

USE AND MAINTENANCE MANUAL



CM43 F
CM43 F PLUS
CM50 F
CM50 F PLUS

ED. 10-2010

EN

ORIGINAL INSTRUCTIONS
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AC Version



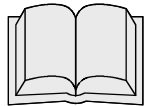
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Symbols used in the manual



Open book symbol with an "i"
Indicates the need to consult the instruction manual



Open book symbol
Used to tell the operator to read the manual before using the machine



Warning symbol
Carefully read the sections marked with this symbol and observe the indications, for the safety of the operator and the machine



Warning symbol
Indicates danger of gas exhalation and leakage of corrosive liquids



Warning symbol
Indicates that the packed product should be handled with suitable lifting means that comply with the legal requirements



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On consignment of the machine

When the machine is consigned to the customer, an immediate check must be performed to ensure all the material mentioned in the shipping documents has been received, and also to check the machine has not suffered damage during transportation. If this is the case, the carrier must ascertain the extent of the damage at once, informing our customer service office. It is only by prompt action of this type that the missing material can be obtained, and compensation for damage successfully claimed.

Introductory comment

CM43-50 F and CM43-50 F PLUS machines are built for the professional cleaning of hard and vinyl floors for indoor surfaces, to be carried out by following the instructions. Any use of the machine for other purposes is dangerous and therefore prohibited. The machine is suitable for collective use, for example in hotels, schools, hospitals, factories, shops, offices and condominiums.

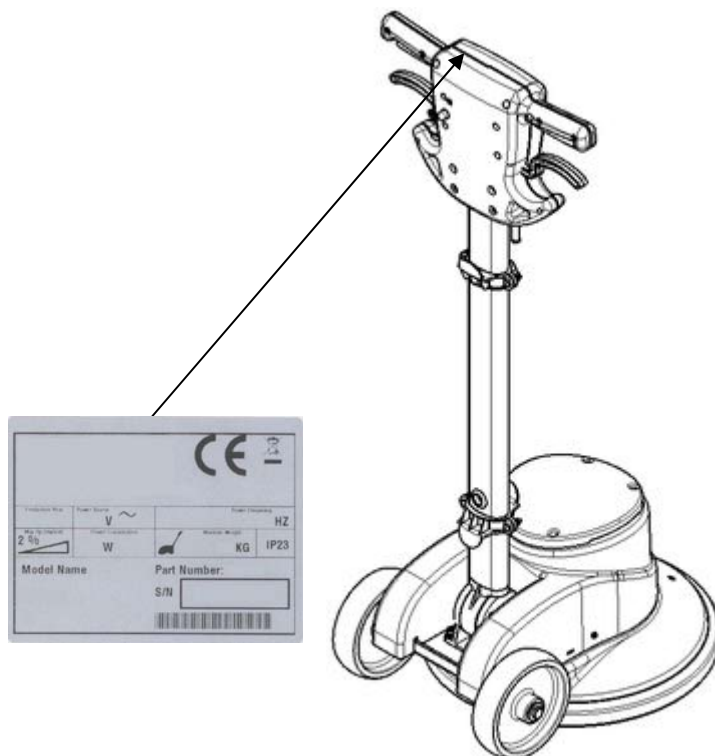
The machine must be used only for this purpose.

Even the best machines will only work well if used correctly and kept in good working order. This brochure offers you all the information necessary to use in a regular, safe and suitable manner the models of the "COMAC Single-Brush" machines, and it must always be made available to the user. We therefore suggest you read this instruction booklet carefully and read it again whenever difficulties arise while using the machine. If necessary, remember that our customer assistance service (organised in collaboration with our dealers) is always available for advice or direct intervention.

The scrubbing machine is designed exclusively for the professional cleaning of surfaces and floors in industrial, commercial and public environments. The machine is only suitable for use in closed - or at least covered - locations.

The machine is not suitable for use in the rain, or under water jets. It is **FORBIDDEN** to use the machine for picking up dangerous dusts or inflammable liquids in places with a potentially explosive atmosphere. In addition, it is not suitable as a means of transport for people or objects.

Serial number plate

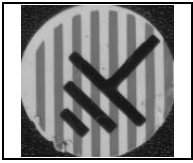


Intended use

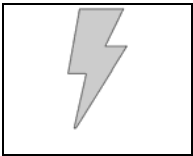
TECHNICAL DESCRIPTION	UM	CM43 F	CM43 F PLUS	CM50 F	CM50 F PLUS
Working width	mm	430	430	500	500
Disk brush	Ø mm	430	430	500	500
Brush rotations	rpm	180	180	160	160
Brush motor power	W	1100	1100	1500	1500
Brush motor voltage	V	230	230	230	230
Brush motor frequency	Hz	50	50	50	50
Maximum gradient with full load	%	2	2	2	2
Solution tank capacity (optional)	l	15	15	15	15
Rear wheel diameter	mm	175	175	175	175
Machine length	mm	565	565	565	565
Machine height at motor	mm	365	365	365	365
Machine height at shaft	mm	1220	1220	1220	1220
Machine width	mm	450	450	470	470
Machine service weight (without solution tank)	kg	40	45	40	45
Length of power supply cable	m	15	15	15	15
Noise level (in compliance with IEC 704/1)	dB (A)	-	-	-	-
Hand vibration level	m/s ²	-	-	-	-
Body vibration level	m/s ²	-	-	-	-



SYMBOLS USED ON THE MACHINE

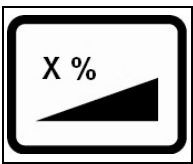


Indicates the earth connection point of the electric system of the machine



Voltage symbol

Warning high voltage 230 Volt



Indicates the maximum gradient



GENERAL SAFETY REGULATIONS

The regulations below must be carefully followed in order to avoid harm to the operator and damage to the machine.

