Some surfaces will require hand chiseling. Care must be taken to not gouge or otherwise damage the PVC surfaces, in particular the glazing leg surface where the glazing tape is intended to adhere and create a seal between glass and vinyl. The inside of the corner cleaner must be cleaned and maintained daily.

Oversize Single-Slide frames, welded on the Two-Point welder are taken to the Sturtz Corner Cleaner.

All Multi-Slide frames have to be corner cleaned by hand using a ½" chisel and a Dremel with a steel jig. After removing the excess weld material with the hand chisel, the steel jig is clamped into place and the Dremel is used to simulate the scarf marks left by the Corner Cleaner. If the Multi-Slide frame is a four panel, the three-panel frame is corner cleaned normally and the add-a-track is cleaned manually using a ½" chisel.

After frames are corner cleaned, they will have 2" x 2" wood bracing affixed to the perimeter of the frame for reinforcement. Once the reinforcement is screwed to the nailing fin the frame is then clamped into a steel squaring rack to ensure the frame remains square during the assembly of the frame and test fit of all of the panels.

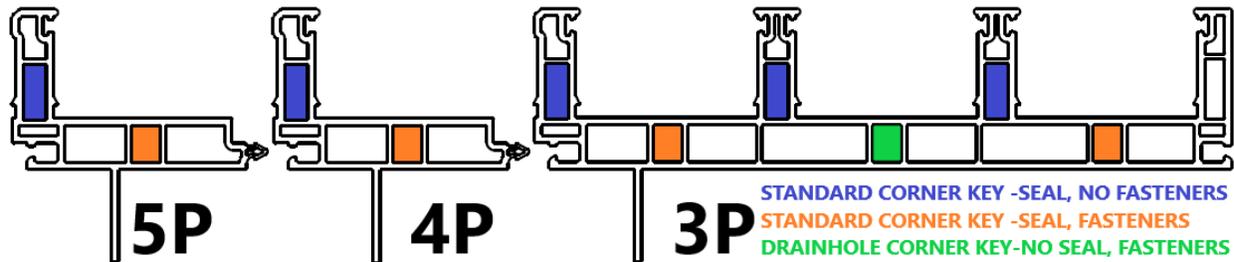
## Add-A-Track Application

### **4-5 Panel Multi-slides (X)(X)XXF or FXX(X)(X)**

If the frame is a four or five panel multi-slide patio door, the add-a-track will need to be attached to the three panel multi-slide frame. First, a bead of silicone is run around the perimeter of the frame except the drainage slots on the exterior wall of the accessory groove. The add-a-track is then placed on top of the three-panel frame and is press fit into place. A rubber mallet can be used but care must be taken around the corners of the frame, hitting the frame too hard with the mallet can crack the weld. If it is a five panel multi-slide, this process will need to be repeated.

## Knockdown Multi-slide- In-House Dry-Fitting

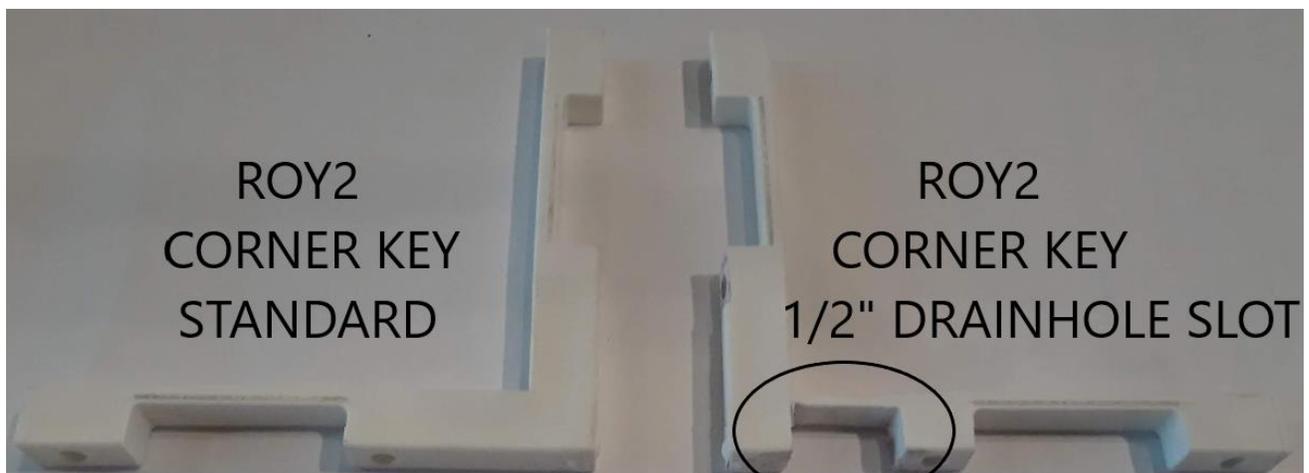
1. Pre-drill frame for corner keys (ROY2). One in the center of each pocket on all corners of frame.
2. Insert corner keys (ROY2) into all channels as drawn below. As we only do in-house dry fitting for knockdown requests, no corner keys will be sealed in-house.



