

GEA Farm Technologies

3-point hitch articulated Agitator PTO agitator

Instruction Manual / Installation Instructions (Original instructions)

2010-9015-014 05-2010

GEA Farm Technologies - The right choice.

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1 Preface

1.1 Information on the instructions

These instructions are supplied with the product.

They are designed modular and are only in relation to the mentioned product.
 For details of the components which are relevant to the product, please refer to the appropriate manuals.

This applies especially for safety information!

- They should be kept close at hand and remain with the equipment even if the equipment is sold.
- This manual is not subject to an amendment service. The most recent version at any time can be obtained through the technical dealer or directly from the manufacturer.

The manufacturer reserves the right to make changes due to technical developments in the data and images given in this manual.

Reproductions, translations and copies of any kind, even of extracts, require written authorization from the manufacturer.

Abbreviations, units, specialist terms, special names or specialist terminology are explained in more detail in the "Appendix".

Pictograms used



This pictogram indicates information that will help towards a better understanding of the working processes.



This pictogram indicates a special tool required for installation.



A correction bar in the margin indicates changes to the previous edition.



This pictogram refers to another document or chapter.

If a manual number is given, the middle 4 figures indicate the language, as follows:

	Language		Language		Language		
-9000-	German	-9013-	Dutch	-9032-	Serbian		
-9001-	English (Great Britain)	-9015-	English (America)	-9034-	Slovakian		
-9002-	French (France)	-9016-	Polish	-9036-	Lithuanian		
-9003-	Italian	-9021-	Danish	-9038-	Portuguese (Brazil)		
-9004-	Romanian	-9022-	Hungarian	-9039-	French (Canada)		
-9005-	Spanish	-9023-	Czech	-9040-	Latvian		
-9007-	Swedish	-9024-	Finnish	-9041-	Estonian		
-9008-	Norwegian	-9025-	Croatian	-9043-	Spanish (North America)		
-9009-	Russian	-9027-	Bulgarian				
-9010-	Greek	-9029-	Slovene				
Possibly not all above-mentioned languages are available.							

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1.2 Manufacturer's address

GEA Houle Inc. 4591 boul. St-Joseph Drummondville, Qc, J2A 0C6 (CANADA)

+1 819 477 - 7444

+1 819 477 - 5565

geahoule@geagroup.com

@ www.gea-farmtechnologies.com

1.3 Customer service

Authorised Technical Dealer

If necessary, please contact your nearest authorised technical dealer.

European Contact Information:

GEA Farm Technologies GmbH Siemensstraße 25-27 D-59199 Bönen (Germany)

+49 (0) 2383 / 93-70

+49 (0) 2383 / 93-80

contact@gea-farmtechnologies.com

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US Contact Information:

GEA Farm Technologies, Inc. 1880 Country Farm Dr. Naperville, IL 60563 (USA)

+1 630 369 - 8100

+1 630 369 - 9875

contact_us@gea-farmtechnologies.com

@ www.gea-farmtechnologies.com

1.4 **Declaration of conformity**

Installation declaration in accordance with the machinery directive: 2006/42/EC- Annex:II B

Manufacturer: **GEA Houle Inc.**

4591 boul. St-Joseph

Drummondville, Qc, J2A 0C6 (CANADA)

3-point Hitch Articulated Agitator Product category:

Name / Model: PTO agitator

The named product is in conformity with the requirements of the following European directives:

2006/42/EC Machinery Directive

Conformity with the requirements of these directives is testified by complete adherence to the following standards:

Harmonized European standards

Pumps and pump units for fluids - general safety requirements EN 809

(2009-06)

Safety of machinery

EN 953 (2009-07)

Guards

EN 4254-1 (2010-01)

Agricultural Machinery - safety

EN 4413

General requirements

Hydraulic fluid power

(1999-08)EN 12100-1 General rules relating to systems

(2009-10)

Machine safety, basic terms, general design guidelines. Part 1: Basic terminology, methods

EN 12100-2

Machine safety, basic terms, general design guidelines.

(2009-10)

Part 2: Technical guidelines and specifications Safety of machinery - Risk assessment - Part 1: Principles

EN ISO 14121-1 (2007-12)

EN ISO 14121-2

Safety of machinery - Risk assessment - Part 2: Practical guidance and examples of methods

(2007-12)

NF X 08-003-1 (2006-07)

Graphic and pictographic symbols - colors and safety signs

Attention!

We would point out that commissioning is not permitted until it has been established that the machine/system in which this product is installed meets the conditions of the directives on which they are

Person responsible for compiling the

Josef Schröer

relevant technical documents:

GEA Farm Technologies GmbH

Siemensstraße 25-27 D-59199 Bönen (Germany)

+49 (0) 2383 / 93-70

Drummondville, 01.05.2010

Yann Desrochers

(Head of Research and Development)

The undersigned is acting by virtue of power of attorney from the management of: GEA Houle Inc., 4591 boul. St-Joseph, Drummondville, Qc, J2A 0C6 (CANADA)

This declaration certifies compliance with the guidelines indicated, but does not establish any guarantee in the sense of paragraphs 443, 444 BGB.

1.5 GEA Houle Inc. - General Equipment Warranty



Important notice!

THIS GENERAL WARANTY APPLIES TO ALL EQUIPMENT SOLD UNDER THE GEA HOULE TRADEMARK.

1.5.1 Limited warranty

GEA Houle Inc. (hereinafter referred to as "the Company") warrants to the original buyer and end user (hereinafter referred to as the "Purchaser") that the parts of all equipment sold under the Company trademark are free from defects in material or workmanship for a period of twelve (12) months from the date of delivery of the equipment to the Purchaser. This written warranty takes precedence over any other written warranty included in previous versions of the Company's manuals. Any equipment used for commercial usage, commercial lease on one or more farms is warranted for a reduced period of thirty (30) days only.

Components from third-party manufacturers that are not built by the Company, and which are accessory to the equipment sold under the Company trademark (including, without limitation, the motors and tires), are subject to such third-party manufacturers' specific warranty coverage.

THIS WARRANTY EXTENDS ONLY TO THE PURCHASER AND DOES NOT APPLY IN THE EVENT THAT THE EQUIPMENT IS SOLD OR OTHERWISE TRANSFERRED.

1.5.2 Condition of the limited warranty

The Company, through its GEA authorized dealers only (hereinafter referred to as "Dealer"), reserves the right to either repair or replace all parts deemed defective under the following conditions:

- 1. That the equipment is installed, operated and maintained in accordance with the Company directives;
- 2. That the Purchaser uses the equipment in accordance with specific instructions, under normal conditions, for the sole purpose for which the equipment was designed;
- 3. That the Purchaser notifies in writing his Dealer or the Company (whichever the case may be) of any defect of the equipment. In either case the notification must be made within the twelve (12) months following the date of the delivery to the Purchaser:
- 4. The Purchaser or the Dealer must keep the defective parts or equipment for inspection by the Company and return such defective parts or equipment prepaid to the Company, if requested;
- 5. That the Purchaser does not modify the equipment, nor attempts to repair any equipment or parts without proper authorization from the Company;
- 6. Depending on the nature of the equipment involved and whether it is fixed or transportable, the Company will repair or replace the defective parts of the equipment free of charge where installed, or at the business place of the Dealer or the Company, at its sole discretion.

1.5.3 Extent of limited warranty

This limited warranty DOES NOT cover:

- Defects caused by negligence of the Purchaser in the maintenance of the equipment, improper use resulting from failure to adhere strictly to the Company's manuals or non-compliance with prescribed maintenance instructions provided by the Company (including, without limitation, lack of lubrication of the equipment), as well as damages arising from non-conforming installation of the equipment, or ambient temperature or conditions of storage of the equipment that do not comply with the Company's recommendations (including, without limitation, any damages resulting from storage or operation of the equipment at a temperature equal or below the freezing point (0°C/32°F));
- Damages to equipment due to normal wear and tear or to external causes, including issues of power or inadequate electrical conditions (including, without limitation, inadequate tension (neutral/ground), abnormal mechanical or environmental conditions (including, without limitation, damages caused by fire, lightning, flood or other natural disaster), damages caused by the use of sand litter or other abrasive or inadequate material (including, without limitation, damages caused by solids in the manure, such as stone, wood, iron, concrete, and strings), as well as damages caused by ice or frozen manure blocking the evacuation line of the equipment or the introduction of such solids in the equipment;
- Freight and shipping associated with repair or replacement of equipment under this limited warranty, as well as all costs relating to removal or replacement of any equipment that is welded or affixed permanently to the ground or a building (including, without limitation, labor costs, and costs related to concrete or excavation);
- Claims arising from repairs or replacements made by the Purchaser without the prior written consent of the Company. The Purchaser shall not remove or alter any safety device, guard, or warning sign.

