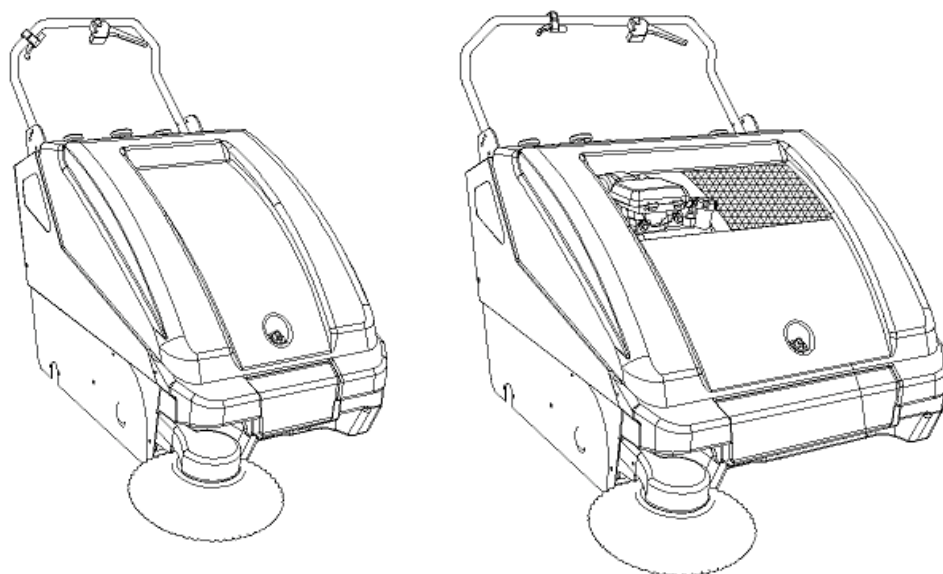


**MANUALE USO E MANUTENZIONE MOTOSCOPA  
INSTRUCTIONS AND OPERATING MANUAL  
MANUEL D'INSTRUCTION POUR MOTOBALAYEUSE  
BEDIENUNGS- UND WARTUNGSANLEITUNG KEHRMASCHINE  
MANUAL DE ISTRUCCIONES BARREDORA  
OBUDOWA I KONSERWACJA ZAMIATARKI**



**Mod. SWL 700 ET / SW 2600 BT  
Mod. SWL 900 ET / SW 3700 BT**

**Mod. SWL 700 ST / SW 2600 SC  
Mod. SWL 900 ST / SW 3700 SC**

Prodotto a norma



**LAVORWASH S.p.A.**  
Via J.F. Kennedy, 12  
46020 Pegognaga (MN)

**DICHIARAZIONE DI CONFORMITA'**  
(secondo la Direttiva CE macchine 2006/42/CE)



**La sottoscritta**

**LAVORWASH S.p.A.**  
**Via J.F. Kennedy, 12**  
**46020 Pegognaga (MN) – Italy**

**Dichiara sotto la propria responsabilità che il prodotto:**

**MOTOSCOPA**

**Mod. SWL 700 ET / SW 2600 BT**  
**Mod. SWL 900 ET / SW 3700 BT**  
**Mod. SWL 700 ST / SW 2600 SC**  
**Mod. SWL 900 ST / SW 3700 SC**

**è conforme alle seguenti direttive:**

**2006/95/CE (Direttiva bassa tensione), 2006/42/CE (Direttiva macchine),  
2004/108/CE (Direttiva EMC)**

**Norme armonizzate applicate:**

**EN 292-1 EN292-2, EN 60335-2-72, EN 55014-1, EN 294/93, EN 349/93**

**Pegognaga, 10/02/2012**

**Il fascicolo tecnico si trova presso Lavorwash S.p.A**  
**Via J.F. Kennedy, 12, 46020 Pegognaga (MN) – Italy**

**Direttore generale**  
**Lanfredi Giancarlo**



CHAPTER 1	<i>GENERAL INFORMATION</i>
CHAPTER 2	<i>PURPOSES / INTENDED USE</i>
CHAPTER 3	<i>PREPARATION (UNPACKING)</i> Unpacking Assembling the side brush
CHAPTER 4	<i>ACCEPTABLE ENVIRONMENTAL CONDITIONS</i>
CHAPTER 5	<i>INTENDED AND FORBIDDEN USE</i>
CHAPTER 6	<i>TECHNICAL SPECIFICATIONS AND NOISE LEVELS</i>
CHAPTER 7	<i>DESCRIPTION OF MACHINE</i> Description of the manual commands Specific description for battery power sweepers
CHAPTER 8	<i>OPERATOR WORK STATION - EMERGENCY STOP</i>
CHAPTER 9	<b><i>SAFETY REGULATIONS</i></b>
CHAPTER 10	<i>CHECK TO BE MADE BEFORE STARTUP</i>
CHAPTER 11	<i>STARTING AND STOPPING</i>
CHAPTER 12	<i>CORRECT USE AND ADVICE</i>
CHAPTER 13	<i>ROUTINE MAINTENANCE JOBS</i> Adjustments Replacements
CHAPTER 14	<i>EXTRAORDINARY MAINTENANCE</i>
CHAPTER 15	<i>DECOMMISSIONING</i>
CHAPTER 16	<i>DISMANTLING / DEMOLITION</i>
CHAPTER 17	<i>EMERGENCY SITUATIONS</i>
CHAPTER 18	<i>TROUBLESHOOTING</i>
CHAPTER 19	<i>WARRANTY</i>

## CHAPTER 1 – GENERAL INFORMATION



**BEFORE USING THE MACHINE, READ THIS INSTRUCTION MANUAL CAREFULLY**

LAVORWAS S.P.A.

