



**OPERATION & INSTRUCTION MANUAL
MODULAR GRINDING AND POLISHING SYSTEM**

FORCIPOL Series

EC Declaration of Conformity

- Manufacturer** : Metkon Instruments Inc.
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- Model No** : FORCIPOL 102/202

Herewith declares that;

Metallographic Grinding & Polishing Machine

- is in conformity with the provisions of the Machinery Directive **(directive 2006/42/EEC)**, as amended, and with national implementing legislation;
- is in conformity with the provisions of the Low Voltage Directive **(directive 2014/35/EU)**, as amended, and with national implementing legislation;
- is in conformity with the provisions of the EMC Directive **(directive 2014/30/EU)**, as amended, and with national implementing legislation;

And furthermore declares that

- the following (parts/clauses of) standards have been applied

EN ISO 12100:2010, TS EN 60204-1, TS EN IEC 61000-6-2, TS EN 61000-6-4

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DESCRIPTION

Design

All materials testing laboratories in the industry, research or educational field have a demand for sample preparation. Whether your requirements call for individual components or basic sample preparation, FORCIPOL family of instruments will meet your needs. FORCIPOL Series of instruments are available as Single wheel [FORCIPOL 102] and Dual wheel [FORCIPOL 202] Units.

Both single and double wheel versions are suitable with $\varnothing 200$, $\varnothing 250$ and $\varnothing 300$ mm wheels. The working wheel is powered by a high torque 1.0 HP electric motor with both clockwise and counterclockwise wheel rotation possibility. The state of the art frequency converter allows smooth speed variation (50–600 rpm) of the grinding wheel with soft start and soft stop. This allows the setting of the optimum speed for each individual preparation process. It is perfect choice for laboratories preparing a wide range of different materials from very small to very large.

FORCIPOL instruments are designed to modular configuration for manual, semi-automatic and programmable automatic equipment. When only manual preparation is required, FORCIPOL Control Unit can be fitted on the FORCIPOL grinder / polisher. If automatic operation is required in the future, one of the FORCIMAT automatic heads can be installed at any time.

When the number of specimens to be prepared increases, FORCIPOL instruments can be fitted with one of FORCIMAT automatic heads [FORCIMAT 52 or FORCIMAT 102] for automation. FORCIMAT automatic heads provide high rate sample preparation and frees the operator from the grinding and polishing procedures. FORCIMAT series of Automatic Heads are available as two types: FORCIMAT 52 and FORCIMAT 102



Technical Data

Model Order No	FORCIPOL 102 36 21-200/250/300	FORCIPOL 202 36 22-200/250/300
Number of Wheels	1	2
Wheel Diameter	Ø200/250/300 mm	Ø200/250/300 mm
Base Motor Power	1 HP	1 HP
Wheel Speed	50-600 RPM	50-600 RPM
Wheel Rotation Direction	CW/CCW	CW/CCW
Dimensions, WxDxH, [cm]	45 x 74 x 34	87 x 74 x 34
Weight, kgs	50	55

Model Order No	FORCIPOL Control Unit 30 11	FORCIMAT 52 30 12	FORCIMAT 102 30 14
Operation	Manual	Semi Automatic	Programmable Automatic
Application of Force	-	Individual	Individual + Central
Control Panel	Touch Pad Controls	Touch Pad Controls	7" HMI Touch Screen
Program Memory	Last Parameters Retained in Memory	Last Parameters Retained in Memory	30 Programs
Head Motor Power	-	100 W	100 W
Sample Holder Rotation Direction	-	CW	CW
Sample Holder Speed	-	50-150 RPM	50-150 RPM
Individual Force	-	5-60 N	5-60 N
Central Force	-	-	30-500 N
Grinding Depth Measurement	-	-	Optional (10 µm Accuracy)
Disc Cleaning & Drying Feature	Yes	Yes	Yes
Smart Water Saving Feature	Yes	Yes	Yes
Compatible Instruments	FORCIPOL 102/202	FORCIPOL 102/202	FORCIPOL 102/202
Compressed Air Requirement	-	6 Bars	6 Bars
Dimensions, WxDxH, [cm]	20 x 20x 39 (above FORCIPOL disc)	26 x 46 x 54 (above FORCIPOL disc)	26 x 46 x 54 (above FORCIPOL disc)
Weight, kgs	5	16	16

Model Order No	DOSIMAT 12 40 06	DOSIMAT 52 40 07	DOSIMAT 102 40 08
Number of Pumps (Bottles)	1	6	6
Control Panel	Touch Pad Controls	Touch Pad Controls	Controllable from LCD Screen of FORCIMAT 102
Program Memory	Last Parameters Retained in Memory	Last Parameters Retained in Memory	30 Programs
Pre-Dosing Function	No	No	Yes
Compatible Instruments	FORCIMAT 52/102	FORCIMAT 52	FORCIMAT 102
Dimensions, WxDxH, [cm]	14 x 21x 16	20 x 74 x 30	20 x 74 x 30
Weight, kgs	5	15	15

Warranty

The FORCIPOL Series of instruments are guaranteed against defective material or workmanship defects for a period of 12 months from the date of receipt by the customer or latest 18 months after the shipping date. The warranty is not valid if inspection shows evidence of misuse or unauthorized repair. Warranty covers only replacement of defective materials. If this unit need to be returned to our factory for service, please contact your distributor for authorization and include the following details: Serial Number of the unit, Invoice number and date. Transport costs belong to the customer.



NOTE

The equipment is designed to be used with METKON accessories and consumables. In case of misuse of equipment, improper installation, alteration, use of different source parts, improper repair, METKON will accept NO responsibility for any damages to the operator or the equipment. Disassembling of any part should always be performed by a qualified technician

Safety Precautions

Read the below instructions carefully before use.

- Place the machine on a sturdy and safe platform.
- The equipment must be installed in compliance with local safety regulations.
- Only use approved METKON accessories and consumables to achieve maximum safety and lifetime.
- Follow the instructions and safety regulations when lifting and carrying the equipment.
- Be sure that the water connections are assembled properly without any water leakage.
- Be sure that the water outlet hose is safely assembled to the outlet connection.
- Make sure that the grinding and polishing discs are correctly assembled and the pins on the faceplate are engaged with the grinding disc.
- While grinding manually, be careful not to touch the grinding disc and do not put your hand close to head.
- Do not try to collect a specimen from the working area while the disc is turning.
- Disconnect the electrical connection before servicing the equipment.
- Do not put your hand under the sample holder while moving the head up and down.
- Follow the periodically maintenance.



NOTE

METKON Instruments Inc. can make any changes without notice on the equipment, accessories, consumables and miscellaneous products. Consequently; visual or written information on the instruction manuals, technical materials, catalogues, website, product videos and other marketing materials may show inconsistencies and may be different from the product.

INSTALLATION & SET UP

Unpacking & Checking Contents of Package

Carefully unpack and check contents of the package. If any components are missing or damaged, save the packing list and materials and advise your distributor and the carrier of the discrepancy.

Carefully unpack and check that the following items have been received:

- Power Cable, 1.8 mt, 1 piece
- Drain Hose, 1.5 mt, 1 piece
- Water Inlet Hose, 1.5 mt, 1 piece
- Pneumatic Fitting, 8 mm to ¼", 1 piece
- Brass adapter, ¼" to ½", 1 piece
- Hose Clamp, Ø22 to Ø36 mm, 1 piece
- Air Hose, 1.5 mt, 1 piece [If FORCIMAT 52/102 is ordered]
- Hex Key, 1.5 mt, 1 piece [If FORCIMAT 52/102 is ordered]

WARNING



Please consider the weight of equipment and be sure that there are enough people (at least 2) or lifting equipment to lift safely for transportation. It is recommended to wear safety shoes during transportation.

ATTENTION



FORCIPOL 102/202 is bolted to a wood base for protection during shipping. Remove the bolt securing the unit to the wood base.

Step by Step Unpacking

- Carefully remove the outer stretch wrap, cut the strips and remove the cover.



- Place the upper box on the ground.



- Open that box and remove the consumables.



- Open the other box and remove the equipment from the box by holding wooden base at the bottom. Be careful not to damage ABS cover when lifting. Please consider weight of equipment when lifting it. Lift the equipment by considering the center of gravity.



- Equipment is fixed on the wooden base with bolts. Carefully remove these bolts.



- Carefully remove the protective bubble wrap. Be careful not to damage equipment while using a knife.



Installation and Set-Up



CAUTION

Follow approved procedures and take all necessary preventive safety measures when lifting and installing this equipment. Improper lifting can result equipment damage.

- FORCIPOL 102/202 is available as bench top.
- FORCIPOL 102/202 should be placed on a sturdy and safe platform. Please be sure that the platform is large enough and can stand its weight.
- In order to work with equipment comfortably, it is recommended to leave at least 30 cm space from all side of the equipment.
- You can see the dimensions and weight of FORCIPOL 102/202 together with FORCIPOL Control Unit as below:

FORCIPOL 102 + FORCIPOL Control Unit			
Dimensions	W	D	H
	45 cm	74 cm	39 cm
Weight	Approx. 55 kgs		

FORCIPOL 202 + FORCIPOL Control Unit			
Dimensions	W	D	H
	87 cm	74 cm	39 cm
Weight	Approx. 60 kgs		

Electrical Installation

Before making electrical connections, check that the voltage and frequency stated on the specification plate correspond to the local voltage and frequency. Check that the values for mono-phase voltage if it is compatible with the intended electrical supply before installation.



ATTENTION

Connect the unit to the grounded mains voltage.



WARNING

Electrical Shock Hazard. A qualified electrical technician should perform all hard wiring and electrical maintenance.

- Disconnect the power supply before making any electrical adjustments.
- Make sure that the supply voltage and frequency is correct. Check the values from the machine identification plate located at the rear of the machine:

Voltage / Frequency	Operational Power Range	Fuse Rating
230 V, 50/60 Hz. 1 ph.	200 - 250 V	10A [C Type]
115 V, 50/60 Hz. 1 ph.	100 - 125 V	10A [C Type]



Identification Plate

- Connect the equipment to the grounded mains voltage. Power cord will be supplied with the equipment.
- Length of power cable is 1.8 meters.



Power Cable

- You can see suitable power sockets as below. If you have not suitable power socket, in this case you should supply a suitable power cord.



Water & Cable Connections

- FORCIPOL 102/202 requires water supply with a minimum of 2 liters/min flow rate.
- Maximum water pressure must not exceed 3 bars. Well water or hard water must not be used.
- If the equipment used with well water, hydrophore or very hard water; a water filtering and pressure regulator system must be used. Please contact Metkon Service [metkonservice@metkon.com] or your local representative if you need water filtering and pressure regulator system.



Water Filtering and Pressure Regulator System



ATTENTION

A Hydrophore generates much higher water pressure than city water. This causes input hose to blow out and solenoid valve to be damaged. Maximum water pressure must not exceed 3 bars.



ATTENTION

Well water or hard water causes solenoid valve to be clogged up and broke down due to dirt and lime.

- Water inlet and drain hoses will be sent together with the equipment. [See: Installation Kit]
- See diameters of hoses as below:

Drain Hose:

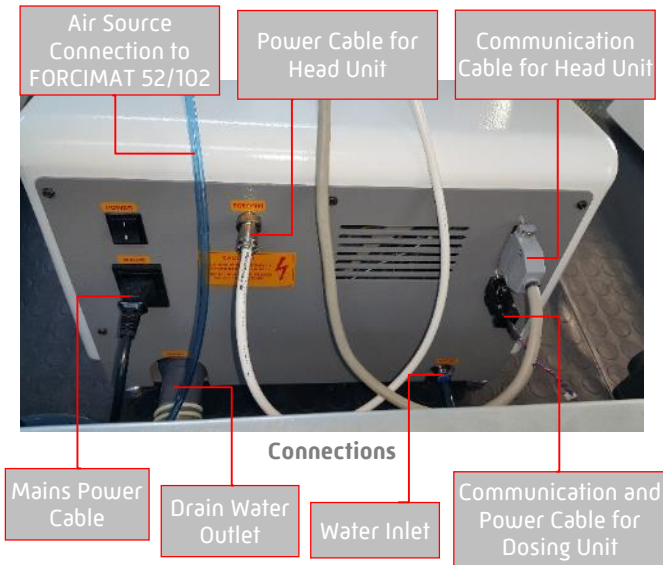
Input diameter: 29 mm
Outer diameter: 33 mm

Water Hose:

Input diameter: 5 mm
Outer diameter: 8 mm [5/16"]

- Please be sure that there are enough space or holes for hoses at the backside of the equipment.

- Connect the line water to the unit with the plastic tube.
- Fix the Drain Water Hose to the drain.



FORCIMAT series of Automatic Heads are available as two types: FORCIMAT 52 and FORCIMAT 102.

FORCIMAT 52 provides single force semi automatic application. It has touch pad controls with turn knob.
FORCIMAT 102 provides single force and central force application. It has programmable 7" HMI touch screen.



FORCIMAT 52

FORCIMAT 102

Assembling FORCIMAT 52/102 Automatic Head

FORCIPOL instruments are designed to modular configuration for manual, semi-automatic and programmable automatic equipment. When only manual preparation is required, FORCIPOL Control Unit can be fitted on the FORCIPOL.



FORCIPOL Control Unit

When the number of specimens to be prepared increases, FORCIPOL instruments can be fitted with one of FORCIMAT automatic heads (FORCIMAT 52 or FORCIMAT 102) for automation. FORCIMAT automatic heads provide high rate sample preparation and frees the operator from the grinding and polishing procedures.



CAUTION

Follow approved procedures and take all necessary preventive safety measures when lifting and installing this equipment. Improper lifting can result equipment damage.

