

SICMI

PRESSE OLEODINAMICHE

HYDRAULIC PRESS

Model PCL



GENERAL FEATURES

Introduction

The **C-frame hydraulic press**, PCL model, is ideal for **stamping** and **deformation** of sheet metal and various materials.

This press model is characterized by the cylinder approach speed which is less than **30 mm/sec** and this makes it ideal for use in workshops with **slow production cycles** or for the creation of **mold tests**.

The press is equipped with a **sliding upper mobile table** and a **fixed lower table** bolted to the press frame. On the latter, T-slots are made to fix the molds.

The **two-speed hydraulic power unit** is positioned at the back of the press to optimize space, while the electrical panel is installed on one side of the frame.

On the upper part of the structure there is also a **knob** for adjusting the maximum working pressure and the **pressure gauge** to display the value of the pressure in use.

The machine is available in the **semi-automatic** and **automatic versions**.



Semi-automatic version

In the semi-automatic version, the press works by using the **lever and the button** at the same time, as required by the current safety regulations for all presses whose cylinder descent speed exceeds **10 mm/sec**.

For all these presses, European regulations require the operator to have **both hands busy** during the pressing phases with the aim of preventing the user from inadvertently injuring himself during the descent of the cylinder.

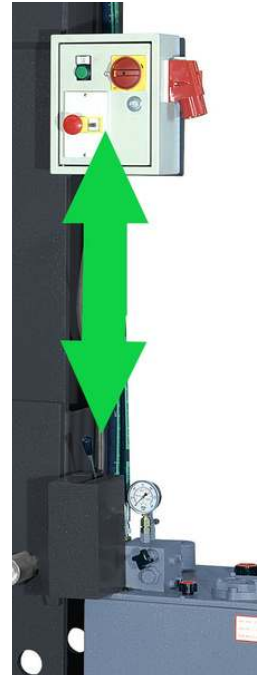
Furthermore, the regulation requires that the lever and the button be placed at a certain distance and at different heights.

The aim is to **prevent** them from being operated by just one hand (or even, for example, by pressing with an arm or part of the body) while the other hand is moving the piece to be worked, with the **risk of injury**.

The semi-automatic version is equipped with **micro switches** that allow the cylinder stroke to be adjusted and thus its maximum descent and ascent point to be set.

Micro switches are **sensing devices** that monitor and report the end position of the cylinder during its movement.

As the cylinder approaches its end position, the micro switches detect the stopping point and send a signal to the press control system.



Automatic version

In the automatic version, the press works by using the **double buttons** placed on a mobile pedestal at the same time, thus always respecting the European standards mentioned above.

This version also includes the installation of **microswitches** to adjust the cylinder stroke and set the maximum descent and ascent point.

In this version, the **cylinder rises automatically** when one of the following situations occurs:

- when the double buttons are released.
- when the preset maximum descent point is reached.
- when the pressure level is reached (if the pressure switch has been installed).

If **photoelectric barriers** are installed on the press, it is sufficient to press the double buttons simultaneously once to start the complete cylinder descent and ascent cycle.

The console also features a selector to **switch from automatic to manual mode**. The latter mode is normally used for **positioning the moulds** and for adjusting the microswitches. On the pedestal, in addition to the emergency button, there is also the button for raising the cylinder in manual mode.

A Siemens electronic board is installed in the electrical panel, while Rexroth solenoid valves are mounted on the hydraulic control unit.



OPTIONAL

(for semi-automatic & automatic versions)

4 sliding guides

The PCL hydraulic press includes the standard installation of **two self-lubricating sliding guides** up to the 200-ton models, which are located in the corners of the upper moving platen.

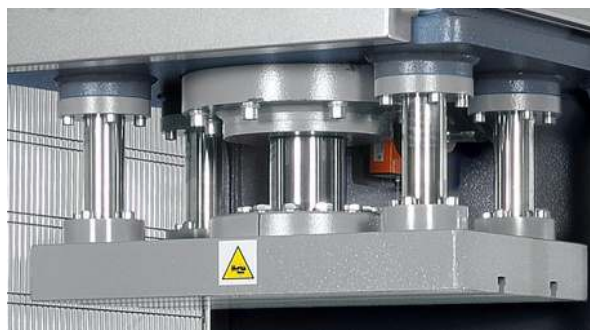
Upon request, the press can be equipped with **four sliding guides** to allow correct descent of the work platen and **greater precision** in the execution of the stamping operations.

Starting from the 300-ton models, the four sliding guides are mounted as standard.

