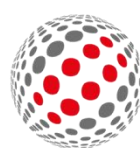




OPERATING and INSTRUCTIONS MANUAL

FORCIPOL

GRINDING & POLISHING SYSTEM



metkon®
Technology behind Specimen

EC DECLARATION OF CONFORMITY

Manufacturer : **Metkon Instruments Inc.**

Address : **Demirtas Dumlupinar Organize Sanayi Bolgesi
Ali Osman Sonmez Cd. No:14 Bursa / TURKEY**



Herewith declares that;

Metallographic Grinding&Polishing Machine,

Model: FORCIPOL

- 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 2006/95/EEC**), as amended, and with national implementing legislation;
- is in conformity with the provisions of the EMC Directive (**directive 2004/108/EEC**), 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 61000-6-2, TS EN 61000-6-4

Authorized Person: Ercin Senay

Position: Manager of Research and Development Department

Year: 2014



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A. DESCRIPTION

1. Design

FORCIPOL Series of instruments are available as Single Disc Units and Double Disc Units. The drive elements are fixed on heavy duty aluminium alloyed casting. The rotating discs are mounted on ball bearings which allow the application of high pressures to prepare even large specimens. Ball bearings used provide quite and vibration free operation.

FORCIPOL uses a powerful high torque motor. The power transmission from the motor to the rotating disc is made via belt drive. Motor overload protection switch ensures maintenance-free operation.

FORCIPOL grinders and polishers, both single or double disc versions are available with constant or infinitely variable rotating speeds, with digital display. This allows the setting of the optimum speed for each individual preparation process. The modern state of the art electronics in the form a compact printed circuit board provides a smooth speed variation.

Water inlet and flexible water outlets with control valves for wet grinding and the facility for FORCIMAT attachment are standard features.

Motor on / off and water on / off buttons are mounted on the front panel.

FORCIPOL instruments can be used for grinding, lapping and polishing by quick and simple exchange of discs which takes only a few seconds. When the number of specimens to be prepared increases, FORCIPOL instruments can be fitted with FORCIMAT attachment for automation. FORCIMAT provides high rate of sample preparation and frees the operator from the polishing procedures.

FORCIMAT can accommodate upto six specimens. By using the spacer rings, the diameter of the specimens can vary from 25 to 40 mm. Also you can attach 3 x 50 sample holder.



Fig. 1 FORCIPOL 1V & FORCIPOL 2V

2. Technical Data

	No. Of Discs	Motor	Discs Speed rpm	Discs Size mm	Dimens. mm	Weight kg.
FORCIPOL 1V	Single	0.75HP,220V-50Hz, 1 ph	50-600 Var.	200, 250	380x690x340	30
FORCIPOL 300-1V	Single	1,0 HP,220V-50Hz, 1 ph	50-600 Var.	300	420x730x350	37
FORCIPOL 2V	Double	0.75HP,220V-50Hz, 1 ph	50-600 var.	200, 250	700x690x340	40

3. Warranty

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

4. Safety Precautions

Read the below instructions carefully before use.

- Place the machine on a sturdy and safe table.
- The equipment must be installed in compliance with local safety regulations.
- Only use approved METKON accessories and consumables to achieve max. 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 face plate are engaged with the grinding disc.
- While grinding manually be careful not to touch the grinding disc.
- Do not try to collect a specimen from the working area while the disc is turning.
- Disconnect the electrical connection before servicing the equipment.
- Follow the periodically maintenance.



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.

B. INSTALLATION & SET UP

1. 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 the carrier and Metkon Instruments Ltd. 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



WARNING! The FORCIPOLs weighs from 29 kgs to 40 kgs. please be sure that there are enough people (at least 2) to safely lift the unit from the shipping carton. It is recommended to wear safety shoes during transportation. Follow the steps on **1.1** which the unpacking procedure is described step by step with photos.



ATTENTION! The FORCIPOLs are bolted to a wood base for protection during shipping. Lift the unit out of the carton and position it on a table so it overhangs on the edge. Remove the bolt securing the unit to the wood base.

Carefully remove outer packing material. Refer to the packing documents for a list of items supplied.

2. Installation and Set-Up



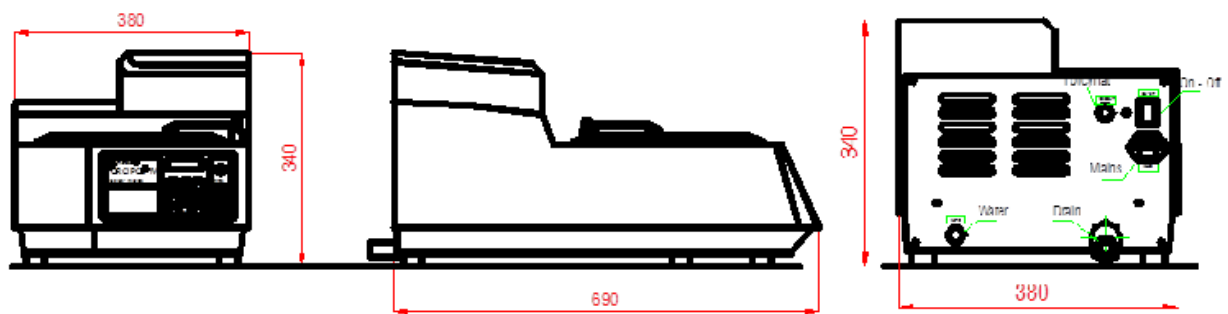
CAUTION! Follow approved procedures and take all necessary preventive safety measures when lifting and installing this equipment. Improper lifting can result equipment damage.

