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efficient machines from

GOMA

Built on experience



EU DECLARATION OF CONFORMITY

We,

Gøma A/S

Petersmindevej 6

DK-8800 Viborg

Declare by own responsibility that the following product: GG 2 axle



For use in storing and applying manure slurry, which this statement includes, is consistent with:

- DIRECTIVE 2006/42/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 May 2006

Viborg, November 24, 2020

A handwritten signature in blue ink that reads 'Jakob Møller'.

Jakob Møller, Foreman/Service Manager

Dear customer,

Congratulations on the purchase of your new GG 2 axle from Gøma. The machine is made of the highest quality as well as surface-treated for a long life. We wish you all the best with the use of the product in the future .

Should you at any point have questions about functionality, maintenance or anything else, you're always welcome to contact Gøma and we'll do the best to assist you. When making inquiries to Gøma regarding your product, please make sure to note the product's item number and software revision for identification of the product in connection with your request.

Once again, thank you very much for your purchase of a GG 2 axle from Gøma !



Read the user manual thoroughly before using the product.

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GG 2 axle

This user manual is applicable to Gøma products with the following functionality and specification/s:

Functionality

A GG 2 axle is used for the collection and delivery of manure slurry. The tanker is attached to a tractor.

A GG 2 axle is produced in many different variations according to the customer's wish. There may be small changes regarding the below.

General specification

Tanker*

Length:	9.3 m
Width:	3.0 m
Height:	4.0 m
Tank diameter:	2.05 m
Weight basic installation**:	9,000 kg.

Display

Brand:	Wachendorff
Model:	Opus A8 SN1
Dimensions:	375mm X 214mm X 75mm
Connector:	Harting 4 pole connector
Mounting holes:	M5 X 10
Operation:	Touch + buttons

Joystick

Brand:	Danfoss
Model:	JS1
Operation:	Multifunction joystick

Crane specification

Length:	8.4 m
Extension length:	1.7 m
Type:	Hydraulic
Load pump type:	Harsø

*A GG 2 axle can be shipped with many different options. Therefore, there may be some differences. Contact Gøma for the specific numbers for your tanker .

** Including 710/55R34 Alliance

Loading pump max capacity: 15 m³/min
Surface treatment : Painted/Hot Galvanized

Lift specification

Type: GG model
Claws: Category 3

Unloading pump

Type: PTO driven
Model: Centrifugal pump
Max. capacity: 15 m³/min

Control board

Size: 74 cm X 54 cm (controller)
PLC: Danfoss MC50

Triangle

Standard type: Manual height adjustment
Type (option): Hydraulic suspension
Drive: Customer specific

Breaks

Standard type: Hydraulic
Type (option): Air brakes or combi brakes

Toolbox

Standard size: Machine-specific
Type: Dust and splashproof with hinge door
Standard colour: Electrogalvanization

Type sign

Placement: Right side
Number format: GG18—yearXXXX

Weight transfer (option)

