

## Technical Support / Error Analysis

### Possible Pressing Errors and Correction Measures

#### *General Measures*

The film to be processed should be tempered and adjusted to the room temperature. This means that the film should never be stored on the (especially in winter), but should rather be stored in a temperate room at 18 C for 24 hours to acclimate and warm up. This also applies to timber material (MDF) and adhesives.

Strong temperature decline around the press, i.e. due to draught or open doors/gates near the press, can lead to the temperature fluctuations in the pressing room and adversely affect the pressing result as well as the processing quality.

Therefore, when pressing, observe the room climate with regards to temperature and humidity should be kept as constant as possible (approx.. 68F-72 F at approximately 50% relative humidity is ideal).

#### *Press Layouts*

Malfunctions or erroneous presses can sometimes be caused by disadvantageous component layouts on the press tray with too many different measurements (see sketch 1+2, Page 2/5). In the case of too many different measurements within a layout, the parts are not flush (sketch 1, optimal), but rather the work pieces are moved to one side (sketch 2). Due to this displacement, irregular film stretching occurs, which can lead to folds and holes in the film during the forming process.

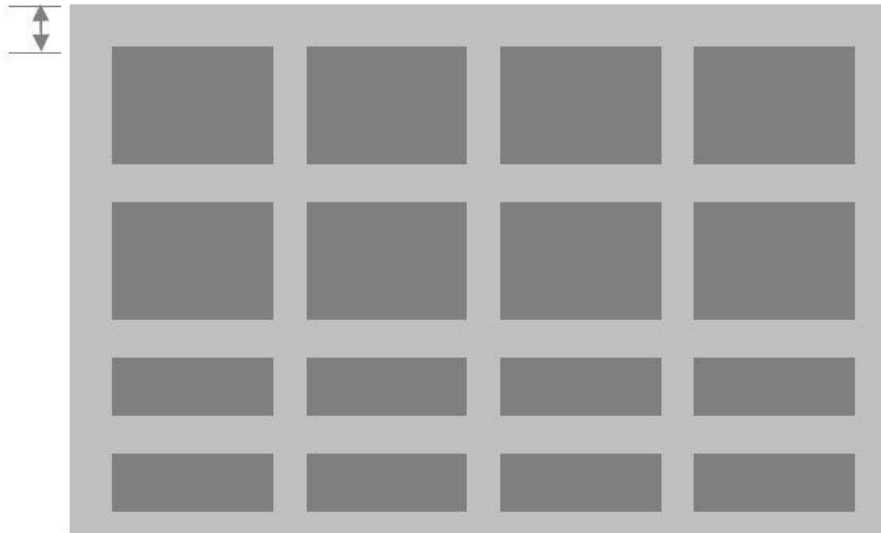
In each case, sufficient distances (2") between parts and table edge (under pressing frame) must be observed. Depending on press system and mill geometry of work pieces, the height of the pedestals could also be of significance.

Here, the same rule applies: do not choose pedestals which are too small; instead, aim for height of 5/8" or 3/4" (sketch 3) as an optimal height.

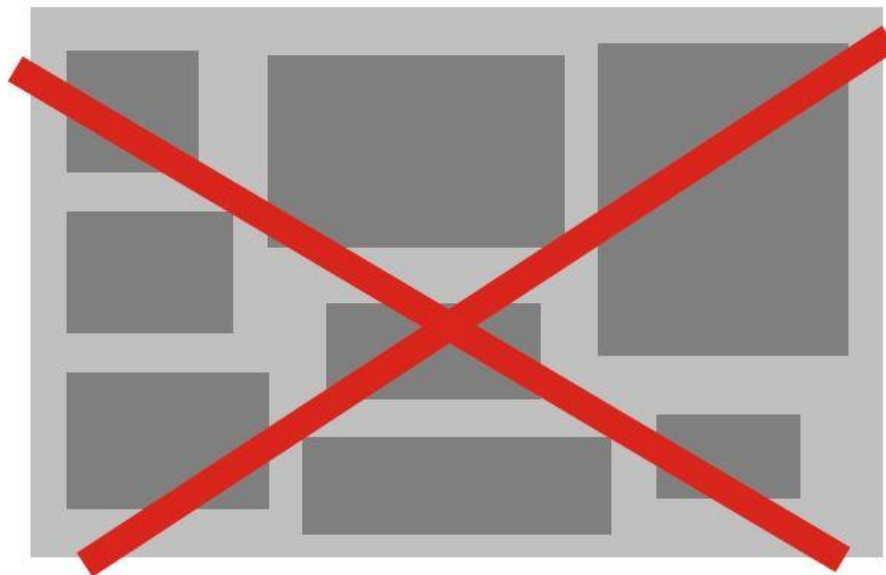
## Possible pressing errors and correction measures