DISCLAIMS ALL LIABILITY FOR DAMAGE TO THINGS AND / OR INJURY TO PERSONS RESULTING FROM FAILURE TO COMPLY WITH THE INSTRUCTIONS IN THIS MANUAL AND FROM INCORRECT AND / OR IMPROPER MACHINE USE.

ALL THE EQUIPMENT NEEDED FOR PERSONAL PROTECTION (GLOVES, MASKS, WHITE-LENS GLASSES, KEYS, TOOLS, ETC.) MUST BE PROVIDED BY THE USER.

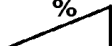
FOR EASIER READING, REFER TO THE CONTENTS PAGE.

ALWAYS KEEP THIS MANUAL HANDY FOR QUICK REFERENCE (IN CASE OF LOSS, ASK YOUR DEALER FOR ANOTHER COPY)

LAVORWASH S.P.A.

RESERVES THE RIGHT TO MAKE CHANGES OR UPGRADE ITS MACHINES, WITHOUT ANY OBLIGATION TO UPGRADE PREVIOUSLY- SOLD MACHINES.

ALL LAVORWASH MOTOR-SWEEPERS CONFORM TO EEC STANDARDS AND ARE LABELLED:

<b>LAVOR</b> <b>PRO</b>		<b>CE</b>	
Lavorwash S.p.A. - J.F. Kennedy 12, Pegognaga (MN)		Made in Italy	
MOD.	<input type="text"/>	MATR.	<input type="text" value="00000"/>
COD.	<input type="text"/>	ANNO COSTR.	<input type="text"/>
MASSA KG	<input type="text"/>	KW	<input type="text"/>
VOLTS	<input type="text"/>	Db	<input type="text" value="(LpA)"/> 

## CHAPTER 2 – PURPOSE OF THE SWEEPER

As per directive EC and its ensuing amendments, every machine is supplied with a manual for its use and maintenance. Should this documentation result missing, the user is kindly requested to order it. Every machine is accompanied by the following documentation:

- Handbook for use and maintenance
- Handbook for use and maintenance of engine (endothermic versions)
- Declaration of conformity to directive EC and its ensuing amendments.

With the aim of using the machine correctly and with maximum safety, the user must carefully read this entire manual, paying particular attention to the sections regarding potential risks, safety regulations and emergency operations.

All the articles for the personal protection of the operator, specifically indicated in the manual, (gloves, masks, glasses, etc.) must be supplied by the user.

The terms front, rear, left and right used in this publication always refer to the driving position occupied by the operator.

To assure the longest possible life of the machine parts, the instructions in this handbook must be followed closely and only original spare parts must be used.

Data contained in this documents are liable to change since the Manufacturer reserved the right, in any given moment, to make modifications with the aim of improving the machines.

## CHAPTER 3 - PREPARATION

► **UNPACKING:**

Having eliminated the outer packaging, free the machine from the pallet as follows:

- 1) Release the front wheel brake
  - 2) Remove the sticky tape **Detail C** blocking the handlebar
  - 3) Open the bin **Detail A** and pull out the two handlebar supports **Detail B Fig.1**
  - 4) Screw the handlebar supports **Part. B** into the holes **Part. E Fig. 1**
  - 5) Screw the ends of the handle into the holes **Detail D** on the supports as shown in **Fig.1/B**
- 6) Take the machine off the pallet: according to the machine weight, written on the CE label, this can be done in different ways:
- a) With the aid of one or more people provided with gloves, lift the machine, holding it by handle at the front, and stand it on the ground.
  - b) With the aid of a slanting board (not longer than 80 cm not to damage the dust flaps) placed against the narrowest side of the bench, slide the machine down until the floor.

**IMPORTANT:** *Check that the machine has not been damaged. In the case of apparent faults, do not attempt to use the machine and inform the supplier or the manufacturer.*



**IT IS DUTY OF THE USER TO ENSURE THAT THE WASTE PACKAGING IS DISPOSED OF AND DESTROYED ACCORDING TO THE SPECIFIC REGULATIONS.**

► **ASSEMBLING THE SIDE BRUSH:**

- 1) Take the side brush **Detail 2 Fig. 2** out of the bin **Detail A Fig. 1**
- 2) Unscrew and remove the three bolts **Detail 1 Fig. 1**; assemble the brush so that the three pins fit into the holes **Detail 3 Fig. 2**
- 3) Replace the three bolts **Detail 1** and screw on tightly to block the brush.
- 4) Once assembled, the side brush makes contact with **Detail 2 Fig. 2** blocking the pulley where to place the elastic belt **Detail 5 Fig. 1**
- 5) Pull the belt **Detail 5** forwards and fit it into the plastic pulley **Detail 4**.
- 6) Unscrew the screws **Detail 6**: the purpose of these screws is to keep the belt taut while assembling the brush. Once the brush has been assembled these screws are no more needed.
- 7) Secure the cover **Detail 1 Fig. 3** using the three screws **Detail 2 Fig. 3**.

