

USE AND MAINTENANCE MANUAL



CS50 B-BT
CS50 H-HT

ED. 10-2010

EN

ORIGINAL
INSTRUCTIONS
Doc. 10010179
AB Version



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Symbols used in the manual



Open book symbol with an "i"
Indicates that this document is an instruction manual



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



Warning symbol
Read carefully the sections marked with this symbol, for the safety of the operator and the machine



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



Warning symbol
Indicates the danger of fire
Do not go near with free flames



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



Disposal symbol
Carefully read the sections marked with this symbol for the disposal of the machine



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On consignment of the machine

When the machine is consigned to the customer, an immediate check to ensure that all the material mentioned in the shipping documents has been received, that the machine has not suffered damage during transportation should be performed. 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 any compensation for damage can be successfully claimed.

Introduction

Even the best machines will only work well if used correctly and kept in good working order. 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.

Identification data

For technical assistance or to request replacement parts, always give the model, the version and serial number written on the serial number plate.

Technical description

CS50 H-HT is a sweeping machine driven by an internal combustion engine, for the cleaning of both internal and external surfaces, with tiled, concrete and asphalt floors.

CS50 H-BT is a battery powered electric sweeping machine for the cleaning of both internal and external surfaces, with tiled, concrete and asphalt floors. The machines must operate on dry surfaces, and if necessary they can also work on wet surfaces making sure the suction is closed.

The machines feature: a central brush for debris collection, a side brush for cleaning corners, a vacuum system with filter to avoid raising dust, and a debris hopper.

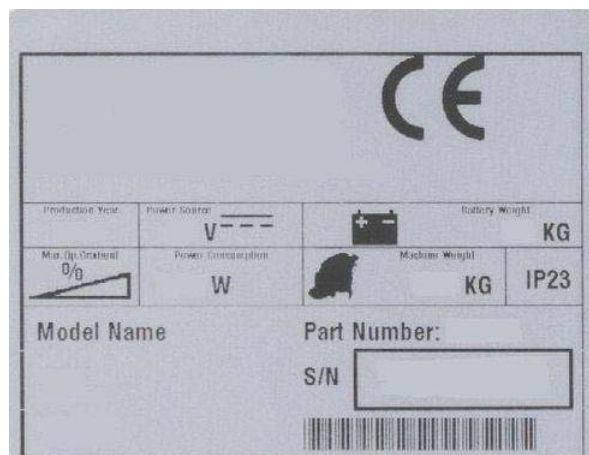
Do not use the machine for purposes other than those intended.

Intended use

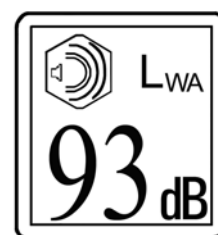
The sweeping machine is designed to clean both inside and outside surfaces with tiled, concrete and asphalt floors, for professional use in industrial, commercial and public places. The machine is only suitable for use in closed (or at least covered) places.

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 or inflammable dusts 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



CS50 B-BT



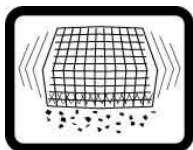
CS50 H-HT



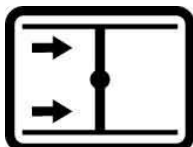
TECHNICAL DESCRIPTION	UM	CS50 H	CS50 HT	CS50 B	CS50 BT
Working width without side brush	mm	500	500	500	500
Work capacity, up to	m ² /h	2275	2600	2275	2600
Maximum gradient	%	5	10	5	10
Central brush dimensions	mm	500x265	500x265	500x265	500x265
Debris hopper capacity	l	40	40	40	40
Honda internal combustion engine	HP	3	3	-	-
Electric motor	V	-	-	12	12
Electric motor	W	-	-	600	600
Filtering surface	m ²	2.5	2.5	2.5	2.5
Type of advance		-	mechanical	-	mechanical
Forward speed	km/h	0÷3.5	0÷4	0÷3.5	0÷4
Machine length	mm	1430	1430	1430	1430
Machine height	mm	1000	1000	1000	1000
Machine width	mm	660	660	660	660
Battery	V/Ah	-	-	12/140	12/140
Battery compartment dimensions	LxWxH	340x175x220	340x175x220	340x175x220	340x175x220
Battery weight	kg	-	-	28.5	28.5
Machine weight (empty and without battery)	kg	70	78	67	65
Machine weight in running order	kg	70	78	95.5	93.5
Noise level (in compliance with IEC 704/1)	dB (A)	74	74	68	68
Vibration level	m/sq.sec.	1.2	1.2	0.12	0.12



