

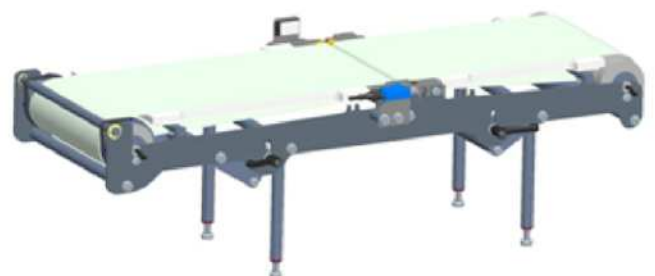


Tool sizes are 340 mm in width and 570 in length, number of trays per tool can be maximum 4 according to the tray dimension in travelling direction. Sealing tool driving system and sealing force generator consist in a fully electro-mechanical system.

General description.

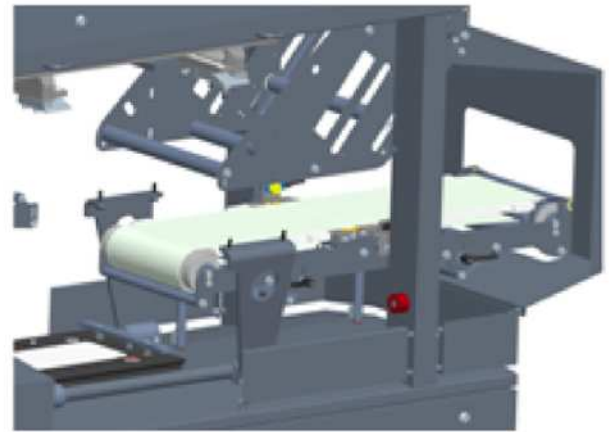
Tray in feed.

A belt is receiving the trays from a previous conveyor. Trays have to arrive aligned and at a suitable distance. A smart belt will pace and group the trays, independently of the previous pitch, to prepare them to be transferred to the sealing station. These two belts can handle random feeding speed and allow the machine to remain in stand by, which is important, both for fully automated solutions and for manual operations. Detection of the tray is provided by a single photo eye positioned above the travelling plane.

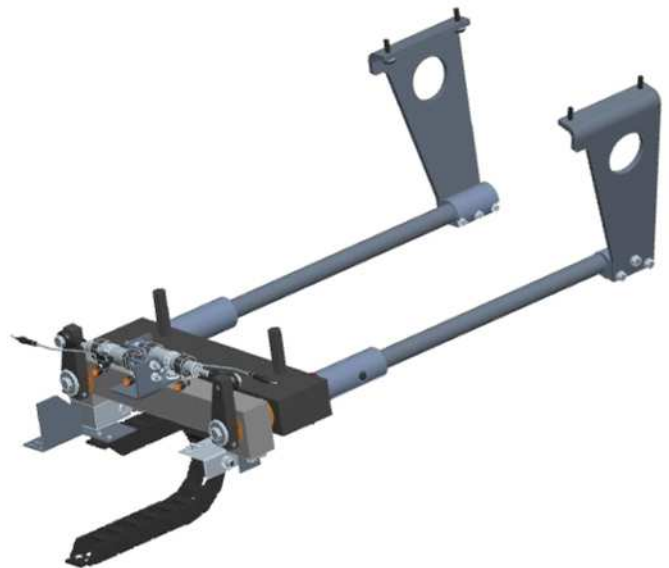


Tray handling.

To avoid tray shaking and excessive deceleration and acceleration of the product inside the tray, the handling is extremely smooth and accurate.



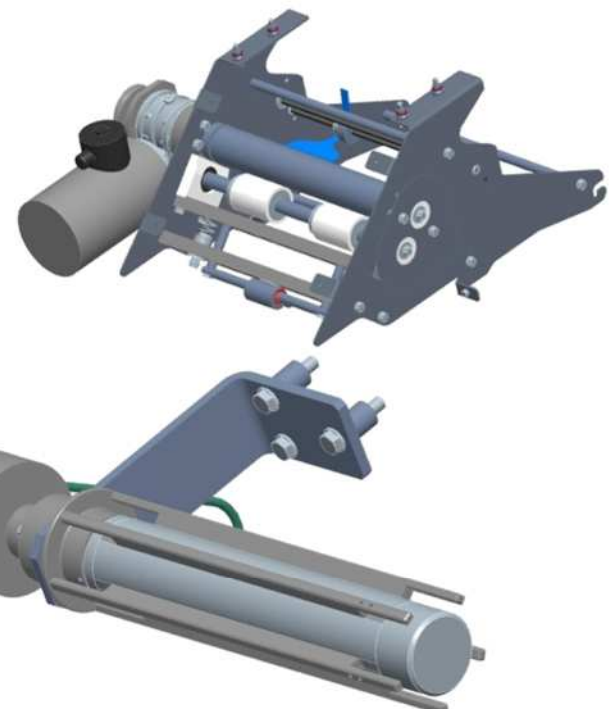
Trays are moved from the smart belt to the sealing station through moving arms, which are gripping the group from the side. These arms are controlled by a servomotor system, whose main characteristics are smoothness, high speed, consistency, accuracy and extremely low maintenance and by a long-stroke pneumatic piston for the rotation to allow a very good smoothness and a wide range of settings.



