Metawell
metal sandwich technology

Metawell® Aluflex

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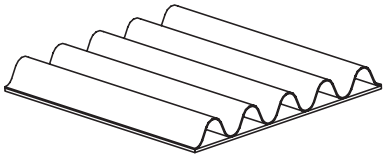
PRODUCT DESCRIPTION



Metawell® Aluflex consists of a thin corrugated aluminium sheet that is glued to one flat cover sheet. This makes for a panel that is very flexible in one direction but rigid in the other, which is ideal for formed structures.

FORMING PARALLEL TO THE CORRUGATION

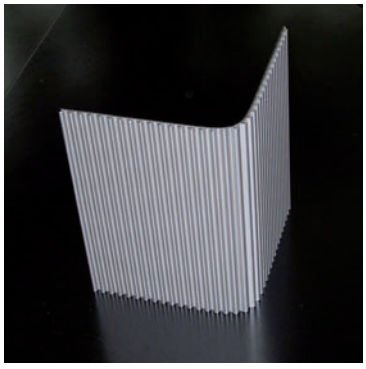


Fig. 1: Transformation parallel to the corrugation tops

Thanks to its special structure Metawell® Aluflex can be very easily transformed around the axis parallel to the corrugation tops, with smaller bending radii (e.g. for Metawell® Aluflex 05-02 / H4.7 smaller than 200 mm) even plastically (see fig. 1). The bending parameters have to be determined case-wise to make sure that both bending radii and bending angle can be reproduced. In order to compensate the spring-back effect of the material, the ´over-bending' is very important. The rigidity around this bending axis is relatively small. It may be necessary to additionally stiffen the element e.g. by gluing a metal sheet or other surface material to the corrugation in order to obtain a two-dimensionally formed „panel". With this bending technique radii of 30 mm and more can easily be realized with Metawell® Aluflex 05-02 / H4.7.

Note
It is strongly recommended to make trials with suitable samples in order to determine the working parameters as e.g. the overbending angle.

FORMING PERPENDICULARLY TO THE CORRUGATION

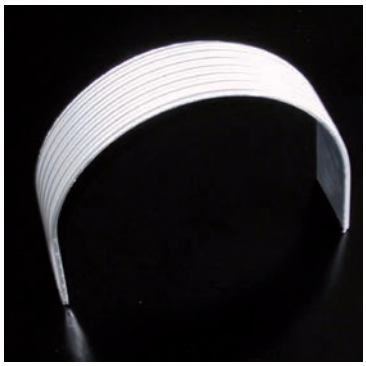


Fig. 2: Transformation perpendicularly to the corrugation

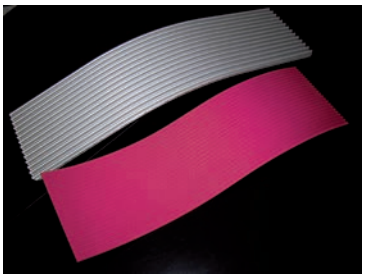
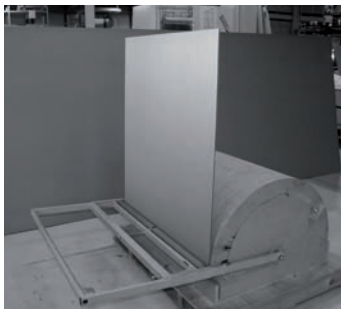


