# Stamping

EUROPEAN BODY PANELS EBP

# A full-grown yet fully adaptable press line

***EBP's press shop is designed to meet the automotive industry's growing need for OEM and OES manufacture of Vehicle Components and Assemblies in low series volumes. EBP focus on high demands for press force, precision and capacity. Simultaneously, each press is designed to be easily adaptable to suit different tool designs. The same applies to the layout of the press shop.***

The press shop consists of a 6-step press line which boasts a maximum ram force of 2000 tonnes. The largest press beds (presses 1–4) measure 5 x 2.5 metres. Presses 1–5 are hydraulic while press 6 is mechanical.

The press line is fully automated with robots that feed the blanks between the presses. The line can be operated from press 1–6 with material output after each stage. However, the press line can also be run in reverse with input from press 6 through to 1.

**Tool Adaptation**

The EBP press line offers smooth and easy adaptation for many types of press tooling. With the large press tables and the split cushion and ram capability we are able to run many different sizes and styles of tool design in the press line.

English, German and Japanese tool designs have all successfully been adapted to the press line with a minimum of change required. If modifications for tool adaptation are required, the Press Engineers can carry out these requirements.

**Tool Preparation and Maintenance**

The press line has its own preparation and maintenance team that is separate from the team operating the press line. This maintenance team works independently but also in parallel with production planning and focuses on supplying the press line according to the following priorities to meet production requirements.

- ***Position 1.*** A fully prepared press tool sequence installed in the press line, ready to run.
- ***Position 2.*** The next production-designated tool set, prepared and waiting next to the press line to move into position 1 to give the production system sufficient flexibility to change planning and to maintain production flow and productivity levels.
- ***Position 3.*** Prepare the next production-designated tooling line-up in the maintenance area in front of the press line to maintain the flow through the above 2 positions.

**Material**

EBP's press shop can handle all types of sheet metal such as zinc-plated steel, high-strength steel and aluminium. The blanks are ordered ready-cut from approved suppliers.

**Blank Washing**

This machine is situated at the start of the Press line. It automatically feeds in the required blanks whilst washing and lubricating them to customer process requirement for guaranteed "A-Class Surface" quality finish and maximising production output.

**Operation**

EBP has the competence and flexibility to run on a split-shift system. The maximum weekly capacity is 804 hours at maximum shift requirement (2 day shifts, 1 night shift and a weekend shift). The Shift team is determined by the size and complexity of the part as they deal with checking, loading and racking of finished parts when in full production flow.

