

DLG Test Report 6395

SILOKING Mayer Maschinenbau GmbH

**Self-propelled vertical feed
mixer wagon SILOKING SelfLine 4.0
Compact 1612-13**



FULL TEST
SILOKING SELFLINE 4.0
COMPACT 1612-13
DLG Test Report 6395

Overview

A test mark “DLG-APPROVED FULL TEST” is awarded for agricultural products which have successfully fulfilled a comprehensive usability testing conducted by DLG according to independent and recognised assessment criteria. During this examination, all essential characteristics of a product are neutrally evaluated from the perspective of the practitioner. The test process includes examinations on test benches and under different conditions. In addition, the test subject must prove itself during a practical testing under operational conditions. The test conditions and procedures as well as the evaluation of the test results are specified by an independent Test Commission in a test frame, and continuously adapted according to the recognized rules of technology, as well as the scientific and agricultural knowledge and requirements. The successful testing is concluded with the publication of a test report, as well as the awarding of the test mark which is valid for five years from the date of awarding.

The DLG-Approved Full Test is comprised of measurements and feasibility study on farm operations. In the practical operations, the removal and filling, mixing, feed discharge, fuel consumption are measured, and the operation, handling, maintenance and durability are assessed. The test was conducted in accordance with the DLG test framework for feed mixing and distribution vehicles (as of October 2008).



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Evaluation – short version

The self-propelled vertical feed mixer wagon SILOKING SelfLine 4.0 Compact 1612-13 tested here was examined with respect to its functional properties in a DLG-Approved Full Test under practical usage conditions.

The mixing accuracy, processing performance and fuel consumption were better than the standard.

Table 1:
Results at a glance

Test feature	Test result	Evaluation*
Removal and filling		++
Removal performance	loader wagon grass silage: 962 kg/min	++
	grass silage: 1,269 kg/min	++
	maize silage: 3,255 kg/min	++
Hashing effect	loader wagon grass silage: 5 %	++
	grass silage: 7 %	++
Cutting surface in the silage clamp	clean	+
Discharge losses	low	+
Feed debris on the ground	very minor	++
Mixing**		+
Mixing accuracy		
– half-full mix	loader wagon grass silage/maize silage: 2.5 %	+
	grass silage/maize silage: 2.0 %	+
– full mix	loader wagon grass silage/maize silage: 2.6 %	+
	grass silage/maize silage: 1.8 %	+
Mixing time	short; after filling 3 min	+
Hashing effect	good	+
	to exclude smashing	++
Weighing		++
Accuracy (max./min. load)	< 1 or 1.8 % deviation from the true filling weight	++
Feed discharge		+
Overview of the left discharge	good	+
Overview of the right discharge	satisfactory	○
Discharge performance	high	+
Swath discharge	no running over swath	++
Emptying	almost no food debris in the tank	+
Handling		+
Driving	very manoeuvrable	++
	direct steering movements on the rear axle require practice and experience	○
Operation	simple and with a clear overview	+
Cabin		
– Arrangement	appropriate, wide and comfortable entry	+
– View	constrained by the cutting arm	○
– Equipment	enhanced, good space availability	++/+
– Heating/ventilation	good	+
Machine equipment	high standard	+

Continuation of table 2, see page 4

* Evaluation range: + + / + / ○ / - / - - (○ = standard / n.a. = not applicable)

** Evaluation area during the mixing: + / ○ / -

Overview of table 1 "Results at a glance"

Test feature	Test result	Evaluation*
Usage behaviour		+
Engine performance	105 kW, 4-cylinder, sufficient	+
Fuel consumption during a test cycle	an average of 14.8 l/h or 0.9 l/t	n.a.
Drive	hydrostatic, two-stage	++
Turning circle	maximum 9.62 m	++
Tyres	sufficient	○
Brake	wet multi-disk brake on the front axle	++
Noise level	72.3 dB(A)	++
Maintenance		+
Bearings and lubrication points	29 pieces	○
Accessibility	13 pieces are accessible in an upright posture	++
	16 pieces are accessible in a stooped posture	○
Drive	normal	+
Drive accessibility	easily accessible	+
Cabin	low	+
Cabin accessibility	can be opened and accessed easily	+
Operating instructions	good	+
Spare parts list	clear and extensive	+
Durability		+
Practical use	no damage	+
Occupational safety	examined by the DPLF	
Traffic safety	registration certificate part I	

* Evaluation range: ++ / + / ○ / - / -- (○ = standard / n.a. = not applicable)

The product

Applicant and manufacturer

SILOKING Mayer Maschinenbau GmbH, Kehlsteinstraße 4, 84529 Tittmoning

Product:

Self-propelled feed mixer wagon SILOKING SelfLine 4.0 Compact 1612-13

Contact:

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Description and technical data

Self-propelled feed mixer wagon SILOKING SelfLine 4.0 Compact 1612-13 for independent filling, creating and distributing uniform feed mixes using self-filling.

Compact construction with a four-wheel running gear and steering through the twin wheels attached in the centre of the rear.

Driver cab arranged on the left side.