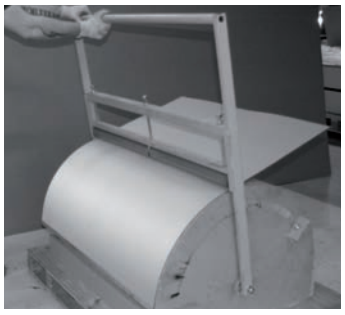
Fig 3: Formed structures

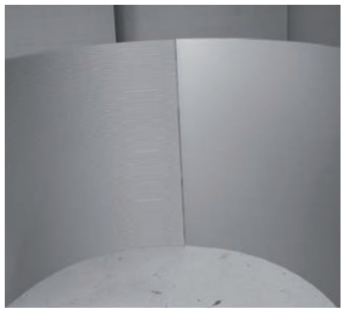
Any transformation perpendicularly to the corrugation makes the structural element considerably stiffer so that it can frequently be mounted directly (e.g. for curved ceiling linings in rail vehicles). Particularly advantageous is to have the corrugation exposed to the outside (fig. 2). Metawell® Aluflex 05-02 / H4.7 is thus suitable for bending radii of more than approx. 100 mm. With smaller radii the corrugation tends to be „pulled flat" and the corrugation is seen through the cover sheet. Is the bending done with the corrugation on the inner side, higher min. bending radii are requested to avoid that the corrugated sheet buckles.

Note

It is strongly recommended to make trials with suitable samples in order to determine the working parameters as e.g. the overbending angle.