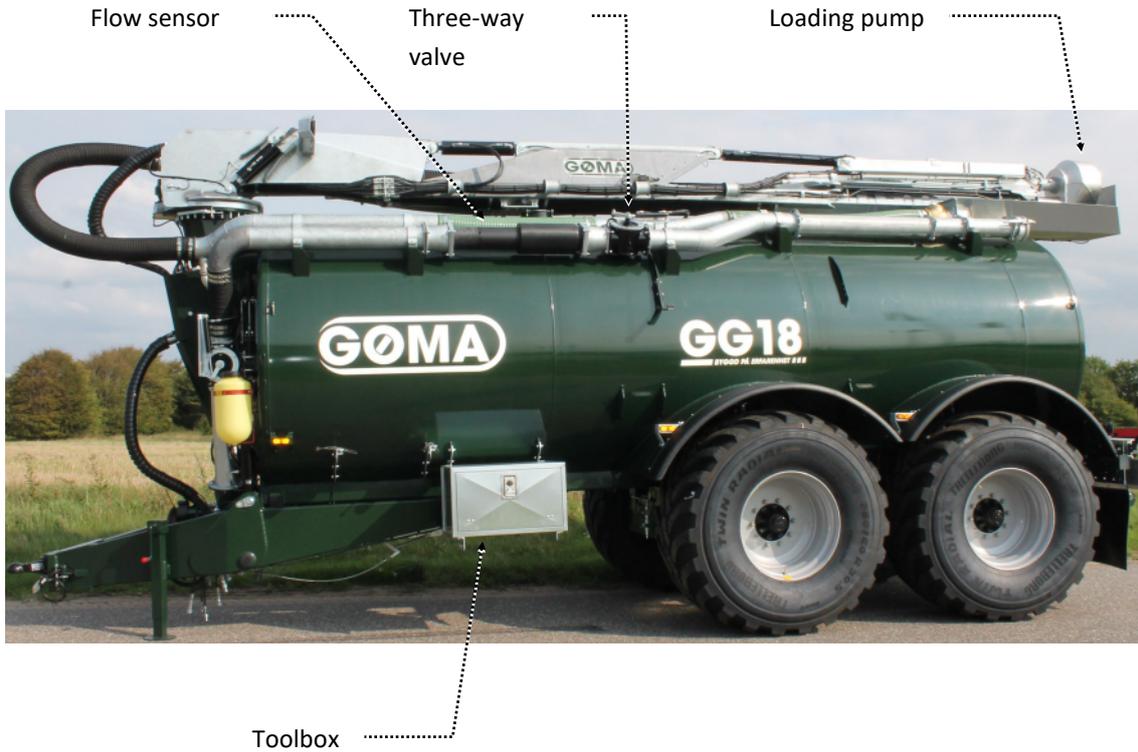
Connection: Joint bearing

Wheel drive (option)

Type: W/ reverse gear and boost function. Pump Tower via LS.

Oil tank volume: 100 L

The GG 2 axle is available with several additional features, all not mentioned. For a list of additional options, contact Gøma.





Funnel

Lift/lift attachment

Quick-connector hydraulics



Quick-connector hydraulics



Top attachment

Safety

Please read this user manual thoroughly before using the machine. Failure to follow the instructions may lead to danger to persons around the machine as well as reducing the life of the machine.



Warning!

- Make sure you follow this user manual thoroughly before bringing the machine into use. If this is not done, inappropriate startup may occur, which may result in component damage or, worst case, death.
- The assembly and disassembly of the GG slurry tanker is provided by qualified personnel with knowledge of the handling of hydraulics. Improper handling of hydraulics can result in personal injury .
- Do not allow anyone on the machine during operation!
- When slurry is transported in the tank, harmful gases develop in the tank. The tank must therefore be emptied and ventilated before any inspection is done inside the tank.
- To remain under the GG tanker in connection with assembly or de-assembly is extremely dangerous and must not take place under any circumstances.
- Make sure that the tractor is sized for the GG tanker, including full load. Gøma takes no responsibility for lack of lifting capacity of the tractor and damage associated with it (see section on general specification and requirements for tractor capacity).
- When the crane is used there shall under no circumstances be personnel around it, as the crane is moving with great force and may result in injury if something is struck by the crane.
- Persons may at no time remain under the crane in connection with the use of the crane. Remaining at or around the crane must only occur when the hydraulic system is not pressurized.
- The GG tanker shall not under any circumstance come near an open fire, as flammable gases can develop in the sludge tank.
- If chains from the shielding on the power transfer are not mounted securely on the tractor and machine, there will be direct access to the power transmission. The power transmission can cause severe personal injury, so make sure to attach chains properly!
- All operation of the functions of the machine must be done at a safe distance to the actuators of the machine, which are capable of severe damage.
- Compliance with limits on brake pressure and tyre pressure is the responsibility of the customer. Damage that occurs due to incorrect tyre pressure or brake pressure cannot be attributed to Gøma .

- The slurry tanker is not frost-proof. It is the responsibility of the customer to empty the tanker of slurry when frost is possible.
- Life-threatening gases can develop during the pumping/stirring of slurry. Ensure adequate ventilation during pumping/stirring slurry.
- All work on the PTO shaft may only be performed if the ignition key has been removed. Coupling and decoupling of the PTO shaft shall be carried out after reading the user manual of the PTO shaft thoroughly.
- It is the owner of the GG tanker who is responsible for complying with all traffic laws including compliance with the gross weight limits of the vehicle combination and compliance with load limits on steering wheels.
- When removing the slurry tanker, the weight transfer must be without load and the manometer at 0 bar.
- The GG tanker must be completely empty before the support leg may be used. The support leg is not sized for weight greater than the weight of the machine on its own.
- It is prohibited to be on top of the slurry tanker. All work carried out on the slurry tanker must be done from a secure and approved platform.
- Non-compliance with maintenance/service specifications may result in component damage and, worst case, result in personal injury. Therefore, read this section thoroughly and contact Gøma if anything is unclear.

