SERIES 960 WALL STOREFRONT

INSTALLATION INSTRUCTIONS



Part NO. Y005 MAY 1, 2019



WHERE WINDOWS ARE JUST THE BEGINNING®

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X GLAZING

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Minimizing Condensation				
 NOTE: Please reference EFCO's "Understanding Condensation" brochure which can be obtained through your EFCO representative. Condensation will form on any surface when unfavorable conditions (interior temperature and relative humidity and exterior temperature) are present. When the formation of excessive condensation is a concern, it is highly recommended that a design professional is utilized to perform an analysis of the shop drawings to recommend the best installation methods. Please contact EFCO representative for information on EFCO's Thermal Analysis Services. Many current installation practices lead to an increase in the possibility of the formation of condensation. Though not all inclusive, the list of examples below illustrates conditions under which condensation is likely to occur: Bridging system thermal break with non-thermally broken metal flashing or lintels that are exposed to the exterior. System exposure to cold air cavities. Interior relative humidity levels not maintained at recommended levels, see EFCO's "Understanding Condensation" brochure. Inadequate separation between system and surrounding condition at perimeter. Product combinations during the shop drawing stage that result in bridging thermal breaks of one or all products involved. 				

SECTION I - GENERAL NOTES

EFCO Series 960 Wall is a thermal wall system with a 1 3/4" face dimension and has system depth dimensions from 2 3/4" to 8 1/8". The system is exterior glazed with either 1/4" or 1" dry glazing. Entrance doors are an engineered part of the system.

 Check the shop drawings, installation instructions, and the glazing instructions to become thoroughly familiar with the project. The shop drawings take precedence and include specific details for the project. The installation instructions are of a general nature and cover the most common conditions.

- 2) Check all materials upon arrival and be sure you have everything required to begin installation.
 (See Section II "PARTS IDENTIFICATION")
- 3) All work should start from bench marks and/or column center lines as established by the architectural drawings and the general contractor. Check construction for compliance with the contract documents.
- 4) Sealants must be compatible with all surfaces. Consult with the sealant manufacturer for recommendations regarding compatibility and adhesion.
- 5) All materials are to be installed plumb, level, and true.
- 6) Protect aluminum materials after erection. Cement, plaster, alkaline solutions, and acid based materials can be harmful to the finish.
- 7) Clean all finished aluminum surfaces with a mild detergent and water. No abrasive agent should be used.



Π CTION I PARTS IDENTIFICATION

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CTION II

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PARTS

IDENTIFICATIC

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FOR 1/4" GLAZING MULLION COMPONENTS AND COMBINATIONS (USE H261 ISOLATOR)



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DOOR HEADERS & JAMBS

FOR 1" GLAZING



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STANDARD SILL FLASHINGS w/END CAPS



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90 DEGREE INSIDE AND OUTSIDE CORNER MULLIONS FOR 1" GLAZING USE H260 ISOLATOR 4 1/2" SYSTEM DEPTH 8477 / 8478 90° INSIDE CORNER MULLION 8477 2.625 2.625 2.625

8478

6.000

8477

.687

.687

4.500

PARTS

8479

SHEAR BLOCK REQ'D = K478

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SECTION II - PARTS IDENTIFICATION

SYSTEM 960 WALL ACCESSORIES LIST

CONT.

F960 WALL

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SECTION II - PARTS IDENTIFICATION

SYSTEM 960 WALL ACCESSORIES LIST

CONT.

The screw spline system is a fabrication and erection method that permits the preassembly of single units in the shop or at the job site. These units are then erected by mating the male mullion with the female mullion counterparts.

When an entrance is required, shear block joinery must be used to attach the side lite horizontals to the immediate door frame. The other side of the side lite will be fabricated for screw spline joinery as usual.

- NOTE: DUE TO THE SCREW TENSIONS REQUIRED FOR CORRECT INSTALLATION, IT WILL BE NECESSARY TO 'WAX' THE FRAME ASSEMBLY SCREWS TO PREVENT GALLING AND BREAKAGE.
- STEP 1) Measure the opening to determine the cut length of the frame components.
 - NOTE: Allow a minimum 1/2" shim and caulk space around the perimeter.
 - NOTE: Allow extra clearances, if necessary, to accommodate building tolerances.