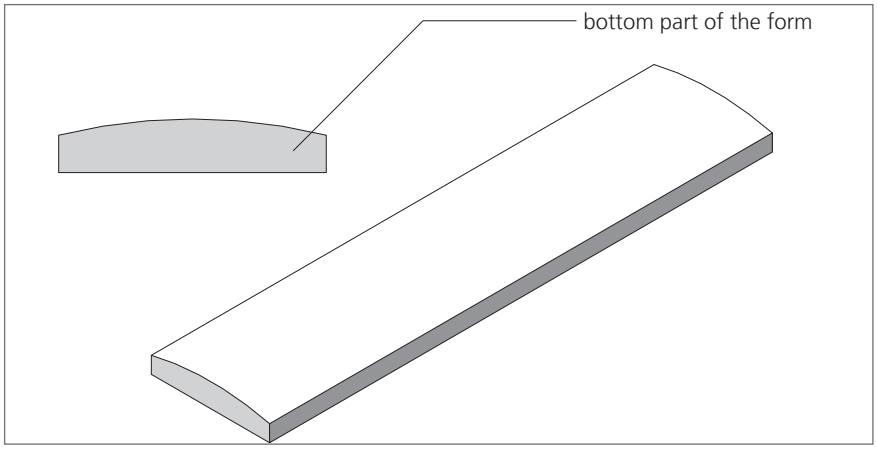




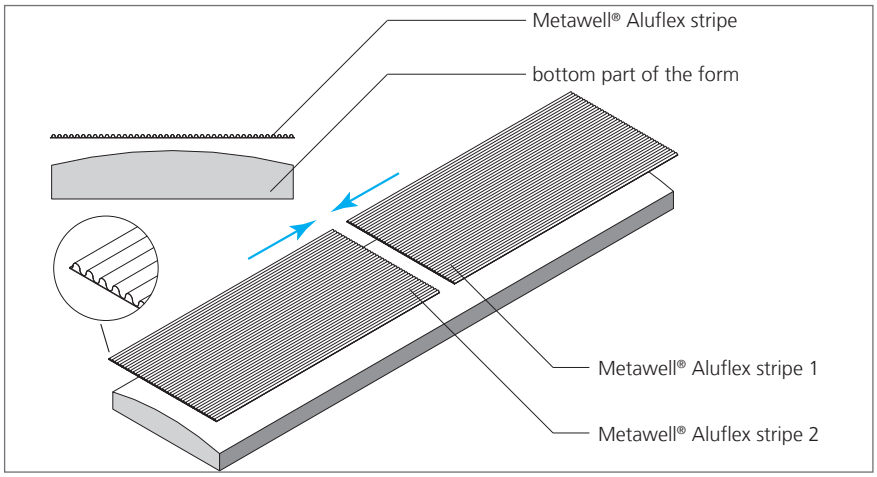
SHAPING: HYDRAULIC PRESS

Typical production sequence

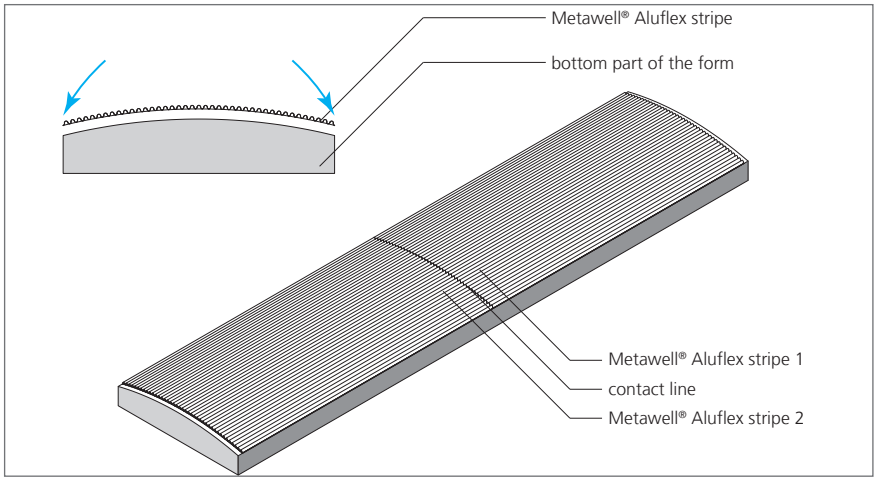
Step 1:
Prepare bottom part of the form



Step 2:
Lay down Metawell® Aluflex stripes facing each other



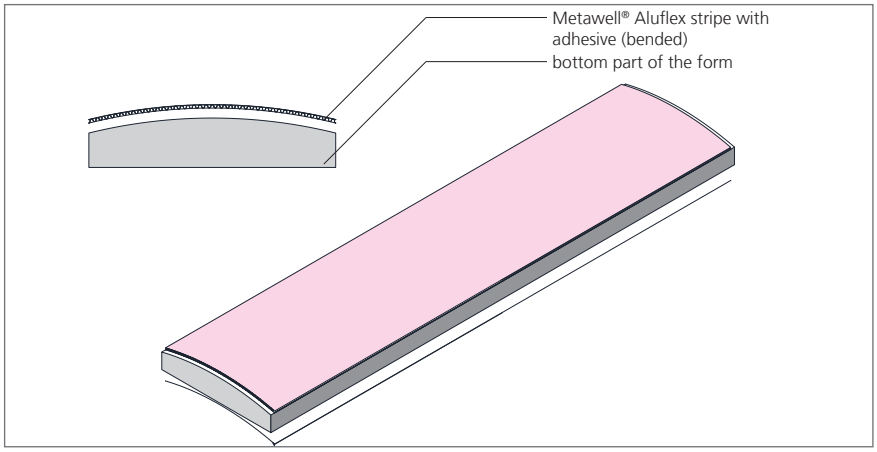
Step 3:
Bend Metawell® Aluflex stripes on the form



