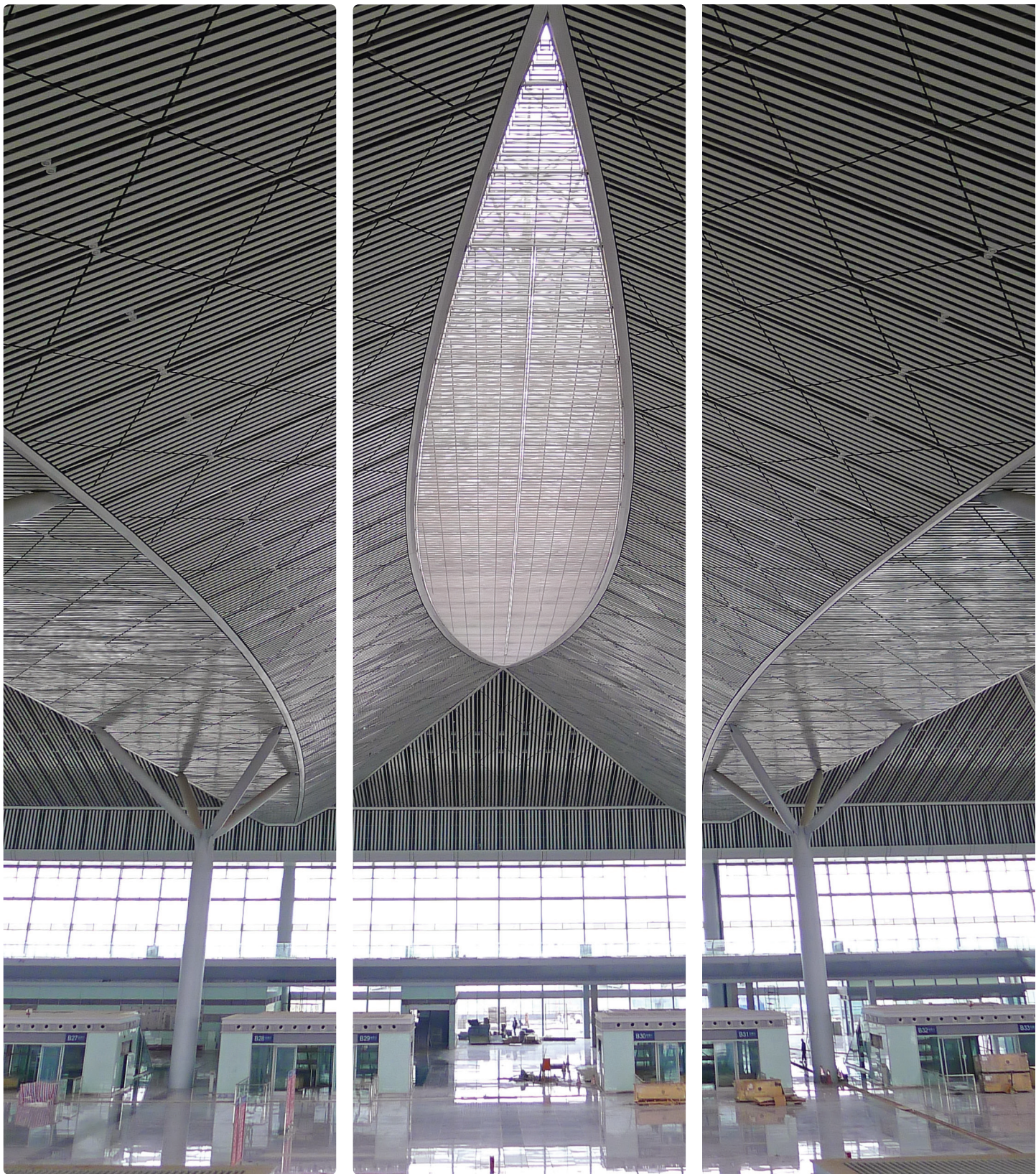




SUNPAL[®]

Multiwall Polycarbonate Standing Seam Architectural System

SUNPAL® Multiwall Polycarbonate Standing Seam Architectural System



Contents

Introduction	2
Main Benefits	2
Applications	2
Panel Types	3
Colors	4
SUNPAL® Projects Gallery	5
Typical Physical Properties	11
Thermal Insulation	11
Flammability	11
Assembly Details	11
System Principles	12
System Components	13
Installation Data	14
Installation Guidelines	16
Typical Installation Details	18
Manufacturer's Lifetime Warranty	26

Introduction

SUNPAL is an advanced multiwall polycarbonate panel system that combines proven design, light transmission, thermal insulation and strength. It offers a lightweight, leak-proof design that withstands very high loads and accommodates expansion and contraction. The system's distinct advantages make it ideal for long-term application on many types of projects. As with any true architectural glazing system, SUNPAL is appropriate for a variety of roofing and cladding designs, flat or curved.

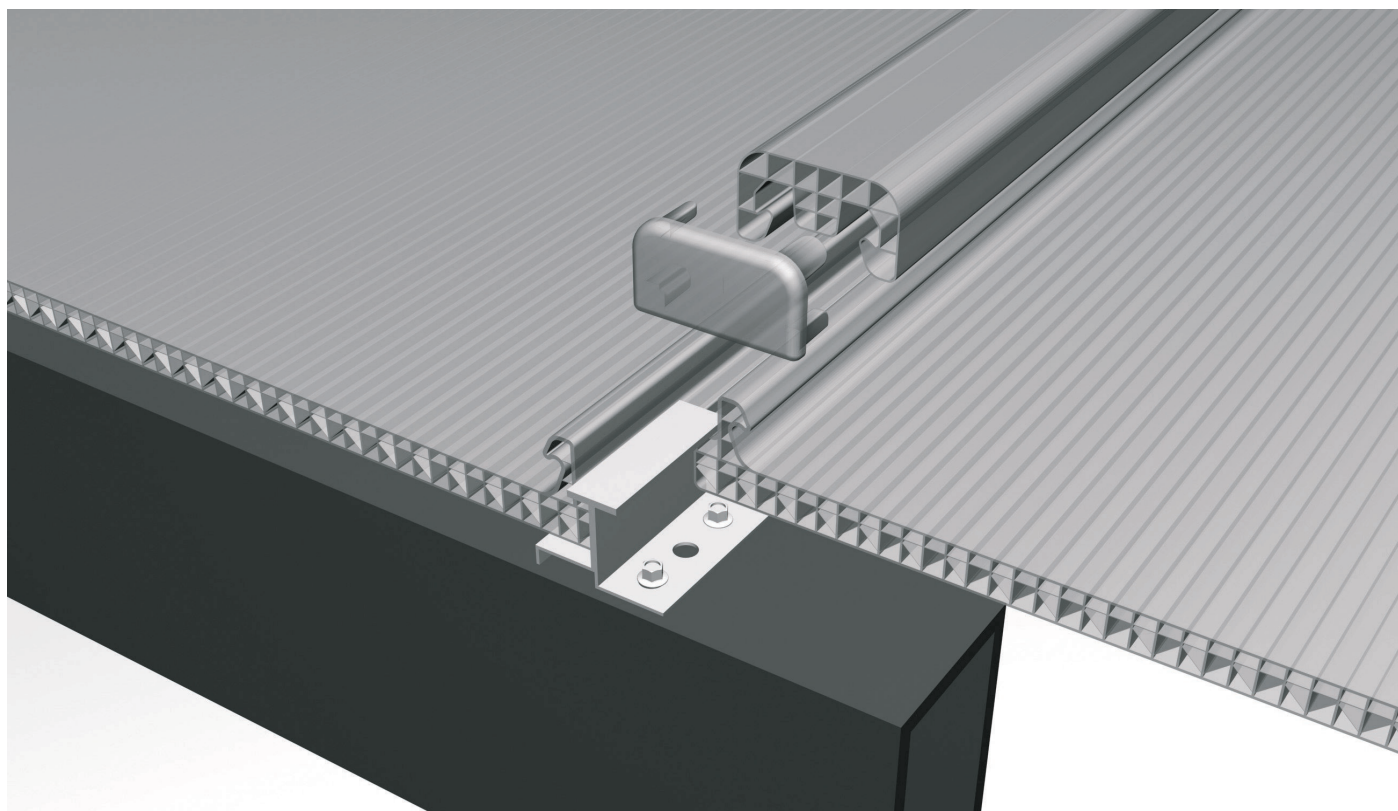
SUNPAL is a self-fastening system, based on multiwall panels, and is available in a range of thicknesses. The panels join together by polycarbonate or aluminum joiners, which are sealed at the ends by End-Caps. T-Fasteners fix the entire system to the structure, allowing the panels to be clamped in place, without any point fastener penetration through the panels. Ventilated Sealing Tape seals the panel lower end, to prevent dirt from entering the flutes, while also providing sufficient drainage. U-Profiles (polycarbonate or aluminum) or F-Profiles (aluminum) seal the upper ends of the panels. Aluminum F-Profiles finish off side edges of the plane, creating a fully framed installation.

Main Benefits

- ✓ Withstands very high loads
- ✓ Accommodates expansion & contraction
- ✓ Simple & fast installation
- ✓ Leak-proof
- ✓ High thermal insulation
- ✓ Ideal for curved designs
- ✓ Double sided UV protection
- ✓ SolarSmart™ cool light colors

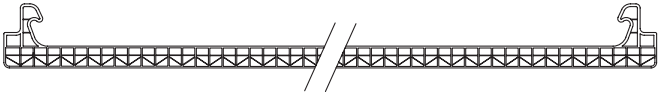
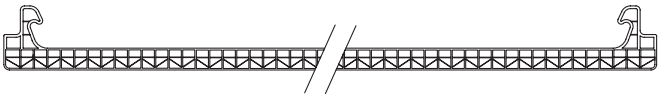
Applications

- Architectural roofing & glazing
- Commercial and retail roofing
- Sport facilities - translucent roofing
- Covered walkways, awnings & entrances
- Open markets - light roofing
- Service stations - translucent roofing
- Parking structure covering
- Swimming pool covers



Panel Types

SUNPAL panels are of multiwall structure, available by thicknesses of 0.313", 0.406", 0.703", and 0.78" (8, 10, 18 and 20 mm). Standard SUNPAL panels have UV protection on both sides. Specific order can be produced with UV protection on one side only. Maximum panel length is 472.05" (11.99m - typical stock length).

