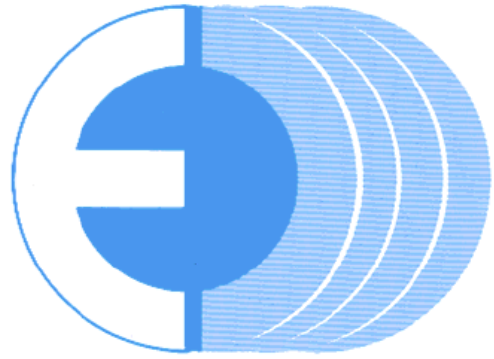


*Do you have a technical need ?*



*Make it happen. . . .*

# INTRODUCTION



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GABANDE MACHINERY was founded in 1940 by Gabande family.

From the beginning the Company Managerial team realized that the technological developments aligned with the accuracy of our machines would get achieve international objectives and projects at the five continents.

Currently Gabande is comprised on a hydromechanics section (full drawbench lines, straightening machines, flying saws and hydraulic presses) and another wire drawing line to be presented below.

One of the lines where we've enhanced which derived from our historical in calibration and straightening, is the supply of machinery for the cable industry, having enhanced the design and construction of complete stretching lines for ferrous and non-ferrous as wire in copper, aluminum and others.

These lines incorporate one or more machines depending the customer needs we can perform processing machines in automatic system (spooler - winding - drawing machine - cutting machine – straightening machine) which are the called combined systems, where we aim to offer competitive prices to suit our customer needs.

Currently between 70% and 80% of the activity of the wire line is focused on the steel industry where we are providing full projects for wire manufacturing.



# INTRODUCTION



In the field of non-ferrous metals we continue offering the scrabble lines for fine or intermediate wire with continuous annealing furnace, inductive preheaters, collection systems or drawing machines for enamelled wires.

If in attached files cannot find your machinery needs, please direct your inquiry to:

**GABANDE, S.L. Maquinaria Hidromecánica.** C/Rio Ebro, 23-25 Políg. Las Eras. 50.420 Cadrete – ZARAGOZA Spain  
e-mail.: [gabande@gabandemachinery.com](mailto:gabande@gabandemachinery.com)/ Tel.: + 34 976 12 60 12 Fax.:+ 34 976 12 60 28

**Madrid Office,** Antonio Salces, 1-1º., 28002 Madrid - Spain. Tel.: +34 91 519 26 59 / 06 35 Fax.: +34 91 415 07 02  
e-mail.: [comercial@gabandemachinery.com](mailto:comercial@gabandemachinery.com) - Web.: [www.gabandemachinery.com](http://www.gabandemachinery.com)

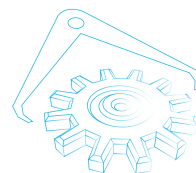
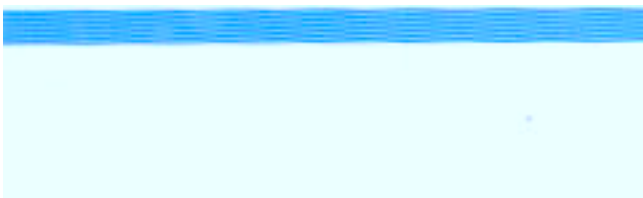
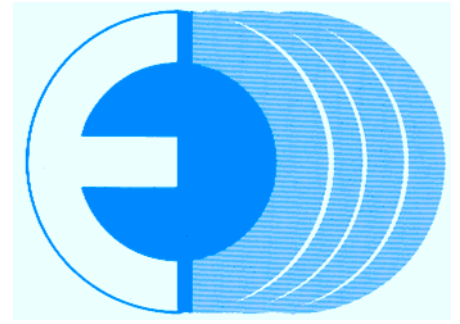


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# PAY-OFFS

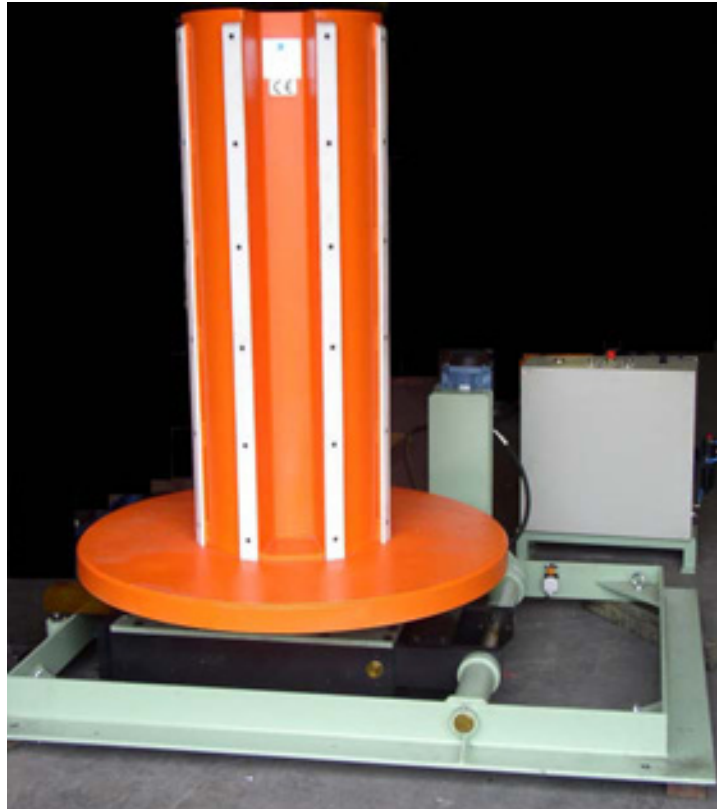
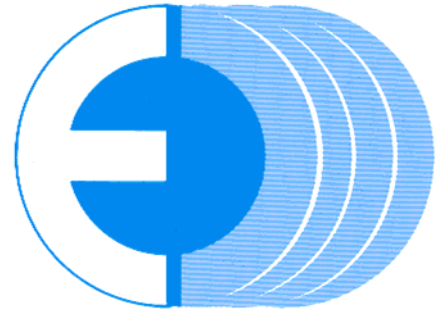
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## VERTICAL TILTING PAY-OFF, TYPE DFV



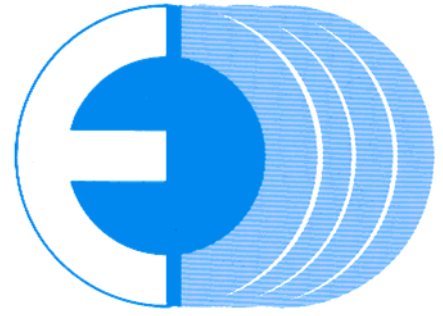
**Vertical Tilting Pay-Off DFV-2.000. Working Position**

Tilting pay-off DFV has been designed as a unit to supply large fermachine coils to combined wire drawing, straightening and cutting-off lines or to individual wire drawing bullblocks. It is composed of an independent tilting-mounted coil-carrying basket assembled onto a static platform which is fixed on the floor. The coil-carrying basket can turn clockwise or anticlockwise depending on user requirements.

### **Main Features**

- Tilting-mounted basket to reach horizontal position.
- Twin pneumatic breaking system which can be regulated; the first is the working brake and the other the emergency brake.
- The operator can voluntarily restrain the working brake for loading operations.
- Basket with space to pass the coil sustaining tube into the hoisting trolley.
- Anti-knot stopping switches with adjustable springs which stop the line immediately.
- It may be optionally fitted with nylon sheets on the coil-carrying basket.





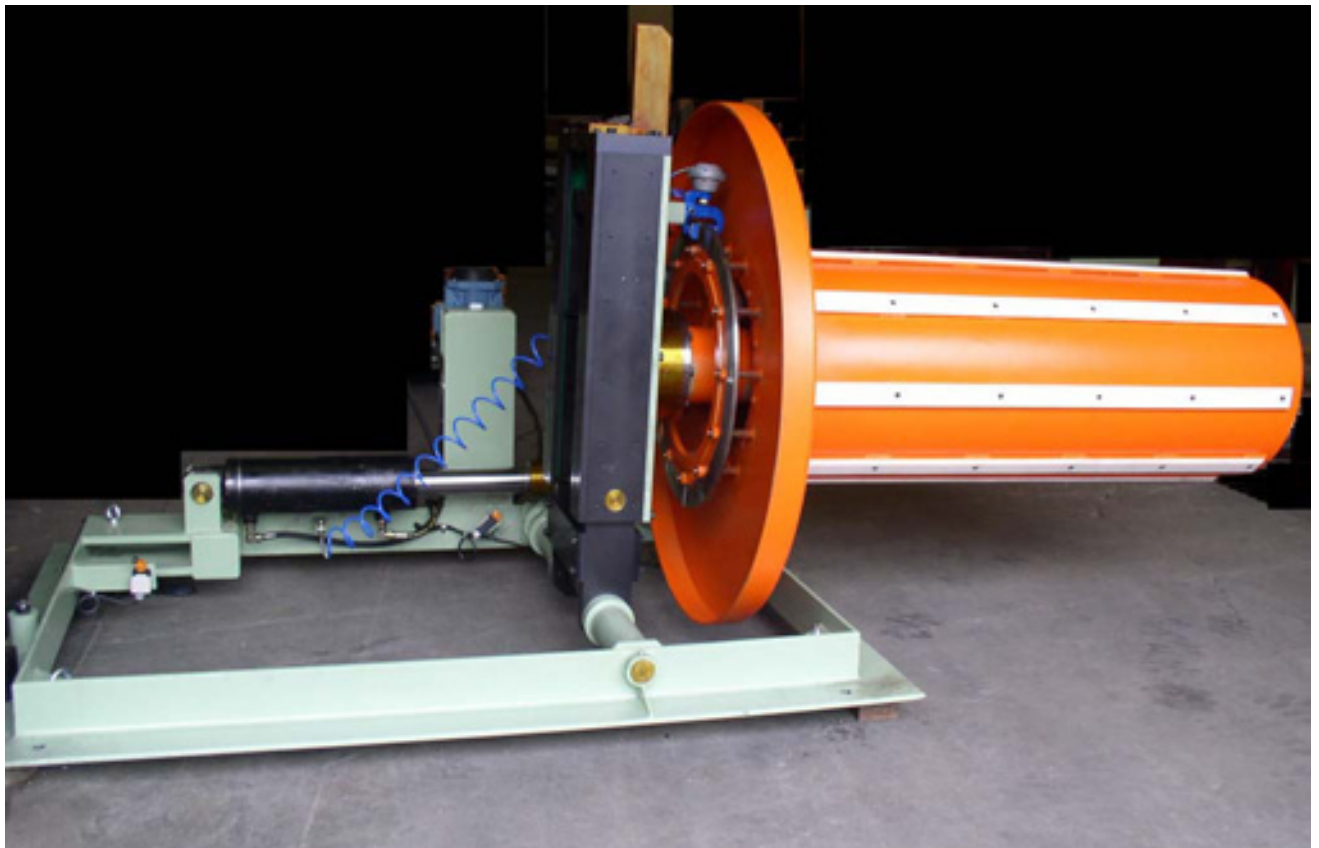
### Technical Data

	<i>DFV-2.000</i>	<i>DFV-2.000S</i>
Wire diameter:	6 to 16 mm.	15 to 32 mm.
Outside coil Ø:	1.200 to 1.500 mm.	
Inside coil Ø:	800 to 900 mm.	
Maximum coil height:	2.000 mm.	
Maximum coil weight:	Up to 2.500 kg	

*(Other measures on order)*

### Construction

Tilting pay-off DFV consists of a solid, electro-welded bed-frame of hot rolled sections. The coil-carrying basket is mounted on a tilting frame that is driven by an hydraulic piston. The hydraulic group is located on the static platform and the electrical cabinet, which holds the control panel, is mounted on an independent base.



**Vertical Tilting Pay-Off DFV-2.000. Loading Position**

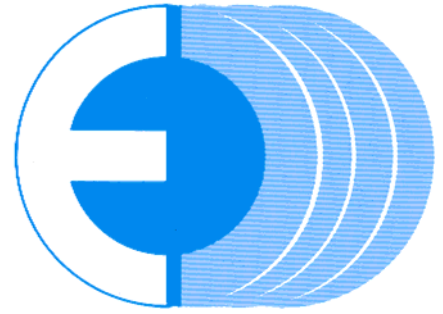
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## TWIN TILTING TURNING PAY-OFF, TYPE DGFV



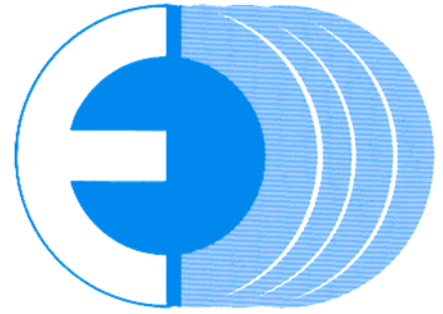
**Twin Tilting Turning Pay-Off DGFV-2.000**

Twin tilting turning pay-off DGFV has been designed as a unit to supply large fermachine coils to combined wire drawing, straightening and cutting-off lines or to individual wire drawing bullblocks. It is composed of two independent tilting-mounted coil-carrying baskets assembled onto a shared, rotating platform. This way, a 180° turn on said platform alternatively situates one of the two coil-carrier baskets in the working position and the other in the loading position, thus considerably reducing the time spent in changing the coils (whilst the material is wound in one basket, in the other another coil is loaded).

### Main Features

- Tilting-mounted baskets to reach horizontal position.
- Twin pneumatic braking system which can be regulated; the first is the working brake and the other the emergency brake.
- The operator can voluntarily restrain the working brake for loading operations.
- Baskets with space to pass the coil sustaining tube into the hoisting trolley.
- Anti-knot stopping switches with adjustable springs which stop the line immediately.
- Electrical control system that enables the platform to be tilted 30° in either of two turn directions so that the operator can prepare the tip of the wire loaded on one of the carriers while the second continues feeding material to the line.





- Roll carrying supports constructed with a central axis of rotation whose ends rest on two large bearings. This enables the carriers to rotate freely whether in a vertical or horizontal position, applying very low pull forces.
- Roll carrying supports with a weight distribution so that when placed in a horizontal position (loading a new roll) the roll spike of the fork-lift truck is located at the top (it is not necessary for the operator to place it manually).

#### Technical Data

	DGFV-2.000	DGFV-2.000S
Wire diameter:	6 to 16 mm.	15 to 32 mm.
Outside coil Ø:	1.200 to 1.500 mm.	
Inside coil Ø:	800 to 900 mm.	
Maximum coil height:	2.000 mm.	
Maximum coil weight:	Up to 2.500 kg	

*(Other measures on order)*



#### Construction

Twin tilting turning pay-off DGFV consists of a solid, electro-welded turning bed-frame of hot rolled sections mounted on a central device which is equipped with a big size gear. The complete set is powered by an easy access gearmotor. Each coil-carrier basket is fitted over a tilting-mounted frame driven by its own hydraulic cylinder, which means the frame can be situated in a horizontal (loading) or vertical (working) position.

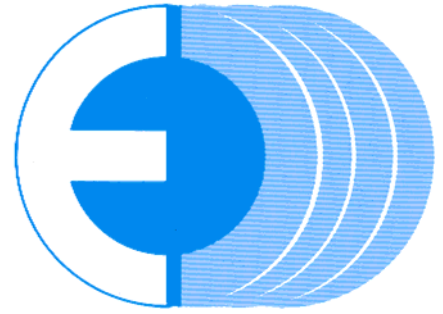
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## MOTORIZED ROTARY PAY-OFF, TYPE DRM

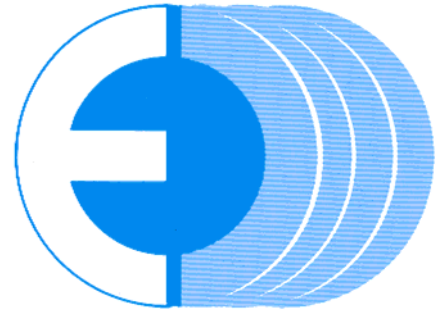


**Motorized Rotary Pay-Off DRM-3.000S**

Motorized rotary pay-off DRM feeds a wide range of wires or tubes (low, medium or high carbon steels content, copper alloys, etc.) to machines of different characteristics (continuous or discontinuous process) thanks to its dancer arm.

### Main Features

- Built-in version (series DRM-E) or floor mounted version (series DRM-S).
- Guiding arms to open the wire wrap (depending upon diameter and material) to avoid crossings and knots.
- Automatic speed control via pneumatically operated dancer arm and potentiometer that synchronize the pay-off and production line speeds.
- Electrical cabinet made up the machine's frame.
- Clockwise and anticlockwise pay-off sense. Then, any kind of coil can be loaded (clockwise or anticlockwise spooling system).
- Expanding bore mechanically operated (by wheel) with three sectors at 120° that fit the inner diameter of the coil. Optionally, by means of four extending bars or prepared for loading baskets.



- Sectors with rolling device on sliding guides.

#### Technical Data

<i>DRM-S/E</i>	<i>1.000</i>	<i>2.000</i>	<i>3.000</i>
Wire diameter:	2,40 a 9,00 mm.		
Outside coil Ø:	Hasta 1.200 mm.		
Inside coil Ø:	430 a 620 mm.		
Speed:	Hasta 100 rpm.		
Maximum coil weight:	1.000 kg	2.000 kg	3.000 kg
<i>(Other measures on order)</i>			



**Motorized Rotary Pay-Off  
DRM-1.000E**

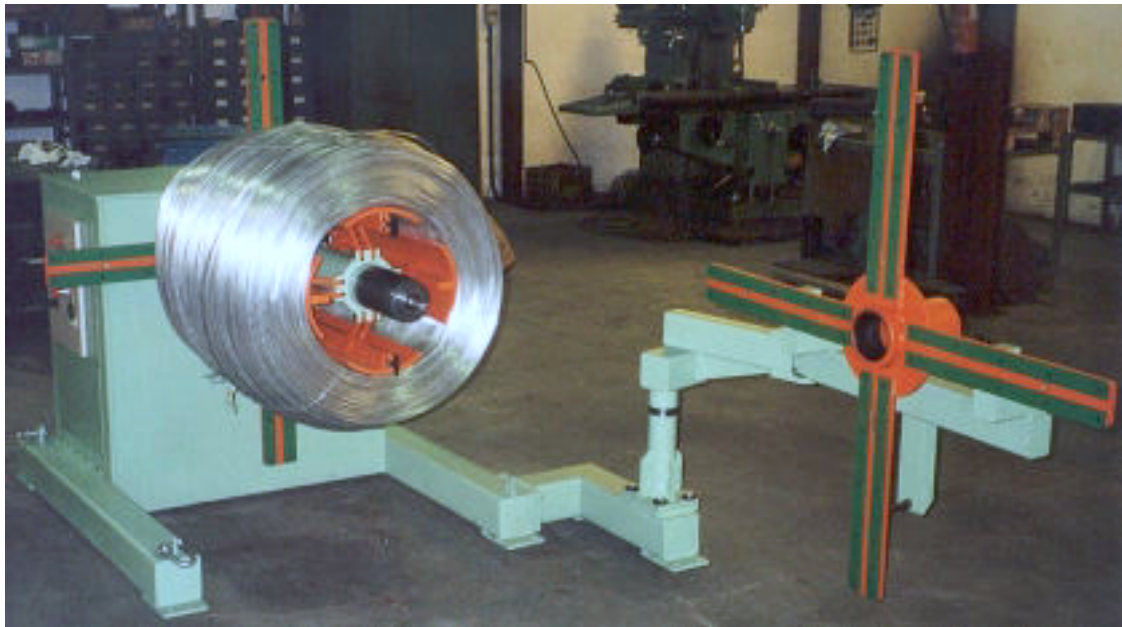
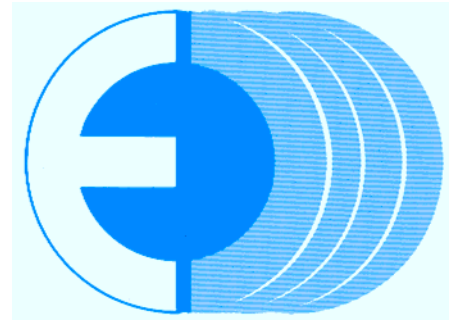


**Motorized Rotary Pay-Off DRM-2.000S**

*We reserve the right to modify the specifications as a result of technical improvements.*



## HORIZONTAL PAY-OFF, TYPE DRAG-1.500



### Horizontal Pay-Off DRAG-1.500

The horizontal pay-off DRAG-1.500 has been designed as a unit to supply large coils when the wire has to be feeded at high speed with low tensions.

•Hydraulic installation equipped with safety key to prevent the eventual drum disassembly because of an incorrect operation.

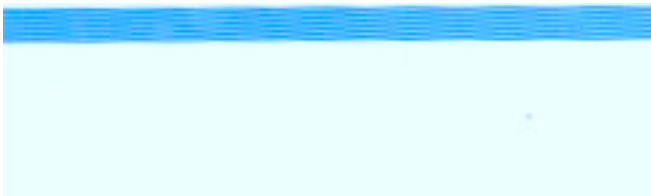
#### Main Characteristics

- Twin pneumatic braking system (working brake and emergency brake).
- Four hinged sections drum, hydraulically expanded / collapsed.
- Flanges consist of four arms internally coated with low friction plastic sheets to prevent any mark on the wire surface.
- Equipped with an articulated arm which holds the specific mechanism to hang the mobile flange.

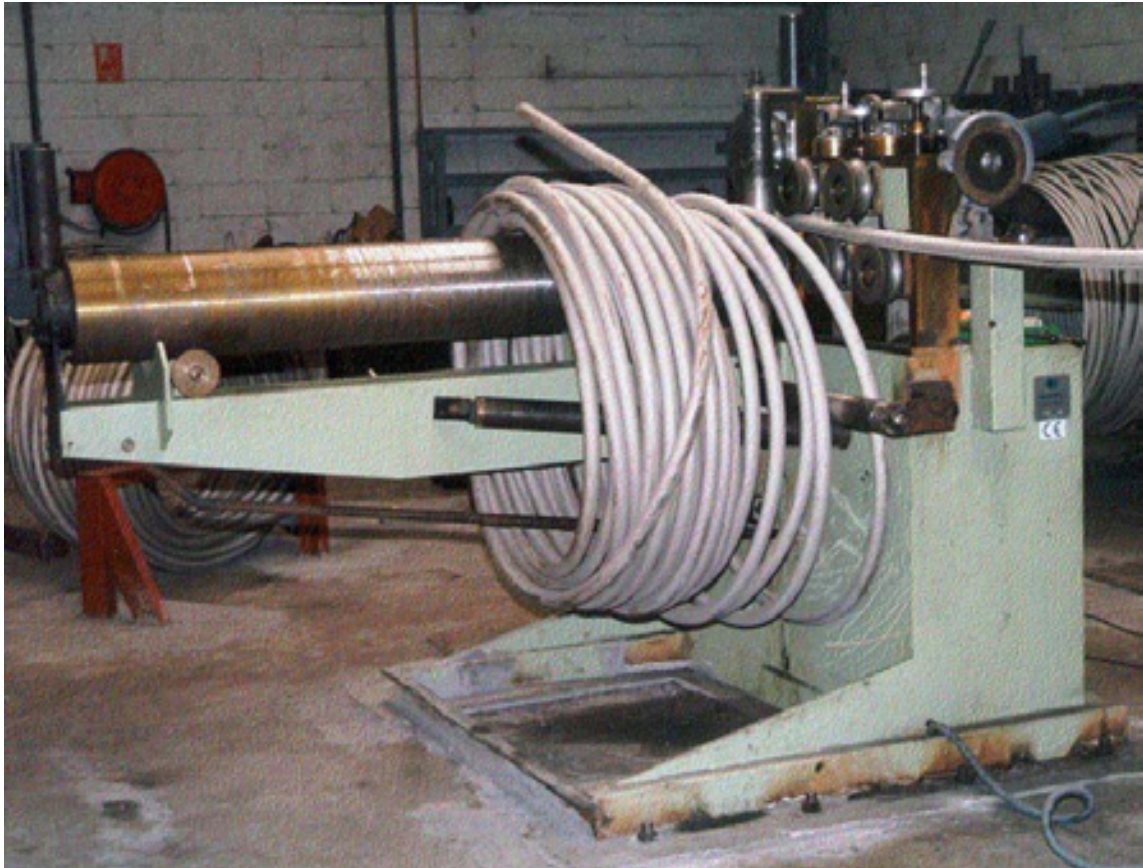
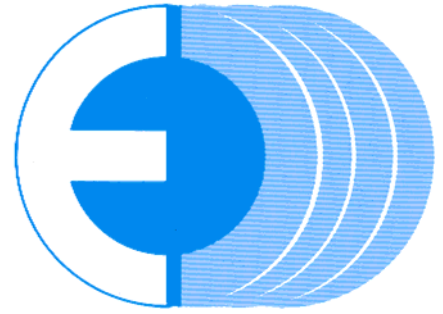
#### Technical Data

Work range:	up to 12 mm diameter.
Speed:	up to 300 m/min.
Maximum coil diameter:	1.500 mm.
Useful coil width:	880 mm.
Maximum coil weight:	1.500 kg.
<i>(Other measures on order).</i>	

*We reserve the right to modify the specifications as a result of technical improvements.*



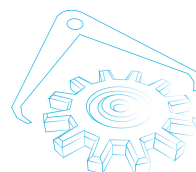
## HORIZONTAL PAY-OFF, TYPE DP



**Horizontal Pay-Off DP-45**

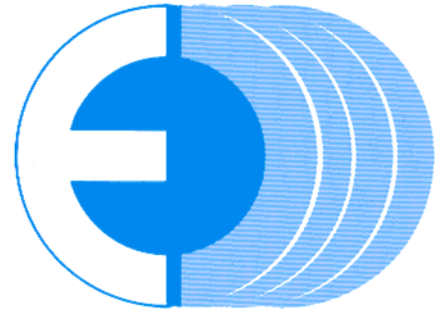
### Main Features

- Horizontal pay-offs type DP have been designed for pre-straightening and infeeding wire rod coils in synchronization with wire drawing machines, cold forging presses and combined wire drawing, straightening and cutting-off machines or straightening and cutting-off machines. It is comprised of one horizontal coil-carrier mandrel which turns clockwise (forward motion) or anticlockwise (backward motion) to facilitate the threading.
- Heavy and solidly built.
  - Easy and safety handling.
  - Two powered rolls and four vertical pre-straightening rolls. The powered rolls are interchangeable (a specific set is selected depending upon wire diameter to be uncoiled).
  - Interchangeable pre-straightening rolls designed to cover the whole operating range.
  - Anti-knot stopping switch which stops the line immediately.



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## Technical Data

Outside coil diameter:	1.350 mm.
Inside coil diameter:	800 mm.
Maximum coil weight:	1.500 up to 2.500 kg depending on model.
Motor:	A.C. motor with frequency inverter.

	DP-28	DP-38	DP-45
Minimum inlet diameter (mm)	15,0	15,0	20,0
Maximum inlet diameter (mm)	28,0	38,0	45,0
Maximum speed (m/min)	60,0	45,0	35,0
Power (kW)	4,7	8,5	12,1

These powered rolls are interchangeable, and a specific set is selected for each case according to the diameter of the wire to be uncoiled (they have a single groove). The top roll is hydraulically operated, while the bottom is fixed. During threading, the wire rod is pinched between both rolls when the top roll moves down to its lower limit. The next stage involves the four straightening rolls, which are also interchangeable although they have been designed to cover the whole operating range. All the rolls are hydraulically operated (except model DP-28).

The hydraulic unit is located to the bottom rear of the machine, with the hydraulic actuating controls on each side of the mandrel. A little control panel, which houses the push buttons, is on the back hand side of the machine. There are also two jog pedals, one on each side of the machine.

## Construction

Horizontal pay-offs DP are comprised of a mandrel which hold coils of wire rod, a group of powered rolls and a group of pre-straightening rolls. The mandrel is motorized and feeds the wire rod to the two powered rolls.

Different sets of guide rollers are located at various points of the payoff bed to prevent turns of wire from crossing each other as the wire is paid off, even at high speeds.

DP-45 is fitted with an auxiliary mechanism on the mandrel support to facilitate the threading of thicker rod. Optionally, the whole range can be fitted with a saw to cut the tip of the wire.

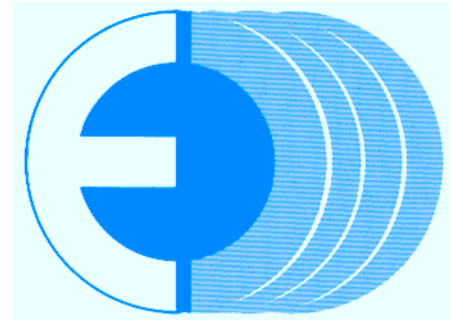
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## HORIZONTAL TILTING PAY-OFF, TYPE DB



### Horizontal Pay-Off DB-1.200

The pay-off DB-1.200 is a machine specially developed to feed wire drawing machines, rewinding lines or straightening and cutting machines as well as combined drawing, straightening and cutting machines. DB-1.200 is provided with a near silent hydraulic system to provide reel lift and pintle arm positioning. The unit is designed to handle a wide range of reel sizes while keeping the machine size to the minimum so as to maximize use of available floor space. It is offered in standard floor mounted version.

#### Technical Data

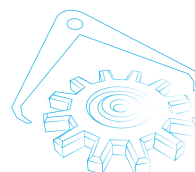
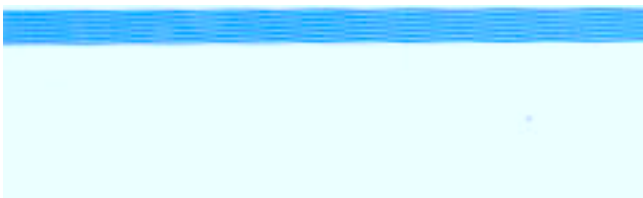
##### Bobbin

Flange diameter:	600 to 1.200 mm.
Width:	315 to 780 mm.
Hole:	80 mm.
Maximum weight:	1.000 kg.

Power (hydraulic system): 1,5 kW.

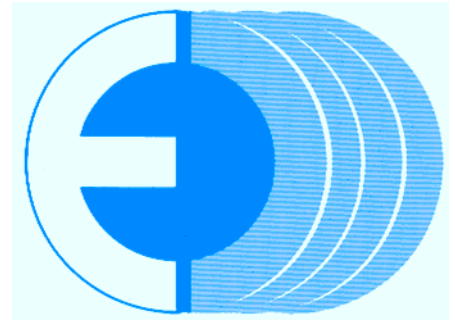
Compressed air requirements (braking system): 5-6 bar.

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# INFEEDING AND PRE-STRAIGHTENING UNIT, TYPE TE



## Infeeding and Pre-straightening Unit TE-18E

TE unit has been specially designed for pre-straightening and infeding wire into forging presses or chain making machines from vertical pay-offs. It is usually used during the threading process, without speed regulation. However, it is also available as autonomous system, which incorporates a programming terminal to edit the basic operation data (infeeding length and cadence between operations).

### Main Features

- Horizontal guiding rolls with wide inlet way to make the wire infeding easier from several angular position of the vertical payoff.
- Powered rolls hydraulically operated.

- Pre-straightening rolls mechanically operated via reduction gear (optional, hydraulically operated).
- Equipped with connector for optional hydraulic cutter device.
- Hydraulic circuit with pressure gauge located to the front of the machine.

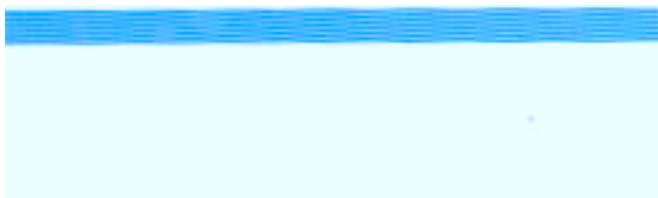
### Technical Data

Wire range diameter: 7,0 ÷ 18,0 mm.

Speed: constant or ajustable up to 25 m/min.

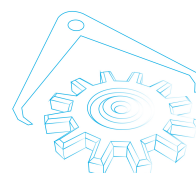
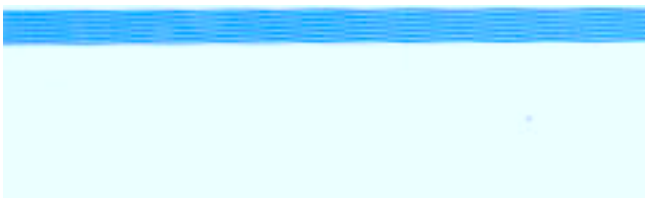
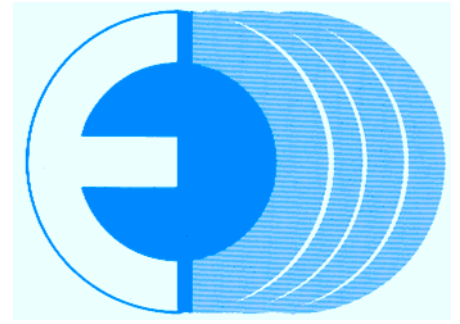
Power: 3,4 kW.

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# POINTING MACHINES

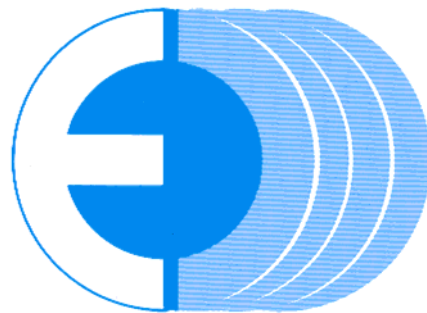
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# LAMINADOR SACAPUNTAS TIPO SS POINTING MACHINE, TYPE SS



**Laminador Sacapuntas SS-100C**  
*Pointing Machine SS-100C*

Tipo / Type	SS-100A	SS-100B	SS-100C	SS-100D
Ø acero 0,8% C / Ø steel 0,8% C (mm)	16 - 6	12,5 - 3	8,5 - 2,2	6,5 - 1,5
Ø hierro, latón / Ø iron, brass (mm)	19 - 8	16 - 4,75	13 - 3	10 - 1,5
Ø cobre, alum. / Ø copper, aluminium (mm)	20 - 8	18 - 4,75	15 - 3,5	10 - 1,5
Número de canales / Grooves Number	8	10	12	16
Potencia / Power (kW)	3	3	2,2	2,2
Ø de los rodillos / Rolls Ø (mm)	100	100	100	100

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# LAMINADOR SACAPUNTAS TIPO SD POINTING MACHINE, TYPE SD

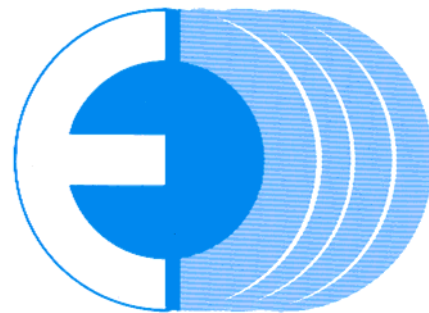


**Laminador Sacapuntas SD-100B**  
*Pointing Machine SD-100B*

Tipo / Type	SD-155	SD-100A	SD-100B	SD-100C	SD-100D
Ø acero 0,8% C / Ø steel 0,8% C (mm)	25 - 14	16 - 6	12,5 - 3	8,5 - 2,2	6,5 - 1,5
Ø hierro, latón / Ø iron, brass (mm)	28 - 10	19 - 8	16 - 4,75	13 - 3	10 - 1,5
Ø cobre, alum. / Ø copper, aluminium (mm)	30 - 10	20 - 8	18 - 4,75	15 - 3,5	10 - 1,5
Número de canales / Grooves Number	7	8	10	12	16
Potencia / Power (kW)	2 x 4	3	3	2,2	2,2
Cizalla incorporada / Cutter device	No	Sí / Yes	Sí / Yes	Sí / Yes	Sí / Yes
Ø de los rodillos / Rolls Ø (mm)	155	100	100	100	100

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# STRINGING AND POINTING MACHINE, TYPE ENF-400



**Stringing and Pointing Machine ENF-400**

## Technical Data

The machine is designed to thread multiple cone or tandem wire drawing machines and it is suitable for copper, bronze, brass, aluminium and its alloys as well as precious metals. ENF-400 consists of a pointing machine and a stringing drum with pull-in dog. The distance between the dies can be easily obtained using the auxiliary housing-arm. The stringing and pointing devices are driven by means of two independent A.C. motors, the first one equipped with frequency inverter and controlled through the inching pedal.

Depending on material, ENF-400 is equipped with diebox and lubrication system (independent pump and tank).

Wire range diameter: Aluminium from 2,50 to 16,00 mm; Copper from 2,00 to 8,00 mm (up to 10 mm under request); Bronze, brass and aluminium alloys from 1,50 to 6,50 mm.

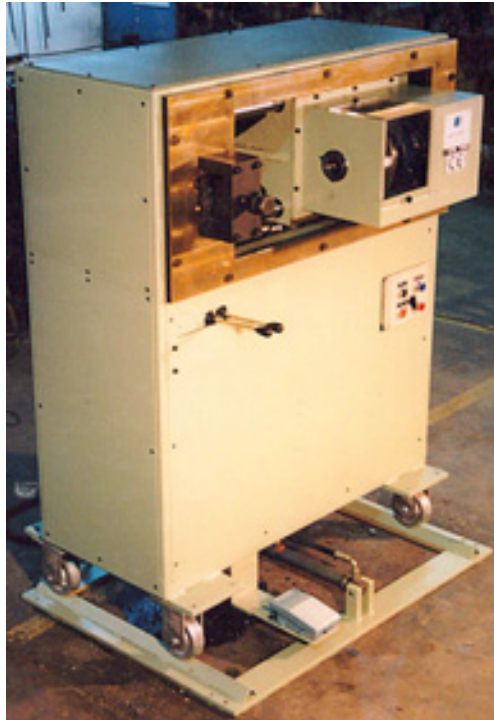
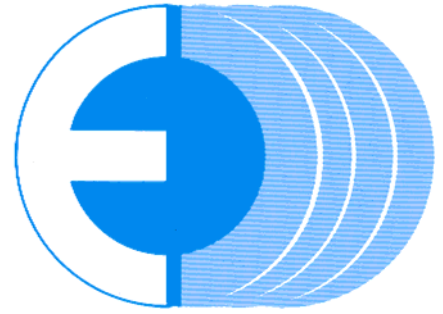
Stringing drum diameter: 400 mm.

Pointing rolls diameter: 100 mm.

Total power: 7 kW.

*We reserve the right to modify the specifications in accordance with technical improvements.*

## PEELING MACHINE, TYPE PB



**Peeling Machine PB-28**

### Main Features

Peeling machines PB mill long wire points, preferably with heavy wires or bars. The cylindric points are burr free and longer than those obtained with pointing machines. They can join pay-offs supplied by Electrorrec, S.A. (DP series) or any other depending on their pre-straightening quality. If PB machine is fitted in with DP payoff, both machines share the same hydraulic unit. Otherwise, it is supplied with independent hydraulic unit. Peeling machine has a jog pedal for threading located to the bottom front of the machine.

- Milling head hydraulically operated with three cutting tools.
- Fastening hydraulic clamp and cross guiding rolls at the entrance.
- Mobile frame mounted on castors and guides hydraulically operated.

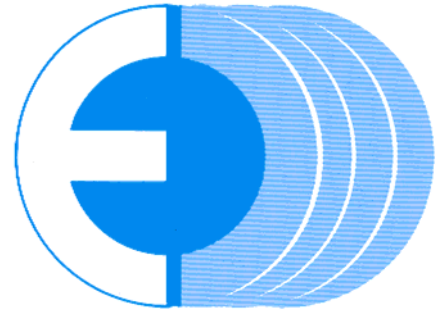
### Technical Data

	PB-28	PB-38
Wire diameter (mm)	15 ÷ 28	15 ÷ 38
Peeling length (mm)	250	

*We reserve the right to modify the specifications as a result of technical improvements.*



## PEELING MACHINE, TYPE PB SPECIAL

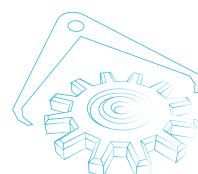


**Peeling Machine PB-28 Special**

Peeling machines PB Special have a compact design and easy handling, and are suitable for ferrous and non-ferrous materials. Their main features are:

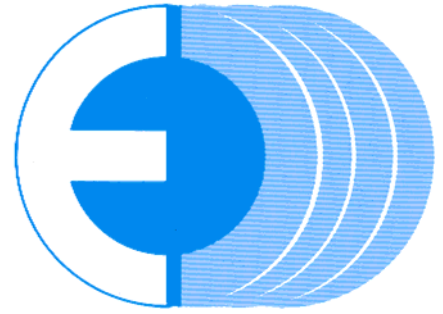
- Milling head hydraulically operated via flow gauge, with a fixed stroke. All the points have the same length unless the machining process is stopped manually.
- Constant angular speed and cutting speed of the rotating head, driven by A.C: motor.
- Automatic or manual (step by step) manoeuvre controlled by PLC
- Rotating head with four easy adjustable cutting tools and low cost parts.
- Easy access swarf container.

