

Serviceveiledning for:

Agricow Kubørste, type Pendular



Ku børste «Pendular» er designet for bedre hygiene og velvære for deres kubesetning. Børsten er produsert av Agrow som også er eier av patent No 1360795 utstedet 19. mai 2009, basert på søknad av BS2005A000032 datert 11. mars 2005. European patent No 1665927, 23. januar 2006, og EU direktiv 2006/42/CE fra mai 2006.

Ku børsten har følgende CE Declaration of Conformity:

The AGRICOW machine named “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	
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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.

Carpenedolo, 31/10/2008

Alberto Musicco (*Legal Representative*)

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



Tekniske data:

	pendular
Antall motorer	1
Volt spenningsnivå	220V – 110V
Frequens	50 – 60 Hz
Kapasitet	0.75 Cv
Forbruk	0,55 Kw/h
Netto vekt	Kg 80
Børste spesifisering	See Fig.1
Børste hastighet	50 r/min



Bruk av maskinen:

KU børsten er konstruert for å mosjonere og stelle pelsen til Ku. En børste har en **maks kapasitet på 60 dyr.**

Børsten må på ingen måte benyttes til annet formål enn børstning av ku!

- Når dyret presser mot børsten, og beveger denne, aktiveres en mikro bryter på maskinen som starter motoren. Prosessen er helautomatisk.
- Når motoren har startet, pågår børstningen i 90 sekunder, og stopper.
- Neste gang børsten aktiveres, starter den motsatt vei, dette for å få en jevn slitasje av børsten.



Risikovurdering:

Personsikkerhet:

Maskinen kan utgjøre en risiko for personer under følgende omstendigheter:

- Deksel som beskytter bevegelige deler er fjernet, eller defekte
- Sikkerhets systemer eller sikkerhets brytere er forriglet eller fjernet
- Skadet eller defekt styre skap
- Elektriske komponenter er montert av uautorisert personell
- Maskinen blir startet for testing etc. før den er forsvarlig festet

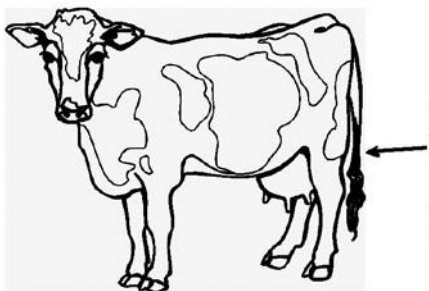
Vær også obs på følgende:

- Kontroller maskinen for synlige skader eller mangler før installasjonen
- Monter maskinen i godt ventilerte rom
- Pass på at maskinen ikke utsettes for elektromagnetisk støy fra andre elektriske kilder
- Instruer personell om bruk og vedlikehold før bruk

Dyrenes sikkerhet:

Maskinen er utstyrt med elektroniske brytere og sensorer som skal ivareta dyrenes sikkerhet på følgende måter:

- Motor belastningskontroll. Motorens maksimum dreiemoment er programmert på det elektroniske styrekortet, dersom rompe eller liknende skulle sette seg fast i børsten.
- Dersom dette skulle skje, vil motoren stoppe og snu i motsatt retning i 1 minutt. Deretter stopper børsten helt.
- Dyrenes hale, og **hale hår må trimmes**, før dyrene slippes til å benytte Pendular børsten fra Agricow. Trimmingen er beskrevet i figur:



Kuas hale hår må ikke være lenger enn 5 – 10 Cm



Garanti:

Fjøssystemer har 12 mnd/5000 timer, garanti på produktet mot fabrikkasjons feil.

Garantien frafaller dersom maskinen er montert feil, brukt feil, overbelastet med for mange dyr, reparert med uoriginale deler eller har manglende periodisk vedlikehold som beskrevet i neste kapittel.

Periodisk vedlikehold:

NB! All form for vedlikehold av maskinen må foregå med servicebryteren avslått!

