

INDEX

INTRODUCTION	PAGE 2
HOT AIR MANUAL WELDING	PAGE 6
AUTOMATIC WELDING	PAGE10
WELDING TRANSVERSE JOINTS	PAGE13
T-JOINTS – MULTIPLE WELDING SEAMS	PAGE15
PERIMETER FIXING	PAGE16
FIXING MEMBRANE TO A VERTICAL SURFACE	PAGE18
FIXING MEMBRANE TO A HORIZONTAL SURFACE	PAGE21
ACCESSORIES	PAGE25
INTERNAL CORNERS	PAGE26
EXTERNAL CORNERS	PAGE33
CURVED, CONICAL AND ROUND DETAILS	PAGE38
OUTLETS	PAGE42
PERIMETER EDGE FLASHING	PAGE44
SEAM CHECKS	PAGE54
DAMAGE REPAIR	PAGE57
INSTALLATION OF NEW MEMBRANE TO EXISTING	PAGE59
NOTE	PAGE62

INTRODUCTION



This manual sets out the installation methods for FLAGON TPO membranes (polyolefin).

1. Storage

Rolls of FLAGON TPO membrane are delivered to site on pallets.

These should be stored in a dry place or, if this is not possible, protected against dampness and exposure to frost and snow using waterproof sheets.

2. Labelling

All FLAGON TPO membranes have a green label identifying the membrane, its thickness, length and width.

All accessories used to install FLAGON TPO have green identification labels and/or packaging.

INTRODUCTION

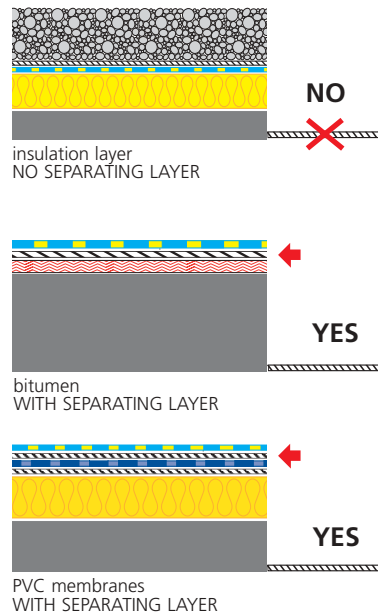
3. Equipment

The following is the equipment necessary to install FLAGON TPO membranes:

- hot air manual welding guns
- 20 mm nozzle (for finishing or welding details)
- 40 mm nozzle (in seam welding)
- Flagofil nozzle (to weld Flagofil cord)
- 28 mm Teflon roller (blue)
- 6 mm brass roller (to weld awkward details)
- scissors
- cutter for T-joints and bevels
- mill cutter for T-joints and bevels
- the welding tester (seam probe)
- automatic welding machine (type Varimat)



INTRODUCTION



4. Chemical compliance *
FLAGON TPO membranes are chemically compatible with a large range of materials (refer to data sheet).

A) Insulation material

It is not necessary to lay a separation layer between the waterproof membrane and most insulation boards.

B) Bitumen

In the case of bitumen, lay a separation layer of geo-textile before laying FLAGON TPO.

C) PVC membranes

Lay a separation layer of geo-textile between the FLAGON TPO membrane and new PVC synthetic membranes.

*** Please contact our Technical Department who will advise on the chemical compliance of FLAGON TPO membranes with different materials**

INTRODUCTION

5. Cleaning welding surfaces

The surface of TPO membranes may become electrostatically charged which can significantly increase the deposit of dust and impurities. Before welding, using a white cloth, clean the edges of the membrane with FLAGON TPO CLEANER.

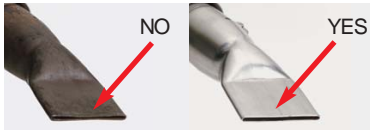


This operation can only be avoided:

- 1- when welding is carried out immediately new rolls of membrane are unrolled;
- 2- when automatic welding is carried out using a Varimat Leister equipped with a FLAG SCRAPER NOZZLE (see step 2.1 page10).

NOTE: When the welding surfaces are too wet or dirty, use a new, dry, absorbent cloth to wipe them before cleaning with FLAGON TPO CLEANER.

1 HOT AIR MANUAL WELDING



Setting temperature on the Triac S



Setting temperature on the Triac PID

1.1 Preliminary checks

Ensure the nozzle is clean and uniformly open across its entire width.

1.2 Operating temperature

Adjust the welding temperature according to the following table;

Model	20 mm Nozzle
Triac mod 1A	Position 5*
Triac S	Position 5*
Triac PID	300° C±10*
Model	40 mm Nozzle
Triac mod 1A	Position 5,5/6*
Triac S	Position 5,5/6*
Triac PID	350° C±10*

The required operating voltage is 220/240 Volts for automatic machines; 110 Volts for hand guns.

To avoid voltage drops:

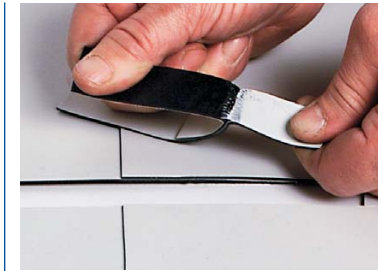
- **Never use** excessively long supply cables or those with a small diameter (110 Volts 6 mm diameter minimum)

Never use a shared power supply.

1 HOT AIR MANUAL WELDING

Make a sample weld to test the temperature before starting work. Check the sample weld with a destructive test (see 14.2 page 55).

* the working temperature could be affected by environmental conditions on site (humidity, temperature, wind, etc.)



