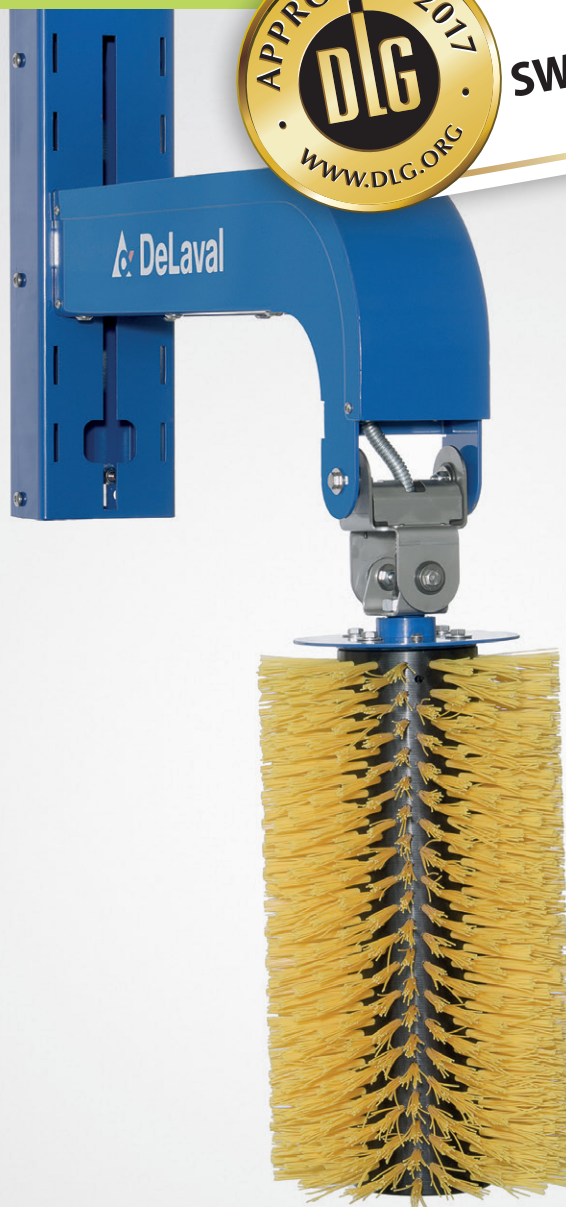


DeLaval

Mini Swinging Brush MSB

for calves and goats



FULL TEST
DELAVAL MINI SWINGING BRUSH MSB
DLG Test Report 6747

Overview

A quality mark “DLG-APPROVED FULL TEST“ is awarded to agricultural products which passed DLG’s comprehensive usability test according to independent and approved evaluation criteria. The product’s most important criteria from the farmer’s point of view are evaluated during this test. The test includes investigations on test benches and under various operating conditions and furthermore, the tested item must prove itself during a practical testing on a farm. The test conditions and procedures are fixed in a test framework which is developed by an independent test commission and adjusted regularly according to accepted rules of engineering as well as to latest scientific and agricultural knowledge and requirements. The successful test concludes with the publication of a test report as well as with the award of the quality mark, being valid for five years after the award.

The DLG-APPROVED full test included technical measurements, practical examinations and behaviour observations on agricultural farms. On the practical farms energy consumption, power input and shutdown force were measured, behaviour observations executed as well as installation, durability, abrasion, operational safety, maintenance and cleaning properties evaluated. The testing was based on the DLG test framework for cow brushes in the version of March 1999.



Assessment – Brief Summary

The tested DeLaval mini swinging brush MSB, a brush for calves and goats, was examined in a practical test with regards to its functional properties based on a “DLG-APPROVED FULL TEST”.

The energy consumption of the 24 V tube motor and the shutdown force were significantly lower than the standard. The brush is started by a light touch and turns into both directions. By using a tool, its height can be adjusted well to the growing animals.

*Tabelle 1:
Ergebnisse im Überblick*

Test criteria	Test result	Evaluation*
Suitability	Suitable for the cleaning and coat care of calves and goats. Requirement for a safe operation is that the animal's hair and the switch of the calves are not longer than 3 cm.	
Occupational safety	confirmed by DPLF	
TECHNICAL CRITERIA		
Installation	can be done by the farmer	○
Power supply	outside of reach of the animals	+
Installation and user manual	very comprehensive and clear	++
Durability and abrasion		
Durability	good for calves	+
	sufficient for goats	-
Abrasion	low for calves	+
	significant for goats	-
Operational safety	good	+
Maintenance		
Maintenance effort	low	+
Change of brush elements	simple	+
Cleaning	simple, but rarely necessary	+
Energy consumption	very low	++
Guarantee	1 year	
ANIMAL-RELATED CRITERIA		
Animal observation	The animals learn quick and without difficulties how to start the brush.	+
Acceptance	very good	++
Injuries	none	○
	stops upon very low resistance due to the automatic shutoff system	++
Cleanliness of the animals	good at defined positions	+