If the Purchaser fails to comply with any of its obligations referred to in this paragraph, the Purchaser agrees to save the Company and the Dealer harmless in respect of any liability or obligation incurred by the Company or the Dealer resulting from such failure of the Purchaser.

1.5.4 Warranty limitations and exclusion

NO WARRANTY, ORAL OR WRITTEN, EXPRESS OR IMPLIED, OTHER THAN THE ABOVE WARRANTY IS PROVIDED IN RESPECT OF THE EQUIPMENT SOLD.

Some states (or jurisdictions) do not allow the exclusion of implied warranties so it is possible that this limitation may not apply.

THE COMPANY DISCLAIMS ALL IMPLIED WARRANTIES, INCLUDING THE WARRANTIES OF MERCHANTABILITY, ADAPTABILITY OR OF PERFORMANCE, PROVIDED THAT SUCH EXCLUSION OF LIABILITY COMPLIES WITH THE LAWS HAVING APPLICABLE REGULATORY JURISDICTION.

THE LIABILITY OF THE COMPANY AND ITS DEALERS UNDER THIS WARRANTY IS LIMITED TO REPAIR OR REPLACEMENT OF DEFECTIVE PARTS UP TO THE CONTRACT VALUE FOR THE PURCHASED EQUIPMENT. IN NO EVENT SHALL THE COMPANY BE LIABLE FOR ANY SPECIAL, INDIRECT, CONSEQUENTIAL, INCIDENTAL, PUNITIVE OR EXEMPLARY DAMAGES IN ANY KIND OR CHARACTER, INCLUDING INDIRECT COSTS, LOSS OF PRODUCTION, LOSS OF REVENUES OR PROFITS, AND OTHER DISBURSEMENTS WHICH MAY OCCUR.

Some states (or jurisdictions) do not allow the exclusion or limitation of incidental or consequential damages and so it is possible that these limitations or exclusions may not apply.

1.5.5 General statements

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS THAT VARY BY JURISDICTION.

THE DEALER IS NOT AUTHORIZED TO MAKE ANY ADDITIONAL OR REPRESENTATIONS OR PROMISES THAT DIFFER IN ANY WAY FROM THE TERM OF THIS LIMITED WARRANTY, OR MODIFY THE PROVISIONS, DURATION AND CONDITIONS OF THIS LIMITED WARRANTY. NO WAIVER OR MODIFICATION OF THIS LIMITED WARRANTY IS VALID UNLESS AGREED TO IN WRITING AND SIGNED BY THE AUTHORIZED REPRESENTATIVES OF THE COMPANY.

IN THE EVENT OF ANY CONFLICT BETWEEN THE ENGLISH LANGUAGE VERSION AND ANY OTHER TRANSLATED VERSION OF THIS LIMITED WARRANTY (WITH THE EXCEPTION OF THE FRENCH LANGUAGE VERSION) THE ENGLISH VERSION SHALL PREVAIL.

2 Safety

2.1 Owner's obligation of care

The product has been designed and constructed while taking account of a potential risk analysis and after careful selection of the harmonized standards and other technical specifications to be complied with. It therefore guarantees a maximum level of safety.

This safety can only be achieved in practice on the farm however when all of the necessary measures have been taken. It is part of the owner's obligation of care to plan these measures and check that they are carried out.

In particular, the owner must ensure that

- Everyone who works with or performs activities in connection with the product must carefully read the instructions (especially the safety instructions and warnings).
- A DANGER! TOXIC GASES sign is posted at the eye level, at the entry of the pit area. Make sure this sign remains visible all the time.
- No one must enter into a manure pit at any time, except qualified personnel having knowledge on procedures in confined spaces.
- Safety equipment is available on site (hearing protection, eye protection.).
 Everyone who works with or performs activities in connection with the product must use safety equipment.
- Safety fences have been installed near the access point of the reservoir to protect people against hazardous fall. Safety fences must meet local requirements regarding workers safety.
- The tractor size operating the equipment must match the equipment. Refer to Tractor specifications section.
- The equipment will not be towed on public road. If the equipment needs to be towed on public road, the owner must adapt the equipment in accordance with local towing safety regulations.
- All local requirements on safety procedures in confined spaces have been followed. Refer to the Basic Safety Instruction section.
- Enough light is provided in each operation and maintenance area to light up equipment, controls and safety stickers. To ensure adequate visibility of safety stickers applied on the equipment, lights must provide 200 lux minimum at these areas
- A full set of legible instructions is always kept by the product so that anyone who
 has to carry out work on the product can look at the instructions at any time.
- The instructions in the section entitled "Basic safety instructions" are observed.
- The legal requirements are observed.
- Operating instructions are produced for the farm. These must be especially adapted to the conditions of the business, once again, expressly taking account of safety aspects.
- The product
 - is only used for its intended purpose.
 - should only be operated if it is in perfect working order.

 Particularly check the operation of the safety equipment on a regular basis.

- The work to be carried out is performed by a sufficiently qualified person!
 - In this respect, please also read the section on "Personnel Qualification".
- These personnel will be regularly instructed in all relevant matters of safety at work and protection of the environment and be familiar with the manual, particularly the safety instructions it contains.
- Operating personnel who require training may only work on the product under the supervision of an experienced person.
- Safety signs, manufacturer's plate and decals, attached to the product, must be replaced immediately if they become illegible or are lost.
- Unauthorised persons (e.g. children) are not allowed in hazardous areas.
- The guard over the PTO shaft is kept in place.
- Hands, feet and clothing are kept away from all moving parts.
- No one stands close to moving parts before engaging PTO.
- Never allow bystanders to stay close to the equipment when it is lifted and / or in operation.
- The tractor must be shut off before lubricating, maintaining and adjusting.
- Adjustable leg supports must be lowered and sitting on a solid surface when agitating.

2.2 Explanation of the safety symbols used

Safety symbols draw attention to the importance of the adjacent text.

The design of the warnings is based on ISO 3864-2 and ANSI535.6.

Safety symbols and signaling word



DANGER!

The indication "Danger" signals immediate danger to life or health of personnel.

Death or serious injury will result if the danger is not avoided.



WARNING!

The indication "Warning" signals danger to life or health of personnel. Death or serious injury may result if the danger is not avoided.



CAUTION!

The indication "Caution" signals dangerous situations. Injury may result if the danger is not avoided.



Attention!

The indication "N.B." signals important information on risks for the product or the environment.

2.3 Basic safety instructions

Safety procedures in confined spaces



Danger!



Manure produces toxic gases that may cause death in a second. When agitated, the manure produces heavy toxic gases such as hydrogen sulfide (H_2S), carbon dioxide (CO_2), methane (CH_4) and ammonia (NH_3). It is **MANDATORY** to follow the Safety Procedures for Confined Spaces before operating or servicing the equipment. These safety procedures clearly explain the risks associated with manure, procedures for a safe access to workspaces and the minimum ventilation requirements to ensure the safety of humans and livestock. Find local safety procedures for confined spaces in Web Sites below.

Location	Administrated by	Web Site
In Canada	Canadian Centre for Occupational Health and Safety	www.ccohs.ca
In USA	Occupational Safety and Health Administration	www.osha.gov
In European Union	European Agency for Safety and Health at Work	www.europe.osha.eu.int



DANGER!

Always deactivate the PTO driveline when the agitator is outside the reservoir. Activating the agitator outside the reservoir may result in serious injuries and/or damages.



WARNING!

Always turn off the tractor and apply parking brake before lubricating, cleaning or servicing the equipment.



Danger!

Hydraulic line under pressure

Escaping fluid can penetrate skin causing serious injury or death. Never use your hand to feel for leaks. Hold a scrap of cardboard to feel around for leaks. Relieve pressure prior to servicing.



Note!

There are warnings about specific residual dangers in the corresponding chapters.

- Follow the maintenance and safety instructions on the labels affixed to the equipment.
- Do not remove safety guards from the equipment.
- Keep hands, feet and clothing away from all moving parts.
- Never use the equipment if any part of the equipment seems damaged or shows signs of abnormal wear.
- Make sure that no one stands close to moving parts before starting the PTO.
- Never allow bystanders to stay close to the equipment when it is lifted and / or in operation.
- The chapter on "Technical data" gives the permissible working conditions (pressure ranges, temperature ranges, etc.) and these must be followed!
- When working with products from other manufacturers always observe the warnings from the safety data sheets and operating instructions from the product manufacturer!
- Follow measures on protection against noise!
- Do not stand underneath suspended loads.
- Sharp edges may cause injuries.
- If load suspension devices other than those indicated here are used, this may lead to serious damage to property and/or life-threatening injury to people.
- Leaking lubricants, solvents,... could cause injury if they come into direct contact with the skin and could make the floor surface slippery which could result in dangerous fall.