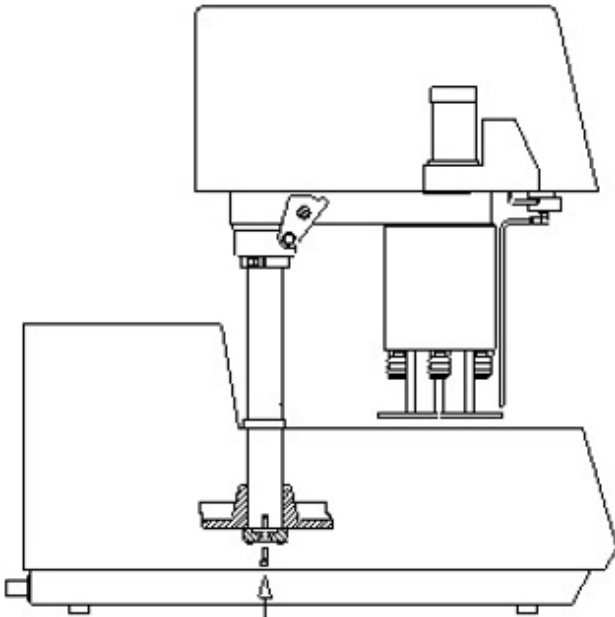
Both FORCIPOL Control Unit, FORCIMAT 52 and FORCIMAT 102 are mounted on FORCIPOL base same way. Follow below steps to step by step mount:

- Please be sure that the platform is large enough and can stand its weight.
- You can see the total dimensions and total weight of FORCIPOL 102/202 together with FORCIMAT 52/102 as below:

FORCIPOL 102 + FORCIMAT 52/102			
Dimensions	W	D	H
	45 cm	74 cm	54 cm
Weight	Approx. 66 kgs		

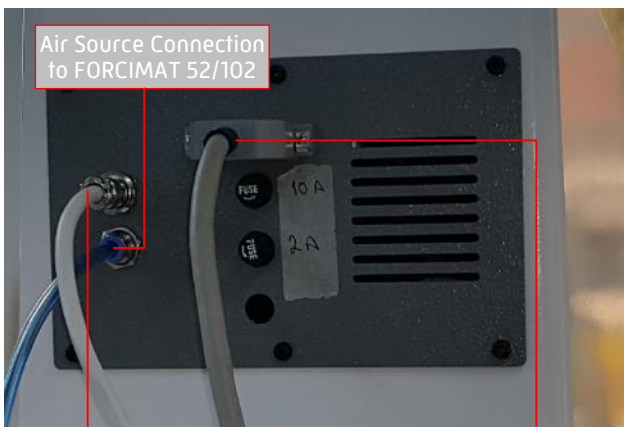
FORCIPOL 202 + FORCIMAT 52/102			
Dimensions	W	D	H
	87 cm	74 cm	54 cm
Weight	Approx. 71 kgs		

- Pull off the plastic plug on the surface of FORCIPOL.
- Place FORCIMAT with its column in the FORCIPOL and fix it from the bottom with the M8 screw. Be sure that the screw is tighten correctly. (FORCIPOL Control Unit is also mounted in same way)



Fixing FORCIMAT with M8 Screw at the bottom of FORCIPOL

- Make power and communication cable connections as below: [Same for FORCIPOL Control Unit]



Air Source Connection to FORCIMAT 52/102

FORCIMAT 52/102 Connections

Power Cable for FORCIMAT 52/102

Communication Cable for FORCIMAT 52/102



FORCIPOL 102/202 Connections

Air Connection

- If FORCIPOL 102/202 is equipped with one of FORCIMAT 52/102 automatic head, it requires air supply with 6 bars pressure. (FORCIPOL Control Unit does not require air connection)
- A compressor, which can generate more than 6 bars and has 50 liters capacity, is enough for only one equipment. If you have more equipment that use air supply, please consult your local compressor dealer to choose correct compressor.



ATTENTION

If there is a doubt about the quality of the air supply, make certain that a filter and regulator unit for compressed air, which is connected in the airline before FORCIMAT 52/102.

- METKON can supply GR 0440 Air Filtering and Lubricating Unit, which regulates air pressure to 6 bars.



Air Filtering and Lubricating Unit

- A pneumatic air hose with 8 mm outer diameter will be supplied with the equipment. [See: Installation Kit]
- Please be sure that you have suitable connection fittings to connect hose to the airline.

Assembling Sample Holders

The FORCIMAT 52 is designed for only Single Force applications; the FORCIMAT 102 is designed for both Single Force and Central Force applications. Six Single Force pistons prepare one to six samples at the same time. The piston feet are engineered to provide optimally flat sample preparation.

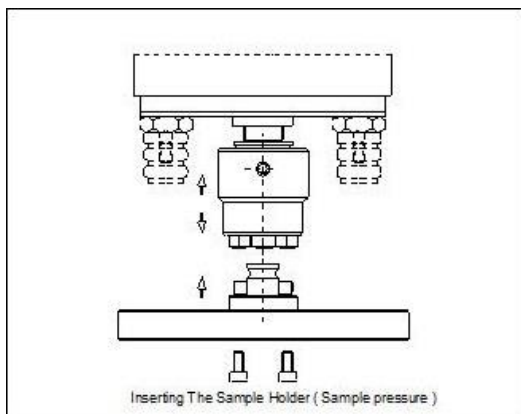
Use Central Force for multiple simultaneous sample preparation. A soft start and soft stop motor function helps prevent sample damage. The mechanical vertical drive provides downforce without the need for compressed air in Central Force operation.

Single and central sample holders are mounted in same way.

- Insert the "central or individual force sample holder adapter" on the automatic head.
- Move the chuck upwards by hand.
- Insert the sample holder and release the chuck.



Connection Chuck



Mounting Specimen Holder

Adjusting the Height of FORCIMAT 52/102 Head

When you place the FORCIMAT on the FORCIPOL we strongly advise you to check the distance between the single force sample holder and the disc when the sample holder is at the bottom position. It should be 5 mm. If it is longer or shorter you need to adjust the height. Height of FORCIMAT 52 and FORCIMAT 102 are adjusted similarly but there is a little difference.

Follow below steps to adjust height of FORCIMAT 52:

- Move the head position handle up. The FORCIMAT 52 will go up by pneumatic force.



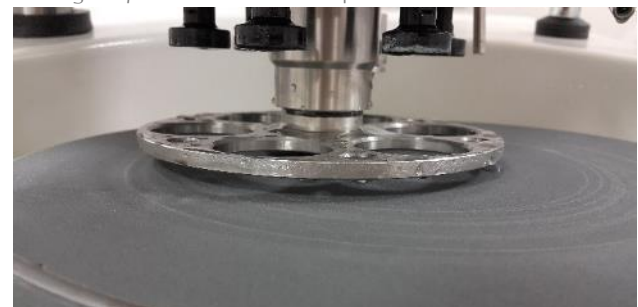
Head Position Handle

- Loosen the setscrew of the adjusting collar. If the length you measured at the beginning is shorter than 5 mm, move the collar upwards and tighten the setscrew again.
- If it was longer than 5 mm at the beginning, than you have to move the collar downwards and tighten setscrew.



Adjusting Collar

- After that check the distance again when the sample holder is at the bottom position. If the distance is not OK again you have to do the steps one more time.



Distance Between Sample Holder and Disc Should be 5 mm

Follow below steps to adjust height of FORCIMAT 102:

- FORCIMAT 102 cannot go up by pneumatic force like FORCIMAT 52. For this reason, there are two collars to prevent head from falling down. Do not loosen both of them at the same time.
- If the length you measured at the beginning is shorter than 5 mm, you should move the collar upwards. To do this;
 - Loosen the upper collar.
 - Lift the head up by the help of another person.
 - Move the collar up and tighten.
 - Loosen and move up another collar and tighten it.
- If it was longer than 5 mm at the beginning, than you have to move the collars downwards. To do this;
 - Loosen the bottom collar.
 - Move the collars down and tighten it.
 - Loosen another collar and move it down, then tighten it.



Head Position Handle and Collars

Fixing and Releasing the Automatic Head

Before starting grinding & polishing operation, the automatic head should be fixed. Both FORCIMAT 52 and FORCIMAT 102 is fixed similar way with head positioning handle.

FORCIMAT 52:

If you turn the handle up, the head will go up by pneumatic force and will be able to move right and left. You can easily replace sample holder or disc at this position.

If you turn the handle down, the head will go down. If you keep it turning more, the head will be fixed and cannot be moved right and left.



Loose Position

Fixing Position

FORCIMAT 102:

If you turn the handle up, the head will be loosen. You can easily position the head.

If you turn the handle down, the head will be fixed and cannot be moved right and left.



Loose Position

Fixing Position



ATTENTION

Before moving down the automatic head, make sure that the water tube is not under the sample holder. Otherwise, the sample holder may put pressure on the water tube and may damage it. The damages caused by operator mistake are out of warranty.

LEVOMAT Specimen Loading Fixture

All specimens on the central sample holder should be at the same level to obtain same result for all samples. Therefore, you should adjust level of samples before the operation. LEVOMAT Specimen Loading Fixture is designed for this purpose as an optional accessory. You adjust the level of the entire specimen very quickly and easily.

Please see below step by step how to fix samples at the same level using LEVOMAT:

- Put the Specimen Loading Plate on the LEVOMAT. Diameter of Specimen Loading Plate should be chosen according to sample holder's diameter.



- Place Central Sample Holder on to the Specimen Loading Plate.



- Push the arm downwards to fix sample holder properly.



- Place your specimens into the Sample Holder.



- Tight each the screws properly using an Allen key.



- Pull it upwards to release sample holder. The Sample Holder is Ready to use with DIGIPREP



DOSIMAT Peristaltic Fluid Dispenser

DOSIMAT Peristaltic Dispenser is an optional accessory for the FORCIMAT 52 and FORCIMAT 102 systems. It is an automatic fluid dispensing instrument used in combination to obtain consistent specimens and to save time and consumables.

DOSIMAT can feed both diamond suspensions / lubricants and aluminium oxide suspensions. Automatic dosing of consumables is applied precisely for perfect sample surfaces. Efficiency is further increased with high quality peristaltic pumps that guarantee exactly the same dosing every time for automation and control of consumable consumption. The liquid is dosed exactly to where the operator wants it on the polishing cloth. No vaporization or spray mist occurs.

It is possible to clean all the tubes with a single button at the end of preparation steps to eliminate the risk of clogged tubes.

Three different DOSIMAT Peristaltic Fluid Dispensers are available for FORCIMAT 52 and FORCIMAT 102:

DOSIMAT 12 (With 1 Peristaltic Pump)

DOSIMAT 12 has one peristaltic and non-misting pump for diamond suspensions, alumina suspensions, lubricant or 2 in 1 suspensions and can be matched with Forcimat 52 and Forcimat 102 Automatic Heads. Modern touch pad controls with ergonomic turn knob allows fast and easy setting of dispensing parameters like; frequency, dosing time, etc. parameters and increases productivity. The last parameter settings are always retained in the memory.

DOSIMAT 52 (With 6 Peristaltic Pump)

DOSIMAT 52 has 5 peristaltic pumps for diamond suspensions / lubricant and 1 pump for aluminium oxide suspension or 2 in 1 suspensions and can be matched with Forcimat 52 Automatic Head. Modern touch pad controls with ergonomic turn knob allows fast and easy setting of dispensing parameters like; frequency, dosing time, etc. parameters and increases productivity. The last parameter settings are always retained in the memory.

DOSIMAT 102 (With 6 Peristaltic Pump)

DOSIMAT 102 has 5 peristaltic pumps for diamond suspensions / lubricant and 1 pump for aluminium oxide suspension or 2 in 1 suspensions and can be matched with Forcimat 102 Automatic Head. Dispensing parameters like; frequency, dosing time, fluid selection etc. are controlled through the LCD screen of the FORCIMAT 102 Automatic Head and can be stored in memory.



DOSIMAT 12/52/102

DOSIMAT bottles are named with numbers on FORCIMAT 102's software from 1 to 6.

Number 1 bottle has dedicated for alumina suspensions. Do not put alumina suspensions on the other bottles. These pumps cannot drip suspension due to density of alumina suspension. Moreover, they can be clogged up quickly.

Installation of DOSIMAT 12/52/102

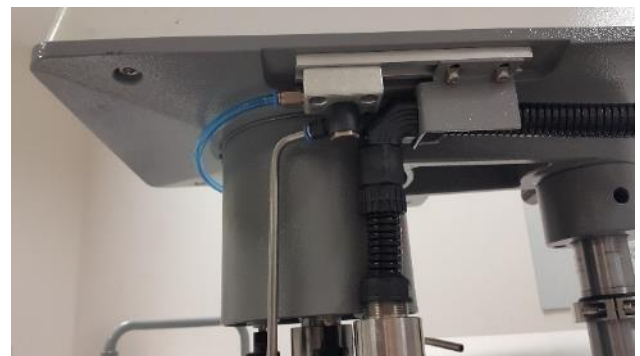
DOSIMAT 12

DOSIMAT 12 can be used together with FORCIMAT 52 or FORCIMAT 102. Follow below steps to install DOSIMAT 12:

- Place the mounting bracket of DOSIMAT 12 to the left hand side of FORCIMAT's base.
- Tighten the screws and fix it properly.



- Mount the dosing pipe to the right hand side of FORCIMAT.



- Make cable connection.

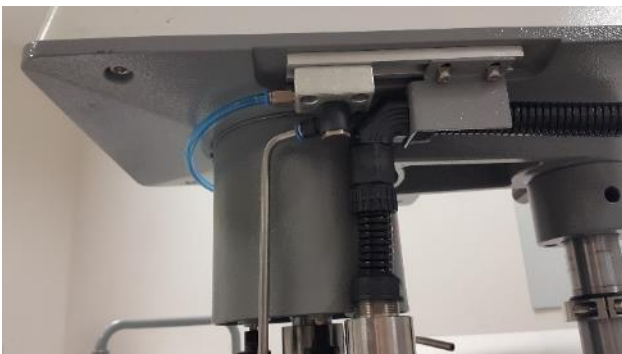


- Activate the DOSIMAT 12 from the FORCIMATE 52 or FORCIMATE 102.
- If you have FORCIMATE 52; follow below steps to activate DOSIMAT 12:
 - Keep pressing the turn-knob until it enter factors settings menu.
 - Choose "P3" by turning the turn-knob, then press on turn-knob.
 - Choose "1" and press turn-knob again. [0: None, 1: DOSIMAT 12, 2: DOSIMAT 52, 3: Both]
 - Press disc speed button to exit.
- If you have FORCIMATE 102; follow below steps to activate DOSIMAT 12:
 - Enter the SETTINGS >>> METKON SERVICE menu.
 - Set DOSIMAT 12 to "ACTIVATE"
 - Exit

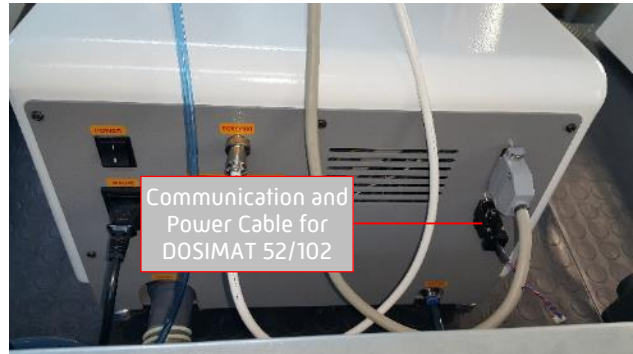
DOSIMAT 52

DOSIMAT 52 can be used together with FORCIMATE 52. Follow below steps to install DOSIMAT 52:

- Place the DOSIMAT 52 to right or left hand side of FORCIPOL.
- Mount the dosing pipe to the right hand side of FORCIMATE 52.



