



GEA Farm Technologies

3-point Agi-Pompe® for Above Ground Tank PTO pumps

**Instruction Manual / Installation Instructions
(Original instructions)**

**2010-9015-009
08-2011**

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.

- It is designed modular and is 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.

We reserve 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.

1.2 Manufacturer's address

GEA Houle Inc.
4591 boul. St-Joseph
Drummondville, Qc, J2A 0C6
 +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.

There is a comprehensive dealer Internet search function on our website at the following address:

- www.gea-farmtechnologies.com

European Contact Information:

GEA Farm Technologies GmbH
Siemensstraße 25-27
D-59199 Bönen
 +49 (0) 2383 / 93-70
 +49 (0) 2383 / 93-80
 contact@gea-farmtechnologies.com
 www.gea-farmtechnologies.com

US Contact Information:

GEA Farm Technologies, Inc.
1880 Country Farm Dr.
Naperville, IL 60563
 +1 630 369 - 8100
 +1 630 369 - 9875
 contact_us@gea-farmtechnologies.com
 www.gea-farmtechnologies.com

1.4 Declaration of Incorporation

Declaration of conformity in accordance with the machinery directive:
2006/42/EC- Annex:II B

Manufacturer:	GEA Houle Inc. 4591 boul. St-Joseph Drummondville, Qc, J2A 0C6
Product category:	
Name / Model:	
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:	
<ul style="list-style-type: none"> • Harmonized European standards <ul style="list-style-type: none"> EN 349 (2009-01) Minimum distances to prevent pinching parts of the body EN 809 (2009-06) Pumps and pump units for fluids - general safety requirements EN 894 Safety of machinery - Ergonomics requirements for the design of displays and control actuators. EN 953 (2009-07) Safety of machinery Separating safety devices EN 1050 Machine safety guidelines on risk assesment EN 1152 Tractors and machinery for agricultural and forestry - Guards for power take-off (PTO) drive shafts - Wear and strength tests EN 1153 Agricultural machinery - Agricultural self-propelled mounted, semi-mounted and trailed machines - Common safety requirements EN 12100-1 (2009-10) Machine safety, basic terms, general design guidelines. Part 1: Basic terminology, methods EN 12100-2 (2009-10) Machine safety, basic terms, general design guidelines. Part 2: Technical guidelines and specifications EN 12162 Liquid pumps - Safety requirements - Procedure for hydrostatic testing 	
<p>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 based.</p>	
Person responsible for compiling the relevant technical documents:	Josef Schröer GEA Farm Technologies GmbH Siemensstraße 25-27 D-59199 Bönen ☎ +49 (0) 2383 / 93-70
Drummondville, 01.08.2009	 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	
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 WARRANTY 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 (5°C/41°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) and sign to confirm that they have understood them and will act in accordance with them!
- A full set of legible instructions is always kept by the product.
- 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.
- The owner has to produce operating instructions for the farm which are especially adapted to the conditions of his business, once again expressly taking account of the safety aspects.
- The product
 - Should only be used for its intended purpose.
 - Should only be used if it is in perfect operating condition and, in particular, the safety equipment should be regularly checked to make sure it is in perfect operating condition.
- 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. The successful completion of training is to be confirmed in writing.
 - All safety or warning instructions applied are not removed and remain legible.
 - 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.
-

- Escape routes are marked by means of signs in accordance with national regulations!
- The personal protective equipment required for personnel carrying out operation, maintenance and repairs is made available and used.
- No one must enter into a manure pit at any time.
- The "Safety Procedures for Confined Spaces" are always followed before operating or maintaining the pump. These safety procedures clearly explain the risks associated with manure, procedures for a safe access to work spaces and the minimum ventilation requirements to ensure the safety of humans and livestock. Find local safety procedures for confined spaces using Web Site 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

- Unauthorized persons (e.g. children) are not allowed in hazardous areas and do not have access to cleaning agents or disinfectants.
- All guard are kept in place.
- Hands, feet and clothing are kept away from all moving parts.
- No one stands close to moving parts before starting the equipment.
- Never allow bystanders to stay close to the pump when it is lifted and / or in operation.
- The equipment is stopped before lubricating, maintaining and adjusting.

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!

Manure produces toxic gases that can cause a loss of consciousness, asphyxia or death in a few seconds.



Manure agitation can produce toxic gases in buildings built above the pit. Toxic gases can also emanate in buildings situated by the pit and / or connected to the pit by an evacuation line.



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.



Attention!

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

2.3 Basic safety instructions



DANGER!

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



Attention!