Film unwinding and waste rewind.

Film saving and reliable continuous run are at the base of the development of the system incorporated in this tray sealer. The reel is positioned on a cantilever shaft which is connected to a servomotor. Film is kept in tension through several shafts, which are supported both sides to avoid any misalignment. A dancing bar keeps a constant tension on the film during the unwinding.

The film is pulled through the tool via two counter rotary rollers, controlled by an electrical motor, which allows smooth pulling to reach the maximum waste savings. A clutch controls the tension on the continuous running film waste rewind.



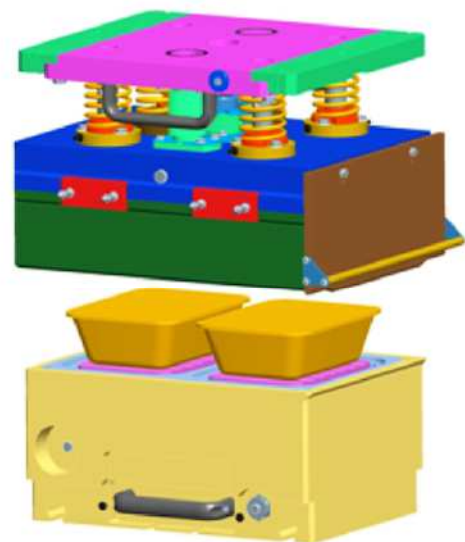
Sealing Station.

Once the trays are positioned in the sealing tool, the lower part is raised and the sealing process starts. High sealing force and consistency of sealing parameters are critical to guarantee the same seal characteristics tray after tray. The TRAVE-350 is equipped with a high duty system which is of an electromechanical type. A rod-crank system is controlling the motion up and down of the sealing tool, keeping an absolute control of the tool position while still very fast. The sealing force can reach 2200 Kg. Main characteristics of this solution are smoothness, high speed, very high consistency in sealing force, very high accuracy in positioning and extremely low maintenance.



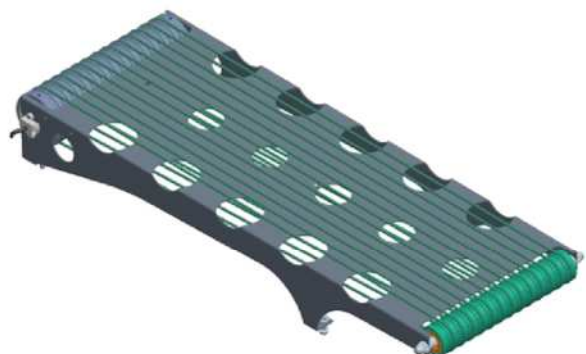
Tooling.

Each tray foot print has its own tool, but different tray heights are handled in the same tool. The construction is completely in anodised aluminium and all parts are machined from a single piece to reach the best accuracy in sealing pressure distribution. Each tray cavity supports the base of the sealing edge with a T section gasket to recover from different thickness in the packaging material. The location of the tray is as accurate as possible, due to tray size consistency, to reach the best results in seal location and film trimming. Sealing plates are made of aluminium-bronze, to keep the sealing temperature consistent in all contact points, the sealing profile varies according to the specific packaging material, it also contributes to remove contamination from the sealing area. Heating is provided by an element cast into aluminium. This solution provides a long lasting heater plate and a very accurate sealing temperature control: plus or minus five degrees between each point.



Out feed.

A polycord belt takes the sealed trays out of the guarding in a straight line.