- Make cable connection.



- Activate the DOSIMAT 52 from the FORCIMATE 52.
- Follow below steps to activate DOSIMAT 52:
 - Keep pressing the turn-knob until it enter factors setting menu.
 - Choose "P3" by turning the turn-knob, then press on turn-knob.
 - Choose "2" and press turn-knob again. [0: None, 1: DOSIMAT 12, 2: DOSIMAT 52, 3: Both]
 - Press disc speed button to exit.

DOSIMAT 102

DOSIMAT 102 can be used together with FORCIMATE 102. Installation of DOSIMAT 102 is same as DOSIMAT 52. The only difference is activation. Follow below steps to activate DOSIMAT 102:

- Enter the SETTINGS >>> METKON SERVICE menu.
- Set DOSIMAT 102 to "6"
- Exit

To Make DOSIMAT Ready for Operation

Fluids are conveyed from bottles to polishing cloth via plastic hoses. So, the pumps should be run until fluids drip from steel pipes before the first operation.

Follow below steps to run the pumps:

DOSIMAT 12

- Keep pressing the purge button until fluid starts dripping from the steel pipe.



DOSIMAT 52

- Press the number of bottles that you want to use during operation.

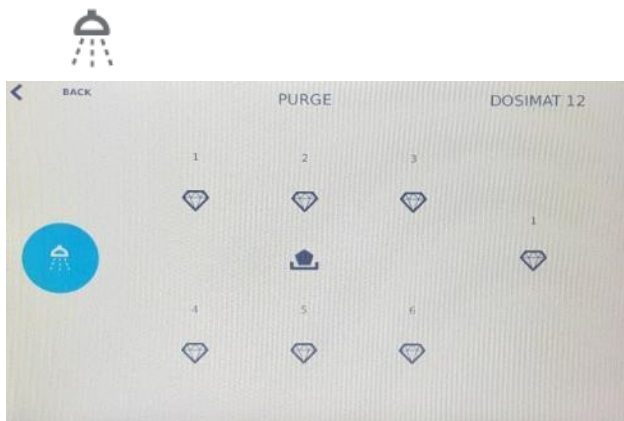
1 2 3 4 5 6

- Keep pressing the purge button until fluids start dripping from the steel pipes.



DOSIMAT 102

- Enter Manual, Single or Central Operation menu from the FORCIMAT 102.
- Press manual DOSIMAT button from operation menu. DOSIMAT menu will appear.



Manual DOSIMAT Menu

- Activate the pump by pressing bottle icon that you want to use during polishing operation.
- Deactivate the pump by pressing same bottle icon when it starts to drip.

Cleaning DOSIMAT Hoses

If you do not use the equipment for long time (such as end of working shift), you should clean the tubes of dosing unit by using "Retract" function. Otherwise, the tubes can be clogged and dosing hoses may blow up. Warranty does not cover this kind of damages. Follow below steps to clean the hoses:

DOSIMAT 12/52

- Keep pressing "Retract" button until all fluids come back to bottles.



DOSIMAT 102

- Enter Manual, Single or Central Operation menu from the FORCIMAT 102.
- Press manual DOSIMAT button from operation menu. DOSIMAT menu will appear.
- Keep pressing "Retract" button until all fluids come back to bottles.



Platen Installation

- Align the holes under the platen (polishing wheel) with the pins on the faceplate.
- Place the platen on the base plate with the pins inserted in the platen.
- Press down on the platen to produce a secure fit and check that the platen does not wobble.
- Position and install the splash ring.



ATTENTION

Always use the splash ring to prevent a messy over-spray. Before use, make sure the platen surface is clean and free of residue from previous operations. Adhesive residues may be removed with an approved solvent.

Using Different Diameter Discs

Both FORCIPOL 102 and FORCIPOL 202 are suitable for Ø200, Ø230, Ø250 and Ø300 mm working wheels.

- For switching between Ø250 and Ø300 mm discs, you only need to change PVC or Aluminum wheels.
- For switching Ø200 mm, you need to change the base plate (faceplate) first. Then, you can use Ø200 mm PVC or aluminum wheels.

Please see the order codes and suitable wheel diameters of base plates:

YM 6505: Base plate for Ø250 mm and Ø300 mm wheels.

YM 0269: Base plate for Ø200 mm and Ø230 mm wheels.

If you need one of these base plates in the future, please contact with Metkon to order it.

Optional Recirculating Cooling System (ENVIRO)

Enviro Filter Unit is a closed loop recirculating filter system, which is optionally available. It has a 20-lit reservoir capacity with 1-micron filter entering the grinder / polisher intake.

Enviro can also be coupled with line water and 80-micron filtering system for disposal.



ENVIRO Filter Unit

Noise Level

Approx. 60 dB is measured at idle running at a distance of 1 m from the machine.

CONTROL PANEL (FORCIPOL Control Unit)

FORCIPOL Control Unit has a modern looking and easy to use operator panel with buttons and knob. It has specially designed to increase operator comfort and maximize productivity. All grinding and polishing parameters can be set easily and quickly. A multipurpose digital display allows you to observe all parameters.



FORCIPOL Control Unit





CONTROL PANEL (FORCIMAT 52)

FORCIMAT 52 has a modern looking and easy to use operator panel with buttons and knob. It has specially designed to increase operator comfort and maximize productivity. All grinding and polishing parameters can be set easily and quickly. A multipurpose digital display allows you to observe all parameters.











FORCIMAT 52 Control Panel

Control Button Functions

-  Time
-  Disc Speed
-  Water
-  Start/Stop

Control Button Functions

-  Head Speed
-  Disc Speed
-  Time
-  Opposite Direction
-  Manual Operation
-  Water
-  Pistons Up/Down
-  Start/Stop





CONTROL PANEL (DOSIMAT 12)

DOSIMAT 12 has a modern looking and easy to use operator panel with buttons and knob. It has specially designed to increase operator comfort and maximize productivity. All dosing parameters can be set easily and quickly. A multipurpose digital display allows you to observe all parameters.



DOSIMAT 12 Control Panel

Control Button Functions

	Dosing Period
	Dosing Time
	Purge
	Retratch





CONTROL PANEL (DOSIMAT 52)

DOSIMAT 52 has a modern looking and easy to use operator panel with buttons and knob. It has specially designed to increase operator comfort and maximize productivity. All dosing parameters can be set easily and quickly. A multipurpose digital display allows you to observe all parameters.



DOSIMAT 52 Control Panel

Control Button Functions

	Dosing Period
	Dosing Time
	Purge
	Retratch
1	Bottle Number 1
2	Bottle Number 2
3	Bottle Number 3
4	Bottle Number 4
5	Bottle Number 5
6	Bottle Number 6

CONTROL PANEL (DOSIMAT 102)

DOSIMAT 102 has no control panel. It is controlled from LCD touch screen of FORCIMAT 102.



DOSIMAT 102


























TOUCH SCREEN CONTROL PANEL (FORCIMAT 102)

The operation panel is a 7" touch screen LCD. HMI touch screen controls increasing the productivity, sample consistency and operator comfort.



FORCIMAT 102 HMI Touch Screen

Control Button Functions

	Main menu
	Metkon contact info
	Service and maintenance menu
	Information
	Central Force Application
	Single Force Application
	Manual Grinding/Polishing
	Consumable List
	Application Areas
	Create New Program
	Load Existing Program
	Head
	Base
	Save Parameters
	Light On/Off
	Water
	DOSIMAT
	Drip
	Suction
	Disc Cleaning & Drying
	Single Pistons Down
	Central Piston Down
	Activate the USB Port
	Transfer Data From USB
	Transfer Data to USB

Password List

Below are passwords, which are required for operating and programming the machine. You can use any of them.

Username	Password
Start-up Password	1840
USER1	1234
USER2	123456
USER3	1000

Operation Parameter Ranges

Grinding/Polishing Direction : CW / CCW
 Grinding/Polishing Speed : 50 – 600 RPM/min
 Head Direction : CW
 Head Speed : 50 – 150 RPM/min
 Single Force : 5 – 60 N
 Central Force : 30 – 480 N

Grinding/Polishing Time : 9999 sec.
 Grinding Depth : 0.01 – 5 mm

DOSIMAT
 Frequency : 1 – 999 sec.
 Duration : 0.1 – 9.9 sec.
 Pre-dosing Time : 0.01 – 99 sec.

WATER
 Status : ON/OFF

OPERATION (FORCIPOL Control Unit)

- Switch on the equipment from the main switch at the rear side.
- The display will be lightened up.



Setting Parameters

Follow below steps to adjust any parameter:

Setting Disc Speed

- Press the "Disc Speed" button. The LED of this button will blink and current disc speed parameter will be seen on the display.



- Set disc speed by turning knob.
- Push the knob to save disc speed.
- Disc speed is set.

Setting Disc Turning Direction

- During the operation, keep pressing the "Disc Speed" button for 2 seconds. The disc will start to turn opposite direction. The last turning direction will always keep in memory until you change the direction again.



Setting Operation Time

- Press the "Time" button. The LED of this button will blink and the time parameter will be seen on the display.



- Set the time by turning knob.
- Push the knob to save the time.
- Operation time is set.
- If you set the time to zero "0", the operation will not stop.

Cooling Water

- Press the "Water" button. The LED of this button will blink and water will flow from the tap.



- If you press this button again, the water flow will stop.

Cooling Water Activation Modes

- There are two water activation modes for grinding operation:
 1. Manual Mode
 2. Automatic Mode
- "Manual Mode" means, the water should be manually activated by pressing "Water" button before starting grinding operation.
- "Automatic Mode" means, the water will be automatically activated when you press "Start" button.
- Follow below steps to select the activation mode:
 - Keep pressing the knob for 5 seconds to enter settings menu. The "P0" text will be seen on the display.
 - Go "P4" section by turning knob.
 - Press turn knob to enter the "P4" section.
 - Select "1" or "2" by turning the knob. ["1" = Manual Mode, "2" = Automatic Mode]
 - Press the knob. The water activation mode is selected.
 - Press "Disc Speed" button to exit from settings menu.

Disc Cleaning and Drying Function

- Keep pressing the "Water" button for 2 seconds.



- The disc will start to turn at 600 RPM for 20 seconds.
- The water will be on for the first 10 seconds, off for the last 10 seconds.

Changing Parameters of Disc Cleaning and Drying Function

- Keep pressing the knob for 5 seconds to enter settings menu. The "P0" text will be seen on the display.
- For setting the water on time, you should enter "P0" and set the time in second.
- For setting motor turning time, you should enter "P1" and set the time in second.
- For setting disc cleaning speed, you should enter "P2" and set the speed in RPM.
- After settings are done, press "Disc Speed" button to exit.

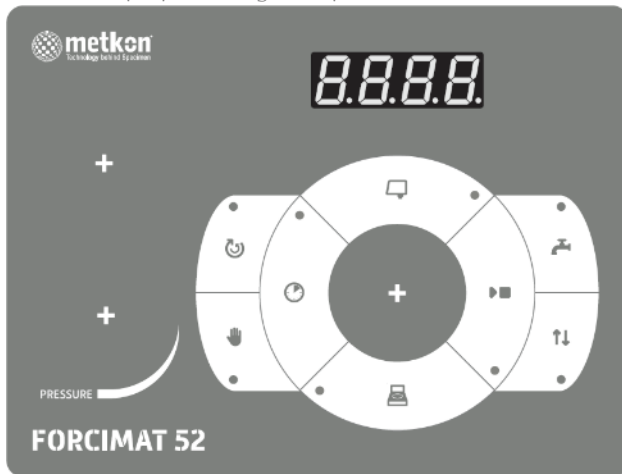
Start and Stop

- Press the "Start/Stop" button to run or stop the equipment. The LED of this button will be on when equipment is running.



OPERATION (FORCIMAT 52)

- Switch on the equipment from the main switch at the rear side.
- The display will be lightened up.



Setting Parameters

Follow below steps to adjust any parameter:

Setting Disc Speed

- Press the "Disc Speed" button. The LED of this button will blink and current disc speed parameter will be seen on the display.



- Set disc speed by turning knob.
- Push the knob to save disc speed.
- Disc speed is set.

Setting Head Speed

- Press the "Head Speed" button. The LED of this button will blink and current head speed parameter will be seen on the display.



- Set head speed by turning knob.
- Push the knob to save head speed.
- Head speed is set.

Opposite Rotation Direction

- Normally, disc and head turn in same direction. Press "Opposite Direction" button. The LED of this button will be on and disc and head will turn in opposite direction during operation.



Setting Operation Time

- Press the "Time" button. The LED of this button will blink and the time parameter will be seen on the display.



- Set the time by turning knob.
- Push the knob to save the time.
- Operation time is set.
- If you set the time to zero "0", the operation will not stop.

Cooling Water

- Press the "Water" button. The LED of this button will blink and water will flow from the tap.



- If you press this button again, the water flow will stop.

Cooling Water Activation Modes

- There are two water activation modes for grinding operation:
 1. Manual Mode
 2. Automatic Mode
- "Manual Mode" means, the water should be manually activated by pressing "Water" button before starting grinding operation.
- "Automatic Mode" means, the water will be automatically activated when you press "Start" button.
- Follow below steps to select the activation mode:
 - Keep pressing the knob for 5 seconds to enter settings menu. The "P0" text will be seen on the display.
 - Go "P4" section by turning knob.
 - Press turn knob to enter the "P4" section.
 - Select "1" or "2" by turning the knob. ["1" = Manual Mode, "2" = Automatic Mode]
 - Press the knob. The water activation mode is selected.
 - Press "Disc Speed" button to exit from settings menu.

Disc Cleaning and Drying Function

- Keep pressing the "Water" button for 2 seconds.



- The disc will start to turn at 600 RPM for 20 seconds.
- The water will be on for the first 10 seconds, off for the last 10 seconds.

Changing Parameters of Disc Cleaning and Drying Function

- Keep pressing the knob for 5 seconds to enter settings menu. The "P0" text will be seen on the display.
- For setting the water on time, you should enter "P0" and set the time in second.
- For setting motor turning time, you should enter "P1" and set the time in second.
- For setting disc cleaning speed, you should enter "P2" and set the speed in RPM.
- After settings are done, press "Disc Speed" button to exit.

Manual Operation

- Press the "Manual Operation" button for manual operation mode. The LED of this button will be on. The automatic head will not work when press "Start/Stop" button, only disc will turn.



Pistons Up/Down

- Press the "Pistons Up/Down" button. The LED of this button will be on and pistons will go down.



