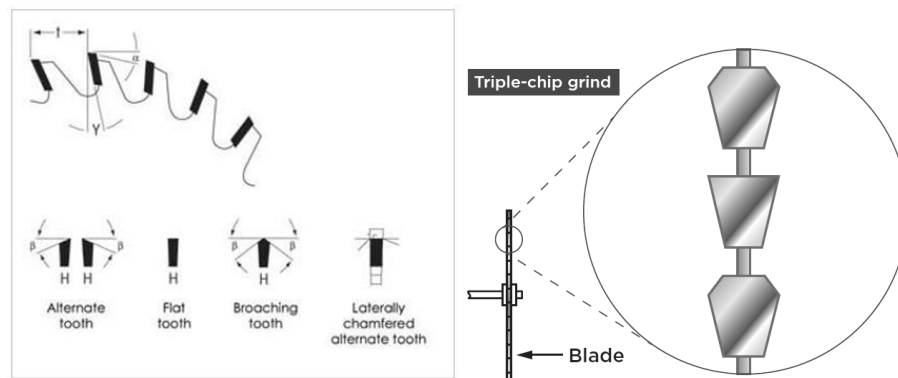


1- CUTTING

The preferred method for cutting POLICAM PET-G sheets is a circular blade with carbide tipped teeth using the "Triple Chip Grind" tooth design. Also, the POLICAM PET-G sheets can also be cut with the blade selected in accordance with the following parameters.

Cutting places of sheet should be smooth and there should be no burrs, fractures etc. caused by cutting. Micro, capillary cracks that may occur due to cutting may cause breakage on the sheet over time.



Type of sawing	Band saw	Circular saw
Tooth distance	sheet thickness below 3 mm, 1 to 2 mm	8 to 12 mm
	sheet thickness 3 to 20 mm, 2 to 3 mm	8 to 12 mm
Clearance angle α	30 to 40 °	15 °
Rake angle ψ	15 °	10 °
Tooth angle β	-	15 °
Cutting speed	1200 - 1700 m/ min	2500 - 4000 m/min
Feed speed	-	20 m/min

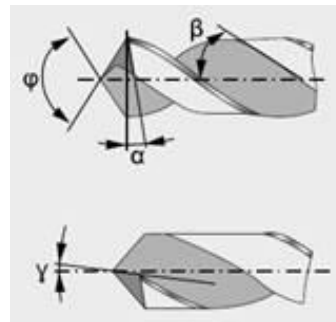
- Band saws, circular saws and jigsaws, hand-operated saws can also be used to cut POLICAM PET-G sheets.
- It is recommended to use new or well-sharpened tools.
- At very high cutting speeds, the saw blade must be cooled with an air jet.
- The saw blade must be kept sharp to prevent melting and scaling of the sheet edges.
- It is important that the cutting part is properly supported, as vibration during cutting may cause the sheet to crack.

2- DRILLING

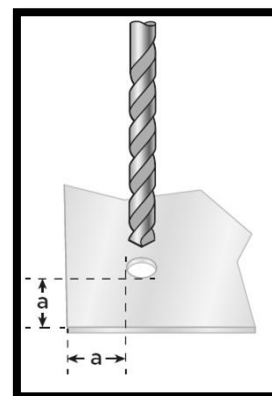
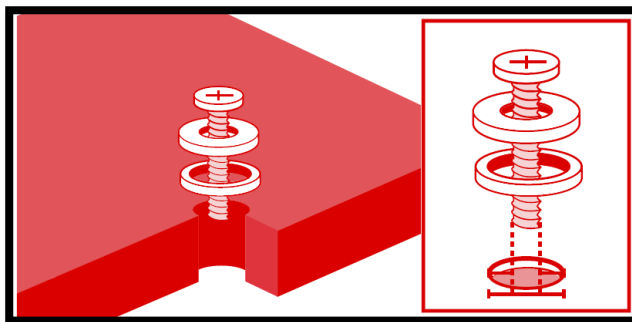
- The drill bit to be used for drilling should be sharp and wide angled.
- According to the hole diameter to be drilled, the following parameters must be careful. If the drill bit is not suitable, micro cracks may occur in the drilled hole, and as a result of the growth of these cracks over time, fracture may occur in the hole area.
- The sheet must be fixed and vibration must be prevented during drilling. To prevent the bottom surface from breaking or bursting, the part being drilled can be supported with MDF or plywood.