FORCIPOL units are shipped as already assembled.

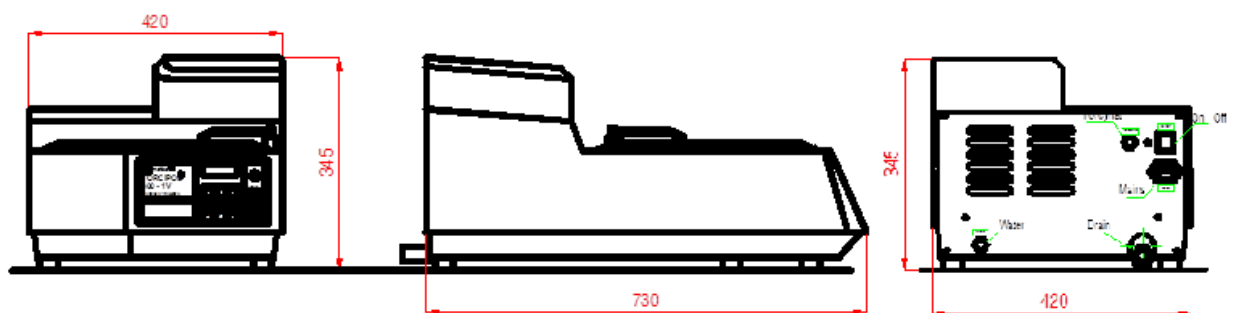
- FORCIPOL is only available as bench top.
- FORCIPOL should be placed on a sturdy and safe platform. Please be sure that the platform is large enough and can stand it's weight.
- In order to work with equipment comfortably, it is recommended to leave at least 30 cm space from all side of the equipment.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

Equipment	Dimensions			
	W	D	H	Weight
Forcipol 1V	380 mm	690 mm	340 mm	30 kgs
Forcipol 300-1V	420 mm	730 mm	350 mm	30 kgs
Forcipol 2V	700 mm	690 mm	340 mm	40 kgs

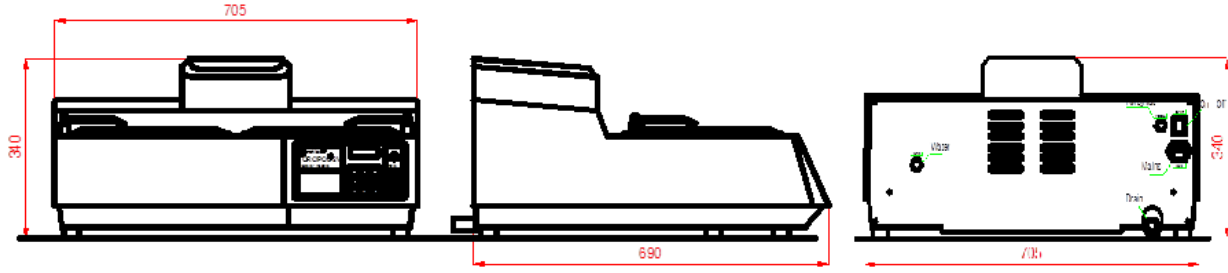
Place the FORCIPOL on a sturdy table with convenient access to a 1-phase grounded power source, water supply and water drain. Make the drain connection with the plastic hose and the hose clip supplied. Connect the nylon tube to the water outlet at the rear of the instruments for water supply. Place the disc and the splash guard. (Fig. 2)



FRC 1V



FRC 300-1V



FRC 2V

2.1 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 three-phase voltage, 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 optional 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 back thin metal plate.

Voltage	Operational Power Range
230 V, 50/60 Hz. 1 ph.	220 - 240 V
115 V, 50/60 Hz. 1 ph.	110 - 120 V

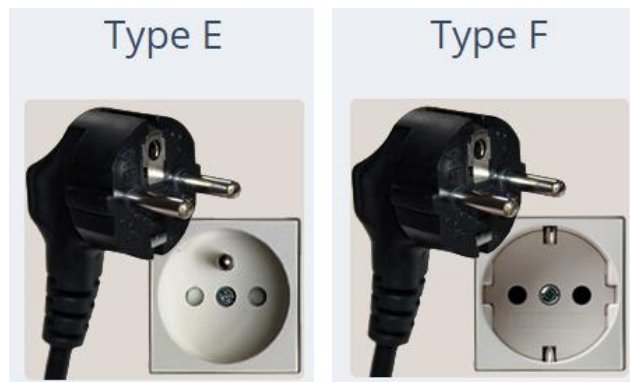
Equipment	Fuse Ratings	
	230 V	115V
Forcipol 1V	6 A (C Type)	6 A (C Type)
Forcipol 300-1V	10 A (C Type)	10 A (C Type)
Forcipol 2V	6 A (C Type)	6 A (C Type)



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



- 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.



2.2 Water & Cable Connections

The recommended cooling water flow rate is a minimum of 2 liters/min with max water pressure 3 bars.

