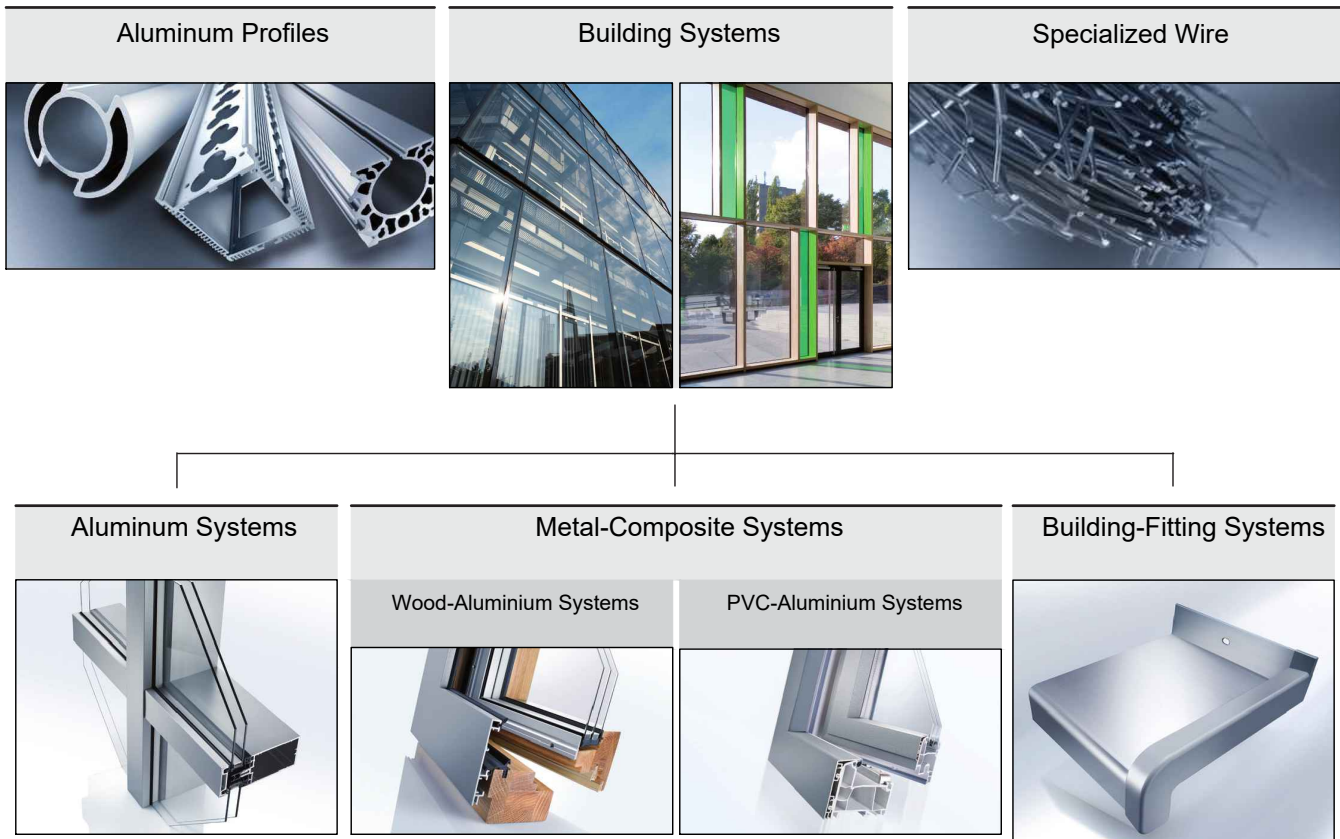


# GUTMANN F60++

BUILDING SYSTEMS	ALUMINUM STICK CURTAIN WALL	CATALOGUE	01.2021 REV - 00
------------------	-----------------------------	-----------	---------------------



# GUTMANN



GUTMANN AG is an international supplier for system-based aluminum building solutions. GUTMANN building Systems are designed for modern windows, doors and curtain-wall systems that are optimized and customized for the wide range of stylistic, design and energy-efficiency requirements demanded by architects, investors and fabricators.

With more than 70 years of presence in the field, GUTMANN AG together with its holding companies, GARTNER EXTRUSION GmbH, NORDALU GmbH and GUTMANN ALUMINUM DRAHT GmbH, has also become a producer of high-quality Aluminum Profiles and Specialized wire.

Customer proximity, 1300 committed employees and high innovative power have made the GUTMANN Group a trusted international partner for aluminum products. These qualities also form a solid base for continued growth in the future.

## General Notes

1. The F60++ system is intended for installation by professional glazing contractors with appropriate experience. We expect that you are familiar with, and have installed products of same and similar type.
2. 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. The shop drawings will take precedence over these instructions as they are project specific.
3. Engineering Calculations and shop drawing review should be performed by a professional engineer.
4. 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.
5. Coordinate protection of installed work with general contractor and/or trades.
6. Coordinate sequence of other trades which affect framing installation with the general contractor.
7. 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 the adjacent substrate construction by others.
8. 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 Gutmann.
9. 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.
10. Sealant must be compatible with all materials with which they may have contact, including other sealant surfaces. Consult the sealant manufacturer for recommendations relative to shelf life, compatibility, cleaning of substrate, priming, tooling/adhesion etc. Recommended 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. Gutmann will not accept responsibility for improper drainage as a result of clogged gutters and weep holes.
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.
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. Care must be taken when assembling aluminum framing components. Over tightening any fastener may cause stripping or fastener failure. Gutmann recommends the use of drill motors with clutches engaged 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.

## Table of Contents

DRAWING NAME	Drawing No.
General Construction Notes	1.1.1
System Description	1.1.2
Static list	1.1.3
<b>PART A - PROFILES</b>	
F60++ Profiles	2.1
<b>PART B - CROSS SECTION POINTS</b>	
typical System Details	2.2
<b>PART C - GLAZING TABLES</b>	
Glass Options	2.3
<b>PART D - ACCESSORIES</b>	
Gaskets, Sealing Piece, Fasteners etc.	2.4
<b>PART E - FABRICATION AND INSTALLATION INSTRUCTIONS</b>	
Profile Cutting List, Drainage & Notchings	3.1

## General Construction Notes

### HANDLING, STORAGE AND PROTECTION OF ALUMINUM

The following precautions are recommended to protect the material against damage. Following these precautions will help ensure early acceptance of your products and workmanship.

**1. HANDLE CAREFULLY.**

All aluminum materials at job site must be stored in a safe place, well removed from possible damage by other trades. Cardboard wrapped or paper interleaved materials must be kept dry.

**2. CHECK ARRIVING MATERIALS.**

Check all shipments from Gutmann immediately upon receipt thereof. Check for damage, count and quantities and keep records of where various materials are stored. Inform your Gutmann service representative immediately of errors, omission, questionable quality or damage.

**3. KEEP MATERIALS AWAY FROM WATER, MUD, AND SPRAY.**

Prevent cement, plaster or other materials from damaging the finish.

**4. PROTECT THE MATERIALS AFTER ERECTION.**

Protect erected frame with polyethylene or canvas splatter screen. Cement, plaster, terrazzo, other alkaline solutions, and acid base materials used to clean masonry are harmful to the finish. If any of these materials come in contact with the aluminum, IMMEDIATELY remove with water and mild soap.

## GUTMANN F60++

### ► System Description

The GUTMANN Curtain Wall System fulfills all the architectural requirements. Gutmann is innovative system solution with competitive edge in technology and cost effectiveness. The Gutmann Curtain Wall System F60++ provides high quality products, fast installation, simplified fabrication, superior performance, and design flexibility. This system is applicable in sloped and vertical curtainwall system.

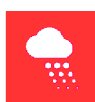


- Identical profiles for mullion and transom, straight cutting, no transom profile notching, minimal off-cuts rational manufacture, and installation.
- Narrow 2 3/8-inch (60mm) sight line.
- Various system depths to suit most design and load requirements.
- Identical widths of inner glass gaskets at mullions and transoms.
- System is outside pressure glazed, available with captured or SSG mullions.
- Water drainage via a special transom gasket.
- Flawless inner transom connection - unique transom connector for gapless mounting to the vertical mullion.
- Glazing options of 1" - 2 1/16"(26mm-52mm) for double glazed and 3/8" - 7/8"(10mm-22mm) for single glass option.
- Maximum glass loads up to 400-730 kg, depending on wind loads.
- Shear block by fabrication method.
- Can be used for vertical and sloped curtainwall system.
- Offers integrated entrance framing systems and vents.
- Different colour options available.
- Tested to NAFS and CSA standards.
- Thermal transmittance simulation results using NFRC 100 or AAMA 507 are based on double glazed unit, a Center of Glass (COG) U-factor of 0.20 Btu/(hr.ft<sup>2</sup>.°F) and an aluminum spacer. When simulated using NFRC 100 or AAMA 507, the U-factor is 0.28 Btu/(hr.ft<sup>2</sup>.°F). This value may vary according to glass choice, framing configuration and spandrel to vision ratios.

Our in-house design-assist, engineering, and manufacturing ensure maximum efficiency throughout the entire process.

### ► Optional Features:

- Steel reinforcing available.
- Captured system heavy-weight mullion available for 2 - 3/8" x 8 7/16"(60mm x 215mm).
- Captured system integrates with standard Gutmann windows and doors.
- Captured system integrates with concealed Gutmann Vent-SK70.

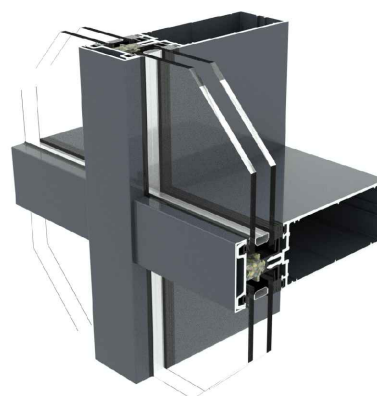
### ► System Properties of Classes

	Water tightness	ASTM E 331 720 Pa
	Air permeability	ASTM E 283 300 Pa
	Wind load	ASTM E 330 Structural Performance = 2880 Pa

### ► Thermal Insulation

Uf

0.28



## GUTMANN SSG F60++

### ► System Description

The GUTMANN SSG or Toggle system provides unique all glass capless look in its F60++ curtainwall system. The Gutmann curtain wall system F60++ toggle System provides a four-sided structural silicone flat look in a stick system with an economical, quality curtainwall system with quick deliveries and easy installation. Various Mullion depth profiles are available based on spans, loads and project design. This system is applicable in sloped and vertical curtainwall system.

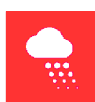


- The curtain wall system is mechanically held by four sided toggles spaced as required to meet wind load.
- Identical profiles for mullion and transom, straight cutting, no transom profile notching: minimal off-cuts, rational manufacture, and installation.
- Narrow 2 3/8-inch (60mm) sight line.
- 13/16"(20mm) exterior vertical and horizontal weather seal sight line and 2"(50mm) interior metal sight line.
- Various system depths to suit most design and load requirements.
- Identical widths of inner glass gaskets at mullions and transoms.
- System is outside pressure glazed.
- Controlled drainage system via a special transom gasket.
- Glazing options of 1" - 1 7/16"(26mm-36mm) for double glazed.
- Maximum glass loads up to 400-730 kg, depending on wind loads.
- Innovative toggle assembly captures glass, eliminating field application of structural silicone.
- Screw spline joinery method allows shop assembly of ladder sections, reducing field labor.
- Can be used for vertical and sloped curtainwall system.
- Different colour options available.
- Tested to NAFS and CSA standards.
- Thermal transmittance simulation results using NFRC 100 or AAMA 507 are based on double glazed unit, a Center of Glass (COG) of 0.20 Btu/(hr.ft<sup>2</sup>.°F) and an aluminum spacer. When simulated using NFRC 100 or AAMA 507, the U-factor is 0.28 Btu/(hr.ft<sup>2</sup>.°F). This value may vary according to glass choice, framing configuration and spandrel to vision ratios.

Our in-house design-assist, engineering, and manufacturing ensure maximum efficiency throughout the entire process.

### ► Optional Features:

- Steel reinforcing available.
- SSG system heavy-weight mullion available for 2 - 3/8" x 8 7/16"(60mm x 215mm).
- SSG system integrates with standard Gutmann windows and doors.
- SSG system integrates with concealed Gutmann Vent-SK70.

### ► System Properties of Classes

	Water tightness	ASTM E 331 720 Pa
	Air permeability	ASTM E 283 300 Pa
	Wind load	ASTM E 330 Structural Performance = 2880 Pa



### ► Thermal Insulation



## Static list F60++ system

Series	Profile no.	Ix cm <sup>4</sup>	Wx cm <sup>3</sup>	Iy cm <sup>4</sup>	Wy cm <sup>3</sup>
<b>F60++</b>	<b>160055</b>	35.99	9.05	28.69	9.65
<b>F60++</b>	<b>160075*</b>	71.34	14.67	36.31	7.27
<b>F60++</b>	<b>160095</b>	121.83	21.12	43.67	14.55
<b>F60++</b>	<b>160115</b>	189.25	28.26	51.01	17.00
<b>F60++</b>	<b>160135</b>	289.63	37.01	59.54	19.84
<b>F60++</b>	<b>160155</b>	462.20	49.19	73.67	24.56
<b>F60++</b>	<b>160175*</b>	615.18	59.19	81.64	27.21
<b>F60++</b>	<b>160195</b>	849.65	70.65	90.66	30.22
<b>F60++</b>	<b>160215</b>	1157.00	92.98	104.80	34.93
<b>F60++</b>	<b>151001*</b>	5.44	1.65	1.00	0.55
<b>F60++</b>	<b>161095*</b>	60.26	11.98	6.54	4.08
<b>F60++</b>	<b>161115*</b>	102.43	19.99	79.62	5.04
<b>F60++</b>	<b>161135*</b>	159.28	22.66	93.35	6.00
<b>F60++</b>	<b>161155*</b>	159.28	29.12	9.34	7.27
<b>F60++</b>	<b>162095</b>	191.77	15.45	107.98	28.58

Insert Hollow profiles mm	Hollow profiles	
	Ix cm <sup>4</sup>	Iy cm <sup>4</sup>
40/50/3.0	11.38	16.15
**		
80/50/3.0	61.15	29.42
100/50/3.2	112.29	37.95
120/50/4.0	213.82	53.43
**		
**		
**		
**		
-		
50/20/3.0	12.83	5.70
**		
**		
**		
80/50/3.0	61.15	29.42

The indicate single shell values apply to profiles 161095 - 161135.  
The entire mounting mullion is a result of 2 x single shell + profile 151001.

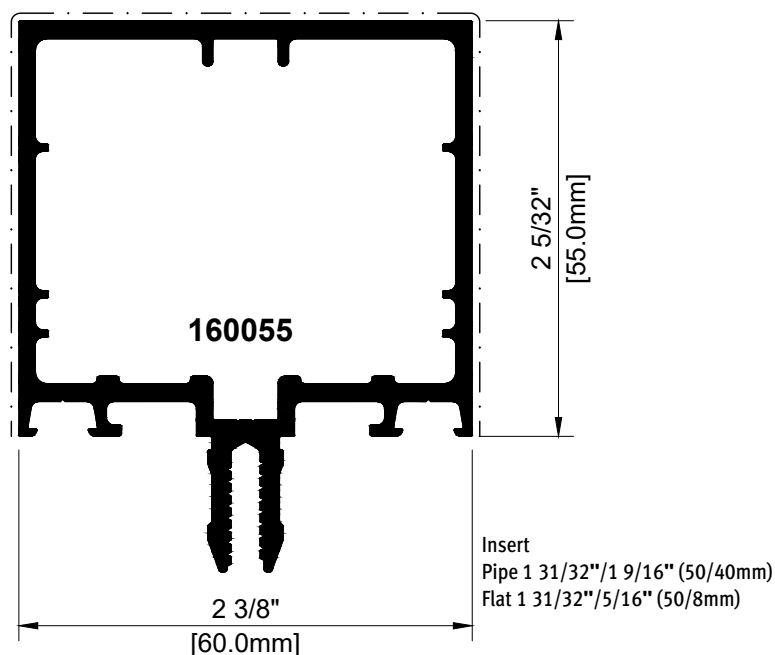
\*\* Industrial rectangular pipes not available

Insert Flat profiles mm	Flat profiles	
	Ix cm <sup>4</sup>	Iy cm <sup>4</sup>
50/8	8.30	0.21
70/8	22.86	0.29
90/8	48.60	0.38
110/8	88.73	0.47
130/8	146.47	0.55
150/8	225.00	0.64
-		
-		
-		
-		
60/8	14.80	0.26
80/8	34.13	0.34
100/8	66.67	0.43
120/8	115.20	0.51
90/8	48.60	0.38



## PROFILES

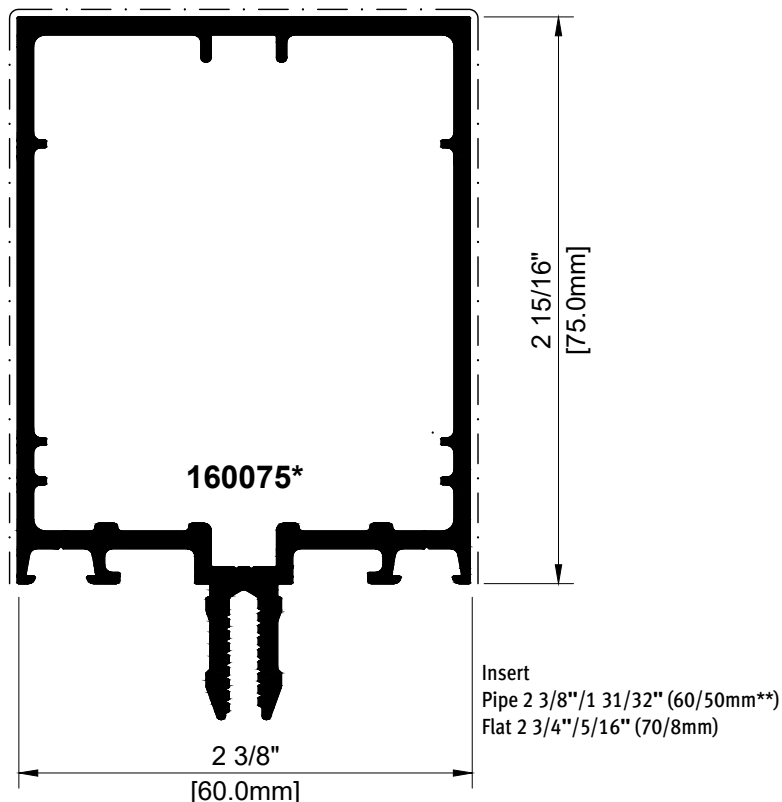


**160055****Mullion/Transom**

Factory Length	236 7/32" (6000mm)		
Execution	annodized	13 13/16" (351mm)	mech. 6 11/16" (170mm)
Moments of Inertia	Ix	35.99 cm <sup>4</sup>	Iy 28.69 cm <sup>4</sup>

**Connectors**

		Connecting Profile	Cutting
Joint Connector	760602	446001	1 17/32" (39mm)
Assembly Joint Connector	760612	446003	1 19/32" (40.5mm)
		446004	1 17/32" (39mm)
Variable Joint Connector	-	446005	1 17/32" (39mm)
Insert Profile	-	465022	1 9/16" (40mm)

**160075 \*****Mullion/Transom**

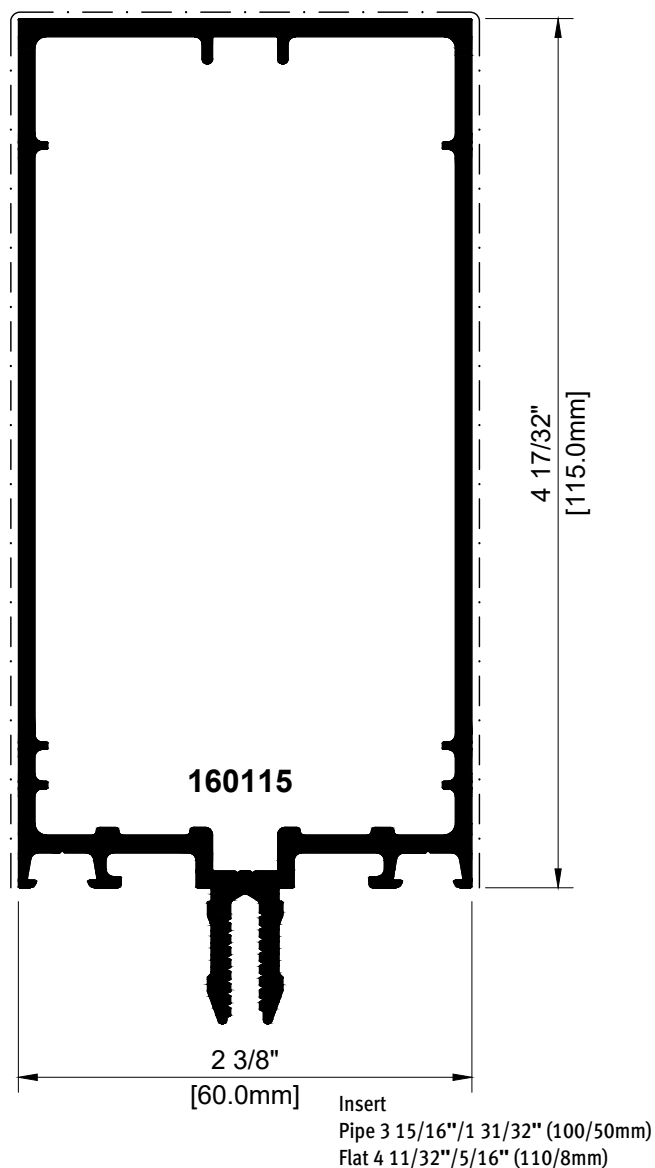
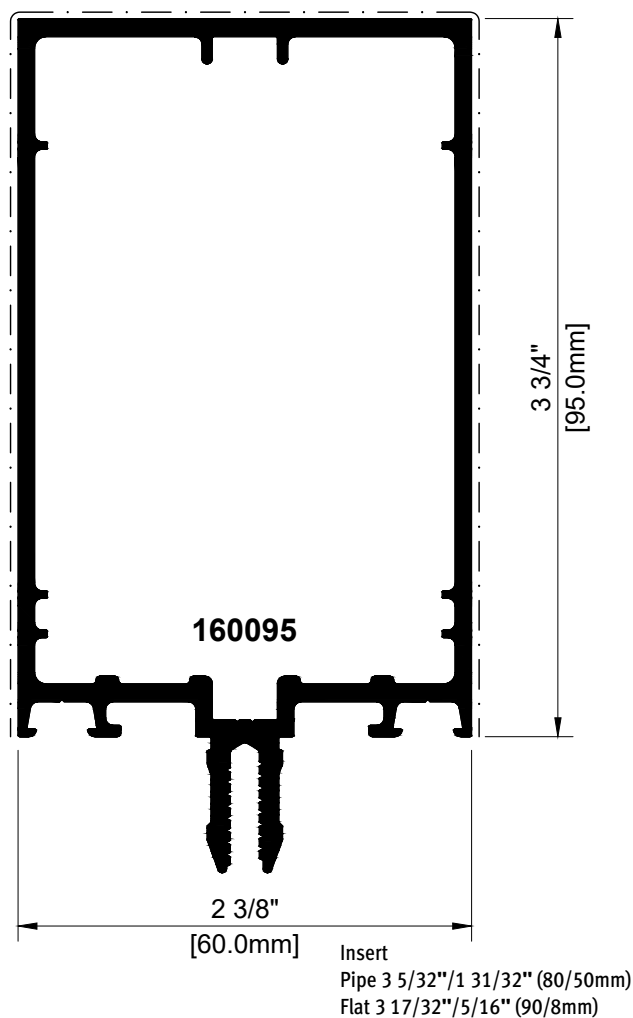
Factory Length	236 7/32" (6000mm)		
Execution	annodized	15 25/64" (391mm)	mech. 8 9/32" (210mm)
Moments of Inertia	Ix	71.40 cm <sup>4</sup>	Iy 36.28 cm <sup>4</sup>