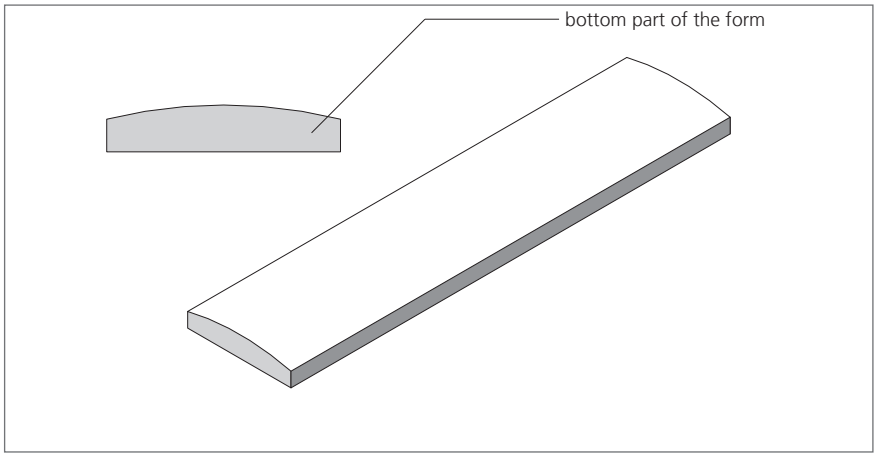
SHAPING: HYDRAULIC PRESS

Typical production sequence - continued

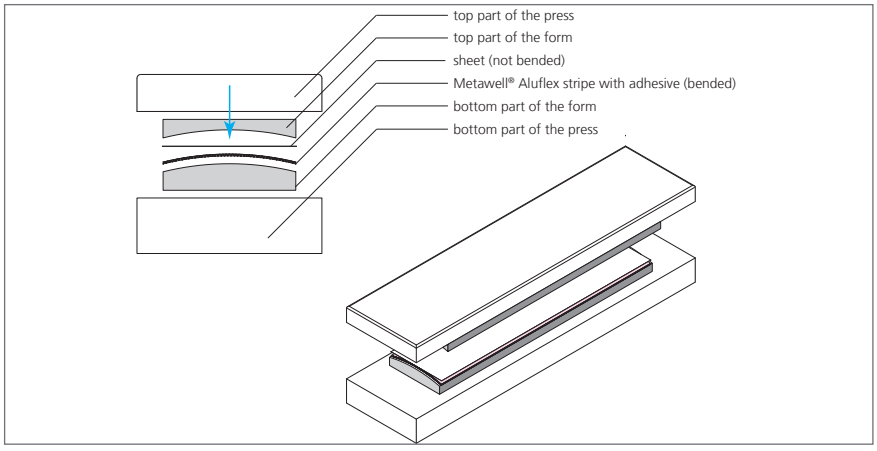
Step 4:
Apply Metawell® Aluflex stripe with adhesive



Step 5:
Lay sheet on Metawell® Aluflex stripe coated with adhesive



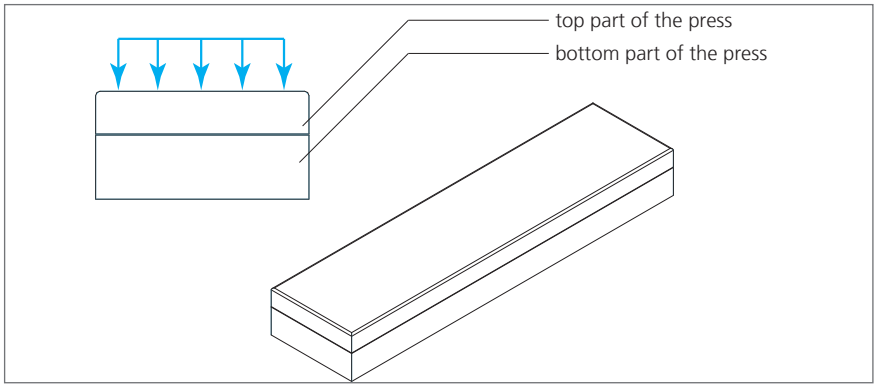
Step 6:
Place top part of the form above structure