- Read the labels on the machine carefully. Do not cover them for any reason and replace them immediately if they become damaged.
- **CAREFULLY** read the instructions before starting the machine or performing maintenance.
- The machine must be used exclusively by authorised, trained personnel.
- Do not use the machine for purposes other than the intended use.
- Always make sure that the work surfaces, floors and ramps, are able to withstand the weight of the machine.
- During the working of the machine, pay attention to other people and especially to children.
- The machine is not suitable for cleaning carpets or textile floors.
- The socket for the machine power cable must have a prescribed earth connection.
- Avoid damaging the machine power cable by crushing or bending it, or by applying stress.
- Attention: do not let the power cable come into contact with the rotating brush.
- Do not place any liquid containers on the machine.
- The storage temperature must be between -25°C and +55°C; do not store outdoors in damp conditions.
- Conditions of use: room temperature between 0°C and 40°C with relative humidity between 30 and 95%.
- Only use the machine in closed areas and do not expose it directly to rain.
- Polishing operations should only be carried out in areas where the passage of unauthorised persons is prohibited. Signal the presence of work areas with suitable signs
- Do not use the machine in an explosive atmosphere.
- Avoid working with the brushes when the machine is standing still, so as not to damage the floor.
- In the event of a fire, use a powder extinguisher. Do not use water.
- Do not knock against shelving or scaffolding, where there is a danger of falling objects. The operator must always be equipped with the appropriate safety device (gloves, shoes, helmet, glasses, etc.)
- If the machine does not work properly, check this is not caused by failure to carry out routine maintenance. Otherwise, request the intervention of the **COMAC** technical assistance centre.
- If you need to replace any components, request the **ORIGINAL** spare parts from a **COMAC** dealer and/or Authorised Retailer.
- For all maintenance interventions, switch off the machine and disconnect the power cable from the socket.
- Do not remove any protection devices which require the use of tools in order to be removed.
- Do not wash the machine with direct water jets or with pressurised water, nor with corrosive substances.
- Have the machine checked by a **COMAC** technical assistance centre every year.
- Do not put your hands into the machine during operation.
- Do not remove the covers and/or guards when the machine is running.
- Do not operate the machine without any protections.
- Do not approach the machine with clothes that can get entangled, **AVOID** the use of scarves, shawls, wraps and loose clothing.
- Avoid working over pieces of rope, wire, cables: these can be caught in the brush and create friction.
- If damage to the power supply cable occurs, the machine must be stopped, if it is operating, the plug immediately removed from the power supply and the cable replaced by a **COMAC** service centre.
- Before using the machine, check that all the hatches and covers are positioned as shown in this Use and Maintenance Manual.
- When disposing of consumption materials, observe the laws and regulations in force.
- When your **COMAC** machine has reached the end of its long working life, dispose of the materials it contains (especially oils and electronic components) in an appropriate manner, and bearing in mind that the machine itself was constructed using 100% recyclable materials.
- Only use the discs supplied with the device, or those specified in the Use and Maintenance Manual (page 18). The use of other discs could compromise safety levels
- The machine is not suitable for use by children or people with reduced physical, mental and sensorial capacities, or people lacking experience and knowledge, unless supervised and instructed in the use of the machine by a person responsible for their safety.
- Children must be supervised to ensure they do not play with the device.



MACHINE PREPARATION

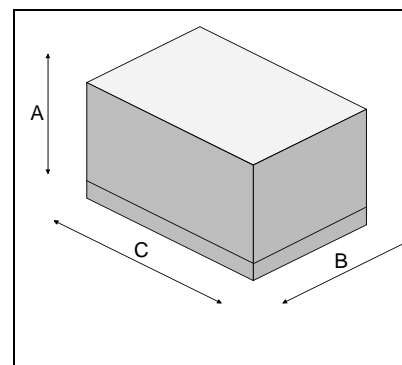
1. HANDLING THE PACKAGED MACHINE

The machine is contained in specific packaging with a pallet for the handling with fork trucks. The packages cannot be placed on top of each other.

The total mass of the machine with packaging is 00 kg (without solution tank).

The dimensions of the packaging is as follows:

CM43 F – CM43 F PLUS	CM50 F – CM50 F PLUS
A: 570 mm	A: 690 mm
B: 490 mm	B: 580 mm
C: 1190 mm	C: 1230 mm



2. HOW TO UNPACK THE MACHINE

1. The machine is fixed inside the box by means of reinforcements; remove them and set them aside for future transport.
2. Remove the outer packaging.
3. Use a chute to get the machine down from the pallet, pulling it backwards.
4. Keep the pallet for any future transport needs.



