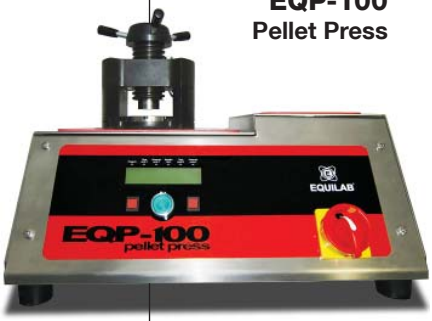
Sample Preparation

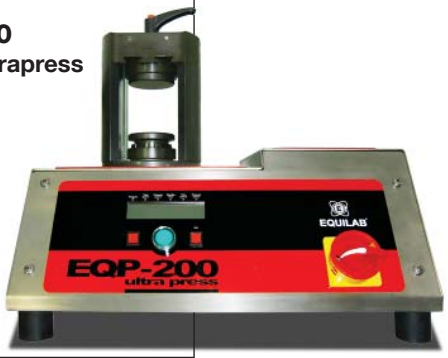
EQP-1
Manual
Pellet Press

F Series
Induction
Fluxers

EQP-100
Pellet Press



EQP-200
Pellet Ultrapress



EQM-400
Ball Mixer Mill

EQR-100
Vibratory
Disc Mill

MultiEQP-100
Processing System
for Metallic Samples

EQH-3.0
Induction
Heater

EQUILAB *Versatile Analytical Instrumentation*

"For truly representative and repeatable results in any analytical process, the first step, preparing the sample, is the most important. Excellence in the treatment of the sample can only come from high quality units".

C O N T E N T

EQUILAB

25 años

EQP-1 Manual Pellet Press

Obtaining truly representative results in RX or LIBS depends very much on the previous step, the manufacturing of the pellet. The Hydraulic Manual Pellet Press EQP-1 has been specially designed to achieve high quality pellets, homogeneous and stable. Able to apply pressure up to 20 tons, it is simple and safe to manage, and it occupies very little room in the laboratory.

The sample is placed in the chamber, specially designed for this purpose, then you lower the spindle and exert pressure progressively on the hydraulic lever until reaching the desired pressure – which you can control visually at all times with the analog gauge -. Once the level you wanted has been reached, the pressure is released through the pressure relief device, the plunger goes up and you can remove the pellet.

Technical Specifications:

Method: pressure

Prospect: cement industry, metallurgical industry, material recovery companies, Geology and Mineralogy, ceramics

Maximum pressure: 20 t

Sample diameter: Ø 32 /40 mm. (other sizes and shapes under demand)

Consumables: aluminium cups Ø 32 - 40 mm.

Dimensions: 50cm (height) x 22cm (width) x 23cm (depth)
Approximate weight: 20kg

Applications:

Glass, cement, plaster, ceramics, minerals, silicates, slags

- **Fast manufacturing of quality pellets**
- **Does not need electrical power**
- **Compact and autonomous unit**

“F” Series Induction Fluxers

The new F1 and F2 induction fusion units have been specially developed to speed up and facilitate the process of preparation of glass disks for their analysis by XR, and AA solutions for ICP. They can produce, fast and accurately, beads and dissolutions with classical fluxes (Borates) as well as to undertake high quality fusions in non oxidized elements using peroxide. They are effective both in high and low temperatures. The F2 model has got two working stations completely independent from one another, it is literally like having two fluxes within a single unit.

Following the trend of removing combustion gas from laboratories, the **F Series** represents a technological breakthrough in the fusion units, as it heats up the samples by induction homogeneously, quickly and efficiently. These are highly automated units with capacity to control and monitor in real time the fusion process of one or two samples separately. To this innovative heating system we add a constant temperature check up device and a good work of software. The result is a unit able to exhaustively control and change the fusion process of each of the samples, in real time.

Working System

The **F Series** induces electrical power through a coil – no flames and no contact -, which, producing an electromagnetic field, can heat up the crucible efficiently and very quickly, causing the fusion of the sample mixed with the flux in very short time and homogeneously. When the heating time we allocated for this step finishes, the sample is poured automatically to the left, in the solutions beaker, or to the right, in the mould heated previously.

