Stepped / Offset Sealed Units

Different-sized inner and outer panes — sash windows and flat roof rooflights

Product Overview

A stepped (offset) sealed unit has inner and outer glass panes of different sizes, creating a step at one or more edges. The most common application is vertical sliding sash windows, where the step accommodates the meeting rail overlap between upper and lower sashes.

Step Types

Step Type	Description	Typical Step	Application
Single Bottom	Outer pane extends below inner	12-18mm	Bottom sash meeting rail
Single Top	Inner pane extends above outer	12-18mm	Top sash meeting rail
Double (Top+Bottom)	Steps on both parallel edges	12-18mm	Double-hung sash — both rails
L-Step	Steps on two adjacent edges	6-25mm	Corner conditions
All-Round	Inner smaller on all four sides	6-15mm	Deep-rebate frames
Reverse	Inner pane larger than outer	6-25mm	Deeper internal rebate

Sash Window Applications

For standard double-hung sash windows: the lower sash unit has a single bottom step (outer pane extends below inner), and the upper sash unit has a single top step (inner pane extends above outer). The step dimension matches the sash frame thickness — typically 12-18mm. This allows the sashes to slide past each other at the meeting rail while maintaining weathertightness.

Flat Roof / Rooflight Applications

Stepped units for flat roof rooflights accommodate kerb profiles with different inner and outer rebate depths. Outer pane MUST be toughened, inner pane MUST be laminated (overhead glazing mandatory). Minimum slope 5° for self-draining.

Ordering — Critical

Specify: (1) BOTH inner and outer pane dimensions separately, (2) which pane is larger, (3) step position (top/bottom/left/right), (4) step dimension in mm. A dimensioned drawing is strongly recommended — errors cannot be corrected after manufacture.

Gas Fill — Air as Standard, Argon Optional

CSU sealed units are air-filled as standard. Argon gas fill (minimum 90% concentration) is available as an optional upgrade. Argon has 34% lower thermal conductivity than air (0.018 vs 0.026 W/mK), improving thermal insulation by approximately 15%. Argon is an inert, non-toxic, odourless gas that makes up 0.93% of Earth's atmosphere. Krypton gas is available by special order for slim-cavity applications where maximum performance is needed in a narrow gap.

Property	Dry Air (Standard)	Argon (Optional)	Krypton (Special)
Thermal conductivity	0.026 W/mK	0.018 W/mK	0.010 W/mK
U-value benefit	Reference	~15% better	~25% better
Optimal cavity	12-16mm	16-20mm	10-12mm
Depletion rate	N/A	<1% per year	<1% per year
Relative cost	1x	~1.2x (optional upgrade)	~50x (premium)

Spacer Bar Options — Warm Edge vs Aluminium

Traditional aluminium spacers conduct heat rapidly, creating a cold thermal bridge at the unit edge that causes condensation and heat loss. Warm edge spacers use low-conductivity materials, reducing this bridge by up to 94%. CSU recommends Swisspacer Ultimate or Super Spacer TriSeal for all projects.

Spacer	Material	Conduct. (W/mK)	Psi value	Edge Temp vs Alu.
Aluminium	**Aluminium alloy**	160.0	0.080	Baseline (cold)
Swisspacer Ultimate ★	**Composite polymer**	0.19	0.030	+3-4°C warmer
Super Spacer TriSeal ★	**Silicone foam**	0.17	0.028	+3-4°C warmer
Thermix TX.N Plus	**Stainless + plastic**	0.60	0.040	+2-3°C warmer
TGI Spacer	**Stainless + polymer**	0.90	0.050	+1-2°C warmer

Warm edge improves whole-window U-value by 0.1-0.2 W/m²K, eliminates edge condensation, and can improve Window Energy Rating by one full band. Available in widths: 6-24mm.

Handling, Storage & Lead Times

- **Storage:** Store vertically on A-frames under cover. Never store flat.
- **Handling:** Suction cups for units over 25kg. Mechanical handling over 60kg.
- **Edge protection:** Protect edges during transport. Avoid glass-to-glass contact.
- **Installation:** Install within 28 days of delivery for warranty validity.
- **Temperature:** Do not install below 5°C. Allow units to acclimatise first.

Product	Standard	Express	Notes
Standard DGU	3-5 days	1-2 days	Most configs
Triple Glazed	5-7 days	3-4 days	Warm edge std
Integral Blinds	10-15 days	—	Made to order
Jumbo Units	5-10 days	—	Size dependent

Product	Standard	Express	Notes
Shaped Units	5-7 days	—	Template req.
Fire-Rated	7-14 days	—	Availability
Walk-On Glass	7-10 days	—	SGP lamination
Smart Glass	10-15 days	—	PDLC film

How to Order

Contact our sales team: 020 8574 9342 | 07305 993794 | sales@csultd.co.uk | csultd.co.uk — quotes returned within 2 business hours (Mon-Fri, 8am-5pm).