3. The frame is now fastened together through the pre-drilled corners using snubber screws. It will then be taken to the squaring rack for dry fitting of panels, tracks, and pocket covers.
4. After dry fitting is complete, the frame is disassembled and wrapped for transport.

A knockdown kit will also need to be sent with the frame. It is important to note that new corner keys will need to be provided in the kit. Below is a chart that specifies each configurations pack list

3 Panel	4 Panel	5 Panel
-50X snubber screws	64X snubber screws	64X Snubber Screws
-4X 3panel Frame gaskets	-4X 4panel Frame gaskets	-4X 5 Panel Frame Gaskets
-4X 3Panel 90° corner caps	-4X 4Panel 90° corner caps	-4X 5 Panel 90° Corner caps
-22X Single corner keys	-32X Single corner keys	-32X Single Corner Keys
2X Drainage Channel Corner Keys	2X Drainage Channel Corner Keys	-2X Drainage Channel Corner Keys



## SASH AND FRAME ASSEMBLY

The hole for the handle and rollers will have already been milled into the active panel. There are two different handle options available for the 425 patio doors. The standard handle for the dual slide frame is the North American style but the premium handle is available as an option.

Part #	Supplier	Description
PS01-0030-000	Interlock USA	Internal Handle Assembly (White)
PS01-0030-026	Interlock USA	Internal Handle Assembly (Beige)
PS01-0030-00B	Interlock USA	Internal Handle Assembly (Black)
PS01-0030-115	Interlock USA	Internal Handle Assembly (Bronze)
PS01-0030-117	Interlock USA	Internal Handle Assembly (Silver)
PS01-0030-510	Interlock USA	Internal Handle Assembly (Brushed Nickel)
PS01-3040-000	Interlock USA	Non-Locking External Handle (White)
PS01-3040-026	Interlock USA	Non-Locking External Handle (Beige)
PS01-3040-00B	Interlock USA	Non-Locking External Handle (Black)
PS01-0030-115	Interlock USA	Non-Locking External Handle (Bronze)
PS01-3040-017	Interlock USA	Non-Locking External Handle (Silver)
PS01-3040-510	Interlock USA	Non-Locking External Handle (Brushed Nickel)
PS01-3041-000	Interlock USA	Locking External Handle (White)
PS01-3041-026	Interlock USA	Locking External Handle (Beige)

The Premium Handle set is the Euro style handle from Truth. The Handles come in a set, containing both internal and external handles, we also offer a split finish handle sets referred to as Zebra handles and there are keyed options available as well. This handle is standard on all multi-slide patio doors, the use of this handle allows the active sash to slide along side of the semi-active sash without the handle hitting the edge of the other sash.

Part#	Supplier	Description
40.84.33.311.1	Truth Hardware	Patio Door Handle Set - XO Satin Nickel
40.84.33.310.1	Truth Hardware	Patio Door Handle Set - OX Satin Nickel
40.84.32.311.1	Truth Hardware	Patio Door Handle Set - XO White
40.84.32.310.1	Truth Hardware	Patio Door Handle Set - OX White
40.84.02.311.1	Truth Hardware	Patio Door Handle Set - XO Black
40.84.02.310.1	Truth Hardware	Patio Door Handle Set - OX Black
40.84.02.301.1	Truth Hardware	Keyed Patio Door Handle Set - XO Black

40.84.32.301.1	Truth Hardware	Keyed Patio Door Handle Set - XO White
40.84.33.301.1	Truth Hardware	Keyed Patio Door Handle Set - XO Satin Nickel
40.84.02.475.1 40.84.32.400.1	Truth Hardware	Zebra Patio Door Handle Set - Black external/White Internal

Depending on the configuration of the patio door each panel will require a different combination of interlocks (KE-2545), spacers (KE-2589) and astragals (KE-2609). The astragal that will be attached to the left side (When viewed from the exterior of the patio door) of the opening panel will need to have a hole milled through it for the mortise. Interlocks are fastened to the panel with three #8 x 1" flathead TEK screws, two approximately 3" from top and bottom respectively and one in the middle.

