

# 2020 METALLOGRAPHY



# CONTACTS



*POLISHING TECHNOLOGY®*

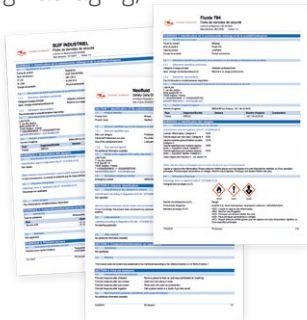
Located in Gaillard, LAM PLAN specializes in industrial lapping and polishing solutions.

For 58 years, LAM PLAN teams have been designing and providing equipment and preparations guaranteeing its customers performance, quality and productivity.



## Safety data sheets

Download all the safety data sheets in PDF format LAM PLAN according to the REACH and CLP regulations (Classification Labeling Packaging).



[sds.lamplan.com](https://sds.lamplan.com)

## Catalogs

Download the LAM PLAN catalogs and find all the polishing technologies, an overall vision of the volume of lapping, polishing, surface finishing and metallographic preparation solutions.



[catalogs.lamplan.com](https://catalogs.lamplan.com)

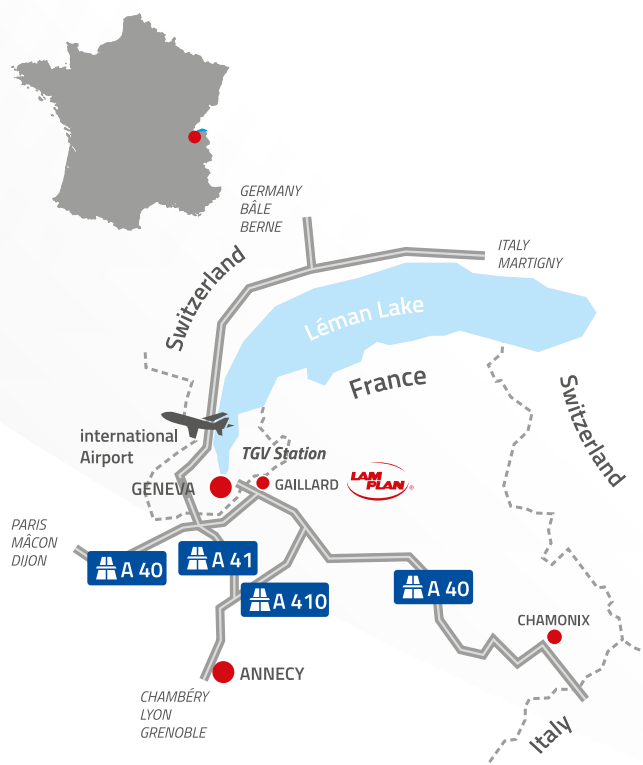


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## Videos

Watch the videos of our different machines by scanning the QRcode located on the «machine» pages of this catalog using your smartphone and find all of our videos on YouTube and at the following address:



[videos.lamplan.com](http://videos.lamplan.com)

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# LAM PLAN, SERVICES

ALWAYS GATHER  
THE BEST OF  
YOUR INVESTMENTS.

By choosing LAM PLAN 's equipment, you will benefit the service and monitoring of our technicians. As a machinery and consumable manufacturer, we provide our entire experience and resources for your satisfaction.



## Testing Laboratory

Attentive to your need, we assist you regarding the process of defining and interpreting your expectations. The fine expertise of your demand combined to our best know-how enable us to shape a tailor made solution for you.

## Commissioning and Training

Our aim is for you to become immediately efficient and productive. We will train you in the use of the material and in the implementation of the included consumables.

## Preventive Maintenance

LAM PLAN offers you punctual preventive maintenance tasks or annual contracts designed for each machine. We provide regular monitoring of your machines profiting an optimised management of maintenance costs, minimising the frequencies of failures.

## The curative maintenance

In case of a failure which would cause the cessation of your production, the rapidity of reaction is preeminent. It mostly lays on the quality of the diagnosis and the availability of replacement parts. These curative maintenances are operated for all LAM PLAN's machinery.

## The Retrofit

Retrofit maintenances include the upgrade of old equipment in order to prolong their use or to comply with new standards.

We also assure you the installation of optional equipment to improve your material and adjust it to your requirements.

# FROM INNOVATION TO DESIGN AND MANUFACTURING

Your requirements are a constant source of innovation. The LAM PLAN technical team addresses all challenges and attempts to respond to specific issues in a simple way, that remains safe and comfortable to handle.

Our constant renewed ability to improve our machines, supports and products, combined with our original know-how, enable us to respond to all demands.

Lapping, polishing, metallography: mastering these 3 lines of business empowers us to respond the most varied customer demands. Our know-how is spread into each distinct sector, through an overview of the volume of solutions.



## Supports

Plates, rods, abrasive discs, polishing pads, we develop a full range of supports making it possible to reach any surfaces and remove the required matter.



## Abrasive solutions

Preparations in the form of pastes and liquids, conventional and diamond abrasives, we develop formulations that respect the health of users and preserve the environment without compromising efficiency.



## Machines

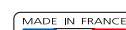
Whether your needs go for lapping, polishing or metallography, our range of machines and peripheral devices offer you a complete equipment to treat all type of parts.

## Quality assurance

The ISO 9001 certification constitutes the base of our approach to perpetual enhancement and concern about customer's needs, which enables us to respond to it properly. This certification of quality management within our organisation guarantees a permanent monitoring of our system's performance, quality of our products and services. Our goal: The customers' satisfaction.

COMPANY CERTIFIED  
**ISO 9001**

PROMOTES THE CERTIFICATION  
**ISO 14000**



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# 55 YEARS OF PASSION

FOR INNOVATION  
DEDICATED TO OUR CUSTOMERS

LAM PLAN S.A. was awarded the TALENT INPI trophy by the National Institute of Industrial Property.

This distinction is awarded to SME-SMI companies that innovate and include industrial property in their development strategy and growth plans.



# CUTTING



CUTTING MACHINES

## CUTLAM® micro 1.1

MADE IN FRANCE

The CUTLAM® micro 1.1 is a LAM PLAN laboratory micro-cutting machine. Easy to use and economical. It is designed for precision cuts of the most sensitive materials.

The CUTLAM® micro 1.1 allows you to include a versatile and robust machine in your laboratory at a reasonable budget. Its speed range and cutting chamber capacity will enable you to use it for many applications with a variety of cutting wheels (diamond,  $Al_2O_3$ , etc.) up to 150 mm diameter.

The work piece is held by a vice-holding, the knob, located outside of the cutting chamber, which permits a micro metric movement of the Z-axis.

The cutting feed is controlled with a sliding weight system, allowing you to fine-tune the load applied for delicate and slow cuts.

Equipped with an independent decanting/ recirculation tank, you can easily make slow cuts in optimum conditions of cooling.

Based on a robust aluminium frame with a painted metal body, the CUTLAM® micro 1.1 is stable and vibration free. The hinged transparent hood avoids any spraying outside the machine and allows easy access for clamping vices on the arm. The hood is fitted with a safety device which stop immediately the cutting wheel motor in case of an opening.



## CUTLAM® micro 1.1

Laboratory micro cutting machine  
Ø 150 mm



Recirculation coolant system, 10 litres

### Included Equipment

- Recirculation coolant system, 10 litres
- Cylindrical sample holder with clamping screw: Ø 12 to 50 mm maxi
- Set of flanges Ø 50 mm for cut-off wheels Ø 125 to 150 mm

### Accessories

- Set of flanges Ø 35 mm for cut-off wheels Ø 75 to 100 mm 60 CTM01 10
- Sample holder with multi screw clamping for irregular parts 60 CTM03 50
- Sample holder vice with clamping screw: Ø 12 mm maxi 60 CTM03 30
- V sample holder with clamping screw: Ø 24 mm maxi 60 CTM03 20
- Sample holder double vice with clamping screw: Ø 12 mm maxi 60 CTM03 40
- Cylindrical sample holder with clamping screw: Ø 12 mm to 50 mm 60 CTM03 10
- Small vice with clamping screw: Ø 12 mm 60 CTM02 10

Technical data	CUTLAM® micro 1.1
Wheel Ø	75 to 150 mm
Shaft Ø	12,7 mm
Standard flanges Ø	50 mm
Lateral arm displacement	Stroke 25 mm (accuracy 0,02 mm)
Preload weight	1 x 200 g
Vertical movement	Manual
Lubrication/Cooling	Recirculation system, 10 litres, 800 L/ hour pump driven by the machine
Motor power	0,18 kW
Rotational speed	Variable, from 50 to 1500 rpm
Body	Steel coated with epoxy paint
Protection	Transparent cover with locking system
Voltage	230 V - 50 Hz single phase
Dim. W x H x D	390 x 390 x 340 mm (H cover open: 630 mm)
Weight	25 kg
Reference	60 CTM10 00



Faced with the constant evolution of the materials and the quality standards, LAM PLAN is a reference partner for the preparation of the samples for the metallographic analysis.

Our technical solutions and our customised methods will ensure you reliable and reproducible results. We are fully committed to the quality of the samples.

## CUTTING MACHINES

**CUTLAM®micro 2.0**

MADE IN FRANCE

The CUTLAM®micro 2.0 is a compact laboratory micro-cutting machine intended for the most sensitive materials. The speed range and cutting chamber capacity make this machine incredibly versatile.

The sample is held in position using a vice-tightened holding arm and the wheel located outside the cutting chamber enables a micrometric movement along the Z axis; the movement can be tracked directly on the screen (accurate to 0,02 mm) Thanks to the zeroing system, very accurate parallel cuts can be performed.

A wide range of vices is available, enabling you to clamp any type of component or material. The cutting progress is either controlled manually or with a counterweight system specially adapted to delicate cuts. A rocker arm balances the implement weight, and another one permits to adjust the applied load with precision.

Fitted with a large-capacity (10 litres, large for the machine's size), independent filtration/decanting/recirculation tank, it is easy to perform long cuts under ideal cooling conditions. The CUTLAM®micro 2.0 has been designed to simplify maintenance and cleaning operations, the base of the cutting chamber is equipped with an inlet filter to prevent the loss of small parts and components. A 100 µm fabric filter at the decanter inlet filters out the largest particles, and the remainder of the filtration is accomplished by decanting into a compartmented tank.

Built upon a robust, mechanically welded chassis sheathed with a painted sheet-steel body, the CUTLAM®micro 2.0 is particularly stable and is not prone to vibration, saving you valuable laboratory work space.

Technical data	CUTLAM®micro 2.0
Wheel Ø	75 to 200 mm
Shaft Ø	12,7 mm
Standard flanges Ø	50 mm
Lateral arm displacement	Stroke 80 mm (accuracy 0,02 mm)
Preload weight	2 x 200 g
Vertical movement	Manual
Motor power	0,6 kW
Rotational speed	Variable, from 200 to 4000 rpm
Protection	Transparent cover with locking system
Touch screen 3,5"	Intuitive and graphic interface
Voltage	230 V - 50 Hz single phase
Dim. W x H x D	430 x 300 x 450 mm (H cover open: 644 mm)
Weight	40 kg
Reference	60 CTM20 00

**CUTLAM®micro 2.0**

Laboratory precision  
micro cutting machine

**Included Equipment**

Recirculation system, 10 litres,  
2 compartment decantation tank, 100 µ fabric filter, recirculation pumps  
800 L/hour driven by the machine

Cylindrical sample holder with clamping screw: Ø 12 to 50 mm

Set of flanges: Ø 50 mm for cut-off wheel: Ø 125 to 150 mm

**Options**

Slow speed 50 to 1000 rpm 60 CTM 20 20

Vacuum system for holding thin sections 60 CTM 03 80

**Accessories**

Set of flanges Ø 35 mm for cut-off wheels Ø 75 to 100 mm 60 CTM01 10

Set of flanges Ø 75 mm cut-off wheels until Ø 200 mm 60 CTM01 30

Sample holder with multi screw clamping for irregular parts 60 CTM03 50

Sample holder double vice with clamping screw: Ø 12 mm max 60 CTM03 30

V sample holder with clamping screw: Ø 24 mm maxi 60 CTM03 20

Sample holder double vice with clamping screw: Ø 12 mm max 60 CTM03 40

Cylindrical sample holder with clamping screw: Ø 12 mm to 50 mm 60 CTM03 10

Small vice with clamping screw: Ø 12 mm 60 CTM02 10

Medium vice with clamping screw: Ø 24 mm 60 CTM021 10



## CUTLAM® micro 3.0



The CUTLAM® Micro 3.0 is designed for laboratories looking for an automatic machine adapted to high precision, long and difficult cuts.

This benchtop designed cutting machine offers astonishing capacities. Thanks to the multiple motion table, the cutting wheel, and the feed speed control system according to the cutting torque, this machine will overcome any difficult task.

### Large capacity compact cutting machine

It is fitted with a large: 320 x 540 mm chamber, and equipped with a grooved aluminium table, sized 210 x 210 mm, and stainless steel interchangeable pallets.

The large capacity of the CUTLAM® micro 3.0 relies on the use of 230 mm cut-off wheel, combined with a vertical movement range of 100 mm (Z axis) and a longitudinal range of 270 mm (Y axis).

### Precision

The positioning of the axes, which can be seen on the screen is 0,01 mm accurate and feed speed while cutting can be set from 0,1 to 20 mm/sec or 0,1 to 10 mm/sec.

The use of the "smart motion" (read the following page about this device) will automatically reduce the moving of the axes in order to obtain a minimum value of 0,02 mm/sec.

### User-friendly interface

A large touch-screen allows you to select the different functions using an easy to use, intuitive interface. All the positioning and cutting parameters can continuously be visible on the screen. The use of a joystick allows a fast positioning of the cut-off wheel; while in automatic and semi-automatic modes, an estimation of the remaining cutting time appears.

Three cutting modes are available: manual, semi-automatic and automatic.

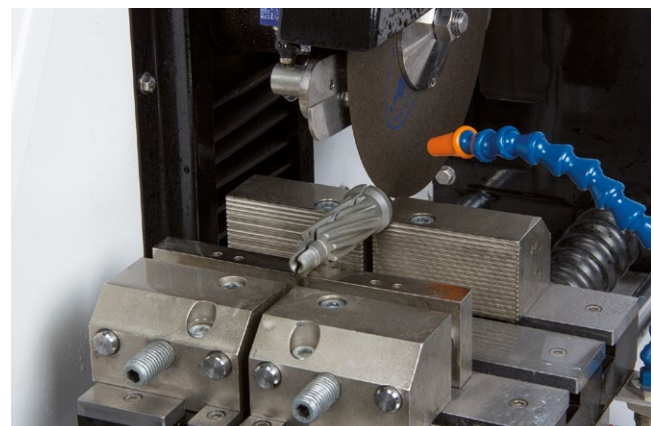
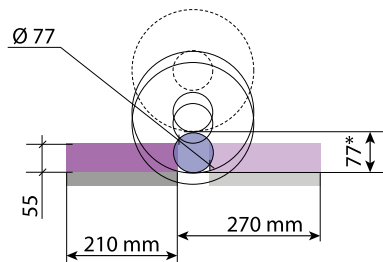


\*optional 3rd (X)



300 programs can be stored in the built-in memory, including: start position, feed speed, rotational speed, cutting mode.

Theoretical cutting capacity - Ø 230 mm \*space under wheel



## CUTTING MACHINES

**Efficiency: 5 key points for higher productivity**

1. Powerful motor of 1,1 kW.
2. Sequential cutting mode for a maximum cooling.
3. Ingenious feed speed control:
  - The feed speed is pre-set, and will be automatically reduced if the load on the cutting wheel increases. The pre-set speed returns when the load on the wheel decreases.
  - It improves the quality of the cut by limiting the heat damages on the samples.
  - Suitable for irregular samples and/or materials with heterogeneous hardness.
  - It prevents the wheel from breaking in case of overload.
  - It allows you to always work at maximum speed without any risk of damage.
4. Optional cross-feed table (X axis) manual or motorised for repetitive parallel cuts.
5. Independent lubrication/cooling system, composed of a 100 µ washable filter, and a 30 litres sedimentation tank with multi-point nozzle, insures excellent cooling of the sample and the cutting wheel even during intensive use.

**Options**

Manual cross-feed table (X axis) to cut parallel sections stroke 55 mm accurate to 0,01 mm	60 CTM31 00
Motorised cross feed table (X axis) to cut parallel sections stroke 50 mm, accurate to 0,01 mm	60 CTM34 00
Positioning laser	60 CTM35 00

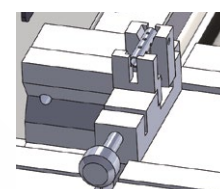
Technical Data	CUTLAM®micro 3.0
Wheel Ø	75 to 230 mm
Shaft Ø	12,7 mm
Standard flanges Ø	75 mm
Passage under the wheel	70 mm (with a Ø 230 mm wheel)
Max cutting capacity	Ø 77 mm (with a Ø 230 mm wheel)
Vertical movement	Z axis 100 mm automatic
Longitudinal movement	Y axis 270 mm automatic
Transversal movement	X axis 55 mm manual or 50 mm motorised (optional)
Cooling/ Lubrication	Decantation tank, 2 chambers, Input 100 µm filter, Pump 800 L/hour driven by the machine.
Motor power	1,1 kW
Rotational speed	Variable, from 1000 to 4000 rpm.
Cutting modes	Manual, semi-automatic, automatic
Feed speed control	0,1 to 20 mm/sec. programmable Automatic control of speed / power continuous or sequential
Lightening	LED
Protection	Transparent cover with locking system
Voltage	230 V - 50 Hz simple phase
Dim. W x H x D	620 x 470 x 750 mm (H cover open 812 mm)
Weight	80 kg
Reference	60 CTM30 00

**Tool for axial cutting of Ø 4 mm parts.**

This device, used in conjunction with quick release clamps, enables manual positioning following the X axis, ensuring cutting precision and repeatability.

NEW

60 CTM03 93



60 CTM35 00



60 CTM31 00



60 CTM34 00



60 CTM01 10/20/30



60 CT200 40



60 CTM36 00



60 CTM32 00



60 CTM33 00



60 M0100 00

**Accessories**

Set of flanges Ø 35 mm for cut-off wheels Ø 75 to 100 mm	60 CTM01 10
Set of flanges Ø 50 mm for cut-off wheels Ø 125 to 150 mm	60 CTM01 20
Set of flanges Ø 75 mm for cut-off wheels until Ø 230 mm	60 CTM01 30
Independent double vice (right and left) screw tightening	60 CT200 40
Right vice with fast tightening, small model	60 CTM32 00
Left vice with fast tightening, small model	60 CTM33 00
Buckle fastener Kopal 54	60 CTM36 00
Cabinet: 1 drawer, 1 storage in the door + integration of the recirculation tank	60 M0100 00

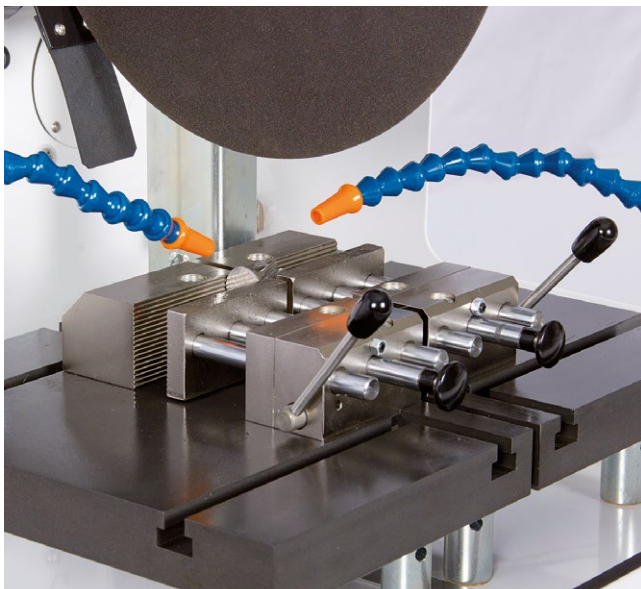
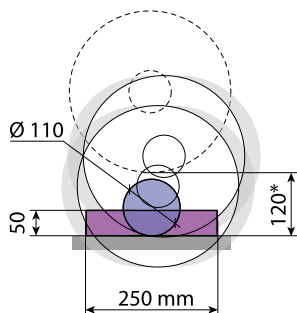


## CUTLAM® 1.1

Manual cutting machine  
vertical motion

### Theoretical cutting capacity - Ø 305 mm

\*space under wheel



## CUTLAM® 1.1

MADE IN FRANCE

The CUTLAM® 1.1 is a bench-mounted cutting machine for a wide range of applications. Robust and easy to use, with a deported motor design, this machine has a very large cutting capacity. It allows you to equip your laboratory with a simple, versatile and reasonably-priced machine made from high-quality components.

This machine offers a spacious cutting table, made of treated anti corrosive cast iron. It is also easy to handle with a fully opening cover and remote motor. The 4 perpendicular grooves enable you to clamp components of thicknesses up to 120 mm. The CUTLAM® 1.1 can be equipped with Ø 250 to 305 mm cut-off wheels.

Fitted with a speed adjuster and a powerful 3.8 Kw motor particularly adapted to Ø 305 mm wheels, the CUTLAM® 1.1 is perfect for intensive use.

The high-capacity recirculation system with pre-filter and decanter compartments ensures optimum lubrication and cooling by a multi-point spray.

The cutting chamber is illuminated by a strong and trendy aluminium projector.

The protection cover is made of two parts: a large glass area, giving a complete visibility on the cutting chamber, and a lacquered metallic belt offering a high resistance to this protection core. Furthermore, thanks to an interlocking system, this cover locks itself when the wheel is in rotation.

This machine is offering 2 lateral openings, giving the possibility of cutting bars which have a 60 mm diameter.

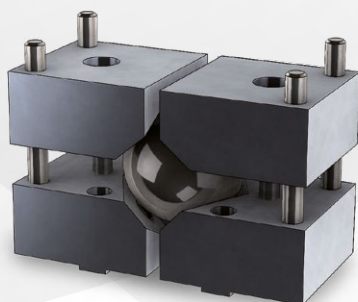
An external shower head combined with a tilted cutting chamber base makes cleaning easy, and an inlet filter ensures that your samples do not fall down the large-diameter outlet pipe.