Description and technical data	
Motor	105 kW (143 PS) Volvo 4-cylinder turbo diesel engine emission control level IV
Drive	hydrostat, two-stage
Brake	wet multi-disk brake on the front axle
– Service brake	hydraulic
– Parking brake	pneumatic
Chassis	two-axle, four-wheeled, steering axle rear
Wheelbase	3,900 mm
Top speed	1st level: 15 km/h 2nd level: 25 km/h
Hopper	
Capacity	13 m ³
Opening top, length x width	3,300 mm x 2,350 mm
Material thickness and type	
– Walls	6 mm, S355J2G3 plus SILONOX on the discharge
– Floor	19 mm, S355J2G3
Extraction and filling system	
Milling head with loading belt conveyor	hydraulic drive; 42 (6 x 7) curved knives, plus transport blades
Maximum extraction distance	3.26 m (bottom of cutting drum)
Extraction width	2.00 m
Maximum extraction depth	0.10 m
Conveyor channel	
– Outer dimensions, length x width x height	3,150 mm x 700 mm x 700 mm
– usable free space, width x height	700 mm x 430 mm
Goods conveyor	
– Length (axle distance) and type	2,950 mm, conveyor
– Driver	driver distance: 360 mm driver height: 20 mm
	rubber lip
– Material	PVC

Mixing system	
Vertical mixing auger	2.5 coils with 7 adjustable and exchangeable hardened blades
Auger inclination	450 mm
Material thickness and type	15 mm, S355J2G3
Two-stage hydraulic motor	
– Rotation speed	1st step (at 1,900 min ⁻¹): 20 min ⁻¹ 2nd step (at 2,200 min ⁻¹): 46.0 min ⁻¹
Gear ratio	1 : 92.38
Counter knives	two hydraulically operated integral switching
Weighing system	
Programmable scale DG600 (Dinamica Generale) display illuminated	yes
Digit height	45 mm
Storable mixture recipes	99
Possible components during the loading	24
Storable discharge programs	48
Storable discharge points	48
Number of weighing bars	3
Discharge technology	
Double-sided discharge	rear left: retractable chain conveyor front right: door direct discharge
Discharge conveyor	hydraulically extendible
– Length, axle distance	600 mm; 460 mm; width 1,000 mm
– Driver	driver distance: 230 mm driver height: 20 mm
– Height above ground	500 mm
Discharge opening, width x height	LH: 940 mm x 640 mm; RH: 940 mm x 640 mm
Dosing valve	hydraulically operated
Fuel, lubricants and coolant, filling quantities	
Fuel tank	200 litres
AdBlue	26 litres
Transmission oil	
– Cutting transmission	1.1 litres
– Mixer gearbox	10.75 litres
Front axle	11.6 litres
Hydraulic oil	140 litres when changing
Motor oil	13 litres
Motor coolant	43 litres
Special equipment	
Special equipment (tested)	
Additional discharge gate front right; outer mirror retraction – right	
Special equipment (not tested)	
Was present in the testing machine, but was not tested: Automatic climate control; suspension lowering (front and rear); input funnel in the mixing container, incl. input auger with drive motor; heavy-duty magnet on the mixing auger	
Further special equipment: 15 km/h version, 40 km/h version, rear steering with independent suspension, tyres front 385/65/R 22.5, tyres front 400/70/R 22.5, 129 kW (175 HP) 4-cylinder turbo diesel engine, 160 kW (218 HP) 4-cylinder turbo diesel engine, different discharge options with retractable, folding and fixed discharge variations, automatic lubrication system, loading conveyor belt made of rubber; SILONOX equipment	

Main dimensions and weights			
Length	in transport position: 8,000 mm	Track width	front: 1,920 mm
	in working position: 7,600 mm		rear: 410 mm
Width	Machine width: 2,550 mm	Outer dimension of the track	front: 2,410 mm
	Machine width with mirror: 3,100 mm		rear: 650 mm
Height	in transport position (cutter horizontally): 2,900 mm	Ground clearance	230 mm
	in working position (cutter completely lifted): 3,870 mm	Admissible total weight	12,520 kg
	hopper: 2,550 mm	Admissible axle load	front: 11,000 kg
total: 2,650 mm	rear: 4,000 kg		
Tyres	front: GOODYEAR 495/45 R 22.5	Kerb weight	10,720 kg
	rear: Wide wall 27 x 10-12 20 PR		

Basic equipment
3-point suspension with a low height design
Variable control of the driving speed through a speed pedal, 1 operating range (0 to 15 km/h)
Control of the machine functions via CAN-Bus board
7" display for the presentation of machine functions, valve display, speed and weighing data
Feed table management: individually programmable sequence of the discharge functions
2 m wide extraction cutting machine with up to 3.50 m height
700 mm wide loading conveyor belt
Colour camera system: 4-section monitor in the cabin, as well as 2 cameras (connection possibility for a max. of 2 additional cameras)
Auger speed can be switched in 2 levels per button actuation under load
Volvo 4-cylinder turbo diesel engine, 5.1 l displacement, emission level IV
LED package for working lights and cab roof
Single-surface cooler with automatic reversing device
Cabin with glass roof and heated exterior mirrors
Air-cushioned driver seat
Hydraulic oil pre-heating with plug-in connection for 230 V socket
1 mixing auger with adjustable, hardened XS knives
1 SILOKING planetary gearbox with 4 planets
2 hydraulic counter cutting knives with automatic function
Edged hopper
SILONOX wear protection at the discharge: SILONOX is a special stainless steel alloy with special properties 1. Corrosion resistant against chemical wear (rust) 2. Abrasion resistant against mechanical wear (friction during mixing)
Straw ring

Additional equipment
Discharge conveyor rear left, extendible diagonally upwards, length 600 mm
Additional discharge door front right
Right exterior mirror retraction
Automatic climate control
Suspension lowering (front and rear axle)
Mineral input funnel in the mixing container, incl. input auger with drive motor
Heavy duty magnet on mixing auger
25 km/h version
Full air suspension with automatic level control
2 driving ranges, can be switched under load

The Method

Removal and filling

The handling and operation of the removal and filling system is practically assessed.