- Water inlet and drain hoses will be sent together with the equipment. (See: Installation Kit)
- Please 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 back side of the equipment.

- Below fittings will be sent for water hose connection together with the equipment :



- Connect the line water to the unit with the plastic tube. Fig.2
- Fix the Drain Water Hose to the drain. Fig. 2.
- Make all the necessary electrical connection as shown on Fig. 2.

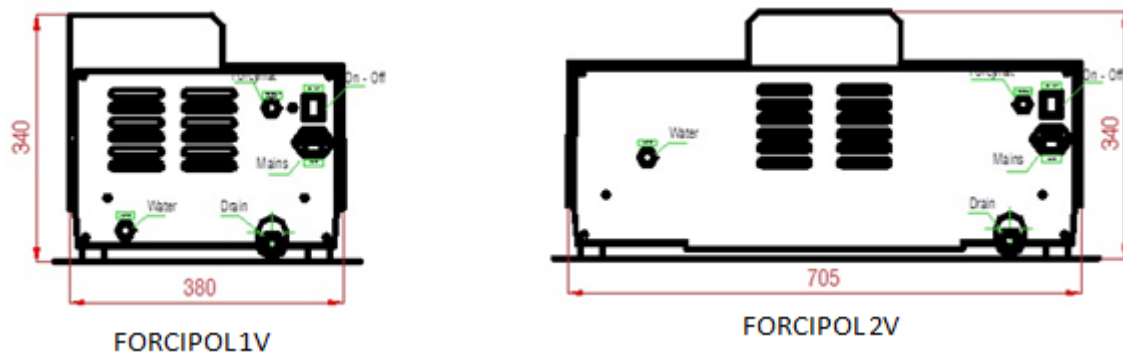


Fig.2. Connections



ATTENTION!

- A Hydrophore generates much higher water pressure than city water. This causes input hose to blow out and solenoid valve to be damaged. Max water pressure must not exceed 3 bars.
- Well water or hard water causes solenoid valve to be clogged up and broke down due to dirt and lime.

If the equipment used with well water, hydrophore or very hard water; water filtering and pressure regulator system must be used. Otherwise, the equipment will be out of warranty. Please contact Metkon Service (metkonservice@metkon.com) or your local representative if you need water filtering and pressure regulator system.

2.3 Noise Level

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

C. CONTROL PANEL

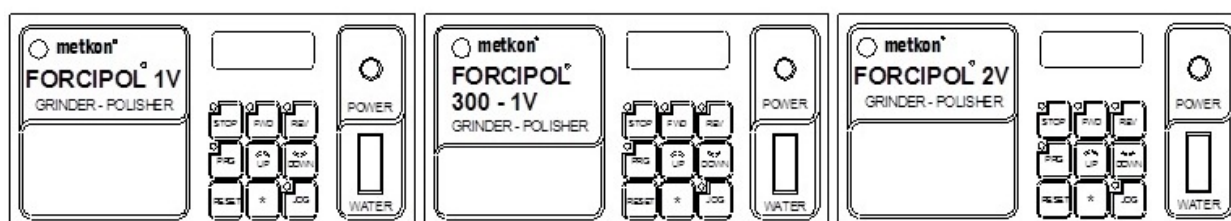


Fig.3. FORCIPOL CONTROL PANEL

1. Control Button Functions

STOP : Stop button is used to stop the unit when it is in operation. It is also used to save the “cycle time”.

FWD : FWD (forward) button is used to start the motor in clockwise direction.

REV : REV (reverse) button is used to start the motor in counter clockwise direction. While selecting reverse or forward operation there is no need to stop the unit, in between.

UP : UP button is used to increase the turning speed of the wheel in rpm.

DOWN : DOWN button is used to decrease the turning speed of the wheel in rpm.

(*) and PRG buttons: These two buttons are used for time setting

The last operating speeds as well as the last operating cycle time is always kept in the memory even if when the instrument is turned-off completely.

D. OPERATION

1. Platen Installation

- Align the holes under the platen (polishing wheel) with the pins on the face plate.
- 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.
- Install the cover to protect the platen and bowl when not in use.



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.

2. Operation

Turn ON/OFF switch is at the rear side of the equipment. FORCIPOL units have quite simple operation. ON / OFF and WATER buttons are placed on the front plate. (Fig. 3)

FORCIPOL 1V, FORCIPOL 2V, FORCIPOL 300-1V,

Variable speed FORCIPOL units have Digital display and setting buttons on the front plate. The overload protection on the motor is managed by the speed controller. PC-board will shut off the power to the motor and after a short period, the instrument will be ready for operation again automatically. The rotational direction of the wheel can be selected as CW or CCW from the front panel.

3. Time Setting

- For setting time press (*) button while the STOP button is active.
- Select STT module.
- After that press PROGRAM button to see time adjusting mode.
- Adjust the required time by means of (^)UP and (v) DOWN buttons.
- Save the changes by pressing PROGRAM button and use * button to get out the programming mode.

E. SERVICE and MAINTENANCE

1. MAINTENANCE

1.1 Daily Maintenance

- Clean all accessible surfaces with a moist cloth.
- When using embedding resins, aluminium 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 bottom side of the PVC or Aluminium disc by a wet cloth to remove the particles, residual material etc. as shown in Fig.4.
- At the end of the working day, clean the bowl with water.



