

TUBELITE®

DEPENDABLE

**LEADERS IN ECO-EFFICIENT STOREFRONT,
CURTAINWALL AND ENTRANCE SYSTEMS**



PHANTOM VENT 5000

INSTALLATION INSTRUCTIONS

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TABLE OF CONTENTS

GENERAL CONSTRUCTION NOTES.....	3-4
QUICK REFERENCE CHECKLIST & GLASS REQUIREMENTS.....	5
PARTS LIST.....	5 - 9
SIZE CHARTS.....	10 - 13
DETERMINE FRAME SIZES.....	14
INSTALLATION INFORMATION & DETAILS.....	15
GLAZING	
Step 1 Install Glass into Sash.....	16
Step 2 Install Setting Blocks & Glass Supports.....	17
WINDOW INSTALLATION	
Step 1 Install SSG Adapter (SSG Condition).....	18
Step 2 Install Vent (Non-SSG Condition).....	19
SCREEN INSTALLATION	
Step 1 Install Screen.....	20

GENERAL CONSTRUCTION NOTES

1. These instructions cover typical product application, fabrication, installation and standard conditions and are general in nature. They provide useful guidelines, but the final shop drawings may include additional details specific to the project. Any conflict or discrepancies must be clarified prior to execution.
2. Materials stored at the job site must be kept in a safe place protected from possible damage by other trades. Stack with adequate separation so materials will not rub together and store off the ground. Cardboard or paper wrapped materials must be kept dry. Check arriving materials for quantity and keep a record of where various materials are stored.
3. All field welding must be done in accordance with AISC guidelines. All aluminum and glass should be shielded from field welding to avoid damage from weld splatter. Results will be unsightly and may be structurally unsound. Advise general contractor and other trades accordingly.
4. Coordinate protection of installed work with general contractor and/or other trades.
5. Coordinate sequence of other trades which affect framing installation with the general contractor (e.g. fire proofing, back up walls, partitions, ceilings, mechanical ducts, HVAC, etc.).
6. General contractor should furnish and guarantee bench marks, offset lines and opening dimensions. These items should be checked for accuracy before proceeding with erection. Make certain that all adjacent substrate construction is in accordance with the contract documents and/or approved shop drawings. If not, notify the general contractor in writing before proceeding with installation because this could constitute acceptance of adjacent substrate construction by others.
7. Isolate all aluminum to be placed directly in contact with masonry or other incompatible materials with a heavy coat of zinc chromate or bituminous paint. Fasteners attaching framing to building structure are typically not provided by Tubelite.
8. Sealant selection is the responsibility of the erector, installer and/or glazing contractor and must be approved by the sealant manufacturer with regard to application and compatibility for its intended use. All sealants must be used in strict accordance with the manufacturer's instructions and applied only by trained personnel to surfaces that have been properly prepared.
9. For cold weather installations, glazing materials (including but not limited to glazing gaskets, isolators and gaskets for air seals and expansion mullions) can become more rigid and thus more difficult to install. These materials should be installed at temperatures above 40°F for proper system performance and ease of installation. A hot box may be required to warm the glazing materials prior to installation. Allow glazing materials to lay flat at 50°F minimum temperature prior to installing.
10. Sealant must be compatible with all materials with which they have contact, including other sealant surfaces. Consult the sealant manufacturer for recommendations relative to shelf life, compatibility, cleaning of substrate, priming, tooling/adhesion, etc. Recommend sealant manufacturer perform adhesion "pull test" at "wet" glazing for quality assurance.
11. Drainage gutters and weep holes must be kept clean at all times. Tubelite will not accept responsibility for improper drainage as a result of clogged gutters and weep holes.

GENERAL CONSTRUCTION NOTES

12. This product requires clearances at the head, sill and jambs to allow for thermal expansion and contraction as well as construction tolerances. Refer to final distribution drawings for joint sizes. Joints smaller than 1/4 " may be subject to failure. Consult the sealant manufacturer for proper sizing of joints.
13. All framing members, entrances and other materials are to be installed plumb, level and true with regard to established bench marks, column center lines or other working points established by the general contractor and checked by the erector, installer and/or glazing contractor.
14. After sealant is set and a representative amount of the wall has been glazed (500 square feet or more), run a water hose test to check installation. On large projects, a hose test should be repeated during glazing operation. This testing should be conducted in accordance with AAMA 501.2 specifications.
15. Cleaning of exposed aluminum surfaces should be done per AAMA recommendations.
16. Due to varying perimeter conditions and job performance requirements, anchor fasteners are not specified in these instructions. For anchor fastening, refer to the shop drawings or consult the fastener supplier.
17. Care must be taken when assembling aluminum framing components. Over tightening any fastener may cause stripping or fastener failure. Tubelite recommends the use of clutched drivers to provide satisfactory tightening of the screw while preventing over torque. The use of impact drill motors is not recommended due to the absence of a clutch device.
18. Codes governing the design and use of products vary widely. Tubelite does not control the selection of products configurations, operating hardware, or glazing materials, and assumes no responsibility for these considerations. It is the responsibility of the owner, specifier, architect, general contractor and the installer to make these selections in strict conformance with all applicable codes.
19. Check www.tubeliteinc.com any installation instruction updates prior to commencing work.

QUICK REFERENCE CHECKLIST

1. Make sure the opening is square and the caulk joints are 1/8" nominal around the frame. Maximum caulk joint size is 3/16".
2. Ensure surfaces that will be sealed are free of contaminants that can lead to adhesion issues.
3. Cap seal any exposed anchor or screw.
4. Ensure that interior seal is married continuous around the perimeter.

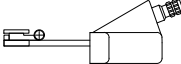



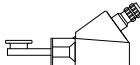
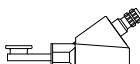

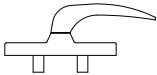
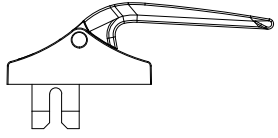
GLASS ORDERING REQUIREMENTS

1. All glass to have silicone edge seals suitable for structural glazing
2. All glass to have arris edge perimeter finish (both lites)
3. Use black spacer
4. Stepped glass edges to have offset with black silicone flat skim coat
5. All edges exposed

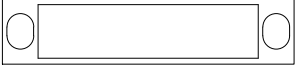


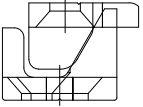
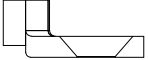
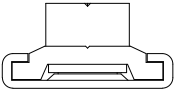
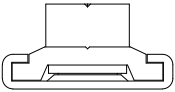
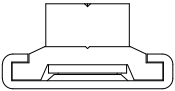
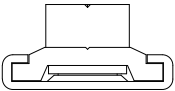
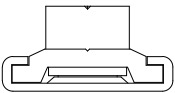
GLASS SIZES

Glass sizes vary depending upon the framing options, hardware options, etc. selected. Tubelite will provide sizes and call out any offset edge locations with all order acknowledgements.