2.4 Personnel qualification

All personnel who perform work on or with the product must carefully read and understand the instructions and act in accordance with them!

- The operator may only carry out work on the equipment if trained, instructed and authorized to do so by the owner.
- National driver's licence for drive-on machines, stackers and other trucks.
- All equipment handled/moved with lifting devices must be performed by qualified personnel only in accordance with slinging techniques.
- Any work in a reservoir must only be carried out by qualified personnel having knowledge on safety procedure in confined spaces.
- All welding work must only be performed by trained welders.

In addition, special qualifications are required for the following activities:

- Transport
- Cleaning
- Installation
- Commissioning
- Operation
- Maintenance / servicing
- Troubleshooting
- Repairs
- Shut-down



Note!

If the work requires special qualifications, these are described in the corresponding chapters!

2.5 Protective devices

Protective devices



Protective guard for power take off driveline (part no. 2010-7606-910) American



Protective guard for power take off driveline (part no. 2018-4701-630) European

• Safety symbols, warnings, warning signs and labels



Danger! - Toxic gases (American model)

Manure produces toxic gases that can cause loss of consciouness, axphyxia or death in few seconds.

(part no. 2099-4720-010)



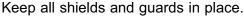
Danger! (American model)

Rotating driveline. Keep away! (part no. 2099-4720-020)

Warning!

Always stop the equipment before servicing and maintenance.

Never adjust the equipment while it is running.



Keep hands and loose clothing away from moving parts.

Make sure everyone is clear from moving parts before starting the equipment.

Refer to the owner's manual for operating and maintenance instructions.

(part no. 2099-4721-020)



Read the instruction manual for safety information. (part no. 2099-4725-100)



Maximum 540 RPM

(part no. 2010-4703-430)



Oil type 80W90

(part no. 2099-4725-310)



Grease point

(part no. 2099-4701-240)



Hydraulic control lever (part no. 2010-4703-830)

3 Description

3.1 Correct applications

The product described was designed for use in agricultural livestock farm operations.

Type of product / Product name

3-point hitch articulated Agitator / PTO agitator

is exclusively designed to:

- Agitate liquid manure.
 - Maximum consistency for agitation is 1" [25 mm]

Any applications that are not listed here are not part of the intended purpose and are therefore considered as improper use!

The following in particular are prohibited:

- processing others substences than manure and water.
- activating the PTO driveline when the agitator is outside of the reservoir.

The manufacturer/supplier is not liable for any resulting damage. The user alone bears the risk.

Correct use also includes reading the instructions and observing the inspection and maintenance conditions.

- Original GEA Houle parts and accessories are specially designed for GEA Houle equipment.
- The manufacturer expressly points out that only original parts and original accessories have been adapted, tested and authorized for use with the product.
- We would specifically like to point out that parts or accessories not supplied by ourselves and setting instructions not provided by GEA Houle are not checked or released by us either.
- The installation or use of products from other manufacturers may affect the specified properties of the original parts and lead to injury to people and animals.
- The manufacturer does not accept any liability for injury to people or animals, or damage to the product, caused by the use of products from other manufacturers.

3.2 Changes to the product

For safety reasons, do not carry out any unauthorized changes!

Any planned changes must be approved by the manufacturer in writing.

3.3 Design of the equipment

Design

The 3-point hicth articulated Agitator consists of:

- a PTO agitator attached to a tractor to agitate manure in a lagoon or a storage pit.
- an auger style propeller with knife kit to chops fibers in manure.
- 2 or 3 hydraulic controlled articulations to position the agitator propeller on the lagoon/pit.
- An optional 3 levers control valve is available to control articulations.

Drive

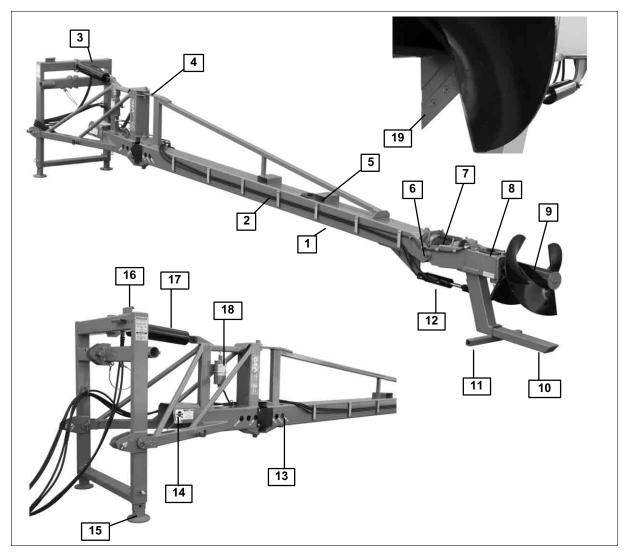
The 3-point hitch articulated Agitator is PTO driven and hydraulically articulated by a farm tractor.

3.4 Functional description

The 3-point hitch articulated Agitator is used to agitate liquid manure in a lagoon or a cement pit storage.

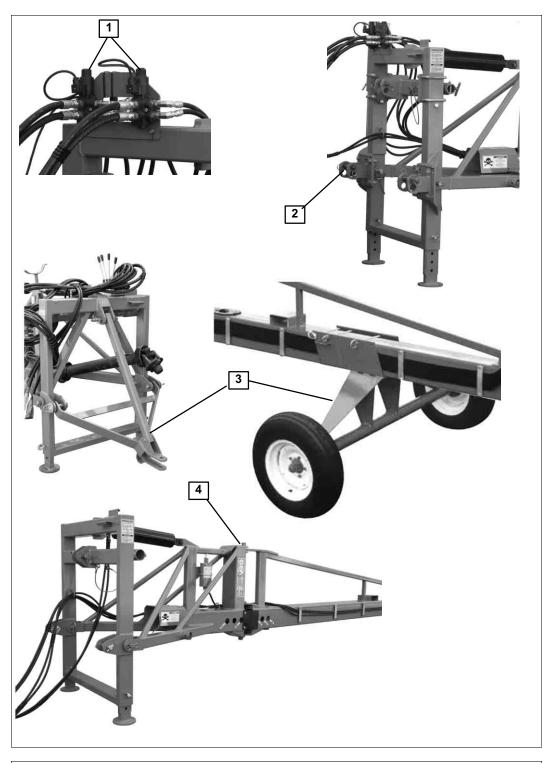
3.5 Main View

3.5.1 Agitator



Legend:						
1	Main frame	2	Hydraulic Lines			
3	3 point hitch	4	60° sideways articulation (optional)			
5	Lifting ring	6	40° propeller articulation			
7	Oil bath articulation	8	Access cover			
9	Propeller	10	Foot			
11	Stability support	12	Vertical articulation cylinder			
13	Grease zerks access	14	PTO guard			
15	Adjustable legs	16	Hook for hydraulic levers			
17	Hydraulic articulating cylinder	18	Oil tank			
19	Knife kit					

3.5.2 Optionnal devices



Leg	Legend:				
1	Solenoid valves				
2	3 point quick hitch				
3	Wheel and tow bar kit				
4	60° sideways articulation				

3.6 Technical Data

Geometric data

	27' [8.23m] 3-point hitch articulated Agitator					
Propeller dimensions	24" O.D. x 15½" Long. x 24" Pitch [61cm O.D. x 39.3cm Long. x 61cm Pitch] 24" O.D. x 21" Long. x 3 [61cm O.D. x 53.3cm Long Pitch]					
Agitatar langth	28'					
Agitator length	[8.23m]					
Agitator height	9.58' [2.92m]					
Agitator width	56" [1.42m]					
Agitator weight	1530 lbs					
	[694kg]					
Agitator centre of	166"					
gravity	[422cm]*					

^{*}Dimension from the agitator 3-point hitch

Acoustic emission

Noise level	85 dBA
-------------	--------

Hydraulic hoses

I.D.	1/4"	1/2"	3/4"
O.D.	0.58"	0.86"	1.10"
Quantity of braids	2	2	2
Camilaa maaasiina	400 bar	276 bar	207 bar
Service pressure	(5,800 psi)	(4,000 psi)	(3,000 psi)

Tire (optional)