The diagram is a vertical yellow panel containing several safety icons and text annotations. At the top right, there is a separate icon of a spray gun labeled 'Lubricant symbol'. The main panel contains the following elements from top to bottom:

- Icon of a tractor pulling a tanker with a person on top, crossed out with a red 'X'. Annotation: 'Do not allow anyone on the machine during operation'.
- Icon of a person on top of a tanker with a cloud of fumes rising from it. Annotation: 'Toxic fumes are released from the slurry tanker during filling'.
- Icon of a tractor with a PTO shield. Annotation: 'Remember shielding of the PTO'.
- Icon of a person falling. Annotation: 'No work on the slurry tanker may be done during operation'.
- Icon of a hand being crushed by gears. Annotation: 'Remember lubrication and retorque'.
- Icon of an open book. Annotation: 'Read the instruction booklet thoroughly before use'.
- Icon of a tractor with a '20 M' safety distance symbol. Annotation: '20m safety distance for when manure slurry is spread'.
- Icon of a tractor with a key in the ignition. Annotation: 'Empty the slurry tanker for frost protection'.
- Icon of a tractor with a key in the ignition. Annotation: 'Leave no key in the ignition while working on the machine'.
- Icon of a tractor with a PTO shaft and a gear icon. Annotation: 'Tighten the wheel bolts according to instructions'.
- Icon of a tractor with a PTO shaft and a gear icon. Annotation: 'Max. revolutions PTO'.
- Icon of a tractor with a PTO shaft and a gear icon. Annotation: 'Max. brake pressure'.
- Icon of a tractor with a PTO shaft and a gear icon. Annotation: 'Tyre pressure'.

The GOMA logo is at the bottom of the panel.

Tractor requirements

In order to drive with a GG tanker, the tractor must comply with the following:

Hydraulics

- Pressure-free drain (1/2" quick-connector male)
- LS (3/8" quick-connector female)
- Pressure, P (3/4" quick-connector female)
- Return, T (3/4" quick-connector male)
- Other additional features (1/2" quick-connector female)

Traffic lights

- 7 pole connector

Power Supply 12V

- ISO Bus connector
- JD connector (30A)

Bringing into use

General rules before the machine is brought into use:

- The machine may only be brought into use by persons qualified for handling large agricultural machinery. Incorrect handling may lead to serious personal injury or death for the operator and people nearby!



- Install the tanker with thorough assembly of pin or on ball hitch, depending on tractor configuration.
- Check that the hydraulics are properly connected according to the specifications:

Pressure (P),	black strips
Return (T),	white strips
Drain,	red strips
LS,	blue strips
- Install 12V connectors in the tractor.
 - + red wire
 - black wire
- 12V must be supplied to the steering and other electronics not related to traffic lights of the GG tanker.
- Install the 7 pinned connector and check that all lights work as intended.
- Install the power transfer.
 - Adjust the length so the power transfer fits the vehicle combination
 - Install with lock
- Chains for power transfer are mounted on the tractor so that the shielding is maintained when in use.
- Adjustment of hydraulic suspension.
- Go through calibration routines step-by-step according to the instructions in the manual.
- Install power transfer .
 - Adjust length so the power transfer fits the vehicle
 - Install with lock
- Chains on the power transfer are mounted on the tractor and machine so that the shield is maintained when in use .