*We reserve the right to modify the specifications as a result of technical improvements.*



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## PEELING MACHINE, TYPE PBE



**Peeling Machine PBE-38**

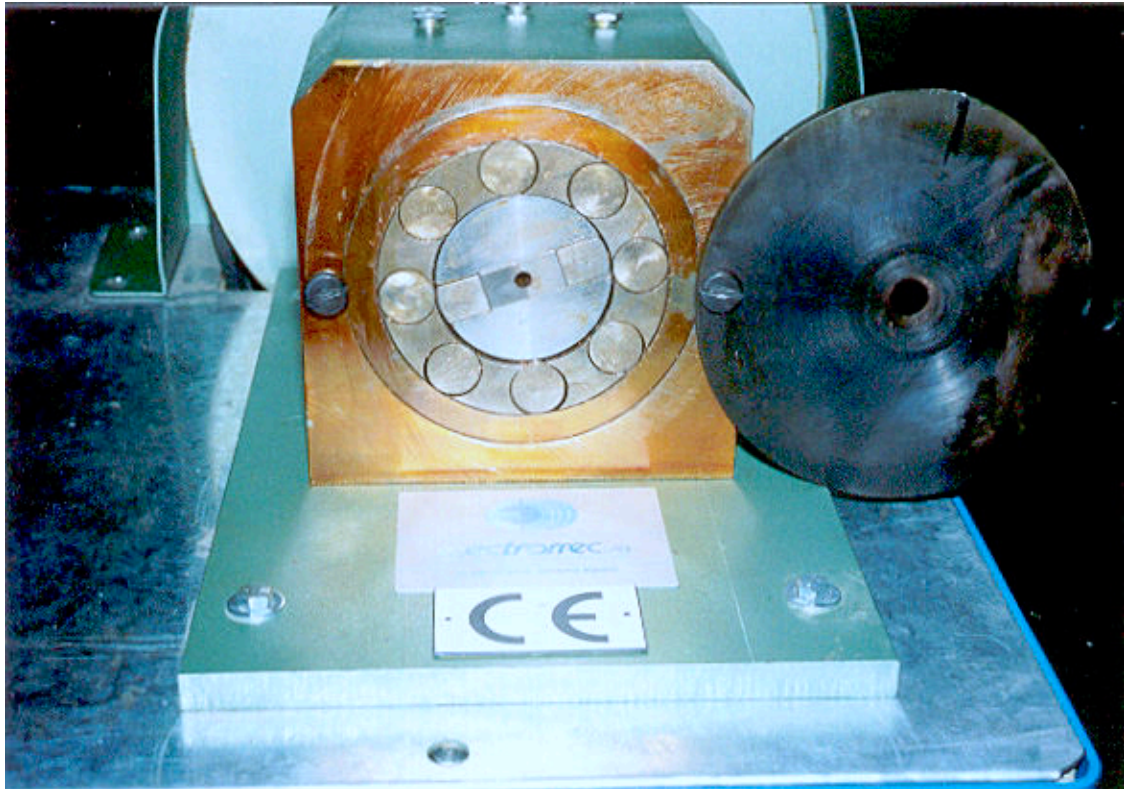
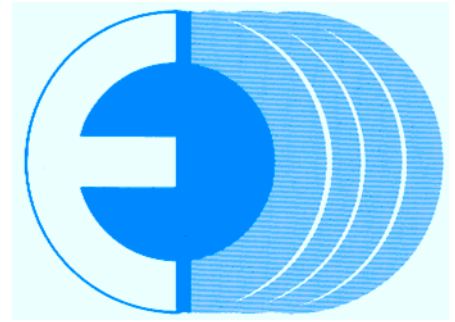
The design of peeling machines PBE simplifies the tasks of the operator and extends the products to be processed compared to PB and PB Special series. The new peeling machines are suitable for ferrous and non-ferrous materials.

More specifically, the main features of PBE machines are:

- Automatic or manual (step by step) manoeuvre controlled by PLC.
- Rotating head with four easy adjustable cutting tools and low cost parts.
- Guiding rollers with quick.closing.
- Great capacity swarf container.
- Angular speed and lineal speed of the rotating head separately adjustable via two A.C. drives with frequency inverters.

*We reserve the right to modify the specifications as a result of technical improvements.*

# ROTARY SWAGING MACHINE, TYPE MR



**Rotary Swaging Machine MR**

## Construction

Swaging rotary machines MR are used to reduce the cross sections of rods and tubes. They are more efficient, economic and flexible than the traditional roll pointing machines.

Swaging machines consists of a rotary head, which houses the dies, mounted on a trolley. The drive is located to the bottom rear of the machine with transmission via “V” belts.

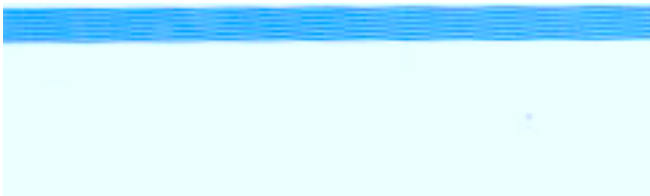
## Main Features

- Easy handling.
- Safety operation.
- Increase in productivity with longer ends compare to traditional roll pointing machines.

## Specifications

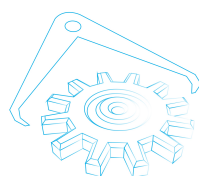
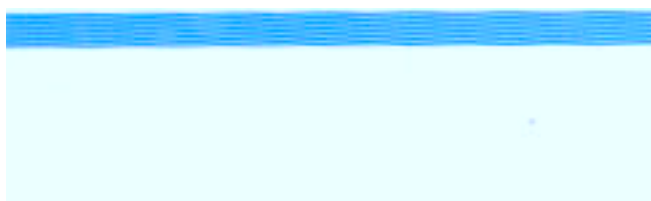
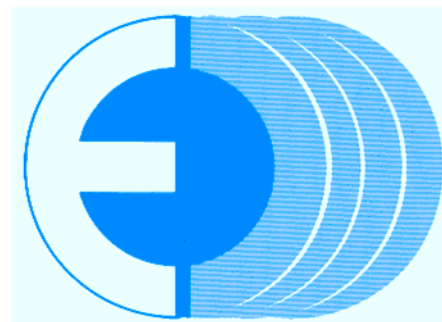
Model	MR 2-40	MR 4-60
Diameter (mm)		
Tube	0,5 - 7	0,5 - 4
Wire	5 - 18	5 - 8
Number of swaging dies	2	4

*We reserve the right to modify the specifications as a result of technical improvements.*



# DESCALING MACHINES

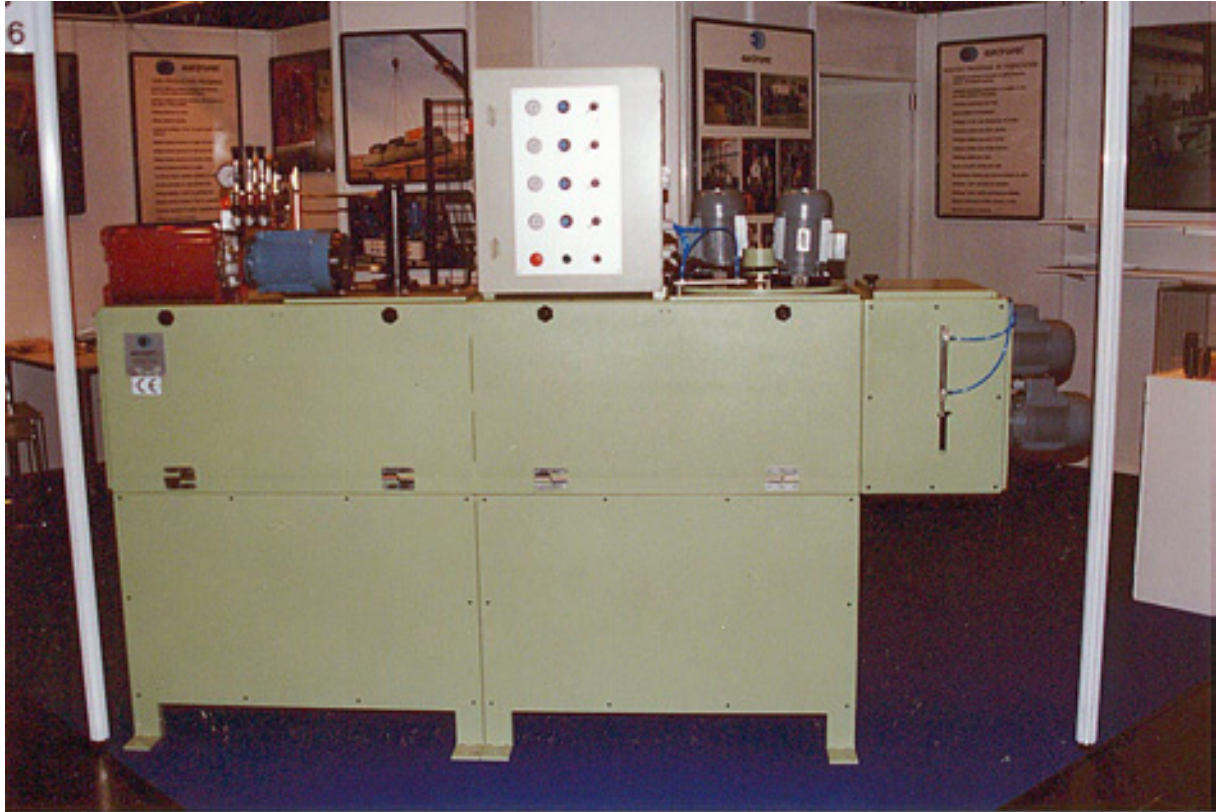
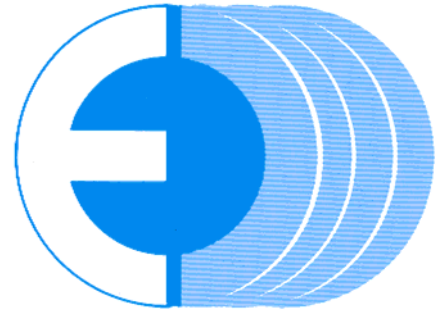
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# MECHANICAL DESCALING MACHINE, TYPE DECL

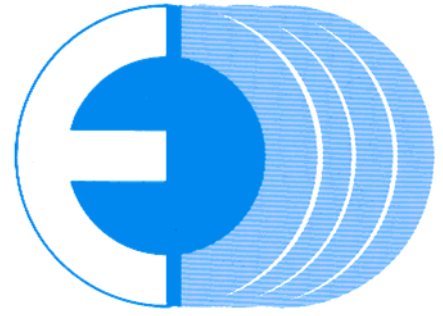


**Mechanical Descaling Machine DECL-16 and Polishing Unit UP-1**

## Main Features

Mechanical descaling machines DECL descale the wire rod by bending and metallic wire brushes later clean it. Optionally, when further clean is needed, DECL can be equipped with polishing units (by means of metallic wire brushes or abrasive wheels) and also with coating borax or lime station and drying unit. Compared with traditional acid pickling systems, DECL machines, in addition to be free environmental pollution, provides significant cost reductions in investment and running and energy costs.

- Maximum efficiency and easy handling to the user because of straight stringing-up.
- Wire brushes displacement controlled by pneumatic cylinders. Therefore, a long brush working life is provided.
- Designed to work in line with bullblock benches or joined to coilers (to produce big coils at high speed).



## Technical Data

	DECL-16	DECL-20	DECL-28
Maximum inlet diameter (mm)	12,0	18,0	25,0
Minimum inlet diameter (mm)	5,5	10,0	16,0
Maximum speed (m/s)	3,3	2,5	1,5
Installed power (kW)	5,5	10,0	10,0

## Construction

Mechanical descaling machines DECL consist of two main units: heavy descaling unit and fine descaling unit.

The heavy descaling unit is a fabricated frame, which houses a double set of bending rollers in two planes 90° (models DECL-20 and DECL-28 have only a set of bending rollers).

Hydraulic cylinders move central rollers. The user has to modify the working position of the mentioned rollers depending on wire rod diameter and raw material characteristics.

Fine descaling unit consists of two sets of wire brushes also allocated in two planes 90°. An independent pneumatic cylinder, which allows a permanent contact between the wire brushes and the wire rod surface, independently of the brushes wearing, tilt each set. Since the brushes' motors are placed outside, there is not any problem with scale powder.

Optionally, DECL machines can be supplied with additional polishing units (metallic wire brushes or abrasive wheels depending on final product specifications).



**Mechanical Descaling Machine DECL-28**

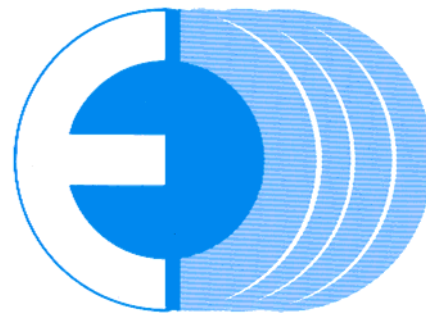
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# MECHANICAL DESCALING MACHINE, TYPE DECL-G



## Mechanical Descaling Machine DECL-16G and Polishing Unit UP-1

The modular design of descaling machines DECL provides a wide range of configurations according to the customer requirements. When exigent clean is required, the heavy descaling unit DECL-G has to join the fine descaling unit DECL-F and a polishing unit (UP-1 or UP-2). However, a large number of applications can be solved arranging the heavy descaling unit DECL-G and the polishing unit UP-1, providing significant reductions in cost investment.

### Main Features

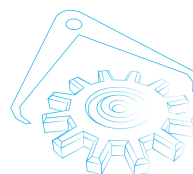
- Heavy descaling by means of double set of bending rollers in two planes 90°, with central rollers driven hydraulically.

- Bending rollers with tungsten carbide central rings.
- Wire brushes displacement controlled by pneumatic cylinders. Therefore, a long brush working life is provided.

### Technical Data

Maximum inlet diameter:	12 mm.
Minimum inlet diameter:	5,5 mm.
Maximum speed:	3,3 m/s.
Installed power:	3,3 kW.

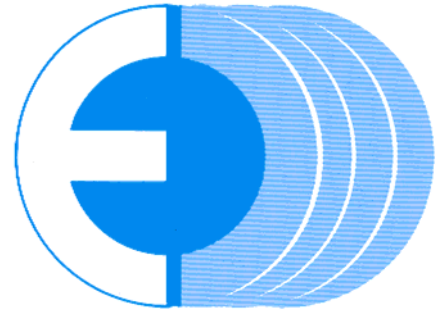
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# MECHANICAL DESCALING MACHINE, TYPE DECL-F



**Mechanical Descaling Machine DECL-16F and Polishing Unit UP-1**

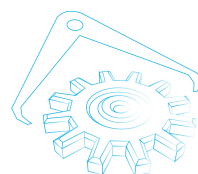
Mechanical descaling machine DECL-F can join steel wire descaling lines, removing the fine scale powder on wire rod surface. In addition, DECL-F machines can be used when exigent clean is required on different materials (steel, brass, copper, etc.) to remove impurities or lubricant lumps. Particularly, DECL-F is especially useful to clean high carbon steel wires used in Alclad manufacturing.

## **Main Features**

- Double set of brushes in two planes 90° controlled by independent pneumatic cylinders.

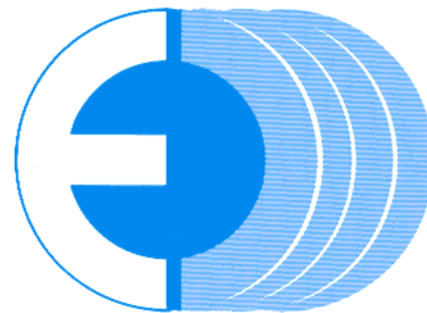
Thus, a permanent contact between the brushes and the material is provided as well as a long brush working life.

- Since the brushes' motors are placed outside, there is not any running problem with scale powder.
- Inlet and outlet tungsten carbide guiding bushings.
- The unit can be equipped with different type of brushes depending on system requirement.
- Adjustable brushes (height and orientation).



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## Technical Data

	<i>DECL-16F</i>	<i>DECL-28F</i>
Maximum inlet diameter (mm)	16,0	28,0
Minimum inlet diameter (mm)	4,0	10,0
Maximum speed (m/s)	3,3	3,3
Total number of brushes	4	4
Brush dimensions (mm)	Diameter: 175 Thickness: 35	Diameter: 200 Thickness: 50
Installed power (kW)	4,4	8,8



**Detail of  
Mechanical Descaling Machine DECL-16F**

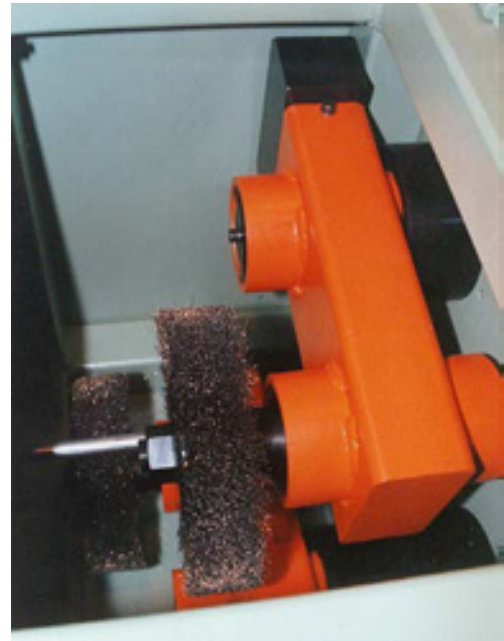
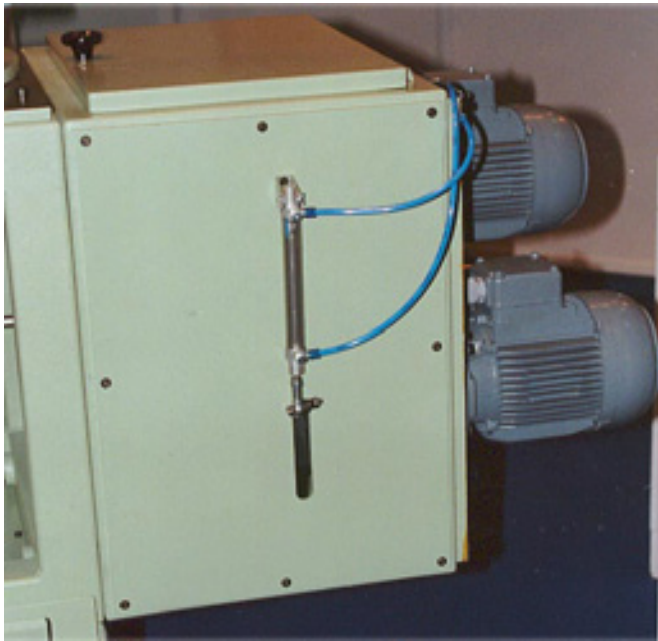
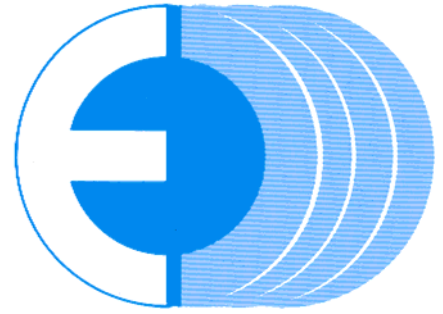
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## POLISHING UNIT, TYPE UP-1



### Polishing Unit UP-1

Polishing unit UP-1 has been especially developed as an auxiliary equipment to join our mechanical descaling machines DECL, although it can also work in line other descaling systems or used to polish different materials (copper, brass, etc). UP-1 is especially recommended when optimum cleanness is required. In addition to be free environmental pollution, it provides significant cost reductions in investment, maintenance and running and energy costs.

#### Main Features

- Maximum efficiency and easy handling to the user because of straight stringing-up.
- Wire brushes displacement controlled by pneuma-

tic cylinders. Therefore, a long brush working life and easy adjustment are provided.

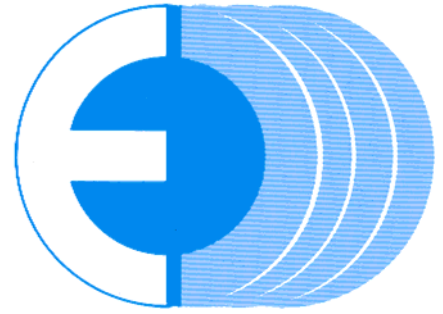
- Interchangeable wire brushes with the ones used in the fine descaling unit of our mechanical descaling machines DECL.
- Prepared to absorb scale powder with a vacuum cleaner.

#### Technical Data

Total number of brushes:	2
Brush dimensions:	Ø 175 mm x 35 mm.
Total power:	2,2 kW

*We reserve the right to modify the specifications as a result of technical improvements.*

## POLISHING UNIT, TYPE UP-2

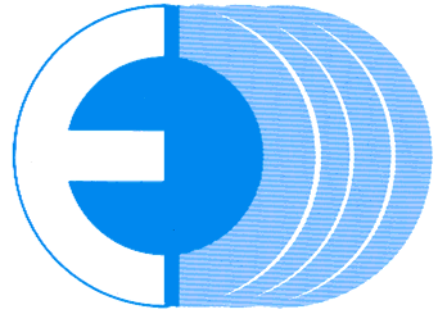


### Polishing Unit UP-2

Polishing unit UP-2 has been especially developed as an auxiliary equipment to join our mechanical descaling machines DECL, although it can also work in line other descaling systems or used to polish different materials (copper, brass, etc). UP-1 is especially recommended when optimum cleanness is required. In addition to be free environmental pollution, it provides significant cost reductions in investment, maintenance and running and energy costs.

#### Main Features

- Rotary central body with hardened and rectified gears, oil-lubricated.
- Low noise level.
- Very flexible thanks to the use of abrasive endless bands, abrasive flap wheels or metallic brushes depending on each application (we recommend the cleaning agent upon our experience).
- Cleaning agents shafts are motorized increasing the lifetime of the abrasive endless bands.
- When using endless band, drums with special shape to avoid the band displacement due to the wire force.
- Fast change of the cleaning agent. Endless band is tightened by easy access gear mechanism.
- Prepared to absorb scale powder with a vacuum cleaner.



- Driven by C.A. motor and frequency inverter to synchronize the wire speed with the angular speed of the central body, overlapping 10% the second one to assure the complete material cleaning.
- On order, equipped with pump for cooling emulsion which increases the lifetime of the cleaning agents and absorbs dirt particles.

#### Technical Data

Wire range diameter: 5.50 to 9.00 mm.

Wire speed: up to 105 m/min.

Tangential speed: up to 15 m/s.

Total power: 3 kW.

Cleaning agent dimensions: up to 3 brushes per shaft Ø 165 x 50 mm and endless bands 200 x 750 mm.



**Cleaning agents depending on application: brass-plated steel, braided steel, stainless steel, nylon, abrasive endless band, abrasive flap wheels, ...**

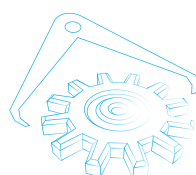
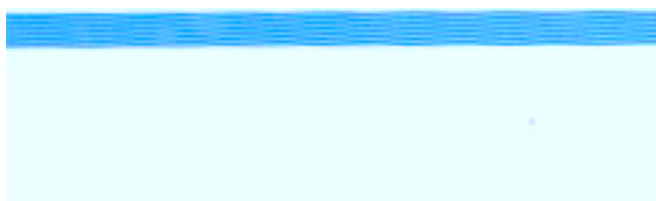
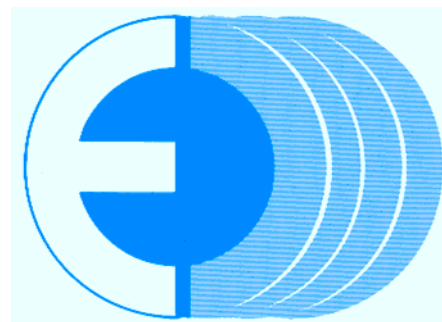


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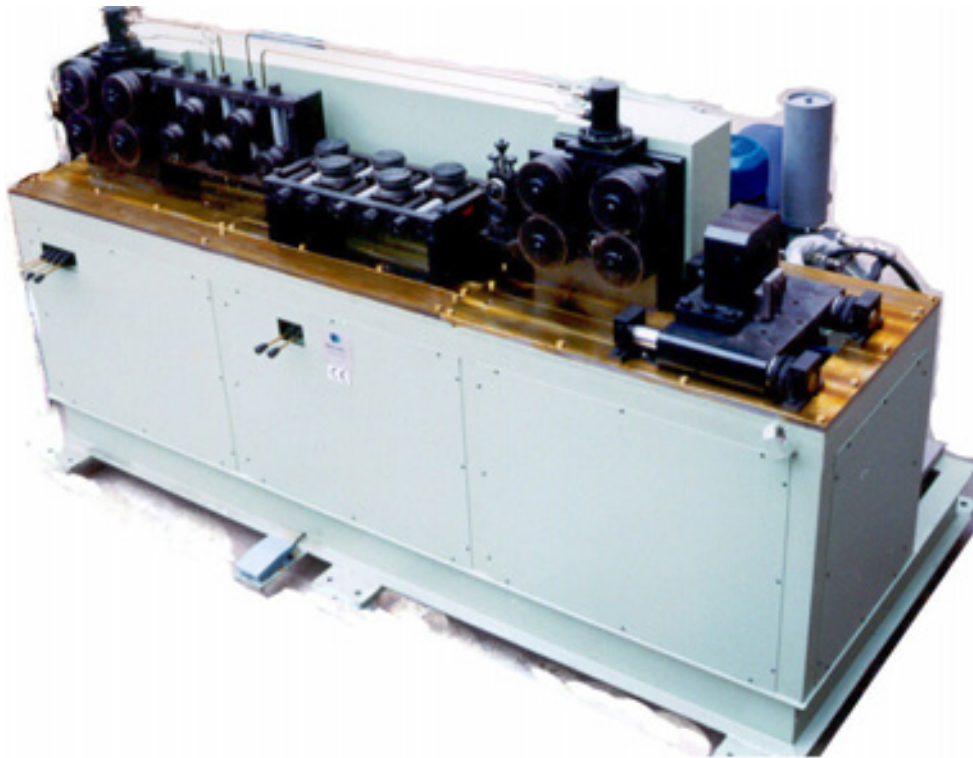
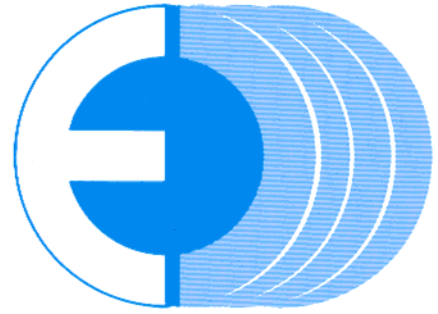
# STRAIGHTENING AND CUTTING

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# STRAIGHTENING AND CUTTING-OFF MACHINE, TYPE EC



## Straightening and Cutting-Off Machine EC-28

Straightening and cutting-off machines EC take the wire from coil, straighten and cut it into close tolerance straight lengths (from millimeters to meters, from inches to feet) with burr free cuts. ES machines feature a low production cost and easy handling (only one operator is involved in the process) which brings economies in labor costs.

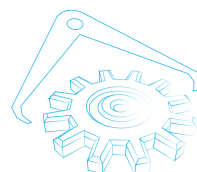
### Main Features

- Cut-off by means of high-pressure impact hydraulic flying shear or abrasive wheel flying saw.
- A counter displays the number of cut-off operation and stops the machine after a preset number of parts have been produced.
- Preset of the cutting length (mm or in).

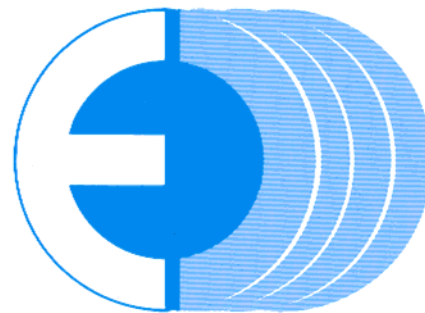
- Depending on wire rod diameter, EC machines take wire from static or rotary pay-off systems (horizontal or vertical).
- Other equipment can be integrated within the line, as descaling machines.

### Technical Data

Straightening Accuracy*:	0,5 mm – 0.019” - within 500 mm – 19.685” – length.
Cutting Tolerance*:	± 0,5 mm – 0.019” -, lengths < 1.000 mm – 39.370” –.
*EN 10218-2	



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Cutting  
length:

minimum 15 mm – 0.591”  
- (with flying shear).  
Maximum according to  
the catching through.  
Standard length between  
1-5 m (3.280-16.400’).

tening group, achieved by two roller  
straighteners mounted in two planes 90° (op-  
tionally equipped with rotary spinner). The  
straightening group is arranged between two  
feeding groups.

### Construction

EC machines consist of two basic units. The  
first unit (feeding and straightening) consists of  
two or three forwarding groups, with two or  
four rollers each one (composition according to  
customer requirements) driven mechanically,  
pneumatically or hydraulically, and the straigh-

The cut-off unit is equipped with an hydraulic  
flying shear. A high-pressure impact cylinder  
transfers an impact motion to the cut-off arm,  
where a shaped cut-off knife performs the  
operation. The cutting knives are profiled in  
accordance with the wire thickness. Therefore,  
the cut is clean and right-angled. All cutting  
tools are easily accessible. The machine could  
be supplied with abrasive wheel flying saw  
instead of flying shear on order.

<i>Model</i>	<i>Maximum inlet wire diameter</i>		<i>Minimum inlet wire diameter</i>		<i>Maximum speed</i>		<i>Maximum capacity*</i>
	<i>(mm)</i>	<i>(in)</i>	<i>(mm)</i>	<i>(in)</i>	<i>(m/min)</i>	<i>(fpm)</i>	<i>(c/min)</i>
EC-7	7,0	0,276	4,0	0,157	60	197	120
EC-10	10,0	0,394	5,0	0,197	60	197	100
EC-15	15,0	0,591	7,0	0,276	50	164	60
EC-28	28,0	1,102	15,0	0,591	30	98	50
EC-38	38,0	1,496	15,0	0,591	30	98	40

\*Data with high-pressure impact flying shear.

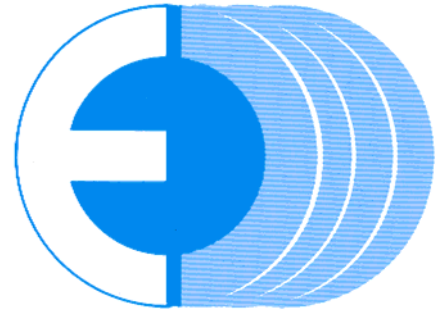
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# SPECIAL PROFILE STRAIGHTENING AND CUTTING MACHINE EC-10T



**Special Profile Straightening and Cutting Machine EC-10T**

The EC-10T straightening and cutting machine has been especially designed for the triangular, square or star profile bars manufacturing, from low carbon wire rod coils or stainless steel wire rods. However, the machine is very flexible and, just changing the forwarding and straightening rollers as well as the cutting knives, it can also be used for round bars manufacturing (plain or ribbed bars).

## Main Features

- Straightening group consists of two roller straighteners mounted in two planes 90°.
- Motorized straightening rollers by means of A.C. motor and gears with central lubrication system (programmable system).
- High-pressure impact hydraulic flying shear.
- A counter displays the number of cut-off operation and stops the machine after a preset number of parts have been produced.

- Preset of the cutting length (mm or in).

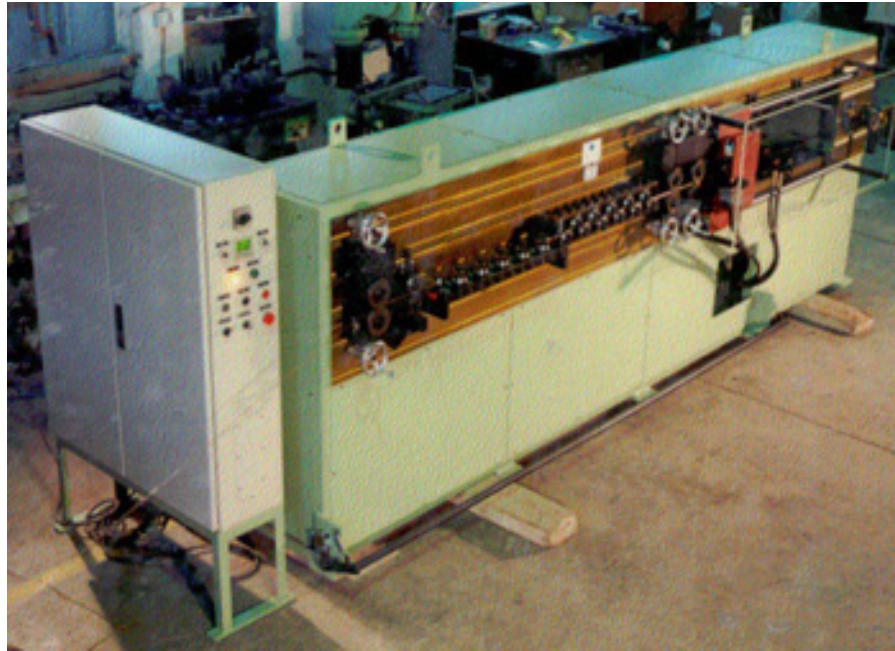
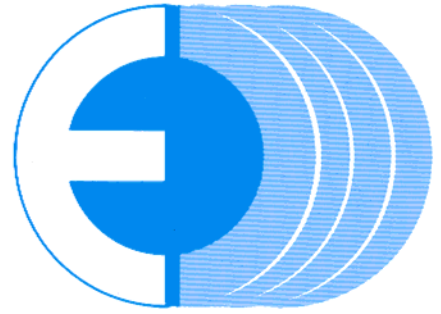
## Technical Data

Wire range:	triangular profile 9,65 mm - 0,38 in- base and 8,60 mm - 0,34 in- height; round profile up to 12 mm -0,47 in-.
Minimum cutting length:	20 mm -0,79 in-.
Maximum cutting length:	Unlimited.
No of straightening rollers:	14, with special grooves.
Speed:	Steplessly adjustable up to 30 m/min (98 fpm).
Capacity:	40 cuts/min.
Straightness:	according to EN-10218-2.
Cutting tolerance:	according to EN-10218-2.

*We reserve the right to modify the specifications as a result of technical improvements.*



# TUBE STRAIGHTENING AND CUTTING MACHINE, TYPE EC-10TC



**Tube Straightening and Cutting Machine EC-10TC**

Straightening and cutting machine EC-10TC has been specially designed to produce air conditioning and refrigeration tubes, instrumentation tubes, temperature sensors tubes, heat exchangers tubes and any application where copper, aluminium or brass tubes are required.

## Main Features

- Straightening unit consisting of two roll straighteners with horizontal and vertical configuration.
- Cutting by flying device with circular knife (burr free cuts), equipped with two hydraulic clamps. The second clamp performs the cut through a cylinder pneumatically operated (no deformation on tube).

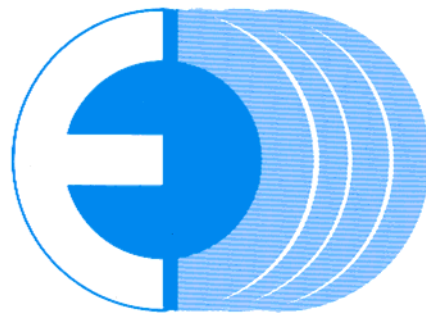
- Cutting length and number of parts pre-set.
- Output by means of tube conveyor mechanism.

## Technical Details

Tube range:	Ø 2,0 x 0,5 to Ø 8,0 x 1,0 mm.
Cutting device useful length:	1.000 mm.
Number of straightening rolls:	22, with customized groove.
Speed:	steplessly adjustable up to 120 m/min.
Straightness and cutting accuracy:	According to EN-10218-2.

*We reserve the right to modify the specifications as a result of technical improvements.*

# STRAIGHTENING AND CUTTING-OFF MACHINE, TYPE END-20



**Straightening and Cutting-Off Machine END-20**

The END-20 straightening and cutting machine is especially developed for the tube manufacturing (steel, copper, aluminum, brass or other material). It is equipped with a static roller straightening unit in two planes (vertical and horizontal) which gives an excellently straightened material without any damages to the tube surface. The straightening rollers are driven via an alternate current motor and frequency inverter.

## Main Features

- Cut-off by means of flying saw.
- A counter displays the number of cut-off operation and stops the machine after a preset number of parts have been produced.

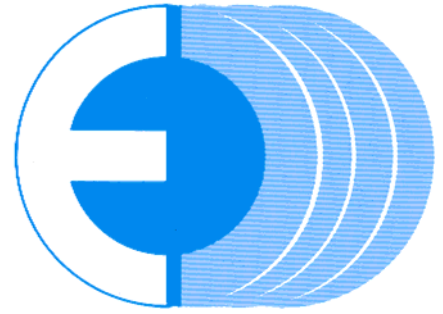
- Preset of cutting length electronically controlled.

## Technical Data

Outer tube diameter:	2 to 12 mm.
Thickness:	0,2 to 2 mm.
Minimum cutting length:	20 mm.
Maximum cutting length:	standard 3 m
Straightening rollers:	16, radius groove.
Speed:	steplessly adjustable up to 60 m/min.
Capacity:	up to 2.400 cuts/h.
Power:	4,5 kW.
Saw diameter:	160 to 225 mm.
Straightness:	acc. to EN 10218-2.
Cutting tolerance:	±0,5 mm.

*We reserve the right to modify the specifications as a result of technical improvements.*

# HYPERBOLIC ROLLER STRAIGHTENING AND CUTTING MACHINE EC-RH

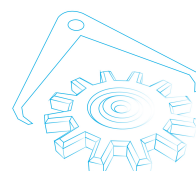


**Hyperbolic Roller Straightening and Cutting Machine EC-38RH**

## Main Features

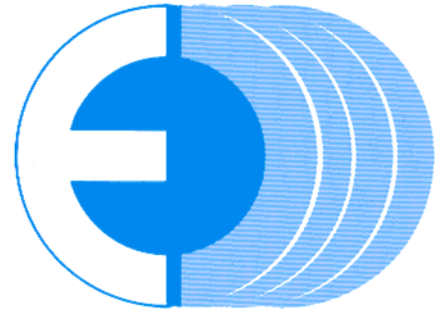
Straightening and cutting machine EC-RH, thanks to its straightening system, provides excellent straightness without marking the material. It is specially recommended to process solid wires, without previous drawing or calibration, due to the straightening system, which not only straightens the material but also mills it. Its use is also recommended to process tubes.

- Cut-off by means of high-pressure impact hydraulic flying shear or abrasive wheel flying saw.
- A counter displays the number of cut-off operation and stops the machine after a preset number of parts have been produced.
- Preset of the cutting length (mm or in).
- Horizontal rotary pay-off system (DP series).
- Optionally, integrated within descaling machine (up to 28 mm -1,102 in- diameter).



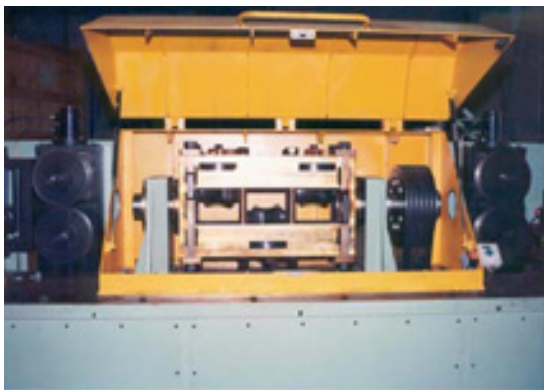
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## Technical Data

Straightening accuracy:	0,5 mm -0,020 in- within 500 mm -19,685 in- length (rule EN 10218-2).
Cutting tolerance:	$\pm 0,5$ mm -0,020 in-, lengths lower than 1.000 mm -39,370 in- (rule EN 10218-2).
Cutting length:	minimum 25 mm -0,984 in- (with flying shear). Maximum according to the catching through. Standard length between 1-5 m (3,280-16,400 ft).



## Construction

EC-RH machines consist of two basic units. The straightening and feeding unit consists of two or three forwarding groups, with two or four rollers each one (composition according to customer requirements) driven hydraulically, and the straightening group, achieved by two roller straighteners mounted in two planes 90° (prestraightener) and a hyperbolic roller rotary spinner (main straightener). The spinner is arranged between two feeding groups.

The cut-off unit is equipped with an hydraulic flying shear. A high pressure impact cylinder transfers an impact motion to the cut-off arm, where a shaped cut-off knife performs the operation. The cutting knives are profiled in accordance with the wire thickness. Therefore, the cut is clean and right-angled. All cutting tools are easily accessible. Under request, the machine is supplied with abrasive wheel flying saw instead of flying shear.