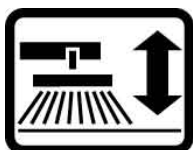
SYMBOLS USED ON THE MACHINE



Filter shaker



Suction switch-off



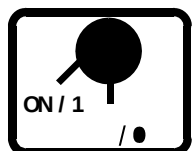
Side brush



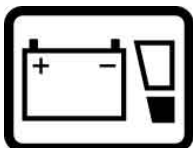
Wear hearing protection



Pay attention to hot parts



On/off (battery-operated versions only)



Battery charge signal (battery-operated versions only)



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.
- Optimal use conditions will have a temperature range between -10° and 40° C and a humidity range between 30% and 95%, while the storage temperature range may be between -25° and +55° C.
- For any adjustments or maintenance, stop the machine and wear protective gloves.
- The use of the machine in enclosed areas should be subject to the rules prevailing in the country of use.
- Do not refuel while engine is running. Let the engine cool several minutes before refilling.
- Do not touch the exhaust, cylinder or other parts subject to overheating, the contact of which may cause burns.
- Do not use the machine as a means of transport.
- Do not use the machine for purposes other than those intended, in particular, do not to use the side brush to polish shoes or other objects.
- Do not use the machine in an explosive atmosphere.
- Do not use the machine to collect incandescent materials (lit cigarette butts, etc.).
- Do not use the machine to collect toxic dust or waste.
- In case of fire, use a powder fire extinguisher. Do not use water.
- Do not place any liquid containers on the machine.
- Always make sure that the work surfaces, floors and ramps, are able to withstand the weight of the machine.
- While working maintain a safe distance from people in the work area, with particular attention to children.
- 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.
- Wear hearing protection for machines with internal combustion engine.
- Avoid suction over pieces of rope, wire, cables: these can be caught in the central brush and create friction.
- When anomalies in the functioning of the machine are found, adjustment or repair must only be performed by qualified and trained personnel. Otherwise, especially for anomalies involving electrical parts, request the intervention of the COMAC technical assistance centre.
- When replacing parts, request original spare parts from our dealer or our assistance service.
- Do not damage the safety devices for any reason, but check their efficiency.
- Do not wash the machine with direct water jets, liquids or with corrosive substances.
- Turn off the machine for any kind of dangerous situation.
- Do not knock against shelving or scaffolding, where there is a danger of falling objects.
- If the machine is used where there is a risk of falling objects, the machine must be equipped with protections against falling objects.
- Do not exceed the gradient limit to avoid instability and braking problems.
- The machine must be exclusively used by authorised, trained personnel.
- Before using the machine, check that all the hatches and covers are positioned as shown in this Use and Maintenance Manual.
- When disposing of waste materials, comply with currently effective laws and regulations.
- To prevent the unauthorised use of the machine, the ignition key must be removed when the machine is unattended.
- Do not vacuum flammable and/or explosives liquids and substances.
- Do not remove any protection devices which require the use of tools in order to be removed.
- The machine should not be abandoned, due to the presence of toxic-harmful materials (batteries, oil etc.) subject to regulations which provide for their scrapping in the appropriate centres.
- The batteries must be removed from the machine before its disposal.
- The batteries must be disposed of in a safe manner, fully observing the laws and regulations in force.
- Disconnect the battery before cleaning or maintenance.



MACHINE PREPARATION

1. HANDLING THE PACKAGED MACHINE

The machine is contained within specific packaging.

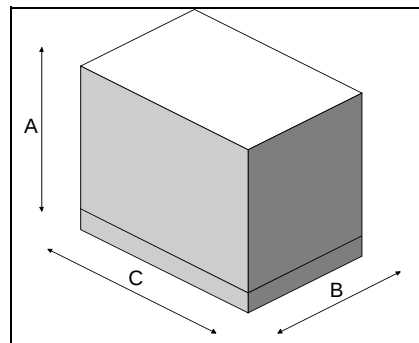
It is not possible to place more than two packages on top of each other.