Tire brand	Tire model	Ply	Pressure			ensions es/mm)		ight nout rim)
			psi	bar	Diameter	Width	Lbs	Kg
Goodyear	16.5L X 16.1	8	26	1.8	30.3/770	10.7/272	31	14

Performance data

	27' [8.23m] 3-point hitch articulated Agitator
Maximum effective	16'
depth	[4.88m]
Maximum manure	1"
consistency	[25 mm]
Operating temperature	5°C [41°F] minimum

Tractor specifications

	27' [8.23m] 3-point hitch articulated Agitator					
Propeller dimensions	24" O.D. x 15½" Long. x 24" Pitch [61cm O.D. x 39.3cm Long. x 61cm Pitch]	24" O.D. x 21" Long. x 32" Pitch [61cm O.D. x 53.3cm Long. x 81.3cm Pitch]				
Minimum tractor power	80 HP 100 HP					
PTO RPM required	540 RPM					
Towing capacity	2000 lbs [1000kg]					
Tractor 3-point hitch category required	Category 2 or 3					
Tractor 3-point hitch lift capacity at 24" [61cm]*	10560 lbs [4800kg]					

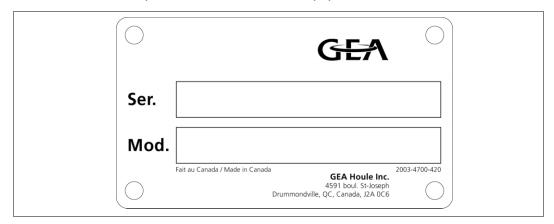
^{*}Capacity required at 24" [61cm] behind the hitch balls. Weight can be added on the tractor front end to balance the load.

Bolt torque chart (except when otherwize specified)

Bolt	Mat.	Bolt diametre									
		1/4"	5/16"	3/8"	7/16"	1/2"	9/16"	5/8"	3/4"	7/8"	1"
SAE 2	LCS	8Nm (6 ft-lb)	16Nm (12ft-lb)	27Nm (20ft-lb)	44Nm (32ft-lb)	64Nm (47ft-lb)	94Nm (69ft-lb)	130Nm (96ft-lb)	210Nm (155ft-lb)	279Nm (206ft-lb)	420Nm (310ft-lb)
SAE 5	MCS HT	14Nm (10ft-lb)	26Nm (19ft-lb)	45Nm (33ft-lb)	73Nm (54ft-lb)	106Nm (78ft-lb)	155Nm (114ft-lb)	209Nm (154ft-lb)	349Nm (257ft-lb)	518Nm (382ft-lb)	796Nm (587ft-lb)
SAE 8	MCAS	19Nm (14ft-lb)	39Nm (29ft-lb)	64Nm (47ft-lb)	106Nm (78ft-lb)	161Nm (119ft-lb)	229Nm (169ft-lb)	312Nm (230ft-lb)	515Nm (380ft-lb)	814Nm (600ft-lb)	949Nm (700ft-lb)
Socket Head Cap Screw	AS HT	22Nm (16ft-lb)	45Nm (33ft-lb)	73Nm (54ft-lb)	114Nm (84ft-lb)	170Nm (125ft-lb)	244Nm (180ft-lb)	339Nm (250ft-lb)	542Nm (400ft-lb)	868Nm (640ft-lb)	1315Nm (970ft-lb)

Manufacturer's plate

The manufacturer's plate is attached to the equipment.



4 Transport

4.1 Special personnel qualification required for transport

Transport may only be performed by specially qualified personnel in accordance with the safety instructions.



Also see the section on "Personnel qualification".

4.2 Safety instructions for transport

To prevent damage to property and/or life-threatening injury to personnel always observe the following:

 Only the lifting devices and support equipment indicated here should be used, at the specified support points, for transport.



Also read the chapter on "Safety".

Special transport hazards:

- The equipment is not approved to be moved at any speed above 5 km/h (3 mph) when using the 3-point hitch.
- The equipment is not approved to be towed at any speed above 8 km/h (5 mph) when using optional wheels and tow bar kit.
- The equipment has no braking system and signal lights. It is designed to be towed strickly on the field by a farm tractor.
- Hydraulic hoses failures may cause unexpected movements.

4.3 Permissible devices and aids for transportation



Attention!

To lift the equipment, use a lifting device with a minimum capacity of: 3000 lb [2000 kg].



4.4 Lifting and moving the equipment



CAUTION!

Sharp edges may cause cuts.

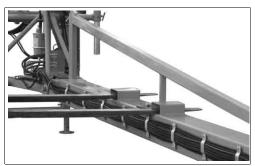


WARNING!

Do not stand underneath suspended loads. Suspended loads may fall, so there is a danger of death!

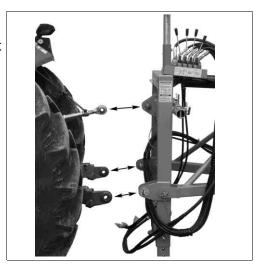
Using a fork lift

• To lift the agitator, use the lifting rings located on the main frame.



Using the 3-point hitch

• To move the agitator with the 3-point hitch, refer to the operating section.



Using the tow bar kit

 To move the agitator with the optional tow bar kit, refer to the operating section.



4.5 Storage conditions



Attention!

Risk of corrosion!

When storing the goods supplied, the location must provide protection against:

- Moisture
- External damage (jolts, knocks, rodents, insects, . . .)
- Direct sunlight

4.6 Information on disposing of packing material

After unpacking, the packing material is to be handled properly and disposed of carefully in accordance with the valid local regulations on waste disposal and utilisation.

5 Installation

5.1 Special personnel qualification required for installation

Installation may only be carried out by specially qualified personnel in accordance with the safety instructions.

5.2 Safety instructions for installation

To prevent damage to property and/or life-threatening injury to personnel always observe the following:

- Before installation, look for any damage caused during transport. Do not use damaged components!
- Use only the special tool indicated for assembly.



Also read the chapter on "Safety".

Special hazards during installation:

- There is a fire hazard associated with welding work.
- Components which have not been removed correctly may fall off or twist
- Components with sharp edges which are still open and accessible represent a source of injury.
- Leaking lubricants, solvents,... could cause injury if they come into direct contact with the skin and could make the floor surface slippery which could result in dangerous fall.
- Serious injury to personnel or damage to property can be caused if the incorrect torque is applied when tightening screws.

5.3 Assembly preparations

Special tools

	Description	Purpose
	Fork lift truck	To lift the equipment
O	Chain hoist	To lift the equipment
	Safety chains	To lift the equipment
	Wrench set	To tighten bolts and anchor bolts
	Ratchet tool set	To tighten bolts and anchor bolts
	Torque wrench	To tighten bolts and anchor bolts at the specified torque

Local purchased items

Provided by the owner:

- A PTO driveline meeting local requirements. This applies only when this item is not supplied by the manufacturer.
- Safety fences meeting local requirements for worker safety. It must be installed near the access point of reservoir to prevent operator from falling.

5.4 Remove safety devices used during transportation

• Remove cardboard from the propeller.

5.5 Agitator assembly

5.5.1 Stability support



Note!

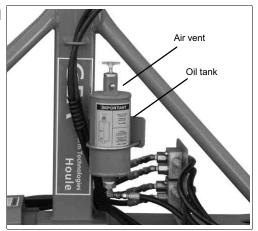
The stability support is used to maintain the agitator when it is not connected to a tractor.

• Install the stability support by sliding it on the leg.



5.5.2 Air vent

• Remove tape from the air vent of the oil tank.



5.5.3 Power Take-Off

European model



Refer to the PTO driveline instruction manual and follow manufacturer's recommendations.

American model

 Remove and save the extra safety shear bolts.

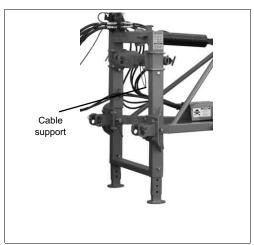


Installation of Standard PTO

- Attach the power take-off to the agitator shaft (male part of the power take-off).
- Place the other end of the power take-off on the cable support.

Installation of Constant velocity PTO

- Attach the power take-off simple joint to the agitator shaft.
- Place the other end of the power take-off (double joint) on the cable support.



5.5.4 Optional wheels and tow bar kit

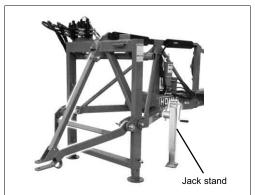


Attention!

Make sure to tight wheel nuts to a torque of 122 N/m (90 lbs/foot).