WARNING: if the product is delivered in cardboard containers, handle the packed product with suitable lifting means that comply with the legal requirements.

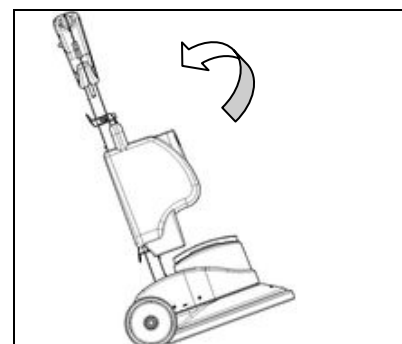
3. HOW TO MOVE THE MACHINE

1. Check that the solution tank is empty (optional)
2. Remove the brush from the base (see corresponding chapter "DISASSEMBLING THE BRUSH")
3. Position the single brush on the pallet by means of a chute
4. Insert the cardboard box and the previously kept supports

4. HANDLING AND TRANSPORTATION OF THE MACHINE

To handle the machine safely, proceed as follows:

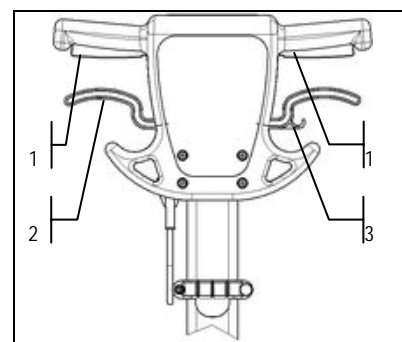
1. Check that the solution tank (optional) is empty
2. Rotate the handlebars to the rest position (see chapter HANDLEBAR ADJUSTMENT) and fix them in this position
3. Tilt the machine, by putting a foot into the rear of the base body, so only the rear wheels touch the ground and the machine can move freely.



5. HANDLEBAR COMPONENTS

The handlebar components are identified as follows:

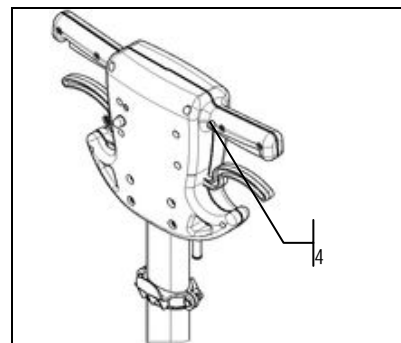
1. Main switch control lever
2. Handlebar tilt adjustment lever
3. Solution tank tap control lever (optional)





MACHINE PREPARATION

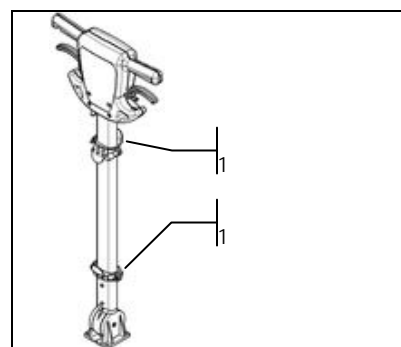
4. Man present push-button



6. STEERING COLUMN COMPONENTS

The handlebar column components are identified as follows:

1. Cable wrap bracket - solution tank support bracket (optional)



7. HANDLEBAR ADJUSTMENT – WORK POSITION

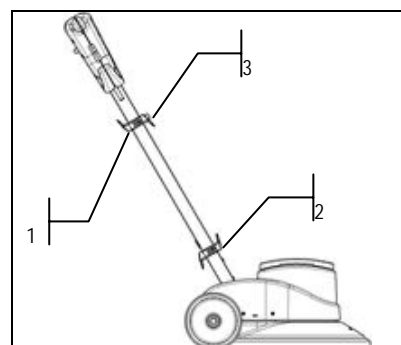
Before you start working with the machine, you will need to find the correct work position. To do this, press the tilt adjustment lever, release it until your arms are slightly bent and as low as possible, while keeping the back straight and the legs slightly apart. When working the operator is behind the machine.



8. SOLUTION TANK (OPTIONAL)

To insert the solution tank onto the handlebars, proceed as follows:

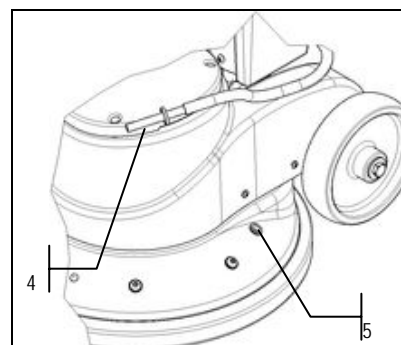
1. Secure the handlebars in a position of about 45° to the ground
2. By loosening the closing knob (1), position the top brackets above half of the column (if these are not already positioned)
3. Put the solution tank on the column, so that the bottom of the tank is anchored to the fixed bracket (2) on the column
4. While keeping the tank with one hand, move the mobile bracket (3) down until the solution tank is locked to the column
5. Lock the position of the mobile bracket (3) by acting on the closing knob (1)