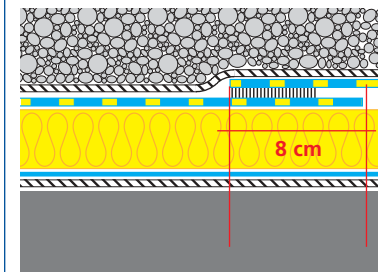
1.3 Overlap

The edges of the membranes to be welded must be clean and dry.

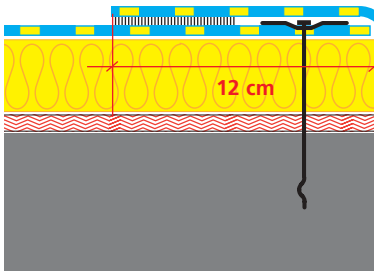


The overlap should be:

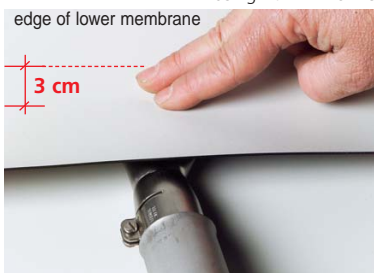
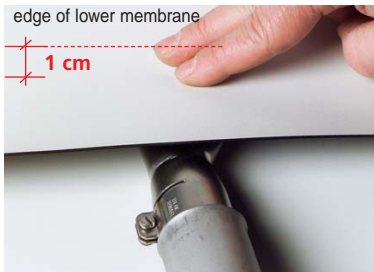
- 8 cm for ballasted and fully adhered roof systems;



1 HOT AIR MANUAL WELDING



- 12 cm for mechanically fixed roofs.



1.4 Phase 1 – spot welding

Spot-weld the overlap, about every 40 cm. Distance the spot welding from the edge of the lower sheet, by:

- 1 cm (using the 40 mm nozzle)
- 3 cm (using the 20 mm nozzle)

using 40 mm nozzle

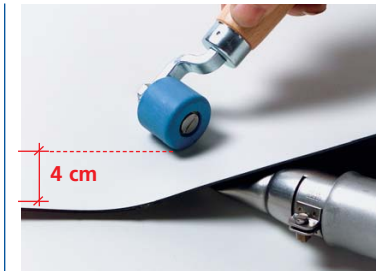
using 20 mm nozzle

1 HOT AIR MANUAL WELDING

1.5 Phase 2 - pre-welding

Weld the rear overlap area so that the following openings remain for the finishing weld:

- 4 cm (using the 40 mm nozzle);



using 40 mm nozzle



using 20 mm nozzle

- 3 cm (using the 20 mm nozzle)

Position the nozzle between the two edges at an angle of 45° to the welding line. Roll at a distance of about 1 cm from the nozzle

1.6 Phase 3 - welding

Carry out the weld at the edge of the upper layer. Position the nozzle between the two edges at an angle of 45° degrees to the welding line. Roll at a distance of about 1 cm from the nozzle.



2 AUTOMATIC WELDING



Using automatic welding equipment such as the Varimat Leister equipped with a FLAG SCRAPER NOZZLE.

2.1 Preliminary operation
Clean the nozzle and FLAG SCRAPER NOZZLE before welding.

Varimat Leister	
TEMPERATURE	450°±10*
SPEED	200 cm/minute

2.2 Welding temperature/speed
A sample weld serves to check the basic settings of the automatic welding machine before starting work on the waterproofing project.

Check the sample weld with a destructive test (see 14.2 page 55).

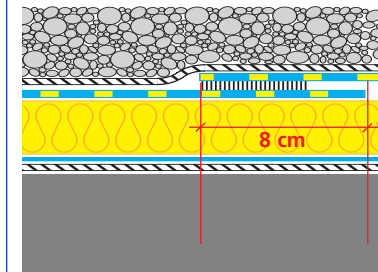
* the working temperature could be affected by environmental conditions on site (humidity, temperature, wind, etc.)

2 AUTOMATIC WELDING

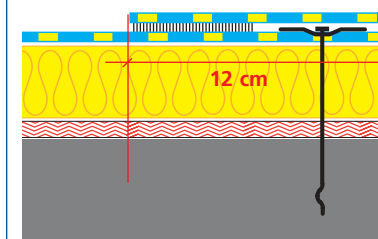
2.3 Overlap
The edges of the membranes to be welded must be clean and dry

The overlap should be:

- 8 cm for ballasted roofs



- 12 cm for mechanically fixed roofs



2 AUTOMATIC WELDING

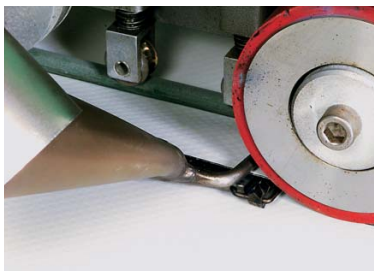


2.4 Use of Flag scraper nozzle

This scrapes the surface of the FLAGON TPO membrane enhancing welding and avoiding the necessity of cleaning.



Using a screwdriver, insert the FLAG SCRAPER NOZZLE between the layers to be welded.



Carry out the welding..

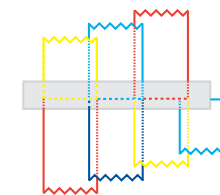
3 WELDING TRANSVERSE JOINTS

Round off sharp edges with scissors.

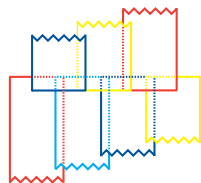
When possible, avoid creating multiple cross joints with more than three sheets.