Fig.4.Cleaning of the Platen

1.2 Weekly Maintenance

- 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 water drain hole in the bowl with flowing water as shown in Fig.5.



Fig.5. Water Drain Hole

1.3 Yearly Maintenance

-The belt may need adjustment from time to time, the transmission being less efficient with inadequate belt tension:

- 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 (Fig.6.)

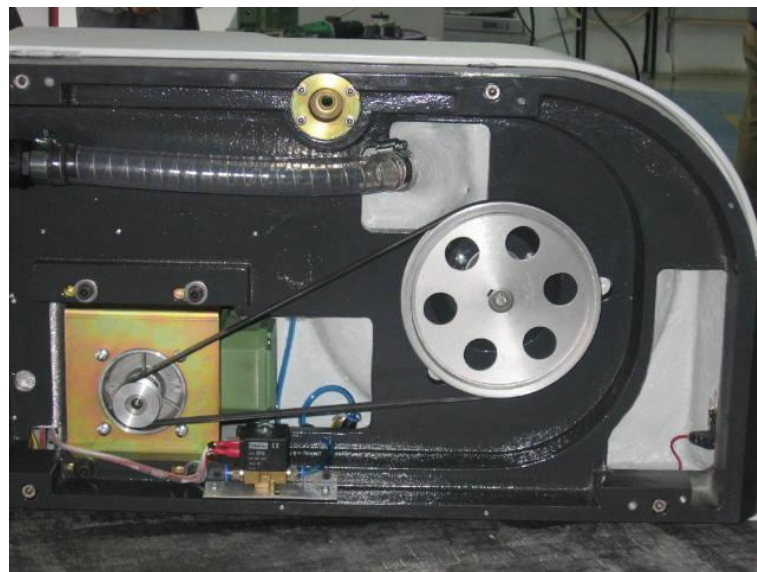


Fig.6.

- Check the water drain hose. If particles accumulated, dismantle the hoses, clean them and

2. Troubleshooting

Fault	Cause	Action
Power lamp is on. Display does not exist.	Data cable connection problem	Check the data cable between frequency converter and the display board.
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 at the bottom of the equipment	Water does not drain away	See above
Noise when the machine starts	The belt is not tight enough	The belt must be tightened.
The machine does not start	The main switch is OFF	Turn on the main switch.
	The fuses at the back are blown	Change the blown fuses
Cooling water does not flow	Water button is closed.	Turn the water button ON
	Valve on the water tap 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 face plate.

F. ACCESSORIES and CONSUMABLES

1. Accessories

200 MM APPLICATION	
31 01	PVC Wheel, 200 mm
31 02	Aluminium Wheel, 200 mm
31 53	Splash Guard, 200 mm
31 04	Paper Ring, 200 mm
31 06	Cover
31 10	Special Plexyglass Protection Unit, to be used with Forcipol 1V (To be ordered simultaneously together with the machine order)
250 MM APPLICATION	
31 21	PVC Wheel, 250 mm
31 22	Aluminium Wheel, 250 mm
31 63	Splash Guard, 250 mm
31 24	Paper Ring, 250 mm
31 06	Cover
31 10	Special Plexyglass Protection Unit, to be used with Forcipol 1V (To be ordered simultaneously together with the machine order)
300 MM APPLICATION	
31 31	PVC Wheel, 300 mm
31 32	Aluminium Wheel, 300 mm
31 73	Splash Guard, 300 mm
31 34	Paper Ring, 300 mm
31 36	Cover
31 11	Special Plexyglass Protection Unit, to be used with Forcipol 300-1V

 (To be ordered simultaneously together with the machine order)

2. Consumables

In order to obtain scratchfree 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 irregularation 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 for 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.

Paper Grinding Discs

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. So it does not curl as traditional SiC Paper and stays flat and ready for immediate or later reuse

Paper Grinding Discs, Plain Back (1 Pack 100 Pcs.)		
Order No:	Code	Description
38-020-060	DEMPAX	Ø 200 mm Disc, 60 Grit
38-020-120	DEMPAX	Ø 200 mm Disc, 120 Grit
38-020-180	DEMPAX	Ø 200 mm Disc, 180 Grit
38-020-240	DEMPAX	Ø 200 mm Disc, 240 Grit
38-020-320	DEMPAX	Ø 200 mm Disc, 320 Grit
38-020-400	DEMPAX	Ø 200 mm Disc, 400 Grit
38-020-600	DEMPAX	Ø 200 mm Disc, 600 Grit
38-020-800	DEMPAX	Ø 200 mm Disc, 800 Grit
38-020-1000	DEMPAX	Ø 200 mm Disc, 1000 Grit
38-020-1200	DEMPAX	Ø 200 mm Disc, 1200 Grit
38-020-2000	DEMPAX	Ø 200 mm Disc, 2000 Grit
38-020-3000	DEMPAX	Ø 200 mm Disc, 3000 Grit
38-020-S	DEMPAX	Ø 200 mm Mix Grinding Paper set (10 of each from 120 grit to 2000 grit)