During the removal/cutting of grass and maize silage, the time is measured for every cutting operation and the weight of the removed material. The removal power is calculated in kg/min.

After the removal process, the width and depth is measured from the silage clamp through the removal and filling technology.

After the extraction process, the feed debris (collection losses) not conveyed by the mixing container are collected and weighed. Any edge strip that was left uncut after the extraction operation is measured at the silo wall.

Through the sampling (10 samples) on the silage clamp, the feed structure of output grass silage is examined with a shaker box (screen size 19 mm and 8 mm). During the filling process, 10 samples are taken from the feed stream. In these samples, the feed structure is examined using a shaker box. The size fractions obtained using the shaker box are weighed and the hashing effect of the cutter calculated for the silage.

Mixing

10 samples of the two mixing components (grass silage, maize silage) are extracted at the silage clamp prior to the mixing and the dry matter content determined through a drying cabinet (24 hours at 105°C). After the mixing (mixing time around 3 minutes) and the discharge, a sampling will be performed on 8 places along the entire discharge path. The first measurement point is after 1 meter, the last 1 meter before the end of the discharge route. 5 samples are extracted at the 8 measurement points.

There is at least a one-time repetition attempt with roughly equal mixing proportions. The investigations are carried out with a full and half-full mixes.

The dry matter content of the individual samples at the 8 measuring points are compared with the target value which is calculated from the mass and the dry matter content of the two components of the mixture. The examinations of the mixing accuracy are carried out with the following specification of the feed components: silage (short/long); maize silage (2/3 DM silage and 1/3 DM maize silage).

The hashing effect of the mixing auger and the feed treatment are examined with a practical assessment.

Weighing

The different filling degrees of the mixing hopper are simulated in the laboratory through the loading and unloading of calibrated weights. The weight display of the weighing system and the actual weight are compared with each other, and the accuracy of the weight display is calculated.

Feed discharge

The feed discharge (discharge amount, feed storage, hopper emptying, overview of the discharge openings) is evaluated with a practical assessment.

Handling

The handling, operation and the operating instructions of the feed mixer wagon are practically assessed.

Usage behaviour

A practical assessment will be performed to assess whether the engine power is sufficient for all operating conditions. The fuel consumption of the motor is measured using the DLG fuel measurement technique during a complete cycle (cutting of silage and maize silage, mixing and transport drive, discharge).

The maximum speed of the feed mixer wagon is measured with an empty mixing hopper on the DLG measuring track. The turning circle of the feed mixer wagon is measured on the outer front wheel tracks, and with a lowered cutting arm at the outer edge of the cutter.

The noise level at the maximum engine speed and different operational states is measured with a closed cabin at the ear of the driver. The noise level is also measured during a drive-by with full throttle.

Maintenance

The maintenance effort on the feed mixer wagon is practically assessed.

Durability

The maintenance effort for the feed mixer wagon is practically assessed.

Occupational safety

The occupational safety examination of the feed mixer wagon will be conducted by the German Test and Certification Centre for Agriculture and Forest Engineering (DPLF) – a testing laboratory that is accredited according to the German appliance safety law.

Traffic safety

The relevant documents shall be provided by the manufacturer.

Survey

A survey conducted in companies that have the same feed mixer wagon in operations is intended to be conducted to supplement the test results.



Figure 2:
Cutting in the silage clamp

On the SILOKING SelfLine 4.0 Compact 1612-13 the loading conveyor channel is recessed into the mixing hopper. Therefore, the hopper capacity can only be utilized to about 85 %. To take advantage of the remaining capacity loading with the cutting arm is recommended not higher than 1 m above the ground.

Proper handling is essential for a clean feed removal from the silage clamp. In order to avoid feed from being ejected onto the covers of the clamp, the cutting drum should be applied below the upper edge of the silage clamp. When cutting the face of the silage clamp extraction depths of approximately 10 cm are possible. As a result, the wagon must often be moved over for subsequent cuts.

Removal and filling

The results obtained for the removal performance in the silage clamp are very high when loading wagon grass silage, grass and maize silage. The extraction performance shown in table 2 relates exclusively to the cutting operation in the silage clamp. The manoeuvring times required for the tracking of the cutter or the lateral displacement are thereby not taken into account. The measurements have been performed with blades in new condition.

Through the great conveyance channel, the large quantities of feed are easily gathered by the conveyor and transported into the mixing hopper. No blockages were determined during the measurements.