The overall dimensions of the package are:

	CS 50
A	153 cm
B	76 cm
C	119 cm

Weight of packed CS50 B-BT machine: W = 95 Kg

Weight of packed CS50 H-HT machine: W = 103.5 Kg



2. HOW TO UNPACK THE MACHINE

1. Remove the straps
2. Remove the staples at the base of the package
3. Remove the cardboard
4. Use a chute to get the machine down from the pallet, pushing it backwards
5. Keep the pallet for any future transport needs.



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



3. BATTERY TYPE (CS50 B-BT VERSION)

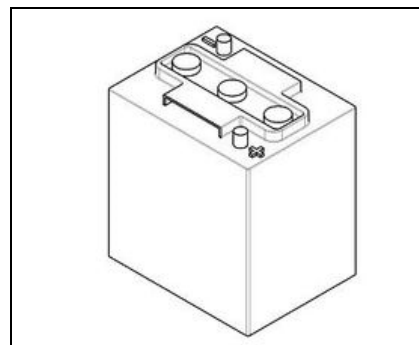
To power the machine it is necessary to use:

- liquidelectrolyte lead traction batteries

OTHER TYPES MUST NOT BE USED.

The batteries must meet the requisites laid out in standards CEI EN 60254-1:2005-12 (CEI 21-5) + CEI EN 60254-2:2008-06 (CEI 21-7).

Each battery consists of DIN type cells connected in series that supply 12V 120Ah(C20) – 100Ah(C5) voltage to the clamps



4. BATTERY MAINTENANCE AND DISPOSAL (CS50 B-BT VERSION)

For maintenance and recharging, comply with the instructions provided by the battery manufacturer. Particular attention must be paid when choosing the battery charger, if not supplied, since there are different kinds according to the type and capacity of the battery.

Proceed as follows when the battery is dead:

1. Raise the covering hood
2. Disconnect the battery connector
3. Remove the battery by using suitable devices, lifting it with the provided handles.
- 4.

EXHAUSTED BATTERIES ARE CLASSIFIED AS DANGEROUS WASTE AND MUST BE CONSIGNED TO THE AUTHORISED BODIES FOR CORRECT DISPOSAL.



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



ATTENTION: You are advised to only lift and move the batteries with lifting and transportation means suitable for the specific weight and size



MACHINE PREPARATION

5. BATTERY FITTING (CS50 B-BT VERSION)

The machine can be supplied with batteries included.

If using a battery other than those supplied with the machine, check that the size is suitable for the battery compartment

Perform a battery charging cycle before using the machine.

The batteries must be housed in the appropriate compartment beneath the recovery tank, and must satisfy the requisites of Standard CEI 21-5.

To insert the batteries you must:

1. Make sure the main switch is in the "0" position
2. Rotate the hood of the machine until it stops
3. Lift the battery by means of the grips on the upper part
4. Place the battery into the compartment



WARNING: you are advised to use airtight batteries only, to avoid the leakage of acids!



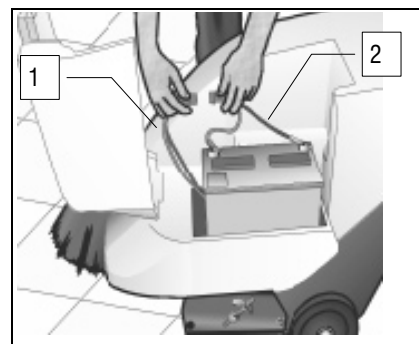
ATTENTION: you are advised to always wear protective gloves, to avoid the risk of serious injury to your hands



ATTENTION: You are advised to only lift and move the batteries with lifting and transportation means suitable for the specific weight and size

6. CONNECTION OF THE ELECTRICAL POWER SUPPLY CONNECTOR (CS50 B-BT VERSION)

Beneath the recovery tank there is the battery connector (2), in which the electrical system connector (1) must be inserted.



7. BATTERY RECHARGING(CS50 B-BT VERSION)

In order not to cause permanent damage to the batteries it is essential to avoid their complete discharge: arrange the recharge within a few minutes of the switching on of the flashing "discharged batteries" signal.



ATTENTION: never leave the batteries completely discharged, even if the machine is not being used. Check the battery charger is suitable for the batteries installed, in terms of both capacity and type.