STEP 2)

- Cut the verticals and vertical face caps to the frame size.
 NOTE: Verticals must run through. If the opening has an entrance, see the appropriate frame and door fabrication and installation sheets.
- NOTE: Door jambs run to the floor and are cut longer than other verticals.
- STEP 3) Drill holes for the assembly screws on the vertical members. See the drilling template on page 19 or the drill jig guide on page 20.

STEP 4) Cut the horizontal members to the day lite openings (between the vertical mullions). Cut the horizontal face caps to day lite openings minus 1/16". (D.L.O. - 1/16")

SECTION III - SCREW SPLINE FABRICATION DRILLING TEMPLATE

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SECTION III - SCREW SPLINE FABRICATION DRILL JIG

(CONT.)

For 2 9/16" back member top screw spline holes drill the marked "D" & "E" locations 0.177 dia.(# 16 Drill) (2 Holes)

For 4 1/16" & 4 13/16" back members top screw spline holes drill the marked "D" & "F" locations 0.177 dia. (# 16 Drill) (2 Holes)

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(CONT.)

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STEP 7) Snap together the assembled female and male units, then install into the opening.

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(CONT.)

FIG. #6 THRU # 9 SHOW THE SHADED AREAS WHERE A BUTYL TYPE SEALANT MUST BE APPLIED TO THE ENDS OF THE HORIZONTALS, AT METAL TO METAL JOINTS.

9666 ADAPTOR - 1/4" GLZ. # 9666 ADAPTOR - 1/2" GLZ.

Adaptors are available to convert 1" glazing systems to 1/4" and 1/2" glazing. Refer to Fig. # 10 and # 11 above.

STEP 1)

Measure the opening to determine the cut length of the frame components.

- NOTE: Allow a minimum 1/2" shim and caulk space around the perimeter.
- NOTE: Allow extra clearances, if necessary, to accommodate building tolerances.

STEP 2)

Cut the verticals and vertical face caps to the frame size. NOTE: Verticals must run through. If the opening has an entrance, see the appropriate frame and door fabrication and installation sheets.

NOTE: Door jambs run to the floor and are cut longer than other verticals.

STEP 3)

Drill mounting holes for the shear blocks on the vertical members. See the drilling template on page 28 or the drill jig guide on page 29. Also refer to pages 30 through 32 for drilling information.

STEP 4)

Cut the horizontal members to the daylite openings (between the vertical mullions).

Cut the horizontal face caps to daylite openings minus 1/16". (D.L.O. - 1/16")

STEP 5)

Drill the holes in the horizontals for attachment to the shear blocks. Refer to Fig. # 14 and # 15 on page 33.

SECTION IV - SHEAR BLOCK FABRICATION DRILLING TEMPLATE

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For 1 9/16" back member top shear block holes drill the marked "A" locations .159 dia. (# 21 Drill) (2 places).

For 2 9/16" back member top shear block holes drill the marked "A" & "B" locations .159 dia. (# 21 Drill) (3 places).

For 4 1/16" & 4 13/16" back members top shear block holes drill the marked "A" & "C" locations .159 dia. (# 21 Drill) (3 places).

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SECTION IV - SHEAR BLOCK FABRICATION

(CONT.)

For 1 9/16" back member intermediate shear block holes drill the marked "A" locations .159 dia. (# 21 Drill) (2 places).

For 2 9/16" back member intermediate shear block holes drill the marked "A" & "B" locations .159 dia. (# 21 Drill) (3 places).

For 4 1/16" & 4 13/16" back members intermediate shear block holes drill the marked "A" & "C" locations .159 dia. (# 21 Drill) (3 places).

(CONT.)

For 1 9/16" back member bottom shear block holes drill the marked "A" locations .159 dia. (# 21 Drill) (2 places).

