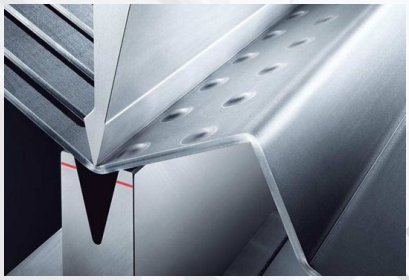
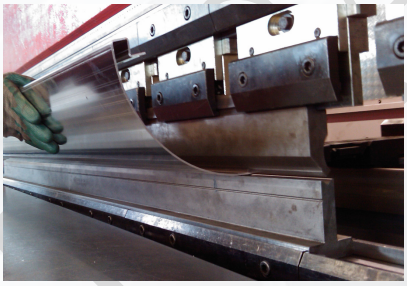
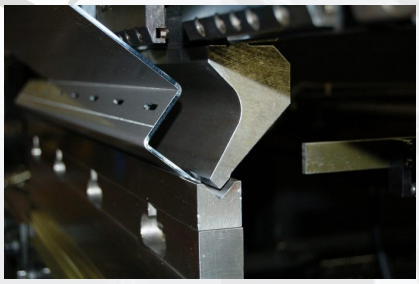
SHEET METAL BENDING

Bending presses are machinery tools that are commonly used to bend sheets of different thicknesses. In the metalworking sector, they are very popular for iron modelling. Bending presses are machinery tools that are commonly used to bend sheets of different thicknesses. In the metalworking sector, they are very popular for iron modelling. The "V" bend is the most popular sheet bending technique. The process generally requires a punch that presses the material so that it adheres to a V shaped die. The V bend is divided into three types defined as follows:

- **Air bend** this is the most frequent; air bending is when the sheet is simply placed on two supports and bent by punching. It requires low bending force and allows very thick panels to be bent
- **Embossing** the bend is achieved by forcing the part inside a die; this way the sheet exactly follows the die profile. To emboss, a force four/five times higher than that necessary for air bending is required, thus a high tonnage machine and tools are needed
- **Crushing** used to avoid any sharp angles. There are numerous factors that can influence deformation limits and thus sheet bending capacity without breaking. Some of the principles worthy of note are: the material's properties, any stress conditions induced by previous processes, edge finish conditions, piece length in the bend direction, bend direction compared to sheet direction and processing temperature







FORMING

Cold forming process is turning sheet metal in flat pieces or coiled strips into solid models from machinery and moulds, with a proper relationship between cross-sectional area and depth cut. Transformation process of the used materials allows obtaining objects with concave or convex surface, perfect in every detail. It prevents possible problems linked to temperature increase produced during the course of the process. The process includes activities of deformation such as : blanking, bending, tapping, drawing.

In order to obtain the desired shape, the whole machining process may require different stages:

- Cutting
- Forging
- Direct extrusion (free or contained)
- Pultrusion
- Trimming or shearing