1: Left blinker



2: Stop light



3: Right taillight



4: Right blinker



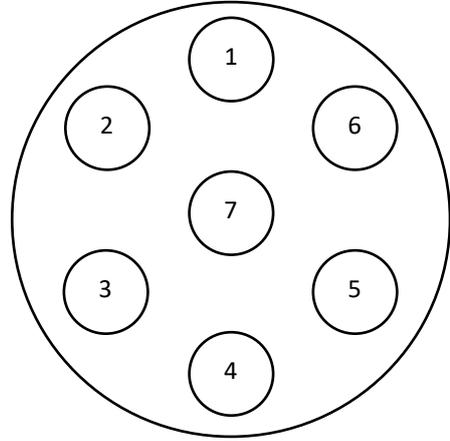
5: Chassis



6: Reversing light



7: Left taillight



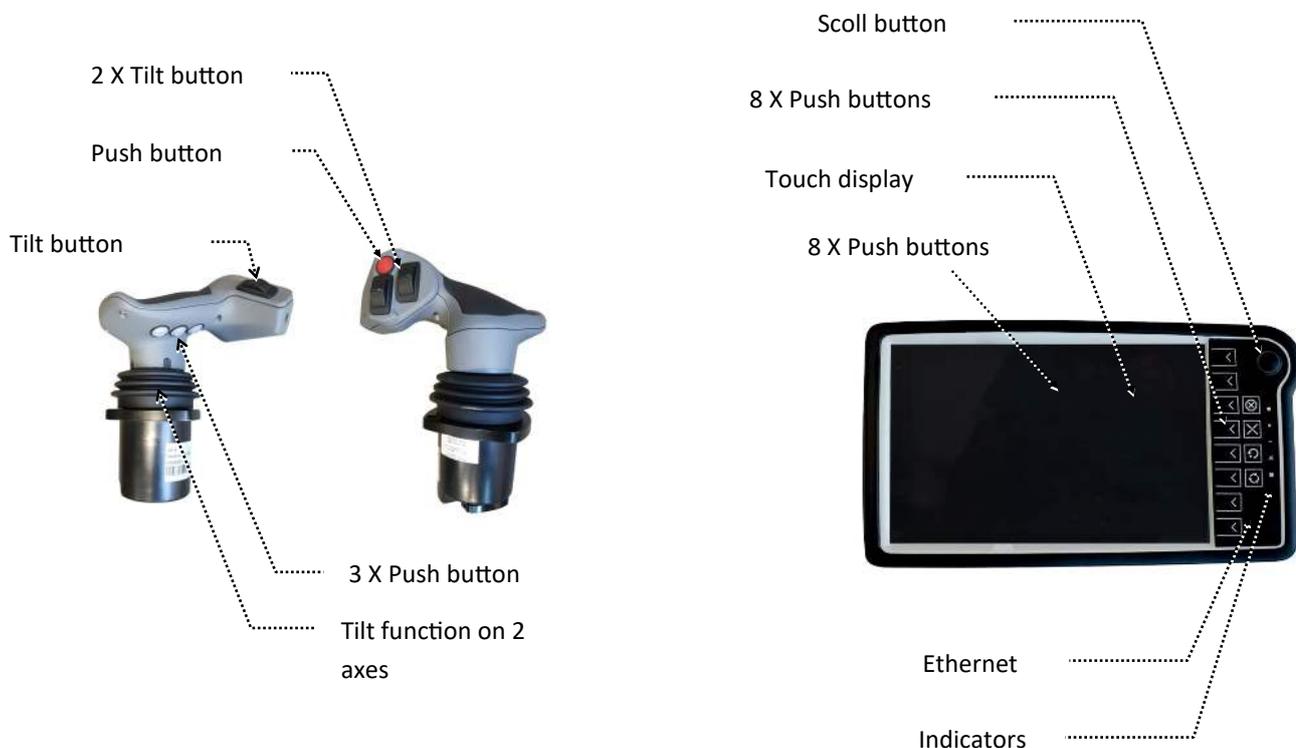
Operating the machine

The many functions of the machine are controlled primarily by means of the joystick and the monitor in the cab. A separate manual for the monitor is provided.

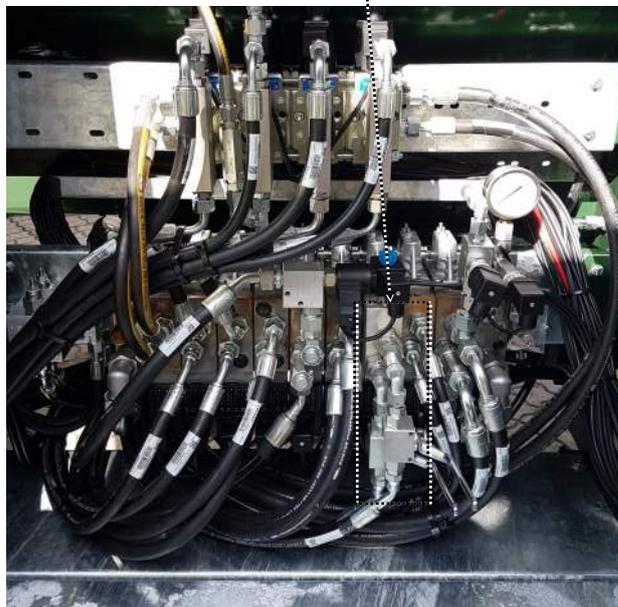
Operating function

The joystick and the monitor are connected to the machine's plc, which processes signals from them and initiates the function corresponding to what the user want. This could be to open and close a valve, thereby sending oil to or from the actuators so that a movement is initiated. A couple of calculations are made in the monitor, which has an internal processor.