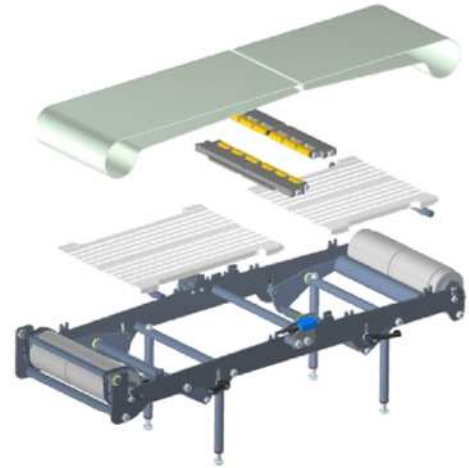


Wash Down capabilities

Clean ability and resistance to continuous wash down is one of the main characteristic of this machine.

Hygiene Design.

- Avoidance of contact between extended flat surfaces.
- No closed cavities which can trap water and dirt.
- No sensors below travelling plane.
- Reduction of exposed nuts and bolts to increase easy cleanable surface.
- One main electrical cabinet and one main mechanical cabinet.



Food grade materials.

- Stainless steel for main body.
- Anodised aluminium tool.
- Belts in polyurethane.

IP Rate.

- IP 65 mechanical cabinet.
- IP 65 electrical cabinet.
- IP 65 pneumatic and services cabinet.
- IP 67 control panel.
- IP 67 control switches.
- IP 67 photo eyes with quick release for quick substitution
- IP 67 proximity sensors with quick release for quick substitution.

Operations.

Start, Stop, Reset, are simply controlled with standard and user friendly switches. All other settings are controlled via panel control. In this way the operators are free to use the machine without the risk of changing parameters which can jeopardize the efficiency. The list of parameters which are menu driven are:

- Sealing Temperature.
- Sealing Time.
- Vacuum Time (optional).
- Gas Time (optional).
- Film Unwinding Speed.
- Length of film, by time.

All previous parameters are stored into recipes to allow an easy and fast change over. Increased list of parameters are due for automatic lines.



Change Over

A full change over of the tray sealer can be done in **ten minutes**. All parameters are menu driven, in this way the skill requirement is very low. Both bottom and top tool slide out of the chassis of the machine. The top and the bottom tool are locked and unlocked through a pneumatic quick release system. No lifting is required by the operators.

Performances

The product and the packaging material will determine exactly the cycle time. However, as a reference, we consider the following table of cycles per minute.

<u>Type of Product</u>	<u>Heat Seal</u>	<u>Pre Cut Lid</u>	<u>V&G</u>	<u>G Closure</u>	<u>L Closure</u>
Solid	17	15	14	17	16
Liquid	10	10	8	10	10

Maintenance

Being mainly a mechanical machine, all bearings, bushing, shaft etc need to be greased regularly. Each tool has its own greasing point.

Mechanical Specifications

- Electrical Motors: Coel.
- Gear Box: STM
- Drum motor: Interrol
- Belts: Habasit

Pneumatic Specifications

- Metalwork

Health and safety

The machine is CE marked and comes with declaration of conformity.



Electrical Specifications.

	Mondini Standard
Plug sockets (auxiliary v.220)	Schuko
Main switches	Merlin Gerin / Schneider
Push button ,Selector 22.5mm	Telemecanique / Schneider
Signal lamp 22.5 mm	Telemecanique / Schneider
Interface relay	Phoenix / Omron
Emergency stop safety relay	Telemecanique / Schneider
Feeding device 24 v.dc	Telemecanique / Schneider
Protective relay for motor	Telemecanique / Schneider
Frequency Inverter	B&R
Terminals	Phoenix
Temperature controller	B&R
Bus system I/o	X2X-POWERLINK
Axis communication	POWERLINK
Multi-polar plug connectors	Ilme
Opto-electronic sensor	Wenglor
Proximity switch	Telemecanique / Schneider
Safety switch	AB Rockwell
Temperature sensor	PT 100
Acoustic alarm units	Telemecanique / Schneider
Signal tower	Telemecanique / Schneider
Plc	B&R
Operator panel	B&R (PC) G.Mondini
Axis control	B&R
Axis motor	B&R

Driving unit per Item

Infeed belt	AC motor Optional : Inverter (with variable speed controlled by panel)
Grouping belt	AC motor Standard : Inverter (with variable speed controlled by panel)
Exit belt	AC motor Optional : Inverter (with variable speed controlled by panel)
Arms translation	SM motor
Arms closure	PN
Tool lifting movement	AC motor
Film feeding	SM motor
Reel unwinding	AC motor Optional : Inverter (with variable speed controlled by panel)