38-040-060	DEMPAX	Ø 250 mm Disc, 60 Grit
38-040-120	DEMPAX	Ø 250 mm Disc, 120 Grit
38-040-180	DEMPAX	Ø 250 mm Disc, 180 Grit
38-040-240	DEMPAX	Ø 250 mm Disc, 240 Grit
38-040-320	DEMPAX	Ø 250 mm Disc, 320 Grit
38-040-400	DEMPAX	Ø 250 mm Disc, 400 Grit
38-040-600	DEMPAX	Ø 250 mm Disc, 600 Grit
38-040-800	DEMPAX	Ø 250 mm Disc, 800 Grit
38-040-1000	DEMPAX	Ø 250 mm Disc, 1000 Grit
38-040-1200	DEMPAX	Ø 250 mm Disc, 1200 Grit
38-040-2000	DEMPAX	Ø 250 mm Disc, 2000 Grit
38-040-3000	DEMPAX	Ø 250 mm Disc, 3000 Grit
38-040-S	DEMPAX	Ø 250 mm Mix Grinding Paper set (10 of each from 120 grit to 2000 grit)
38-050-060	DEMPAX	Ø 300 mm Disc, 60 Grit
38-050-120	DEMPAX	Ø 300 mm Disc, 120 Grit
38-050-180	DEMPAX	Ø 300 mm Disc, 180 Grit
38-050-240	DEMPAX	Ø 300 mm Disc, 240 Grit
38-050-320	DEMPAX	Ø 300 mm Disc, 320 Grit
38-050-400	DEMPAX	Ø 300 mm Disc, 400 Grit
38-050-600	DEMPAX	Ø 300 mm Disc, 600 Grit
38-050-800	DEMPAX	Ø 300 mm Disc, 800 Grit
38-050-1000	DEMPAX	Ø 300 mm Disc, 1000 Grit
38-050-1200	DEMPAX	Ø 300 mm Disc, 1200 Grit
38-050-2000	DEMPAX	Ø 300 mm Disc, 2000 Grit
38-050-3000	DEMPAX	Ø 300 mm Disc, 3000 Grit
38-050-S	DEMPAX	Ø 300 mm Mix Grinding Paper set (10 of each from 120 grit to 2000 grit)

Paper Grinding Discs, Foil Back, for CATCHY System (1 Pack 100 Pcs.)

38-020-060F	DEMPAX-F	Ø 200 mm Disc, 60 Grit
38-020-120F	DEMPAX-F	Ø 200 mm Disc, 120 Grit
38-020-180F	DEMPAX-F	Ø 200 mm Disc, 180 Grit
38-020-240F	DEMPAX-F	Ø 200 mm Disc, 240 Grit
38-020-320F	DEMPAX-F	Ø 200 mm Disc, 320 Grit
38-020-400F	DEMPAX-F	Ø 200 mm Disc, 400 Grit
38-020-600F	DEMPAX-F	Ø 200 mm Disc, 600 Grit
38-020-800F	DEMPAX-F	Ø 200 mm Disc, 800 Grit
38-020-1000F	DEMPAX-F	Ø 200 mm Disc, 1000 Grit
38-020-1200F	DEMPAX-F	Ø 200 mm Disc, 1200 Grit
38-020-2000F	DEMPAX-F	Ø 200 mm Disc, 2000 Grit
38-040-060F	DEMPAX-F	Ø 250 mm Disc, 60 Grit
38-040-120F	DEMPAX-F	Ø 250 mm Disc, 120 Grit
38-040-180F	DEMPAX-F	Ø 250 mm Disc, 180 Grit
38-040-240F	DEMPAX-F	Ø 250 mm Disc, 240 Grit
38-040-320F	DEMPAX-F	Ø 250 mm Disc, 320 Grit
38-040-400F	DEMPAX-F	Ø 250 mm Disc, 400 Grit
38-040-600F	DEMPAX-F	Ø 250 mm Disc, 600 Grit

38-040-800F	DEMPAX-F	Ø 250 mm Disc, 800 Grit
38-040-1000F	DEMPAX-F	Ø 250 mm Disc, 1000 Grit
38-040-1200F	DEMPAX-F	Ø 250 mm Disc, 1200 Grit
38-040-2000F	DEMPAX-F	Ø 250 mm Disc, 2000 Grit
38-050-060F	DEMPAX-F	Ø 300 mm Disc, 60 Grit
38-050-120F	DEMPAX-F	Ø 300 mm Disc, 120 Grit
38-050-180F	DEMPAX-F	Ø 300 mm Disc, 180 Grit
38-050-240F	DEMPAX-F	Ø 300 mm Disc, 240 Grit
38-050-320F	DEMPAX-F	Ø 300 mm Disc, 320 Grit
38-050-400F	DEMPAX-F	Ø 300 mm Disc, 400 Grit
38-050-600F	DEMPAX-F	Ø 300 mm Disc, 600 Grit
38-050-800F	DEMPAX-F	Ø 300 mm Disc, 800 Grit
38-050-1000F	DEMPAX-F	Ø 300 mm Disc, 1000 Grit
38-050-1200F	DEMPAX-F	Ø 300 mm Disc, 1200 Grit
38-050-2000F	DEMPAX-F	Ø 300 mm Disc, 2000 Grit
CATCHY System Accessories		
39-083-200	CFP	Ø 200 mm, Catchy Fix Plate (1 pcs)
39-083-250	CFP	Ø 250 mm, Catchy Fix Plate (1 pcs)
39-083-300	CFP	Ø 300 mm, Catchy Fix Plate (1 pcs)

MAGNETO Diamond Grinding Discs

MAGNETO I Diamond Grinding Disc for Planar Grinding and MAGNETO II Diamond Grinding Disc for fine grinding offer wonderful advantages:

- 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 scratchfree surface.
- Very short preparation time.