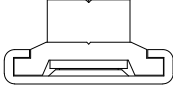
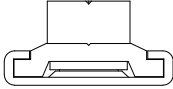
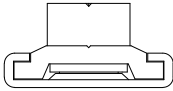
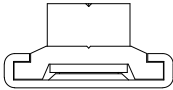
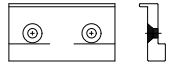
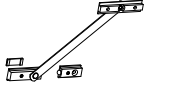
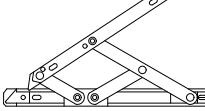
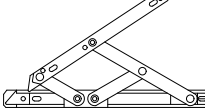
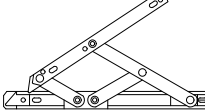
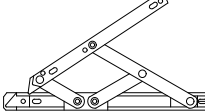
PARTS LIST

SHAPE	DESCRIPTION	PART #	
	DOUBLE-ARM ROTO-OPERATOR 27 3/4"	GREY	1450001
		BROWN	1450002
	DOUBLE-ARM ROTO-OPERATOR 16 3/4"	GREY	1150501
		BROWN	1450502
	ROTO-OPERATOR HANDLE	GREY	1449901
		BROWN	1449902
	SINGLE-ARM ROTO-OPERATOR RH - 13 1/2" ARM	GREY	1451701
		BROWN	1451702
	SINGLE-ARM ROTO-OPERATOR LH - 13 1/2" ARM	GREY	1451801
		BROWN	1451802
	SINGLE-ARM ROTO-OPERATOR RH - 9 1/2" ARM	GREY	1451501
		BROWN	1451502
	SINGLE-ARM ROTO-OPERATOR LH - 9 1/2" ARM	GREY	1451601
		BROWN	1451602
	MULTI POINT LOCKING HANDLE	GREY	1173101
		BROWN	1173202
	MULTI POINT LINEAR HANDLE	GREY	1162001
		WHITE	1162101
		BLACK	1162103

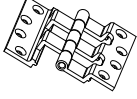

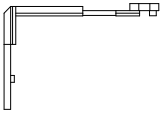
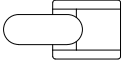
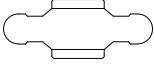

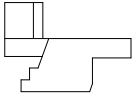



PARTS LIST

SHAPE	DESCRIPTION		PART #
	LINEAR HANDLE GASKET - EPDM	BLACK	1162203
	BACKER PLATE	SS	1162304
	DRIVE PIN EXTENSION PLATE	BLACK	1166001
	SNUBBER SET (THPO ONLY)		1167003
	TWIST-IN KEEPER		1165003
	12" LOCK BAR		1164001
	24" LOCK BAR		1164101
	36" LOCK BAR		1164201
	48" LOCK BAR		1164301
	6" EXTENSION BAR		1163001




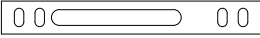
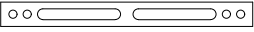

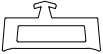


PARTS LIST

SHAPE	DESCRIPTION		PART #
	10" EXTENSION BAR		1162901
	14" EXTENSION BAR		1162801
	18" EXTENSION BAR		1162701
	22" EXTENSION BAR		1162601
	DOUBLE-ARM ROTO-OPERATOR LIMITER	BLACK	1141603
	BUTT HINGE LIMITER	SS	1174601
	10" (254.0 mm) FRICTION ARM STAINLESS STEEL	SS	1171001
	16" (406.4 mm) FRICTION ARM STAINLESS STEEL	SS	1171601
	24" (558.8 mm) FRICTION ARM STAINLESS STEEL	SS	1172401
	28" (558.8 mm) FRICTION ARM STAINLESS STEEL	SS	1142801

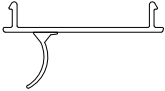


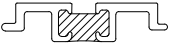
PARTS LIST

SHAPE	DESCRIPTION		PART #
	5000 BUTT HINGE	BLACK	7528003
	OPENING LIMITER		1174501
	STANDARD CORNER TRANSMISSION		1173701
	END LOCKING BOLT	BLACK	1172703
	INTERMEDIATE LOCKING BOLT	BLACK	1173003
	SNUBBERS (SET)	BLACK	1172503
	ADJUSTABLE KEEPER	BLACK	1172603
	DOUBLE-ARM ROTO TRACK 13 7/8"	SS	1149801
	DOUBLE-ARM ROTO TRACK 8 3/8"	SS	1450601
	SINGLE-ARM ROTO TRACK 13 1/8"	SS	1452101

PARTS LIST

SHAPE	DESCRIPTION		PART #
	CAPPED DOUBLE GLAZED GLASS SUPPORT 4" LONG	BLACK	1172373
	SETTING BLOCK 4" X 1 1/4" X .062	BLACK	1170503
	SSG FOAM CORNER PLUG FOR SSG/CAPPED CORNERS		1464103
	SINGLE-ARM ROTO GASKET		1450402
	DOUBLE-ARM ROTO GASKET		1150402
	5/16" SCREEN CLIP	CLEAR	1159101
	1/4" SPACER GASKET - SCR-900	BLACK	1170203
	1/4" AIRSEAL BULB	BLACK	1170303
	PERIMETER WEATHERSEAL	BLACK	1170403

PARTS LIST

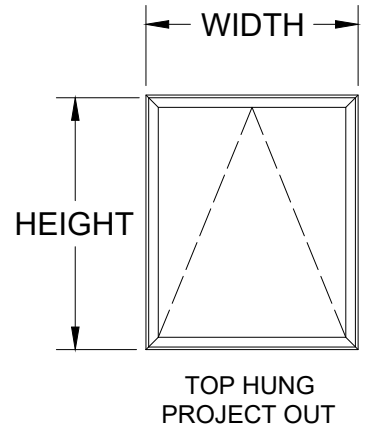
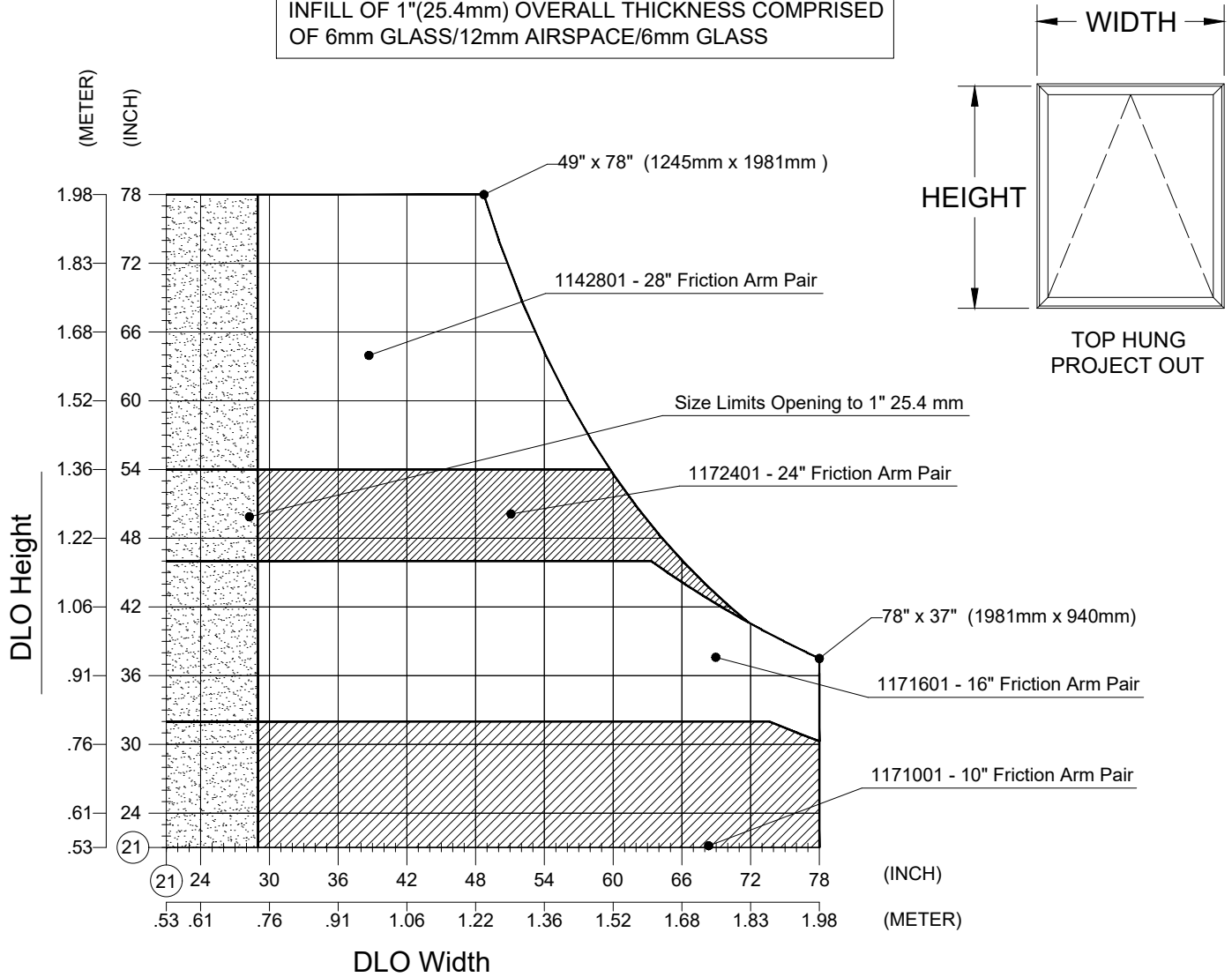
SHAPE	DESCRIPTION		PART #
	POCKET FILLER W/ FIN USE WITH 900RW HEAD/JAMBS	BLACK	P2937
	POCKET FILLER USE WITH 900RW SILL ONLY	BLACK	P2500
	POCKET FILLER USE WITH STOREFRONT	BLACK	P4563
	POCKET FILLER USE WITH CURTAINWALL		TA311TU