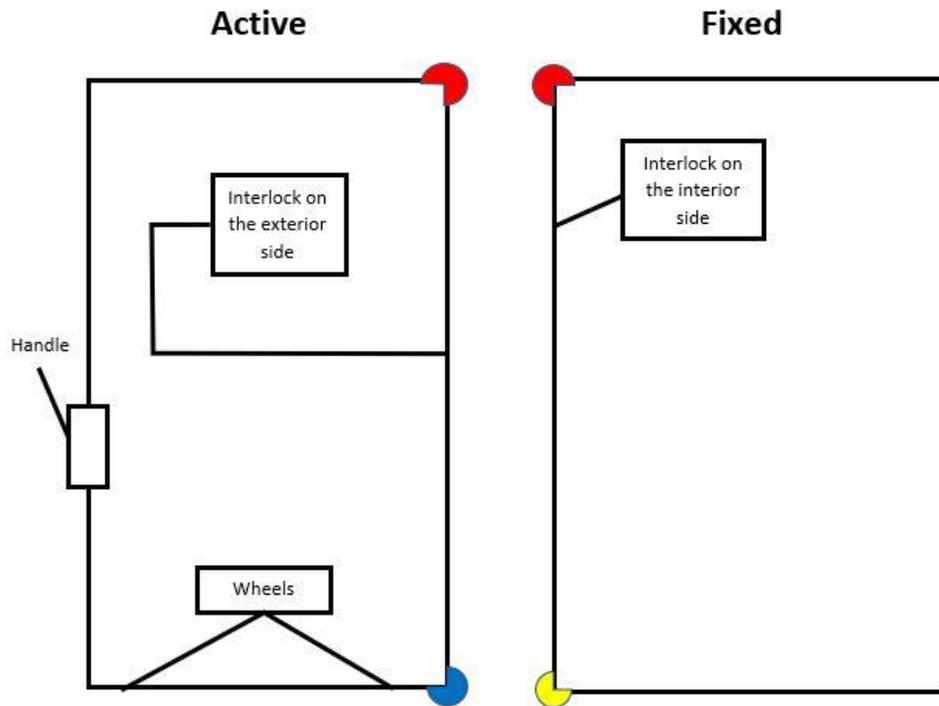
For the Standard (North American) lock, the mortise (Interlock 191014) is attached using two M4 x 40 flathead machine screws with the writing towards the inside of the panel. The mounting plate (Interlock PS01-0031) is then attached to the interior side. The pinion gear (Interlock PS01-3033) is put in place next. Following this the handles are attached. The exterior handle is attached using two M4 x 50 flathead machine screws. The interior handle is attached using two M4 x 26 Flathead machine screws with painted heads that match the handle colour.

The mortise for the premium handles (Truth 13326.1) is placed into the routed out hole with the control input at the bottom. The Premium Handles come in a kit that includes both the interior and exterior handles as well as all of the necessary screws for installation. The external handle is placed in

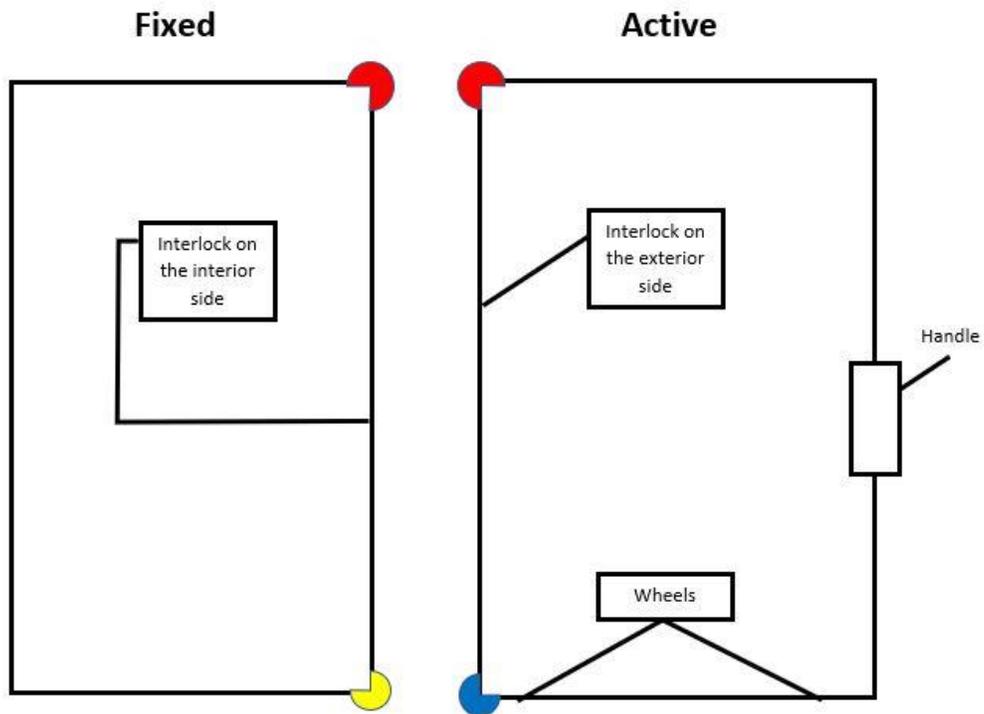
For all sliding panels, the same dual wheel rollers (Anthony Innovations SS4640DPSA) are used regardless of handing. They are fastened through the glazing cavity down into the wheel housing using 1/4" x 20x3/4 FH machine screws. The dual wheel roller set has an adjustment range of 21mm between 'fully retracted' position to 'fully extended' position. The panels can be adjusted by using a #3 Philips screwdriver as seen in the picture below.