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

- There are risks involved in the operation and maintenance of equipment for dairy farms. For your own safety, read and follow the operating manual carefully (especially the section entitled "Safety information")!
- The chapter on "Technical data" gives the permissible working conditions (pressure ranges, temperature ranges, airflow quantities etc.) and these must be observed!
- Do not open or dismantle devices (risk of injury)!
- Do not remove any protective devices (risk of injury)!
- When working with products from other manufacturers always observe the warnings from the safety data sheets and operating instructions from the product manufacturer!
- Do not stand underneath suspended loads.

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!

- Participation in corresponding product training is necessary.
- In principle, any work on hydraulic and pneumatic equipment may only be carried out by specialist personnel who have received the necessary training.

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

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



Attention!

Particular qualifications are described in the corresponding chapters!

2.5 Protective devices

- Protective devices

Protective guard for power take off driveline
(part no.) European

Safety cap
(part no. 2010-7704-670)



- Safety symbols, warnings, warning signs and labels



Danger! - Toxic gases (American model)
Manure produces toxic gases that can cause loss of consciousness, asphyxia or death in few seconds.
(part no. 2099-4720-010)



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



Danger! (American model)
Before removing this cap, stop the pump.
Actuate directional valve cylinder a few times in order to relief pressure from the discharge pipe.
(part no. 2099-4720-070)



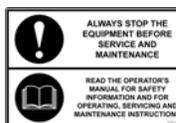
Danger! (European model)
Before removing this cap, stop the pump.
Actuate directional valve cylinder a few times in order to relief pressure from the discharge pipe.
(part no. 2099-4725-090)



Danger!
Keep all articulated components away from electric power lines.
(part no. 2099-4725-070)



Warning!
Always stop the equipment before servicing and maintenance.
Never adjust the equipment while it is running.
Keep all shields and guards in place.
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)



Warning!
Always stop the equipment before service and maintenance.
Read the operator's manual for safety information and for operating, servicing and maintenance instructions.
(part no. 2099-4725-110)

540 rpm 10-07-004 **Maximum 540 RPM**
(part no. 2010-4703-430)

1000 rpm 10-07-004 **Maximum 1000 RPM**
(part no. 2010-4703-440)

3 Description

3.1 Correct applications

GEA Houle products and equipment are designed exclusively for agricultural livestock farms.

3-point Agi-Pompe® for Above Ground Tank is exclusively designed for:

- To homogenize and transfer liquid manure containing long bedding and bottom sediments.
 - Maximum consistency for agitation is 1½" [38 mm]
 - Maximum consistency for transfer is ¾" [19 mm]
- The pump is designed to be used with an above ground manure tank.

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

We would like to point out that the following in particular are prohibited:

- Processing substances other than manure and water through the pump.

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.

- The manufacturer expressly points out that only original parts and original accessories have been adapted, tested and authorized for use with the product.
- 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.

Parts and special equipment which have been obtained elsewhere must be expressly authorized by GEA Houle, in writing, for use in GEA Houle components and installations.

3.3 Design of the equipment

Design

The 3-point Agi-Pompe® for Above Ground Tank consists of:

- a vertical pump fixed on an outside member attached to the 3-point hitch on a farm tractor.
- a hydraulic tilting pivot allowing to pass the vertical pump over an above ground tank wall.
- a propeller which chops fibers in manure.
- an adjustable nozzle to homogenize manure.
- a directional valve to divert the flow to either the agitation nozzle or the discharge line.

Drive

The pump is driven with a PTO shaft connected to the tractor.

3.4 Functional description

3-point Agi-Pompe® for Above Ground Tank

- A farm tractor is used to move the pump.
- Hydraulic hoses from the pump assembly are connected to the tractor to operate the cylinders and motors as well as the hydraulic controls.
- The pump is positioned adjacent to an above ground manure storage tank.
- The pump assembly has an articulating joint to allow the pump to be raised up and over the side of an above ground manure tank.
- The pump is driven with a PTO shaft connected to the tractor.
- The pump will agitate, chop and transfer manure from an above ground manure tank.
- The pump has a directional propeller which chops fibers in manure.
- The agitation nozzle is adjusted up and down plus rotated side to side to homogenize the manure in the pit.

3.5 Technical Data

Performance data

With 24" propeller - impeller 20" X 6 blades - 12" intake and 6" discharge.



Note!

Ratio shown below is for the top gearbox of the pump main frame.
 The ratio of the propeller gearbox is normally -35%.
 The ratio of the 2 gearboxes of the outside member is always 1 to 1.

RPM/ ratio	Horsepower	Nozzle diameter	Nozzle pressure	Shut-off pressure	Maximum head *
540 / 1:1	70	3" [76 mm]	16 psi [1.1 bar]	18 psi [1.2 bar]	29 ft [8.8 m]
540/ +10%	85	3" [76 mm]	20 psi [1.4 bar]	22 psi [1.5 bar]	36 ft [11.0 m]
540/ +26%	105	3" [76 mm]	26 psi [1.8 bar]	28 psi [1.9 bar]	45 ft [13.7 m]
1000/ -35%	125	3" [76 mm]	30 psi [2.1 bar]	33 psi [2.3 bar]	53 ft [16.2 m]
1000/ -26%	140	3" [76 mm]	35 psi [2.4 bar]	38 psi [2.6 bar]	61 ft [18.6 m]

* Maximum pumping head permitted.

