

MICROBLASTER **MICRA Evoluzione**

 **USER AND MAINTENANCE MANUAL**



1. DESCRIPTION

MICRA Evoluzione is a sandblasting unit designed for microblasting operations in the Dental and Jewellery field.

The main features of the machine are: the ergonomic layout of the working chamber, the safety of use, and the trouble-free structure of the mechanical installation. **MICRA Evoluzione** is equipped with useful accessories and ensures a fast, practical and accurate work. The unit consists of 2 **EASY tanks**, featuring a pressure release system and an instant stop of the blasting jet. The unit can thus operate with **two different abrasive media**.

The sandblasting process originates toxic dust which must not be inhaled; for this reason, **it is absolutely forbidden to operate the machine if a proper suction system has not been previously connected to the sandblaster.**

DENTALFARM has developed the so-called W.A.F.I.S. (WATER AIR FILTERING SYSTEM), a patented solution which eliminates airborne dust thanks to the combined action of water and air pressure, in compliance with hygiene and safety regulations. The WAFIS system can be easily connected on the top left side of the machine and starts automatically when the sandblaster is switched on.

DENTALFARM ranges also include **PRO-3** and **PRO-3 Shake** suction units, which can be easily connected to any sandblasting machine.

2. TECHNICAL REFERENCE REGULATIONS AND TEST PROCEDURES

The appliance is mass-manufactured by DENTALFARM in compliance with technical and safety rules in force, as provided for by the Machinery Directive 2006/42 EEC.

Careful inspection and full routine testing is carried out singularly on each machine which is furtherly processed by an automatic testing installation assuring compliance with the fixed limits

DEMOLITION AND WASTE DISPOSAL

According to International regulations, this unit has been classified as AEE (electric and electronic device, whose correct operation depends on electric currents and electromagnetic fields) and as a consequence, at the end of its lifetime, it can not be treated as normal waste material but it must be disposed separately, complying with Directive 2002/96/EEC.



3. INSTALLATION INSTRUCTIONS

ATTENTION

Installation of this machine is quite easy but must be carried out paying utmost attention in order to avoid any mistake which may originate problems, inconveniences and even damages during operation.

1. Place the machine on a proper workbench, which must be stable and strong enough to hold the machine safely. Keep a sufficient distance (10/15 cm) on the right side of the machine for the pipes and the feeding cables, as well as in order to have access to the shutter and the filter. If a built-in WAFIS system is present, preferably choose a workbench and a position (for instance on the bench edge) allowing the exhaust pipe to fall perpendicularly into the collection tank.



2. Insert the quick clutch fitting on the male intake (A) located on the right side of the unit and connect the pneumatic feeding pipe (polyethylene or rilsan, with diameter $\varnothing$ 8x6) to the pipe-fitting. It is also possible to use a $\varnothing$ 12x6 elastic feeding pipe, by using the fitting supplied with the unit.
3. Connect the electric feeding cable to the pre-fitted electric socket on the unit (B) and plug into an approved 220v AC - 50Hz network socket with ground connection.
4. Install the preferred suction system; WAFIS, PRO-3 or any other. The built-in WAFIS should be installed on the top left side of the unit: unscrew the 4 screws fixing the black collection intake and mount the WAFIS, unscrew the cap (C) and replace it by the pipe-fitting delivered in the package, put together with the other portion of pipe and plug the feeding cable into the electric socket (D). PRO-3 suction units can be connected in two different ways: **on**



the top left to extract dust particles only; in this case, insert the piping into the black collection intake; alternatively, **on the rear bottom** of the working chamber: in this case, all the exhausted abrasive will be extracted. In both

cases, remove the protection caps from their holes.

Any other suction system can be connected to the black collection intake by means of flexible piping; the inside manifold fits a $\varnothing$ 30mm pipe, the outside manifold fits a $\varnothing$ 40mm pipe.



5. Adjust the air flow to avoid the machine being under pressure. Slightly turn the mobile section of the adjusting valve when the suction system is on and stop when you notice that the gloves are still slightly inflated.
6. **Microblasting tanks (EASY tanks) are identical in layout, but can feature different components (calibrated metering system) and external nozzles which vary according to the abrasive mixture they can supply;** it is therefore necessary to observe the indications written on the identifying labels. Should you need to use an abrasive compound of different grainsize (not listed below), it is possible to request the assembly components and to replace them.

The unit can thus operate with **three different abrasive media**. It is also possible to upgrade the unit to 3 or 4 microblasting tanks, thus offering **the possibility to work with 4 different abrasive media**.

To pour abrasive media into the tank, unscrew the tank cap and fill in the tank till approximately 2/3 of its capacity (respect the maximum level marked on the label); then close the tank.

