GS Bagger 2016 Manual

&

Supplementary Technical Information

EG – Declaration of Conformity for Machines

Farm Mac AB
Alfahills Gård, Tågarpsv. 369
261 76 Asmundtorp
Sweden

GS Bgger Art. no: ….

The machines comply with the stipulations of Machinery Directive 2006/42/EC.

Asmundtorf, 9-12-2019

Per Cristenson, Krister Wiengren
Directors

1. INTRODUCTION

1.1 Disclaimer

1.2 Definitions

Hopper	A loading area for the grain.
Auger tube	A tube in were the Auger is turning
Auger	Mechanical device which moves and presses the grain int o the plastic bags
Cleaning inlet	Hatch to clean the auger pipe
Parking support	A height-adjustable support used when connecting and disconnecting the GS Bagger cart.
Drawbar	An adjustable hinged drawbar to match the height of the GS bagger with the height of the tractor.
Coupling shaft	A shaft transmitting the mechanical drive from the tractor to the centre box of the GS Bagger wagon.
Tunnel	Frame where plastic tube is placed on
Drawbar eye	A metal eye on the drawbar to connect the unit to a tractor.
Lights bar	A bar containing the rear lights, brake lights and indicators.

1.3 General

Congratulations on the purchase of your Farm Mac machine. This manual gives you the instructions in terms of operation, use, maintenance and safety of the machine. The manual is part of the machine and should be kept with the machine at all times. If the machine is sold, this manual should be passed on to the new owner. Any person involved in the start-up, operation and maintenance must have read and fully understood this manual, in particular the safety regulations. Depending on the model, the illustrations printed in this manual may differ slightly.
Please make sure that the manual is always available to the operator in order to avoid operational errors and to guarantee the trouble-free operation of the machine.
Please contact your dealer or the manufacturer for any further questions you may have. The manufacturer's address details are shown on the cover of this manual.

1.4 Area of application

GS Bagger is constructed for agricultural companies, manufacturers of feed mixtures and service organizations. The machine is used first and foremost to store grain in large-volume plastic storage bags. The in-line bagging technology provides an alternative to the standard grain storage systems, such as silage pits and silos. The machine is most frequently used to store grain, pulse, fertilizer, pressed and ground grain. Only suitably trained personnel may operate and maintain the machine. Always observe the locally introduced bylaws as well as the safety and environmental rules and regulations.

1.5 Terms of guarantee

See our General Terms and Conditions for the terms of guarantee.

Farm Mac would like to point out that any claims made under the guarantee will be invalid and Farm Mac will be indemnified for any liability and responsibility if:

- six months have lapsed since the purchase date. The guarantee covers any defects as a result of faulty materials and workmanship, such to be considered by Farm Mac. This guarantee is restricted to free delivery of new parts to your dealer. No such restriction will apply to complete parts purchased by Farm Mac. Such parts are subject to the warranty conditions of the supplier. In case of failures, please contact your dealer. Only contact Farm Mac directly if your dealer is unable to assist with your complaint;
- work is not carried out within the functional limitations (e.g. max. RPM) as explained in the instructions for assembly, operation, service and maintenance. Always use proper and sound tools;
- unauthorised DIY and constructive alterations have been made, safety devices have been put out of action, incompetent adjustments to hydraulic valves, operational errors or deficient repairs have been carried out;
- because of gross negligence, the aforementioned instructions in the manual have not been observed;
- local regulations in terms of accident prevention, safety, traffic and transport have not been observed;
- no original Farm Mac parts or equivalent, extra parts and lubricants have been used and have not been assembled as per the instructions. A part (or lubricant) is considered of the same quality if it has explicitly been approved of by Farm Mac or if it can be proven that it has the properties that are necessary for the function in question;
- incompetent persons operate or otherwise deal with the machine, i.e. persons who are not familiar with the machine and the possible hazards involved;
- the defective parts are simply worn out;
- the machine has been used improperly, incorrectly, carelessly or not in line with its nature and purpose.

1.6 Check on delivery

- On delivery, please check immediately that the goods are the ones you ordered and check that the machine is complete and undamaged. Do not use the machine if damaged, but contact your Farm Mac dealer or the freight carrier instead.

1.7 Obtaining Replacement Parts

If you adhere to the rules stated below when ordering spare parts, you are assured of a fast and correct delivery.

1. Quote the model and serial number of the machine.
2. Quote both the part number in full (if known), and its description.
3. State the way in which the spare part needs to be despatched.
4. When ordering wheel axle parts, it is also advisable to state the wheel axle model. This can be found on the identification plate of the wheel axle.

Parts can be ordered from your nearest Farm Mac dealer, or from:

Farm Mac AB
Alfahills Gård, Tågarpsv. 369
261 76 Asmundtorp
Sweden
GSM +46-733335130
E-mail: krister@farmmac.com

2. SAFETY REGULATIONS

2.1 Explanation of the symbols used in this manual

Further in this manual the following symbols will be used to warn for possible hazardous situations.

Symbol warning for unsafe working conditions if the instructions are not observed.

This symbol comes with any safety regulations relating to situations that may cause personal injury or death.

Please follow these regulations and be always alert.

Mention these safety regulations to anyone who takes part in the work.

Also observe any general safety regulations.

Symbol warning for any danger to the operational safety of the machine

This symbol in the manual is shown together with any instructions with regard to preventing damage to the machine.

Symbol for actions affecting the environment.

This symbol in the manual is shown together with any action related to waste and residual products.

Please recycle, or discard waste and residual products in an environmentally friendly manner.

2.2 Model plate and CE marking on the machine (Fig. 1)

Summary of the labels attached to the machine with regard to safety precautions and possible hazards. Observe these warnings and make sure the labels remain clearly visible.

Ignoring these instructions may cause serious personal injury, death by accident, damage to the system or damage to the business.

Marking type	Position	Description	Sticker
Warning	A	Carefully read the manual and the safety regulations before putting the machine into service.	
	B	Stay out of the turning circle of the hydraulic tailgate during the operation.	

Marking type	Position	Description	Sticker
Warning	C	Guard against being trapped or crushed! Rotating machine parts.	
	D	Guard against being trapped or crushed! Do not climb on machine while still in operation.	
	E	Guard against risk of being cut! Do not operate without safety guards in place.	
	F	Risk of being grabbed! Dangerous rotating PTO.	
Indications	G	PTO 540 RPM.	
	H	Tighten wheel nuts!	
Model plate	M	Information about the manufacturer: name, address, CE mark, type indication, serial number, capacity.	