Technical Data	CUTLAM® 1.1
Wheel Ø	250-305 mm
Shaft Ø	25,4 mm
Standard flanges Ø	80 mm
Max cutting capacity	Ø 110 mm (Ø 305 mm wheel)
Passage under the wheel	120 mm (Ø 305 mm wheel)
Vertical movement	Manual
Lubrication	Recirculation system, 60 litres, on casters, integrated cleaning system, with shower head located outside the cutting chamber
Motor power	3,8 kW
Rotational speed	Variable, from 1000 to 4000 rpm
Table	Groove treated stainless steel, 400 x 300 mm
Type of groove	T groove 12 mm (2 longitudinals, 2 transversals)
Lightening	LED
Protection	Transparent cover with locking system
Body	Epoxy painted coated steel
Voltage	400 Volts - 50 Hz (three-phase)
Dim. W x H x D	630 x 650 x 820 mm - H opened cover: 820 mm
Weight	125 kg
Reference	60 CT110 00

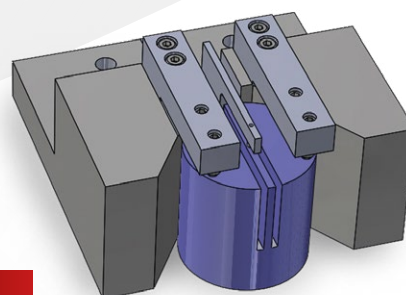
## CUTTING MACHINES

**Example of application: cutting of a sphere**

One of the recurrent issues remaining in the cutting processes is the clamping of spherical parts. The implementation of this kind of vice on the CUTLAM®1.1 enables to cut spheres having a diameter going from 30 mm to 60 mm.

**Example of application: cutting of a glass cylinder with double wheel**

Tooling allowing the removal of a 3 mm slice from a glass cylinder Ø 50 mm, height 50 mm. This article includes the supply and installation of a specific clamp and a double grinding wheel on a CUTLAM® 1.1 machine.

**Accessories**

Fast tightening double vice system	60 CT200 20
Screw tightening double vice system	60 CT200 40
Universal clamping vice KOPAL 61	60 081282 20
Clamping flange adjustment	60 081282 40
Long shaft for clamping flange KOPAL	60 00285 90
Cabinet: 1 drawer, 1 storage + integration of the recirculation tank	60 M0100 00
Universal table (X axis) for parallel cuttings	60 CT205 20
Stainless steel table in option	60 CT211 200
Aspiration/filtration set (see page 20)	60 CT204 00



60 081282 40



60 00285 90



60 081282 20



60 CT206 20



60 CTC20 520



Recirculation system 60 L



60 CT200 40



60 CT200 20



Interlocking

**CUTLAM® support cabinet**

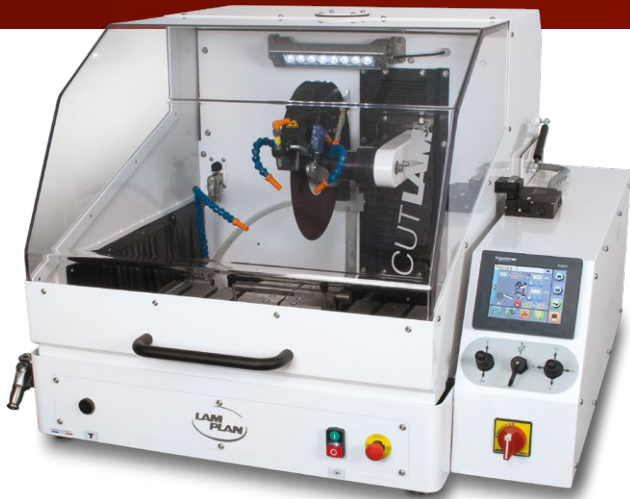
**Solid painted-steel piece of furniture specially designed for CUTLAM® products.**

It contains a storage door for tools and cut-off wheels, a drawer on top and a space for the recirculation tank. This piece of furniture is stable and has adjustable feet.

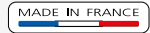
**Dimensions W x H x D:** 630 x 800 x 835 mm

**Reference:** 60 M0100 00





## CUTLAM® 3.1



The CUTLAM®3.1 is the ultimate development of LAM PLAN and is the most advanced automatic  $\varnothing$  300 mm cut-off machine in its market sector.

### Largest cut-off area on the market of $\varnothing$ 300 mm cut-off machines

The CUTLAM®3.1 offers an unprecedented cutting capacity, the machine table can move forward and backward automatically over a distance of 300 mm. New, the cut-off wheel has an automatic and linear top-to-bottom movement. With this linear movement, this new-generation of cutting machine offers a 140 mm space under the cutting wheel. The CUTLAM®3.1 has a cover which includes opening side to cut bars.

### Easy to use

The CUTLAM®3.1 is extremely simple to operate with its large touch screen (5.7 inches) and intuitive interface. The 2 motorised axes of CUTLAM®3.1 (optional 3rd axis) can be controlled manually by two joysticks located near the control screen. The internal memory allow to save over 300 cutting programs, which can also be imported or exported via a USB port.

### A great variety of possible setting configuration

The rotation speed of the cutting wheel and the feed speed of the axes can be programmed so as to prevent any deterioration or deformation of the samples. 3 cutting modes are possible: manual (via joysticks), semi-automatic and automatic. The movements of the axes can be continuous or sequenced.

The CUTLAM®3.1 is also equipped with the smart motion function: the definition of an acceptable torque for the cutting wheel, with the touch screen will automatically regulate the feed speed of the axes.

This option makes it possible to cut materials with different hardnesses (e.g. steel with an HVOF coating) without having to modify the feed speed. This option allows to avoid long testing campaigns to define the correct feed speed.



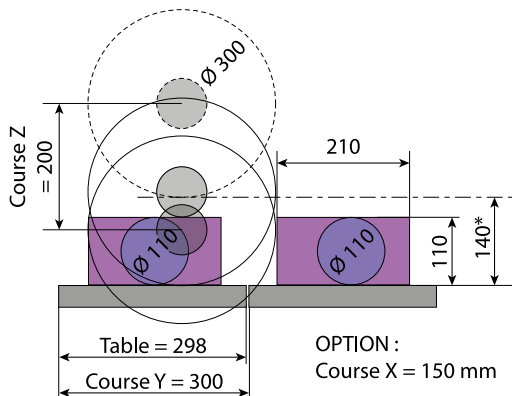
## CUTLAM® 3.1

Automatic and programmable cutting machine with 2 or 3 motorised axes\*, equipped with a 300 mm  $\varnothing$  cut-off wheel

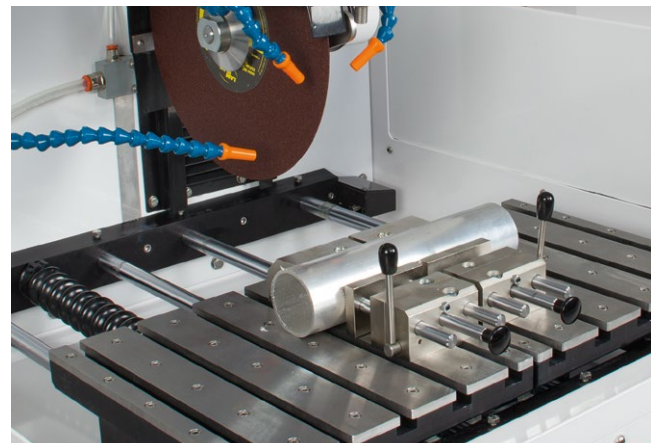
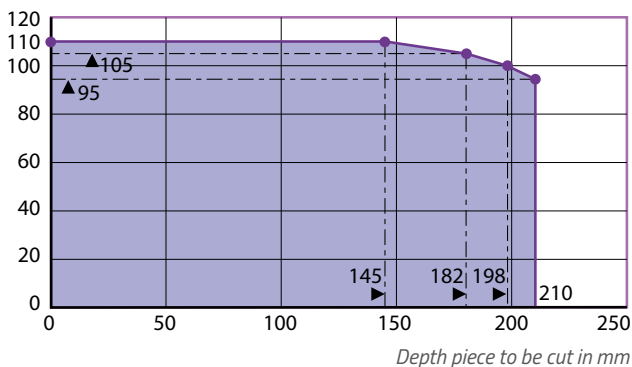
\*Optional motorised 3rd Axis (X)

### Theoretical cutting capacity - $\varnothing$ 300 mm

\*space under wheel



Height cut piece to be cut in mm



## CUTTING MACHINES

**Many cutting possibilities are offered**

This automatic cut-off machine makes it possible to cut vertically (along axis Z), over a maximum stroke of 200 mm, or to cut horizontally along axis Y, over a maximum stroke of 300 mm.

It is also possible to combine the two Z and Y movements. Thus, your machine will be able to perform cutting passes with a pass number and depth, which can be programmed.

This machine can optionally be equipped with a manual or automatic X axis for cutting parallel sections.

**Your safety, our priority**

An interlocking device maintains the cover in its closed position when the cutting wheel is rotating. When the cover is open, any axes movement (controlled by the joysticks) is only possible when the technician presses the "man present" button.

Technical Data	CUTLAM®3.1
Wheel Ø	250 to 305 mm
Shaft Ø	25,4 mm
Max cutting capacity	Ø 110 mm
Space between the cutting wheel and the table (with wheel Ø 300 mm)	140 mm
Table	Stainless steel 574 x 298 mm
Longitudinal movement - table	300 mm
Vertical movement - wheel	200 mm
Transversal movement	150 mm (optional)
Motor power wheel	3,8 kw
Cooling/Lubrication	Recirculation system, 60 litres decantation tank, 2 chambers, Input 100 µm filter, 800 L/hour pump driven by the machine
Wheel rotation speed	From 1000 to 4000 rpm
Cutting mode	Manual, semi-automatic, automatic
Feed speed control	From 0.1 to 20 mm/s, continuous or sequenced. Intelligent motion: automatic check of the feed motion according to the resulting torque on the cutting wheel motor
Lighting	LED strip
Protection	Cover secured by interlocking Man present button for operating the axes when the cover is open
Voltage	400 Volts - 50 Hz (three-phase + ground)
Dim. W x H x D	900 x 700 x 1000 (H. cover open 1100 mm)
Weight	210 kg
Reference	60CT30100



Support cabinet with integrated cooling system (60 litres).

**Options**

Manual X axis-table, stroke: 150 mm	60 CT31A20
Automatic X axis-table, stroke: 150 mm	60 CT31A30
Laser positioning device	60 CT31A10



60 CT31A30



60 CT31A20



60 CT31A10

**Accessories**

Double independent vice (left and right) with a screw-type tightening system	60 CT200 40
Double independent vice (left and right) with a fast tightening system	60 CT200 20
Cabinet for CUTLAM®3.1	60 MO100 00
Aspiration/filtration set (see page 20)	60 CT204 00



60 CT200 40



60 CT200 20



60 MO100 00



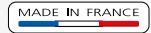
Quick positioning with joysticks. Touch screen with graphical interface.



Positioning laser.



## CUTLAM® 4.0



The CUTLAM®4.0 is designed especially for manufacturing companies with high standards who are looking for high-quality and reliable equipment for heavy-duty use with a great cutting capacity.

The CUTLAM®4.0 is a pedestal-mounted single-block machine with an integrated recirculation/decanter tank. The wheel's vertical descent can be controlled automatically (oleo pneumatic) or manually using the joystick. The maximum cutting descent is 240 mm.

Adapted for intensive use on heavy components, the CUTLAM®4.0 is fitted with a powerful 5.5 kW motor.

The wheel's speed is adjustable from 1000 to 4000 rpm, the feed speed is adjustable. 2 cutting modes are available: sequential automatic with adjustable frequency or continuous.

An end of cycle sensor shuts off the machine and automatically raises the wheel after each operation.

The controls are easy to use and intuitive: they are centralized on the 5.7" arm-mounted touch-screen.

The cover opening clears 3 sides, guaranteeing easy loading of heavy or bulky parts. Removable gates to the left and right enable you to cut long bars.

The wide cast-iron clamp bench has 6 T-longitudinal grooves and 5 transversal grooves, and as an optional extra may be made mobile along the X and the A axes.

The multi-point hose over the wheel and part ensures optimum cooling for high-quality cuts and consistent results.

In the standard configuration, the work area is illuminated by a adjustable spotlight, and an external shower head is provided for cleaning the cutting area.

In order to optimise your equipment according to your needs, a variety of accessories and optional extras are available.

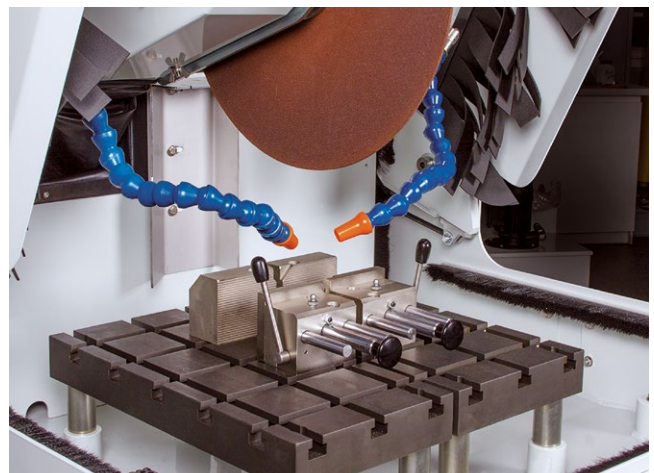
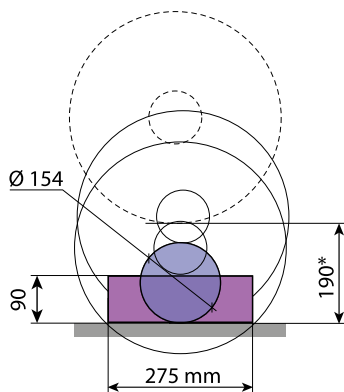


**CUTLAM® 4.0**

**High-capacity automatic cutting machine**

### Theoretical cutting capacity - Ø 400 mm

*\*space under wheel*





## CUTTING MACHINES



Transversal table X axis 120 mm stroke

Technical Data	CUTLAM® 4.0
Wheel Ø	300 to 400 mm
Shaft Ø	25,4 mm
Standard flanges Ø	100 mm
Max cutting capacity	Ø 154 mm or 145 x 160 mm or 90 x 275 mm (with a Ø 400 mm wheel) + right and left opening for long parts)
Passage under the wheel	190 mm (with a Ø 400 mm wheel)
Vertical movement	Manual
Lubrication	Recirculation system, 140 litres, on casters Cleaning system integrated, with a shower head outside of the cutting chamber
Motor power	5,5 kW
Rotational speed	Variable, from 1000 to 4000 rpm
Arm speed advance	5 to 200 mm/min during cutting
Table	Double grooved treated cast iron, 400 x 400 mm
Type of groove	T groove 12 mm (6 longitudinal, 5 transversal)
Lightening	LED
Protection	Cover with locking system
Body	Steel coated with epoxy paint
Pneumatic feeding compressed air	6 bars filtered 5 µ
Electrical power	6 kW cumulative
Electrical consumption	24 Ah
Voltage	400 Volts - 50 Hz (three-phase)
Dim. W x H x D	818 (+ 300 mm with control panel) x 1802 x 1280 mm
Weight	650 kg
Reference	60 CT40A 00



## Options

Table with manual longitudinal displacement (Y axis) of a 180 mm stroke	60 CT401 00
Table with manual transversal displacement (X axis) of a 120 mm stroke	60 CT402 00
Positioning laser	60 CT403 00



60 CT403 00

## Accessories

Universal clamping KOPAL 61	60 081282 20
Lift for KOPAL 61	60 081282 40
Long cam for KOPAL 61	60 00285 90
Independent double vice (right and left) with fast tightening system	60 CT400 20
Double vice with fast tightening system (left and right side of the wheel)	60 CT200 20
Double vice with screw tightening system (left and right side of the wheel)	60 CT200 40



60 081282 40



60 00285 90



60 081282 20



60 CT400 20



60 CT200 20



60 CT200 40



## CUTLAM® 5.0

MADE IN FRANCE

The CUTLAM® 5.0 is a pedestal-mounted machine with an integrated recirculation/decanter tank. It represents the ultimate equipment in terms of high-capacity programmable automatic cutting machines. Power and advanced control of the cutting steps will guarantee first class efficiency and productivity.

### Wheel and table movements

Fitted in standard with a  $\varnothing$  355 mm wheel, which produces an automatic vertical and longitudinal movement. The automatic transverse movement is carried out by an optional cross-feed table.

### Controls

Programming is performed via a large touch screen with a graphical interface that ensures you an intuitive use. Cutting parameters are continuously visible on the screen. Fast positioning of the cutting point is provided by the use of a joystick.

The internal memory allows you to store 300 programs that can be transferred via USB.

### Easy programming

Depending on the location of the sample on the table, and on its dimensions, the screen will indicate the various necessary and possible moves in order to complete the cut. This data can then be saved.

### All cutting modes are possible

- Automatic or manual cutting.
- Continuous automatic cutting with ingenious feed speed control:

The feed speed is pre-set, and will be automatically reduced if the load on the cutting wheel increases. The pre-set speed returns when the load on the screen decreases.

It improves the quality of the cut by limiting the thermal damages over the samples.

It is suitable for irregular samples and/or material with heterogeneous hardness.

It prevents the wheel from breaking in case of overload.

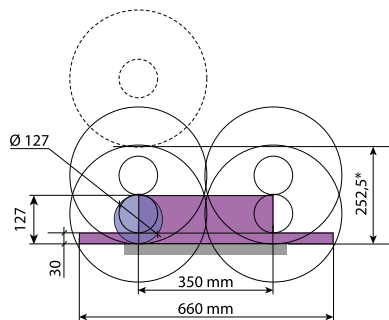
It allows you to work at maximum speed without any risk of damage.

- Automatic sequential cutting for maximum cooling.
- Plunge cutting, horizontal feed cutting and oscillating cutting.
- Repetitive parallel cutting.



### Theoretical cutting capacity - $\varnothing$ 355 mm

\*space under wheel



A spacious cutting chamber: W 408 x D 422 mm with openings on both right and left sides for the cutting of long samples.



Work area lit by LED strip

## CUTTING MACHINES

## Equipments

A high-capacity, independent cooling/recirculation system (140 litres) is located under the machine. The multipoint nozzles insure excellent cooling of the sample and the cutting wheel even during intensive use.



Fast cleaning is made possible thanks to an exterior shower head and a carefully designed cutting chamber.

The wide cutting table: W 408 x D 422 mm is composed of two independent parts. 4 longitudinal grooves and 6 transversal grooves that allow to fix all kind of clamping systems available as options or on the market.

Technical Data	CUTLAM*5.0
Wheel Ø	355 mm (400 mm optional)
Shaft Ø	25,4 mm
Standard flanges Ø	100 mm
Max cutting capacity	Ø 127 mm (with Ø 355 mm wheel) + opening on left and right hand side for long parts
Passage under the wheel	252,5 mm (Ø 355 mm wheel)
Vertical movement	Z axis stroke 350 mm, speed from 0,1 to 25 mm/sec, speed advanced 50 mm/sec
Longitudinal movement	Y axis stroke 350 mm speed from 0,1 to 25 mm/sec advanced speed 50 mm/sec
Transversal movement	X axis stroke 120 mm (optional)
Lubrication	Recirculation system, 140 litres, on casters Cleaning system integrated, with a shower head outside of the cutting chamber
Motor power	5,5 kW
Rotational speed	Variable, from 1000 to 4000 rpm
Table	Treated aluminium and interchangeable stainless steel plate, W 408 x D 422 mm
Type of groove	T-slots 12 mm (4 longitudinal, 6 transversal)
Lightening	LED strip
Protection	Cover with locking system
Body	Steel coated with epoxy paint
Pneumatic feeding	6 bars filtered 5 µ
Electrical power	12 kW combined
Electrical consumption	32 Ah
Voltage	400 Volts - 50 Hz (three-phase + ground)
Dim. W x H x D	877 (+ 600 mm with control panel) x 1727 x 1800 mm (H. cover open 2272 mm)
Weight	750 kg
Reference	60 CT50A 00



## Options

Motorised cross-feed table (X axis) stroke 120 mm, accuracy 0,05 mm	60 CT501 00
Machine for cut-off wheel Ø 400 mm	60 CT503 00
Positioning laser	60 CT506 00



60 CT506 00



60 CT503 00

## Accessories

Universal clamping KOPAL 61	60 081282 20
Lift for KOPAL 61	60 081282 40
Long cam for KOPAL 61	60 00285 90
Independent double vice (right and left) with fast tightening system	60 CT400 20
Double vice with fast tightening system (left and right side of the wheel)	60 CT200 20
Double vice with screw tightening system (left and right side of the wheel)	60 CT200 40



60 081282 40



60 00285 90



60 081282 20



60 CT400 20



60 CT200 20






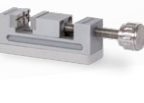









60 CT200 40

## Machine variants

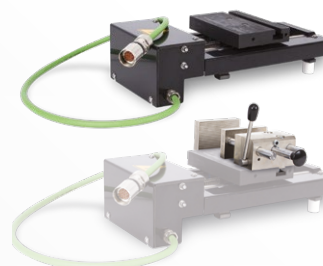
Motorised cross-feed table (X axis) stroke 120 mm, accuracy 0,05 mm	60 CT50A 10
Motorised cross-feed table (X axis) stroke 380 mm, accuracy 0,05 mm	60 CT50A100

## Vices, clamping and accessories

Designation	Ref.	CUTLAM®Micro			CUTLAM®			
		1.1	2.0	3.0	1.1	3.1	4.0	5.0
 <p>Multi-screw sample holder for irregular parts</p>	60 CTM03 50	✓	✓					
 <p>Screw vice holder: max Ø 12 mm</p>	60 CTM03 30	✓	✓					
 <p>Screw V-shape sample holder: max Ø 24 mm</p>	60 CTM03 20	✓	✓					
 <p>Screw double vice sample holder: Ø 12 mm maxi</p>	60 CTM03 40	✓	✓					
 <p>Screw cylindrical sample holder: Ø 12 mm to 50 mm</p>	60 CTM03 10	✓	✓					
 <p>Small vice with screw tightening system: Ø 12 mm</p>	60 CTM02 10	✓	✓					
 <p>Medium vice with screw tightening system: Ø 24 mm</p>	60 CTM02110		✓					
 <p>Double vice with fast tightening system (left and right side of the wheel) 2 x 2 elements vice, without sole, to obtain maximal length clamping Jaw width 80 mm Jaw height 45 mm T-slot 12 mm screw included Lever (left and right)</p>	60 CT200 20				✓	✓	✓	✓
 <p>Double vice with screw tightening system (left and right side of the wheel) 2 x 2 element vice, without sole, to obtain maximal length clamping Jaws width 80 mm, Jaws height 45 mm T-slot 12 mm screw included Left and right levers</p>	60 CT200 40				✓	✓	✓	✓
 <p>Universal clamping KOPAL 61</p>	60 081282 20				✓	✓	✓	✓
 <p>Lift for KOPAL 61</p>	60 081282 40				✓	✓	✓	✓
 <p>Long cam for KOPAL 61</p>	60 00285 90				✓	✓	✓	✓
 <p>Universal clamping KOPAL 54</p>	60 CTM36 00			✓				

## CUTTING MACHINES

Designation	Ref.	1.1	2.0	3.0	1.1	3.1	4.0	5.0
Double vice with fast tightening system (left and right side of the wheel) 2 x 2 element vice, without sole, to obtain maximal length clamping Jaws width 80 mm Jaws height 70 mm T-slot 12 mm screw included Lever (left and right)	60 CT400 20						✓	✓
Transversal table (X movement) to perform parallel cuts. Manual movement with roller, stroke 100 mm, Display accuracy: 0,01 mm Can receive the right vice reference 60 CT200 20 or 60 CT200 40.	60 CT205 20				✓			
Double vice with fast tightening system for transversal table 60 CT205 20, right lever	60 CT206 20				✓			
Transversal table (X movement) manual movement with roller, stroke 150 mm, Display accuracy: 0,01 mm Can receive right vice reference 60 CT200 20 or 60 CT200 40	60 CT31A 20					✓		
Automatic transversal table (X movement), stroke 150 mm	60 CT31A 30					✓		
Specific vice with fast tightening system for transversal table 60 CT31A 20 and 60 CT31A 30, left lever	60 CT306 20					✓		
Transversal table (X movement) to execute parallel cuts. Manual movement with a roller, stroke 55 mm, precision 0,01 mm. Can receive right vice reference 60CT200 20 or 60 CT200 40.	60 CTM31 00			✓				
Automatic transversal table (X movement), stroke 50 mm, precision 0,01 mm	60 CTM34 00			✓				
Small right vice with fast tightening system stroke 53 mm	60 CTM32 00			✓				
Small left vice with fast tightening system stroke 53 mm	60 CTM33 00			✓				
Steel adaptor rings (by 5) Ø 22 x 12,7 mm	60 00608 90			✓				
PVC adaptor rings (by 5) Ø 22 x 12,7 mm	60 00609 90			✓				
Steel adaptor rings (by 5) Ø 25,4 x 12,7 mm	60 00369 90		✓	✓				
PVC adaptor rings (by 5) Ø 25,4 x 12,7 mm	60 00370 90		✓	✓				
Steel adaptor rings (by 5) Ø 25,4 x 22 mm	60 00372 90							
PVC adaptor rings (by 5) Ø 25,4 x 22 mm	60 00371 90							
Steel adaptor rings (by 5) Ø 32 x 25,4 mm	60 00373 90				✓	✓	✓	✓
PVC adaptor rings (by 5) Ø 32 x 25,4 mm	60 00374 90				✓	✓	✓	✓





## Cutting fluid series 722

### Reduce heating

The cutting fluid 722 series is a synthesis soluble lubricant specifically developed for metallographic cuts. This fluid will prevent from heating by lubricating the cutting sections and wheels.