Standard



Optional



OPTIONAL

(for semi-automatic & automatic versions)

Hydraulic cushion

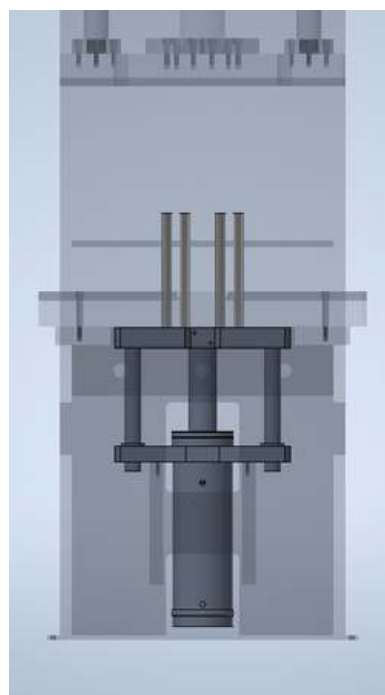
The hydraulic cushion has the task of **counteracting** the force of the main cylinder and thus slowing its descent, allowing the **sheet metal to be stretched** to create the piece.

It is particularly used for **drawing** processes, i.e. in those operations performed cold on flat metal sheets to transform them into more or less complex concave shapes.

The hydraulic cushion **is located underneath the lower fixed table** of the press and is composed of a main cylinder, a fixing flange, a mobile plate that slides along 4 self-lubricating guides and rods that pass through holes made on the lower fixed table.

Under the table top, there is an **openable door** for adjusting the cylinder stroke using microswitches. Upon request, the encoder can be installed instead of the microswitches.

There is also a **safety sensor** that prevents damage to the hydraulic cushion **in the event of overpressure** and an additional safety sensor is provided on the door, which inhibits the movements of the press in case the door is opened during the processing cycle.



OPTIONAL

(for semi-automatic & automatic versions)

Sliding safety nets

The press is equipped with **fixed lateral aluminum nets as standard**, which have the main function of preventing unauthorized or involuntary access to the pressing area, minimizing the risk of serious injuries and ensuring operator safety.

Upon request, these fixed nets can be **replaced by sliding nets** that allow lateral access to the machine, both to position the molds on the work surface and to place the piece to be worked.

These nets are equipped with **safety sensors**, so that the electro-hydraulic press only works when the nets are completely closed.

In the event of opening during the pressing phases, the safety sensors immediately **block the press operating cycle**.



OPTIONAL

(electrical system - only for automatic version)

Front photoelectric barriers

Photoelectric barriers are **safety devices** that use infrared rays to create an **invisible protective barrier**.

They are configured to **immediately block** the pressing process if the operator or any object comes between the photocells.

The barriers are protected by sheet metal and aluminum nets and this configuration also allows the minimum distance from the end of the work surface to be respected.

Thanks to the photoelectric barriers, a protected work area is created and this makes it possible to activate the hydraulic press by **pressing the double buttons only once**, without the need for simultaneous two-hand control for the entire descent time of the main cylinder.



OPTIONAL

(electrical system - only for automatic version)

Digital controller



On request, the **Siemens KTP 700 Basic touchscreen** display can be installed, which allows you to set the following parameters:

- Maximum stroke of the hydraulic cylinder in ascent and descent
- Pressure holding time on the lower platform
- Working pressure
- Decompression time
- Piece counter
- Prestop ascent/descent: function that allows you to stop the ascent or descent before reaching the quota, thus eliminating errors caused by speed and cavitation due to the weight of the mold. It guarantees a precision of 0.1 mm.
- Alarm management

It is possible to store up to **100 different processing programs**.

It allows you to choose whether to work in manual or automatic mode.

The stroke is read by means of a **wire encoder**, while the pressure is read by means of a **transducer** installed on the hydraulic control unit.

If a hydraulic cushion is installed, it is possible to install the possibility of managing the operation of the hydraulic cushion via the digital screen as an additional accessory.

OPTIONAL

(electrical system - only for automatic version)

Timer

The timer is very useful for various stamping operations as it allows the operator to **adjust the time** the hydraulic press remains closed.

It is manually adjustable using a special wheel. In presses equipped with a touchscreen, the timer function is already included and is set digitally.



Piece counter

The piece counter device accurately **counts** and **records** each pressing cycle, allowing efficient production monitoring by controlling the quantity of pieces produced.

As with the timer, the piece counter function is also managed digitally if the press is equipped with a touchscreen.