SIZE CHART

TOP HUNG PROJECT-OUT (MAX-MIN) VENT WITH ROTO-OPERATOR & LINEAR HANDLE LOCKING

THIS CHART REFLECTS THE SIZE LIMITATIONS FOR PHANTOM VENT 5000 APPLICATIONS THAT INCORPORATE THE USE OF ROTO-OPERATORS AND LINEAR HANDLE LOCKING

CHARTS ARE BASED UPON AN INSULATED GLASS UNIT INFILL OF 1"(25.4mm) OVERALL THICKNESS COMPRISED OF 6mm GLASS/12mm AIRSPACE/6mm GLASS



USING THIS CHART:

- ENSURE YOUR LARGEST VENT SIZE FALLS WITHIN THE ABOVE SIZE LIMITATION CHART.
- MAXIMUM SIZES 49" WIDE X 78" (1254mm x 1981mm) OR 78" X 37" HIGH (1981mm X 940mm)

STANDARD VENT HARDWARE INCLUDES THE FOLLOWING:

- ONE PAIR OF STAINLESS STEEL FRICTION ARMS
- ONE ROTO-OPERATOR AND TWO LOCKING LINEAR HANDLES

OPTIONAL EXTRAS (MUST BE SPECIFIED AT TIME OF ORDERING OR QUOTATION)

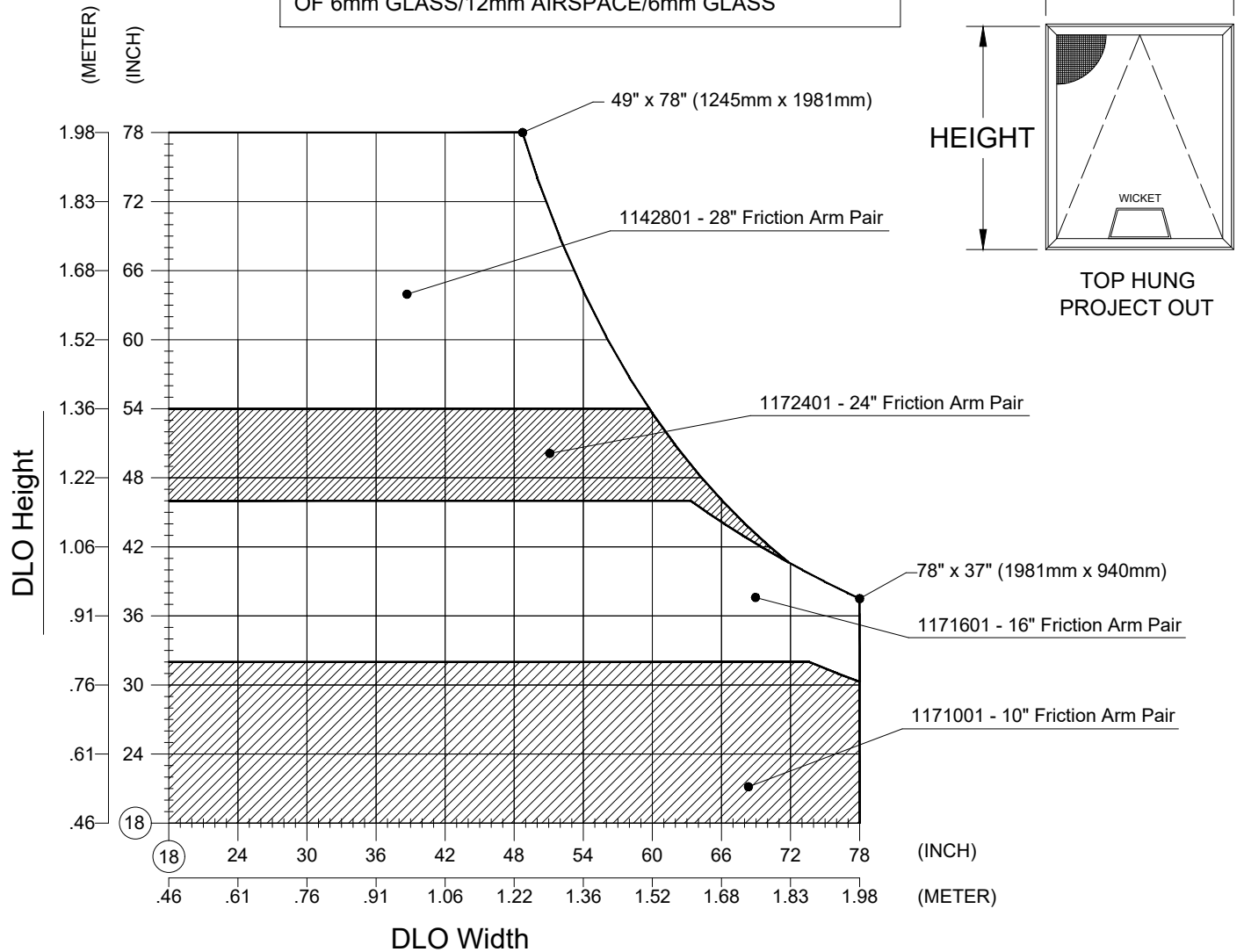
- INSECT SCREEN (FIBERGLASS OR ALUMINUM MESH)
- SASH LIMITERS

SIZE CHART

TOP HUNG PROJECT-OUT (MAX-MIN) VENT WITH SINGLE LEVER, MULTI-POINT LOCKING HARDWARE

THIS CHART REFLECTS THE SIZE LIMITATIONS FOR PHANTOM VENT 5000 APPLICATIONS THAT INCORPORATE THE USE OF SINGLE LEVER, MULTI-POINT LOCKING HARDWARE. IT MUST NOT BE USED FOR APPLICATIONS USING ROTO-OPERATORS. (SEE SEPARATE CHART)

CHARTS ARE BASED UPON AN INSULATED GLASS UNIT INFILL OF 1"(25.4mm) OVERALL THICKNESS COMPRISED OF 6mm GLASS/12mm AIRSPACE/6mm GLASS



USING THIS CHART:

- ENSURE YOUR LARGEST VENT SIZE FALLS WITHIN THE ABOVE SIZE LIMITATION CHART.
- MAXIMUM SIZES 49" WIDE X 78" (1254mm x 1981mm) OR 78" X 37" HIGH (1981mm X 940mm)

STANDARD VENT HARDWARE INCLUDES THE FOLLOWING:

- ONE PAIR OF STAINLESS STEEL FRICTION ARMS
- ONE MULTI-POINT LOCKING HANDLE
- LOCKS, KEEPERS AND CORNER TRANSMISSIONS AS DETERMINED BY VENT SIZE