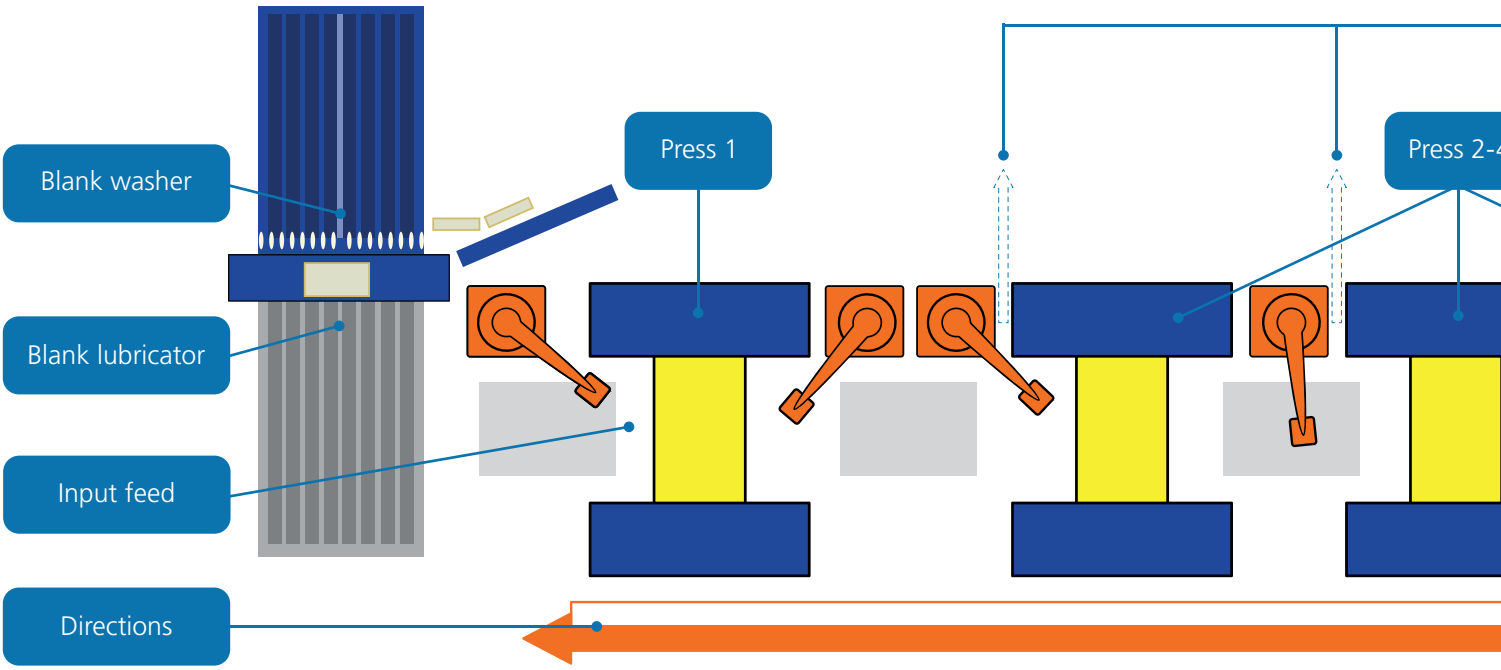
**Scrap Handling**

The press shop has an automated conveyor belt system which runs in the basement under the press line. This system is easily adaptable for scrap clearing operations and can cater for all methods of scrap removal for all tool designs.

The scrap handling system is capable of removing up to 120 kg/min. It is also able to segregate different types of scrap material such as steel and aluminium.

**Eye on Quality**

At EBP, quality control is built into the entire process as documented in our ISO/TS 16949 and ISO 14001 certifications. In addition, each sheet metal component is individually checked to see that it meets the "A-Class Surface" quality finish requirements after the last press stage.




## Mechanisation

- Air and electrical supply to each press
- 8 ABB robots moving the panel from press to press
- Lifting capacity 125 kg, radius 3500 mm. The loading robot is controlled by the vision system. Transfer robots are loop programmed.
- Unloader ABB Doppin Feeder. Lifting capacity 150 kg
- Scrap transporter made by Neuhäuser, capacity 120 kg/min

## Blank washer

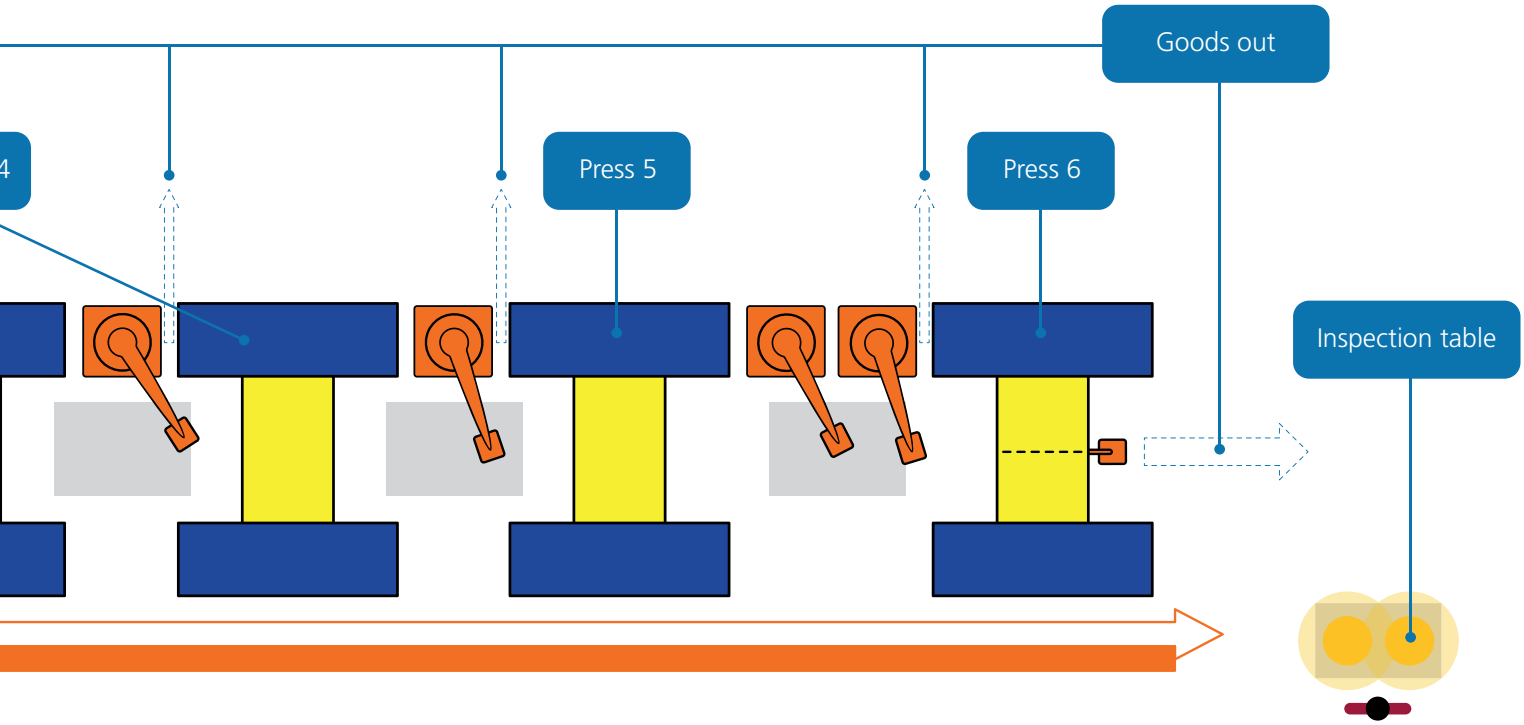
- Caters universally for steel and aluminium, untreated and surface-treated
- Blank length 600–4300 mm
- Blank width 300–2300 mm
- Panel thickness 0.5–3 mm
- Speed max 2 m/s
- Washes up to 6 blanks/min
- Washes in oil at 40°C
- Uses vegetable oil (Binol CUT 10)
- Can be set for different oil types and emulsions
- Washing chamber with brushing and rinsing
- Rinsing 300 litres/min
- Residual oil film approx. 1.5 g/m$^2$
- Closed-loop system that filters out particles down to 40 µm
- Smaller particles are centrifuged out