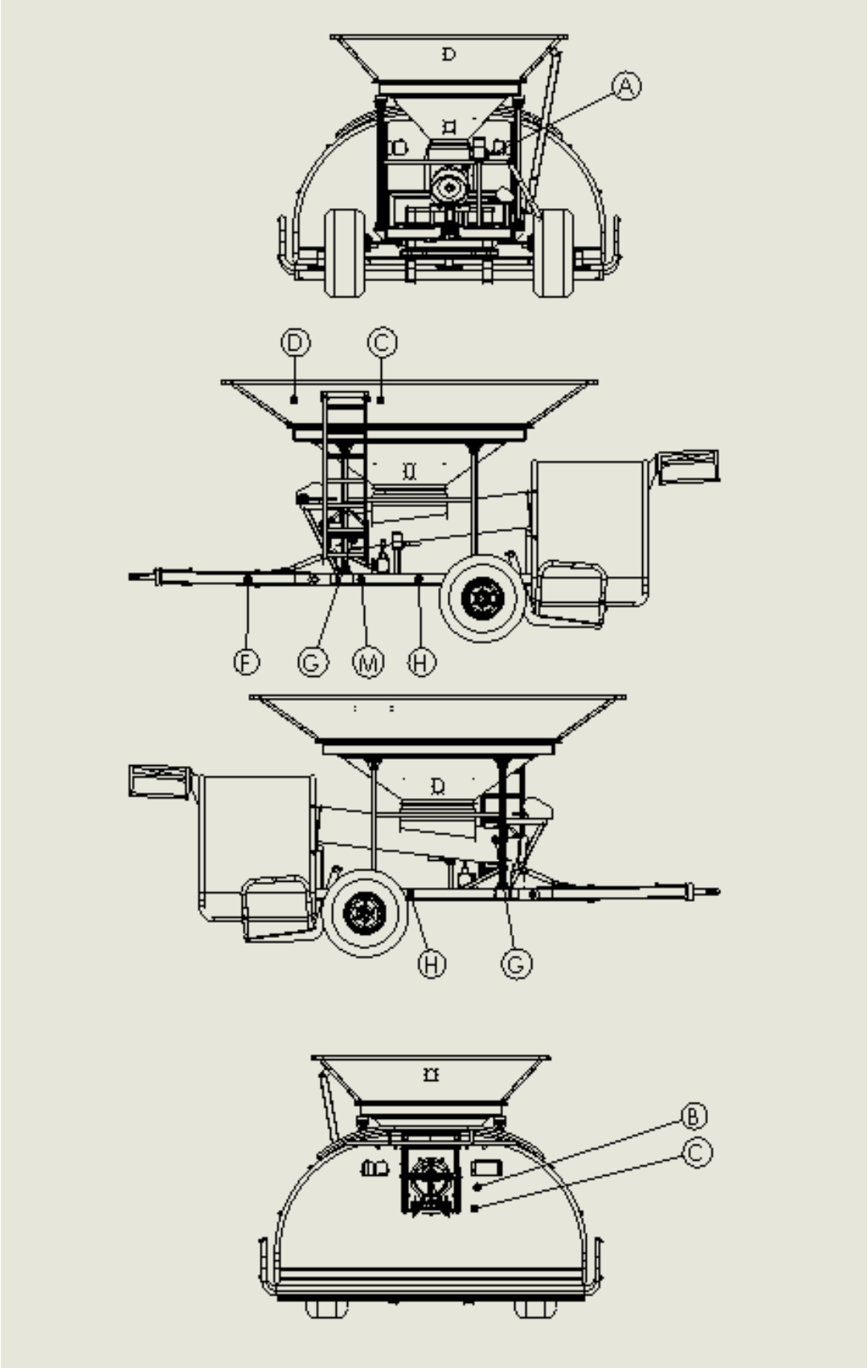


Fig. 1

2.3 General safety regulations

- Use the machine only for its intended purpose. If in doubt or if anything is not clear, always contact your Farm Mac dealer first.
- Replace any worn off safety symbols/icons and/or information labels with new ones, available from your Farm Mac dealer.
- Make sure you are familiar with all the functions of the machine before operation.
- Check the machine(s) each time before use for safety in order to prevent accidents.
- Only operate the machine with the complete, undamaged guard that is properly working.
- Immediately repair any malfunctions before reusing the machine.
- Disengage the coupling shaft, switch off the engine and remove the ignition key before leaving the tractor.
- Uncouple the machine on a flat surface and prevent it from rolling down; use the brakes or wheel blocks.
- Place the dust caps after uncoupling the hydraulic hoses.
- Watch out for hazardous situations from accumulators, gas springs, etc. in the event that the back pressure drops.
- Painted, plastic and rubber parts cannot resist corrosive acids or fluids. Use water to rinse any parts that have been in contact with corrosive acids or fluids.
- Protect the machine from welding or grinding sparks.
- Observe the inspection and maintenance instructions.

2.4 Personal safety

- Machine operators must be familiar with the local safety requirements.
- Only qualified staff are allowed to operate the machine.
- Avoid unhealthy working positions. This may cause physical complaints.
- Wearing ear protection while using the machine is recommended.
- Be aware that loose-fitting clothes, jewellery and rings may get jammed in the machine.
- Be aware of any danger of falling down while at work on the machine.

2.5 Safety regulations with regard to the combination of tractor and machine

- Do not use the machine for purposes other than purposes it was designed for.
- Check the lights on both the tractor and the machine before the operation.
- Observe the highway code when using the public road.
- Connect the hydraulic hoses and electrical cables in such a manner that no unwanted movements can occur or required functions are obstructed.
- Only use the protected coupling shaft supplied by Farm Mac with a shearbolt coupling and make sure that the covering guard is intact.
- Protective tubes and guards to the coupling shaft must be thoroughly mounted and be in a sound condition to ensure the shaft is fully protected both during transport and while in use. Secure the guard so it cannot move.
- Couple or uncouple the coupling shaft only with the tractor engine turned off.
- Make sure that no persons are within the range of the rotating coupling shaft.
- Do not run the coupling shaft unless necessary.
- Make sure that the direction of rotation and the speed of the coupling shaft match the machine to be driven.
- Never operate the coupling shaft with the engine turned off.
- The working pressure of the hydraulic system of the driving tractor must not exceed 190 bar. Higher values may cause dangerous situations.
- Adjust the driving speed and style to suit the local conditions, the terrain and other traffic on the road.
- When driving on a ramp or slope, be aware of the risk of the machine falling over.
- When taking corners, be aware of the width and weight of the machine.
- Never exceed the maximum axle load prescribed by traffic laws.
- Do not exceed the maximum axle load. Do not compromise the control, stability and braking properties of the machine.
- The use of any non-approved CE transmitters in the tractor may cause interference to the electronics of the machine.
- Make sure that no human beings or animals are between the tractor and the machine.

2.6 Safety regulations with regard to the operation of the machine

- Make sure that no person is within the working range during transport and operation.
- Avoid stress, and work in a structured manner. This will reduce the risk of mistakes and combinations of hazards and accidents.
- Do not operate the machine if you are overtired.
- Use only the original Farm Mac accessories and ensure these accessories are placed in the correct manner.
- Keep body parts away from any moving parts of the machine. Body parts may be crushed or ripped off.
- Immediately stop if the machine produces strange noises or responds in a different manner.
- Immediately stop if the machine leaks oil. Pressurised oil may forcefully penetrate the human skin, causing blood poisoning that may be fatal. Call immediately for medical assistance after a worker has been injected with oil.
- Make sure that no persons are in the vicinity of the hydraulic tailgate while being opened or closed.
- Never get too close to a running auger or moving elevator arm.
- Never get too close to a moving hydraulic parking support.

2.7 Safety regulations with regard to maintenance

- Wear personal protection gear during maintenance work.
- Do not work in a way that may compromise the safety requirements.
- Make sure the machine has been protected against inadvertent start-up during maintenance and repairs. Switch off the drive, take the keys from the ignition of the tractor and switch off the control box.
- Make sure the machine is unable to roll down.
- Spare parts used as replacement of damaged or worn-out machine parts should meet the manufacturer’s specifications. Original parts meet this requirement. Parts that fail to meet the manufacturer’s specifications may jeopardise the proper operation of the machine as well as the personal safety of the operators.
- Immediately replace any damaged parts.
- Replace the hydraulic hoses at least once every six years. Immediately replace any damaged hydraulic hoses (if the steel-wire layers are visible).
- Use only maintenance gear recommended by Farm Mac or equivalent, or maintenance gear of an even better quality.
- Make sure that the hydraulic system is disabled and release the pressure from the system before carrying out any maintenance work to the hydraulic system.
- Make sure that the power supply has been turned off and cannot be turned on during maintenance work to the electrical system, unless power is required to detect and rectify and malfunctions.
- Always check all hydraulic components of the machine for oil leaks after maintenance.
- Do not aim a (high-pressure) sprayer at electrical components.
- Collect and discard any used and spilt oil in an environmentally friendly manner.
- Disconnect any electric wiring from the printed circuit boards and the control box during welding work to the machine.
- Process any products used for maintenance in a manner that will cause the least possible damage to the environment.

