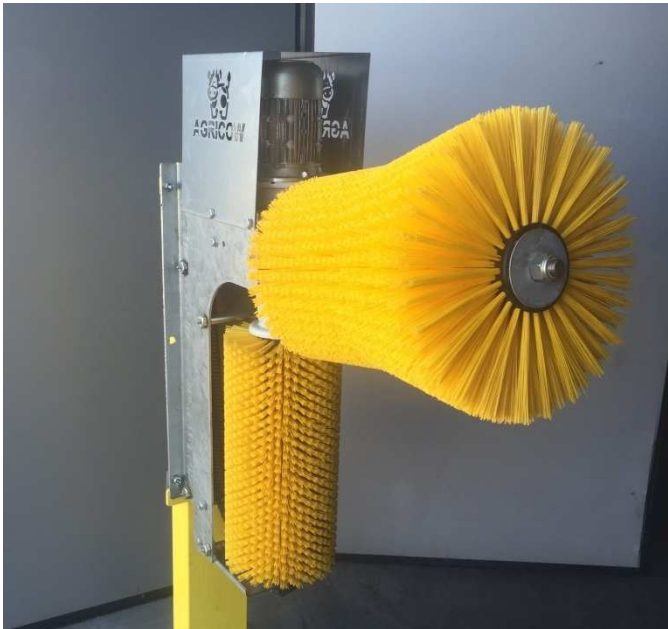


## VERSION BRUSHES

Compiled according to Machine Directive 2006/42/CE, Annex I, point 1.7.4

# USE & MAINTENANCE MANUAL

general features



### **WARNING:**

Please read these instructions carefully before using the machine and keep them safely for future use

### MACHINE DESCRIPTION

#### Cattle Brushing Machine (BRUSH)

**Description:**

The AGRICOW BRUSHING MACHINE has been designed to facilitate a more hygienic and efficient cleaning of cattle, while rationalising costs with respect to traditional manual cleaning.

In compliance with current standards for the safety of persons and things, the machine has been designed to conform with the applicable requisites as stated in Directive 2006/42/CE issued in May 2006.

As prescribed in the **mentioned** standards, the machine is supplied with:

- Declaration of Conformity issued by the Manufacturer;
- CE marking;
- Identity plate showing:
  - Name of manufacturer
  - place where machine was made
  - type and serial number of machine
  - year of construction

The cattle brush is:

- safe for the animals and persons working in the shed
- easy to install, not requiring brickwork
- easy to use
- reliable and easy to maintain
- operated at low energy cost 0.55 kW

**Technical data:**

No. motors	1
Voltage supply	220 – 110V
Frequency	50– 60Hz
Capacity	0.75 Cv
Consumption	0,55 Kw/h
Overall weight	Kg 130
Brushdimensions	See pag 9
Brush movement speed	50 rev/min

## USING THE MACHINE

**Inspection and controls before use:**

The machine is checked on Agricow premises before delivery as foreseen by internal procedures.

**Use:**

The cattle brush has been designed and produced for use as a system for cleaning the coat of dairy cows, **one brush should be used for every 50/60 cows.**

**IT MUST NOT BE USED for any purpose other than cleaning th coat of cattle.**

- When the animal pushes against the brush, a limit switch pizzato starts to turn the roller which automatically proceeds to clean the animal without requiring assistance by staff.
- By means of the start motor contact, the board controls the start and finish of a work cycle. When the device is started, the electronic board begins a brush rotation procedure which lasts 90 second When the device is started again, the motor turns in the opposite direction to the previous cycle so the brush is used evenly.

### DECLARATION OF CONFORMITY

The AGRICOW machine named“DOUBLE BRUSH” has been designed to render the cleaning of cattle coats hygienically more efficient, with the purpose of rationalising costs in respect to traditional manual cleaning.

#### **Manufacturer's name**

**Name:** AGRICOW Srl  
**Legal office and admin:** Via Caduti del Lavoro, 88  
Loc. Cervo - 25013 -  
Carpenedolo (BS)  
**Telephone:** +390309697658  
**Fax:** +390309983270  
**e-m** **ail:** info@agricow.com  
**web:** www.agricow.com

In conformity with current laws concerning the safety of persons and things, the Manufacturer declares that the machine has been constructed in compliance with the applicable requisites stated in Directive 2006/42/CE issued in May 2006.

Agricow reserves the right to change in this manual the specifications and features of the machine without notice.