Thanks to this fluid the cut parts and the materials will be protected from corrosion.

It does not lather. For an optimal use, we advise you to dilute 5 % of the solution in water. In order to maintain the efficiency of this fluid, we recommend you to check regularly its concentration with a refractometer.

Properties	Type	Qty.	Ref.
Recyclable concentrated fluid: heating control	722	5 litres	07 50722 50



## Refractometer

The refractometer is a measuring instrument which allows you to control the cutting fluid concentration in the machine to assure the quality of the cuts, to avoid the corrosion on the cut parts, the table and vices. It also controls heating during cuts (no smokes) and prevent from microbial and smells in the machine.

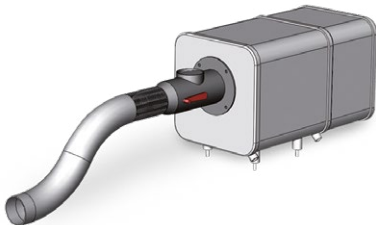
Designation	Qty.	Ref.
Refractometer	1	60 CT900 10



## Filters

Characteristic	Qty.	Ref.
100 µm fabric filter for decantation tank CUTLAM Micro®2.0	1	60 00574 90
100 µm fabric filter for decantation tank CUTLAM®1.1 - 2.0 - 3.0 - Micro 3.0	1	60 00141 90
100 µm fabric filter for decantation tank CUTLAM®4.0 and 5.0	1	60 00576 90

## Aspiration/filtration set CUTLAM® 1.1 and 3.1 cutting machines



According to the chosen material, the "fog" generated by the cutting process needs to be evacuated from the chamber. LAM PLAN proposes an aspiration/ filtration set to respond to this issue. This device is made of a vacuuming unit, connected to the machine's cover by a flexible tube. A downstream filter is found in the core of this system, capable of blocking more than 98% of the sucked particles.

The system is set on an extruded aluminium chassis, at the same height of the cutting machine. The vacuuming set is autonomous, containing its proper electric power of 400 V (three-phase). Please contact us for more technical data.

Reference. : 60 CT204 00

## CUT-OFF WHEELS

## Cut-off wheels Excellence

The new Excellence cut-off wheels offer faster cuttings without heating. These wheels can be used at high speed and assure an excellent quality without causing any damages on the material structure.

The quality of their function guarantees a greater life expectancy and limit the vibrations while cutting.

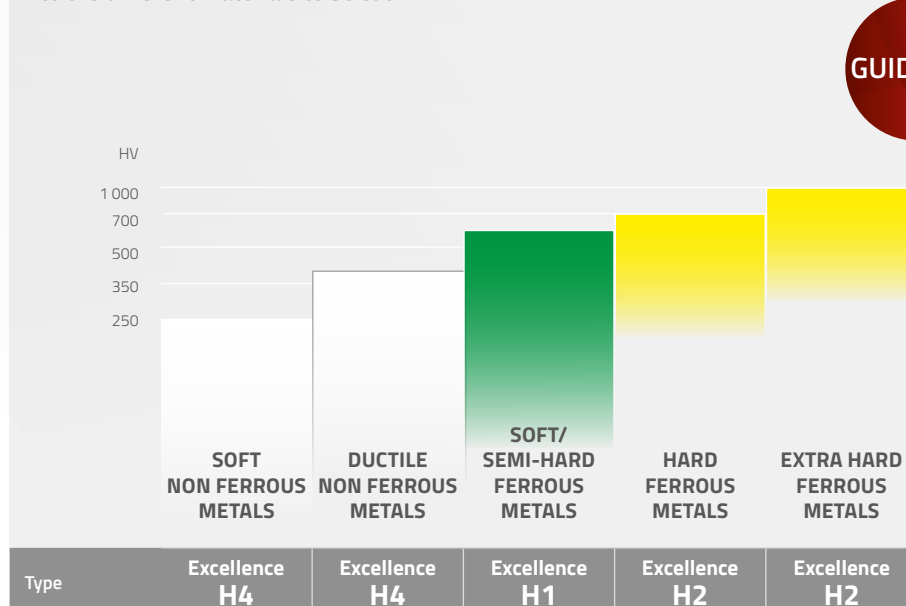
Available in three versions, the cut-off wheels H1, H2 and H4 will enable you to cut any metallic materials. In order to know what wheel is adequate to your need.

Type	Dim. (mm)	Qty.	Ref.
<b>EXCELLENCE H1 (AL<sub>2</sub>O<sub>3</sub>)</b>			
Soft/ semi-hard metals	250 x 32 x 1,5	10	05 83011 40
	300 x 32 x 2	10	05 83011 50
	350 x 32 x 2,5	10	05 83011 60
	400 x 32 x 3	10	05 83011 70
<b>EXCELLENCE H2 (AL<sub>2</sub>O<sub>3</sub>)</b>			
Treated metals/special metals	250 x 32 x 1,5	10	05 83021 40
	300 x 32 x 2	10	05 83021 50
	350 x 32 x 2,5	10	05 83021 60
	400 x 32 x 3	10	05 83021 70
<b>EXCELLENCE H4 (SiC)</b>			
Non ferrous materials Casting	250 x 32 x 1,5	10	05 85041 40
	300 x 32 x 2	10	05 85041 50
	350 x 32 x 2,5	10	05 85041 60
	400 x 32 x 3	10	05 85041 70



Please contact us for a diameter superior to 400 mm.

The chart below indicates the adequate wheels to choose according to the different materials to be cut.



## Precision cut-off wheels

### Combine performance and versatility

Elaborated according to a very rigorous specification, these cut-off wheels offer the user a precision cutting thanks to the characteristics of its binder and the quality of its abrasives.

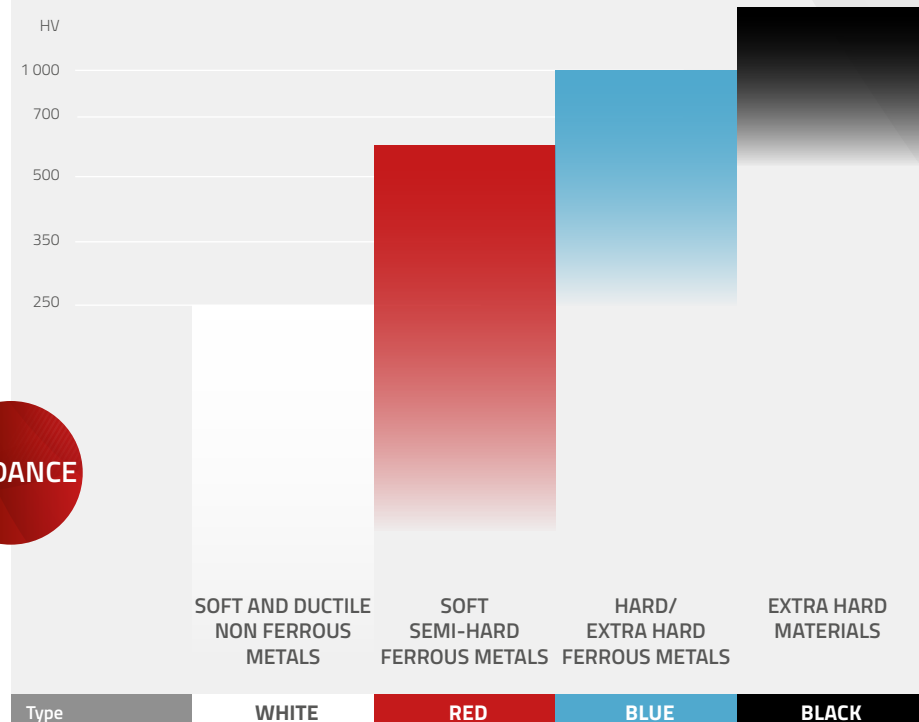
Usable on all cutting machines, these wheels give cut-off quality which allows reducing the duration of the downstream operations. Their low wear significantly reduces cost prices.

LAM PLAN precision cut-off wheels are available in 4 versions according to their hardness and the abrasive used in their composition: WHITE wheels (SiC), RED wheels (Al<sub>2</sub>O<sub>3</sub>), BLUE wheels (Al<sub>2</sub>O<sub>3</sub>) and BLACK wheels (diamond).

The visual colour code facilitates memory.



The table below will help you determine the right cut-off wheel choice for the material to be cut.



**GUIDANCE**



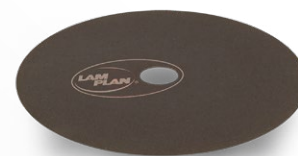
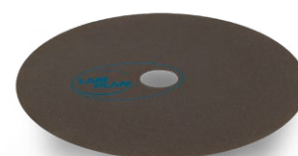
## CUT-OFF WHEELS

Type	Dim. (mm)	Qty.	Ref.
<b>RED (AL<sub>2</sub>O<sub>3</sub>)</b>			
Soft – semi-hard steel	125 x 12,7 x 0,45	5	05 80016 90
	150 x 12,7 x 0,45	5	05 80016 10
	203 x 25,4 x 1	10	05 80016 20
	230 x 22 x 1,2	10	05 80016 30
	250 x 32 x 1,5	10	05 80016 40
	305 x 32 x 1,5	10	05 80016 50
<b>BLUE (AL<sub>2</sub>O<sub>3</sub>)</b>			
Treated metals- special steel	125 X 12,7 X 0,45	5	05 80013 90
	150 x 12,7 x 0,45	5	05 80013 10
	203 x 25,4 x 1	10	05 80013 20
	230 x 22 x 1,2	10	05 80013 30
	250 x 32 x 1,5	10	05 80013 40
	305 x 32 x 1,5	10	05 80013 50
<b>WHITE (SIC)</b>			
Non ductile material Cast iron Stainless steel	125 x 12,7 x 0,45	5	05 80025 90
	150 x 12,7 x 0,45	5	05 80025 10
	203 x 25,4 x 1	10	05 80025 20
	230 x 22 x 1,2	10	05 80025 30
	250 x 32 x 1,5	10	05 80025 40
	305 x 32 x 1,5	10	05 80025 50

Type	Dim. (mm)	Qty.	Ref.
<b>BLACK (Diamant)</b>			
All sintered materials Ceramic Cermet Carbide W and Sic Glass, silica, quartz High metal content materials	102 x 12,7 x 0,30	1	05 82129 10
	127 x 12,7 x 0,40	1	05 82129 20
	152 x 12,7 x 0,5	1	05 82129 30
	203 x 32 x 0,8	1	05 82130 30
	254 x 32 x 1	1	05 82335 40
	300 x 32 x 1,3	1	05 82335 50
Heterogeneous hardness materials ex. : carbide coating on, steel substrate	152 x 12,7 x 0,38	1	05 82129130

## Adaptor rings

Designation	Ø mm	Qty.	Ref.
Adaptor ring - PVC For cut-off wheels	22 / 12,7	5	60 00609 90
	25,4 / 12,7	5	60 00370 90
	25,4 / 22	5	60 00372 90
	32 / 25,4	5	60 00374 90
Adaptor ring - Steel For cut-off wheels	22 / 12,7	5	60 00608 90
	25,4 / 12,7	5	60 00369 90
	25,4 / 22	5	60 00371 90
	32 / 25,4	5	60 00373 90



# MOUNTING



MOUNTING MACHINES

## PRESSLAM® 1.1

MADE IN FRANCE

The PRESSLAM® 1.1 is a multi-purpose, easy-to-use, automatic hot mounting press that will allow you to achieve high production levels. All parameters are accessible via a 5.7" colour touch screen. The graphic interface guides you intuitively through the different settings, which you can then store and reuse at will. It is also possible to transfer predefined hot mounting parameters via the machine's USB port. All phases are visible on the screen during the hot mounting cycle and can be modified at any time.

Each function can be adjusted separately and 4 pressurisation modes are available, along with a function reducing the amount of water used for cooling.



**PRESSLAM® 1.1**

Easy-to-use, productive,  
automatic hot mounting press



Technical Data	PRESSLAM® 1.1
Capacity	Ø 25,4 to Ø 50 mm
Heating system	4 x 600 W around mould
Temperature range	20 to 200 °C
Heating cycle	0 to 30 min
Cooling cycle	0 to 30 min
Pressure	0 to 1,600 daN
Double mounting	yes – all diameters
Program back-up	300 with USB connexion
Pressurisation modes	4 different modes
Chamber closing	half turned cover with a safety chamber
Mould changing	Quick, without connectors- electric or hydraulic
Pre-heating mode	Yes (cleared after 6 min without manipulation)
Water saving	yes (up to 25%)
Voltage	230 V – 50 Hz single-phase
Pneumatic feed	6 to 10 bars
Dimensions W x H x D	250 x 680 x 470 mm
Weight	72 kg (depending on mould size)
Reference	60 PL110 00

Embedding allows limiting edge stresses during the polishing step.

This operation will also allow you:

- In manual polishing: to facilitate the holding of the sample
- In automatic polishing: to place several samples together in a sample holder under optimum tightening conditions

## MOUNTING MACHINES

Once put in service the PRESSLAM®1.1 runs a pre-heating cycle that is cleared after 6 minutes without user intervention.

Access to mould is wide open for a sample positioning and filling facility. Quick and effortless, the locking/unlocking is realised by a cover and a ¼ turn locking lever.

### Exclusive safety device

The expulsion of the sample after the mounting cycle is only possible when the safety cover is located in its intermediary position. This device creates a safety chamber in which the sample is protected in case of an eventual sticking situation.



*Closed*



*Safe position  
for sample recovery*



*Open*

The PRESSLAM®1.1 is equipped with a main heating unit which contains the removable cylinder. The standard heating unit covers diameters from 25,4 to 40 mm and a specific element is available for a 50 mm diameter.

**The mounting chamber can be changed without any tools, nor electric or hydraulic connections.**

It only takes a few minutes to change the complete heating unit.

The PRESSLAM®1.1 is the ideal link in your mounted sample production line. It is a compact machine that is both easy to use and easy to maintain and will allow you to increase your productivity while maintaining unrivalled flexibility.

### Accessories

Heating unit for Ø 25.4 mm (1"), 30, 40 mm, 1"1/4 and 1"1/2	60 PL2H1 00
Heating unit for Ø 50 mm and 2"	60 PL2H2 00
Assembly mould Ø 25,4 mm or 1"	60 PL1C1 00
Assembly mould Ø 30 mm	60 PL1C2 00
Assembly mould Ø 40 mm	60 PL1C4 00
Assembly mould Ø 50 mm	60 PL1C5 00
Assembly mould Ø 1"1/4	60 PL1C2 10
Assembly mould Ø 1"1/2	60 PL1C4 10
Assembly mould Ø 2"	60 PL1C5 10
Spacer Ø 25,4 mm or 1" for double mounting	60 PL2I1 10
Spacer Ø 30 mm for double mounting	60 PL2I2 00
Spacer Ø 40 mm for double mounting	60 PL2I4 00
Spacer Ø 50 mm for double mounting	60 PL2I5 00
Spacer Ø 1"1/4 for double mounting	60 PL2I2 10
Spacer Ø 1"1/2 for double mounting	60 PL2I4 10
Spacer Ø 2" for double mounting	60 PL2I5 10
Compressed air filtration kit	60 00375 90
Cooling unit	60 PL090 00



*Heating unit for mould assembly Ø 25,4 mm (1"),  
30 mm, 40 mm, 1"1/4 and 1"1/2*



*Heating unit for mould assembly  
Ø 50 mm and 2"*



*Spacer for double mounting*



*Independent cooling unit to use  
the PRESSLAM® 1.1  
without water supply*



Parameters recapitulation PRESSLAM®1.1 with LAM PLAN hot mounting resins.

Resine	Heating time (min)				Cooling time (min)				Pressure (daN)				Temperature (°C)				Pressure mode
	∅ 25	∅ 30	∅ 40	∅ 50	∅ 25	∅ 30	∅ 40	∅ 50	∅ 25	∅ 30	∅ 40	∅ 50	∅ 25	∅ 30	∅ 40	∅ 50	
Phenolic (602, 622, 632, 642)	3.5	3.5	4	5.5	3	3	3	3.5	800	1000	1200	1400	170	170	170	170	
Epoxy (633, 634) <i>Use the SOLILUB</i>	4	5	5	6.5	4	4	4	4.5	800	1000	1200	1400	180	180	180	180	
Acrylic (616,2 and 616)	4.5	5	5.5	6.5	4	4	4	4.5	800	1000	1200	1400	170	170	170	170	
Copper (604.3)	3	3	3.5	5.5	3	3	3	3.5	800	1000	1200	1400	170	170	170	170	
Phenofree <i>Use the SOLILUB</i>	3	3	4	5.5	3	3	3.5	3.5	1000	1000	1200	1400	175	175	175	175	
Graphite (617)	3	3	3.5	4.5	3	3	3	3.5	800	1000	1200	1400	170	170	170	170	



## Pressurised mounting device M.M.806

### Improve the performance of cold mounting resins

Thanks to its pneumatic system, the device prevents any formation of bubbles and pores without changing the physical and chemical properties of the resins. The device releases a pressure of 2.0 bars adapted to the specific properties of rapid polymerisation resins. Reliable and easy to use, the M.M.806 is equipped with a safety valve which prevents over pressurisation. The device is compact with a resin body and a steel container.

Designation	Characteristics	Ref.
Cold mounting pneumatic device	Elimination of air bubbles in the mountings Shrinkage limitation Better penetration of mounting resin	08 00806 00



## Polymerisation lamp M.M.866

The blue light polymerisation device enables you to speed up the polymerisation process of the 601.2 resin. (20 minutes)

Designation	Characteristics	Ref.
Blue light mounting device	Solar energy collector for light-curing resins. Equipped with a timer (3 positions): 5 min. 10 min. and continual.	08 00866 10



## ISOFORCE

**NEW**

The ISOFORCE device allows flattening of embedded samples in a central pressure sample holder. Homogeneous pressure is applied to each sample via a pneumatic cylinder. The operation is carried out in complete safety thanks to the dual control system.

Designation	Characteristics	Ref.
ISOFORCE	∅ 210 mm	60 MLISI 210
	∅ 160 mm	60 MLISI 160

## HOT MOUNTING RESINS

## PHENOFREE hot moulding resin

### New phenol-free and formaldehyde-free thermosetting mounting resin

In line with its ecological commitment, LAM PLAN proposes on the market the first effective alternative to phenol metallographic mounting resins which are liable to release phenol (and/or formaldehyde) during baking.

The PHENOFREE mounting is intended for the technical mounting of all types of materials for material examinations or edge examinations. It smartly replaces the traditional phenol mounting resins with the same hardness and less shrinkage than a phenol mounting resins.

The range of PHENOFREE resins includes 3 coloured resins (grey, white and red) to make the identification of your metallographic samples easier. They are particularly adapted for the polishing of hard materials. The white Phenofree resin may prove to be in some cases a good alternative to the use of epoxy resins.

Characteristics	Qty. in kg	Ref.
<b>PHENOFREE 1</b>		
Grey composite powder Polyvalent, hard	2,5	06 PF010 20
	10	06 PF010 10
	25	06 PF010 50
<b>PHENOFREE 2</b>		
Red composite powder Polyvalent, very hard	2,5	06 PF020 20
	10	06 PF020 10
	25	06 PF020 50
<b>PHENOFREE 3</b>		
White composite powder Polyvalent, extra hard	2,5	06 PF030 20
	10	06 PF030 10
	25	06 PF030 50

Require the unmoulding agent SOLILUB.