Type	Panel Data	Drawing
SUNPAL® 8/600 Lite	Width: 23.625" (600mm) Height: 0.922" (23.5mm) Height with PC-Joiner: 1.3" (33mm) Weight: 0.744 lb/ft, 0.373 lb/ft² (1.11kg/m, 1.83kg/m²) Min. cold bending radius: 80" (2.0m)	
SUNPAL® 8/600	Width: 23.625" (600mm) Height: 0.922" (23.5mm) Height with PC-Joiner: 1.3" (33mm) Weight: 0.831 lb/ft, 0.41 lb/ft² (1.24kg/m, 2.00kg/m²) Min. cold bending radius: 80" (2.0m)	
SUNPAL® 10/600	Width: 23.625" (600mm) Height: 1" (25.5mm) Height with PC-Joiner: 1.375" (35mm) Weight: 1.045 lb/ft, 0.53 lb/ft² (1.56kg/m, 2.60kg/m²) Min. cold bending radius: 96" (2.4m)	
SUNPAL® 18/1000	Width: 39.37" (1000mm) Height: 1.313" (33.5mm) Height with PC-Joiner: 1.625" (41mm) Weight: 2.084 lb/ft, 0.634 lb/ft² (3.11kg/m, 3.11kg/m²) Min. cold bending radius: 120" (3.0m)	
SUNPAL® 20/1000	Width: 39.37" (1000mm) Height: 1.406" (35.5mm) Height with PC-Joiner: 1.703" (43mm) Weight: 2.137 lb/ft, 0.651 lb/ft² (3.19kg/m, 3.19kg/m²) Min. cold bending radius: 120" (3.0m)	

Scan for product
video overview



Colors

Color	SUNPAL® 8/600 & 10/600			SUNPAL® 18/1000 & 20/1000		
	%LT	SHGC	SC	%LT	SHGC	SC
 Clear	65	0.63	0.72	50	0.54	0.62
 Bronze	25	0.40	0.46	20	0.35	0.39
 Grey	30	0.45	0.52	24	0.44	0.51
 White Opal	25	0.37	0.43	20	0.30	0.34
 White Ice	50	0.56	0.64	40	0.48	0.55
 Green	50	0.56	0.64	38	0.46	0.53
 Blue	50	0.60	0.69	36	0.50	0.57
 Red	20	0.52	0.60	20	0.44	0.50
 Purple	40	0.55	0.63	40	0.50	0.58
 Orange	35	0.51	0.59	35	0.46	0.53
 Yellow	55	0.57	0.65	55	0.51	0.59
 Aqua Green	14	0.30	0.35	14	0.27	0.31
 Navy Blue	20	0.45	0.52	22	0.41	0.47
 White / Bronze	10	0.29	0.34	10	0.29	0.34
 White / Grey	10	0.29	0.34	10	0.29	0.34
 White / Blue	10	0.37	0.43	10	0.37	0.43
 White / Red	4	0.28	0.32	4	0.28	0.32
 Solar Ice	20	0.28	0.32	15	0.23	0.26
 Solar Control	20	0.30	0.34	15	0.25	0.29
 Bluish Breeze	34	0.32	0.38	34	0.33	0.38
 Clear	50	0.49	0.56	33	0.40	0.46
 Bronze	20	0.42	0.44	20	0.37	0.43
 White Opal	26	0.40	0.45	20	0.33	0.38
 Green	40	0.48	0.54	25	0.38	0.44
 Blue	40	0.51	0.59	25	0.41	0.48
 Red	20	0.47	0.55	15	0.39	0.45
 Solar Ice	20	0.35	0.41	15	0.30	0.35
 Grey	30	0.42	0.49	30	0.41	0.48

Minimum order quantities and lead times vary by color. Please contact Palram for details.

Legend

LT (Light Transmission) = The percentage of incident visible light that passes through an object.

SHGC (Solar Heat Gain Coefficient) = The percentage of incident solar radiation transmitted by an object, which includes the direct solar transmission and the part of the solar absorption radiated inward.

SC (Shading Coefficient) = The amount of the sun's heat transmitted through a given window compared with that of a standard 3mm thick single pane of glass under the same conditions.

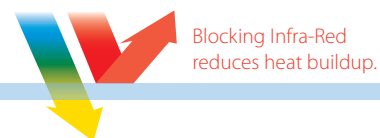


SolarSmart™ - Energy Efficiency

SolarSmart™ are energy-efficient colors break the traditional ratio between light transmission and shading coefficient. SolarSmart™ panels block Infrared energy that causes heat buildup, and transmit "cool light" that reduces air-conditioning and lighting costs.

More energy-saving, natural visible light is transmitted.

SolarSmart™ Panel



DiffuserPlus™ - Double Diffusion Effect

DiffuserPlus™ offers double diffusion which prevents both transmitted and reflected light from excessive glare.

SUNPAL® Project Gallery

Hangzhou Sports Park, China | Architect: NBBJ in partnership with CCDI | Application: Skylight -15,000 sqm | SUNPAL® Type: Clear 20mm



Holiday Inn, Tennessee, USA | Application: Entrance Canopy | SUNPAL® Type: White Opal 18mm



Beijing Urban Rural Century Plaza, China | Architect: Beijing Design Institute | Application: Skylight - 10,000sqm | SUNPAL® Type: 18mm



Wingate Sports Center, Israel | Architect: Atzmon Architects | Application: Sidelight - 2,600sqm | SUNPAL® Type: 18mm Grey, Blue & Bronze



George Town Trade Centre Tasmania, Australia | Architect: Loop | Application: Sidelight | SUNPAL® Type: White Ice 10mm



AEDC Redevelopment Project, Pennsylvania, USA | Application: Skylight | SUNPAL® Type: Clear 18mm



Williamstown Library, Victoria, Australia | Architect: Sally Draper Arch. | Application: Sidelight - 330 sqm | SUNPAL® Type: Solar Ice 18mm



Whitten Oval Community Sports Hall, Australia | Architect: Peddle Thorp | Application: Curtain Wall - 370 sqm | SUNPAL® Type: Solar Ice 18mm



Business Park, UK | Architect: Aros Architects UK | Application: Staircase Cladding - 146 sqm | SUNPAL® Type: 18mm



Griffith University at Gold Coast, Australia | Application: Study Pod Partitions | SUNPAL® Type: Clear 8mm



Bridgehampton Tennis & Surf Club, New York, USA | Application: Skylight | SUNPAL® - White Opal 18mm



Private Residence, New Zealand | Application: Curtain Wall | SUNPAL® Type: Solar Ice 18mm



Typical Physical Properties

Property	Method*	Conditions	Units	Value
Density	D-792		pound/ft ³	62.428
Heat deflection temperature (HDT)	D-648	Load: 264 psi	°F	266
Service Temperature - Short term			°F	-58 to +248
Service Temperature - Long term			°F	-58 to +212
Coefficient of linear thermal expansion	D-696		in./in. · °F	3.6 x 10 ⁻⁵
Tensile strength at yield	D-638	0.4"/min	psi	8992
Elongation at break	D-638	0.4"/min	%	>80
Impact falling dart	ISO 6603/1		J	40-400
Practical Thermal expansion/contraction rate			in/ft	0.040"

*ASTM method except where noted otherwise

Thermal Insulation

Type	U-Value BTU / (hr·ft ² ·°F)	R-Value (hr·ft ² ·°F) / BTU
SUNPAL Lite 8 mm	0.43	2.3
SUNPAL 8 mm	0.43	2.3
SUNPAL 10 mm	0.37	2.7
SUNPAL 18/20 mm	0.26	3.8

Flammability

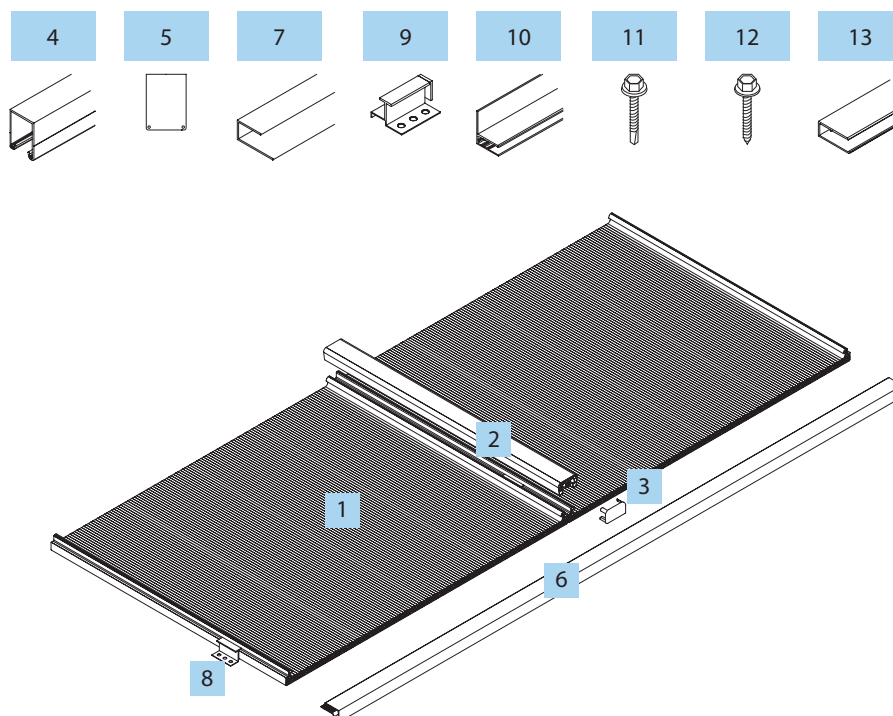
SUNPAL complies with the most demanding international fire resistance standards in the field of plastics, as indicated in the detailed table herein. The classification is subject to product type, thickness and color.

Method	Classification
EN 13501	B, s1, d0*
ASTM E84	Class A*
ASTM D635	CC2
ASTM D2843	<75
ASTM D1929	Self Ignition >900°F

*Depends on panel thickness.