3. DESCRIPTION

3.1 GS Bagger

- The GS Bagger is a machine designed for work on the land. GS Bagger is constructed for agricultural companies, manufacturers of feed mixtures and service organizations. The machine is used first and foremost to store grain in large-volume plastic storage bags. The in-line bagging technology provides an alternative to the standard grain storage systems, such as silage pits and silos. The machine is most frequently used to store grain, pulse, fertilizer, pressed and ground grain. The machine is driven by a cardan shaft of a tractor with 120 HP.

- Prior to the machine startup, get thoroughly acquainted with the bagging silage storage system:
- Silage bagging is the most practical as well as economical system for storage of grain.
- If certain conditions are met, it is possible to bag wet as well as dry grain.
- Minimum maintenance costs (compared to silos).

- Further benefits that this GS Bagger offers are:
  - Easy storage of grain
  - Low investment of capital to achieve greater productivity.
-
- The GS Bagger is towed by a tractor. The machine consists of a robust steel body with an removable tunnel on the backside.

3.2 Operation

The machine is mechanically driven by the tractor. The auger are mechanically driven by a coupling shaft between the machine and the tractor. The brake system is hydraulic but can not be used during transport on the road. The vehicle has no light, When transported over the road a light bar needs to be placed on the machine.

3.3 Mechanical security system

The machine has one mechanical fuse systems

Shear bolt in P.T.O shaft
There is a shear bolt in the P.T.O shaft from the machine. This shear bolt secures the complete drive line from the GS Bagger. In case of a calamity the shear bolt will break to protect the auger,

When the shear bolt P.T.O. breaks:
Solution: Stop the P.T.O. of the tractor, Switch of the tractor and take the keys from the ignition of the tractor. Because the driveline is switched of it is now possible to turn the P.T.O so that the two flanges match. Mount a new shear bolt.
When connected, start the tractor and clutch softly and accelerate slightly till the auger begins to unload again

Some tractor models allow the PTO shaft to reverse. This should never be done with the Grainsaver GS Bagger wagons, as it may damage the augers and cause the augers to jam.

Product identification:

A. **Hopper**
B. **Auger tube**
C. **Auger**
D. **Cleaning inlet**
E. **Parking support**
F. **Drawbar**
G. **Ladder**
H. **Coupling shaft**
I. **Drawbar eye**
J. **Tunnel**

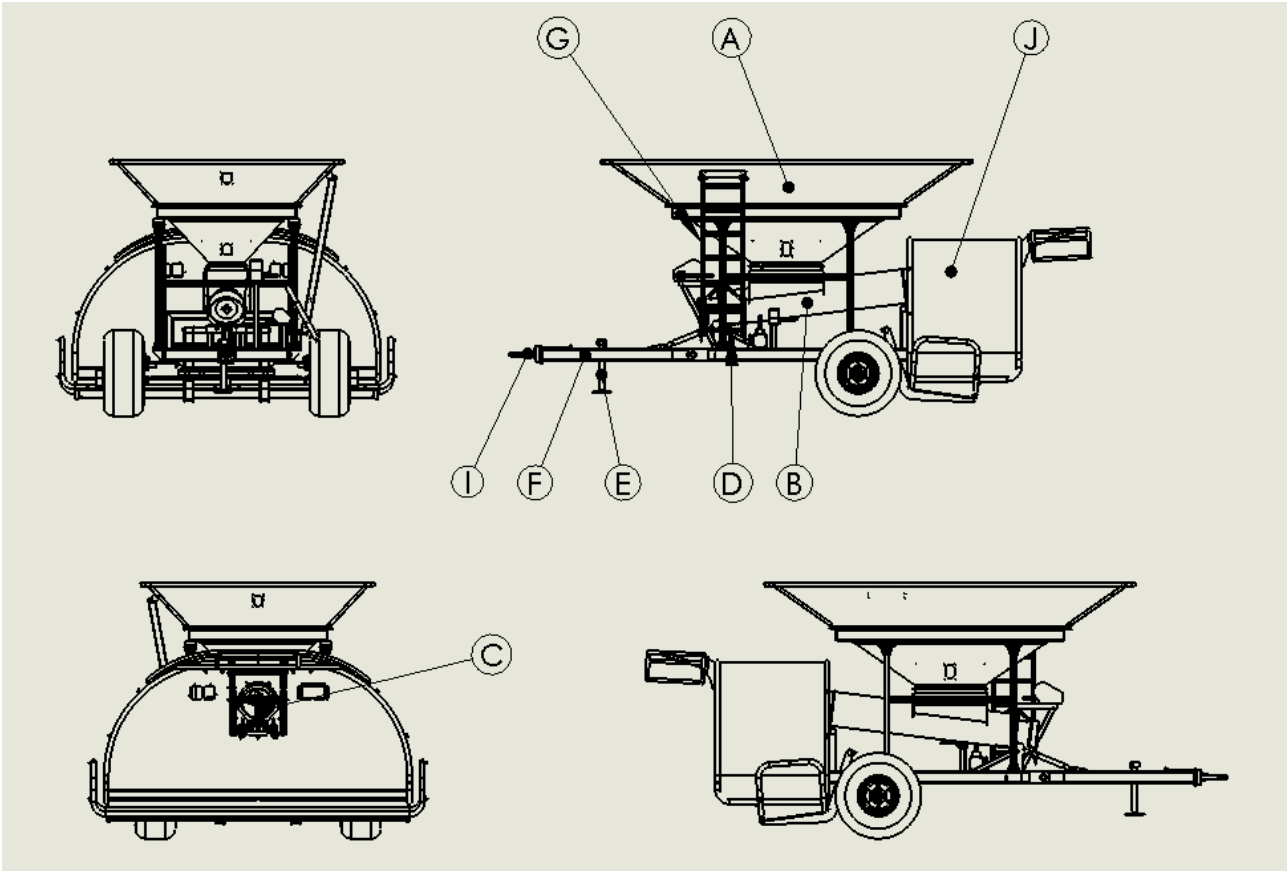
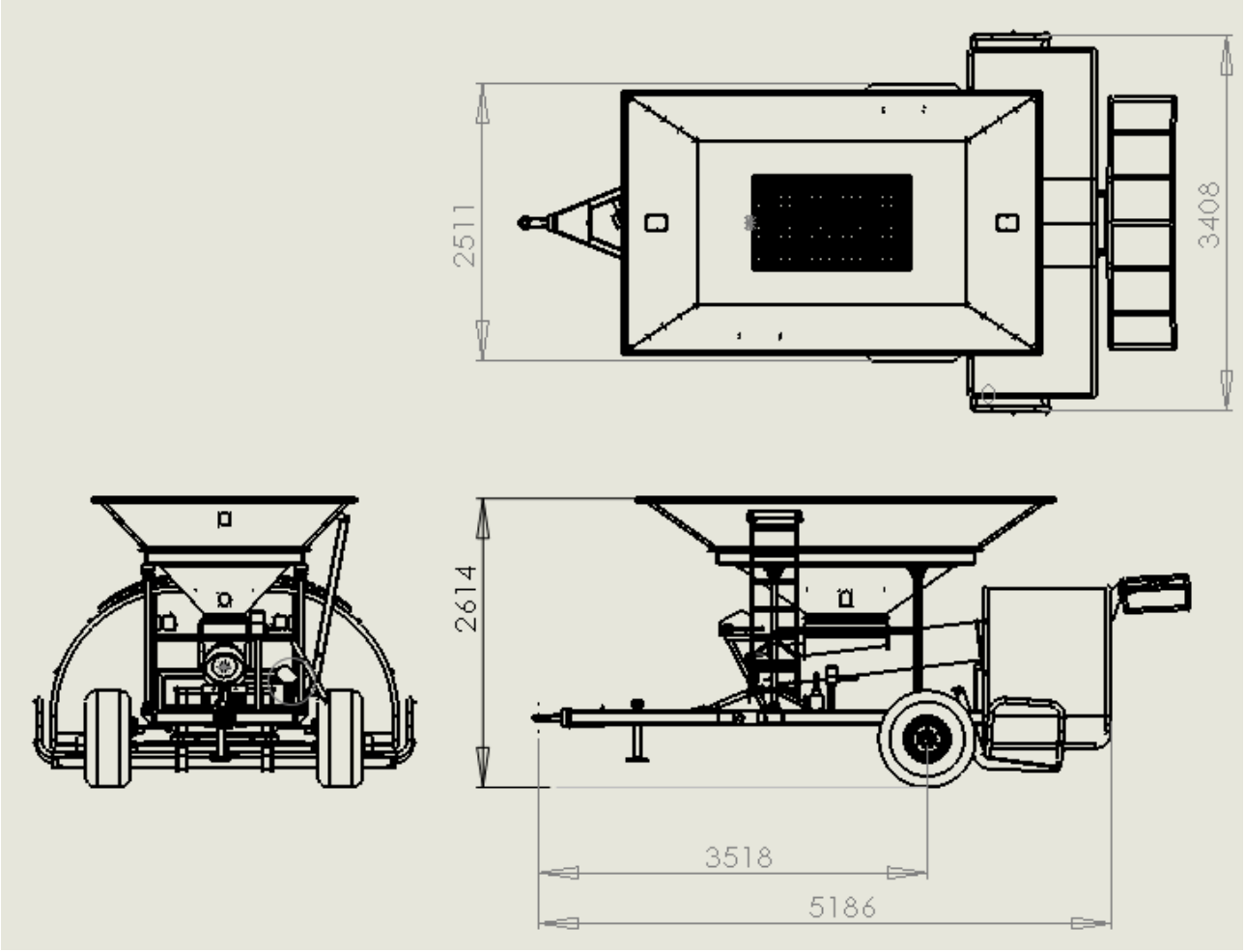