For this purpose:
a) position two or more sheets perfectly parallel and aligned. Weld a third sheet or strip (min. 20 cm) transversally (90°) to previously installed sheets;



3 WELDING TRANSVERSE JOINTS



b) stagger the joints



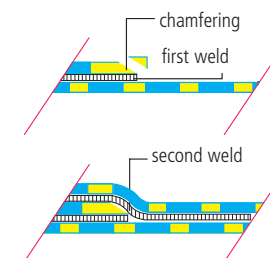
4 T-JOINTS - MULTIPLE WELDING

At "Tjoints" (e.g. at the trailing edges of sheets, and when installing any prefabricated FLAGON TPO elements):

a) chamfer the welding seam edge with the mill or chamfer tool.

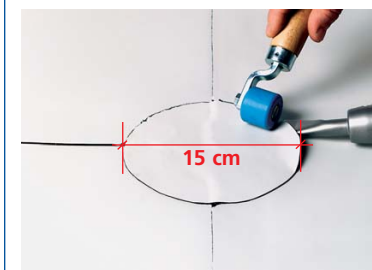


This operation removes the difference in height resulting from the overlapping of several waterproofing sheets and allows adequate cleaning of the seam prior to welding.



b) cut a circle of membrane (diameter approx. 15 cm) and weld over the chamfered T-joint.

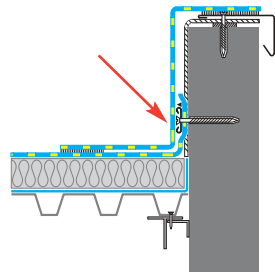
c) Spot-weld, pre-weld and weld.



5 PERIMETER FIXING

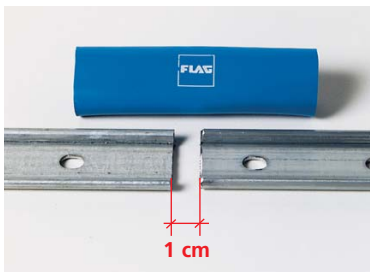


It is always necessary to fix around the perimeter with a pre-drilled FLAGON bar. The bar can be mechanically fixed on the horizontal or vertical surface at the base of the upstand.



Fix on the vertical surface in the case of:

- cement screeded deck;
- insulation board with thicknesses in excess of 5 - 6 cm.



Position the bars along the perimeter of the upstand and around any projections such as skylight kerbs. Leave a 1 cm. gap between bar ends to avoid expansion problems.

5 PERIMETER FIXING

Protect the membrane from puncture by installing FLAG BAR END PROTECTORS. Using the speed welding nozzle, hot-air weld the FLAGOFIL TPO cord (orange).

Note:
Mechanically fasten, using drilled bars or plates and screws, around all protrusions and changes in levels of the waterproofing membrane.



6 FIXING MEMBRANE TO A VERTICAL SURFACE



If the vertical upstand is more than 35 cm high, it will be necessary to anchor the FLAGON TPO membrane.

6.1 ADHERING*

Use solvent based FLEXOCOL BONDING ADHESIVE for FLAGON TPO.

Supports suitable for adhesives are: cement, wood, metal (after appropriate surface cleaning), polyurethane insulation panels with glass mat paper facing, tiles, etc.

Do not use solvent based glue on: extruded or expanded polystyrene insulation, cellular cement, newly laid bituminous membrane, panels containing perlite, mineral wool (unless Hard Rock SPA insulation boards), fibrous or dusty surfaces.

***Please contact our Technical Department who will advise on the the compliance of Flexocol glue with different materials.**

6 FIXING MEMBRANE TO A VERTICAL SURFACE

Using a roller spread the glue evenly on both surfaces.

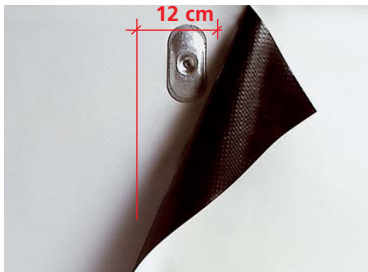
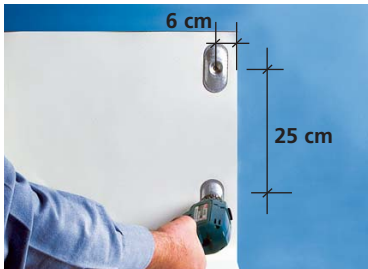
Leave until touch dry and the solvents have dispersed from the glue. Attach the two surfaces.



NOTE: When the environmental temperature is particularly cold, soften the external surface of the membrane using, a heat source, before gluing.



6 FIXING MEMBRANE TO A VERTICAL SURFACE



6.2 Mechanical fixing

Fixings should be positioned 6 cm from the edge and a maximum 25 cm apart. (Fixing centres will vary according to the building height and exposure. Please consult the FLAG Technical Department for fixing design requirements.)

Overlap the fixing line by 12 cm with the subsequent sheet.
Spot-weld, pre-weld, and weld.

7 FIXING MEMBRANE TO HORIZONTAL SURFACE

7.1- Fully adhering (fleece-backed FLAGON TPO membrane)

For fully adhering, use Flexocol A89 glue. Using the spatula supplied, spread the glue onto the supporting surface. (Refer to glue installation data sheet.)
Spot-weld, pre-weld, and weld.



NOTE: Avoid contaminating the welding edge of the membrane with glue. Any glue spots or residue can be removed with alcohol or acetone and a clean cloth.