# XF



# FX

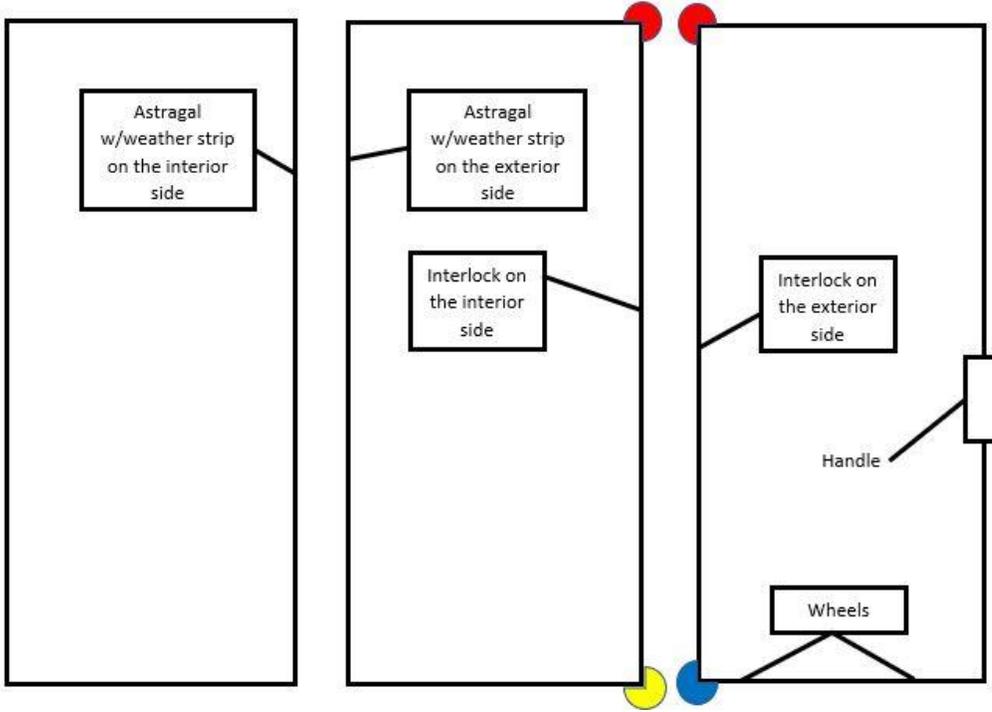


## XF/FX FRAME ASSEMBLY

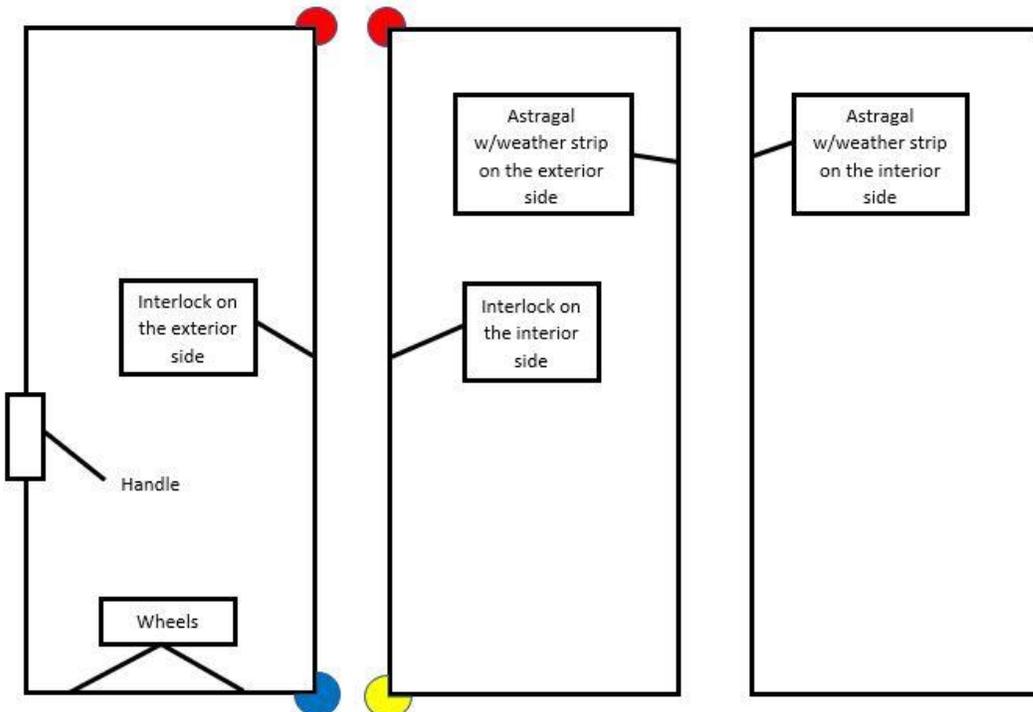
1. Cut/notch/install fixed sash support (R-1837) to sill. It is very important that the notch lines up with the frame drainage channel to allow the drainage system to work.
2. Install rubber 3/8 spacing blocks into to the frame where the fixed panel will be installed. The rubber spacing blocks should be spaced out every 12".
3. Set fixed panel on the spacing block(R-1837). Clamp fixed panel to pre-installed 3/8 rubber spacing blocks within exterior frame pocket. Ensure that the fixed panel is positioned correctly at the sill/jamb/head.
4. Fasten the fixed panel to the frame with #8 2 1/4"FH screws. Screw placement should occur between 1" and 3" of each corner (vertical & horizontal), head & sill interlock location, and one screw every 8"-10" at the jamb. The screw fastening order should be sill->jamb-> header. It is important to check level before installing interlock screws at the head & sill.
5. Measure/cut/notch/install the frame components in the following order:
  1. Panel Track(425-A-18)- Requires 45° trim on exterior of track for water drainage purposes
  2. Screen Track(R-1813)- Requires a notch for water drainage
  3. Pocket Covers (KE-2587)-Jamb pocket cover requires a punch for the panel track
  4. Spacing Block(R-1837)- Install at sill in exterior pocket in front of operator. Will require notching for water drainage
  - 5.Threshold Cover(R-1847)- Snap onto spacing block(R-1837) in front of operator. This will completely cover the pocket between the fixed panel to the frame.
6. Test fit active sash. Install corresponding striker to which handle set was used on active panel.

