

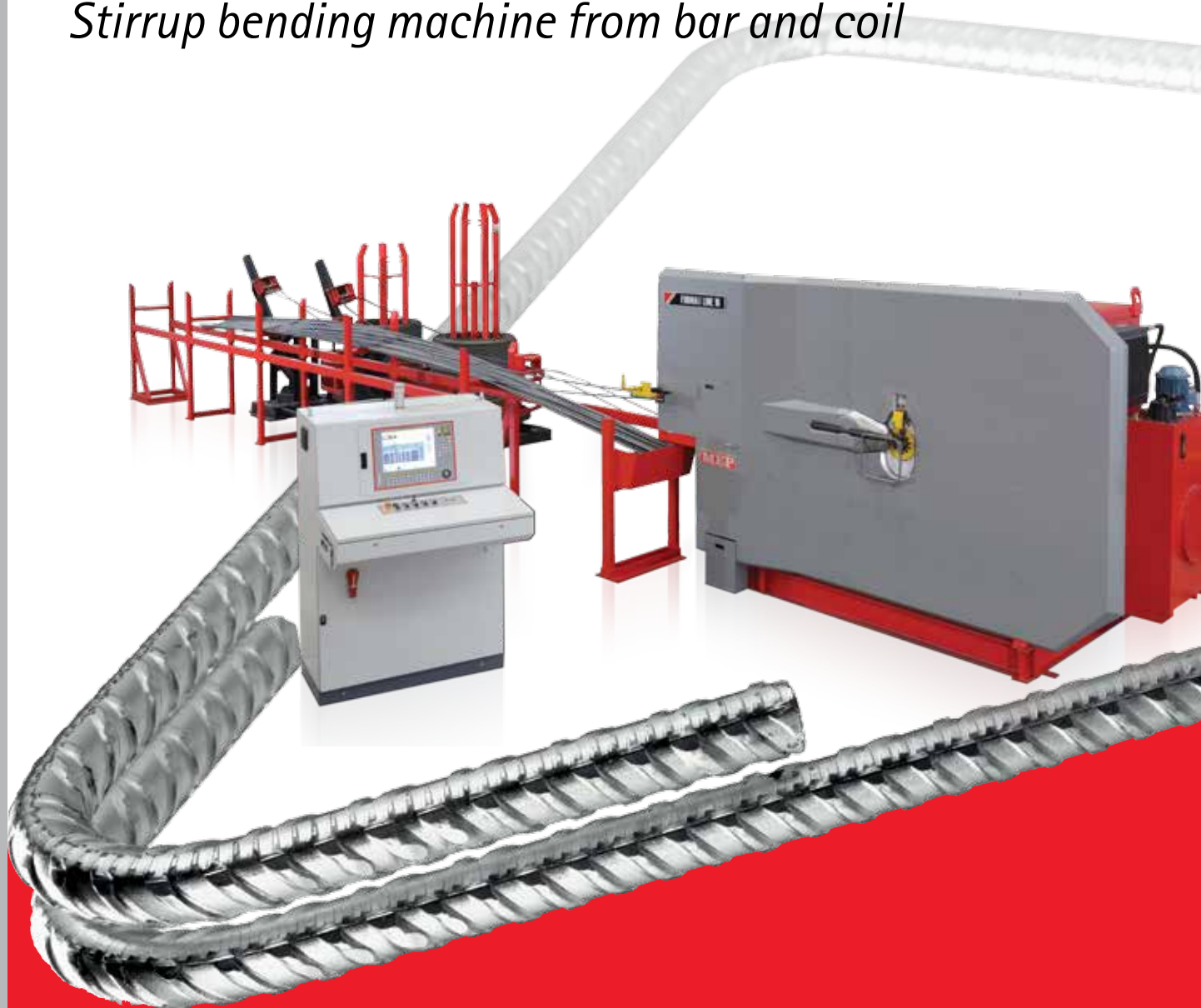


Stirrup bending machine from bar and coil

Format Line 16

Format Line 16 3D

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BAR AND COIL 2D-3D WITH ZERO SCRAP: THE FIRST IN THE WORLD

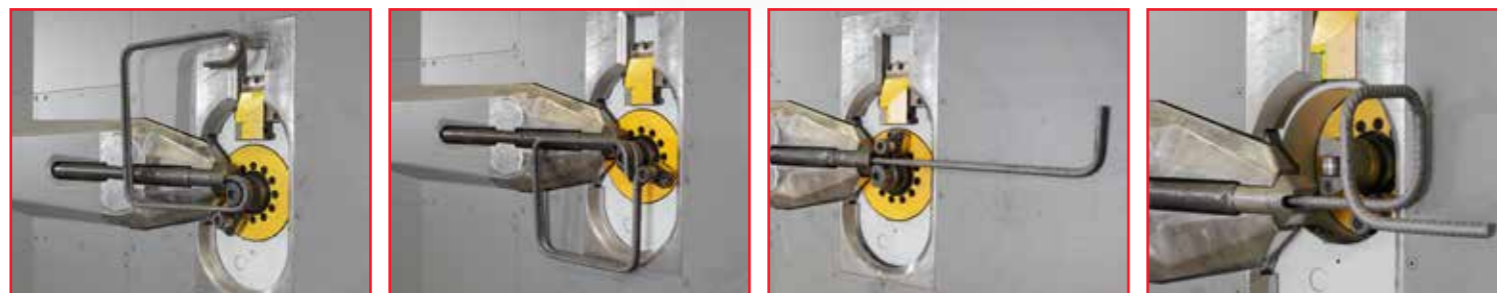
FORMAT LINE is the most innovative **stirrup bender**, designed to produce stirrups out of **coil** or **stock rebar** according to the different production requirements in a **fully automatic way**, guaranteeing maximum **flexibility**, **productivity** and **quality** of the finished product. **FORMAT LINE** is the first equipment in the world to use **100%** of the bar's length without generating additional **scrap**.



MAXIMUM FLEXIBILITY AND PRODUCTIVITY, AT LOW COST

Small or large **stirrups**, straightened or bent **bars**, as well as **circles** and **spirals** are produced in **2D** or **3D** (optional patented device).

The **full automated process** allows to use **less machines**, to **reduce the workforce** and therefore to **cut the cost per unit of weight** of the finished products.



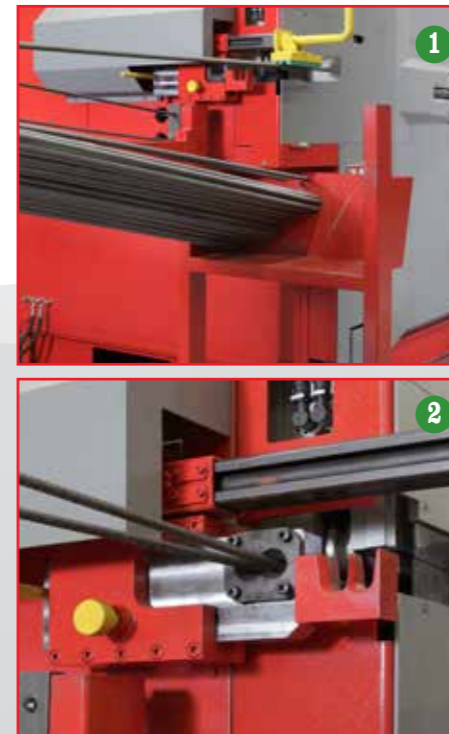
Unrivalled quality and productivity

FORMAT LINE is the first machine in the world able to switch production from bar to coil in fully automatic mode avoiding manual settings, mistakes and waste of time that would normally come with it.

FORMAT LINE allows to obtain, in a simple way, a superior quality product. The combined action of an exclusive series of patented devices reduces the setting times and dramatically reduces the amount of products to be rejected.

A system of the latest generation of drives and controls allows to achieve levels of productivity per hour without equal.

FROM BAR TO COIL IN A FEW SECONDS



The use of the same feeding unit for the processing of the bar (1) and coil (2), allows to switch the production from one to another in a very short time. The straightening system "ARS" (Anti Rotation System) reconfigures itself in function of the type of material and diameter to be worked using the stored data.

With this solution, the machine is ready to restart the production in a few of seconds.

MAGNETIC BAR LOADING

Is used for the loading of the bars during the work cycle. It is equipped with a mechanical contrast for the pre-alignment (trimming) of the bars.