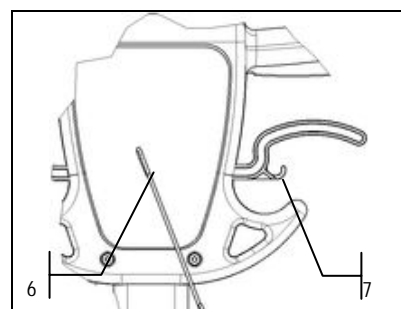


MACHINE PREPARATION

6. Insert the water distribution pipe (4) in the hole in the brush head (5)



7. Insert the tank tap tie-rod (6) in the hook on the tap control handle (7)



9. DETERGENT SOLUTION

Fill the solution tank only when the column is in vertical position, by proceeding as follows:

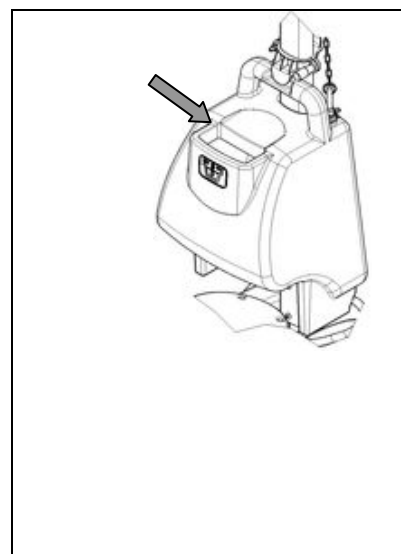
1. Fill it with clean water at a temperature not exceeding 50°C.
2. Add the liquid detergent to the tank in the concentration and manner indicated on the detergent manufacturer's label. The formation of excess foam could damage the internal components of the machine, so only use the minimum amount of detergent needed.



WARNING: you are advised to always wear protective gloves, to avoid the risk of serious injury to your hands



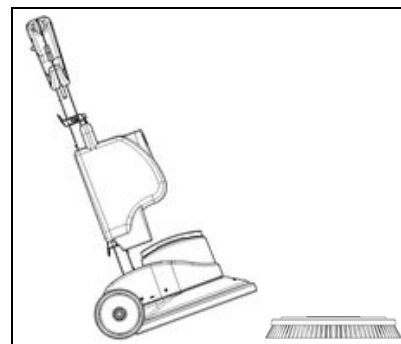
WARNING: We recommend that you vacuum at intervals the dirt-loaded foam with a vacuum cleaner for liquids.



10. ASSEMBLING THE BRUSH

To insert the brush:

1. Plug the power supply cable into the mains socket
2. Place the brush in front of the base body
3. Raise the base by using the handlebars as a lever
4. Place the base above the brush
5. Activate the handlebar tilt lever
6. Press the man present push-button and pulse-press the main switch control lever to engage the brush to the base





MACHINE PREPARATION



WARNING: you are advised to always wear protective gloves, to avoid the risk of serious injury to your hands



WARNING: during this operation, check there are no people or objects near the brush.

WARNING: Make sure the brushes are correctly connected. If this is not the case, the machine could move in an irregular, sudden manner.



WORK

11. PREPARING TO WORK

1. Make sure the power supply cable is not damaged
2. Plug the power supply cable of the machine into the mains socket
3. Bring the handlebar into work position by acting on the release lever

12. MANOEUVRABILITY OF THE MACHINE

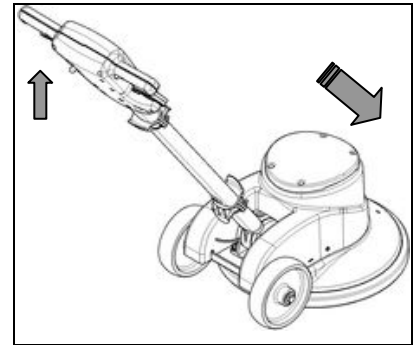
The first time an operator uses the machine, he/she should become familiar with the movements to be imparted to the shaft in order to be confident enough with the directionality of movement of the machine, and should therefore not operate the machine near people or obstacles.

Work in slow movements to the right and left, possibly moving back so that the operator always stands on an area of the floor yet to be cleaned up.

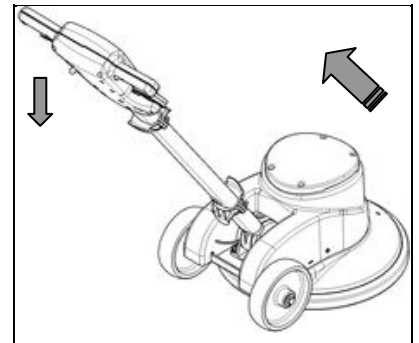
Keep the power supply cable behind the operator, taking care not to operate the machine in its vicinity in order not to damage it.

Do not insist too much on the same area so as to avoid damaging the floor, also in function of the type of brush or abrasive floor pad chosen.

In operation, the machine moves to the right by slightly lifting the handlebars.