- Assemble the wheels on the axle.
- Tighten the wheel nuts using a torque of 122 N/m (90 lbs/foot).
- Lift the agitator to insert the wheels under the agitator's main frame. Wheels must be installed near the propeller.
- Install the lock pins to secure the assembly on the main frame.
- Install the jack stand on agitator main frame using the lock pin.
- Install the tow bar on the agitator 3-point hitch using 3 lock pins.





6 Initial Commissioning

6.1 Special personnel qualification required for initial commissioning

Initial commissioning may only be performed by specially qualified personnel in accordance with the safety instructions.

6.2 Safety instructions for initial commissioning



WARNING!

Read Instructions First! To prevent serious injury or death, do not operate or service this machine without first reading and understanding the instruction manuals for all of the equipment. If these manuals are lost, contact your nearest dealer or the manufacturer for replacements.

To prevent damage to property and/or life-threatening injury to personnel always observe the following:

- Before starting for the first time, check that all tools and other parts have been removed from the danger area.
- Are all of the operating media suitable, present and connected?
- Have all protective hoods and covers been fitted?



Also read the chapter on "Safety".

Special risks involved in initial commissioning:

- If the hydraulic connections to the tractor are mixed up this may cause unexpected movements.
- Hydraulic hoses failures may cause unexpected movements.
- Check all pressure areas for leaks.

6.3 Checks before initial commissioning

The owner should ensure that:

- Oil in the agitator oil tank is at proper level.
 - Add SAE 80W90 gear oil if necessary.
- All grease zerks have been lubricated.
- All personnel who perform work on or with the product must carefully read, understand and act in accordance with the instructions.
- Check the product for visible damage; immediately remove any faults that are found (note personnel qualification required) or send to the specialist dealer the product may only be used if it is perfect condition.
- Check and make sure that only authorized personnel are in the work area of the machine and no other people will be endangered by the machine starting.
- Check and make sure that there are no objects or materials in the working area if they are not necessary for operation.
- Make sure the hydraulic circuit of the tractor contains sufficient hydraulic oil to safely articulate the agitator up and down.
- Make sure the tractor have been correctly attached to the agitator's 3-point hitch. Refer to section on Lifting and moving the equipment.
- Make sure PTO driveline meet local requirements.
 - Secure both ends of the driveline;
 - Keep all guards in place.

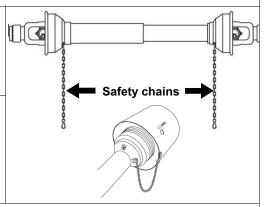
• European PTO driveline model



Refer to the PTO driveline instruction manual and follow PTO manufacturer's recommendations.

Safety Chains

- Safety chains must be in place at all times to prevent the driveline guards from rotating.
- Make sure that the safety chains do not restrict the movement of the driveline when operating or transporting the equipment.



- Never use the safety chains to secure the PTO when disconnected from the tractor.
- Replace any damaged chain.

American PTO driveline model

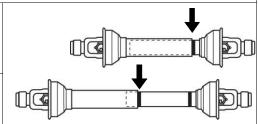


Refer to the PTO driveline instructions below.

PTO driveline instruction (American model only)

Maximum Extension and Retraction

- While operating the agitator, never exceed the maximum points indicated by the adhesive tapes on the male guard.
- The minimum retraction indicator must never disappear underneath the female guard.
- The maximum extension indicator must never be completely visible.



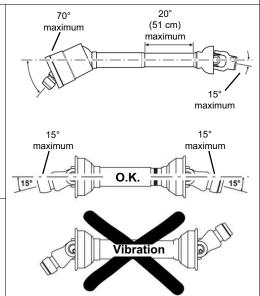
Maximum Angle of PTO joints

Constant velocity PTO driveline

 One PTO joint must be at angle (maximum 70°). Second PTO joint must be at angle (maximum 15°).

Standard PTO driveline

- Both PTO joints must be at the same angle (maximum 15°).
- Joints must always be directed towards the same side of the driveline.



Lubrication

• On universal joints, use a high quality grease formulated specifically for intensive use. Refer to Maintenance section for grease specification.

6.4 First start



WARNING!

Rotating driveline keep away!



Turn off the tractor and apply parking brake before installing or removing the PTO driveline.

Once the equipment has been fully assembled in accordance with instructions and the operating instructions have been read carefully, the equipment can be put into operation.

Activate the agitator and check the functions.



Attention!

PTO driveline must always be activated when the propeller is immersed into the manure/water. Running the agitator propeller out of manure may result in damage.



Refer to the Operation section for proper procedures.

6.5 Checks after initial commissioning

Check that the oil in the oil tank is at the proper level.

If the oil level has dropped, check for leaks. Defective parts may need to be repaired.

Check that the oil in the tractor hydraulic oil tank is at the proper level. The first operation of agitator hydraulic components may be decreased the tractor hydraulic oil level. Add hydraulic oil as per the tractor manufacturer recommendations.

6.6 Handing over to the owner

Hand-over warranty registration form

The warranty registration form must be completed and signed by the customer and the dealer.

7 Operation

7.1 Special personnel qualification required for operation

Operation may only be performed by specially qualified personnel in accordance with the safety instructions.

The operator may only carry out work on the equipment if trained, instructed and authorized to do so by the owner.

7.2 Safety instructions for operation



WARNING!

Read Instructions First! To prevent serious injury or death, do not operate or service this machine without first reading and understanding the instruction manuals for all of the equipment. If these manuals are lost, contact your nearest dealer or the manufacturer for replacements.



Attention!

To operate the equipment safely, the tractor operating the equipment must meet the tractor specifications given. Refer to the Technical Data section on Tractor specifications.



WARNING!

Rotating driveline keep away!



Turn off the tractor and apply parking brake before installing or removing the PTO driveline.



Attention!

Make sure all control levers are locked at desired position before operating the equipment.

To prevent damage to property and/or life-threatening injury to personnel always observe the following:

Only fit or use the product for its intended purpose.



Also read the chapter on "Safety".

Special dangers involved in operation and normal operation:

- Incorrect use may lead to serious damage to property and/or life-threatening injury to people.
- The careless use of personal protection equipment can result in serious physical injury.
- If the hydraulic connections to the tractor are mixed up this may cause unexpected movements.
- Hydraulic hoses failures may cause unexpected movements.

Before operating, make sure you are adequately familiar with the following:

- the operating and control elements
- the equipment
- The method of operation
- The immediate environment
- The safety devices
- The PTO driveline recommendations

Carry out the following checks before every start:

- Check and make sure that all of the safety devices (safety guard, emergency-off switches, etc.) are present and working.
- Check the product for visible damage; immediately repair without any delay damage found (note: personnel qualification required) or send to the specialist dealer - the product may only be used if in perfect condition.
- Check and make sure that only authorized personnel are in the work area of the machine and no one will be endangered by the machine starting.
- Check and make sure that there are no unnecessary object or material is located in the working area.
- Make sure the hydraulic circuit of the tractor contains sufficient hydraulic oil to safely articulate the agitator up and down.
- Make sure PTO driveline meet local requirements.
 - Secure both ends of the driveline;
 - Keep all guards in place.

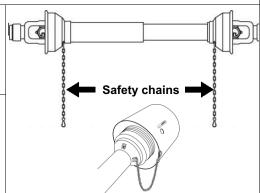
• European PTO driveline model



Refer to the PTO driveline instruction manual and follow PTO manufacturer's recommendations.

Safety Chains

- Safety chains must be in place at all times to prevent the driveline guards from rotating.
- Make sure that the safety chains do not restrict the movement of the driveline when operating or transporting the equipment.



- Never use the safety chains to secure the PTO when disconnected from the tractor.
- Replace any damaged chain.

American PTO driveline model

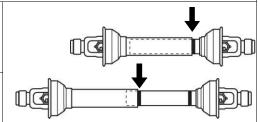


Refer to the PTO driveline instructions below.

PTO driveline instruction (American model only)

Maximum Extension and Retraction

- While operating the agitator, never exceed the maximum points indicated by the adhesive tapes on the male guard.
- The minimum retraction indicator must never disappear underneath the female guard.
- The maximum extension indicator must never be completely visible.



PTO driveline instruction (American model only)

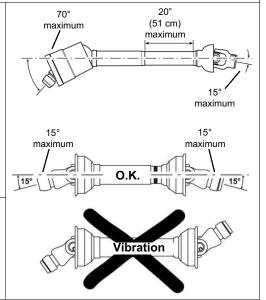
Maximum Angle of PTO joints

Constant velocity PTO driveline

 One PTO joint must be at angle (maximum 70°). Second PTO joint must be at angle (maximum 15°).

Standard PTO driveline

- Both PTO joints must be at the same angle (maximum 15°).
- Joints must always be directed towards the same side of the driveline.