Carpenedolo,  
01/06/2014

*Alberto Musicco*  
(Legal Representative)

## SAFETY INSTRUCTION

**ENSURE THAT THE DEVICE IS ONLY USED BY PERSONS WITH ADEQUATE TECHNICAL SKILLS.**

**The operation, maintenance and start-up of the machine must only be carried out by trained and authorized personnel.**

**KEEP CHILDREN AND THE ELDERLY OR INFIRM FAR FROM THE DEVICE. FOLLOW THE SAFETY AND MAINTENANCE INSTRUCTIONS.**

## RESIDUAL RISKS

### **Risks for persons:**

The safety of persons and things can be compromised if, while the machine is running:

- Covers provided for moving parts are opened.
- Safety systems are removed.
- Any damage to the control system is not repaired immediately.
- The electronic board is modified by unauthorised staff.
- The machine is started, for a test or demonstration, before being accurately fastened to the support structure.

Care must also be taken to prevent risks to persons and things as summarised below:

- Avoid damage to the machine assembly, commands and brush, during transport and handling before installation.
- Any kinds of interventions on the machine must only be carried out when the machine is switched off.
- Do not move close to the machine with open garments or long hair untied.
- Install the machine in well-ventilated spaces and far from sources of electromagnetic pollution.
- Train assigned staff how to use the machine and carry out maintenance.

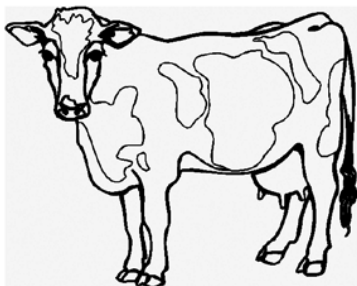
### **Risks to the animals:**

Thanks to its electronic control, the cattle brushing machine is safe for the animals. The aspects characterising this safety are:

- Motor force control
- The motor's maximum tractive force is programmed to control any critical

situations for the animal such as, for example, the tail becoming trapped in the roller.

- Inversion of rotation when meeting resistance in the presence of an obstacle
- If the maximum force is exceeded, the brush inverts direction and rotates in the opposite sense for 1 minute, after which it returns to rest position.



**Warning:**  
The length of the final  
part of the tail of the  
animal should not exceed  
5-10 cm

### PRODUCTION OF NOISE

Not significant in the working area.

### WARRANTY

**The warranty has the duration of 24 months or 10.000 running hours of machine operation .The warranty period begins on the delivery date of the machine.**

**The warranty issued by Agricow applies to the mechanical and electrical parts of the brush, including the:**

- motor
- gearbox
- electronic board
- sensor

**This warranty covers the repair and/or replacement of parts damaged due to an ascertained material fault or construction defect.**

**The part whose replacement or repair is claimed must not be returned to Agricow to be checked without its prior consent. The checks and verification of the anomaly will be carried out by the specialist personnel in charge.**

Mechanical parts of the brush, such as motors and gearboxes out of warranty must be disposed of locally and should in no way be returned to Agricow.

**The warranty excludes** the costs of labour incurred from customer service for the replacement of faulty components or costs incurred for travel to the customer site.

The replacement or repair will be carried out in the shortest time possible, subject to written notice, consistent with the commitments of the manufacturer and its organized persons, with no obligation to provide compensation and/or reimbursement for direct or indirect damages.

**The warranty excludes** breakdowns due to transportation by any means other than AGRICOW vehicles, poor or incorrect connection or connection to electrical systems with insufficient flow, failure to comply with the provisions regarding the installation of the brush, failure to perform the periodic maintenance, negligence or inability to use, tampering by non-authorized personnel and, in any case, caused by persons other than AGRICOW employees.

The transport costs and risks for repairs will be entirely borne by the user.

**The warranty becomes automatically void if:**

- The machine is used for purposes other than those for which it is intended, that is, the cleaning of the coats of cattle.
- Non-original spare parts are used.

- Changes are made to the machine without the written consent of Agricow.
- The dedicated magnetothermal differential switch has not be installed.
- The brush is used for more than 50-60 cows.