Strictly observe the following parameters, based on the abrasive grainsize.				
TREATMENT	TANK (dosing system)	RECOMMENDED ABRASIVE	NOZZLE DIAMETER	PRESSURE
Surface roughness on metals for composites	A1072G (coarse)	AP-060 Orange label (AL2O3 60 - 250 μ)	2,0 mm (RMN046)	4 BAR
Surface roughness on metals for composites	A1072M (medium)	AP-120 Pink label (AL2O3 120 - 105 μ)	1,2 mm (RMN043)	3/4 BAR
Surface roughness on metals for ceramic or resin	A1072M (medium)	AP-150 Green label (AL2O3 150 - 95 μ)	0,8 mm (RMN044)	3/5 BAR
Surface roughness on metals for ceramic	A1072M (medium)	AP-180 Red label (AL2O3 180 - 80 μ)	0,8 mm (RMN044)	3/5 BAR
Sculpture on ceramic	A1072S (fine)	AP-270 Yellow label (AL2O3 270 - 50 μ)	0,5 mm (RMN045)	3/5 BAR
Satin-finishing on any type of metal	A1072M (medium)	AP-090 MICROBLAST White label	Higher precision 0,8mm Higher speed 1,2 mm	3/4 BAR 4/5 BAR

A longer nozzle with $\varnothing$ 0,8 mm size (RMN044L) is available on request to carry out cleaning operations on ceramic prosthesis without metal support.

<u>!! WARNING:</u>	Very fine abrasives are highly sensitive to moisture and must be stored in a dry place, after the can has been accurately sealed and the dessiccant packet has been duly introduced into the can (if needed, replace them periodically). When filling the abrasive tanks, check the condition of the abrasive product; if the moisture content is too high (bad flowability and presence of clots) it is recommended to heat the abrasive in order to allow it to dry up completely. It is also of utmost importance to check the condition of the compressed air which in no way must contain evidence of moisture or of any polluting agents (oil, grease or rust).
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4. INSTRUCTIONS FOR USE

- Press the switch to illuminate the working chamber and feed the operating controls.

 <u>ATTENTION:</u>	May we remind that the sandblasting process will start only provided the suction system is operating – as a consequence, the filtering system MUST always be installed and OPERATED BEFORE you start to work.
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- Lift the window to introduce the pieces to be treated into the working chamber.
- Turn the selector switch knob to choose the type of blasting procedure you prefer – references marked on the label are herewith specified.

POSITION OF THE POINTER	SELECTED FUNCTION
GREEN	MICROBLASTING FROM THE GREEN TANK
BLUE	MICROBLASTING FROM THE BLUE TANK (if any)
RED	MICROBLASTING FROM THE RED TANK (if any)
WHITE	MICROBLASTING FROM THE WHITE TANK

- Press the foot control: air enters the selected tank putting it under pressure, it gets mixed with abrasive micrograins and will then be propelled by the spraying nozzle.
- Adjust the working pressure by means of the pressure adjusting device located next to the pressure gauge: lift the knob and turn it rightwards (to increase) or leftwards (to decrease). To lock the knob, push the knob back down.

The microprojectors are ideally positioned in the centre of the working chamber to facilitate use with both hands. We recommend to put back them in place on their support at the end of the work.

The window is made of anti-scratch polycarbonate material, resisting to the rebounding abrasive grains. We recommend to use a soft cloth to clean it and to remove the dust from inside and the use of protection screens (code 1000533).

5. MAINTENANCE

Many of the components of any sandblasting machine are subject to wear: this is caused by the circulation of abrasive media; the instructions for a careful maintenance of the machine as well as the operations to replace the damaged or worn out parts are specified here below.

 <u>ATTENTION:</u>	Before carrying out any maintenance operation inside the working chamber or technical repair of the connections, remove the feeding cable both from network socket and from the rear of the machine; in such a way, both the electric and pneumatic installation of the unit will be fully disconnected. Should you have any doubts or difficulties, please contact our Technical Service to avoid any risks or damages.
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Cleaning of the 5my filter

A 5my filter, fitted on the right side of the sandblaster, prevents fine dust from damaging internal components. Remove the inspection cap every 2-3 months and blow the filter with compressed air to clean it from dust sediment.

Replacement of the polycarbonate window

Although the window is anti-scratch, it may be damaged by an extensive use (or a bad maintenance). Replacement is very simple: locate the screws which fix the window to the hinges and unscrew them.

Replacement of the plastic protection screens of the glass window: remove the fixing clips, clean accurately the glass and place a new protection screen.

Replacement of gloves

The gloves are made of highly resistant and elastic latex, but are subject to the natural ageing of rubber and to the action of sweat (produced by hands). This cause them to dry up. To replace them, unscrew the flange screws and fit a new pair of gloves into the proper seat.

Replacement of nozzles

Nozzles of the microblasting tanks are also subject to wear and need to be replaced. To do this, unscrew the ring nut and assemble the new nozzle.