Clearance angle α	5° – 15°
Rake angle γ	0° – 5°
Point angle ϕ	120° – 160°
Helix angle β	20° – 40°

Hole Diameter	Speed (rev/min)	Feed (mm/min)
1,5 mm	2000	150
3 mm	1750	125
6 mm	1500	100
9 mm	1000	75
12 mm	650	50



- It should be paid attention that the hole diameter should be larger than the screw diameter when drilling the sheet holes. Due to thermal expansion in plastic materials, the hole diameter to be drilled in sheets up to 2 metres long should be 6mm more than the screw diameter (e.g. 9mm hole diameter for 3mm screw diameter).
- The hole diameter to be drilled must be at least 2 times the distance from the edges (e.g. 6mm edge distance for 3mm hole diameter).
- The washer to be used in screwing should be a flexible gasket, not metal, to allow thermal movement of the sheet.



3- LASER CUTTING

The parameters to be applied for laser cutting of POLICAM PET-G sheets are given in the table below.

	Sheet Thickness (mm)	Laser Power (W)	Cutting Speed (m/min)	Gas Type/Pressure (bar)	Results
Eurolaser M-1200 Synrad CO ₂ Laser	1 mm	250 W	10.8	Air 1 bar	Excellent edge surface
	3 mm	250 W	3.90	1 bar	Excellent edge surface
	6 mm	250 W	1.50	No Air	Excellent edge surface
CO ₂ Laser	1-3 mm	300 – 330 W	2.0 – 2.5	Air 1 bar	Excellent edge surface
	> 3 mm	330 – 400 W	1.8 – 2.0	1.2 bar	Excellent edge surface
Electrovox Nova 1500 CO ₂ Laser	3 mm	140 W	-	Air 1 bar	Excellent edge surface
	3 mm	450 W	-	1 bar	Reasonable edge surface
Trumpf 1700W CO ₂ Laser	1 mm	300 W	7	Nitrojen 0.7 bar	Excellent edge surface
	3 mm	300 W	4.0 – 5.0	0.7 bar	Good edge surface
	6 mm	450-760 W	2.0 – 2.5	0.9 bar	Edge not transparent

4 – COLD BENDING

POLICAM PET-G sheets can be cold bent. Cold bending is possible in exceptional cases and can be applied using normal bending machines according to the table below.

For thicknesses over 2.5 mm thickness, cold bending is not recommended due to the problems that may occur due to high stress at the bending point.

Note: Cold bending process should not be applied to laser cut sheets because of the stress load.

Sheet Thickness (mm)	Bending Radius (mm)	Maximum Bending Angle
1 -2,5	2	90 ⁰
3 - 4	3	90 ⁰

Cold bending machine



5 – LINE BENDING (STRIP HEATING)

POLICAM PET-G sheet can be bent by preheating the area to be bent with an electric strip heater and then rapidly bending it according to below steps. The optimum sheet temperature is reached (slightly above 105°C), the sheet can be easily bent. Pre-drying is only necessary if bubbles form in the bending area of the sheet. If the bending process is performed too cold, small fractures may occur at the bending edges due to stress.

- Remove the protective film from the area to be bent.
- Adjust the heat source so that the PET-G sheet reaches 140°C-160°C.
- Place sheet over heat source at bending area.
- Allow heat to soften the sheet; time depends on gauge, 3mm normally requires 2 minutes.
- Remove sheet and make desired bend

Heat bending device