"ARS" Anti-Twist and Straightening System

"ARS", THE GENIAL SOLUTION FOR BARS AND COIL

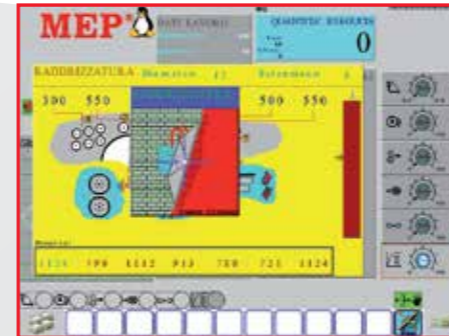
The "ARS" (anti rotation system) is a straightening system that eliminates the effect of the wire rotation on its own axis.

Therefore, **closed stirrups and straight bars** can be always produced.

The **independent control** of the traction on two wires **eliminates any difference in length** between the two wires and **the coil ribs are far less deformed by the straightening process** in case where there are geometric or dimensional differences.

CONTROLLED STRAIGHTENING

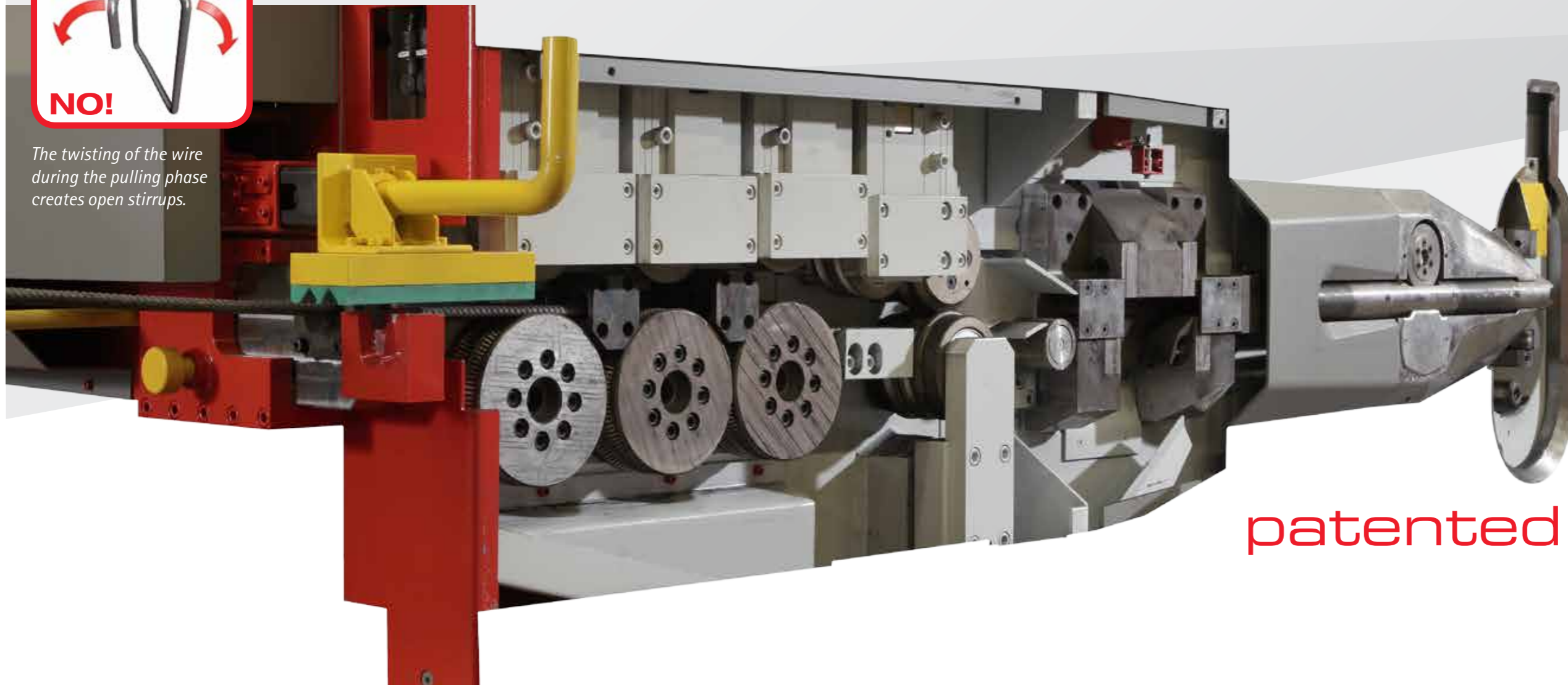
The combined action between the "ARS" and the **on-screen electronic pointer** provides a real and full automated automatic control of straightening functions.