Replacement of abrasive media

To replace used abrasive media, pull the machine forward, lift the internal filtering grid, remove the cap from the bottom of the working chamber and let abrasive flow out, collecting it into a proper container.

Replacement of parts subject to wear (pipe, pipe-fittings, microprojector body)

The polyurethan pipe, the connection fitting and the microprojector body where abrasive flows will inevitably wear out and need to be replaced regularly. To replace the microprojector body, follow the same instructions specified for the nozzle; to replace pipes or pipe-fittings, capsize the unit and work under the container. It is also possible to disconnect each tank for easier operation, simply unscrewing the nuts fixing it to the housing.

Replacement of tank internal components

Should it be necessary to replace the tank internal components like joints, air injectors, abrasive outlet pipe, please contact our Technical Service.

Removal of a microblasting tank for repair purposes

The new tank units have been studied to facilitate your task during installation and removal.

1. Unscrew the feeding pipe ring nut and disconnect the pipe
2. Unscrew the plastic ring nut and remove the microprojector pipe
3. Unscrew the two nuts fixing the tank to the support, and unclutch the tank.

Procedure for the installation of an additional Modulo tank

- Disconnect the feeding cable and the quick clutch pipe-fitting of the compressed air
- Remove the rear panel (unscrew the 2 fixing screws and pull out the side slots)
- Remove the sheet steel closing the tank seat by making it rotate on itself
- Fix the tank in place by means of the two nuts (adjust it so as to have the blue plastic pipe-fitting towards the centre of the machine)
- Remove the cap from a free pipe-fitting on the selector and introduce the air inlet pipe
- From inside the working chamber, loosen the screw fixing the microprojector support lower part and rotate it in order to locate the set up holes
- Drill the membrane of the rubber joint and let the free end of the handpiece pipe pass through
- Connect the handpiece pipe to the blue pipe-fitting under the tank..

6. TROUBLESHOOTING

Problem: THE MACHINE DOES NOT START	
Possible cause	Remedy
Lack of tension	Check: - magnetothermic switch - socket supply switch - fuses of the supply board
Lack of distribution in the machine	Check: - connection to network socket - network fuse Should this malfunction repeat, contact our TECHNICAL SERVICE.

Problem: NO LIGHTING	
Possible cause	Remedy
Bad electrical connection	Check that the electrical plug is correctly plugged in.
Shutter is damaged	Check connections and operation (some dust could have oxidized contacts so that they seized up). Try to blow with compressed air and replace if needed.

Problem: NO AIR IS COMING OUT

Possible cause	Remedy
Bad pneumatic connection	Check connection to the compressor.
Internal pipes are clogged	Check connections and condition of pipes up to their end (nozzles).
Air filter is clogged	Check and disassemble, if needed, the moisture collection glass and replace the internal filtering element.

Problem: INTERNAL AIR LEAKAGE

Possible cause	Remedy
Condensate discharge on the filtering unit.	The condensate discharge is carried out by the lifting of a ball cock. A sufficient level of pressure must be provided for the valve to close.
Internal pipes are disconnected	Check condition of the piping. Polyethylene pipes might not be perfectly calibrated; try to cut out a small portion from the end of the pipe and insert it into the pipe-fitting; if needed, replace the pipe.

Problem: NO ABRASIVE COMING OUT, INTERNAL LEAKAGE.

Possible cause	Remedy
Worn pipe-fittings or punched microprojector pipe.	The components of the circuit located after the tank – where abrasive flows - are subject to wear. It is recommended to prevent any possible break by replacing these components each 6-12 months, according to the workload.

Problem: THE BLASTING FLOW IS IRREGULAR

Possible cause	Remedy
Nozzle is clogged or worn out.	Unscrew nozzle fixing nut, clean both the hole and microprojector components (especially the thread) - re-assemble. If necessary, replace the damaged parts.
Microprojector feeding pipe is worn out, bent or clogged	If the pipe is worn out or bent, replace it. If it is clogged, disassemble the nozzle and let air come out.
The abrasive mixture is too rich in aluminium oxide, i.e. loss of sharpness	Abrasive container is overfilled, discharge it. Pipe bending under the containers may collect abrasive at the end of the work, when the valve releases pressure; it is possible to limit this reaction reducing pipe bending.
Damp aluminium oxide causing bad flowing.	Empty the tank, possibly disconnect it from the machine and turn it upside down, blow with clean air in order to dry up all the internal pipings, then heat and dry up the abrasive product and fill in again.