OPTIONAL EXTRAS (MUST BE SPECIFIED AT TIME OF ORDERING OR QUOTATION)

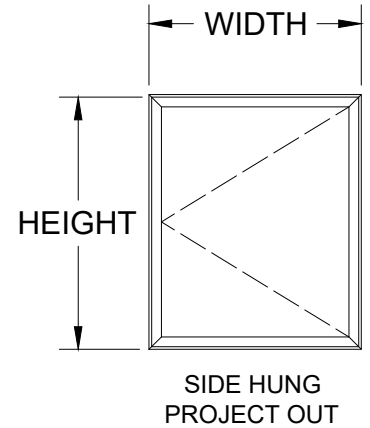
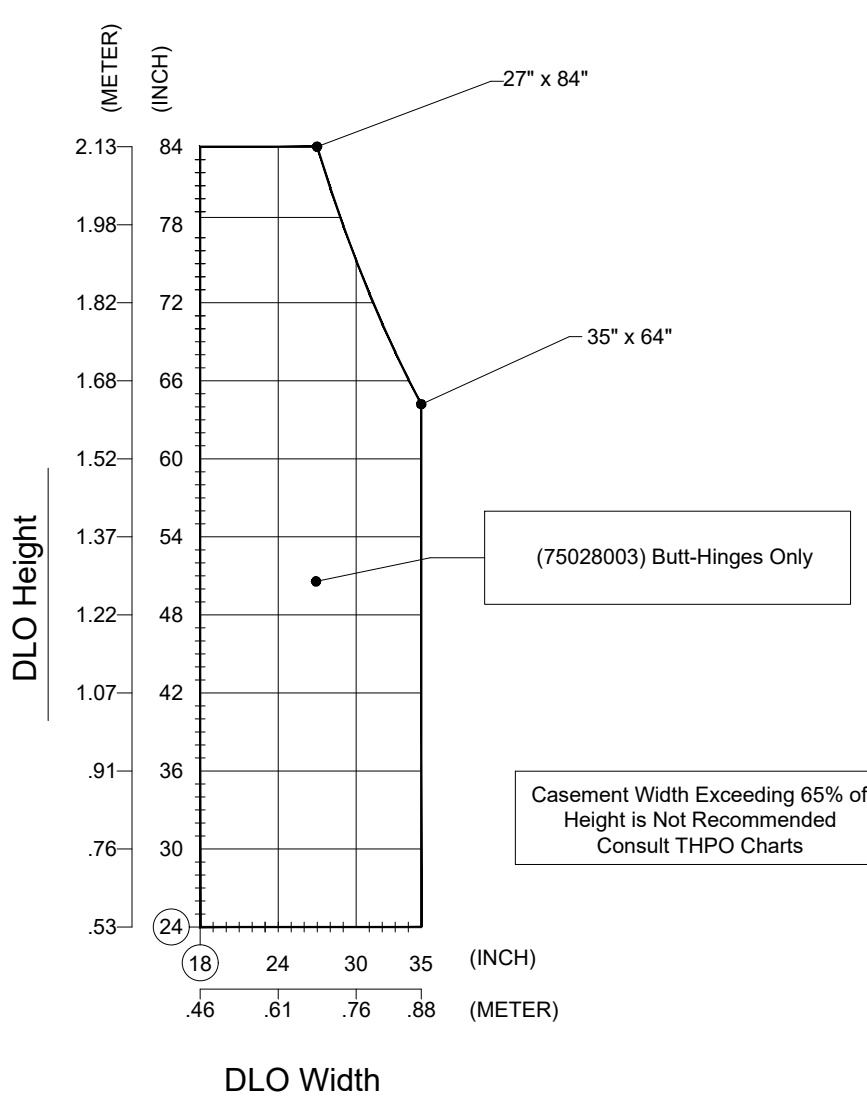
- INSECT SCREEN (FIBERGLASS OR ALUMINUM MESH)
- SASH LIMITERS
- NON-STANDARD HARDWARE

SIZE CHART

SIDE HUNG PROJECT-OUT (MAX-MIN) CASEMENT WITH ROTO-OPERATOR & LINEAR HANDLE

CHARTS ARE BASED UPON AN INSULATED GLASS UNIT INFILL OF 1"(25.4mm) OVERALL THICKNESS COMPRISED OF 6mm GLASS/12mm AIRSPACE/6mm GLASS

MAXIMUM OPENING 35 DEGREES



USING THIS CHART:

- ENSURE YOUR LARGEST VENT SIZE FALLS WITHIN THE ABOVE SIZE LIMITATION CHART.
- MAXIMUM SIZES 27" WIDE X 84" OR 35" X 64" HIGH

STANDARD VENT HARDWARE INCLUDES THE FOLLOWING:

- ONE PAIR OF BUTT HINGES (ADDITIONAL HINGES INCLUDED FOR EVERY 36" BETWEEN HINGES)
- ONE SINGLE ARM ROTO OPERATOR AT SILL
- ONE LIMITER AT HEAD (MAX OPENING 35 DEGREES)

OPTIONAL EXTRAS (MUST BE SPECIFIED AT TIME OF ORDERING OR QUOTATION)

- INSECT SCREEN (FIBERGLASS OR ALUMINUM MESH)
- NON-STANDARD HARDWARE

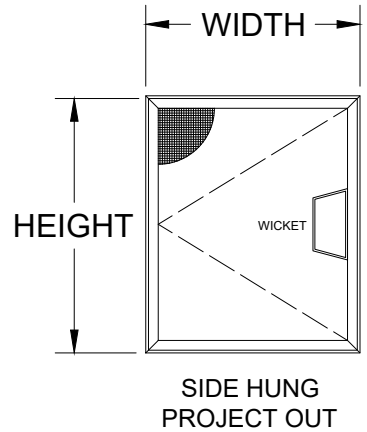
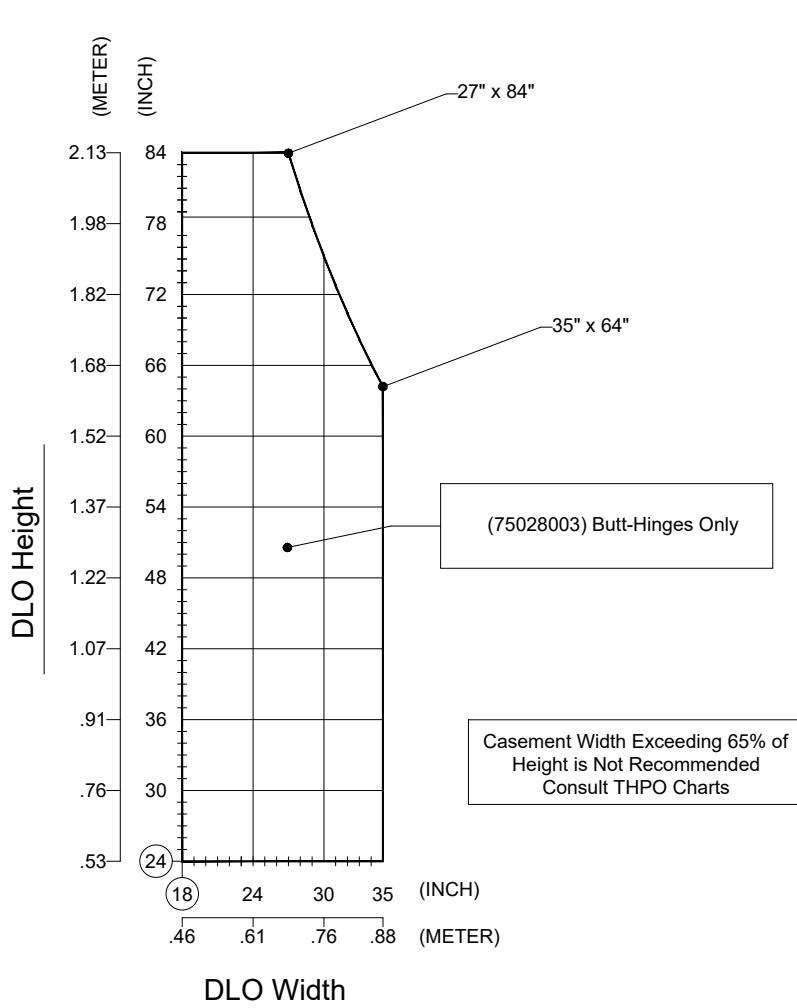
SIZE CHART