Fig. 4

3.4 Technical data

3.4.1 *Dimensions* The quoted heights apply if standard tyres have been fitted.



3.4.2 Mass and volume of body

Model	Empty mass [kg]	Loading capacity [ton]	Hopper volume [m³]
GS Bagger	2000 kg	-	4 m³

Mass model S without options.

Note: The model plate information is always binding for weights of a GS Bagger and its load.

4. COUPLING AND UNCOUPLING THE MACHINE

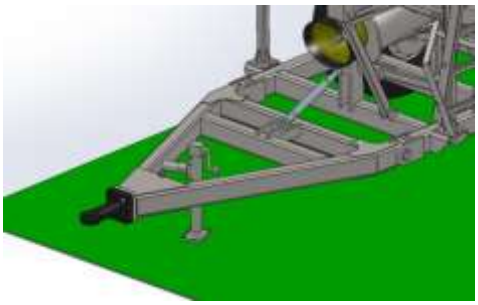


Fig. 5

4.1 Coupling to the tractor

Make sure the tractor will largely match the maximum front pressure of the GS Bagger. The coupling height of the GS Bagger is approximately 50 cm

- Line up the GS Bagger with the tractor.
- To connect, use the support leg to set the right height.
- Connect the GS Bagger with the under linkage from the tractor and check that the pin is locked.
- Raise the parking support

4.2 Attaching the coupling shaft

When the PTO shaft is aligned straight, it should be pushed out approx. 15 cm so that it can move in and out freely when taking bends.

On the side of the wagon the PTO is provided with a shear bolt coupling.

Model	Model PTO shaft	Shear bolt	Connection	
			Tractor	GS Bagger
GS Bagger	W 2480	M10x60	$1^{3}/_{8}$" 6-spline	$1^{3}/_{8}$" 6-partite

Couple or uncouple the coupling shaft only with the tractor engine turned off.

- Check that the coupling shaft is of the correct length. This will depend on the type of tractor.
- If necessary, adjust the length of the coupling shaft according to the instruction book supplied with the coupling shaft.
- Place the coupling shaft between the tractor and the GS Bagger.

4.3 Uncoupling the machine

Always uncouple the GS Bagger on a flat and firm surface. Prevent the wagon from rolling away and use wheel blocks if necessary.

- Remove the coupling shaft connecting the tractor and the GS Bagger.

Couple or uncouple the coupling shaft only with the tractor engine turned off.

.

- Raise the towing eye with parking support until the wagon reaches the desired height.
- Move the tractor a little forward.
- Uncouple all hydraulic hoses . (if applicable).
- Uncouple the brake line using the brake plug. (if applicable).
- Uncouple the cable from the control box. (if applicable).
- Uncouple the supply cables from the electric/hydraulic controls and the working lights/rotating light. (if applicable).
- Uncouple the 7-pin plug from the vehicle lights.
- Uncouple the pressure and command hose from the air brake system (if applicable).

5. USE

5.1 Before use

Make daily checks (before using the machine) for the trouble-free operation of the GS Bagger. The checks are listed in the maintenance schedule

- Check the machine for safety, completeness, oil leaks and damage. Do not use the machine in the event of leakage or damage. Correct any problems, or contact the Eurobagging/Farm Mac dealer.
- Check the condition of the hydraulic, electric and pneumatic (if applicable) connections and couple the machine to the tractor.
- Check that the hinged front gate is locked.
- Check the lights of the tractor and the machine before use.

Allow only qualified staff to operate the machine.
Be familiar with all safety regulations and make sure you will be in control of the machine before operation.

5.2 How to Set the Machine for Bagging

Once the machine is delivered to the area where the bag will be stored, align the tractor into a straight line with the machine. The surface in the bagging area should be leveled, firm and without too much waste (concrete is ideal).

The front shafts are setup with a mechanical third point on a machine so that the distance between the ground and the tunnel is approximately 100÷150 mm (these are only approximate values - can be changed if necessary) - see the following image.

5.3 Bag Fixing

Prior to bag fixing, make sure that you selected the appropriate bag size in relation to the type of machine. This machine has a tunnel with a diameter of 2.7 meters. Bags for this diameter are made with the following lengths: 45, 60, 75 and 90m.

Bag fixing procedure:

1) Unclamp the hooks in the tunnel which secure the gate in the tunnel. Then unclamp the rubber cable on the perimeter of the tunnel.