Asynchronous motor	AC motor
Servo motor	SM
Pneumatics	PN
Not applicable	NA



TRAY SEALER OPTIONS

Vacuum & Gas

This option allows the production of modified atmosphere packs. It includes:

- Vacuum Pump: Busch 300 m3.
- Vacuum hoses and valves Gemu.
- Gas reservoir.
- Gas hoses and valves.
- Vacuum and Gas tool. The vacuum chamber is machined out of a single piece of aluminum to reduce the risk of leakage. Also all seals are lip seals type and greased with vacuum type grease. The minimum pressure reachable is below 4 mbar. These results are important to decrease oxygen residuals and to increase productivity.
- PLC software.

Anti-explosion pump

It is mandatory whenever using high oxygen flows or gas mixing and the machine is sold with a vacuum pump.

High oxygen protection

All the vacuum valves and gas valves are provided with proximity sensor for positive detection of status (open and closed). A PLC which is separate from the main one checks that the vacuum and gas system is working properly for each cycle, avoiding a flow of missing gas to the vacuum pump. In case of malfunctioning the machine detects it and goes in a state of alarm.

Note: this system is not certified and it will be totally under the responsibility of the end user to be provided with suitable pumps for the type of product to be packed.

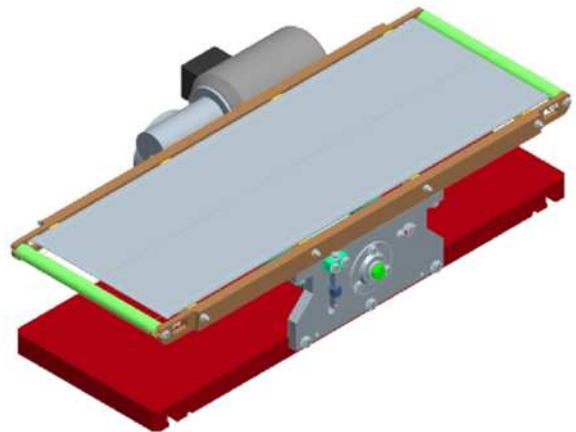
Pressure transducer

The vacuum and gas cycle is controlled through timers but the pressure transducer will detect the level of the millibar at the end of the vacuum cycle and the gas cycle. If the readings are not between the boundaries pre-set in the recipe, the machine will go into a state of alarm. Also with the specific menu the machine will close the tool, pull the vacuum to the maximum level and then hold it. Through the readings again it is possible to see any leakages in the tool.



By-pass belt

By-pass belt suitable for allowing un-sealed trays to pass through the sealing station without being heat sealed. The by-pass belt is positioned in the place of the sealing tool where there are trays which have to by-pass the sealing station.



Pre Cut Lid

A shuttle system allows the machine to pick pre cut lids from the side magazine located on the side of the tool.

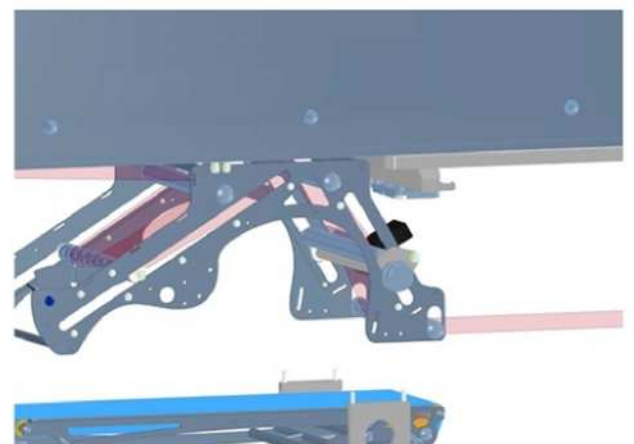
This option includes:

- Shuttle structure.
- Vacuum generator.
- Hoses and electro valves.
- Tool with side magazine.
- PLC software.



Printed Film Registration

A photo eye detects the marking log on the printed film and stops it in the right position to have the printing centred on the tray. An accurate film lay out is provided for each tool to allow a proper film printing.



TOOLING & TOOL OPTIONS

Pre Cut Lid.

Lids are stored on the side of the tool. A pick and place removes the lids from the base of the pile, or the piles, via suction cups, then position the lid on the sealing profiles. Suction cups retain the lid in position. To use this tool the machine has to be predisposed with the pre cut lid shuttle.