OPTIONAL

(electrical system - only for automatic version)

Heat exchanger

The air/oil heat exchanger is used **to cool the hydraulic circuit** of the press and uses the ambient air as a cooling source, which is conveyed to the circuit by a fan.

It is used to **prevent overheating** of the hydraulic circuit and to maintain a constant oil temperature, thus avoiding damage to the hydraulic system and gaskets.

It is an accessory particularly recommended when the press needs to work **for long production cycles or in very hot environments**.

The **decompression valve** is also mounted as standard together with the heat exchanger to safeguard the cooling system.

The latter can be requested separately if the heat exchanger is not installed.



OPTIONAL

(electrical system - only for automatic version)

Decompression valve

The decompression valve is responsible for **decompressing the pressure** accumulated in the hydraulic circuit and comes into operation just before the hydraulic cylinder rises, thus **avoiding overloads** and **preventing potential damage** to the machine.

When the pressing cycle is completed or when the stop command is released, the decompression valve opens, allowing the hydraulic fluid to return to the tank in a controlled manner. This process ensures that the hydraulic cylinder stops safely and there are no sudden or abrupt movements.

In essence, this accessory **protects the hydraulic circuit** of the press and is particularly recommended when working at high pressures.



Pressure switch

The pressure switch is a **sensor** that monitors the pressure of the hydraulic fluid inside the system.

Its main function is to **regulate the maximum working pressure**, based on the preset calibration, thus optimizing the operation of the hydraulic press based on the processes that need to be performed.



In the automatic version of the presses, it allows the **hydraulic cylinder to automatically rise** when the calibration pressure is reached.

In the presses equipped with a touchscreen, the pressure switch function is managed digitally via encoder reading

Oversized welds

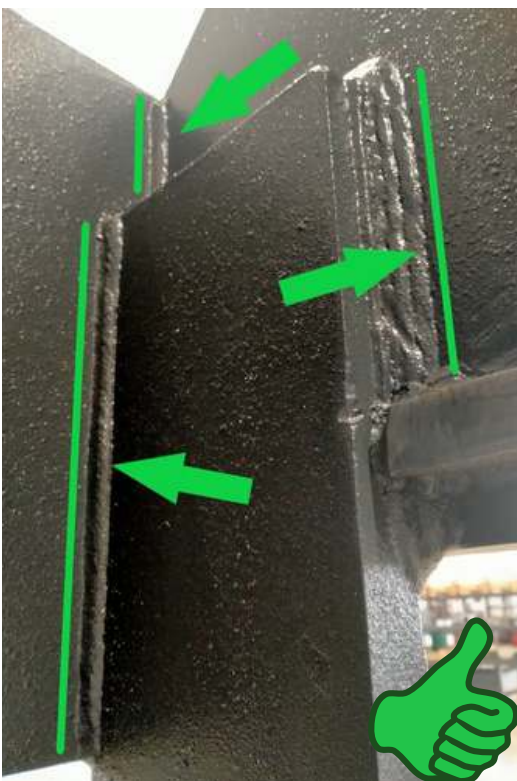
The structures of all the presses produced by **SICMI** are made of **very thick milled steel**, which is **completely welded** along the entire perimeter of the press with **oversized welds**.

In fact, to ensure that the press can absorb even the highest pressures and maintain its structure unchanged over the years, it is necessary that the welds are made in an optimal manner.

This differentiates us from most of our competitors who, to contain production costs, make much thinner welds and only in some points of the frame.

Below on the left is an example of welding made by **SICMI** and on the right that of a **European manufacturer**.