## Unmoulding agent

### SOLILUB

Characteristics	Qty.	Ref.
Anti-stick powder for hot mounting process	Pot de 50 g	06 00683 00



Phenol-free  
CMR-free



## Hot mounting resins

To respond to all metallographic control and research situations, LAM PLAN developed and tested a range of hot mounting resins. Each resin is characterised by a very specific physical and chemical properties.

### EPOXY RESINS 633 AND 634

The black epoxy mounting resin is filled with glass fibres with high mineral loads. It is ideal for mountings intended for edge examinations of hard to extra hard materials thanks to its resistance to abrasion, important hardness and absence of shrinkage. The 634 is a fine powder epoxy resin, used for examination of edged samples.

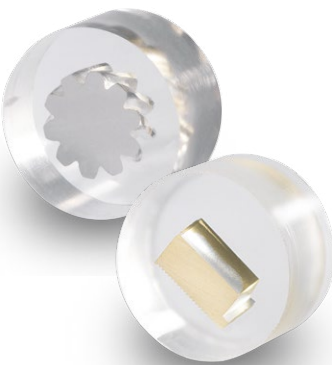


Characteristics	Qty. in kg	Ref.
<b>633</b>		
Black epoxy powder, loaded with glass fibres	2,5	06 00633 20
Edges examinations		
Extra hardness - No shrinkage	10	06 00633 10
<b>634</b>		
Black epoxy powder, fine grains	2,5	06 00634 20
Edge examinations on complex samples		
High hardness - No shrinkage		

### ACRYLIC RESINS 616 AND 616.2

The acrylic resin 616 is perfectly transparent and adapted to most materials. Mainly used to view the evolution of the grinding of the sample.

Perfectly transparent with no cotton effect, the acrylic resin 616.2 is resistant to alcohol, and therefore ideal for work with alcohol-based polishing products or requiring a cleaning phase with ethanol, isopropyl alcohol or other.



Characteristics	Qty. in kg	Ref.
<b>616</b>		
Transparent acrylic powder.	2,5	06 00616 20
Visualising the sample during and after the polishing.		
All materials.	10	06 00616 10
<b>616.2</b>		
Transparent acrylic powder.	2,5	06 06162 20
Visualising the sample during and after the polishing.		
Water resistant.	10	06 06162 10

## HOT MOUNTING RESINS

**COPPER MOUNTING RESIN 604.3**

Conductive mounting resin for examinations with SEM or electrolytic etching device. A pure copper based resin of very homogeneous consistency, the conductivity of your mountings is optimised. The use of ultra-pure materials eliminates the risk of an analysis error.

Characteristics	Qty. in kg	Ref.
Resinoid copper powder For electrolytic polishing.	2	06 00604 30

**GRAPHITE MOUNTING RESIN 617**

Conductive phenolic mounting resin loaded with graphite (without copper and without metals or alloys) for SEM and TEM examinations.

Characteristics	Qty. in kg	Ref.
Conductive black phenolic powder (graphite) For SEM examination	1,5	06 00617 00

**GUIDANCE**

Material	Resin	Characteristics	Volumetric shrinkage	Color	Polymerisation time*
Composite	PHENOFREE 1 PHENOFREE 2 PHENOFREE 3	Phenol Free	Low	Grey Red White	10 to 15 min
Epoxy	633	Extra hard	Very low	Black	5 to 10 min
Epoxy	634	Extra hard (fine grain)	Very low	Black	5 to 10 min
Acrylic	616	Excellent transparency	Low	Transparent	5 to 10 min
Acrylic	616.2	Transparent and alcohol resist	Low	Transparent	5 to 10 min
Copper	604.3	High conductivity	Low	Coppered	10 min
Graphite	617	Conductable	Low	Black	5 to 10 min

\* Depending of the machines' characteristics

## Cold mounting resins

Mainly intended for the metallography research sector, the LAM PLAN range of cold mounting resins offers many technical and economic advantages.

The cold mounting resins are the solution for samples which do not withstand high pressure or temperature. In addition, they allow responding in a simple and efficient way to timely needs by circumventing the investment of a hot mounting press. You can achieve a large quantity of samples simultaneously while adjusting precisely the volume of mounting material and shape of the moulds.



### ACRYLIC RESIN 601.2

The fluidity of this transparent mounting resin and its very low shrinkage ensure a maximum penetration ratio in cavities. It is ideal for microelectronics, optics and microsystem applications. Compatible for conventional scanning electron microscopy (SEM) examinations.

Mono-component resin easy to dose and manipulate (no loss). Polymerisation with low temperature rise in 20 minutes in the blue light device M.M.866 + 10 minutes for the surface varnish. With no disturbing odour, it is resistant to alcohol and acids..

Characteristics	Qty.	Ref.
Transparent Acrylic Monocomponent	Resin 1000 ml + varnish 100 ml set	06 00601 00
	Resin 1000 ml	06 01601 00
	Varnish 100 ml	06 01602 00



CMR-free

### EPOXY RESIN 603

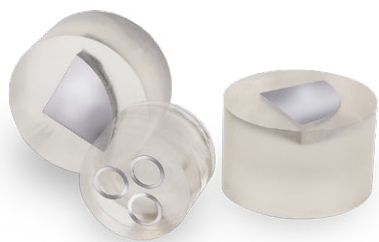
The Resin 603 is a two-component epoxy resin without CMR substance used to achieve high quality technical metallographic mountings at room temperature. This resin is the best choice when the transparency of the coating is a requirement.

The resin has zero shrinkage, excellent adhesion to all kinds of materials and a very good chemical resistance.

With an ideally adjusted viscosity, the resin 603 is used to mount metallographic specimens with complex shapes, porosities, or delicate technical coatings.

**Solvent free and CMR-free** (no Carcinogenic, Mutagenic, toxic to Reproduction suspences).

Characteristics	Qty.	Ref.
Transparent Epoxy 2 liquid components	Liquid 1000 ml + hardener 500 ml set	06 00603 00
	Liquid 1000 ml	06 01603 00
	Hardener 500 ml	06 02603 00



CMR-free

### EPOXY RESIN 603.2

The Resin 603.2 is a fast-curing two-component epoxy resin without CMR substance used to make technical metallographic mountings. It must be used on materials that withstand temperatures of 140°C.

This transparent resin has zero shrinkage, excellent adhesion to all kinds of materials and very good chemical resistance.

**Solvent free and CMR-free** (no Carcinogenic, Mutagenic, toxic to Reproduction suspences). Polymerisation 2h.



## COLD MOUNTING RESINS

Characteristics	Qty.	Ref.
Transparent Epoxy 2 liquid components	Liquid 1000 ml + hardener 500 ml set	06 00603 20
	Liquid 1000 ml	06 01603 20
	Hardener 500 ml	06 02603 20

**METHYL-METHACRYLATE RESIN 605**

Versatile, it is adapted to the majority of common materials for the fast mounting standard sample. It is possible to change the viscosity by modifying the proportion of the mixture: liquid + powder. Resistant to the principal acids used in laboratories.

Characteristics	Qty.	Ref.
Green Methyl-methacrylate 2 components (powder and liquid)	Powder 1 kg + catalyst 500 ml set	06 00605 00
	Catalyst 500 ml	06 00615 00
	Powder 10 kg + catalyst 5000 ml set	06 00605 10
	Catalyst 5000 ml (cond. 2 x 2500 ml)*	06 00615 10

**POLYESTER RESIN 607**

The Resin 607 is a three-component resin based on modified polyester.

This fast curing resin adheres perfectly to metal surfaces and its mechanical characteristics make it particularly effective on very hard materials.

Its very low shrinkage allows edge examinations on metallographic samples. It is resistant to the main acids and bases used in laboratories.

Characteristics	Qty.	Ref.
Modified white polyester 3 components	Set of 1,5 kg	06 00607 00
	Catalyst 500 ml	06 00607 10
	Hardener 250 ml	06 00607 20
	Powder 750 g	06 00607 30

**POLYESTER RESIN 608**

The Bi-component resin 608 based on low viscosity modified polyester is ideal for the mounting of metallographic samples of complex shapes. With a very low shrinkage and a high hardness, this resin is suitable for the mounting of hard and very hard samples. It is resistant to the main acids and bases used in laboratories.

Characteristics	Qty.	Ref.
Modified green polyester 2 components (Powder + Liquid)	Powder 1 kg + catalyst 500 ml set	060060800
	Catalyst 500 ml	060160800
	Powder 1 kg	060260800
	Powder 10 kg + catalyst 5000 ml set	060060810
	Catalyst 5000 ml	060160811
	Powder 10 kg	060260812

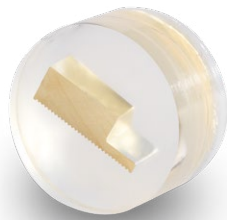
\* Packaging related to transport restrictions



**METHYL-METHACRYLATE RESIN 609**

A perfectly transparent resin used for precision parts, notably those of the electrical or electronics industry. It renders the sample perfectly visible, which allows analysing precise points. It must be used with the pneumatic device M.M.806 to obtain an optimum transparency.

The methyl-methacrylate resin 609 is available in the Plastichrome version – 5 transparent colours to simplify the classification of samples.



**609**

Characteristics	Qty.	Ref.
	Powder 1 kg + catalyst 500 ml set	06 00609 00
Methyl-methacrylate	Catalyst 500 ml	06 00619 00
Transparent	Powder 1 kg	06 00609 20
2 components (powder + liquid)	Powder 10 kg + catalyst 5000 ml set	06 00609 10
	Catalyst 5000 ml (cond. 2 x 2500 ml)*	06 00619 10

**609 PLASTICHROME**

Characteristics	Qty.	Color	Ref.
		BLUE	06 0071B 00
Methyl-methacrylate	Powder 1 kg + Catalyst 500 ml set	YELLOW	06 0071J 00
Transparent coloured		ORANGE	06 0071O 00
2 components (powder + liquid)		RED	06 0071R 00
		GREEN	06 0071V 00

\* Packaging related to transport restrictions



Material	Resin	Characteristics	Volumetrical shrinkage	Color	Polymerisation
Acrylic	601.2	Liquid monocomponent Low heating	Very low	Transparent	Curing < 20 min in the blue lightening device +10 min for the varnish
Epoxy	603	No heating	Non-existent if used with pressure device M.M.806	Transparent	Curing 10 hours
	603.2	Fast curing excellent adhesion	Non-existent	Transparent	Curing 2 hours
Methyl methacrylate	605	Versatility	Correct	Green	Fast Curing < 10 min
Methyl methacrylate	609	Excellent transparency if used with pressure device M.M.806	Correct	Transparent = colourless + 5 colours (series Plastichrome )	Fast Curing < 10 min
Modified polyester	607	Hardness	Very Low (<0,2%)	Beige	Fast Curing < 15 min
Modified polyester	608	Hardness	Very Low (<0,2%)	Green	Fast Curing < 10 min



## ACCESSORIES

## Moulds with removal bottom

Mainly used with the transparent mounting resins (601.2, 609, 603).

Type	Qty.	Dim. (mm)	Ref.
681	5	25	06 00681 10
	5	30	06 00681 20
	5	32	06 00681 30
	5	40	06 00681 40



## Flexible rectangular cold mounting moulds

Specifically, for cold mounting resin, adapted to complex and nonstandard shapes, many dimensions available, made of a flexible material to facilitate mould removal, (For an intensive use of Epoxy 603, it is preferable to use removable bottom moulds).

Type	Qty.	Dim. (mm)	Ref.
Flexible 670	5	70 x 30 x 40	06 00670 10
	5	100 x 42 x 30	06 00670 20
	5	120 x 50 x 30	06 00670 30
	5	100 x 70 x 30	06 00670 40
Flexible 670 4 pieces set	1	70 x 30 x 40	06 00670 00
	1	100 x 42 x 30	
	1	120 x 50 x 30	
	1	100 x 70 x 30	



Any other dimensions on request.

## Flexible cylindrical cold mounting moulds

Available in all standard diameters for central and individual pressure sample holders, made of a flexible material to facilitate mould removal. (For an intensive use of the EPOXY 603 resin, it is preferable to use moulds with removable bottoms).

Type	Qty.	Dim. (mm)	Ref.
Flexible 625	5	Ø 25	06 00625 00
Flexible 630	5	Ø 30	06 00630 00
Flexible 632	5	Ø 32	06 00632 00
Flexible 640	5	Ø 40	06 00640 00
Flexible 650	5	Ø 50	06 00650 00
Flexible 660	5	Ø 60	06 00660 00



## Universal sample-holder mould Series 610

The LAM PLAN universal sample-holder is a smart and economical system which combines the functions of both mould and sample-holder for cold mounting processes using any kind of cold liquid resin.

See details page 45.





## Cups and spatulas

Paper cups and wooden spatulas to mix cold mounting resins.

Characteristics	Qty.	Capacity	Ref.
Paper cups	200	200 ml	06 00696 00
Set: cups and spatulas	400 cups 400 spatulas		06 00698 00

## Micro engraver

To mark and identify samples.



### M.M.886

Characteristics	Ref.
Speed 0-20 000 rpm Clamping jaw: Ø 1,58 mm - Ø 2,35 mm - Ø 3,175 mm	10 88630 00

## Charge element for resin

The Voluma spheres are ceramic balls used as sole or base. They allow increasing the hardness of the mounting resins and decrease their shrinkage in order to reduce fallen edge effects. They are adapted to all types of hot and cold mounting resins; available in various colours to personalize samples..



### VOLUMA SPHERES

Characteristics	Qty.	Ref.
3-colour set	3 bottles of 250 cc	06 007SV 00
Blue	250 cc	06 007SV 20
Ivory	250 cc	06 007SV 30
Red	250 cc	06 007SV 10

## Unmoulding agent

### SOLILUB

Characteristics	Qty.	Ref.
Anti-stick powder for hot mounting process	50 g pot	06 00683 00



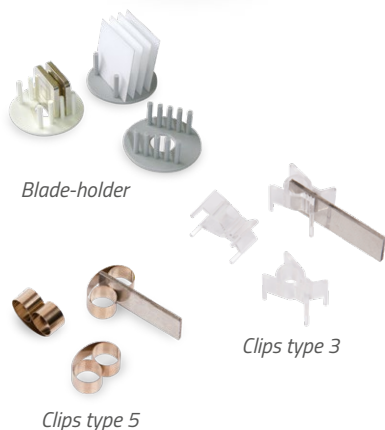
## Blade-holders & holding clips

For the vertical positioning of thin sections, to use of cold mounting resin.

Type	Qty.	Thickness in mm	Ref.
Blade-holder series 690	100	1	06 00690 10
Blade-holder series 691	100	2	06 00690 20
Blade-holder series 692	100	3	06 00690 30

Holding clips type 3 plastic clips to use with cold mounting resin.  
Holding clips type 5 metal clips to use with hot mounting resin.

Type	Characteristics	Qty.	Ref.
Clips type 3	Plastic, raised	100	06 00694 00
Clips type 5	Metal	100	06 00693 00



Blade-holder






Clips type 3

Clips type 5

### Diagnosis and guidance for LAM PLAN resin

Before to begin any mounting process, the grease needs to be removed from the samples in order for the resin to adhere to the contours of the parts. Check if any burrs were committed in the cutting process. If necessary, deburr the sample's edges with an abrasive paper.

#### Hot mounting resins

Noticed faults	Cause	Solution
Primer cracks on the sample's edges	 Oversized Coated part according to the chosen mounting mould	Reduce the size of the sample or increase the size of the mounting mould
	Inadequate mounting resins	Choose a resin offering less shrinkage
Shrinkage	 Insufficient heating time	Increase the temperature during the heating time
	Inadequate pressure mode and insufficient pressure	- Use the machine mode adjusting the temperature curve - Increase the mounting pressure
Resins grains visible on the faces of the sample	 Insufficient pressure	Increase the pressure during the mounting cycle
	Insufficient heating time	Increase the heating time
	Wrong pressure choice	Choose a pressurisation only during the cooling cycle
"Smoke" visible in a transparent mounting	 Too much resin according to the size of the sample	Limit the quantity of resin inserted in the mould or reduce the size of the mould
	Insufficient heating time	Increase the heating time
Mounting stuck in the mould	Insufficient "solilub" powder	Drop a sufficient amount of "solilub" on the machine's superior and inferior pistons
	Insufficient heating time	Increase the heating time
Bulge on top of the mounting	 Insufficient cooling time	Increase the cooling time

#### Cold mounting resins

##### Procedure of the cold mounting

The sample is placed at the bottom of the mould; it is recommended to use clips to maintain the thin samples on its edge. Mix the resin components respecting the dosage indicated in the technical sheet. Gently blend to avoid air bubbles. Pour the resin in the mould until the desired level and let it harden on open air or in a pressure device M.M.806 in order to get rid of any bubbles or porosities. The mounting time is about 15 minutes long.

Resin	Blending proportions
601.2	1 liquid + 1 varnish. Apply the varnish on top of the coating 20 minutes after polymerisation in the M.M.866 device
603	2 volums of powder for 1 volume of liquid
603.2	2 volums of powder for 1 volume of liquid
605	2 volums of powder for 2 volums of liquid 1 and 1 volume of liquid 2
607	3 volums of powder for 2 volume of liquid
608	2 volums of powder for 1 volume of liquid
609	2 volums de poudre pour 1 volume de liquide

# PREPOLISHING & POLISHING



PREPOLISHING MACHINE

## RECTILAM® 2.0

NEW

MADE IN FRANCE

When the prepolishing phase demands a high level of effectiveness and precision the RECTILAM® 2.0 is the answer. This machine is particularly productive in the preparation of coated or raw samples by high speed prepolishing. Several parts can be installed on the central pressure sample holder. Large parts can also be treated individually.

The principle of high speed prepolishing on stone enables significant material removal and unrivalled flatness without rounding the edges.

The single block design and rigidity of the RECTILAM® 2.0 avoids vibration which is detrimental to the surface condition. In order to ensure significant and even removal of material, a reconditioning system automatically follows each stage of polishing.

The prepolishing system and the sample holder are connected to the same mechanical arm which guarantees precision.

The RECTILAM® 2.0 is supplied with an integral security hood. The assembly includes a closed-circuit lubricating filtration system integrated into the machine as well as a spray-tap for cleaning.



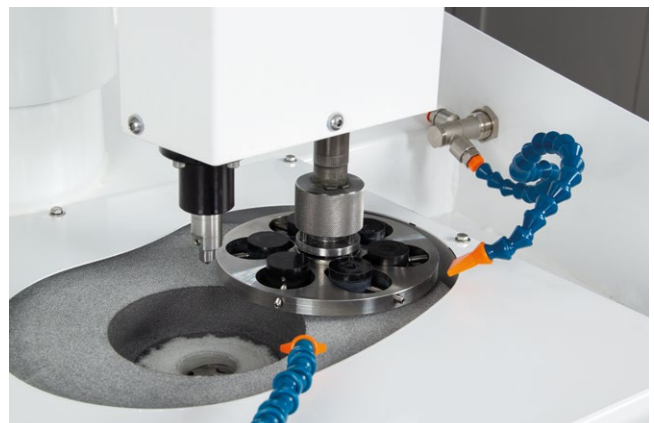
## RECTILAM® 2.0

Automatic flat prepolishing machine

*Prepolishing of large raw samples.*



*Prepolishing of coated samples, mounted on a central pressure sample holder.*



Grinding and prepolishing are crucial steps in the preparation of a metallographic sample. It is the quality of these steps which will condition and optimise the rest of the process.

At the end of the prepolishing step, the sample's aspect must be uniform and regular without any alteration of the inherent flatness or the material.

## PREPOLISHING MACHINE

### The RECTILAM®2.0's unique feature is its 2 axis principle.

The Z axis deals with the motorised rise and fall of the reconditioning tool and the pressurisation of the sample carrier.

The R axis enables precise positioning of the sample holder in relation to the grinding wheel in order to make the most of the available abrasion surface.

During the start cycle the starting point of the sample/grinding wheel is automatic. The stock removal is continuously managed. The real-time display shows the operator if the rectification settings entered are appropriate.

All parameters are managed and clearly shown on the 5.7" touchscreen with graphic display.



Technical data	RECTILAM®2.0
Grinding wheel diameter	Ø 356 mm
Control	By 5.7 inch touchscreen and joystick
Grinding wheel speed	1000 to 3000 tr/min.
Sample holder speed	20 to 150 tr/min.
Applied force	10 to 550 N
Sample holder size	Ø 210 mm max
Conditioning wheel specifications	Configurable pass depth and diamond feed rate
In cycle reconditioning mode	Automatic - customisable frequencies
Stock removal range	0,1 mm to 1 mm
Measurement precision	0,02 mm
Work zone lighting	Enclosed LED
Body	Powder-coated steel
Grinding wheel motor power	3,8 kW
Sample holder motor power	0,25 kW
Noise level	70 dB
Tension	400 V-50 Hz three-phase + neutral
Dimensions W x H x D	900 x 1620 x 1000 mm (H. cover open : 1850 mm)
Weight	450 kg
Reference	60 RL200 00

### Accessories

Grinding wheel AL <sub>2</sub> O <sub>3</sub> - GRAIN 60 - Ø 355 mm	05 M0060 80
Grinding wheel SiC - GRAIN 150 - Ø 355 mm	05 M0150 80



05 M0060 80



05 M0150 80

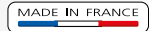
The 5.7 inch touch screen





POLISHING MACHINES

## SMARTLAM® 2.0



The SMARTLAM® 2.0 is a compact, single plate polishing machine that gives you a wide range of possibilities both in manual and semi-automatic polishing. Ergonomic and easy-to-use, the SMARTLAM® 2.0 is entirely controlled by a colour touch screen equipped with an intuitive interface. The internal memory can store 9 programs that can be exported via the USB port.

The power of the bidirectional rotation, variable-speed, constant-torque motor and the possibility to use plates with a diameter from 200 to 300 mm are exclusive assets that will allow you to face up to all situations encountered in metallographic research polishing.

### Evolutive

Thanks to the mechanical pressure head option SPRINGLAM® and the central-pressure holders but also use of the M.M. 909 M programmable dosing unit slaved to the machine, you will have a very efficient, semi-automatic polishing system.