**THE WARRANTY ONLY COVERS BREAKDOWNS REPORTED IN TEXTUAL FORM, THAT IS, IN WRITING, VIA FAX OR E-MAIL WITHIN THE VALIDITY PERIOD OF THE WARRANTY. ONCE THE VALIDITY PERIOD HAS EXPIRED, REPORTED BREAKDOWNS WILL NOT EACKNOWLEDGED.**

**Claims concerning the parts of the brush covered by warranty under the aforementioned terms will only be considered if accompanied y the following documents:**

- A copy of the invoice showing the date of delivery to the end customer:
- Serial number of the brush, shown on the label bearing the AGRICOW trademark
- Photo of the motor and/or gearbox label; photo of the electronic card bearing the sensor error number.
- Photo of the sensor

**It is also understood that AGRICOW is not liable for any direct or indirect damages caused to persons or things by defects and breakdo ns of the machine or resulting from forced suspension in its use.**

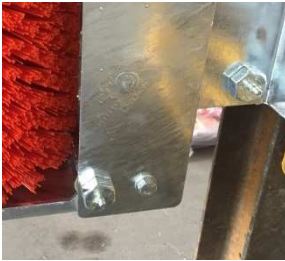


## PERIODICAL MAINTENANCE

### Maintenance foreseen:

All maintenance operations on the machine must be effected with the power supply switch turned off. The machine must not be cleaned inside with jets of water which would compromise the electric components, but using compressed air and brushes.

The machine body must be cleaned each month, removing any residue, and the bearings must be greased using a normal lubricant commonly on sale.



### Greasingpoints



### SPARE PARTS

Art. Code	Description
SPARICRP1-	BRUSH ROLLER up 0,50x0,38x0,60mt ALL COLOURS
<del>SPARICRP</del>	BRUSH ROLLER down below 0,28x0,60x0,60mt ALL COLOURS
SPARICS01	ELECTRONIC BOARD 230 VOLT 50/60HZ SL49
SPARICS02	ELECTRONIC BOARD 110 VOLT 50/60HZ SL49
SPARICS07	LIMIT SWITCH PIZZATO
SPARICM13	ENGINE 230V 60HZ 0,55Kw-UL/CSA
SPARICM07	ENGINE 230 VOLT 50HZ 0.55 KW PAM 80 B5
SPARICR02	GEAR BOX LA1/22.02 148 80 B5 ASA
SPARIC070	ROLLER SHAFT 0.60 mt
SPARIC002	THREE-WIRE CABLE 0,50
SPARIC076	TRACTION SPRING D5 OCCHIO
SPARIC097	TILTING PLATE
SPARIC098	SPECIAL SCREW 20X280 L
SPARIC067	BEARING SUPPORT UCFL 207

### FAULTS AND FAILURES

In the case of malfunctions, consult the last chapter of this manual “FAULTS TREE”

### TRANSPORT AND HANDLING

The brush is despatched completely assembled.

The brush is despatched on a pallet, and optimum transport is with:

3 brushes on pallet 110X140X145 total weight Kg 400  
The pallet is wrapped in plastic film using an appropriate wrapping device. The load, when packaged in this way, suffers no risks during handling.

## INSTALLATION E ASSEMBLY

### Installation instructions:

Instructions are given below on how to install the double brush . the brush must be fastened to the wall by a dedicate fixing-system followed by a connection to the electrical system which must be carried out by qualified personnel.

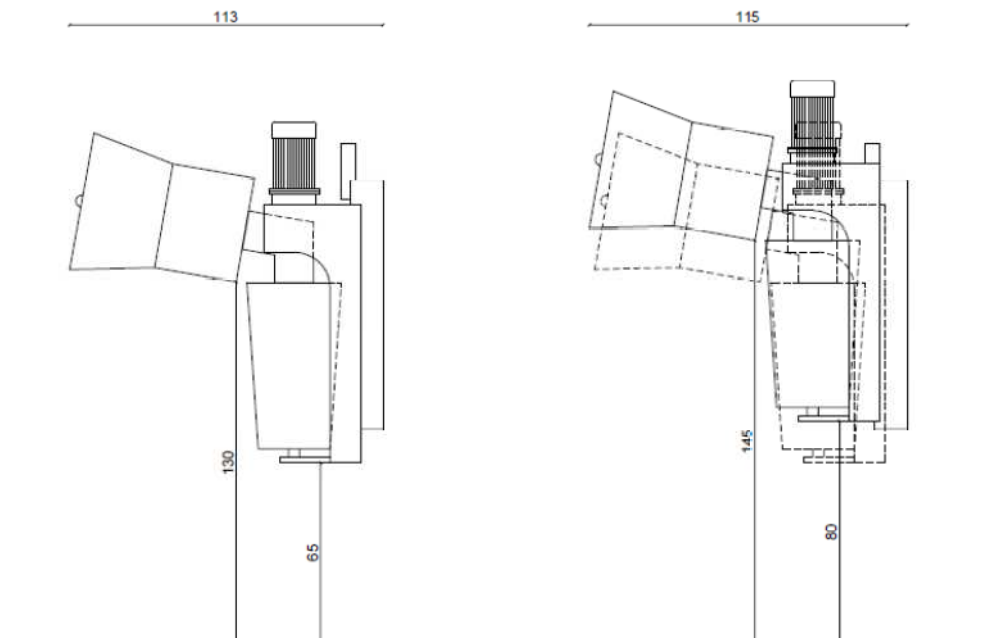
In case of external installation the electronic parts must be protected against rain or excessive sunlight.