**Connectors**

		Connecting Profile	Cutting
Joint Connector	760603*	446001	2 5/16" (59mm)
Assembly Joint Connector	760613*	446003	2 3/8" (60.7mm)
		446004	2 5/16" (59mm)
Variable Joint Connector	-	446005	2 5/16" (59mm)
Insert Profile	-	465022	2 3/8" (60mm)

\*Upon request

\*\*No profile available, that is customary in trade

**160095****Mullion/Transom**

Factory Length	236 $7/32"$ (6000mm)		
Execution	anodized	$16 \frac{31}{32}"$ (431mm)	mech. $9 \frac{27}{32}"$ (250mm)
Moments of Inertia	Ix	121.83 cm <sup>4</sup>	Iy 43.67 cm <sup>4</sup>

**Connectors**

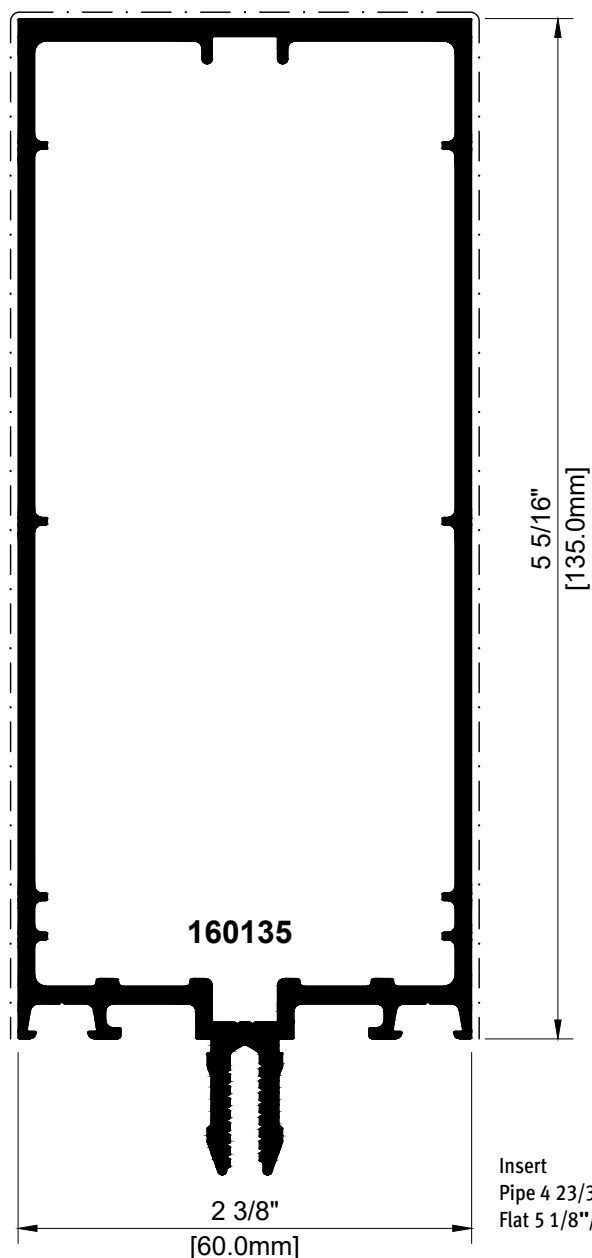
		Connecting Profile	Cutting
Joint Connector	760604	446001	$3 \frac{1}{8}"$ (79mm)
Assembly Joint Connector	760614	446003	$3 \frac{3}{16}"$ (80.7mm)
		446004	$3 \frac{1}{8}"$ (79mm)
Variable Joint Connector	-	446005	$3 \frac{1}{8}"$ (79mm)
Insert Profile	-	465022	$3 \frac{5}{32}"$ (80mm)

**160115****Mullion/Transom**

Factory Length	236 $7/32"$ (6000mm)		
Execution	anodized	$18 \frac{35}{64}"$ (471mm)	mech. $11 \frac{13}{32}"$ (290mm)
Moments of Inertia	Ix	189.25 cm <sup>4</sup>	Iy 51.01 cm <sup>4</sup>

**Connectors**

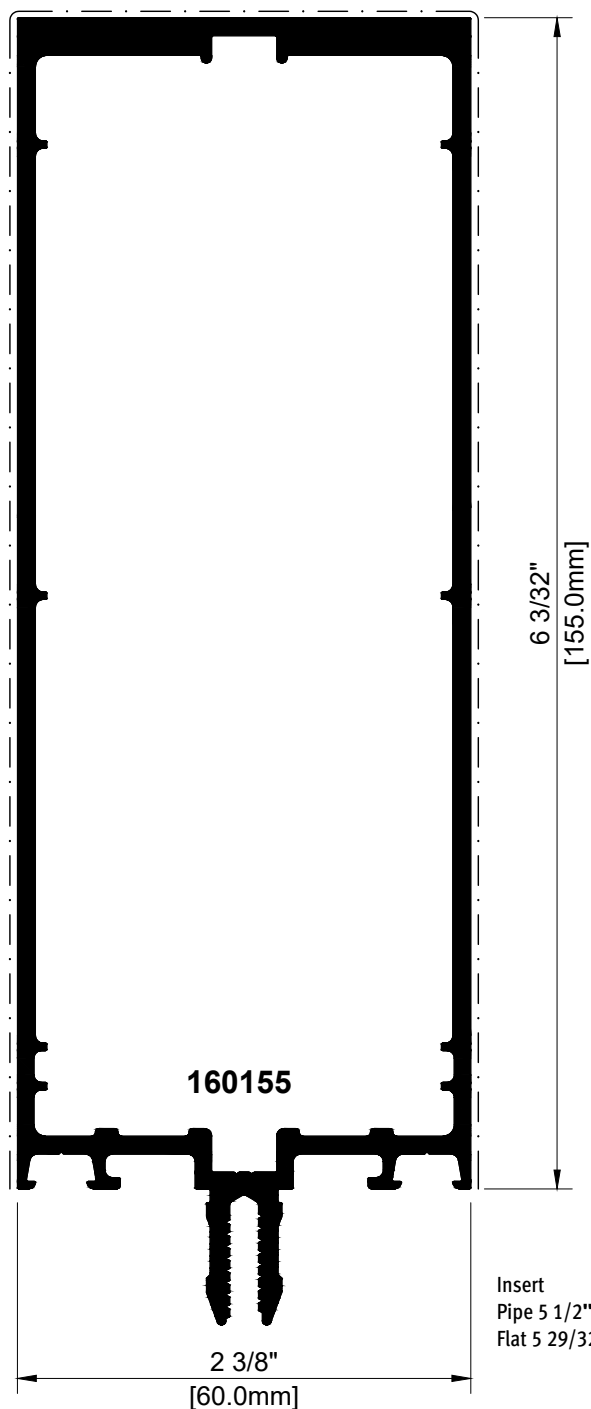
		Connecting Profile	Cutting
Joint Connector	760605	446001	$3 \frac{29}{32}"$ (99mm)
Assembly Joint Connector	760615	446003	$3 \frac{31}{32}"$ (100.7mm)
		446004	$3 \frac{29}{32}"$ (99mm)
Variable Joint Connector	-	446005	$3 \frac{29}{32}"$ (99mm)
Insert Profile	-	465022	$3 \frac{29}{32}"$ (99mm)

**160135****Mullion/Transom**

Factory Length	236 7/32" (6000mm)		
Execution	annodized	20 1/8" (511mm)	mech. 12 63/64" (330mm)
Moments of Inertia	Ix	289.63 cm <sup>4</sup>	Iy 59.54 cm <sup>4</sup>

**Connectors**

		Connecting Profile	Cutting
Joint Connector	760606	446001	4 11/16" (119mm)
Assembly Joint Connector	760616	446003	4 3/4" (120.9mm)
		446004	4 11/16" (119mm)
Variable Joint Connector	-	446005	4 11/16" (119mm)
Insert Profile	-	465022	4 23/32" (120mm)



## 160155

Industrial rectangular pipes not available

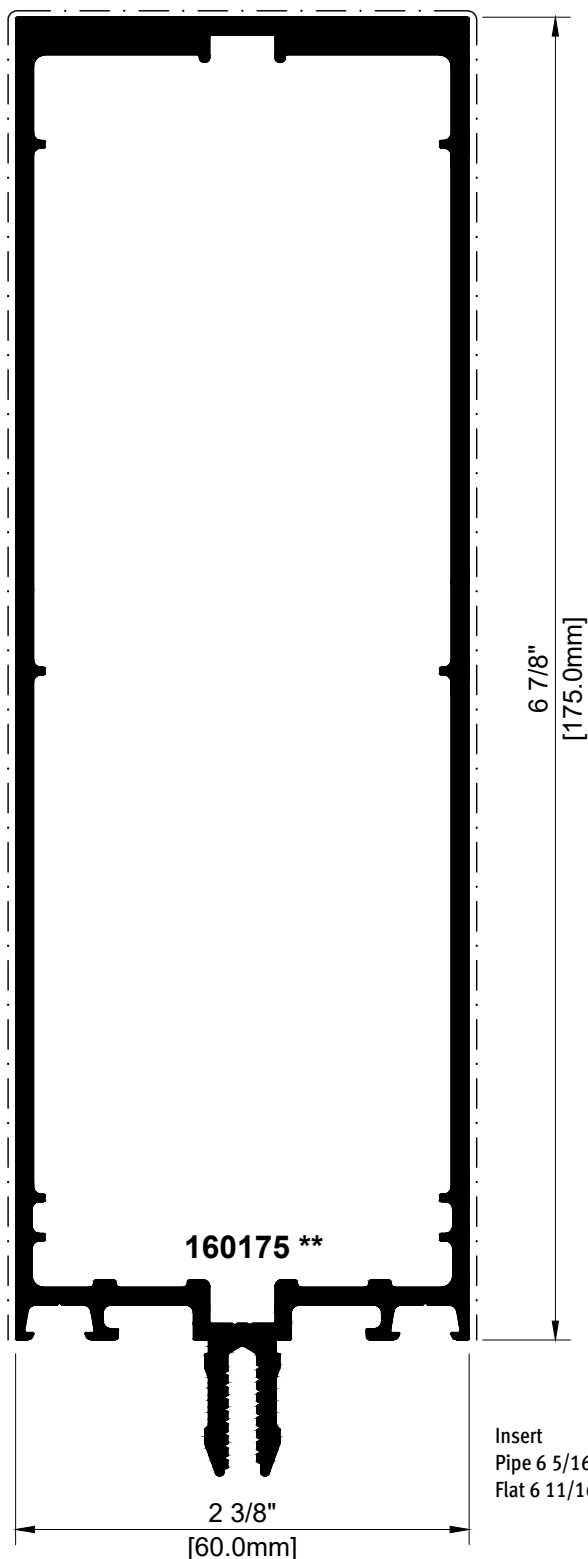
### Mullion/Transom

Factory Length	236 7/32" (6000mm)		
Execution	anodized	21 11/16" (551mm)	mech. 14 9/16" (370mm)
Moments of Inertia	Ix	462.2 cm <sup>4</sup>	Iy 73.67 cm <sup>4</sup>

### Connectors

		Connecting Profile	Cutting
Joint Connector	760607	446001	5 15/32" (139mm)
Assembly Joint Connector	760617	446003	5 9/16" (140.9mm)
		446004	5 15/32" (139mm)
Variable Joint Connector	-	446005	5 15/32" (139mm)
Insert Profile	-	465022	5 1/2" (140mm)

\*No commercial tubes available.



Insert  
Pipe 6 5/16"/1 31/32" (160/50mm)  
Flat 6 11/16"/5/16" (170/8mm)

## 160175 \*\*

Industrial rectangular pipes not available

### Mullion/Transom

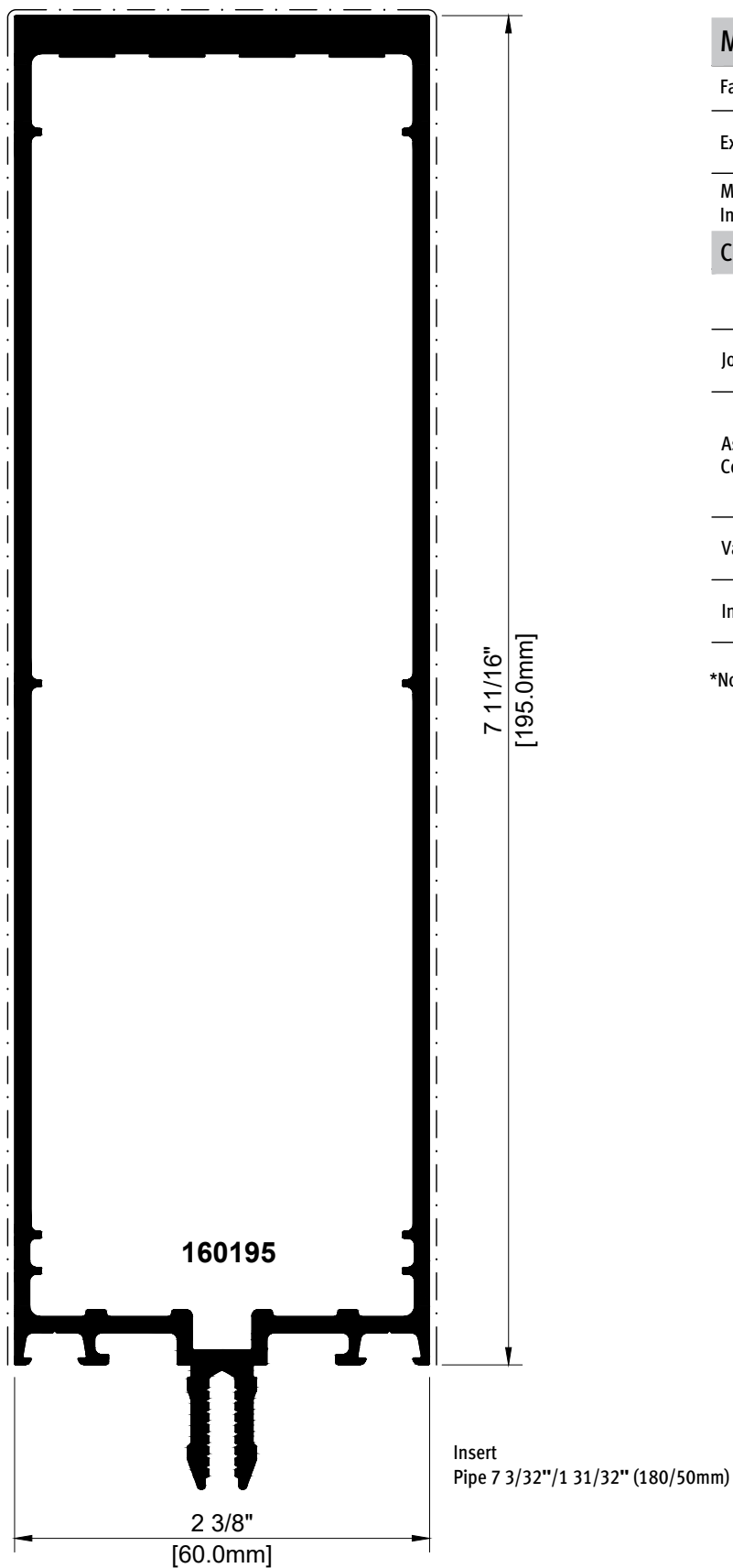
Factory Length	236 7/32" (6000mm)		
Execution	anodized	23 5/16" (592mm)	mech. 16 9/64" (410mm)
Moments of Inertia	Ix	615.18 cm <sup>4</sup>	Iy 81.64 cm <sup>4</sup>

### Connectors

		Connecting Profile	Cutting
Joint Connector	760608**	446001	6 1/4" (159mm)
Assembly Joint Connector	760618**	446003	6 11/32" (161.2mm)
		446004	6 1/4" (159mm)
Variable Joint Connector	-	446005	6 1/4" (159mm)
Insert Profile	-	465022	6 5/16" (160mm)

\*\*Upon request!

\*No commercial tubes available.



## 160195

### Mullion/Transom

Factory Length	236 7/32" (6000mm)		
Execution	anodized	24 27/32" (631mm)	mech. 17 23/32" (450mm)
Moments of Inertia	Ix	849.65 cm <sup>4</sup>	Iy 90.66 cm <sup>4</sup>

### Connectors

		connecting profile	Cutting
Joint Connector	760609	446001	7 1/16" (179mm)
Assembly Joint Connector	760619	446003	7 1/8" (181.2mm)
		446004	7 1/16" (179mm)
Variable Joint Connector	-	446005	7 1/16" (179mm)
Insert Profile	-	465022	7 3/32" (180mm)

\*No commercial tubes available.

160215

Industrial rectangular pipes not available

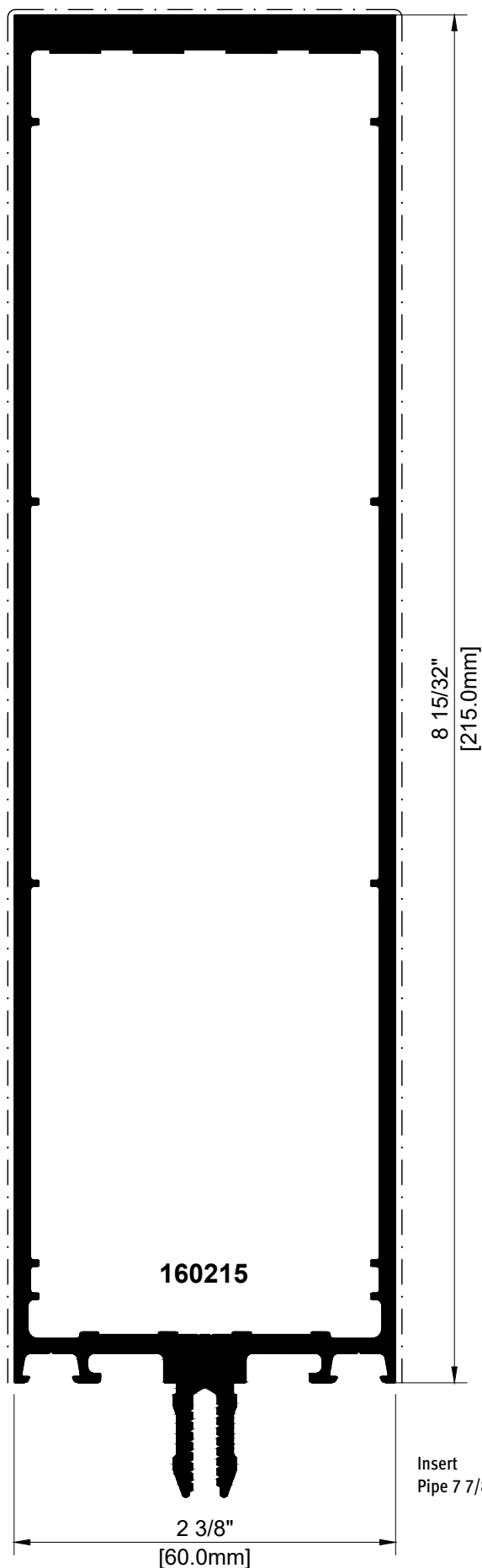
Mullion/Transom

Factory Length	236 7/32" (6000mm)		
Execution	anodized	26 27/64" (671mm)	mech. 19 19/64" (490mm)
Moments of Inertia	Ix	1157 cm <sup>4</sup>	Iy 104.8 cm <sup>4</sup>

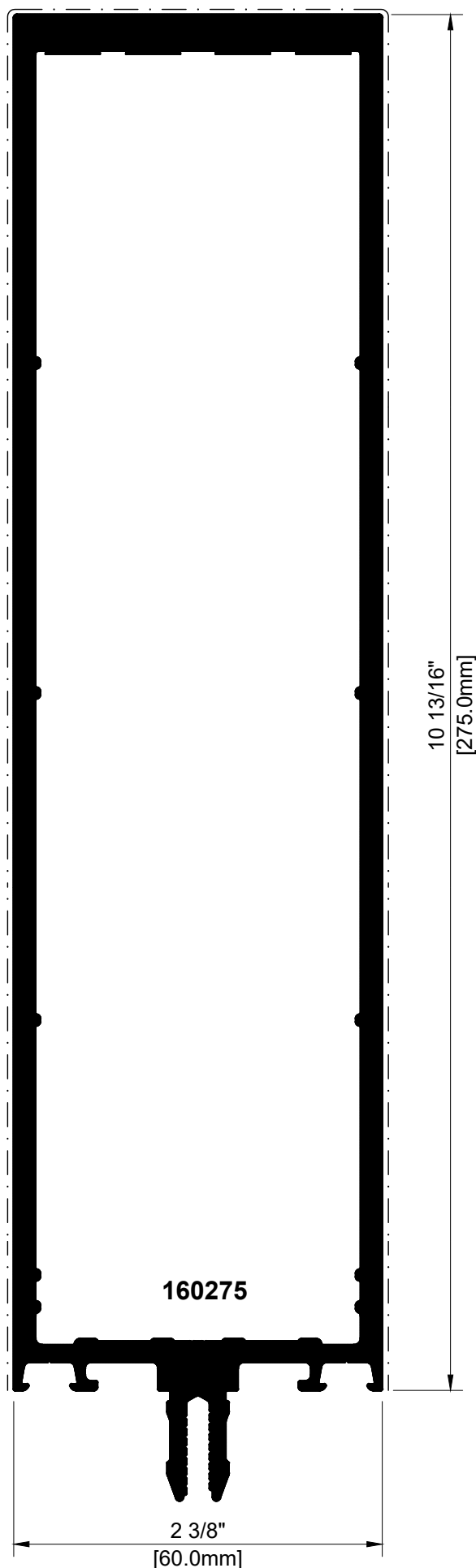
Connectors

		Connecting Profile	Cutting
Joint Connector	760622	446001	7 27/32" (199mm)
Assembly Joint Connector	760623	446003	7 29/32" (201.2mm)
		446004	7 27/32" (199mm)
Variable Joint Connector	-	446005	7 27/32" (199mm)
Insert Profile	-	465022	7 7/8" (200mm)

\*No commercial tubes available.