XFF/FFX SASH ASSEMBLY

# FFX



# XFF

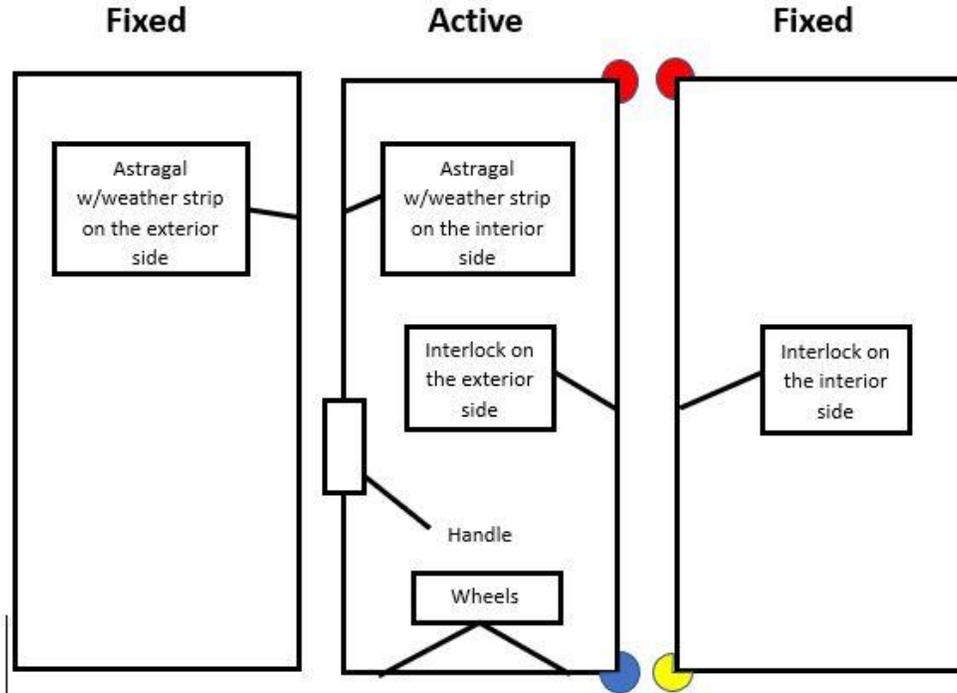


## XFF/FFX FRAME ASSEMBLY

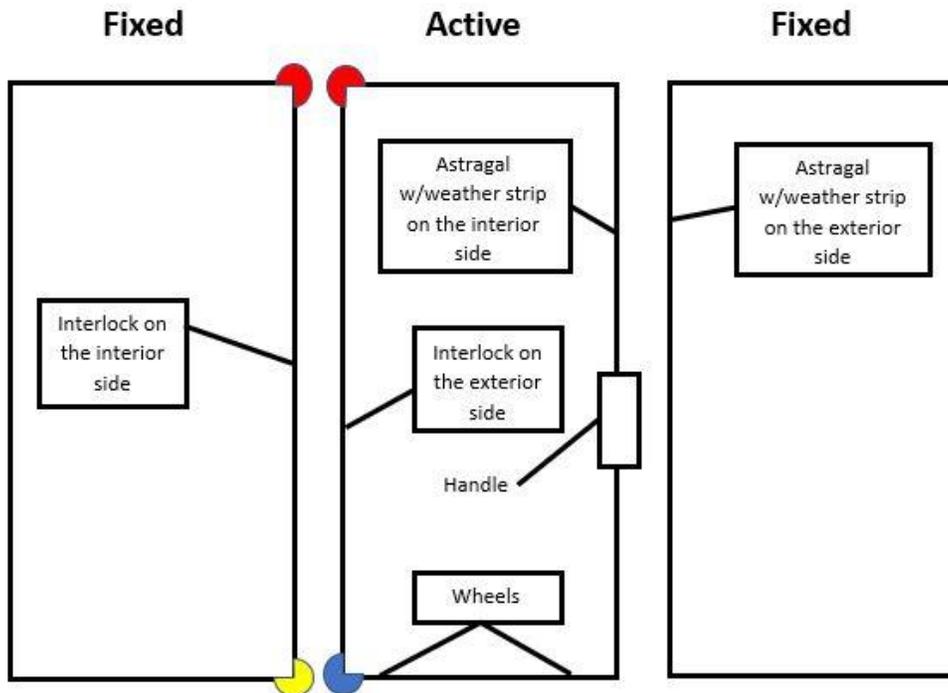
1. Cut/notch/install jamb side fixed sash support (R-1837) to sill. It is very important that the notch lines up with the frame drainage channel to allow the drainage system to work. Now install rubber 3/8 spacing blocks into the exterior frame pocket where the fixed panel will be installed.
2. Set fixed panel on the spacing block(R-1837). Clamp fixed panel to pre-installed 3/8 rubber spacing blocks within exterior frame pocket. Ensure that the fixed panel is positioned correctly at the sill/jamb/head.
3. Cut/install middle fixed sash support(R-1837) to the sill beside the first fixed panel. Set middle fixed panel onto spacing block(R-1837). Ensure that the fixed panel is level with the jamb side fixed panel.
4. Clamp both fixed panels together and mulled together. Screw pattern is 6" from the top/bottom and every 12" in between. Pre-drilling of 3/8" through 1 layer of fiberglass will be required before fastening screws. Screws needed are #8 2" FH TEK screws. 3/8" holes will need to capped with silicone.
5. Fasten the fixed panel to the frame with #8 2 1/4"FH screws. Screw placement should occur between 1" and 3" of each corner (vertical & horizontal), head & sill interlock location, and one screw every 8"-10" at the jamb. The screw fastening order should be sill->jamb-> header. It is important to check level before installing interlock screws at the head & sill.
6. Measure/cut/notch/install the frame components in the following order:
  1. Panel Track(425-A-18)- Requires 45° trim on exterior of track for water drainage purposes
  2. Screen Track(R-1813)- Requires a notch for water drainage
  3. Pocket Covers (KE-2587)- Interior jamb pocket cover requires a punch for the panel track
  4. Spacing Block(R-1837)- Install at sill in exterior pocket in front of operator. Will require notching for water drainage
  5. Threshold Cover(R-1847)- Snapped onto spacing block in front of operator. This will completely cover the pocket between the fixed panel to the frame.
7. Test fit active sash. Install corresponding striker to which handle set was used on active panel.