Model	Maximum inlet wire diameter		Minimum inlet wire diameter		Maximum speed		Maximum capacity*
	(mm)	(in)	(mm)	(in)	(m/min)	(fpm)	
EC-15RH	15,0	0,591	5,0	0,197	60	197	60
EC-28RH	28,0	1,102	15,0	0,591	45	148	40
EC-38RH	38,0	1,496	15,0	0,591	45	148	40
EC-45RH	45,0	1,772	20,0	0,788	30	98	----

\*Data with high-pressure impact flying shear.

*We reserve the right to modify the specifications as a result of technical improvements.*

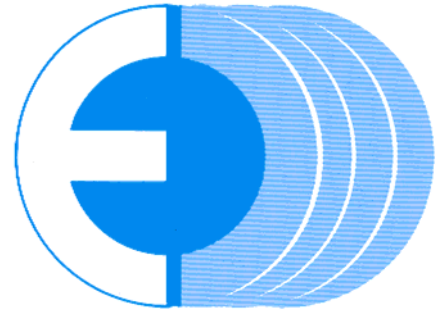


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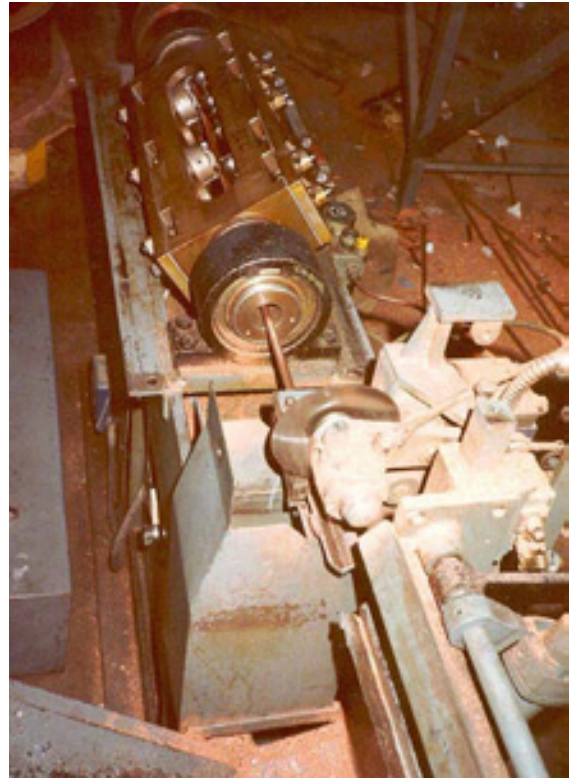
# HYPERBOLIC ROLLER STRAIGHTENING AND CUTTING MACHINE EC-15RH



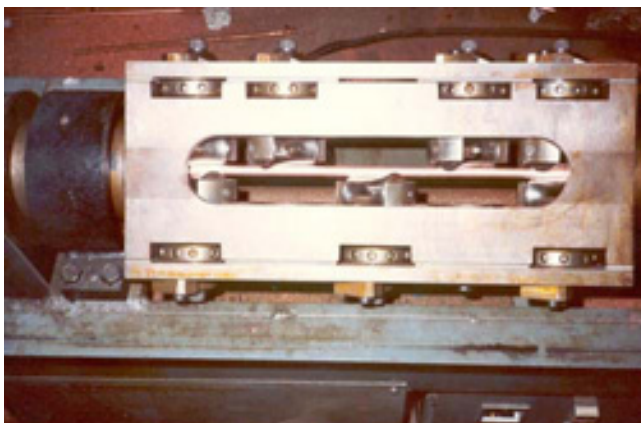
Hyperbolic roller straightening and cutting machine EC-15RH takes the material from coil and straightens and cuts it into close tolerance straight lengths (from millimeters to meters). Thanks to the straightening system, the machine provides excellent straightness without marking the material. Thus, it is especially recommended to process tubes (copper, aluminum, brass and other materials.).

## Main Features

- Cut-off by means of static saw, powered by pneumatic or electrical motor.
- A counter displays the number of cut-off operation and stops the machine after a preset number of parts have been produced.
- Mechanical releasing system to provide close length tolerances.
- The tube does not rotate during passage, thus eliminating stock damage.
- Variable rotary speed of the spinner powered by alternate current motor and frequency inverter.
- The spinner pulls the tube through the machine.



**Hyperbolic Roller Straightening and  
Cutting Machine EC-15RH**



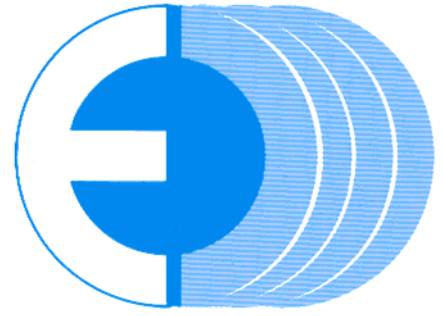
**Detail of the Spinner**

## Technical Data

Outer tube diameter:	4 to 15 mm.
Thickness:	0,4 to 2 mm.
Minimum cutting length:	100 mm.
Maximum cutting length:	depends on catching trough (standard 3 m)
Speed:	steplessly adjustable up to 60 m/min.
Capacity:	300 to 2.400 cuts/h.
Power:	3 kW.
Saw diameter:	160 to 225 mm.
Straightness:	acc. to EN 10218-2.
Cutting tolerance:	±0,2 mm.

*We reserve the right to modify the specifications as a result of technical improvements.*

# **HYPERBOLIC ROLLER STRAIGHTENING MACHINE, TYPE EC-45RH**

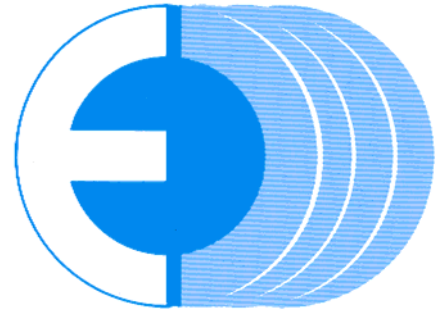


**Hyperbolic Roller Straightening Machine EC-45RH**

## **Main Features**

Straightening machine EC-45RH, thanks to its combined straightening system consisting of two straighteners placed in two planes of 90° and hyperbolic roller rotary straightener, provides excellent straightness without marking the material. It is specially recommended to process solid wires, without previous drawing or calibration, due to the straightening system although its use is also recommended to process tubes and ribbed wires (carbon content or stainless steel).

- Coil feeding by means of pre-straightening horizontal pay-off (series DP).
- Process data input (line speed, wire diameter, etc) through touch panel and intuitive menu.
- Metre-counter floating assembly which results in high cutting accuracy.
- Cutting by means of abrasive wheel flying saw synchronized via CNC (series SVC).
- Equipped with programming library on order.



## Technical Data

Max. diameter:	45,0 mm (1.772").
Min. diameter:	26,0 mm (1.024").
Max. speed:	18 m/min (60 fpm).
Max. capacity:	4 p/min, wire range 26,0 to 31,0 mm (1.024" to 1.221") and 3 m (9') cutting length.
Straightening Accuracy*:	$\pm 0,5$ mm ( $\pm 0.020$ ") 500 mm (19.685") cutting length.
Cutting Tolerance*:	$\pm 0,5$ mm ( $\pm 0.020$ ") $\leq 1.000$ mm (39.370") cutting length.
Cutting length:	According to the collecting table. Standard length 1-12 m (3.280'-39.370').

## Construction

Straightening machine EC-45RH consists of a solid, electro-welded frame which houses a base plate. The plate holds the elements to feed and straighten the material: three sets of powered rolls hydraulically operated (the first has four powered rolls, while the other two are only two rolls), a pre-straightening system consisting of two straighteners of seven rolls, each one placed in two planes of 90° with independent adjustment through its corresponding motor-reduction gears, a rotary straightener with five hyperbolic rolls and a metre-counter group pneumatically operated which provides the cutting signal.

The rotary straightener drive is independent of that of the powered rolls and pay-off although all of them are in synchronization.

*\*According to EN 10218-2 rule.*



**Motorized pre-straightener with position indicators SIKO.**

*We reserve the right to modify the specifications as a result of technical improvements.*



**Hyperbolic roller rotary straightener.**

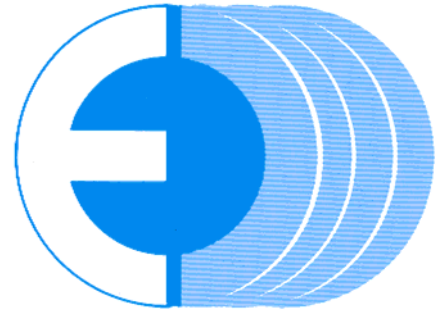


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## FLYING SAW, TYPE SVC-350



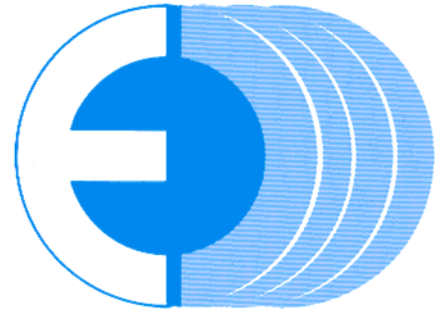
**Flying Saw SVC-350**

### **Main Features**

SVC-350 flying saw has been especially developed to join straightening and cutting lines when an alternative high quality cutting system is required, which guarantees clean and right-angled cuts, without any deformation. SVC-350 saw is a very flexible tool thanks to the wide wire range diameters and materials that can be processed. In addition, SVC machine features easy handling because of its friendly software, minimizing the input data to introduce through the control panel.

- Big diameter abrasive wheel.
- Advance wheel speed preset according to the wire diameter.
- Optionally, with constant tangential cutting speed, independent of progressive wheels wearing.
- Main control by means of 2-axis CNC.
- Electrical axis synchronism between the straightening machine and the flying saw.





## Technical Data

Abrasive wheel diameter: 350 to 400 mm -13,78 to 15,75 in-.

Tangential cutting speed: 80 m/s (262 fps).

Wire range diameter: 12 to 45 mm -0,47 to 1,77 in-

Maximum working speed: up to 30 m/min (98 fpm).

Maximum stroke: 4.550 mm (14,93 ft).

Length: 6.300 mm (20,67 ft).

## Construction

SVC-350 flying saw is a welded tubular fabricated frame, which houses a robust base plate on top. On the base plate are mounted the prismatic guides of the saw chariot.

The saw chariot is driven via a brushless alternate current servomotor through pinion-toothed bar set. The synchronism between the brushless motor and the main motor of the straightening line is guaranteed by electrical axis.

After each cutting operation, the saw chariot returns quickly to its zero position electronically controlled.

The abrasive wheels, equipped with an alternate current motor, are mounted on a second chariot driven by another independent motor. Thus, a very fine control of the advance wheel speed is achieved.

The saw chariot disposes of a double hydraulic clamp driven by two hydraulic cylinders, which holds the wire while the cutting operation is done.

Optionally, the saw can be equipped with a special control system to place the chariot depending on the progressive wheel wearing. Then, the tangential cutting speed of the wheels is constant from beginning to the end, with automatic adjustment by means of a frequency inverter.

The hydraulic system is located at the midpoint of the frame and it is assembled with flexible connectors. Enclosed to it there is an industrial vacuum cleaner (on order). This autonomous equipment collects the dust produced after each cutting operation in a large box to avoid its dispersion.

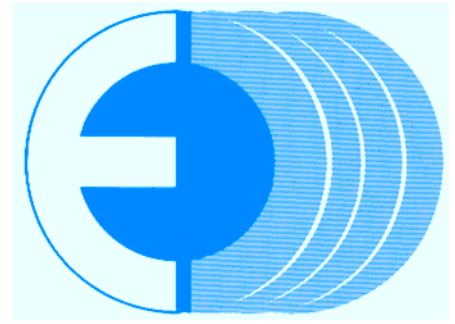
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# AUTOMATIC HYDRAULIC SHEAR FOR BARS, TYPE C-30



**Automatic Hydraulic Shear for Bars C-30**

The automatic hydraulic shear C-30 consists of three units: bar feeder, fully automatic forwarding roller way and shear body.

## Main Features

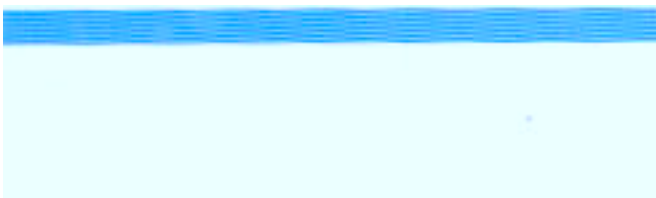
- Bar feeder pneumatically driven (automatic or manual system).
- Bar feeder equipped with bar retention device in case of air supply failure.
- Forwarding roller way with self-centering system depending on bar diameter.
- Clean and right-angled cuts, without any deformation.
- Cutting system **without mechanical ends**, which allows to cut any bar length (limited by the total bar length).
- Two different cutting lengths preset for the same bar (minimum scrap).

- Length measuring device for automatic sorting of rest-ends.
- End sorting device to ensure a simple removal of the unusable end pieces.

## Technical Data

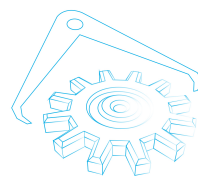
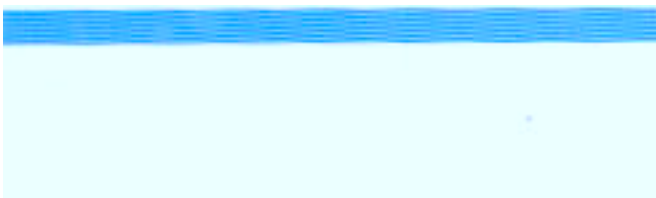
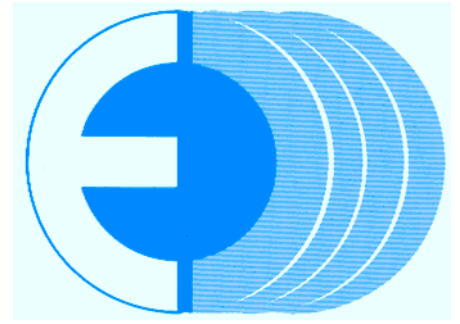
Bar range diameter:	12 to 30 mm –0,47 to 1,18 in- depending on material.
Drive:	alternate current motors and frequency inverter.
Power:	18 kW.
Maximum speed:	15 m/min -50 fpm-.
Capacity:	40 cuts/min.

*We reserve the right to modify the specifications as a result of technical improvements.*



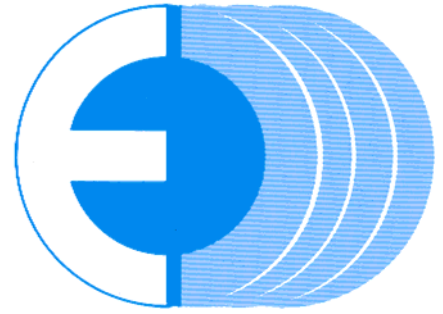
# DRAWING, STRAIGHTENING AND CUTTING

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# COMBINED DRAWING, STRAIGHTENING AND CUTTING MACHINE TEC

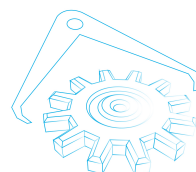


**Combined Drawing, Straightening and Cutting-Off Machine TEC-10**

## Main Features

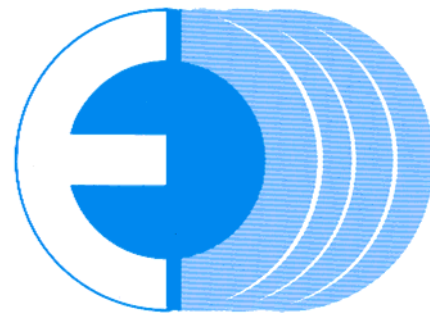
Combined lines TEC take the wire from coil, draw it and straighten and cut it into close tolerance straight lengths (from millimeters to meters, from inches to feet) with burr free cuts. TEC machines feature a low production cost and easy handling (only one operator is involved in the process), which brings economies in labor costs. Other significant features of TEC are an outstanding economy of space, minimum amount of scrap and stock saving in material's intermediate sizes.

- Cut-off by means of high-pressure impact hydraulic flying shear or abrasive wheel flying saw.
- A counter displays the number of cut-off operation and stops the machine after a preset number of parts have been produced.
- Preset of the cutting length (mm or in).
- Depending on wire rod diameter, TEC machines take wire from static or rotary pay-off systems (horizontal or vertical)
- Other equipment can be integrated within the line, as descaling or peeling machines.



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## Technical Data

Straightening accuracy:	0,5 mm -0,0197 in- within 500 mm -19,6850 in- length (rule EN 10218-2).
Cutting tolerance:	$\pm 0,5$ mm -0,0197 in-, lengths lower than 1.000 mm -39,3701 in- (rule EN 10218-2).
Cutting length:	minimum 15 mm -0,5905 in- (with flying shear). Maximum according to the catching through. Standard length between 1-5 m (3,28-16,40 ft).
Drawing reduction:	up to 26% depending on material.

## Construction

TEC machines consist of three basic units. The drawing unit is a fabricated frame, which houses the bearings for the capstan, which is mounted with the axis horizontal. It has one drawing draft (model 3TEC up to three drafts), and the drive is achieved by A.C. motor with steplessly adjustable speed preset.

Depending on model, the machine is supplied with a clamp roller that can be brought down onto the surface of the wire, which grips this on the surface of the capstan. The dieholder is pivoted both vertical and horizontal planes, and it allows drawing with soap lubricant or lubricating oils.

The second unit is the straightening and feeding unit. It consists of two or three forwarding groups, with two or four rollers each one (composition according to customer requirements) driven mechanically, pneumatically or hydraulically, and the straightening group, achieved by two roller straighteners mounted in two planes 90° (optionally equipped with rotary spinner). The straightening group is arranged between two feeding groups.

Finally, the cut-off unit is equipped with an hydraulic flying shear. A high-pressure impact cylinder transfers an impact motion to the cut-off arm, where a shaped cut-off knife performs the operation. The cutting knives are profiled in accordance with the wire thickness. Therefore, the cut is clean and right-angled. All cutting tools are easily accessible. Under request, the machine is supplied with abrasive wheel flying saw instead of flying shear.

Model	Maximum inlet wire diameter		Minimum inlet wire diameter		Maximum speed		Maximum capacity*
	(mm)	(in)	(mm)	(in)	(m/min)	(fpm)	
3TEC7	5,5	0,2165	3,0	0,1181	60	197	120
TEC-7	7,0	0,2756	4,0	0,1575	60	197	120
TEC-10	10,0	0,3937	5,0	0,1969	60	197	100
TEC-15	15,0	0,5905	7,0	0,2756	50	164	60
TEC-28	28,0	1,1024	15,0	0,5905	30	98	50
TEC-38	38,0	1,4961	15,0	0,5905	30	98	40

\*Data with high-pressure impact flying shear.

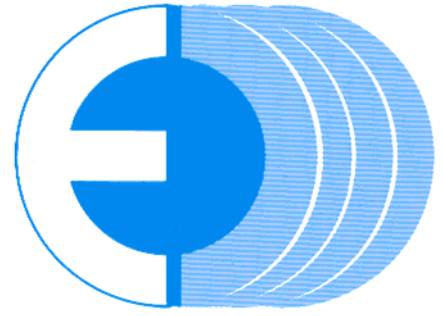
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# COMBINED DRAWING, STRAIGHTENING AND CUTTING MACHINE TEC-50



**Combined Drawing, Straightening and Cutting-Off Machine TEC-50**

Combined line TEC-50 takes the wire from coil, draws it and straightens and cuts it into close tolerance straight lengths (from millimeters to meters, from inches to feet) with burr free cuts. TEC-50 machine features a great flexibility to cover a wide range of wire diameters, which brings an outstanding economy of space, minimum amount of scrap and stock saving in material's intermediate sizes.

## Main Features

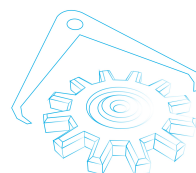
- Cut-off by means of high-pressure impact hydraulic flying shear or abrasive wheel flying saw.
- Preset of the cutting length (mm or in).

- A counter displays the number of cut-off operation and stops the machine after a preset number of parts have been produced.
- Horizontal rotary pay-off system DP-50 can join the line.

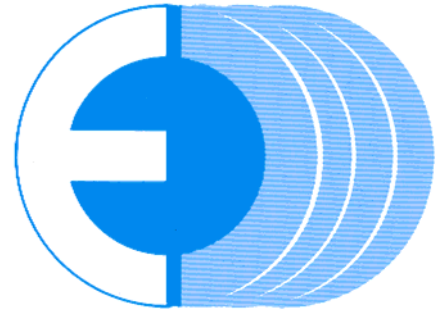
## Technical Data

Straightening accuracy: 0,5 mm -0,0197 in- within 500 mm -19,6850 in- length (rule EN 10218-2).

Cutting tolerance:  $\pm 0,5$  mm -0,0197 in-, lengths lower than 1.000 mm -39,3701 in- (rule EN 10218-2).



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## Technical Data

Cutting length: minimum 25 mm –0,9842 in- (with flying shear). Maximum according to the catching through.

Drawing reduction: up to 20% depending on material.

## Construction

TEC-50 machine consists of three basic units. The drawing unit is a fabricated frame, which houses the bearings for the capstan, which is mounted with the axis horizontal. It has one drawing draft, and the drive is achieved by A.C. motor with steplessly adjustable speed preset and speed gear box. The machine is supplied with a pair of clamp rollers that can be brought down onto the surface of the wire, which grips this on the surface of the capstan. The die-holder is pivoted both vertical and horizontal planes, and it allows drawing with soap lubricant or lubricating oils.

The second unit is the straightening and feeding unit. It consists of three forwarding groups (the first one with four rollers and the second and third ones with two rollers each one) driven hydraulically, and the straightening group, achieved by two roller straighteners mounted in two planes 90°. The position of the rollers is controlled by motor reducer via push buttons (optionally equipped with automatic programming systems of the roller position SimDATA and Computerized Tool by Witels Albert). The straightening group is arranged between the first and second feeding groups.

Finally, the cut-off unit is equipped with an hydraulic flying shear. A high pressure impact cylinder transfers an impact motion to the cut-off arm, where a shaped cut-off knife performs the operation. The cutting knives are profiled in accordance with the wire thickness. Therefore, the cut is clean and right-angled. All cutting tools are easily accessible. Under request, the machine is supplied with abrasive wheel flying saw instead of flying shear.

Model	Maximum inlet wire diameter		Minimum inlet wire diameter		Maximum speed*		Maximum capacity*
	(mm)	(in)	(mm)	(in)	(m/min)	(fpm)	(c/min)
TEC-50	50,0	1,9685	19,0	0,7480	12	40	12

\*Other features under request.



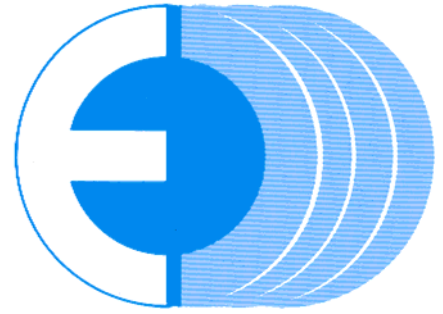
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# COMBINED DRAWING, STRAIGHTENING AND CUTTING MACHINE TEC-VI

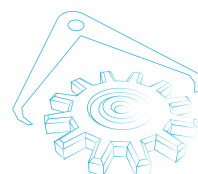


**Combined Drawing, Straightening and Cutting-Off Machine TEC-10 VI**

## Main Features

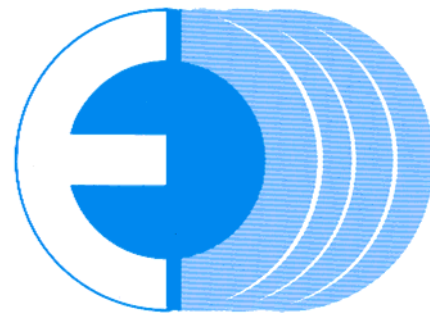
Combined drawing, straightening and cutting lines TEC VI have been especially designed to produce short length bars (lower than 500 mm –19.70 in -) at high cutting speeds. Under these conditions TEC VI works without end stop. Higher productivity is available for longer length bars installing an end stop and outlet group. TEC VI machines feature a low production cost and easy handling (only one operator is involved in the process), which brings economies in labor costs.

- Acoustics soundproof to minimize the impact on the environment.
- Cut-off by means of high impact inertia wheel electronically controlled.
- Intuitive menu and touch-screen system to pre-set number of parts, cutting length and working speed.
- Optionally, equipped with mechanical descaling machine.



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## Technical Data

Straightening accuracy:	0.5 mm – 0.0197 in - within 500 mm –19.68 in-length (EN 10218-2 rule).
Cutting tolerance:	$\pm$ 0.5 mm – 0.0197 in -, lengths lower than 1.000 mm –39.37 in- (EN 10218-2 rule).
Cutting length:	minimum 50 mm – 1.97 in -. Maximum 500 mm – 19.70 in - (without end stop). Longer lengths with end stop.
Drawing reduction:	Up to 26% depending on material.

The machine is supplied with a clamp roller that can be brought down onto the surface of the wire, which grips this on the surface of the capstan. The dieholder is pivoted both vertical and horizontal planes, and it allows drawing with soap lubricant or lubricating oils.

The second unit is the straightening and feeding unit. It consists of two or three forwarding groups, with two or four rollers each one (composition in accordance with customer requirements) pneumatically operated, and the straightening group, achieved by two roller straighteners mounted in two planes 90°. The straightening group is arranged between two feeding groups.

Finally, the cut-off unit is equipped with an inertia wheel driven by A.C. motor and frequency inverter which transfers an impact motion to the cutting knife through a cutting-arm. The fixed blade tool and the cut-off knife perform the operation. The cutting knives and tools are profiled in accordance with the wire thickness. Therefore, the cut is clean and right-angled. All cutting tools are easily accessible.

## Construction

TEC VI machines consist of three basic units. The drawing unit is a fabricated frame, which houses the bearings for the capstan, which is mounted with the axis horizontal. It has one drawing draft and the drive is achieved by A.C. motor and frequency inverter.

Model	Maximum inlet wire diameter		Minimum inlet wire diameter		Maximum speed <sup>f</sup>		Maximum capacity*
	(mm)	(in)	(mm)	(in)	(m/min)	(fpm)	
TEC-10VI	10.0	0.40	6.0	0.24	50	165	180
TEC-15VI	15.0	0.60	8.0	0.31	50	165	180

<sup>f</sup>Lengths upper than 500 mm – 19.70 in -.

\*Lengths lower than 500 mm – 19.70 in -.

*We reserve the right to modify the specifications as a result of technical improvements.*

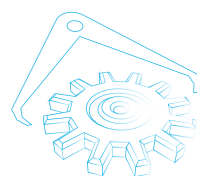
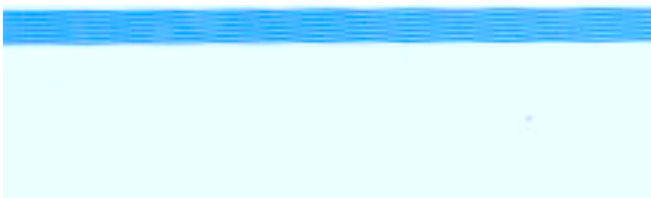
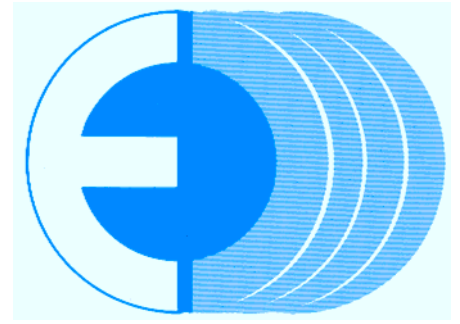


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# DRAWING MACHINES

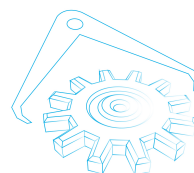
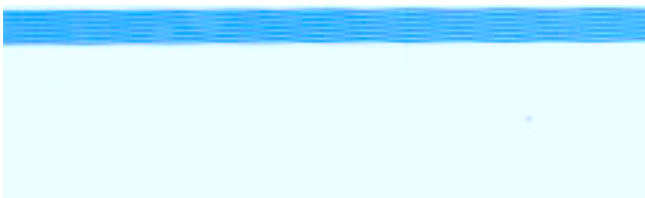
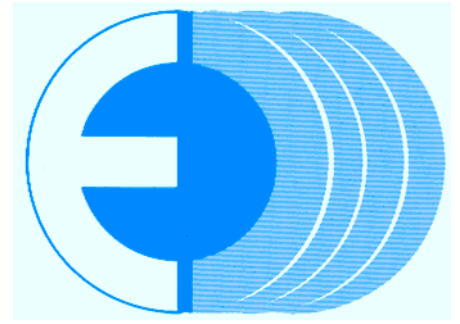
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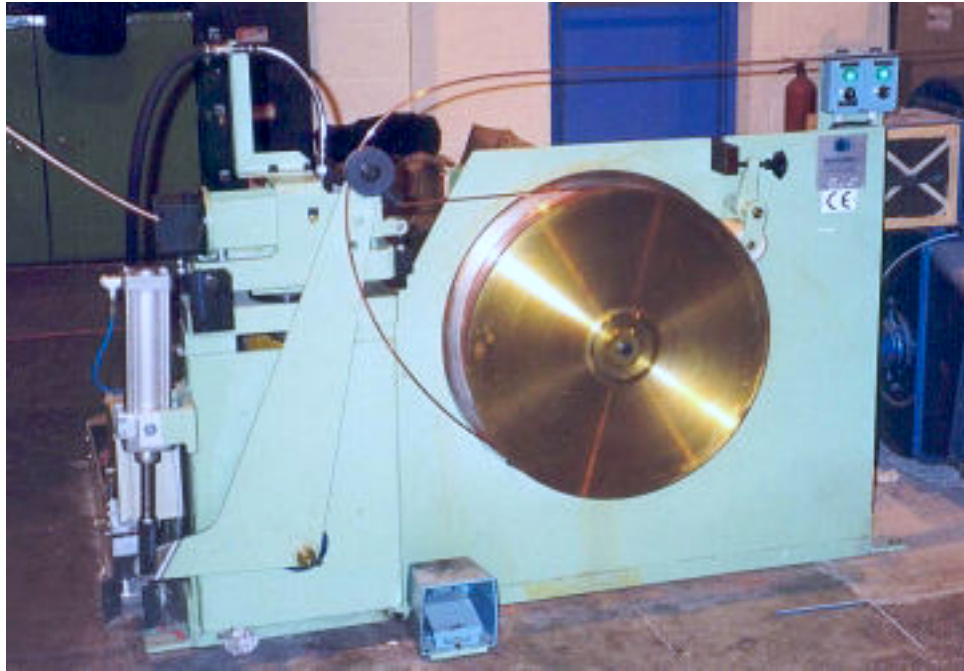
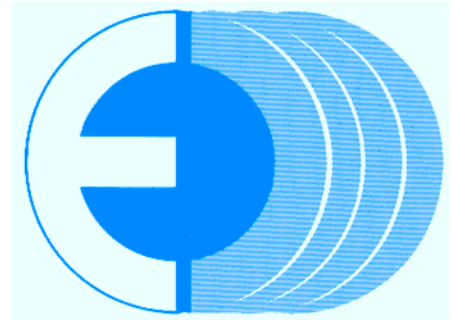
# BULLBLOCK WIRE DRAWING MACHINES

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## IN LINE WIRE DRAWING MACHINE, TYPE PRE-TRE



### In Line Wire Drawing Machine PRE-TRE 600

In line wire drawing machines PRE-TRE have been specially designed to join copper or aluminium rod breakdown wire drawing machines. Thus, another drawing draft is easily added to an existing installation. Nevertheless, they can also be used feeding bullblock wire drawing machines, bending machines and cold forging presses.

#### Main Features

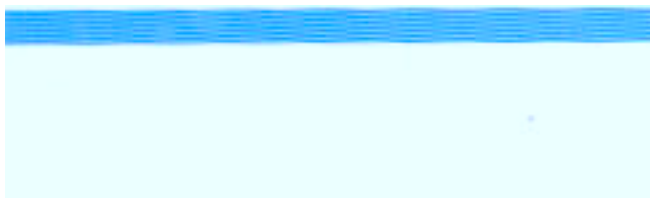
- Diebox suitable for liquid lubrication (non ferrous materials) or soap (ferrous materials).
- Cross guiding rolls at the diebox entrance.
- Clamp roller manually operated which grips the wire on the surface of the capstan.

- Pneumatically operated arm to synchronize in line wire drawing machine with the master machine.

#### Technical Data

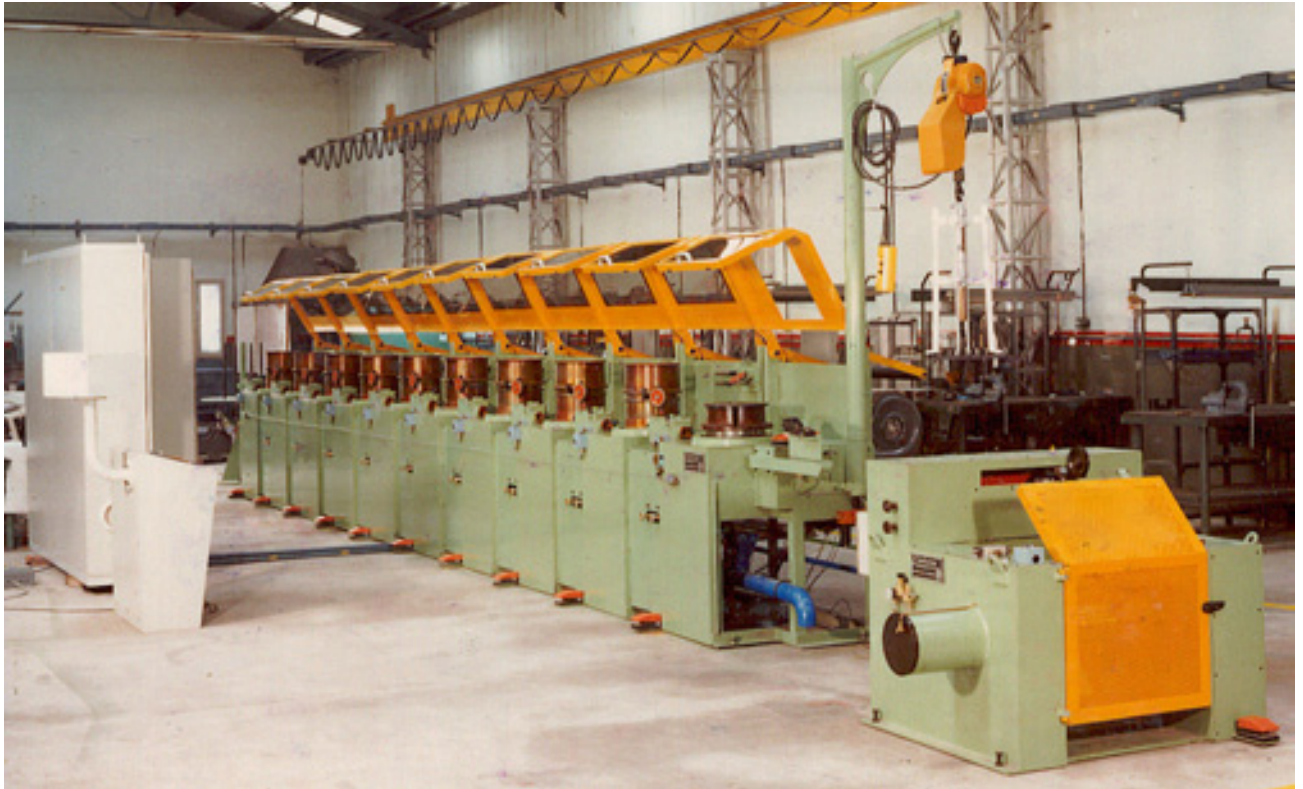
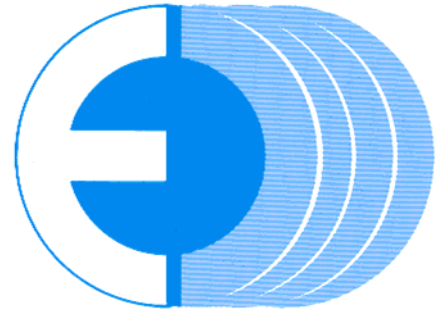
Wire range diameter:	3 ÷ 20 mm depending on material.
Bobbin range diameter:	500 ÷ 1.000 mm.
Motor:	D.C. motor or A.C. motor with frequency inverter.
Power:	5,5 ÷ 22 kW.

*We reserve the right to modify the specifications as a result of technical improvements.*





# **BULLBLOCK WIRE DRAWING BENCH, TYPE MST / MTRB**

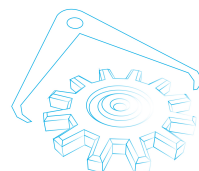


**Bullblock Wire Drawing Bench MST-400 and Spooler ENC-630**

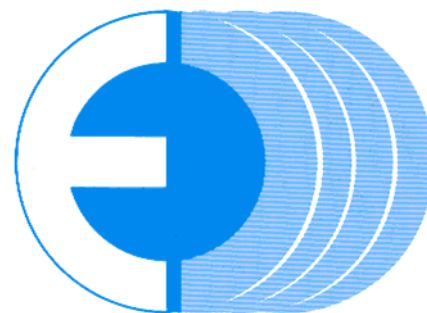
## **Main Features**

Wire drawing bullblocks MST (double accumulation without torsion) and MTRB (straight through with control dancer) have been especially developed to draw high carbon steels content and stainless steels. Both models feature high drawing speeds, low noise and vibration levels and easy and fast maintenance as well as easy handling because of their friendly software, minimizing the input data to introduce through the control panel.

- Each bullblock is driven independently by A.C. motor and frequency inverter.
- Steel wire drawing bobbins hardened up to HRC 60-62, equipped with high efficiency internal water cooling system.
- Dieholder pivoted both vertical and horizontal planes and water cooled die.
- Maximum flexibility due to any intermedium bullblock can be excluded.
- Optionally, equipped with rotary dieholder.



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## Technical Data

Type MST	600	500	400
Bobbin diameter (mm)	600	500	400 (300)
Maximum drawing drafts	12	12	12
Maximum inlet diameter 0,8%C steel (mm)	8,00	7,50	5,00 (2,80)
Maximum inlet diameter 0,1%C steel (mm)	12,00	9,00	5,50 (3,50)
Minimum outlet diameter (mm)	2,00	1,40	0,60 (0,40)
Maximum pulling force (kP)	3.000	2.600	1.200
Power up to (kW)	60,00	36,00	22,00

Type MTRB	600	560	500	460	400	300	250	180
Bobbin diameter (mm)	600	560	500	460	400	300	250	180
Maximum drawing drafts	10	10	12	12	12	12	12	14
Maximum inlet diameter 0,8%C steel (mm)	7,00	6,50	5,50	5,00	4,00	3,00	2,50	1,80
Maximum inlet diameter 0,1%C steel (mm)	10,00	8,50	7,50	6,50	5,50	4,00	3,00	2,50
Minimum outlet diameter (mm)	1,80	1,50	1,20	1,00	0,80	0,50	0,30	0,25
Maximum speed (m/s)	20,00	22,00	22,00	25,00	25,00	25,00	25,00	25,00
Maximum pulling force (kP)	3.200	2.800	2.300	1.800	1.300	600	400	280
Power up to (kW)	80,00	75,00	70,00	50,00	36,00	20,00	12,00	6,00
Aprox. net weight per bullblock (kg)	2.600	2.400	2.100	1.800	1.200	900	500	350

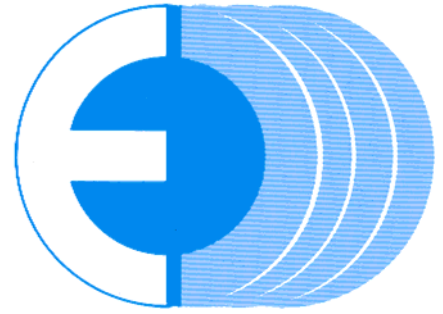
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# BULLBLOCK WIRE DRAWING BENCH, TYPE MTRS



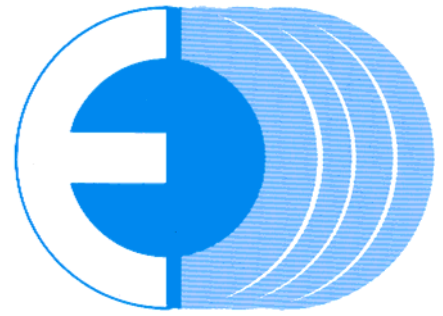
## Bullblock Wire Drawing Bench MTRS-680 and MTRS-560

### Main Features

Straight through wire drawing bullblocks MTRS with control sensors have been especially developed to draw high carbon steels content, alloyed steels and stainless steels as well as aluminum or zinc plated steel wires. MTRS bullblocks feature high drawing speeds, low noise and vibration levels and easy and fast maintenance as well as easy handling because of their friendly software, minimizing the input data to introduce through the control panel. For instance, the operator only has to fix the speed of the last block, adjusting automatically the speeds of the remaining blocks and correcting also automatically the speed of each one depending on die wearing.