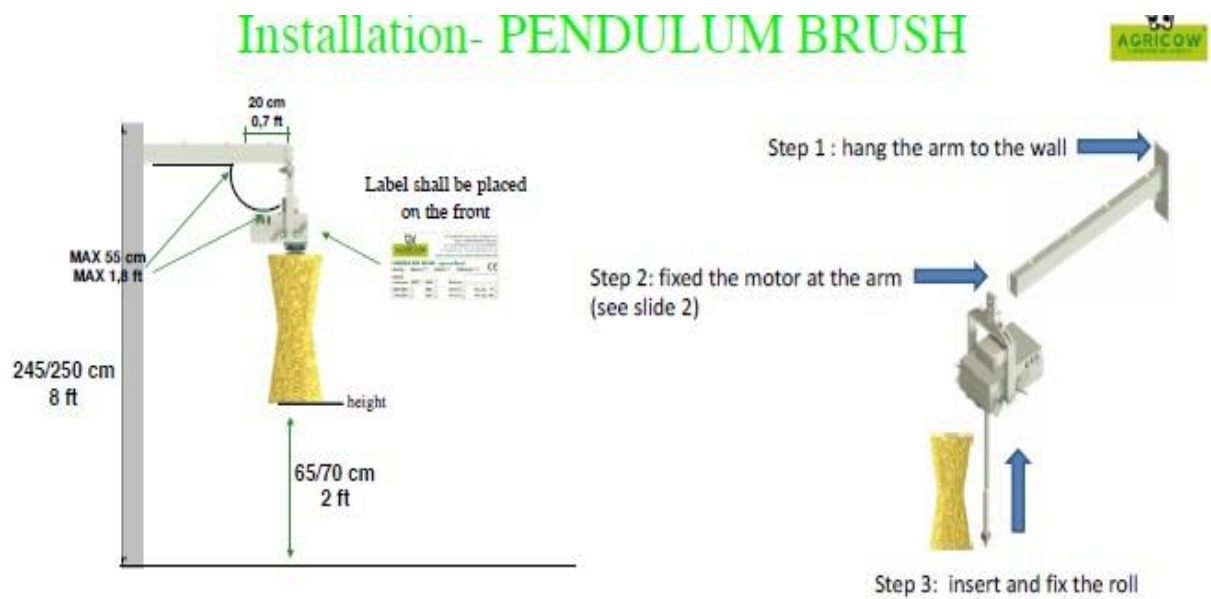
- Maskinen skal vaskes minimum en gang pr. mnd
- Det må ikke spyles vann inn i motor eller direkte mot elektroniske bokser
- Elektriske deler og motor skal rengjøres med trykkluft minimum en gang pr. mnd
- Lagrene som sitter i den roterende akselen, skal smøres med fettpresse en gang pr. mnd. Se figur:



Smørenippel for lager, smøres minimum en gang pr. mnd



Monterings anvisning:



1. Heng opp armen for børsten. Denne skal være 245 – 250 Cm, underkant arm, over gulv. Avhengig av størrelse på dyrene.
2. Monter motorvugge komplett på armen som nå sitter festet.
3. Monter, og fest børsten på det firkantede røret. Passer begge veier.
4. Kontroller høyder som angitt på tegningen over.
5. Autorisert elektriker foretar deretter de elektriske installasjoner som er nødvendig etter FEL/NEK.

NB! Nødstop og Servicebryter er ikke inkludert i leveransen fra Fjøsssystemer.

Nøyaktige koblingsdetaljer, og feilsøkningsprosedyrer for servicetekniker følger i neste kapittel. Service detaljer er skrevet på Teknisk Engelsk.



For serviceteknikkere.

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

Main features

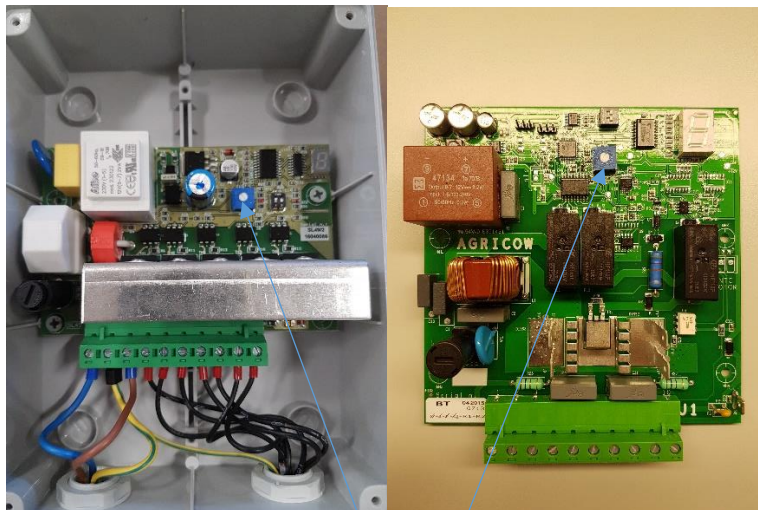
- Motor protection with 10A fuse.
- Motor start by means of relé.
- Messages signalled on one-digit display.
- Monitored power supply.