2) **Place the box containing the bag so that the arrow points towards the tunnel. In case you turn the box so that the arrow points the opposite direction, the bag would hardly unwind. The bag must be labeled with Grain Bag! (When bagging on this machine, the bag is unraveled in the opposite direction than when bagging with our other machines - i.e. bagging stocks are unraveled from the outside!)**

3) Open the bag box. The warranty document is clipped to the lower side of the box lid. The warranty card should be used to lodge a claim, in case the bag ruptures for no apparent reason. Fill in the warranty card, primarily the date of bagging, names of the operating staff, bagged material together with dry matter content. Having fixed the bag on the machine, mark it with a number or another symbol and write the same symbol on the top of the warranty card.

4) After the bag is open, unfold the bag along the whole tunnel so that the logo on the foil points to the gate centre. The logo will significantly facilitate the fixing procedure and will prevent the later turning of the bag on the tunnel. The logo shall point to the centre and top of the tunnel, i. e. the logo together with control stripes should be placed on the side of the machine, approximately on the eye level. This area suffers from high tension during bagging.

5) Place the bag on the tunnel gate and use the mechanical reel to raise it into an altitude so that the edge of the gate is slightly above the tunnel. The second mechanical reel should be below the lower gate of the tunnel.

6) Fix the bag to the tunnel and close the lower lid so that there is a gap of 1 - 2 cm between the tunnel bottom and the bag pan.
7) Using the mechanical reel, return the gate of the tunnel back into the tunnel, and secure it with hooks.
8) Tie the bag after it is fully slid to the tunnel. The 2 methods described in the following paragraph are used most frequently.
   - The sheet is removed in the outward direction from the outer side (check that there is an outer layer outside and a black one inside). Pull out the foil so that the bag can be easily roped and closed. Roll the bag evenly from both sides and carefully fasten it with a string or puller band. Place the knot of the bag under the tunnel and release the upper side of the bag by pulling the storage out.

   - The sheet is removed in the outward direction from the outer side (check that there is an outer layer outside and a black one inside). Remove the sheet so that it can be easily unfolded on the ground. Place a board on the side of the sheet and wrap around it several times in the direction of the tunnel. Then place a board below and another above the wrapped board in the sheet (only

a single board can be used - see chapter 9.2) and hammer them together with several nails - see following image.

9) Place the rubber cable back onto the tunnel so that it is placed behind the edge of the bag storage (meaning farther from the machine), and tie it to the loops welded to the tunnel at several places.

10) Ensure that the machine is secured with the hydraulic pump.
    - Check that the tap is open - (the bar of the tap is horizontal)
    - Use the pump to secure the machine with the required pressure (based on the scale on the manometer)
    - Close the tap to prevent pressure from brakes from escaping- (the bar on the tap is vertical)

5.4 How to start Bagging

Having got familiar with the operating manual, bagging principles, machine braking systems and bag fixing procedure, you can start bagging.
Proceed as follow:

1) Start up the tractor.
2) Set 540 RPM on the exit shaft and start up the cardan
3) Material can start being moved into the machine (manipulator, frontal loader, transfer vehicle...)

Filling the Bagger with the GS GS Bagger.

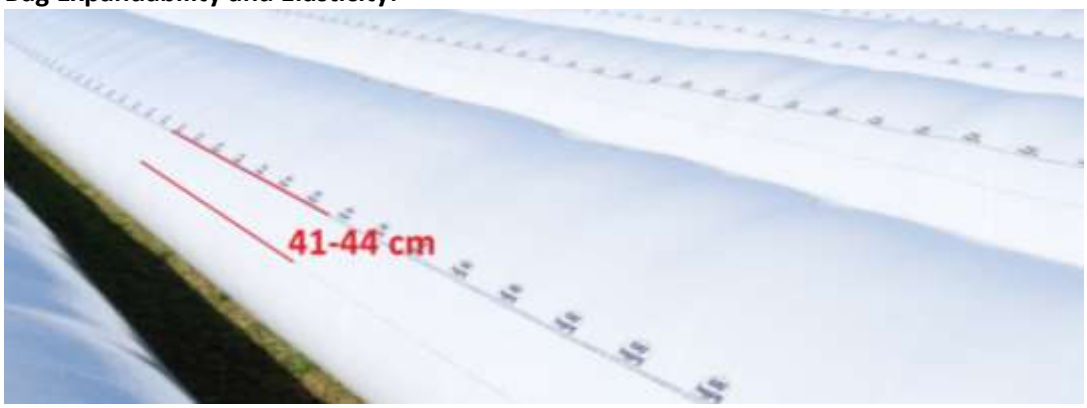
Filling the Bagger with special loading machine→ See also Appendix 9.3

5.5 Machine check during bagging

Filling the hopper should be fluent and even to prevent unnecessary shocks on the worm.

Check the appropriate direction of the machine as well. If the machine moves to one or to the other side, adjust the driving direction by turning the tractor wheels.

Bag Expandability and Elasticity:



- There are 2 lines marked along the whole length of the bags from the manufacturing workshops. When not stretched, the distance between the lines totals 40 cm. The manufacturer declares the expandability of 10 %, please follow this value while bagging. Measure regularly the lines on the bag always 2 meters behind the tunnel where the material is appropriately fed to the bag. Should the distance between the lines exceed 44 cm, decrease the pressure as well as the braking power. Should the distance between the lines be lower than 41 cm, increase the pressure!

The appropriately placed logo of the bag with the running lines - the distance should total 44 cm as maximum.

Ground under the Bag; Bag Unwinding

- Check regularly whether the bag is unwound symmetrically. If it tends to move aside, adjust it on the tunnel chamber.

Keep the area close to the machine and in front of it clean and tidy!

Check of the Bag Damage:

- a hole can occur in the bag during the bagging process. Check the whole perimeter of the bag regularly and in case you find a hole in the foil, seal it with a patch tape immediately. The patch tape is attached to every box containing a bag.

5.6 Bag Ending

When the bag is going to end, watch the bag fixed on the tunnel. The end of the bag is visually marked with a red stripe on the tunnel side. The stripe is visible enough. As soon as the stripe appears on the tunnel, instruct the manipulator operator to stop feeding the machine.

Bag Ending Procedure:

- Ensure that the hopper is completely empty
- Shut the cardan off
- Start slowly exiting from the bag
- End the bag in the same manner as it was closed at the beginning

6. General informatio on Bagging

Storing of bulk forage in the polyethylene bags in the utmost quality and the most economical forage storing method. You can easily store several forage materials in one place with no additional costs. The whole machine application is mobile and versatile. To ensure that the whole system works efficiently and economically, it is necessary to pay attention to several principles, crucial for the good quality of forage in the bag.

6.1 Selection of Storing area

Below you can find several principles of selection of the appropriate place to store the bags. Pay increased attention to these and think about where you want to place your bags!