*How to plan an optimal layer mix*

 *Distance approx. 50 – 60 mm*



*Sketch 1 – Correct: Parts are flush*

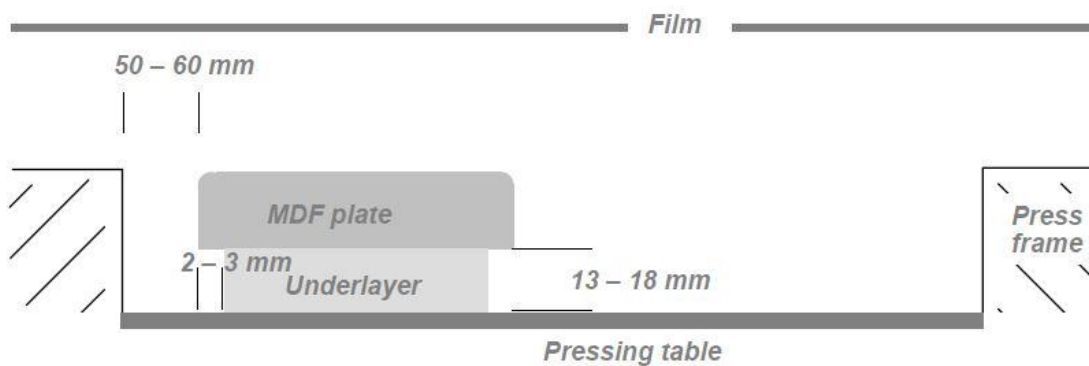


*Sketch 2 – Wrong: Too many different sizes*

## Possible pressing errors and correction measures

### *Possible pressing errors and correction measures*

#### *Choose correct underlayer*



*Sketch 3 – Optimal layering of pressing table*

### **Process Parameters For Thermoform Presses**

Process parameters should be set complying to pressing systems as well as implemented films and mill geometry.

Depending on material type, ascertain an optimal setting of temperature, pressure and time. The temperature is the most sensitive and critical factor. Film performance within the press is basically dependent on sufficient and even warming of the film and decides the pressing result.

Further parameters like vacuum, vacuum speed and pressing times are to be adjusted according to individual variables.

Film warming or reaction of the adhesive is regulated on the one hand by the adjusted heating plate temperature and one on the other hand by the time period of the temperature regulation. Through experiments and changes to the combination of these two variables, most processing faults or problems can usually be corrected.

Malfunction and errors are caused by temperatures which are too low and/or preheating periods which are too short just like temperatures which are too high and/or preheating periods which are too short.

**Overview: Possible pressing errors and correction measures**

<b>Fault type</b>	<b>Cause</b>	<b>Measure</b>
<b>Fold formation and / or glossy areas on the fronts (area)</b>	Film did not lie evenly against the heating plate or the membrane in the preheating period and was unevenly heated	Increase vacuum / support air at the membrane / heating plate and / or change the temperature time combination
	Laying pattern is not optimal. Pressing table not fully covered, therefore film hangs loose in uncovered areas.	Change laying pattern. Cover table completely, if necessary, use blind pieces.
	Film is formed too slowly, resulting in selective preadhesion in single places.	Increase vacuum speed
	Membrane not installed correctly, tightened unevenly.	Retighten membrane.
<b>Fold formation in the corner / edge areas (table cloth folds)</b>	Film surplus between work pieces, surplus material is not completely pulled away.	Increase distance between parts. Possible vary height of under layer. Optimize table layering.
<b>Corner adhesion insufficient / loose corners.</b>	Adhesion coating missing or too low.	Apply adhesive according to manufacturer's specifications.
	Work piece has moved on the underlayer / pins.	Check table layering.
<b>Film does not adhere to countersinks.</b>	Wrong temperature settings, film is too cold.	Check parameters.
	Adhesive coating too low or initial adhesion too small.	Observe specifications of adhesive manufacturer.

**Overview: Possible pressing errors and correction measures**

<b>Fault Type</b>	<b>Cause</b>	<b>Measure</b>
Holes in the film / film tears	Temperature too high, film is overheated (film melts)	Reduce Temperature
	Film is too cold and tears, rough irregular edges (cold tear)	Increase temperature
	Vacuum time is too short, film is formed too quickly.	Reduce forming pressure and / or speed.
	Film was stretched too strongly, as distance between parts was too small.	Enlarge distance between parts, or optimize table layering.
	Work piece has been displaced or pedestal is wrong.	Reposition work piece, or renew pedestal.
Lightening of corners / thinning of film	Film is stretched too thin.	Increase part distance and / or decrease height of underlayer
	Film is fixed at corner radius (transition zone of surface to edge) and pulled down too far.	Corner radius too peaked, film "locks". Round off edges slightly.
	Film is formed too coldly ("crazing")	Increase temperature