For 2 9/16" back member bottom shear block holes drill the marked "A" & "B" locations .159 dia. (# 21 Drill) (3 places).

For 4 1/16" & 4 13/16" back members bottom shear block holes drill the marked "A" & "C" locations .159 dia. (# 21 Drill) (3 places).

(CONT.)

(CONT.)

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STEP 6) Apply a butyl type sealant to the ends of all horizontals before assembling the units as shown in Fig. #20 above. See page 26 for sealant application guidance.

STEP 7) Assemble the units as shown in Fig. # 20 above.

<u>SECTION V B</u> - SCREW SPLINE / SHEAR BLOCK FABRICATION CONT.

GLASS SETTING CHAIR AND GLAZING ADAPTORS

SECTION V C - SCREW SPLINE / SHEAR BLOCK FABRICATION CONT

SYSTEM II ADAPTOR FOR P.O. / P.I. & CASEMENTS

The vertical SYSTEM II adaptor runs through and is square cut. The cut length formula is frame D.L.O. - 1/6".

The horizontal adaptor requires notching to match the vertical. The cut length formula for the horizontal adaptor is frame D.L.O. - 7/16", then notch the vertical leg back 9/16" x 1/8" at each end. These dimensions allow 1/32" clearance per end.

Install the weathering in each piece and attach the adaptors with #SFP5 screws, 3" from the ends and 12" on center.

Seal the ends with a nonhardening sealant completely. Then install the System II window tight against the weathering leg of the adaptor. Use appropriate blocking and fasteners as required.

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SECTION VI - DOOR FRAME INSTALLATION

NOTE: If an entrance frame is required, it must be installed first. NOTE: If NO entrance frame is required, proceed to Section VII.

WEEP THE TRANSOM BAR WITH (2) 1/4" DIA. HOLES, 5/8" DOWN FROM THE TOP AND AT 1/4 POINTS.

- STEP 1) Correctly locate the entrance frame in the opening.
- STEP 2) Set the assembled door frame in the opening, plumb and level.
- STEP 3) Anchor the door frame as indicated below in Fig. # 27A. Also see Fig. # 28 thru Fig. # 30 on page 40.

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SECTION VI - DOOR FRAME INSTALLATION

(CONT.)

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SEE PAGES 10 THRU PAGE 12 FOR DOOR HEADER AND DOOR JAMB IDENTIFICATION.

DOOR INSTALLATION INSTRUCTIONS.

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SECTION VI - DOOR FRAME INSTALLATION

TRANSOM LITE GLAZING ADAPTOR (CONT.)

CUT LENGTH FORMULA FOR TRANSOM APPLIED GLAZING = D.L.O. - 1/16"

THE FIN STOP WILL HAVE TO BE NOTCHED AT THE TRANSOM BAR.

SECTION VII - SILL FLASHING INSTALLATION

STEP 1) Install the sill flashing continuously between the masonry jambs or door frame to masonry. Refer to Fig. # 33 & # 34 below.

STEP 2) Splice the sill flashing every 20'-0" as shown in Fig. # 35 below. F-542 splice sleeve is supplied for use with the 4 13/16" back member. Trim F-542 to the correct length for the particular system depth being used.

If the elevation's configuration consists of verticals through, for best performance, locate the sill flashing splice 6" from vertical intermediates.

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SECTION VII - SILL FLASHING INSTALLATION

COMBINATION

Incorporating the sill flashing end caps will complement the sealing procedure.

The end caps must be sealed to the condition and the sealant must tie in with the jamb blocking and the perimeter seals.

The end cap edges must also be concealed with the sealant to present a neat and clean installation.

This may cause the caulk joint at the jamb to increase in thickness if the condition is irregular

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SECTION VIII B - SCREW SPLINE / SHEAR BLOCK

GLASS SETTING CHAIR ASSEMBLY INSTALLATION

STEP 1) The glass setting chair/block can be installed by rotating upward and in, then push down to lock in place. See Fig. # 41 below.

FIG. # 41

STEP 2) To insure proper installation of the setting chair/block, press down until locked into position. See Fig. # 42 below.