## CHAPTER 4 - PERMITTED ENVIRONMENTAL CONDITIONS

FOR THE ENDOTHERMIC VERSIONS:

<b>MINIMUM WORKING TEMPERATURE</b>	<b>- 28° C</b>	<b>(- 18,4° F)</b>
<b>MAXIMUM WORKING TEMPERATURE</b>	<b>+ 38° C</b>	<b>(+ 100° F)</b>

FOR THE ELECTRIC VERSIONS:

<b>MINIMUM WORKING TEMPERATURE</b>	<b>- 20° C</b>	<b>(- 4° F)</b>
<b>MAXIMUM WORKING TEMPERATURE</b>	<b>+ 40° C</b>	<b>(+ 104° F)</b>

**IMPORTANT:** *Do not use or leave parked with temperatures above +45° C (+113° F).*

## CHAPTER 5 – PERMITTED AND FORBIDDEN USES

► **PERMITTED USES:**

The **SWL 700/900 – SW 2600/SW 3700** sweeping machines are designed for cleaning ground surfaces under the following conditions: types of material to be swept up from ground: machining residues, dust, grit, dirt in general; types and features of working surfaces (ground): hard, flat and compact surfaces such as: asphalt, concrete, wood surfaces, metallic surfaces, ceramics, marble, smooth or rusticated plastic materials fibre or synthetic (to avoid electrostatic charges on these surfaces, natural fibre brushes are essential.) cut moquette; type of environment: closed environments (electric versions), open environments (endothermic versions).

► **FORBIDDEN USES:**

**SWL 700/900 – SW 2600/SW 3700** sweeping machines must not be used under the following conditions:

- ✗ For gathering up oils, toxic dust or materials and chemical in general (specific authorisation must be requested from the manufacturer or supplier if the machine is to be used in chemical plants or in environments where toxic waste is to be removed from the floors).
- ✗ The machine must not be used for collecting filiform materials (for example, waste threads from textile production, or long chips from mechanical machining) since material in this form would be incompatible with the mechanical rotary action of the central brush.
- ✗ Sweeping up lighted cigarette butts or any other object which could cause the combustion of the deposits in the container or filter cartridges.
  
- ✗ The machine must not be used for clearing snow, for washing any type of surface or for use on particularly wet or damp surfaces.
- ✗ The machine must not be used on surfaces with a gradient of more than **2 %**.
- ✗ The machine must not be used on surfaces which are particularly loose, broken up or gravelly.
- ✗ The machine must not be used in the presence of explosive or inflammable materials (in these circumstances machines bearing FLP certificates must be used).
- ✗ The machine must not be used on public highways as it is not equipped for highway homologation.
- ✗ The machine must not be used in badly lit environments unless fitted with their own lighting unit.
- ✗ The endothermic version of the machine (with an internal combustion engine) must not be used in enclosed environments since **the exhaust fumes from the motor contain carbon monoxide, a lethal odourless gas.**
- ✗ The machine must not be towed or used for towing anything.
- ✗ The machine must not be used as a raised surface or resting surface for persons or objects.
- ✗ The machine must not be used without the protective casing with which it is fitted.

## CHAPTER 6 – TECHNICAL FEATURES AND NOISE LEVELS

DESCRIPTION	U.M.	SWL 700 ST – SW 2600 SC	SWL 700 ET – SW 2600 BT	SWL 900 ST – SW 3700 SC	SWL 900 ET – SW 3700 BT
POWER	//	Petrol	Battery	Petrol	Battery
CLEANING WIDTH WITH MAIN BRUSH	mm	510	510	700	700
CLEANING WIDTH WITH MAIN BRUSH + SIDE BRUSH	mm	680	680	880	880
CLEANING CAPACITY	m <sup>2</sup> /h	2600	2600	3550	3550
TRACTION		Standard	Standard	Standard	Standard
SPEED	m/Sec	1,1	1,1	1,1	1,1
FILTERING SURFACE	m <sup>2</sup>	2	2	3	3
FILTER CLEANING	//	manual	Electric	Manual	electric
CONTAINER CAPACITY	L	45	45	55	55
ELECTRIC MOTOR	KW	-	0,4	-	0,4
SPANNUNG	V.	-	12	-	12
LENGHT	mm	1260	1260	1260	1260
WIDTH	mm	630	630	820	820
HEIGHT	mm	850	850	850	850
WEIGHT (WITHOUT BATTERIES)	kg	76	78	87	89
MAX. OPERATING AUTONOMY	h	1,5 - 4	1,5 - 4	1,5 - 4	1,5 - 4
NOISE LEVEL	dBA	78,7	62,5	78,7	62,5
VIBRATION	m/sec <sup>2</sup>	1,38	1,38	1,38	1,38

(\* ) Noise and speed measurements were taken for the explosion engine powered sweeper while the engine was running at 3.000 rpm.

## CHAPTER 7 - DESCRIPTION OF THE MACHINE

APPLICABLE TO ALL MODELS

### ► SAFETY MEASURES:

The safety devices are illustrated in **Fig. 4**: they must be installed accurately and be in proper working order. The machine cannot be used if one or more safety devices are missing or damaged; the description of the safety devices are given below:

DETAIL	FIG.	DESCRIPTION
1	4	Battery cover (BATTERY ONLY)
2	4	Protective case
3	4	Rh side case
3	4	Lh side case
4	4	Rh safety net
4	4	Lh safety net
5	4	Front bumper
6	4	Cover for side brush
	4/A	Case switch (BATTERY ONLY)

► **SIDE BRUSH:**

The side brush, **Detail 5 Fig. 4**, acts as a conveyor of the dust and rubbish and is only used to clean edges, corners and borders; after these operations it has to be lifted up to avoid raising dust and also because the cleaning effect of the side brush is always less than that of the main broom.