### Options: SPRINGLAM® pressure head to use the SMARTLAM® as a semi-automatic polisher

Variable pressure thanks to the 0- 250 N spring

Attachment system for central pressure sample-holder

Sample-holder Ø 119 mm 6 alveolus water drops for Ø 20 to 32 mm



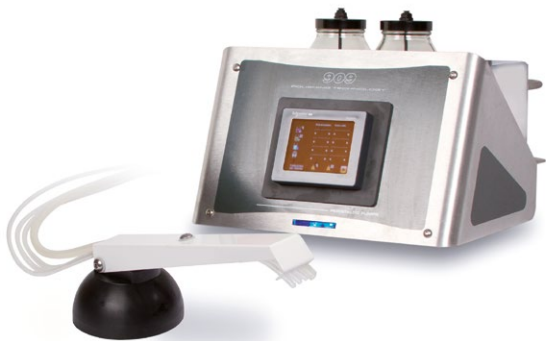
## SMARTLAM® 2.0

The most versatile manual polishing machine

## 909 M DOSING UNIT

### M.M. 909 M dosing unit technical data

Distribution system	Distribution of 3 different liquids
Controls	Touch screen
Pumps	3 peristaltic pumps, with 1 outlet to drive an external pump
Electrical power supply	230 v single-phase 50 Hz
Dosing / machine communication	1 x 24 V input for machine servoing
Option	Replacement of a standard peristaltic pump by a high flow rate pump for high-viscosity products
Reference	08 00799 10



Easy cleaning: spinning function, removable water input, easy tank removal



Technical data	SMARTLAM® 2.0
Plate Capacity	Ø 200 to 300 mm
Body	Steel, coated with epoxy paint
Bowl	Removable resin basin for easy cleaning
Controls	3,5" touch screen to control the machine: start/stop, timer, speed and direction of plate, water solenoid valve
Plate rotation speed	Variable from 20 to 650 rpm
Rotation	Clockwise / counter-clockwise
Programming	Loads 9 programs
Connection	Slave connector for dosing unit
Water inlet	Removable pipe with flow-rate adjustment and safety solenoid valve
Power max	0,75 kW
Voltage	230 V - 50 Hz single-phase
Dimensions W x H x D	450 x 300 x 650 mm
Weight	30 kg
Reference	60 SL200 00



## POLISHING MACHINES

**SMARTLAM® 3.0**

With the SMARTLAM®3.0, LAM PLAN proposes an economic solution in terms of automatic pre-polishing and polishing of metallographic samples.

The SMARTLAM®3.0 is equipped with a new specific motorised head, composed with a 3 cells sample-holder and an individual pneumatic pressure system.

The moto reducer group has a high torque, the speed and the rotation can be set. The individual pneumatic pressure system handled by the electronic proportional valve, assures a great polishing regularity. The pressure applied per sample goes from 5 to 60 N.

The SMARTLAM®3.0 uses the reliable and proven base of the SMARTLAM®2.0 from which it conserves all the assets for a manual use (activation/deactivation of the sample holder head with the touch screen). The plate's speed and rotation can be set from 20 to 650 rpm.

For more efficiency, you can connect the M.M. 909 M automatic dosing unit to your SMARTLAM® 3.0 and benefit of a very economic and competitive set.

The automatic motorised head compactness is due to its strategically placed power supply on the side of the machine. The head rotates to free the workspace and allows the easy change of the polishing support and the cleaning of the plate and bowl.

All the functions accomplished by the machine or the head are controlled by the screen. The programs can be stored in the intern memory.

Technical data	SMARTLAM®3.0
Plate Capacity	Ø 200 to 300 mm
Body	Steel coated with epoxy paint
Bowl	Removable resin basin for easy cleaning
Controls	3,5" touch screen to control the machine: start/stop, timer, speed and direction of plate, water solenoid valve
Plate rotation speed	Variable from 20 to 650 rpm
Rotation	Clockwise / counter-clockwise
Programming	Loads 9 programs
Connection	Slave connector for dosing unit
Water inlet	Removable pipe with flow-rate adjustment and safety solenoid valve
Power max	0,75 kW
Voltage	230 V - 50 Hz single-phase
Pneumatic feed	6 bars, filtered 50 µm
Dimensions W x H x D	580 x 570 x 670 mm
Weight	65 kg
Reference	60 SL220 00



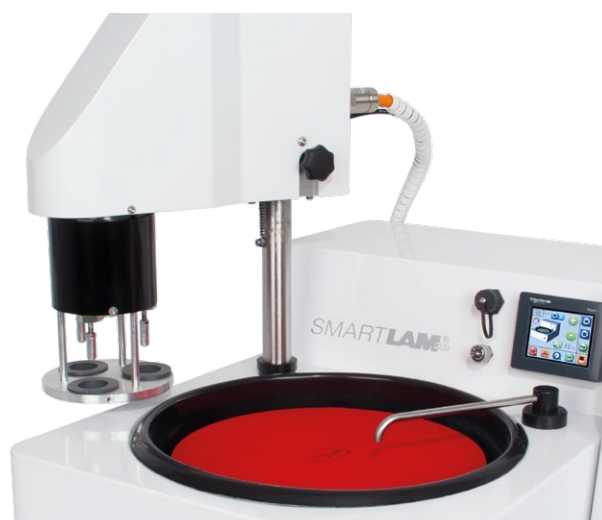
Friendly interface with large 3,5 " touch screen

**SMARTLAM® 3.0**

Individual pressure semi-automatic polishing machine

**Technical data of the head**

Capacity	3 samples Ø 25,4 to 50 mm (on Ø 200 mm plate 3 samples Ø 30 mm max.)
Body	Steel coated with epoxy paint
Controls	Colour touch screen (3"): controls the machine and the head
Sample holder rotation speed	Variable from 10 to 150 rpm
Rotation	Clockwise / counter-clockwise
Pressure	Individual, pneumatic, variable from 5 to 60 N
Programming	Loads 9 programs
Power max	Moto reducer with high torque
Positioning	Manual, with indexable handle
Positioning and locking in height	Manual, raising/lowering of the head with a lever, locking with knob





## MASTERLAM<sup>®</sup> 1.0

Automatic polishing machine with central pressure, oscillating head\* and stock removal control\*

\* Optional equipment available



### Options

Dosing unit DISTRILAM (4 circuits)	60 MLD00 00
Oscillation function	
Stock removal control system	
Transparent secured housing for MASTERLAM <sup>®</sup>	60 MLEP0 00
Filtering / sedimentation 60 L tank, recirculation pump	60 A0029 00
Filtering / decantation 60 L tank	60 A0029 90

### Accessories (See next page)



## MASTERLAM<sup>®</sup> 1.0

MADE IN FRANCE

Automatic, single-plate Ø 250 to 300 mm polishing machine with bidirectional rotation and variable speed. Touch screen controls, intuitive and user friendly interface, MASTERLAM<sup>®</sup> machines are equipped with the best programming, parameter storage and export technologies. Control of the 4-circuit DISTRILAM<sup>®</sup> dosing unit directly integrated.

The MASTERLAM<sup>®</sup> 1.0 is equipped with a powerful central-pressure head, bidirectional rotation, variable speed and pressure. The distinctive feature of this polishing head is the oscillation function with oscillation configurable both for amplitude and frequency.

The use of the oscillating head will allow you to achieve unrivalled levels of performance and versatility: it improves the quality of flatness, increases the stock removable and the service life of polishing supports (uniform wear due to the use of the entire surface of the plate.)

La MASTERLAM<sup>®</sup> 1.0 with the oscillation option, is particularly efficient for polishing large-sized samples and for superfinishing of mechanical components, prototypes or micro-series.

A stock removal control system with an automatic "stop at measurement" function is also available (accurate to 0,02 mm).

The MASTERLAM<sup>®</sup> 1.0 is a high-performance machine intended for intensive use such as in-production inspections.

Technical data	MASTERLAM <sup>®</sup> 1.0
Plate Capacity	Ø 250 to 300 mm
Body	Steel coated with epoxy paint
Bowl	Removable, in resin, to ease cleaning
Controls	Touch screen (5,7")
Plate rotation speed	Variable from 20 to 650 rpm Bidirectional rotation
Head's speed	Variable from 10 to 150 rpm bidirectional rotation
Applicable load	5 to 400 N central pressure
Capacity	Sample size in central pressure 6 x Ø 40 mm
Head oscillation function	Adjustable speed and amplitude (optional)
Stock removal control function	Stock removal measuring system with automatic stop, accurate to 0.02 mm (optional)
Workspace lightening	LED
Water inlet	Removable pipe, with flow rate adjustment and safety solenoid valve
Programming	60 storable programs, USB connector to backup programs and Ethernet port for networking
Cumulative machine power	1.1 kW
Voltage	230 V - 50 Hz single phase
Pneumatic feed	6 bars
Dimensions W x H x D	550 x 670 x 670 mm
Weight	80 kg
Reference	60 ML100 00

## POLISHING MACHINES

**MASTERLAM® 3.0**

MADE IN FRANCE

Automatic, single plate Ø 250 to 300 mm polishing machine, bidirectional rotation and variable speed.

This machine has all the functions that make the MASTERLAM® range outstand and on this model a specific new combo-head. The MASTERLAM® 3.0 is the metallographic polishing machine without concession. Polishing can be carried out with central pressure or individual pressure and can be equipped with a stock removal measuring system.

The MASTERLAM® 3.0 is based on the same technology as the MASTERLAM® 1.0 with, in this configuration, a powerful central and individual pressure head equipped with 6 pistons.

Changing sample holders is quick and the pressure mode is controlled directly on the screen without having to touch the head, thus, you can switch from one pressure mode to another in a few seconds.



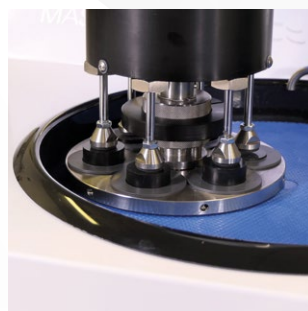
CUTTING

MOUNTING

POLISHING



Central pressure mode



Individual pressure mode

## MASTERLAM® 3.0

Automatic polishing machine  
with central and individual pressure

**Options**

Dosing unit DISTRILAM (4 circuits)	60 MLD00 00
Stock removal control system	
Transparent secured housing for MASTERLAM®	60 MLEPO 00
Filtering / sedimentation 60 L tank, recirculation pump	60 A0029 00
Filtering / decantation 60 L tank	60 A0029 90



60 MLD00 00



60 MLEPO 00



60 A0029 00

Technical data	MASTERLAM® 3.0
Plate Capacity	Ø 250 to 300 mm
Body	Steel coated with epoxy paint
Bowl	Removable resin bowl for easy cleaning
Controls	Touch screen (5,7")
Plate rotation speed	Variable from 20 to 650 rpm Bidirectional rotation
Head's speed	Variable from 10 to 150 rpm bidirectional rotation
Applicable load	5 to 400 N central pressure 5 to 100 N individual pressure
Capacity	Sample size 6 X Ø 40 mm Sample size 1 - 6 X Ø 50 mm
Workspace lightening	LED
Water inlet	Removable pipe, with flow rate adjustment and safety solenoid valve
Programming	60 storable programs, USB connector to backup programs and Ethernet port for networking
Cumulative machine power	1.1 kW
Voltage	230 V - 50 Hz single phase
Pneumatic feed	6 bars
Dimensions W x H x D	550 x 670 x 670 mm
Weight	85 kg
Reference	60 ML300 00

**Accessories for MASTERLAM® 1.0 and 3.0**

Aluminium removable plate Ø 250 mm
Aluminium removable plate Ø 300 mm
Sample-holder: CP (central pressure) and IP (Individual pressure)



Aluminium plate



IP sample-holder



CP sample-holder

Ø 160 mm central pressure sample holder  
for eccentric restriction of non-embedded  
complex geometric parts.

60 MLC60 00

NEW





## MASTERLAM® 1.1



Automatic single-plate Ø 350 to 400 mm polishing machine, bidirectional rotation and variable speed.

The MASTERLAM® 1.1 is a central pressure machine. It is equipped with a 2,2 Kw main motor, a 250 W head motor and applicable pressure may reach 450 N.

Using the oscillating head allows you to make use the entire surface of the 350 or 400 mm diameter plate: the quality of flatness is improved, stock removal is increased and the service life of polishing supports is increased (uniform wear due to use of the entire surface of the plate.)

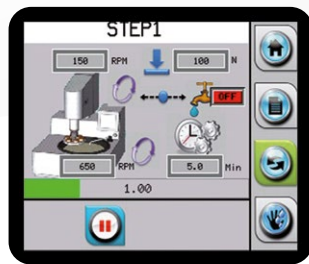
The specific capacities of the MASTERLAM® 1.1 allow it to cope with most difficult applications, particularly in terms of large polishing surfaces where the torque and required pressure exceed the capabilities of standard equipment.



**MASTERLAM® 1.1**  
Large diameter, automatic polishing machine with central pressure and motorised oscillating head



*DISTRILAM dosing unit programming integrated to the machine's commands in the full range of MASTERLAM® machines.*



*Possibility of changing parameters while the machine is working: pressure, speed, time and dosage (except the rotation.)*

### Options

Dosing unit DISTRILAM®	60 MLD00 00
Filtering / sedimentation 60 L tank, recirculation pump	60 A0029 00
Filtering / decantation 60 L tank	60 A0029 90



60 MLD00 00



60 MLEP1 00



60 A0029 00

### Options

Transparent secured housing for the MASTERLAM® 1.1	60 MLEP1 00
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### Technical data MASTERLAM® 1.1

Plates Capacity	Ø 350 to 400 mm
Body	Steel coated with epoxy paint
Bowl	Removable, in resin, to ease cleaning
Controls	Touch screen (5,7")
Plate rotation speed	Variable from 20 to 650 rpm Bidirectional rotation
Head's speed	Variable from 10 to 150 rpm bidirectional rotation
Applicable load	5 to 450 N central pressure
Capacity	Sample size 6 X Ø 60 mm
Oscillating head (option)	Adjustable speed and amplitude
Workspace lightening	LED
Water inlet	Removable pipe, with flow rate adjustment and safety solenoid valve
Programming	60 storable programs, USB connector to backup programs and Ethernet port for networking
Motor power	2,2 kW
Head motor power	250 W
Voltage	230 V - 50 Hz single phase (25A)
Pneumatic feed	6 bars
Dimensions W x H x D	800 x 597 x 712 mm
Weight	110 kg
Reference	60 ML110 00

## POLISHING MACHINES

**Dosing unit DISTRILAM®**

MADE IN FRANCE

The automatic dosing unit DISTRILAM® is directly controlled via the touch screen on the machine through a RS 232 connector. It is instantly recognised by all the MASTERLAM® polishing devices as the control program is already programmed in the machines. It is equipped with 4 circuits composed of 3 standard peristaltic pumps for an accurate dosage of diamond liquids, and 1 high flow rate peristaltic pump for the dosage of the lubricant or the colloidal silica abrasive. It works without compressed air nor electric wiring.

The automatic dosing unit DISTRILAM® is an indispensable accessory for an automatic use of the MASTERLAM®.

This device is the guarantee of a reproducible process and an economic use of the fluids.

It contains: a dosing unit, a machine connection, a 4 ways distribution nozzle on magnetic leg and 4 plastic bottles.

Technical data	DISTRILAM®
Dimensions L x H x P	170 x 205 x 200 mm
Reference	60 MLD00 00

**Transparent protective housing**

The secured housing is a totally transparent protection compatible with the full range of MASTERLAM®.

Its opening stops all movements of the machine\*, it offers an integral protection complying with the 2006/42/CE and 2004/108/CE standards. The housing's design preserves the accessibility of the plate and does not clutter the workspace.

The touch screen is located outside of the secured zone; therefore, the commands are permanently accessible.

For the MASTERLAM®1.0 and 3.0 the touch screen control panel is located on the right, a 195 mm space needs to be foreseen in addition to the machine width.

*\*However, the transparent secured housing authorises the plate rotation in the manual mode.*



Technical data	Housing for MASTERLAM® 1.0 et 3.0
Required space	Width 770 mm - Height 910 mm
Reference	60 MLEP0 00
Technical data	Housing for MASTERLAM® 1.1
Required space	Width 880 mm - Height 910 mm
Reference	60 MLEP1 00

**DISTRILAM®**

3 standard pumps and  
1 high flow rate pump



## Accessories for polishing machines



Designation	Ref.	SMARTLAM®		MASTERLAM®		
		2.0	3.0	1.0	3.0	1.1
<b>PLATES AND SUPPORTS</b>						
Aluminium plate Ø 200 mm	08 8270100	✓	✓			
Aluminium plate Ø 230 mm	08 8270200	✓	✓			
Aluminium plate Ø 250 mm	08 8270300	✓	✓	✓	✓	
Aluminium plate Ø 300 mm	08 8270400	✓	✓	✓	✓	
Aluminium plate Ø 400 mm	08 8270600					✓
Metal clamping ring for Ø 200 mm plate	60 SL00290	✓	✓			
Metal clamping ring for Ø 230 mm plate	60 SL00190	✓	✓			
Metal clamping ring for Ø 250 mm plate	60 SL00490	✓	✓	✓	✓	
Metal clamping ring for Ø 300 mm plate	60 SL00690	✓	✓	✓	✓	
Metal clamping ring for Ø 305 mm plate	60 SL00790	✓	✓	✓	✓	
Tank reducer SMARTLAM® for Ø 200 mm plate	60 ML08090	✓	✓			
Tank reducer SMARTLAM® for Ø 230 mm plate	60 ML08290	✓	✓			
Tank reducer SMARTLAM® for Ø 250 mm plate	60 ML08190	✓	✓	✓	✓	
Anti-splash ring pour MASTERLAM® & SMARTLAM®2.0	60 ML08091	✓		✓	✓	
<b>SAMPLE HOLDERS AND ACCESSORIES</b>						
CP sample holder Ø 119 mm with 6 x Ø 20 to 32 mm water drop cells	06MLP0200	✓*				
CP sample holder Ø 160 mm with 6 x Ø 20 to 40 mm water drop cells	06MLC1000	✓*		✓	✓	
CP sample holder Ø 160 mm 9 x Ø 30 mm	06MLC3000	✓*		✓	✓	
CP sample holder Ø 160 mm 6 x Ø 40 mm	06MLC4000	✓*		✓	✓	
CP sample holder Ø 160 mm 5 x Ø 50 mm	06MLC5000	✓*		✓	✓	
CP sample holder Ø 160 mm with 3 x rectangular 40 x 70 mm	06MLC1200	✓*		✓	✓	
CP sample holder Ø 160 mm with 6 x rectangular 25 x 34 mm	06MLC1400	✓*		✓	✓	
CP sample holder Ø 210 mm without cavity	06MLC0100					✓
IP sample holder Ø 160 mm 6 x Ø 50 mm	06MLI1000			✓		
Kit 6 x Ø 40 mm reducer rings	06MLIK500				✓	
Kit 6 x Ø 30 mm reducer rings	06MLIK200				✓	
Kit 6 x Ø 25,4 mm reducer rings	06MLIK110				✓	
Kit 6 x 1-1/4" reducer rings	06MLIK310				✓	
Kit 6 x 1-1/2" reducer rings	06MLIK410				✓	
Kit 3 x Ø 40 mm reducer rings	06SLIK500		✓			
Kit 3 x Ø 30 mm reducer rings	06SLIK200		✓			
Kit 3 x Ø 25,4 mm reducer rings	06SLIK110		✓			
Kit 3 x 1-1/4" reducer rings	06SLIK310		✓			
Kit 3 x 1-1/2" reducer rings	06SLIK410		✓			
Levelling plate for CP sample holder Ø 160 mm - 3 mm depth	06MLP0100				✓	✓
Levelling plate for CP sample holder Ø 119 mm - 3 mm depth	06MLP0200	✓*	✓			
<b>DISTRIBUTORS</b>						
Automatic dosing unit DISTRILAM® for MASTERLAM®	60 MLD00 00			✓	✓	✓
Automatic dosing unit M.M. 909 M for SMARTLAM®	080079910	✓*	✓			

\* SMARTLAM® 2.0 equipped with the SPRINGLAM®

## ACCESSORIES FOR POLISHING MACHINES

## Diaphragm compressor

Diaphragm compressor for laboratories that are not equipped with a compressed air network. Silent operating.

Flow	Pressure	Dim. W x H x P	Ref.
50 l/min	8 bar	330 x 500 x 330 mm	60 COM00 00

## Pressure regulator filter kit for compressed air

Indispensable to preserve the machines from impurities. Compatible with: CUTLAM®4.0 and CUTLAM®5.0, PRESSLAM®1.1, SMARTLAM®3.0, MASTERLAM®1.0/1.1/3.0.

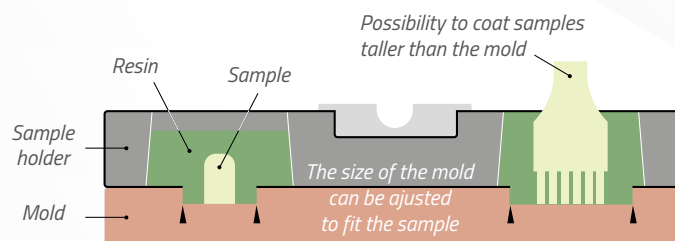
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## Universal sample-holder mould

The LAM PLAN universal sample-holder mould is a smart and economical system which combines the functions of both mounting mould and sample-holder for cold mounting processes using any kind of liquid resin. This system has been developed as two removable parts: the metallic universal sample-holder with non-stick coating and a special silicon based flexible mould to embed your cold mounting samples.

### Use

The 610 sample holder can be used on both automatic and semi-automatic machines. It is directly compatible with the SMARTLAM®2.0 fitted with the SPRINGLAM® pressure arm. An adaptor kit is available for use with an automatic machine with motorised head.