### Assembly instructions:

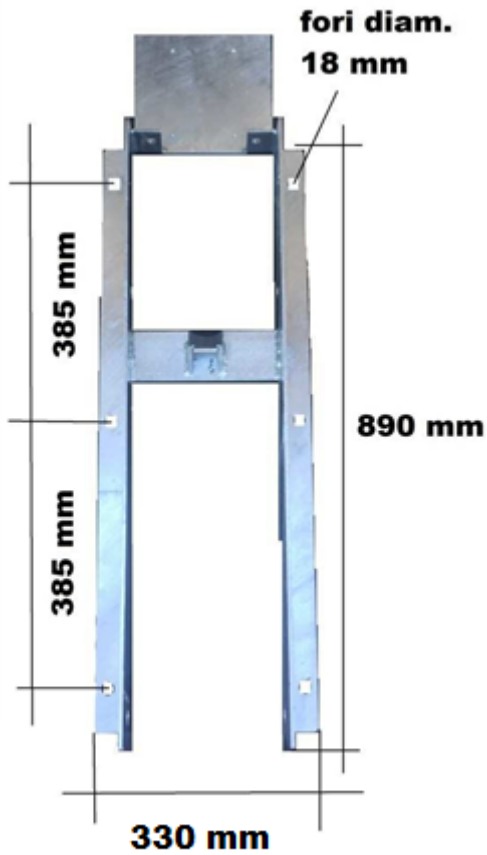
The Double Brush is supplied completely assembled and ready for installation.

### ATTENTION:

**The brushes must be installed with the dedicated differential magnetothermal differential switch.**



recommended installation height



Double Brush: assembled and fixed detail

### DOUBLE Brush Operation

The SL49 board manages the operation of electric brushes for farmed cattle, controlling the start motor contact, the operation time, the direction of rotation and the force applied to the brush itself. It supports monophasic 230VAC motors (1HP max) for the **standard version** and 115VAC (0.5HP max) for version "A". A one-digit display signals some messages, such as the motor's sense of rotation or any alarms detected.

#### Main features

- Motor protection with 10A fuse.
- Motor start by means of electronic commutators (Triac).
- Messages signalled on one-digit display.
- Monitored power supply.

#### Normal OPERATION

When the motor is at a standstill awaiting a work cycle, the dot on the display flashes to indicate that the board is active.

By means of the start motor contact the board controls the start and the end of a work cycle. The brush is connected to a limit switch pizzato using Dip Switch SW1.

When the device is activated, the SL49 starts a brush rotation procedure that lasts for a set time of 90 seconds.

The end of each cycle is followed by a pause of about 4 seconds; when the device is activated again, the motor starts to turn in the opposite direction to that of the previous cycle in order to use the brush evenly.

The display shows the letters "R" or "L" to indicate the sense of rotation.

#### Control of current

The device checks the current absorbed by the motor to establish if the brush is functioning correctly.

Every time the current exceeds the threshold set by the Trimmer R22, the brush inverts rotation (motor block/ failure condition); if this situation is repeated more than 5 times at intervals of less than 6 seconds, the SL49 enters a condition of alarm identified by the message "5" on the display. The same happens in case of voltage fluctuations are not detectable by the electric passing from motor off to motor on (situation of motor disconnected/burnt out or board failure). In this case, however, the system enters the condition of alarm immediately without waiting for the event to be repeated more than 5 times and the display shows message "4". If one of these two alarms are met, the SL49 remains in the condition for about 4 minutes before coming back to its normal functions.