**NEVER TOUCH THE SIDE BRUSH WITH YOUR HANDS WHEN IT IS TURNING, DO NOT COLLECT THREADY MATERIAL.**

► **CENTRAL BRUSH:**

The main brush, **Detail 2 Fig. 5** is the main part of the sweeper. This brush collects and loads dust and rubbish in the refuse container; it is available with different types of bristles of different harnesses according to the material to be collected; it can be adjusted in height when it is worn.

**IMPORTANT:** *Never collect string, wires, packaging straps, sticks etc., that are longer than 25 cm as they could wind around the side and main brushes.*

► **FILTERING SYSTEM:**

Thanks to the sweeper's filtering effect no dust is seen in the environment when it is working. This is achieved by means of filters **Detail 3 Fig. 5**; the filter system can be disengaged by pulling the knob **Detail 4 Fig. 6** upwards.

**IMPORTANT:** *Disengage the filter when going over damp surfaces (if the machine is running) otherwise the paper filters will get damp causing them to deteriorate quickly.*

► **DUST FLAPS:**

See **Details 4 of Fig. 5**. These flaps are all around the main brush and are extremely important to ensure that the sweeper works properly thanks to their suction effect; check them often to make sure they are always in a good state of repair.

► **REFUSE CONTAINER:**

The refuse collector or container **Detail A Fig. 1**, is made in strong and resistant plastic and holds all the material collected by the main brush and dust from the filters.

**IMPORTANT:** *Always empty the container after the motor has been turned off, wearing gloves and even a mask to protect your lungs from the dust which is always present in this operation.*

## DESCRIPTION OF THE MANUAL COMMANDS

**SWL 700 ST/ SWL 900 ST/ SW 2600 SC / SW 3700 SC:** Part. 1 - 4 - 5 - 6 - 9

**SWL 700 ET/ SWL 900 ET/ SW 2600 BT/ SW 3700 BT:** Part. 1 - 2 - 3 - 4 - 6 - 7 - 8 - 9

► **FORWARDS LEVER:**

By pulling the forwards lever, **Detail 1 Fig. 6** towards the handle, an internal mechanism is activated which causes the moving of the sweepers at its own speed (forwards only). Traction will stop when you let go of this lever.

► **SIDE BRUSH ENGAGEMENT LEVER:**

The engagement lever **Detail 6 Fig. 6** makes possible to lower the brush from the driving seat. Remember that the side brush must only be used for cleaning edges, profiles and corners and that it continues to rotate when the machine motor is working.

**IMPORTANT:** *Never touch the side brush with your hands and never pick up threaded materials.*

► **FILTER SHAKING KNOB:**

This knob is used to shake (clean) the filter, **Detail 3 Fig. 5** : pull it and leave it suddenly 5 or 6 times to mechanically shake the filters; the dust on the filters will fall inside the container.

**IMPORTANT: This operation must be carried out before starting works and before emptying the container with the motor off or with suction disengaged.**



**ON THE BATTERY MODELS THIS KNOB IS REPLACED BY A VIBRATING ELECTRIC BUTTON DETAIL 7 FIG. 6. TO CLEAN THE FILTER KEEP THIS BUTTON PRESSED FOR 4 / 6 SECONDS; REPEAT 5/6 TIMES.**

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► **SUCTION OFF KNOB:**

**Detail 4 Fig. 6.** When this knob is pulled outwards, suction is disengaged. Disengage the suction every time the filters need shaking or when passing over damp areas (with the motor on).

► **FLAP-LIFT LEVER:**

By pressing the flap-lift lever **Part. 9 Fig. 6**, the front seal lifts up for picking up a large objects. Suitable for collecting leaves, cigarette packets, etc.

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### **SPECIFIC DESCRIPTION FOR BATTERY SWEEPERS**

► **START KEY:**

**Detail 3 Fig. 6**, to start and stop the sweeper's motor that activates all the movements and rotations at a steady state.

► **FLAT BATTERY INDICATOR LIGHT:**

**Detail 2 Fig. 6.** This indicator light signals fully charged battery with a **green light**, low battery with an **intermittent red light which means it must be recharged** and flat battery with a **permanent red light**.

► **BATTERY CHARGER PLUG (CONNECTOR):**

**Detail 8 Fig. 6**, used to activate a battery charger fitted with the same type of plug for recharging.

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## **CHAPTER 8 – OPERATOR WORKING POSITION AND EMERGENCY STOP**

► **WORKING POSITION:**

When using the machine the operator must be in the working position shown in **Fig. 7**.

► **EMERGENCY STOP: PETROL VERSION**

Release the forwards lever **Detail 1 Fig. 6** and brake the sweeper with the force of Your arms, now put the accelerator lever (on the motor) on the STOP position.

► **EMERGENCY STOP: BATTERY VERSION**

Release the forwards lever **Detail 1 Fig. 6** and brake the sweeper with the force of Your arms, now turn the start key from right to left **Detail 3 Fig. 6**.

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## **CHAPTER 9 – SAFETY RULES AND REGULATIONS**

Although the machine conforms to all the safety regulations, there is always a certain degree of risk involved with any type of machine, either due to incorrect use (see paragraph relative to forbidden use) or inevitable risks due to the nature of the machine. These risks are defined as "residual risks".

The chapter shows a list of foreseeable residual risks and how to minimize the deriving dangers.