Normal functions

When the motor is at a standstill awaiting a work cycle, the led LD2 lighting GREEN and the RED FLASHING DOT on one –digit display indicate that the board is active. When the LD1 START-MOTOR is lighting red, the brush starts to rotate.

By means of the *start motor contact* the board controls the start and finish of a work cycle. It can be connected to a *normally open contact* or *normally closed* using Dip Switch SW1.

In the case of the oscillating brush, this is connected to a 3-wire *inclination sensor*. When the device is activated, the BT board 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.



R8



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 **R8**, 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 BT board enters a *condition of alarm* identified by the message “**5**” on the display.

The same situation could occur when the board does not detect variations of the current, 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 occur, **the BT board remains in the condition for about 4 minutes**, then returns to normal functions.

Checks on over and under-voltage

The BT 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 BT board remains in one of these two conditions as long as the alarm persists.

Checks on overheating

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

Description of LED

Rif.	Colour	Description
LD2	GREEN	Presence of voltage supply
LD1	RED	<u>Inclination Sensor with wirings colours:</u> white/brown/green – Dip Switch 1 Off OFF: inclination sensor at rest (brush stopped after time out). ON: inclination sensor active (brush in operation). <u>Inclination Sensor with wirings colours:</u> grey/brown/black – Dip Switch 1 On ON: inclination sensor at rest (brush stopped after time out). OFF: inclination sensor active (brush in operation).



Description of display messages

Each alarm gets stuck the motor for 4 minutes. Time machine alarm 4 minutes.

After this time the brush is active again (if solved the problem identified with one of the following numbers)

DESCRIPTION	
DOT	Flashing: board active awaiting for a work cycle
r	Motor in direct sense of rotation
L	Motor in inverted sense of rotation
1	Over tension at the board more than 12 Volt
2	Under tension at the board less than 12 Volt
3	Over heating: more than 75°C inside the board box
4	Motor disconnected/burnt
5	Too many reversals for motor overvoltage. Check the dip switch that identifies 115/230V is in the correct position (if the board is connected at 115V when the dip switch is setting for 230V it could easily appear.
6	Internal alarm: switch off than on.
7	Internal alarm: board probably damaged
8	Internal alarm: switch off than on.
9	Early Warning Alarm: the board is going to break ; check the connection motor.-electric board