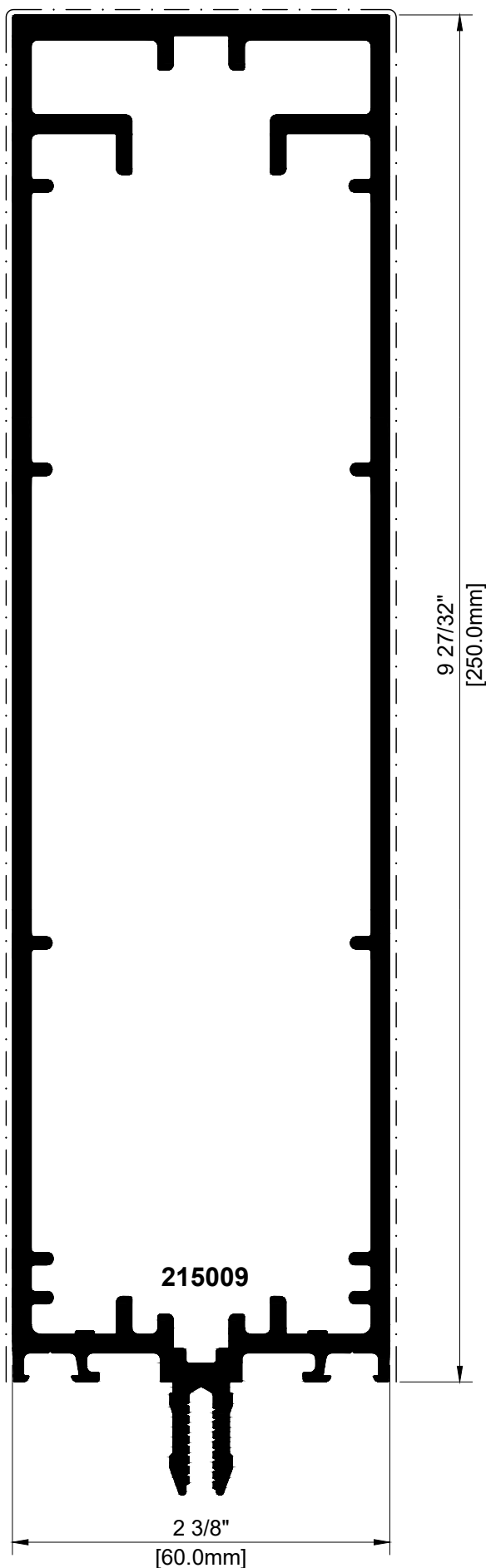
## 160275

### Mullion/Transom

Factory Length	236 7/32" (6000mm)		
Execution	anodized -	mech. -	
Moments of Inertia	Ix	2451.69 cm <sup>4</sup>	Iy 166.07 cm <sup>4</sup>

### Connectors

	Connecting Profile	Cutting
Joint Connector	446001	10 3/16" (259mm)
Assembly Joint Connector	446003	10 1/4" (260.7mm)
	446004	10 3/16" (259mm)
Variable Joint Connector -	446005	10 3/16" (259mm)
Insert Profile -	465022	10 3/16" (259mm)



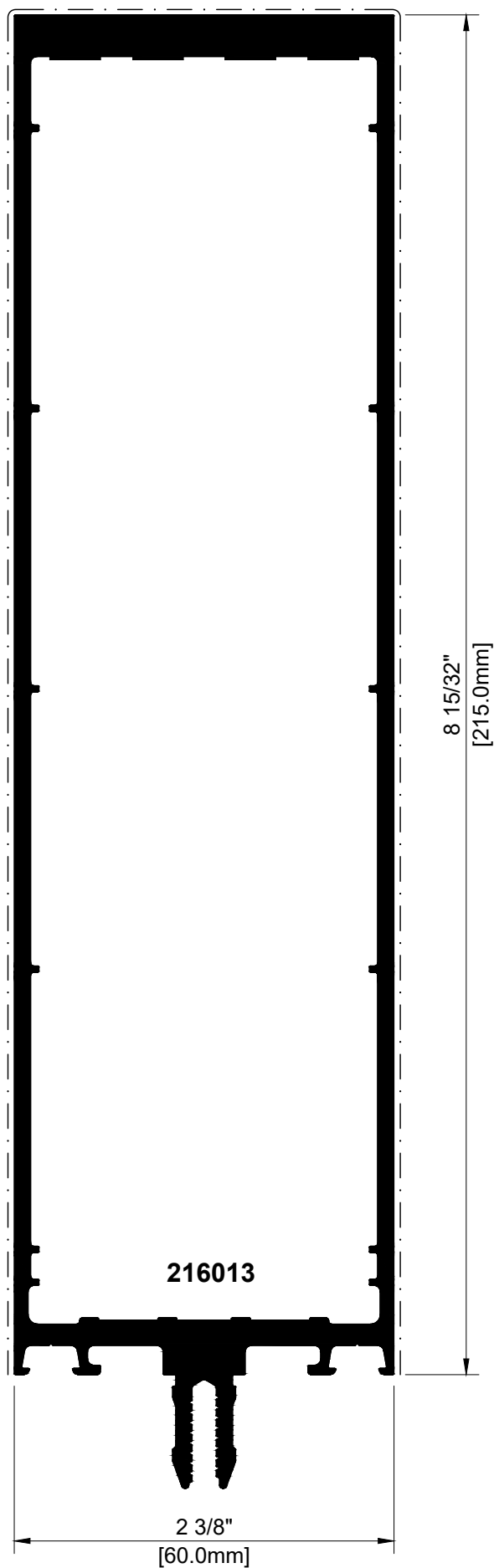
## 215009

### Mullion/Transom

Factory Length	236 7/32" (6000mm)			
Execution	anodized	-	mech.	-
Moments of Inertia	Ix	1841 cm <sup>4</sup>	Iy	140.42 cm <sup>4</sup>

### Connectors

	Connecting Profile	Cutting
Joint Connector	446001	9 7/32" (234mm)
Assembly Joint Connector	446003	9 7/32" (234mm)
	446004	9 9/32" (235.7mm)
Variable Joint Connector	-	446005 9 7/32" (234mm)
Insert Profile	-	465022 9 7/32" (234mm)



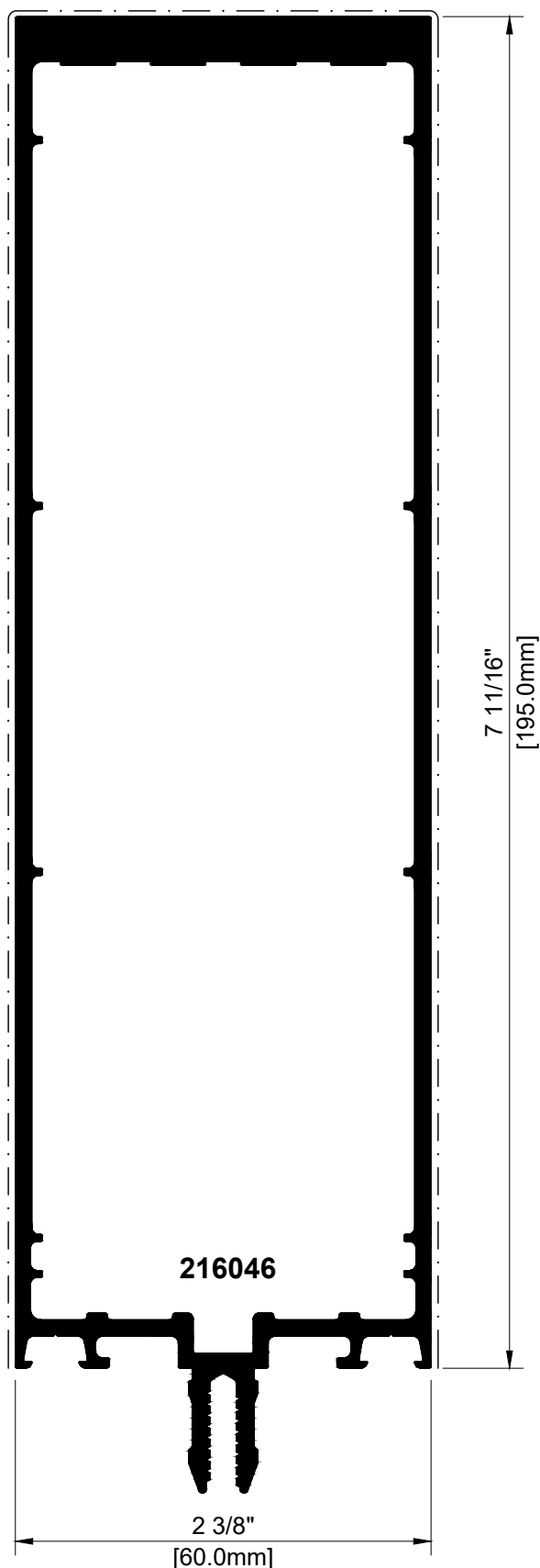
## 216013

### Mullion/Transom

Factory Length	236 7/32" (6000mm)			
Execution	anodized	-	mech.	-
Moments of Inertia	Ix	1274.37 cm <sup>4</sup>	Iy	107.88 cm <sup>4</sup>

### Connectors

	Connecting Profile	Cutting
Joint Connector	446001	7 27/32" (199mm)
Assembly Joint Connector	446003	7 29/32" (201.2mm)
	446004	7 27/32" (199mm)
Variable Joint Connector	-	446005 7 27/32" (199mm)
Insert Profile	-	465022 7 27/32" (199mm)



## 216046

### Mullion/Transom

Factory Length	236 7/32" (6000mm)			
Execution	anodized	-	mech.	-
Moments of Inertia	Ix	892.24 cm <sup>4</sup>	Iy	92.34 cm <sup>4</sup>

### Connectors

	Connecting Profile	Cutting
Joint Connector	446001	8" (203mm)
Assembly Joint Connector	446003	8 1/16" (204.7mm)
	446004	7 27/32" (199.2mm)
Variable Joint Connector -	446005	8" (203mm)
Insert Profile -	465022	8" (203mm)

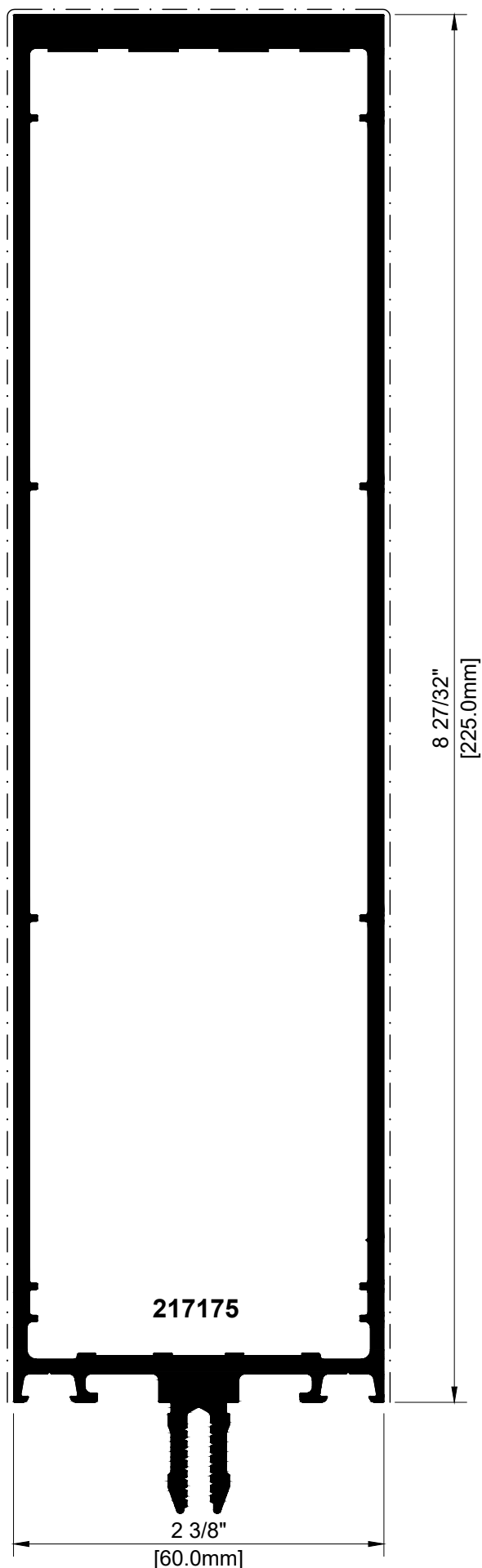
## 217175

### Mullion/Transom

Factory length	236 7/32" (6000mm)		
Execution	anodized	-	mech. -
Moments of Inertia	Ix	1291.8 cm <sup>4</sup>	Iy 109.14 cm <sup>4</sup>

### Connectors

	Connecting Profile	Cutting
Joint Connector	446001	8 7/32" (209mm)
Assembly Joint Connector	446003	8 9/32" (210.7mm)
	446004	8 7/32" (209mm)
Variable Joint Connector	-	446005 8 7/32" (209mm)
Insert Profile	-	465022 8 7/32" (209mm)



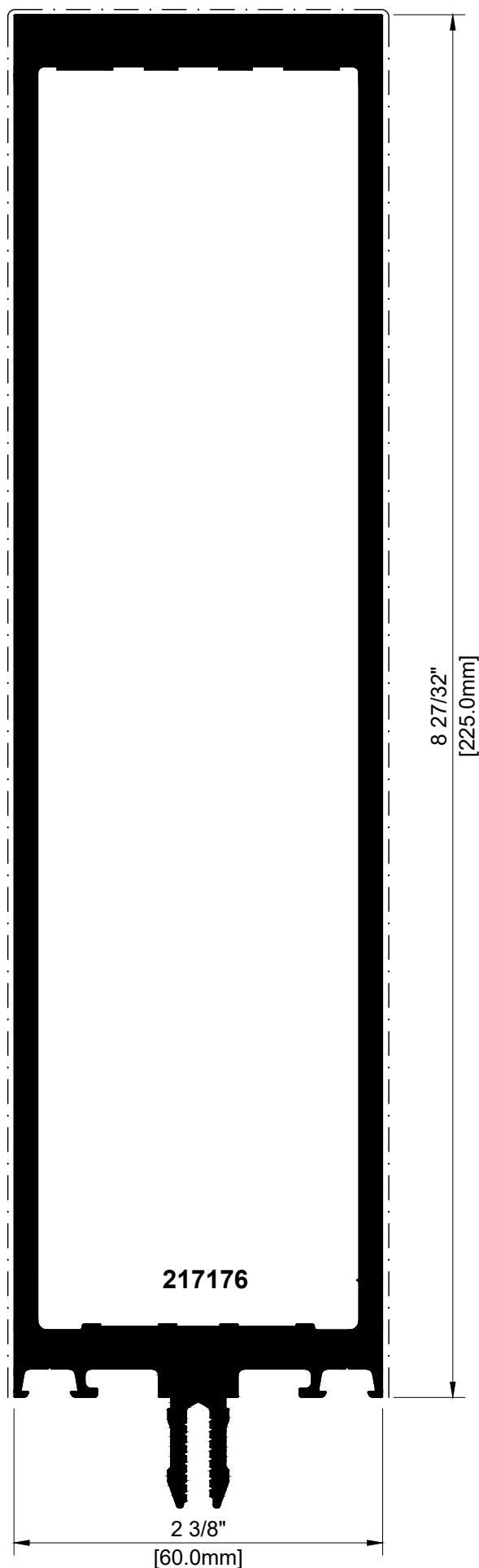
## 217176

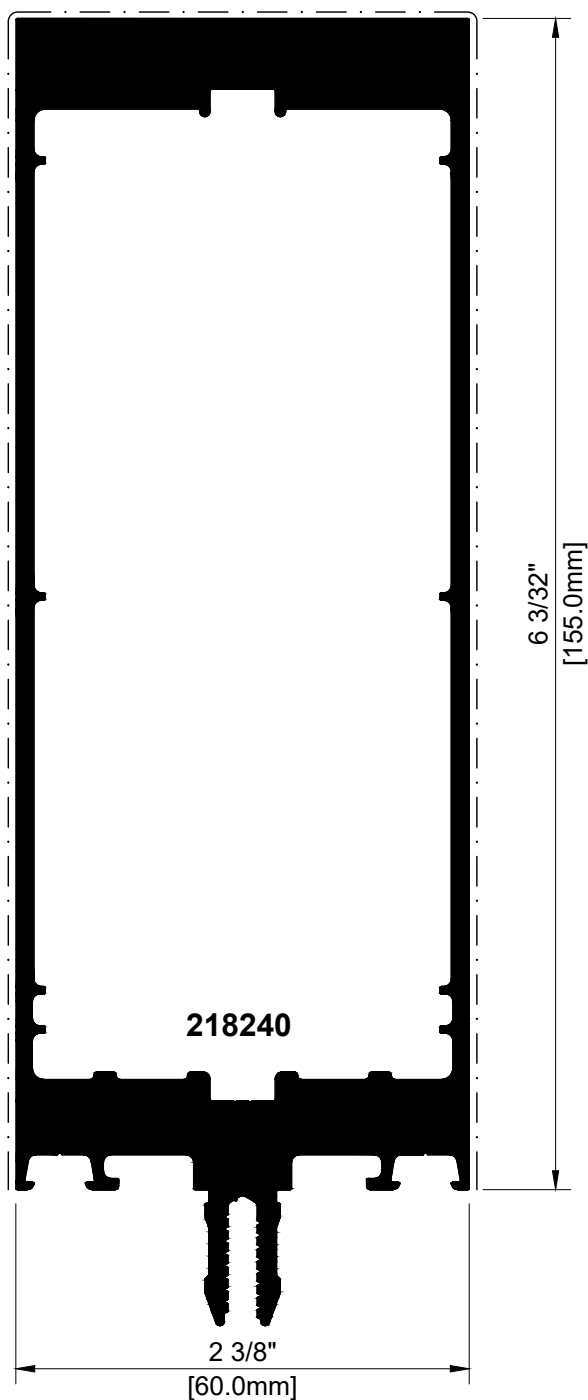
### Mullion/Transom

Factory Length	236 7/32" (6000mm)			
Execution	anodized	-	mech.	-
Moments of Inertia	Ix	1886.60 cm <sup>4</sup>	Iy	156.20 cm <sup>4</sup>

### Connectors

	Connecting Profile	Cutting
Joint Connector	446001	8 7/32" (209mm)
Assembly Joint Connector	446003	8 9/32" (210.7mm)
	446004	8 7/32" (209mm)
Variable Joint Connector	-	446005 8 7/32" (209mm)
Insert Profile	-	465022 8 7/32" (209mm)





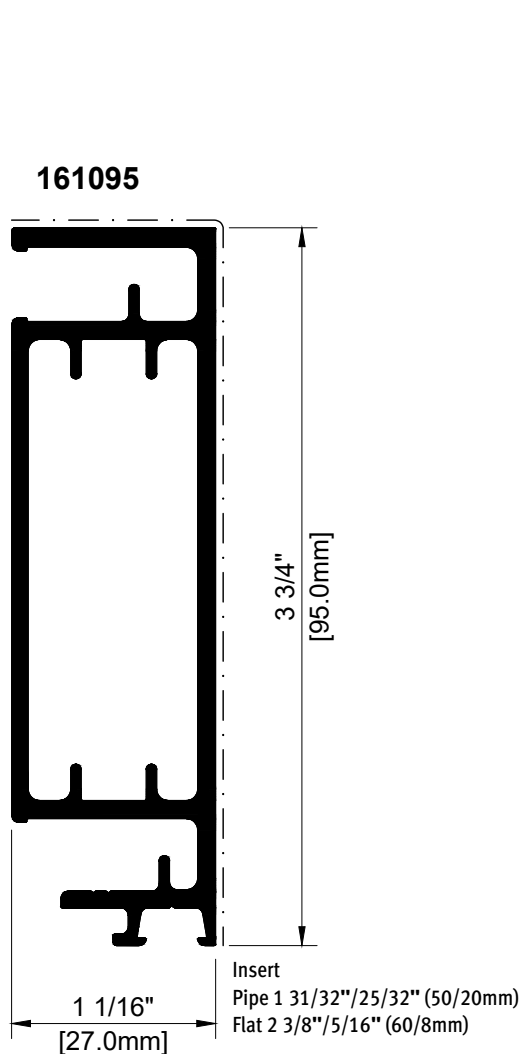
## 218240

### Mullion/Transom

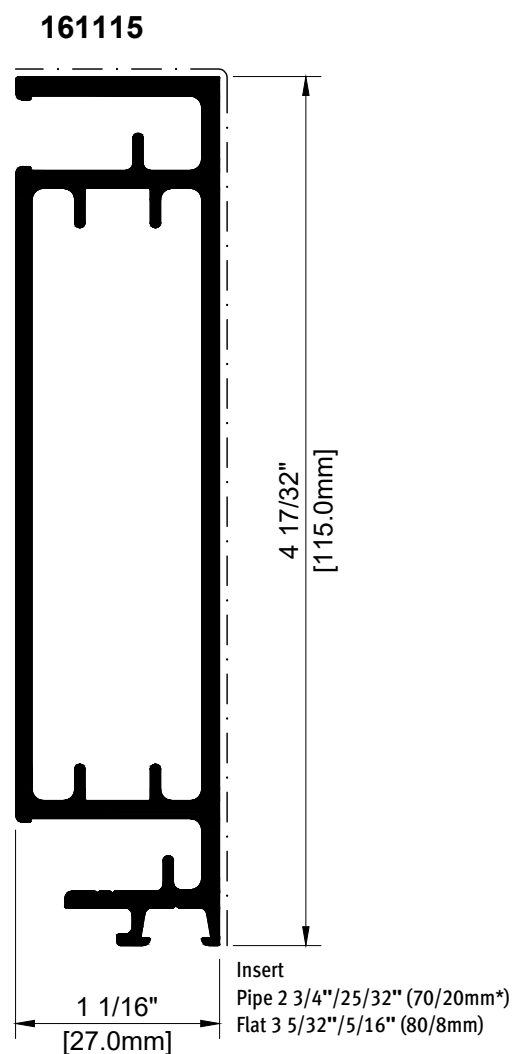
Factory Length	236 7/32" (6000mm)			
Execution	anodized	-	mech.	-
Moments of Inertia	Ix	845 cm <sup>4</sup>	Iy	94.22 cm <sup>4</sup>