**Checks on over and under-voltage**

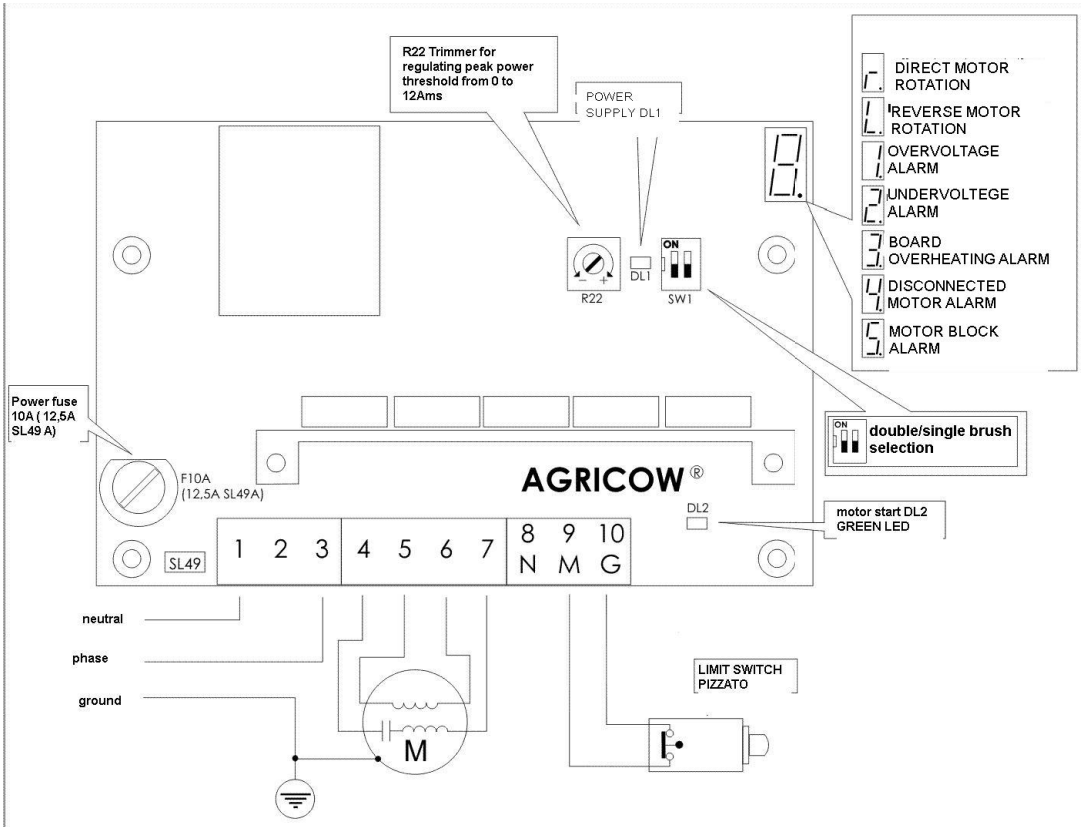
The SL49 board constantly monitors the voltage supply (230/115V) and switches off the brush if this reaches values that could damage the electronic board or the motor. These conditions of alarm are identified by the messages “1” and “2” on the display; the SL49 remains in one of these two conditions as long as the alarm persists.

**Checks on overheating**

The SL49 board constantly monitors the temperature inside the container, switching off the brush if it exceeds 75°C; the display shows message “3” and the SL49 remains in this condition as long as the alarm persists.

## DESCRIPTION OF CONTROL PANEL AND DISPLAY

Fig. A Control panel



Number “2”:

Indicates that the board is ending an undervoltage procedure (it also appears when switching off).

Letter “t” followed by a number:

The “t” stands for “Trimmer” and corresponds to trimmer R22 for load adjustment.

The number indicates the load adjustment value. It varies between 0 and 255 (0 minimum load, 255 maximum load).

By default, it is set to a value ranging from 90 to 95 (92 is ideal).

Letter “H” followed by a number:

The “H” indicates the hours of motor operation.

The number indicates how many hours the motor has been running. To check how many hours the machine has been operating, switch the device off and then on again.

Flashing dot “.”:

The flashing dot indicates that the board is ready to operate and is awaiting the starting command.