- If you press this button again, pistons will go up.

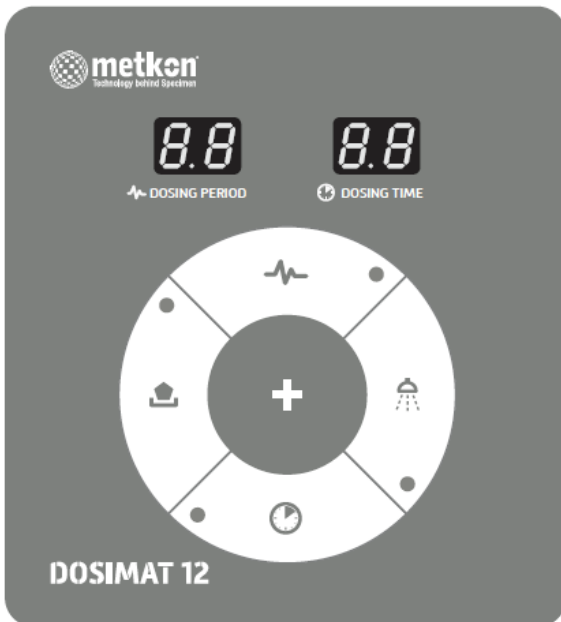
Start and Stop

- Press the "Start/Stop" button to run or stop the equipment. The LED of this button will be on when equipment is running.



OPERATION (DOSIMAT 12)

- DOSIMAT 12 will be switched on together with FORCIMAT 52/102.
- The display will be lightened up.



Setting Parameters

Once you set "Dosing Period" and "Dosing Time" parameters, DOSIMAT 12 will run automatically together with FORCIMAT 52 during operation. For example; if you set "Dosing Period = 3.0 s" and "Dosing Time = 0.1 s", the pump will drip suspension with 0.1 second duration on every 3.0 seconds. Follow below steps to adjust any parameter:

Setting Dosing Period

- Press the "Dosing Period" button. The LED of this button will blink.



- Set the dosing period in second by turning knob.
- Push the knob to save dosing period.
- Dosing period is set.
- If you set "Dosing Period" to zero "0", the pump will not drip any suspension during operation.

Setting Dosing Time

- Press the "Dosing Time" button. The LED of this button will blink.



- Set the dosing time in second by turning knob. Dosing time can be set in 0.1 second increments.
- Push the knob to save dosing time.
- Dosing time is set.
- If you set "Dosing Time" to zero "0", the pump will not drip any suspension during operation.

Purge

- Keep pressing the "Purge" button to make dosing manually.



Retratch

- Keep pressing the "Retratch" button to get suspension back in the bottle.

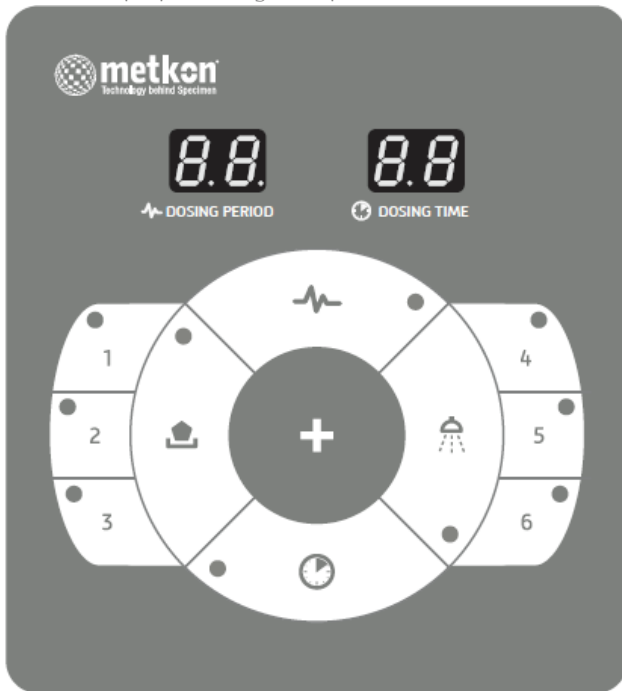


Turning off/on the DOSIMAT 12

- If you do not want to use DOSIMAT 12 during operation, you can turn off the DOSIMAT 12.
- Keep pressing the knob for 5 seconds. The DOSIMAT 12 will turn off.
- Press any button to turn on again.

OPERATION (DOSIMAT 52)

- DOSIMAT 52 will be switched on together with FORCIMAT 52.
- The display will be lightened up.



Setting Parameters

Once you set "Dosing Period" and "Dosing Time" parameters, DOSIMAT 52 will run automatically together with FORCIMAT 52 during operation. For example; if you set "Dosing Period = 3.0 s" and "Dosing Time = 0.1 s", the pump will drip suspension with 0.1 second duration on every 3.0 seconds. Follow below steps to adjust any parameter:

Selecting / Deselecting the Bottles

- Press for 2 seconds on the bottle number that you want to use during polishing. The LED of selected bottles will be on. This means, this bottles will drip suspension during polishing operation.

1 2 3 4 5 6

- If you do not want to use any bottle, press for 2 seconds on the selected bottle. The LED will be off. This means, this bottles will not drip suspension during polishing operation.

Setting Dosing Period and Dosing Time

- Press for 2 seconds on one of the bottle number.

1 2 3 4 5 6

- The LED of selected bottle and "Dosing Period" button will blink.



- Set the dosing period in second by turning knob.
- Push the knob to save dosing period. Dosing period is set.
- After that, the LED of "Dosing Time" button will start to blink.



- Set the dosing time in second by turning knob.
- Push the knob to save dosing time. Dosing time is set.

Purge

Keep pressing the "Purge" button to make dosing manually. The selected dosing bottles will start to drip suspension as long as you keep it pressed.



Retratch

- Keep pressing the "Retratch" button to get suspension back in the bottle.



Turning off/on the DOSIMAT 52

- If you do not want to use DOSIMAT 52 during operation, you can turn off the DOSIMAT 52.
- Keep pressing the knob for 5 seconds. The DOSIMAT 52 will turn off.
- Press any button to turn on again.

OPERATION (FORCIMAT 102)

Mounting of Sample Holder

Mounting of sample holder is the first step towards automatic preparation.

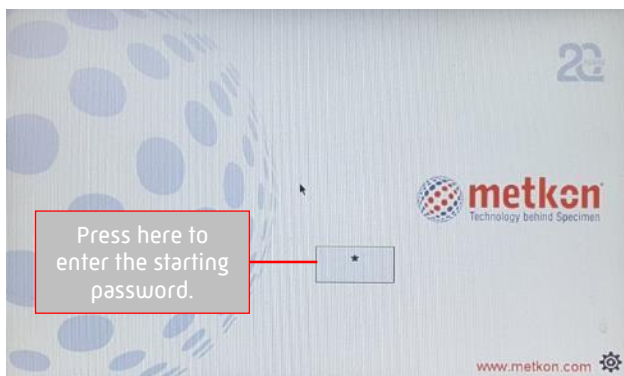
Where single specimens are going to be prepared, use Single Force Sample Holders. Force is applied individually to each specimen.

Use Central Force for multiple simultaneous sample preparation. The force is applied centrally, guaranteeing perfect planeness of all specimens.

Assemble the right sample holder for your application.

Switch on the Equipment

- Turn on the equipment from the main switch at the rear side. The screen will become light up as below.



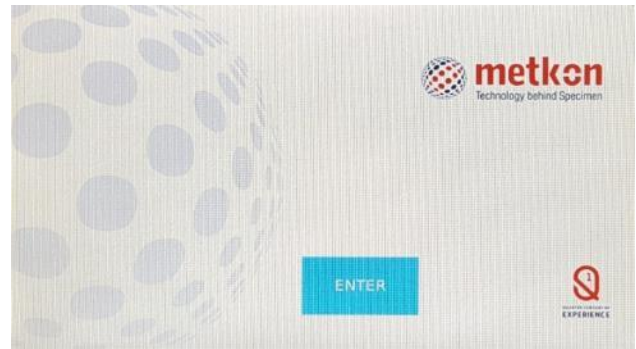
Starting Screen

- Enter the starting password: 1840



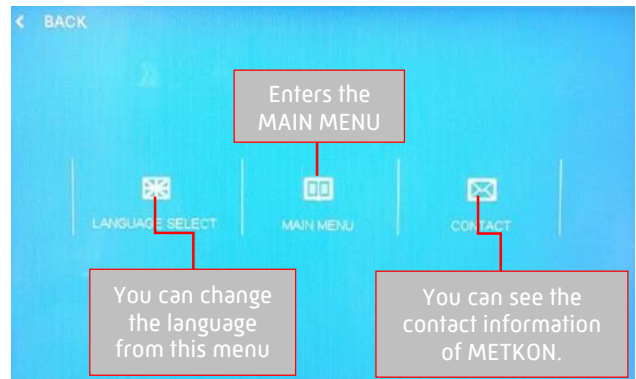
Entering the Starting Password

- Press ENTER button to continue.



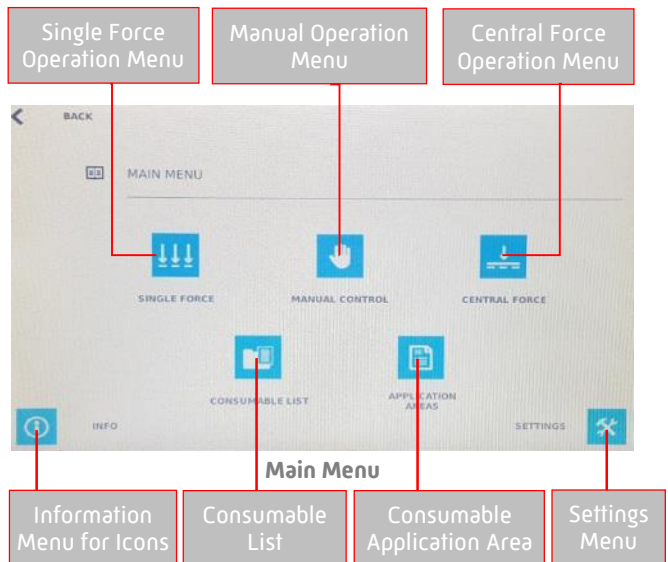
Starting Screen

- The menu will appear as below. To press MAIN MENU button to continue.



Starting Menu

- The MAIN MENU will appear as below:

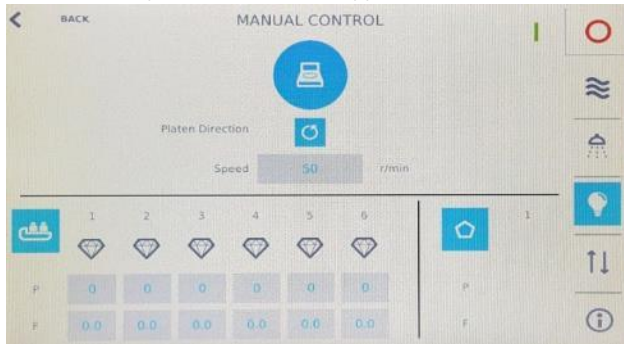


Main Menu

Manual Operation

In this manual mode, only the base platen rotates. Therefore, you have the possibility to prepare your samples manually.

- Press manual operation button from the main menu. The manual operation menu will appear as below:

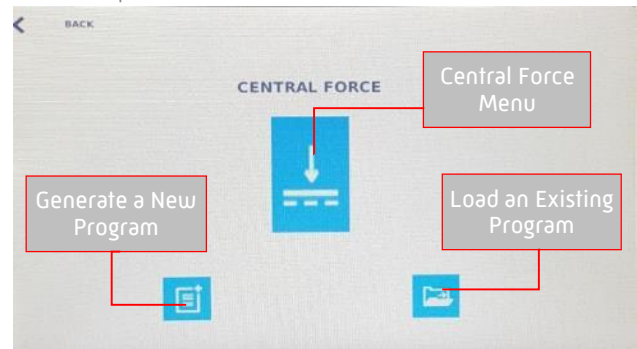


Manual Operation Screen

- Select rotation direction of the wheel. (Clockwise or Counterclockwise)
- Set the disc speed in RPM.
- Press light button to illuminate the working area.
- If you have a peristaltic dosing unit DOSIMAT, select the bottle numbers that you require for the polishing application. Enter period [P] and frequency [F].
- For working with DOSIMAT first time, use retratch button to clean the pipes from the previous operations.
- Press "Purge" button until it lubricates on the polishing cloth.
- Press Start button.

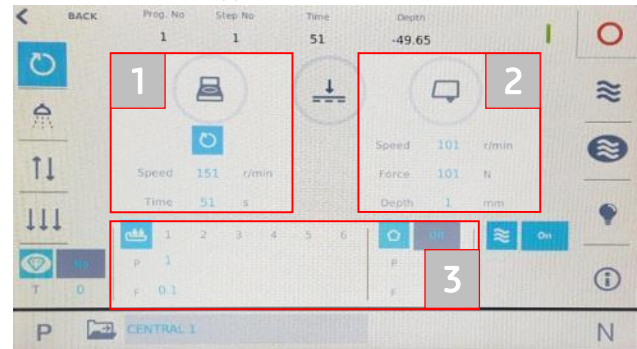
Individual / Central Force Operation

- Select Single or Central Force Operation from the Main Menu.
- Then press Individual/Central Force icon.



Central Force Starting Screen

- The Menu will appear as below:

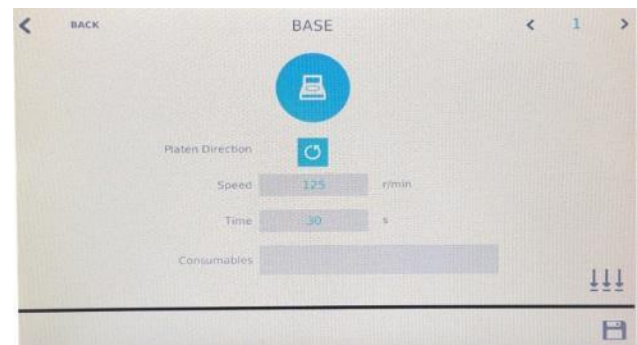


Central Force Menu

The menu is split in to three main areas;

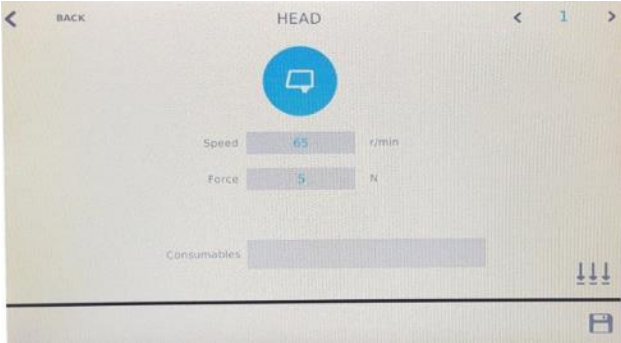
- 1st Area:** Parameters for Base
- 2nd Area:** Parameters for Head
- 3rd Area:** Parameters for Dosing Unit

- To set the base platen parameters press the mentioned area as above.
- Set the parameters of the Base as rotation direction, speed and time. You also have the ability to write down the consumable name for your reference in the "Consumables" section.