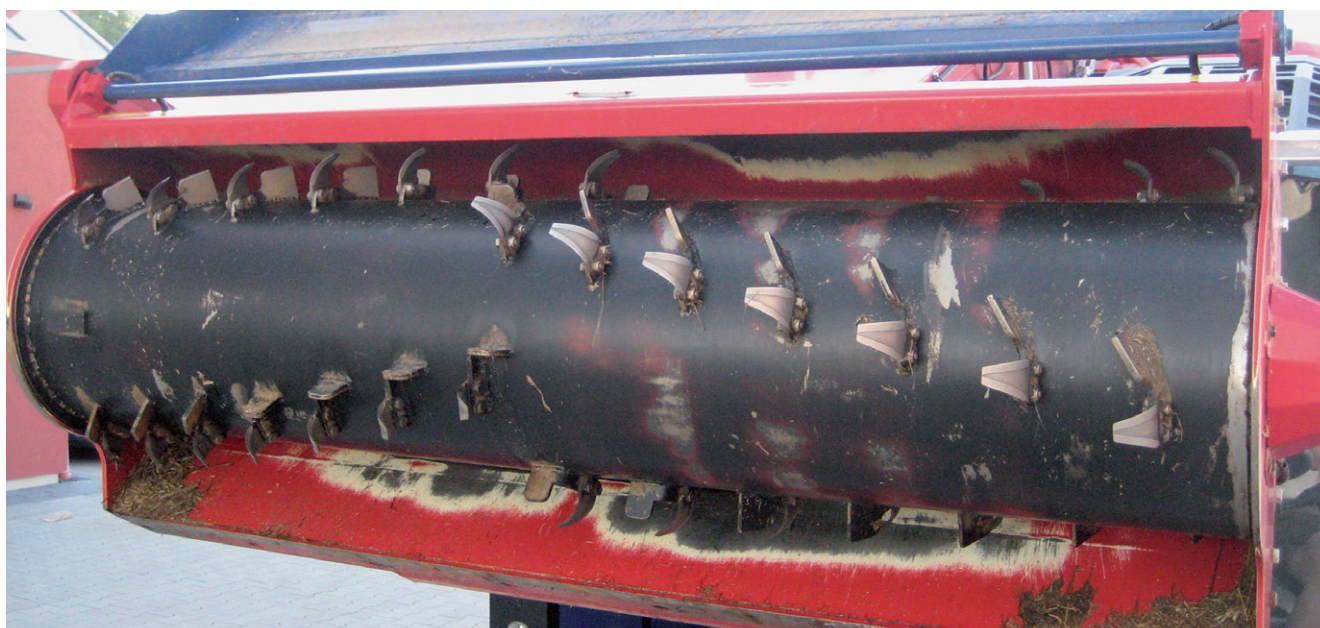


Figure 3:
Cutter with cutting blades

The cutter is equipped with 42 curved cutting blades with straight and angled transport blades. These quickly convey the cut feed to the large filling opening and onto the conveyor belt. The conveyor belt quickly transports the large quantities of feed smoothly into the mixing hopper. This prevents the feed from being severely crushed, thus largely keeping the structure intact. The feed crushing by the cutter is comparatively very low (see table 3).

For the loading of maize silage, the feed can be thrown over the hopper when running at full speed and the cutter being in lower position. The speed of the conveyor belt and cutting head can be reduced in maize.

The two-metre-wide cutting drum also enables lossless feed picking on the side walls without large residual strips through a slanted driving approach. The prerequisite for this is a sufficiently wide clamp face. A trained and skilled driver is able to cut the silage on both sides in such a manner, that the remaining strips often break off and fall down on their own. At the same time, loose feed can be pushed all the way to the silage clamp with the ground-touching cutter edge and then very efficiently picked up with the cutter. During a careful operation, the driver is able to perform the feed intake process without any manual work.

With the cutter it is possible to load nearly all feed components. To ensure a clean feed collection, the extraction points should be fixed with a base plate.

Round and square bales can be cut if a careful operation is performed. In order to avoid a clogging of the cutting drum, the bale should be carefully cut with a not too great extraction depth. A large dust development cannot be avoided during the collection of fine-particle bulk materials. An external filling from the top into the mixing hopper is therefore recommended.

Small amounts of additive feed components can be easily added through the laterally mounted input funnel (optional). The funnel and the auger should be regularly checked and cleaned.

*Table 2:
Removal performance in the forage floor*

Removal performance ¹⁾	
Loader wagon grass silage	max. 962 kg/min
Grass silage	max. 1,269 kg/min
Maize silage	max. 3,255 kg/min
Extraction width	2.0 m
Maximum extraction height (cutting drum bottom edge)	3.26 m
Maximum extraction depth	0.10 m
Discharge losses	low
Collection losses (removal width)	
	loading wagon grass: 2.7 kg/m
	grass silage: 3.4 kg/m
	maize silage: 5.1 kg/m

*Table 3:
Hashing effect of the cutter*

	Feed structure						Structure hashing
	in the forage floor			after the cutter			
Particle size	> 19 mm	> 8 mm	< 8 mm	> 19 mm	> 8 mm	< 8 mm	
Grass silage	74	15	10	67	18	14	7 %
Loading wagon grass silage	89	7	3	84	9	6	5 %

1) Dry matter, calculated with 40 % grass, 30 % maize, with a forage floor height between 2.5 m and 3.0 m

Mixing

The SILOKING SelfLine 4.0 Compact 1612-13 was able to achieve a good mixing accuracy with all tested mixing variants. Full and half blends were examined according to the respective capacity. The maximum permissible deviations of $\pm 10\%$ for forage were met (figs. 5 and 6). The use of the hopper counter knives was omitted during the mixing. The mixing time was limited to three minutes after input of the last component.

The mixing results were determined in the first speed level of the mixing auger. The two speed levels of the mixing auger are beneficial. For small mixtures, feed can remain on the auger. Through a switching on to the faster speed, the feed is thrown down and mixed in.

The hashing effect of the SILOKING SelfLine 4.0 Compact 1612-13 is good. In addition, it can be changed through the positioning of the counter knives and the adjustable blades. In most cases, an additional cutting will not be necessary, because the feed is already crushed by the cutter. When processing very long material it may be advantageous to use the hopper counter knives.