SIDE HUNG PROJECT-OUT (MAX-MIN) VENT WITH SINGLE LEVER, MULTI-POINT LOCKING HARDWARE

THIS CHART REFLECTS THE SIZE LIMITATIONS FOR PHANTOM VENT 5000 APPLICATIONS THAT INCORPORATE THE USE OF SINGLE LEVER, MULTI-POINT LOCKING HARDWARE. IT MUST NOT BE USED FOR APPLICATIONS USING ROTO-OPERATORS. (SEE SEPARATE CHART)

CHARTS ARE BASED UPON AN INSULATED GLASS UNIT INFILL OF 1"(25.4mm) OVERALL THICKNESS COMPRISED OF 6mm GLASS/12mm AIRSPACE/6mm GLASS

MAXIMUM OPENING 35 DEGREES



USING THIS CHART:

- ENSURE YOUR LARGEST VENT SIZE FALLS WITHIN THE ABOVE SIZE LIMITATION CHART.
- MAXIMUM SIZES 27" WIDE X 84" OR 35" X 64" HIGH

STANDARD VENT HARDWARE INCLUDES THE FOLLOWING:

- ONE PAIR OF BUTT HINGES (ADDITIONAL HINGES INCLUDED FOR EVERY 36" BETWEEN HINGES)
- ONE MULTI-POINT LOCKING HANDLE
- LOCKS, KEEPERS AND CORNER TRANSMISSIONS AS DETERMINED BY CASEMENT SIZE

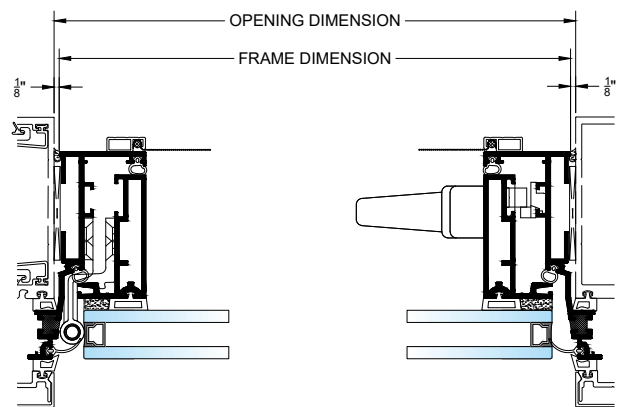
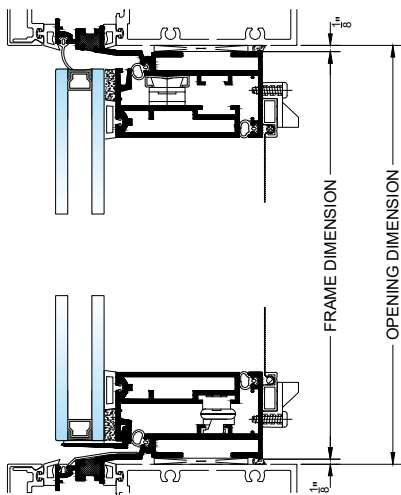
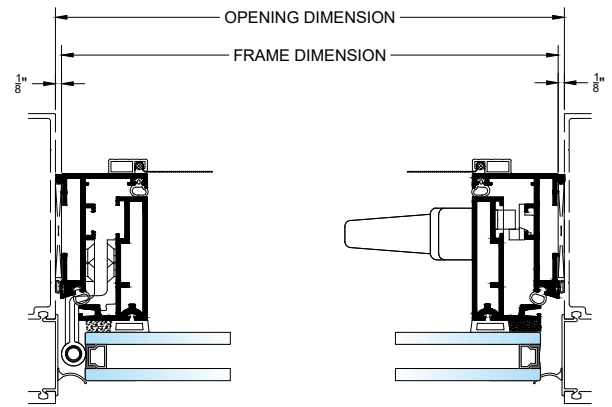
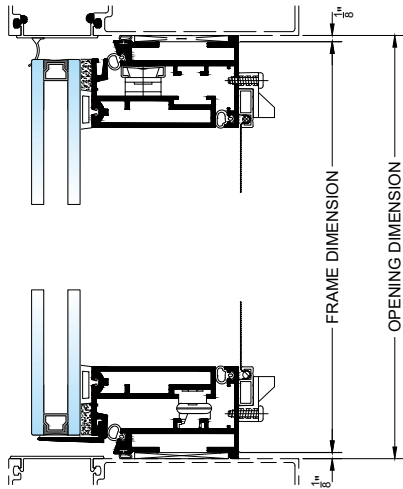
OPTIONAL EXTRAS (MUST BE SPECIFIED AT TIME OF ORDERING OR QUOTATION)

- INSECT SCREEN (FIBERGLASS OR ALUMINUM MESH)
- SASH LIMITERS
- NON-STANDARD HARDWARE

DETERMINING FRAME SIZE

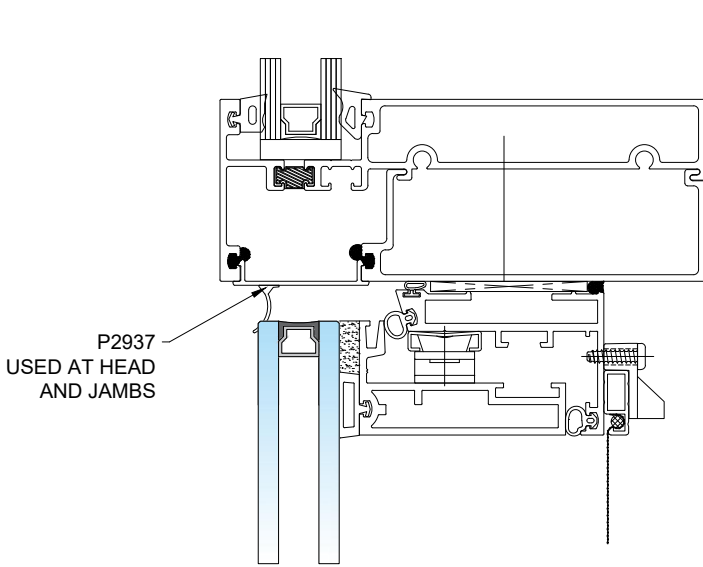
Phantom Vent 5000 windows are available with either flatback frame or captured. Captured design is used when installing Phantom Vent 5000 into curtainwall applications. For installation into most fixed window frames the flatback frame design should be used.

Phantom Vent 5000 frame size = Opening dimension - 1/4"



INSTALLATION INFORMATION - DETAILS

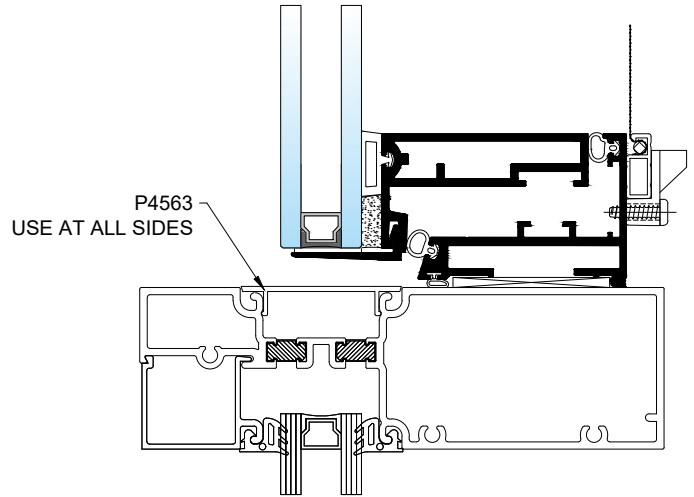
When using the Flatback vent frames, a pocket filler will be required in the surrounding wall system. Select pocket filler based on the system type. See full perimeter sheet for more details.