### SERIE 610

Designation	Ref.	SMARTLAM® option SPRINGLAM®	MASTERLAM®
		2.0	1.0 and 3.0
Ø 110 mm with 6 x Ø 28 mm cells	06 00612 20	Ø 200 mm	
Ø 145 mm 3 moulds 6 included cells 6 x Ø 40, 6 x Ø 35 and 6 x Ø 32 mm	06 00614 10	Ø 250 - 300 mm	Ø 250 - 300 mm
Ø 145 mm with 3 moulds 6 included cells 6 x Ø 30, 6 x Ø 25 and 6 x Ø 20 mm	06 00614 20	Ø 250 - 300 mm	Ø 250 - 300 mm
Ø 145 mm with moulds 3 x Ø 50 mm cells	06 00614 30	Ø 250 - 300 mm	Ø 250 - 300 mm
Ø 145 mm with 2 moulds 3 included rectangular cells 3 x 30 x 55 mm and 3 x 18 x 55 mm	06 00614 40	Ø 250 - 300 mm	Ø 250 - 300 mm
Ø 160 mm with mould 6 x Ø 36 mm cells	06 00612 40	Ø 250 - 300 mm	Ø 250 - 300 mm
Ø 160 mm with mould 10 x Ø 28 mm cells	06 00612 50	Ø 300 mm	Ø 300 mm
Universal sample holder ADAPTOR KIT for MASTERLAM®1.0 and 3.0	06 K0010 00		✓

In order to use the universal sample-holders with the SMARTLAM®2.0, the machine must be fitted with a SPRINGLAM® pressure arm. The universal sample-holders are not compatible with the individual pressure.



SPRINGLAM® pressure arm for SMARTLAM®2.0





Adhesive disc on FAS<sup>2</sup> support

Self-adhesive CAMEO<sup>®</sup>DISK and polishing cloths



Aluminium or PVC plates

Self-adhesive CAMEO<sup>®</sup>DISK and polishing cloths



Magnetic plates



Magnetic CAMEO<sup>®</sup>DISK



Aluminium or PVC plates

## Fixing accessories

The discs and plates FAS<sup>2</sup>, FMS<sup>®</sup>, X LAM<sup>®</sup> and FIX LAM<sup>®</sup> allow you to easily fix all your discs whether self-adhesive or not, for simplified manipulation.

### FAS<sup>2</sup> DISCS

The solution for adhesive fixing

The FAS<sup>2</sup> facilitates the sticking and unsticking of all self-adhesive supports (abrasive papers, grinding and polishing discs). It avoids the time consuming cleaning of plates dirtied by glue remains whenever a self-adhesive disc is removed.

The patented material comprising the FAS<sup>2</sup> system allows combining the softness and regularity of the abrasion of a flexible coating with the inherent flatness obtained with a metal support.

Available in 2 versions:

- FAS<sup>2</sup>: rigid self-adhesive, fixed to your machine's plate, available in all diameters, its low thickness (1 mm) guarantees the initial inherent flatness of the master plate.
- FAS<sup>2</sup>-M: magnetic, equipped with a support adaptable on a magnetic plate.

Characteristics	Qty.	Ø in mm	Ref.	
FAS <sup>2</sup>	1	200	05 FAS20 20	
	1	230	05 FAS20 30	
	Self-adhesive backside	1	250	05 FAS20 40
	1	300	05 FAS20 50	
	1	400	05 FAS20 80	
FAS <sup>2</sup> -M	1	200	05 FAS2M 20	
	1	230	05 FAS2M 30	
	Magnetic backside	1	250	05 FAS2M 40
	1	300	05 FAS2M 50	
	1	400	05 FAS2M 80	

### FMS<sup>®</sup> PLATES AND DISCS

The fixing system by magnetic attachment.

The FMS<sup>®</sup> magnetic disc sticks to all type of support plates. It is also available in an FMS plate and adapts to all existing machines.

Characteristics	Qty.	Ø in mm	Ref.	
FMS <sup>®</sup> DISCS	1	200	08 82801 10	
	1	230	08 82802 10	
	Self-adhesive backside	1	250	08 82803 10
	1	300	08 82804 10	
	1	400	08 82807 10	
FMS <sup>®</sup> PLATES	1	200	08 82801 00	
	1	230	08 82802 00	
	Aluminium plate equipped with a FMS <sup>®</sup> adaptable disc on polishing machine	1	250	08 82803 00
	1	300	08 82804 00	
	1	400	08 82807 00	



## FIXING ACCESSORIES

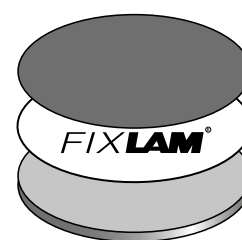
**FIX LAM® DISCS AND PLATES****The repositionable adhesive system.**

The FIX LAM® allows you to maintain non-adhesive abrasive papers thanks to a repositionable adhesive surface.

- FIX LAM®: adhesive backside.
- FIX LAM®-M: magnetic backside.

Characteristics	Qty.	Ø in mm	Ref.
<b>FIX LAM® DISCS</b>			
Adhesive backside	5	200	05 40000 20
	5	230	05 40000 30
	5	250	05 40000 40
	5	300	05 40000 60
<b>FIX LAM®-M DISCS</b>			
Magnetic backside	5	200	05 4000M 20
	5	230	05 4000M 30
	5	250	05 4000M 40
	5	300	05 4000M 60

*Non-adhesive abrasive paper*



*Aluminium or PVC plates*

**GUIDANCE****Applications table**

	Machine equipment	
	Aluminium plate	Magnetic plate
Non-adhesive abrasive paper	FIX LAM®	FIX LAM®-M
Self-adhesive CAMEO DISK® Self-adhesive abrasive paper Self-adhesive polishing cloth	FAS®2	FAS®2-M
Magnetic CAMEO DISK® Magnetic polishing cloth	FMS®	-

Extend the service life of your discs thanks to the discs and plates storage system.



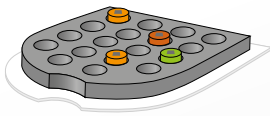
## BOX LAM® 300

The BOX LAM® 300 allows storing discs and plates, up to Ø 300mm. Delivered with 10 sliding aluminium shelves, which may be equipped, among others, with a foam template to store your samples. The large transparent cover and the shelf arrangement allow an optimum visibility of the stored products.

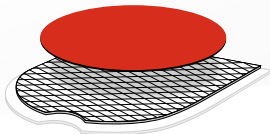
Characteristics	Qty.	Dim. (mm)	Ref.
Storage for 10 discs or plate up to Ø 300 mm and storage for samples (according to options)	1	W 400 x H 470 x D 490	08 BL300 00

## BOX LAM® 300 accessories

Characteristics	Qty.	Dim. (mm)	Ref.
<b>FOAM TEMPLATE</b>			

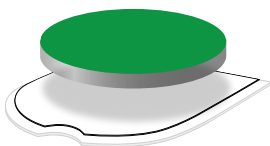


Storage template for samples, self-adhesive foam	2	W 320 x H 10 x D 330	08 BL300 20
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### “DIAMOND” PLEXIGLASS SHELF

Self-adhesive diamond tip plexiglas shelf specially studied for the storage of adhesive discs	2	W 320 x H 2 x D 330	08 BL300 40
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### PVC PROTECTION

Self-adhesive protection sheet made of smooth white PVC	10	W 320 x D 330	08 BL300 60
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## BOX LAM®

The BOX LAM® is an economic unit to arrange and store in a dust-free space grinding and polishing discs, specially for self-adhesive cloths up to Ø 300 mm. The BOX LAM® is equipped with a transparent closing flap, 6 shelves and a storage drawer.

Characteristics	Qty.	Dim. (mm)	Ref.
Economic model with 6 shelves	1	W 340 x H 450 x D 340	08 BL100 00

## CLEANING AND STORAGE ACCESSORIES

## COVER LAM®

The COVER LAM® is a self-adhesive protection disc which is applied on clean and polished samples to efficiently preserve their surface condition and protect it from ambient environment attacks. The COVER LAM® does not require any cleaning of the polished sample after its has been removed.

Characteristics	Qty.	Ø in mm	Ref.
Disc for the protection of metallographic samples after polishing	100	50	08 COV00 00



## Ultrasonic cleaning

### The efficiency of ultrasonic cleaning

The ultrasonic process is the most used to clean parts because it guarantees a rapid and efficient result, while avoiding the deterioration of the material. 2 tank capacities are available: 0.8 and 2.75 litres.

The tank consisting of a container and a basket made of stainless steel is equipped with a timer from 0 to 30 minutes.

Characteristics	Qty.	Capacities	Ref.
<b>ULTRASONIC TANK M.M.80</b>			
Stainless steel container with stainless steel basket Timer from 0 to 30 minutes	1	0,8 L	60 US100 00

### ULTRASONIC TANK M.M.275

Stainless steel container with stainless steel basket Timer from 0 to 30 minutes	1	2,75 L	60 US200 00
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## Detergent

Characteristics	Qty.	Ref.
<b>DETERGENT 742</b>		
Detergent for ultrasonic cleaning tank (dilution < 10 % in water)	5 litres	08 01742 10
	1 litre	08 01742 00



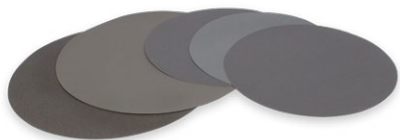
## Technical wipings

### Technical wiping of samples without micro-scratches

The LAM® 15 cloth allows you to eliminate and wipe off easily the halos left by cleaning liquids or water.

Characteristics	Qty.	Ref.
<b>LAM 15</b>		
Cloths 320 x 400 mm	2 x 24 cloths	08 LAM15 00
Cloths Ø 80	400 cloths	08 LAM15 20





## Standard SiC abrasive papers

Available from P80 to P4000 from  $\varnothing$  200 to 400 mm.

The LAM PLAN® abrasive papers respond to very strict quality standards. The calibration of the silicon carbide grains is guaranteed for the European standards FEPA regardless of their size (P80 to P4000).

The resistance of the resins used to maintain the abrasive grains gives to the LAM PLAN® abrasive papers a high resistance to heat and moisture. The orientation of the grains is obtained by an electrostatic process. The choice of the support paper (thickness and basis weight) is adapted to the grain's thickness in order to reduce the wear of the abrasive papers. The paper is made impermeable in its mass and on the surface.

### $\varnothing$ 200 mm

### $\varnothing$ 230 mm

100 pieces box

Grains FEPA	Self-adhesive		Non-adhesive	
	Ref.	Ref.	Ref.	Ref.
P80	05 60080 20	05 50080 20	05 60080 30	05 50080 30
P120	05 60120 20	05 50120 20	05 60120 30	05 50120 30
P180	05 60180 20	05 50180 20	05 60180 30	05 50180 30
P240	05 60240 20	05 50240 20	05 60240 30	05 50240 30
P320	05 60320 20	05 50320 20	05 60320 30	05 50320 30
P400	05 60400 20	05 50400 20	05 60400 30	05 50400 30
P600	05 60600 20	05 50600 20	05 60600 30	05 50600 30
P800	05 60800 20	05 50800 20	05 60800 30	05 50800 30
P1000	05 61000 20	05 51000 20	05 61000 30	05 51000 30
P1200	05 61200 20	05 51200 20	05 61200 30	05 51200 30
P2400	05 62400 20	05 52400 20	05 62400 30	05 52400 30
P4000	05 64000 20	05 54000 20	05 64000 30	05 54000 30

### $\varnothing$ 250 mm

### $\varnothing$ 300 mm

100 pieces box

Grains FEPA	Self-adhesive		Non-adhesive	
	Ref.	Ref.	Ref.	Ref.
P80	05 60080 40	05 50080 40	05 60080 50	05 50080 50
P120	05 60120 40	05 50120 40	05 60120 50	05 50120 50
P180	05 60180 40	05 50180 40	05 60180 50	05 50180 50
P240	05 60240 40	05 50240 40	05 60240 50	05 50240 50
P320	05 60320 40	05 50320 40	05 60320 50	05 50320 50
P400	05 60400 40	05 50400 40	05 60400 50	05 50400 50
P600	05 60600 40	05 50600 40	05 60600 50	05 50600 50
P800	05 60800 40	05 50800 40	05 60800 50	05 50800 50
P1000	05 61000 40	05 51000 40	05 61000 50	05 51000 50
P1200	05 61200 40	05 51200 40	05 61200 50	05 51200 50
P2400	05 62400 40	05 52400 40	05 62400 50	05 52400 50
P4000	05 64000 40	05 54000 40	05 64000 50	05 54000 50

## GRINDING AND PREPOLISHING DISCS

## Ø 305 mm

## Ø 400 mm

100 pieces box

Grains FEPA	Self-adhesive		Non-adhesive	
	Ref.	Ref.	Ref.	Ref.
P80	05 60080 70	05 50080 70	05 60080 80	05 50080 80
P120	05 60120 70	05 50120 70	05 60120 80	05 50120 80
P180	05 60180 70	05 50180 70	05 60180 80	05 50180 80
P240	05 60240 70	05 50240 70	05 60240 80	05 50240 80
P320	05 60320 70	05 50320 70	05 60320 80	05 50320 80
P400	05 60400 70	05 50400 70	05 60400 80	05 50400 80
P600	05 60600 70	05 50600 70	05 60600 80	05 50600 80
P800	05 60800 70	05 50800 70	05 60800 80	05 50800 80
P1000	05 61000 70	05 51000 70	05 61000 80	05 51000 80
P1200	05 61200 70	05 51200 70	05 61200 80	05 51200 80
P2400	-	05 52400 70		
P4000	-	05 54000 70		

## Grain sizes

FEPA standard	80	120	180	240	320	400	600	800	1000	1200	2400	4000
Grains Ø (microns)	201	125	82	59	46	35	26	22	18	15	10	5

## GUIDANCE

The patented FAS<sup>®</sup>2 system is the indispensable accessory when using self-adhesive discs. The FAS<sup>®</sup>2 is a support disc which allows easy positioning and unsticking of self-adhesive abrasive papers on all machines. It avoids the cleaning of the plates and the tearing of the abrasive papers during usage (see all our fixing systems pages 46 and 47).

The use of non-adhesive abrasive papers is facilitated when using the FIX LAM<sup>®</sup> fixing system (see page 47), avoid the use of glue spray.



## Excellence SiC abrasive papers

Available from P80 to P1200 from Ø 200 to 300 mm

The standard checks of abrasive papers generally manufactured in large quantities are sometimes insufficient to avoid that complete series of discs are outside the standard required by our Metallography laboratory.

LAM PLAN creates the Excellence Range and its double guarantee, every single paper is individually checked before packing.

Ø 200 mm			Ø 230 mm		100 pieces box
	Self-adhesive	Non-adhesive	Self-adhesive	Non-adhesive	
Grains FEPA	Ref.	Ref.	Ref.	Ref.	
P80	05 10080 20	05 00080 20	05 10080 30	05 00080 30	
P120	05 10120 20	05 00120 20	05 10120 30	05 00120 30	
P180	05 10180 20	05 00180 20	05 10180 30	05 00180 30	
P240	05 10240 20	05 00240 20	05 10240 30	05 00240 30	
P320	05 10320 20	05 00320 20	05 10320 30	05 00320 30	
P400	05 10400 20	05 00400 20	05 10400 30	05 00400 30	
P600	05 10600 20	05 00600 20	05 10600 30	05 00600 30	
P1200	05 11200 20	05 01200 20	05 11200 30	05 01200 30	

Ø 250 mm			Ø 300 mm		100 pieces box
	Self-adhesive	Non-adhesive	Self-adhesive	Non-adhesive	
Grains FEPA	Ref.	Ref.	Ref.	Ref.	
P80	05 10080 40	05 00080 40	05 10080 50	05 00080 50	
P120	05 10120 40	05 00120 40	05 10120 50	05 00120 50	
P180	05 10180 40	05 00180 40	05 10180 50	05 00180 50	
P240	05 10240 40	05 00240 40	05 10240 50	05 00240 50	
P320	05 10320 40	05 00320 40	05 10320 50	05 00320 50	
P400	05 10400 40	05 00400 40	05 10400 50	05 00400 50	
P600	05 10600 40	05 00600 40	05 10600 50	05 00600 50	
P1200	05 11200 40	05 01200 40	05 11200 50	05 01200 50	

## Grinding wheels

LAM PLAN grinding wheels are used to dress samples in high speed automatic prepolishing machines. Two types available:  $Al_2O_3$  grain 60 and SiC grain 150.



### $Al_2O_3$ - GRAIN 60

Application	Lubricant	Ø in mm	Ref.
For grinding of soft, ductile materials <HV200	Water	355	05 M0060 80

### SIC - GRAIN 150

Application	Lubricant	Ø in mm	Ref.
For grinding of all materials >HV200	Water	355	05 M0150 80

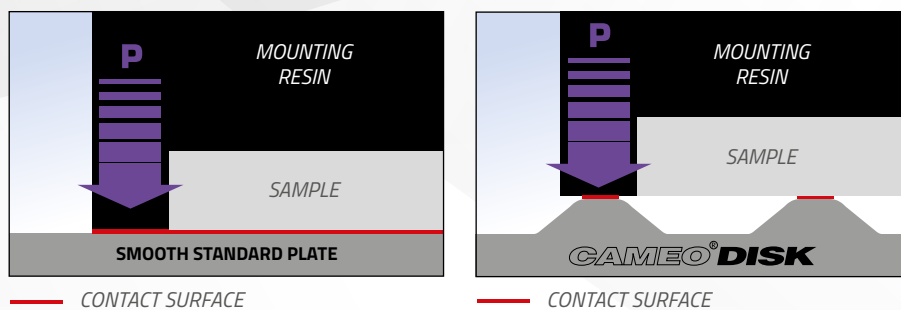
## CAMEO®DISK

Grinding and polishing are key steps in the preparation of a metallographic sample. It is the quality of these steps which will condition and optimise the rest of the process.

At the end of the grinding step, the sample's aspect must be uniform and regular without altering the inherent flatness and the material. The CAMEO®DISK's performances in terms of stock removal reduce the work time on the part, thereby guaranteeing the sample's inherent flatness, an indispensable condition to succeed with your metallographic analyse.

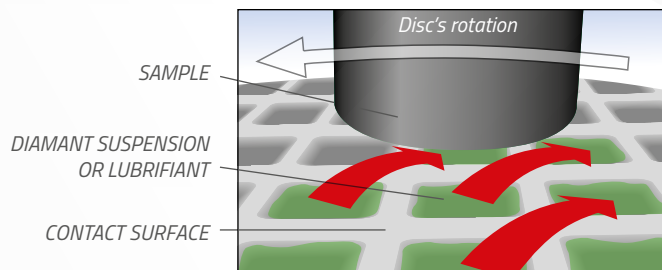
### Stock removal

The CAMEO®DISK honeycomb cell structure allows decreasing the surface in contact with the sample to be polished. The pressure required to grind the sample is much less than that generally applied during the use of a solid disc. The equipment is less stressed and the risks of tearing out the grinding disc are significantly reduced.



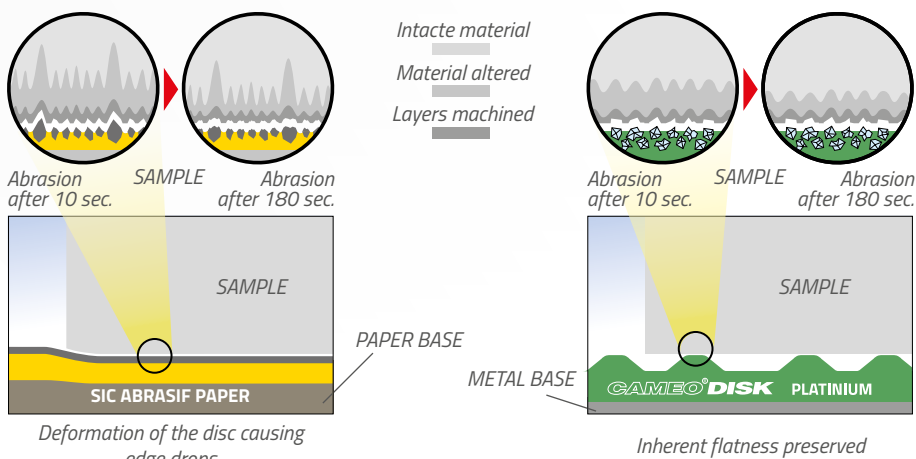
### Reproducibility

The profile of the honeycomb cells was specially designed to optimise the circulation of the lubricant from one cavity to another. The abrasion residues are evacuated, guaranteeing a constant abrasive power and therefore a regularity of the result throughout the grinding and polishing steps.

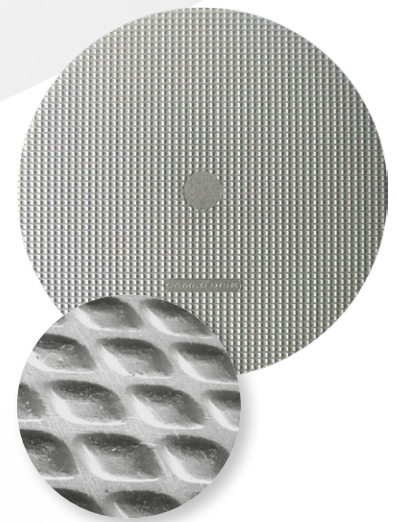


### Preparation quality

For a process usually performed with several SiC abrasive papers, LAM PLAN proposes you a single, reusable disc: the CAMEO®DISK. Contrary to SiC abrasive papers, CAMEO®DISK constant abrasion prevents the formation of deep disturbed layers during the first few seconds of grinding.



CAMEO®DISK



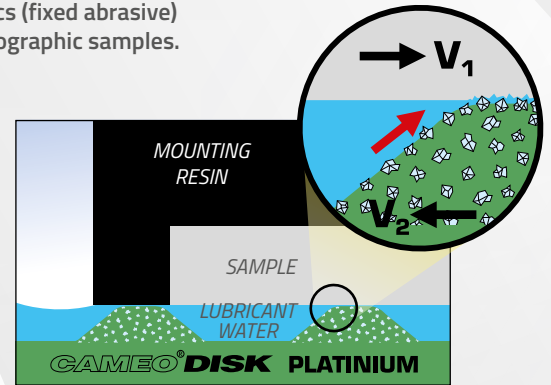
A patented honeycomb cell structure

**CAMEO®DISK**

**CAMEO®DISK Platinum**

The CAMEO®DISK Platinum are diamond discs (fixed abrasive) which are ideal for a rapid grinding of metallographic samples.

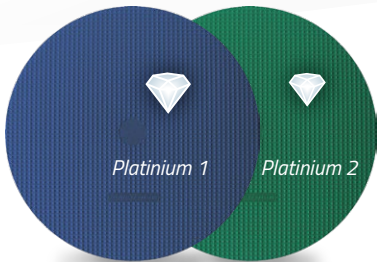
The use of diamond integrated in the CAMEO®DISK Platinum honeycomb cell structure allows preserving a constant stock removal throughout the operation, which prevents the appearance of edge drops, including on samples of heterogeneous hardnesses.