The feed processing is very gentle through the vertical mixing auger. Even with damp and structurally weak components, the feed is mixed gently. A mashing effect is definitely prevented.

Continuous feeding with loosened material and the proper order of the component input provide a beneficial effect for the mixing process. Through this, it is possible to avoid extended mixing times.



Figure 4:

The vertical mixing auger of the SILOKING SelfLine 4.0 Compact 1612-13 has 2.5 turns and is equipped with seven blades.

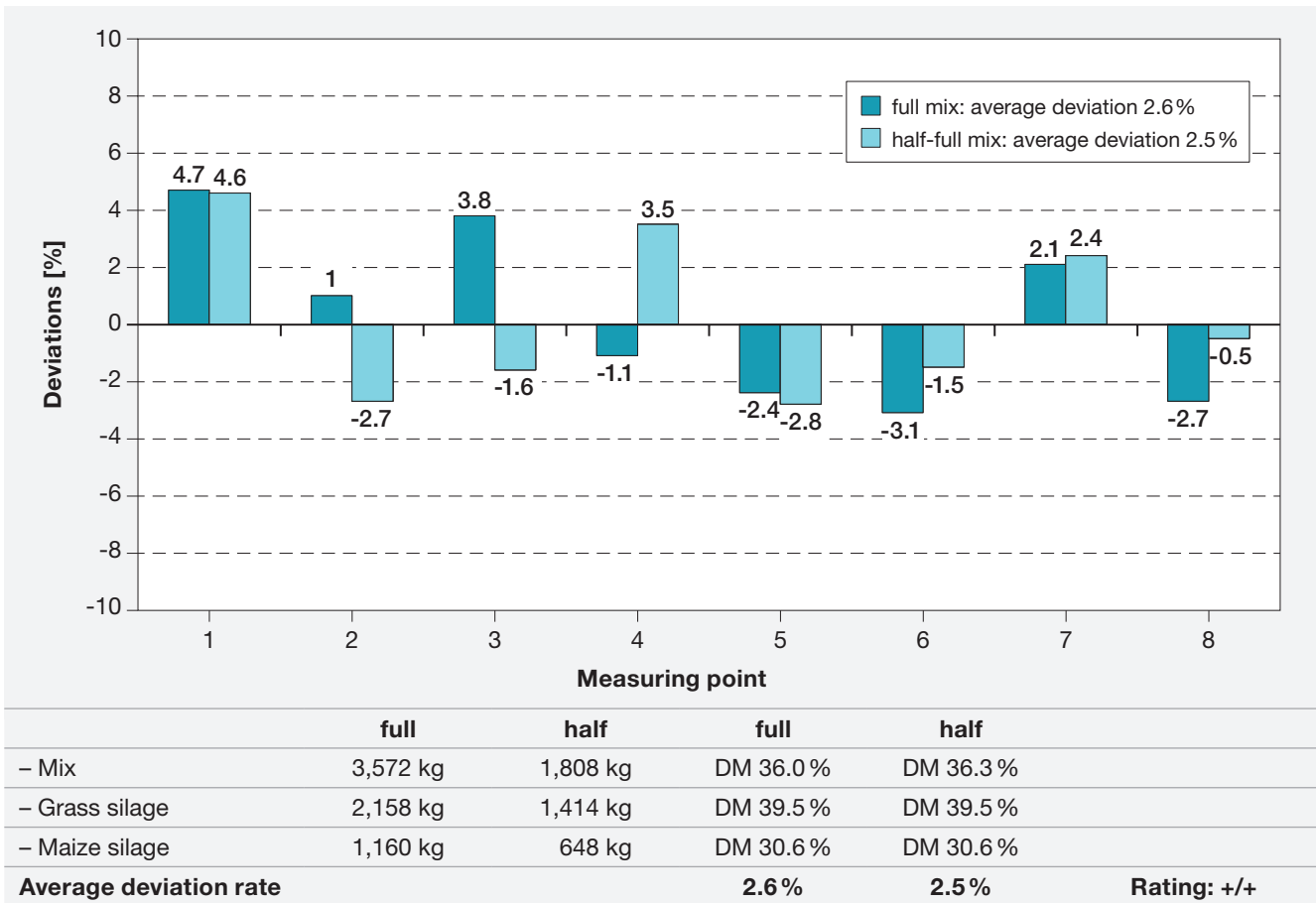


Figure 5:
Deviations in the mixture loading wagon grass/maize – full/half

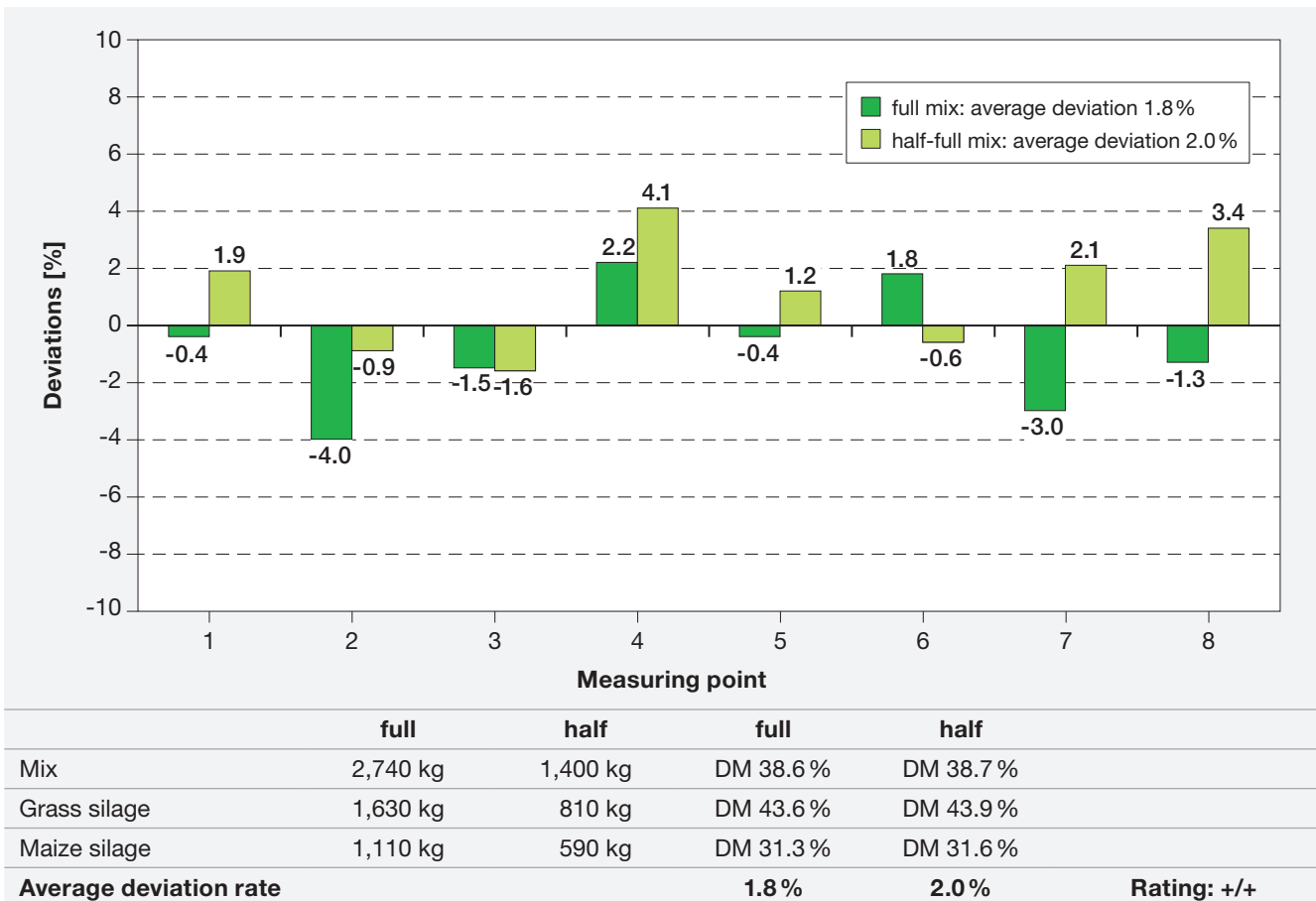


Figure 6:
Deviations in the mixture silage grass/maize – full/half

Weighing

The mixing container is connected to the vehicle chassis via three weighing bars. The weight display is performed with an electronic weighing computer. It is mounted in the cabin on the right side above the steering wheel. During the operation, the display is in the driver's field of vision. The display is illuminated and the 45 mm large digits are easy to read. The accuracy of the weight display depends on the weight of the filling. At a minimum quantity of 130 kg, a deviation of 1.8 % was identified and < 1 % with a maximum payload.

Feed discharge

The feed discharge sometimes occurs in bursts with mixtures containing loader wagon grass silage or hay and straw. However, a relatively uniform feed discharge can be achieved along the entire stretch of the discharge route with some experience and skill. The discharge amount can be easily adjusted through the adjustment of the metering valve, the driving speed and the auger rotational speed. A full hopper can be discharged in about three minutes. The fast stage of mixing auger is highly beneficial for the hopper emptying. Feed residues on the auger and the hopper bottom are thus emptied better. An almost complete hopper emptying can thus be achieved.

For the discharge of large feed quantities (single feed discharge per day), no feed will be run over due to the twin wheels attached in the centre of the rear. The steering in the rear and the associated direct reaction to steering movements require a high degree of practice and skill during the feed discharge.