MACHINE PREPARATION

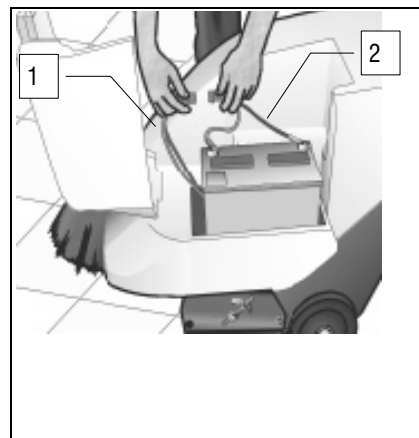
To connect the battery charger you must:

1. Make sure the main switch is in the "0" position
2. Move the machine near to the battery charger
3. Open the hood of the machine
4. Disconnect the battery connector (2) from the electric system (1).
5. Connect the battery charger cable connector

The coupling connector of the battery charger is consigned inside the bag containing this instruction booklet, and must be assembled on the cables of the battery charger as indicated in the instructions.

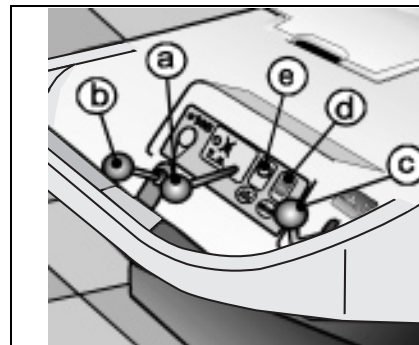


ATTENTION: this process must be carried out by qualified personnel. An incorrect connection of the connector may cause problems with machine functioning.



8. BATTERY INDICATOR (CS50 B-BT VERSION)

On the instrument panel of the machine there is a monitor (E) indicating the battery charge status. If the green light is on, the battery level is full. If the red light is on, the batteries are flat.



9. ENDOTHERMIC ENGINE CHECK (CS50 H-HT VERSION)



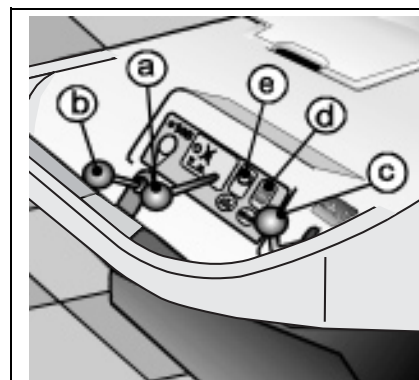
WARNING: For your own safety and to maximize the useful life of the combustion engine, it is very important to take a few moments to read the motor's user manual that came with the machine before turning the motor on



10. INSTRUMENT PANEL COMPONENTS(CS50 B-BT VERSION)

The instrument panel components are identified as follows:

1. Closure of suction/activation of electric filter shaker (optional for battery version) (a): determines the closure of the fan's suction duct@ through the movement of a hatch, which on contact with the stop activates the electric filter shaker.
2. Filter shaker/blocking lever (b): manual control to shake the dust from the filter and to lock its supporting bracket during maintenance.
3. Side brush lever (c): pulling the lever toward you determines the lifting of the side brush. To lower it, simply release the lever by pushing it upward
4. main switch of the machine (d)
5. Battery level indicator (e)



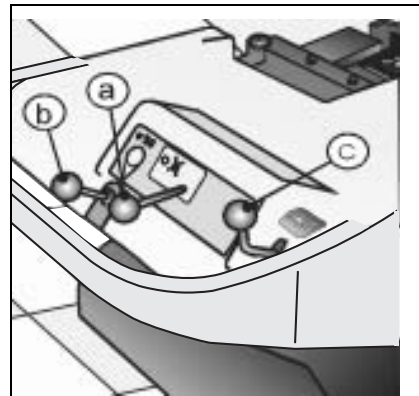


MACHINE PREPARATION

11. INSTRUMENT PANEL COMPONENTS(CS50 H-HT VERSION)

The instrument panel components are identified as follows:

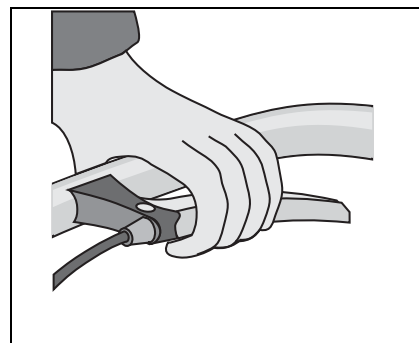
1. Suction tube closure (a): determines the closure of the fan's suction duct through the movement of a hatch, which on contact with the stop activates the electric filter shaker.
2. Filter shaker/blocking lever (b): manual control to shake the dust from the filter and to lock its supporting bracket during maintenance.
3. Side brush lever (c): pulling the lever toward you determines the lifting of the side brush. To lower it, simply release the lever by pushing it upward



12. FORWARD MOVEMENT (CS50 BT-HT VERSIONS)

To advance the machine, versions CS50 BT and CS50 HT, simply activate the lever on the control handlebar.