7.2 Mechanical fixing

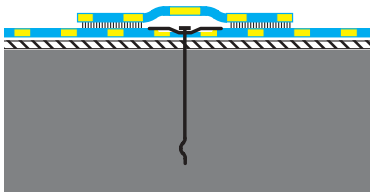
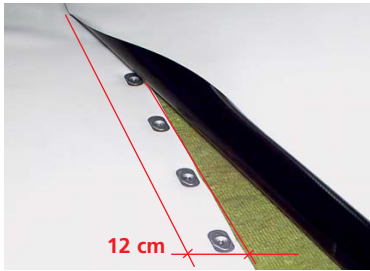
NOTE: When using trapezoidal metal decks the membrane must be laid at right angles to the deck direction.

With concrete decking the membrane can be laid in any direction.

There are two methods mechanically fixing the membrane:

- a) Fixing plates and screws
- b) Fixing with FLAG BARS

7 FIXING MEMBRANE TO HORIZONTAL SURFACE



a) Fixing plates and screws.

Fixing is carried out using proprietary fixing plates and screws along the edge of the membrane as shown. Fixing centres are determined by the building height and the topography of the area when subjected to wind.*

The adjoining membrane overlaps the fixed sheet by a minimum 12 cm encapsulating the fixing line. Weld the membrane together, using manual or automatic methods, to form a homogenous seam.

In areas of high wind exposure it may be necessary to increase the fixing centres in the perimeter and corner zones of the building. This is easily achieved by inserting a line of fixing long the centre of the installed membrane and then using a minimum 20 cm wide strip weld as shown in the diagram.

This same method can also be carried out when using pre-drilled FLAG BARS in lieu of fixing plates and screws.

*** Please contact the FLAG Technical Department regarding fixing design calculations.**

7 FIXING MEMBRANE TO HORIZONTAL SURFACE

b) Fixing with FLAG BARS

FLAG BARS are installed at pre-determined centres according to the wind load requirements of the local area and the building height.

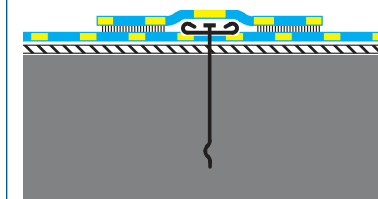
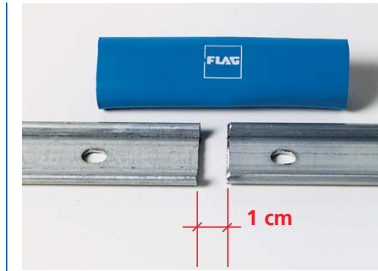
IMPORTANT: The insulation boards must be fixed independently to the membrane.

FLAG BAR ends should be installed with a 1 cm expansion gap between each bar.

FLAG BAR END PROTECTORS must be installed to all bar ends to prevent puncturing during movement and stress. Hot air weld the overlap using manual or automatic methods.

Install the bar system, with bar end protectors, at the pre-determined centres recommended by the FLAG Technical Department.

Hot air weld 20 cm minimum strip over the fixing bar as shown in the diagram.*.



7 FIXING MEMBRANE TO HORIZONTAL SURFACE



Consideration must be given to drainage of water from the roof. FLAG BARS should be installed to allow free flow of water from the roof area.

FLAG BAR END PROTECTORS must be installed when using the FLAG BAR system to avoid damage to the waterproofing membrane when subjected to movement stresses.

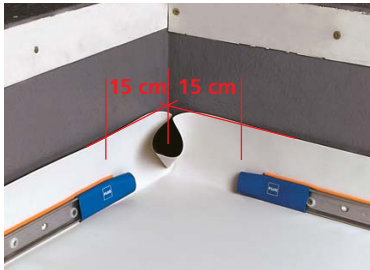
*** Please contact the FLAG Technical Department regarding fixing design calculations.**

8 ACCESSORIES

To improve installation times the FLAGON TPO roofing system has a wide range of hot air weldable accessories that include vents, outlets, scuppers and internal and external corners.



9 INTERNAL CORNERS



9.1 Horizontal pre-fabricated internal corner

Position the FLAGON TPO membrane on the horizontal surface fixing it at the perimeter with pre-drilled bar. Locate fixing bars 15 cm from the corner, protecting the ends with FLAG BAR END PROTECTOR.



Fold the excess membrane towards the wall.



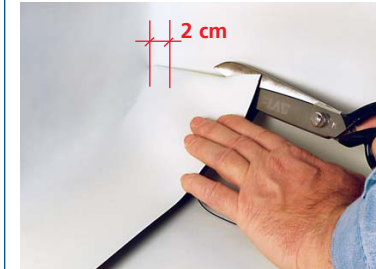
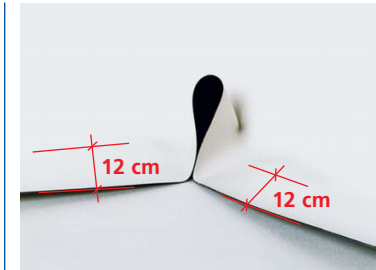
Using hot air seal and weld the "pocket" to the vertical surface.

9 INTERNAL CORNERS

9.2 Prefab internal corner

Measure and cut the membrane to fit the upstand plus an extra 12 cm (minimum) for welding on the horizontal surface. Fix this membrane to the upstand by gluing or spot-welding.

Dress the excess into the corner and cut it up to 2 cm from the edge.



9 INTERNAL CORNERS



Overlap the two edges of membrane and cut the excess material up to 2 cm from the edge as illustrated in the picture.