Figure 7:

The driver cab is located in front of the front axle on the left side.

Sufficient freedom of movement is provided through the large side door entry.

The left discharge side should be preferred due to the better overview. The right feed discharge can be observed through the right-side mirrors, but requires a considerable degree of routine and skill. The supervision and control on the left side is easier and more comfortable for the driver. In practical use, the discharge quantities were almost always controlled through the engine and travel speed with a fully opened valve.

Handling

The driver cab is located in front of the front axle on the left side. All levers and switches are ergonomically mounted in the cabin on the right side. The chassis with the four wheels and the steering by means of twin wheels arranged in the centre of the rear make the vehicle highly manoeuvrable. The rear of the vehicle responds very directly to steering movements, which requires a high degree of skill from the driver during the operation.

This must absolutely be taken into account when driving on public roads and paths. A big advantage is that the front axle is equipped with a disc brake. The pneumatic brakes automatically close when the machine is shut off, and can be actuated with a button on the control panel. Additionally, a foot pedal for the hydraulic operating brake is attached next to the steering column. In practice, the driving speed of the machine is only controlled by the hydrostatic drive. The monitor with the two surveillance cameras for the mixing container and the rear of the vehicle is part of the standard equipment. Especially the surveillance camera at the rear of the vehicle is necessary for reverse driving. However, the outer edges of the mixing hopper are not visible through this. They must be checked using the side-mounted mirrors. A seat-switch automatically switches off the mixing auger if the driver leaves the cabin, thus contributing to the improvement of safety at work.