MAGNETO Diamond Coarse Grinding Discs (1 Pc. Per Pack)		
Order No	Code	Description
38-020-054	MAGNETO I	Ø200 MAGNETO Diamond Disc, 54 mic.
38-040-054	MAGNETO I	Ø250 MAGNETO Diamond Disc, 54 mic.
38-050-054	MAGNETO I	Ø300 MAGNETO Diamond Disc, 54 mic.
38-020-018	MAGNETO II	Ø200 MAGNETO Diamond Disc, 18 mic.
38-040-018	MAGNETO II	Ø250 MAGNETO Diamond Disc, 18 mic.
38-050-018	MAGNETO II	Ø300 MAGNETO Diamond Disc, 18 mic.
MAGNETO Diamond Fine Grinding Discs (1 Pc. Per Pack)		
38-020-006	MAGNETO III	Ø200 MAGNETO Diamond Disc, 6 mic.
38-040-006	MAGNETO III	Ø250 MAGNETO Diamond Disc, 6 mic.
38-050-006	MAGNETO III	Ø300 MAGNETO Diamond Disc, 6 mic.
38-020-003	MAGNETO IV	Ø200 MAGNETO Diamond Disc, 3 mic.
38-040-003	MAGNETO IV	Ø250 MAGNETO Diamond Disc, 3 mic.
38-050-003	MAGNETO IV	Ø300 MAGNETO Diamond Disc, 3 mic.

COMPO Fine Grinding Discs

The COMPO Grinding discs are non-diamond grinding discs developed to be used with diamond suspensions or Duo products. The honeycomb cell structure allows the uniform, regular distribution of the periodically pulverized diamond abrasive suspension. The use of the abrasive suspension is optimized, thereby reducing the diamond product's consumption.

COMPO H & S Fine Grinding Discs

- For single step fine grinding
- Can be used with diamond suspensions or 2 in 1 duo diamond products
- Shorter preparation time
- COMPO-H is used for grinding of materials >200 HV
- COMPO-S is used for grinding soft and non-ferrous materials
- Improves efficiency by reducing processing steps
- Provides optimum flatness and high edge retention

COMPO Composite Fine Grinding Discs (1 Pc. Per Pack)		
Order No	Code	Description
40-010-200	COMPO-H	Ø200 COMPO Composite Grinding Disc - for Hard Materials
40-010-250	COMPO-H	Ø250 COMPO Composite Grinding Disc - for Hard Materials
40-010-300	COMPO-H	Ø300 COMPO Composite Grinding Disc - for Hard Materials
40-020-200	COMPO-S	Ø200 COMPO Composite Grinding Disc - for Soft & NF Materials
40-020-250	COMPO-S	Ø250 COMPO Composite Grinding Disc - for Soft & NF Materials
40-020-300	COMPO-S	Ø300 COMPO Composite Grinding Disc - for Soft & NF Materials

Polishing Clothes

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.
- **The 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	Description
39-013-200	METAPO-P	Ø 200 mm, for 6 micron diamonds
39-033-200	METAPO-B	Ø 200 mm,. for 3-1 micron diamonds
39-043-200	METAPO-V	Ø 200 mm, for 1-0,1 micron diamonds or alumina
39-015-200	FEDO-6J	Ø 200 mm, for 6 micron diamonds
39-025-200	FEDO-3	Ø 200 mm, for 3 micron diamonds
39-065-200	FEDO-1	Ø 200 mm, for 1 micron diamonds
39-055-200	FEDO-1N	Ø 200 mm, for 0,25 micron diamonds

39-085-200	COLLO	Ø 200 mm, for colloidal silica
39-090-200	PETRI	Ø 200 mm, for petrography
39-005-200	NOWO	Ø 200 mm, for 6-1 micron diamonds
39-200-SPC	MIX	Ø 200 mm, (1 of each METAPO-P, METAPO-B, FEDO-3, FEDO-1, FEDO-1N)
39-013-250	METAPO-P	Ø 250 mm, for 6 micron diamonds
39-033-250	METAPO-B	Ø 250 mm, for 3-1 micron diamonds
39-043-250	METAPO-V	Ø 250 mm, for 1-0,1 micron diamonds or alumina
39-015-250	FEDO-6J	Ø 250 mm, for 6 micron diamonds
39-025-250	FEDO-3	Ø 250 mm, for 3 micron diamonds
39-065-250	FEDO-1	Ø 250 mm, for 1 micron diamonds
39-055-250	FEDO-1N	Ø 250 mm, for 0,25 micron diamonds
39-085-250	COLLO	Ø 250 mm, for colloidal silica
39-090-250	PETRI	Ø 250 mm, for petrography
39-005-250	NOWO	Ø 250 mm, for 6-1 micron diamonds
39-250-SPC	MIX	Ø 250 mm, (1 of each METAPO-P, METAPO-B, FEDO-3, FEDO-1, FEDO-1N)
39-013-300	METAPO-P	Ø 300 mm, for 6 micron diamonds
39-033-300	METAPO-B	Ø 300 mm, for 3-1 micron diamonds
39-043-300	METAPO-V	Ø 300 mm, for 1-0,1 micron diamonds or alumina
39-015-300	FEDO-6J	Ø 300 mm, for 6 micron diamonds
39-025-300	FEDO-3	Ø 300 mm, for 3 micron diamonds
39-065-300	FEDO-1	Ø 300 mm, for 1 micron diamonds
39-055-300	FEDO-1N	Ø 300 mm, for 0,25 micron diamonds
39-085-300	COLLO	Ø 300 mm, for colloidal silica
39-090-300	PETRI	Ø 300 mm, for petrography
39-005-300	NOWO	Ø 300 mm, for 6-1 micron diamonds
39-300-SPC	MIX	Ø 300 mm, (1 of each METAPO-P, METAPO-B, FEDO-3, FEDO-1, FEDO-1N)