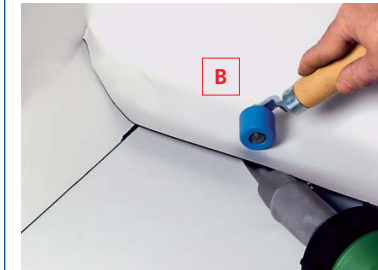
Spot-weld, pre-weld and weld the overlap on only the lower edge (A) of the horizontal surface

9 INTERNAL CORNERS

Chamfer the welding seam edge with the mill or chamfer tool.



Spot-weld, pre-weld and weld the overlap on the upper edge (B) of the horizontal surface . .



9 INTERNAL CORNERS



After chamfering the seam edge, spot weld the FLAGON TPO prefab corner in position.



Working from the centre of the corner outwards, prepare a pre-welding line, set back 3 cm from the border of the corner.

Using the 20 mm nozzle, weld the prefab corner into position.

Note:
Always clean the surfaces to be welded with a clean cloth and FLAGON TPO CLEANER.

9 INTERNAL CORNERS

9.3 Internal corner with vertical crease

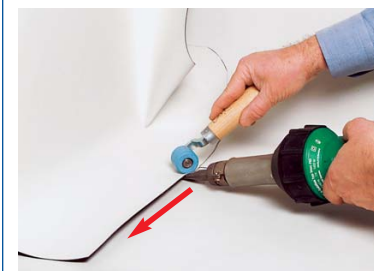
Apply FLAG BONDING ADHESIVE to the internal upstand and FLAGON preformed flashing leaving a 12 cm strip for hot air welding to the main field sheet.



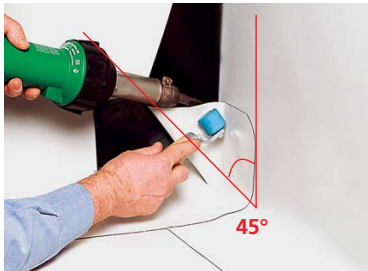
Bond the membrane to the upstand starting at the top edge and working down to the base.



Cut and glue the second FLAG flashing strip on the upstand, leaving 12 cm width for welding on to the horizontal surface.



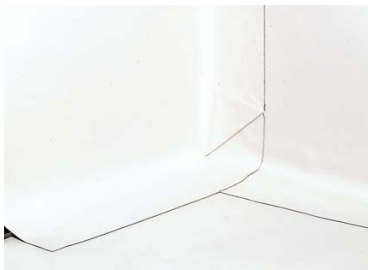
9 INTERNAL CORNERS



Spot weld in position as indicated. Then fold the membrane to form an upright crease. Weld the strip to the first FLAG flashing and weld the crease together. Fold the crease back on to the vertical face. Spot weld, pre-weld and weld.



Close the bend on the vertical wall by spot-welding, pre-welding and welding.



10 EXTERNAL CORNERS

10.1 Horizontal surface

Position the FLAGON TPO membrane on the horizontal surface fixing it at the perimeter with pre-drilled bar. Locate fixing bars 15 cm from the corner, protecting the ends with FLAG BAR END PROTECTORS.

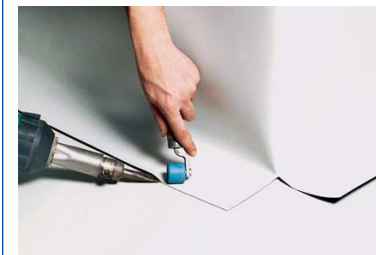
10.2 Prefab external corner

Measure and cut the membrane to fit the upstand plus an extra 12 cm (minimum) for welding to the horizontal surface.

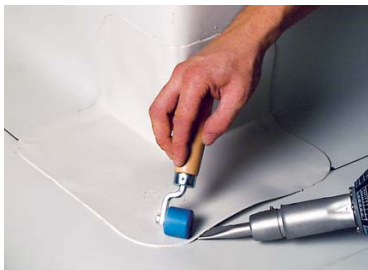
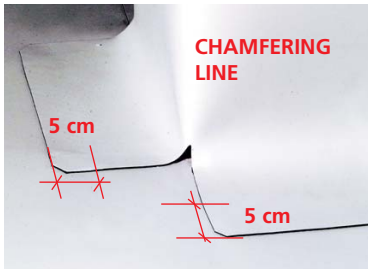
Apply FLAG BONDING ADHESIVE to the upstand face and to the FLAG membrane. Allow the glue to become tack dry. Then bond together on one face of the external corner to be covered, as shown.

Make a cut in line with the corner.

Turn the membrane along the adjacent wall and bond in position. On the horizontal surface, spot-weld, pre-weld and weld the membrane along both sides.



10 EXTERNAL CORNERS



Chamfer the edge for about 5 cm as illustrated.

Position the prefab FLAGON TPO external corner.

Spot-weld, pre-weld and weld working from the centre of the corner outwards.

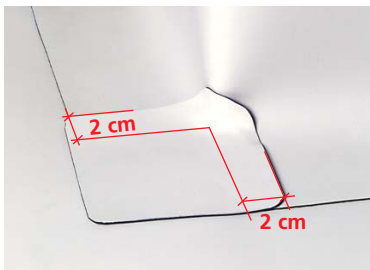
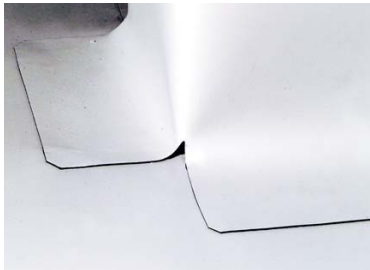
10 EXTERNAL CORNERS

Note:

Always clean the surfaces to be welded with a clean cloth and FLAGON TPO CLEANER.