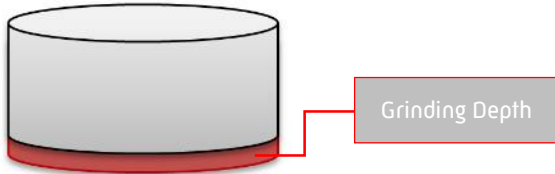
Base Parameters Setting Screen

- To set the automatic head parameters press the mentioned area as above.
- Set the parameters of the Head as speed, grinding depth (optional) and time. You also have the ability to write down the consumable name for your reference in the "Consumables" section.



Head Parameters Setting Screen

- Grinding depth measurement sensor is an optional feature of FORCIMAT 102. If you set depth, for example 0.5 mm, time will automatically be set 3600 seconds and grinding operation will continue until 0.5 mm thickness of material is removed from specimen surface. Therefore, grinding operation time can change depending on grinding depth and material hardness.



NOTE

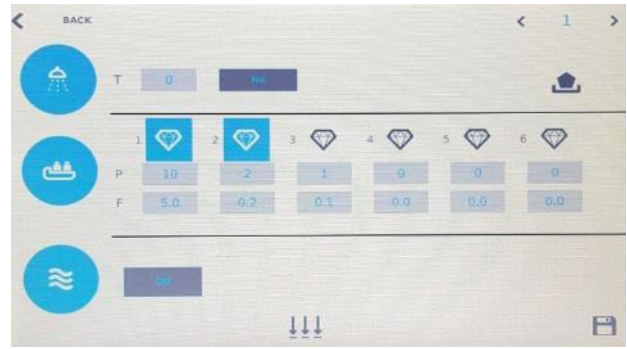
Keep in mind that the grinding depth feature is an optional accessory and available ONLY in Central Force Application. Here you can both set the time and required grinding depth

together. The cycle will be ended either if the set time is reached or if the grinding depth is reached.

- To set the parameters for DOSIMAT and water, press the mentioned area as above.
- Set the parameters of as dosing period, frequency, pre-dosing time and cooling water.
- You can set pre-dosing time parameter. With this feature, polishing cloth is lubricated automatically before operation.

Operation cycle is as below:

Base starts rotation > selected bottles drips suspension during "Starting time" > after "start time" is up, head goes down and operation continues normally.



DOSIMAT Parameters Setting Screen

- After setting all the parameters, press START button.
- Upon completion of the cycle, an acoustic signal lets the operator know that the cycle is over and the samples are ready for the nextstep.
- Press Next [N] or Previous [P] to process with the another step.



NOTE

When required, it is also possible to intervene in the program and change the parameters without stop the instrument. You can save the set parameters on this screen by pressing SAVE button.

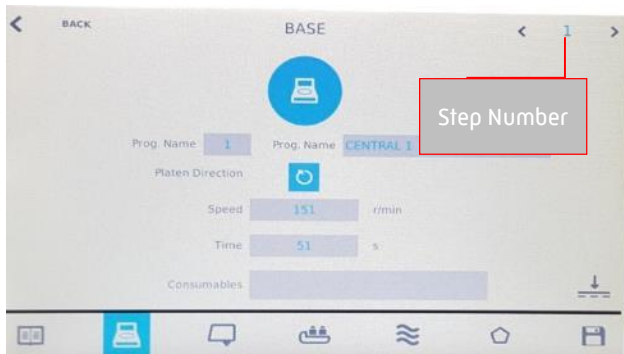
Generating a New Program

- Press "Generate New Program" button on the Individual/Central Force Starting Screen.



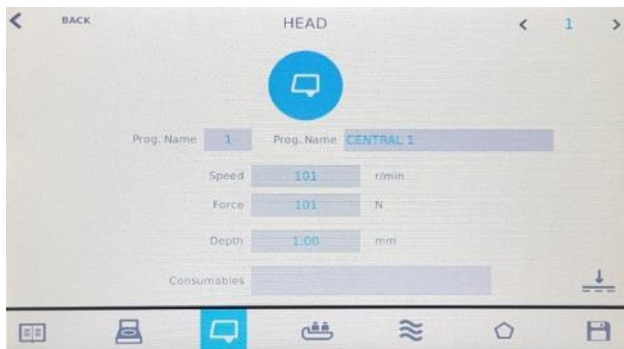
Central Force Starting Screen

- After entering all parameters, you can continue with the next steps. The software allows you to set up to 9 steps for each programs.
- Set the platen direction and speed. You also have the ability to write down the consumable name for your reference in the "Consumables" section.



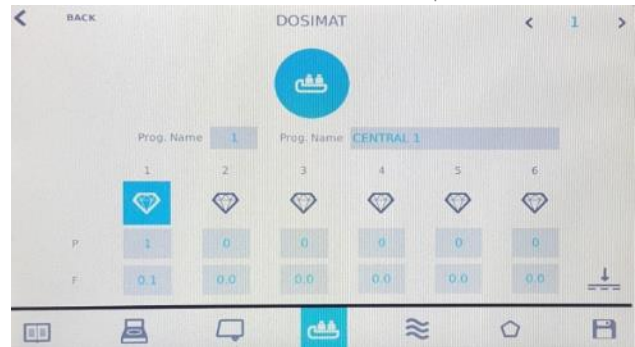
Set Parameters for Base

- Set the head speed, force, time and grinding depth. Keep in mind that the grinding depth feature is available ONLY in Central Force Application. You also have the ability to write down the consumable name for your reference in the "Consumables" section.



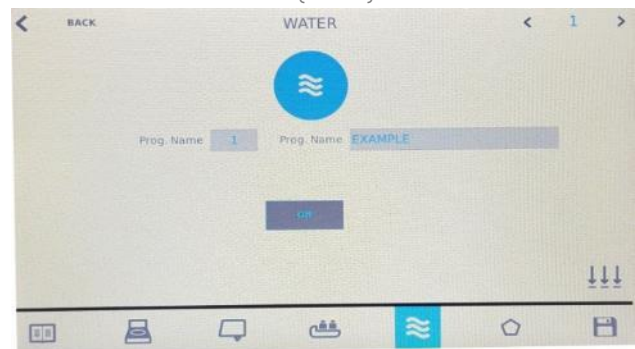
Set Parameters for Head

- For DOSIMAT 102, select the bottle numbers for dispensing. Set the parameters as dosing period, frequency.
- The 1st bottle is for Alumina Oxide suspensions.



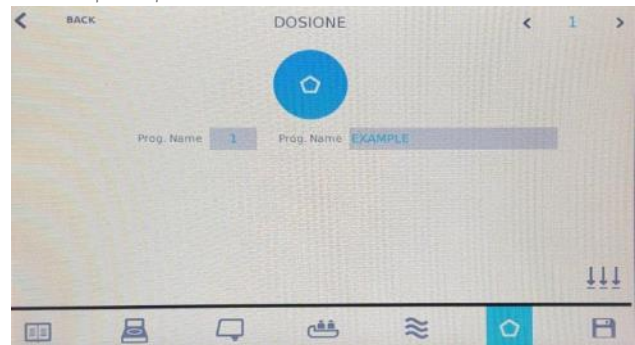
Set Parameters for DOSIMAT 102

- Select the water status. (on/off)



Set Parameters for Water

- For DOSIMAT 12, set the parameters as dosing period, frequency.



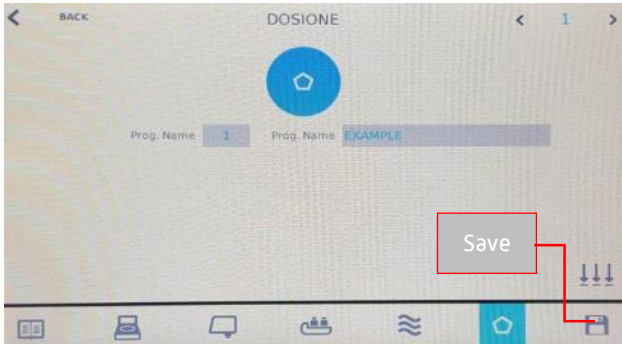
Set Parameters for DOSIMAT 12

- The parameters for the first step are completed. You can continue with the next steps. After finishing entering the parameters, press SAVE button.

Saving/Loading Program

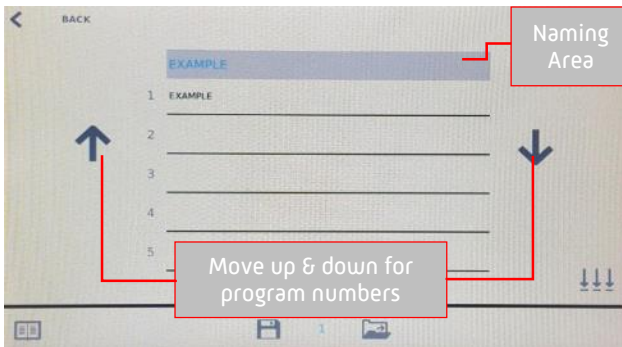
Saving Program

- After setting all parameters, press "Save" icon which shown as below photo:



Parameter Setting Screen

- Program Save/Load menu will appear as below:



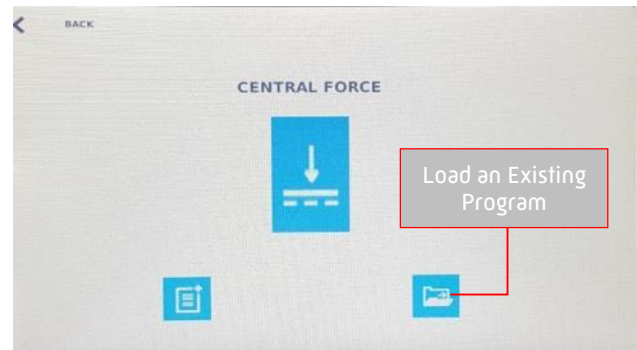
Program Save/Load Menu

- Select an empty area by the help of up/down arrows.
- Touch the naming area.
- Type program name.
- Press save button.

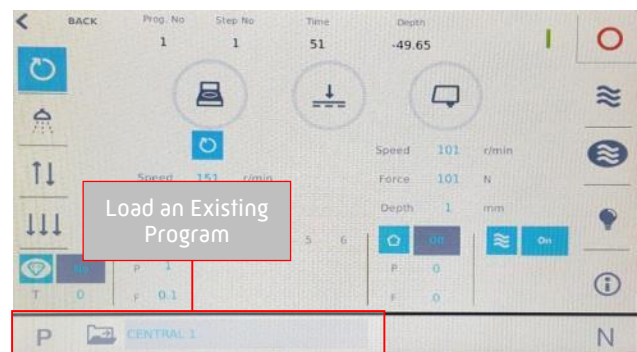


Loading Program

- You can enter the Program Load menu from the Central/Individual Force Starting Screen or Central/Individual Force Menu. You can see as below:

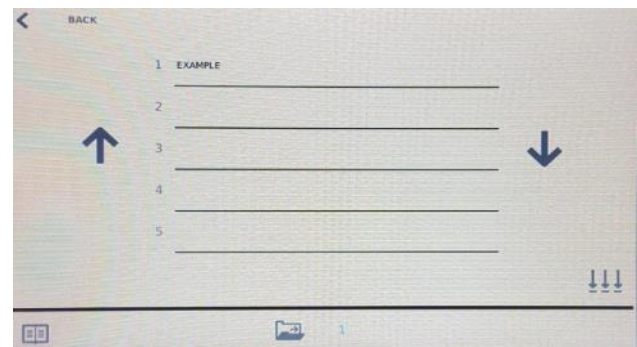


Central Force Starting Screen



Central Force Menu

- Select a program name by the help of up/down arrows.
- Press load button.



Program Save/Load Menu

SERVICE AND MAINTENANCE

Maintenance

It is very important to carry out all maintenance steps on time to use machine without problem for a long time. Strictly follow daily, weekly and monthly maintenance recommendations.

Daily Maintenance

CLEAN THE ALL ACCESSIBLE SURFACES

Clean all accessible surfaces with a moist cloth. Do not let impurities to accumulate on polishing cloths. It is highly recommended to remove polishing cloths before cleaning. Otherwise, impurities may cause scratches on specimen surface during polishing operation.

CLEAN THE DOSING TUBES

Clean the tubes of dosing unit by using "Retract" function. Otherwise, the tubes can be clogged. You should keep pressing the "Retract" button for 10-15 seconds to clean the hoses completely.



CLEAN THE DRAIN HOLE

When using embedding resins, aluminum oxide polishing, etc., the machine should be thoroughly cleaned to prevent resin or oxide to block the outlet hose or the drain hole in the bowl.

CLEAN THE ALUMINUM/PVC DISC

Clean the bottom side and surface of the Aluminum/PVC disc by a wet cloth to remove the particles, residual material etc. as shown in below photo:



Cleaning of the Platen

CLEAN THE BOWL

At the end of the working day, clean the bowl with water.

Weekly Maintenance

CLEAN THE BOWL

Remove the wheel and clean off the debris from the bowl and outlet hose. Make sure that the contact surface between the wheel and turntable are kept clean and dry. In case of heavy use of machine, this cleaning should be done daily. [Do not use solvents.]

CLEAN THE DRAIN HOLE

Clean the water drain hole in the bowl with flowing water as shown in below photo:



Cleaning of the Drain Hole

Monthly Maintenance

CLEAN THE ENVIRO

If you have optional ENVIRO recirculating filtering system, you need to change the filter and clean the tank monthly. In case intensive use of machine, replace the filter more frequently.

Follow below steps to replace filter:

- Disassemble the four screws of the fine filtering tank and take out the top cover.



Opening the Filtering Tank

- Take out the cover.



Removing the Cover

- Take out the filter to replace. Clean inside the tank.