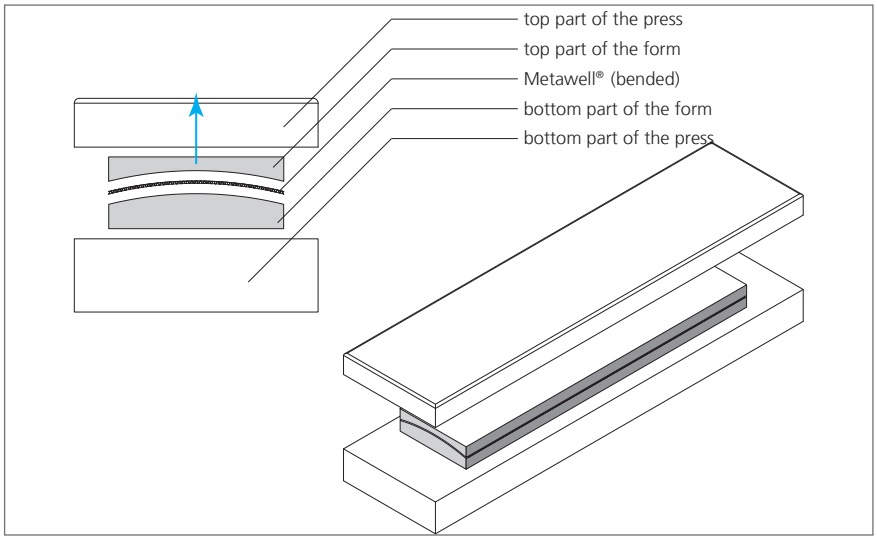
SHAPING: HYDRAULIC PRESS

Typical production sequence - continued

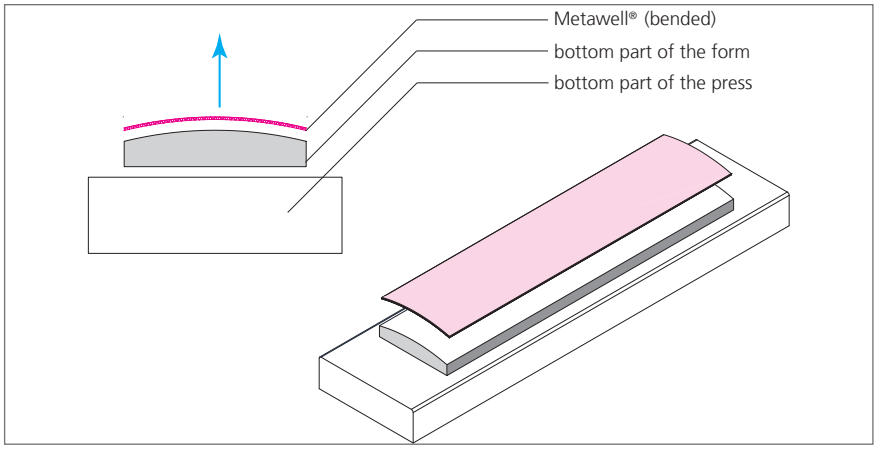
Step 7:
Close hydraulic press and keep pressure if and when necessary with certain temperature until the adhesive is hard



Step 8:
Open hydraulic press and remove top part of the form



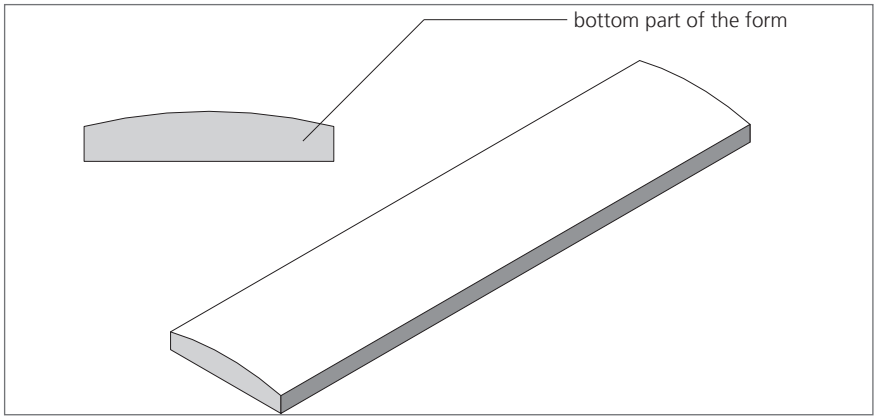
Step 9:
Take out the bended Metawell® panel