- Each bullblock is driven independently by A.C. motor and frequency inverter.
- Steel wire drawing bobbins with inclined shaft and hardened up to HRC 60-62, equipped with high efficiency internal water cooling system.
- Upper mounting design of assembling bobbin, gearbox and motor.
- Dieholder pivoted both vertical and horizontal planes and water cooled die.
- Maximum flexibility due to any intermedium bullblock can be excluded.
- Optionally, equipped with rotary dieholder.





## Technical Data

<i>Type MTRS</i>	<i>900</i>	<i>760</i>	<i>680</i>	<i>600</i>	<i>550</i>	<i>500</i>	<i>460</i>
Bobbin diameter (mm)	900	760	670	600	550	500	460
Maximum drawing drafts	8	10	10	10	10	12	12
Maximum inlet diameter 0,8%C steel (mm)	15,00	12,70	9,00	7,00	6,00	5,50	4,50
Maximum inlet diameter 0,1%C steel (mm)	18,00	16,00	12,00	10,00	7,00	6,00	5,50
Minimum outlet diameter (mm)	3,50	2,50	2,00	1,80	1,50	1,20	0,80
Maximum speed (m/s)	12,00	12,00	12,00	14,00	14,00	14,00	14,00
Maximum pulling force (kP)	9.500	8.000	4.200	3.200	2.800	2.300	1.800
Power up to (kW)	120,0	100,0	75,00	60,00	50,00	40,00	36,00
Aprox. net weight per bullblock (kg)	6.400	4.600	3.800	2.600	2.400	2.100	1.800



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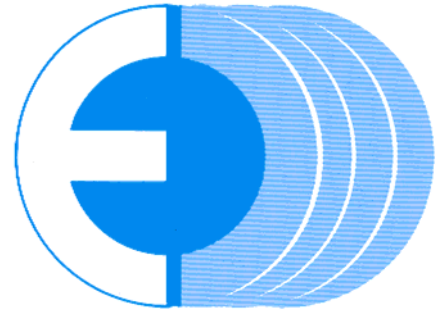


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## **BULLBLOCK WIRE DRAWING BENCH, TYPE MPV**

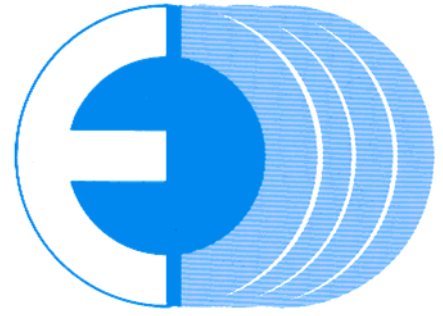


**Bullblock Wire Drawing Bench MPV-500 and Static Coiler RCH-500 BS**

### **Main Features**

MPV bullblock wire drawing machines with accumulation system and overhead pay-off pulley are really flexible. They can be used to draw low carbon steel wires as well as copper, brass and non-ferrous wires. Due to its solid frame and effective bobbin cooling system, high drawing speeds are achieved with low noise and vibration-free running. In addition, its easy handling and low cost maintenance assure the economical production of wires.

- Each bullblock is driven independently by A.C. motor and frequency inverter.
- Steel wire drawing bobbins hardened up to HRc 60-62, equipped with high efficiency internal water cooling system.
- Dieholder pivoted both vertical and horizontal planes and water cooled die.
- Maximum flexibility due to any intermedium bullblock can be excluded.
- Optionally, equipped with rotary dieholder.



## Technical Data

<i>Type MPV</i>	<i>600</i>	<i>500</i>		<i>400</i>	
Bobbin diameter (mm)	600	560	500	400	300
Maximum drawing drafts	12	12	12	12	12
Maximum inlet diameter 0,8%C (mm)	8,00	7,50	6,50	5,00	2,80
Maximum inlet diameter 0,1%C (mm)	12,00	9,00	8,00	5,50	3,50
Maximum outlet diameter (mm)	6,00	3,20	3,00	2,50	1,20
Minimum outlet diameter (mm)	2,00	1,40	1,10	0,60	0,40
Maximum pulling force (kP)	3.000	2.600		1.200	
Power up to (kW)	55,00	37,00		22,00	
Approx. net weight per bullblock (kg)	2.600	2.400	2.100	1.200	900



**Detail of Bullblock Wire Drawing Machine MPV**

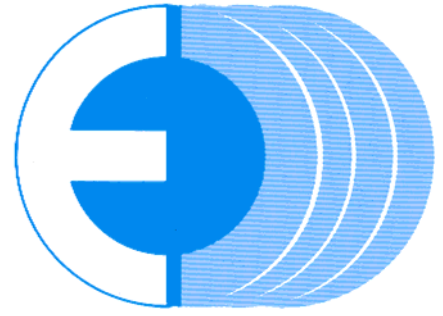
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# **BULLBLOCK WIRE DRAWING BENCH, TYPE MPV WITH MINIMUM TWIST ON THE WIRE**



**Bullblock Wire Drawing Bench MPV-500  
with Electronic Control of Speed and Number of Wraps**

## **Main Features**

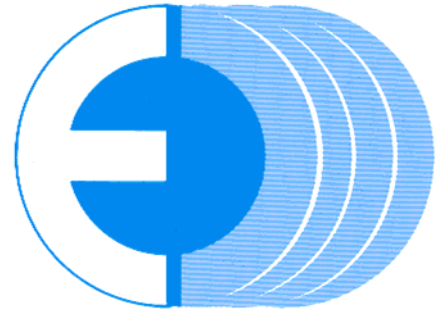
Conventional bullblock wire drawing machines with accumulation system and overhead pay-off pulley twist the material in large numbers due to upper plate movement caused by successive stops and starts and speed regulation to hold the accumulated material. Thanks to the new control system developed by Electrorrec, S.A. all the bullblocks run synchronized, reducing the number of twists almost to zero. Then, in addition to its flexible productivity and high cooling efficiency, MPV accumulation line joins typical features of straight through drawing machine.

- Each bullblock is driven independently by A.C. motor and frequency inverter.
- Bobbins with combined cooling system (inner cooling by water and outer by air).
- Number of wraps electronically controlled. Then, the operator does not pay permanent attention to the line.
- Control panel with easy programmable touch screen due to intuitive menus and diagrams (with emergency display).
- Suitable for large wire diameters and aggressive drawing drafts.

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# **VERTICAL BULLBLOCK WIRE DRAWING MACHINE, TYPE MPV**



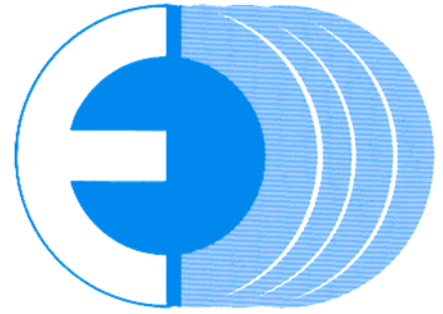
**Vertical Bullblock Wire Drawing Machine MPV-900 with Stripper**

## **Main Features**

The vertical bullblock wire drawing machine MPV has been designed to draw medium and large wires when one or two drawing drafts with significant reductions are required. It is specially recommended to draw low and high carbon steel content wires as well as non ferrous metals.

- Heavy and solidly built.
- Easy and safety handling.
- Low noise level.
- Dieholder pivoted both vertical and horizontal planes suitable for different die cases.
- Soap lubricant. Optionally, with oil lubricant system (independent tank and pump).





### Technical Data

MPV wire drawing machines are powered depending on requirements. Technical data of the standard unit are as follows.

Number of drafts: 1 o 2, with section reductions 15 to 30%.

Bobbin diameter: 600 to 900 mm.

Pulling force: Up to 90.000 N.

Drive:

Cooling system:

Voltage:

Standard Colour:

By means of 4-speed gearbox and A.C. motor.

Internal cooling system by circulating water (dies and bobbin) and external cooiling system by air (bobbin).

380 V III, 50 Hz.

RAL 6.021.

*(Other measures on order).*

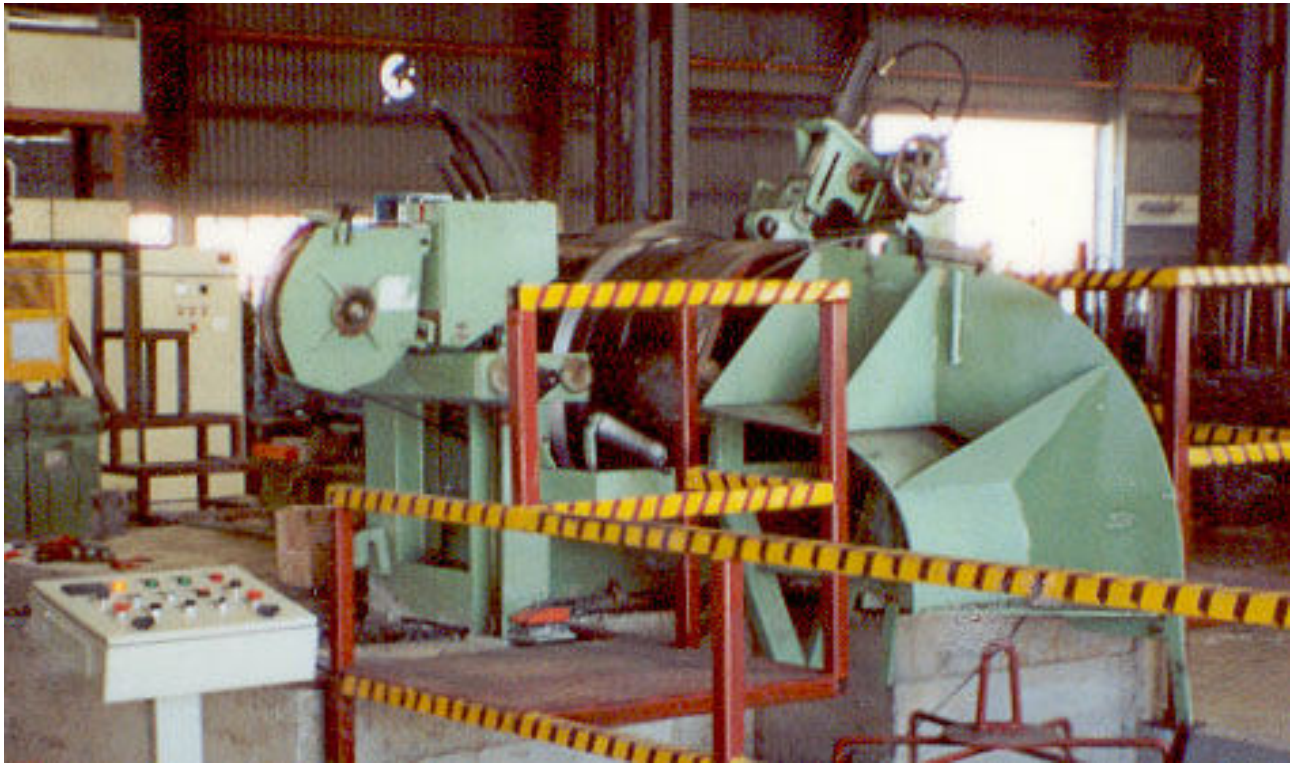
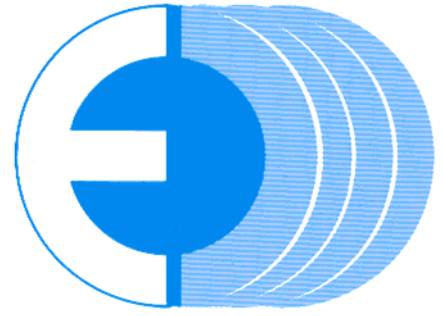
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# **HORIZONTAL BULLBLOCK WIRE DRAWING MACHINE, TYPE MPH**

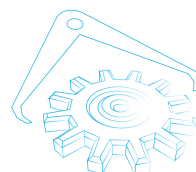


## **Horizontal Bullblock Wire Drawing Machine MPH-2/900 with Coiling Basket DDM**

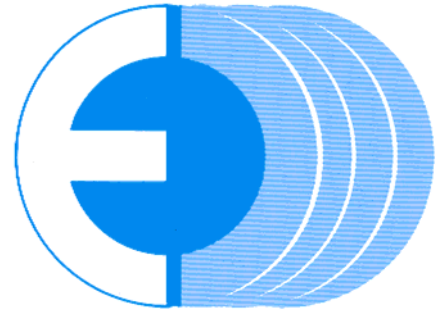
The horizontal bullblock wire drawing machine MPH has been designed to draw medium and large wires when one or two drawing drafts with significant reductions are required. It is specially recommended to draw low and high carbon steel content wires as well as non ferrous metals.

### **Main Features**

- Heavy and solidly built.
- Easy and safety handling.
- Low noise level.
- Dieholder pivoted both vertical and horizontal planes suitable for different die cases.
- Soap lubricant. Optionally, with oil lubricant system (independent tank and pump).
- Equipped with special capstan to coil the material on tilting rotary baskets (CRB) or double turn platforms (DDM).



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## Technical Data

MPH wire drawing machines are powered depending on requirements. Technical data of the standard unit are as follows.

Number of drafts: 1 o 2, with section reductions 15 to 30%.

Bobbin diameter: 600 to 900 mm.

Pulling force: Up to 90.000 N.

*(Other measures on order).*

Drive:

Cooling system:

Voltage:

Standard Colour:

By means of 4-speed gearbox and A.C. motor.

Internal cooling system by circulating water (dies and bobbin) and external coiling system by air (bobbin).

380 V III, 50 Hz.

RAL 6.021.



**Coiling Basket up to 1.500 kg (DDM-900)**

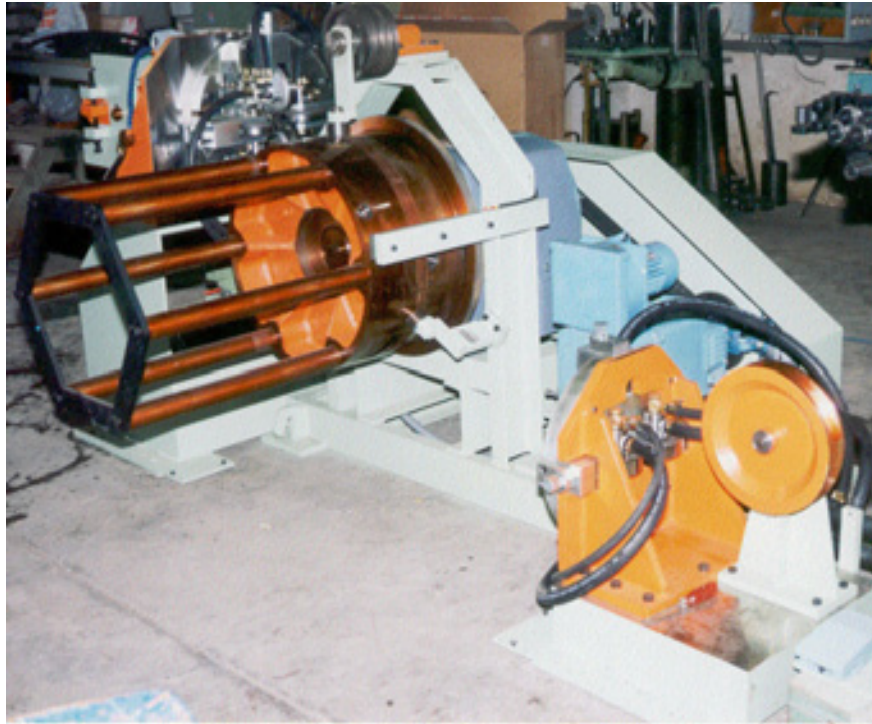
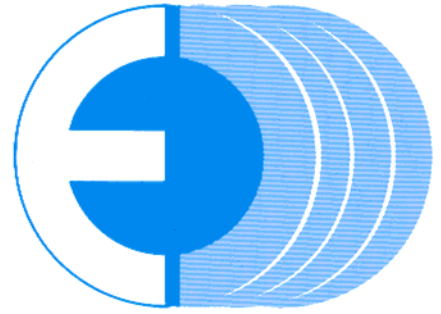
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# HORIZONTAL BULLBLOCK WIRE DRAWING MACHINE, TYPE MHP-600P



**Horizontal Bullblock Wire Drawing Machine MHP-600P**

MHP-600P horizontal bullblock wire drawing machine is especially designed to produce flat and special profile wires from round wire. However, it is also able to draw from round wire to round wire just changing the inlet turk head by a dieholder.

•Round wire (dieholder), triangular profile (three rolls turk head) or square or rectangular profile (four rolls turk head).

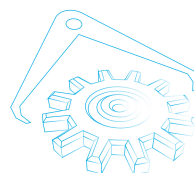
## Main Features

- One or two drawing drafts depending upon customer's requirements.
- Set of flat wire separator consisting of three 120° staggered rolls .
- Flat wire can be coiled on the bobbin (by means of the coiling bars) or fed to straightening and cutting machine or spooler.

## Technical Data

Wire range:	round wire up to 10 mm - 0,39 in - diameter.
Speed:	Steplessly adjustable up to 30 m/min (98 fpm).
Bobbin diameter:	600 mm.
Maximum pulling force:	12.500 N.

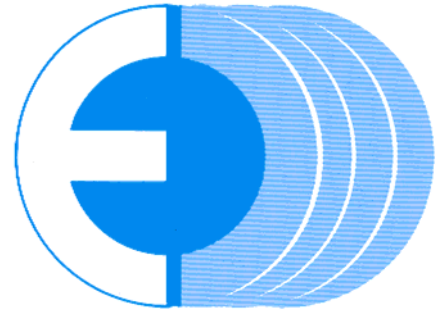
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## TILTING ROTARY BASKET, TYPE CRB



**Special Bullblock Capstan MPH**



**Tilting Rotary Basket CRB-1.300**

### Technical Data

Tilting rotary basket CRB has been especially designed to coil material in synchronization with horizontal bullblock wire drawing machines (MPH series), which have an specific capstan to get large fermachine coils.

#### Main Features

- Heavy and solidly built.
- Easy and safety handling.
- Minimum time spent in changing the coil.
- Petal pattern lay coiling system.

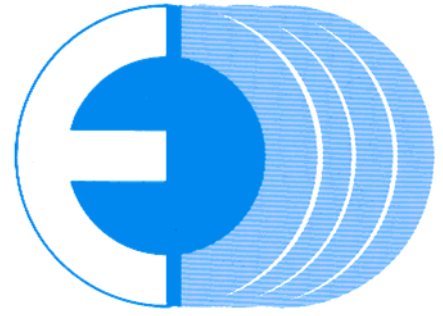
Materials: Stainless and alloyed steels, steel, brass.

Wire range: 4 ÷ 22 mm diameter.

Outside coil diameter: 1.300 mm.

Inside coil diameter: 800 mm.

Maximum coil height: 1.200 mm.



## Construction

Maximum coil weight:

1.200 kg.

Motor:

A.C. gearmotor with frequency inverter in extractor stands inside the basket though a self-synchronisation with the centred axle.

Basket tilting device:

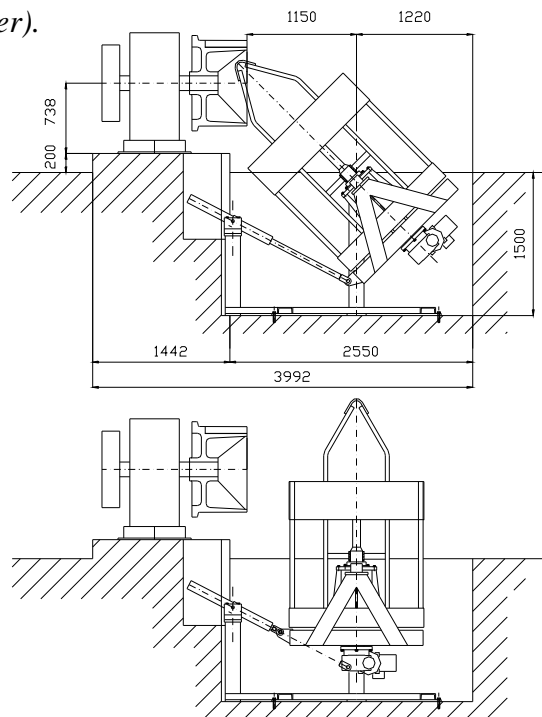
hydraulic.

Extractor:

Fitted inside the tilting basket.

The machine consists of an electro-welded fixed bed-frame. On this bed tilts the basket support which holds the rotary basket itself and the gearmotor. The tilting hydraulic cylinder is fixed to the above-mentioned support. The CRB can join any horizontal bullblock wire drawing machine which houses a capstan with pull-in dog movement while threading, clamp push roller, forward and backward motion and brake system to avoid undesirable capstan step-backwards.

*(Other measures on order).*



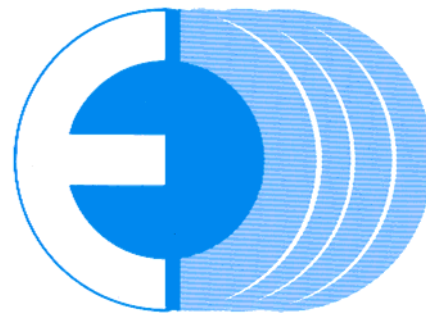
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## DOUBLE-TURN PLATFORM FOR BASKETS, TYPE DDM



**Double-Turn Platform DDM-800**

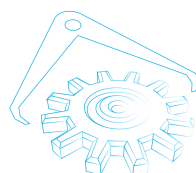
### Technical Data

Double-turn platforms for baskets DDM are specially designed to coil the material in synchronization with horizontal bullblock wire drawing machines (MPH series), equipped with specific bobbin and fall device, to get large fermachine coils.

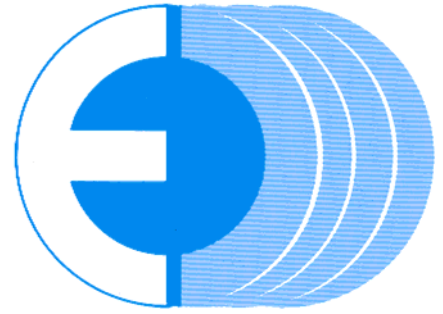
### Main Features

- Heavy and solidly built.
- Easy and safety handling.
- Time-out saving (whilst the material is coiled in one basket, the other is unloaded).
- Petal pattern lay coiling system.

	<i>DDM-800</i>	<i>DDM-900</i>
Materials:	Stainless and alloyed steels, low and high carbon steels, brass.	
Wire range diameter:	4 ÷ 22 mm.	4 ÷ 30 mm.
Outside coil diameter:	1.000 mm.	1.150 mm.
Inside coil diameter:	700 mm.	850 mm.
Maximum coil height:	1.900 mm.	1.300 mm.
Maximum coil weight:	1.200 kg.	1.500 kg.



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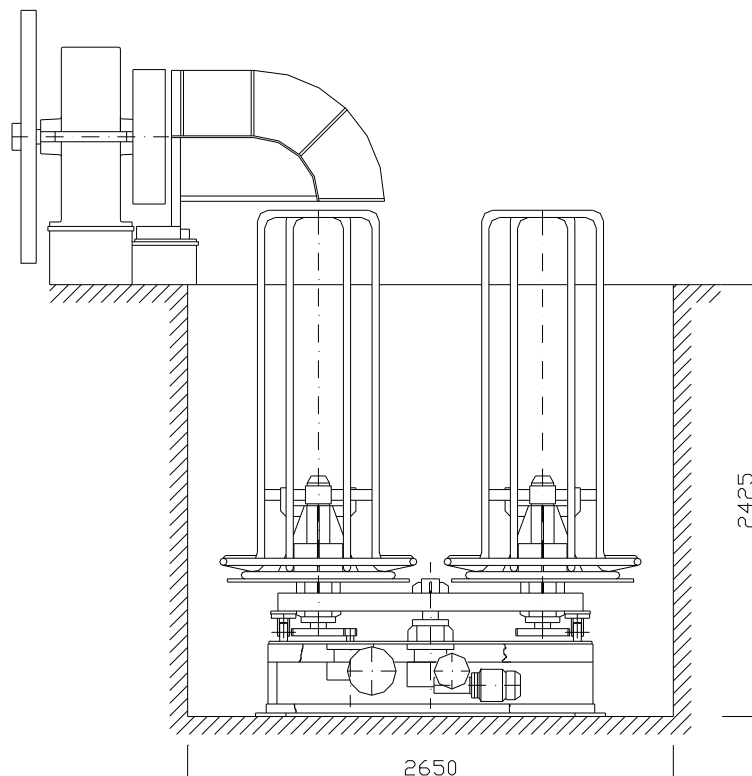
## Construction

	DDM-800	DDM-900
Main motor:	A.C. gearmotor with frequency inverter in synchronisation with the wire drawing machine.	
Basket's hange:	A.C. gearmotor under the platform.	
Extractor:	Fitted inside the turning basket.	

The machine consists of a electro-welded fixed bed-frame. The rotating platform, which houses the baskets, is assembled over said bed-frame. The basket itself has a coil extractor with self-centred axle.

DDM can join any horizontal bullblock wire drawing machine which houses a bobbin with pull-in dog movement while threading, fall device, clamp push roller, forward and backward motion and brake system to avoid undesirable bobbin step-backwards.

*(Other measures on order).*



*We reserve the right to modify the specifications as a result of technical improvements.*

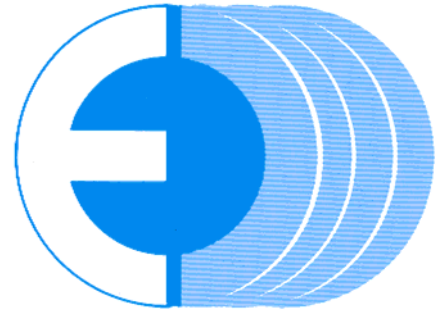


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# SUSPENDED CAPSTAN WIRE DRAWING MACHINE, TYPE TRI



Suspended capstan wire drawing machine TRI 800/600 has been specially designed to draw intermediate tubes and wires, which require one or two drawing drafts, with large coils output.

A significant feature of TRI machine is the drawing system (free end type). Contrary to what happens in conventional bullblock wire drawing machines (both horizontal and vertical), the final product is internal tension free.

## Main Features

- Rigid and robust construction.
- High efficiency due to double spider coiling system (whilst the material is coiled in one basket, in the other the coil is unloaded).
- High quality coils (no crossings). Thus, high pay-off speed is available.
- Die lubrication by powder or liquid (on order).
- Easy threading dieholder thanks to its vertical movement pneumatically operated.
- Pneumatic safety device to prevent false operations.

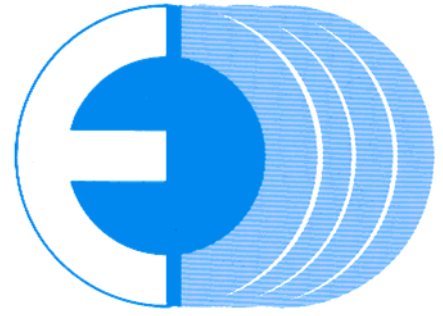


**Wire Drawing Machine TRI 800/600**

## Technical Data

**Material:** Steel, copper, brass, aluminium and aluminium alloys wires; copper and aluminium tubes.

**Inlet diameter:** Steel 0,1%C, copper, brass and aluminium, 16 mm – 0.630”- (one draft) and 12 mm –0.472”- (two drafts). Steel 0,4%C and aluminium alloys, 12 mm –0.472”- (one draft) and 9 mm –0.354”- (two drafts).



### Construction

Working speed:	up to 4 m/s (13 fps).	The machine consists of a steel frame, welded and estabilized supported by rigid steel columns, welded and estabilized. The motor, gearbox and reducer are placed on the upper base plate. The reducer is a worm gear of high efficiency and life long-lasting lubrication system. Underneath the lateral staircase (installed for maintenance purposes) there is the electrical cabinet.
Bobbins diameter:	600 –1' 11.622"- and 800 mm –2' 7.496"-.	
Spider:	from 600 up to 1.200 kg depending on wire diamter and material.	
Pulling force:	up to 50.000 N.	The base plate also houses the suspended drawing bobbins as well as the dieholders, which can be adjusted both vertical and horizontal planes. In case of liquid lubrication, the lubricant tank is near one of the supporting columns. A centralized lubricantion system can be supplied on order.
Drive:	from 18 up to 75 kW, equipped with D.C. or A.C. motors and speed or frequency inverters. Gearbox (3 or 4 speeds) on order.	
Wire grip:	clamp roller pneumati- cally operated.	
Spider drive:	From the lower bobbin by means of pneumatic device.	

*We reserve the right to modify the specifications as a result of technical improvements.*

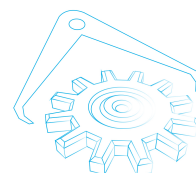
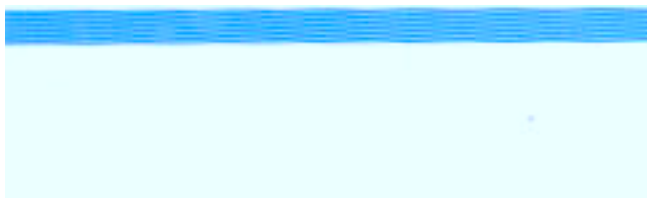
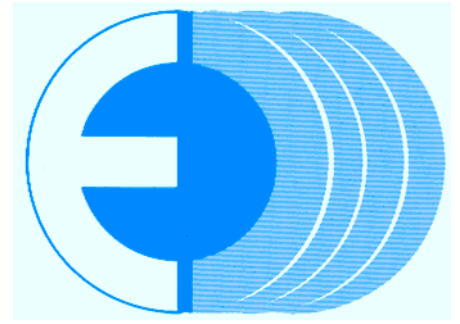


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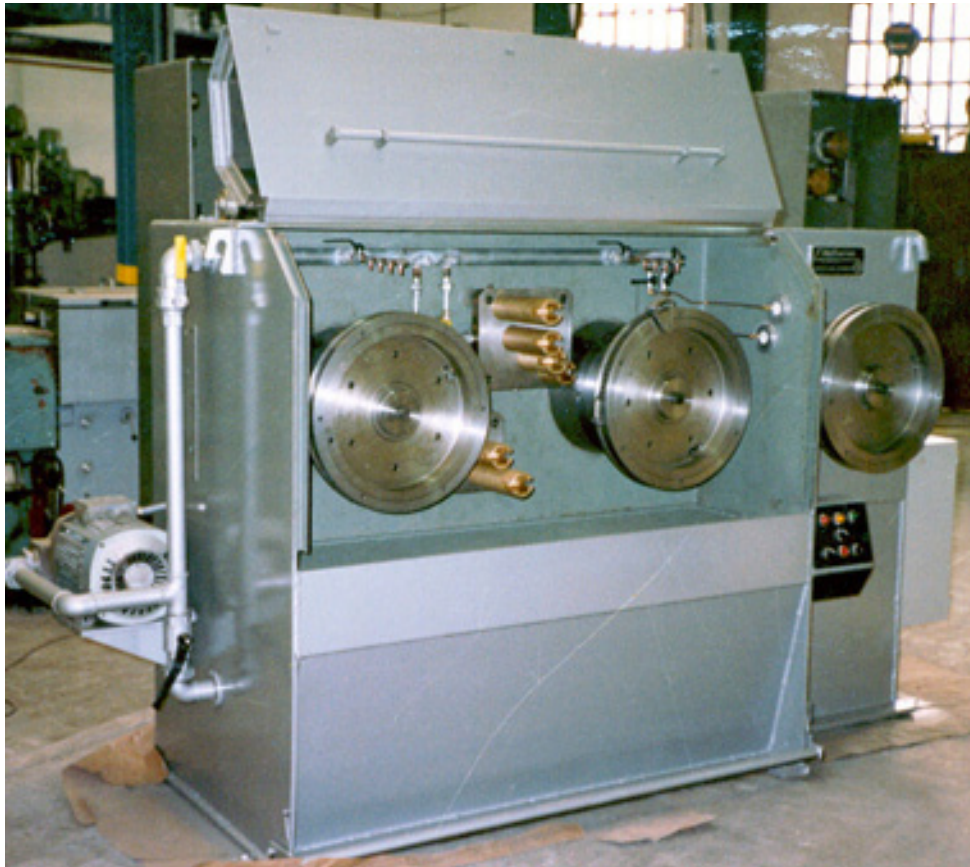
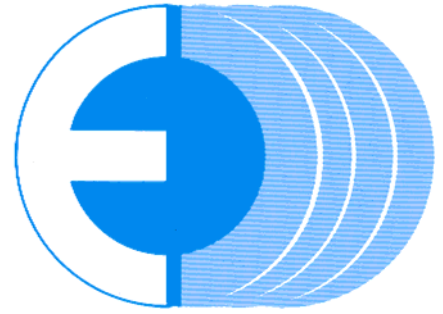
# MULTIPLE WIRE DRAWING MACHINES

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# **ROD BREAKDOWN WIRE DRAWING MACHINE, TYPE M-5**



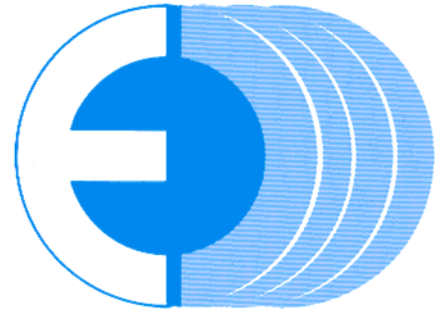
**Rod Breakdown Wire Drawing Machine M-5**

## **Main Features**

Rod breakdown wire drawing machine M-5 is a typical cone-type machine to draw copper wires with a moderate production capacity, suitable for the manufacturing of common cables with low investment requirements. It can be fitted to a continuous resistance annealer and spoiler and the final product can be fed to intermediate drawing machines, bunching machines or dispatched to the final customers.

- Solid construction with quiet and low noise run.
- Easy handling by non-specialist operator.
- Non forwarding between cones resulting in top quality wire.
- Independently adjustable die boxes (vertical and horizontal planes).
- Tilting lubricant system of cones and dies for easy threading.





## Technical Data

Maximum inlet wire diameter:	8,25 mm (AWG 0), 250 N/mm <sup>2</sup> .
Minimum outlet wire diameter:	1,02 mm (AWG 18).
Speed range:	adjustable up to 2 and 8 m/s with 2-speed gearbox.
Drive:	A.C. motor 37 kW with frequency inverter.
Couplings:	continuous resistance annealer.
Number of drafts:	5.
Drawing cones:	special steel interchangeable rings.
Die-case measures:	43 x 32 mm.

## Construction

M-5 rod breakdown wire drawing machine is constructed from welded and stabilized steel sheets.

The bottom frame houses the lubricant tank. On the top, the machine has three cone-shafts. The transmission is assured by large size cogwheels, oil-lubricated inside an independent department. The coupling for the annealer is at the transmission box entrance. The dieholders are placed into the cone tank, which is covered with a counterweighted steel cover of easy handling.

## Production Capacity

With an average efficiency of 65%, the capacity of M-5 is:

Wire Gage AWG	Diameter(mm)	Production (kg/h)
De 0 a 12	De 8,25 a 2,05	260
De 12 a 14	De 2,05 a 1,63	430
De 12 a 16	De 2,05 a 1,29	270
De 12 a 18	De 2,05 a 1,02	170

The same figures referred to cable production:

Cable	AWG Section (mm <sup>2</sup> )	Production (m/h)
TW	18 – 0,75	23.080
V. UNE 21022	16 – 1,50	23.090
TWD	18 – 0,75	11.535
VX. UNE 21022	16 – 1,50	11.545

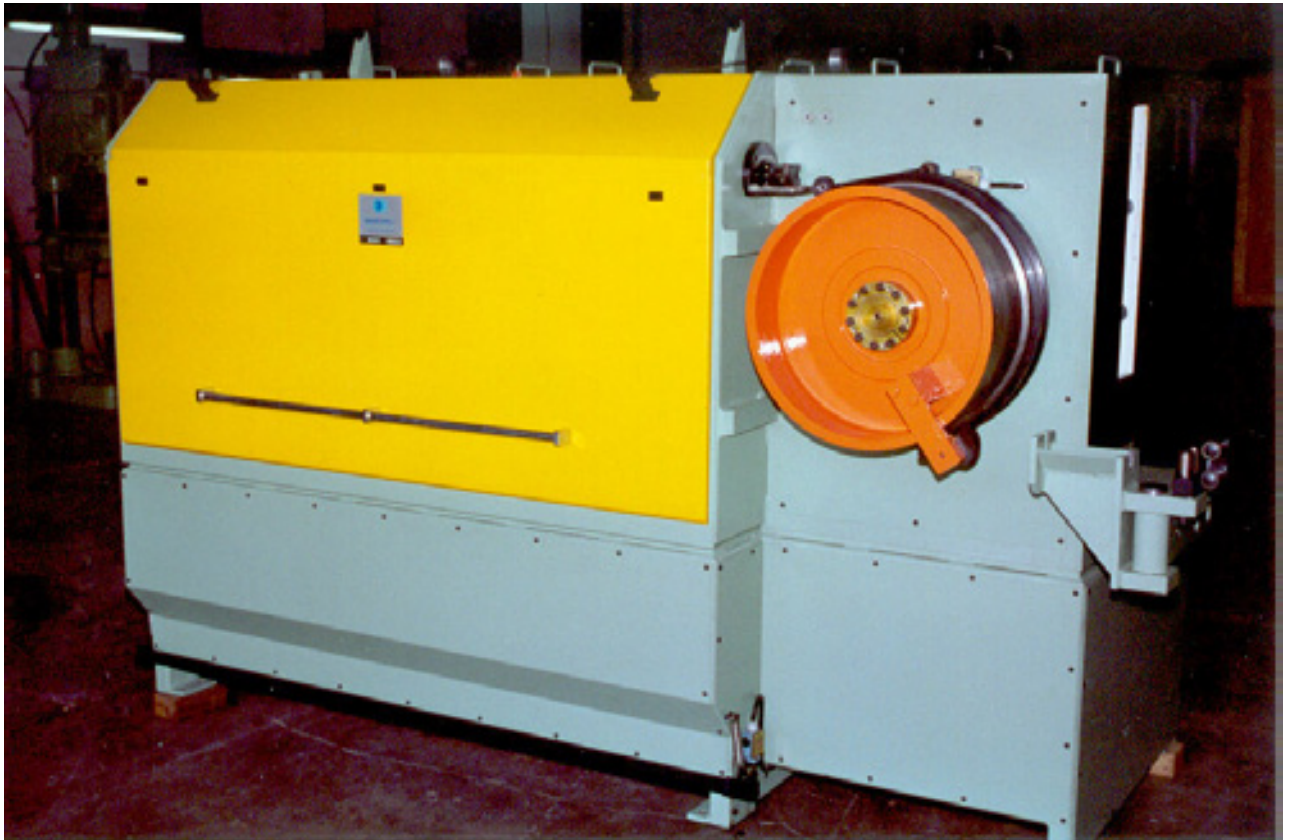
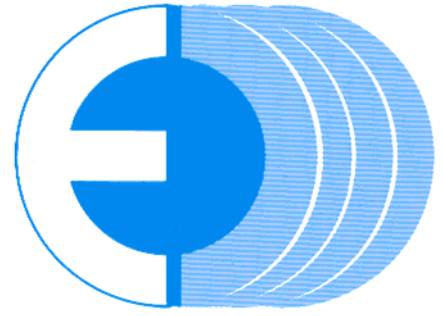
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## ROD BREAKDOWN WIRE DRAWING MACHINE, TYPE M-9E

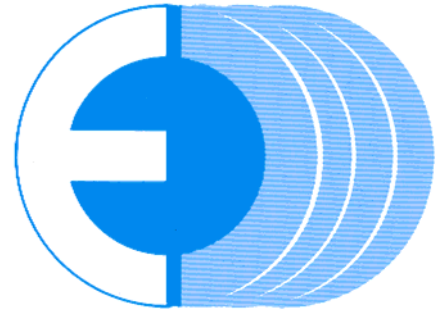


**Rod Breakdown Wire Drawing Machine M-9E with Stringing Unit**

### Main Features

Rod breakdown wire drawing machine M-9E is a cone-type machine to draw copper. The relative low investment linked to high features assure an economical production of copper wires. Wire coils in baskets are obtained when it is fitted together a continuous resistance annealer and a static coiler. The baskets feeds other wire drawing machines or are distributed to the final clients.