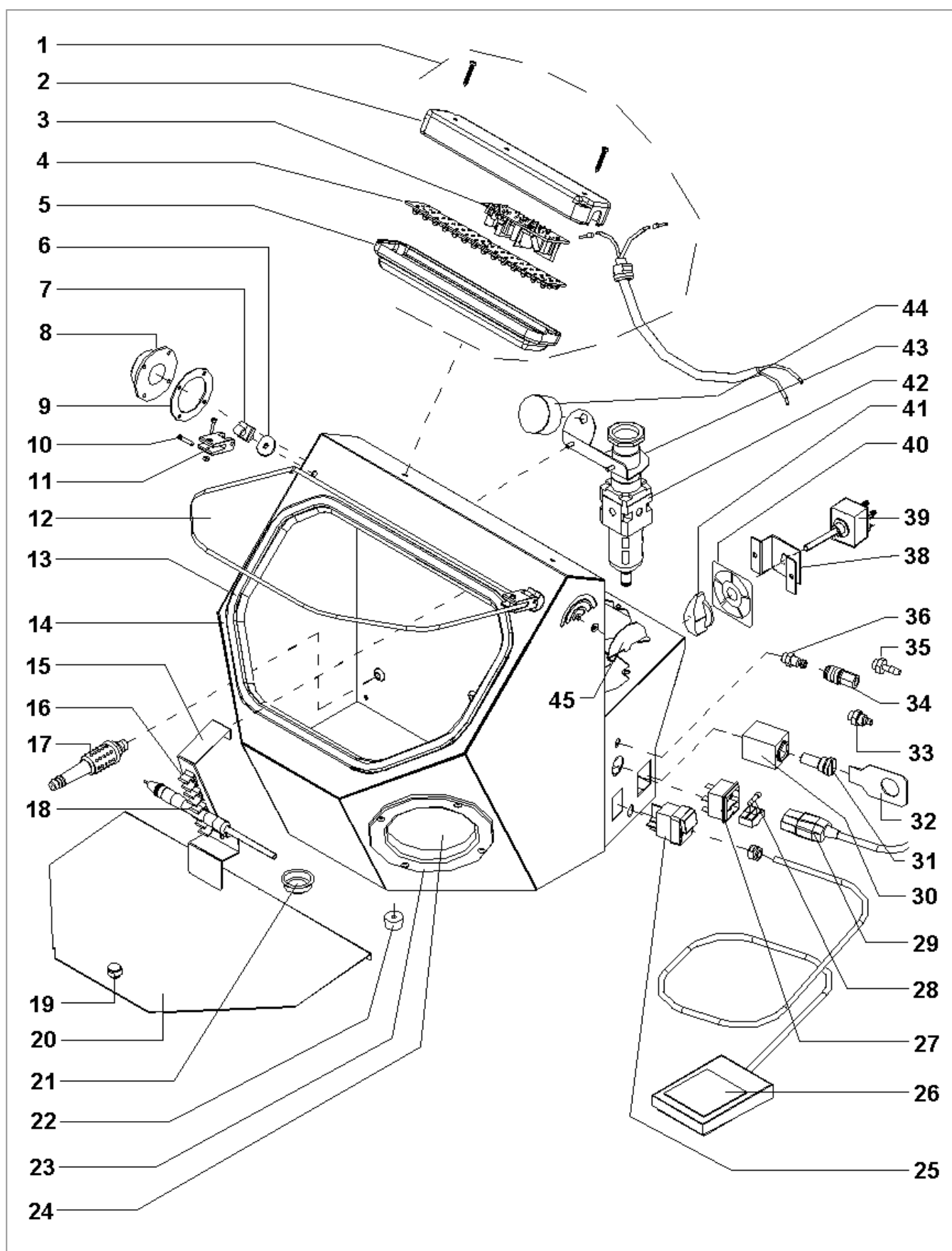
Compressed air filled with condensation or oily particles.	Fine abrasive compounds are particularly sensitive to moisture and, as mechanic pickling agents, they capture polluting agents. Therefore it is important to protect the efficiency of the product by installing adequate filtering and drying systems on the air installation.
Grainsize of the aluminium oxide is not compatible with the abrasive metering system inside the tank.	Verify compliance with the indications printed on the tank label and with the comparative tables (abrasive grainsize / nozzle diameter / internal dosing system).
The blasting flow is not powerful enough	Unsufficient pressure. The 5my filter is clogged, unscrew the inspection cap and clean it. The solenoid valve is dirty: get in touch with Dentalfarm Technical Dept.

Problem: ABRASIVE TANK IS NOT UNDER PRESSURE

Possible cause	Remedy
Joints are not perfectly airtight	Check whether cap has been correctly tightened. Disconnect the tank from the machine, disassemble and clean.