The operating instructions for the SILOKING SelfLine 4.0 Compact 1612-13 properly describe the work performance with the machine.

The spare parts list is clearly structured and comprehensive.



*Figure 8:
A glance inside the driver's cab.
On the right side of the driver's field of vision, there are the instrument console and all control elements.*

Overview 1:

Handling*

Driver's cab

- ++ wide and comfortable entry
- + good space in the cabin
- ++ height and tilt adjustable steering wheel
- + pneumatic parking brake button on the control panel
- ++ convenient and easy-to-manage multifunction lever for the cutting arm
- + heating, ventilation ensuring pleasant temperatures
- ++ all display and control instruments are in the driver's field of vision
- + washer for the windscreen
- ++ additional windshield wiper on the right handside window and roof window
- + motor speed easily adjustable via hand-wheel
- + driver's seat with sufficient setting options
- ++ economically beneficial layout and handling capability for the controls
- + additional AdBlue display
- adjustable sliding windows
- + digital speed display in the monitor
- ++ monitor with two cameras for the mixing hopper and at the rear of the wagon as well as for reverse driving
- + safety switch off of the cutter through a contact switch joystick and seat contact switch
- + safety switch off of the mixing auger through seat contact switch

Operation/maintenance

- + good accessibility of the driving components
- + hydraulically foldable cutting drum cover
- + electrically heated outside mirrors, right mirror bracket electrically retractable
- ++ attached LED lights illuminate the work area very well
- ++ very good manoeuvrability thanks to rear-wheel steering

* Evaluation range: ++ / + / ○ / - / -- (○ = standard / n.a. = no assessment)

Usage behaviour

The engine power was sufficient for all operating conditions. For the centralized propulsion, the vehicle is equipped with a water-cooled Volvo 4-cylinder turbo diesel engine, exhaust gas level IV with a performance of 105 kW.

The fuel consumption essentially depends on the demanded performance and the conditions, for example, in/on the silo. At full throttle and during load peaks (during the cutting), a maximum consumption of 33 l/h was measured. During a complete cycle (grass cutting and maize silage, mixing and transport drive, discharge of 3,554 kg) an average consumption of 14.8 l/h or 0.9 l/t at a travelled distance of 401 m, see fig. 9, was measured.

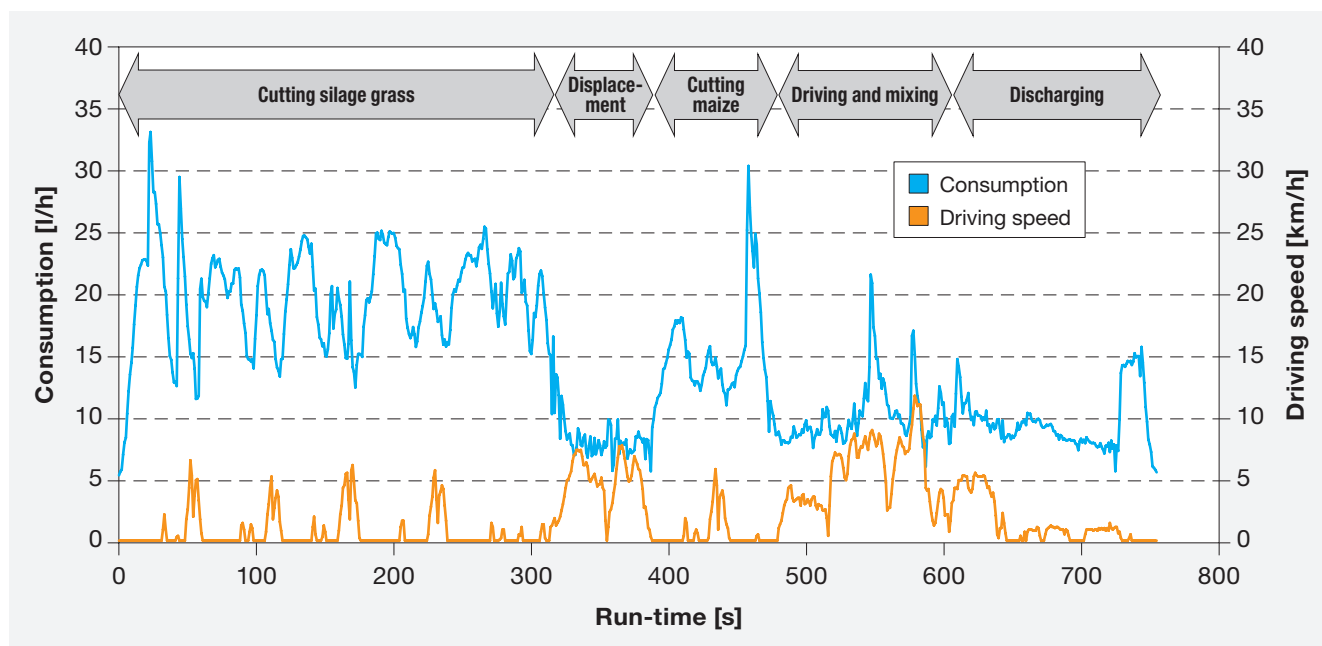


Figure 9:

Fuel consumption and distance travelled during the cutting, mixing, and discharge of 3,554 kg of feed

With the **hydrostatic drive** there are two beneficial speed levels. They can easily be set with a push button on the control panel. With a foot-operated hydrostatic valve, the speed can be regulated variably. On our test track and with an empty mixing hopper, a maximum speed of 15.0 km/h in the first level and 27.5 km/h in the second level was measured.