- Solid construction with quiet and low noise run.
- Easy handling by non-specialist operator.
- Non forwarding between cones resulting in top quality wire.
- Independently adjustable die boxes (vertical and horizontal planes).
- Tilting lubricant system of cones and dies for easy threading
- Last capstan is also used as stringing unit.



## Technical Data

Maximum inlet wire diameter:	8,0 mm (250 N/mm <sup>2</sup> ).
Minimum outlet wire diameter:	1,50 mm.
Speed range:	adjustable up to 8 m/s.
Power:	A.C. motor 57 kW with frequency inverter.
Couplings:	Continuous resistance annealer and static coiler.
Number of drafts:	9.
Drawing cones:	special steel interchangeable rings.
Die-case measures:	43 x 32 mm.



## Construction

M-9E rod breakdown wire drawing machine is constructed from welded and stabilized steel sheets.

The bottom frame houses the lubricant tank. On the top, the machine has three cone-shafts. The transmission is assured by large size cogwheels, oil-lubricated inside an independent department. The coupling for the annealer and the static coiler is at the transmission box entrance. The dieholders are placed into the cone tank, which is covered with a counterweighted steel cover of easy handling.

M-9E wire drawing machine can be equipped on order with heat exchanger and cleaning and filtering units with continuous paper band for lubricant solution.

### **Rod Breakdown Wire Drawing M-9E, Continuous Resistance Annealer B-300 and Static Coiler RCH-500BS**

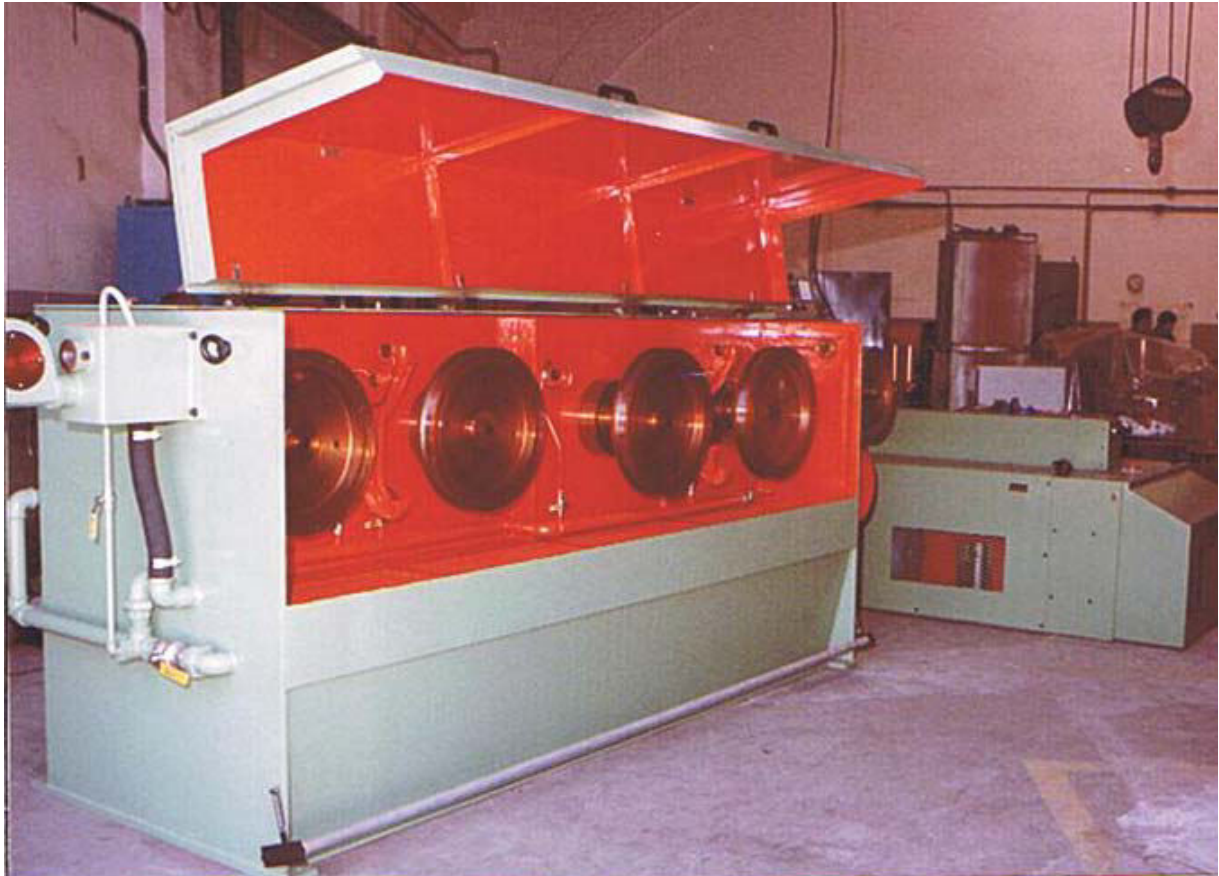
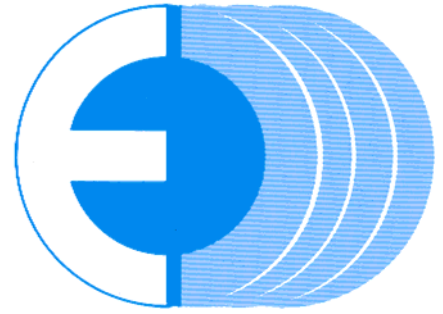
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## ROD BREAKDOWN WIRE DRAWING MACHINE, TYPE M-13L



**Rod Breakdown Wire Drawing Machine M-13L and Spooler ENC-800**

Rod breakdown wire drawing machine M-13L is a cone-type machine specially developed to process moderate productions of copper, aluminium and alloys rod wires. It's an easy handling machine, even though by non-specialist operator. A take-apart lubricant tank of large capacity allows an autonomous running although it's ready to connect to an external centralized installation. The last capstan, equipped with a guiding ring, and the drawing cones are driven by a common D.C. motor.

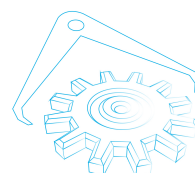
### Technical Data

Maximum inlet diameter:

8.00 mm for copper 250 N/mm<sup>2</sup>.  
12.50 mm for aluminium 80 N/mm<sup>2</sup>.

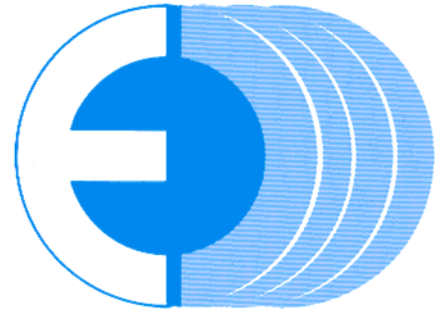
Speed and range for copper:

1.00 ÷ 1.80 mm at 15 m/s.  
1.81 ÷ 2.30 mm at 11 m/s.  
2.31 ÷ 2.80 mm at 9 m/s.  
2.81 ÷ 3.50 mm at 6 m/s.



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## Datos Técnicos

Speed and range  
for aluminium:

1.00 ÷ 2.40 mm at 15 m/s.  
2.41 ÷ 3.00 mm at 12 m/s.  
3.01 ÷ 3.80 mm at 8 m/s.  
3.81 ÷ 5.00 mm at 5 m/s.

Drive:

By 90 kW D.C. motor,  
with shaft to couple a  
continuous resistance  
annealer via flat belt.

Maximum number  
of drafts:

13.

Cones diameters:

200/310/480 mm.

Last capstan  
diameter:

360 mm.

Drawing cones:

Standard design with  
interchangeable rings of  
special steel or with hard  
chrome (ceramic on  
order).

Reduction per  
draft:

36.0 a 18.0% decreasing  
for copper; 24.8%  
constant for aluminium;  
20.6% constant for  
aluminium alloys.

Dies dimensions:

Ø 43 x 32 mm.

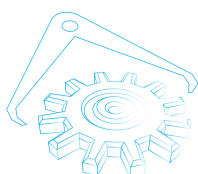
## Construction

M-13L rod breakdown wire drawing machine is constructed from welded and stabilized steel sheets.

The bottom frame houses the lubricant tank. On the top, the machine has four cone-shafts. The transmission is assured by large size cogwheels, oil-lubricated inside an independent department. The coupling for the annealer is at the transmission box entrance. The dieholders are placed into the cone tank, which is covered with a counterweighted steel cover of easy handling.

M-13L wire drawing machine can be equipped on order with heat exchanger and cleaning and filtering units with continuous paper band for lubricant solution.

*ficaciones de acuerdo con las mejoras técnicas.*

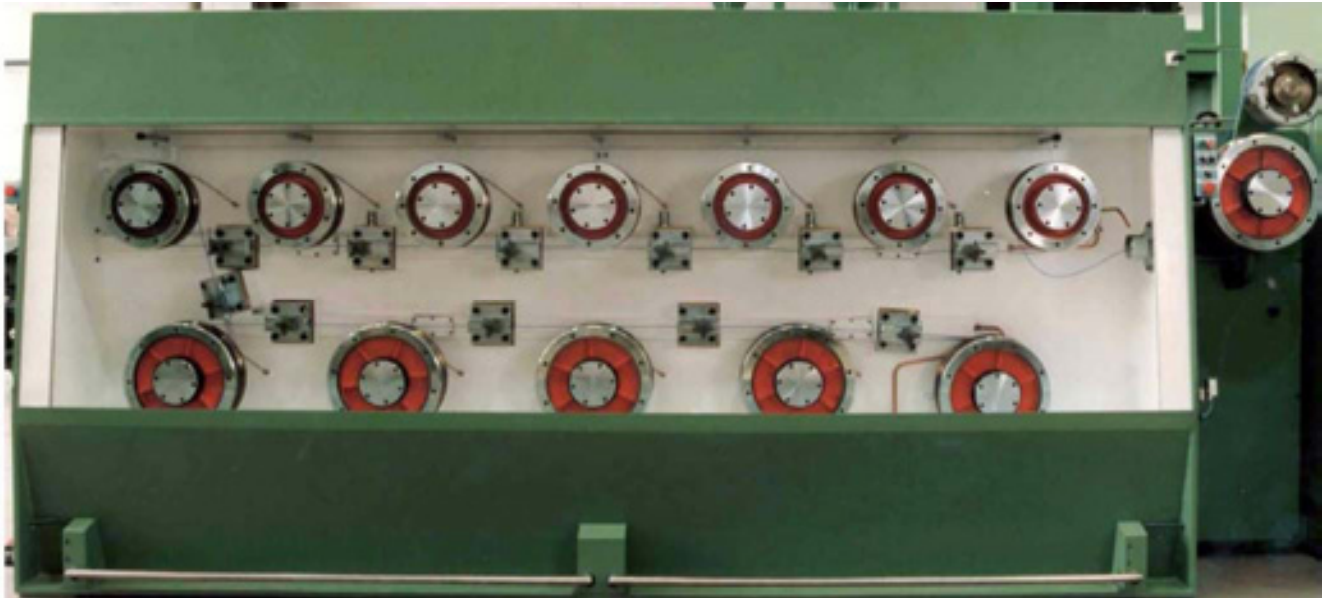
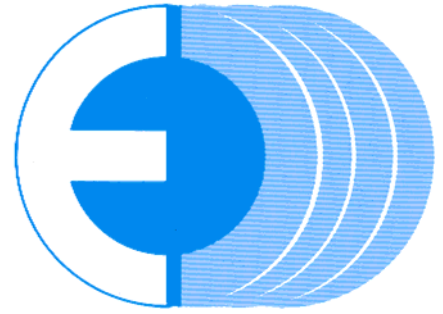


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# ROD BREAKDOWN WIRE DRAWING MACHINE, TYPE T-13



**Rod Breakdown Wire Drawing Machine T-13**

## Technical Data

Rod breakdown wire drawing machine T-13 is a Maximum inlet tandem machine specially designed to process diameter:

8.00 mm for copper 250 N/mm<sup>2</sup>.

## Main Features

- Solid construction, with take-apart tank of large capacity for autonomous running and ready to connect to an external centralized installation.
- Last capstan equipped with guiding ring.
- Drawing capstans in two rows for easy threading.
- Transmission by low maintenance and easy change toothed belts.
- Quick die change thanks to independent last capstan motorization.

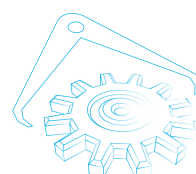
12.50 mm for aluminium 80 N/mm<sup>2</sup>.

Speed and range  
For copper:

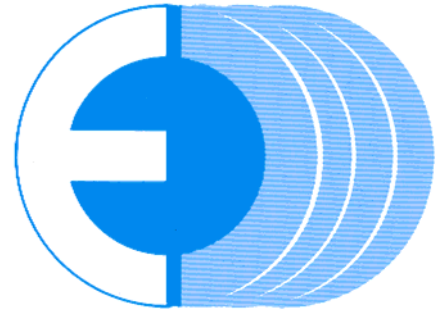
1.00 ÷ 1.80 mm at 25 m/s.  
1.81 ÷ 2.30 mm at 18 m/s.  
2.31 ÷ 2.80 mm at 12 m/s.  
2.81 ÷ 3.50 mm at 10 m/s.

Speed and range  
for aluminium:

1.00 ÷ 2.40 mm at 25 m/s.  
2.41 ÷ 3.00 mm at 18 m/s.  
3.01 ÷ 3.80 mm at 12 m/s.  
3.81 ÷ 5.00 mm at 10 m/s.



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## Technical Data

## Construction

Drive:	By two D.C. motors with total power 185 kW. The main motor drives the drawing cones and the second motor the last capstan, with shaft to couple an annealer via flat belt.	The machine consists of a solid monoblock frame constructed from welded and stabilized steel sheets. Each capstan is mounted on horizontal shaft. The twelve inner capstans are spray lubricated and the dry last capstan is air cooled. The drawing dies are lubricated and cooled under pressure.
Maximum number of drafts:	13.	The bottom frame houses the lubricant tank and the top frame houses the transmission body by toothed belts.
Capstan diameters:	400 mm (lower capstans) and 300 mm (upper ones).	T-13 wire drawing machine can be equipped on order with heat exchanger and cleaning and filtering units with continuous paper band for lubricant solution.
Last capstan diameter:	400 mm.	
Drawing capstans:	Standard design with interchangeable rings of special steel or with hard chrome (ceramic on order).	
Reduction per draft:	36.0 to 18.0% decreasing for copper. 24.8% constant for aluminium 20.6% constant for aluminium alloys.	
Dies dimensions:	Ø 43 x 32 mm.	

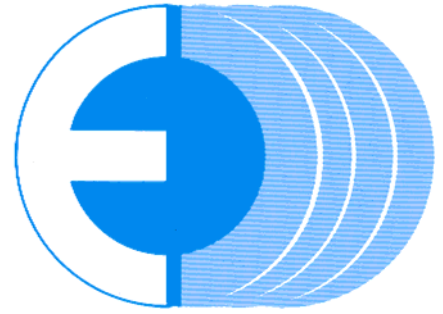
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# ROD BREAKDOWN WIRE DRAWING MACHINE, TYPE M-13



**Rod Breakdown Wire Drawing Machine M-13 and Static Coiler RCIC-650**

Rod breakdown wire drawing machine M-13 is a **Technical Data**  
cone-type machine specially developed to process  
copper, aluminium and alloys rod wires.

## Main Features

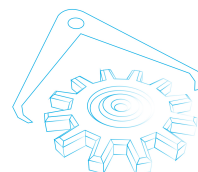
- Solid construction.
- Two take-apart lubricant tanks of large capacity for autonomous running and ready to connect to an external centralized installation.
- Irreversible system on last cone shaft.
- Rotary die box on last capstan and quick die change system.
- Upper guards pneumatically operated.

Maximum inlet  
diameter:

8.00 mm for copper 250  
N/mm<sup>2</sup>.  
12.50 mm for aluminium  
80 N/ mm<sup>2</sup>.

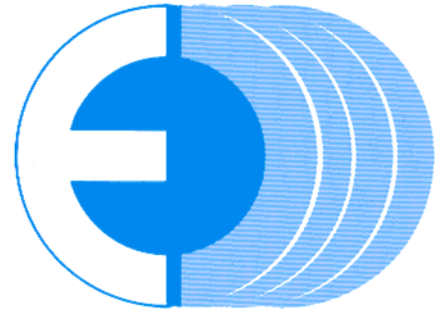
Speed and range  
for copper:

1.00 ÷ 1.80 mm at 30 m/s.  
1.81 ÷ 2.30 mm at 22 m/s.  
2.31 ÷ 2.80 mm at 18 m/s.  
2.81 ÷ 3.50 mm at 12 m/s.



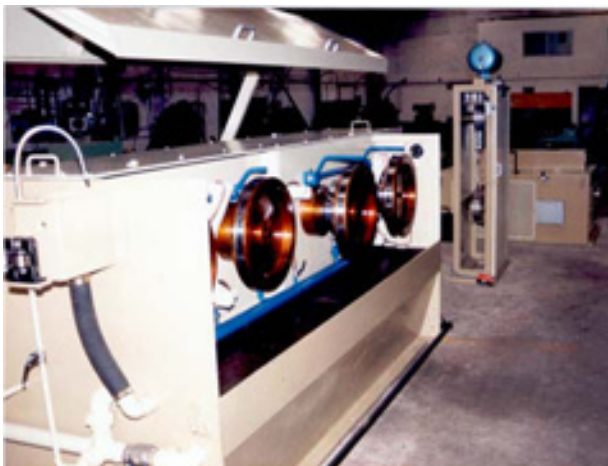
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## Technical Data

Speed and range for aluminium:	1.00 ÷ 2.40 mm at 30 m/s. 2.41 ÷ 3.00 mm at 25 m/s. 3.01 ÷ 3.80 mm at 15 m/s. 3.81 ÷ 5.00 mm at 10 m/s.	Last capstan diameter:	480 mm.
Drive:	By two D.C. motors with total power 185 kW. The main motor drives the drawing cones and the second motor the last capstan, with shaft to couple an annealer via flat belt.	Drawing cones:	Standard design with interchangeable rings of special steel or with hard chrome (ceramic on order).
Maximum number of drafts:	13.	Reduction per draft:	36.0 to 18.0% decreasing for copper. 24.8% constant for aluminium 20.6% constant for aluminium alloys.
Cones diameters:	310/480/715 mm.	Die dimensions:	First die Ø 60 x 35 mm. Remaining dies Ø 43 x 32 mm.



## Construction

The machine consists of four assembled bodies constructed from welded and stabilized steel sheets.

The first unit is the ingoing diebox, mounted on a spindle which can be placed directly over the drawing capstan 1, 3 or 5. The following two units are identical and each one holds two cone-capstan shafts. The transmission system, by chains, is on the back side and the lubricant tanks are at the bottom. The last unit is the last capstan body, independently driven which allows the quick die change.

## Breakdown Wire Drawing Machine M-13, Accumulator ACUM-360 and Spooler ENC-800

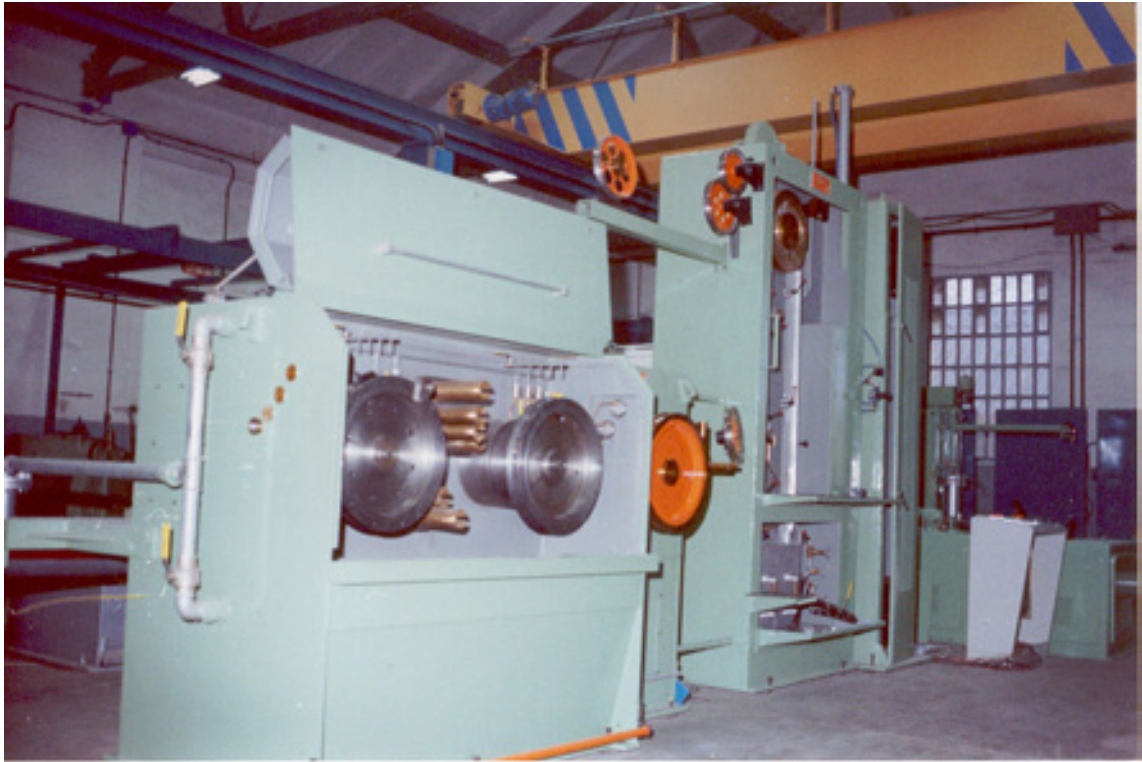
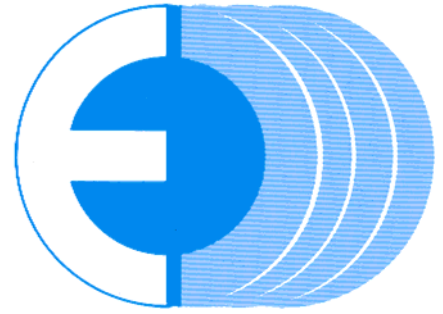
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# INTERMEDIATE WIRE DRAWING MACHINE, TYPE M-17



## Intermediate Wire Drawing Machine M-17 and Continuous Resistance Annealer B-36

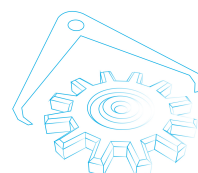
Wire drawing machine M-17 is a cone-type machine to cover the intermediate copper wire range.

### Main Features

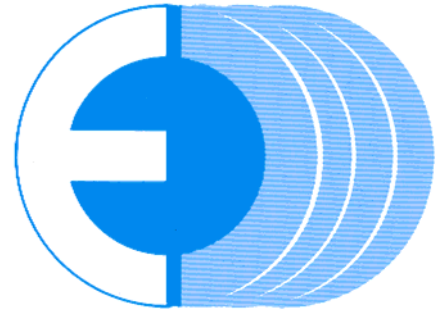
- Solid construction.
- Quiet and low noise run.
- Easy handling and high efficiency.
- Independtly adjustable die boxes (vertical and horizontal planes).
- Tilting lubricant system of cones and dies for easy threading.

### Technical Data

Maximum inlet diameter:	3.50 mm for copper 500 N/mm <sup>2</sup> .
Outlet diameter:	Minimum 0.25 mm. Maximum 1.60 mm.
Speed:	0.25 ÷ 0.70 mm at 40 m/s. 0.71 ÷ 0.80 mm at 35 m/s. 0.81 ÷ 0.90 mm at 30 m/s. 0.91 ÷ 1.10 mm at 28 m/s. 1.11 ÷ 1.25 mm at 25 m/s. 1.26 ÷ 1.35 mm at 20 m/s. 1.36 ÷ 1.60 mm at 14 m/s.



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## Technical Data

Drive:	D.C. motor 70 kW, with shaft to couple a continuous resistance annealer via flat belt.	Drawing cones:	Standard design with interchangeable rings of special steel or with hard chrome (ceramic on order).
Maximum number of drafts:	17.	Reduction per draft:	20.6% standard (other reductions on order).
Capstan diameter:	maximum 250 mm.	Die dimensions:	Ø 28 x 15 mm.
Last capstan:	250 mm.		

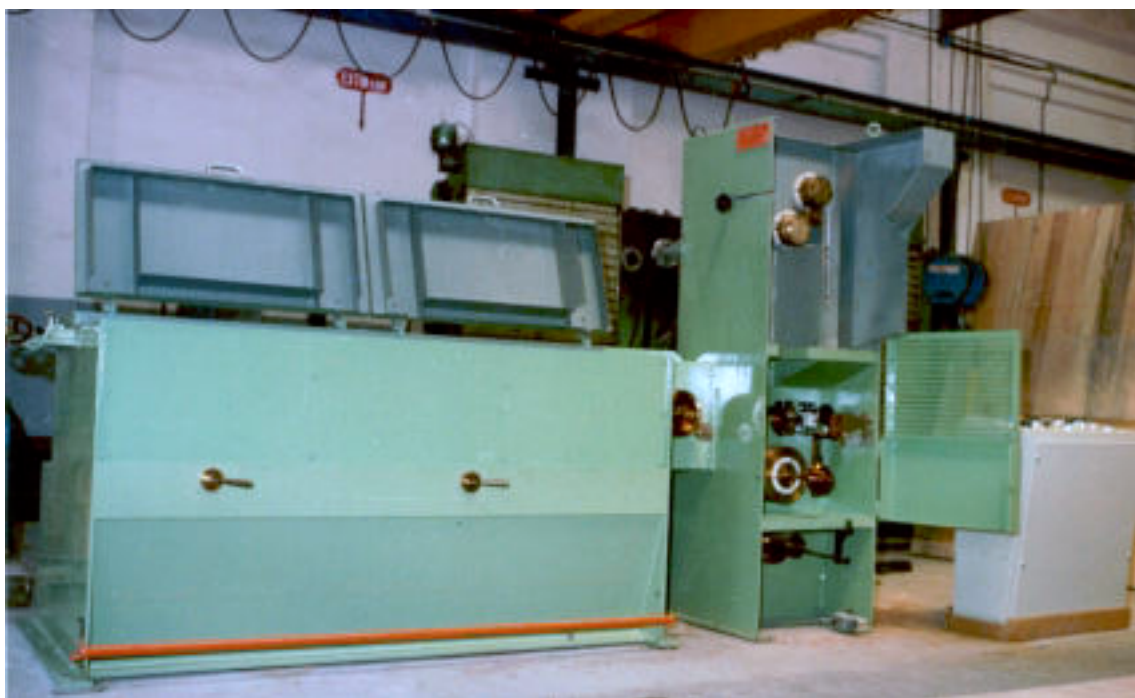
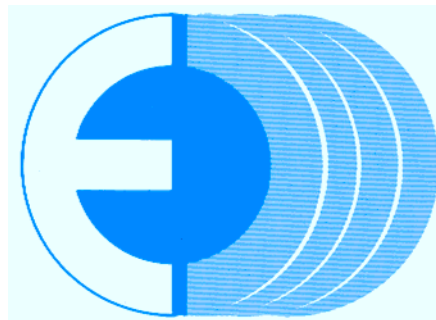
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## FINE WIRE DRAWING MACHINE, TYPE M-21



### Fine Wire Drawing Machine M-21 with Continuous Resistance Annealer (B-26) and Spooler (ENC-30) Module

M-21 wire drawing machine is a cone-type single wire machine to draw fine copper, aluminium and relevant alloys wires. The four cone-shafts have immersed lubrication system.

Speed: Ajustable up to 40 m/s.

Drive: A.C. motor 44 kW.

#### Technical Data

Maximum number  
of drafts:

21.

Inlet wire diameter: 2.00 mm for copper 250 N/mm<sup>2</sup> and 3.00 mm for aluminium 80 N/mm<sup>2</sup>.

Drawing cones:

Standard type, interchangeable rings of special steel or hard-chrome steel (ceramic cones on order).

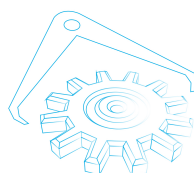
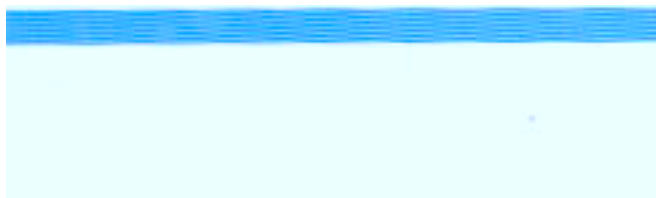
Outlet wire diameter: 0.15 mm to 0.50 mm for copper and 0.25 to 0.80 mm for aluminium.

Reduction per draft:

20.6% standard (other reductions on order).

Die-case measures: Ø 28 x 12 mm.

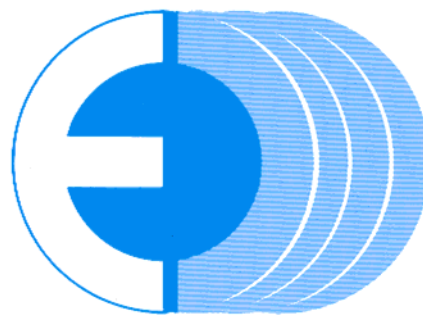
*We reserve the right to modify the specifications as a result of technical improvements.*



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# FINE WIRE DRAWING MACHINE, TYPE M21-25



## **Fine Wire Drawing Machine M21-25 with Continuous Resistance Annealer (B-26) and Spooler (ENC-30 and ENC-400)**

M21-25 wire drawing machine is a cone-type single wire machine to draw fine copper wires. The four cone-shafts have a direct lubricant system by means of tilting tubes.

Drive: A.C. motor 22 kW.

Maximum number of drafts: 21.

### **Technical Data**

Inlet wire diameter: 2.50 mm for copper 500 N/mm<sup>2</sup>.

Drawing cones: Standard type, interchangeable rings of special steel or hard-chrome steel (ceramic cones on order).

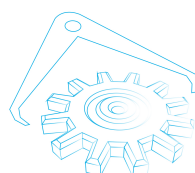
Outlet wire diameter: 0.16 mm to 0.64 mm.

Reduction per draft: 20,60% standard (other reductions on order).

Speed: 0,16–0,40 mm 30 m/s.  
0,41–0,50 mm 25 m/s.  
0,51–0,64 mm 20 m/s.

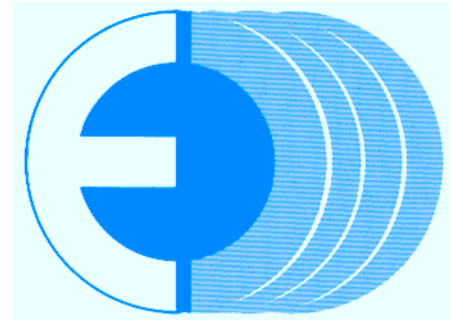
Die-case measures: Ø 28 x 15 mm.

*We reserve the right to modify the specifications as a result of technical improvements.*



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# FINE WIRE DRAWING MACHINE, TYPE 4 M -2 1



## Fine Wire Drawing Machine 4M-21 with Continuous Resistance Annealer (B-15) and Spooler (ENC-30) Module

4M-21 wire drawing machine is a cone-type single wire machine to draw fine copper, aluminium and relevant alloys wires. The four cone-shafts have a direct lubricant system by means of tilting tubes.

Speed: Adjustable up to 30 m/s.

Drive: A.C. motor 14 kW.

Maximum number of drafts: 21.

### Technical Data

Inlet wire diameter: 2.00 mm for copper 250 N/mm<sup>2</sup> and 3.00 mm for aluminium 80 N/mm<sup>2</sup>.

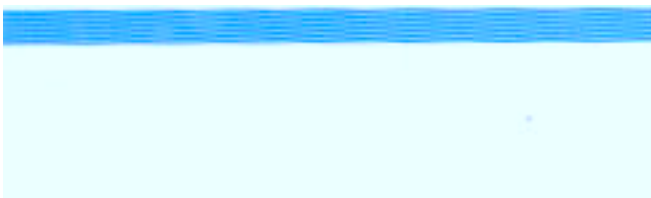
Drawing cones: Standard type, interchangeable rings of special steel or hard-chrome steel (ceramic cones on order).

Outlet wire diameter: 0.15 mm to 0.40 mm for copper and 0.25 to 0.60 mm for aluminium.

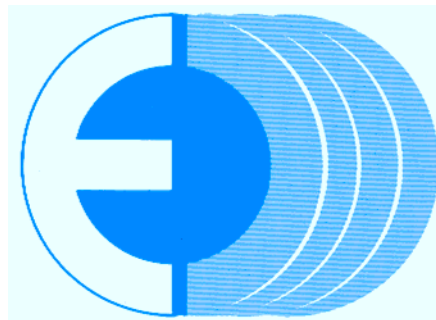
Draft reduction: 19.35% standard (other reductions on order).

Die-case measures: Ø 28 x 12 mm.

*We reserve the right to modify the specifications as a result of technical improvements.*



## FINE MULTIWIRE DRAWING MACHINE, TYPE TRE-21/4



### Fine Multiwire Drawing Machine TRE-21/4 and Continuous Resistance Annealer B-26/4

TRE-21/4 is a tandem four-wires drawing machine to draw fine copper wires with both high productivity and final product quality. Thanks to its independent last capstan motor (common to continuous resistance annealer), the machine features quick die change.

#### Technical Data

Inlet wire diameter: 2.05 mm for copper 250 N/mm<sup>2</sup>.

Outlet wire diameter: 0.16 mm to 0.51 mm.

Speed: Ajustable up to 30 m/s.

Drive:

Maximum number of drafts:

Drawing cones:

Reduction per draft:

Die-case measures:

By means of two A.C. motors with frequency inverters and 84 kW total power.

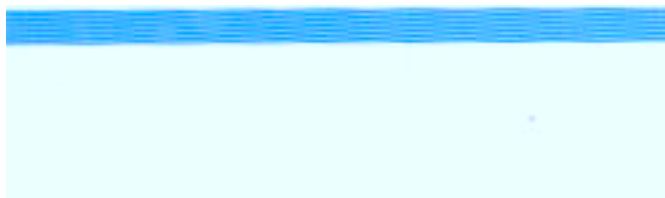
22.

Ceramic interchangeable rings.

20.68% standard (other reductions on order).

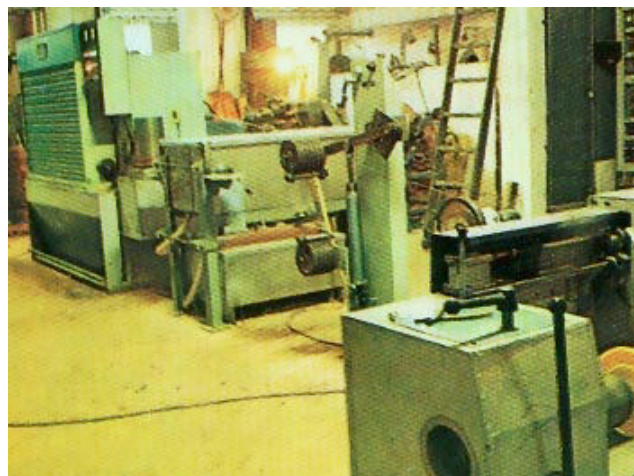
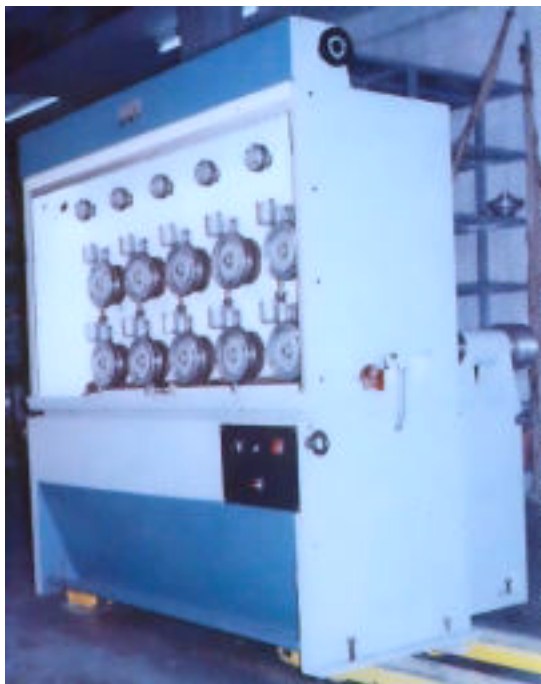
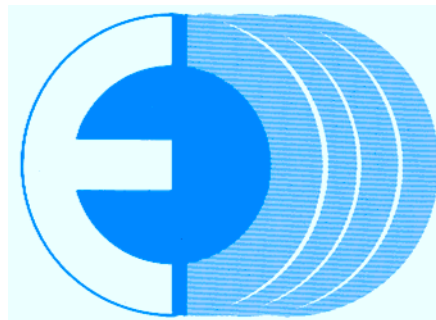
Ø 28 x 12 mm.

*We reserve the right to modify the specifications as a result of technical improvements.*





# TREFILADORA DE DESLIZAMIENTO PARA ALAMBRES FÉRRICOS TRE TANDEM SLIP WIRE DRAWING MACHINE FOR FERROUS WIRES, TRE

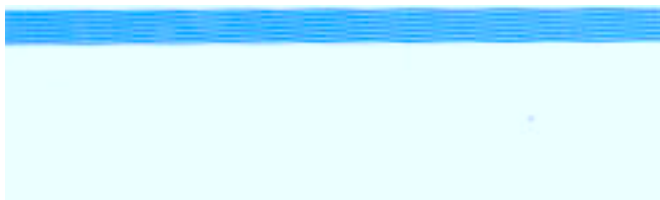


**Trefiladora Tandem de Deslizamiento TRE-11A**  
*Tandem Slip Drawing Machine TRE-11A*

**Línea de Trefilado, Cobreado y Encarretado**  
*Drawing, Copper-Coating and Spooling Plant*

Tipo	TRE-11A	TRE-13A	TRE-21A	Type
Trefilado en seco o en húmedo / Dry or wet drawing				
Diámetro máximo entrada con acero 0,1% C (mm)	1,60	2,20	1,20	Maximum inlet diameter with steel 0,1% C (mm)
Diámetro máximo entrada con acero 0,8% C (mm)	1,20	1,80	1,00	Maximum inlet diameter with steel 0,8% C (mm)
Diámetro salida en rollo (mm).	0,40÷0,80	0,50÷1,00	-----	Outlet diameter in coils (mm).
Diámetro salida en carrete (mm).	0,20÷0,40	0,30÷0,50	0,15÷0,25	Outlet diameter in spools (mm).
Velocidad máxima (m/s).	18,0	15,0	35,0	Maximum speed (m/s).
Potencia (kW).	37,0	55,0	30,0	Power (kW).
Alargamiento por paso (%).	18÷22	18÷22	18	Elongation per draft (%).
Número de pasos.	11	13	21	Number of drafts.
Diámetro discos de tiro (mm).	160	200	135	Pull capstans diameter (mm).
Diámetro bobina acabado (mm).	250	300	-----	Finish coil block diameter (mm)

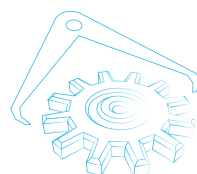
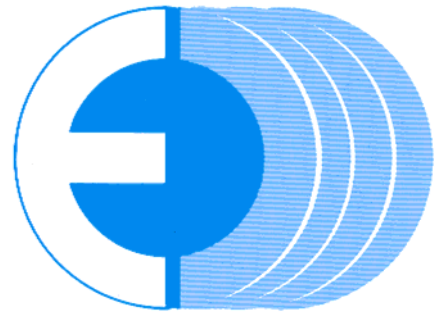
*Nos reservamos el derecho de modificar las especificaciones de acuerdo con las mejoras técnicas.*  
*We reserve the right to modify specification as a result of technical improvements.*





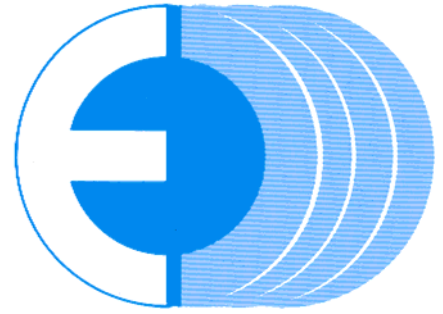
# **WELDING WIRES AND PRECIOUS METALS**

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# **VERTICAL BULLBLOCK WIRE DRAWING MACHINE FOR PRECIOUS METALS, TYPE MPV-E**



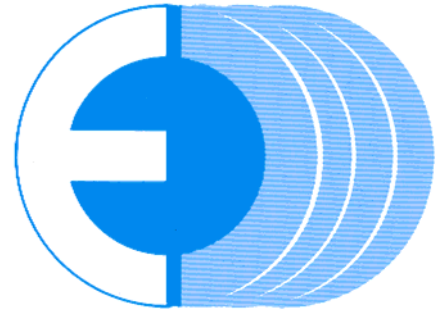
**Vertical Bullblock Wire Drawing Machine MPV-300E**

## **Main Features**

The vertical bullblock wire drawing machine MPV-E has been designed to draw precious metals, its alloys and plated wires as well as welding wires in alloys of lead and tin, solid and flux cored.