**PLATINIUM 0 BROWN**

Ø in mm	Self-adhesive	Magnetic
	Ref.	Ref.
200	09 CA170 20	09 CA570 20
230	09 CA170 30	09 CA570 30
250	09 CA170 40	09 CA570 40
300	09 CA170 50	09 CA570 50

Boxes of 1 piece + 1 dressing stone



**PLATINIUM 1 BLUE**

Ø in mm	Self-adhesive	Magnetic
	Ref.	Ref.
200	09 CA140 20	09 CA540 20
230	09 CA140 30	09 CA540 30
250	09 CA140 40	09 CA540 40
300	09 CA140 50	09 CA540 50

**PLATINIUM 2 GREEN**

Ø in mm	Self-adhesive	Magnetic
	Ref.	Ref.
200	09 CA150 20	09 CA550 20
230	09 CA150 30	09 CA550 30
250	09 CA150 40	09 CA550 40
300	09 CA150 50	09 CA550 50



**PLATINIUM 3 YELLOW**

Ø in mm	Self-adhesive	Magnetic
	Ref.	Ref.
200	09 CA140 20	09 CA540 20
230	09 CA140 30	09 CA540 30
250	09 CA140 40	09 CA540 40
300	09 CA140 50	09 CA540 50

**PLATINIUM 4 RED**

Ø in mm	Self-adhesive	Magnetic
	Ref.	Ref.
200	09 CA150 20	09 CA550 20
230	09 CA150 30	09 CA550 30
250	09 CA150 40	09 CA550 40
300	09 CA150 50	09 CA550 50



**Booster**

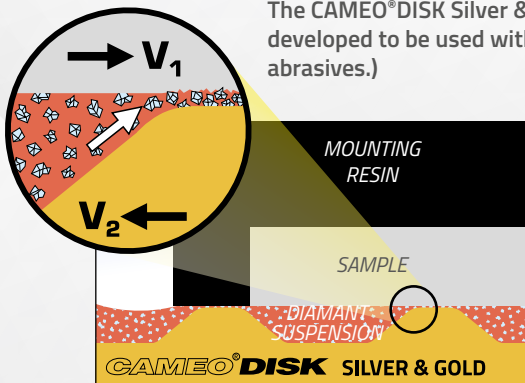
Improve the efficiency of CAMEO®DISK Platinum, the BOOSTER maintains the performance of the CAMEO®DISK Platinum without the use of the dressing stone.

Further information on page 66.



## GRINDING AND PREPOLISHING DISCS CAMEO®DISK

## CAMEO®DISK Silver &amp; Gold



The CAMEO®DISK Silver & Gold discs are non-diamond grinding discs developed to be used with Bio DIAMANT® abrasive products (free abrasives.)

Combined with the latest products of the Bio DIAMANT® range, the NEODIA® diamond abrasives will allow treating all types of materials.

The patented CAMEO®DISK honeycomb structure allows the uniform distribution of the periodically pulverised diamond abrasive suspension. The use of the abrasive suspension is optimised, thereby reducing the diamond product's consumption.

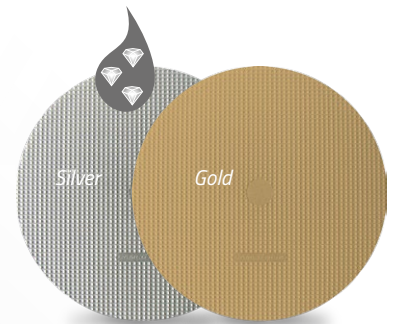
CAMEO®DISK are available in magnetic or self-adhesive versions and can be associated with the various LAM PLAN fixing accessories, see pages 46 and 47.

## SILVER

Ø in mm	Self-adhesive		Magnetic	
	Ref.	Ref.	Ref.	Ref.
200	09 CA120 20	09 CA520 20	09 CA130 20	09 CA530 20
230	09 CA120 30	09 CA520 30	09 CA130 30	09 CA530 30
250	09 CA120 40	09 CA520 40	09 CA130 40	09 CA530 40
300	09 CA120 50	09 CA520 50	09 CA130 50	09 CA530 50

## GOLD

Boxes of 2 pieces + 1 dressing tool



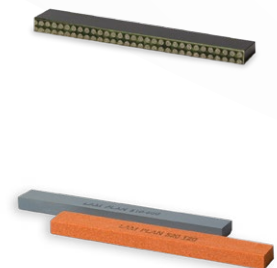
## Dressing tools

## DIAMOND TOOL FOR CAMEO®DISK SILVER &amp; GOLD

Characteristics	Qty.	Ref.
100 x 15 x 5 mm	1	98 BD001 00

## ABRASIVE STONES FOR CAMEO®DISK PLATINIUM

Type	Characteristics	Qty.	Ref.
Grain 120 for platinum 0 & 1	6 x 13 x 100 mm	2	98 59121 00
Grain 400 for platinum 2	6 x 13 x 100 mm	2	98 59401 00
Grain 600 for platinum 3 & 4	6 x 13 x 100 mm	2	98 59601 00



## Application Table

CAMEO®DISK	Equivalences	Applications	Fluide/Liquide
Platinum 0 Brown Platinum 1 Blue Platinum 2 Green Platinum 3 Yellow Platinum 4 Red	Sic Paper P80 Sic Paper P120 Sic Paper P240 Sic Paper P600 Sic Paper P1200	Grinding hard material (≥ 120 HV)	Water
Silver		Grinding semi-hard, Hard and very hard materials (>200HV)	Diamond suspension NEODIA® M or P, or Primeo 6 to 15 µm
Gold		For the prepolishing of soft and non-ferrous materials	Diamond suspension NEODIA® M or P, or Primeo 3 to 6 µm

In order to guarantee constant results, the CAMEO®DISK have to be periodically dressed by adequate abrasive stones and sticks.

**GUIDANCE**

CAMEO®DISK

CUTTING

MOUNTING

POLISHING

# TOUHLAM®

## TOUHLAM® polishing cloths & pads

LAM PLAN proposes a range of exclusive TOUCHLAM® polishing cloths and pads.

We conceive and produce all our TOUCHLAM® products, favouring quality of results through the selection of materials and treatments.

### Quality of results

The structure and the composition of a polishing support have a direct impact on the properties of the associated free abrasive during a polishing process. LAM PLAN has designed a range of polishing cloths & pads according to their capacity of optimising the abrasive functions in order to obtain an optimum quality of results.

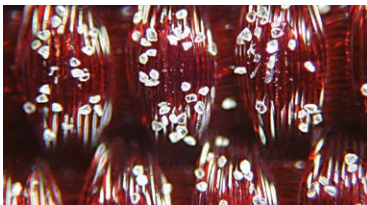
### LAM PLAN guides you in your cloths and pads selection according to your results expectations

Application	TOUHLAM® cloths	Characteristics			
		SR*	Flatness	Finishing	Super Finishing
Fine grinding of soft materials Polishing of hard to extra hard material	2FC1	+	+		
Rough polishing on ductile material	2TT1	+	+		
Rough polishing on ductile material	2TT2	+	+		
Fine polishing (intermediary) on all materials Final polishing on hard materials	2TS3		+	+	
Fine polishing (intermediary) on all materials	2TS4		+	+	
Fine polishing (intermediary) on soft materials	3SE2		+	+	
Fine polishing (intermediary) on soft materials	3SA4		+	+	
Medium to fine polishing on semi-hard to hard (uncoated)	3TL1			+	
Final polishing on semi-hard materials	3FV1				+
Final polishing on soft to semi-hard materials	4FV3				+
Final polishing (chemical/mechanical) on varied materials	4MP1				+
Final polishing (chemical/mechanical) on varied materials	4MP2				+

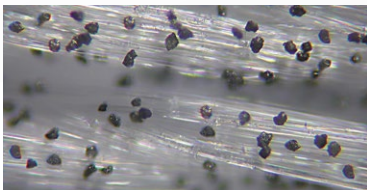
\*Stoke Removal



Example of a diamond abrasive, spread over different disc structures



Taffeta woven synthetic fibres



Satin woven natural fibres



Flocked viscose fibres

### Simplified use

The TOUCHLAM® cloths & pads are available in all standard diameters in two fixation modes: self-adhesive and magnetic.

The marking allows an easy identification. A tab is now integrated on the discs to facilitate the removal of the protective foil of self-adhesive cloths.

See the details on fixation system pages 46 and 47.

Self-adhesive cloth on FAS® 2 support



Magnetic cloth FMS® support



Tab



## POLISHING SUPPORTS

**TOUHLAM® 2FC1**

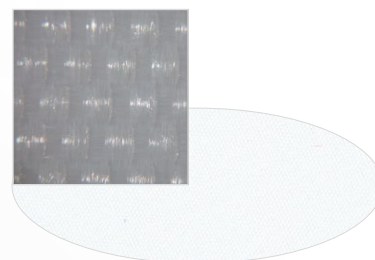
Impregnated non-woven fibres.  
Stoke removal, finishing on extra hard materials.  
Usable with diamond abrasives from 3 to 9 µm.

Ø in mm	Qty.	Self-adhesive		Magnetic	
		Ref.	Ref.	Ref.	Ref.
200	5	2FC10A02005		2FC10M02005	
230	5	2FC10A02305		2FC10M02305	
250	5	2FC10A02505		2FC10M02505	
300	5	2FC10A03005		2FC10M03005	
400	5	2FC10A04005			

**TOUHLAM® 2TT1**

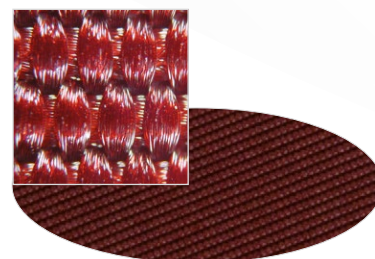
Taffeta woven synthetic fibres.  
Stock removal and inherent flatness on difficult materials.  
Usable with diamond abrasives from 6 to 15 µm.

Ø in mm	Qty.	Self-adhesive		Magnetic	
		Ref.	Ref.	Ref.	Ref.
200	5	2TT10A02005		2TT10M02005	
230	5	2TT10A02305		2TT10M02305	
250	5	2TT10A02505		2TT10M02505	
300	5	2TT10A03005		2TT10M03005	
400	5	2TT10A04005			

**TOUHLAM® 2TT2**

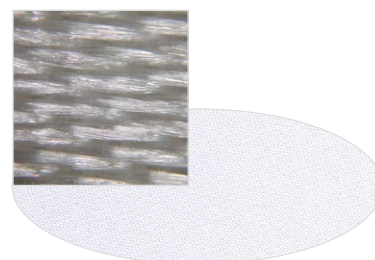
Taffeta woven synthetic fibres.  
Stock removal and inherent flatness on difficult materials.  
High durability.  
Usable with diamond abrasives from 6 to 15 µm.

Ø in mm	Qty.	Self-adhesive		Magnetic	
		Ref.	Ref.	Ref.	Ref.
200	5	2TT20A02005		2TT20M02005	
230	5	2TT20A02305		2TT20M02305	
250	5	2TT20A02505		2TT20M02505	
300	5	2TT20A03005		2TT20M03005	
400	5	2TT20A04005			

**TOUHLAM® 2TS3**

Extra-thin satin woven natural fibres.  
Excellent inherent flatness and finishing, preservation of inclusions and edges, on all materials. Usable with diamond abrasives from 2 to 9 µm.

Ø in mm	Qty.	Self-adhesive		Magnetic	
		Ref.	Ref.	Ref.	Ref.
200	5	2TS30A02005		2TS30M02005	
230	5	2TS30A02305		2TS30M02305	
250	5	2TS30A02505		2TS30M02505	
300	5	2TS30A03005		2TS30M03005	
400	5	2TS30A04005			



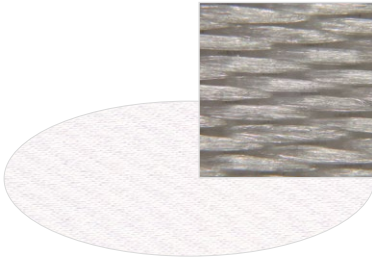
**TOUCLAM® 2TS4**

Satin woven natural fibres.

Excellent finishing and flatness, preservation of edges, especially on sample composed of materials of various hardness or with coating.

High durability.

Usable with diamond abrasives from 1 to 6 µm.



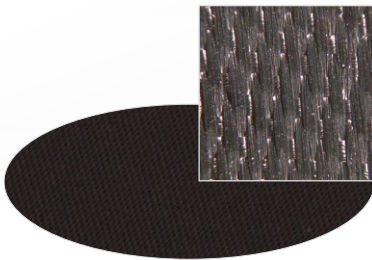
Ø in mm	Qty.	Self-adhesive		Magnetic	
		Ref.	Ref.	Ref.	Ref.
200	5	2TS40A02005		2TS40M02005	
230	5	2TS40A02305		2TS40M02305	
250	5	2TS40A02505		2TS40M02505	
300	5	2TS40A03005		2TS40M03005	
400	5	2TS40A04005			

**TOUCLAM® 3SE2**

Woven synthetic silk fibres.

Finishing and flatness on soft materials.

Usable with diamond abrasives from 1 to 3 µm.



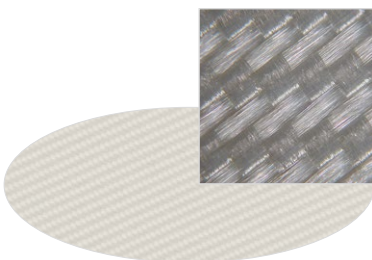
Ø in mm	Qty.	Self-adhesive		Magnetic	
		Ref.	Ref.	Ref.	Ref.
200	5	3SE20A02005		3SE20M02005	
230	5	3SE20A02305		3SE20M02305	
250	5	3SE20A02505		3SE20M02505	
300	5	3SE20A03005		3SE20M03005	
400	5	3SE20A04005			

**TOUCLAM® 3SA4**

Soft composite synthetic fibres

Finishing on soft materials.

Usable with diamond abrasives from 0,25 to 3 µm.



Ø in mm	Qty.	Self-adhesive		Magnetic	
		Ref.	Ref.	Ref.	Ref.
200	5	3SA40A02005		3SA40M02005	
230	5	3SA40A02305		3SA40M02305	
250	5	3SA40A02505		3SA40M02505	
300	5	3SA40A03005		3SA40M03005	
400	5	3SA40A04005			

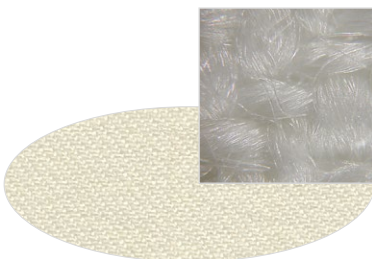
**TOUCLAM® 3TL1**

High resistant woven wool fibres.

Adapted for the finishing of non-mounted samples

High durability.

Usable with diamond abrasives from 3 to 6 µm.



Ø in mm	Qty.	Self-adhesive		Magnetic	
		Ref.	Ref.	Ref.	Ref.
200	5	3TL10A02005		3TL10M02005	
230	5	3TL10A02305		3TL10M02305	
250	5	3TL10A02505		3TL10M02505	
300	5	3TL10A03005		3TL10M03005	
400	5	3TL10A04005			

## POLISHING SUPPORTS

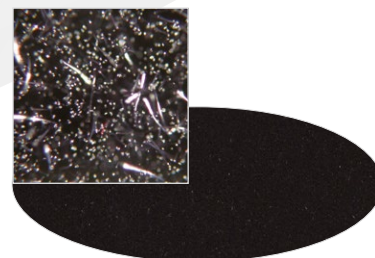
**TOUHLAM® 3FV1**

Semi-hard flocked short viscose fibres.

Super finishing, preservation of the inherent flatness on mounted hard materials.

Usable with diamond abrasives from 1 to 3 µm.

Ø in mm	Qty.	Self-adhesive		Magnetic	
		Ref.	Ref.	Ref.	Ref.
200	5	3FV10A02005		3FV10M02005	
230	5	3FV10A02305		3FV10M02305	
250	5	3FV10A02505		3FV10M02505	
300	5	3FV10A03005		3FV10M03005	
400	5	3FV10A04005			

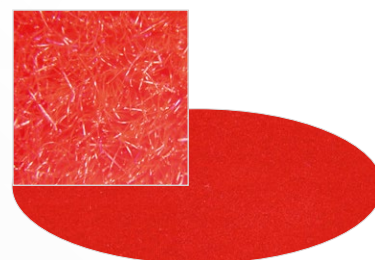
**TOUHLAM® 4FV3**

Soft flocked long viscose fibres.

Super finishing on large variety of materials, including very soft materials.

Principally used with diamond abrasives from 0,25 to 3 µm but also with alumina suspension and colloidal silica.

Ø in mm	Qty.	Self-adhesive		Magnetic	
		Ref.	Ref.	Ref.	Ref.
200	5	4FV30A02005		4FV30M02005	
230	5	4FV30A02305		4FV30M02305	
250	5	4FV30A02505		4FV30M02505	
300	5	4FV30A03005		4FV30M03005	
400	5	4FV30A04005			

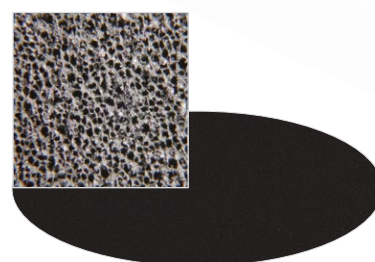
**TOUHLAM® 4MP1**

Microporous polyurethane foam.

Adapted to sensitive samples requiring an extreme super finish with chemical abrasives.

Usable with oxides or colloidal silica.

Ø in mm	Qty.	Self-adhesive		Magnetic	
		Ref.	Ref.	Ref.	Ref.
200	5	4MP10A02005		4MP10M02005	
230	5	4MP10A02305		4MP10M02305	
250	5	4MP10A02505		4MP10M02505	
300	5	4MP10A03005		4MP10M03005	
400	5	4MP10A04005			

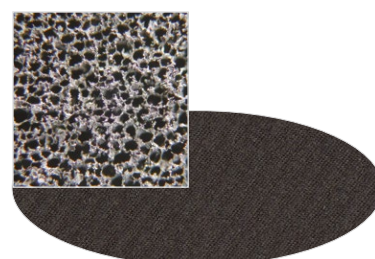
**TOUHLAM® 4MP2**

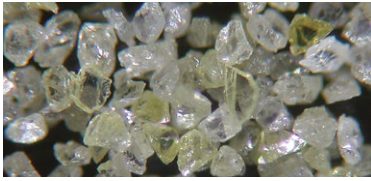
Microporous polyurethane foam.

High thickness. High durability, usable in production process.

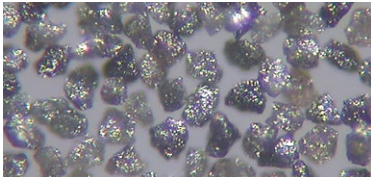
Usable with oxides or colloidal silica.

Ø in mm	Qty.	Self-adhesive		Magnetic	
		Ref.	Ref.	Ref.	Ref.
200	5	4MP20A02005		4MP20M02005	
230	5	4MP20A02305		4MP20M02305	
250	5	4MP20A02505		4MP20M02505	
300	5	4MP20A03005		4MP20M03005	
400	5	4MP20A04005			

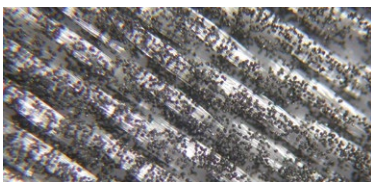




Monocrystalline diamond



Polycrystalline diamond



Polycrystalline diamond on cloth

## Bio DIAMANT® abrasive suspension

For many years, the LAM PLAN R&D department has been committed to develop advanced products which are more user oriented and aimed to preserve the environment without compromising effectiveness.

Secured supply and total traceability.

Conformity to the REACH regulation.

LAM PLAN sets up all the arrangements needed for its application in order to guarantee the quality and availability of all its products over the long term. All the substances contained in our preparations comply with the REACH regulation's specifications. To facilitate your administrative formalities, all the Safety Data Sheets (SDS) of our products conform to the legislation in force it can be downloaded on [www.fds.lamplan.com](http://www.fds.lamplan.com)



## BIO DIAMANT® ABRASIVE SUSPENSION NEODIA®

In direct line with our famous Bio DIAMANT® range, the new NEODIA® diamond abrasive suspension goes even further in terms of performance, efficiency and user comfort. The NEODIA® diamond suspension is a top-of-the-range product featuring exceptional performances.

### Enhance roughness

The quality of the abrasive used, the tight criteria of calibration and concentration, as well as the use of a new generation of water-based binders allow better roughness results while preserving a high stock removal. The binder consistency allows the cutting action to start at the first seconds of usage.

### Free of VOCs

The new NEODIA® diamond suspensions are composed of a specific new generation binder; this liquid is free of Volatile Organic Compound (VOCs). The NEODIA® diamond suspensions is of course biodegradable at more than 70 % in accordance with the criteria of our Bio DIAMANT® label. Non-toxic and harmless, they are neutral, the user's work conditions are thus respected.

### Biodegradable packaging: reduction of your activity's environmental impact

For the first time in the polishing industry a diamond suspension is packaged in a plastic bottle of vegetal origin which is 100% biodegradable and compostable according to the standard NF EN 13 432 (for 200 and 400 ml packaging).

## BIO DIAMANT® NEODIA® F LIQUID

New generation of ready-to-use abrasive suspensions containing polycrystalline diamonds. The NEODIA® F is optimised for automatic dosage by spray (Venturi system). Its formulation and its price make it useful for intensive usage.

Type	400 ml		1 l	2,5 l
	µm	Ref.	Ref.	Ref.
1 F	1	02 01470 60	02 01470 20	02 01470 30
3 F	3	02 03470 60	02 03470 20	02 03470 30
6 F	6	02 06470 60	02 06470 20	02 06470 30
9 F	9	02 09470 60	02 09470 20	02 09470 30
14 F	14	02 14470 60	02 14470 20	02 14470 30



## DIAMOND SUSPENSION

**BIO DIAMANT® ABRASIVE SUSPENSION NEODIA®M**

High performance suspension, high concentration of monocrystalline diamonds, biodegradable with no decantation.