10 EXTERNAL CORNERS



10.3 External corner

Measure and cut the membrane to fit the upstand plus an extra 12 cm (minimum) for welding to the horizontal surface.

Glue and position the membrane on one face of the external corner to be covered.

Make a cut in line with the corner.

Turn the membrane along the adjacent wall and glue in position.

On the horizontal surface, spot-weld, pre-weld and weld the membrane along both sides.

Cut out a corner patch of FLAGON TPO unreinforced membrane. Round off the corner that is to be positioned at the vertical edge.

Chamfer the welding seam edge of the installed flashing with the mill or chamfer tool.

Round the corners to be overlapped to the edge. Heat and stretch the rounded corner of the patch that welds to the vertical upstand.

Position the patch
The minimum overlap should be 2 cm.

10 EXTERNAL CORNERS

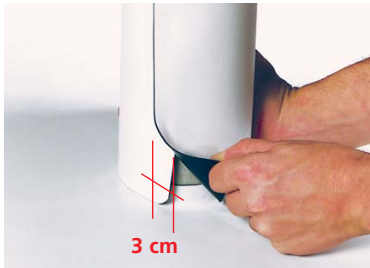
Spot-weld, pre-weld and weld patch working from the centre outwards.

Note:

Always clean the surfaces to be welded with a clean cloth and FLAGON TPO CLEANER.



11 CURVED, CONICAL AND ROUNDED DETAILS



11.1 Extractor vents, pipes etc.

Cut out a square of unreinforced FLAGON TPO membrane and round off the corners with scissors..

Cut a hole 1 cm smaller than the pipe size in the middle of the square. Carefully heat around the hole and stretch the membrane over the pipe creating an upstand rim at the base of the pipe.

Spot weld, pre-weld and weld to the main field sheet.

Cut a strip of unreinforced FLAGON TPO plus an extra 3 cm for vertical welding as illustrated.

The height of the strip should equal the height of the cylinder body plus an extra 3 cm for welding to the horizontal surface.

Spot-weld, pre-weld and weld the vertical seam.

Remove the resulting cylinder and manually spread the excess for welding onto the horizontal surface.

11 CURVED, CONICAL AND ROUNDED DETAILS

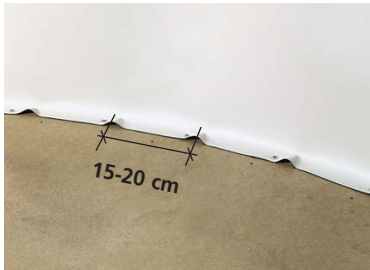
Replace the cylinder and weld to the newly formed upstand of the base flashing.

Note:

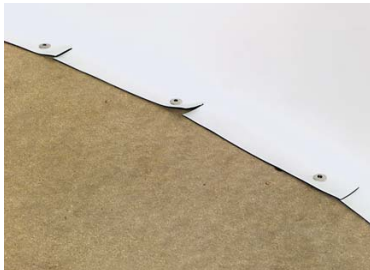
Always clean the surfaces to be welded with a clean cloth and FLAGON TPO CLEANER.



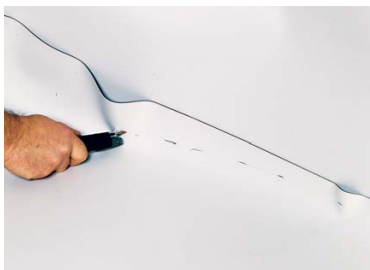
11 CURVED, CONICAL AND ROUNDED DETAILS



11.2 Curved vertical wall
Bond the FLAGON TPO flashing to the vertical wall using FLAG BONDING ADHESIVE, allowing 5 cm excess for fixing to the decking at 15 – 20 cm centres.



Cut the membrane and weld the excess material as indicated.



Install the FLAGON field sheet. Bond and cut the membrane to form a bend of approximately 3 – 4 cm on the vertical wall. Once in position, cut the excess material to create a minimum upstand of 2 cm.

11 CURVED, CONICAL AND ROUNDED DETAILS

Spot weld, pre-weld and weld the field sheet to the vertical membrane using the brass roller.



12 OUTLETS



Only use outlets from the FLAGON TPO range.
Cut a hole in the roof membrane to correspond with the downpipe.



Mechanically fix the membrane around the outlet to the decking with fixing plates and screws.

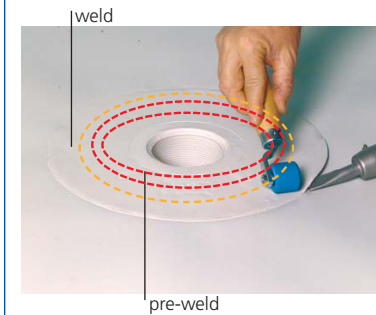
12 OUTLETS

Insert the FLAGON TPO pre-fabricated outlet..

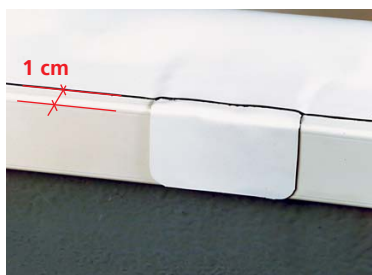
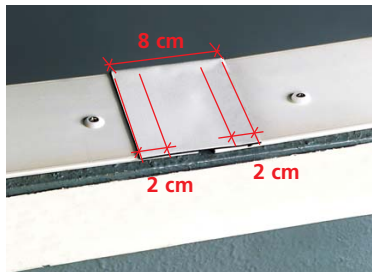
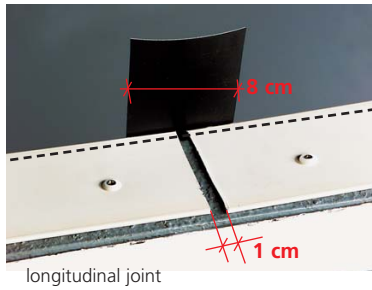
Note:
Always clean the surfaces to be welded with a clean cloth and FLAGON TPO CLEANER.