The twisting of the wire during the pulling phase creates open stirrups.



The "ARS" system guarantees perfect straightening with close stirrups.



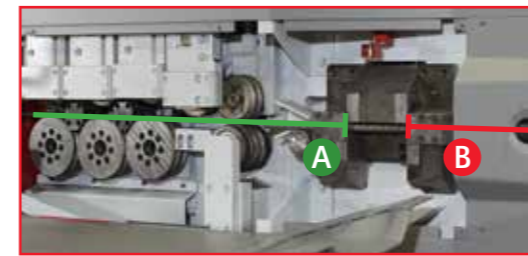
patented

Patented solutions for an unmatched precision

THE SOLUTION THAT EVERYONE EXPECTED: 100% OF THE BAR, ZERO SCRAP

FORMAT LINE is the first machine in the world able to use the full length of the bar, be it commercial length (12-15m) or pre-cut to size, in a fully automatic way. The scraps is reduced to zero (in the case where the optimization allows it), making FORMAT LINE unique.

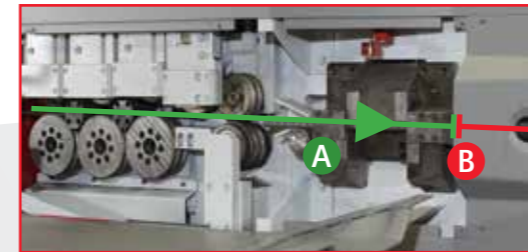
TWO SHEARS: PUSHING SYSTEM (PATENTED)



FORMAT LINE is equipped with a shear at "double effect" for the alignment of the initial part (head **A**) and end (tail **B**) of 2 bars.

In this way, the two new bars **A** can push those nearing **B** completing the processing.

This patented system in combination with the roller extractor rollers allows the use of 100% of the bar.



TWO SHEARS FOR MAXIMUM PRECISION



Generally the actual length of stock rebars is not known but always exceed the nominal theoretical of 12 or more meters (12,03/12,04m...). It is unlikely to be able to ensure the length tolerances of the planned cuts, without having first measured the bars.

The solution to this problem is represented by the patent which involves the use of two shears which allow to have the certainty of the measurement of each cut, in addition to remove the scrap from the machine, of any size.

While the first shear (**1**) makes the intermediate cuts between two stirrups or bars, **1**, the second shear (**2**) cuts the tail of the bar **3** only after the achievement of the right length **2**.

In this way, we avoid the classic method which provides a first alignment cut of the bars, completely random, which produces differences in the length, not predictable.



SCRAP: NO MORE A PROBLEM

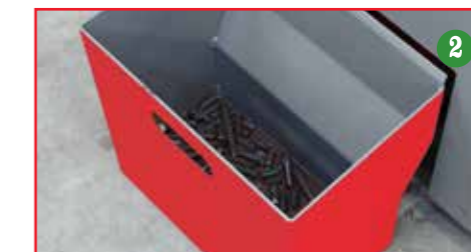


The scrap is managed according to its length.

In case it is less than 100 mm (**2**), the end of the bar is cut and separated from the rest of the production automatically collected in a dedicated outside bin.

In the case of longer lengths (**1**), the piece is automatically extracted from the front.

This process is full automated and it does not require any manual intervention by the operator with consequent downtime of the machine.



SAFETY AND ERGONOMICS



With the "ARS" system it is **always** granted to obtain **closed stirrups**, thus **eliminating** the typical and dangerous **manual operation** during the bending process by operator. It is possible to produce straight bars or bent at one side in **total safety**.

WORLD SYSTEM: TOTAL CONTROL



The world system through an interface "user friendly" allows total control of all the devices of the equipment, enhancing performance.