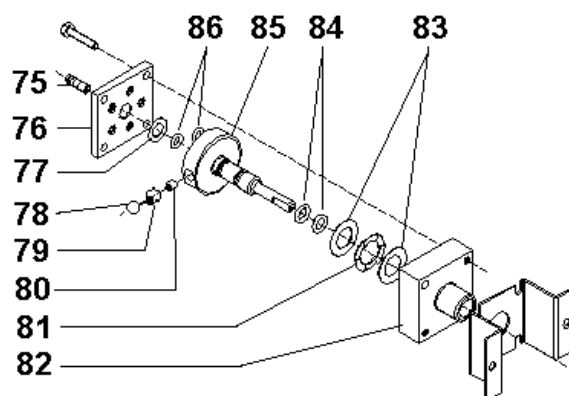
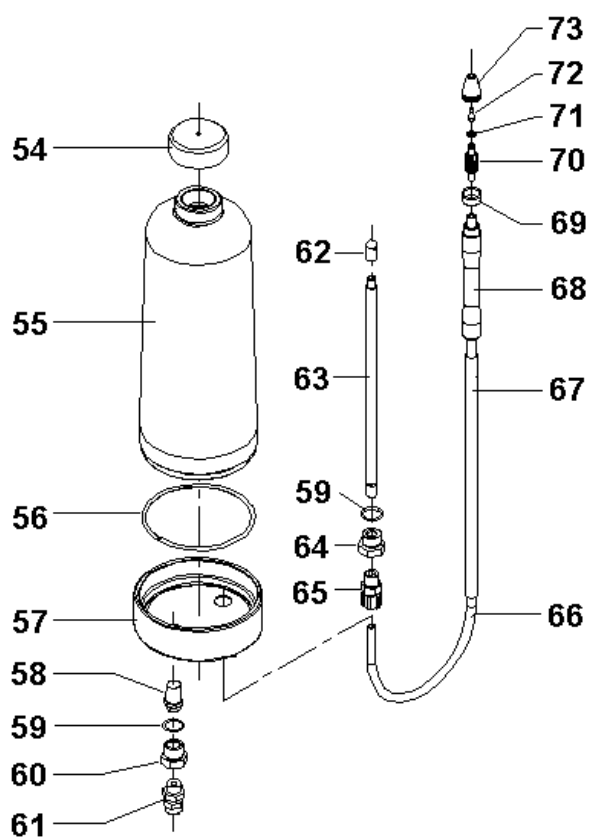
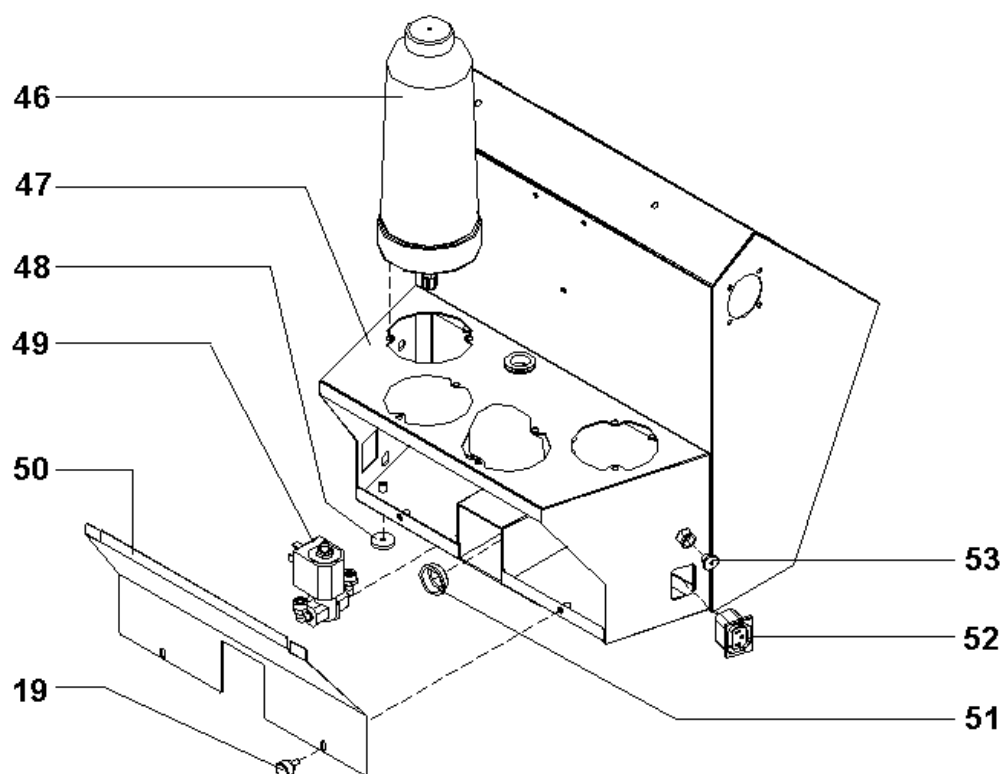
7. EXPLODED DRAWING AND SPARE PART LIST MICRA EVO table 1