Quicker

The heating process by induction is noticeably a faster operation, cleaner, and more accurate and reliable than any other system. It enables the user to reach high temperatures (1200ºC) in just a few seconds and to control them effectively. The changes in the temperature of the sample are applied right away, so you can truly have the control of the fusion process in real time. The only parts of the unit that do actually become hot are the crucibles and the moulds: this allows the unit to reduce the time between fusion cycles, as it does not need cooling large surfaces.

Better features

- An optical pyrometer focused to the base of the crucible carries out a check up of the fusion temperature all the time.
- The programmable stirring system ensures an excellent homogenization of the samples during the heating up process.

- You can also adjust the refrigeration system for the crucibles and the moulds, thus accelerating noticeably the cooling down of the same.
- Flexible process for stirring dissolutions.
- Includes an exclusive system to remove gases that enables the unit to be placed anywhere, not needing extractor hoods.
- As a safety measure, the door is locked automatically if the temperature inside supposes a risk for the user.
- The coil is cooled down using a closed water circuit with a small refrigeration device (300W) – no water or coolers needed – able to maintain up to 2 modules / 4 coils working simultaneously (2 crucibles and 2 moulds).

Flexible

Each of the fusion modules can work synchronized with the rest or independently with different programs, for example, if undertaking samples of varied nature. This freedom lets the user prepare new samples as the others finish their cycle, increasing thus the productivity in the laboratory.

Low consumption

The induction system is a fast heating method with a very moderate electricity consumption.

Maximum consumption 4000W, tested with the simultaneous heating of two crucibles and two plates.

Great productivity

- Beads: up to 6 / 8 per hour with each module
- Dissolutions: up to 16 per hour with each module
- Fusions/oxidations (peroxide): up to 16 per hour and module

Technical specifications:

Method:	Fusion, shaking, blend and homogenization
Applications:	Geological samples, cements, minerals, slag, ceramics, oxides, glass, metals, ferroalloys, sulphide, fluoride, alloys, etc.
Manufactures:	• glass beads for XRF • solutions of peroxide or pyrosulphate • samples for AA and ICP
Programs:	50 independent modifiable programs
Maximum consumption:	4000W (heating two crucibles and two moulds)
Power:	230V - 18A
Control:	PC Control or Tablet PC 10,1" Custom Control
Cooling:	a - Closed circuit / minichiller 300W b - Open circuit / external circuit 1.5 LPM
Work frequency:	130..160 KHz (self-adjusting)
Programmable elements:	crucible shaking system / crucible shaking angle / pouring of the crucible solution stirring speed / crucible and mould cooling system
Temperature control:	400 to 1200ºC limited by software
Software:	graphic and intuitive. Diagnosis and parameterization screens
Accesories:	platinum alloys, zirconium and nickel crucibles and moulds

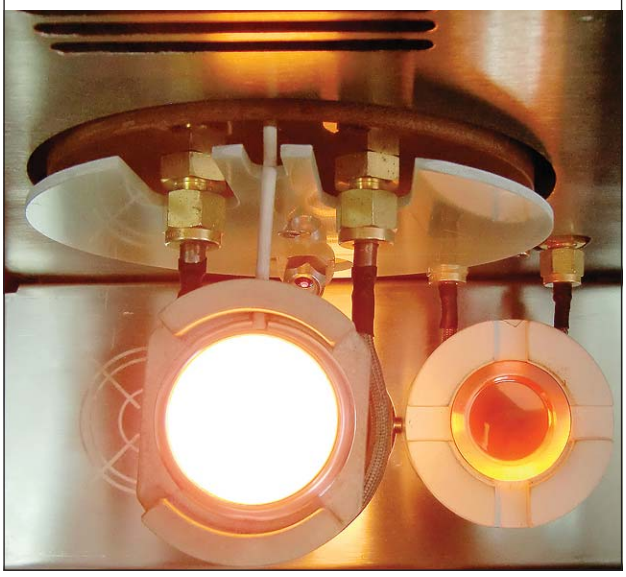
F1
Dimensions: 42cm (height) x 35,5cm (width) x 50cm (depth)
Approx weight: 20kg

F2
Dimensions: 42cm (height) x 60cm (width) x 51cm (depth)
Approx weight: 35kg

Applications:

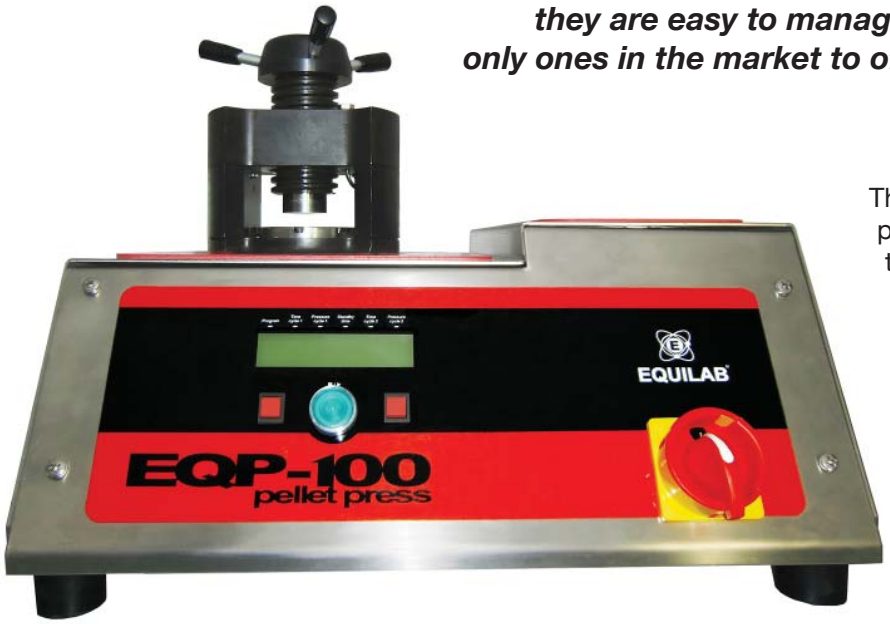
Glass, cements, plaster, slag, coal, clinker, coke, metal oxides, ferroalloys, ceramic materials, mineral and mineralogical samples.

- **Beads for XRF**
- **Solutions for AA and ICP**
- **Peroxide oxidations**
- **Electric all over**
- **Exhaustive control of the fusion temperature**
- **User-friendly software, intuitive, with graphics**



EQP-100 & EQP-200 Pellet Press

To obtain truly representative results in XR or LIBS, the samples request a fine finish – very flat surfaces, regular and without cracks -. Therefore, the manufacture of the pellets must guarantee a high degree of cohesion and stability. The EQP-100 and EQP-200 units have been especially developed for getting the best result in the manufacture of tablets. With a robust and durable design, they are easy to manage and very effective. These are the only ones in the market to offer up to five working programs in single or double cycle.



The double cycle option allows the user to program the **EQP-100** and **EQP-200** units to apply pressure two times during the same process, letting you digitally adjust the time and the strength, and the time elapsed between each cycle. That time is necessary, in many of the cases, to allow the release of gas trapped within the sample – this gas is generally the reason for irregularities or fissures in the pellets.- This capacity makes of them the best alternative to treat difficult samples.

Both the **EQP-100** and the **EQP-200** press have been specifically designed to prepare dust samples (pellets), the objective of the tablets is to be analyzed by XR.

The preparation of samples is a common technique that will allow us to manipulate and store the samples easily, as well as ensuring analytical repeatable results

This technique consists in compressing the particles of the dust sample (by themselves or mixed with a binding agent) until obtaining a perfectly homogeneous pellet with a flat surface, mechanically robust and free of cracks or dust.

- The **EQP-100** manufactures pellets of a single size, 40 mm.
- Thanks to a comfortable replaceable tool, the **EQP-200** Pellet Press can prepare pellets of 32 and 40 mm. Other diameters under request. Its versatility allows it to work as well with different types of mould, such as square, rectangular, etc.

THE ONLY ONES WITH PROGRAMMABLE DOUBLE CYCLE

Technical specifications:

Method: pressure

Applications: cement industry, metallurgical industry, Thermal Stations, Environmental Laboratories, material recovery companies, recycling plants, Geology and Mineralogy, ceramics

Speed control: frequency converter 25/75 Hz

Sample diameter: EQP-100 / 40 mm
EQP-200 / 32 & 40 mm. (other sizes and moulds under request)

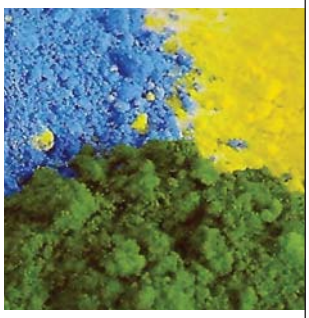
Maximum pressure: 40 t / 50 t

Engine power: 750W

Power source: 220V

Consumables: aluminium cups 40 mm diam. / Binding Agent

Dimensions: 40 cm (height) x 51 cm (width) x 42 cm (depth)
Approximate weight: 75 kg.