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VALID FOR ALL MODELS AND VERSIONS

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**RESIDUAL RISKS:**



- Risk of lesions to limbs and eyes through using the machine without the supplied safety protections correctly assembled and not damaged.
- Risk of lesions to limbs through contact with the side brush or with the central brush in rotation. The brushes may only be touched when the machine is off and with the added protection of heavy duty gloves to avoid lesions caused by any sharp material remained in the brushes.
- Risk of inhaling harmful substances or causing lesions to hands and eyes while emptying the refuse container if this operation is made without suitable protections such as heavy duty gloves, glasses and a protective breathing mask.
- Risk of loss of control of the machine if used on gradients of more than 2% or if left parked on slopes, as the machine is not fitted with a braking device.

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### VALID FOR MODELS WITH ENDOTHERMIC ENGINES

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#### **RESIDUAL RISKS:**

Concerning risks involving the engine, the chapter "Safety rules and regulations" of the hand-book enclosed with the documentation of the machine, must be studied carefully.

- Risks of explosion or fire while filling the engine with fuel if carried out while the engine is running or not completely cooled. Make sure that, while filling the engine, there are no naked flames or sparks caused by grinders, welders or other.
- Risk of severe burns if any type of operation is carried out on the engine while it is running or not completely cooled.

---

### VALID FOR MODELS WITH BATTERIES

---

#### **RESIDUAL RISKS:**

- Risk of electrocution or severe burns due to a short circuit. Before carrying out any repairs or maintenance operations in general to the machine or to the battery, the battery terminals must be removed. Never use current from the battery by using pliers, grips or any other type of improvised contact.
- Risks of severe burns and intoxication of the breathing apparatus while filling the battery elements with sulphuric acid solution in the case of a new dry battery. To carry out this operation the following protections are necessary: heavy duty gloves, glasses and breathing mask. The sulphuric acid solution must be stopped out of the reach of children and in the case of contact with the eyes, rinse thoroughly and consult a doctor.
- Risks of severe burns and intoxication of the breathing apparatus due to leakage of the sulphuric acid solution if, as necessary for certain maintenance interventions, the machine is tilted without first having removed the batteries.
- Risks of explosion in the vicinity of naked flames or sparks.
- Risks of explosion, fire and lesions while recharging the battery. To reduce these risks of this nature to a minimum, follow the indications below:

#### **IMPORTANT: Use a battery charger suitable to the capacity and features of the battery:**

- for the 12V 110 - 140Ah tubular or flat plate battery, use an automatic electronic 12V 20A model fitted with an SB50 connector.
- for the 6V 240Ah tubular or flat plate batteries (2 units connected in serial), use an automatic electronic 12V 40A model fitted with an SB50 connector.
- Before starting the operation of recharging the battery, make sure that the room is well ventilated, or recharge it in a room specially fitted out for this purpose.
- Do not smoke or go near a naked flame or any other apparatus that can produce sparks.
- Make sure that all the connections (wiring terminals, plugs, sockets etc.) are tight fitting and efficient.
- Do not rest tools or metallic objects on top of the batteries.
- Avoid overloads and keep the temperature of the batteries below 45-50° C.
- Top up with distilled water whenever the level of the electrolyte goes below 5-10 mm from the splash guard.
- Keep any centralised filling systems clean and efficient.
- Do not move the machine manually or start it up for any reason while recharging the battery.

## CHAPTER 10 – CHECKS PRIOR TO STARTING UP

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### SPECIFIC CHECKS FOR MODELS WITH ENDOTHERMIC ENGINES

**Carefully read use and maintenance handbook for the motor, enclosed with the documentation supplied with the machine.**

Check the oil level of the engine and top up if necessary (wear nitril safety gloves throughout the operation). For type of oil and amount, see indications in the handbook for the engine.

Fill up with petrol (with the engine off and cold, and using the type of fuel recommended by the manufacturer of the engine - see engine user handbook). The container used for storing the petrol must be suitable for this purpose and perfectly clean so as to avoid damage to the petrol filter caused by impurities. Use a petrol container of a capacity in proportion to the amount consumed, so that in a period of 2 - 3 months the fuel is

all used in this way it will always be fresh.



**STORE THE FUEL IN A FRESH AIRY PLACE, AWAY FROM SOURCES OF HEAT AND OUT OF REACH OF CHILDREN.**

---

### SPECIFIC CHECK FOR MACHINES POWERED BY BATTERY

Check if the battery contains the sulphuric acid solution and if it is charged.

If not, proceed as follows:

***Carefully read the chapter "Safety rules and regulations", which specifies the risks involved with filling the elements with the sulphuric acid solution***

***Acquire the following instruments and personal protections: Safety glasses, protective gloves, 1 pair of scissors, 1 receptacle for the transfer (clean), 1 funnel (clean).***

- Use the scissors to cut off the end of the plastic container holding the sulphuric acid solution and pour it into the transfer container.
- Remove the cap to the chambers of the battery elements.
- With the aid of the funnel, pour in the solution until it reaches the level shown on the outside of the battery.
- Wait at least 12 hours leaving the battery inactive and then, if necessary, top up the solution bringing the levels, of the various elements to the same conditions.
- Carefully read, in the chapter "Safety rules and regulations", the risks involved in charging or discharging the battery.
- Charge the battery.