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## Description of leds

Ref.	Colour	Description
DL1	RED	Presence of voltage supply.
DL2	GREEN	Off: limit switch pressed (brush stopped after time out). On: limit switch released. (brush in operation).

## Description of display messages

Character	Description
dot	Flashing, board active, awaiting work cycle
R	Motor running in direct sense of rotation
L	Motor running in inverted sense of rotation
1	Over-voltage alarm; above 270V for brushes at 230V, 140V for 115V
2	Undervoltage alarm; less than 180V for brushes at 23 V, 85V for 115V
3	Overheating alarm; more than 75°C inside the container
4	Motor disconnected/burnt out alarm
5	Motor block alarm

## FAULTS TREE

Below we give a description of some malfunctions that, on the basis of internal statistics, occur most frequently and caused by wear, exposure to particularly difficult climatic conditions or failures.

Therefore, based on the data in our possession, these are the most common cases and relative methods for identifying the fault according to the following:

## METHOD OF CONSULTATION

### 1. Brush behaviour

- Eventual fault
  - Possible solutions

#### 1. The brush does not start:

- No voltage supply to brush.
  - Make sure that the voltage supply is arriving.
  - Check that differential and/magnetother al switches are in the correct position.
  - Check the integrity and correct connection of the supply cable and the motor cable.
- Supply voltage too low: the display shows alarm message "2".
  - For brush with 230VAC supply, check that voltage is more than 180VAC.
  - For brush with 115VAC supply, check that voltage is more than 85VAC.
- Supply voltage too high: the display shows alarm message "1".
  - For brush with 230VAC supply, check that voltage is less than 270VAC.
  - For brush with 115VAC supply, check that voltage is less than 140VAC.
- Fuse F1 burnt out.
  - Remove voltage from brush and replace the 10A fuse **F1**, pressing the cap and turning slightly anti-clockwise. Supply voltage to brush and check that the red LED **DL1** lights up. If the fuse burns immediately, the board is faulty.
- Red LED **DL1** off.
  - Check integrity of fuse and that it is inserted correctly in its housing.
  - Carry out checks as above.

- The start motor limit switch does not work
    - Make sure that when moving the brush the limit switch is released and pressed correctly.
    - Check that the limit switch is positioned correctly.
    - Check that the limit switch is connected correctly to terminals 9M and 10G as shown in Fig. A.
    - Replace the limit switch.
  - Faulty board.
    - Replace board.
- 2. The brush continues to function:**
- Dip-switch **SW1** not configured correctly.
    - Configure the dip-switch **SW1** as shown in Fig. A (1 and 2 OFF).
  - The start motor limit switch does not work
    - Make sure that when moving the brush the limit switch is released and pressed correctly.
    - Check that the limit switch is positioned correctly.
    - Check that the limit switch is connected correctly to terminals 9M and 10G as shown in Fig. A.
    - Replace the limit switch..
- 3. The brush turns for two seconds then stops for 4 minutes; the display shows alarm message “4”:**
- Motor cables connected incorrectly.
    - Check that the two motor windings are connected correctly, both to the motor and to the board.
  - Motor failure.
    - Check the two windings and replace the motor if necessary.
  - Faulty board.
    - Replace board.

4. **The brush does not invert direction when under force:**
  - Trimmer **R22** not set correctly.
    - Turn trimmer **R22** slightly anti-clockwise until the brush inverts direction under required force. If the trimmer limit switch is reached without success, replace the board.
  - Faulty board
    - Replace board.
  
5. **The brush inverts direction for five consecutive times then stops for 4 minutes; the display shows the alarm message “5”:**
  - Motor mechanically blocked by foreign bodies.
    - Free the brush from any foreign bodies.
  - Trimmer **R22** not set correctly.
    - Turn trimmer **R22** slightly clockwise until obtaining required force on brush, thus exiting the alarm condition.  
**Warning! The position of the trimmer must never exceed a half turn clockwise; otherwise, check motor absorption.**
  - Faulty board.
    - Replace board.
  - Motor with locked mechanical parts.
    - Replace motor.
  
6. **The brush attempts to start for five consecutive times but does not turn, then it stops for 4 minutes; the display shows the alarm message “5”:**
  - Motor is mechanically blocked.
    - Free the brush from any foreign bodies.
    - Replace the motor or any blocked mechanical parts.



*le vostre vacche sceglierebbero Agricow*



**AGRICOW**

*your cow comfort specialist*

**AGRICOW S.r.l.**

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