Assembly Details

#	Legend
01	Panel
02	Polycarbonate Joiner
03	End-Cap for Polycarbonate Joiner
04	Aluminum Joiner 'C'
05	End-Cap for Aluminum Joiner 'C'
06	Aluminum Sealing Strip
07	Polycarbonate U-Profile
08	T-Fastener
09	T-Stopper
10	Aluminum F-Profile
11	Metal Screw
12	Wood Screw
13	Aluminum U-Profile

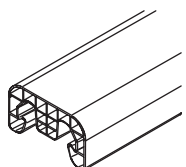


System Principles

A SUNPAL system is primarily defined by the panel thickness. All other components are selected to match this panel.

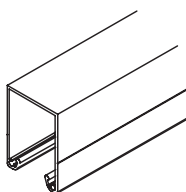
Joiners

The joiners are made of polycarbonate or aluminum and fit all panel types. The choice between them is usually made according to the type of application - Polycarbonate Joiner for roofing (or any case where the seam is external); Aluminum Joiner 'C' for cladding (hidden seam).



Polycarbonate Joiner

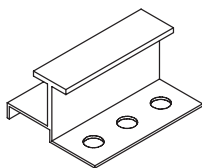
Polycarbonate Joiner (Part 0200) is 0.875" (22mm) high by 1.546" (39mm) wide, made of extruded polycarbonate in a color matching to that of the panels. Its maximum length is 471.95" (11.99m), with weight of 0.107 lb/ft. The Polycarbonate Joiner should overhang about 4" (1m) beyond the last fastener. End Cap for the Polycarbonate Joiner (Part 0300) is a clear acrylic cap designed to be plugged at the joiner edge. It prevents water and dirt penetration, helps to reinforce the joiner ends and provides styled appearance to the system edge.



Aluminum Joiner

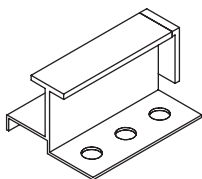
Aluminum Joiner 'C' (Part 0400) is 1.546" (39mm) wide by 2.125" (54mm) high, anodized extruded aluminum. Maximum length is 236.22" (6m). The Alu-Joiner should overhang about 10" (250mm) beyond the last fastener. End-Cap for Aluminum Joiner 'C' (Part 0500) is a mill-finish aluminum plate, designed to close the Aluminum Joiner edge. This end cap is fixed by inserting four screws into the joiner end face. Note: Polycarbonate joiners for curved applications can be cold-curved. Aluminum joiners have to be pre-curved.

Fasteners



T-Fastener

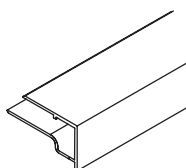
T-Fastener (08 series parts) - SUNPAL roofing system is attached to the supporting structure by the T-Fasteners. These are stainless steel concealed clips that are fixed onto the structure with screws. The fasteners have four different sizes to match each panel type. For installing SUNPAL system onto wooden structure, the T-Fasteners are fixed with Wood Screws (part 1500). For metal structure, Metal Screws (part 13) are used. As standard, each fastener is fixed with two screws. For high wind areas, using three screws per fastener is recommended.



T-Stopper

T-Stopper (09 series parts) - To prevent "travelling" of the panels, it is recommended to fix one T-Stopper at a certain fixing point along each Joiner. This will be the only longitudinal fixed point, while all other fixings of this panel are floating, by regular T-Fasteners. It is a special T-Fastener with added stopper plate, which fits into a slit cut in the attached panels (prepared on spot).

Sealing & end cap Strips



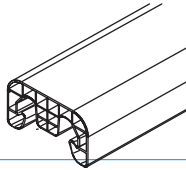
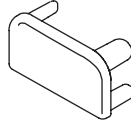
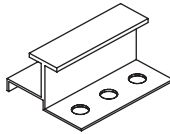
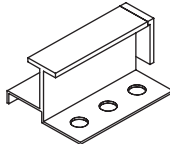
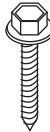
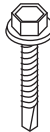
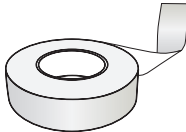
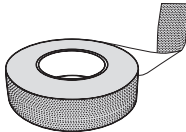
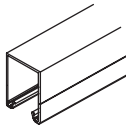
Aluminum Sealing Strip

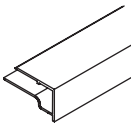
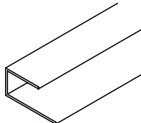
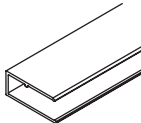
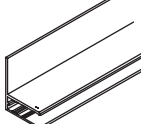
The Aluminum Sealing Strips (06 series parts) are anodized extruded aluminum profiles with four sizes that match each type of SUNPAL panel. Maximum length is 236.22" (6m - stock length). These are used as a closure for the panels end (usually the lower) to prevent penetration of dirt and moisture and provide efficient drainage. U-Profile is used for sealing the panel's upper end, preventing penetration of moisture and dirt. Polycarbonate U-Profiles (07 series parts) are made of polycarbonate, and have two types to suite 0.313" (18mm) and 0.406" (20mm) panels. Their maximum length is 236.22" (6m - stock length).

Aluminum U-Profile (16 series parts) is an anodized extruded aluminum profile, with two types of sizes to suit 0.78" panels. Its maximum length is 236.22" (6m - stock length).

Aluminum F-Profiles (11 series parts) are available in four sizes to match each panel type. These are anodized extruded aluminum profiles with maximum length of 236.22" (6m - stock length). The F-Profiles are used generally as a side fixing detail, also applicable for an upper-end closure.

System Components

Component	Part Number - Type	Drawing	Suppliance Data
Polycarbonate Joiner	0200		Length: 471.95" (12m) Colors: panel matched
End-cap for Polycarbonate Joiner	0300		Quantity: 200/box Colors: Clear
T-Fastener	0808 - 0.313" (8mm) 0810 - 0.406" (10mm) 0818 - 0.703" (18mm) 0820 - 0.78" (20mm)		Quantity: 200/box Sizes: 0.313" (8mm), 0.406" (10mm), 0.703" (18mm), 0.78" (20mm) (8, 10, 18, 20mm) Material: Stainless steel
T-Stopper	0908 - 0.313" (8mm) 0910 - 0.406" (10mm) 0918 - 0.703" (18mm) 0920 - 0.78" (20mm)		Quantity: 50/box Sizes: 0.313" (8mm), 0.406" (10mm), 0.703" (18mm), 0.78" (20mm) (8, 10, 18, 20mm) Material: Stainless steel
Wood Screw Galvanized Hex-head tapping screw 1" (5x25mm)	1500		Quantity: 500/box
Metal Screw Galvanized Hex-head self-drilling screw #10x0.75" (4.8x19mm)	1400		Quantity: 500/box
Aluminum (Solid) Tape	92698 - 0.313" (8mm) 92699 - 0.406" (10mm) 92804 - 0.703" & 0.78" (18mm & 20mm)		Quantity: 1968.5" (50m) / roll
Breather (Ventilated) Tape	92696 - 0.313" (8mm) 92697 - 0.406" (10mm) 92802 - 0.703" & 0.78" (18mm & 20mm)		Quantity: 1299.2" (33m) / roll
Aluminum Joiner - C	0400		Length: 236.22" (6m) Finish: Anodized

Component	Part No.	Type	Drawing	Suppliance Data
End-Cap for Aluminum Joiner - C	0500			Finish: Mill (Natural)
Aluminum Sealing Strip	0608	0.313" (8mm)		Length: 236.22" (6m) Finish: Anodized
	0610	0.406" (10mm)		
	0618	0.703" (18mm)		
	0620	0.78" (20mm)		
PC U-Profile	0708	0.313" (8mm)		Length: 236.22" (6m) Finish: Anodized
	0710	0.406" (10mm)		
Aluminum U-Profile	1618	0.703" (18mm)		Length: 236.22" (6m) Finish: Anodized
	1620	0.78" (20mm)		
Aluminum F-Profile	1108	0.313" (8mm)		Length: 236.22" (6m) Finish: Anodized
	1110	0.406" (10mm)		
	1118	0.703" (18mm)		
	1120	0.78" (20mm)		

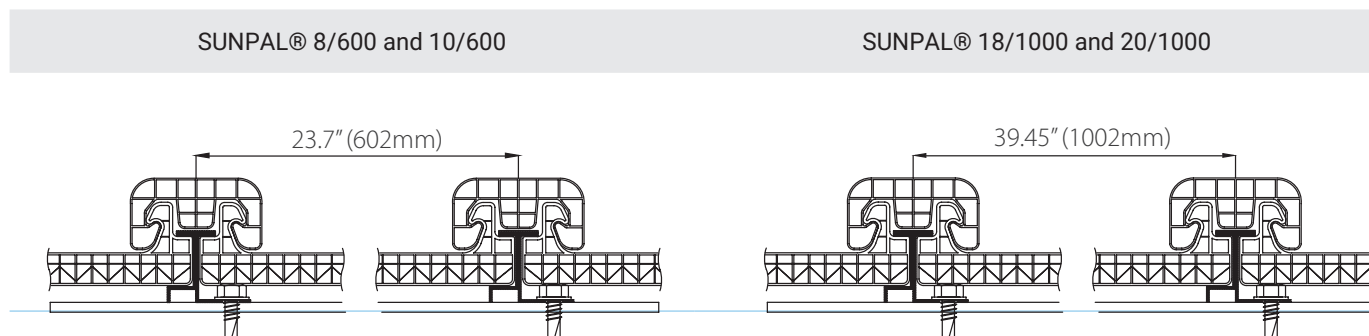
*Standard profiles are shown above; for specialty installation see Palram Americas website for non standard profiles.

Installation Data

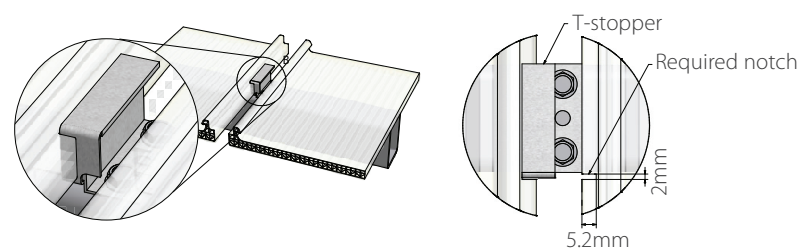
Roof Structure

SUNPAL system fits for both rafter and purlin construction. The recommended minimum roof slope for SUNPAL applications is 5%. For lower slopes rafter design is recommended.