### Connectors

	Connecting Profile	Cutting
Joint Connector	445001	5 15/32" (139mm)
Assembly Joint Connector	445003	5 9/16" (141.2mm)
	445004	5 15/32" (139mm)
Variable Joint Connector -	445005	5 15/32" (139mm)
Insert Profile -	465011	5 1/2" (140mm)

**161095****Mounting Mullion**

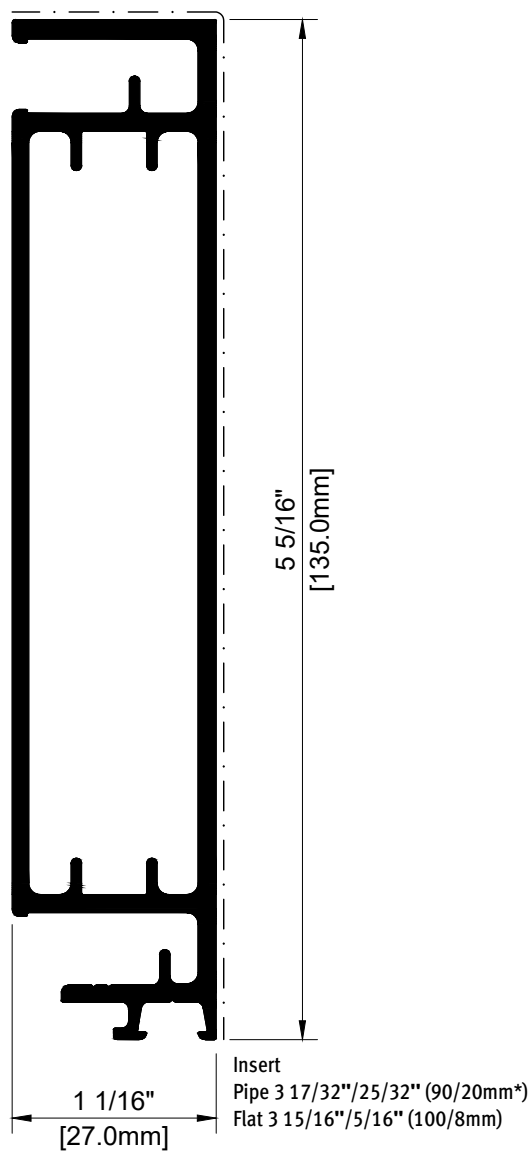
Factory Length	236 7/32" (6000mm)			
Execution	annodized	14 3/32" (358mm)	mech.	4 13/16" (122mm)
Moments of Inertia	lx	60.26 cm <sup>4</sup>	ly	6.54 cm <sup>4</sup>

**161115****Mounting Mullion**

Factory Length	236 7/32" (6000mm)			
Execution	annodized	15 43/64" (398mm)	mech.	5 19/32" (142mm)
Moments of Inertia	lx	102.42 cm <sup>4</sup>	ly	7.96 cm <sup>4</sup>



161135



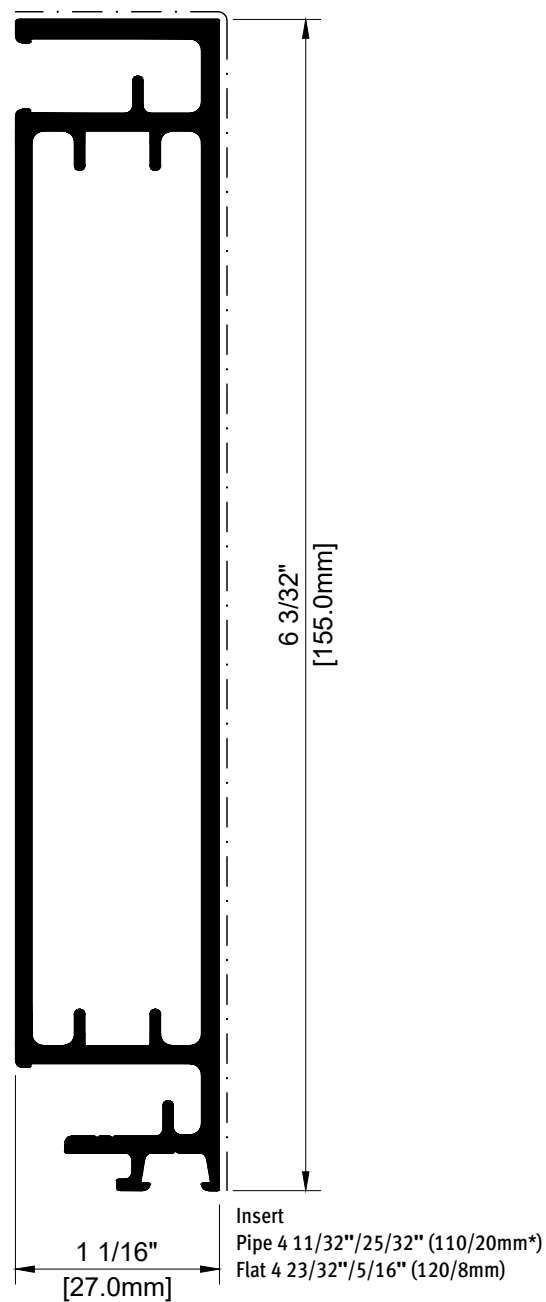
161135

## Mounting Mullion

Factory Length	236 7/32" (6000mm)			
Execution	anodized	18 1/32" (458mm)	mech.	6 3/8" (162mm)
Moments of Inertia	Ix	159.28 cm <sup>4</sup>	Iy	9.34 cm <sup>4</sup>

\* No profile available, that is customary in trade

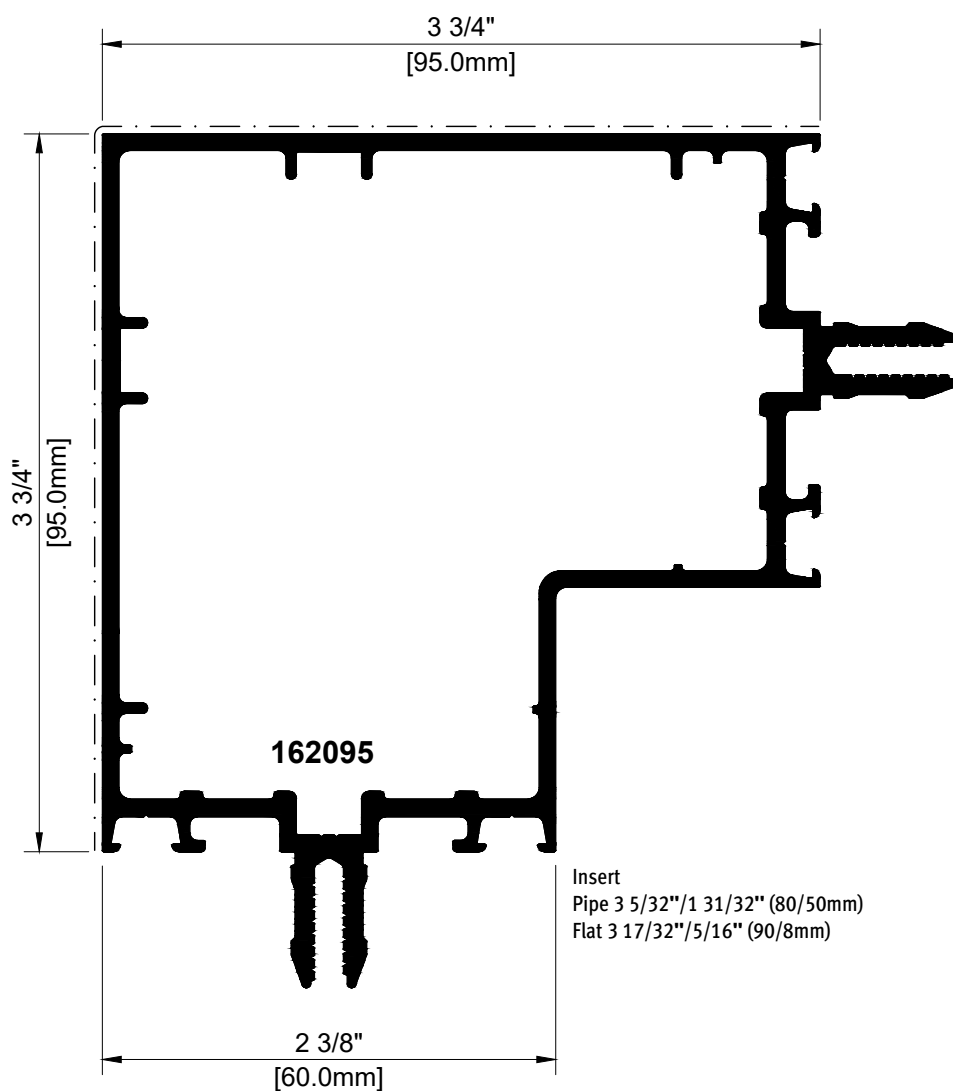
161155



161155

## Mounting Mullion

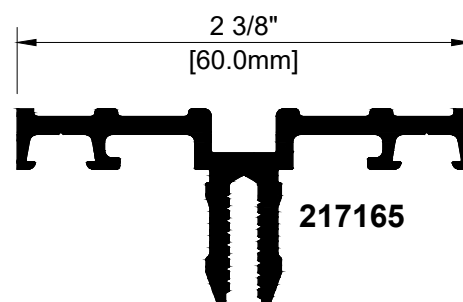
Factory Length	236 7/32" (6000mm)			
Execution	anodized	18 13/16" (478mm)	mech.	7 5/32" (182mm)
Moments of Inertia	Ix	233.37 cm <sup>4</sup>	Iy	10.77 cm <sup>4</sup>



## 162095

### Mounting Mullion

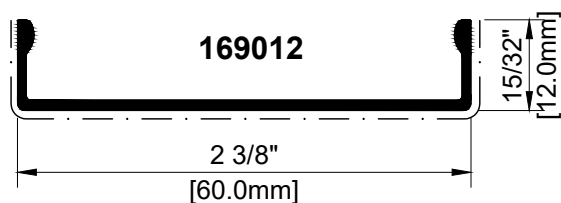
Factory Length	236 7/32" (6000mm)			
Execution	annodized	24 31/64" (622mm)	mech.	10 1/4" (260mm)
Moments of Inertia	Ix	191.77 cm <sup>4</sup>	Iy	107.96 cm <sup>4</sup>



## 217165

### Basic Profile for Steel

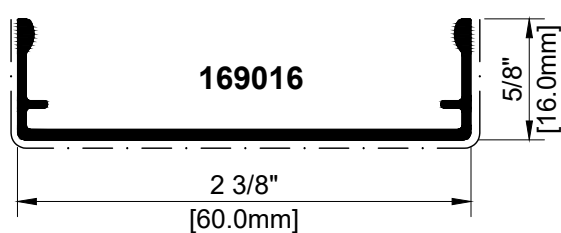
Factory Length	236 7/32" (6000mm)
----------------	--------------------



## 169012

## Cover Plate

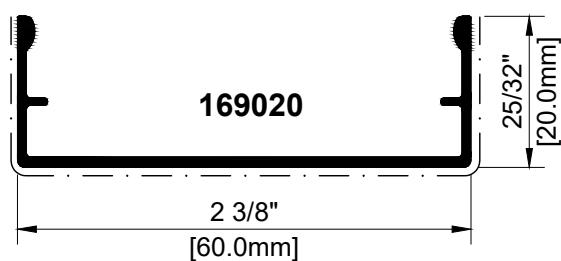
Factory Length	236 $\frac{7}{32}"$ (6000mm)		
Execution	anodized	$6 \frac{1}{2}"$ (165mm)	mech. $3 \frac{5}{16}"$ (84mm)



## 169016

## Cover Plate

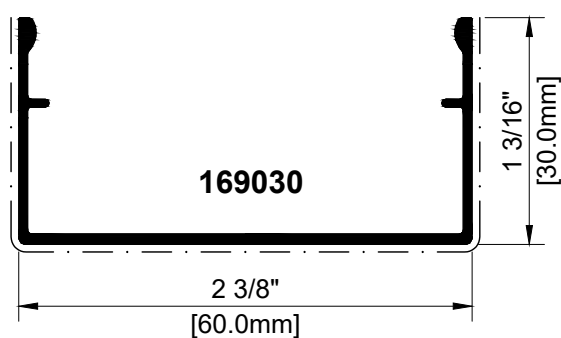
Factory Length	236 $\frac{7}{32}"$ (6000mm)		
Execution	anodized	$7 \frac{17}{32}"$ (191mm)	mech. $3 \frac{5}{8}"$ (92mm)



## 169020

## Cover Plate

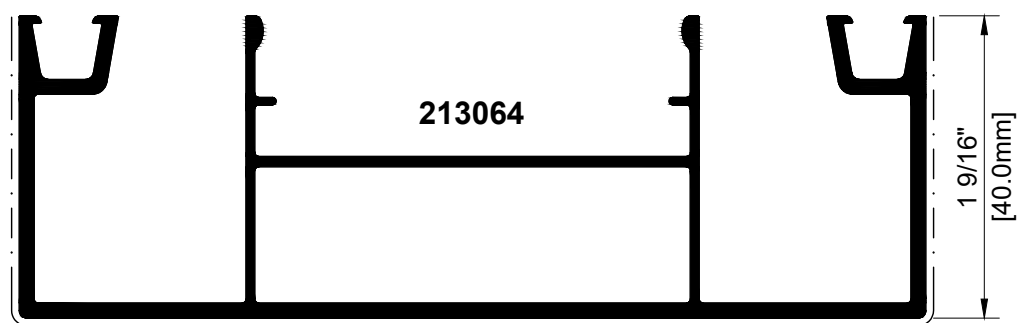
Factory Length	236 $\frac{7}{32}"$ (6000mm)		
Execution	anodized	$8 \frac{5}{32}"$ (207mm)	mech. $3 \frac{15}{16}"$ (100mm)



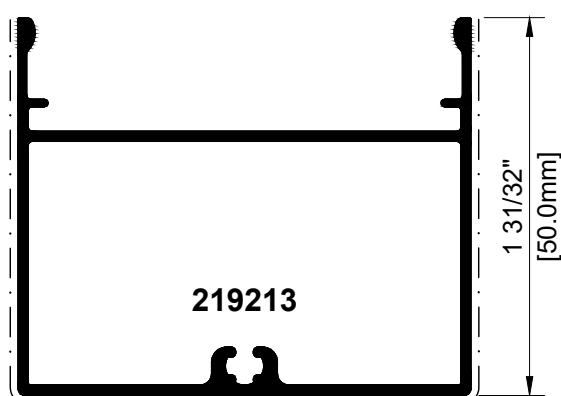
## 169030

## Cover Plate

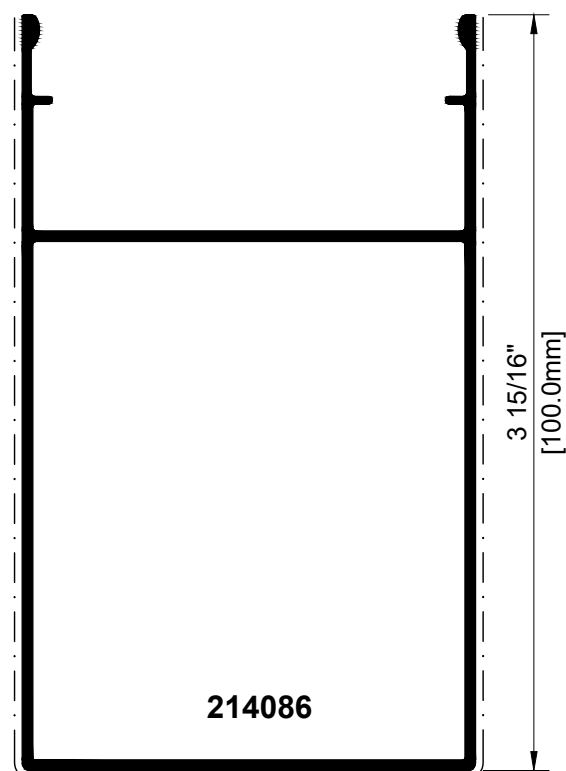
Factory Length	236 $\frac{7}{32}"$ (6000mm)		
Execution	anodized	$9 \frac{23}{32}"$ (247mm)	mech. $4 \frac{23}{32}"$ (120mm)

**213064****Cover Plate**

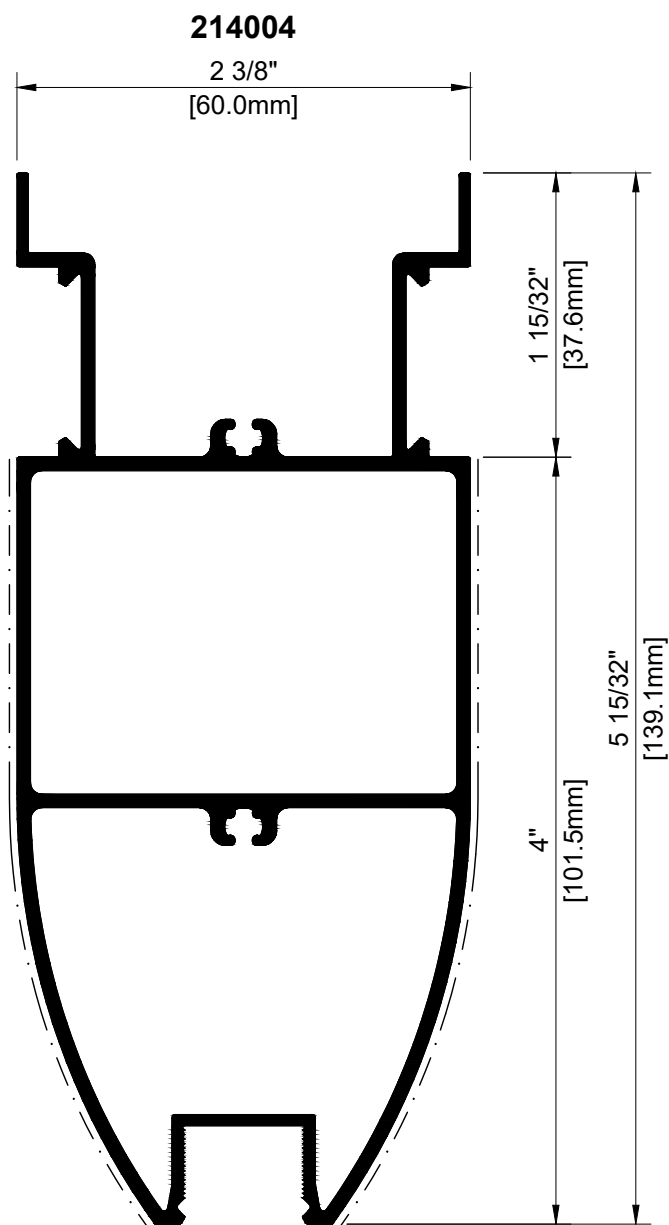
Factory Length	236 7/32" (6000mm)		
Execution	anodized	-	mech. -

**219213****Cover Plate**

Factory Length	236 7/32" (6000mm)		
Execution	anodized	-	mech. -

**214086****Cover Plate**

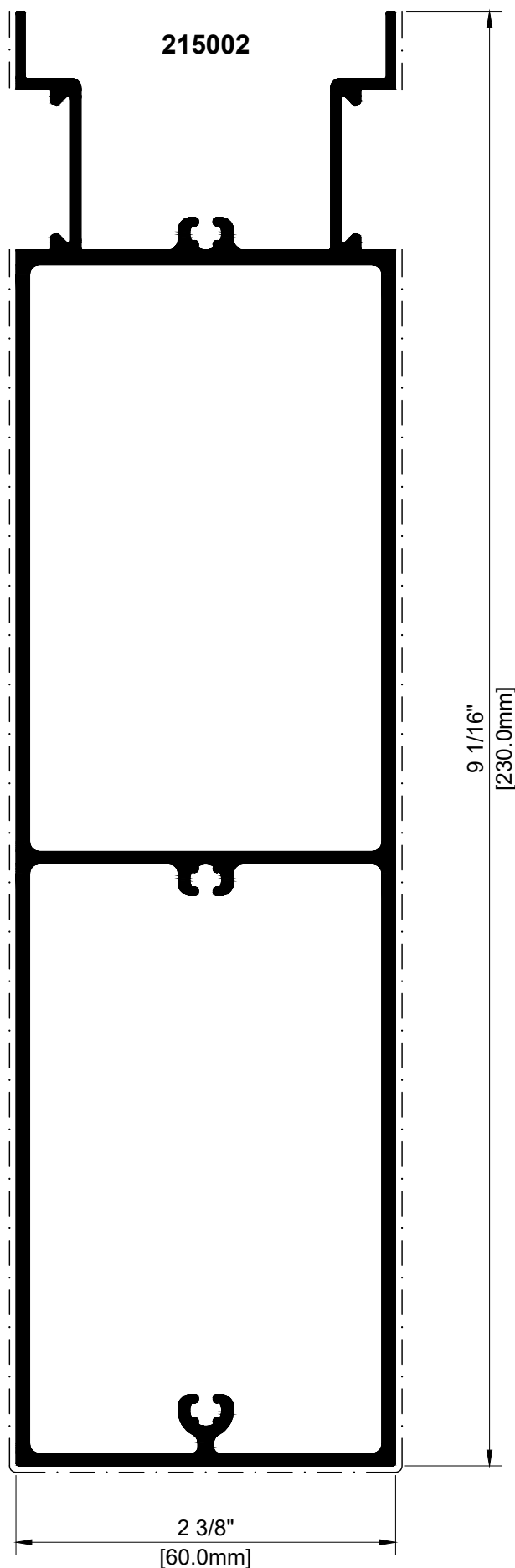
Factory Length	236 7/32" (6000mm)		
Execution	anodized	-	mech. -