Diamond Products

Diamond Pastes, Monocrystalline		
Order No	Code	Description
39-301-M	DIAPAT-M	Diamond Paste, 0.25 Mic., 10gr. syringe
39-311-M	DIAPAT-M	Diamond Paste, 1 Mic., 10gr. syringe
39-321-M	DIAPAT-M	Diamond Paste, 3 Mic., 10gr. syringe
39-331-M	DIAPAT-M	Diamond Paste, 6 Mic., 10gr. syringe
39-341-M	DIAPAT-M	Diamond Paste, 9 Mic., 10gr. syringe
Diamond Pastes, Polycrystalline		
39-301-P	DIAPAT-P	Diamond Paste, 0.25 Mic., 10gr. syringe
39-311-P	DIAPAT-P	Diamond Paste, 1 Mic., 10gr. syringe
39-321-P	DIAPAT-P	Diamond Paste, 3 Mic., 10gr. syringe
39-331-P	DIAPAT-P	Diamond Paste, 6 Mic., 10gr. syringe
39-341-P	DIAPAT-P	Diamond Paste, 9 Mic., 10gr. syringe
Diamond Suspensions, Monocrystalline		
39-400-M	DIAPAT-M	Diamond Suspension 0.25Mic. 250 ml, bottle with sprayer
39-410-M	DIAPAT-M	Diamond Suspension 1 Mic. 250 ml, bottle with sprayer

39-420-M	DIAPAT-M	Diamond Suspension 3 Mic. 250 ml, bottle with sprayer
39-430-M	DIAPAT-M	Diamond Suspension 6 Mic. 250 ml, bottle with sprayer
39-440-M	DIAPAT-M	Diamond Suspension 9 Mic. 250 ml, bottle with sprayer
Diamond Suspensions, Polycrystalline		
39-400-P	DIAPAT-P	Diamond Suspension 0.25Mic. 250 ml, bottle with sprayer
39-410-P	DIAPAT-P	Diamond Suspension 1 Mic. 250 ml, bottle with sprayer
39-420-P	DIAPAT-P	Diamond Suspension 3 Mic. 250 ml, bottle with sprayer
39-430-P	DIAPAT-P	Diamond Suspension 6 Mic. 250 ml, bottle with sprayer
39-440-P	DIAPAT-P	Diamond Suspension 9 Mic. 250 ml, bottle with sprayer
Diamond Two in One Products, Monocrystalline		
39-510-M	DUOPAT-M	A perfect mixture of 1 mic. Diamond suspension & Diamond Lubricant 500 ml, bottle with sprayer
39-520-M	DUOPAT-M	A perfect mixture of 3 mic. Diamond suspension & Diamond Lubricant 500 ml, bottle with sprayer
39-530-M	DUOPAT-M	A perfect mixture of 6 mic. Diamond suspension & Diamond Lubricant 500 ml, bottle with sprayer
Diamond Lubricant		
39-502	DIAPAT	Diamond Lubricant, Water-based, 1.0 lt., bottle

Alumina Products

Alumina Suspensions		
39-200	ALU-MiK	Alumina Susp. 0.05 Mic. 1.0 lt., bottle
39-210	ALU-MiK	Alumina Susp. 0.3 Mic. 1.0 lt., bottle
39-220	ALU-MiK	Alumina Susp. 1.0 Mic. 1.0 lt., bottle
Alumina Powder		
39-100	ALU-MiK	Alumina Powder 0.05 Mic. 1000gr.
39-110	ALU-MiK	Alumina Powder 0.3 Mic. 1000gr.
39-120	ALU-MiK	Alumina Powder 1.0 Mic. 1000gr.
Coloidal Silica		
39-600	COL-K(NC)	Colloidal Silica (1 lt), bottle

G. TECHNICAL DOCUMENTATION

1. Recommended Spare Part List

ORDER CODE	DESCRIPTION
GR 0670-01	MAIN SPINDLE GROUP, FRP
YM 0280-01	FRONT PANEL CONTROL BOARD AND DISPLAY KEYBOARD 230V
YM 0306-00	Electric motor 380V 71M2B