POS.	CODE	DESCRIPTION
1	1000534	COMPLETE LED LIGHTING SYSTEM
2	1072037	LIGHTING SYSTEM BASE
3	1072040	ELECTRONIC BALLAST
4	1072041	42 LED CIRCUIT
5	1072038	LIGHTING SYSTEM COVER
6	1069010	PVC WASHER FOR HINGE
7	1054019A6	HINGE FIXED PART HOLE 6mm
8	RWA007	SUCTION HOSE
9	RWA006	JOINT FOR SUCTION HOSE
10	RMBL028	PIVOT FOR HINGE
11	RCB016A	HINGE MOVABLE PART
12	1073010	MICRA POLYCARBONATE WINDOW
	1000533	PACK OF 6 GLASS PROTECTION SCREEN
	RCB042	PROTECTION SCREEN FIXING CLIPS
13	1064015	GLASS JOINT FOR SANDBLASTERS
14	1073001	MICRA WORKING CHAMBER
15	1073011	MICROPROJECTOR SUPPORT FOR 4 MICROPROJECTORS - MICRA
16	NEA123	CLIP
17	NPS001	AIR BLOWER
18	1000605	COMPLETE MICROPROJECTOR (specify color and nozzle)
19	NVT151	MALE KNOB M4x10
20	1073006	ABRASIVE FILTERING GRID
21	NVP030	PLASTIC CAP D.=31
22	NVG049	RUBBER FOOT H=19
23	RCB017	GLOVE FLANGE
24	RMA103	PAIR OF LATEX GLOVES
25	NEC018	PROTECTED BIPOLAR SWITCH
26	NEC050	ELECTRIC FOOT CONTROL
27	NEA046	PLUG AND FUSEHOLDER
28	NEA071	FUSE 5x20 - 6,3 A
29	NEV013	ELECTRIC CABLE WITH 3x1 PIN/PLUG
30	1072008	FILTER CONTAINER
31	1072009	CAP WITH 5MY FILTER
32	1072034	KEY FOR 5MY FILTER - BASE/MICRA
33	NPR119	STRAIGHT MALE PIPE-FITTING 8x6 1/8
34	NPR303	RAPID FEMALE CLUTCH 1/8
35	NPR220	PIPE-FITTING 7 1/8
36	NPR304	RAPID MALE CLUTCH 1/8
38	1069003	SELECTOR SWITCH HOLDER
39	1000531	5-WAY SELECTOR SWITCH
40	1073008E	SELECTOR LABEL
41	NVT141	GRADUATED KNOB
42	NPS029	FILTER + REDUCER 1/8
43	1072026	REDUCER AND PRESSURE GAUGE ASSEMBLY BASE/MICRA
44	NPS040	0-6 1/8 PRESSURE GAUGE
45	1072033	CAP FOR SUCTION - BASE/MICRA