- MEP Industrial PC "World System" operator control panel is comprised of:
 - LCD Touch Screen for the user friendly graphical visualization of all data.
 - Compact, "embedded" microprocessor with low power consumption and a compact flash disk with no moving parts (disk-less).
 - Linux operating system.
 - Automatic backup saving system in case of accidental power interruption for safeguarding files and memory support integrity.
- The custom software developed by MEP allows:
 - Data input with graphic visualization of programmed and pre-memorized shapes with feasibility checks via a "dynamic simulation".
 - Control of all speed parameters in execution via a potentiometer.
 - Availability to program up to 7 different templates for each bar.
 - Availability to plan and automatically performs a sequence of different pieces together e.g.:beams with variable pitch. (optional)
 - Saving and archiving of data relative to work cycles and generation of daily production statistics (positions, diameters, times, weights, etc.).
 - Availability of cutting lists optimized creating automatic working cycles.
 - "Active diagnostic" system for a constant efficiency check of all machine devices.
 - Automatic activation of the scheduled maintenance program.
 - Interface compatible with optical bar code reader through RS 232 port.
 - USB connection port.
 - Possible to connect to Company Network through RJ45 Ethernet port (LAN port) or RS 232 port.
 - VPN Connection-ready for remote assistance via Internet (through Company Network).

WAREHOUSE STORAGE: BAR-COIL



Fix stock bars, composed by one single compartment (capacity 2500 kg) for the storage of the bars.
The **pay off** stations (optional) allow the use of coils having a capacity up to 3,200 kg.

THE FASTEST BENDING PINS CHANGE



FORMAT LINE is equipped with a set of fast fitting bending pins. They are made in **accordance** with the **international regulations**, allowing the **fast change** during the diameter change phase, so the production can restart quickly.

UNIVERSAL BLADES



The three cutting units use **universal knives**, for all diameters processed with **4 cutting faces**.



- **3D bending pin**
Optional patented system allows the automatic production of 3D stirrups. (OPTIONAL)

ACCESSORIES





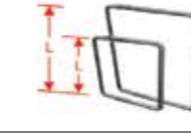



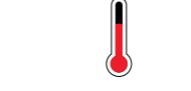



- **Winch** equipped with clamping device for the wire end to be pulled. (OPTIONAL)



- **Supporting and collecting unit** for the production of straight bars and bars bent at one end. (OPTIONAL)

TECHNICAL AND PRODUCTION CHARACTERISTICS

	SINGLE STRAND PROCESSING WIRE DIAMETER	FORMAT LINE 16 3D
	cold drawn, hot rolled, smooth or ribbed wire fy = 600 N/mm ² - ft = 700 N/mm ² (other loads upon request)	from Ø 6 to Ø 16 mm - from #2 to #5
	hot rolled, smooth or ribbed wire fy = 600 N/mm ² - ft = 700 N/mm ² (other loads upon request)	from Ø 8 to Ø 16 mm - from #2 to #5
	DOUBLE STRAND PROCESSING WIRE DIAMETER cold drawn, hot rolled, smooth or ribbed wire fy = 600 N/mm ² - ft = 700 N/mm ² (other loads upon request)	from Ø 6 to Ø 13 mm - from #2 to #4
	DOUBLE STRAND UP TO hot rolled, smooth or ribbed wire fy = 600 N/mm ² - ft = 700 N/mm ² (other loads upon request)	from Ø 8 to Ø 13 mm - from #2 to #4
	SQUARE STIRRUP DIMENSIONS minimum with Ø 6 mm wire (optional bending pin) maximum if clockwise maximum if counterclockwise (with eventual optional cover extension)	50 mm x 50 mm - 2" x 2" 1000 mm x 1000 mm - 40" x 40" 2000 mm x 2000 mm - 6 - 7" x 6 - 7"
	LENGTH OF CUT-TO-LENGTH BAR minimum maximum (if equipped with optional supporting guide; other sizes upon request)	5 mm - 3/16" 12000 mm - 39-4"
	CENTRE FORMING TOOLS DIAMETER minimum maximum (other sizes upon request)	24 mm - 1" 80 mm - 3"
	MAXIMUM DISTANCE BETWEEN CENTRAL BENDING PIN AND THE GROUND standard optional upon request	1300 mm - 4'3" > 1300 mm - > 4'3"
	STORAGE RACK 1 compartment up to 12.000 mm length (other sizes and configurations available upon request)	
	OPERATING TEMPERATURE standard optional upon request	-5° C / +40° C - 23° F / 104° F -15° C / +55° C - 5° F / 131° F
	INSTALLED POWER maximum (other sizes upon request)	36 kW - 48 hp

THE PLANT DOES NOT REQUIRE COMPRESSED AIR.

fy: Max. unit yield point - ft: Max. Tensile strength

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