To advance the machine, versions CS50 B and CS50 H, simply push it forward.





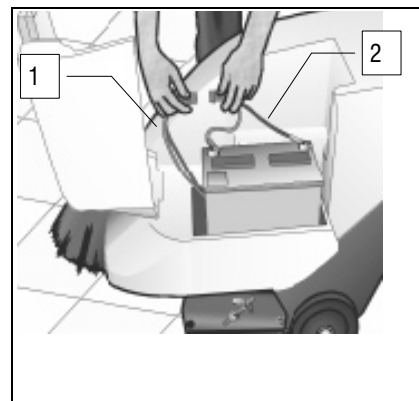
WORK

1. PREPARING TO WORK (CS50 B-BT VERSION)

1. Check that the main switch of the machine is set to "0"
2. Open the hood of the machine
3. Connect the battery connector (2) to the electric system connector (1)
4. Lower the hood
5. Make sure the debris hopper is positioned and latched properly
6. Turn the main switch of the machine in position "1"



ATTENTION: before using the machine, the operators must be suitable trained. We therefore suggest you read this instruction booklet carefully and read it again whenever difficulties arise while using the machine



2. PREPARING TO WORK (CS50 H-HT VERSION)



WARNING: Before starting the engine, carefully carry out the checks listed in the user manual of the Honda GX100 engine supplied with the machine



WARNING: In terms of optimizing the use of the machine, an engine speed has already been selected



ATTENTION: before using the machine, the operators must be suitable trained. We therefore suggest you read this instruction booklet carefully and read it again whenever difficulties arise while using the machine

3. WORK

The operator operates the machine from the ground standing behind the machine and holding the handlebar

The forward drive for the CS50 B and CS50 H versions is given by the operator, while for the CS50 BT and CS50 HT versions the drive is activated by pressing the lever on the handlebar.

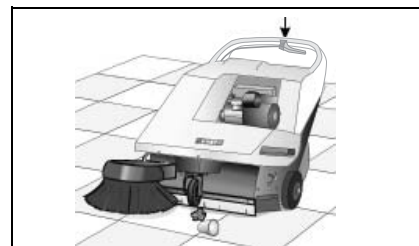
Once the machine is running the main brush will begin to turn, from this moment on you are ready to work.



ATTENTION: if the machine is used in places where there is a risk of falling objects, the operator must be provided with all the appropriate protection devices as laid out in the legal requirements



In the presence of bulky waste, to allow access to the main brush that picks them up, the machine must be raised more by pressing on the handlebars.



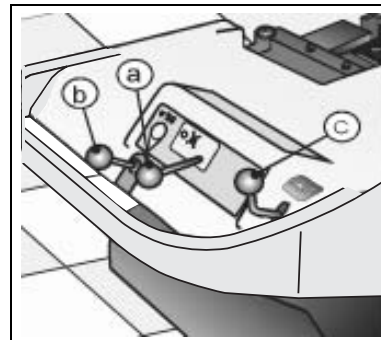


WORK

For suction efficiency, clean the filter approx. every 10 min. Proceed as follows:

- close the suction (lever a);
- activate the manual filter shaker repeatedly (lever b);
- for the version with electric filter shaker, pull the lever (a) for a few seconds at the end of run
- reopen suction and start work again.

Close the suction (lever a.) when working on wet or damp surfaces (for the version with electric filter shaker, pull the lever without activating the motor itself).



Periodically check the filling of the tray by pulling it out of the machine after having released the hooks, and if necessary empty it. Bear in mind that the weight of the dirt collected is proportional to the specific weight of the material brushed up.



ATTENTION: These operations must be carried out using gloves to protect the hands.



ATTENTION: Beware of the possible combinations of hazardous dusts that could trigger an explosion or fire.



ATTENTION: Be careful to follow the regulations regarding the disposal of hazardous dusts.