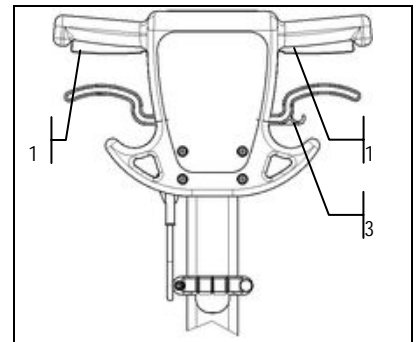


In operation, the machine moves to the left by slightly lowering the handlebars.



13. WORK

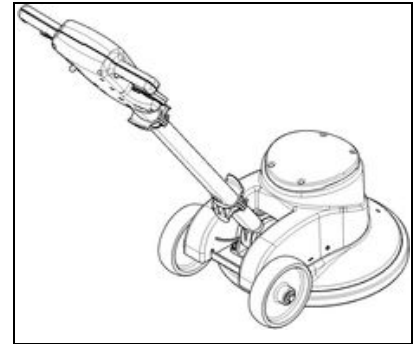
1. At this point, by pressing the man present push-button and activating the main switch control lever (1), the machine can operate at full efficiency
2. Start the machine dry for a few seconds (optional solution tank kit)
3. Apply a small amount of detergent solution on the floor, by pressing the lever (3), until the brush is saturated with foam (optional solution tank kit)





WORK

4. Drive the machine with the rotating brush from left to right or in reverse
5. Immediately afterwards, drive the machine in a similar way but in reverse, so that about one quarter of the working width overlaps the previous one
6. We recommend that you vacuum at intervals the dirt-loaded foam with a vacuum cleaner for liquids (optional solution tank kit)

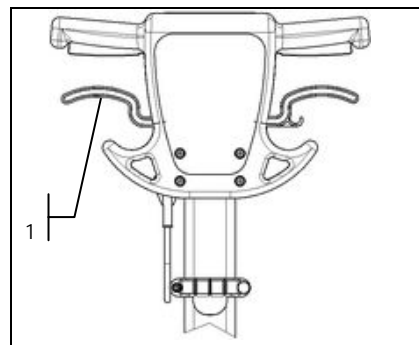




AT THE END OF THE WORK

At the end of the work, and before carrying out any type of maintenance, perform the following operations:

1. Disconnect the plug from the mains socket
2. Wrap it into the rear brackets
3. Operate the handlebar adjustment lever (1) and set the column at rest
4. Move the machine indoors, in an area where it cannot cause any damage to people or surrounding property, but where it can also be protected against the accidental fall of objects. In addition, do not park the machine in open places or on sloping floors
5. disassemble the brush and clean it with a jet of water (to disassemble the brush, see "DISASSEMBLING THE BRUSH" below)



WARNING: you are advised to always wear protective gloves, to avoid the risk of serious injury to your hands



DAILY MAINTENANCE

PERFORM ALL MAINTENANCE OPERATIONS IN SEQUENCE

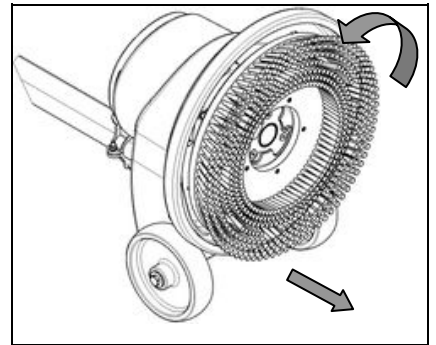
14. DISASSEMBLING THE BRUSHES-PAD HOLDER

1. Make sure the power supply cable is unplugged from the mains socket
2. Check that the handlebars are in the rest position
3. Tilt the machine until bringing the handlebars down to the ground, by putting a foot into the rear of the brush head body



WARNING: This operation must be carried out using gloves to protect against contact with dangerous solutions.

4. Rotate the brush anticlockwise until it leaves the brush holding tray seat and clean them up with a jet of water. Check the bristles are not worn; in the event of excessive wear, replace the brushes (the bristles should be at least 10mm long)

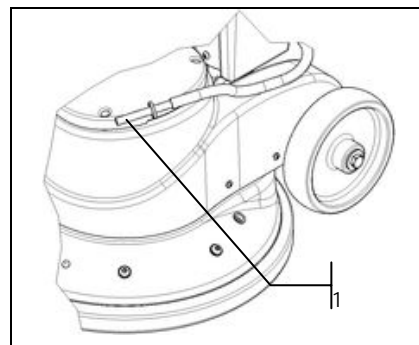




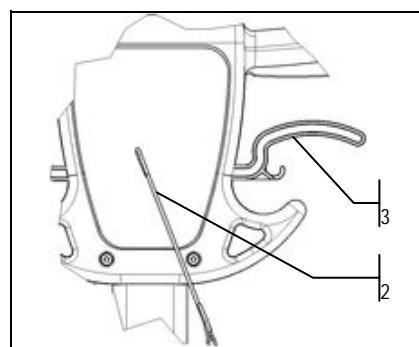
WEEKLY MAINTENANCE

15. CLEANING THE SOLUTION TANK

1. Check that the solution tank is empty, otherwise empty it by keeping the tap control lever operating
2. Remove the water distribution pipe (1) from the hole on the brush head