Applications:

Glasses, earths, cements, plaster, ceramic materials, minerals, silicates, geological and mineralogical samples.

- **High quality pellets in no time**
- **Simple handling**
- **5 working modes**
- **Double press cycle**
- **User friendly English/Spanish display**
- **Compact design**
- **Great value**
- **Obtain pellets of different diameters and facilitate the cleaning of the unit choosing the EQP-200 model**

Pressing dies of different diameters

EQM-400 Ball Mixer Mill

Thanks to its capacity to crush, blend and homogenize in a fast way small volumes of samples, the EQM-400 Mill is your best ally to prepare samples. This Mill has been designed for the final preparation of small sizes of hard, semi-hard and fragile samples – up to 15 g. It can prepare two samples simultaneously and reduce their size parting from an initial 0.8 to 1.5 mm. to sizes of less than 10µ in short periods of time – 1 to 4 minutes.

Given its efficiency-time ratio, this mill is the best solution for the final downsizing in the preparation of samples by fusion – the use of sizes of grain of 10µ speeds up the homogenization of the sample in the flux, substantially reducing the melting times. It is also specially recommended for the preparation and blending of samples with binding agents for their further analysis by X-Ray fluorescence.

The **EQM-400** Mill allows to reduce the size of dry samples to a final grain size of 10µ in milling times of 1 to 4 minutes, all in a compact desktop design. It is controlled by a microprocessor with 5 working programs with which you can choose - comfortably and through a digital display – the speed and milling time in an independent manner.

The unit is composed of two sample containers of easy and safe assembly, connected to a small and powerful engine. A series of articulations allow for the strength of the engine to be transferred to the containers following a swinging arch trajectory. The effect of milling, blending and

homogenization is produced inside the receptacles, where the sample strongly collides against the milling balls.

Easy of use

The sample is put inside the milling jars together with one or several balls, depending on the size of the sample, starting size and desired final granule size. You choose the speed and timing for the milling process – between 0 and 2000 shakes per minute – and press "START". The swinging movement of the jars results in the movement, by inertia, of the balls within, which strongly collide amongst themselves and against the walls of the jar, crushing, milling and blending all they find in their way.

Technical specifications:

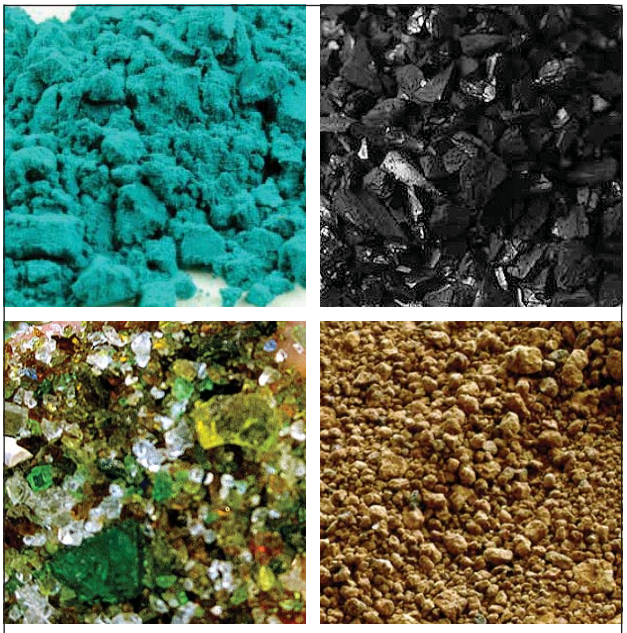
Method:	Crushing, milling, blend and homogenization
Applications:	Hard, semi-hard and fragile materials such as coal, coke, glass, slag, minerals, flooring, ceramics, silica, bones, plastics, wood, electronic waste, chemical products, tobacco, cereals, etc.
Programs:	5 independent programs Speed: 0 to 2000 shakes/minute Time: 0 to 99 minutes
Power:	150W
Engine:	220V - 150W
Power source:	230V - 150W
Accesories:	50ml and 25 ml jars CW balls: Ø 10mm / Ø 15mm / Ø 20mm / Ø 25mm