Spot-weld, pre-weld and weld the flange of the FLAG outlet to the main field sheet.



13 PERIMETER EDGE FLASHING



Install FLAG metal laminated flashings in conjunction with a neoprene or butyl tape sealing strip leaving a 1 cm gap for expansion/contraction.

Fix the flashing with expansion nails or counter sunk screws.

Warning: always ensure the perimeter edge can accommodate fixings to withstand the anticipated wind loadings

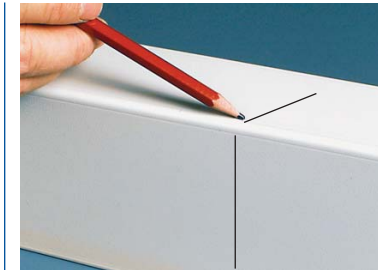
Cover the expansion joint with a 2 cm masking tape prior to welding a 8 cm wide strip over the joint as illustrated.

To allow for movement only weld either side of the strip to a maximum of 2 cm. For ease when welding the membrane to the top surface of the FLAGMETAL allow a 1 cm gap from the front face.

For flashings with face depths greater than 5 cm internal support metal butt straps or face

13 PERIMETER EDGE FLASHING

fixings will be required.
13.1 -Flashing on internal corner
 Mark the cutting line, both horizontally and vertically.



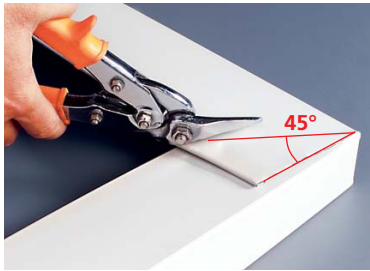
Squeeze the drip near the cutting line to identify the desired cutting point



Cut on the horizontal level at about 30° with reference



13 PERIMETER EDGE FLASHING



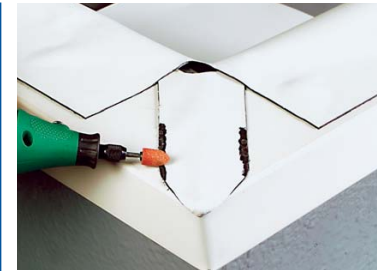
to the marked line. Bend to form a 90° corner and trim the overlap at 45° as illustrated



After positioning the neoprene or butyl sealing strip, mechanically fix the prepared flashing to the perimeter edge. Cut and weld a strip of membrane over the new joint.

13 PERIMETER EDGE FLASHING

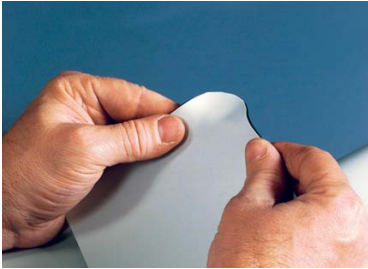
Weld the waterproof membrane to the flashing. Chamfer the welding edge.



Round the corners of a piece of FLAGON TPO unreinforced membrane allowing a 2 cm excess for overlapping and welding.



13 PERIMETER EDGE FLASHING



Heat and stretch the internal corner of the patch.

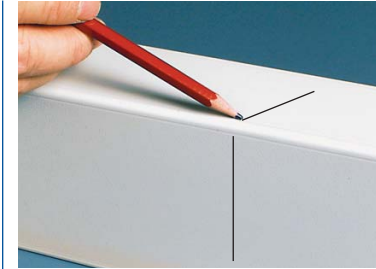


Spot-weld, pre-weld and weld the patch onto the corner.

13 PERIMETER EDGE FLASHING

13.2-Flashing on external corner

Mark the cutting line, both horizontally and vertically.



Squeeze the drip near the cutting line to identify the desired cutting point.



13 PERIMETER EDGE FLASHING



Cut the horizontal surface following the cutting line.



Open the flashing. After installing the neoprene/butyl sealing strip, mechanically fix the flashing to the perimeter edge.



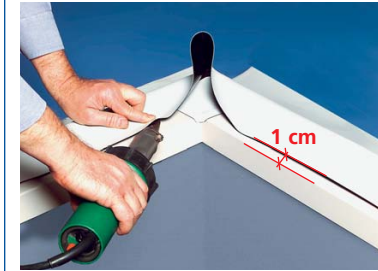
Round the corners of a square patch of FLAGON TPO unreinforced membrane allowing a 2 cm excess for overlapping and welding. Heat and stretch the internal corner of the patch

13 PERIMETER EDGE FLASHING

Position the patch over the corner area. Spot-weld, pre-weld and weld to the metal plate.



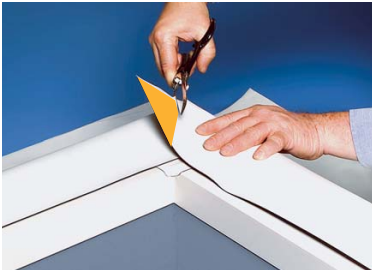
Spot-weld the flashing onto the profile starting 1 cm from the edge. The excess membrane from the vertical surface will form a pocket at the corner edge.