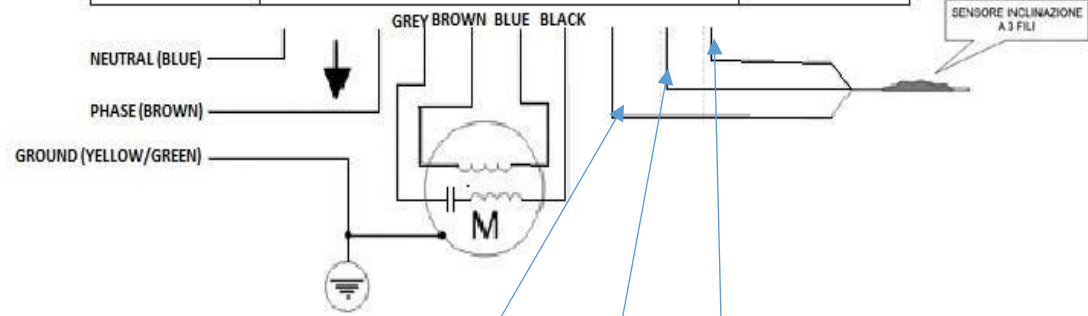
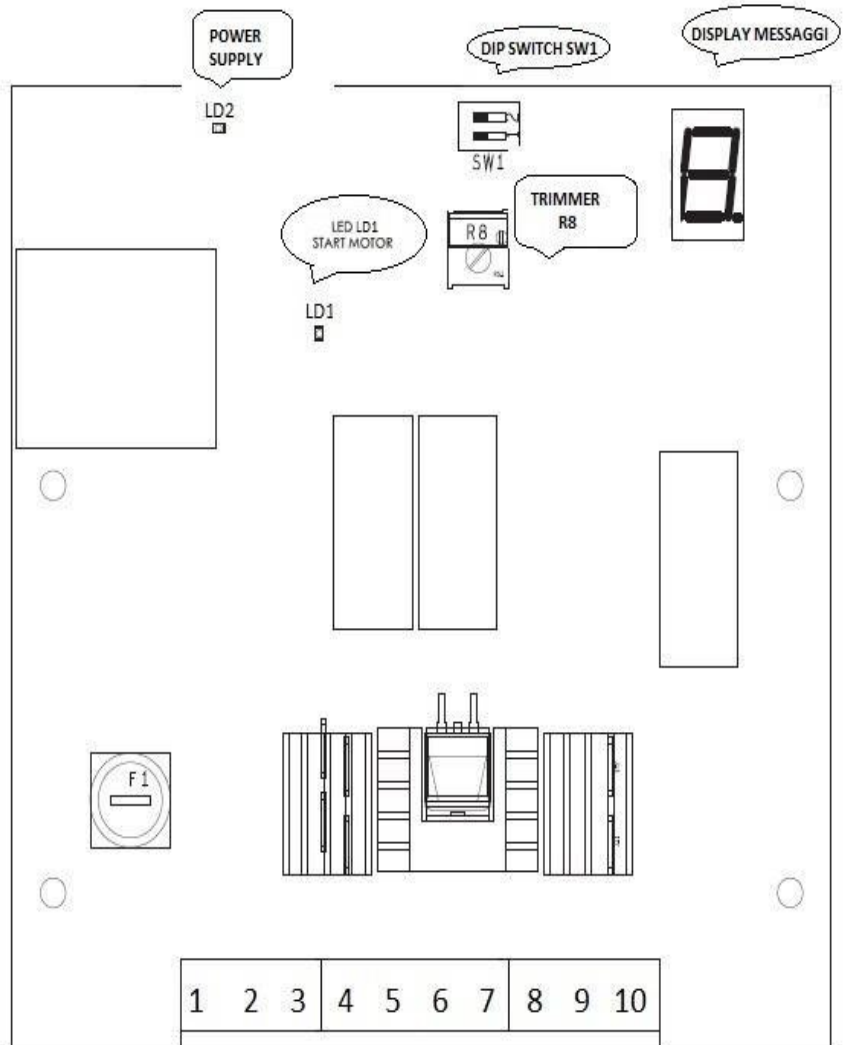
Alarms 1, 2, 7 identify a malfunction of the board.

Perhaps the card is damaged but at worst try to power cycle (switch off than on) the card by checking if the message reappears. Alarms 8 and 6 identify an internal problem that is reset at restart.

Dip Switch 2 Off: power supply 230V (see pict. C)

Warning !!!! Remember to properly adjust the DIP Switch 2 depending on the power supply, otherwise the brush could continue to reverse the rotation or could never reverse it.