FIG. # 42

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SECTION VIII C - SCREW SPLINE / SHEAR BLOCK

INSTALLATION OF WATER DEFLECTOR AND

SETTING CHAIR / BLOCK

[1" Glazing]

STEP 3) With the exception of the head and sill, all intermediate horizontals must include a continuous water deflector to divert any water to the verticals or to the weep holes. See Fig. # 46 on page 48 for the deflector end notching.

STEP 4) A silicone type sealant should be applied after the continuous water deflector is installed.

SECTION VIII D - SCREW SPLINE / SHEAR BLOCK INSTALLATION DETAILS SHOWING TYPICAL GLAZING CONDITIONS AND THE RELATIONSHIP OF PARTS TO EACH OTHER.

SECTION VIII E - SCREW SPLINE / SHEAR BLOCK

INSTALLATION

1/4" AND 1/2" GLAZING ADAPTORS w/ L129 WATER DEFLECTOR

STEP 1) Screw attach the glazing adaptor to the back mullion using the SPP8 screw, 3" from the end and 12" on center. Refer to Fig. # 49 below.

<u>FIG. # 49</u>

STEP 2) Set the water deflector's heel end first, then snap the outer leg onto the leg of the adaptor. Refer to Fig. # 50 below.

FIG. # 50

SECTION VIII E - SCREW SPLINE / SHEAR BLOCK

INSTALLATION

1/4" AND 1/2" GLAZING ADAPTORS w/ L129 WATER DEFLECTOR

STEP 3) Apply a bead of sealant across the length of the deflector, and across the bulb gasket, and the end of the deflector at the vertical member's pocket. Refer to Fig. # 51 below and to Fig. #53 on page 52.

<u>FIG. # 51</u>

STEP 4) The clips H260 or H261 should be installed as soon as possible before the sealant from step # 3 can setup. Care should be taken to not disengage the water deflector when setting the glass unit below.

NOTE AT HORIZONTAL INTERMEDIATES ONLY:

The clips H260 or H261 need to be installed with the 'ear' up as shown to accommodate setting the lower glass unit.

FIG. # 52

SECTION VIII E - SCREW SPLINE / SHEAR BLOCK

CONT.

INSTALLATION OF WATER DEFLECTOR, 1/4" AND 1/2" GLAZING ADAPTORS

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SECTION VIII F - SCREW SPLINE / SHEAR BLOCK INSTALLATION

DETAILS SHOWING THE RELATIONSHIP OF THE GLAZING ADAPTORS AND OTHER PARTS AT HORIZONTAL INTERMEDIATES

Elevations without horizontal intermediates may use #9649 1/4" glazing adaptor throughout as an alternate to the #9667 adaptor.

The glazing adaptors with a water deflector locating leg must be used with a horizontal intermediate.

See page 52 for the notching of # 9667 and # 9666 glazing adaptors for setting chair clearance.

SECTION VIII F - SCREW SPLINE / SHEAR BLOCK

INSTALLATION CONT.

DETAILS SHOWING THE RELATIONSHIP OF THE GLAZING ADAPTORS AND OTHER PARTS AT THE SILL

<u>FIG. # 57</u>

See page 52 for the notching of # 9667 and # 9666 glazing adaptors for setting chair clearance.

FIG. # 58

<u>SECTION VIII G</u> – screw spline / shear block bulb gasket installation

STEP 1)

Push in all VERTICAL glazing gasket, being careful not to stretch the gasket. Apply sealant in the glazing bulb cavity 1" from the ends, and push the bulb gasket into the sealant. Refer to the figures below.

Push in all HORIZONTAL glazing gasket, being careful not to stretch the gasket. Apply sealant in the glazing bulb cavity 1" from the ends, and push the bulb gasket into the sealant. Refer to the figures above.