## Blank lubricator

- Lubricates the blank entirely or partially
- Computer-controlled lubrication profiles for each article
- Article-regulated feed speed
- 23 spray nozzles alongside each other
- Oil film 2–5 g/m$^2$
- Uses oil with a viscosity of 10–250 Cst
- Preheating of thicker oils

## Input feed

The EBP press line is equipped with an ABB/COGNEX vision system to guarantee the correct alignment of the blank into the first press. This consists of a system of sensors and a camera to carry out this alignment. The vision system functions as the eye and the brain of the loading robot.




**Press 1**

- Hydraulic press, made by Loire
- Single or double action
- Press bed size 5000 x 2500 mm
- Single action ram force 2000 tonnes
- Double action ram force 1200 tonnes on the puncher, blank holder force 800 tonnes
- Tooling: Single, double and dual
- Shut height 1000–2400 mm
- Inner slide separation 600 mm
- Puncher dimension 3600 mm x 1650 mm

***Lower cushion:***

- Pin interval 150 mm
- Max stroke 250 mm
- Max force 500 tonnes

**Press 2–4**

- Hydraulic press, made by Loire
- Single action
- Press bed size 5000 x 2500 mm
- Ram force 1200 tonnes
- Shut height 800–2400 mm

***Upper cushion:***

- Pin interval 150 mm
- Max force 200 tonnes
- Max Stroke 200 mm

***Lower cushion:***

- Pin interval 150 mm
- Max force 300 tonnes
- Max stroke 300 mm

**Press 5**

- Hydraulic press, made by AP&T
- Single action
- Press bed size 4000 x 2200 mm
- Ram force 1000 tonnes
- Shut height 800–2300 mm
- Pin interval 150 mm

***Upper cushion:***

- Pin interval 150mm
- Max force 200 tonnes
- Max stroke 140 mm

***Lower cushion:***

- Pin interval 150mm
- Max force 480 tonnes
- Max stroke 300 mm

**Press 6**

- Mechanical press, made by Weingarten
- Single and double action
- Press bed size 4050 x 2250 mm
- Ram force 1000 tonnes, panel holder force 600 tonnes
- Shut height 1500–2400 mm
- Pin interval 150 mm

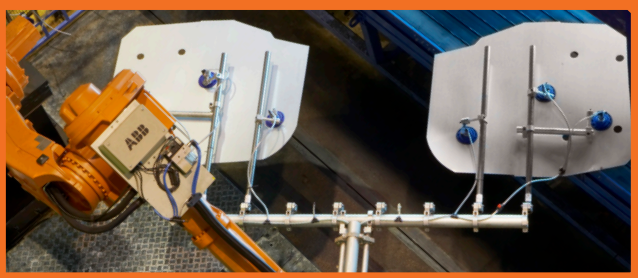
***Lower cushion:***

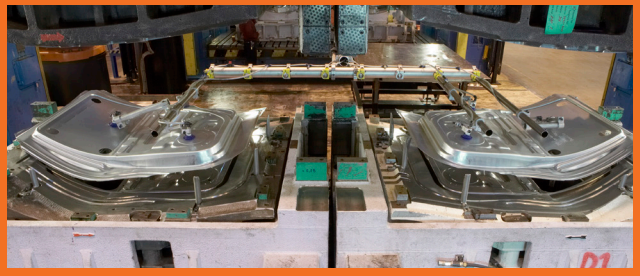
- Pin interval 150 mm
- Max force 200 tonnes
- Max stroke 250 mm
- Capabillity to handle upper air requirement

# .....High Pressure

**Press Line.** The press line is fully mechanised with robots that feed the blank between the presses. The line can be operated at 1–6 stages with output after each stage. The press line can also be run in reverse, that is to say with input from press 6.

**Blank Washer.** In order to ensure the best dimensional precision and surface finish for the parts, the blanks can be washed and lubricated in the automatic blank washer before the first press stage.





**Dual Blanks.** The large capacity of the presses makes it possible to press dual blanks in parallel in the press line, for instance right and left hand door tools simultaneously. The feeder robot positions the dual blanks with extreme precision in the dual press tools using the intelligent camera-guided Vision system.

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