Removing the Filter

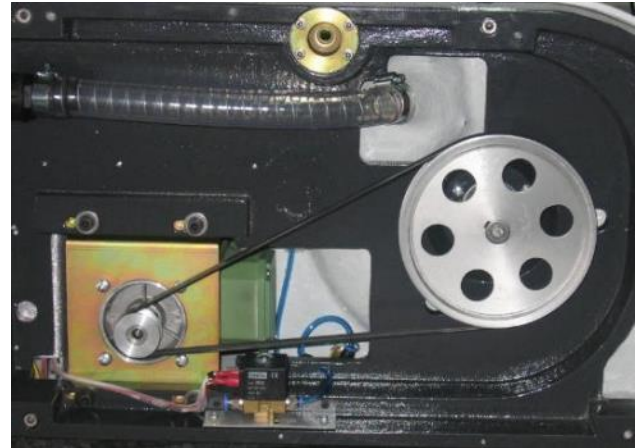
Follow the steps backwards to assemble it again.

Yearly Maintenance

BELT MAINTENANCE

The belt may need adjustment from time to time, the transmission being less efficient with inadequate belt tension. Follow below steps for belt maintenance:

- Pull out the power supply plug.
- Remove the bottom cover to check the belt tension. If necessary adjust the belt tightness by pushing the motor plate backwards or exchange the belts.



Belt

Troubleshooting

ERROR	DESCRIPTION	ACTION
Power lamp is on but, no display on the HMI screen	Power cable connection problem.	Check the power cable.
Water is not draining away	Drain hose clogged.	Clean the drain gap and hose.
	Drain hose squeezed.	Check the outlet hose and straighten the hose.
	Drain hose does not slope away.	Adjust the hose to an even slope.
Water dripping to inside of the cabinet	Water does not drain away.	See above.
Too much abnormal noise while machine is working	The belt tension is enough.	The belt tension must be adjusted correctly.
The machine does not start	The main switch is OFF.	Turn on the main switch.
	The fuses are blown.	Change the blown fuses.
Cooling water does not flow	Water button is closed.	Turn the water button ON.
	Valve on the water tab is closed.	Turn the valve ON.
Vibration on the grinding wheel	Dirt on the faceplate or under the grinding wheel.	Clean the contact surface between grinding wheel and the faceplate.

ACCESSORIES AND CONSUMABLES

Sample Holders and Accessories

Order No	Operational Accessories for FORCIPOL Grinder/Polishers
31 01	PVC wheel, 200 mm
31 02	Aluminum wheel, 200 mm
31 55	Splash guard, 200 mm
31 04	Paper ring, 200 mm Note: This paper ring is not suitable to use together with FORCIMAT 52/102 automatic heads. The sample holder will touch this paper ring which makes not possible to make automatic operation. If you want to make automatic operation on Ø200 mm discs, use CATCHY System grinding papers instead of using plain back grinding papers.
31 21	PVC wheel, 250 mm
31 42	Aluminum wheel, 250 mm
31 65	Splash guard, 250 mm
31 24	Paper ring, 250 mm
31 31	PVC wheel, 300 mm
31 52	Aluminum wheel, 300 mm
31 75	Splash guard, 300 mm
31 34	Paper ring, 300 mm
31 05	Cover
31 13	Special Plexiglas Protection Unit, to be used with FORCIPOL 102/TS (To be ordered simultaneously together with the machine order)

Order No	Accessories for for FORCIPOL Grinder/Polishers
GR 1397-00	Water Filtering and Pressure Regulator System for city water inlet. Keeps the water pressure at the appropriate level and protects from sudden pressure spikes. Filtering out impurities in the water and prevents calcification.
YM 3824-00	Spare Siliphos Cartridge Filter (for Water Filtering and Pressure Regulator System [GR 1397-00])

Order No	Accessories for FORCIMAT 52/102 Automatic Heads
GR 0872	Z-axis material removal with depth control, for FORCIMAT 102/ACCURA 102 (To be ordered simultaneously together with the machine order)
GR 0440	Air filtering and lubricating unit

Order No	Spare Part Kit for FORCIPOL
GR 1991	Recommended Set of Spare Parts, FORCIPOL 102/202/TS *POLISHING SPINDLE, FORCIPOL 102-202, 1 pc. *SOLENOID VALVE, 24 DC, 1 pc.

Order No	Spare Part Kit for FORCIMAT
GR 1992	Recommended Set of Spare Parts, FORCIMAT 52/TS *MANOMETER, Ø40MM 0/6 BAR, 1 pc. *REGULATOR, 1 pc.
GR 1993	Recommended Set of Spare Parts, FORCIMAT 102 *BEARING, 6013, 1 pc. *BELT, 3PJ 432, 1 pc. *MODULATING VALVE, 1 pc.

Order No	Spare Part Kit for DOSIMAT
GR 1994	Recommended Set of Spare Parts, DOSIMAT 12/52/102 *PERISTALTIC PUMP, 24V 10/50 (WITH NOVOPREN HOSE), 1 pc. *PERISTALTIC PUMP, 24V SR 10/30 (NOVOPREN HOSE), 1 pc.

Order No	ENVIRO Recirculating Filtering System
GR 0865	ENVIRO Recirculating Filtering System
YM 6214-00	Filter, 10 inches 1 Micron, for ENVIRO

Order No	Accessories for Specimen Loading
45 60	LEVOMAT Specimen Loading Fixture for Central Force Specimen Holder
45 10	Specimen Loading Plate Ø130 mm
45 50	Specimen Loading Plate Ø160 mm

Order No	Specimen Holders for Individual Force Application
33 31	Ø145 mm specimen holder for 6 pieces of Ø25 mm specimens.
33 32	Ø145 mm specimen holder for 6 pieces of Ø30 mm specimens.
33 33	Ø145 mm specimen holder for 6 pieces of Ø40 mm specimens.
33 34	Ø155 mm specimen holder for 3 pieces of Ø50 mm and 3 pieces of Ø30 mm specimens.
33 35	Ø145 mm specimen holder for 6 pieces of Ø1" specimens.
33 36	Ø145 mm specimen holder for 6 pieces of Ø1¼" specimens.
33 37	Ø145 mm specimen holder for 6 pieces of Ø1½" specimens.
33 38	Ø155 mm specimen holder for 3 pieces of Ø2" and 3 pieces of Ø30 mm specimens.
33 39	Ø145 mm blank specimen holder.

Order No	Set Insert Rings for Reducing Diameter
33 02	Set of insert rings for Ø30 mm (to be used with 33 33)
33 03	Set of insert rings for Ø25 mm or Ø1" (to be used with 33 33)
33 04	Set of insert rings for Ø1 1/4" (to be used with 33 33)
33 05	Set of insert rings for Ø1 1/2" (to be used with 33 33)

Order No	Specimen Holders for Central Force Application (Ø160 mm specimen holders should be used with Ø300 mm grinding/polishing discs)
46 81	Ø130 mm specimen holder for 6 pieces of Ø25 mm specimens.
46 82	Ø130 mm specimen holder for 6 pieces of Ø30 mm specimens.
46 83	Ø130 mm specimen holder for 4 pieces of Ø40 mm specimens.
46 84	Ø130 mm specimen holder for 6 pieces of Ø1" specimens.
46 85	Ø130 mm specimen holder for 6 pieces of Ø1¼" specimens.
46 86	Ø130 mm specimen holder for 4 pieces of Ø1½" specimens.
46 88	Ø130 mm teardrop specimen holder for 6 pieces of Ø10-32 mm specimens.
46 89	Ø130 mm teardrop specimen holder for 4 pieces of Ø10-42 mm specimens.
46 44	Ø130 mm specimen holder for 4 pieces of 25 x 32 mm rectangular specimens.
46 45	Ø160 mm specimen holder for 3 pieces of 40 x 70 mm rectangular specimens.
46 91	Ø160 mm specimen holder for 10 pieces of Ø25 mm specimens.
46 92	Ø160 mm specimen holder for 8 pieces of Ø30 mm specimens.
46 93	Ø160 mm specimen holder for 6 pieces of Ø40 mm specimens.
46 94	Ø160 mm specimen holder for 4 pieces of Ø50 mm specimens.
46 95	Ø160 mm specimen holder for 10 pieces of Ø1" specimens.
46 96	Ø160 mm specimen holder for 8 pieces of Ø1¼" specimens.
46 97	Ø160 mm specimen holder for 6 pieces of Ø1½" specimens.
46 98	Ø160 mm specimen holder for 4 pieces of Ø2" specimens.
46 77	Universal specimen holder for large and irregular shaped specimens, Ø160 mm with 6 clamping fixture
46 39	Ø220 mm specimen holder for 3 pieces of irregular shaped specimens. (Including loading plate)

Consumables

In order to obtain scratch-free surfaces without deformation, successive material removal by abrasives is necessary. Grinding is the next stage after sectioning. Grinding is divided into two processes: Planar grinding and Fine grinding. The purpose of planar grinding is to obtain a level surface and to remove scale, burrs or surface irregularity from the specimen.

To remove deformation from fine grinding and obtain a surface that is highly reflective, the specimens must be polished before they can be examined under the microscope. Polishing is a complex activity in which factors such as "quality and suitability of the cloth", "abrasive", "polishing pressure", "polishing speed" and "duration" need to be taken into account. The quality of the surface obtained after the final polishing depends on all these factors and the finish of the surface on completion of each of the previous stages.

SiC Grinding Papers

Coarse paper discs (up to 120 grit) are used for planar grinding. Fine grinding removes the deformations resulting from coarse grinding to make the surface ready for polishing, which is the final stage. Metkon paper grinding discs are available as "Plain back" and "Foil Back" (CATCHY System).

CATCHY system has a high friction foil, which makes the new SiC Foil back grinding papers stick very well and at the same time very easy to remove again. Traditional PSA back and self-adhesive grinding papers are difficult to apply, difficult to remove. The Foil back papers are removed easily, without leaving any trace of adhesive. Water does not affect the shape of the foil at all. Therefore, it does not curl as traditional SiC Paper and stays flat and ready for immediate or later reuse

Order No	CODE	DEMPAX Paper Grinding Discs, Plain Back (1 Pack 100 Pcs.)
38-020-060	DEMPAX	Ø200 mm SiC Paper Grinding Disc, 60 Grit (2x50 pcs)
38-020-120	DEMPAX	Ø200 mm SiC Paper Grinding Disc, 120 Grit
38-020-180	DEMPAX	Ø200 mm SiC Paper Grinding Disc, 180 Grit
38-020-240	DEMPAX	Ø200 mm SiC Paper Grinding Disc, 240 Grit
38-020-320	DEMPAX	Ø200 mm SiC Paper Grinding Disc, 320 Grit
38-020-400	DEMPAX	Ø200 mm SiC Paper Grinding Disc, 400 Grit
38-020-600	DEMPAX	Ø200 mm SiC Paper Grinding Disc, 600 Grit
38-020-800	DEMPAX	Ø200 mm SiC Paper Grinding Disc, 800 Grit
38-020-1000	DEMPAX	Ø200 mm SiC Paper Grinding Disc, 1000 Grit
38-020-1200	DEMPAX	Ø200 mm SiC Paper Grinding Disc, 1200 Grit
38-020-2500	DEMPAX	Ø200 mm SiC Paper Grinding Disc, 2500 Grit
38-020-4000	DEMPAX	Ø200 mm SiC Paper Grinding Disc, 4000 Grit
38-020-S	DEMPAX	Ø200 mm Mix Grinding Paper set (10 of each from 120 grit to 2500 grit)

38-040-060	DEMPAX	Ø250 mm SiC Paper Grinding Disc, 60 Grit (2x50 pcs)
38-040-120	DEMPAX	Ø250 mm SiC Paper Grinding Disc, 120 Grit
38-040-180	DEMPAX	Ø250 mm SiC Paper Grinding Disc, 180 Grit
38-040-240	DEMPAX	Ø250 mm SiC Paper Grinding Disc, 240 Grit
38-040-320	DEMPAX	Ø250 mm SiC Paper Grinding Disc, 320 Grit
38-040-400	DEMPAX	Ø250 mm SiC Paper Grinding Disc, 400 Grit
38-040-600	DEMPAX	Ø250 mm SiC Paper Grinding Disc, 600 Grit
38-040-800	DEMPAX	Ø250 mm SiC Paper Grinding Disc, 800 Grit
38-040-1000	DEMPAX	Ø250 mm SiC Paper Grinding Disc, 1000 Grit
38-040-1200	DEMPAX	Ø250 mm SiC Paper Grinding Disc, 1200 Grit
38-040-2500	DEMPAX	Ø250 mm SiC Paper Grinding Disc, 2500 Grit
38-040-4000	DEMPAX	Ø250 mm SiC Paper Grinding Disc, 4000 Grit
38-040-S	DEMPAX	Ø250 mm Mix Grinding Paper set (10 of each from 120 grit to 2500 grit)

38-050-060	DEMPAX	Ø300 mm SiC Paper Grinding Disc, 60 Grit (2x50 pcs)
38-050-120	DEMPAX	Ø300 mm SiC Paper Grinding Disc, 120 Grit
38-050-180	DEMPAX	Ø300 mm SiC Paper Grinding Disc, 180 Grit
38-050-240	DEMPAX	Ø300 mm SiC Paper Grinding Disc, 240 Grit
38-050-320	DEMPAX	Ø300 mm SiC Paper Grinding Disc, 320 Grit
38-050-400	DEMPAX	Ø300 mm SiC Paper Grinding Disc, 400 Grit
38-050-600	DEMPAX	Ø300 mm SiC Paper Grinding Disc, 600 Grit
38-050-800	DEMPAX	Ø300 mm SiC Paper Grinding Disc, 800 Grit
38-050-1000	DEMPAX	Ø300 mm SiC Paper Grinding Disc, 1000 Grit
38-050-1200	DEMPAX	Ø300 mm SiC Paper Grinding Disc, 1200 Grit
38-050-2500	DEMPAX	Ø300 mm SiC Paper Grinding Disc, 2500 Grit
38-050-4000	DEMPAX	Ø300 mm SiC Paper Grinding Disc, 4000 Grit
38-050-S	DEMPAX	Ø300 mm Mix Grinding Paper set (10 of each from 120 grit to 2500 grit)

Order No	CODE	DEMPAX ECO Paper Grinding Discs, Plain Back (1 Pack 100 Pcs.)
48-040-120	DEMPAX ECO	Ø250 mm SiC Paper Grinding Disc, 120 Grit
48-040-180	DEMPAX ECO	Ø250 mm SiC Paper Grinding Disc, 180 Grit
48-040-240	DEMPAX ECO	Ø250 mm SiC Paper Grinding Disc, 240 Grit
48-040-320	DEMPAX ECO	Ø250 mm SiC Paper Grinding Disc, 320 Grit
48-040-600	DEMPAX ECO	Ø250 mm SiC Paper Grinding Disc, 600 Grit
48-040-1000	DEMPAX ECO	Ø250 mm SiC Paper Grinding Disc, 1000 Grit
48-040-1200	DEMPAX ECO	Ø250 mm SiC Paper Grinding Disc, 1200 Grit