## 214004

### Bullnose Profile

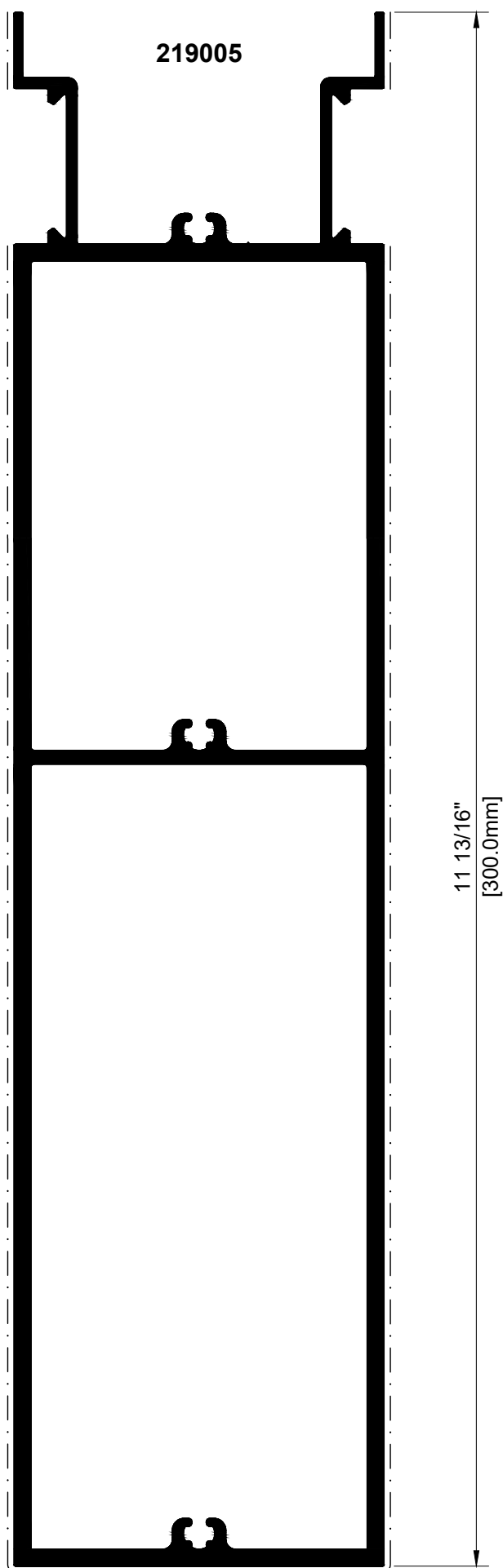
Factory Length	236 7/32" (6000mm)		
Execution	anodized	-	mech. -
Moments of Inertia	I <sub>x</sub>	-	I <sub>y</sub> -



## 215002

### Bullnose Profile

Factory length	236 7/32" (6000mm)		
Execution	anodized	-	mech. -
Moments of Inertia	I <sub>x</sub>	-	I <sub>y</sub> -

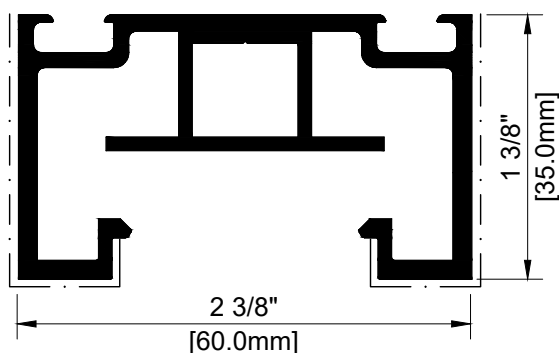


## 219005

### Bullnose Profile

Factory Length	236 7/32" (6000mm)		
Execution	anodized	-	mech. -
Moments of Inertia	I <sub>x</sub>	-	I <sub>y</sub> -

## 219203

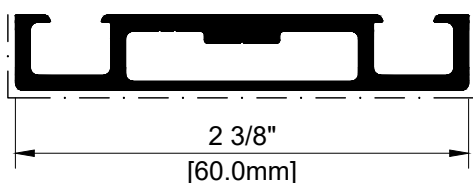


## 219203

## Pressure Strip

Factory Length	236 7/32" (6000mm)		
Execution	anodized	-	mech. -

## 169210

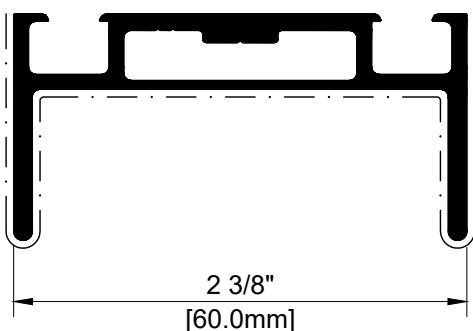


## 169210

## Pressure Strip

Factory Length	236 7/32" (6000mm)		
Execution	anodized	7 1/8" (181mm)	mech. 3 5/32" (80mm)

## 169230

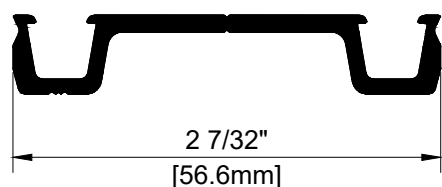


## 169230

## Pressure Strip

Factory Length	236 7/32" (6000mm)		
Execution	anodized	10 3/16" (259mm)	mech. 6 7/32" (158mm)

## 169300



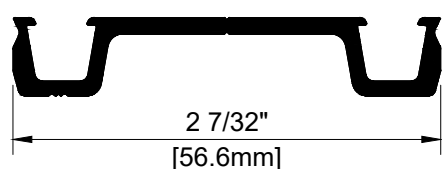
## 169300

Punched Ø1/4" (Ø6mm)

## Pressure Strip

Factory Length	236 7/32" (6000mm)		
----------------	--------------------	--	--

## 169300 L\*



## 169300 L\*

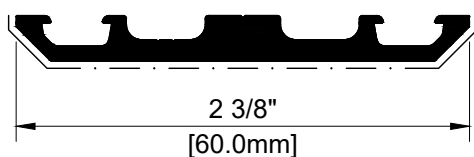
Perforated, oblong hole 9/32"x25/32"(7 x 20 mm)

## Pressure Strip

Factory Length	236 7/32" (6000mm)		
----------------	--------------------	--	--



## 169301

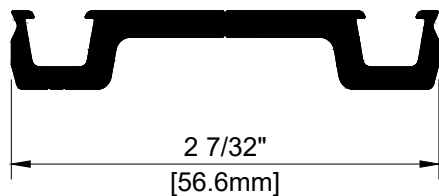


## 169301

## Pressure Strip

Factory Length	236 7/32" (6000mm)		
Execution	anodized	6 3/32" (155mm)	mech. 2 5/8" (67mm)

## 169302



## 169302

Punched  $\phi 1/4"$  ( $\phi 6\text{mm}$ )

## Pressure Strip

Factory Length	236 7/32" (6000mm)		
----------------	--------------------	--	--

## 169309

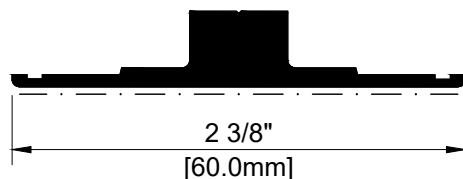


## 169309

## Pressure Strip

Factory Length	236 7/32" (6000mm)		
----------------	--------------------	--	--

## 169313

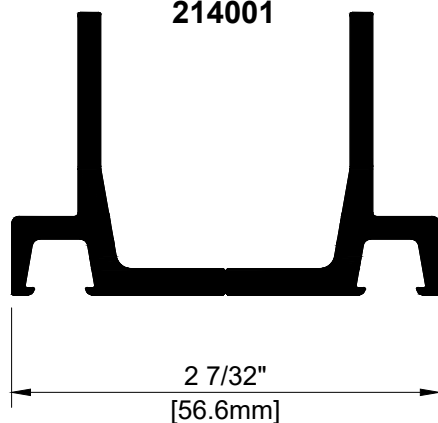


## 169313

## Pressure Strip

Factory Length	236 7/32" (6000mm)		
Execution	anodized	5 1/2" (140mm)	mech. 2 3/8" (60mm)

## 214001

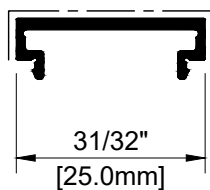


## 214001

## Pressure Strip

Factory Length	236 7/32" (6000mm)		
----------------	--------------------	--	--

### 214002

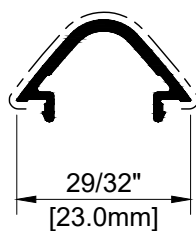


### 214002

#### Cover Strip

Factory Length	236 7/32" (6000mm)
----------------	--------------------

### 214003

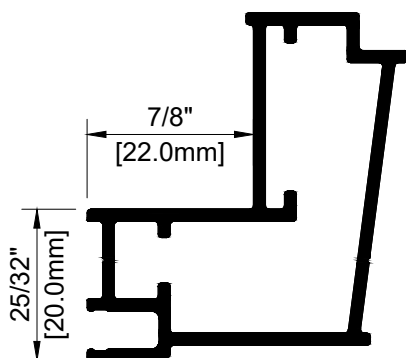


### 214003

#### Cover Strip

Factory Length	236 7/32" (6000mm)			
Execution	anodized	6 3/32" (155mm)	mech.	2 5/8" (67mm)

### 212150

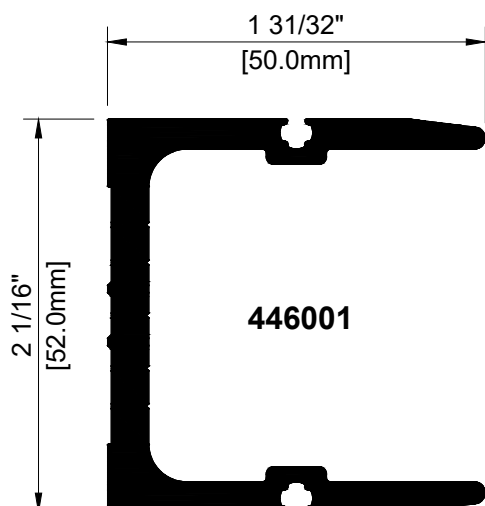


### 212150

#### Spandrel Profile

Factory Length	236 7/32" (6000mm)
----------------	--------------------

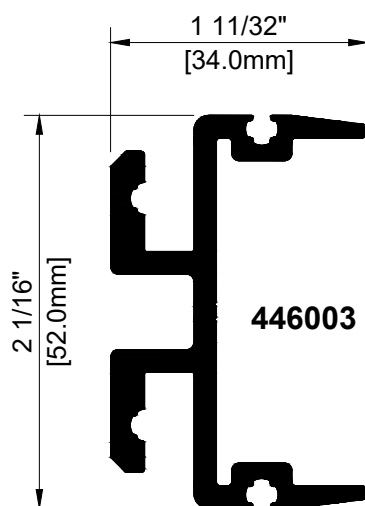
### 446001



### 446001

#### Joint Connector

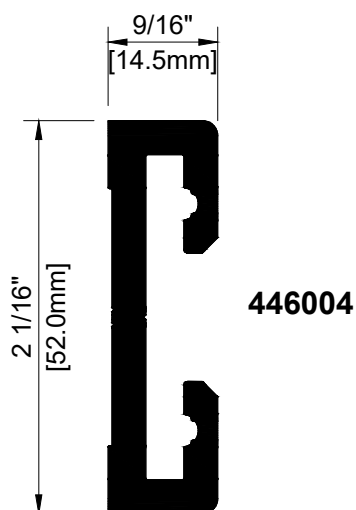
Factory Length	236 7/32" (6000mm)
----------------	--------------------



446003

Joint Connector

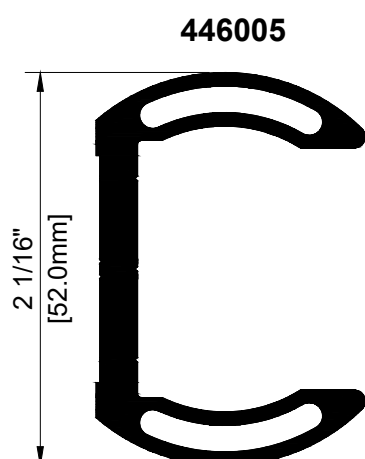
Factory Length	236 $\frac{7}{32}$ " (6000mm)
----------------	-------------------------------



446004

Joint Connector

Factory Length	236 $\frac{7}{32}$ " (6000mm)
----------------	-------------------------------



446005

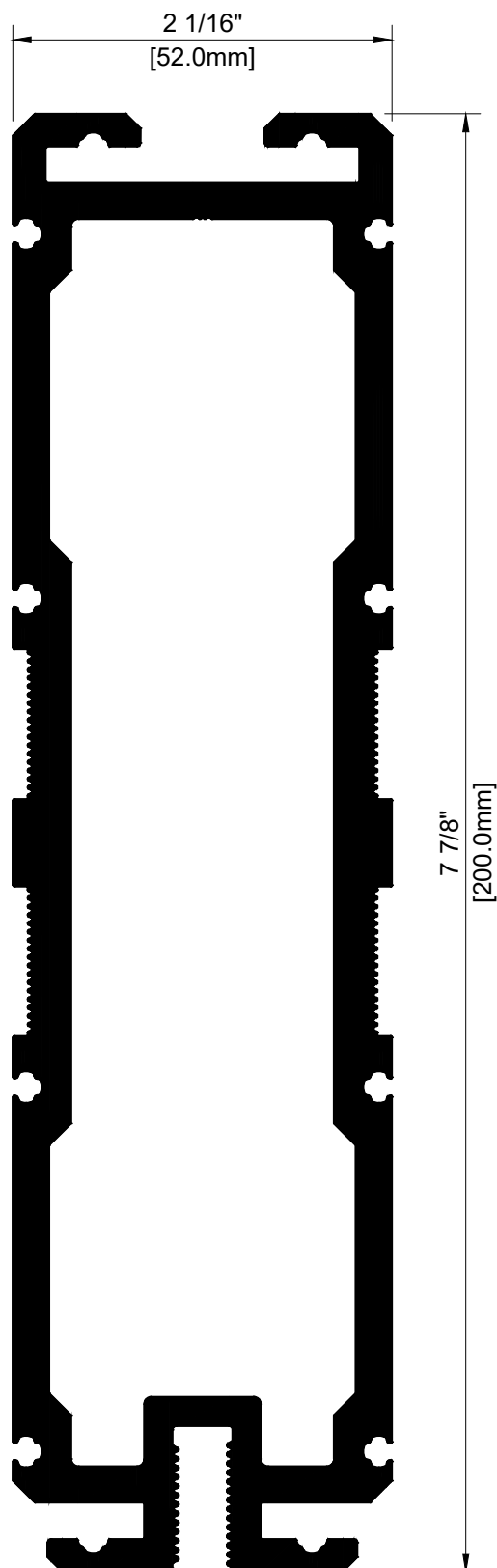
Joint Connector

Factory Length	236 $\frac{7}{32}$ " (6000mm)
----------------	-------------------------------

446005 2\*

Joint Connector

Factory Length	236 $\frac{7}{32}$ " (6000mm)
----------------	-------------------------------



## 465022

### Insert Profile

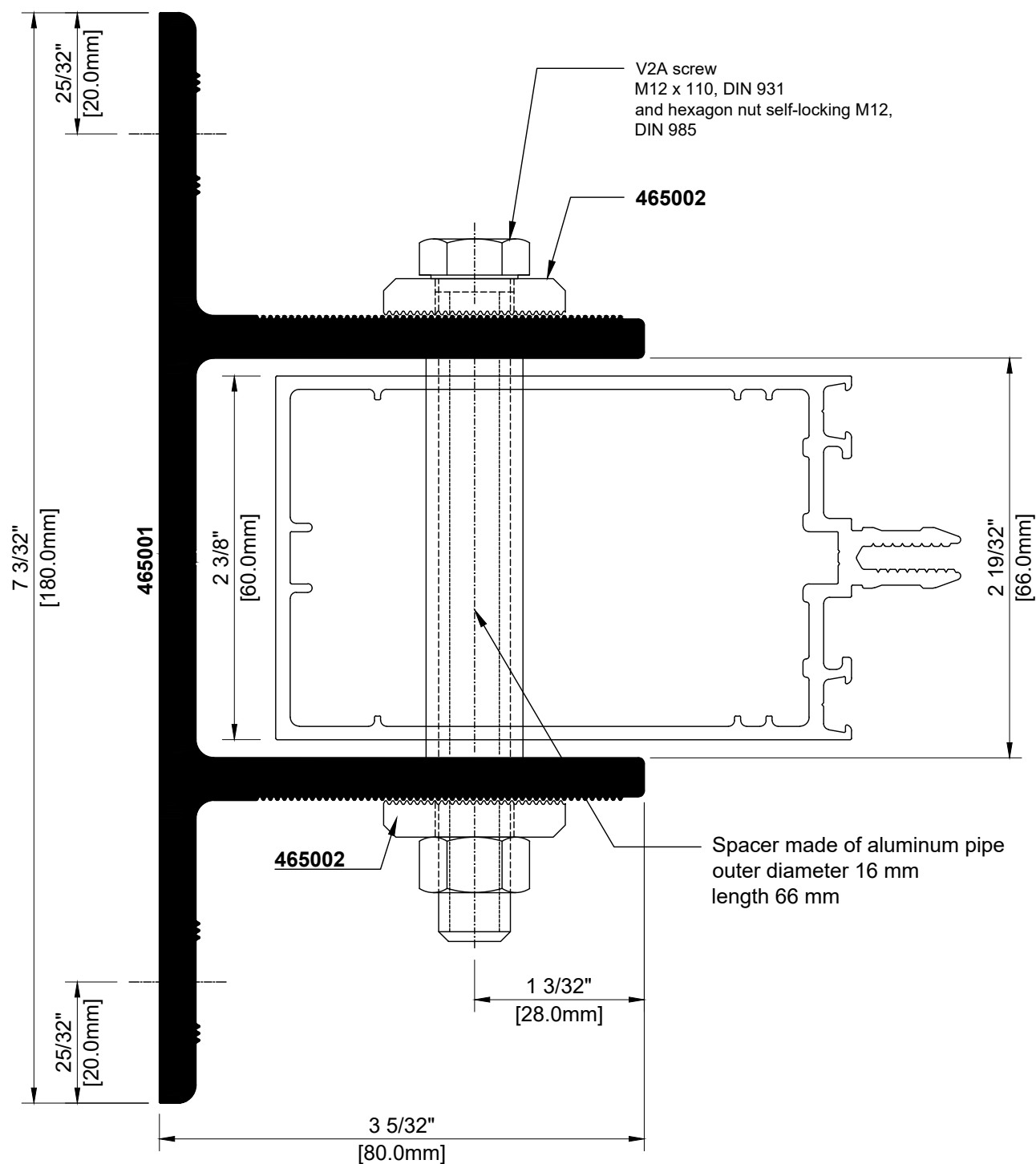
Also usable as joint connector and assembly joint connector

Please check mullion profile 465022 and 160055 for actual dimensions before cutting 465022.

### Cutting Dimensions in mm for Transom Profile

160055	160075	160095	160115	160135	160155	160175	160195	160215
	*					*		
40	60	80	100	120	140	160	180	200
-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5

\*Upon request



#### 465001

##### Curtain Wall Connection

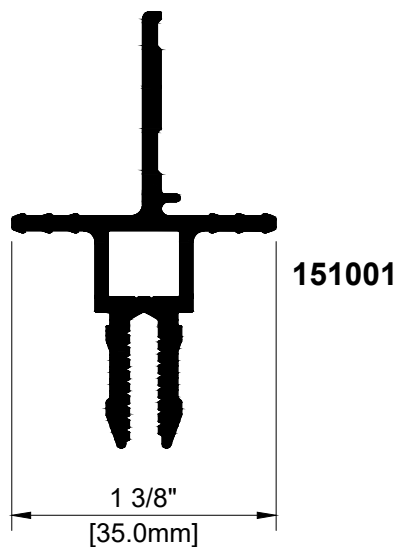
Factory Length	236 7/32" (6000mm)
----------------	--------------------

#### 465002

##### Adjusting Plate

Factory Length	236 7/32" (6000mm)
----------------	--------------------

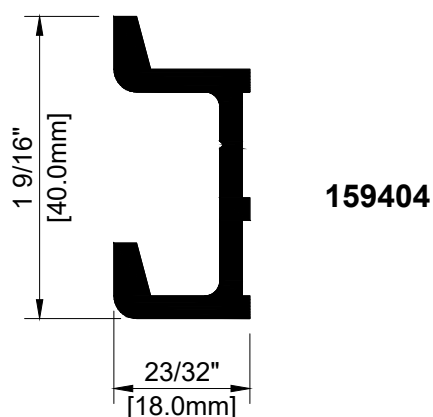
Please see processing guidelines for drill templates



## 151001

### Connecting Profile

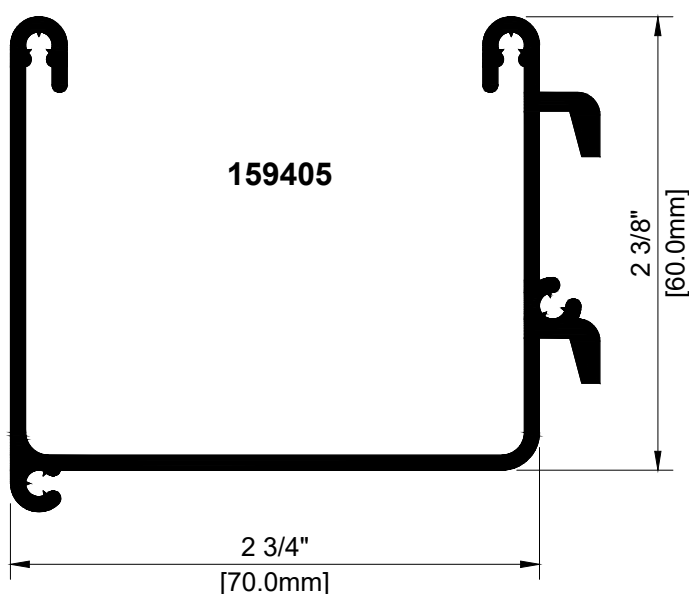
Factory Length	236 7/32" (6000mm)			
Moments of Inertia	lx	5.44 cm <sup>4</sup>	ly	1 cm <sup>4</sup>



## 159404

### Gutter Fastener

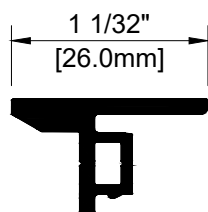
Factory Length	236 7/32" (6000mm)			
Moments of Inertia	lx	5.44 cm <sup>4</sup>	ly	1 cm <sup>4</sup>