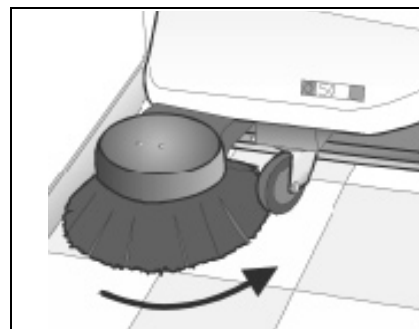


4. SIDE BRUSH

Use the side brush in a limited manner on the edges, as it is not assisted by the suction.

To use the side brush, simply release the lever (c) from its housing and push it upward.

To raise the side brush, simply push the lever (c) downwards and insert it into the idle position.



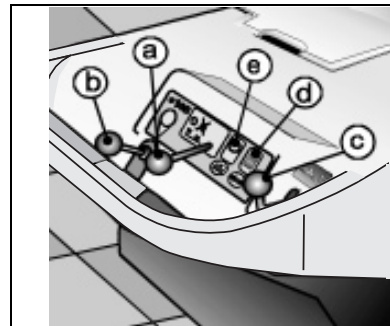


AT THE END OF THE WORK

1. AT THE END OF THE WORK

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

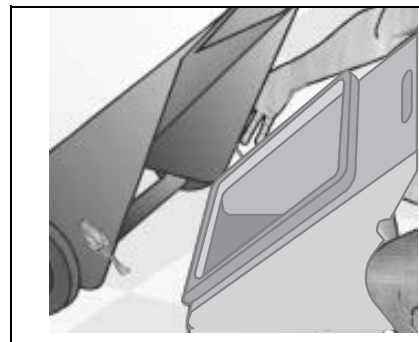
1. Bring the machine to the place provided for debris discharge
2. Position the machine's main switch (d) to "0" (for CS50 B-BT versions)
3. Turn the engine's main switch to "OFF" (for versions CS50 H-HT), see user manual for the Honda GX100 engine supplied with the machine



4. Activate the lever several times to shake the filter, for versions with electric shaker do this before shutting down the machine
5. Remove the debris hopper from its housing and empty it



ATTENTION: These operations must be carried out using gloves to protect the hands.



2. STORING OF THE MACHINE

Proceed as follows to store the machine at the end of work:

1. Park the machine in a covered area protected from the weather, and on a flat and level surface; objects that can damage or be damaged through contact with the machine must not be present close to the machine.
2. Position the machine's main switch to "0" (for CS50 B-BT versions) and disconnect the machine connector
3. Turn the engine's main switch to "OFF" (for versions CS50 H-HT), see user manual for the Honda GX100 engine supplied with the machine
4. Lift the side brush



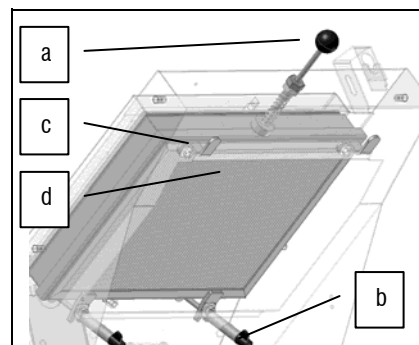
DAILY MAINTENANCE

PERFORM ALL MAINTENANCE OPERATIONS IN SEQUENCE

1. FILTER CLEANING (VERSION WITH FIXING TAB)

Proceed as follows to clean the suction filter:

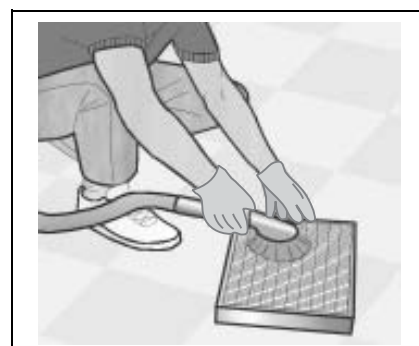
1. switch off the machine
2. Remove the debris hopper
3. Lift the filter shaker (a) and lock it in the raised position with the special pin supplied with the machine.
4. Loosen the lower knobs (b).
5. Unscrew the wing nuts (c).
6. Take out the filter panel (d).



7. Clean the filter using a vacuum cleaner or manually shaking the filter in the absence of a vacuum cleaner.
8. reassemble everything, carrying out the above-mentioned operations in the reverse order.