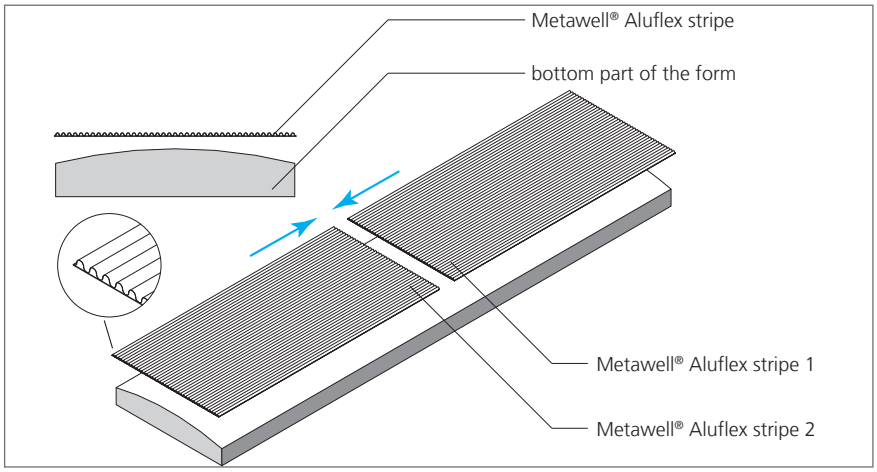
SHAPING: MEMBRANE VACUUM PRESS

Typical production sequence

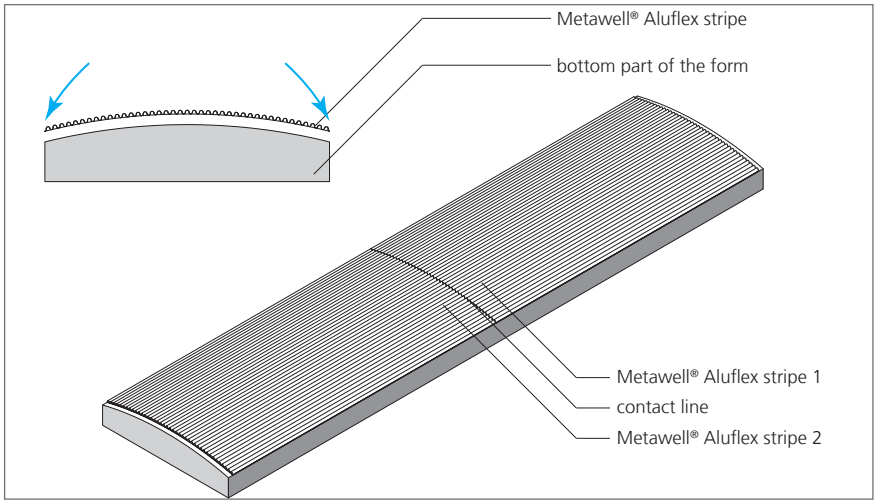
Step 1:
Prepare bottom part of the form



Step 2:
Lay down Metawell® Aluflex stripes facing each other



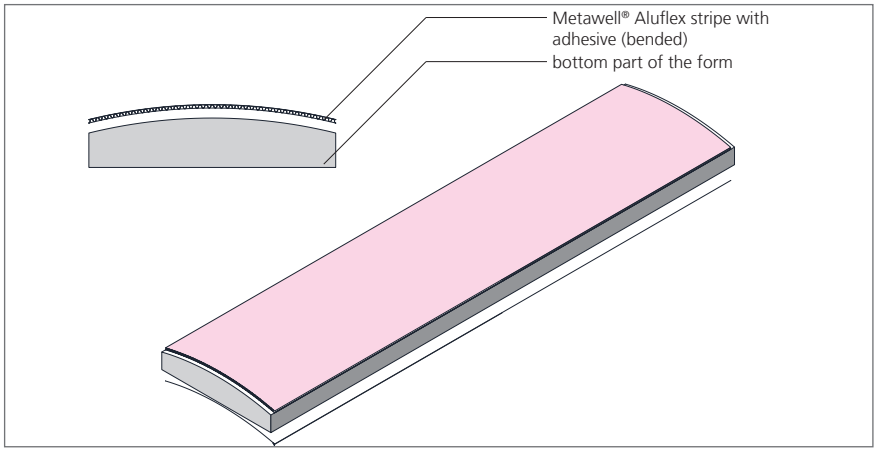
Step 3:
Bend Metawell® Aluflex stripes on the form