P2937
USED AT HEAD
AND JAMBS

FLATBACK INSTALLATION
INTO 900RW SILL

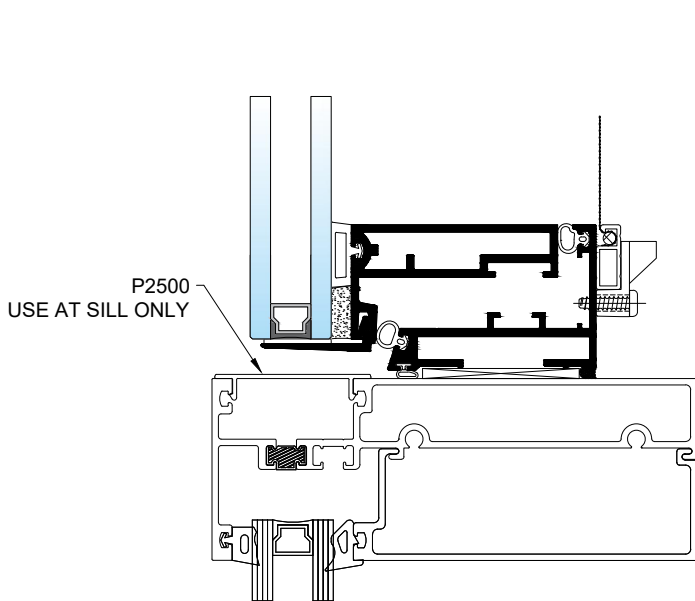
Fig. 17.1



P4563
USE AT ALL SIDES

FLATBACK INSTALLATION
INTO TU24650 STOREFRONT
Similar for other storefront applications

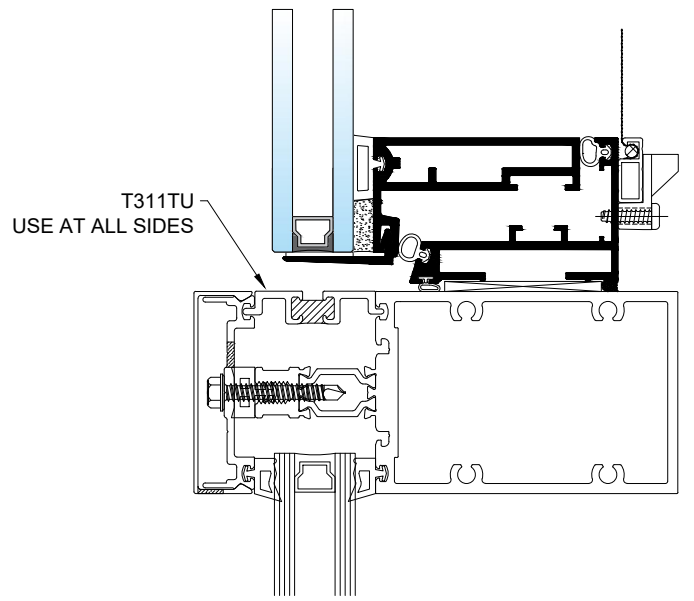
Fig. 17.2



P2500
USE AT SILL ONLY

FLATBACK INSTALLATION
INTO 900RW SILL

Fig. 17.3



T311TU
USE AT ALL SIDES

FLATBACK INSTALLATION
INTO 400TU CURTAINWALL

Fig. 17.4

GLAZING

Step 1: Install Glass into Sash

1. Remove the sash from the frame. For awnings leave the 4-bar hinges attached to the sash. For casements remove the butt hinges from both the sash and the frame.
2. Clean the surfaces that will contact the structural silicone using an approved cleaner and the two-cloth method. See **Fig.18.1**
3. Install the spacer gasket (11702) into the sash receiver. The gasket receiver should be filled with the neutral cure black silicone for 1" in each direction at all the corners prior to seating the gasket. The gasket ends should be mitered and fit tightly together.
4. Apply masking tape to the area shown to prevent silicone filling the glass support groove. See **Fig 18.1 & Fig. 18.2**

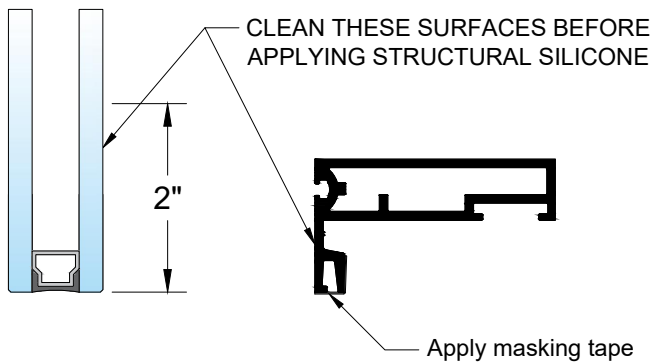


Fig. 18.1

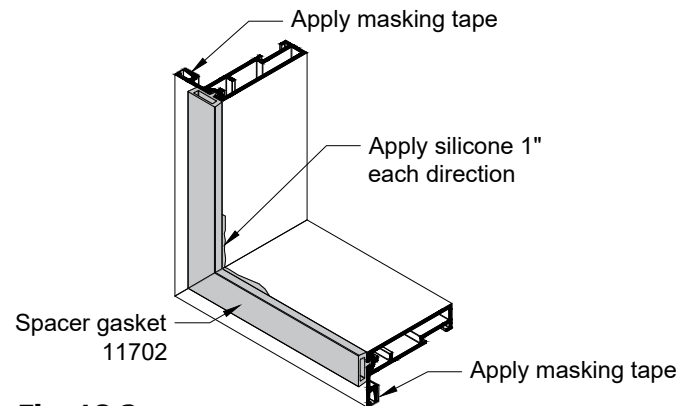


Fig. 18.2

5. If the glass has offsets a skim coat of silicone covering the entire offset is required. See **Fig. 18.3**
6. Carefully place the glass onto the spacer gasket making sure to orient the glass correctly. Clamps or weights may be required to ensure the glass is completely seated against the spacer gasket.
7. Apply structural silicone into the joint and tool so silicone completely fills the void. Remove masking tape before silicone skins over. See **Fig. 18.4**

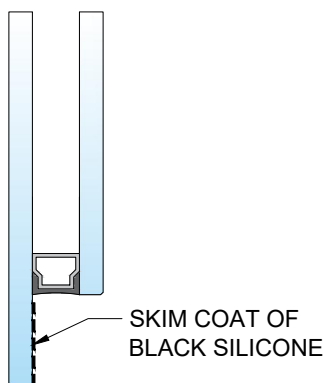


Fig. 18.3

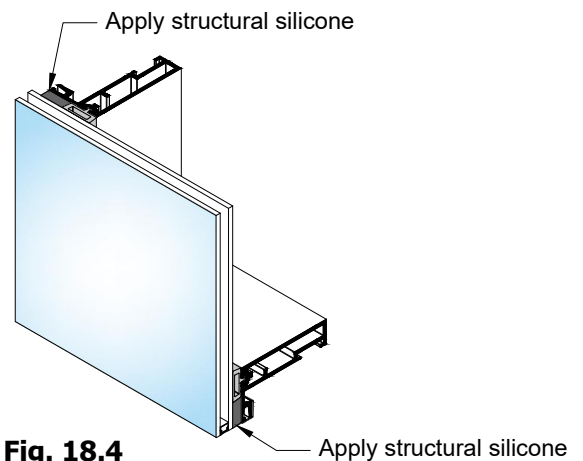


Fig. 18.4

GLAZING

Step 2: Install Setting Blocks & Glass Supports

9. If using the 4" glass supports, place a 1 $\frac{3}{4}$ " wide x 4" long x $\frac{1}{16}$ " thick setting block (1170503) onto the support, held in place by a dab of silicone. Snap the glass support into the race at $\frac{1}{4}$ points or specified locations using a plastic hammer. See **Fig. 19.3**
10. If using the SSG support, locate from one end of the sash. Cut 1170503 setting block to size ($\frac{1}{4}$ " wide x 4" long x $\frac{1}{16}$ " thick) and place onto the support, held in place by a dab of silicone. Use a hammer and block of wood to tap the support in place. See **Fig. 19.4**