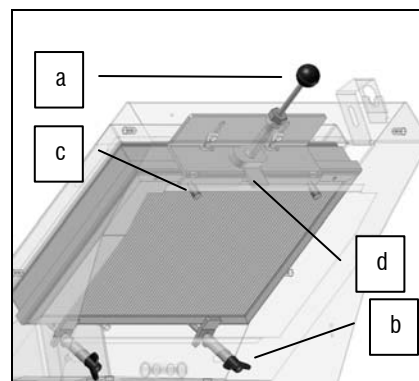
ATTENTION: These operations must be carried out using gloves to protect the hands.



2. FILTER CLEANING (VERSION WITH FIXING BRACKET)

Proceed as follows to clean the suction filter:

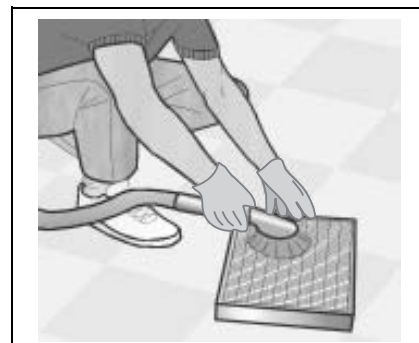
1. switch off the machine
2. Remove the debris hopper
3. Lift the filter shaker (a) and lock it in the raised position with the special pin supplied with the machine
4. Loosen the lower knobs (b)
5. Loosen the upper registers (c) with the help of a coin
6. Raise the fixing bracket and block it by rotating the filter shaker
7. Take out the filter panel (d)



8. Clean the filter using a vacuum cleaner or manually shaking the filter in the absence of a vacuum cleaner
9. Reassemble everything in reverse order to the previous operations



ATTENTION: These operations must be carried out using gloves to protect the hands.



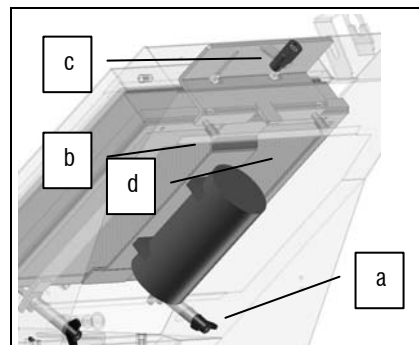


DAILY MAINTENANCE

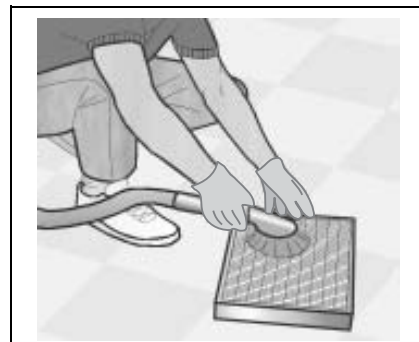
3. FILTER CLEANING (VERSION WITH FIXING BRACKET AND ELECTRIC FILTER SHAKER)

Proceed as follows to clean the suction filter:

1. switch off the machine
2. Remove the debris hopper
3. Disconnect the red connector of the filter shaker motor
4. Loosen the lower knobs (a)
5. Loosen the upper registers (b) with the help of a coin
6. Lift the fixing bracket and secure it by turning the plastic lever (c) clockwise
7. Take out the filter panel (d)



8. Clean the filter using a vacuum cleaner or manually shaking the filter in the absence of a vacuum cleaner
9. Reassemble everything in reverse order to the previous operations

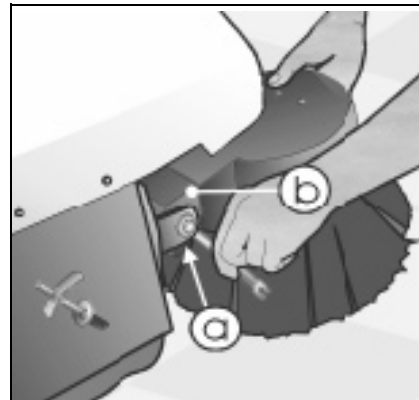




WEEKLY MAINTENANCE

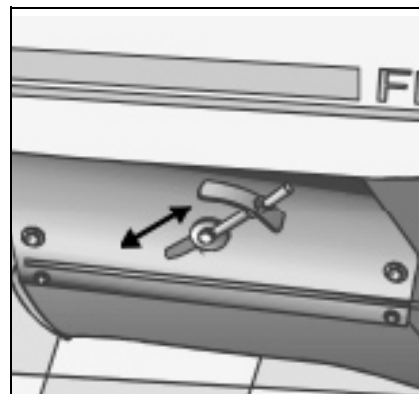
1. SIDE BRUSH ADJUSTMENT

The brush height adjustment is made by means of screw (a) inside the support bracket (b) of the brush. The brush must be compressed against the ground for about 2 cm.