200 ml with vaporiser			Refill 400 ml (sold without spray)
Type	µm	Ref.	Ref.
1/4 M	1/4	02 97460 80	02 97460 60
1 M	1	02 01460 80	02 01460 60
2 M	2	02 02460 80	02 02460 60
3 M	3	02 03460 80	02 03460 60
6 M	6	02 06460 80	02 06460 60
9 M	9	02 09460 80	02 09460 60
14 M	14	02 14460 80	02 14460 60

Refill 1 l (sold without spray)			Refill 2,5 l (sold without spray)
Type	µm	Ref.	Ref.
1/4 M	1/4	02 97460 20	02 97460 30
1 M	1	02 01460 20	02 01460 30
2 M	2	02 02460 20	02 02460 30
3 M	3	02 03460 20	02 03460 30
6 M	6	02 06460 20	02 06460 30
9 M	9	02 09460 20	02 09460 30
14 M	14	02 14460 20	02 14460 30

**BIO DIAMANT® ABRASIVE SUSPENSION NEODIA®P**

High performance suspension, high concentration of polycrystalline diamonds, biodegradable with no decantation.

200 ml with vaporiser			Refill 400 ml (sold without spray)
Type	µm	Ref.	Ref.
1/4 P	1/4	02 97469 80	02 97469 60
1 P	1	02 01469 80	02 01469 60
2 P	2	02 02469 80	02 02469 60
3 P	3	02 03469 80	02 03469 60
6 P	6	02 06469 80	02 06469 60
9 P	9	02 09469 80	02 09469 60
14 P	14	02 14469 80	02 14469 60

Refill 1 l (sold without spray)			Refill 2,5 l (sold without spray)
Type	µm	Ref.	Ref.
1/4 P	1/4	02 97469 20	02 97469 30
1 P	1	02 01469 20	02 01469 30
2 P	2	02 02469 20	02 02469 30
3 P	3	02 03469 20	02 03469 30
6 P	6	02 06469 20	02 06469 30
9 P	9	02 09469 20	02 09469 30
14 P	14	02 14469 20	02 14469 30





**BIO DIAMANT® M.M.140 FINISHING LIQUID**

High yield emulsion for the finishing of all materials.  
High concentration.  
Cleaning with solvent or detergent 742.

Characteristics	Type	Conditioning	Ref.
High yield emulsion for the finishing of all type of materials	M.M.140	250 gr	02 MM140 00



**BIO DIAMANT® ABRASIVE SUSPENSION PULMATIC 310 AND 320P**

For large surface polishing and material sensitive to corrosion.

The Pulmatics are proposed in a practical packaging for a very good distribution of the product over the work surface. They are free of any propeller gas.

Pulmatic 310 is a alcohol based monocrystalline diamond liquid of a medium concentration.

The Pulmatic 320P is a alcohol based polycrystalline diamond liquid of a strong concentration.

Characteristics	Concentration	Type	µm	Ref.
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**SERIE 310**

75 g Monocrystalline diamond Optimum distribution of the abrasive on the polishing support Alcohol base (free of water)	Medium	025 313	1/4	03 97313 00
		1 313	1	03 01313 00
		2 313	2	03 02313 00
		3 313	3	03 03313 00
		6 313	6	03 06313 00
		8 313	8	03 08313 00
		10 313	10	03 10313 00
		14 313	14	03 14313 00
		25 313	25	03 25313 00
		40 313	40	03 40313 00

**SERIE 320P**

75 g Polycrystalline diamond Optimum distribution of the abrasive on the polishing support Alcohol base (free of water)	Strong	025 323P	1/4	03 97323 00
		1 323P	1	03 01323 00
		2 323P	2	03 02323 00
		3 323P	3	03 03323 00
		6 323P	6	03 06323 00
		8 323P	8	03 08323 00
		10 323P	10	03 10323 00
		14 323P	14	03 14323 00
		25 323P	25	03 25323 00
		40 323P	40	03 40323 00



## DIAMOND SUSPENSION

## Finishing liquids SUPERFINISH

### FINAL FINISHING LIQUID

Aqueous suspension of non-agglomerated nanometric silica stabilised in an alkaline medium. Used to carry out super finishing, to obtain ultra-low roughness. Very easy-to-use and applicable on all types of materials.

**Usage recommendation:** dilute 10 to 20% in water.

Characteristics	Type	Conditioning	Ref.
Final polishing on polishing cloth	Final liquid	500g	05 NLO08 00
All materials	Final liquid	5 litres	05 NLO08 40

### L1 FINISHING LIQUID

Final polishing suspension specially formulated for mechano-chemical polishing. During usage, the active substances of the solution embrittle the surface to be polished, thereby optimising the efficiency of the abrasive grains. Allows combining performance (stock removal) and polishing quality. Recommended for titanium and its alloys.

**Usage recommendation:** ready-to-use preparation.

Characteristics	Type	Conditioning	Ref.
Final polishing on polishing cloth	L1 liquid Titanium	1 litre	05 NL0L1 00
All materials			

### L2 FINISHING LIQUID

Composite solution of ceramic oxides and silica. Ideal to prepare your surface before the super finishing step. Recommended for the polishing of aluminium and its alloys.

**Usage recommendation:** ready-to-use preparation.

Characteristics	Type	Conditioning	Ref.
Final polishing on polishing cloth	L2 liquid Aluminium	1 litre	05 NL0L2 00
All materials			

### ALPLAN LIQUIDS

New final polishing solutions composed of aluminium oxides of a very high purity. These alumina preparations are subjected to a pushed de-agglomeration treatment; which result excellent polishing quality. Easy-to-use, ALPLAN solutions are usable on all types of materials.

**Usage recommendation:** use pure or diluted up to 50% with water.

Characteristics	Grain sizes	Conditioning	Ref.
ALPLAN is used pure or diluted up to 50% with water	0,05 µm	1 litre	05 AP005 00
	0,25 µm	1 litre	05 AP025 00
	1 µm	1 litre	05 AP100 00
	3 µm	1 litre	05 AP300 00

### Manual distributors to be filled

Designation	Qty.	Ref.
200 ml biodegradable bottle + White vaporiser	1	08 00514 00
400 ml biodegradable bottle + Green spray	1	08 00513 00
Green spray	1	08 00503 00
500 ml PET bottle + white and red spray	1	08 00502 00



200 ml

400 ml

500 ml



## Bio DIAMANT® Stick series 122 and 123P

### For manual use and control of consumption

The diamond paste is distributed according to a precise dosage thanks to a drum graduated every 0.2 g. The diamond paste is repetitively loaded on the polishing cloth without any contact with fingers. The pastes and sticks are used with 702 and 704 type lubricants. The product's colour marking facilitates its identification.

#### The dosing sticks series 122:

are composed of a monocrystalline diamond paste of a strong concentration.

#### The dosing stick series 123P:

are composed of a polycrystalline diamond paste of a strong concentration.



Characteristics	Concentration	Type	µm	Ref.
<b>SERIE 122</b>				
10 g Monocrystalline diamond Consumption control Easy distribution Coloration by grain size Water or alcohol cleaning	Strong	025 122	1/4	01 97122 00
		1 122	1	01 01122 00
		3 122	3	01 03122 00
		6 122	6	01 06122 00
		9 122	9	01 09122 00
		15 122	15	01 15122 00
<b>SERIE 123P</b>				
10 g Polycrystalline diamond Consumption control Easy distribution Water or alcohol cleaning	Strong	025 123P	1/4	01 97123 00
		1 123P	1	01 01123 00
		3 123P	3	01 03123 00
		6 123P	6	01 06123 00
		9 123P	9	01 09123 00
		15 123P	15	01 15123 00



### Indicative quantities necessary to load a new cloth

Cloth Ø mm	150	200	250	300	400
Woven	0,2 g	0,2 g	0,4 g	0,4 g	0,6 g
Flocked	0,3 g	0,4 g	0,5 g	0,6 g	0,7 g

## DIAMOND SUSPENSION

**Bio DIAMANT® pastes series 100****Unique abrasive compounds**

Designed for all grinding and polishing work, the Bio DIAMANT® Pastes contain a diamond powder free of any impurity, guaranteeing its cutting power. The perfectly calibrated grains are uniformly suspended in chemically pure ingredients.

A formulation which provides a more uniform and more fluid abrasive film which allows an immediate abrasion of the part to be polished.

The concentration of the pastes has a direct effect on the polishing's execution rate: a high concentration is the guarantee of a high yield.



Characteristics	Concentration	Type	µm	Ref.
10 g. Monocrystalline diamond For all materials Cleaning with water or alcohol Coloration by grain size	Strong	010 103	1/10	01 99103 00
		025 103	1/4	01 97103 00
		1 103	1	01 01103 00
		2 103	2	01 02103 00
		3 103	3	01 03103 00
		6 103	6	01 06103 00
		8 103	8	01 08103 00
		14 103	14	01 14103 00

Characteristics	Concentration	Type	µm	Ref.
10g. Monocrystalline diamond For all materials Cleaning with water or alcohol Coloration by grain size	Very strong	1 105	1	01 01105 00
		2 105	2	01 02105 00
		3 105	3	01 03105 00
		6 105	6	01 06105 00
		8 105	8	01 08105 00
		14 105	14	01 14105 00

**GUIDANCE****Reading the type**

<b>Exemple:</b>	Paste type:	6 103
	Grain size:	6 microns
	Series:	100
	Concentration:	3 (strong) 5 (very strong)



## Lubricant M.M.702

Lubricant to be used to optimise polishing with Bio DIAMANT® diamond pastes series 100 and sticks series 122 & 123P. Ready-to-use, it ensures an excellent dispersion of the abrasive and prevents the risks of heating the material during polishing.

This lubricant is easily cleaned with water, alcohol or aqueous detergents (detergent 742).

Characteristics	Packaging	Ref.
Recommended as an addition to LAM PLAN diamond pastes and sticks	1 litre	07 MM702 30
Water base	5 litres	07 MM702 40



## Lubricant M.M.704

Alcohol-based lubricant perfectly suitable to polish samples which are sensitive to corrosion. Ready-to-use, it ensures a strong cooling during the work.

This lubricant is particularly recommended for the polishing of ductile materials.

For cleaning, it is recommended to use the detergent 742 or alcohols like isopropyl alcohol.

Characteristics	Packaging	Ref.
Recommended as an addition to LAM PLAN diamond pastes and Pulmatic Alcohol base diamond liquid	1 litre	07 00704 30
	5 x 1 litre*	07 00704 40

\*Packaging related to transport restrictions



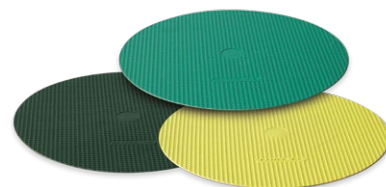
## Booster for CAMEO®DISK Platinum

Booster fluid is a new lubricant especially developed to be applied on the CAMEO®DISK Platinum during the polishing step. Its specific formulation facilitates the use of the CAMEO®DISK Platinum 0, 1, 2, 3 and 4.

Ready-to-use, this new lubricant maintains the efficiency of the CAMEO®DISK constant in time and avoids the use of abrasive stone to regenerate the disc.

The main advantages are:

- Improves the efficiency of the CAMEO®DISK
- Keeps the efficiency constant in time
- Reduces water consumption
- Universal use, can be used on all kind of material
- Ready to use.



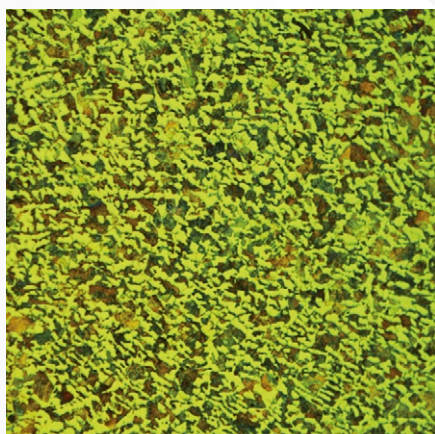
Characteristics	Packaging	Ref.
Ready to use lubricant fluid	5 litres	07 BP030 40

## METALLOGRAPHIC ETCHANTS

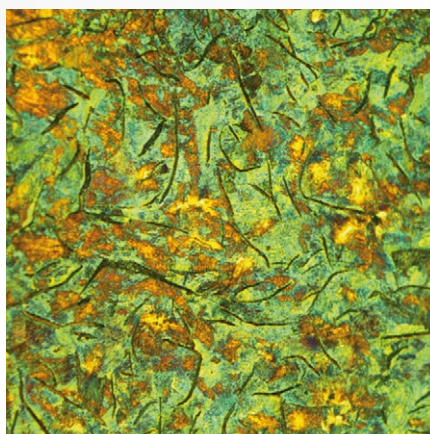
## Metallographic etchants

The attack etchants are used to examine the structure of metallic materials. The purpose of the micrographic analysis is to highlight the materials' structure (inclusions, grain joins, phases...) thanks to an optical microscope. These etchants react either with preferential chemical attacks, or by colouring certain components instead of others).

Packaging 1 L		
Type	Use	Ref.
Nital 5%	Highlighting the structure of cast irons and steels	08RN05020
Picral-2 etchant	Highlighting grain joins in cast irons and steels	08RR02020
Murakami etchant	Highlighting carbides, steel and stainless steel cementite	08RR03020
Kalling etchant	Highlighting austenite grains in stainless steel	08RR04020
Lye solution 10%	Microscopy and Macrography of aluminium alloys	08RS10020



Steel Nital attack 4%



Lamellar cast Nital attack 4%



# GENERAL TERMS AND CONDITIONS OF SALE

## 1. Application of General Terms & Conditions of Sale

All orders placed with Lam Plan imply acceptance by the client, without any reservation, of all the General Terms and Conditions of Sale as set forth here below.

Client orders shall be registered by Lam Plan only in accordance with these General Terms and Conditions of Sale, regardless of contrary provisions, if any, that may be contained in the purchase order or in the general terms and conditions of purchase of the client, unless they have been expressly accepted in writing by Lam Plan.

The waiver by Lam Plan of one or more provisions of these General Terms and Conditions of Sale does not imply the waiver of any other provisions thereof which shall remain effective and binding upon the client.

The present General Terms and Conditions of Sale may be amended at any time without prior notice by Lam Plan, with the amendments thereafter being applicable to all subsequent orders.

The Client acknowledges being fully aware that their agreement with respect to the contents of these General Terms and Conditions of Sale does not require their signing of this document.

## 2. Orders

The sale shall be deemed to have been completed only upon acceptance of the order from the client by Lam Plan.

The products shall be supplied and invoiced at the relevant price rates in effect at the time of placing of the order or, where applicable, in accordance with the specific commercial proposal addressed to the client and accepted by them.

Any eventual amendments to the order subsequently made by the client shall be taken into account, only within the limits of the possible options available and at the sole discretion of Lam Plan, and provided that they have been notified in writing to Lam Plan at least fifteen days prior to the date scheduled for delivery, accompanied with the issuance of a new specific purchase order duly signed by the client, including, where appropriate, a price adjustment.

## 3. Prices

The prices indicated in the Lam Plan catalogues are provided for illustrative purposes only and are not binding upon Lam Plan.

Appropriate invoices shall be issued in accordance with the price rates in force on the date of the order.

Unless otherwise specified in writing, all rates and prices are expressed in Euro and quoted net, ex works, exclusive of taxes and packaging.

As a consequence, the client shall bear all costs related to VAT at the applicable rate, transportation costs, fees and duties as well as any expenses associated with insurance.

Special pricing terms and conditions may be applicable depending upon the specifications requested by the client, particularly concerning the specific modalities, terms and timelines of delivery, timing and terms and conditions of payment.

In this event a special commercial offer shall be prepared and sent to the client by Lam Plan.

## 4. Payment

The quoted price shall be payable in full in one single payment within a period of thirty days from the date of issue of the invoice, end of the month.

In case of late payment, Lam Plan may suspend any pending orders without prejudice to the application of late payment penalty fees that will be due as of the day following the settlement date as indicated on the invoice, applicable on the full amount/s due, calculated at three times the interest rate in effect on the date of implementation of this provision and applied by the European Central Bank.

Moreover, and in accordance with Article L 441-6 of the Code de Commerce (French Commercial Code), in addition to late payment penalties, the client shall be required to pay a lump sum amount of 40 Euros for recovery costs, with Lam Plan however, reserving the right to seek additional compensation on upon presentation of supporting documentation, corresponding to the recovery costs incurred, in excess of the lump sum amount.

## 5. Retention of Ownership Title

Lam Plan retains the right to reserve ownership title of the goods delivered to the client until payment has been made in full, inclusive of principal, interest and ancillary costs.

However, the risks relating to the goods shall be transferred to the client immediately upon delivery and, for the entire period of time corresponding to the Retention of Ownership Title by Lam Plan.

Client shall agree, therefore, to take out appropriate insurance policies to provide adequate coverage against the risk of loss, theft or destruction of the goods prior to full payment being made.

Without prejudice to any subsequent action or claim for compensation for damages, Lam Plan may terminate the sale, with the aforementioned goods being subject to repossession in totality by Lam Plan without prior notice provided thereof, in the event of non payment of any invoices that become due.

The client shall refrain from pledging as collateral or assigning ownership of the said goods until such time as they have fully settled the payment corresponding to the price thereof.

In the event of the client becoming the subject of bankruptcy proceedings or getting involved in any other event making it impossible to pay for the goods delivered by Lam Plan and where the goods were to be sold in part or whole by the client to a subsequent purchaser, without the subsequent purchaser being discharged from the liability of paying the sale price, with respect to the client, the client shall agree to promptly provide Lam Plan with all information necessary for Lam Plan to make any eventual claim on the goods, against the corresponding claim related to the sale price still owed by the subsequent purchaser.

## 6. Delivery

Delivery dates and time lines are purely indicative, provided only for informative purposes and as such, are in no way guaranteed.

In this regard, Lam Plan's obligation is an obligation in terms of means and not an obligation in terms of result.

As a consequence, possible delays in delivery therefore may not be considered grounds for the cancellation of the order, refusal of the goods, the allocation of penalties or any claim for compensatory damages.

Lam Plan shall therefore not be held responsible for any delays in or suspension of delivery, errors, disruptions attributable to their service providers, contractors and / or subcontractors, or due to any unforeseeable fortuitous circumstances or force majeure events, as recognised by the French courts.

The Lam Plan warehouses shall constitute the place of delivery.

This rule shall not be subject to any derogation whatsoever on account of the management, in whole or in part, of the transportation of goods by Lam Plan.

In such a case, Lam Plan shall act in the capacity of a mere agent of the client, with the transportation risks being entirely borne by the client.

Unless otherwise stipulated in relevant provisions, the goods shall be transported at the sole risk and expense of the client, by carrier, and shall be delivered to the address indicated by them in the purchase order.

The client shall be responsible for checking and verifying the condition of the goods upon receipt.

In the event of goods that are missing or that have been damaged in transit, the client shall undertake to express all the necessary reservations on the delivery note or transportation waybill, upon receipt of the said goods.

In addition, these reservations must be confirmed to the carrier in accordance with Article L 133-3 of the French Commercial Code, in writing, within three days following the receipt of goods, by registered letter with acknowledgment of receipt.

It shall be up to the client to exercise their rights in respect of any eventual claims against the carrier or carriers.

## 7. Warranty

The new hardware and equipment sold by Lam Plan shall be covered under warranty against any risk of manufacturing defects for a period of one year from the confirmation of technical inspection and acceptance of the respective equipment installed with regard to its operation.

Upon the discovery, during the time period under consideration, of any deficiencies related to workmanship or faulty design or quality defects, the client must promptly inform Lam Plan thereof without any delay.

Lam Plan shall then, at its discretion, undertake to remedy any malfunction or operational deficiencies during the warranty period, either by carrying out the appropriate repairs as necessary, or by replacing the product, or by processing a refund, unless the defect of failure is attributable to the following:

- materials provided by the client or a design imposed by them;
- incidents arising from unforeseeable fortuitous circumstances or force majeure events, normal wear and tear, negligence of the client, the lack of supervision or proper maintenance, or operation or usage that is improper, inappropriate or not compliant with standard operating procedures;
- storage or packaging that is not in conformity with accepted professional practices and usage rules or incompatible with the specificities of the product;
- defects related to installation or implementation carried out by the client, or undertaken by third parties;

- modifications or repair, upgrading or refurbishment related work carried out by the client or by third parties without the prior authorisation of Lam Plan.

The client is required to give Lam Plan the time and the means and resources necessary to carry out the repairs and / or provide the replacements that would be required, failing which the Lam Plan warranty would no longer apply to the client.

The Lam Plan warranty is thus strictly limited as stipulated here above.

By express agreement, any loss or damages of any nature whatsoever, resulting from a prejudice arising from inherent defects in the goods shall be excluded from coverage.

## 8. Installation Start Up and Initial Operation

Work related to installation, start up and initial operation are not part of the delivery service to the client.

Thus, activities and operations that are excluded from delivery services, include foundation work, work related to electrical wiring and connections, hydraulics and compressed air lines and necessary supplies associated with the installation.

However, such works may be undertaken by Lam Plan upon express request by the client and will result in separate invoicing associated therewith.

In the event of works related to installation, start up and initial operation being carried out by a third party, only the terms and conditions of the said third shall be applicable.

## 9. Copyright

Ownership of copyrights for all documents in all classes is retained by Seller. Buyer is granted a license to make, without further approval by Seller, a limited number of copies, in whole or in part, of a document, so long as the copied portion includes the applicable copyright and trademark statements found on the original document.

The reproduction for promotional purposes of all or part of texts, images and graphic elements is strictly prohibited without the express permission of LAM PLAN.

## 10. Applicable Law

All provisions of these General Terms and Conditions of Sale are exclusively subject to French law with respect to the interpretation and enforcement thereof.

## 11. Assignment of Jurisdiction

Any dispute arising from the interpretation and / or enforcement of these General Terms and Conditions of Sale shall be subject to a process of discussion and consultation with a view to achieving an amiable settlement.

Failing such a settlement being obtained within a period of two months from the date the dispute was notified and acknowledged, the dispute shall be brought before the Tribunal de Commerce de Paris (Commercial Court of Paris) who will have sole jurisdiction in the matter.

This clause shall be applicable, including in the event of summary proceedings, fixed date petition hearings and proceedings, incidental claims, plurality of defendants or third parties, and without the possibility of any hindrance thereto arising from the jurisdiction assignment clauses contained in the client's documents.



*POLISHING TECHNOLOGY®*

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Taiwan

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United Arab Emirates  
United Kingdom  
United States



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Delegación Aragón: Tel 976597444  
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