Order No	CODE	DEMPAX-F Paper Grinding Discs, Foil Back, for CATCHY System [1 Pack 100 Pcs.]
38-020-060F	DEMPAX-F	Ø200 mm SiC Paper Grinding Disc, 60 Grit (2x50 pcs), Foil Back
38-020-120F	DEMPAX-F	Ø200 mm SiC Paper Grinding Disc, 120 Grit, Foil Back
38-020-180F	DEMPAX-F	Ø200 mm SiC Paper Grinding Disc, 180 Grit, Foil Back
38-020-240F	DEMPAX-F	Ø200 mm SiC Paper Grinding Disc, 240 Grit, Foil Back
38-020-320F	DEMPAX-F	Ø200 mm SiC Paper Grinding Disc, 320 Grit, Foil Back
38-020-400F	DEMPAX-F	Ø200 mm SiC Paper Grinding Disc, 400 Grit, Foil Back
38-020-600F	DEMPAX-F	Ø200 mm SiC Paper Grinding Disc, 600 Grit, Foil Back
38-020-800F	DEMPAX-F	Ø200 mm SiC Paper Grinding Disc, 800 Grit, Foil Back
38-020-1000F	DEMPAX-F	Ø200 mm SiC Paper Grinding Disc, 1000 Grit, Foil Back
38-020-1200F	DEMPAX-F	Ø200 mm SiC Paper Grinding Disc, 1200 Grit, Foil Back
38-020-2500F	DEMPAX-F	Ø200 mm SiC Paper Grinding Disc, 2500 Grit, Foil Back
38-020-4000F	DEMPAX-F	Ø200 mm SiC Paper Grinding Disc, 4000 Grit, Foil Back
38-020-SF	DEMPAX-F	Ø200 mm Mix Grinding Paper set (10 of each from 120 grit to 2500 grit), Foil Back
38-040-060F	DEMPAX-F	Ø250 mm SiC Paper Grinding Disc, 60 Grit (2x50 pcs), Foil Back
38-040-120F	DEMPAX-F	Ø250 mm SiC Paper Grinding Disc, 120 Grit, Foil Back
38-040-180F	DEMPAX-F	Ø250 mm SiC Paper Grinding Disc, 180 Grit, Foil Back
38-040-240F	DEMPAX-F	Ø250 mm SiC Paper Grinding Disc, 240 Grit, Foil Back
38-040-320F	DEMPAX-F	Ø250 mm SiC Paper Grinding Disc, 320 Grit, Foil Back
38-040-400F	DEMPAX-F	Ø250 mm SiC Paper Grinding Disc, 400 Grit, Foil Back
38-040-600F	DEMPAX-F	Ø250 mm SiC Paper Grinding Disc, 600 Grit, Foil Back
38-040-800F	DEMPAX-F	Ø250 mm SiC Paper Grinding Disc, 800 Grit, Foil Back
38-040-1000F	DEMPAX-F	Ø250 mm SiC Paper Grinding Disc, 1000 Grit, Foil Back
38-040-1200F	DEMPAX-F	Ø250 mm SiC Paper Grinding Disc, 1200 Grit, Foil Back
38-040-2500F	DEMPAX-F	Ø250 mm SiC Paper Grinding Disc, 2500 Grit, Foil Back
38-040-4000F	DEMPAX-F	Ø250 mm SiC Paper Grinding Disc, 4000 Grit, Foil Back
38-040-SF	DEMPAX-F	Ø250 mm Mix Grinding Paper set (10 of each from 120 grit to 2500 grit), Foil Back

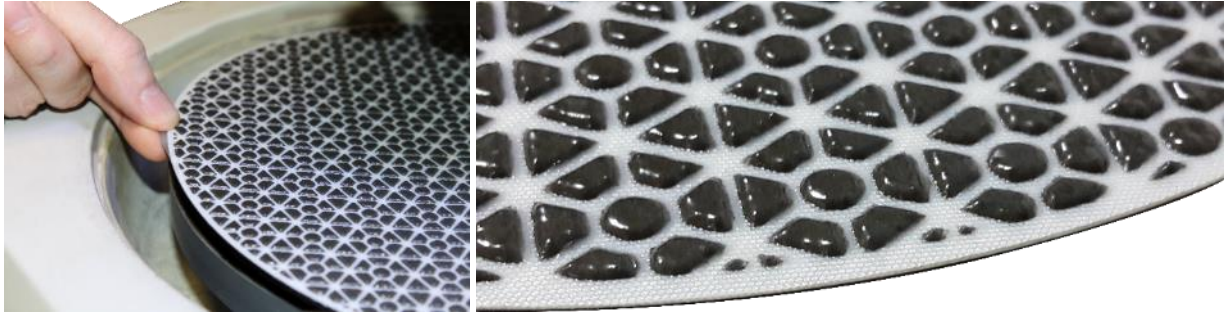
38-050-060F	DEMPAX-F	Ø300 mm SiC Paper Grinding Disc, 60 Grit (2x50 pcs), Foil Back
38-050-120F	DEMPAX-F	Ø300 mm SiC Paper Grinding Disc, 120 Grit, Foil Back
38-050-180F	DEMPAX-F	Ø300 mm SiC Paper Grinding Disc, 180 Grit, Foil Back
38-050-240F	DEMPAX-F	Ø300 mm SiC Paper Grinding Disc, 240 Grit, Foil Back
38-050-320F	DEMPAX-F	Ø300 mm SiC Paper Grinding Disc, 320 Grit, Foil Back
38-050-400F	DEMPAX-F	Ø300 mm SiC Paper Grinding Disc, 400 Grit, Foil Back
38-050-600F	DEMPAX-F	Ø300 mm SiC Paper Grinding Disc, 600 Grit, Foil Back
38-050-800F	DEMPAX-F	Ø300 mm SiC Paper Grinding Disc, 800 Grit, Foil Back
38-050-1000F	DEMPAX-F	Ø300 mm SiC Paper Grinding Disc, 1000 Grit, Foil Back
38-050-1200F	DEMPAX-F	Ø300 mm SiC Paper Grinding Disc, 1200 Grit, Foil Back
38-050-2500F	DEMPAX-F	Ø300 mm SiC Paper Grinding Disc, 2500 Grit, Foil Back
38-050-4000F	DEMPAX-F	Ø300 mm SiC Paper Grinding Disc, 4000 Grit, Foil Back
38-050-SF	DEMPAX-F	Ø300 mm Mix Grinding Paper set (10 of each from 120 grit to 2500 grit), Foil Back

Order No	CODE	CATCHY System Accessories
39-083-200	CFP	Ø200 mm, Catchy Fix Plate (1 pc)
39-083-250	CFP	Ø250 mm, Catchy Fix Plate (1 pc)
39-083-300	CFP	Ø300 mm, Catchy Fix Plate (1 pc)

MAGNETO Diamond Grinding Discs

MAGNETO Diamond Grinding Discs for Planar Grinding and for fine grinding with offering wonderful advantages:

- Very long lifetime. One MAGNETO is equal to 1000 pcs of SiC grinding papers. [depending on the sample hardness and size]
- Only water is needed (No additional diamond suspensions or lubricant).
- The same disc can be used for grinding hard as well as soft materials.
- Very clean working environment.
- Very high edge sharpness and scratch-free surface.
- Excellent planarity and flatness.
- Very short preparation time.



Order No	CODE	MAGNETO Diamond Coarse Grinding Discs (1 piece per pack)
38-020-125	MAGNETO 125	Ø200 mm MAGNETO Diamond Grinding Disc, 125µ
38-040-125	MAGNETO 125	Ø250 mm MAGNETO Diamond Grinding Disc, 125µ
38-050-125	MAGNETO 125	Ø300 mm MAGNETO Diamond Grinding Disc, 125µ
38-020-075	MAGNETO 75	Ø200 mm MAGNETO Diamond Grinding Disc, 75µ
38-040-075	MAGNETO 75	Ø250 mm MAGNETO Diamond Grinding Disc, 75µ
38-050-075	MAGNETO 75	Ø300 mm MAGNETO Diamond Grinding Disc, 75µ
38-020-054	MAGNETO 54	Ø200 mm MAGNETO Diamond Grinding Disc, 54µ
38-040-054	MAGNETO 54	Ø250 mm MAGNETO Diamond Grinding Disc, 54µ
38-050-054	MAGNETO 54	Ø300 mm MAGNETO Diamond Grinding Disc, 54µ
38-020-018	MAGNETO 18	Ø200 mm MAGNETO Diamond Grinding Disc, 18µ
38-040-018	MAGNETO 18	Ø250 mm MAGNETO Diamond Grinding Disc, 18µ
38-050-018	MAGNETO 18	Ø300 mm MAGNETO Diamond Grinding Disc, 18µ

Order No	CODE	MAGNETO Diamond Fine Grinding Discs (1 piece per pack)
38-020-006	MAGNETO 6	Ø200 mm MAGNETO Diamond Grinding Disc, 6µ
38-040-006	MAGNETO 6	Ø250 mm MAGNETO Diamond Grinding Disc, 6µ
38-050-006	MAGNETO 6	Ø300 mm MAGNETO Diamond Grinding Disc, 6µ
38-020-003	MAGNETO 3	Ø200 mm MAGNETO Diamond Grinding Disc, 3µ
38-040-003	MAGNETO 3	Ø250 mm MAGNETO Diamond Grinding Disc, 3µ
38-050-003	MAGNETO 3	Ø300 mm MAGNETO Diamond Grinding Disc, 3µ

Order No	CODE	Magnetic System Accessories
39-003-200	SMF	Ø200 mm Special Magnetic Foil, 1 piece
39-003-250	SMF	Ø250 mm Special Magnetic Foil, 1 piece
39-003-300	SMF	Ø300 mm Special Magnetic Foil, 1 piece
39-093-200	TMP	Ø200 mm Thin Metal Plate, 5 pieces
39-093-250	TMP	Ø250 mm Thin Metal Plate, 5 pieces
39-093-300	TMP	Ø300 mm Thin Metal Plate, 5 pieces

MAGNETO-S Silicon Carbide Grinding Discs

MAGNETO-S Silicon Carbide Grinding Discs are developed to provide excellent specimen surfaces. It can be used for any material that SiC papers are used. It is the most modern and the best alternative of SiC papers with many advantages:

- Very cost effective.
- One MAGNETO-S is equal to 100 pcs of SiC grinding papers. (Depending on the sample hardness and size)
- Only water is needed (No additional diamond suspensions or lubricant).
- Suitable for both ferrous and non-ferrous materials
- Very clean working environment.
- Very high edge sharpness and scratch free surface.
- Excellent planarity and flatness.
- Superior specimen surfaces.

Order No	CODE	MAGNETO-S Silicon Carbide Grinding Discs (1 Pc. Per Pack)
38-021-120	MAGNETO-S-120	Ø200 MAGNETO-S Silicon Carbide Grinding Disc, 120 Grit
38-041-120	MAGNETO-S-120	Ø250 MAGNETO-S Silicon Carbide Grinding Disc, 120 Grit
38-051-120	MAGNETO-S-120	Ø300 MAGNETO-S Silicon Carbide Grinding Disc, 120 Grit
38-021-220	MAGNETO-S-220	Ø200 MAGNETO-S Silicon Carbide Grinding Disc, 220 Grit
38-041-220	MAGNETO-S-220	Ø250 MAGNETO-S Silicon Carbide Grinding Disc, 220 Grit
38-051-220	MAGNETO-S-220	Ø300 MAGNETO-S Silicon Carbide Grinding Disc, 220 Grit
38-021-500	MAGNETO-S-500	Ø200 MAGNETO-S Silicon Carbide Grinding Disc, 500 Grit
38-041-500	MAGNETO-S-500	Ø250 MAGNETO-S Silicon Carbide Grinding Disc, 500 Grit
38-051-500	MAGNETO-S-500	Ø300 MAGNETO-S Silicon Carbide Grinding Disc, 500 Grit
38-021-800	MAGNETO-S-800	Ø200 MAGNETO-S Silicon Carbide Grinding Disc, 800 Grit
38-041-800	MAGNETO-S-800	Ø250 MAGNETO-S Silicon Carbide Grinding Disc, 800 Grit
38-051-800	MAGNETO-S-800	Ø300 MAGNETO-S Silicon Carbide Grinding Disc, 800 Grit
38-021-1200	MAGNETO-S-1200	Ø200 MAGNETO-S Silicon Carbide Grinding Disc, 1200 Grit
38-041-1200	MAGNETO-S-1200	Ø250 MAGNETO-S Silicon Carbide Grinding Disc, 1200 Grit
38-051-1200	MAGNETO-S-1200	Ø300 MAGNETO-S Silicon Carbide Grinding Disc, 1200 Grit

Polishing Cloths

There are three types of polishing clothes; Woven, Non-Woven and Flocked.

- **Woven cloths** offer 'hard surface' polishing properties and guarantee flat pre-polishing, without deterioration of the edges.
- **Non-woven cloths** are used on very hard materials for high precision surface finishing such as glass, quartz, sapphire and semi- conductors.
- **Flocked cloths** guarantee a super-polished finish. The polishing duration must be as short as possible, to avoid inclusions from being extracted.