Assembled System Width



T-Stopper Installation



Purlin Design - Recommended spans

for wind load of 21 psf (1.0 kPa)

Panel Type	Panel Width	Polycarbonate Joiner		Aluminum Joiner - C	
		Mid-Span	End-Span	Mid-Span	End-Span
		▲▲▲▲	▲▲	▲▲▲▲	▲▲
SUNPAL Lite 0.313" (8mm)	23.625" (600mm)	36" (900mm)	28" (700mm)	60" (1,500mm)	44" (1,100mm)
SUNPAL 0.313" (8mm)	23.625" (600mm)	36" (1000mm)	33" (825mm)	64" (1,600mm)	48" (1,200mm)
SUNPAL 0.406" (10mm)	23.625" (600mm)	50" (1,250mm)	38" (950mm)	68" (1,800mm)	56" (1,400mm)
SUNPAL 0.703" / 0.78" (18/20mm)	39.36" (1000mm)	54" (1,350mm)	40" (1,000mm)	68" (1,800mm)	56" (1,400mm)

Rafter Design - Recommended Spans

With max. intervals of T-Fasteners along rafters for wind load of 21 psf (1.0 kPa).

SUNPAL® Type	Rafter Centers	Polycarbonate Joiner		Aluminum Joiner - C	
		Internal Fasteners	Fasteners at Rafter Ends	Internal Fasteners	Fasteners at Rafter Ends
0.313" Lite (8mm)	23.625" (602mm)	36" (900mm)	28" (700mm)	60" (1,500mm)	44" (1,100mm)
0.313" (8mm)	23.625" (600mm)	36" (1000mm)	33" (825mm)	64" (1,600mm)	48" (1,200mm)
0.406" (10mm)	23.625" (600mm)	50" (1,250mm)	38" (950mm)	68" (1,800mm)	56" (1,400mm)
0.703" / 0.78" (18/20mm)	39.36" (1002mm)	54" (1,350mm)	40" (1,000mm)	68" (1,800mm)	56" (1,400mm)

Note 1: The above spans are specified for wind loads of 21 psf (1.0 kPa) in roofing applications. For vertical or internal applications, contact your local SUNPAL distributor.

Note 2: In curved applications, Aluminum Joiners will have to be pre-rolled, while Polycarbonate Joiners can be cold curved to the roofing radius.

Maximum Spans Between Purlins

SUNPAL® Type	Single Span					
	15 psf (75kg/m²)	21 psf (100kg/m²)	26 psf (125kg/m²)	31 psf (150kg/m²)	36 psf (175kg/m²)	41 psf (200kg/m²)
0.313" (8mm)	34" (850mm)	30" (750mm)	28" (700mm)	26" (650mm)	24" (600mm)	22" (550mm)
0.406" (10mm)	38" (950mm)	34" (850mm)	32" (800mm)	30" (750mm)	28" (700mm)	26" (650mm)
0.703" (18mm)	44" (1100mm)	40" (1000mm)	38" (950mm)	36" (900mm)	34" (850mm)	32" (800mm)
0.78" (20mm)	48" (1200mm)	44" (1100mm)	40" (1000mm)	38" (950mm)	36" (900mm)	34" (850mm)

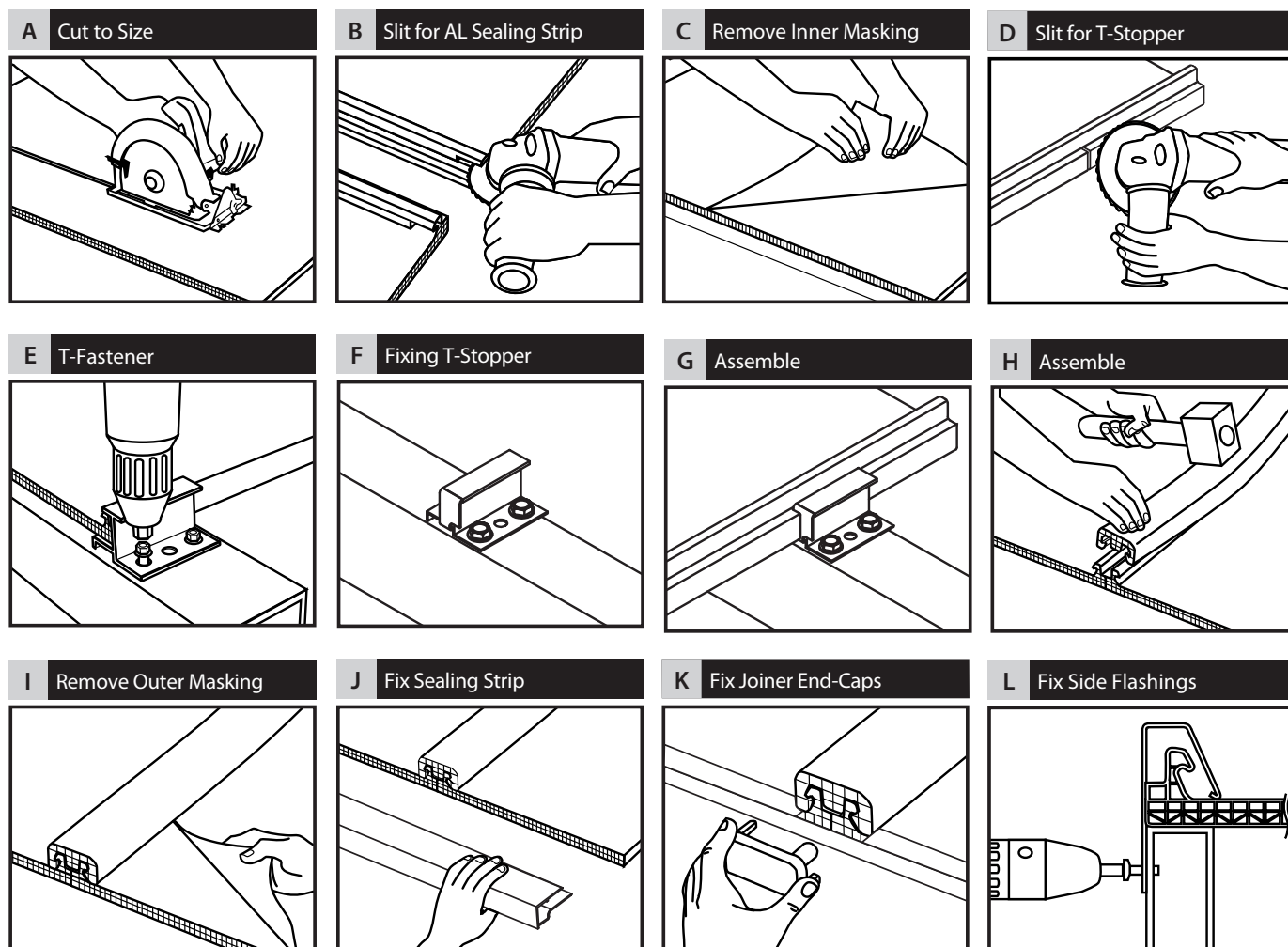
SUNPAL® Type	Multi-Span											
	Mid-Span						End-Span					
	15 psf (75kg/m²)	21 psf (100kg/m²)	26 psf (125kg/m²)	31 psf (150kg/m²)	36 psf (175kg/m²)	41 psf (200kg/m²)	15 psf (75kg/m²)	20 psf (100kg/m²)	26 psf (125kg/m²)	31 psf (150kg/m²)	36 psf (175kg/m²)	41 psf (200kg/m²)
0.313" (8mm)	46" (1150mm)	42" (1050mm)	36" (900mm)	34" (850mm)	32" (800mm)	30" (750mm)	36" (900mm)	33" (825mm)	28" (700mm)	26.59" (665mm)	25" (625mm)	23.4" (585mm)
0.406" (10mm)	54" (1350mm)	50" (1250mm)	44" (1100mm)	42" (1050mm)	40" (950mm)	38" (950mm)	42" (1050mm)	39" (975mm)	34.4" (860mm)	32.78" (820mm)	31.2" (780mm)	29.59" (740mm)
0.703" (18mm)	60" (1500mm)	56" (1400mm)	52" (1300mm)	48" (1200mm)	46" (1150mm)	44" (1100mm)	46.78" (1170mm)	43.59" (1090mm)	40.59" (1015mm)	37.22" (930mm)	36" (900mm)	34.4" (860mm)
0.78" (20mm)	64" (1600mm)	60" (1500mm)	60" (1400mm)	52" (1300mm)	50" (1250mm)	48" (1200mm)	50" (1250mm)	46.78" (1170mm)	43.59" (1090mm)	40.59" (1015mm)	39" (975mm)	37.4" (935mm)

Notes: 1. The values are based on deflection criterion of L/20 of the Polycarbonate panels.

2. The table is valid for purlin installation only.

3. The dimensions depicted do not supersede the requirements of local construction codes.

Installation Guidelines



*Referene to the illustrations above appear in brackets in the text below.

1. Cut to size (A): Cut panels to length allowing for an overhang of no more than 4" at each end. A penetration of minimum 2" into the gutter is recommend. Use a circular saw or hand saw with fine tooth blades for easier and more precise cutting.
2. Slit for Aluminum Sealing-Strip (B): Using a small cutting disc ($\frac{1}{16}$ " thick), prepare $\frac{1}{4}$ " deep horizontal cuts at each end of the panel teeth. This cut should be in parallel to the panel top face, but without damaging the panel surface. Since this step needs precision, it is highly recommended to perform this action at ground floor level.
3. Remove cutting chips: Use a vacuum cleaner or an air compressor with blow gun to blow out any "swarf" or loose particles from inside the panel. Make sure that both ends of panel are not covered with the protective film.
4. Position first panel: To achieve a symmetric installation, determine the layout of the first panel, starting at the center of the structure. Measure the structure's width, to determine using odd or even number of the prepared panels. Accordingly, mark on the support purlins the location of the middle panel or middle pair of panels. For "side to side" installation, set up the first panel, fitted to the side flashing at the preferred starting side.

5. Remove inner masking (C): Remove the protective film from the internal face only. Keep this side away from the roof purlins until final positioning of the panel, to avoid scratching.