- Heavy and solidly built.
- Easy and safety handling.
- Low noise level.
- Dieholder pivoted both vertical and horizontal planes suitable for dies 43 x 25 mm or 60 x 35 mm.
- Oil lubricant system with independent tank and pump.





### Technical Data

MPV-E wire drawing machines are powered depending on customer's requirements. Technical data of the standard unit are as follows.

Number of drafts: 1 (free reduction according to material specifications).

Capstan diameter: 300, 400 or 500 mm.

Pulling force: Up to 10.000 N.

Maximum inlet wire diameter:

10.00 mm.

Outlet wire diameter:

8.85 to 0.50 mm.

Drive:

By means of A.C. motor with frequency inverter.

Voltage:

3x380 V ( $\pm 10\%$ ), 50 Hz ( $\pm 2\%$ )

Standard Colours:

RAL 6.021 (green) or RAL 5.005 (blue).

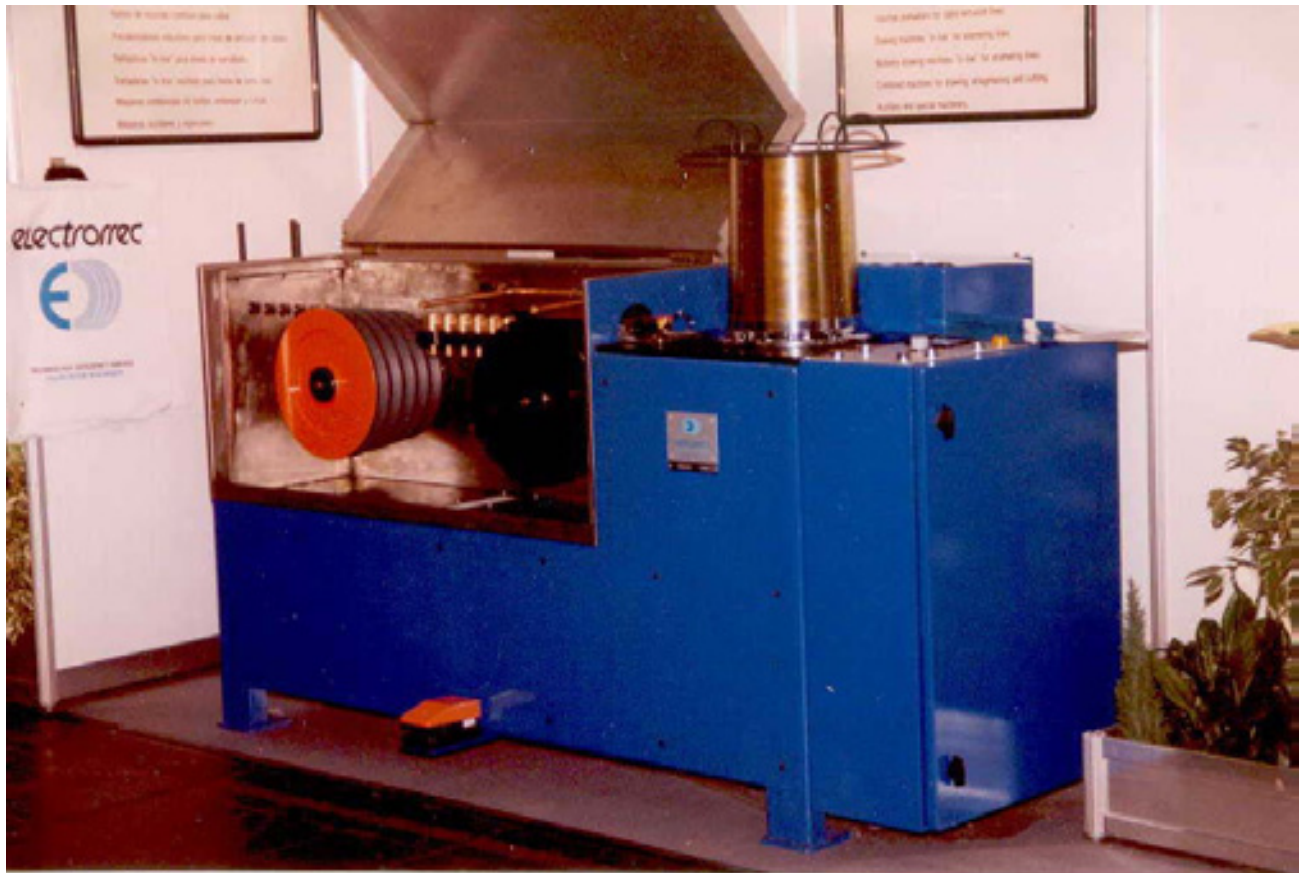
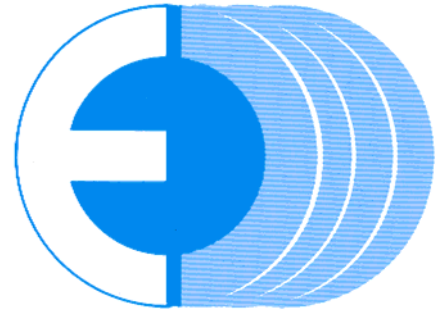
*We reserve the right to modify the specifications as a result of technical improvements.*



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# MULTIPLE WIRE DRAWING MACHINE FOR PRECIOUS METALS, TYPE TRE-E



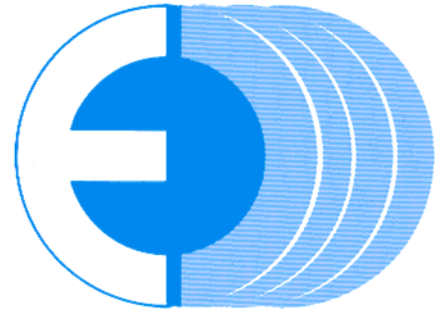
**Vertical Bullblock Wire Drawing Machine TRE-7E**

## Main Features

The multiple wire drawing machine TRE-E has been designed to draw precious metals, its alloys and plated wires as well as welding wires in alloys of lead and tin, solid and flux cored. Wires from extrusion presses, continuous casting or rolling mills are directly fed thus eliminating the use of previous bullblocks or additional drawing machines.

- Built-in pay-off device and outlet vertical bobbin.
- High quality surface wires due to capstans design and independent dies adjustment.
- Easy threading because of tilting cooling tubes for dies and cones.
- Stainless steel tank and guard.
- Minimum slippage between capstan and material.





## Technical Data

### TRE-13E

Capstans dimensions:	Minimum 250 mm and maximum 300 mm.	Number of drafts:	13
Finishing bobbin:	Diameter 250 mm (equipped with spooler on order).	Speed range:	Available from 0 to 60, 0 to 120 m/min, 0 to 240 m/min and 0 to 360 m/min.
Elongation per draft:	16 to 6%.	Drive:	Available with 4.50 kW, 7.50 kW, 11,00 kW and 15 kW.
Die dimensions:	28 x 16 mm or 43 x 25 mm	Maximum inlet wire diameter:	6.00, 5.00, 4.00, 3.00 or 2.25 mm depending on material specifications.
Cooling system:	By 0.25 kW pump.		

### TRE-7E

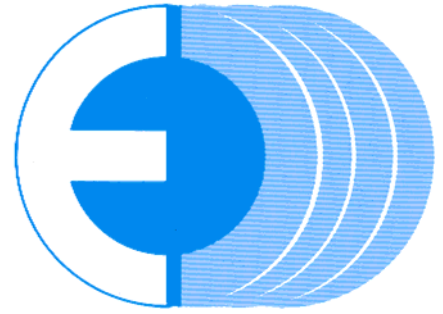
Number of drafts:	7	Minimum outlet wire diameter:	0.80 mm.
Speed range:	Available from 0 to 30 m/min, 0 to 90 m/min and 0 to 180 m/min.	Net weight:	1.500 kg.
Drive:	Available with 4.50 kW, 7.50 kW and 11,00 kW.		
Maximum inlet wire diameter:	6.00, 5.00, 4.00, 3.00 or 2.25 mm depending on material specifications.		
Minimum outlet wire diameter:	0.80 mm.		
Net weight:	1.150 kg.		



**Spooler ENC-10M**

*We reserve the right to modify the specifications as a result of technical improvements.*

# WIRE DRAWING MACHINE FOR SPECIAL METALS, TYPE M-20D



## Wire Drawing Machine for Special Metals M-20D with Barrel Coiling System

Wire drawing machine M-20D is a typical cone-type machine to draw alloyed welding wires (lead, zinc and tin), solid or flux cored, and precious metals and its alloys, as well as plated wires.

Drive: A.C. motor 22.00 kW

Max. and min.  
number of drafts: 20 and 8.

### Technical Data

Drawing cones: 4 cones with maximum diameter 360 mm.

Inlet wire diameter: 10.00 mm.

Reduction per draft: 10.00%.

Outlet wire diameter: from 1.60 mm to 6.00 mm.

Elongation per  
draft: 11.10%.

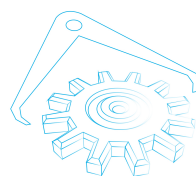
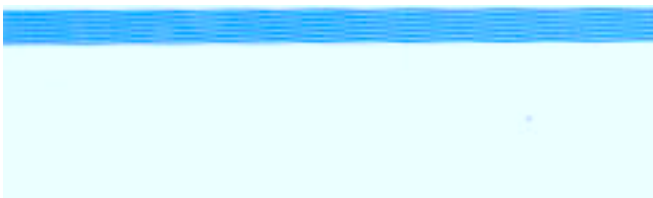
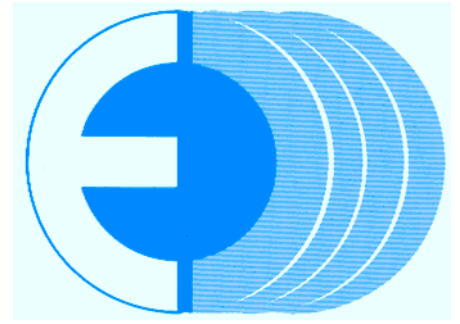
Speed range: adjustable up to 4 m/s.

Dies dimensions:  $\varnothing 43 \times 32$  mm.

*We reserve the right to modify the specifications as a result of technical improvements.*

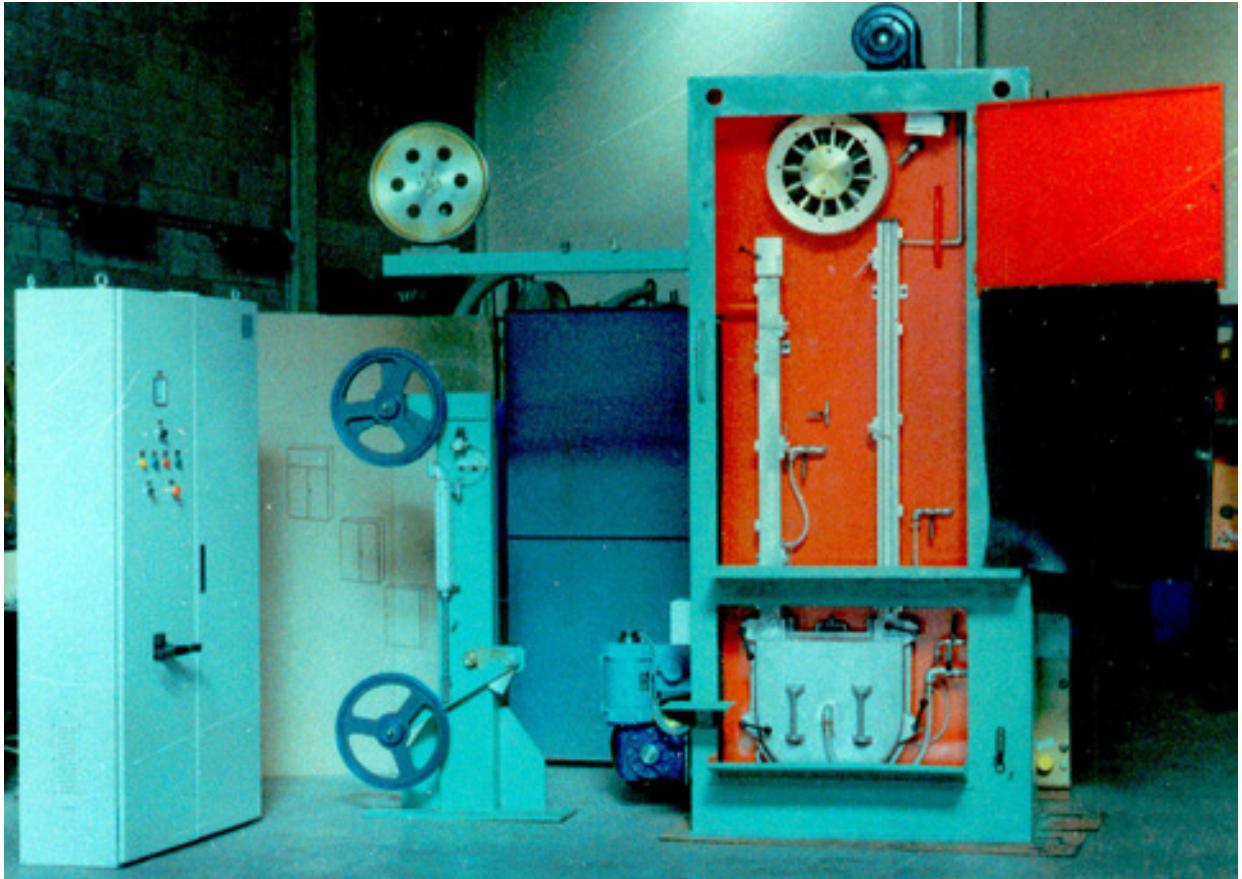
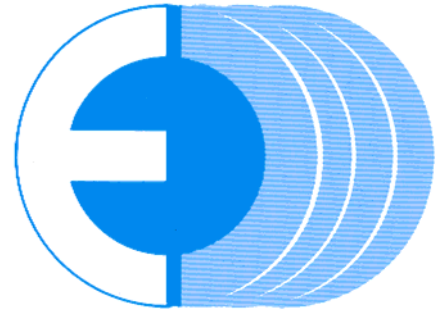
# THERMAL TREATMENT

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## CONTINUOUS RESISTANCE ANNEALER, TYPE B-300

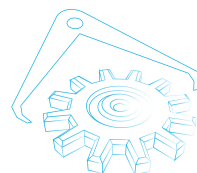


**Continuous Resistance Annealer B-300**

The continuous resistance annealer B-300 has been designed to anneal in line rod breakdown wire drawing machines.

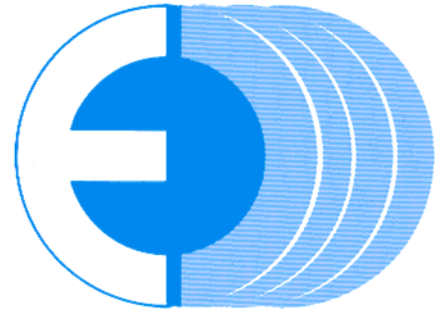
### Main Features

- Solid construction.
- Outstanding surface quality of the annealed wire.
- Trouble-free handling.
- Annealing contact pulleys include interchangeable contact bands.
- Current is sent directly to the contact pulleys by means of big brushes so that current can never go through the bearings.
- Steam covers, air dryer and water cooling are placed on the front side of the machine and very accessible.
- Annealing electric control done by a toggler selector and a potentiometer to fit the desired annealing grade.



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## Technical Data

The following data are related to the standard annealing transformer 200 kVA. Bigger or smaller load can be delivered under request.

Annealing transformer: 200 kVA.

Contact pulley's diameter: 435 mm.

Annealing voltage adjustment: by a thyristor bridge and electronic shot circuit; square annealing ramp as a speed function of a wire lineal tachogenerator.

Drive: by flat belt from the wire drawing machine. Under request can be attached an independent motor.

Cooling medium: dissolution of lubricant in water. Approx. 11 to 18 m<sup>3</sup>/h at 35°C temperature.

Heat intercooler: 130 to 260 kW depending on transformer.

Steam: approx. 20 kg/h at 0,4 bar.

Compressed air: approx. 27 m<sup>3</sup>/h at 6 bar.

## Construction

The continuous resistance annealer B-300 is built by a frame of welded and stabilized steel sheets. The central part of the frame houses the contact pulleys assemblies and the brushes' rings. On the frame bottom is fitted the immerse contact pulley and on the top the external one. Both pulleys, which shafts are placed in spacious bearings, are driven via a common flat belt, thus a perfectly quiet run of the annealer is guaranteed.

The brushes' rings as well as the contact pulleys are cooled by pressure air from an incorporated fan.

Ingoing and outgoing wire is led via a common contact pulley (short circuit pulley). In this way the wire outside the annealer is electrically neutral.

The contact pulleys are arranged in a triangle and thus three annealing areas are created: pre-heat area, main annealing area and re-heat area. The main annealing area and the re-heat area are housed. The main annealing area is protected with nitrogen against oxidation ante the re-heat area is provided with cooling fluid. Before reaching the third contact pulley the wire leaving the main annealing area submerges in the cooling fluid. According to the regulation of the cooling fluid of the third area the wire either cool off or heat up. Before reaching the short circuit pulley the wire passes a compressed-air wipe, where the remaining cooling fluid is dried up.

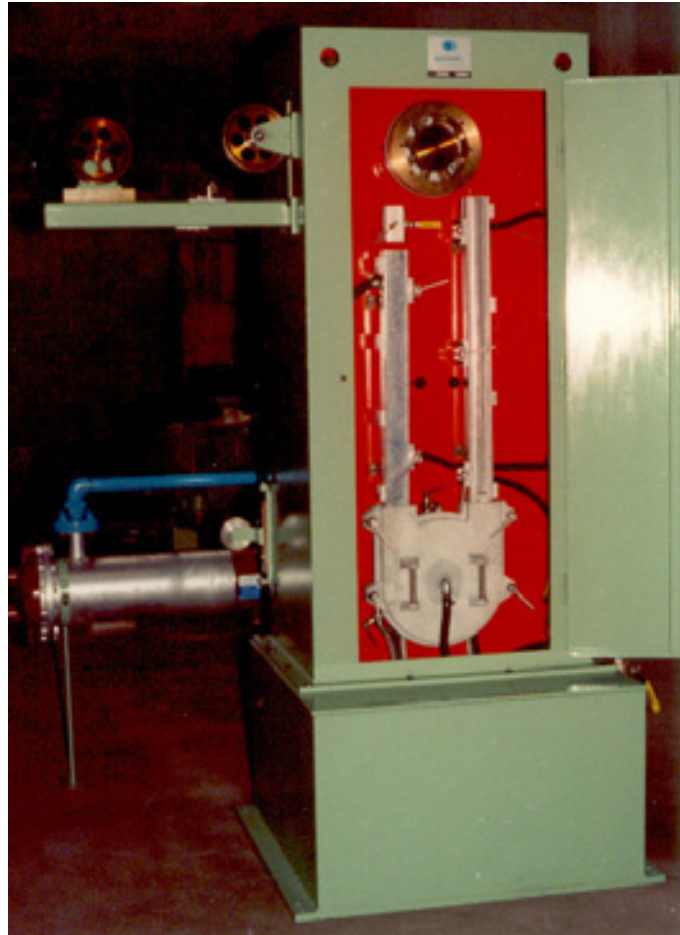
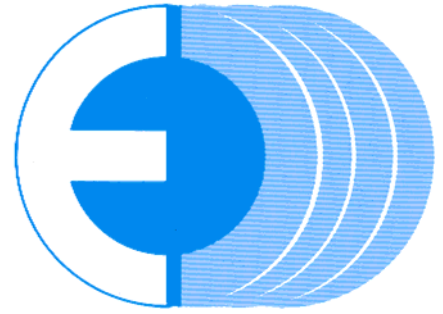
*We reserve the right to modify the specifications as a result of technical improvements.*



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# CONTINUOUS RESISTANCE ANNEALER, TYPE B-26/B-36

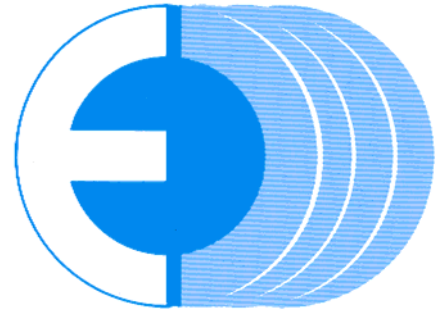


**Continuos Resistance Annealer B-26**

Continuous resistance annealers B-26 and B-36 have been designed to anneal in line intermediate wire drawing machines, ranging 0.16 to 0.64 mm diameters (B-26) or 0.40 to 1.50 mm (B-36).

## **Main Features**

- Solid construction.
- Outstanding surface quality of the annealed wire.
- Trouble-free handling.
- Annealing contact pulleys include interchangeable contact bands.
- Current is sent directly to the contact pulleys by means of big brushes so that current can never go through the bearings.
- Steam covers, air dryer and water cooling are placed on the front side of the machine and very accessible.
- Annealing electric control done by a toggler selector and a potentiometer to fit the desired annealing grade.



## Technical Data

Annealing transformer:	26 and 36 kVA.
Contact pulley's diameter:	150 and 250 mm.
Range and speed:	B-26: 0.15 ÷ 0.40 mm at 30 m/s and 0.63 mm at 20m/s. B-36: 0.40 ÷ 0.70 mm at 30 m/s, 0.90 mm at 20 m/s, 1.10 mm at 12 m/s and 1.50 mm at 6 m/s.
Annealing voltage adjustment:	by a thyristor bridge and electronic shot circuit; square annealing ramp as a speed function of a wire lineal tachogenerator.
Drive:	by flat belt from the wire drawing machine. Also available with independent A.C. motor on request.
Cooling medium:	dissolution of lubricant in water. Approx. 9 m <sup>3</sup> /h (B-26) and 12 m <sup>3</sup> /h (B-36) at 35°C temperature.
Steam:	approx. 3 kg/h at 0,3 bar.
Compressed air:	approx. 15 m <sup>3</sup> /h at 6 bar.

## Construction

Continuous resistance annealer B-26 is built by a frame of welded and stabilized steel sheets. The central part of the frame houses the contact pulleys assemblies and the brushes' rings. On the frame bottom is fitted the immerse contact pulley and on the top the external one. Both pulleys, which shafts are placed in spacious bearings, are driven via a common flat belt, thus a perfectly quiet run of the annealer is guaranteed.

The brushes' rings as well as the contact pulleys are cooled by pressure air from an incorporated fan.

Ingoing and outgoing wire is led via a common contact pulley (short circuit pulley). In this way the wire outside the annealer is electrically neutral.

The contact pulleys are arranged in a triangle and thus three annealing areas are created: pre-heat area, main annealing area and re-heat area. The main annealing area and the re-heat area are housed. The main annealing area is protected with nitrogen against oxidation and the re-heat area is provided with cooling fluid. Before reaching the third contact pulley the wire leaving the main annealing area submerges in the cooling fluid. According to the regulation of the cooling fluid of the third area the wire either cool off or heat up. Before reaching the short circuit pulley the wire passes a compressed-air wipe, where the remaining cooling fluid is dried up.

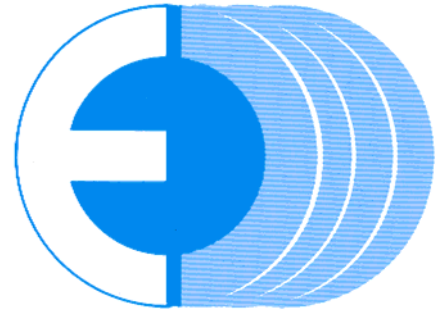
*We reserve the right to modify the specifications as a result of technical improvements.*



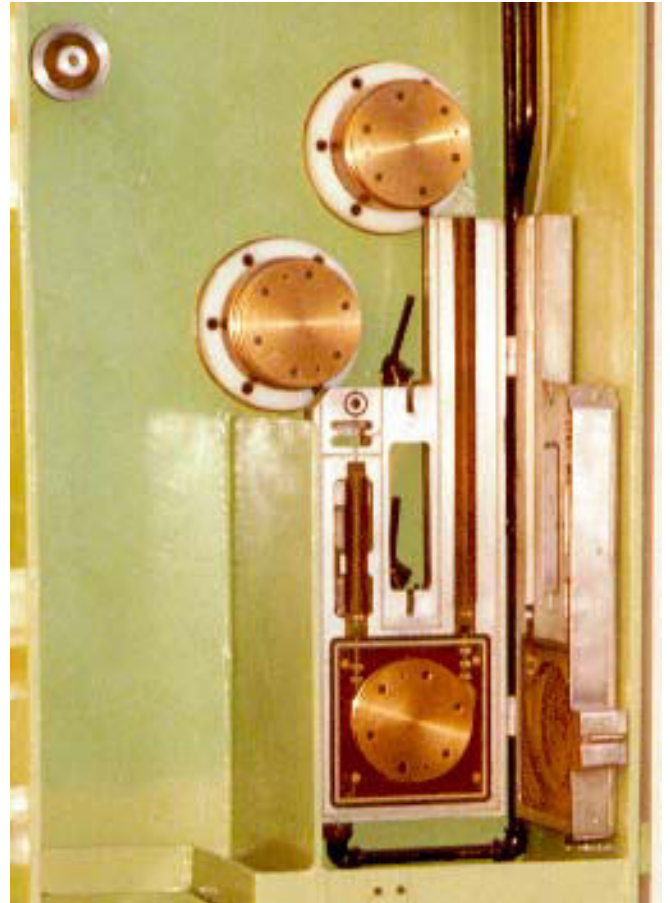
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## CONTINUOUS RESISTANCE ANNEALER, TYPE B-6/B-15



**Continuous resistance annealer B-6**



**Continuous resistance annealer B-15**

Continuous resistance annealers B-6 and B-15 have been designed to anneal in line fine wire drawing machines.

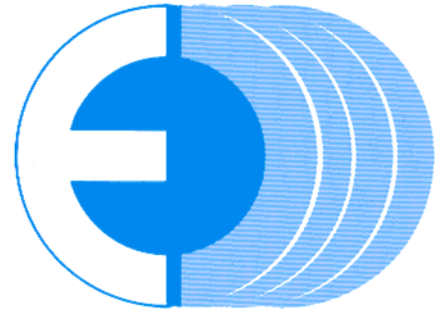
### Main Features

- Solid construction.
- Outstanding surface quality of the annealed wire.
- Trouble-free handling.
- Current is sent directly to the contact pulleys by

means of big brushes so that current can never go through the bearings.

- Annealing contact pulleys include interchangeable contact bands.
- Steam covers, air dryer and water cooling are placed on the front side of the machine and very accessible.
- Annealing electric control done by a toggler selector and a potentiometer to fit the desired annealing grade.





## Technical Data

Annealing transformer: B-6 6 kVA and B-15 15 kVA.

Contact pulley's diameter: 120 mm.

Range and speed (mm):	B-6	B-15
40 m/s	0.20	0.23
30 m/s	0.25	0.28
15 m/s	0.32	0.40
8 m/s	0.40	0.51

Annealing current and voltage: B-6 max. 55 V, 110 A  
B-15 max. 65 V, 220 A.

Annealing voltage adjustment: by a thyristor bridge and electronic shot circuit; square annealing ramp as a speed function of a wire lineal tachogenerator.

Drive: by flat belt from the wire drawing machine. Independent motor on request.

Cooling medium: dissolution of lubricant in water. Approx. 20 l/min (B-6) and 25 l/min (B-15) at 35°C.

Steam: approx. 1,8 kg/h at 0,3 bar.

Compressed air: approx. 12 m<sup>3</sup>/h at 6 bar.

## Construction

Continuous resistance annealers B-6 and B-15 are built by a frame of welded and stabilized steel sheets. The central part of the frame houses the contact pulleys assemblies and the brushes' rings. On the frame bottom is fitted the immerse contact pulley and on the top the external one. Dynamically balanced rotating parts and the pulleys, which shafts are placed in precision bearings, are driven via a common flat belt, thus a perfectly quiet run of the annealer is guaranteed.

Ingoing and outgoing wire is led via a common contact pulley (short circuit pulley). In this way the wire outside the annealer is electrically neutral.

The contact pulleys are arranged in a triangle and thus three annealing areas are created: pre-heat area, main annealing area and re-heat area. The main annealing area and the re-heat area are housed. The main annealing area is protected with nitrogen against oxidation and the re-heat area is provided with cooling fluid. Before reaching the third contact pulley the wire leaving the main annealing area submerges in the cooling fluid. According to the regulation of the cooling fluid of the third area the wire either cool off or heat up. Before reaching the short circuit pulley the wire passes a compressed-air wipe, where the remaining cooling fluid is dried up.

The bottom frame is also used as cooling medium tank, equipped with heat exchanger and pump.

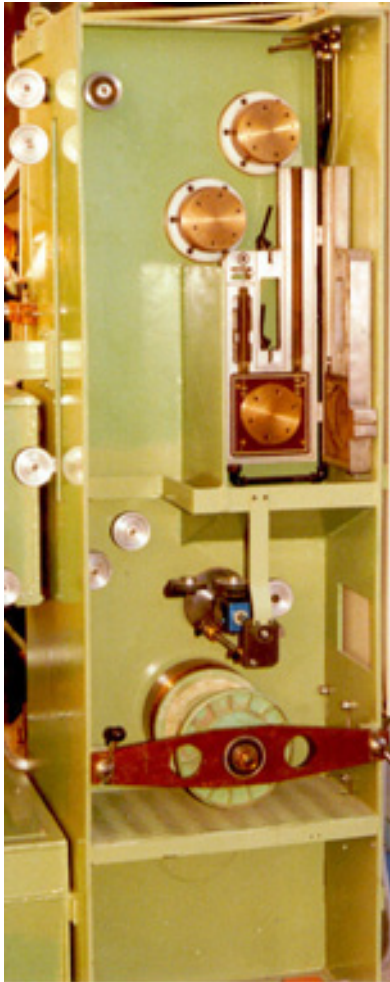
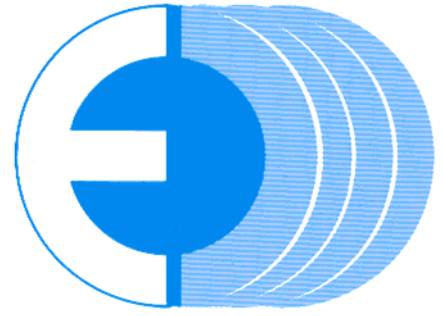
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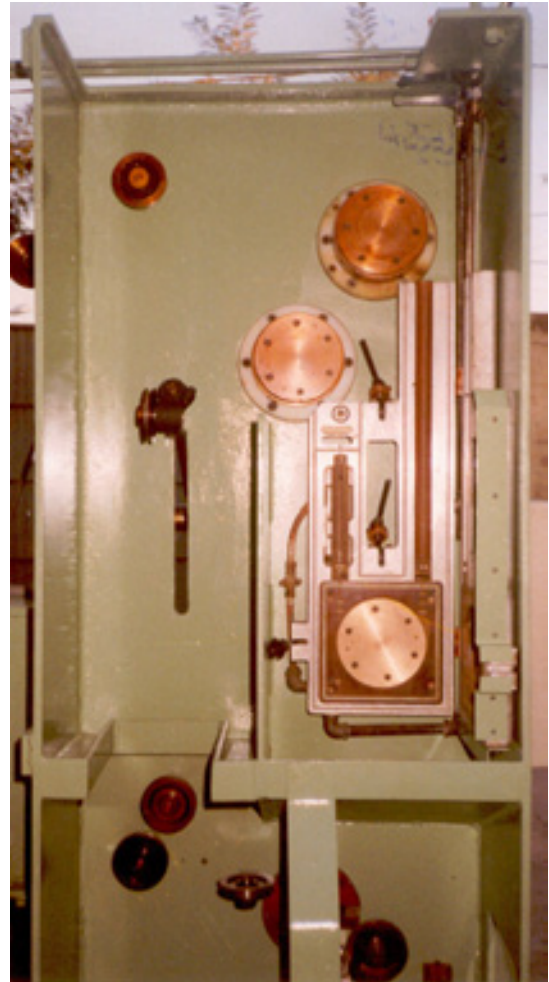
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# CONTINUOUS RESISTANCE ANNEALING AND SPOOLING MODULE



**Annealer B-15 and Spooler ENC-30**

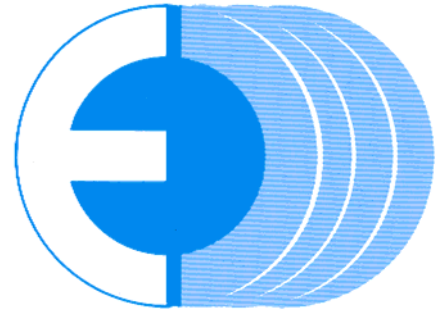


**Annealer B-6 and Spooler ENC-30**

## Main Features

Annealing and spooling modules house in only a single frame a continuous resistance annealer for copper wires and a spooler. There are several configurations but all of them are designed to join medium and fine wire drawing machines. The annealer is usually driven from the drawing machine via flat belt. However, the modules are also supplied with independent drive on order.

- Outstanding surface quality of the annealed wire.
- Easy handling by non-specialist operator.
- Available for any wire drawing machine type or brand.
- Investment lower than the independent purchase of annealer and spooler.



## Technical Data

Different modules available are:

- Module 1 Annealer B-36 and spooler ENC-400.
- Module 2 Annealer B-26 and spooler ENC-400.
- Module 3 Annealer B-26 and spooler ENC-120.
- Module 4 Annealer B-26 and spooler ENC-30.
- Module 5 Annealer B-15 and spooler ENC-120.
- Module 6 Annealer B-15 and spooler ENC-30.
- Module 7 Annealer B-6 and spooler ENC-120.
- Module 8 Annealer B-6 and spooler ENC-30.

### *Continuous Resistance Annealer Features*

Type	Power (kVA)	$\varnothing$ min (mm)	S max (m/s)	$\varnothing$ max (mm)	S min (m/s)
B-36	50	0.40	30	1.50	6
B-26	26	0.16	30	0.64	20
B-15	15	0.16	40	0.51	10
B-6	6	0.16	40	0.40	8

### *Spooler Features*

Type	Power (kW)	$\varnothing$ flange min (mm)	$\varnothing$ flange max (mm)
ENC-400	7.00	250	450
ENC-120	5.00	160	315
ENC-30	2.20	125	250

Annealing voltage adjustment:

by a thyristor bridge and electronic shot circuit; square annealing ramp as a speed function of a wire lineal tachogenerator.

Cooling medium:

dissolution of lubricant in water. The frame houses the lubricant tank.

Protective gas:

Steam or protective gas inlet (annealing area.).

Drying:

air wipe, compressed air at 6 bar.

Pulling force:

adjustable. It depends on wire diameter.

Spooling regulation:

automatic through speed signals and dancer arm corrections.