Lubrication

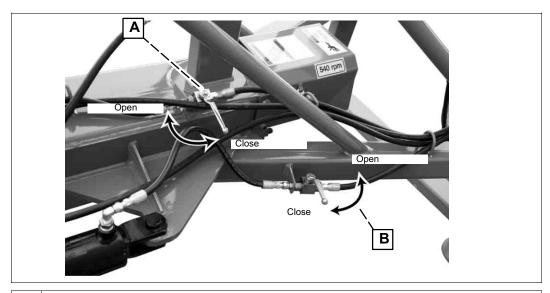
• On universal joints, use a high quality grease formulated specifically for intensive use. Refer to Maintenance section for grease specification.

In normal operation:

- All personnel who perform work on or with the product must carefully read, understand and act in accordance with the instructions.
- The product may only be operated from the seat of the farm tractor or beside the equipment with hydraulic control levers option.
- The equipment must always be attached to the tractor 3-point hitch to prevent the PTO from separation.
- Be careful when positioning the agitator in the pit. Back off tractor at a low speed to prevent the tractor from falling in the pit.
- Never leave the equipment in operation without the supervision of a skilled operator.
- The farm tractor must be immobilized with parking brakes or wheel chocks to keep it from entering manure storage.
- During operation, it is strictly forbidden to remain within the hazard area!
- The following checks should be performed at least once a day:
 - Visual checks for any damage that can be seen on the outside.
 - Check that all safety devices are working.
 - Check that all hydraulic hoses are leaktight and connected correctly.
 - Never use the agitator if parts of the equipment appear damaged or showing signs of abnormal wear.

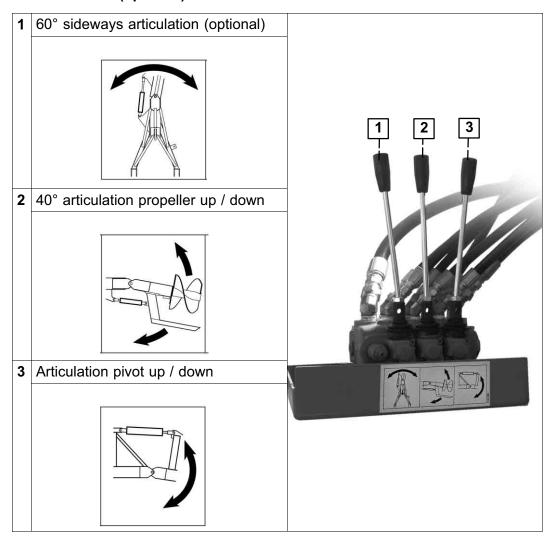
7.3 Description of the operating elements

7.3.1 Ball valves



- A Propeller articulation ball valve
- **B** Sideways articulation ball valve

7.3.2 Hydraulic controls levers (optional)



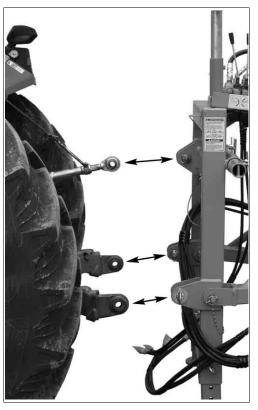
7.4.1 Connecting the equipment to the tractor

\wedge

CAUTION!

Before installing the pins connecting the equipment to the tractor, make sure the tractor is turned off and the parking brake is properly activated to ensure immobilization.

- Remove the pins from the agitator 3-point hitch.
- Back up the tractor to allow connection with the agitator.
- Turn off the tractor and immobilize it using the tractor parking brake.
- Using pins and safety cotter pins, attach the agitator 3-point hitch to the tractor.
- Hook up the hydraulic hoses of the agitator to the tractor.
- Install the PTO driveline.
- European model: Install the safety chains to prevent the guard's power take-off from rotating.





See tractor operating instructions and make sure the chains are attached according to your current local regulations.



Refer to appendix on Hydraulic diagrams

7.4.2 Moving the equipment using the tractor 3-point hitch



Attention! Moving the equipment

- The equipment must be moved with a farm tractor which meet Tractor specifications. Refer to the Technical data on Tractor specifications.
- The equipment is not approved to be moved at any speed above 5 km/h (3 mph).
- · Never travel on hillsides.
- For long distance transportation, use a truck or truck and trailer approved for public roads.
- Make sure the hydraulic circuit of the tractor contains sufficient hydraulic oil to safely articulate the agitator up and down.



Note!

The equipment must be properly connected to the tractor before operation.

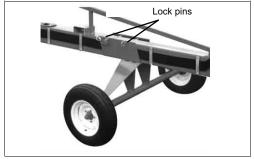
- Operate the articulation cylinder to raise the agitator.
- Move the equipment.

7.4.3 Moving the equipment using the tow bar kit (optional)

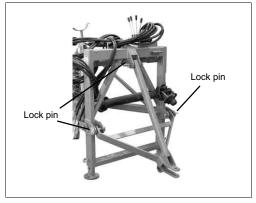


Attention! Moving the equipment

- The equipment must be moved with a farm tractor which meet Tractor specifications. Refer to the Technical data on Tractor specifications.
- The equipment has no braking system. It is designed to be towed strictly on the field by a farm tractor.
- · Never travel on hillsides.
- The hitch, tires, wheels, hubs and axles of the equipment are designed for agricultural use only. They are not approved to be towed at any speed above 8 km/h (5 mph).
- If the equipment needs to be towed on public road, the owner must adapt the equipment in accordance with local towing safety regulations.
- For long distance transportation, use a truck or truck and trailer approved for public roads.
- Position the optional wheels under the agitator main frame near the impeller housing.
- Attach the wheel assembly using lock pin.



• Install the optional tow bar on the agitator 3-point hitch using lock pins.



- Back up the tractor close to the tow bar.
- Apply tractor safety brakes.
- Hook the agitator to the tractor tow bar.
- Remove the jack from the agitator.
- Secure all hoses, wires, PTO driveline and accessories on the equipment.
- Move the equipment.

7.4.4 Agitation



WARNING!

Never operate the equipment without being connected to the tractor 3-point hitch. It is mandatory to connect 3-point hitch to ensure stability and safe operation.



WARNING!

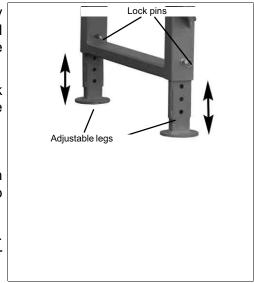
Agitating a pit in one way will create a flow. Once created, never attempt to change the flow direction by running the propeller against the flow. This may result in tractor instability and serious injuries.



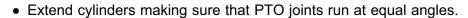
Note!

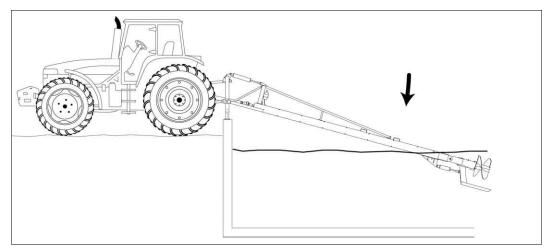
Depending on type of manure and other conditions, it may be advisable to repeat the agitation process every few hours to ensure solids are kept in suspension.

- Make sure to open articulation ball valves before operating the agitator.
- Lift the agitator using the tractor 3 point hitch.
- Activate each hydraulic component to ensure proper operation.
- Locate the most liquid area of the main storage to insert the agitator.
- Back the agitator into this area.
- Lower the propeller into the manure. The operator may need to break through a crust by moving foward and reverse.
- Position the agitator making sure that the adjustable legs can be seated on a solid surface.
- Once the agitator is positionned, apply tractor safety brakes, install wheel chocks behind tractor wheels and lift the 3 point hitch.
- Lift the 3-point hitch to remove the lock pin and release the hitch adjustable legs.
- Lower the legs to a solid surface.
- Lower slowly the 3-point hitch to align lock pin holes. Reinstall the lock pins to secure legs.
- Lower the 3 point hitch on the ground.
 The legs will support most of agitator weight.

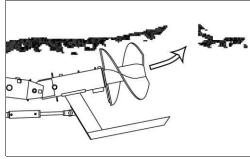


 Using hydraulic control, extend articulations cylinders to lower the agitator into the pit. Lowers until the propeller is fully immerged.