Dimensions: 24cm (height) x 31,5cm (long) x 35cm (width)
Approximate weight: 13kg

Jars and balls:

	Balls			
Jars	**10mmØ**	**15mmØ**	**20mmØ**	**25mmØ**
25ml	2 a 4	2 a 4	1 a 2	-
50ml	6 a 8	4 a 6	1 a 2	1

Jars of hardened steel – 63HRc and Tungsten Carbide Balls (WC)



Applications:

glass, earth, slag, coal, clinker, bones, coke, metallic oxides, ferroalloys, wood, minerals, silica, electronic waste, chemical products, tobacco, geological and mineralogical samples and cereals.

- **Obtain different sizes of grain for analysis in seconds**
- **User friendly and easy to manage**
- **5 working programs**
- **Accepts a wide range of materials**
- **Simple and quick substitution of milling jars**
- **User friendly display**

EQR-100 Vibratory Disc Mill

The EQR-100 Vibrating Disc Mill is a milling unit specifically designed to obtain the analytic granulometry of a great variety of samples, such as glasses, earth, dregs, metallic oxides, ferro-alloys, cements, ceramics, and many others. It is able to triturate an ample range of different materials, from the semisoft to the hardest, fragile or fibrous. Its simplicity of use and the robustness of all its components make this mill a unit practically free from the need of a maintenance service, and easy to operate

Once the sample is deposited in the milling jar, you only need to select the grinding time and the appropriate speed using its microprocessor.

The unit has got five programs to adjust the speed and time of the grinding process. With a special soundproof anti vibration system, the unit remains stable during the process, being acoustically insulated to reduce the noise level to a minimum.

Simple

Controlled by a microprocessor, it has got five working modes, by which you can select different milling times and speeds.
Once the milling jar with the sample is deposited inside the mill, you only need to select the program and press the green key. The unit will start up automatically and, after the selected time has elapsed, the mill stops, allowing the opening of the door to extract the milling jar.

Safe

The fastening system of the milling jars, as well as the door anchorage system disabling its opening until the motor has come to a complete stop, make of this mill a highly safe unit.

Stable

The frequency converter of the mill, apart from allowing the motor speed to be adjusted to the most appropriate one for each type of sample, makes it possible to reach a working speed as well as to pass to zero speed through an acceleration or deceleration ramp, preventing the unit from vibrating during the start up and shut-down processes.

Fast

The grinding of the sample is made in the inside of the jar by means of the initial collision of the discs with one another and the subsequent friction produced between the discs and the jar. The milling time is really short.

Nominal approximate time of milling: 1 minute.

Technical specifications:

Method:	Friction, mixing and grinding
Applications:	cement and metallurgical industries, thermal power plants, environmental laboratories, material recovery plants, recycling plants, geology and mineral related industries, ceramic industry.
Initial granulometry*:	< 15mm
Final granulometry*:	< 50 µm
Grinding speed:	Regulable / 750/2000rpm
Motor power:	750W
Power:	2 x 220V
Milling jars:	• Steel 100ml • Steel 200ml • Tungsten carbide 100ml • Tungsten carbide 200ml
Dimensions:	104cm (height) x 80cm (long) x 60cm (width)
Approximate weight:	250kg

* Depending on the sample material and the milling program

Applications:

Glasses, earths, dregs, coal, clinker, coke, metallic oxides, ferro-alloys, cements, ceramics, minerals, silicates, geological and mineralogical samples.

- **Obtain an analytic granulometry in seconds.**
- **Simple handling**
- **5 working modes**
- **Grinds a wide range of materials**
- **Quick system for jar replacement.**
- **Anti-vibration system**
- **User-friendly display**
- **The best value in the market**

EQH-3.0 Induction Heater

The preparation of metallic samples is currently made in many and various ways – depending on the hardness of the metal. More times than not you need to heat the sample previously in order to soften the metal and thus allow its further processing, whether by cutting, crushing or punching. The Induction Heater EQH-3.0 has been specially developed for the red hot heating of lollipops and bars for their quick softening.

The Induction Heater **EQH-3.0** has got 5 preset programs to cater for the requests of the routine preparation of samples in steel mills and foundries. These programs can be modified according to the type of sample and the needs of each particular client.