YM 0320-01	FREQUANCY CONVENTOR
YM 5080-00	Ball valve 1/4", Blue
YM 5081-00	Nipple PSM G02-G02 (1BB G02-G029-1/4"X1/4" ME
YM 0510-00	Emergency Stop, Micracut 150
YM 0514-00	Rocker switch 220V 16A, ON/OFF
YM 0533-00	Lamp 10 24VAC, Yellow
YM 0555-00	SIEVE, DRAIN
YM 0846-02	TRANSFORMER, FORCIPOL
YM 1070-00	Solenoid 24 V DC
YM 2298-00	Bearing 6203 2RSR
YM 2820-00	CAPACITOR 2200MF 35V
YM 3609-00	BELT PJ 965 5, OUTER
YM 3610-00	BELT PJ 1016 5, OUTER
YM 6284-00	MOTOR, 0.75KW (B14 FLANGE)

2. Customer Service

Our factory-trained assembly personal are at your disposal for customer service.
 Please contact one of the following addresses:

METKON OFFICE ADDRESSES

Head Quarter

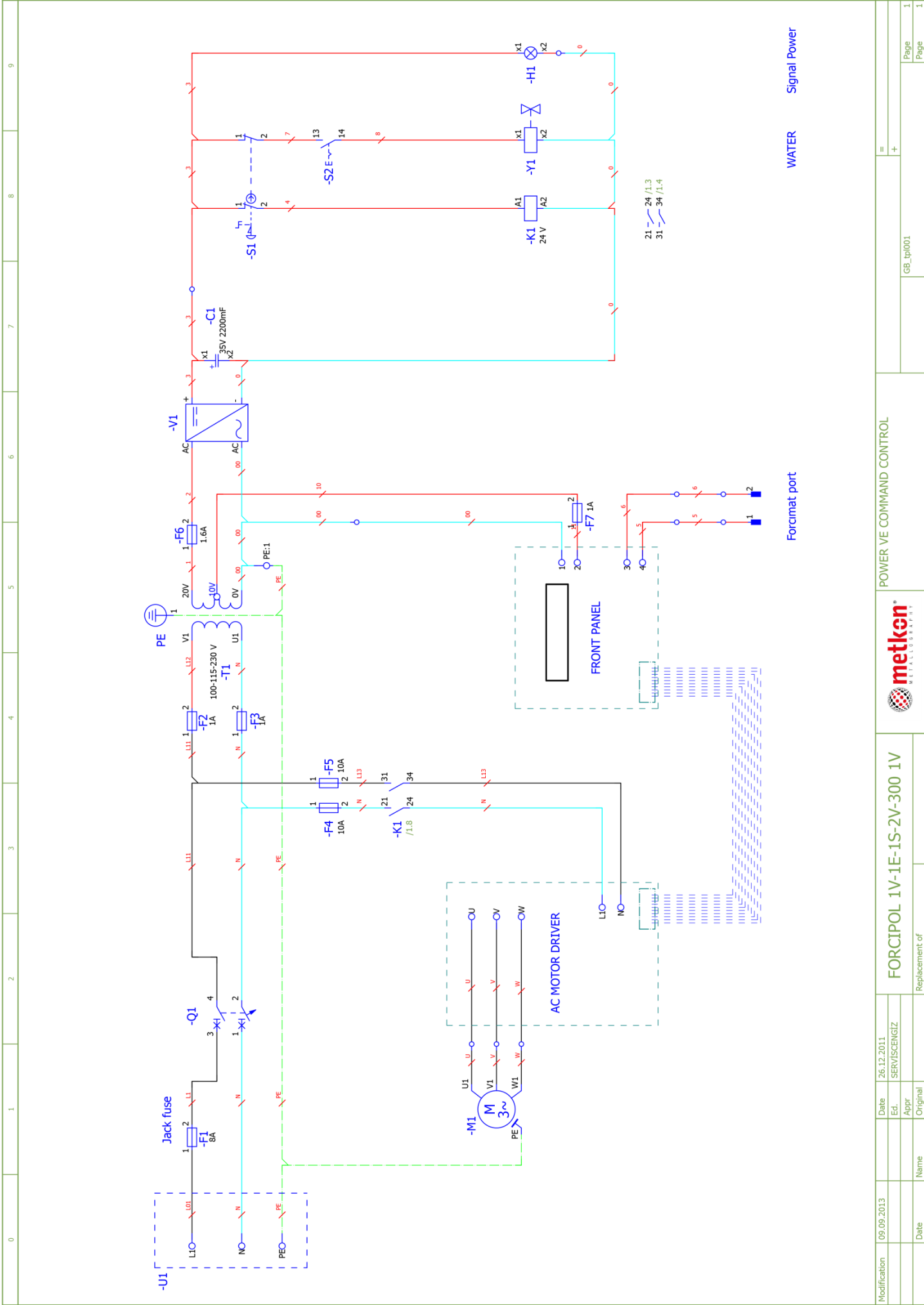
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3. Electrical Wiring Diagrams



Modification	09.09.2013	Date	26.12.2011	FORCIPOL 1V-1E-1S-2V-300 1V	POWER VE COMMAND CONTROL	
Ed.			SERVISCENGIZ			
Appr.						
Date				Replacement of		
Name						
Page					GB_tp001	1
Page						1



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Technology behind Specimen

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