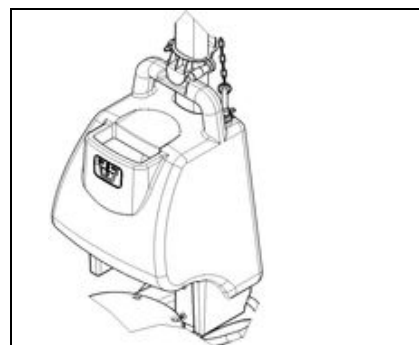
3. Disconnect the tie-rod (2) from the tap control lever (3)



4. Remove the solution tank (see chapter "SOLUTION TANK") and clean it with a jet of running water



ATTENTION: you are advised to always wear protective gloves, to avoid the risk of serious injury to your hands

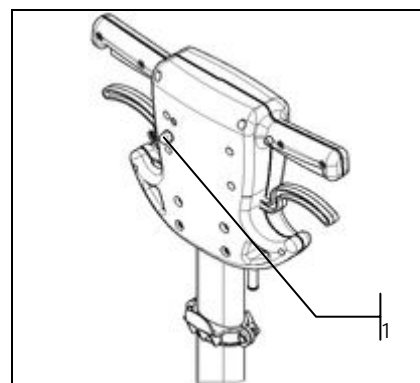




TROUBLESHOOTING

16. THERMAL CUT-OUT

The single-disc machine is equipped with the following electrical protection systems, thermal cut-out (1), located off the handlebars, to protect the motor. In the event of malfunctioning, check a thermal cut-out has not intervened. If the motor overheats, its thermal cut-out intervenes to block the electricity supply. Wait a few minutes until it has cooled down, then press the specific circuit breaker button to reactivate the power supply and motor operation.



17. NOT ENOUGH DETERGENT SOLUTION ON THE BRUSH (OPTIONAL)

1. Check that the valve allowing the detergent solution to flow from the tank to the brush is not blocked. Flush the tank if needed.
2. Check that the solution distribution pipe is not blocked. Flush it if needed.

18. THE MACHINE VIBRATES OR OSCILLATES

The machine has been sitting in rest position for too long, with the brush or pad holder still inserted. Replace as soon as possible.



DISPOSAL

To dispose of the machine, take it to a demolition centre or an authorised collection centre.

Before scrapping the machine, it is necessary to remove and separate the following materials and then send them to the appropriate collection centres, in accordance with the currently effective environmental hygiene regulations:

- brushes
- filter
- electric and electronic parts*
- plastic parts (tanks and handlebars)
- metal parts (levers and frame)

(*) In particular and in order to scrap the electric and electronic parts, contact your area distributor.



CHOOSING AND USING THE BRUSHES

POLYPROPYLENE BRUSH (PPL)

Used on all types of floors. Good resistance to wear and tear, and hot water (no greater than 60°C). The Polypropylene brush is non-hygroscopic and therefore retains its characteristics even when working in wet conditions.

NYLON BRUSH

Used on all types of floors. Excellent resistance to wear and tear, and hot water (even over 60°C). The nylon is hygroscopic and so tends to lose its characteristics over time when working in wet conditions.

ABRASIVE BRUSH

The bristles of this type of brush are charged with highly aggressive abrasives. It is used to clean very dirty floors. To avoid floor damage, work only with the pressure strictly necessary.

THICKNESS OF THE BRISTLES

Thicker bristles are more rigid and are therefore used on smooth floors or floors with small joints.

On uneven floors or those with deep joints, it is advisable to use softer bristles which can enter the gaps more easily.

Remember that when the bristles are worn and therefore too short, they will become rigid and are no longer able to penetrate and clean deep down. In this case, like with overlarge bristles, the brush tends to jump.

PAD HOLDER

The pad holder is recommended for cleaning shiny surfaces.

There are two types of pad holder:

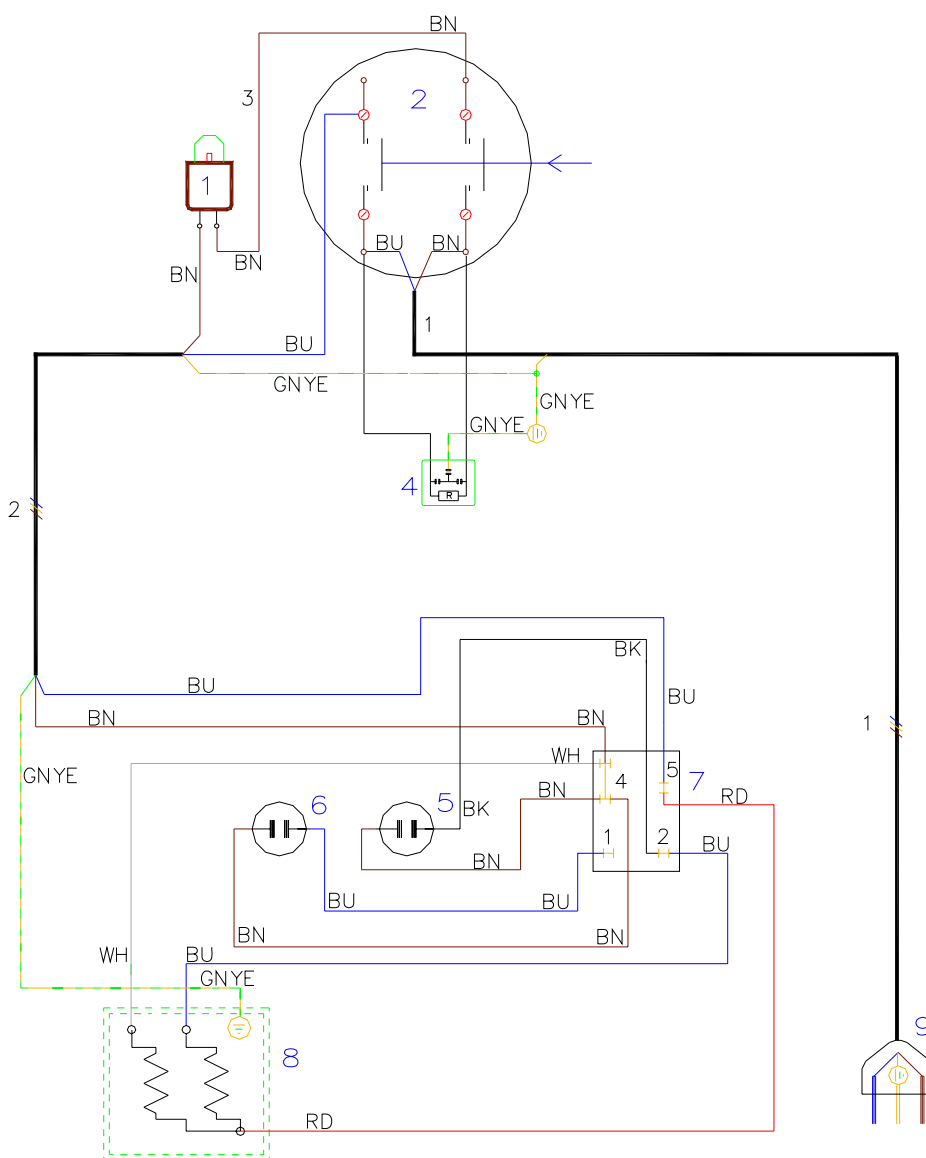
1. the traditional pad holder is fitted with a series of anchor points that allow the abrasive floor pad to be held and dragged while working
2. the CENTER LOCK type pad holder not only has anchor points, but also a snap-type central locking system in plastic that allows the abrasive floor pad to be perfectly centred and held without any risk of it becoming detached. This type of dragging device is recommended above all for machines with more than one brush, where the centring of the abrasive discs is difficult.

TABLE FOR CHOOSING THE BRUSHES

Machine	No. of brushes	Code	Type of bristles	Ø Bristles	Ø Brush	Length	Notes
CM43 F CM43 F PLUS	1	405653	PPL	0.7	420		BRUSH
		405657	ABRASIVE	-	420		BRUSH
		405659	PPL - BLUE	0.45	420		BRUSH
		405540	-	-	430		PAD HOLDER
CM50 F CM50 F PLUS	1	405658	ABRASIVE	0.9			BRUSH
		405661	PPL	0.45	500		BRUSH
		405654	PPL	0.7			BRUSH
		405542	-	-			PAD HOLDER