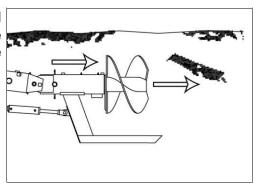




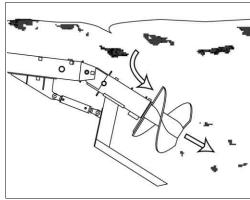
- Engage the PTO at minimum RPM.
- Gradually increase the PTO to 540 RPM;
- Use hydraulic controls to mix the entire storage as shown below:
- Articulate the propeller to break the crust from underneath.



 Articulate the propeller into horizontal position to create a swirl in the storage and also clear the immediate surrounding.



• Articulate the propeller towards bottom to homogenize all the content.



- Using the controls, agitate the content of the pit. In larger manure storage, move the agitator to another area to complete agitation in minimal time.
- When the whole content of the pit is mixed, gradually decrease the PTO to minimum RPM.
- Turn off the agitator.

8 Operating faults

If necessary, please contact your nearest authorized technical dealer.

8.1 Special personnel qualification required for troubleshooting

Troubleshooting may only be performed by specially qualified personnel in accordance with the safety instructions.

8.2 Safety instructions for troubleshooting



WARNING!

Read Instructions First! To prevent serious injury or death, do not operate or service this machine without first reading and understanding the instruction manuals for all of the equipment. If these manuals are lost, contact your nearest dealer or the manufacturer for replacements.

To prevent damage to property and/or life-threatening injury to personnel always observe the following:

- First of all, prevent the product from being restarted accidentally.
- Secure the range of action for any moving parts.



Also read the chapter on "Safety".

Special dangers involved in troubleshooting:

- Hydraulic hoses failures may cause unexpected movements.
- The careless use of personal protection equipment could result in serious physical injury.
- Unsecured manual operation could result in a higher risk of injury caused by crushing/shearing/being pulled in/...

8.3 Troubleshooting possible faults

Symptom	Possible cause	Remedy	
Agitator is not agitating	Broken PTO shear bolts.	Replace PTO shear bolts.	
properly or not at all.	PTO driveline has a defective joint or is disconnected.	Inspect the drive line.	
	Broken shaft in drive line.	Replace.	
	Manure too thick	Refer to section on Consistency test;	
	Obstruction in the propeller.	Lift the agitator and clear the obstruction.	
	Worn out propeller/knife	Replace part.	
	Lack of lubrication	Refer to section on Scheduled maintenance responsabilities;	
Hydraulic system overheats or erratic operation.	Wrong connection.	Read instruction and consult tractor manual.	
Vibration in the driveline.	The PTO joints are out of alignment.	Refer to section on Safety instruction for operation;	
Vibration	Foreign material wrapped on	Remove foreign material;	
	propeller	Refer to section on Repairs to adjust the knife kit;	
Long straw not chopped	Knife kit not cutting	Adjust knife kit and propeller.	
Hydraulic articulations elements do not work.	Tractor hydraulic oil level too low.	Check hydraulic oil level.	
	Hydraulic quick connector is defective.	Replace.	
Tractor RPM meter unstable	Tractor size too small.	Need a bigger tractor.	
or too high to reach performance.	Manure too thick.	Refer to section on Consistency test;	

9 Maintenance

If necessary, please contact your nearest authorised technical dealer.

9.1 Special personnel qualification required for maintenance work

Maintenance work may only be performed by specially qualified personnel in accordance with the safety instructions.



Also see the section on "Personnel qualification".

9.2 Safety instructions for maintenance



WARNING!

Read Instructions First! To prevent serious injury or death, do not operate or service this machine without first reading and understanding the instruction manuals for all of the equipment. If these manuals are lost, contact your nearest dealer or the manufacturer for replacements.



WARNING!

Rotating driveline keep away!



Turn off the tractor and apply parking brake before lubricating, cleaning or servicing the equipment.



WARNING!

Always remove the equipment from the reservoir before servicing.

To prevent damage to property and/or life-threatening injury to personnel always observe the following:

- Only use original spare parts / original wearing parts / original accessories.
 In the case of products by other manufacturers it cannot be ensured that they have been designed and produced from the point of view of loads and safety.
- All of the steps involved in the maintenance work must be worked through in the order specified.
- The maintenance work specified in the instructions (adjustment, cleaning, lubrication, inspection, etc.) must be performed at the specified frequency.
- Maintenance work should only be performed with the tools envisaged for this purpose.
- Note the special information in this manual for the individual components.
- All warnings and warning signs must be present and legible.
- Immediately replace any components that are not in perfect condition.



Also read the chapter on "Safety".

Before carrying out any maintenance work, make sure of the following:

- Set equipment down on level solid area, apply the tractor parking brake and shut off tractor motor before lubricating, cleaning, performing maintenance on agitator.
- The area for the maintenance work and access to the working area should be secured over a wide area and there should not be any unauthorized people in the working area.
- There are suitable hoists and load suspension devices available for changing larger parts.
- That suitable collection vessels are available for all substances that might be harmful to the ground water (oils, coolants, cleaning and disinfecting agents, etc.)

Special risks involved in maintenance work:

- Serious damage to property may occur if incorrect replacement or wearing parts are installed.
- If energy sources are switched on unintentionally, this may lead to serious bodily injury or damage to property.
- There is a risk of injury from components/tools... with accessible sharp edges.
- There is a fire hazard associated with welding, cutting and grinding work.
- Injury can be caused by contact with leaking liquids.
- Serious injury to personnel or damage to property can be caused if the incorrect torque is applied when tightening screws.
- Hydraulic hoses failures may cause unexpected movements.
- Unsecured manual operation means a higher risk of injury due to crushing/shearing/being pulled in/...

After completing the maintenance work, check the following:

- Replace all guards, cover,... removed for maintenance.
- That all safety devices are in good working condition.
- Remove from the working area all the tools, materials and other equipment.
- Remove and clean oil, grease, parts from the working area.
- The operation making sure all is working properly.

9.3 Scheduled maintenance responsibilities

Interval	Description	Action (by)
As per PTO manufacturer recommendations	Grease the PTO driveline (European model)	Lubricate (Operator)
	Check oil level in the oil tank	Check/fill (Operator)
Before each working day	Grease bearing housing	Lubricate (Operator)
before each working day	Check oil in the oil bath	Check/fill (Operator)
	Check the knife kit	Check (Operator)
After each working day	Clean the equipment	Clean (Operator)
Alter each working day	Lubricate the equipment	Lubricate (Operator)
Every 5 hours of operation	Grease the PTO driveline (American model)	Lubricate (Operator)

9.3.1 As per PTO manufacturer recommendations

Grease the PTO driveline (European model only)



Note!

In order to grease PTO driveline properly, refer to the PTO driveline instruction manual and follow PTO manufacturer's recommendations.

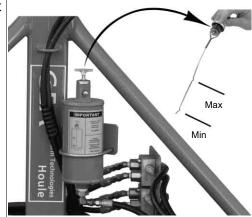
9.3.2 Before each working day

Oil in the oil tank

Note!

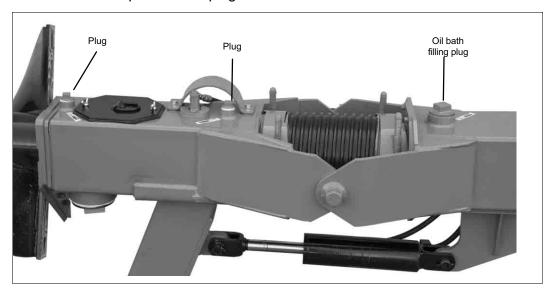
Use SAE 80W90 gearbox oil

- Make sure the oil in the oil tank is at proper level.
- Add SAE 80W90 gear oil if necessary.



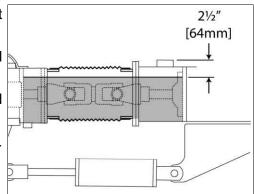
Grease bearing housing

- Remove all plugs identified below to get access to greases zerks.
- Lubricate and put back all plugs.



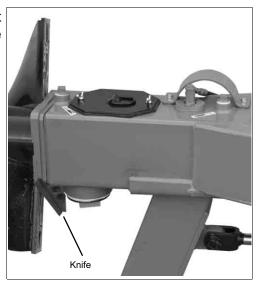
Oil in the oil bath

- Make sure the oil in the oil bath is at proper level.
- Position the equipment on a horizontal flat and firm surface.
- Remove the oil bath filling plug and mesure the oil level as shown.
- Add SAE 80W90 gear oil if necessary.
 Do not overfill.
- Put the plug back on.



Inspect the knife kit

 Check the propeller and knife kit wearing. If required, replace boltable knife.