Order No	CODE	Polishing Cloths, Self-Adhesive
39-013-200	METAPO-P	Ø200 mm, for 9 - 6 µm diamonds, 10 pieces per pack.
39-033-200	METAPO-B	Ø200 mm, for 3 - 1 µm diamonds, 10 pieces per pack.
39-043-200	METAPO-V	Ø200 mm, for 1 - 0.1 µm diamonds or alumina, 10 pieces per pack.
39-015-200	FEDO-6J	Ø200 mm, for 6 µm diamonds, 10 pieces per pack.
39-025-200	FEDO-3	Ø200 mm, for 3 µm diamonds, 10 pieces per pack.
39-066-200	FEDO-1S	Ø200 mm, for 1 µm diamonds, 10 pieces per pack.
39-055-200	FEDO-1N	Ø200 mm, for 0.25 µm diamonds, 10 pieces per pack.
39-075-200	ALSO	Ø200 mm, for 0.25 µm diamonds or alumina, 10 pieces per pack.
39-095-200	WOOL	Ø200 mm, %100 wool cloth, for 6 - 3 µm diamonds or alumina, 10 pieces per pack.
39-085-200	COLLO	Ø200 mm, for colloidal silica, 10 pieces per pack.
39-090-200	PETRI	Ø200 mm, for petrography, 10 pieces per pack.
39-005-200	NOWO	Ø200 mm, for 6 - 1 µm diamonds, 10 pieces per pack.
39-200-SPC	MIX	Ø200 mm, 1 of each METAPO-P, METAPO-B, FEDO-3, FEDO-1S, FEDO-1N
39-013-250	METAPO-P	Ø250 mm, for 9 - 6 µm diamonds, 10 pieces per pack.
39-033-250	METAPO-B	Ø250 mm, for 3 - 1 µm diamonds, 10 pieces per pack.
39-043-250	METAPO-V	Ø250 mm, for 1 - 0.1 µm diamonds or alumina, 10 pieces per pack.
39-015-250	FEDO-6J	Ø250 mm, for 6 µm diamonds, 10 pieces per pack.
39-025-250	FEDO-3	Ø250 mm, for 3 µm diamonds, 10 pieces per pack.
39-066-250	FEDO-1S	Ø250 mm, for 1 µm diamonds, 10 pieces per pack.
39-055-250	FEDO-1N	Ø250 mm, for 0.25 µm diamonds, 10 pieces per pack.
39-075-250	ALSO	Ø250 mm, for 0.25 µm diamonds or alumina, 10 pieces per pack.
39-095-250	WOOL	Ø250 mm, %100 wool cloth, for 6 - 3 µm diamonds or alumina, 10 pieces per pack.
39-085-250	COLLO	Ø250 mm, for colloidal silica, 10 pieces per pack.
39-090-250	PETRI	Ø250 mm, for petrography, 10 pieces per pack.
39-005-250	NOWO	Ø250 mm, for 6 - 1 µm diamonds, 10 pieces per pack.
39-250-SPC	MIX	Ø250 mm, 1 of each METAPO-P, METAPO-B, FEDO-3, FEDO-1S, FEDO-1N

39-013-300	METAPO-P	Ø300 mm, for 9 - 6 µm diamonds, 10 pieces per pack.
39-033-300	METAPO-B	Ø300 mm, for 3 - 1 µm diamonds, 10 pieces per pack.
39-043-300	METAPO-V	Ø300 mm, for 1 - 0.1 µm diamonds or alumina, 10 pieces per pack.
39-015-300	FEDO-6J	Ø300 mm, for 6 µm diamonds, 10 pieces per pack.
39-025-300	FEDO-3	Ø300 mm, for 3 µm diamonds, 10 pieces per pack.
39-066-300	FEDO-1S	Ø300 mm, for 1 µm diamonds, 10 pieces per pack.
39-055-300	FEDO-1N	Ø300 mm, for 0.25 µm diamonds, 10 pieces per pack.
39-075-300	ALSO	Ø300 mm, for 0.25 µm diamonds or alumina, 10 pieces per pack.
39-095-300	WOOL	Ø300 mm, %100 wool cloth, for 6 - 3 µm diamonds or alumina, 10 pieces per pack.
39-085-300	COLLO	Ø300 mm, for colloidal silica, 10 pieces per pack.
39-090-300	PETRI	Ø300 mm, for petrography, 10 pieces per pack.
39-005-300	NOWO	Ø300 mm, for 6 - 1 µm diamonds, 10 pieces per pack.
39-300-SPC	MIX	Ø300 mm, 1 of each METAPO-P, METAPO-B, FEDO-3, FEDO-1S, FEDO-1N

Diamond Products

Diamond, due to its exceptional hardness and cutting capacity, has become the first choice abrasive in metallographic polishing.

Diamonds for metallographic grinding and polishing are available in two different crystalline shapes: Polycrystalline (P) and Monocrystalline (M). Polycrystalline diamonds provide vast numbers of small cutting edges. In the metallographic preparation process these edges result in high material removal, while producing only a shallow scratch depth.

Monocrystalline diamonds are more block-shaped and provide few cutting edges. These diamonds give high material removal with a more variable scratch pattern. For high requirements, the (P)-type diamonds are chosen. The (M) type diamonds are best suited for all-purpose polishing.

METKON offers diamond products in three forms; diamond paste, diamond suspension and two in one products; a perfect mixture of diamond suspension & lubricant.

Order No	CODE	Diamond Pastes, Monocrystalline
39-301-M	DIAPAT-M	Diamond Paste, 0.25 µm, 10gr. syringe
39-311-M	DIAPAT-M	Diamond Paste, 1 µm, 10gr. syringe
39-321-M	DIAPAT-M	Diamond Paste, 3 µm, 10gr. syringe
39-331-M	DIAPAT-M	Diamond Paste, 6 µm, 10gr. syringe
39-341-M	DIAPAT-M	Diamond Paste, 9 µm, 10gr. syringe

Order No	CODE	Diamond Pastes, Polycrystalline
39-301-P	DIAPAT-P	Diamond Paste, 0.25 µm, 10gr. syringe
39-311-P	DIAPAT-P	Diamond Paste, 1 µm, 10gr. syringe
39-321-P	DIAPAT-P	Diamond Paste, 3 µm, 10gr. syringe
39-331-P	DIAPAT-P	Diamond Paste, 6 µm, 10gr. syringe
39-341-P	DIAPAT-P	Diamond Paste, 9 µm, 10gr. syringe

Order No	CODE	Diamond Suspensions, Monocrystalline
39-400-M	DIAPAT-M	Diamond Suspension 0.25 µm, 250 ml bottle with sprayer
39-410-M	DIAPAT-M	Diamond Suspension 1 µm, 250 ml bottle with sprayer
39-420-M	DIAPAT-M	Diamond Suspension 3 µm, 250 ml bottle with sprayer
39-430-M	DIAPAT-M	Diamond Suspension 6 µm, 250 ml bottle with sprayer
39-440-M	DIAPAT-M	Diamond Suspension 9 µm, 250 ml bottle with sprayer

39-411-M	DIAPAT-M	Diamond Suspension 1 µm, 1 lt bottle
39-421-M	DIAPAT-M	Diamond Suspension 3 µm, 1 lt bottle
39-431-M	DIAPAT-M	Diamond Suspension 6 µm, 1 lt bottle

39-415-M	DIAPAT-M	Diamond Suspension 1 µm, 5 lt bottle
39-425-M	DIAPAT-M	Diamond Suspension 3 µm, 5 lt bottle
39-435-M	DIAPAT-M	Diamond Suspension 6 µm, 5 lt bottle

Order No	CODE	Diamond Suspensions, Polycrystalline
39-400-P	DIAPAT-P	Diamond Suspension 0.25 μm , 250 ml bottle with sprayer
39-410-P	DIAPAT-P	Diamond Suspension 1 μm , 250 ml bottle with sprayer
39-420-P	DIAPAT-P	Diamond Suspension 3 μm , 250 ml bottle with sprayer
39-430-P	DIAPAT-P	Diamond Suspension 6 μm , 250 ml bottle with sprayer
39-440-P	DIAPAT-P	Diamond Suspension 9 μm , 250 ml bottle with sprayer

Order No	CODE	Two In One Diamond Suspensions, Monocrystalline
39-510-M	DUOPAT-M	A perfect mixture of 1 μm diamond suspension & diamond lubricant 500 ml bottle
39-520-M	DUOPAT-M	A perfect mixture of 3 μm diamond suspension & diamond lubricant 500 ml bottle
39-530-M	DUOPAT-M	A perfect mixture of 6 μm diamond suspension & diamond lubricant 500 ml bottle

Order No	CODE	Diamond Lubricant
39-502	DIAPAT	Diamond Lubricant, Water-based, 1 lt bottle

Alumina & Colloidal Silica Products

ALU-MIK is a deagglomerated alumina polishing powder and it produces a fine surface quickly due to the lack of aggregates. ALU-MIK alumina suspensions have been developed to give the operator easy to use pre-prepared polishing media. It requires no dilution with water and can be dispensed with COL-K(NC) Colloidal silica suspension is able to produce the ultimate in high quality mirror polishes on polishing machine. A part abrasive, part chemical polishing action makes colloidal silica well suited to polishing difficult materials such as Aluminium, Stellite and Cobalt Chrome. automating dispensing units, like DOSIMAT.

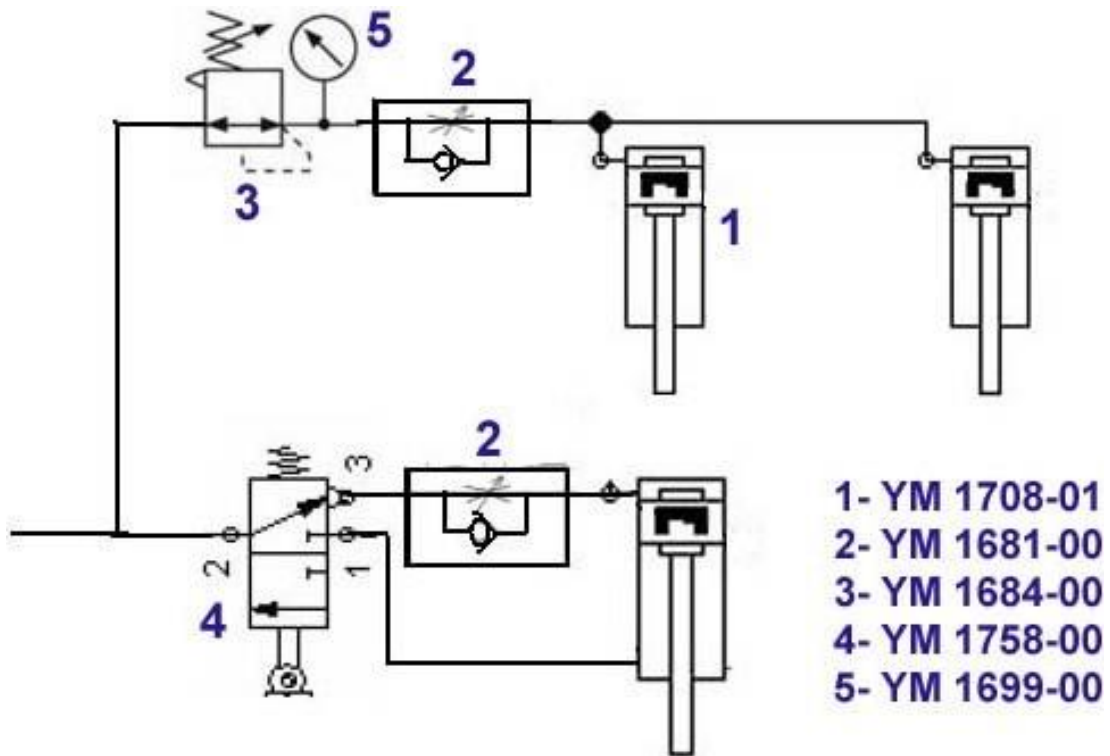
Order No	CODE	Alumina Powder
39-100	ALU-MIK	Alumina Powder 0.05 μm , 500 gr
39-110	ALU-MIK	Alumina Powder 0.3 μm , 500 gr
39-120	ALU-MIK	Alumina Powder 1.0 μm , 500 gr

Order No	CODE	Alumina Suspensions
39-200	ALU-MIK	Alumina Suspension 0.05 μm , 1 lt bottle
39-210	ALU-MIK	Alumina Suspension 0.3 μm , 1 lt bottle
39-220	ALU-MIK	Alumina Suspension 1.0 μm , 1 lt bottle

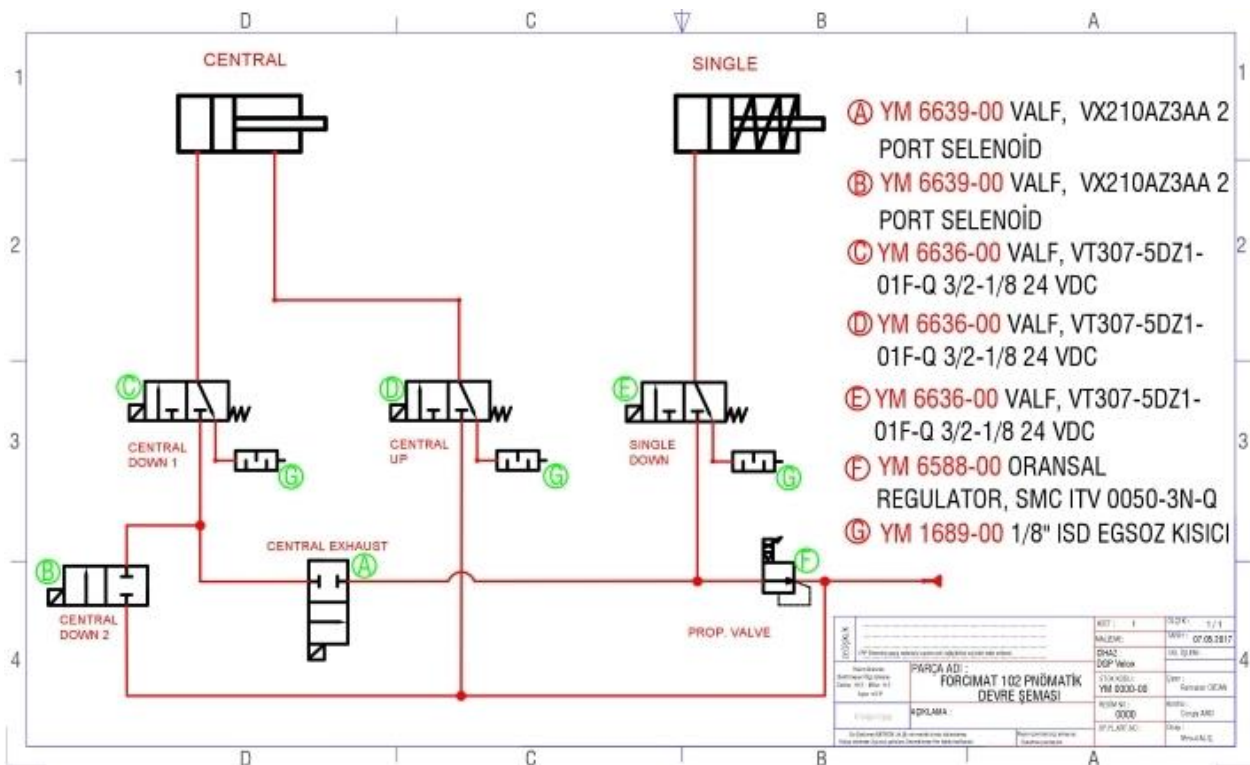
Order No	CODE	Colloidal Silica Suspensions
39-502	DIAPAT	Colloidal Silica Suspension 0.05 μm , 1 lt bottle

TECHNICAL DOCUMENTATION

Pneumatic Wiring Diagram (FORCIMAT 52)



Pneumatic Wiring Diagram (FORCIMAT 102)



Customer Service

Our factory-trained assembly personal is at your disposal for customer service.
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