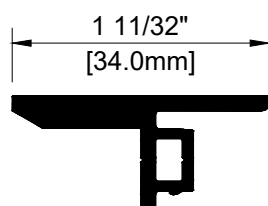
## 159405

### Gutter

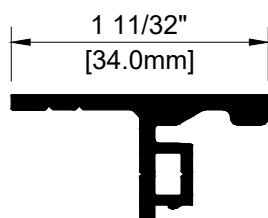
Factory Length	236 7/32" (6000mm)			
Moments of Inertia	lx	5.44 cm <sup>4</sup>	ly	1 cm <sup>4</sup>



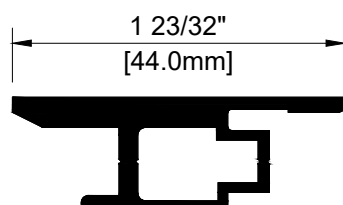
**460004**



**460005**



**460011**



**460012**

### 460004

#### Glass Seat

Factory Length	236 7/32" (6000mm)
----------------	--------------------

### 460004 2\*

#### Glass Seat

Factory Length	78 47/64" (2000mm)
----------------	--------------------

### 460005

#### Glass Seat

Factory Length	236 7/32" (6000mm)
----------------	--------------------

### 460005 2\*

#### Glass Seat

Factory Length	78 47/64" (2000mm)
----------------	--------------------

### 460011

#### Glass Seat

Factory Length	236 7/32" (6000mm)
----------------	--------------------

### 460011 2\*

#### Glass Seat

Factory Length	78 47/64" (2000mm)
----------------	--------------------

### 460012

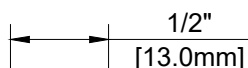
#### Glass Seat

Factory Length	236 7/32" (6000mm)
----------------	--------------------

### 460012 2\*

#### Glass Seat

Factory Length	78 47/64" (2000mm)
----------------	--------------------

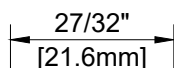


**213062**

**213062**

**Glass U-Channel**

Factory Length	236 7/32" (6000mm)
----------------	--------------------

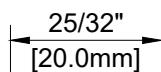


**214124 34**

**214124 34**

**Glass U-Channel**

Factory Length	236 7/32" (6000mm)
----------------	--------------------

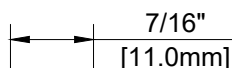


**214127**

**214127**

**Glass U-Channel**

Factory Length	236 7/32" (6000mm)
----------------	--------------------

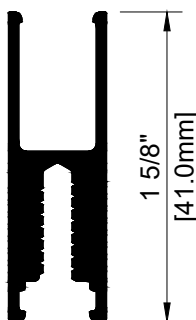


**720602 34**

**720602 34**

**Glass U-Channel**

Factory Length	236 7/32" (6000mm)
----------------	--------------------



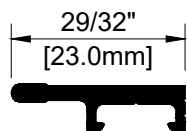
**468302**

**468302**

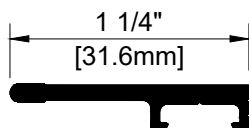
**Adapter Profile**

Factory Length	236 7/32" (6000mm)
----------------	--------------------

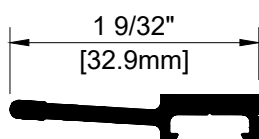




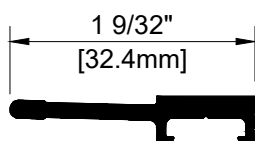
**720601 34**



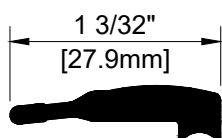
**214125 34**



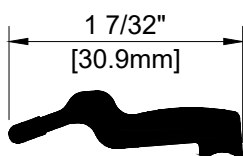
**214130**



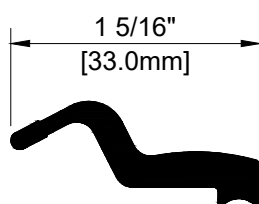
**214131**



**468304**



**468305**



**468306**

**720601 34**

**Glass Toggle**

Factory Length	236 7/32" (6000mm)
----------------	--------------------

**214125 34**

**Glass Toggle**

Factory Length	236 7/32" (6000mm)
----------------	--------------------

**214130**

**Glass Toggle**

Factory Length	236 7/32" (6000mm)
----------------	--------------------

**214131**

**Glass Toggle**

Factory Length	236 7/32" (6000mm)
----------------	--------------------

**468304**

**Glass Toggle**

Factory Length	236 7/32" (6000mm)
----------------	--------------------

**468305**

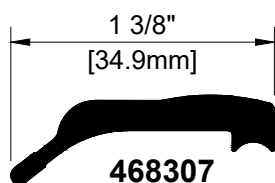
**Glass Toggle**

Factory Length	236 7/32" (6000mm)
----------------	--------------------

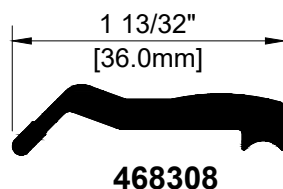
**468306**

**Glass Toggle**

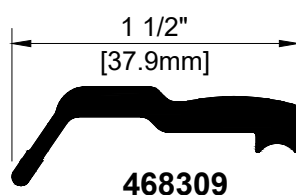
Factory Length	236 7/32" (6000mm)
----------------	--------------------

**468307****Glass Toggle**

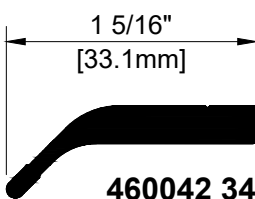
Factory Length	236 7/32" (6000mm)
----------------	--------------------

**468308****Glass Toggle**

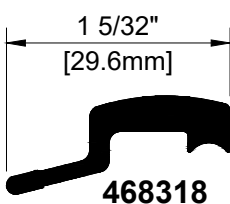
Factory Length	236 7/32" (6000mm)
----------------	--------------------

**468309****Glass Toggle**

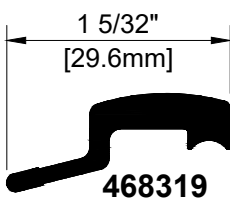
Factory Length	236 7/32" (6000mm)
----------------	--------------------

**460042 34****Glass Toggle**

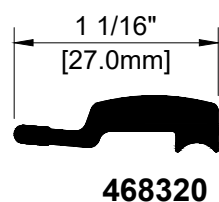
Factory Length	236 7/32" (6000mm)
----------------	--------------------

**468318****Glass Toggle**

Factory Length	236 7/32" (6000mm)
----------------	--------------------

**468319****Glass Toggle**

Factory Length	236 7/32" (6000mm)
----------------	--------------------

**468320****Glass Toggle**

Factory Length	236 7/32" (6000mm)
----------------	--------------------

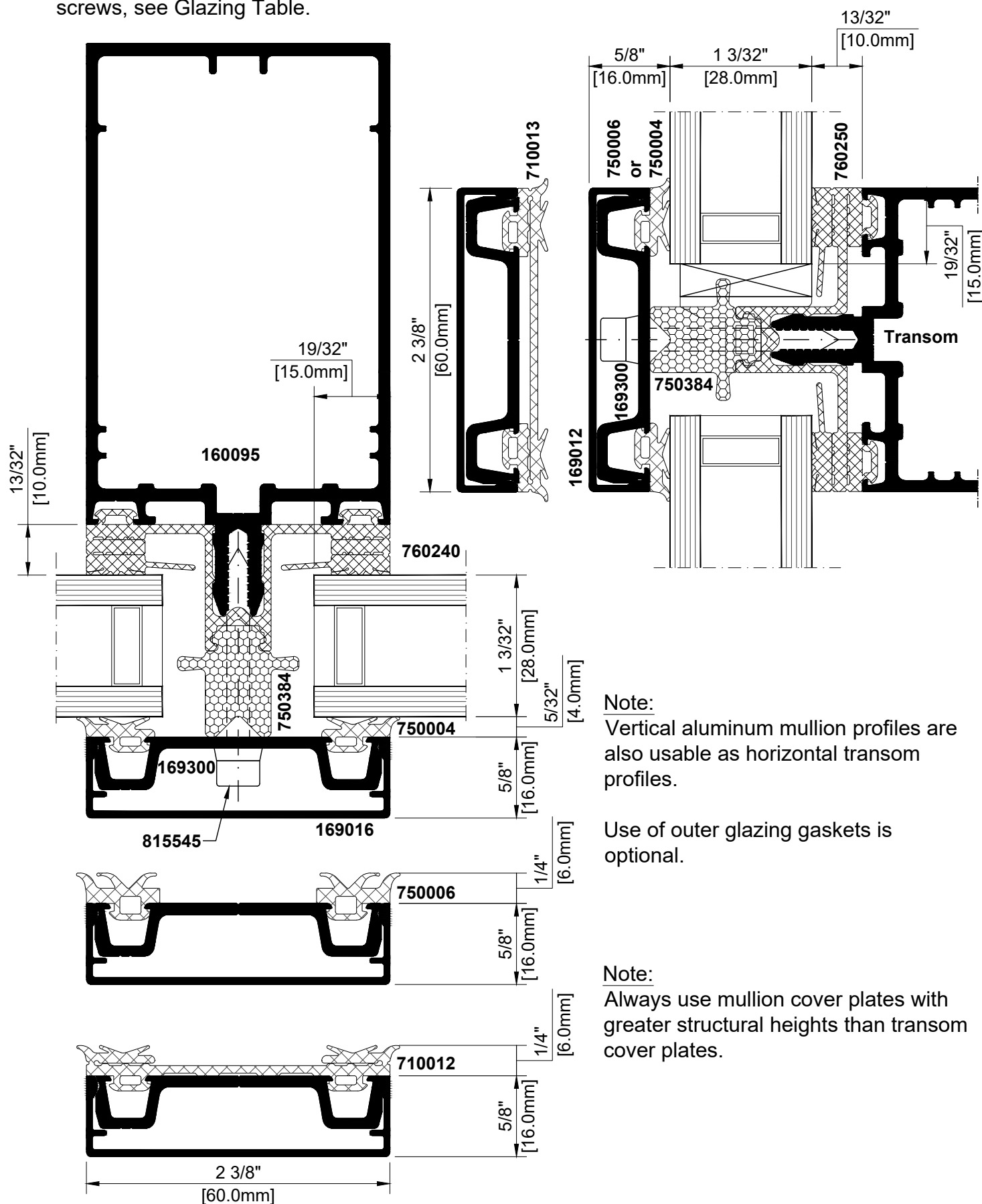
## TYPICAL SYSTEM DETAILS



## Standard Cross-Section Points

### Note:

Panel thicknesses, gaskets, insulators and screws, see Glazing Table.



### Note:

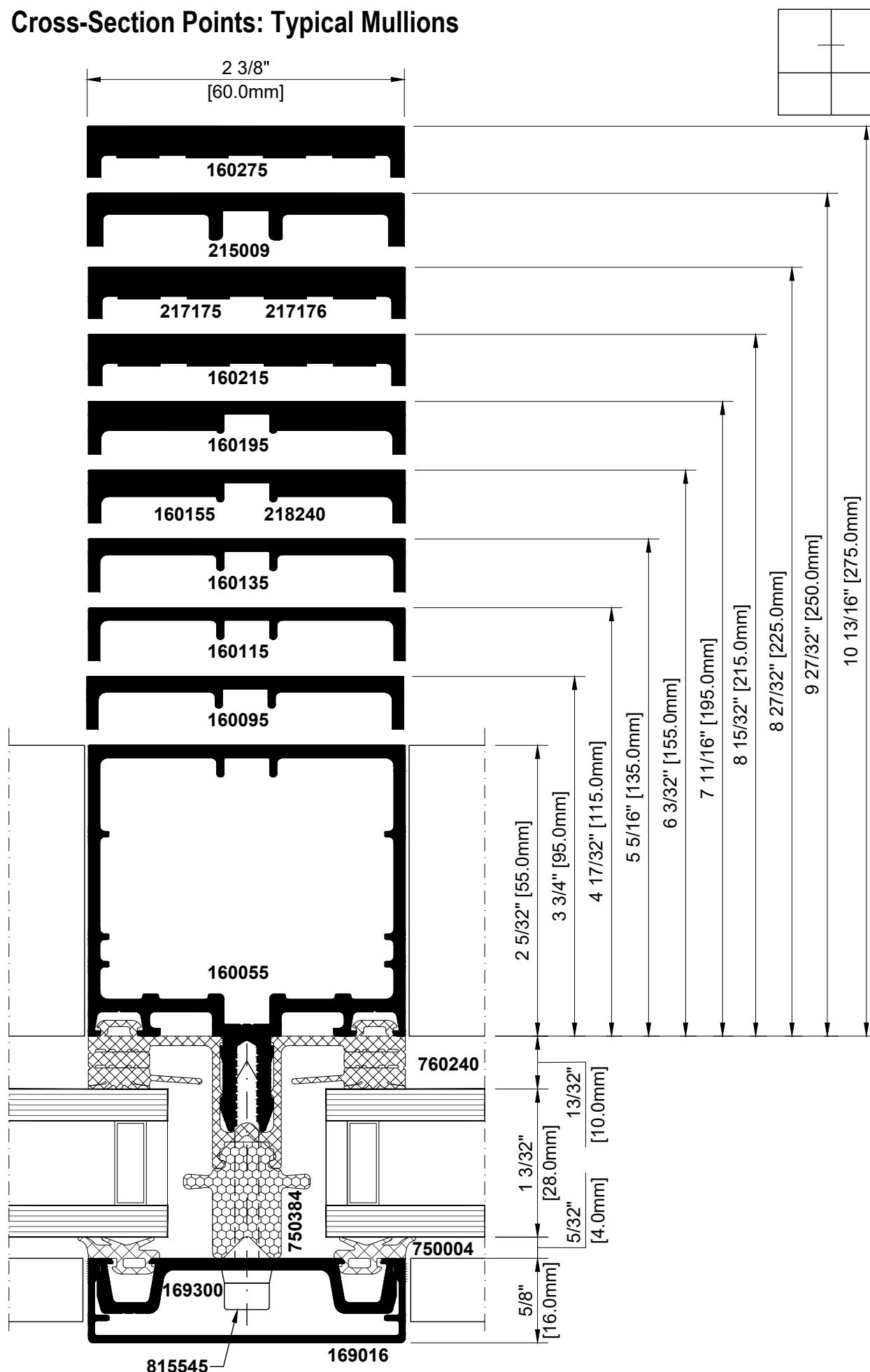
Vertical aluminum mullion profiles are also usable as horizontal transom profiles.

Use of outer glazing gaskets is optional.

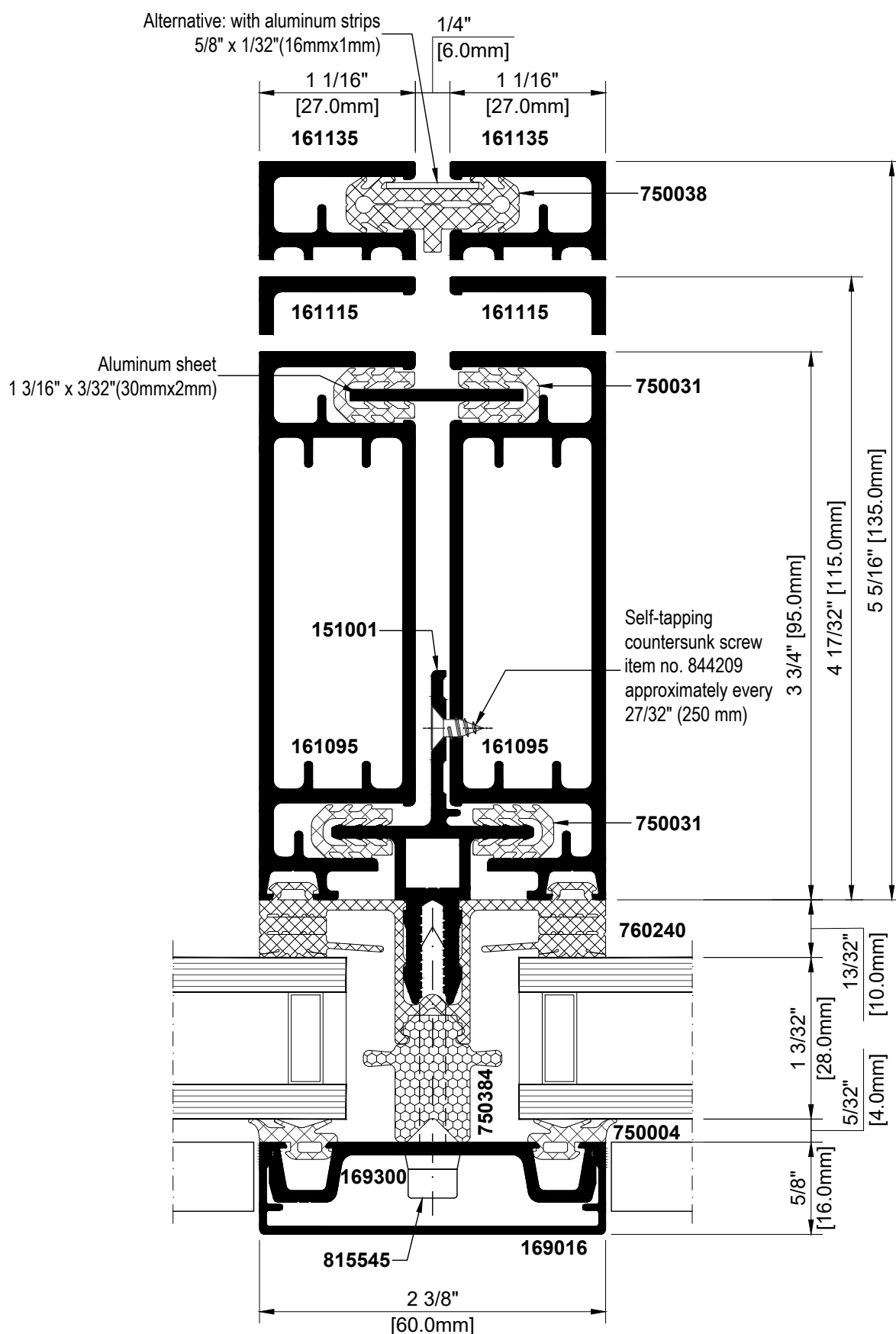
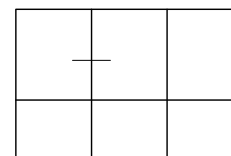
### Note:

Always use mullion cover plates with greater structural heights than transom cover plates.

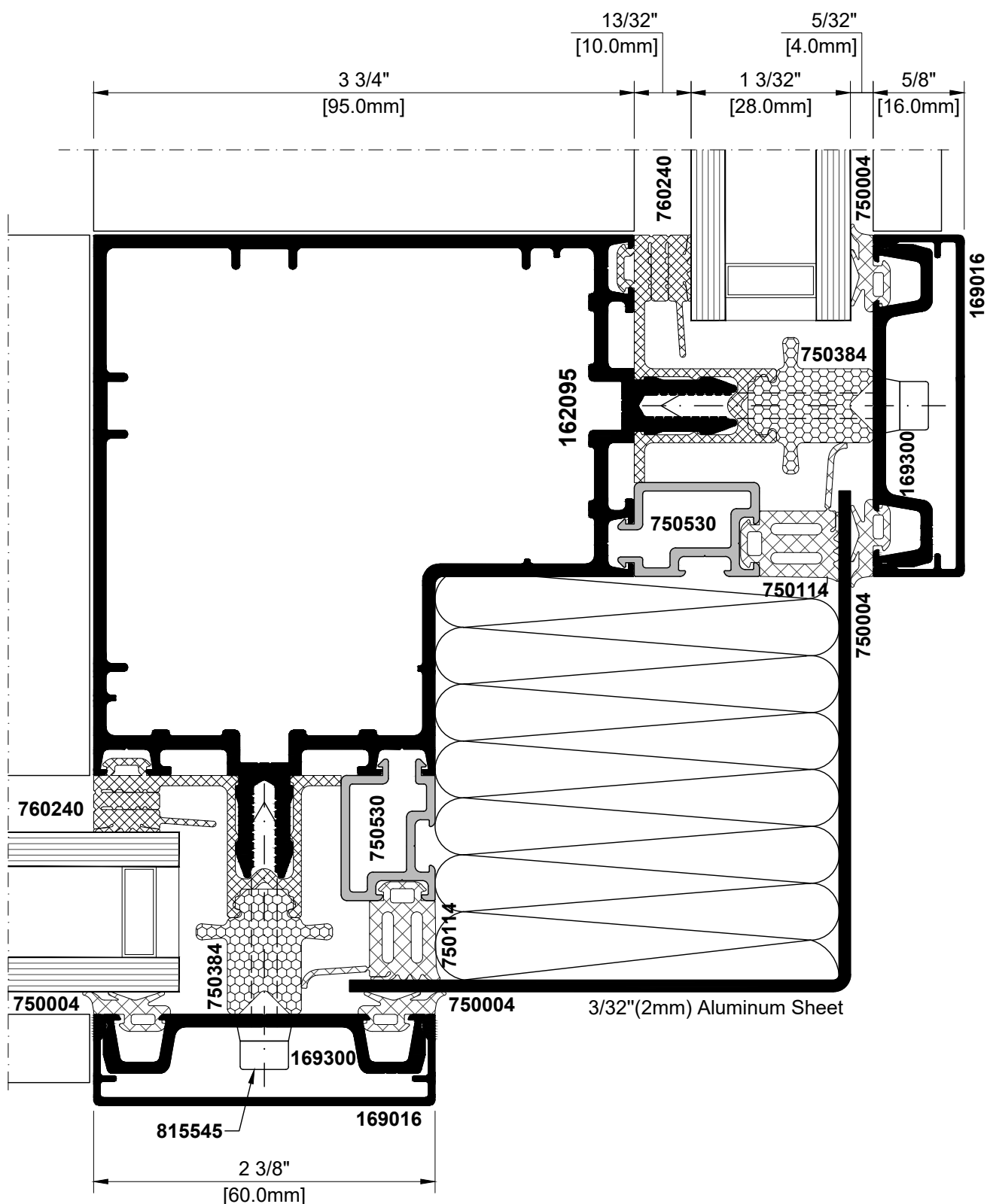
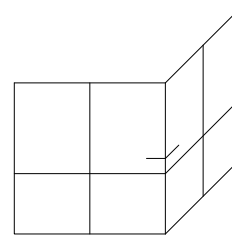
# Cross-Section Points: Typical Mullions