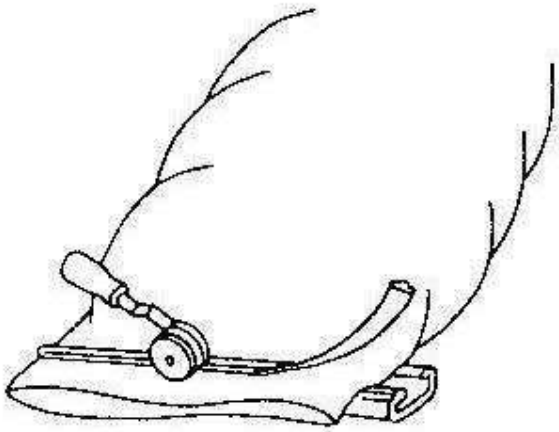
- The bag storing area should be even and properly drained.
- The surface shall be compacted. In case the area is not compacted, the machine can fail to move, the bag bottom can rupture, or the feeding itself can be inefficient due to poor adhesion of the braking wheels to the ground.
- Should you yet want to store the bags in the uncompacted area, select several bags and place them on the compacted yard; these bags will be consumed in winter and in the rainy days. You will prevent the material deterioration by the ground.
- Bagging on or down the slope does not matter, however, on-slope bagging is more favourable due to better pressing of the material to bags.
- Avoid bagging across the slope. In such a case, the bag can start turning and the lower side would be overfed.
- Keep the sufficient distance between the bags in order to ensure easy cleaning of the area, checking of the bags and facile consuming of the forage.
- While selecting the storing area, consider also a possibility of the bag damage by animals, unauthorised persons and machinery. We recommend bordering of the storing area and securing against access of unauthorised persons.

Appropriate surface, drained bags, fenced area.

6.2 Bag Closing Methods

To prevent the forage deterioration and to preserve its best quality, the bag must be properly closed. There are several closing methods available, nevertheless, not all the methods can guarantee the air-tightness of the bag.

1) Bag Closing with POLYFASTENERS
   - It is the most effective bag closing method by means of plastic tapes - fasteners that close the bag at the very end and save space inside the bag. It means the bag can accommodate more material than usual. The fasteners are not one-off elements; providing you handle them carefully, you can easily re-use them.



2) Bag Closing with Two Wooden Battens
   - To apply the method, you will need two battens of half of the bag perimeter and several nails. Grasp the bag foil and uncurl it. Attach one batten to the bag end and wrap it twice or three times. Place the second batten on the wrapped foil and hammer the battens together with the foil by nails.
   - The closing system is very resistant.

The other closing methods consist in covering the bag end with soil, residual silage or tyres. However, we do not recommend applying of such methods, they cannot fully prevent the air from entering the bag.

6.3 Bag Opening

In case the stored forage should be consumed, you can open the bag and start unpiling the forage. Proceed with the utmost caution again! In case you open the bag inappropriately, it could rupture and the whole content would deteriorate.

Appropriately opened bag with CCM grain

The correct opening method can be seen in the picture. The bag should be cut gradually; open always only the particular piece corresponding to the daily consumption. The bag sides should remain compact in order to keep the forage in the bag. The bottom foil must be on the ground to prevent the forage from touching the ground. After you unpiled the needed material volume, you can draw the foil in the opening above the top of the bag so that the sunlight cannot penetrate the bag.

6.4 Unpiling the bag

The forage is most often unpiled by means of the frontloader bucket, however, the bucket handling is not very convenient. It would be best to use a grain collector to easily collect the grain and turn it while minimizing the cut in the bag. Grain collectors are intended mostly for dry grain. It is not suitable for other commodities.

Feed-out by means of the frontloader bucket

Collection from the bag with a grain collector

Allow only qualified staff to clean the machine.
Ensure the machine is turned off and secured against inadvertent starting during cleaning.

7. MAINTENANCE

7.1 General

Careful maintenance of the GS Bagger will retain its operational safety and extend the life of the important parts.
Only properly trained personnel should be in charge of inspection and maintenance work (lubrication). Other maintenance and repairs are to be carried out by the officially appointed distributor.
Spare parts to replace damaged or worn-out machine parts must comply with the manufacturer's specifications. The use of original parts gives that guarantee. Parts that do not meet the manufacturer's specifications may affect the proper operation of the GS Bagger and put lives in danger.

Please observe the safety regulations when undertaking any maintenance work.
Make sure the GS Bagger is protected against starting inadvertently during inspection, maintenance or repairs. Switch the drive off, turn the control box off, and remove the tractor key from the ignition.
Make sure the hydraulic system is disabled and release any pressure from the system prior to maintenance to the hydraulic system.
Make sure the power supply is turned off and cannot be turned back on during maintenance to the electrical system, unless the power supply is needed for troubleshooting.

Please collect and discard any used and spilt oil in an environmentally friendly manner.
Process any products used for maintenance in a manner that will cause the least possible damage to the environment.
Use a polishing rag to remove any excess grease.

7.2 Servicing consumables

Application	Materials	Quantity
Grease nipples and bearings	Grease EP-1	-
Driving chains (augers)	Oil or chain spray	-
Construction parts	RAL 5002 (blue)	-
	RAL 9006 (Silver)	-

*If applicable

7.3 Damaged paintwork

In the event of damage to paintwork: remove any rust from the affected area and apply a new coat of paint of the correct colour.

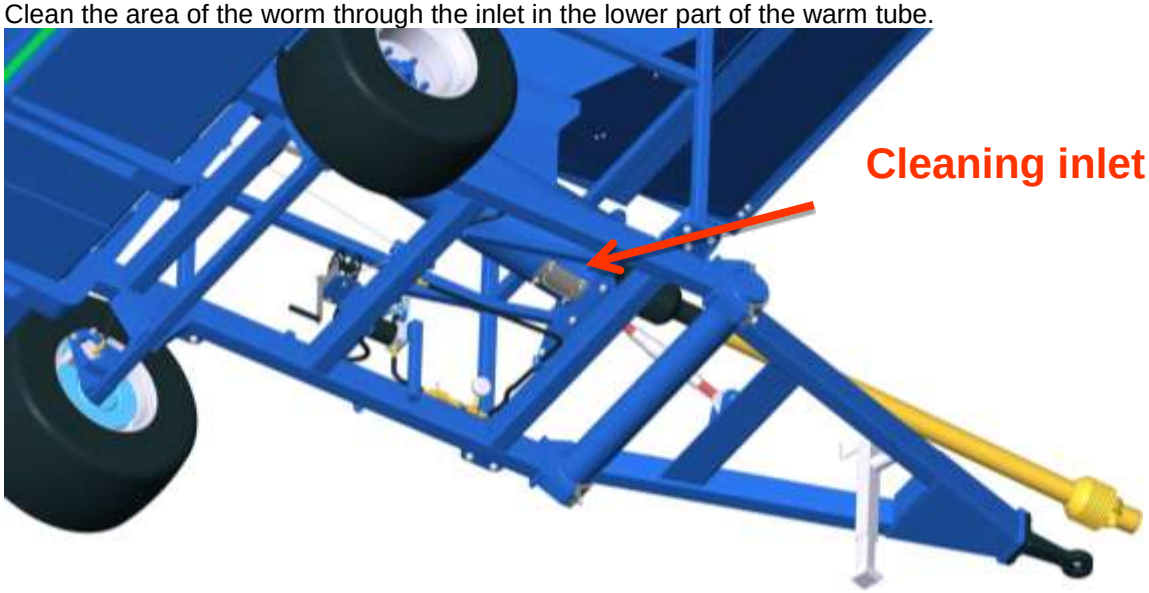
7.4 Maintenance schedule

* *If applicable*

Subject	What to do	When													See paragraph
		Prior to any use	After use	After every 2-4 hours of use	After the first 10 hours of use	Every 20 hrs	Every 50 hrs	Every 100 hrs	Every 500 hrs	Every 1000 hrs	If necessary	After cleaning with water	Every year	Every 6 years	
Grease nipples	Check		X												
	Lubricate bearings			X								X			
	Tighten the chain										X				
Drawbar	Check the rubbers and bolts of the drawbar						X								
	Lubricate bearings							X				X			
Wheels and Tyres	Check the wheel nuts / tighten				X			X							
	Check the tyre pressure					X									

7.5 Cleaning inlet

Clean the machine properly after completion of every bag. Above all, clean the warm and warm bearings carefully. The worm bearing works in a dusty environment, and hence needs to be properly cleaned after each bagging and then lubricated with a plastic lubricant.
Clean the area of the worm through the inlet in the lower part of the warm tube.