6. Fix T-Stopper (D, F & G): The T-stopper's main function is to create a fix point (zero movement) for each panel. This will allow to control the direction of thermal expansion and contraction, and prevent the panels from shifting due of gravity. Fix the T-Stopper using hex head fixings provided while considering the following recommendations:

- Curved application – the T-stopper will be normally fixed at the peak.
- Roof end with no gutter – the T-stopper shall be fixed at the last purlin in order to eliminate differential movements (esthetics).
- Roof end with gutter – the T-stopper shall be fixed the opposite of the expansion allowance.
- Wall Application – the T-Stopper should be fastened at the end of the panel where thermal expansion cannot be accommodated. In this method all thermal expansion is directed to the opposite end of the panel. Proper spacing must be calculated.

7. Fix T-Fasteners (E): Along panel on remaining purlins (see span table for rafter design), place T-fasteners against panel and fix into place using hex head fixings provided (2 fixings for standard, 3 fixings for high wind areas and hurricane regions).

8. Position next panel: Remove protective film from underside of second panel and place against T fasteners.

9. Locking the two panels together (H): Using a rubber mallet, start to fix the Joiner, locking the 2 panels together by striking with short intervals (2" - 4") along the joiner. Start at the bottom end, and work your way up the roof (ensure that the joiner overhangs the panel ends by 1/2", where the aluminum sealing strip will be installed later).

10. Remove outer Masking (I)

Shortly after installation, peel off the protective film from the panel's external face. Delaying removal of the protective film can make it very difficult or impossible to peel off later on. On exceptionally hot days, remove top protective film immediately to prevent it from bonding with the panel.

11. Repeat steps 5 to 9 (or 11) until all panels are in place except for the external panels.

12. Determine width of end panels required: Using a circular saw (fitted with fine tooth blade) or jigsaw cut the external side panels to width.

13. Along the cut edge of the SUNPAL panel, push on the aluminum F section (cut to size) so that it is firmly secured.

14. Lift the end panel into place and repeat step 9 (or 9-11): The aluminum F section should be firmly affixed against last rafter or end of purlins (note: if fixing to metal purlins, make sure the ends of the purlins are closed off).

15. Fix the F-Section to the rafter or end of purlin using tek screws.

16. Start installing the U-Profile at the panel top end by pushing on. It is designed to be a tight fit, so start by pushing one end on and slowly tap it until it is firmly inserted. PC U-Profile (for SUNPAL 0.313" (8mm) & 0.406" (10mm)) is to tap by hand, for Al U-Profile (SUNPAL 0.703" (18mm) & 0.78" (20mm)) use a rubber mallet.

17. Start installing the Aluminum Sealing Strip (J) at the panel bottom end by pushing it on. It is designed to be a tight fit, so start by pushing one end on and using a mallet slowly tap it until it is firmly inserted. These sealing strips are necessary to prevent penetration of dirt end moisture.

18. Joiner End-cap fixing (K): Insert Joiner End-cap in both Joiner ends. The End-cap for PC Joiner is pushed into place. The End-cap for Aluminum Joiner is fit with screws. There is no need to use silicone sealants or adhesives of any kind.

19. Side flashings (L): These are used on both sides of the structure, as a fastener as well as a flashing. They are fit either for full width or cut-to-size panels. Application-specific flashings are required in some situations. End-caps should fit to these flashings on both ends.

Notes:

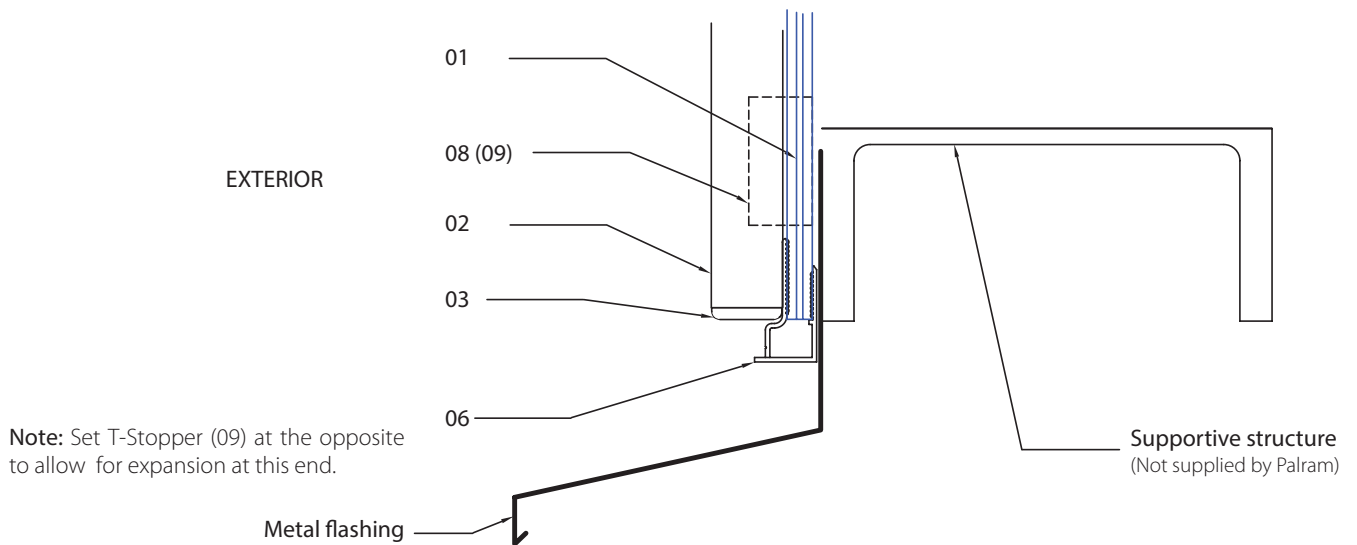
- SUNPAL system does not require using silicones or adhesives for parts interface. For sealing of flashing assemblies use only
- PALRAM approved accessories, silicones, sealing tape, closure fixtures etc.

Typical Installation Details

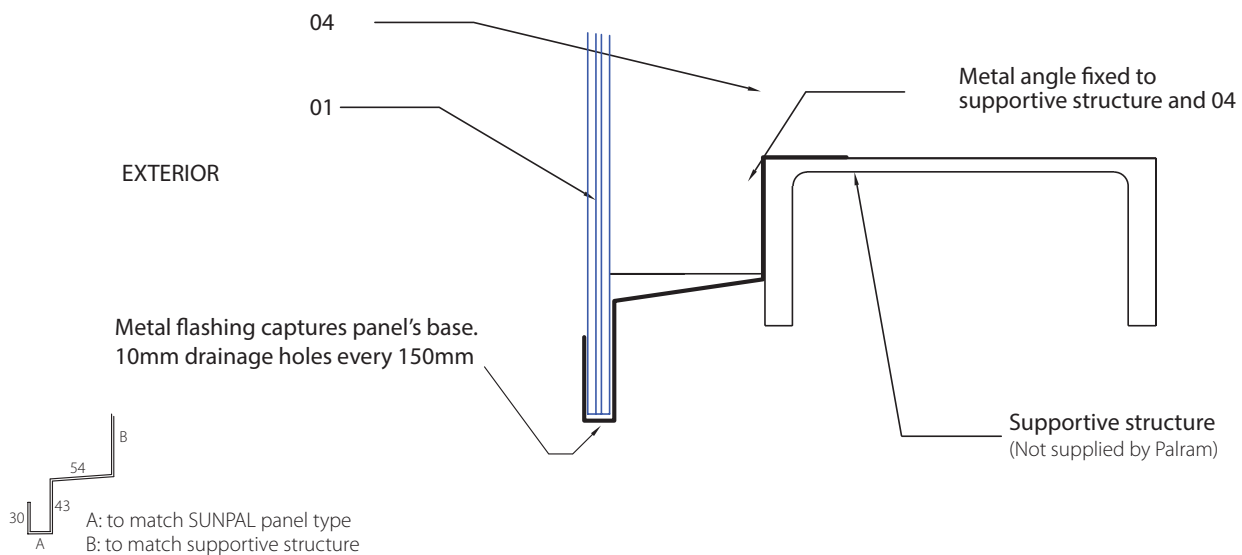
Please note: All drawings are available as CAD files from www.palram.com.

01	Panel	06	Aluminum Sealing Strip	11	Aluminum F-Profile
02	Polycarbonate Joiner	07	Polycarbonate U-Profile	12	Metal Screw
03	End-Cap for Polycarbonate Joiner	08	T-Fastener	13	Wood Screw
04	Aluminum Joiner 'C'	09	T-Stopper	14	Aluminum U-Profile
05	End-Cap for Aluminum Joiner 'C'	10	Aluminum Span-Bar		

Cladding Detail 1: Cladding Base



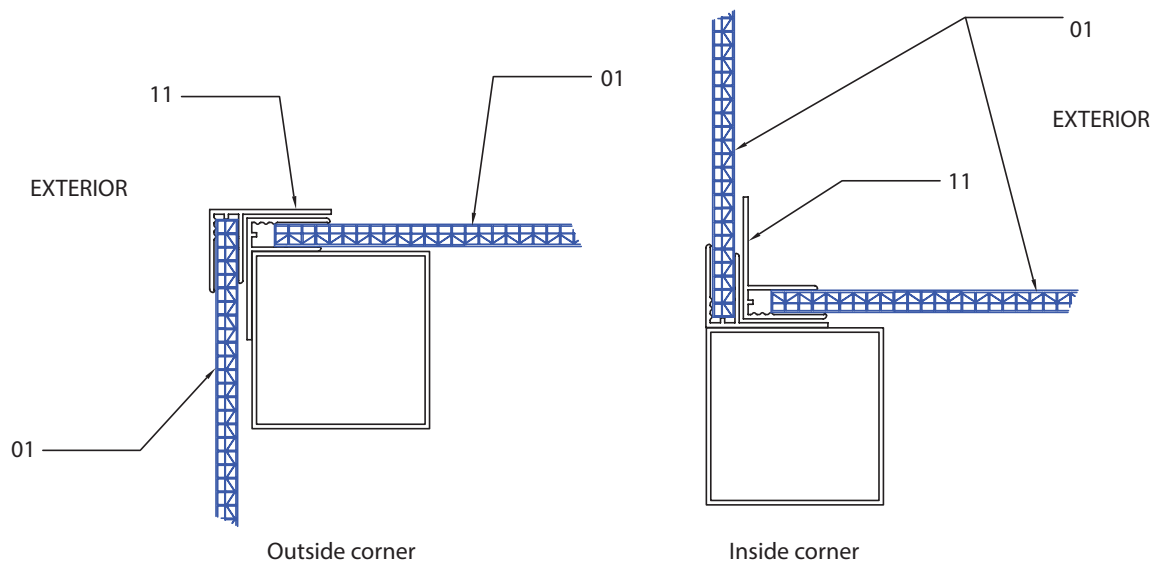
Cladding Detail 2: Cladding Base - Hidden Seams