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## CHAPTER 11 – STARTING AND STOPPING



**STARTING THE MACHINE, IT IS INDISPENSABLE TO HAVE READ THE PREVIOUS CHAPTERS.**

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### SPECIFIC SEQUENCE FOR MODELS WITH ENDOTHERMIC ENGINES

▶ **STARTING:**

- 1 - Turn the STOP control clockwise to position "1"
- 2 - Open the fuel cock
- 3 - Set the speed control lever to "S" (start)
- 4 - Close the "starter" lever
  - > If the engine is already warm or in hot weather, pull the starter halfway out or keep it fully open
  - > If the engine is cold or in cold weather, close the starter.
- 5 - Pull the self-winding handle slowly until it offers resistance. This point marks the start of compression. Return the handle to its original position and pull it sharply. Do not pull the cable out of the guide. Start the engine and return the self-winding handle to its original position without letting it go sharply.
- 6 - Start the engine and open the starter lever gradually leaving it fully open. Do not open the starter lever fully if the engine is still cold or in cold weather as the engine might stall.

▶ **RUNNING:**

- 1 - Once the engine is running return the accelerator lever to the low speed position " L " and warm the engine for a few minutes. Gradually move the accelerator lever towards the high speed position " H " until the required speed is reached.

***IMPORTANT: If there is no need to keep the engine accelerating, slow it down gradually by moving the accelerator lever to the idle running speed: this will reduce fuel consumption and prolong the engine life.***

▶ **TURNING THE ENGINE OFF:**

- 1 - Move the accelerator lever to Minimum and keep the engine running for 2-3 minutes before turning it off.
- 2 - Turn the STOP control anticlockwise to " O ".
- 3 - Close the fuel cock
- 4 - Pull the self-winding handle slowly and return it to its original position until the point of resistance.

**IMPORTANT:** *This manoeuvre prevents condensation from forming in the combustion chamber.*

---

## SPECIFIC SEQUENCE FOR BATTERY POWERED MODELS

▶ **START:**

1 - Turn the key in the clockwise direction **Detail 3 Fig. 6.**

▶ **STOP:**

1 - Turn the key in the anticlockwise direction, **Detail 3 Fig. 6.**

## CHAPTER 12 – CORRECT USE AND ADVICE

**IMPORTANT:** *Before starting the job, make sure that the surface to be swept is free of objects such as ropes, strips of plastic or metal, rags, stick, live electric cables or other similar articles.*

*If such object are present, remove them to avoid damage to the machine or, in the case of live electric cables, risks of electrocution.*

Crossing over rails, small steps or guides which stick up from the floor can damage the flaps on the central brush vacuum chamber; this being one of the most frequent causes of damage, if such object have to be crossed, lift the front part of the machine at the moment of crossing by pressing down on the handle to gain leverage.

Avoid crossing over wet or particular damp surfaces in order to avoid damage to the paper filters. In cases of strict necessity, before crossing stop suction pulling the lever **Detail 4 Fig. 6.**

If the area to be cleaned is very dirty owing to the quantity and quality of the dirt to be eliminated, it is advisable to pass over the first time to get rid of the majority of the dirt, then pass over a second time with the refuse container and the suction filters clean.

If the machine is used methodically and correctly, it is not necessary to carry out multiple passes.

To keep the machine efficient and consequently obtain top performance, the vacuum filters must be shaken and cleaned periodically and the refuse container emptied frequently.

The side brush is used for removing dirt from edges, skirting, corners, etc. and therefore it should be kept in the raised position when it is not carrying out this function. If it is left on the ground, it will raise dust and in this case, the cleaning power of the central brush will be jeopardised.

For the use in small spaces or for moving round close curves, it is advisable not to use the mechanical traction so that the machine is easier to manoeuvre.

For battery powered machines, keep a close check on the condition of the battery and recharge it as soon as the needle on the volt meter moves onto the red zone.

**NEVER LET THE BATTERIES RUN COMPLETELY FLAT AND ALWAYS LET THE BATTERY CHARGER RUN A FULL CYCLE WHEN RECHARGING THE BATTERIES.**

## CHAPTER 13 – ROUTINE MAINTENANCE



**ANY MAINTENANCE OPERATION MUST BE CARRIED OUT WITH THE ENGINE OFF AND COLD IN THE CASE OF ENDOTHERMIC VERSIONS OF THE MACHINE (GIOIA 50 ST AND GIOIA 70 ST) AND WITH THE BATTERY DISCONNECTED IN THE ELECTRIC VERSIONS (GIOIA 51 ET AND GIOIA 71 ET).**

▶ **CLEANING THE DUST FILTER:**

Check the dust filter **Detail 1 Fig. 8** every 40-70 working hours or as necessary. Open the cover **Detail 1 Fig.1** to access the filter compartment.

Cleaning the filter: with the bin **Detail A Fig.1** in place, point the compressed air gun towards the top of the filter so that the dust falls into the bin. Make sure the filter is in good condition and replace it if necessary.

▶ **DUST SEALS:**

Check the condition of the flaps every 40/70 hours. Damage or inefficiency of the flaps jeopardises the performance of the machine in terms of cleaning quality, **Detail 4 Fig. 6**.

**IMPORTANT: To replace the side flaps, make sure that their lower edge is 2-3 mm from the ground.**

► **SIDE BRUSH:**

**Detail 1 Fig. 9.** Keep raised from the ground when not in use to avoid raising dust unnecessarily. Keep raised from the ground when the machine is not in use and make sure it does not come into contact with other objects which could bend it making it unserviceable.

► **CENTRE BRUSH:**

To clean the centre brush.