F\_XF/FX\_F SASH ASSEMBLY

# F\_XF



# FX\_F

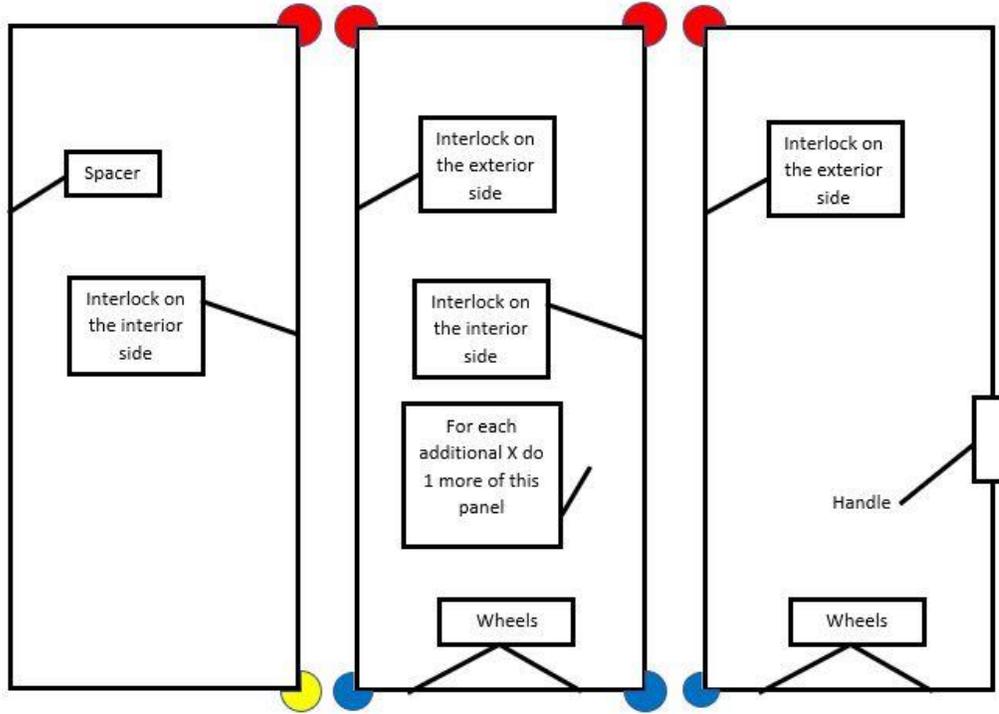


## F\_XF/FX\_F FRAME ASSEMBLY

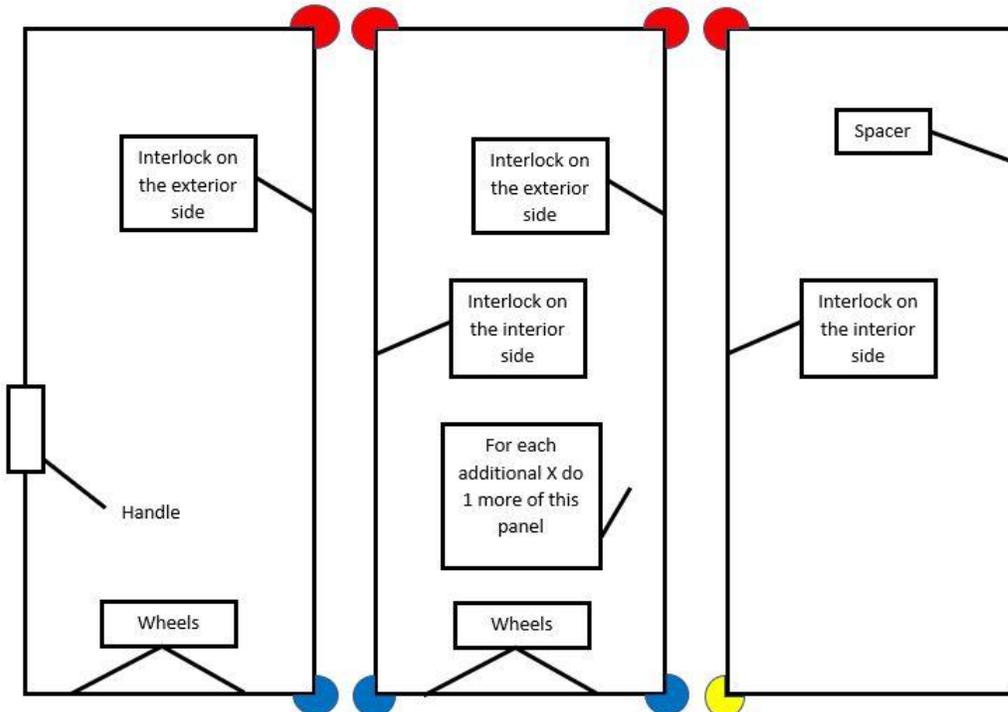
1. Cut/notch/install jamb side fixed sash support (R-1837) to sill. It is very important that the notch lines up with the frame drainage channel to allow the drainage system to work. Now install rubber 3/8 spacing blocks into the exterior frame pocket where the fixed panel will be installed.
2. Set exterior fixed panel on the spacing block(R-1837). Clamp fixed panel to pre-installed 3/8 rubber spacing blocks within the jamb exterior frame pocket. Ensure that the fixed panel is positioned correctly at the sill/jamb/header.
3. Fasten the fixed panel to the frame with #8 2 1/4"FH screws. Screw placement should occur between 1" and 3" of each corner (vertical & horizontal), head & sill interlock location, and one screw every 8"-10" at the jamb. The screw fastening order should be sill->jamb-> header. It is important to check level before installing interlock screws at the head & sill.
4. Install 2 8" MS spacing block (KE2590) on interior pocket where the 2<sup>nd</sup> fixed panel will be installed. Do not cover drainage channels with the spacing blocks
5. Set fixed panel on the MS spacing block (KE2590).