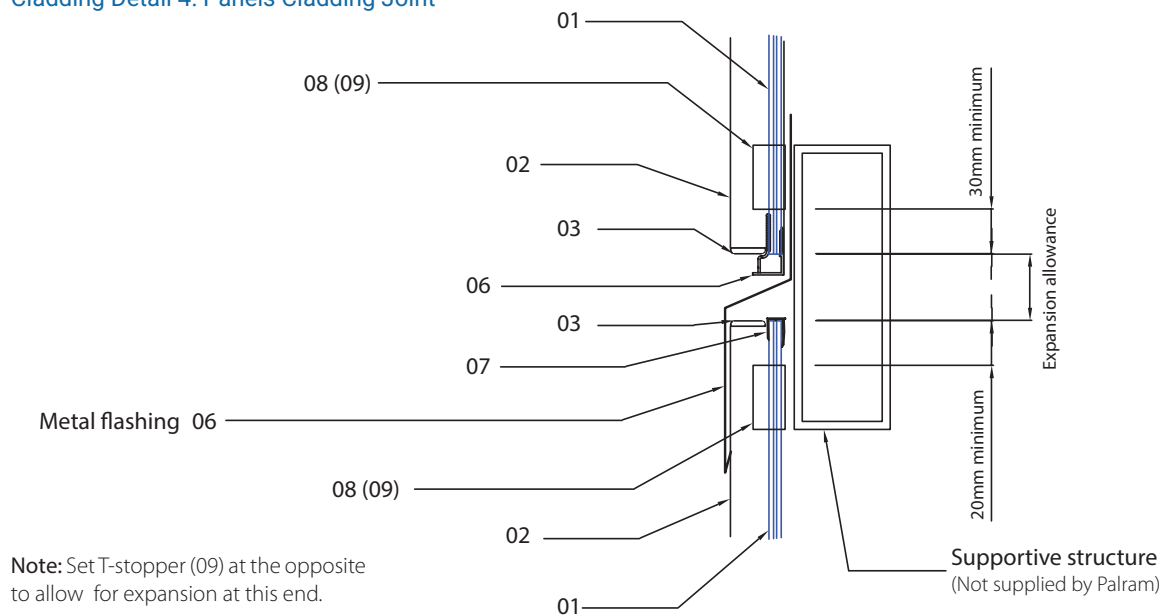
Legend

01	Panel	06	Aluminum Sealing Strip	11	Aluminum F-Profile
02	Polycarbonate Joiner	07	Polycarbonate U-Profile	12	Metal Screw
03	End-Cap for Polycarbonate Joiner	08	T-Fastener	13	Wood Screw
04	Aluminum Joiner 'C'	09	T-Stopper	14	Aluminum U-Profile
05	End-Cap for Aluminum Joiner 'C'	10	Aluminum Span-Bar		

Cladding Detail 3: Corner Details



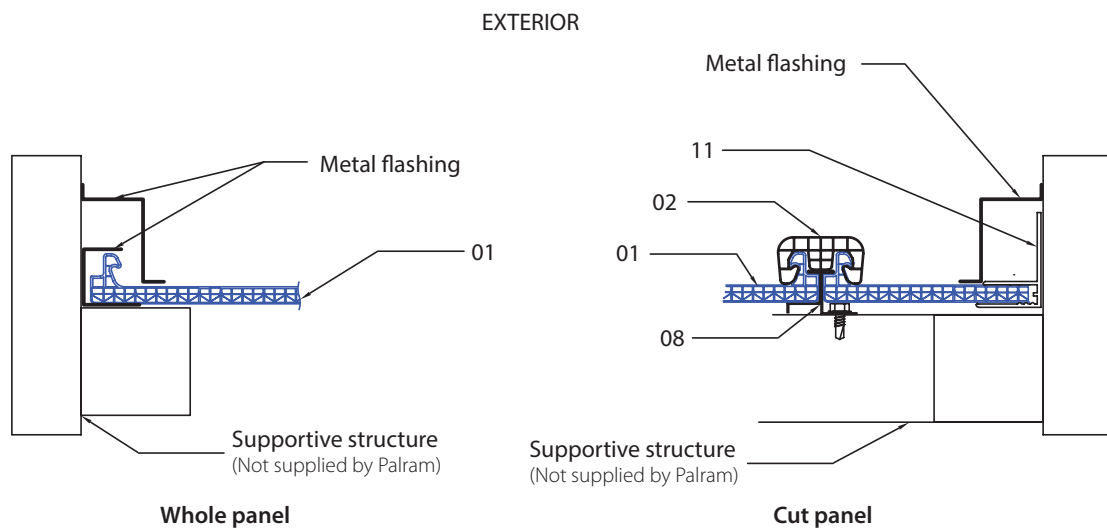
Cladding Detail 4: Panels Cladding Joint



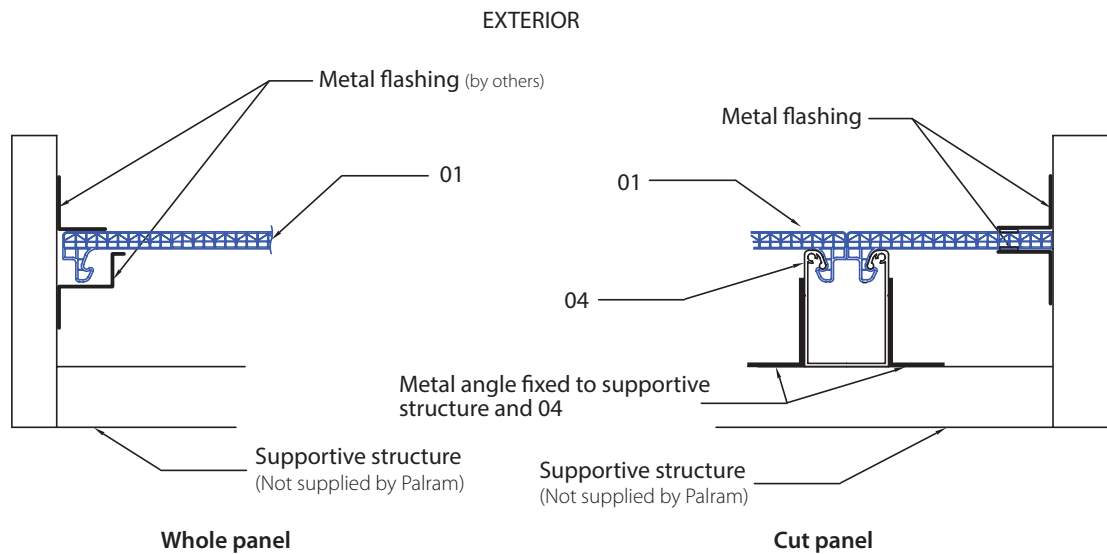
Legend

02	Polycarbonate Joiner	07	Polycarbonate U-Profile	12	Metal Screw
03	End-Cap for Polycarbonate Joiner	08	T-Fastener	13	Wood Screw
04	Aluminum Joiner 'C'	09	T-Stopper	14	Aluminum U-Profile

Cladding Detail 5: Parallel Apron Flashings



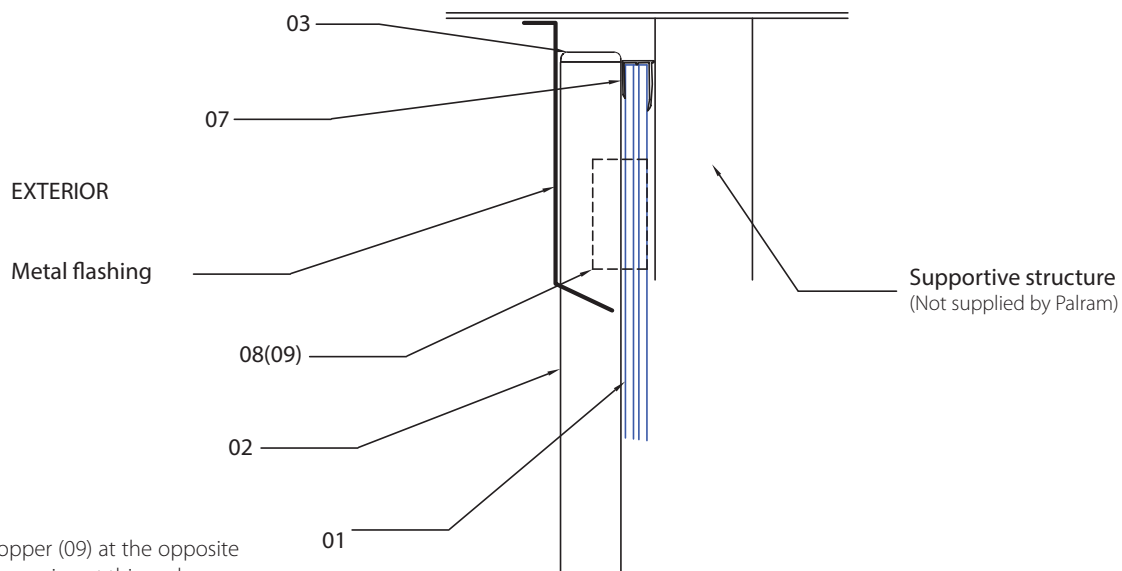
Cladding Detail 6: Parallel Apron Flashings - Hidden Seams