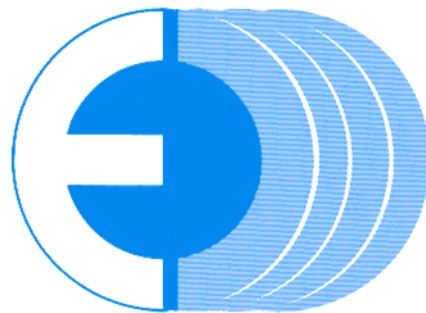
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# MULTIWIRE CONTINUOUS RESISTANCE ANNEALERS



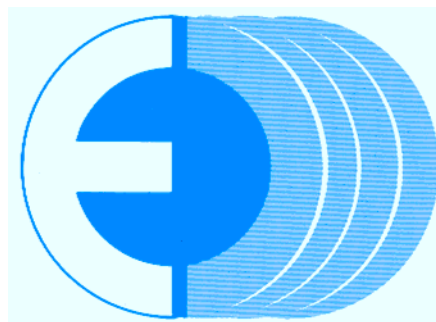
**Multiwire Continuous Resistance Annealer B-26/4**

<i>Type</i>	<i>Nº of wires</i>	<i>Ø minimum (mm)</i>	<i>Speed (m/s)</i>	<i>Ø maximum (mm)</i>	<i>Speed (m/s)</i>	<i>Annealing transformer (kVA)</i>
<i>B-6/4</i>	4	0.16	40	0.40	8	25
<i>B-15/4</i>	4	0.16	40	0.51	10	50
<i>B-26/4</i>	4	0.16	30	0.64	20	75
<i>B-6/8</i>	8	0.16	40	0.40	6	50
<i>B-15/8</i>	8	0.16	30	0.51	8	75
<i>B-26/8</i>	8	0.16	30	0.64	15	100

*We reserve the right to modify the specifications as a result of technical improvements.*



# PRECALENTADOR INDUCTIVO TIPO PCI *INDUCTIVE PRE-HEATER, TYPE PCI*



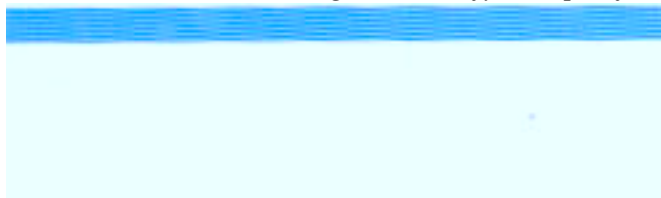
**Precalentador Inductivo PCI-4**  
*Inductive Pre-Heater PCI-4*



**Detector de Temperatura**  
*Temperature Sensor*

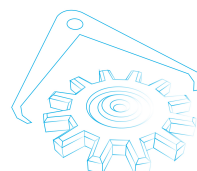
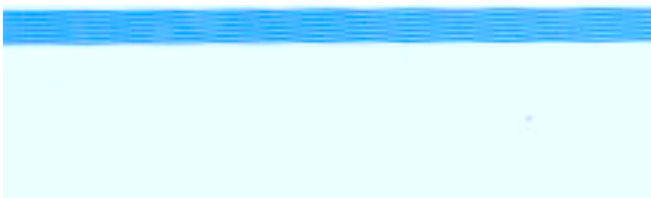
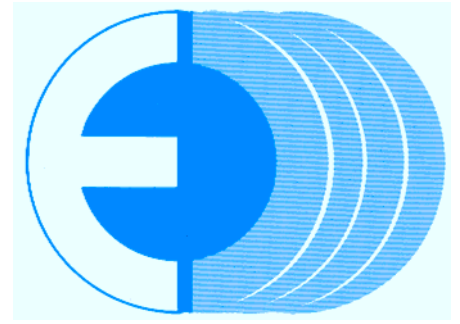
<b>Tipo</b> <i>Type</i>	<b>PCI-4E</b>	<b>PCI-4</b>	<b>PCI-8</b>	<b>PCI-12</b>	<b>PCI-15</b>
Gama de diámetros (mm) <i>Range diameter (mm)</i>	0,15–1,50	0,20-1,80	0,20-2,00	0,20-3,50	0,20-3,50
Diámetro poleas de contacto (mm) <i>Contact pulley diameter (mm)</i>	200	200	300	300	300
Potencia (kW) <i>Power (kW)</i>	4,0	4,0	8,0	12,0	15,0
Velocidad de trabajo (m/min) <i>Operating speed (m/min)</i>	10-800	10-800	30-1.000	30-1.000	30-2.200

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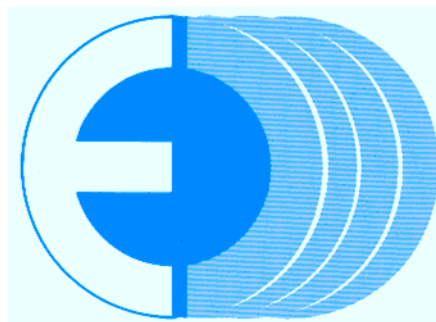
# SPOOLERS AND TAKE-UPS

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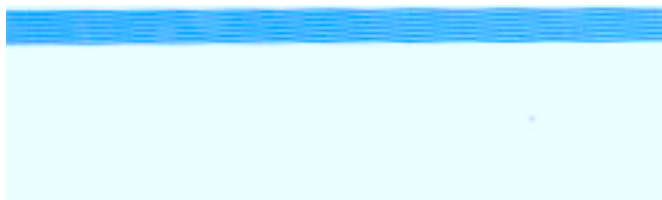
## ENCARRETADOR TIPO ENC SPOOLER, TYPE ENC



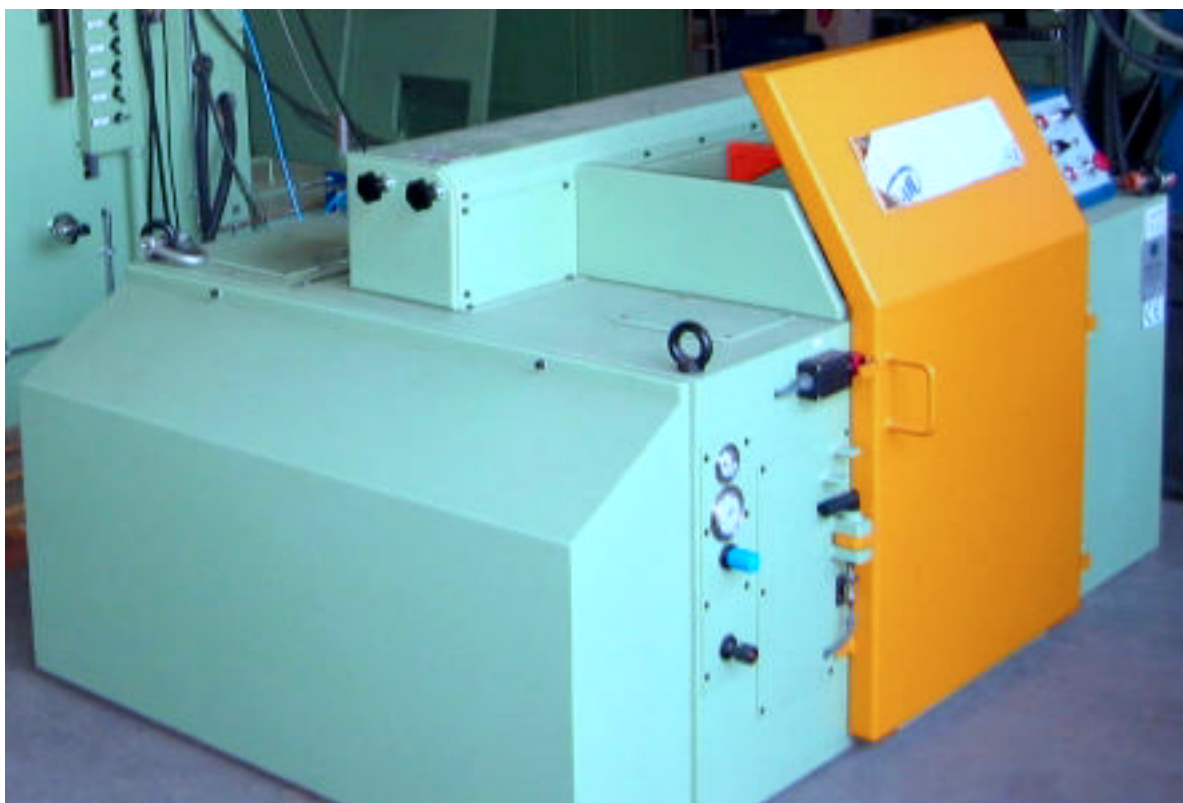
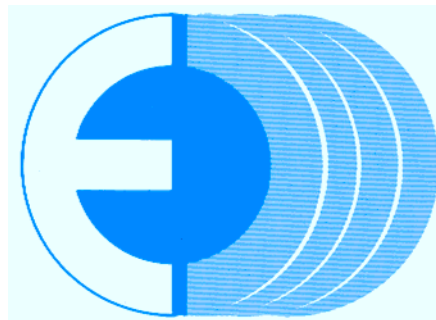
**Encarretador ENC-800**  
**Spooler ENC-800**

<b>Tipo</b>	<b>ENC-400</b>	<b>ENC-630</b>	<b>ENC-800</b>	<b>Type</b>
Diámetro máximo valona (mm).	450	630	850	<i>Max. flange diameter (mm).</i>
Peso máximo (kg).	250	600	1.100	<i>Maximum weight (kg).</i>
Gama de alambres (mm):				<i>Wire range (mm):</i>
Cobre	0,15÷3,00	0,20÷3,50	0,20÷4,60	<i>Copper</i>
Acero	0,10÷2,20	0,20÷5,00	0,30÷6,00	<i>Steel</i>
Velocidad angular máx. (rpm).	4.775	3.410	2.730	<i>Maximum angular speed (rpm)</i>
Potencia (kW).	7,50	15,00	18,50	<i>Power (kW).</i>
Dimensiones (mm):				<i>Dimensions (mm):</i>
Altura.	760	950	1.175	<i>Height.</i>
Longitud.	1.765	1.985	2.345	<i>Length.</i>
Profundidad.	1.060	1.390	1.720	<i>Width.</i>

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## ENCARRETADOR TIPO ENC SPOOLER, TYPE ENC

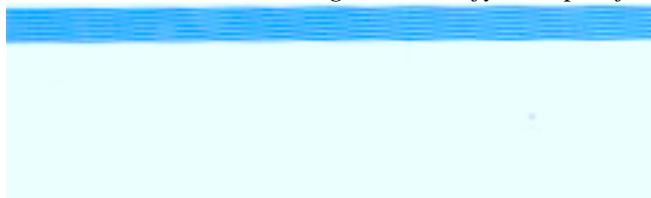


**Encarretador ENC-1.000**  
**Spooler ENC-1.000**

<b>Tipo</b>	<b>ENC-800</b>	<b>ENC-1.000</b>	<b>ENC-1.200</b>	<b>Type</b>
Diámetro máx. valona (mm).	850	1.000	1.250	<i>Max. flange diameter (mm).</i>
Peso máximo (kg).	1.100	2.300	4.500	<i>Maximum weight (kg).</i>
Gama de alambres (mm):				<i>Wire range (mm):</i>
Cobre	0,20÷4,60	0,80÷4,60	2,00÷8,00	<i>Copper</i>
Acero	0,30÷6,00	0,60÷10,0	0,80÷12,0	<i>Steel</i>
Velocidad angular máx. (rpm).	2.730	2.150	1.910	<i>Max. angular speed (rpm)</i>
Potencia (kW).	18,50	22,00	30,00	<i>Power (kW).</i>
Dimensiones (mm):				<i>Dimensions (mm):</i>
Altura.	1.175	1.430	1.600	<i>Height.</i>
Longitud.	2.345	2.500	2.590	<i>Length.</i>
Profundidad.	1.720	1.850	1.930	<i>Width.</i>

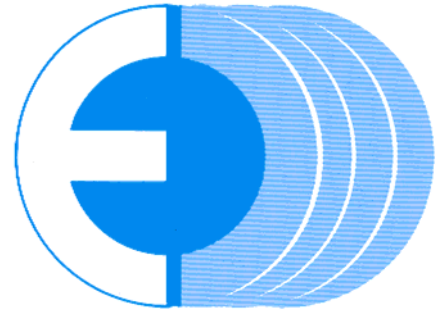
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## VERTICAL SPOOLER, TYPE EV



### Vertical Spooler without Spindle E-1.000VS

EV vertical spoolers have been designed as single spoolers and can be universally used. The more common applications are behind bullblock or multiple wire drawing machines type tandem or cones. Speed or tension regulation is available and they support both fixed bobbin flange or detachable reels with strapping guides.

There are two different types:

- Without spindle.
- With removable spindle.

#### Main Features without Spindle

*Normal and autonomous detachable reels*

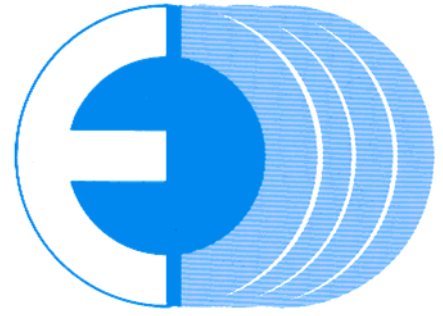
- Locking system by means of special nut.

*Detachable reel fixed to the machine*

- Extraction of the upper flange and the strapped material by means of overhead-travelling crane. Equipped with handling devices (strapping machine, etc.) on order.

*General features*

- Traverse unit with regulation of spooling pitch by A.C. motor and frequency inverter.
- Four cross guiding rolls at the traverse unit entrance. Optionally, equipped with straighteners.
- Adjustable pneumatic disc brake.



## Main Features with Spindle

- Removable spindle pneumatically operated.
- Safety fastening of the spindle to avoid accidents during operation.
- Traverse unit with regulation of spooling pitch by A.C. motor and frequency inverter.
- Four cross guiding rolls at the traverse unit entrance. Optionally, equipped with straighteners.
- Adjustable pneumatic disc brake.

## Technical Data

Wire range: steel, 0.6 ÷ 10 mm;  
copper, aluminium and alloys, 0.6 ÷ 12 mm.

Pitch: adjustable 1 ÷ 15 mm.

Speed: tension controlled up to 6 m/s. Speed controlled up

to 30 m/s (it is required an accumulator between the drawing machine and the spooler).

A.C. motor 15 kW tension controlled equipment and 23 kW speed controlled equipment.

### Reels:

Flange diameter: 600 ÷ 1.000 mm.

Max. weight: 2.500 kg (depending on material).

### Measurements:

Length: 2.169 mm.

Wide: 1.774 mm.

Height: 1.740 mm (without spindle) and 2.310 mm (with spindle).



**Vertical Spooler with Spindle E-1.000VC**

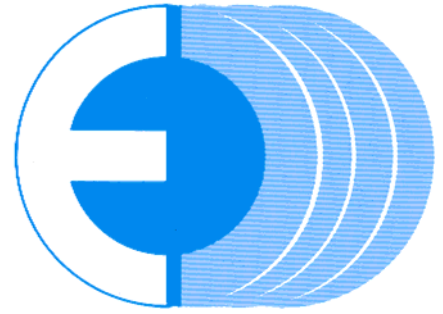
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## PORTABLE REEL SPOOLER, TYPE ENCD-1.200



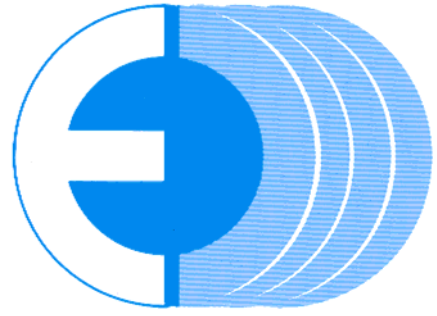
**Portable Reel Spooler ENCD-1.200**

The portable reel spooler ENCD-1.200, has been specially designed for spooling wires, billets or special profiles which require high quality spooling (layer by layer), and supports both portable reels and fixed bobbin flange.

### **Main Characteristics**

- Speed controlled, so that as the core diameter increases due to the addition of another layer, the reel rotation speed is reduced in order to maintain constant tangential speed.
- Reel movement inversion controlled by software in the CNC.
- Spindle with safety end-stops which limit maximum run-out in the case of control system failure.
- Control panel included in the electrical cabinet for space economy and simple installation.
- Simple productive series programming using intuitive CNC menus displays.
- It may be optionally fitted with guide rollers and feed straighteners.





## Technical Data

Work range:	programmable between 0 and 12 mm diameter.
Speed:	programmable up to 300 m/min.
Spooling step:	automatic adjustment via CNC.
Maximum bobbin flange diameter:	1.200 mm.
Minimum core diameter:	370 mm.
Useful width:	300 mm.
Maximum reel weight:	2.000 kg

*(Other measures on order).*

## Construction

The ENCD-1.200 portable reel spooler is constructed from welded tubular profiles and consists of two beds. The lower bed is fixed and equipped with two guides which are ground down on their upper surfaces for heavy loads and on which the mobile bed moves by means of four sliding blocks. The mobile bed houses the main drive, consisting of an orthogonal reduction gearbox and a DC motor, together with the reel. Longitudinally arranged at the centre of the fixed bed is a precision spindle which is driven at one end by a brushless servomotor via an epicycloid planetary reduction gearbox. An incremental encoder is fitted to the opposite end of the spindle. The connecting link between the fixed and mobile beds is a ball nut which is electronically moved along the spindle length.



## Finished product obtained using the ENCD-1.200 Spooler

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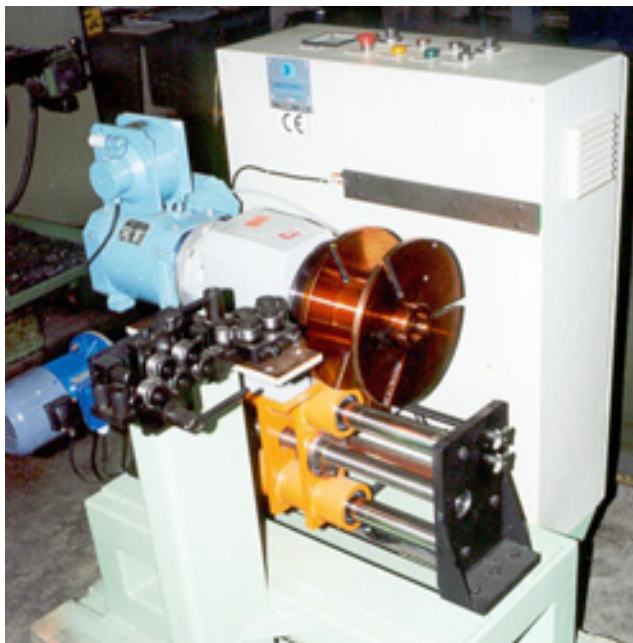
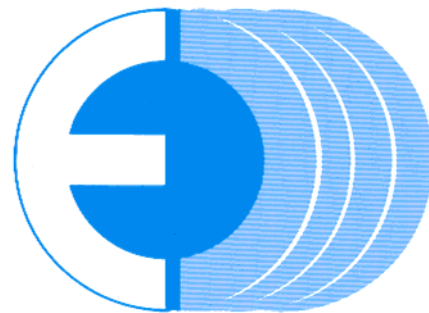


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## PORTABLE REEL SPOOLER, TYPE ENCD-297



### Portable Reel Spooler ENCD-297

Spooler ENCD-297 has been designed to wind flat/strip wires or round wires which require a high quality spooling (layer by layer), using detachable reels as well as standard ones

#### Main Features

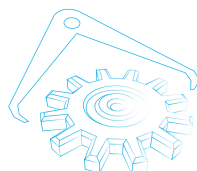
- Wire break stop device.
- Double use jog pedal: start-stop while threading and emergency stop in running conditions.
- Material infeeding through set of straighteners Witels Albert, configuration in two planes 90°.
- Built in electrical cabinet and control panel. Thus, easy installation and starting-up.
- Disk brake pneumatically operated.

#### Technical Data

Flat/strip range:	width from 2,0 to 5,0 mm.
Speed:	tension control up to 30 m/min.
Pitch:	adjustable up to 8 mm.
Reels:	
Flange diameter:	355 mm.
Core diameter:	225 mm.
Useful width:	158 mm.
Total width:	198 mm.
Drive:	Main A.C. motor 1,90 kW and traverse unit A.C. motor 0,75 kW.

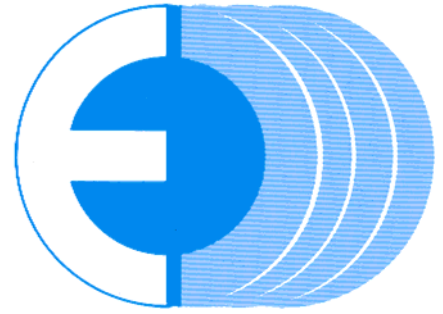
(Other measures on order).

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## RE-SPOOLER, TYPE ENC-630C

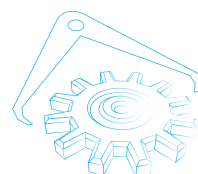


**Re-Spooler ENC-630C**

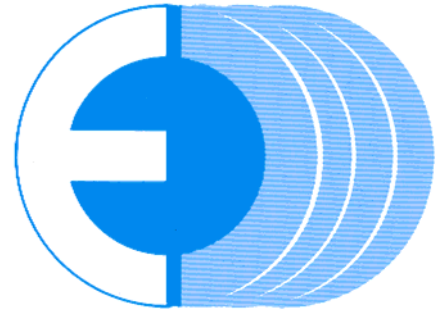
ENC-C series are recommended for re-spooling from coils or reels to reels. The most outstanding performance is the constant re-spooling speed, which means a high quality spooling at high speed.

### Technical Data

- Shaftless drive system (reel position between pintle arms).
- Near silent hydraulic system to provide reel lift powered by 0.50 kW unit.
- Traverse unit type Uhing (shaft diameter 30 mm) suitable for several reel widths.
- Pulling capstan 300 mm diameter, driven by 1.50 kW A.C. motor, gearbox and frequency inverter.
- 3.70 kW D.C. main motor.
- Maximum pulling force 520 N.



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## Features

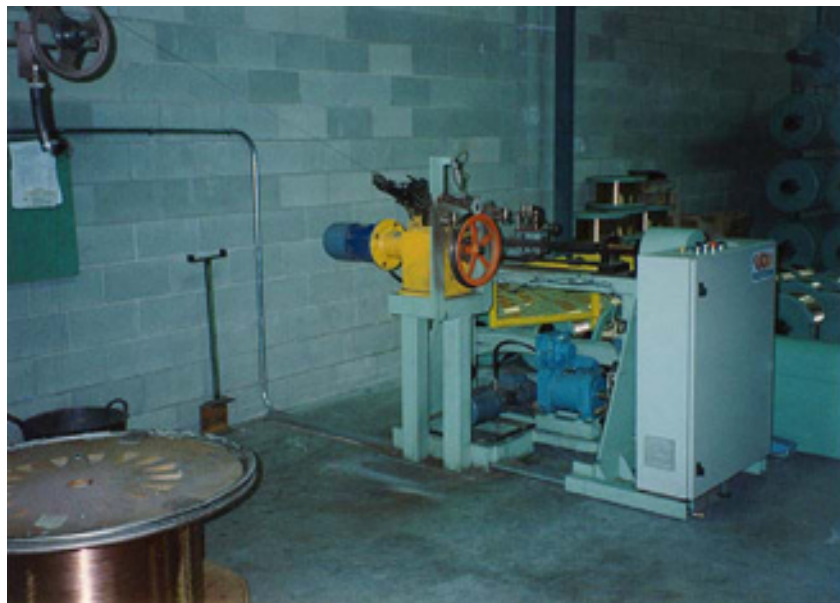
- Twin pneumatic braking system which can be regulated: the first is the working brake and the other the emergency brake.
- The operator can voluntarily restrain the working brake for handling operations.
- Emergency stop push button.
- Jog pedal and emergency stop.
- Wire breakage switch (emergency stop) or reel end.
- Predetermined stop-to-length counter.
- Predetermined working speed.
- Tilting guard by means of two gas cylinders.

Diameter (mm)	Speed (m/min)
<i>Steel up to 1.100 N/mm<sup>2</sup></i>	
2.00	150
1.50	300
0.50	560
<i>Copper up to 400 N/mm<sup>2</sup></i>	
3.50	150
2.20	300
1.20	560
<i>Aluminium up to 200 N/mm<sup>2</sup></i>	
5.00	150
3.80	300
2.20	560

## Reel measures (maximum and minimum)

Flange diameter: 355 to 600 mm.  
 Core diameter: 220 to 355 mm.  
 Width: 310 to 550 mm.

(Other measures on order).

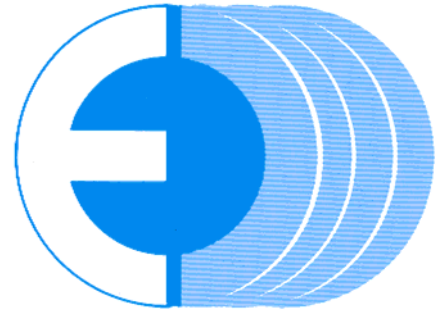


**Re-Spooler ENC-630C**

*We reserve the right to modify the specifications as a result of technical improvements.*



## REWINDING LINE



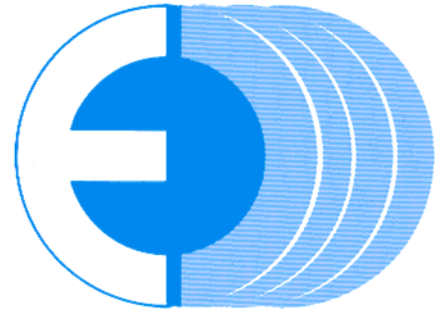
### Horizontal Pay-Off DB-1.200 and Spooler ENC-630B

Rewinding line consists of horizontal pay-off DB-1.200 and spooler ENC-630B. The pay-off is designed to handle a wide range of reel sizes, ranging from 600 to 1.200 mm flange diameters and 315 to 780 mm total widths (also available for other bobbins on order). The spooler holds reels with 630 mm maximum flange diameter (DIN 46397). Both pay-off and spooler are offered in standard floor mounted version.

#### Main Features

- Shaftless drive system (reel position between pintle arms).
- Near silent hydraulic system to provide reel lift.
- Mechanical safety device.
- Adjustable disk brakes pneumatically operated.
- Spooler with centering reel system.





## Technical Data

### Horizontal Pay-Off DB-1.200

Hydraulic unit: 1,5 kW

### Spooler ENC-630B

Speed: Adjustable up to 4 m/s.

Traverse unit: Adjustable, Uhing type, with clamp roller pneumatically operated.

Countertermeter: Omron, with rewinding length preselection and automatic stop.

Hydraulic unit: 0,75 kW.

Drive: 4 kW A.C. motor with frequency inverter.

## Construction

Both machines are made of welded and stabilized tubular frames, providing a rigid structure which holds the shaftless fork. At the front bottom is the hydraulic unit and the main drive (only the spooler is motorized). The drive works the main gear and the traverse unit. The control panel is mounted on the spooler whilst the pay-off is just equipped with an auxiliary switch box.

*(Other measures on order).*



### Horizontal Pay-Off DB-1.200

*We reserve the right to modify the specifications as a result of technical improvements.*

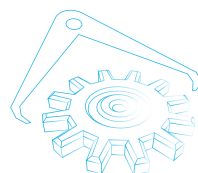
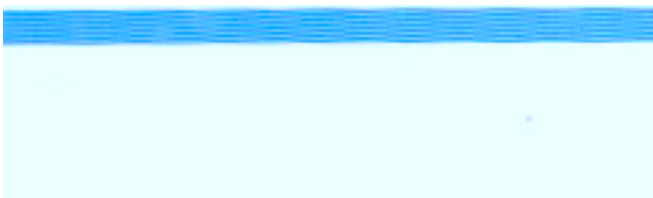
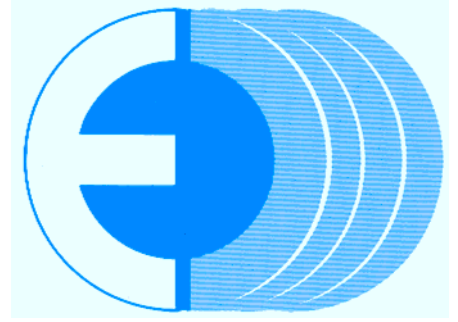


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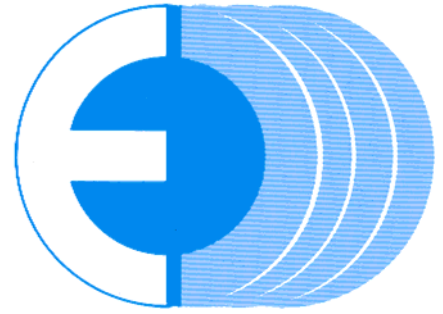
# COILERS<sup>?</sup>

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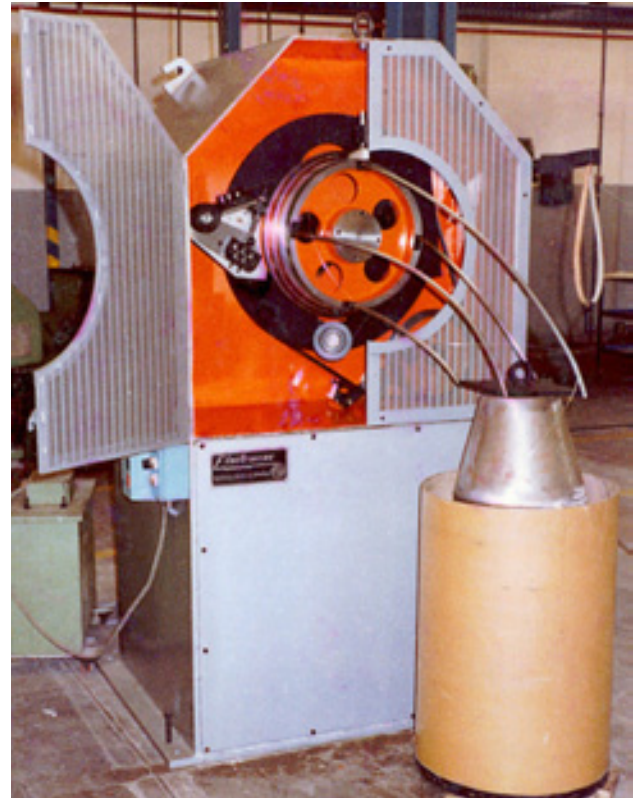


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## STATIC COILERS, TYPE RCH-BS AND RCH-BD



**Static Coiler RCH-500BS**



**Static Coiler RCH-400BD**

### Main Features

The RCH-BS type coilers are foreseen for non ferrous or low carbon content materials. The frame is with a simple capstan. The RCH-BD type coilers are foreseen for medium or high carbon content steels as well as special alloys. In this case, the frame is with a double capstan.

Both types have wire accumulation system for continuous operation and are driven by A.C. motor and frequency inverter with steplessly adjustable speed (driven via belts from wire drawing machine or D.C. motor on order).

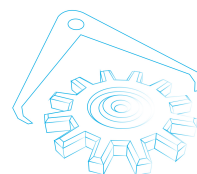
- Models with independent motor, equipped with wire accumulator device and dancer to guarantee synchronization.
- Suitable for baskets or barrels.
- Infeeding empty baskets and outlet full baskets roller conveyors.
- Rosette (pattern) layering system with rotary platform.

#### *RCH-BS Series*

- Simple capstan.

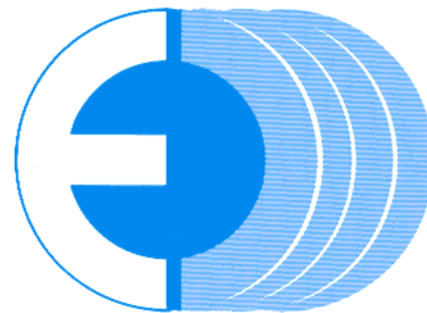
#### *RCH-BD Series*

- Double capstan.



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## Technical Data

<i>RCH-BS Series</i>	<i>300</i>	<i>400</i>	<i>500</i>	<i>600</i>
Capstan diameter (mm)	300	400	500	600
Wire diameter (mm)	0,5 ÷ 2,2	0,8 ÷ 2,8	1,4 ÷ 3,5	1,8 ÷ 4,5
Maximum speed (m/s)	18,0	15,0	15,0	12,0
Power (kW)	5,5 ÷ 7,5	7,5	7,5	11,0
Basket measurements (mm)	500 x 800	500 x 800	800 x 1.600	800 x 1.600
Approx. basket capacity (kg)	200	200	1.200	1.200

<i>RCH-BD Series Se</i>	<i>300</i>	<i>400</i>	<i>500</i>	<i>600</i>
Capstan diameter (mm)	300/300	400/400	500/500	600/600
Wire diameter (mm)	0,5 ÷ 1,6	0,8 ÷ 2,8	1,4 ÷ 2,5	1,8 ÷ 3,0
Maximum speed (m/s)	15,0	12,0	12,0	10,0
Power (kW)	7,5	7,5	11,0	15,0
Basket measurements (mm)	500 x 800	500 x 800	800 x 1.600	800 x 1.600
Approx. basket capacity (kg)	200	200	1.200	1.200



## Rosette (Pattern) Layering System with Rotary Platform

*We reserve the right to modify the specifications as a result of technical improvements.*

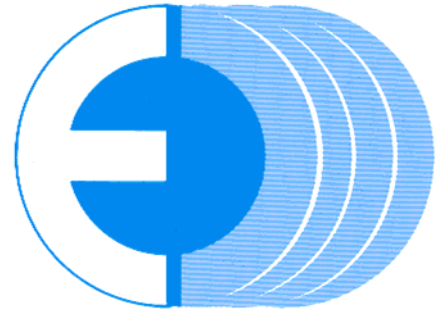


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## STATIC COILER, TYPE RCI AND RCIC



**Static Coiler RCIC-1.000**



**Static Coiler RCIC-650**

### Main Features

Vertical static coilers RCIC are specially designed for bare or insulated non-ferrous wires. Vertical static coilers RCI are suitable for ferrous materials, both low and high carbon content steels.

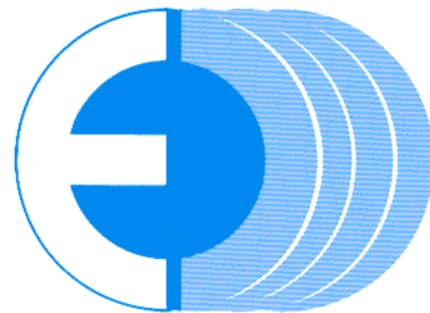
Both systems have accumulator for continuous operation-non stopping during basket change and are driven by D.C. motor or A.C. motor with frequency inverter (depending on customer's requirements). Coilers are designed to join any existing production line or new line (wire drawing or extrusion lines). Coilers can be also used as a rewinding units.

#### *RCIC Series*

- Planetary wheels and cylindrical capstan with eight helix holder that gives a complete independency of the baskets with regard to the capstan.
- Rosette (pattern) layering system with built in speed regulation.
- Motorized roller conveyor with automatic basket change.

#### *RCI Series*

- Pulling system through "V" capstan.
- On request, withdrawal upon double basket robot to get coils with semi-automatcal tightness and compactness.



## Technical Data

<i>RCIC Series</i>	<i>420</i>	<i>650</i>	<i>800</i>	<i>1.000</i>
Bobbin diameter (mm)	420	650	800	1.000
Wire range diameter (mm)	0,4 ÷ 2,5	1,0 ÷ 3,5	1,2 ÷ 4,0	1,5 ÷ 5,0
Maximum speed (m/s)	40,0	36,0	30,0	30,0
Power (kW)	15,0	22,0	22,0	30,0
Basket measures (mm)	500 x 800	800 x 1.600	1.000 x 1.800	1.250 x 2.000
Approx. basket capacity (kg)	200	1.200	2.000	2.500

<i>RCI Series S</i>	<i>400</i>	<i>600</i>	<i>750</i>
Bobbin diameter (mm)	300/400	500/600	750
Wire range diameter (mm)	0,5 ÷ 1,6	1,5 ÷ 4,5	2,0 ÷ 6,0
Maximum speed (m/s)	18,0	15,0	10,0
Power (kW)	5,5	15,0	15,0
Basket measures (mm)	500 x 800	800 x 1.600	800 x 1.600
Approx. basket capacity (kg)	200	1.200	1.200

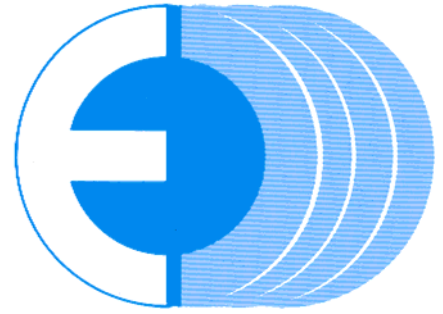
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## STATIC COILER, TYPE RCIC-650E



### Static Coiler RCIC-650E

Vertical static coiler RCIC-650E is specially designed for coiling bare non-ferrous wires, hard or annealed, from a moderate production rod breakdown wire drawing machine.

Driven by A.C. motor with frequency inverter, has accumulation arms for non-stop running. The baskets are mounted on castors for easy handling and are designed to couple the lifting device which keeps a constant falling distance from the capstan. A built-in dancer guarantees the synchronism with the drawing machine.

#### Technical Data

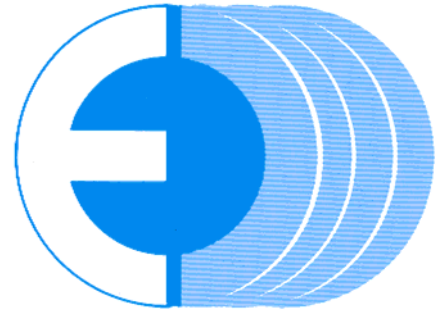
Capstan diameter:	650 mm.
Wire diameter:	1,00 a 3,50 mm.
Maximum speed:	20 m/s.
Power:	15 kW.
Basket dimensions:	800 x 1.200 mm.
Approx. basket capacity:	900 – 1.000 kg.

*We reserve the right to modify the specifications as a result of technical improvements.*





## STATIC COILER, TYPE RB-500



**Coiler RB-500**

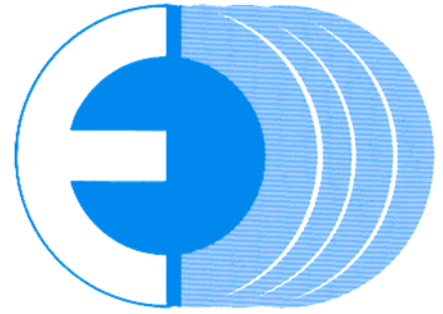
### Main Features

The coiler RB-500 has been specially designed for being installed with a extruder line, drawing line or as a rewinder for insulated cables.

The drive is a A.C. motor with separate ventilation controlled by frequency inverter. It has an accumulator for continuous operation-non stopping during barrel change.

- Counter-meter pre-selection.
- On-line speed adjustment by means of measurement and control equipment (on order).
- Two barrels platform manually operated, with acoustic alarm (counter pre-selection reached) or with automatic barrel change system (on order).
- Vibration unit pneumatically operated to enhance rosette (pattern) layering and promote a better distribution of wire convolution in drum.





## Technical Data

Copper cable sections (mm <sup>2</sup> ):	0,8 to 6,0	Barrel measures (mm):	DIN 46396
Maximum outer diameter (mm):	4,0	Outer diameter	500
Speed (m/min):	Steplessly adjustable up to 200.	Core diameter:	315
		Height:	800

*(Other measures and features on order)*



**Rosette (Pattern) Layering System.**

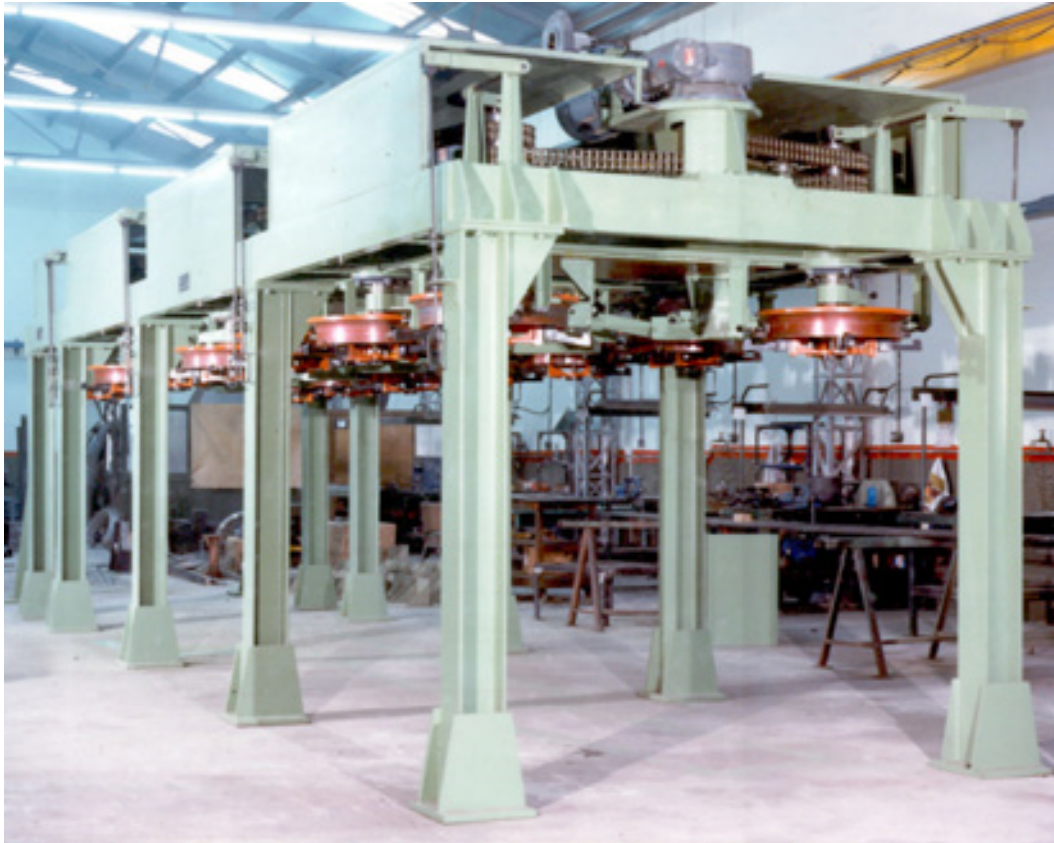
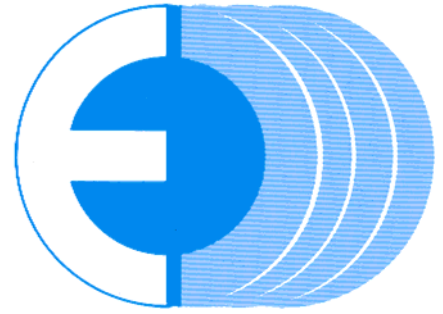
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## MULTIPLE ROTARY COILER, TYPE RRM

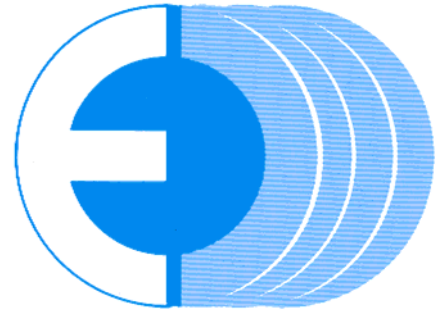


**Multiple Rotary Coiler RRM-800**

Multiple rotary coilers RRM are designed to coil ferrous and non-ferrous wires in baskets from patenting, galvanizing, pickling or coppering lines and, particularly, for materials which require a soft treatment of its surface. Basic frames consist of two or four capstans and, combining different ones, several configurations (2, 4, 6, 8, 10, ....) can be obtained.

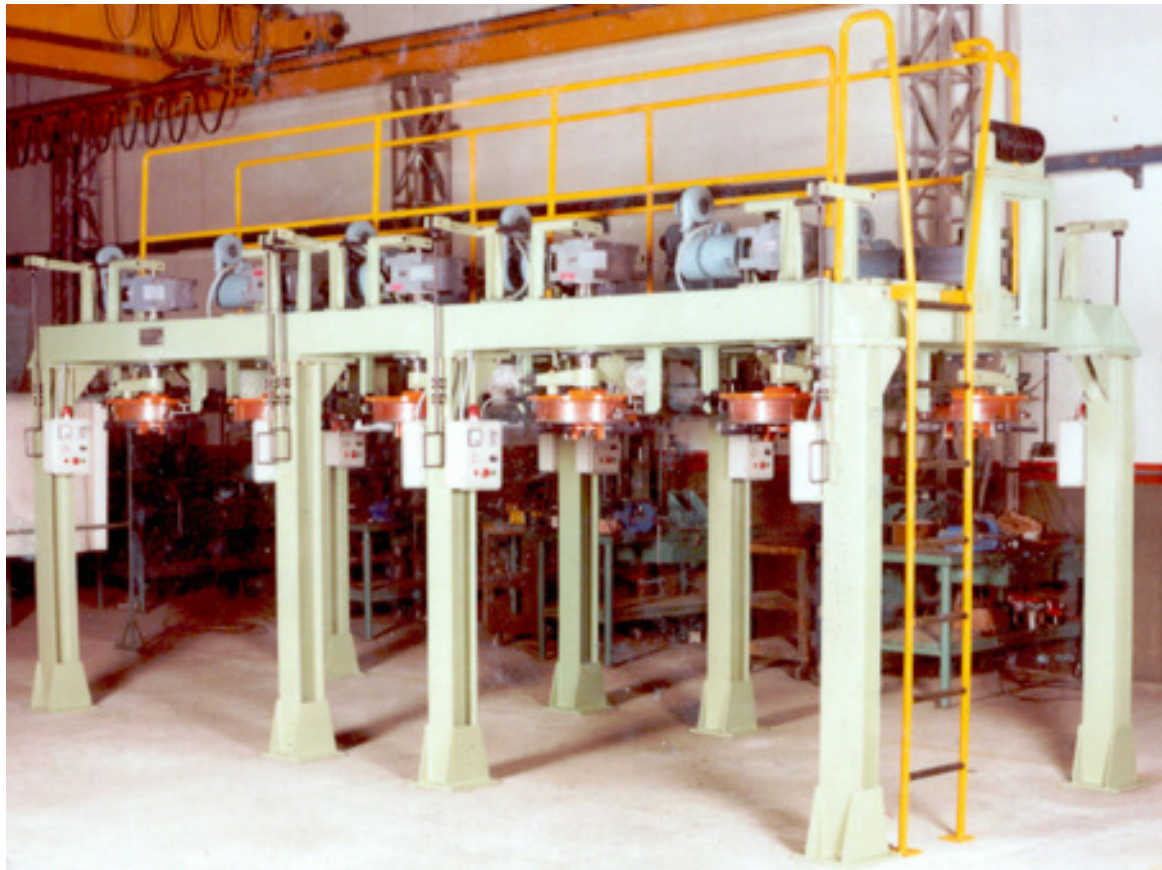
### Main Features

- Rugged frame construction with electro-welded profiles.
- Drive by D.C. motor or A.C. motor and frequency inverter.
- Independent drive for each capstan or common drive for two or four capstans depending on customer's requirements. Using common drive, each capstan is equipped with electro-magnetic clutch for its independent running.
- Pneumatically operated levers under each capstan for wire accumulation when changing from full to empty basket.
- Electrical meter counter mounted on each coiling capstan.
- Equipped with rosette layering system on order.