The **turning circle** is comparatively small. The wheelbase is 3.9 meters. With appropriate training and experience the rear wheel steering can be mastered quite easily. The compact design of the vehicle and the rear wheel steering enable an easy manoeuvrability even at confined extraction points. A turning circle of 7.75 metres was measured on the outer front wheel tracks. With a lowered cutting arm (0.30 m from the ground), 9.62 meters were determined at the outer edge of the cutter. The tyres were perfectly adequate for the conditions during the test.

The **noise level** was a relatively low 72.3 dB(A) at the maximum engine speed, measured with a closed cabin at the ear of the driver. For other operating conditions, similar low values could be achieved (see table 4).

The values were also low during a drive-by at full throttle with a distance of 7.5 metres from the longitudinal axis of the vehicle.

On the right side of the vehicle, a sound pressure level of 77.7 dB(A) was measured on the right vehicle side and 81.4 dB(A) on the left.

Table 4:

Sound pressure level (in the cabin at the ear of the driver)

Cabin	Sound pressure level at the maximum engine speed		
	Motor	Motor + mixing augers	Motor + mixing augers + cutter
	dB(A)	dB(A)	dB(A)
Closed	67.4	71.4	72.3
Open	69.4	74.3	74.3

Maintenance

For a long-lasting, smooth and trouble-free usage it is recommended to regularly conduct a check of the main components before each use. If necessary, dirt must be removed in order to avoid an impairment of the functionality. Residual feed should especially be removed regularly from the engine behind the driver's cab.

The inspection and maintenance intervals are prescribed in the operating instructions. Separate maintenance intervals are applicable for the engine.

In table 5 the maintenance work which can be performed by the driver is shown.

Table 5:
Maintenance work

Bearings and lubrication points
29 pieces
– accessible in an upright posture: 1 piece steering rear and 12 pieces lubrication strip cutter
– bent over reachable: 16 pieces
Drive
– engine easily accessible
– dipstick easily accessible
– fuel filter easily accessible
– oil filter not easily accessible
– air filter easily accessible and can be opened without tools
– cooler accessible from the ground and can be cleaned easily behind the driver's door
– battery accessible from the ground and can be easily reached above the rear axle
Cabin
– air intakes can be easily reached and opened
– fuses are freely accessible and easy to check

Remarks:

With loading wagon goods an increased blade wear could be detected on the cutting drum. The blades should be not be sharpened, but rather turned over once and then be replaced.

Durability

In the practical utilization, the SILOKING SelfLine 4.0 Compact 1612-13 was deployed in three DLG farming operations where the vehicle has operated for 80 hours so far. Thereby, 170 mixes were created to date.

A mixing wagon of the same type was utilized in 6 farming operations by SILOKING and protocolled accordingly. This vehicle operated a total of 431 operating hours within three months. Thereby, 737 mixes with a total of 2,212.7 metric tons were created.

The wear on the cutting blades which was detected during the test period was normal according to the farmers. No malfunctions occurred on the mixing, distribution and discharge systems.

Results of a survey

A survey among owners of feed mixer wagons of the same type could not be conducted because the delivery of the series took place in January 2016.

Occupational safety

The self-propelled feed mixing and distribution wagon SILOKING SelfLine 4.0 Compact 1612-13 was evaluated by the German Testing Centre for Agriculture and Forest Engineering (DPLF). There are no objections to the use of the device for safety-related reasons.

Traffic safety

The tested SILOKING SelfLine 4.0 Compact 1612-13 as a special vehicle is approved for travel on public roads or streets. A registration certificate part I (vehicle registration) is available. The maximum speed of the machine is 25 km/h. To operate the vehicle a driving licence of at least class L is required. Due to the empty weight of 10,720 kg and the permissible total weight of the feed mixer wagon of 12,520 kg, the vehicle may only be loaded with up to 1,800 kg when driving on public roads. For on-premises driving the permissible total weight is 15,000 kg according to the manufacturer.

Conclusion

The criteria tested in the present DLG-Approved Full Test evaluate the functional properties of the self-propelled feed mixing and distribution wagon SILOKING SelfLine 4.0 Compact 1612-13 on the basis of laboratory and practical tests.

The tested self-propelled SILOKING SelfLine 4.0 Compact 1612-13 has met the requirements of the test scope regarding the examined criteria.

More information

Further test results for cow cleaning and care machines can be downloaded at www.dlg-test.de/tierhaltung. The competent DLG professional committees have published various informational pamphlets on the topics of animal-appropriateness and cattle-farming. These are available free of charge at www.dlg.org/merkblaetter.html in PDF format.

Test performed by

DLG e.V., Test Center Technology and Farm Inputs, Max-Eyth-Weg 1, 64823 Groß-Umstadt, Germany

DLG test scope

DLG-Approved Full Test "Feed mixing and distribution wagon" (current as of 10/2008)

Area of expertise

Livestock systems

Project director

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Test engineer(s)

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Practical use

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The DLG

In addition to being the executing body of well-known tests for agricultural engineering, farm inputs and foods, 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 commissions thereby form the basis of expertise and continuity for the professional work. At 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.

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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.

Internal test code DLG: 15-454

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