A separate manual is provided for the joystick and monitor where the operation of the functions of the machine is described .



Valves for locking rotateable axles for driving the GG tanker without hydraulics



Rear axle valves

Main circuit board

Gøma connected (optional)

Danfoss computer modules

Voltage regulator



Relay circuit board

- 1. Computer MC50 fuse
- 2. Computer MC50 fuse
- 3. Output module 1
- 4. Output module 2
- 5. Output module 3

- 6. Input/output module 1
- 7. JD connector behind tanker
- 8. Extras 1+2
- 9. Fan
- 10. Rotating light

- 11. Light 1 + 2
- 12. Light 3 + 4
- 13. Lubrication
- 14. GPS

Lift

Function

The lift is used to raise and lower tools at the rear of the GG tanker.

Keep appropriate distance to tools that tighten through the lift. The lift is able to move several tons and can, in worst case scenario, be deadly through crushing.



Shielding valve for lift



Operating the lift



Adjusting pressure for lift.

Horizontal pos: No pressure

Vertical pos: Double-acting



Category 3 claws



Elongated gap for free movement .

Turn plates so that the elongated holes sit across from each other.

Crane

Function

The crane is used for loading and unloading slurry. The crane may only be operated by persons who have read the monitor manual thoroughly and thereby have in-depth knowledge of the actuator of the crane.

Keep the appropriate distance to the crane in use. The actuators of the crane move by several tons and can, in worst case scenario, be deadly through crushing.



Filling of oil at low oil levels .

Oil for bearing housing for loading pump .

Check oil levels.
Minimum 1/3 filled.



Unload pump.

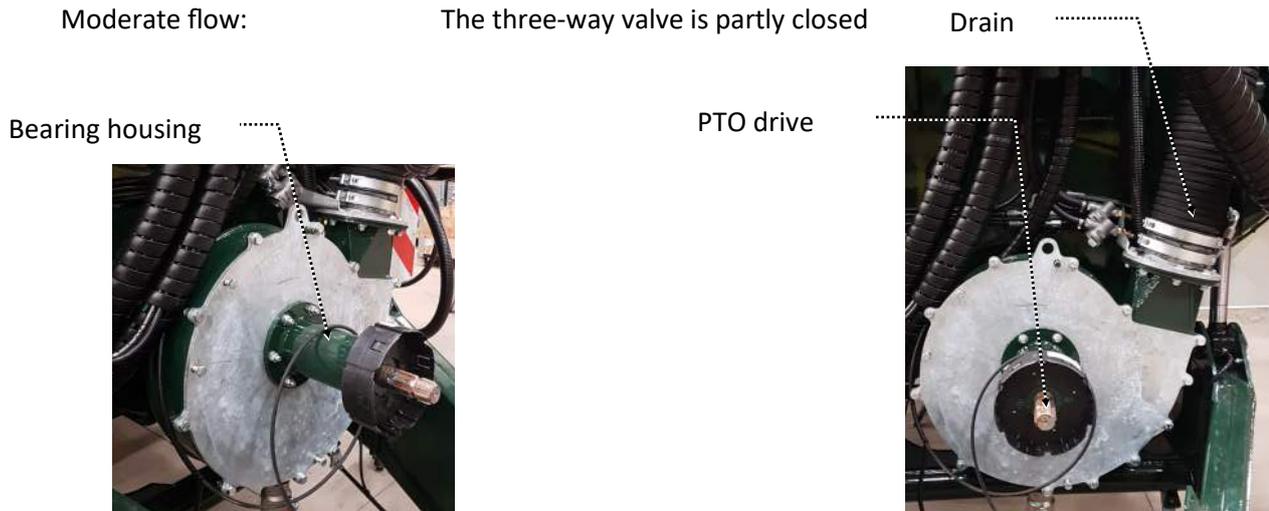
Check rotor bearing for wear and

Unloading pump

Function

The unloading pump (centrifugal pump) is used for unloading and stirring slurry in the tanker. The unloading pump runs at a constant speed. The flow is regulated by opening and closing to the three-way valve.