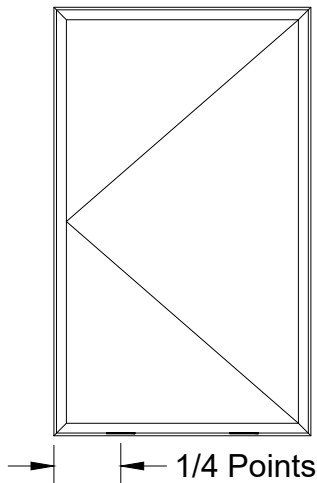


Fig. 19.1

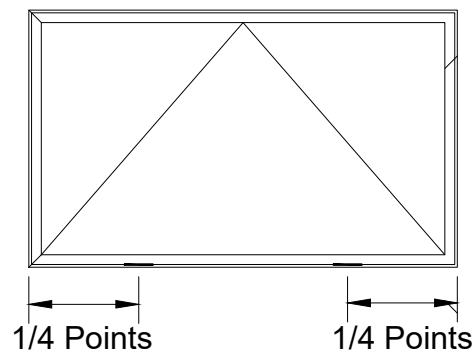


Fig. 19.2

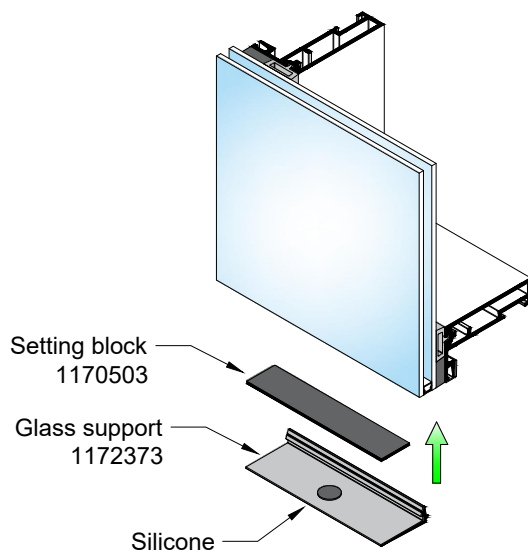


Fig. 19.3

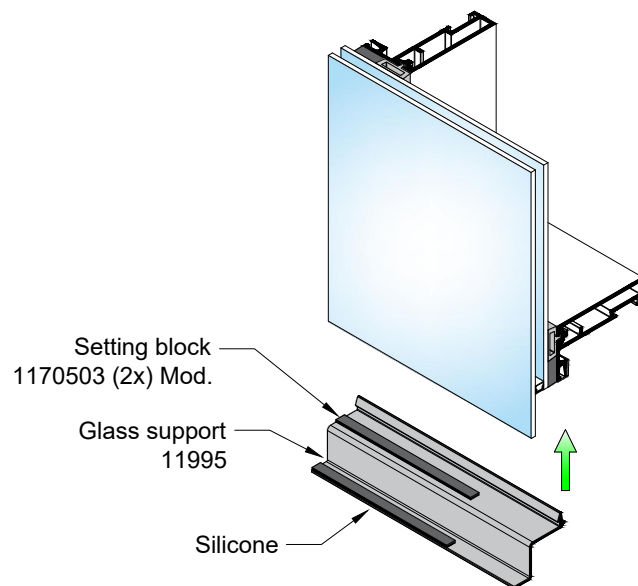


Fig. 19.4

WINDOW INSTALLATION

Step 1: Window Installation with SSG Condition

Note: If the SSG adapter is required this should be installed prior to the window frame.

1. Locate adapter $\frac{1}{4}$ " inset from DLO of wall framing
2. Anchor fasteners should be located no more than 3" from ends of adapter and spaced 12" on center thereafter.
3. Seal all anchor heads with approved sealant
4. Apply a continuous silicone seal at the interior perimeter of the window frame

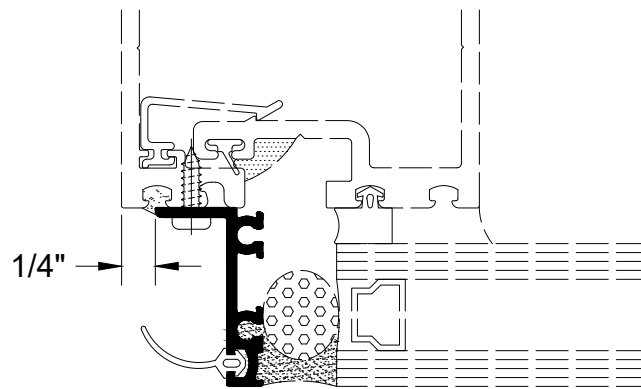


Fig. 20.1

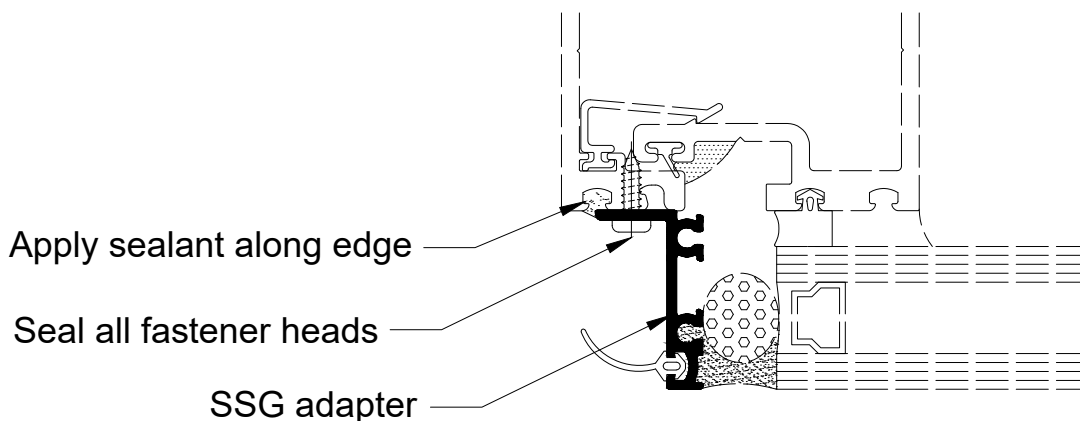


Fig. 20.2

WINDOW INSTALLATION

Step 2: Window Installation (non-SSG)

1. Set the window into the opening and shim as required so the vent is plumb, level and square. Window should be inset so glass pane aligns with the surrounding wall system.
2. Drill clearance holes in window frames using the correct size drill for the anchor fasteners being used. Anchors are required no more than 4" from each corner and at centerline if dimension is greater than 30" or located per approved shop drawings. Anchor locations can be staggered to avoid interference with hardware and as access allows. See **Fig. 21.1 & Fig. 21.2**
3. Match drill hole in surrounding framing with appropriate drill bit.
4. Install anchor fasteners making sure shims are located at all anchor locations. Seal all anchor heads with approved sealant.
5. Apply a continuous silicone seal at the interior perimeter of the window frame.