## Technical Data

<i>Type</i>	<i>450</i>	<i>600</i>	<i>800</i>	<i>1.000</i>
Capstan diameter (mm)	450	600	800	1.000
Minimum wire diameter (mm)	1,00	2,00	4,00	6,00
Maximum wire diameter (mm)	2,50	5,50	8,50	15,00
Maximum basket capacity (kg)	500	1.000	1.500	2.500



**Multiple Rotary Coiler RRM-450**

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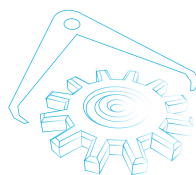
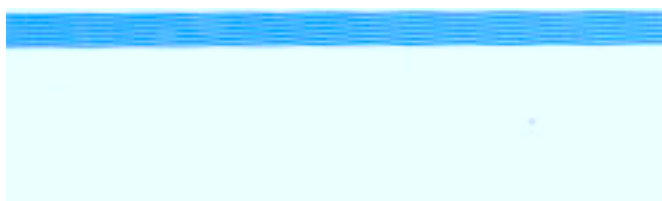
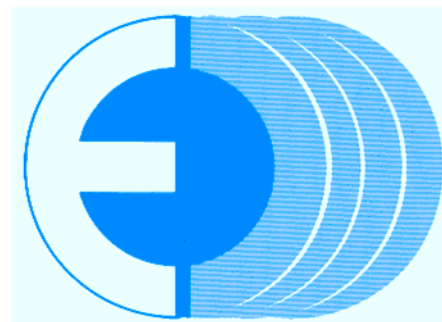


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# ANCILLARIES

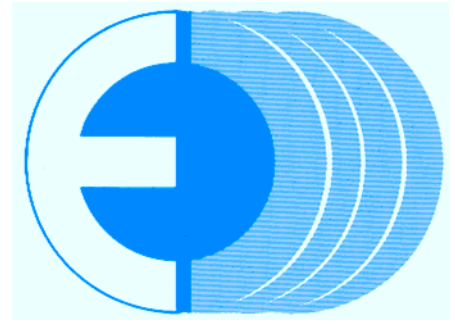
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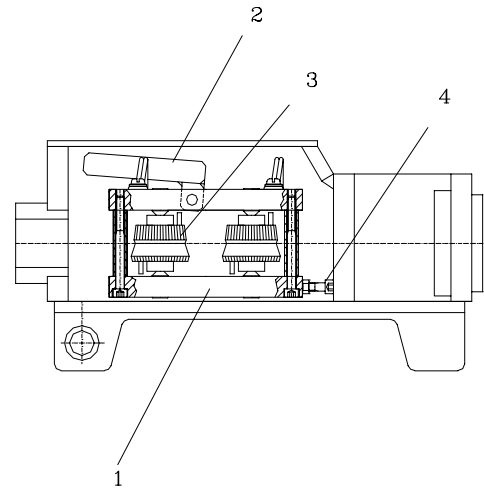
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# LUBRICANT APPLICATOR, TYPE APL



**Lubricant Applicator**



**Die holder and Lubricant Applicator**

## Main Features

The lubricant applicator APL is especially useful to draw low and high carbon steel content wires mechanically descaled.

It can be installed within any die holder because of its small size and eclipsable arms. Moreover, the die holder can be closed preventing lubricant dust dispersions.

The especial shape of the three rollers avoids lubricant lumps. In addition, because of the reduced weight of the rollers, thin wires can be processed at high speed.

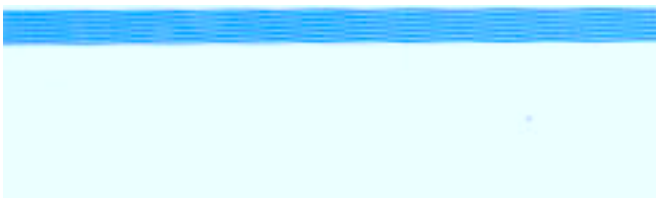
Lubricant applicator APL has positioning screws to prevent the excessive lubricant compression between the applicator and the die.

- 1 Frame.
- 2 Eclipsable arms.
- 3 Rollers.
- 4 Positioning screws.

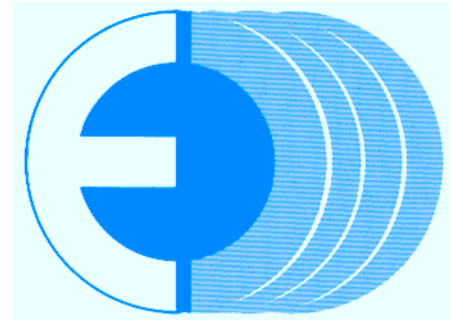
## Technical Data

- Wire range diameter: from 3 to 12 mm.
- Speed: up to 10 m/s.

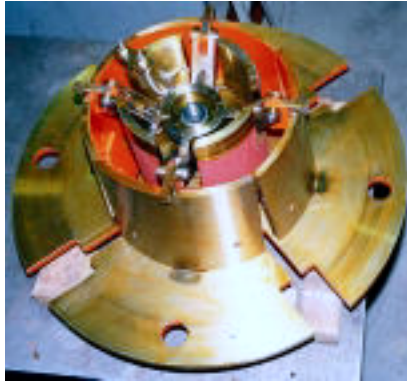
*We reserve the right to modify the specifications as a result of technical improvements.*



# PNEUMATIC DETACHABLE SPOOL, TYPE CDN



**Upper flange**



**Retracted drum**



**Expanded drum**

## Main Features

The pneumatic detachable spool CDN has a strong frame because of its heavy steel construction. The retractable drum consists of four hinged sections to make easy the extraction of the previous strapped material.

The compressed air is supplied by means of swift fastenings allocated under the upper flange. The access to those fastenings is very easy.

The spools CDN can be used with horizontal or vertical axis spoolers. Electrorrec, S.A. can also supply the tilting devices suitable to them.

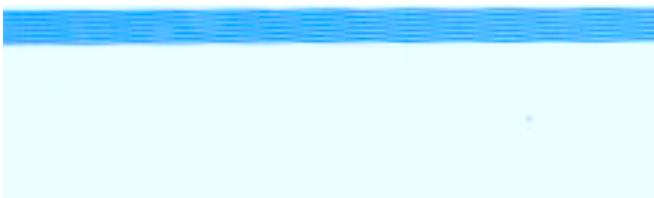
- Fast disassembly and re-assembly of the spool by means of pneumatic cylinder.
- Upper flange with four guides for the passage of the straps using a portable strapping machine.
- Mechanical safety system that prevents the disassembly in case of air supplies failure while running.

## Technical Data

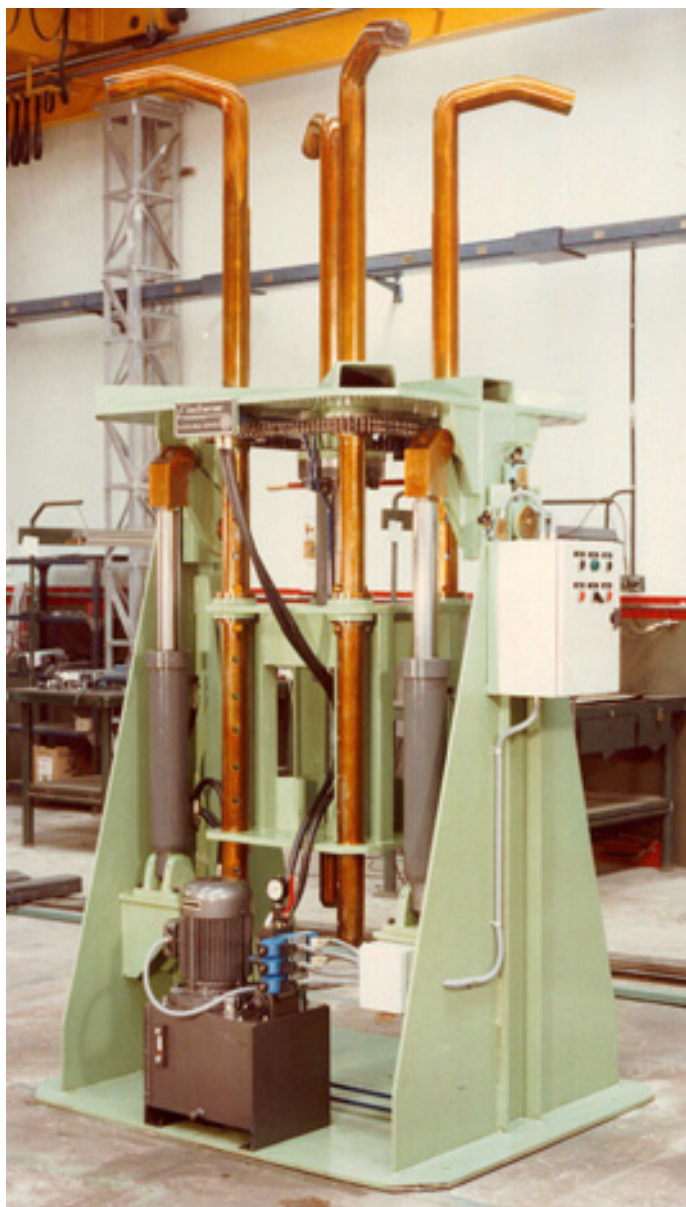
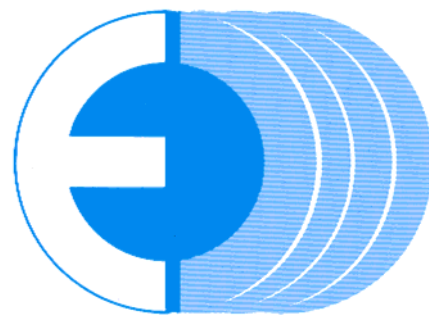
- Final coil dimensions:
  - Inner diameter: 520 mm.
  - Outer diameter: 750 mm.
  - Wide: 280 mm.
  - Approx. weight: 500 kg.
- Flange diameter: 850 mm.
- Compressed air pressure: 6 to 7 bar.

*Other measures on order.*

*We reserve the right to modify the specifications as a result of technical improvements.*



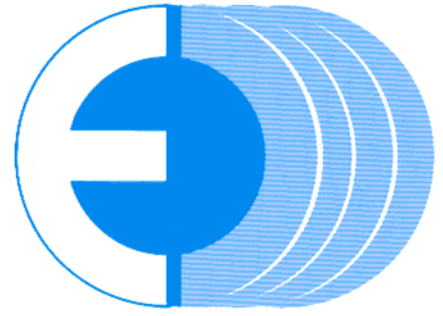
# HYDRAULIC COIL COMPACTING MACHINE, TYPE COM



## Hydraulic Coil Compacting Machine COM-130

Coil compacting machines COM are suitable for compacting and strapping wire coils from wire drawing lines.

On order are mounted on a turn platform driven by gearmotor and jog pedal (COM-G Series). A 90° turn is made after each cycle.



## Main Features

- Low maintenance cost.
- Compacting and tilting operations hydraulically operated.
- Suitable for a wide range of coil heights thanks to its compacting arm design.
- Easy coil load and unload due to the simultaneous turn of the four compacting arms.

## Installation

Compacting machines COM-G require a pit approx. 2.000 x 2.000 x 1.500 mm.

## Technical Data

Inner coil diameter:	600 to 800 mm.
Outer coil diameter:	Up to 1.300 mm.
Coil height:	400 to 2.000 mm.
Coil weight:	Maximum 2.500 kg.
Compacting stroke:	Maximum 400 mm.
Power:	2,20 kW.
Machine's weight:	Approx. 1.200 kg.

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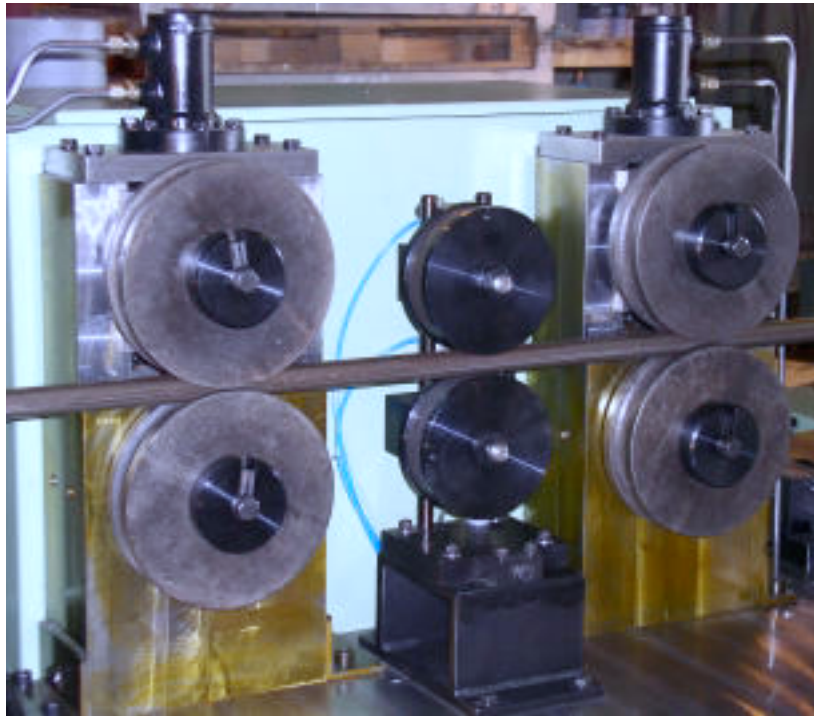
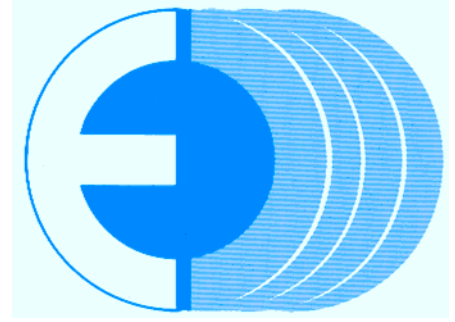


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## COUNTER-METER, TYPE CM



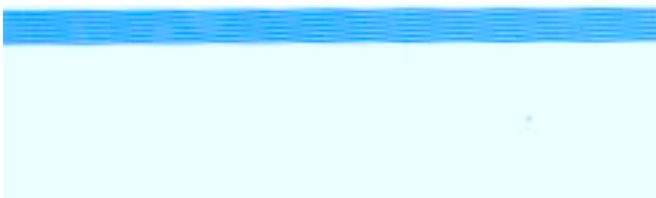
**Counter-Meter CM installed between two feeding groups**

Counter-meter CM provides accurate length readings of cables, wires or bars. It can be easily installed in any existing line. The output signal of the incremental encoder can be used to display both the length and the speed line.

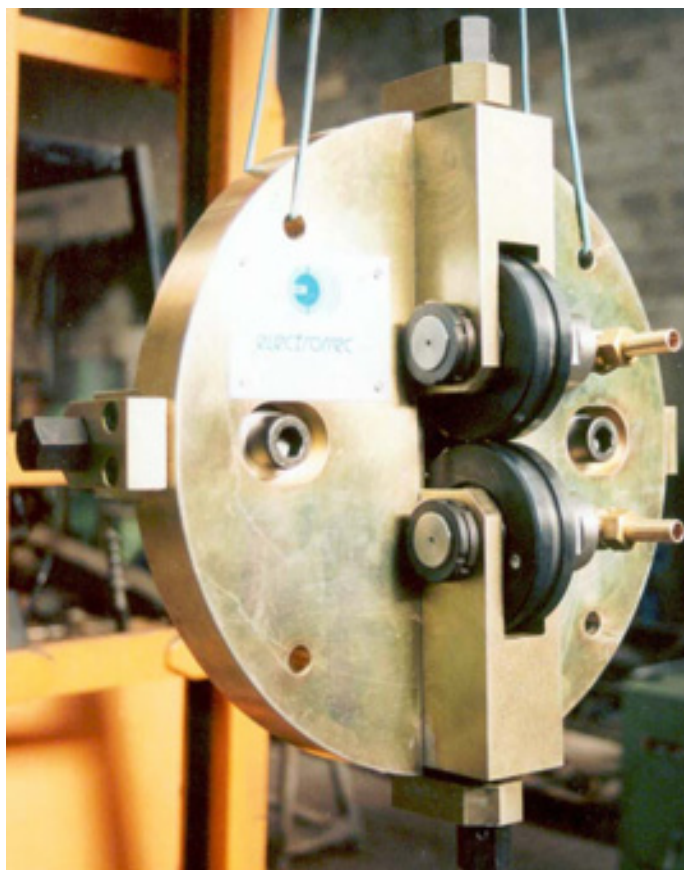
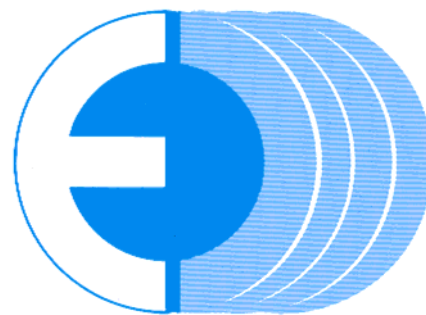
### **Main Features**

- Low maintenance cost because the wearing parts (dismountable rolls) are cheap.
- Incremental encoder mounted on independent support to minimize the effect of vibrations.
- Pneumatically operated system with the pneumatic actuating control housed at the front of the machine.
- High accuracy reading thanks to the floating assembly (i.e. the two rolls constantly rest on the wire).
- Installation on existing machine or as independent unit. In that case, it is supplied with an adjustable support and guiding rolls.
- Suitable for materials up to 100 mm diameter (other measures on order).

*We reserve the right to modify the specifications as a result of technical improvements.*



## PLAIN TURK HEAD



**Plain Turk Head**

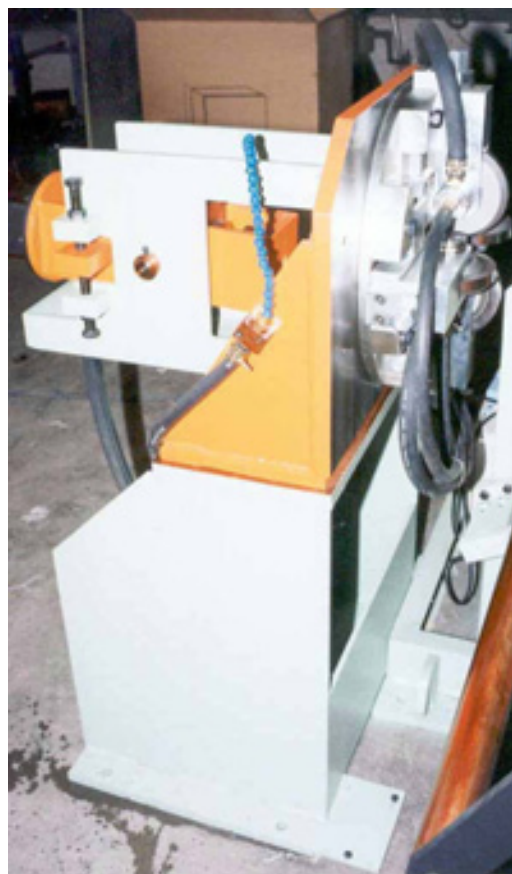
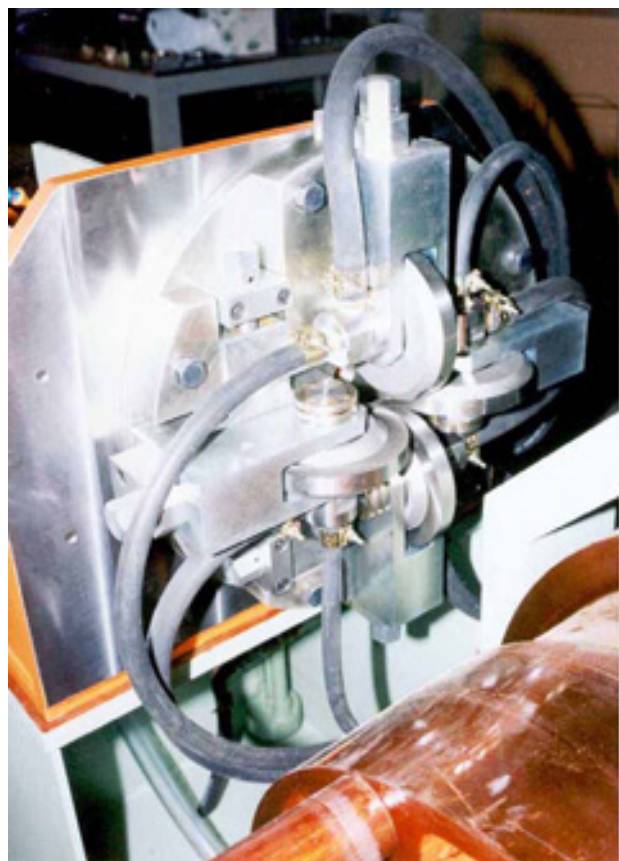
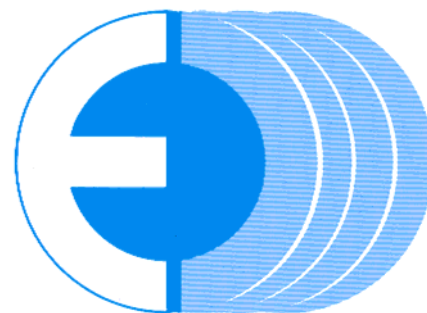
Plain turk heads have four adjustable rollers, manually and independently operated. The bearings of the rollers are water cooled. These turk heads are commonly used to produce square or rectangular shapes with natural edges, as pre-milling stations of die-finished profiles, as cable compacters or for milling oval-round shapes, using special grooved rollers for each case. Depending on material and tolerances, maximum section reductions up to 42% can be achieved.

Size	A	B	C
Max. square material 300 N/mm <sup>2</sup> (mm)	7	10	15
Max. square material 600 N/mm <sup>2</sup> (mm)	5	7	10
Max. square material 900 N/mm <sup>2</sup> (mm)	3	5	7
Dynamic load (kg)	5.400	7.000	10.400
Outside Ø (mm)	425	460	480
Roller Ø (mm)	120	135	150

*(Support base on order)*

*We reserve the right to modify the specifications as a result of technical improvements.*

# UNIVERSAL TURK HEAD



## Universal Turk Head

Universal turk heads have four adjustable rollers, manually and independently operated. The bearings of the rollers are water cooled. These turk heads are commonly used to produce square or rectangular shapes which not exceed the maximum section depending on construction size, using only one set of rollers. Depending on material and tolerances, maximum section reductions up to 42% can be achieved.

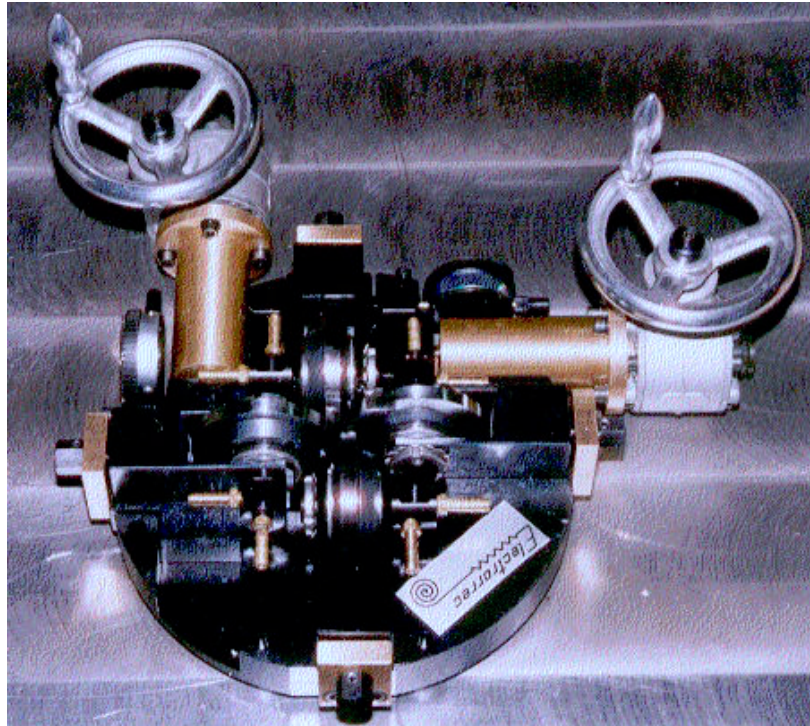
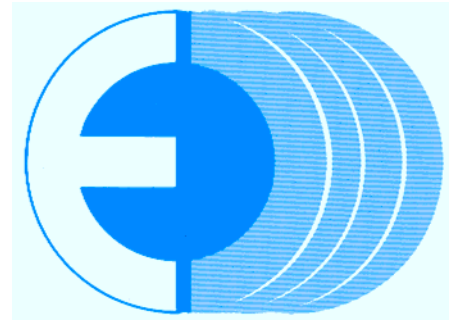
Size	A	B	C
Max square material 300 N/mm <sup>2</sup> (mm)	7	10	15
Max. square material 600 N/mm <sup>2</sup> (mm)	5	7	10
Max. square material 900 N/mm <sup>2</sup> (mm)	3	5	7
Dynamic load (kg)	5.400	7.000	10.400
Outside Ø (mm)	425	460	480
Roller Ø (mm)	120	135	150

(Support base on order)

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## UNIVERSAL PRECISION TURK HEAD, TYPE CTUP



**Universal Precision Turk Head CTUP**

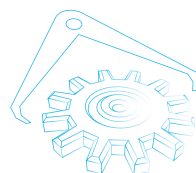
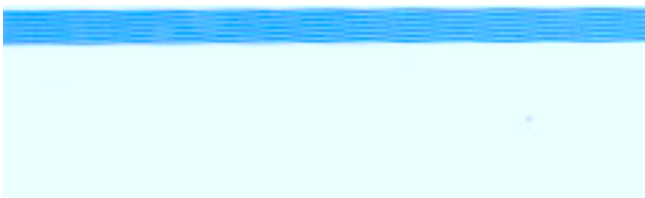
Universal precision turk head CTUP is largely used for the production of close tolerance profiles and especially designed for high and medium carbon steel content wires. It consists of a rigid steel plate which holds four rolls. The radial positions of these rolls are separately adjusted by means of an independent screw. In addition, two rolls are also laterally adjusted by means of two fine wheel-reducers sets. The lateral adjustment is monitored by two dial gauges.

CTUP features water cooled rolls, simple control and easy installation in front of the customer's machine.

### **Technical Data**

Inlet wire diameter:	0,80 mm.
Profile size:	max. 0,65 x 0,65 mm.
Diameter of rolls:	80 mm.
Width of rolls:	8 mm.
Dimensions:	395 x 410 x 184 mm.

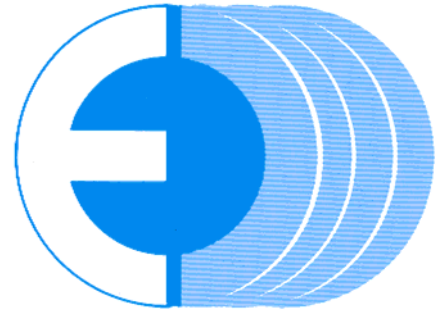
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# BREAKING ELONGATION TESTER, TYPE EAL RS232



**Breaking Elongation Tester EAL RS232**

## Main Features

The breaking elongation tester is designed according to UNE 21-011-74 rule. It disposes of a double automatic stop system so it can do wasteful trials (maximum elongation trial) as well as non-destructive ones (elongation higher than a preset threshold value).

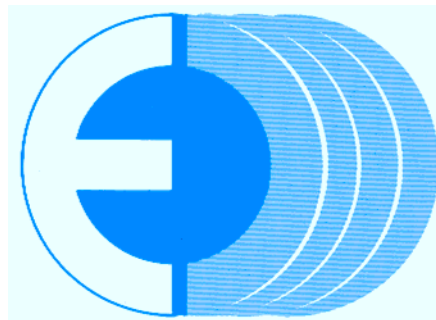
It is fabricated on a compact and solid iron base plate, and it has a fast clamping mechanism. The latest model incorporates a communication port RS 232 to download the data into a computer for statistical processing. Equipped with special clamps kit for very fine wires on request.

**Special version available (EAL6 RS232) for testing copper and aluminum wires up to 6,0 mm diameter.**

- Area of application: soft wire.
- Measuring range: 0,7 mm to 2,5 mm diameter (standard clamps) and under 0,7 mm with special clamps kit.
- Length of test: 200 mm.
- Reading: direct in % elongation.
- System: electronic digital.
- Weight approx.: 22 kg.
- Connection: 220 V alternating current, 50 or 60 Hz, with 1,5 m connecting cord and communication cord.
- Dimensions:
  - Length: 849 mm.
  - Wide: 161 mm.
  - Height: 178 mm.

*We reserve the right to modify the specifications as a result of technical improvements.*

# MOTORIZED POINTING MACHINE, TYPE LPM -4 0



**Pointing Machine LPM-40**

Motorized pointing machine LPM-40 is specially designed to get points from small size wire coils or bars. It is suitable for all materials. LPM-40 consists of one set of rolls with several grooves. Each groove varies its section in accordance with some preset angles. Thus, when the wire is put into the groove and the roll revolution coincides with the maximum groove section, the material goes in freely. On the contrary, the wire is ejected when the roll revolution coincides with the minimum groove section.

## Main Features

- Powered by alternating current motor.
- Big window on the backside of the pointing machine to allow the wire end exit.



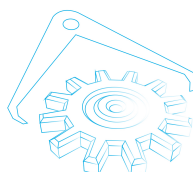
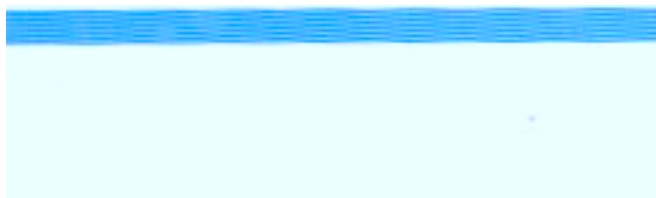
**Detail of constructive novelties**

- Front side of the pointing machine body with guiding holes. Thus, the wire is easily put aligned into the proper groove.
- Horizontal removable end to avoid mistakes when the wire is put into the desired groove.

## Technical Data

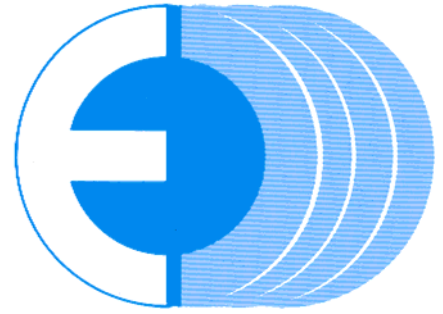
Maximum inlet wire diameter:	3,5 mm.
Minimum outlet wire diameter:	0,6 mm.
Number of rolls:	2, horizontal plane, with 24 grooves each one.
Voltage:	3 x 220 V, 50 Hz.
Power:	1,1 kW.

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## ROTARY DIE HOLDER, TYPE PR



**Rotary Die Holder PR 43/6 M**

### Main Features

Rotary die holder PR increases die life by improved lubrication and minimizing of “tunnelling” in lubricant. Increased drawing speed is often possible as well as less off-round product and less waste of lubricant.

Compact rotary die holder PR, in addition to its reduced weight, provides significant reduction in running cost.

- Thanks to its compact design, the die can be assembled close to the lubricant for a better wire lubrication and higher drawing speeds.
- Equipped with soap mixer.
- Die with direct water cooling.
- Possibility of installation on any type of dry drawing machine.

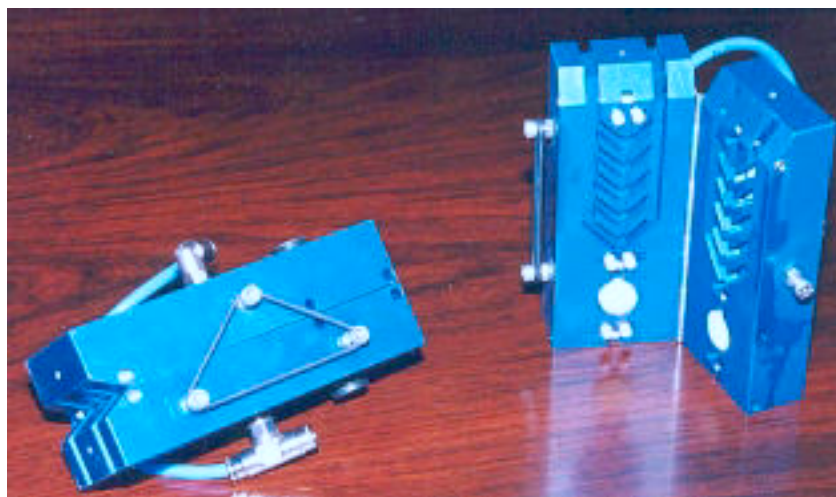
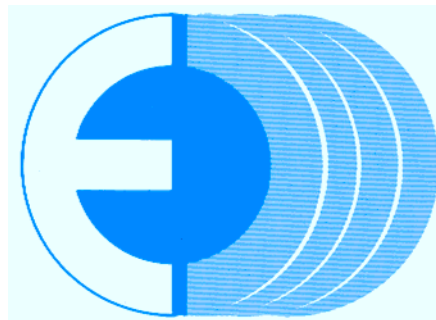
### Technical Data

- Maximum wire diameter: 6 mm.
- Die-case diameter: 43 mm.
- Power: 0,18 kW alternating current motor.
- Approx. weight: 67 kg.
- Dimensions: 490 x 185 x 320 mm.

*Other measures on order.*

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## AIR WIPE, TYPE SEC



**Air Wipe SEC 4**

### Main Features

Air wipes SEC remove cooling water and other unwanted low viscosity liquids from the surface of wires, insulated wires or cables at high speed in wire and cable machinery as, for instance, wire drawing machines, continuous resistance annealers or extrusion lines.

- Aluminum body consisting of two symmetrical pieces with stainless steel hinges and closing system by means of O-ring.
- Ceramic guides at the entrance and exit.

### Technical Data

Air wipes SEC guarantee low air consumption. However, it is recommended that the air supply line should be fitted with the means for controlling the airflow to allow adjustment of air consumption to the lowest, consistent with adequate wiping action.

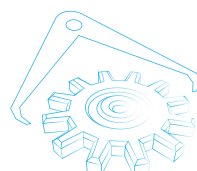
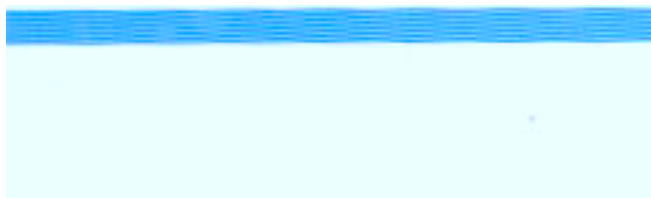
The countercurrent airflow unloads the unwanted liquids at the entrance thanks to the internal grooves.

Air wipes SEC generate less than 85 dB at a distance of one meter in all directions.

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Model	Diameter (mm)		
	Nominal	Maximum	Minimum
SEC 2	2,0	1,6	0,6
SEC 4	4,0	3,2	1,2
SEC 7	7,0	5,5	2,3
SEC 10	10,0	8,0	3,2
SEC 15	15,0	12,0	6,0
SEC 25	25,0	22,0	10,0
SEC 40	40,0	38,0	20,0

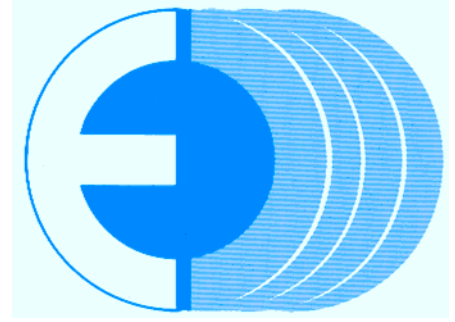
- Compressed air consumption: approx., 33 m<sup>3</sup>/h.
- Compressed air pressure: 5 to 6 bar.



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# HIGH SPEED DRYING TUNNEL, TYPE SEC HS



## High Speed Drying Tunnel SEC HS

The high speed drying tunnel SEC HS has been designed to remove cooling water from the surface of insulated wires at high speed installations.

•Countercurrent airflow.

### Technical Data

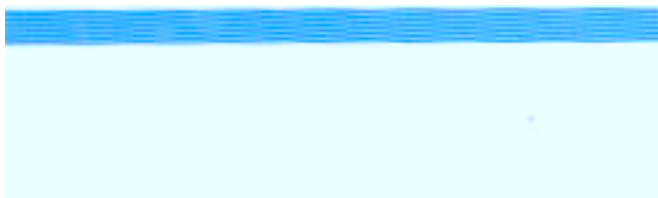
The unit consists of a rectangular body made of stainless steel, which is equipped with two adjustable supports. Inside the body there are two compressed air wipes SEC 7 and one warm air dryer Leister Hotwind S.

Range diameter:	2,30 to 5,50 mm.
Speed:	900 m/min, material up to 3,20 mm diameter.
Flow and pressure of compressed air:	approx., 66 m <sup>3</sup> /h, 5 bar.
Warm airflow:	adjustable 24-36 m <sup>3</sup> /h.
Temperature:	adjustable 20-600°C.
Height of the wire:	adjustable 900-1.100 mm
Length:	1.100 mm.

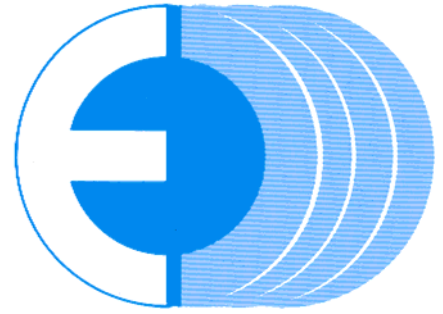
### Main Features

- Flow and temperature of warm air electronically controlled.
- Low noise (lower than 60 dB at a distance of 1,5 m in all directions).
- Built with corrosion and high temperatures resistant materials.

*We reserve the right to modify the specifications as a result of technical improvements.*



# TILTING UNIT AND STRIPPERS



**Tilting Unit ARC**



**Stripper for Barrels**

## Main Features

Tilting units ARC are suitable to lift and tilt reels and spools easily and safely. These units are especially designed to be used in wire drawing plants, cable facilities and cable distribution stores.

- Low tilting effort under load.
- Double mechanical safety system.
- Spool retention by means of eclipsable claws, which prevent the central hole of damage.

Tilting units ARC can be supplied as an independent unit or together with the revolving column and the electrical lifter.

## Technical Data

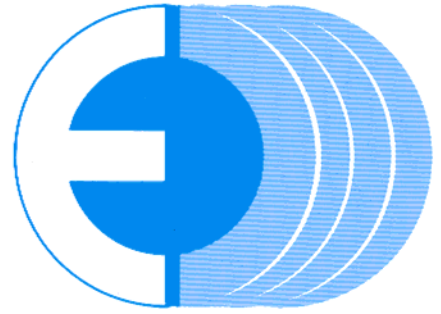
	ARC-630	ARC-800
Reels	DIN 46.397	DIN 46.397
Flange diameter (mm)	630	800
General measures (mm)	690 x 970	1.060 x 1.230

The strippers for barrels and coils are also supplied independently or with the revolving column.

*Other measures on order.*

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## ROTARY PLATFORM, TYPE PRV



**Rotary Platform PRV**

The installation of vertical rotary platforms PRV under static or dynamic coilers guarantees the rosette petal layering coiling, thus increasing the pay-off speed of the final wire coil.

### Main Features

- Built-in design.
- Platform slope adjustable by means of easy-access wheel.
- Rugged construction with low maintenance.
- Basket fixing couplings according to customer's specifications.

### Technical Data

- Drive by means of A.C. 1,00 kW motor.



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