# Cross-Section Points: Split Mullion

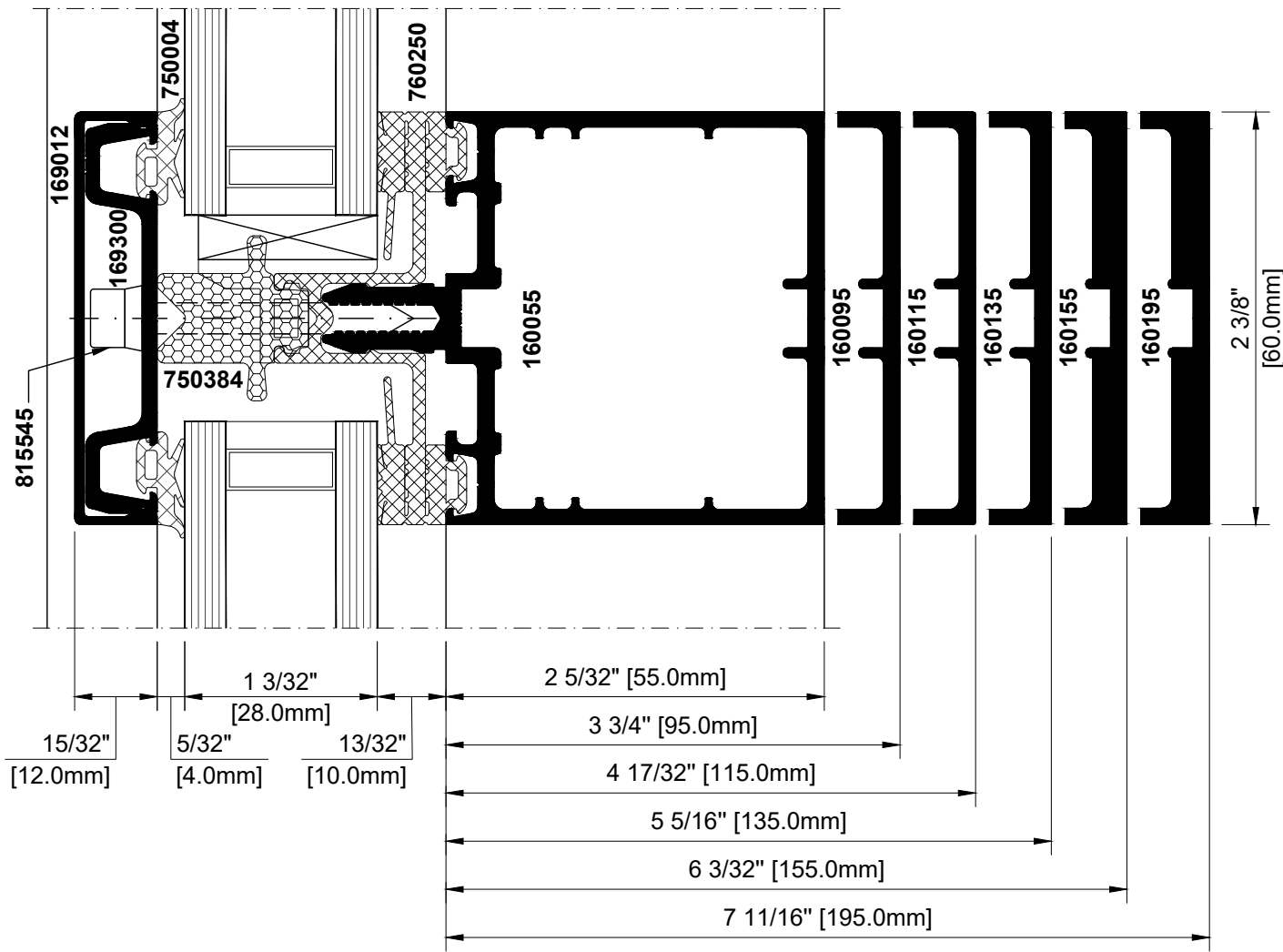
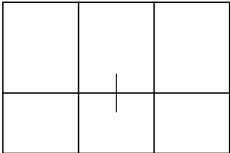


# Cross-Section Points: Corner Mullion





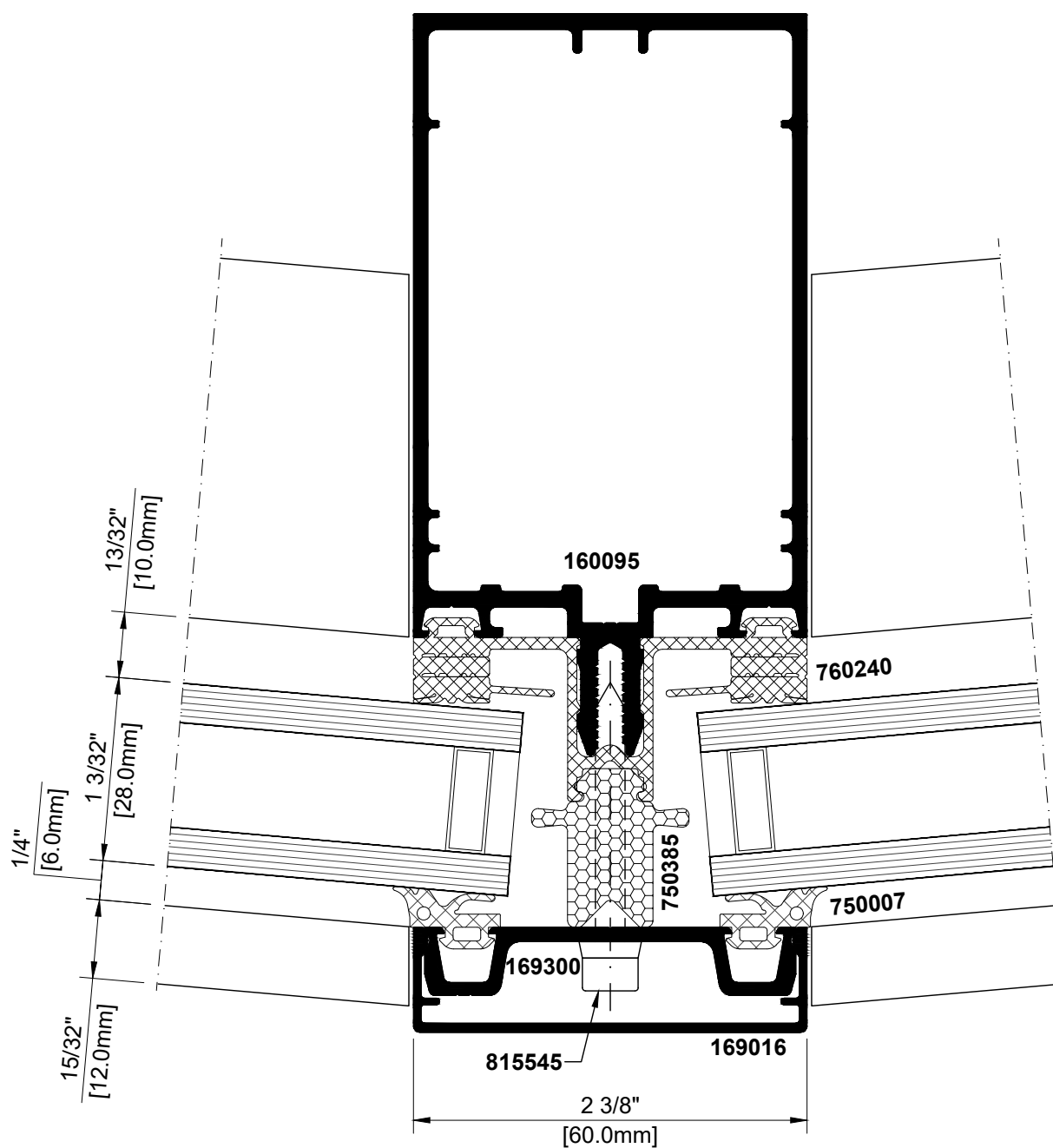
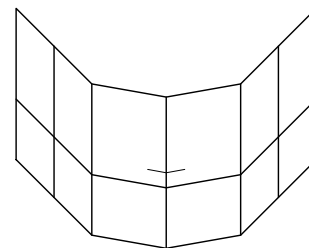
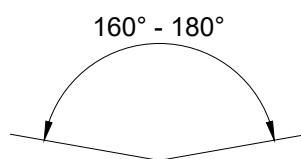
Cross-Section Point: Typical Transoms





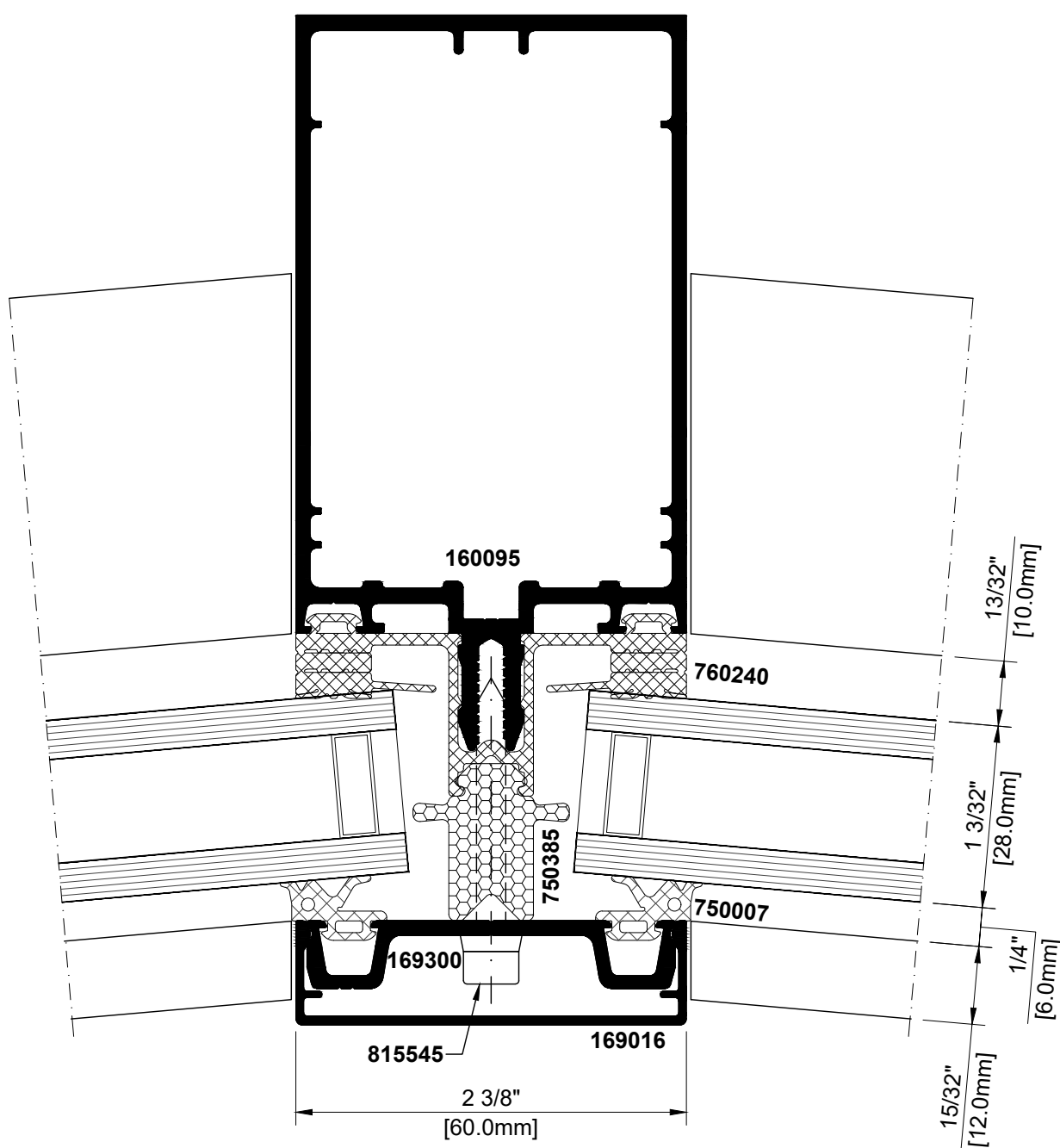
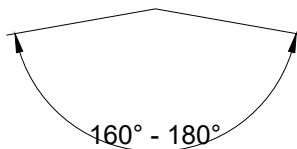
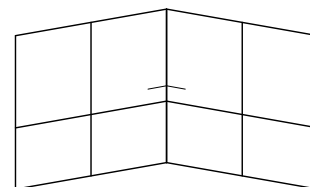
## Cross-Section Point, Outer Corner

Variable 0 - 10°

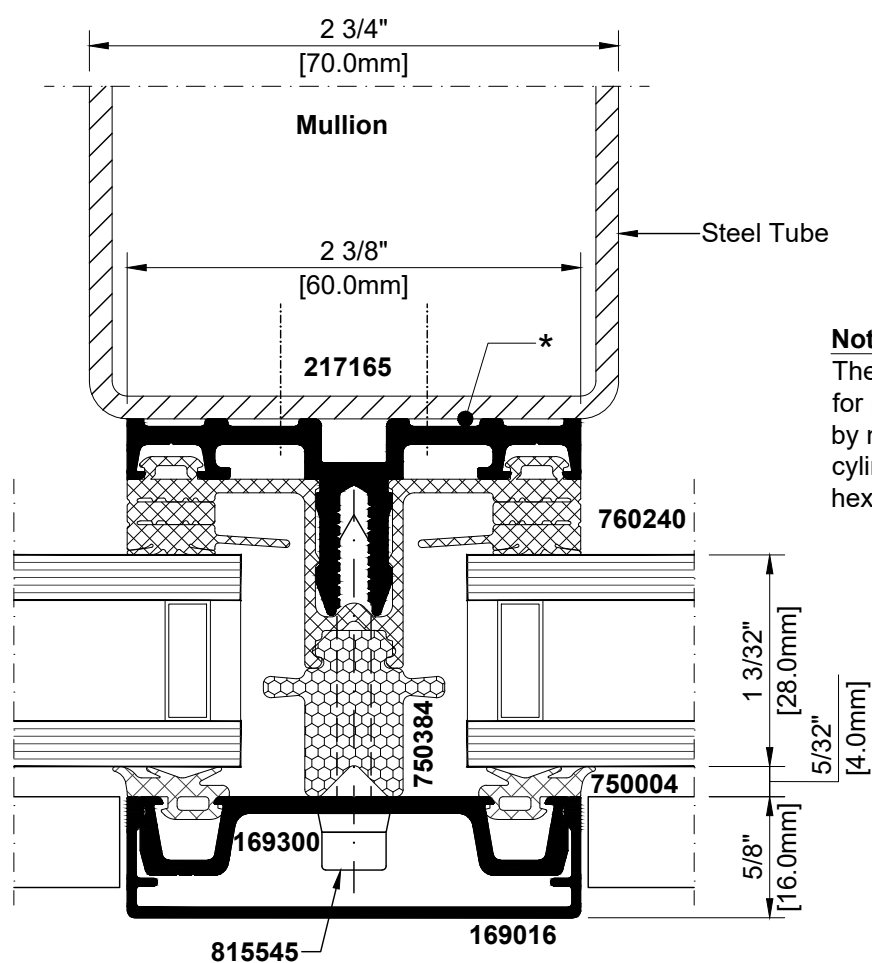
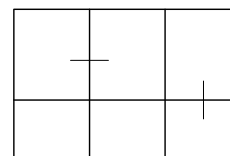


# Cross-Section Point, Inner Corner

Variable 0 - 10°



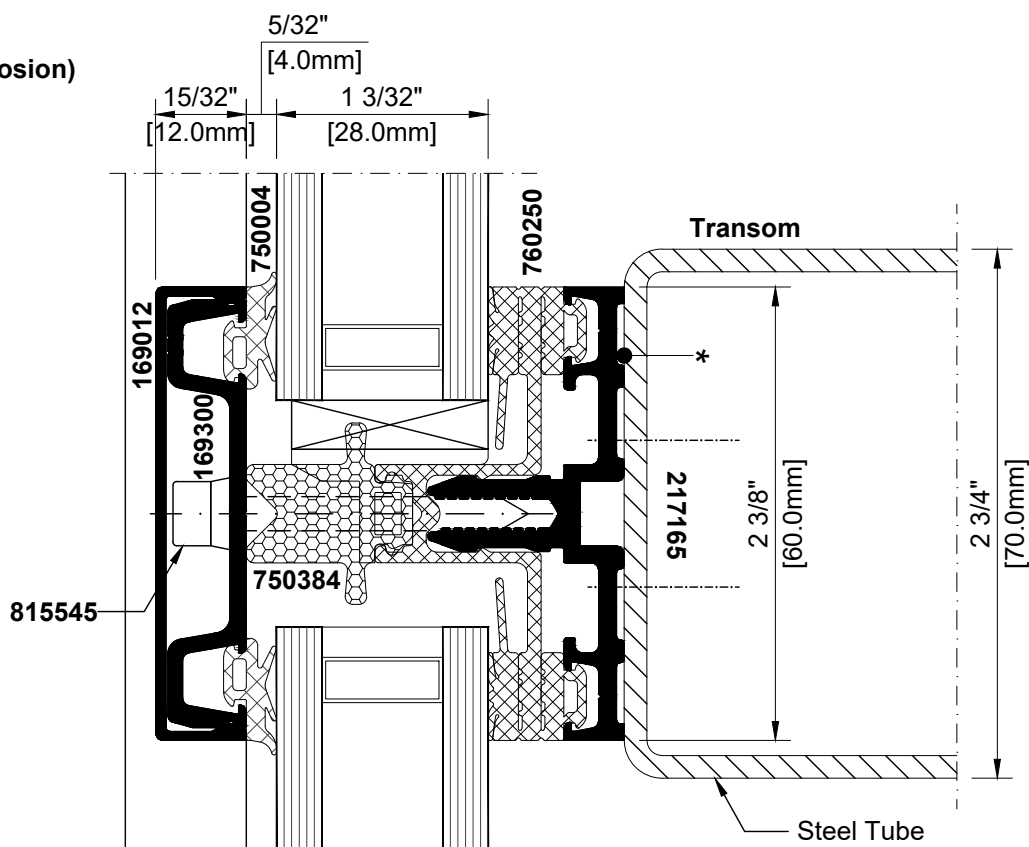
### Cross-Section Points with Base Profile on Steel Structure



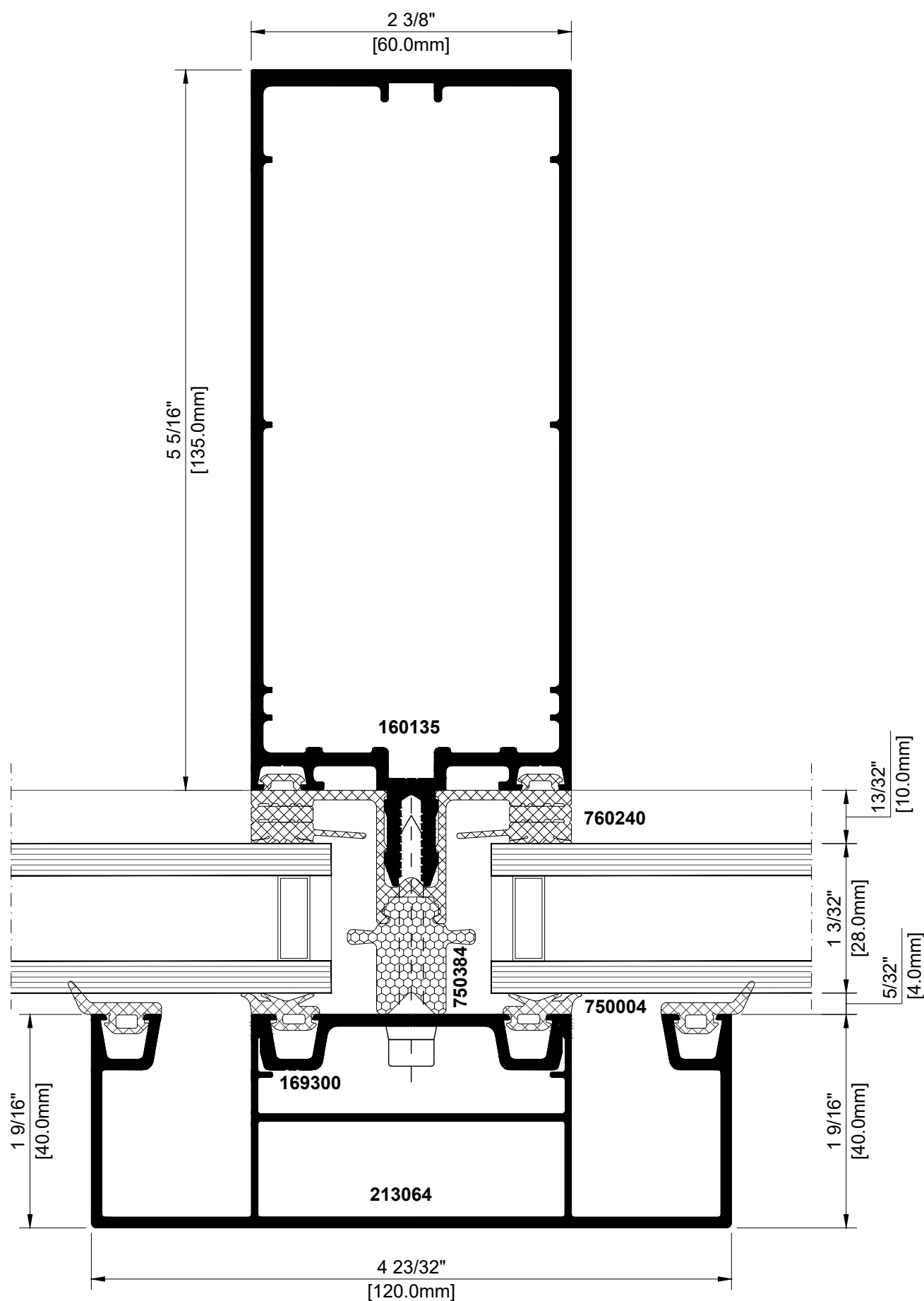
**Note:**

The pre-perforated base Profile 154001 for mullions and transoms is attached by means of the Screw M5 x 10, cylinder-head, as per DIN 7984 with hexagonal recess.

