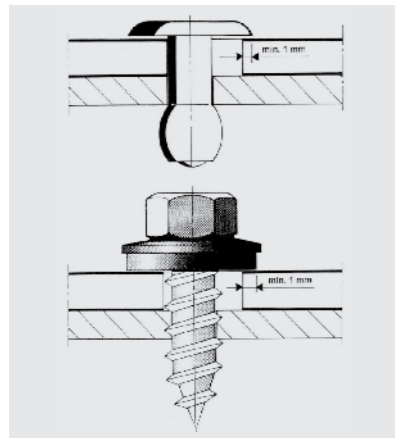


Distances from the edge



Overlapping the hole edge

GENERAL

To avoid any tension occurring in the rivet and screw connections, the rivets and screws must be set tension-free. The bore holes in the panels must be large enough to allow for the expected thermal expansion. The linear, thermal expansion of CBOND is 2.4 mm at a panel length of 1 m and a temperature difference of 100°C.

THERMAL EXPANSION AND CONTRACTION

Material	Linear thermal expansion coefficient α_t (m/°C)	Expansion at 1 m panel length/width and 50°C temp. difference
PVC	$\sim 70 \times 10^{-6}$	3.5 mm
CBOND	24×10^{-6}	1.2 mm
Aluminium	24×10^{-6}	1.2 mm
Steel	12×10^{-6}	0.6 mm
Concrete	12×10^{-6}	0.6 mm
Wood	5×10^{-6}	0.25 mm

Maximum heating of the panel approx. 70°C (measured at a black panel at an air temperature of 40°C).

1 m x 3 m panel as an example

Expected heating of the panel max. 70 °C

Assumed assembly temperature 20 °C

Temperature difference $\Delta t = 50$ °C

Calculation

$2.4 \text{ mm} \times 3 \text{ (m)} \times 0.5 \text{ (}\Delta t = 50 \text{ °C)} = 3.6 \text{ mm}$ panel expansion, i.e. half of the panel expansion must be expected on the opposite panel edges.

NOTE:

In order to exceed the stated durability of the ACP sheets, it is strongly recommended to perform double folding on the top and bottom of the sign trays or cladding.

Sealing should be done with DOWSIL 790 Silicone or similar spec sealer.

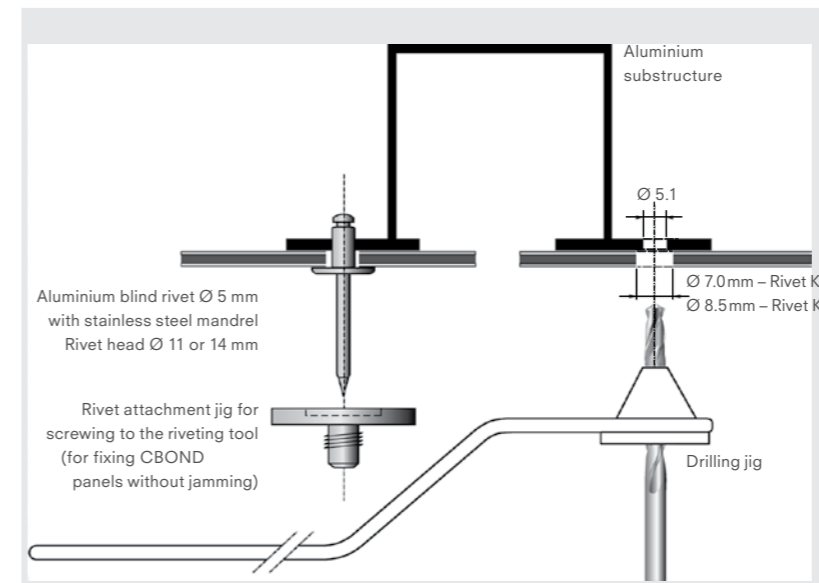
Gluing of sheets should be done with 3M Double Coated Polyethylene Foam Tape 4492

RIVETING

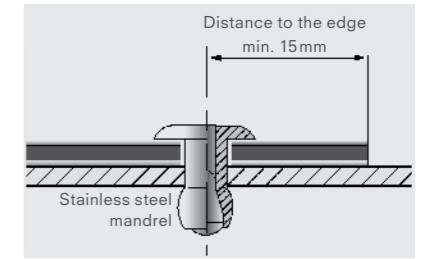
CBOND panels can be fastened together or joined to other materials with rivets common to aluminium constructions.

For outdoor use and for use in areas of high humidity, aluminium blind rivets with stainless steel mandrels should be used to prevent ugly corrosive edges. When using aluminium blind rivets with steel mandrels, the mandrel should drop out after riveting (detachable version).

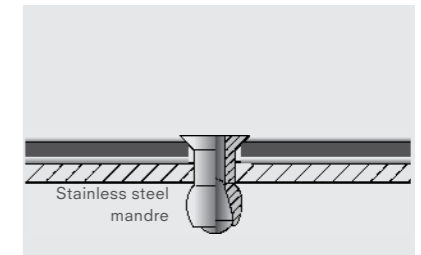
Countersunk rivets are suitable for indoor use only..



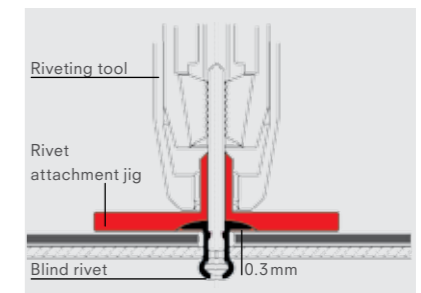
Top: Conical drilling jig, centre: drilling jig for hole = Ø 8.5 mm, bottom: rivet attachment jigs for rivet head dia. 11 and 14 mm mountable on riveting tool AccuBird (MBE)



Blind rivet with standard head



Countersunk rivet (for indoor use only)



Important: During riveting many factors may have an influence on the exact tolerance of the rivets of 0.3 mm (e.g. rivet head tolerance). Therefore, we recommend that you make a test on a façade panel. Please always remove the protective film in the riveting area prior to riveting.

For outdoor use please note:

- For outdoor use, aluminium blind rivets are used that have been approved for construction, and have a 5 mm shaft diameter and a rivet head diameter of 11 or 14 mm.
- Please take the thermal expansion of the panel into account (2.4 mm/m/100°C). To avoid jamming, the hole in the panel must be large enough to allow for the expected expansion.
- With the shaft of the rivet fitting closely to the edge of the hole, the rivet head must cover over 1 mm of the area surrounding the hole.
- Drilling jigs are used for centrally drilling holes into the panel and the substructure and for centrally setting the rivet.
- Rivet attachment jigs are used for setting blind rivets without jamming allowing for a tolerance of 0.3 mm. Make sure to use rivet attachment jigs and rivets from the same manufacturer, as the height of the rivet head according to Din 7337 may vary.
- The clamping thickness results from the thickness of the material to be riveted plus an additional value of 2 mm to ensure that the closing head is perfectly formed. In accordance with this clamping thickness the corresponding shaft length is determined in the tables provided by the rivet manufacturers (L min. = 14 mm).

After installation, panels should be cleaned periodically on site to avoid damage to the coating/surface from pollution and other environmental causes.