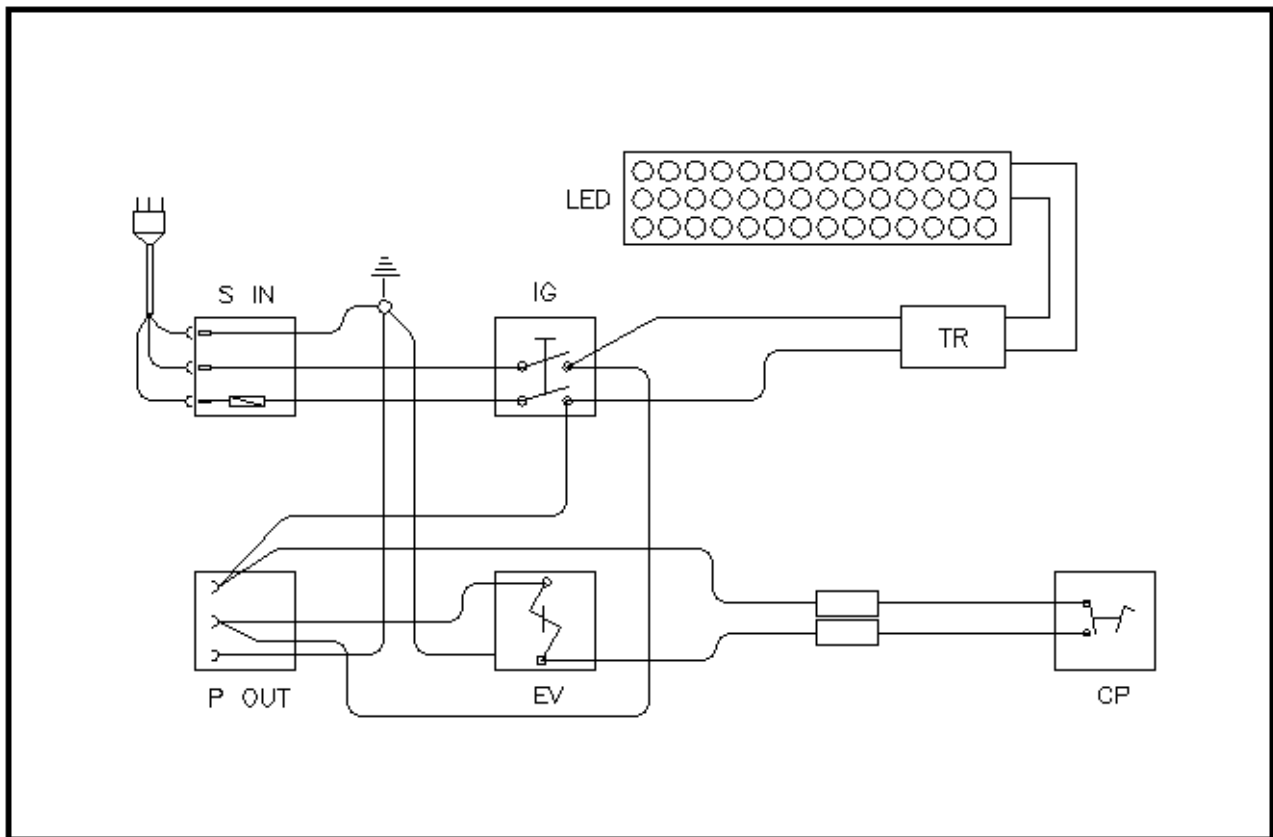


EXPLODED DRAWING AND SPARE PART LIST MICRA EVO table 2

POS.	CODE	DESCRIPTION
46	100072N	COMPLETE EASY TANK
47	1073003	TANK SUPPORT
48	NVG048	RUBBER FOOT H=12
49	NES030	3-WAY SOLENOID VALVE-220v
50	1073005	REAR LOCK MICRA
51	NVP036	PLASTIC CAP D.=27
52	NEA047	FEMALE PLUG
53	NPR223	MALE PIPE-FITTING 1/8
54	NVT165	FEMALE CAP G1
55	1072003	ABRASIVE TANK
56	NPOR3300	OR JOINT 3300
57	1072002P	NYLON / GLASS TANK
58	NPV020	SINTERED AIR INJECTOR
59	NPOR2043	OR JOINT 2043
60	1072004	AIR BLOWER PIPE-FITTING
61	NPR111	STRAIGHT MALE PIPE-FITTING 6x4 1/8
62	1072007	TERMINAL CAP ON ABRASIVE PIPE
63	1072006	ABRASIVE OUTLET PIPE
64	1072005	ABRASIVE PIPE ASSEMBLY PIPE-FITTING
65	NPR111P	PLASTIC STRAIGHT PIPE-FITTING M 6x4 1/8
66	NPV042	SOFT POLYURETHAN PIPE 6x4
67	NEV030	SHEATH D.= 6
68	1067005	MICROPROJECTOR ALUMINIUM HANDLE
69	1067022	HANDLE WASHER (SPECIFY COLOR)
70	1067006	MICROPROJECTOR BODY
71	NPOR2012	OR JOINT 2012
72	RMN043	TUNGSTEN CARBIDE NOZZLE D.= 1,2
72	RMN044	TUNGSTEN CARBIDE NOZZLE D.= 0,8
72	RMN045	TUNGSTEN CARBIDE NOZZLE D.= 0,5
72	RMN046	TUNGSTEN CARBIDE NOZZLE.= 2,0
72	RMN047	TUNGSTEN CARBIDE NOZZLE D.= 1,5
73	1067007	NOZZLE LOCKING RING NUT
75	RM019	PIPE-FITTING
76	1073014	5-WAY SELECTOR SWITCH LOWER CAP
77	NVT047	PS RING 8/14/0.2
78	NVT020	¼ STEEL BALL
79	1027076	SELECTOR SPRING
80	-	M4x3 SCREEW
81	NVT049	FLAT SPRING
82	1073012	5-WAY SELECTOR SWITCH UPPER CAP
83	NVT034	PS RING 15/22/0.2
84	NPOR2025	OR JOINT 2025
85	1073013	5-WAY SELECTOR AIR DISTRIBUTOR
86	NPOR2018	OR JOINT 2018