6. Test fit active panel and install corresponding striker. Check that everything fits together (i.e. interlocks/astragals intermesh with each other properly and the lock will properly engage the keeper/strike). If panels do not line up properly, shim behind the interior fixed panel until within tolerance. Once everything is shimmed correctly, remove the active panel.
7. Fasten the interior fixed panel to the frame with #8 2 1/4"FH screws. Screw placement should occur between 1" and 3" of each corner (vertical & horizontal), head & sill interlock location, and one screw every 8"-10" at the jamb. The screw fastening order should be sill->jamb-> header. It is important to check level before installing interlock screws at the head & sill.
8. Measure/cut/notch/install the frame components in the following order:
  1. Panel Track(425-A-18)- Requires 45° trim on exterior of track for water drainage purposes
  2. Pocket Covers (KE-2587)- Interior jamb pocket cover requires a punch for the panel track
  3. Screen Adapter(part#?)- This will need to be installed to the
  4. Screen Track(R-1813)- Requires a notch for water drainage
  5. Spacing Block(R-1837)- Install at sill/jamb/header in exterior pocket in front of operator. Will require notching at sill for water drainage.
  6. Threshold Cover(R-1847)- Snapped onto spacing block(R-1837) in front of operator. This will be done 3 sided in order to hide the interior fixed panel fasteners.