The following implements are necessary for carrying out this operation: heavy duty gloves, breathing mask, pliers, scissors

Check the condition of the central brush every 50/80 running hours, or more frequently if the machine is used for particularly heavy duties. To gain visual access to the central brush, remove the refuse container (**Detail A Fig. 1**) and tip the machine as shown in **Fig. 9**, by pressing down the handle.

If any ropes, wires or other refuse of this type has been inadvertently collected up, wear the heavy duty gloves and the protective mask to eliminate any refuse that has been wound in the brush.



**FOR ELECTRIC MACHINES, REMOVE THE BATTERIES BEFORE TILTING SO AS TO AVOID SPILLAGE OF THE SULPHURIC ACID SOLUTION.**

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## ADJUSTMENTS

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► **CENTRE BRUSH:**

To adjust the centre brush

If the machine removes dirt and debris inefficiently or leaves dirt behind, it needs to be adjusted. Lower the centre brush and proceed as follows:

- Remove the protective case **Detail 2 Fig.4**
- Loosen the bolt **Detail 1 Fig.10** in the slot at the front
- Tighten bolt **Detail 2 Fig.10** until the three bolts **Detail 1, 2 and 3 Fig.10** make contact
- If the brush is too flat on the ground, loosen bolt **Detail 2** and tighten bolt **Detail 1**.

**N.B.:** To ensure the centre brush is correctly adjusted, measure its "Track" as follows:

- After making adjustments, start the machine up and, without moving either forwards or backwards, leave it standing in the same place for at least 10 / 15 sec. with the centre brush lowered.
- Turn off the motor, raise the centre brush and move the machine forwards manually until the mark left by the rotation centre brush on the floor is visible, as shown in **Fig. 11**.

**N.B.:** The width of the track must not be under 3 cm.

► **FORWARD REGULATION:**

If a machine with mechanical forward drive has lost power, regulate the forward drive as follows:

Loosen bolt **Detail 1 Fig. 12**, move the driving wheel **Detail 3** closer to the hub of the driving pulley **Detail 4** and unscrew the threaded adjusting screw **Detail 2 Fig.12** as required.

**IMPORTANT: After regulation the wheel Detail 3 must be as close as possible to the driving pulley Detail 4 WITHOUT ACTUALLY TOUCHING IT.**

► **REFUSE CONTAINER:**

To carry out this operation, with the machine off, the following articles are necessary: heavy duty gloves, detergent.

Every 50-60 working hours, or more often if the machine is used for particular heavy duties, the container must be washed to avoid the formation of un-hygienic conditions which could be dangerous because of the high concentrations of bacteria.

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## REPLACEMENTS

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► **REPLACING THE CENTRE BRUSH:**

**ALWAYS WEAR GLOVES AND A BREATHING MASK WHEN REPLACING THE CENTRE BRUSH AND ONLY CARRY OUT THIS MANOEUVRE WITH THE ENGINE AT A STANDSTILL AND COLD.**

- 1- Remove the bin **Detail A Fig.1** and push the handle to bring the machine into the position illustrated in **Fig.13**.
- 2- Unscrew and remove the two screws **Detail A** and **B Fig. 13**.
- 3- Before removing the brush from the machine note the direction of the bristles (see **Fig.13**).
- 4- Remove the worn brush and replace it with a new one.
- 5- Replace and tighten the screws **Detail A** and **B Fig. 13** and adjust the height of the brush (see *paragraph ADJUSTMENTS: CENTRE BRUSH on the previous pages*).

► **REPLACING THE SIDE BRUSH:**

- 1- Remove the bin **Detail A Fig.1** and tilt the machine as shown in **Fig.13**.
- 2- Unscrew and remove the three screws **Detail C** that hold the side brush **Detail 1** in place.
- 3- Remove the brush belt from the plastic pulley.
- 4- Remove the side brush using a screwdriver for leverage in the groove on the pulley race (see **Fig.14**)
- 5- Assemble a new brush and secure it by carrying out the above operations in reverse order.

► **REPLACING THE DUST FILTER:**

Check the dust filter **Detail 1 Fig. 8** every 40 - 70 working hours or as necessary. Take the filter out of its seat by unscrewing bolt **Detail 2 Fig.8**. Position the new filter and tighten the bolt **Detail 2 Fig. 8** making sure the filter-pressure bracket **Detail 3 Fig.8** is sufficiently compressed.

## SPECIFIC OPERATIONS FOR ENDOTHERMIC MODELS



**FOR OPERATIONS RELATIVE TO THE ENGINES, IT IS NECESSARY TO READ THE SPECIFIC USE AND MAINTENANCE HAND BOOK ENCLOSED.**

Carry out the operations for checking the engines or changing the while wearing protective nitrile gloves.

Used oil must be disposed of according to the standards enforced by the law.

Normal maintenance involves:

- 1 - Checking the oil lever every 5 working hours.
- 2 - Changing the oil after the first 5 hours (follow the indications in the engine handbook for the type of oil to use).
- 3 - Changing the oil every following 25 hours in the case of heavy duties, or every 50 hours of normal use.
- 4 - Cleaning the air filter every 25 hours.

## SPECIFIC OPERATIONS FOR BATTERY POWERED MODELS



**FOR OPERATIONS RELATIVE TO THE BATTERY, FOLLOW THE INSTRUCTIONS DESCRIBED IN CHAPTER SAFETY RULES AND REGULATIONS IN THE PARAGRAPH RESIDUAL RISKS FOR BATTERY POWERED MODELS.**

So that the batteries last as long as possible, recharge them as soon as the volt meter goes into the red zone. If the accumulators go excessively low, the performance is reduced and their life is consequently shorter.