CM43-50 F ELECTRICAL SYSTEM DIAGRAM



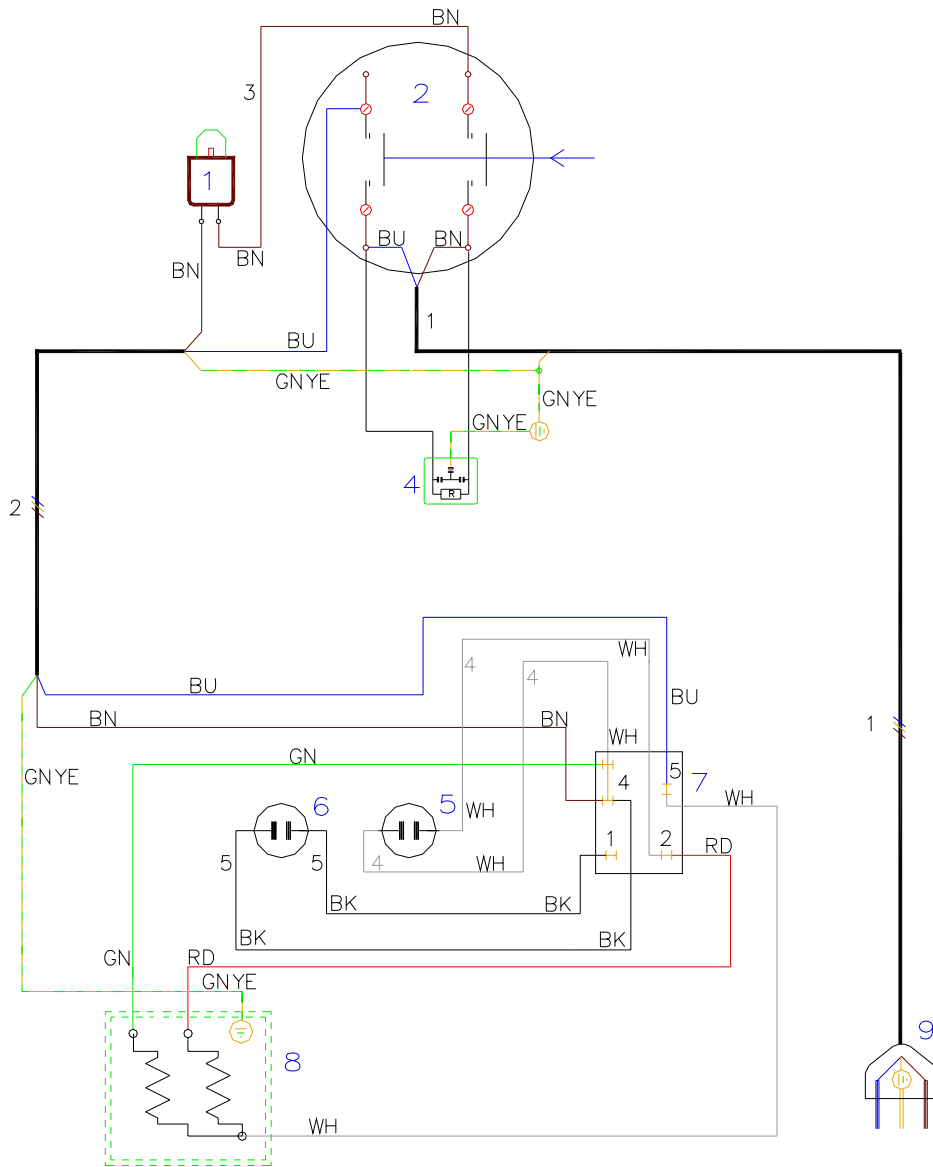
POS	COMPONENT NAMES
1	Cut-out 8A
2	Operating switch 16A
4	Noise filter
5	Operating condenser 40 μ F
6	Start condenser 88 μ F
7	Klixon
8	230V motor
9	Plug 16A

POS	CABLE NAMES
1	Cable 3x1.5x15 metres + shuko plug -1-
2	Cable 3x1.5x1680 -2-
3	Brown cable 1.5x150 -3-

ABBR.	CABLE
BK	Black
BU	Blue
BN	Brown
RD	Red
WH	White
GY	Grey
GNYE	Yellow-green
GN	Green



CM43-50 F PLUS ELECTRICAL SYSTEM DIAGRAM



POS	COMPONENT NAMES
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7	Klixon
8	230V motor
9	Plug 16A

POS	CABLE NAMES
1	Cable 3x1.5x15 metres + shuko plug -1-
2	Cable 3x1.5x1680 -2-
3	Brown cable 1.5x150 -3-
4	2 white cables 1.5x250 -4-
5	2 black cables 1.5x250 -5-

ABBR.	CABLE
BK	Black
BU	Blue
BN	Brown
RD	Red
WH	White
GY	Grey
GNYE	Yellow-green
GN	Green



EC DECLARATION OF COMPLIANCE

The undersigned company:
COMAC S.p.A.
Via Maestri del Lavoro n.13
37050 Santa Maria di Zevio (VR)
declares under its sole responsibility that the product

SINGLE DISC MACHINES mod. CM43 F – CM43 F PLUS – CM50F – CM50 F PLUS

complies with the requirements of the following Directives:

- 2006/42/EC: Machinery Directive
- 2006/95/EC: Low Voltage Directive
- 2004/108/EC: Electromagnetic Compatibility Directive

They also comply with the following standards:

- EN 60335-1: Household and similar electrical appliances - Safety. Part 1: Generic norms
- EN 60335-2-67: Household and similar electrical appliances. Part 2: Specific norms for automatic machines for floor treatment for commercial and industrial use
- EN 12100-1: Machine safety - Fundamental concepts, fundamental principles of design - Part 1: Basic terminology and methodology
- EN 12100-2: Machine safety - Fundamental concepts, fundamental principles of design - Part 2: Technical principles
- EN 55014-1: Electromagnetic compatibility - Regulations for household appliances, electrical devices and similar equipment. Part 1: Emission - Regulations for product family.
- EN 55014-2: Electromagnetic compatibility - Regulations for household appliances, electrical devices and similar equipment. Part 2: Immunity - Regulations for product family.
- EN 61000-3-2: Electromagnetic compatibility (EMC) - Part 3-2: Limits – Limits for harmonic current emissions (Equipment with input current ≤ 16 A per phase).
- EN 61000-3-3: Electromagnetic compatibility (EMC) - Part 3-3: Limits – Restriction of voltage variations and flicker in low voltage power supply systems for devices with a rated current ≤ 16 A.
- EN 62233: Household and similar electrical appliances - Electromagnetic fields Methods for evaluation and measurement

The person authorised to compile the technical file:

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Santa Maria di Zevio, 21/10/2010

COMAC S.p.A.
Legal representative
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