- Maximum flow: The three-way valve is opened completely
- Minimum flow: The three-way valve is closed completely
- Moderate flow: The three-way valve is partly closed



Three-way valve and Spade Valve

Function

The three-way valve and spade valve at the front of GG tanker are used to regulate the flow from the offload pump. Closing the spade valve partially reduces the stirring. Closing it completely will stop all stirring.



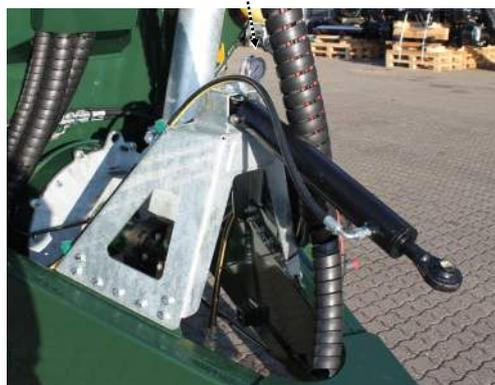
Weight transfer

Funktion

The function of the weight transfer is to transfer weight from the tractor's rear wheel to the front wheel of the tractor for better use of the four-wheel drive of the tractor.

The cylinder must be fitted properly in the top bar fittings of the tractor. The cylinder must have approximately 200 mm of available movement on both sides and placed horizontally when the tanker is horizontal .

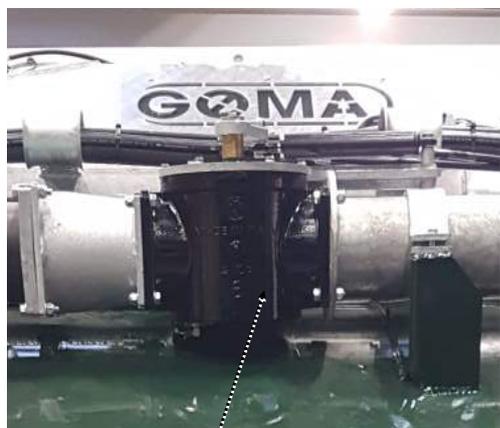
Manometer to indicate cylinder pressure



Three-way valve in the back of tanker

Function

The three-way valve at the rear of the tanker are used for determining the slurry's output. The slurry can be directed towards the crane, pipe or to tools at the rear of the tanker.



Three-way valve on the side of the carriage for unloading through crane



Three-way valve at the back of the tanker for unloading through pipe

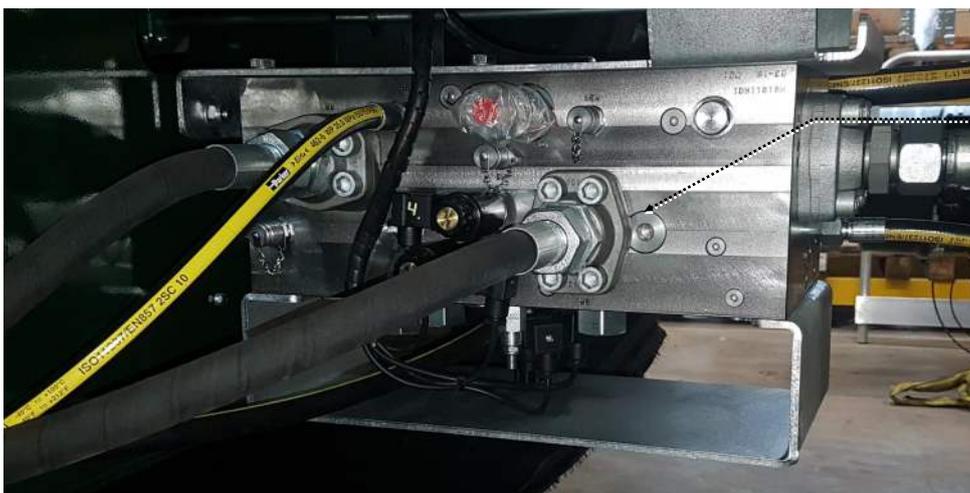
Unloading through pipe

Wheel drive

Function

Wheel drive is an option to add to the GG tanker. If wheel drive is added, a wheel drive axle, a hydraulic block, a drive system and an oil tank are added.

The wheel drive does not require anything of the user, as Gøma's steering automatically connects and disconnects the wheel drive as needed.



Wheel-drive hydraulic block

Install belt protection properly before starting



Filling of oil for bearing housing (1.25l max, 1540 engine oil).