9.3.3 After each working day

Clean the equipment



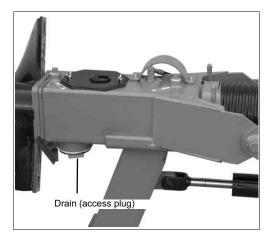
Attention!

Pressure washer may damage the paint if it is not used properly. Use pressure washer not exceeding 2000 psi [105 bar]. Only use cold water when cleaning with a pressure washer. Keep the pressure washer nozzle at least 1 ft [30 cm] from the surface to be cleaned.

• Pressure wash the entire equipment.



- To prevent corrosion, spread a film of oil on all moving parts.
- Visually check over the equipment for loosen bolts, clamps, wear on propeller. Replace if needed.
- Open the drain.



Lubricate the equipment



Note!

Use EP2 mineral grease

• Grease all parts labeled with;



9.3.4 Every 5 hours

Grease the PTO driveline (American model only)



Note!

Use specified grease or equivalent: Red Texas 880 crown and chassis® grade 0 (2010-4300-790)

• Grease the sliding part and all greasing points of the power take-off.



9.4 Repairs

PTO driveline shear bolts (American model only)

Tractor PTO	Part No.	Dimensions	Grade	Quantity
1-3/8" - 6 splines	2010-2404-670	3/8"-16NC x 1	8	2
1-3/8" - 21 splines	2010-2404-010	3/8"-16NC x 1	2	2
1¾" - 20 splines	2010-2404-670	3/8"-16NC x 1	8	2

Knife replacement



WARNING!

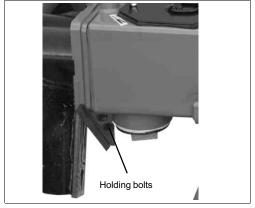
Turn off the tractor, apply parking brake and remove the PTO driveline before replacing the propeller knife.



CAUTION!

Always wear safety gloves when handling the propeller knife. The sharp edges of the knife kit may result in injuries.

- Remove holding bolts.
- Replace knife and reinstall holding bolts.
- Tighten the holding bolts. Refer to section on bolt torque chart.



10 Decommissioning

10.1 Special personnel qualification required for decommissioning

Decommissioning may only be performed by specially qualified personnel in accordance with the safety instructions.

10.2 Safety instructions for decommissioning

To prevent damage to property and/or life-threatening injury to personnel always observe the following:

- The steps involved in the decommissioning work must be done in the order specified.
- The operating area for decommissioning must be safe.



Also read the chapter on "Safety".

Special dangers involved in decommissioning:

- Leaking lubricants, solvents,... could cause injury if they come into direct contact with the skin and could make the floor surface slippery which could result in dangerous fall.
- Components which have not been removed correctly may fall off or twist.
- There is a risk of injury from open components / tools /.... with sharp edges.
- Suspended loads can fall and then there will be a risk of death do not stand underneath suspended loads!
- Using load suspension devices other than those specified here may result in serious injury to people and damage to property.

10.3 Temporary decommissioning



WARNING!

Rotating driveline keep away!



Turn off the tractor and apply parking brake before lubricating, cleaning or servicing the equipment.

Storage

- Install the stability support on the arm under the propeller.
- Place the equipment on a horizontal flat and firm surface.



Attention!

Pressure washer may damage the paint if it is not used properly. Use pressure washer not exceeding 2000 psi [105 bar]. Only use cold water when cleaning with a pressure washer. Keep the pressure washer nozzle at least 1 ft [30 cm] from the surface to be cleaned.

- Pressure wash the entire equipment.
- Place a container under each drain to collect accumulation.



Open the drain.

Grease the PTO driveline (European model only)



Note!

In order to grease PTO driveline properly, refer to the PTO driveline instruction manual and follow PTO manufacturer's recommendations.

Grease the PTO driveline (American model only)



Note!

Use specified grease or equivalent: Red Texas 880 crown and chassis® grade 0 (2010-4300-790)

• Grease the sliding part and all greasing points of the power take-off.



Lubricate the equipment



Note!

Use EP2 mineral grease

Grease all parts labeled with;





Refer to section on Label position

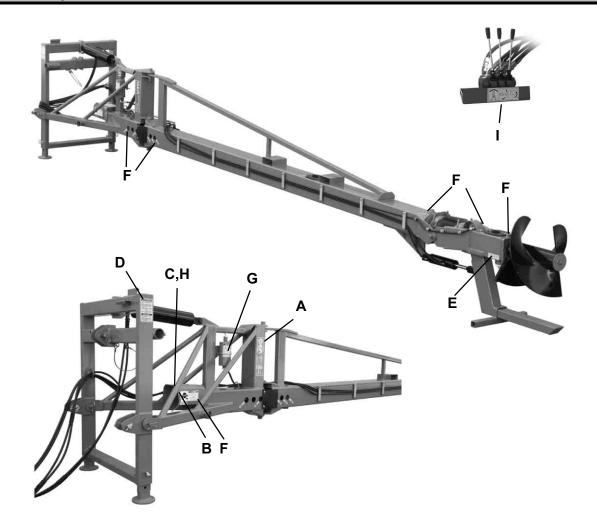
• To prevent corrosion, spread a film of oil on all moving parts.

10.4 Final decommissioning/disposal

After final decommissioning, handle all components properly and dispose of them in accordance with valid local regulations on waste disposal and utilisation.

11 Appendix

11.1 Label position



A	US + EU GEA Form Technologies Houle 2010-4703-660	В	us 2099-4720-010	С	2099-4720-020
D	A WARNING - Secretary of Control	E	VIDANGER APRÈS USAGE DRAIN AFTER USE 2010-4701-590	F	us + eu 2099-4701-240
	2099-4725-100	G	us + EU <mark>∕≰ 80W90</mark> 2099-4725-310	Н	US + EU 540 rpm 2010-4703-430
J	US + EU				
	2010-4703-830				

US = American label / EU = European label

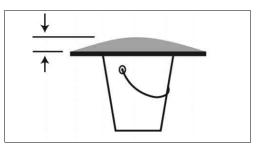
11.2 Abbreviations

Units	
@	at
٥	Degrees (angles)
CE/ EC	European Union
cm	Centimeters
CW	Clockwise
CCW	Counterclockwise
gal	Gallon
Нр	Horsepower
" (in)	Inch (= 25.4 mm)
Inc	Incorporated
kg	Kilograms
km/h	Kilometers per hour
L	Left or liters
lbs	Pounds
m	Meter
mm	Millimeters
max	Maximum
min	Minimum
mph	Miles per hour
NC	National coarse thread
PTO	Power take-off
QC	Quebec (Canada)
R	Right
RPM	Revolutions per minute
SAE	Society of Automotive Engineers
us/ USA	United States of America
www	World wide web

11.3 Consistency test

Friction loss in pipes is related in part to the consistency of the liquid manure. The following test must be performed to find the viscosity of well-agitated slurry.

- Set a 24" (60cm) disc over a pail.
- Slowly pour enough slurry to get overflow all around the disc.
- After 1 minute of rest, measure the thickness of slurry at the center of the disc.

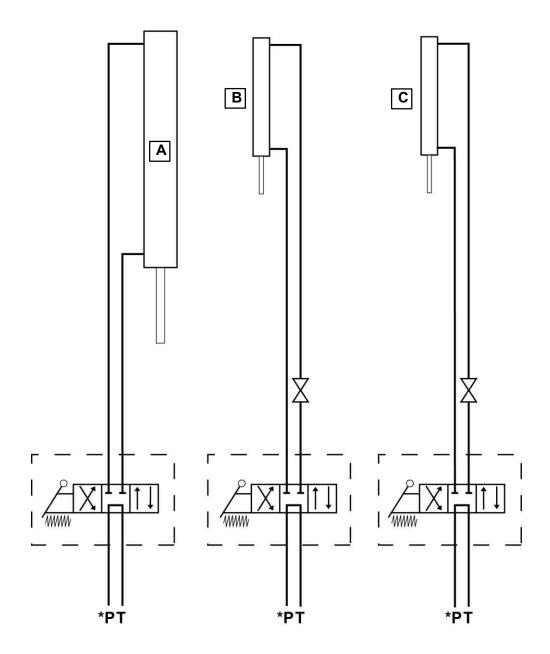


11.4 Hydraulic diagrams1



Note!

The diagram illustrates all hydraulic controls available on the equipment. The dashed frame shows a component equipped with a control lever.



* All components equipped with a control lever may be connected togheter using the same tractor outlet.

Α	Articulation Pivot Cylinder				
В	40° Propeller Articulation Cylinder				
С	60° Sideways Articulation Cylinder (optional)				

Hydraulic diagrams

GEA Farm Technologies The right choice.



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