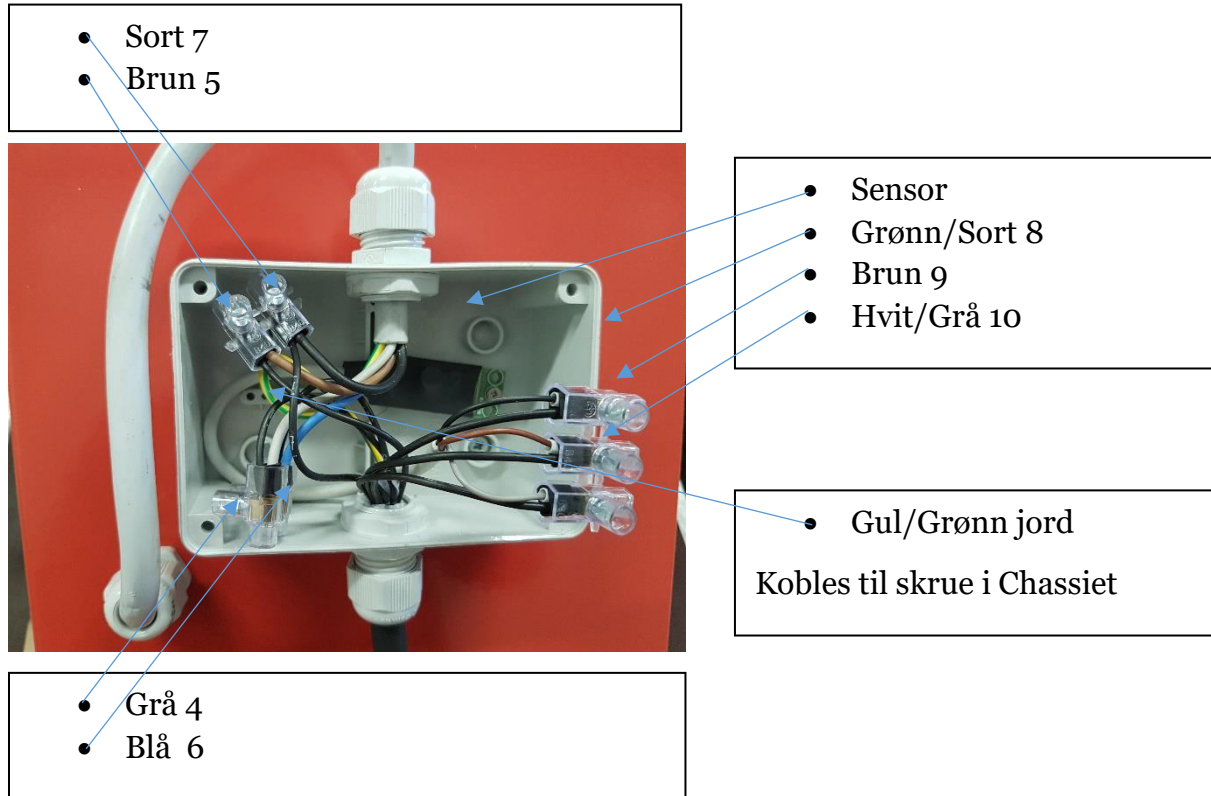




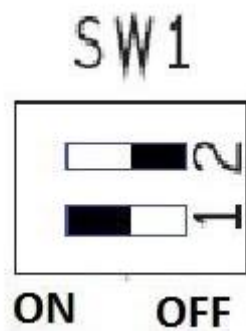
8: Grønn/Sort 9: Brun 10: Hvit/Grå



Bildet under beskriver innholdet i koblingsboks på motorboks



Picture C



2 Off 230 Volt 50Hz

1 On Bevegelse sensor Grå10,Brun9,Sort 8



Bevegelse sensor



Tips for feilsøking. For servicetekniker:

Brush behaviour:

- o Eventual fault
 - Possible solutions

1. The brush does not start:

- o No voltage supply to brush.
 - Make sure that the LD2 lights green
 - Make sure that the voltage supply is arriving.
 - Check that differential and magneto-thermal switches are in the correct position.
 - Check the integrity and correct connection of the supply cable and the motor cable.
- o 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 **DL2** lights up. If the fuse burns immediately, the board is faulty.
- o Red LED **DL2** off.
 - Check integrity of fuse and that it is inserted correctly in its housing.
 - Carry out checks as above.
- o The inclination sensor does not work
 - Check that the sensor is connected correctly to terminals 8N, 9M, 10G as shown in Fig. B.
 - Replace the inclination sensor.
- o Faulty board.
 - Replace board.

2. The brush continues to function:

- o Dip-switch **SW1** not configured correctly.
 - Configure dip-switch **SW1** as shown in Fig. C
- o The inclination sensor does not work
 - Check that the sensor is mounted and locked correctly on the fastening plate.
 - Check that the sensor is connected correctly to terminals 8N, 9M, 10G as shown in Fig. B. Check if changing the inclination of the brush, the LD1 turns on/off
 - Replace the inclination sensor.



3. The brush turns for two seconds then stops for 4 minutes; the display shows alarm message “4”:

- o Motor cables connected incorrectly.
 - Check that the two motor windings are connected correctly, both to the motor and to the board.
- o Motor failure.
 - Check the two windings and replace the motor if necessary.
- o Faulty board.
 - Replace board.

4. The brush does not invert direction when under force:

- o Trimmer **R8** not set correctly.
 - Turn trimmer **R8** slightly anti-clockwise until the brush inverts direction under required force. If the trimmer limit switch is reached without success, replace the board.
- o Dip Switch 2 non correctly set

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”:

- o Motor mechanically blocked by foreign bodies.
 - Free the brush from any foreign bodies.
- o Trimmer **R8** not set correctly.
 - Turn trimmer **R8** 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.**

o Faulty board.

- Replace board.

o Motor with locked mechanical parts.

- Replace motor.

Dip-Switch 2 not correctly set .

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”:

o Motor is mechanically blocked.

- Free the brush from any foreign bodies.

- Replace the motor or any blocked mechanical parts.