Ventilation hose MUST point upwards.

Wheel drive axle



Oil level indicator



Oil filter



Connecting tools

Function

At the back of the GG tanker, two rows of quick-connectors can be seen on the right and left side. These quick-connectors are used for attaching tools. 1-6 is placed on the right side, while 7-12 is placed on the left side.

Specification of the strip colour of the quick connector. 1 black and 2 green	1	2	3	4	5	6
	7	8	9	10	11	12

1. Spreading on the left side

2. Spreading on the right side

3. Raise/lower boom left

4. Raise/lower boom right

5. Boom tilt

6. ADS (Anti drip stop)

7. Non-pressurised tank

8. Open/closing distributor

9. Distributer

10. Boom out/in

11. Boom forward/back

12. Boom up/down

Filling the tanker

Always read the security section thoroughly prior to working with the GG tanker.



Dangerous gases can develop while pumping/stirring slurry. Ensure adequate ventilation while pumping/stirring slurry!

General

Always keep an eye out for the level indicator to make sure it moves during filling. If the level indicator is stuck, overfilling can occur!

Foam return line must not be clogged. If the foam return is clogged, the tanker might be filled with foam and it might overflow.

In case of overfilling, the overfill valve will close. If the filling continues it can damage the tanker due to an increase in pressure.

As the tanker is filling up, the loading pressure will drop to protect the tanker. There's a sensor attached to the level indicator that notifies the tanker's computer that the tank is soon full. If the level indicator is locked in place, the loading pressure will not decrease and overfilling may occur.

Make sure to place the tanker so that it maintains a horizontal position for optimal filling.

Filling through crane

When the crane is in use the total height will exceed 4m. Make sure the crane is operated in places where there is space over the tanker and around the tanker. Damage caused to the crane as a result of operating failure is not included in the warranty.

Make sure that there are no people within reach of the crane when the crane is operated. The crane moves with great force and can, in worst case scenario, be deadly.



See separate manual for operation of display and joystick.



Outflow of foam return line

The crane is maneuvered into the storage tank during filling.

Make sure that the outflow from the foam return line is within the storage tank when the loading pump is running.

The extension on the pump tower must be fully retracted before the crane is passed back into the waste tray. If this is not done, the crane can cause damage to the GG tanker.



Filling through rubber funnel (option)



Always make sure to read the security section thoroughly before working with the GG tanker.

The tanker can be filled through the rubber funnel with external pump.

Make sure to open the spade valve before starting filling.

Cylinder for opening/closing the spade valve

Delivery of manure slurry

Always read the security section thoroughly before working with the GG tanker.



Preparation

Make sure to have an in-depth knowledge of rules related to the spreading of manure slurry in the area.

Delivery is carried out with a tool suitable for the task. The GG tanker is prepared for several kinds of tools. It is the customer's responsibility to ensure that GG tanker is compatible with the selected slurry delivery tool.

Delivery

- Prepare the tool for delivery
- Put the 3-way valve to stirring



Operation of the three-way valve is carried out from the joystick or the display. See separate manual.

- The PTO is started
- Spreading is started
- The tractor is put into drive so that the slurry is spread

Dosage

The dosage is carried out when adjusting the three-way valve at the front of the tanker. When setting the three-way valve at the front of the cart, the dosage is regulated. Auto-dosage or manual dosage is selected on the display.

Maintenance/Service

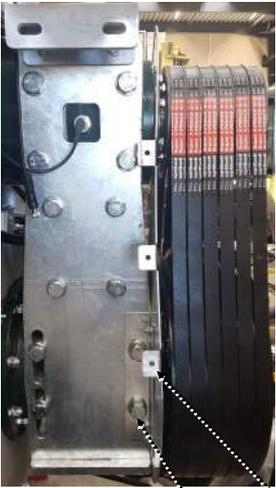
Note! All service and maintenance is carried out on the owner's own responsibility and Gøma cannot be held accountable for the inappropriate execution of service. Service and maintenance require the service technician to be on the machine. It should be noted that the machine must always be fully stopped during service.

Always pay attention to leaks, cracks or other signs of defect/wear. If any kind of inappropriate wear or any type of defect is observed, then this must be taken care of immediately. If necessary, contact Gøma.