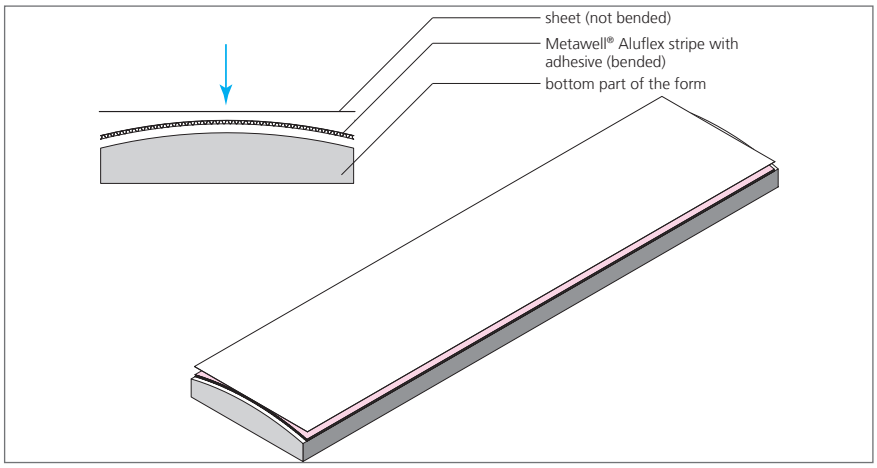
SHAPING: MEMBRANE VACUUM PRESS

Typical production sequence - continued

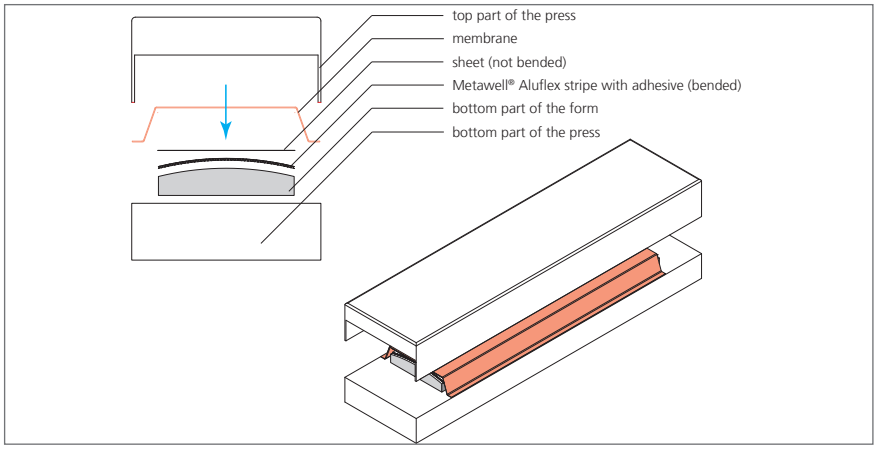
Step 4:
Apply Metawell® Aluflex stripe with adhesive