* Evaluation range: ++ / + / ○ / - / -- (○ = standard)

The Product

Manufacturer and applicant

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Product: DeLaval mini swinging brush MSB

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Description and technical data

The tested DeLaval mini swinging brush MSB is used for cleaning and coat care of calves and goats. The rotating brush is powered by a 24 V tube motor with obstacle detection and is equipped with an automatic shutoff system. The animals themselves can start the brush by direct touch. The DeLaval mini swinging brush MSB is similar to a cardan joint and allows movements of the brush in three levels. This design and functioning allows a good reachability of the brush of tail, head and neck area and especially of flanks and back area. According to the manufacturer a safe operation is only guaranteed if the hair of the switch of especially calves is not longer than 3 cm.

The DeLaval mini swinging brush MSB consists of a sectional steel mounting arm, a main switch with electric supply, an electronic motor with control electronics and a brush roller with yellow plastic bristles. The rotating brush head consists of a brush cylinder with 24 V tube motor and is embedded vertically in the mounting arm.

Table 2:
Technical data

Mounting arm	
Height	approx. 72 cm
Width	approx. 3 cm
Depth	approx. 30 cm
Weight	approx. 35.5 kg
Brush	
Diameter	approx. 28 cm
Length	approx. 48 cm.
Energy supply	
Direct current	230 V on 24 V
Rotation speed	25.5 rpm
Rated output	0.07 kW

The Method

Suitability

The suitability as well as fields and areas of application of the brush for calves and goats were evaluated by a practice-oriented focus.

Operational safety

The operational safety of the DeLaval mini swinging brush MSB was tested by the German Test and Certification Center for Agriculture and Forest Engineering (DPLF) – a notified test body according to the Equipment Safety Act.

Survey

A survey is carried out by asking owners of equal type brushes to verify the test results.

TECHNICAL CRITERIA

Installation

The installation of the brush for calves and goats was evaluated with practice-oriented focus. The installation instructions and the user manual were evaluated.

Durability, abrasion, operational safety and maintenance

Durability, abrasion, operational safety and maintenance of the brush for calves and goats were evaluated in practical use.

Contamination and cleaning

Contamination and cleaning properties of the brush for calves and goats were evaluated in practical use.

Energy consumption/Power input

The electrical power input was recorded by means of a power recorder during idle mode as well as during a continuous cleaning of an animal for at least two minutes. Furthermore the energy consumption in practical use was logged for a period of at least one week. The number of animals in the group who had access to the brush was also documented.

Guarantee

The manufacturer is required to state if and how long a guarantee is granted.

ANIMAL-RELATED CRITERIA

Animal observations

During the practical use behaviour observations were executed by direct observations. It has been tested if the animals were able to use the brush easily and if the brush was accepted by them.

Injuries

On the four farms where the brushes were installed, it was examined if injuries (e. g. tail injuries, skin abrasions, pulling out of ear tags) were caused by the brush.

The shutdown force stopping the motor of the brush was measured. The measurement of the shutdown force was done by a spring scale and an approximately 2 cm wide belt simulating the tail of an animal. After winding of the belt it was pulled with the spring scale and the machine was forced to stop. The necessary force was measured.

Cleanliness of the animals

On the four farms having installed the brushes it was tested if, with correct adjusted installation height, the animals were cleaned well on the body parts reachable by the brush upon correct adjusted installation height.

The Test Results in Detail

Suitability

The DeLaval mini swinging brush MSB is suitable for cleaning and coat care of calves and goats.

Due to the brush size and the programmed shutdown values its use in cattle breeding is reasonably recommended for calves and cattle until an age of maximum 12 months.

The test proved that the animals can start the brush themselves by touching it. The mounting of the brush at the cardan joint and the three level operation allows a good reachability of flanks, tail, back, neck and head. According to the manufacturer a safe operation is only guaranteed if the hair of the switch of especially calves is not longer than 3 cm. If necessary, it must be shortened.

Occupational safety

The operational safety of the DeLaval mini swinging brush MSB was tested by the German Test and Certification Center for Agriculture and Forest Engineering (DPLF). An EC declaration of conformity was presented.

Survey

Due to still missing market distribution no written customer survey was executed. The four test farms gave a good overall evaluation for the DeLaval mini swinging brush MSB and would again invest into the brush in case of need.

TECHNICAL CRITERIA

Installation

The installation of the brush can be done by the farmers themselves, with two persons and suitable tools. The brush is delivered pre-assembled and can be fixed directly on a wall or a post and positioned correctly according to the installation instructions of the manufacturer.

The power cable must run out of the animal's reach.

The installation height results from the average withers height of the animal stock.

Installation instructions and user manual

The installation instructions and user manual are very comprehensive and understandable.

The installation, commissioning, maintenance and care are clearly outlined by drawings.