7.6 Maintenance activities

7.6.1 Wheels and tyres

Wheel nuts

- Check the tightening moment van the wheel nuts after the first 10 hours of operation and every 100 hours of operation thereafter; tighten if necessary.

Tyre pressure

- Check the tyre pressure after every 20 hours of operation. Read the correct tyre pressure from the manufacturer's table for the tyre in question.

7.6.2 Undercarriage

Wheel bearing play

- Check any play in the wheel bearings after the first 10 hours of operation and every 500 hours of operation thereafter.
- Jack up the wheel and check for any play in the wheel bearing by levering the wheel.
- Adjust the play if necessary: remove the hub cap and tighten the castel nut but make sure the wheel can spin freely.
- Check the play of the wheel bearings again.
- Secure the castel nut and put the hub cap back on if there is no more play in the wheel bearing.

Lubrication

- Lubricate the undercarriage after every 20 hours of operation and after cleaning with water.
- Pump the grease into the grease nipple until grease escapes from the bearing.
- Remove any excess grease using a cleaning rag.

Note: The number of grease nipples depends on the type of undercarriage.

7.6.3 Coupling shaft

For maintenance instructions of the coupling shaft, read the manual for the coupling shaft.

7.7 Storage

- Remove any remaining grain or dirt from the GS Bagger.
- Clean the Bagger with water and let it air-dry completely. Take care when cleaning with water near the boxes containing electric wiring..
- Lubricate the bearings of the auger
- Repair any paint damage.
- Apply a preservative to all unpainted steel parts.
- Park the GS Bagger preferably in a covered and properly ventilated area.

8. Trouble shooting

In case of failure, stop the working process immediately and consult the further proceeding with your line manager. Never continue with working until the failure has been completely removed. The below mentioned table gives brief guidelines to failures, the diagnostics and consequent corrective measures.
You can contact the service centre in any case!

Failure description	Possible cause	Solution
The bag has not been completely filled	Low pressure in the brake system	Increase pressure in the brake system
	Wheels are slipping on surface	Place the machine in the compacted area
The bag is too full	High pressure in the brake system	Decrease pressure in the brake system
Material is pouring from the bag	Torn bag on the surface	Remove sharp objects from the tunnel bottom
Bag moves on the tunnel bottom	The bag has not been properly placed on the tunnel bottom	Push the beg between the bottom and tunnel and adjust the lower pan thrust
Bag is sliding backwards instead of the machine	Too steep slope, too heavy tractor, light fodder	Connect the machine to a lighter tractor
	Braked machine wheels	Release the brakes of the machine wheels
	Braked tractor	Release the hand brake of the tractor
Brakes are tugging during bagging	High brake pressure	Decrease brake pressure
	Rusty brake drum	Remove rust or wait when the rust is ground after the next turn of the wheel
	Wet brake drum	Dry the brake drum
Neither bag, nor machine are aligned in the straight direction	The tractor wheels are not aligned	Align the tractor wheels
Too slow bagging	High brake pressure	Decrease brake pressure

9. Appendices

9.1 Tightening moments for nuts and bolts

Appendix 1 Tightening moments for nuts and bolts
All screwed connections must be tightened as per the table shown below, unless specified otherwise. The standard and minimum quality of the GS Bagger bolts is 8.8.

Increase the values from the table by 10% for lock nuts and fastening bolts; decrease these values by 10% if a thick type of grease is used in the tightening process. Use only a thick type of grease to fasten nuts and bolts containing a protective layer (e.g. galvanised nuts and bolts).

	Quality					
	8.8		**10.9**		**12.9**	
Thread	**Nm**	**ft-lb**	**Nm**	**ft-lb**	**Nm**	**ft-lb**
M 3	1,3	0,95	1,8	1,33	2,1	1,6
M 4	2,9	2,13	4,1	3	4,9	3,6
M 5	5,7	4,2	8,1	6	9,7	7,2
M 6	9,9	7,3	14	10,3	17	12,5
M 8	14	17,7	34	25	41	30,3
M 10	48	35,4	68	50,2	81	59,8
M 12	85	62,7	120	88,6	145	107
M 14	135	99,6	190	140	225	166
M 16	210	155	290	214	350	258
M 18	290	214	400	295	480	354
M 20	400	295	570	421	680	502
M 22	550	406	770	568	920	679
M 24	700	517	980	723	1180	871
M 27	1040	767	1180	1077	1750	1291
M 30	1410	1041	1750	1461	2350	1734
M 33	1910	1410	2700	1996	3200	2362
M 36	2450	1808	3450	2466	4150	3063
M 39	3200	2362	4500	3321	5400	3985

	Quality		
	8.8	**10.9**	**12.9**
Tightening moment (N/mm^2)	808<M16>830	1040	1220

Tightening moments for wheel nuts

Bolt size	**Tightening moment (daNM=kpm)**
M 10 x 1,5	4
M 12 x 1,5	7
M 14 x 1,5	13
M 16 x 1,5	20
M 18 x 1,5	27
M 20 x 1,5	35
M 22 x 1,5	45
M 22 x 2	53
M 24 x 1,5	55