Drill correct size clearance hole
for anchor fasteners being used

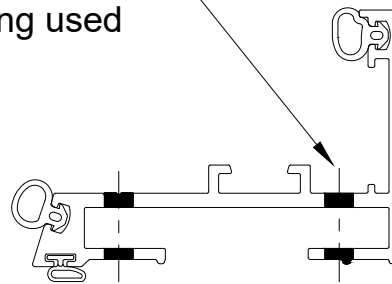


Fig. 21.1

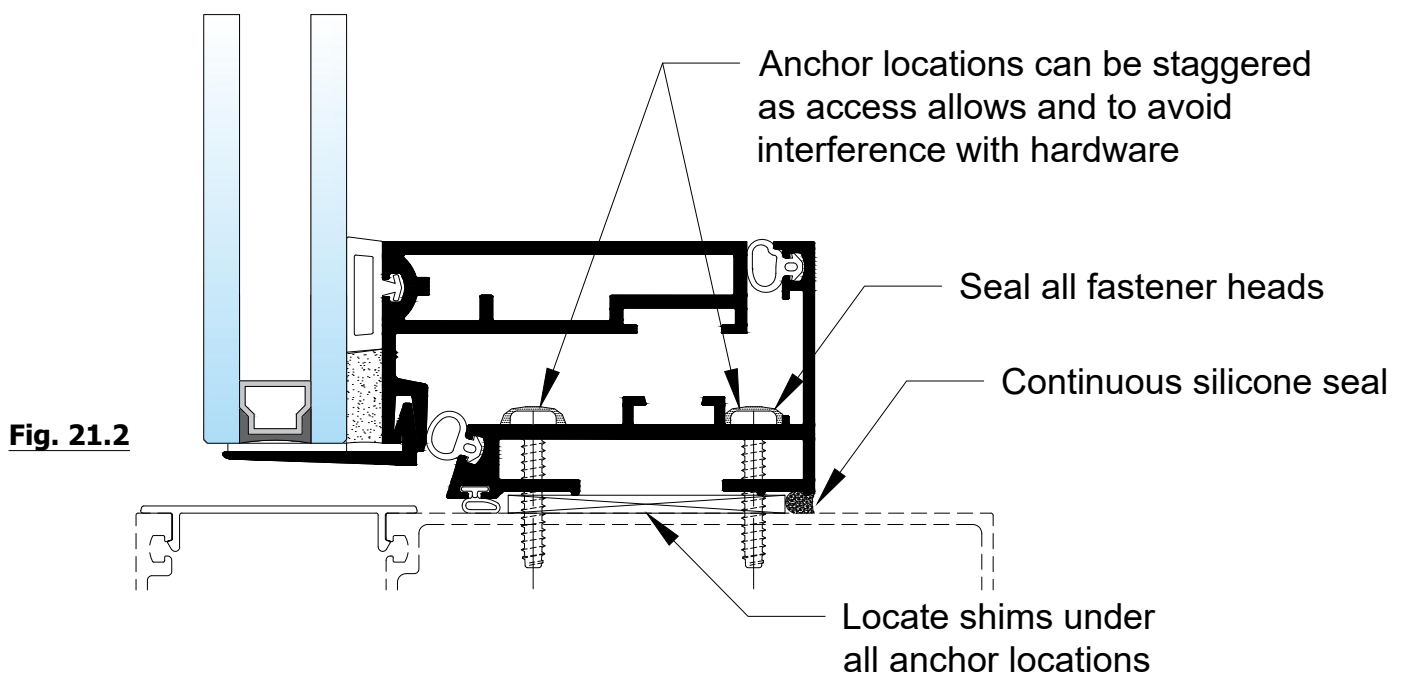


Fig. 21.2

SCREEN INSTALLATION

Step 1: Screen Installation

1. Drill holes in window frames using correct size drill for the #8 screw being used. See **Fig. 22.1**
2. Locate screen frame onto window and tighten the clip screw to hold it in place.

Note: For screens under 48" in height use one clip in the center.

For screens above 48" in height use two clips offset 12" from edge of screen.

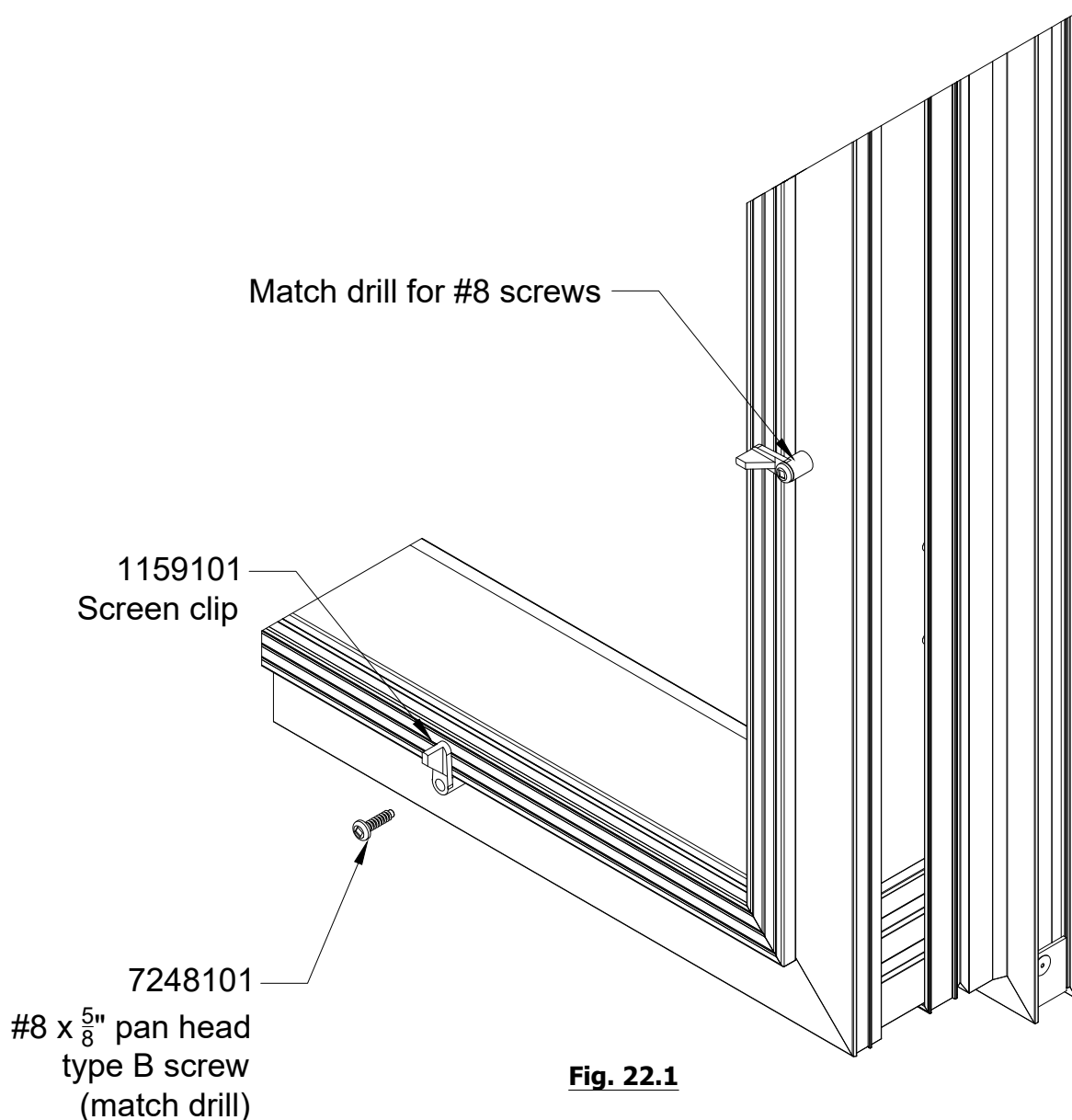


Fig. 22.1