The **EQH-3.0** only needs a 50x50 cm. space and a plug of 220V/15A, and it is able to heat a piece of metal to red hot in barely 30 seconds – depending on the program chosen.

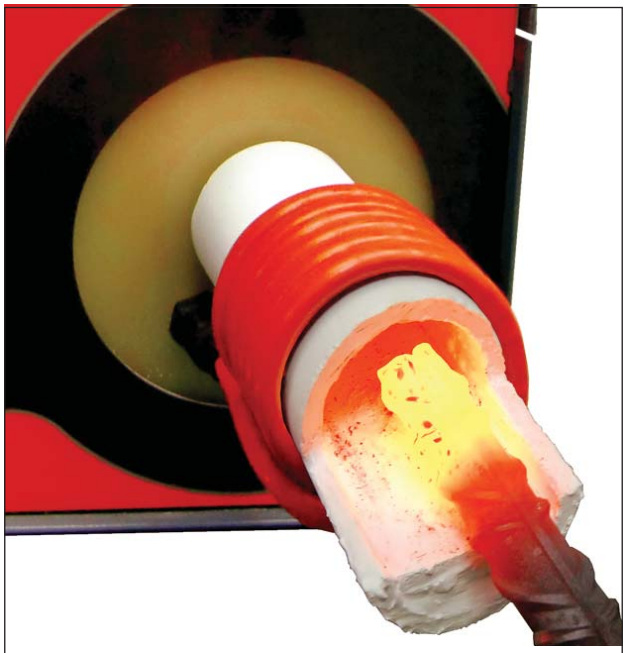
The use of the heater is very simple. Once the program is selected, you put the sample for heating inside the coil and push the "START" button: the heater is immediately working – the lamp in unit 2 shows that the coil is heating up, and shall remain in that state until the programmed time for the heating up has expired. When that moment is reached, the unit warns with a high pitch beep that the power of the coil is being withdrawn so that the sample can be taken out, ready for processing. As a safety measure, the lamp and the cooling system will continue on for 30 more seconds. It has got an internal closed water circuit, constituting the cooling system.

The **EQH-3.0** is a simple and fast unit which allows the heating up of a lollipop or a metal bar in just 30 seconds.

Technical specifications:

Method:	Induction heating
Applications:	Manufacturers of steel, iron and alloys
Programs:	Five programs
Heating speed:	Regulable
Maximum power:	3KVA
Power:	220V 50/60 Hz
Induction Frecuency:	120 kHz ... 150 kHz
Protection:	IP 40
Cooling:	internal closed circuit
Dimensions:	40cm (height) x 51cm (long) x 42cm (width)
Approximate weight:	12Kg

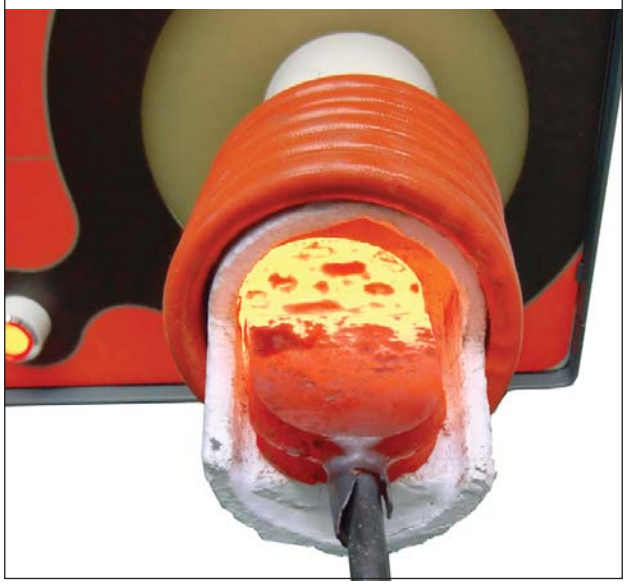
* Depending on the sample material and the heating program



Applications:

Steel, iron and alloy samples.

- **Heat your metal samples very fast**
- **Simple handling**
- **5 adjustable working programs**
- **User friendly display with instructions in English and Spanish**
- **Compact design**
- **The best value in the market**



MultiEQP-100 Processing System for Metallic Samples

The versatility of the new MultiEQP-100 makes of this unit and essential instrument for the treatment and manufacturing of metallic samples. Effective for cutting, crushing and punching metallic samples, you can also include the capacity for pressing pellets that will be analyzed afterwards by RX. The objective of punching the samples is the obtention of pins for their analysis in Elemental Analyzers. With a touchscreen and intuitive software, the multiple possibilities available in the MultiEQP-100 are easily controlled. The addition of two magnetic sensors on the left hand side of the pistons allow the automation of the working cycles.