Inside Cut.

This option allows the tool to cut the film inside of the perimeter of the tray. Such solution can be used to:

- Avoid film protruding the edge of the tray
- To run cups or trays with protrusions or handles from round sealing profile, without need of keeping them aligned.
- To seal special tray with sealing surface below the maximum height of the tray.

No predisposition is required.

Alum Foil Crimping.

This tool cuts a lid from a reel of aluminium and crimps it around the tray. The aluminium has to be at least 40 micron thickness. No predisposition is required.

Pre Cut Lid Crimping.

Pre-shaped lids are stored in a side magazine. A pick and place system removes the lids from the base of the pile, or the piles, via suction cups, then positions the lid on the sealing profiles. Suction cups retain the lid in position. To use this tool the machine has to be predisposed with the pre cut lid shuttle.

Double heater plate.

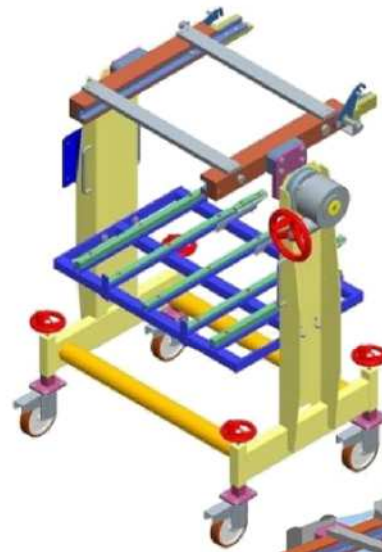
In case of aluminium tray, to decrease the required sealing time and to reduce the sealing temperature, which damages the lid, a second heater plate is positioned in the bottom part of the tool. Sealing profile is heated from the top and the bottom, sealing time is reduced by half the time compared to a standard solution. A water cooled bottom plate avoids the transfer of the heat to the main machine body. The machine has to be predisposed to run two independent heater plates.



Extra Equipment

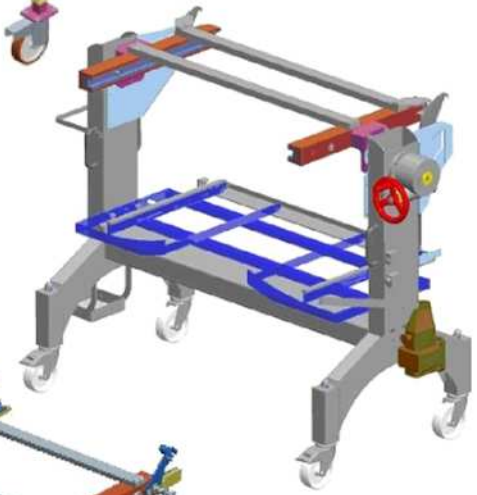
Tool Trolley

Positioned to the side of the tray sealer, assembled on wheels and locked in position, the bottom and top tool can be transferred into the trolley very easily. The top tool is automatically secured in position once the trolley is unlocked from the tray sealer. Now the trolley can be taken to the maintenance area. The top tool can be rotated up-side down through a gear box helping a lot cleaning and maintenance. Stainless steel construction.



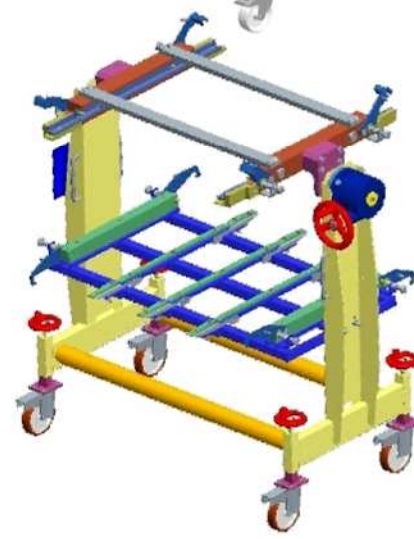
Hidraulical Tool Trolley

Compared to the standard trolley, it has an hydraulic levelling system. For this reason it can be adaptable in height to the different TRAVE and to the tool racks avoiding to act on handle-wheels.



Two-sided tool trolley

This is a two-faced trolley with the possibility to extract the tool from both right and left handed machines. Asymmetric hooks avoid possible matching errors between trolley and machine.



Tool Rack

To easily accommodate the different tools a tool rack, in stainless steel, is available. It can also be equipped with wheels or pre heating station.