(XX)XXF/FXX(XX) SASH ASSEMBLY

# FXX



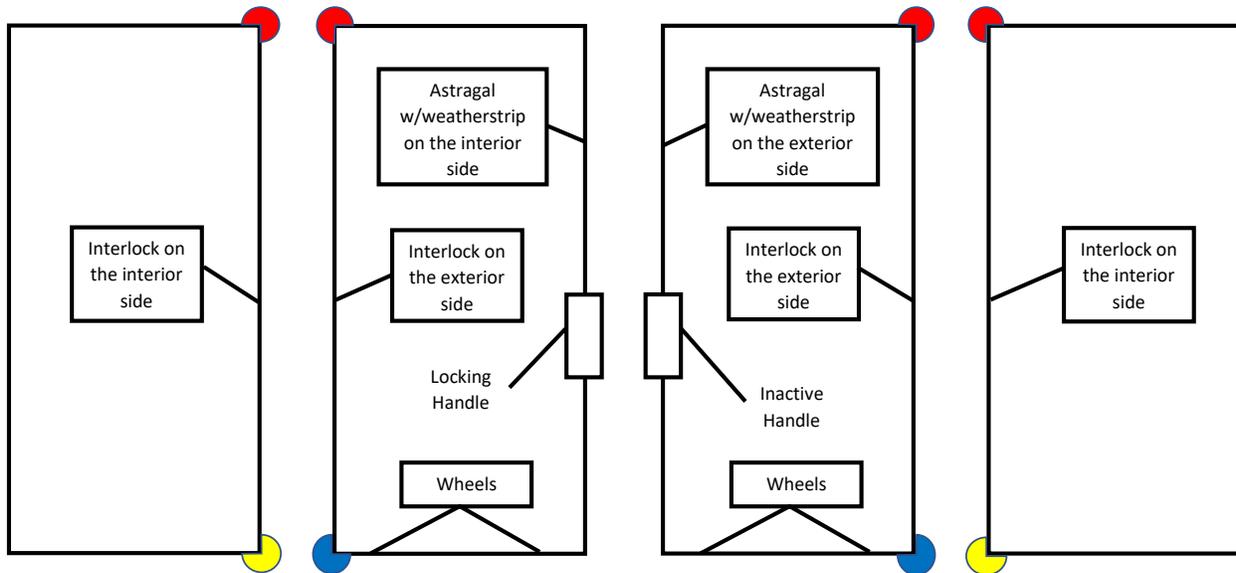
# XXF



## (XX)XXF/FXX(XX) FRAME ASSEMBLY

1. Cut/install MS fixed sash support (KE-2589) to sill. These spacers are 8" long and place 4"-6" from the edge of the fixed panel to allow drainage around the blocks. It is very important to make sure the fixed sash supports do not block drainage
2. Set fixed panel on the spacing block (KE-2589). Clamp fixed panel to the jamb of the frame. Ensure that the fixed panel is positioned correctly at the sill/jamb/head.
3. Pre-drill/counter-sink the fixed panel to the frame. Predrill placement should occur between 1" and 3" of each corner (vertical & horizontal), head & sill interlock location, and one screw every 8"-10" at the jamb. The pre-drill order should be sill->jamb-> header. It is important to ensure the frame and fixed panels are level with each other before pre-drilling.
4. Test fit the rest of the panels within the frame. Install striker. Place bumpers on head/sill
5. Uninstall semi-active/active panels.
5. Measure/cut/notch/install the frame components in the following order:
  1. Panel Track(425-A-18)- Requires 45° trim on exterior of track for water drainage purposes
  2. Pocket Covers (KE-2587)- Head first, jambs second
  3. Aluminum threshold covers- Important to notch for drainage
6. Test fit all semi-active/active panels once again to verify sizing of pocket/threshold covers.

# OXXO



## **FXXF FRAME ASSEMBLY**

- 1.** Cut/notch/install fixed sash supports (R-1837) to sill at both jambs. It is very important that the notch lines up with the frame drainage slot to allow the drainage system to work.
- 2.** Install 5mm Glazpart shims (10405) into the frame where the fixed panels will be installed.
- 3.** Set fixed panels on the spacing block(R-1837). Clamp fixed panels to pre-installed 5mm Glazpart shims within exterior frame pocket jamb. Ensure that the fixed panels are positioned correctly at the sill/jamb/head.
- 4.** Test fit active/inactive panel. Check that everything fits together (i.e.: interlocks/astragals intermesh with each other properly and the lock will properly engage the keeper/strike). If panels do not line up properly, shim equally behind the fixed panels until within tolerance. Once everything is shimmed correctly, remove the active/inactive panels.
- 5.** Pre-drill/counter-sink the fixed panels to the frame. Predrill placement should occur between 1" and 3" of each corner (vertical & horizontal), head & sill interlock location, and one screw every 8"-10" at the jamb. The pre-drill order should be sill->jamb-> header. It is important to ensure the frame and fixed panels are level with each other before pre-drilling.
- 6.** Measure/cut/notch/install the rest of the frame components in the following order:
  - 1.** Panel Track(425-A-18)- Requires 45° trim on exterior of track for water drainage purposes
  - 2.** Screen Track(R-1813)- Requires a notch for water drainage
  - 3.** Pocket Covers (KE-2587)- Install order is Head-> Jambs. Jambs require bottom punch.
  - 4.** Spacing Block(R-1837)- Install at sill in front of operator. Will require notching for water drainage
  - 5.** Threshold Cover(R-1847)- Snapped onto spacing block in front of operator. This will completely cover the pocket between the fixed panel to the frame.
- 7.** Test fit active & in-active panels. Make sure to level off panels by adjusting the wheels. Now the strike plate is ready to be installed. You will need to use the corresponding strike plate to the handles that were used on the active/inactive panels.
- 8.** Remove active & in-active panels. Measure/cut/install operable sash header support(53487). The sash header support needs to be fastened in the operable pocket in between the fixed panels.