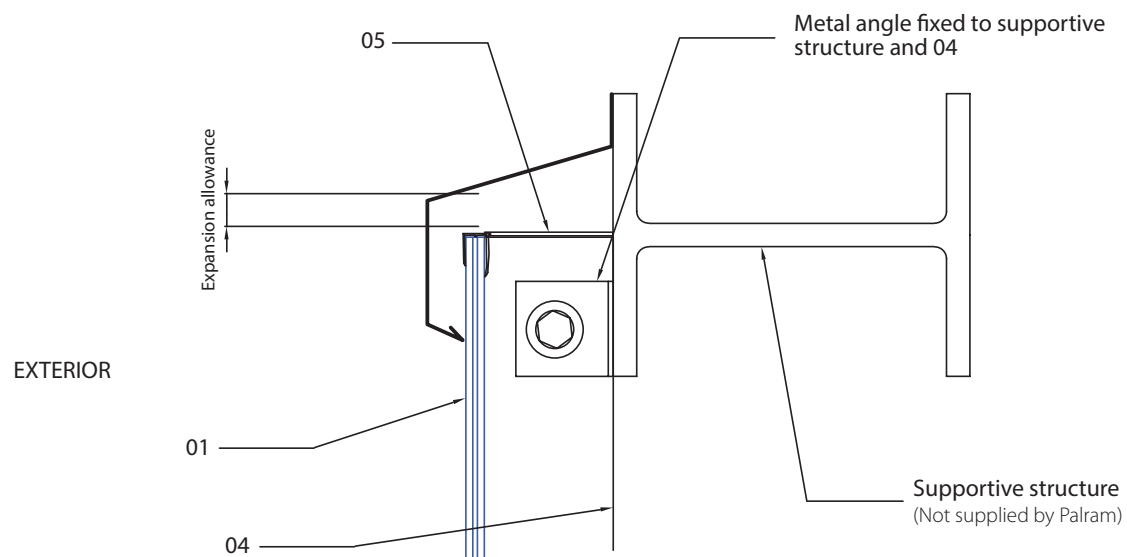
Legend

01	Panel	06	Aluminum Sealing Strip	11	Aluminum F-Profile
02	Polycarbonate Joiner	07	Polycarbonate U-Profile	12	Metal Screw
03	End-Cap for Polycarbonate Joiner	08	T-Fastener	13	Wood Screw
04	Aluminum Joiner 'C'	09	T-Stopper	14	Aluminum U-Profile
05	End-Cap for Aluminum Joiner 'C'	10	Aluminum Span-Bar		

Cladding Detail 7: Cladding Top Flashings



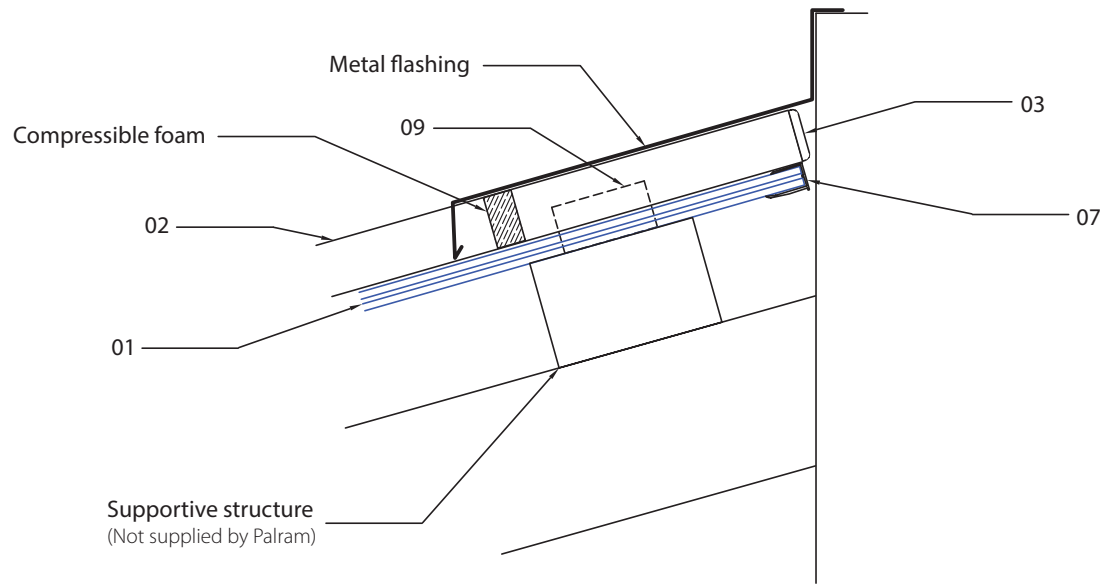
Cladding Detail 8: Cladding Top Flashing - Hidden Seams



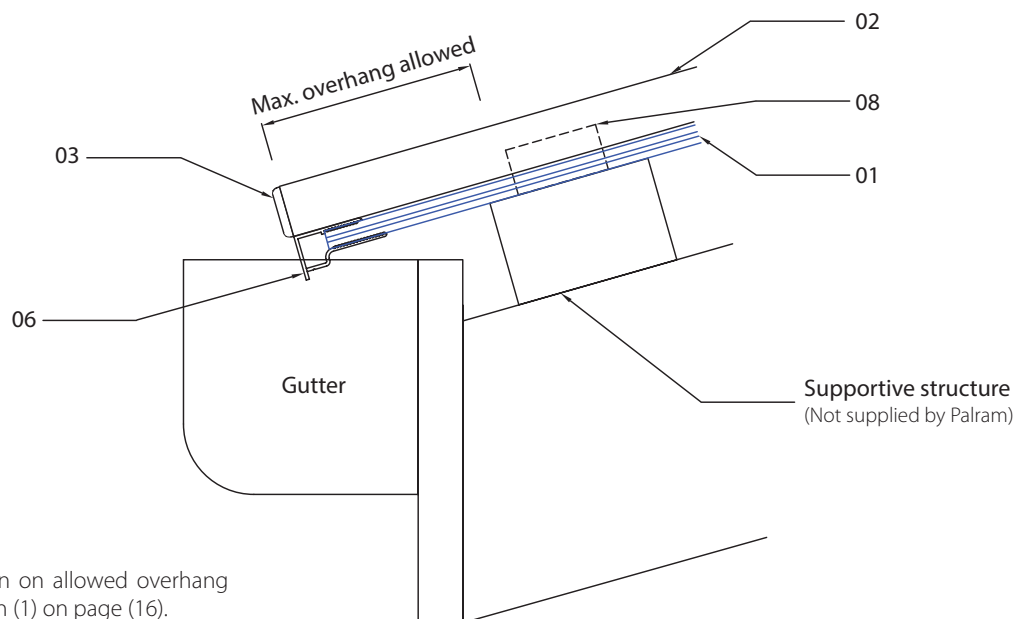
Legend

01	Panel	06	Aluminum Sealing Strip	11	Aluminum F-Profile
02	Polycarbonate Joiner	07	Polycarbonate U-Profile	12	Metal Screw
03	End-Cap for Polycarbonate Joiner	08	T-Fastener	13	Wood Screw
04	Aluminum Joiner 'C'	09	T-Stopper	14	Aluminum U-Profile
05	End-Cap for Aluminum Joiner 'C'	10	Aluminum Span-Bar		

Roofing Detail 1: Apron Flashing



Roofing Detail 2: Eave

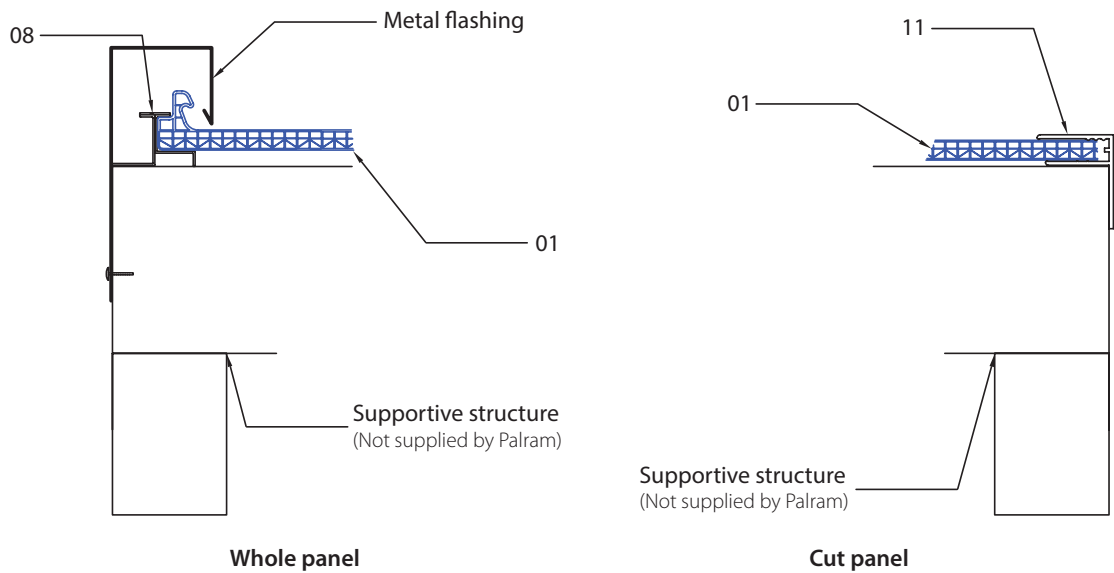


Note: For information on allowed overhang please refer to section (1) on page (16).

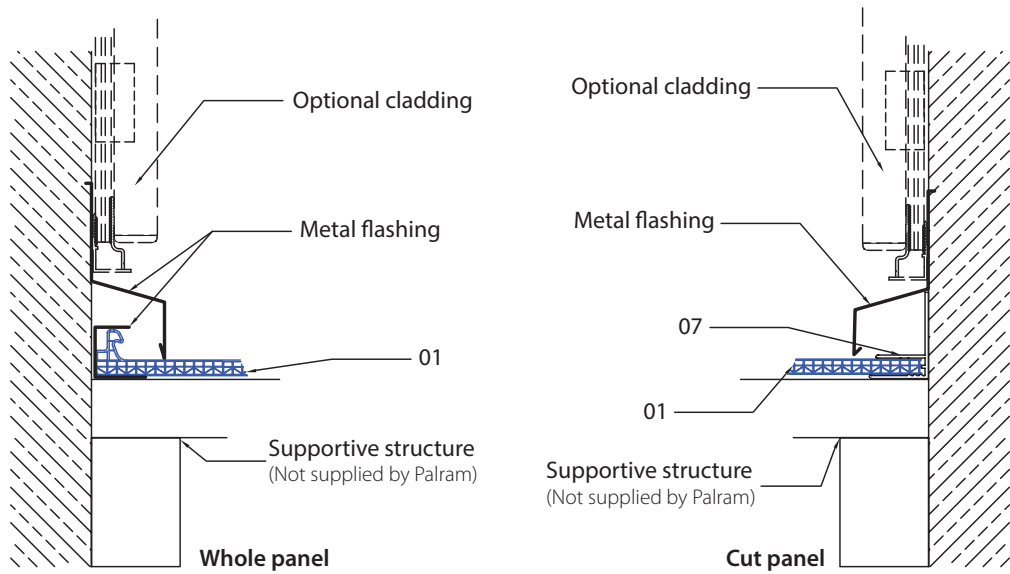
Legend

01	Panel	06	Aluminum Sealing Strip	11	Aluminum F-Profile
02	Polycarbonate Joiner	07	Polycarbonate U-Profile	12	Metal Screw
03	End-Cap for Polycarbonate Joiner	08	T-Fastener	13	Wood Screw
04	Aluminum Joiner 'C'	09	T-Stopper	14	Aluminum U-Profile
05	End-Cap for Aluminum Joiner 'C'	10	Aluminum Span-Bar		