The installation instructions and user manual include also important indications on dangers and risks during the brush's operation, like e. g. the correct installation height, running of the power cable, care and maintenance works.

The manufacturer explicitly advises the user with a drawing not to use the brush for animals having a coat including switch longer than 3 cm or wearing a halter.

Durability and abrasion

In the keeping of calves motor and drive do not show any abrasion signs. After two years of practical use little abrasion can be observed at the brush body. The durability is evaluated as being good due to the low abrasion.

In the keeping of goats a significantly higher abrasion of motor and drive was observed due to the three times higher use. The finish of the enclosure showed significant abrasion and corrosion. The durability is evaluated as being sufficient due to the observable abrasion.

Occupational safety

The occupational safety is good.

Maintenance

The maintenance effort is low. It is limited to a monthly control of the brush, the screw connections and the gearbox. The change of the brush cylinder is easy.

Contamination and cleaning

An accumulation of hair under the brush was observed.

Due to the construction a cleaning in regular periods can be largely waived. A cleaning of the brush body can easily be done after disassembling.

Energy consumption/power input

The energy consumption is comparatively very low and was approximately 0.09 kWh per day with an average of 108 operations (with 14 calves).

With the goats the energy consumption was 0.25 kWh per day with an average of 300 operations (with 40 goats). The electrical power input of the running brush was approximately 5 to 35 watt and approximately 2.2 watt in standby mode.

With an increased resistance (blockage of the brush) the power input can increase briefly until 51 watt.

Guarantee

The manufacturer grants a guarantee of 1 year on the brush.

ANIMAL-RELATED CRITERIA

Animal observations

The animals learn quickly and without difficulties how to use the brush. If the brush is touch by an animal in vertical standby position, the brush starts rotating. It stops approximately 10 seconds after it returns to its vertical position. Afterwards the brush can immediately be re-started by repeated touch.

The animals accept the brush very well for coat care, especially for head, neck, back and tail head. By registration of the starting processes for one week, it was observed that the brush was started on average approximately 108 times per day with a livestock of approximately 14 calves and approximately 300 times per day with a livestock of approximately 40 goats.

Injuries

On the four test farms (two farms with calves breeding and two farms with goat keeping), which had the brush in use for two years, no tail injuries, skin abrasions, pulling out of ear tags or other injuries caused by the brush were observed upon regular operation of the brush. Upon an increased resistance at the brush head (e. g. due to winding of the tail) the automatic switch-off stops the brush.

Measurements indicated that the cow brush stops at a comparatively very low force of approximately 50 N due to the automatic switch-off. This leads to a very low injury risk for the animals. To prevent possible injuries, the manufacturer recommends the shortening of the hair of the switch according to the user manual.

Cleanliness of the animals

With a correct adjusted installation height the animals are well cleaned on the body parts reachable by the brush. The animals accept the brush autonomously well for coat care.

Summary

The criteria tested in the present DLG-Approved Full test evaluate the functioning properties of the DeLaval mini swinging brush MSB for use for calves and goats based on practical tests.

The tested DeLaval mini swinging brush MSB fulfilled the requirements of the test framework with regards to the tested criteria.

Further Information

Further test results on cow brushes are available for download under [www.dlg-test.de/tierhaltung und -pflege](http://www.dlg-test.de/tierhaltung-und-pflege)

The relevant DLG committees have published various instruction leaflets on the topic of animal welfare and cattle husbandry. These instruction leaflets are available free of charge in PDF format at: www.dlg.org/merkblaetter.html

Test execution

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DLG Test Framework

Approved Full Test „Cow brushes“ (version 03/1999)

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The DLG

In addition to being the executing body of well-known tests for agricultural engineering, farm inputs and foods, the DLG is also an open forum for the exchange of knowledge and opinions in the agricultural and food industry.

Some 180 full-time employees and more than 3,000 volunteer experts are developing solutions to current problems. The more than 80 committees, working groups and committees thereby form the basis of expertise and continuity for the professional work. At the DLG, a great deal of specialist information for agriculture is created in the form of information leaflets and working papers, as well as articles in journals and books.

DLG organises the world's leading professional exhibitions for the agriculture and food sector. This contributes to the transparent presentation of modern products, processes and services to the public. Secure the competitive edge as well as other benefits, and contribute to the expert knowledge base of the agricultural industry. Further information can be obtained under www.dlg.org/mitgliedschaft.

The DLG Test Center Technology and Farm Inputs

The DLG Test Centre Technology and Farm Inputs in Groß-Umstadt is the benchmark for tested agricultural products and farm inputs, as well as a leading testing and certification service provider for independent technology tests. The DLG test engineers precisely examine product developments and innovations by utilizing state-of-the-art measurement technology and testing methods gained from practice.

As an accredited and EU registered testing laboratory the DLG Test Center Technology and Farm Inputs offers farmers and practitioners vital information and decision support for the investment planning for agricultural technology and farm inputs through recognized technology tests and DLG testing.

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