SICMI



European manufacturer



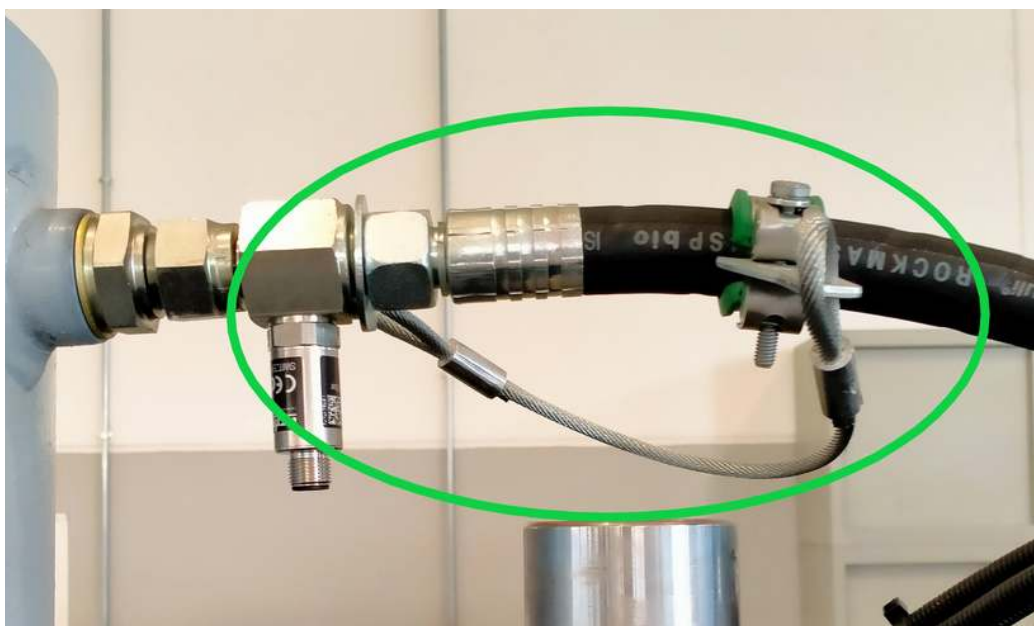
Stopflex anchorage

All presses produced by **SICMI** include safety systems for anchoring hydraulic hoses.

In fact, the force released by a **pressurized hose**, in the event of the fitting slipping off, would be very dangerous for things or people in the vicinity.

This is why the hydraulic hoses of all presses produced by **SICMI** are fixed using the **Stopflex retention system**, which was designed to stop the stroke of the slipped hose and prevent the force released inside it from triggering a fearsome **“whip effect”** and at the same time flooding the work environment with hydraulic oil.

Thanks to this system, in fact, **the hose is anchored** to the system using a rope, thus ensuring **full protection** of the operators, the safeguard of the press and the workshop.



Anchoring hydraulic pipes

In addition to the Stopflex safety retention system, the **hydraulic hoses are firmly fixed** to the press frame by means of special collars that prevent any movement of the hydraulic hose.

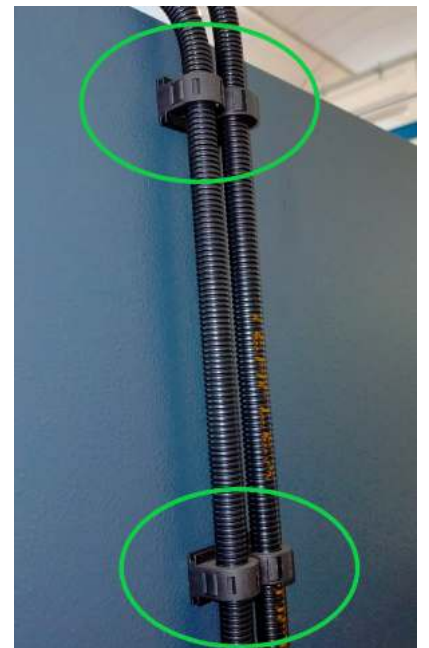
These collars have the **base welded** to the frame, while the upper part is screwed.



Anchoring electrical cables

The pipes for the passage of electrical cables are **anchored to the frame** of the press by means of **special collars**.

Unlike many competitors who use simple plastic ties that are destined to dry out and break in a short time, these collars are made of **highly resistant material** and are screwed to the frame of the press.



Maximum pressure valve

As an additional measure to ensure the **safety of the operator** and to **safeguard the machine**, a maximum pressure valve is installed inside the hydraulic power unit on all hydraulic presses produced by SICMI.

The maximum pressure valve has the function of **regulating the maximum pressure** in the hydraulic circuit.

It is used to **protect the pump** and other components of the system from excessive pressure and therefore to maintain a constant level inside the hydraulic circuit.

It is a normally closed valve capable of opening when a predetermined pressure is reached and of **discharging the flow rate** necessary to keep the circuit pressurized.

In fact, in the event of a malfunction of the hydraulic circuit, this safety valve prevents an excessive quantity of oil from reaching the cylinder, thus **preventing the risk of overpressure**.



Anti-fall and anti-burst valves

All hydraulic stamping and bending presses produced by SICMI are equipped with anti-fall and anti-burst safety valves.