Roofing Detail 3: Barge Details



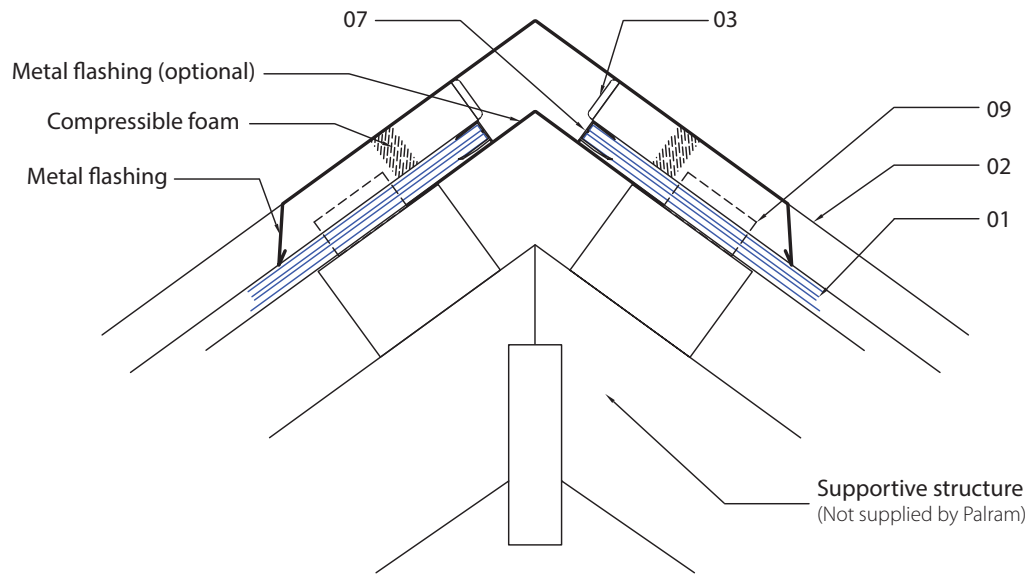
Roofing Detail 4: Parallel Apron Flashing



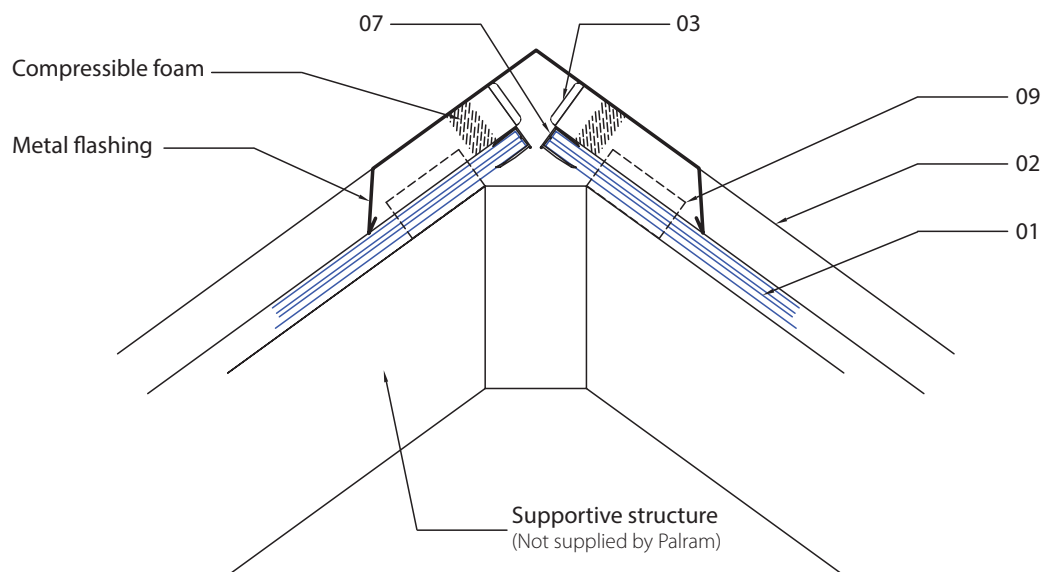
Legend

01	Panel	06	Aluminum Sealing Strip	11	Aluminum F-Profile
02	Polycarbonate Joiner	07	Polycarbonate U-Profile	12	Metal Screw
03	End-Cap for Polycarbonate Joiner	08	T-Fastener	13	Wood Screw
04	Aluminum Joiner 'C'	09	T-Stopper	14	Aluminum U-Profile
05	End-Cap for Aluminum Joiner 'C'	10	Aluminum Span-Bar		

Roofing Detail 5: Ridge Flashing



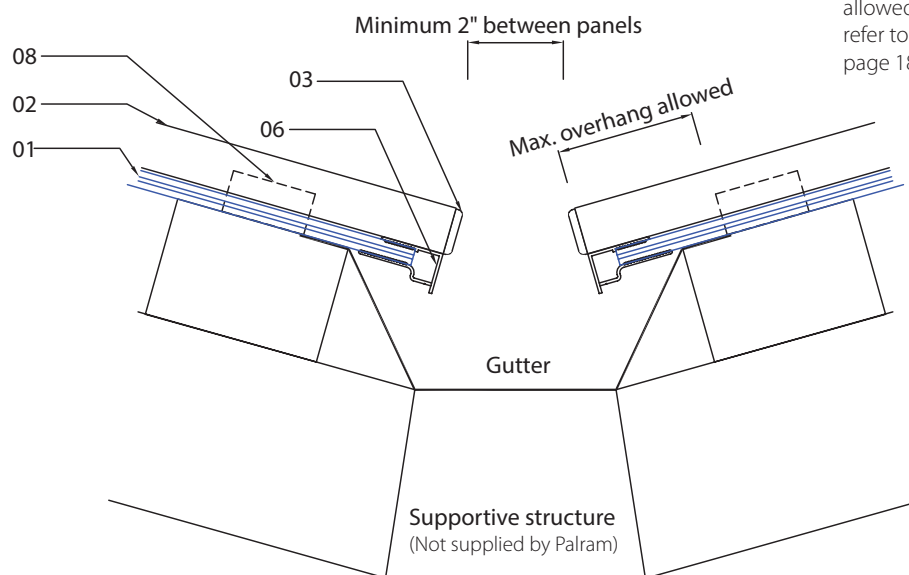
Roofing Detail 6: Hip Flashing



Legend

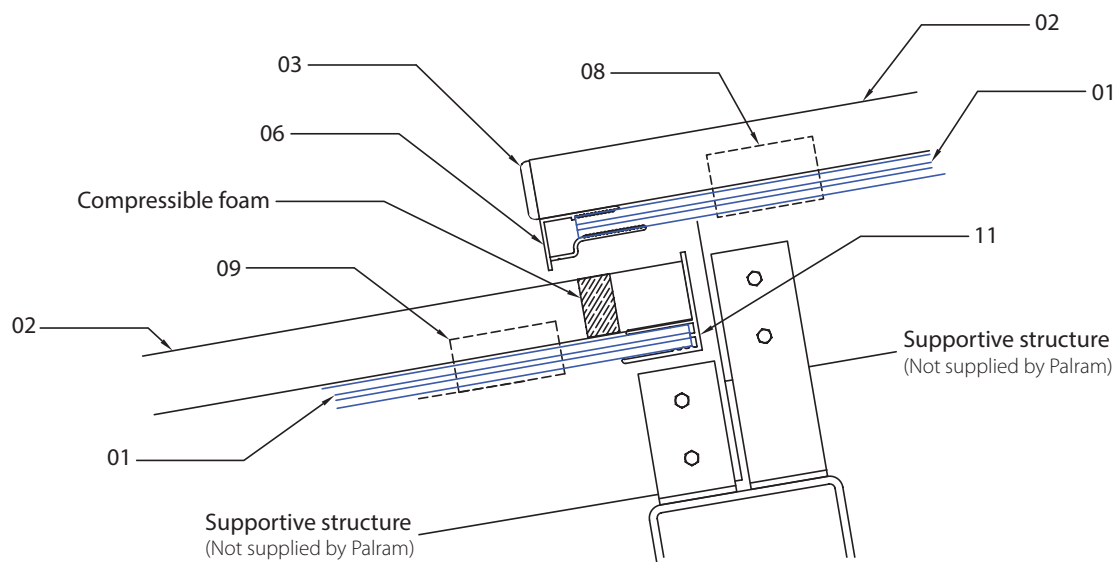
01	Panel	06	Aluminum Sealing Strip	11	Aluminum F-Profile
02	Polycarbonate Joiner	07	Polycarbonate U-Profile	12	Metal Screw
03	End-Cap for Polycarbonate Joiner	08	T-Fastener	13	Wood Screw
04	Aluminum Joiner 'C'	09	T-Stopper	14	Aluminum U-Profile
05	End-Cap for Aluminum Joiner 'C'	10	Aluminum Span-Bar		

Roofing Detail 7: Valley Gutter



Note: For information on allowed overhang please refer to "Joiners" section on page 18.

Roofing Detail 8: Overlap Panels



Manufacturer's Lifetime Warranty

SUNPAL panels are guaranteed not to leak for 25 years. SUNPAL panels bear a limited lifetime warranty not to lose more than 6% of light transmission for 10 years, when measured according to ASTM D1003-13. SUNPAL panels are warranted for up to 10 years from the date of purchase not to break or fail as a result of impact by hail measuring up to 1 Inch in diameter, in speed of up to 20 m/s. For detailed warranty terms please see Palram's website.

Please note:

Warranties apply only if the panels are installed and maintained according to Palram specifications and installation instructions.



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