The special adaptability conditions of the **MultiEQP-100** make it immediately ready for undertaking different tasks. This unit has got a specially designed system for the fast and safe changeover of tools fitted for different purposes.
The need of the clients for the immediate readiness of different tools for processing metallic samples led us to transform the **MultiEQP-100** in a samples processing system, as it is able to hold up to three working pistons with capacity to assume, each of them, multiple types of tools. In fact, we can manufacture the tools according to the specifications of use.
Each of these working stations can be controlled directly from a single control unit – by a user friendly software and a touchscreen-, from which we can adjust the parameters such as the desired time, the stroke of the piston and the pressure: up to 50 tons.
To select a working unit you can do it through the touchscreen, or directly at the unit.

Complementary operation with the Induction Heater

Due to the hardness that some samples can reach (for example C >0.2), they can't be processed directly and must be preheated to soften the metal; the combined use of the EQH3.0 Induction Heater with this unit make possible the quick and convenient processing of these kind of samples.

Technical Specifications:

Method:	pressure, cutting, crushing, punching
Applications:	metallurgical industry
Speed control:	frequency converter 25/75Hz
Power source:	2 x 220V
Consumables:	aluminium cups 40 mm. diam.

Dimensions

Control unit: 40 cm. (height) x 51 cm. (width) x 42 cm. (depth)
Control unit weight: 40 kg.
Piston weight: 60 kg.

Safety housing

Pellet Press Piston:

Maximum stroke:	53 mm.
Diameter:	40 mm.
Flow:	1.17 l/min.
Maximum pressure:	450 kg/cm^2
Maximum strength:	50 T

Punching Tool piston:

- Pressure control
- Time control

Amount of pins: 3
Pins' diameter: 6 mm. (other diameters under request)
Maximum strength: 25 T (limited by software)

Cutting Tool piston:

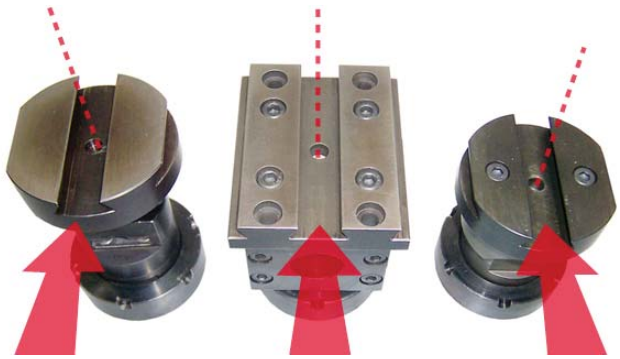
- Pressure control
- Time control

Cutting diameter: bars up to 30 mm Ø
Maximum strength: 50 T

Crushing Tool piston:

- Time control

Contact surface: 53 mm Ø
Maximum strength: 50 T



Applications:

Steel and ferroalloys

- **Process all kinds of metallic samples with just one unit**
- **The best quality/price ratio in the market**
- **Special tools under request**
- **Simple to operate**
- **Fast change of tooling**
- **Customized configuration**
- **User friendly digital display**
- **Programs specially adapted to your needs**

Flux and Platinumware for Fluxers

Our flux is manufactured following the most strict quality control regulations to guarantee a high purity degree.

Platinumware in different alloys, specially designed to cater for the specific needs of laboratories.

Milling jars for the EQR-100 Vibratory Disc Mill

Milling jars:

- EQR-A-100 Steel Milling Jar 100 ml.
- EQR-A-200 Steel Milling Jar 200 ml.
- EQR-W-100 Tungsten Carbide Milling Jar 100 ml.
- EQR-W-200 Tungsten Carbide Milling Jar 200 ml.

Tools for the MultiEQP-100 Metallic Samples Processing System

- Punching tool
- Cutting tool
- Crushing tool
- Pellet Press tool
- Other tools under request

Binders and cups for the manufacturing of pellets by pressure

Binding agents and aluminium cups to manufacture pellets to be analyzed by XRF

Jars and balls for the EQM-400 Balls Mixer Mill

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