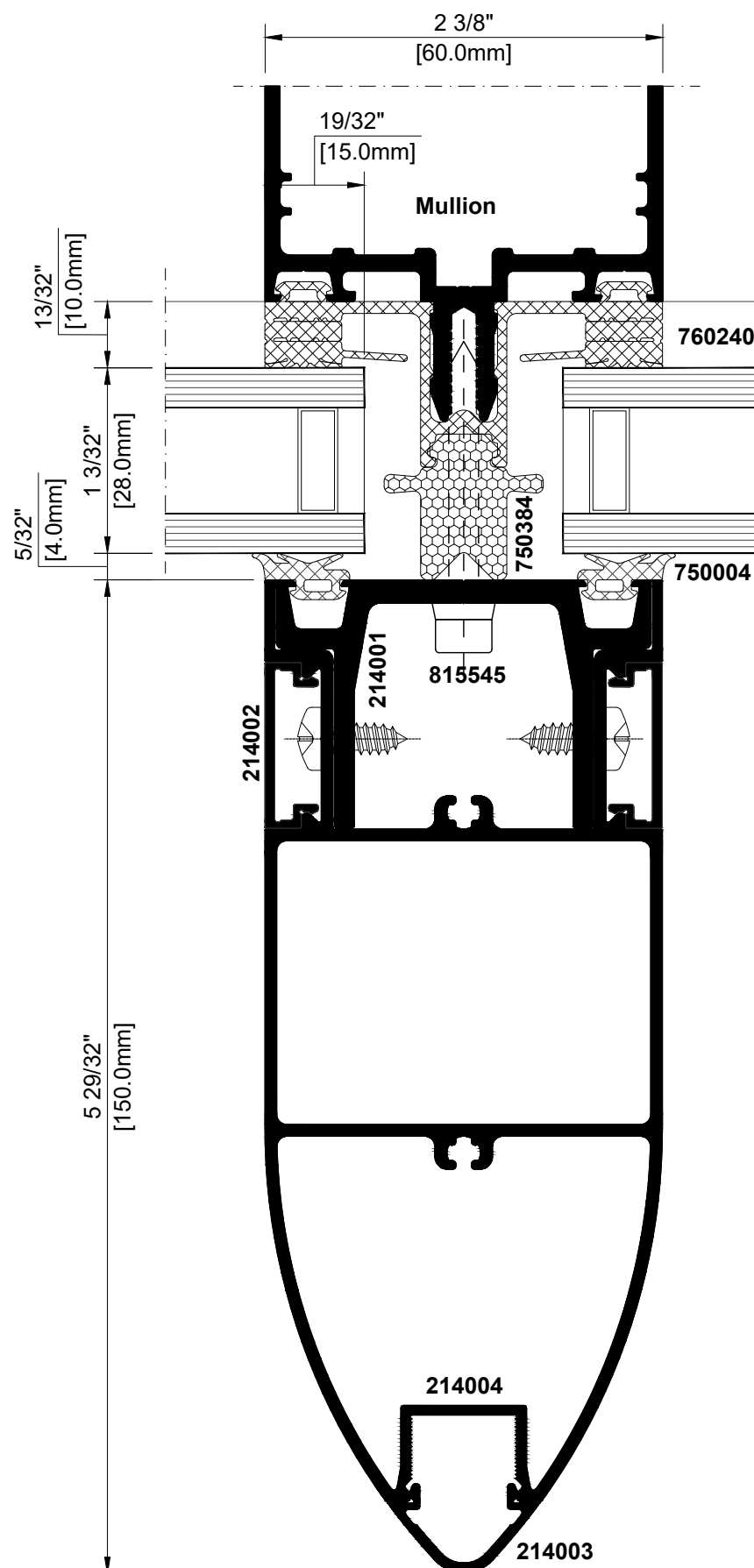
**\* Use separators with steel profiles! (Avoid contact corrosion)**



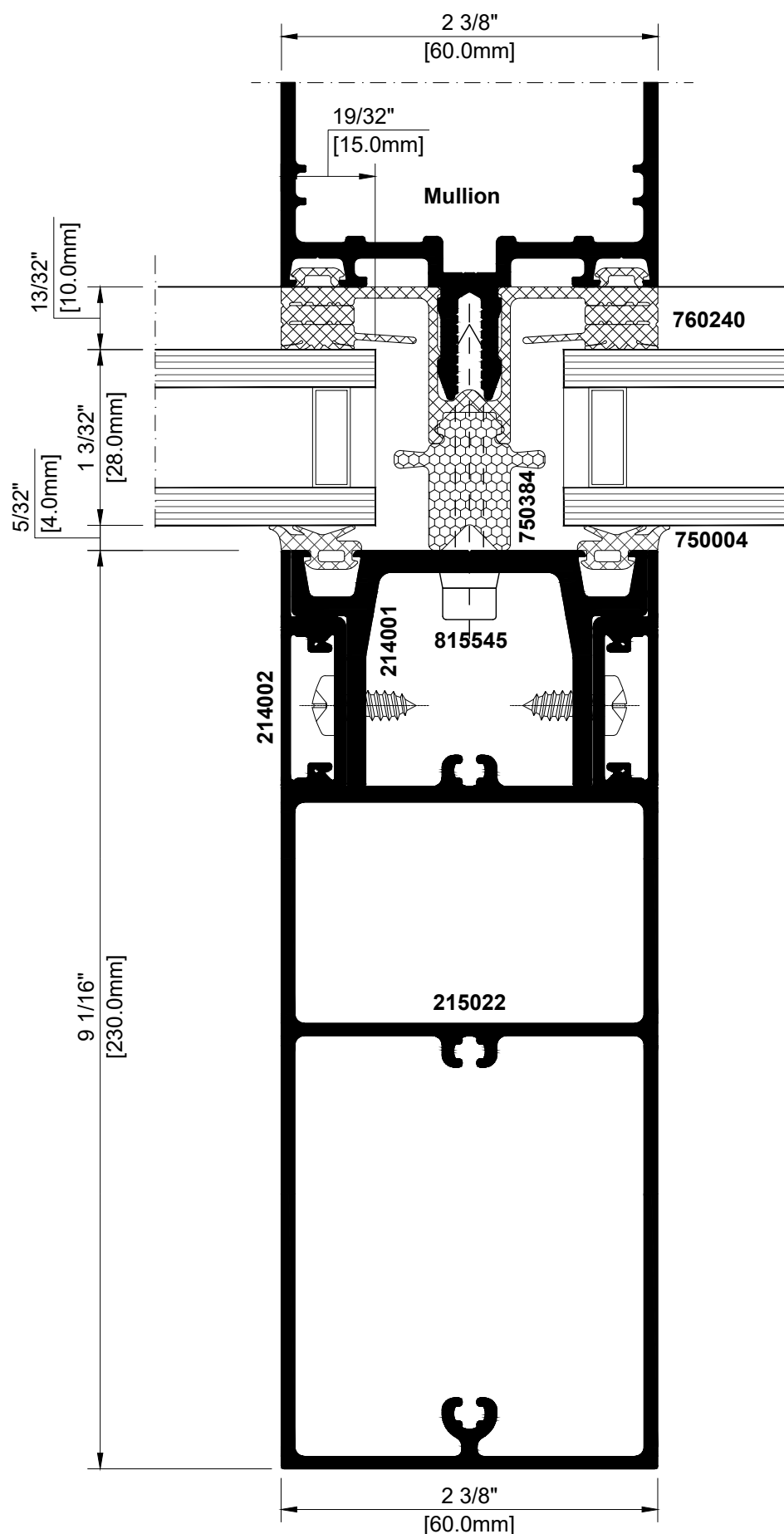
## Installation Sample for Assembly Mullion



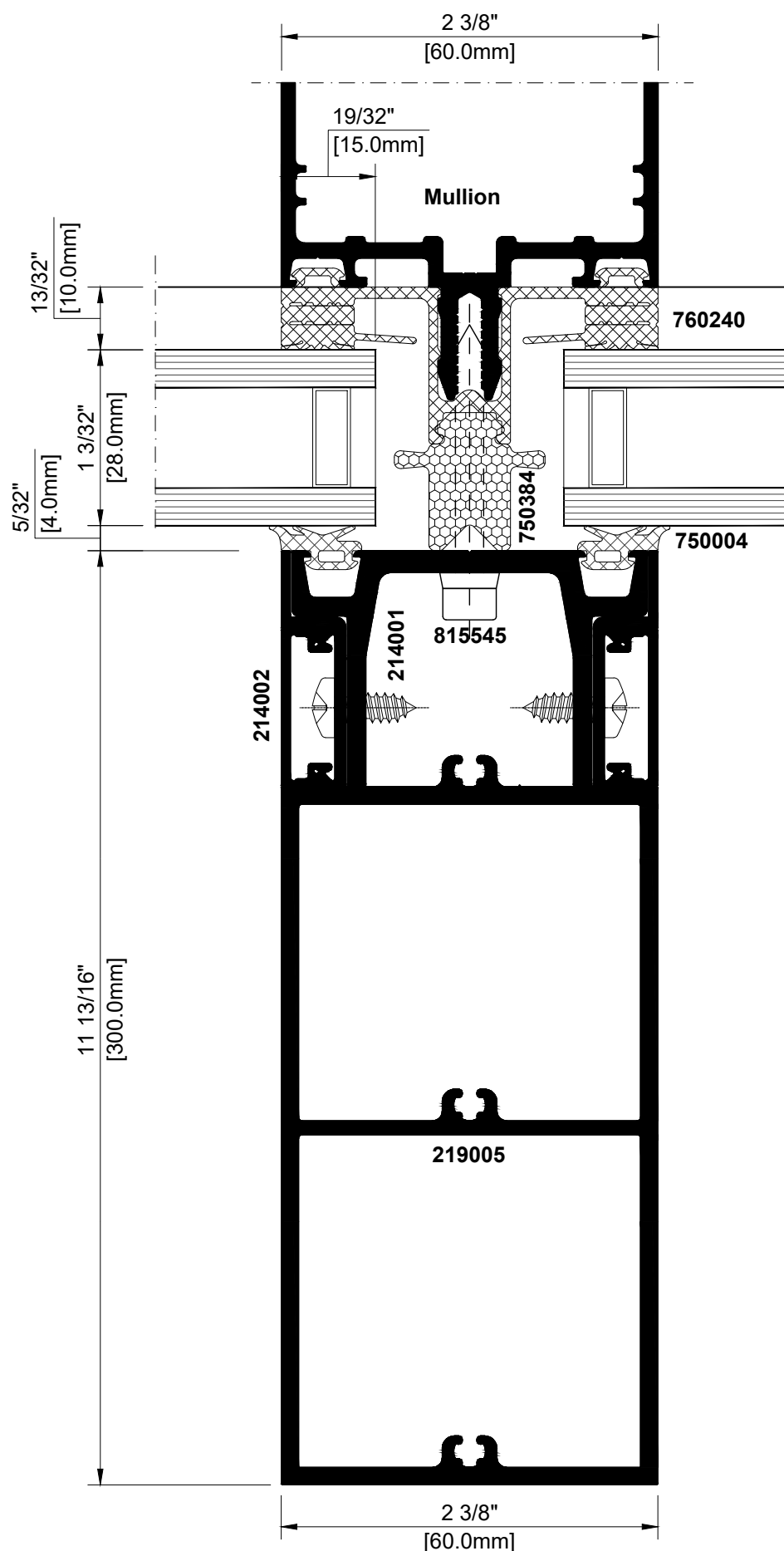
## Installation Sample for F60++ Mullion with Bullnose Profile



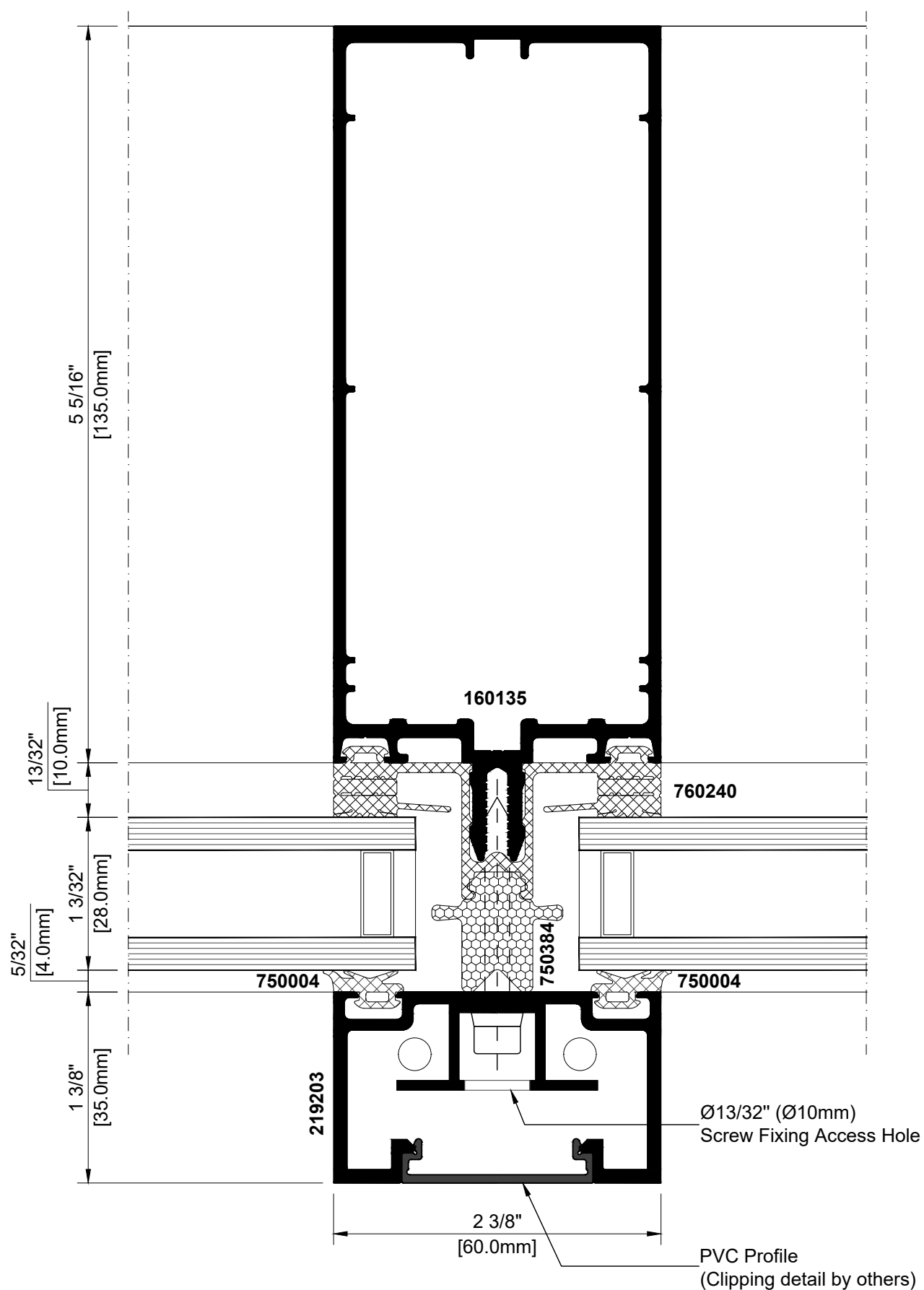
## Installation Sample for F60++ Mullion with Bullnose Profile



## Installation Sample for F6o++ Mullion with Bullnose Profile

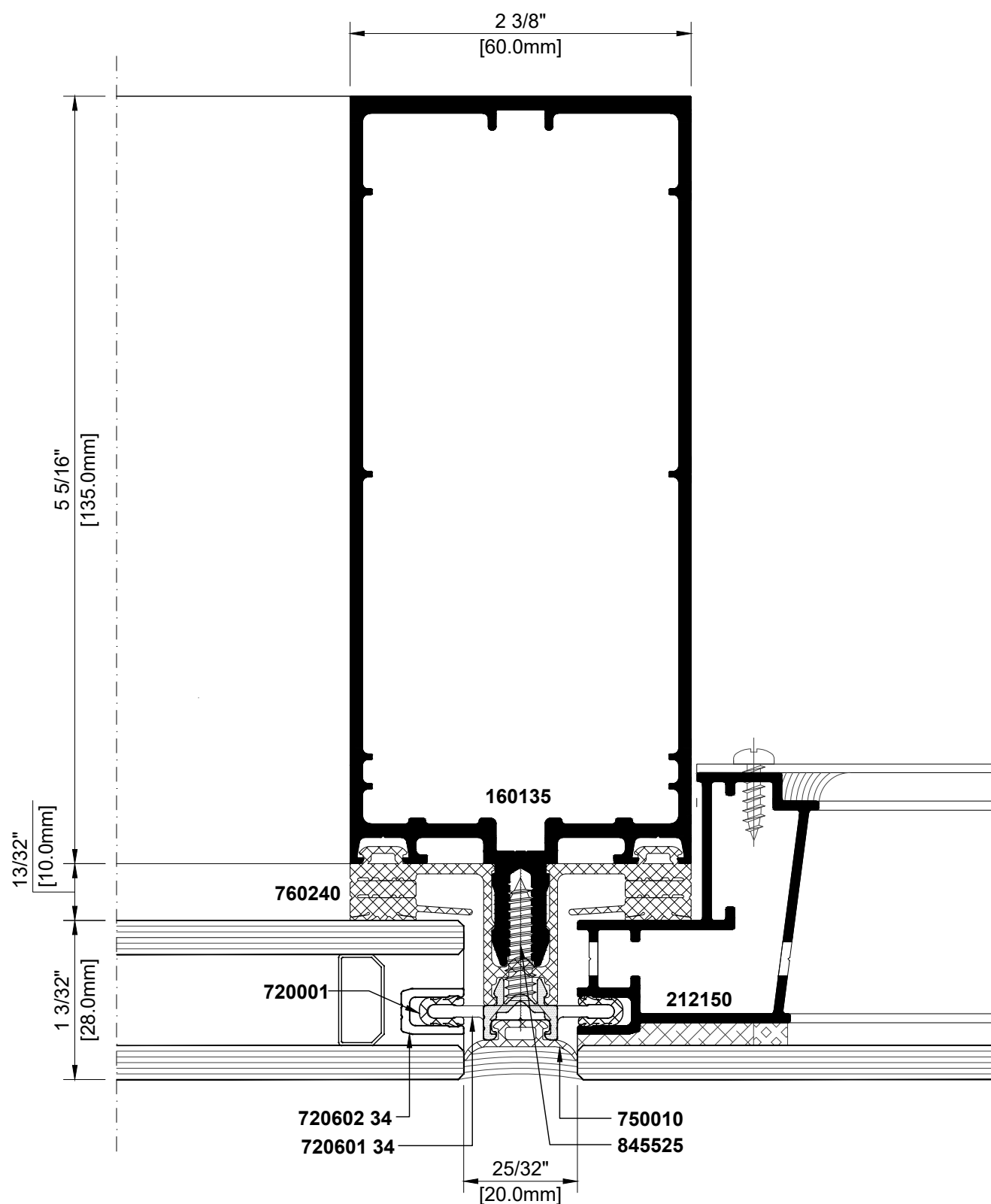


## Installation Sample for Mullion with with Pressure Strip 219203

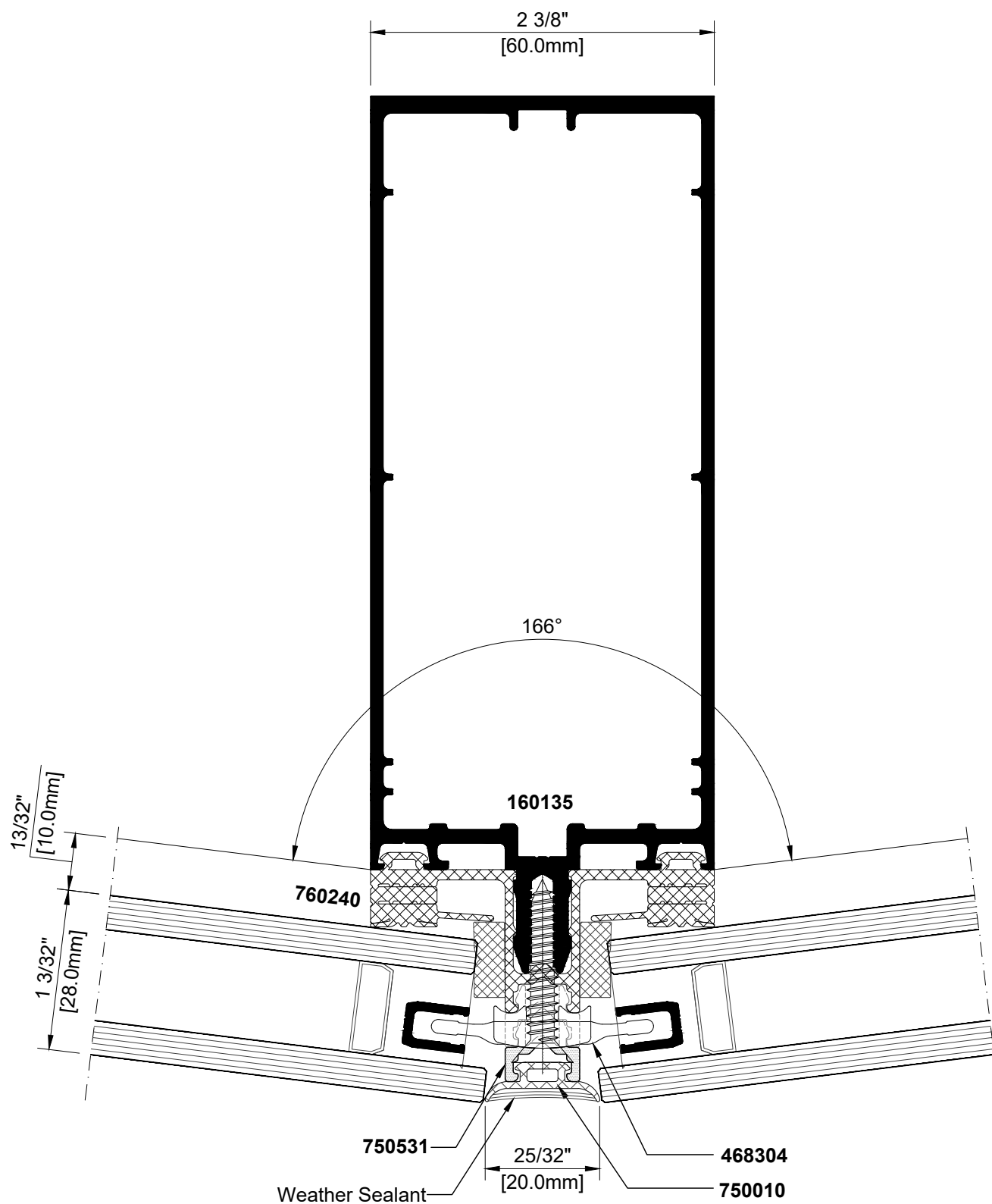




## SG Curtain Wall Design with Spandrel Profile



## Installation Example for Corner Mullion



## Installation Example for Corner Mullion with Adapter Profile 468302