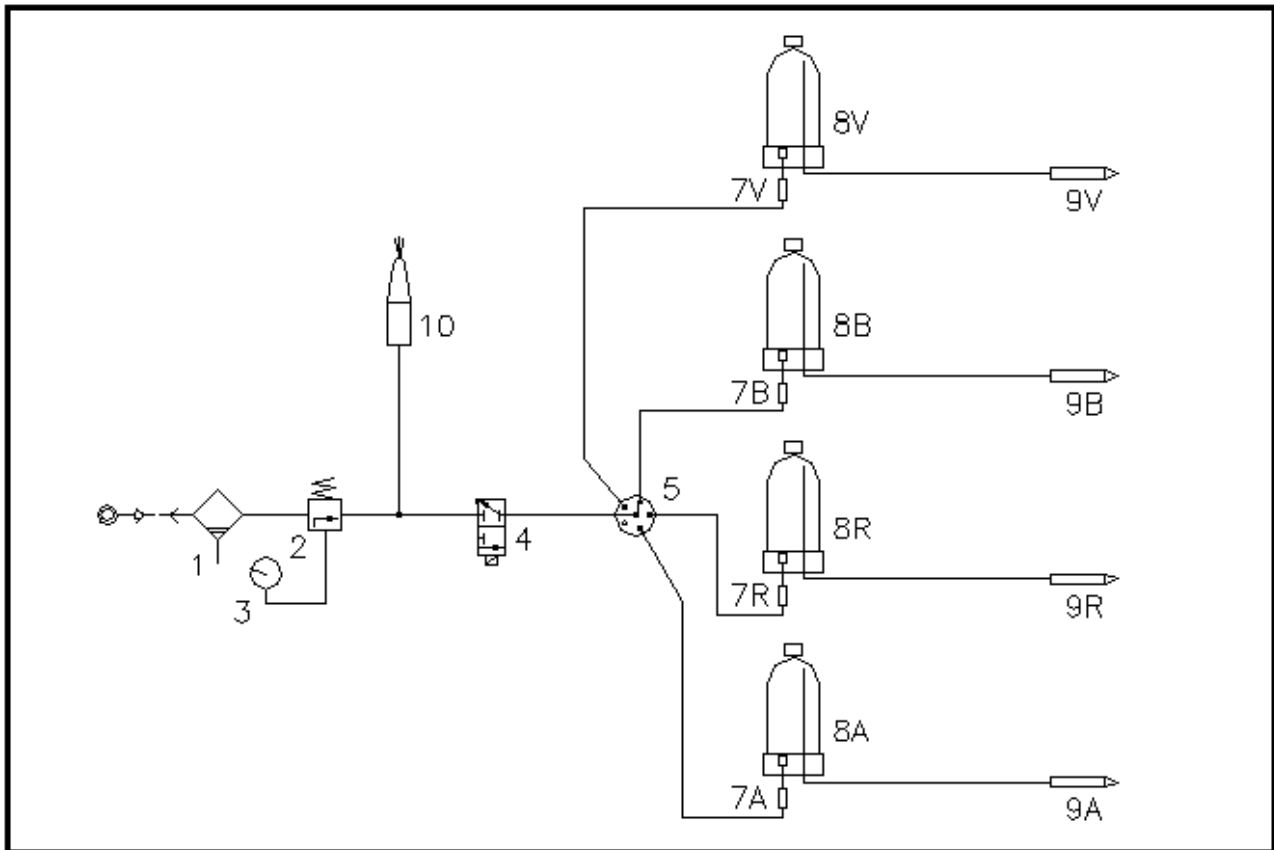


8. WIRING DIAGRAM



NO.	DESCRIPTION
S IN	PLUG AND FUSEHOLDER UNIT
IG	MAIN SWITCH
TR	ELECTRONIC BALLAST
LED	LED CIRCUIT
EV	3-WAY-SOLENOID VALVE
CP	ELECTRIC FOOT CONTROL
P OUT	FLUSH-MOUNTED SOCKET for DUST EXTRACTOR

9. PNEUMATIC CIRCUIT



NO.	DESCRIPTION
1	AIR FILTER
2	PRESSURE REDUCER
3	PRESSURE GAUGE
4	3-WAY-SOLENOID VALVE – MANUAL BLASTING
5	SELECTOR SWITCH
7	5 MY FILTER
8	MICROBLASTING TANK
9	MICROPROJECTOR
10	AIR BLOWER

10. TECHNICAL DATA

Height	415 mm
Width	410 mm
Depth	380 mm at base – 450 mm overall
Net and Gross weight	12,5 kg – 15,0 kg
Voltage	230 V - 50 Hz (different tensions available on demand)
Absorption	60 W - 1,4 A
Lighting	Energy-saving 42 LED circuit
Dust filtering system	Possibility to add-on the built-in WAFIS system or PRO-3; compatible with traditional extractors

Microblasting pressure	min 1,5 BAR - max 6,0 BAR
Air consumption (Ø0,8mm)	15 l/min at 2 BAR
Air consumption (Ø2,0mm)	120 l/min at 4 BAR
Standard nozzles	2 x Ø 0,8 mm tungsten carbide nozzles
Abrasive grainsize min - max	mesh 270 (50µ) – mesh 60 (250µ)

DENTalfarm s.r.l.

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