13 PERIMETER EDGE FLASHING



Cut the pocket up to 2 cm from the corner edge.



Trim the triangle of excess material.
Chamfer the edges.

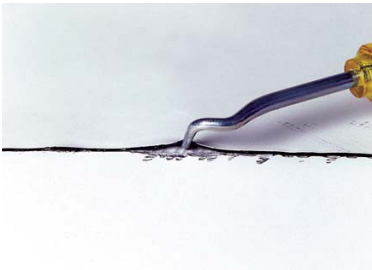
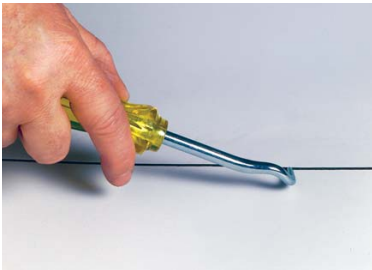
13 PERIMETER EDGE FLASHING

Spot-weld, pre-weld, and weld, onto the horizontal surface of the flashing.

Note:
Always clean the surfaces to be welded with a clean cloth and FLAGON TPO CLEANER.



14 SEAM CHECKS



14.1 Non-destructive control

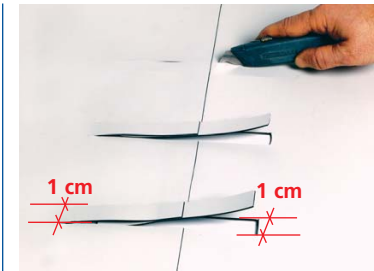
Carry out the test, using the welding tester (seam probe) on cooled material. Pass the seam probe along the welding line, exerting sufficient pressure to identify defective seams

In the case of defective seams, follow the seam cleaning procedure prior to re-welding as necessary. In extreme situations, it is necessary to weld a 15 – 20 cm strip over the existing welding line after cleaning. When using automatic welding machines for this process use the FLAG SCRAPER NOZZLE. (see point 15).

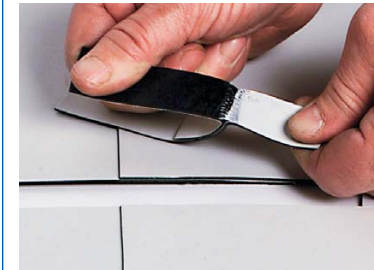
14 SEAM CHECKS

14.2 Destructive control

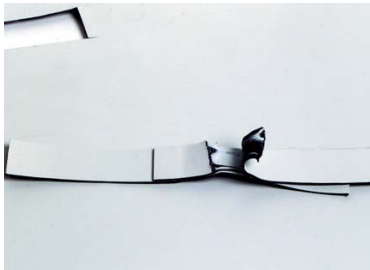
Cut out a 1 cm section of the welded membrane.



Apply pressure to the weld by pulling on the two ends of the sheet as illustrated in the picture.



14 SEAM CHECKS



The membrane must fail outside the welding seam.

This control must always be carried out each day on a sample weld before the installation of the waterproof membrane commences.

Note: The test, although manually performed on site, is based on the provisions set forth by the UEAtc Directive

15 DAMAGE REPAIR

Should accidental damage occur after installation, repairs are simple.

Cut a patch of FLAGON to completely cover the cut and round the corners with scissors.



Trace the circumference of the patch onto the surface



Scrape the surface of the waterproof membrane.



15 DAMAGE REPAIR



Clean the surface of the membrane with a new cloth and FLAGON TPO CLEANER.

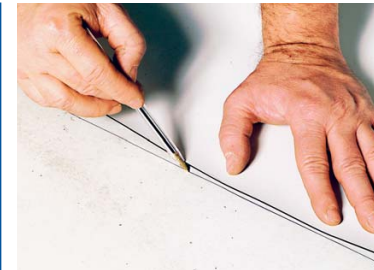


Spot-weld, pre-weld and weld the patch in place.

16 INSTALLATION OF NEW MEMBRANE TO EXISTING

a) Manual welding

Position the new FLAGON TPO on the existing membrane. Mark the overlap line.



Bend back the new material. Clean the surface of the existing membrane with an abrasive disk.



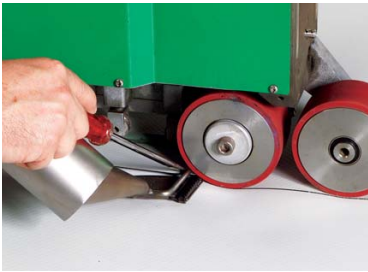
Clean the surface to be welded with FLAGON TPO CLEANER using a clean dry cloth.



16 INSTALLATION OF NEW MEMBRANE TO EXISTING



Re-align the new material. Spot-weld, pre-weld and weld to the existing membrane.



b) automatic welding with Varimat welder
Position the new FLAGON TPO on the existing membrane. Mark the overlap line. Bend back the new material.



Clean with a cloth and FLAGON TPO CLEANER.

16 INSTALLATION OF NEW MEMBRANE TO EXISTING

Re-align the new material and weld using a Varimat automatic welder fitted with a FLAG SCRAPER



NOTE

Flag S.p.A. has the right to modify without previous notice text, images or outlines contained in this manual, whenever innovation of the production methods or in the application of the materials should occur.

Flag S.p.A. guarantee exclusively refers to materials and accessories produced and supplied by Flag itself. The installation of membranes produced by FLAG S.p.A; must be performed by specialised contractors whose operatives have undergone FLAG TPO training.

Please contact FLAG S.p.A.'s Technical Department for guidance for any specific matters not covered in this manual.