To make the most of your GG 18 and ensure the longest possible life, the following must be done:

Description	Image	Frequency
<p>Axle steering</p> <p>Look after the center bolt under the suspension. If the centre bolt is cut, it must be changed immediately.</p> <p>Driving without a center bolt causes high wear on wheels and axles.</p> <p>Check placement</p>		<p>Weekly</p>
<p>Fixed axle</p> <p>Crawl under the cart and check lubrication areas for leaks. Apply lubrication if the tanker does not have central lubrication .</p> <p>Check lubrication areas</p>		<p>Daily</p>
<p>Wheel console piston</p> <p>Check lubrication areas</p> <p>Check lubrication areas</p>		<p>Daily</p>
<p>Engine for axle with wheel control</p> <p>Check lubrication areas</p> <p>Check lubrication areas</p>		<p>Daily</p>

Description	Image	Frequency
<p>Crane</p> <p>Retorque bolts on the crane. Look over the entire crane and retorque all bolts.</p> <p>Retorque the bolts at the slewing ring, top and bottom</p>		Weekly
<p>Loading pump</p> <p>Review loading pump for leaks. Retorque the bolts and check lubrication areas.</p>		Weekly
<p>Unloading pump</p> <p>Retorque the bolts on the unloading pump.</p> <p>Check for leaks between the pump front plate and pump house.</p> <p>Check lubrication areas.</p>		Weekly
<p>Central lubrication</p> <p>Fill up with fat of type EP2.</p>		Daily
<p>Central lubrication</p> <p>If the central lubrication does not work, check the scraper arm in the grease container. Check the pin in the hydraulics box by manual activation of lubrication.</p> <p>Check the overpressure valve.</p>		

Description	Image	Frequency
<p>Brake adjustment</p> <p>Tighten the bolt until the drum can't be rotated by hand. Then loosen the bolt 1 notch.</p> <p>Tightening bolt</p>		<p>Weekly</p>
<p>Tightening of straps (wheel drive option)</p> <p>When tightening straps for wheel drive do the following:</p> <ul style="list-style-type: none"> • Dismount chain screen • Loosen bolts on the side and by the suspension on the tanker. • Tighten nuts at the bottom of pumping station until appropriate tightening is achieved . <p>Tighten until the straps give about 13mm from a 13kg pressure point midway between the axles .</p>	<p>Loosen 2 bolts on each side</p>   <p>Loosen the 4 bottom bolts on each side.</p> <p>Disassemble the chain screen.</p>   <p>Tighten the nuts until appropriate tightening of the straps is obtained.</p>	<p>Weekly</p>

Service schedule

Note! All service and maintenance is carried out on the owner's own responsibility and Gøma cannot be held accountable for the inappropriate execution of service. Service and maintenance require the service technician to be on top of the machine. It should therefore be stressed that the machine must be fully stopped during service.

The following is just a guide and additional service and maintenance may be required .

Daily

- Oil levels are checked.
- Lubrication of areas.
 - Undercarriage
 - Crane
 - Lift
 - Pumps
 - PTO
 - Triangle
 - Three-Way valve
- The tanker is visually inspected for loose bolts, wear and tear, etc.
- Check if there is fat in the central lubrication container (if central lubrication is used).
- Check the overpressure valve on the lubrication pump.
- Check spring bolts.

Weekly

- Tyre pressure is checked.
- Thorough review of undercarriage.
- Adjustment of brakes.
- For air brakes, empty air tanks of liquid.
- Check wheel bolts.
- Retorque crane bolts at lower end of the toothed gear with 120 Nm.
- Retorque crane bolts at upper end of the toothed gear with 200 Nm.
- Check crane pegs.
- Check the PTO for wear and tear.
- Check the bearings and pegs at suspension cylinder.

Monthly

- Check for bearing wear at the wheels.
- Visual review of hydraulic hoses.
- Visual review of drive.
- Review of lift.
- Check bearings at loading pump.
- Check for corrosion on load-bearing parts. It is recommended to grind and apply rust protection in places of beginning rust formation.

If there's any doubt on whether there's any corrosion of the tanker in a critical area, contact Gøma support for guidance.

Wheel drive service

Frequency

- | | |
|--|----------------|
| • Tightening of straps for wheel drive. | 50 hours/month |
| • Oil change (type AWH 46) | Yearly |
| • Filters | 50 hours/month |
| • Filter on oil tank | |
| • Filter on wheel drive unit | |
| • Check the cooler for dust and clean it | Weekly |

Gøma support



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Opening hours can be found at www.goma.dk