2. CENTRAL BRUSH ADJUSTMENT

The central brush should operate flattened to the ground by 7/8 mm. The height adjustment is made by means of the adjustment nuts on the sides of the machine. Respect the alignment of the brush during adjustment.



3. ENGINE MAINTENANCE (CS50 H-HT VERSION)



WARNING: As for maintenance work on the motor, we suggest to closely follow the MOTOR USER MANUAL supplied with the machine.



TROUBLESHOOTING

1. THE CENTRAL BRUSH DOES NOT CLEAN WELL

1. The brush is incorrectly positioned or worn: adjust the position or if necessary, have it replaced at the COMAC service centre.
2. The debris hopper is full: empty it.
3. The brush does not turn because the belt is broken: have it replaced by COMAC assistance centre.

2. THE MACHINE RAISES DUST WHILE CLEANING

1. The flaps that ensure efficient suction are worn: replace them.
2. The filter is blocked: clean the filter thoroughly.
3. The front flap is broken and the machine projected heavy dirty bodies forward: replace them.

3. EXCESSIVE OR IRREGULAR NOISE FROM THE CENTRAL BRUSH

Material wrapped around the brush: remove it.

4. ACID LEAK FROM THE BATTERY

In the case of acid leakage from the battery, replace it immediately.



WARNING: use protective rubber gloves. The sulphuric acid contained in batteries is highly corrosive. Avoid direct contact.

5. MAINTENANCE OPERATIONS THAT REQUIRE SPECIFIC TECHNICAL KNOW-HOW

Maintenance operations are listed below, for which we recommend to contact our customer service, organized in cooperation with our dealers, as these interventions require specific technical skills and suitable equipment.

1. Central brush replacement
2. Side brush replacement
3. Belt replacement



DEMOLITION OF THE MACHINE

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*
- batteries
- endothermic engine
- plastic parts (tanks and handlebars)
- metal parts (levers and frame)



CHOOSING THE BRUSHES

TABLE FOR CHOOSING THE BRUSHES

Machine	No. of brushes	Code	Type of bristles	Ø Bristles	Ø Brush	Brush length	Notes
CS50 B-BT CS50 H-HT	1	411679	PPL	0.6	265	500	Central brush
		411683	PPL + STEEL	0.7 + 0.5			
		411682	TAMPICO	//			
		414295	PPL + COPPER	0.6 + //			
	1	411690	PPL	0.5	380		Side brush
		411691	PPL + STEEL	0.6 + //			



EC DECLARATION OF CONFORMITY

The undersigned manufacturer:

COMAC S.p.A.

Via Maestri del Lavoro n.13

37050 Santa Maria di Zevio (VR)

declares under its sole responsibility that the product

SWEEPING MACHINES

complies with the requirements of the following Directives:

- 2006/42/EC: Machinery Directive
- 2004/108/EC: Electromagnetic Compatibility Directive
- 2000/14/EC: Directive by the European Parliament and Council date 8th May, 2000. Noise emission by machines and equipment for outdoor use.

Falling into the category of road sweeper as defined in Annex 46 of Directive 2000/14/EC of the European Parliament and the Council, is subject to noise marking only.

Conformity assessment was carried out as set out in Annex III.B.46 of the said directive.

MODEL	LwA [dB(A)]	LwA, guaranteed [dB(A)]
CS50 B	81.74	85
CS50 BT	81.74	85
CS50 H	89.3	93
CS50 HT	89.3	93

They also comply with the following standards:

- EN 60335-1: Household and similar electrical appliances - Safety. Part 1: Generic norms
- EN 60335-2-72: 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 61000-6-2: Electromagnetic compatibility (EMC) - Part 6-2: Generic norms – Immunity for industrial environments.
- EN 61000-6-3: Electromagnetic compatibility (EMC) - Part 6-3: Generic norms — Standard emission for residential, commercial and light-industrial environments
- 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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37050 Santa maria di Zevio (VR) - ITALY

Santa Maria di Zevio, 04/10/2010

COMAC S.p.A.
Legal representative
Giancarlo Ruffo

COMAC spa

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