SECTION VIII H - SCREW SPLINE / SHEAR BLOCK INSTALLATION

SYSTEM II WINDOW ADAPTOR FOR PROJECT OUT, PROJECT IN, AND CASEMENTS

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STRUCTURAL SILICONE GLAZED MULLION

- STEP 1) Cut the S.S.G. mullion to frame D.L.O. and screw spline attach the mullion to the perimeter members using the S108 screw spline screws. See page 59. Set the assembled unit in place on the sill flashing, and anchor as directed previously. Refer to Section VIII.
- STEP 2) Install the butt glaze spacer tape to the butt glaze mullion as shown in Fig. #63 on page 58. The spacer tape will run the full length of the vertical butt glaze mullion. Peel back ONLY 2" of the exterior film of the spacer tape at the head or the sill. DO NOT remove all of the exterior film until the glass unit is installed and positioned correctly.
- STEP 3) Install the setting chairs at 1/4 points in the sill members. Set the glass units in place and install (2) glazing clips side by side 3" from the vertical mullion and a single clip at 9" on center from the pair, at the head and sill. Be sure the 'ears' of the clips are toward the glass unit at the head and sill, and jambs. Also, it must be facing up at the horizontal intermediates. Refer to page 61.
- STEP 4) Set the glass unit and position it with the correct glass bite all around.
 - NOTE: Review the 'temporary' glazing procedure presented on page 62, and apply these steps accordingly, if required. If incorporating this procedure, set the temporary glazing covers, leaving access to the vertical glass edges for the application of the structural silicone at the vertical butt glaze mullion.
- STEP 5) Peel off the exterior film of the butt glaze spacer tape and press the glass onto the spacer tape. Install the 12" temporary cover pieces at the head and sill to hold the glass units while the interior silicone is applied. Refer to page 59.
- STEP 6) Repeat the previous steps at other butt glaze mullions in the elevation.

STRUCTURAL SILICONE GLAZED MULLION

CONT.

- STEP 7) Install the interior structural silicone to the glass/spacer tape/mullion, as shown below. This step will require an overnight cure.
- STEP 8) The next day remove the temporary covers and replace any clips that are broken in this process.
- STEP 9) Install the exterior structural silicone to the glass joint. Clean any excess sealant from the glass surface, presenting a clean professional appearance. This step will also require an overnight cure for the silicone.
- STEP 10) Install the W115 bulb gasket in the full length covers, allowing approximately 2% extra per length, to minimize gasket shrinkage. Install the full length covers at the head, sill, and jambs.

STRUCTURAL SILICONE

CONT.

ASSEMBLY PROCEDURE FOR STRUCTURAL SILICONE GLAZED VERTICAL MULLIONS

CLIPS & COVERS NOT SHOWN AT THE HEAD FOR CLARITY.

SECTION X A - GLAZING

GLASS SIZE / GLASS SETTING

Glass size = D.L.O. + 1" for both 1" glazing and 1/4" glazing systems. (See page 59 for butt glaze mullion glass bite requirements.)

> Be sure the "ears" of the clips face toward the glass at the head, jamb, and sill. Also, up at the horizontal intermediates.

- STEP 1) The glass must be installed prior to the installation of the remaining isolator clips. After the glass is installed and properly positioned in the opening, locate and install the isolator clips as shown in figure # 68 above. The isolator clips are located: side by side pairs, 3" from each vertical or horizontal intersection and single clips 9" on center.
 - NOTE: The isolator clips alone are not suitable for temporary glazing. At no time should set glass or panels be left unattended with only the isolator clips holding the units in place. Prompt installation of the snap covers is required to obtain the full structural capability of the system. If temporary glazing is required, please refer to the Temporary Glazing instructions on pages 62 and 63.

NOTE:

If temporary glazing is required, EFCO recommends the use of (2) 12" lengths of the snap cover and (3) clips min. per cover piece, snapped in place as shown above, at the corners of the horizontals and verticals to retain the glass until the full length covers can be installed. This temporary clipping should be installed at every corner of each daylight opening resulting in 8 pieces of snap cover per daylight opening. This is a temporary application only and is not to be used for a structural application. This system will not meet structural performances until full length covers and the required quantity of clips have been installed.

CLIPS & COVERS NOT SHOWN AT THE HEAD FOR CLARITY, BUT THEY MUST BE USED.