Step 5:
Lay sheet on Metawell® Aluflex stripe coated with adhesive



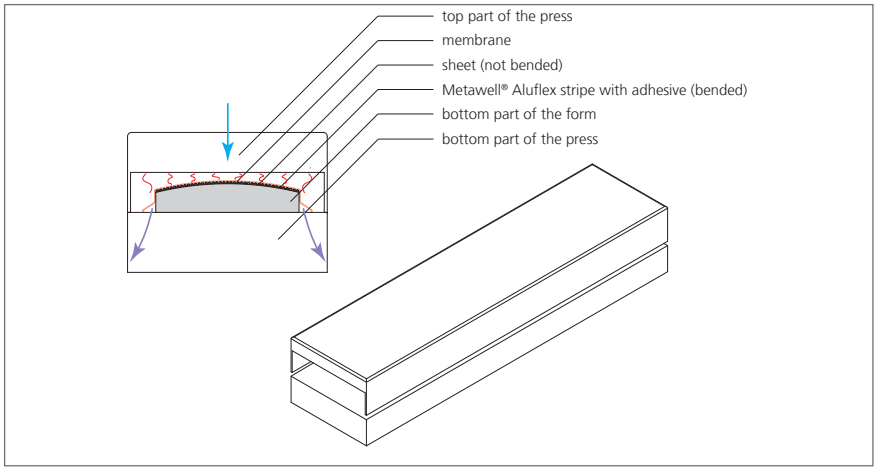
Step 6:
Place membrane of the press above structure



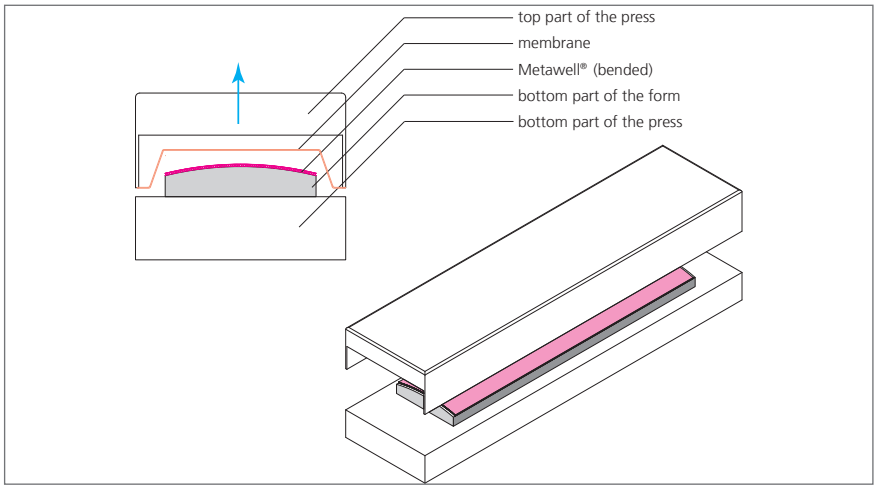
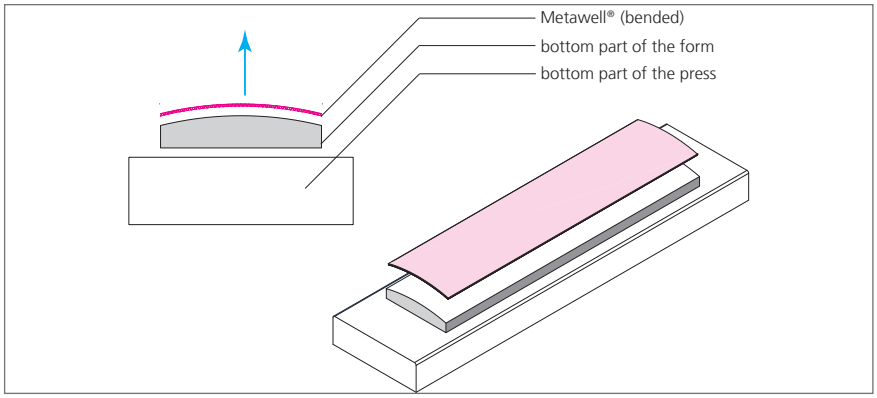
SHAPING: MEMBRANE VACUUM PRESS

Typical production sequence - continued

Step 7:
Close vacuum press, evacuate air and keep vacuum if and when necessary with certain temperature until the adhesive is hard



Step 8:
Open vacuum press



Step 9:
Take out bended Metawell® panel