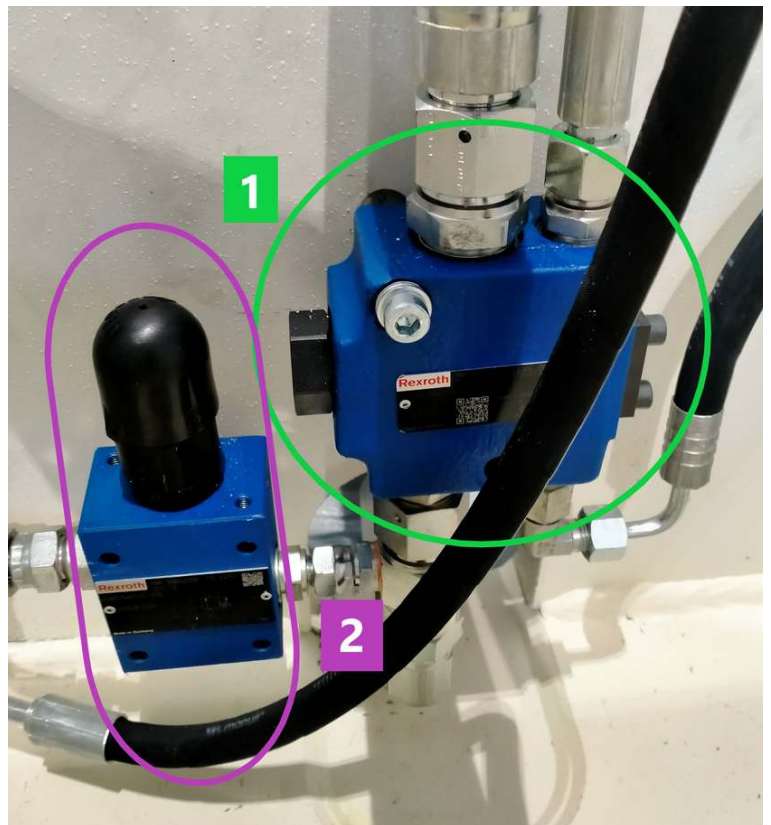
The **anti-fall valve (1)** has the function of maintaining the hydraulic cylinder **under pressure** in the event of a hydraulic hose slipping out.

In this way, **the cylinder**, despite the weight of the upper platform connected to it, would remain still in its position and **would not fall downwards**, thus avoiding injury to the operator.

As an additional form of safety, the **anti-burst valve (2)** is installed, which comes into operation in the event that the anti-fall valve jams.

The function of the anti-burst valve is to **drain the hydraulic oil** from the cylinder if the pressure rises above the permitted limit and therefore **prevents the cylinder from bursting**.

Both valves are from the famous **Rexroth** brand which is recognized globally for its high quality and extremely reliable products.



Electrical system

The press works with a three-phase electrical system with a **380V power supply**.

The electrical panel features an **emergency button**, which immediately stops the machine from working, as well as buttons to operate the press.

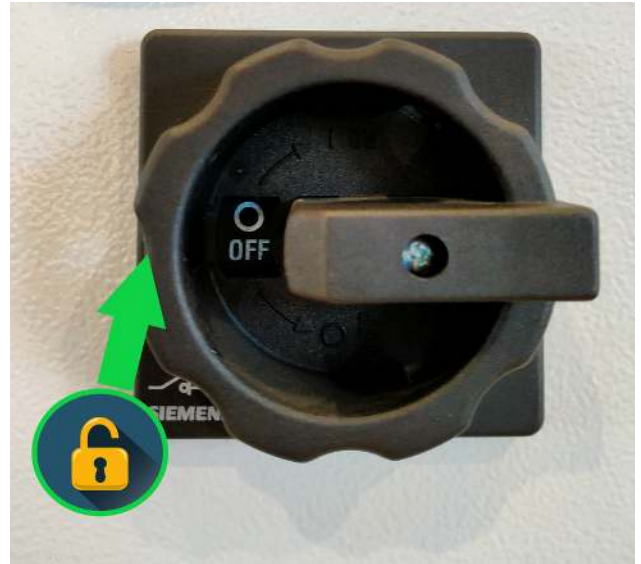
As an additional safety measure, there is a **transformer** inside the electrical panel that **reduces** the current from **380V to 24V**, that is, to a voltage that is not dangerous for human health.

In fact, in the event of a malfunction in the system, the current could propagate to the electrical panel, with the risk that the operator could suffer an **electric shock** when pressing one of the buttons on it.



LOTO Blocking

The electrical panel cabinet is equipped with the **Logout - Tagout (LOTO)** locking system which allows the press ignition control to be locked with a padlock and therefore the machine to be made safe during **maintenance phases**.



Electrical panel closing

The electrical panel cabinet is also equipped with a **key locking system** to keep the electrical components safe and prevent unauthorized personnel from gaining access.





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Only the best is enough

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