At each charging cycle, check the level of the sulphuric acid solution in the elements of the battery. Top up with distilled water if necessary.

Always complete the recharge cycle without interrupting it.

Ask the Dealer or Supplier to send qualified personnel to check the electric motor brushes every 200 working hours.

**BATTERIES, NEW BATTERIES INCLUDED, THAT ARE ALLOWED TO RUN COMPLETELY FLAT CANNOT BE RE-CHARGED.**

## CHAPTER 14 – EXTRAORDINARY MAINTENANCE





**EXTRAORDINARY MAINTENANCE MEANS ANY OPERATION NOT INCLUDED IN THE CHAPTER ROUTINE MAINTENANCE. ALL SPECIAL MAINTENANCE OPERATIONS HAVE TO BE MADE BY MANUFACTURER'S OR DEALER'S QUALIFIED STAFF ONLY.**

## **CHAPTER 15 – LEAVING THE MACHINE UNUSED FOR LONG PERIODS**

### **MODELS IN ENDOTHERMIC VERSIONS**

Leave the machine running to use all the petrol in the tank. Once the machine stops for lack of fuel, wait for the motor to cool down and then clean the filters and refill the container thoroughly.

### **MODELS IN ELECTRIC VERSION**

Remove the batteries from their housing and store them in a cool ventilated place. The batteries, even if not used, must be recharged every 30 - 40 days. After the same period check the level of sulphuric acid solution and top up if necessary. Thoroughly clean the filters and refuse container.

## **CHAPTER 16 – DISMANTLING/DEMOLITION**



**THE DESTRUCTION OR DEMOLITION OF THE MACHINE MUST BE CARRIED OUT BY THE OWNER WITH TOTAL OBSERVATION OF THE LAWS IN FORCE. IT IS ADVISABLE TO UTILISE COMPANIES SPECIALISED IN THIS SECTOR.**

## **CHAPTER 17 – EMERGENCY SITUATIONS**

In any kind of emergency situation such as, for example, if You have accidentally driven the sweeper over current-carrying cables on the floor which have wound around the main or side broom, or there are strange noises coming from inside the machine or motor, or You have accidentally picked up incandescent materials or flammable liquids, chemical products in general, poisons, etc.

### **YOU WILL HAVE TO:**

- 1 - Release the lever to stop traction.**
- 2 - Turn engine off in the explosion engine models, putting the accelerator lever, that is on the engine, onto STOP; or in the case of battery powered sweepers, turn the start key, on the control panel, from right to left.**
- 3 - If You have collected any of the material described above, extract the container (bin) and clean it wearing gloves and a mask to protect Your lungs. In all events, please follow the instructions given on the paragraph Collection container.**

## **CHAPTER 18 – FAULTS / CAUSES / REMEDIES**

Two main faults may occur in the sweepers: the machine causes dust during use or leaves dirt on the floor; there can be many reasons for this but if the machine is used correctly and routine maintenance is carried out regularly, they should not occur very often. Therefore:

<b>FAULTS</b>	<b>CAUSES</b>	<b>REMEDIES</b>
THE MACHINE CAUSES DUST	LEVER IN POSITION TO STOP SUCTION	PUSH THE KNOB TO OPEN THE SUCTION
	FILTERS CLOGGED	CLEAN THEM BY SHAKING IT WITH THE FILTER-SHAKER AND IF NECESSARY REMOVE AND CLEAN IT THOROUGHLY
	FILTER DAMAGED	REPLACE IT
	FILTER BADLY INSTALLED	MAKE SURE IS CORRECTLY INSERTED
	SIDE DUST FLAP(S) DAMAGED	REPLACE IT (THEM)
	CONTINUOUS USE OF THE SIDE BROOM	USE THE SIDE BROOM ONLY FOR THE EDGES, BORDERS AND CORNERS
THE MACHINE LEAVES TRACES OF DIRT ON THE FLOOR	THE MAIN BROOM IS NOT CORRECTLY ADJUSTED OR IS WORN	CHECK THE MAIN BROOM AND IT "TRACK"
	YOU HAVE COLLECTED WIRES, CABLES ETC.	REMOVE THEM
	SIDE FLAP(S) DAMAGED	REPLACE IT (THEM)
	THE COLLECTION BIN IS FULL	EMPTY IT
THE EXPLOSION ENGINE IS NOT PERFORMING CORRECTLY	ENGINE AIR FILTER IS DIRTY	CLEAN OR REPLACE IT
	CARBURATION WRONG	RECARBURATE
THE BATTERY-POWERED SWEEPER IS NOT PERFORMING CORRECTLY; IT IS SLOW AND IS NOT CLEANING WELL	FLAT BATTERY OR NOT FULLY CHARGED	CHECK THE LEVER OF THE ELECTROLYTE AND CARRY OUT A NEW COMPLETE BATTERY CHARGING CYCLE
	THE RECOMMENDED BATTERY CHARGER HAS NOT BEEN USED	USE AN APPROPRIATE BATTERY CHARGER

## **CHAPTER 19 - WARRANTY**

This machine is guaranteed against defects in workmanship or installation for 12 months from the date of sale.

The warranty covers exclusively the replacement or repair parts that are defective. Any other request will not be accepted.

This does not include damage caused by normal wear, use different from that reported on this manual, damage caused by wrong settings, technical operations not carried out properly, acts of vandalism.