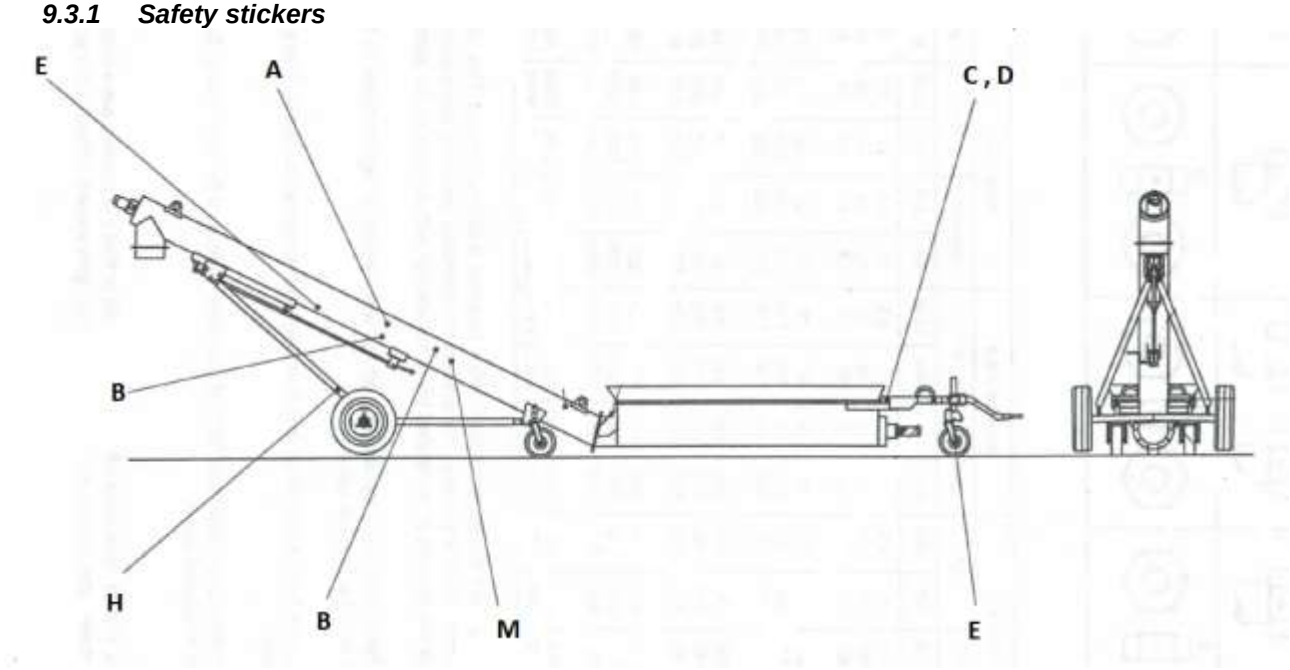
9.2 Appendix 2 Conversion table

Length	1m 1 inch 1 ft	= 100 cm = 25.4 mm = 304.8 mm	= 1000 mm = 0.083 ft = 12 inch	= 39.4 inch	=3.28 ft
Area	1 are 1 ha = 100 ares 2.47 acres 1 m^2 1 acre	= 100 m^2 = 10.764 sq. ft. = 0.4 ha			
Capacity	1 m^3 1 dm^3 1 Imp.bu 1 cu.ft.	= 1000 dm^3 = 1 l = 8 Imp.gal = 28.317 dm^3	= 35.3 cu. ft. = 1.057 US qt(fl) = 36.368 l	= 0.88 Imp.qt.	
Force and mass	1 kg 1 N 1 lb(f)	= 1kp = 0.102 kg = 4.4447 N	= 9.8 N = 0.22487 lb(f)	= 2.2046 lb(f)	
Pressure and tension	1 bar 1 p.s.i.	= 1.02 at = 0.0689 bar	= 0.987 atm.		
Energy and turning moment	1 Nm 1 ft-lb 1 in-lb	= 1 J = 1.356 Nm = 0.113 Nm	= 0.102 kg(f)m		
Power	1 kW 1 hp 1 hp 1 Btu.h	= 1000 W = 1 PS = 0.7357 kW = 0.2930 W	= 0.738 ft-lb/s = 1 cv = 1.01 hp	= 1.36 hp = 0.7355 kW	= 1.34 hp = 0.986 hp
Revolutions	1 rev/min 1 Hz	= 1 rpm = 1 cps	= 1 U/min = 1 rev/s	= 1 r/min = 60 RPM	= 1/60 Hz
Driving speed	1 km/h 1 mph	= 0.27778 m/s = 1.609 km/h	= 0.6214 mph = 0.4470 m/s	= 0.9113 fps = 1.466 fp	

9.3 Appendix 3 Filling Bagger with Elevating Auger

All Safety regulations as mentioned in Chapter 2 of this manual also apply to the Elevating Auger.

9.3.1 Safety stickers



9.3.2 introduction

- The GS Elevating Auger is a machine designed to fill the GS Bagger. Sometimes there is no grain cart wagon to fill the hopper of the GS Bagger. In these cases it is possible to fill the GS Bagger with help of the GS elevator auger. Loaders can fill the hopper on the GS elevator Auger.The GS Elevator Auger is working hydraulicly. The hydraulic engine becomes its oil from the tractor

- The GS elevator Auger is towed by a tractor.

9.3.3 Operation

The augers on the machine is hydraulically driven by the tractor. When transported over the road a light bar needs to be placed on the machine.

TRACTOR

Hydraulic Circuit:

For the Elevating Auger acting is needed a tractor with a double acting hydraulic circuit, for powering the elevation and horizontal augers.

Tractors with center system "Open" or "Close" are indistinct.

- Minimum flow: 32 l/min.
- Maximum flow: 60 l/min.
- Minimum pressure: 11768 kPa (117 bar) (120 kg/cm²).
- Maximum pressure: 15690 kPa (156 bar) (160 kg/cm²).

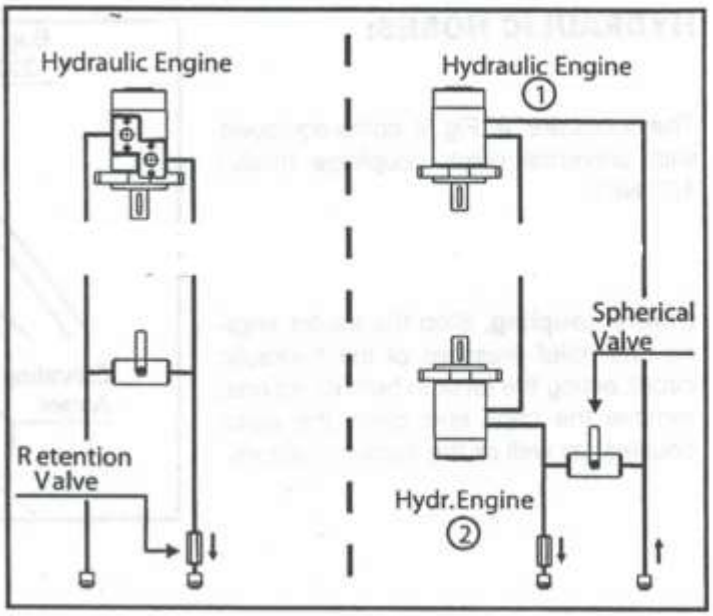
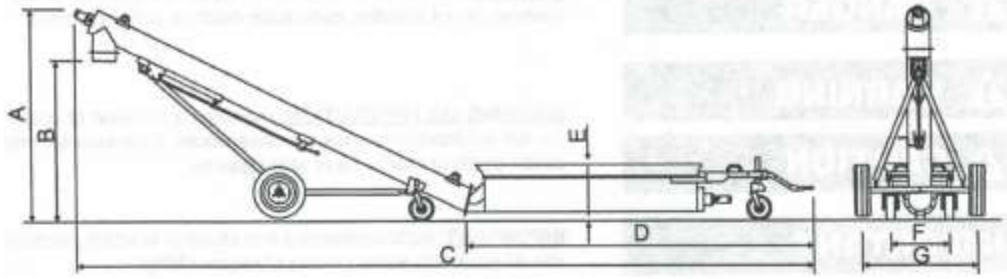
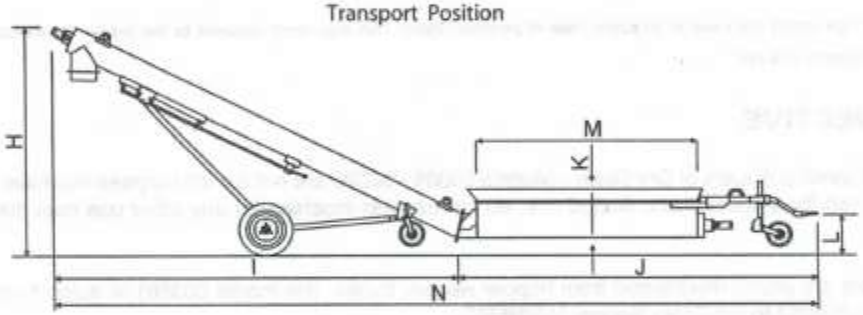


FIG.6

Working Position



Transport Position



WORKING POSITION

Reference	A	B	C	D	E	F	G
Dimension (mm)	2550	1850	8690	4090	670	700	1350

TRANSPORT POSITION

Reference	H	I	J	K	L	M	N	MASS (Kg)
Dimension (mm)	2500	4600	4090	780	580	2500	8690	530