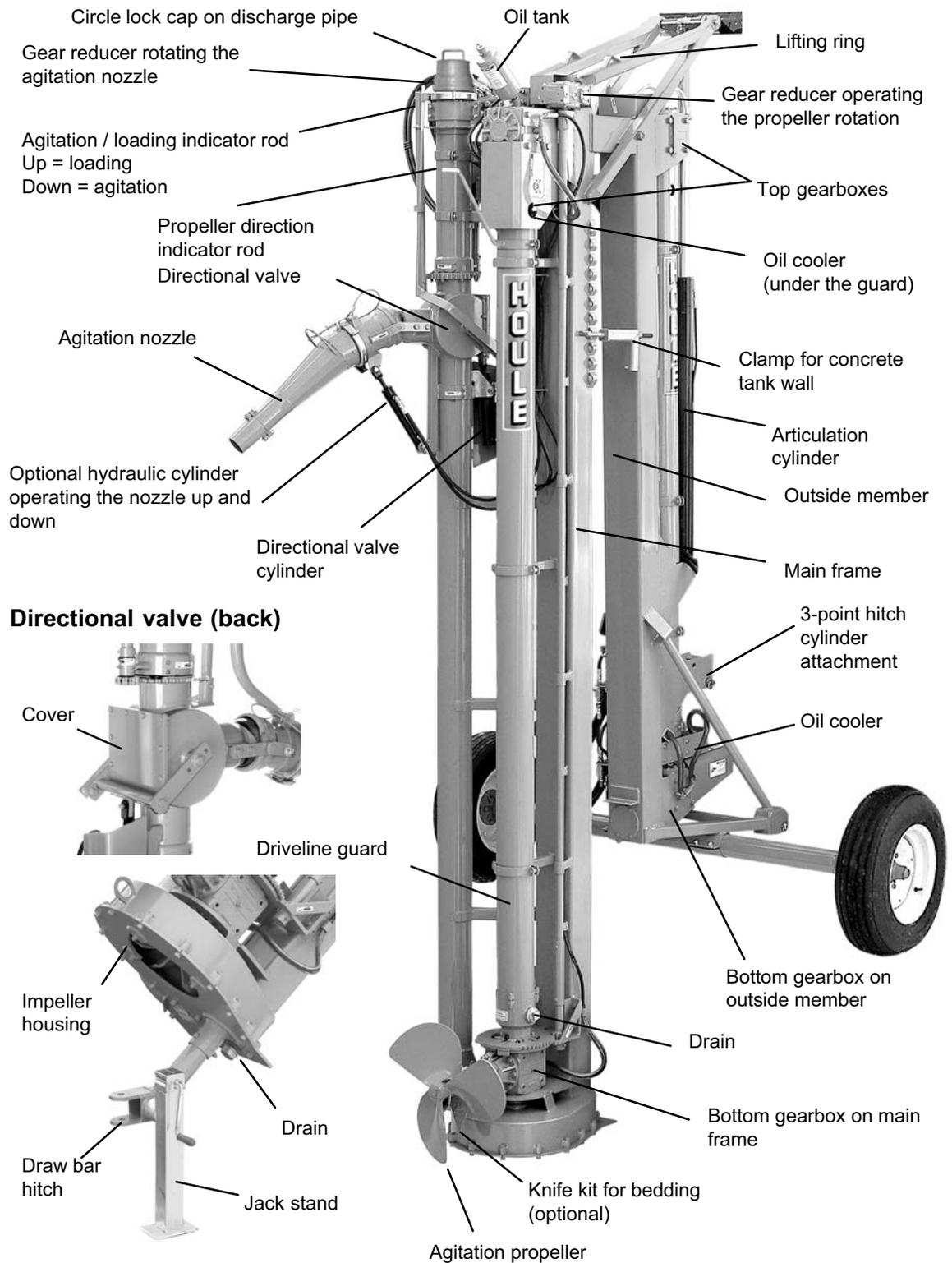
Hydraulic hoses

I.D.	1/4"	1/2"	3/4"
O.D.	0.58"	0.86"	1.10"
Quantity of braids	2	2	1
Service pressure	400 bar (5,800 psi)	276 bar (4,000 psi)	105 bar (1,525 psi)
Service temperature	-40°C to 100°C (-40°F to 212°F)		

Tire

Tire brand	Tire model	Ply	Pressure		Tire dimensions (inches/mm)		Weight (tire without 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

3.6 Main view

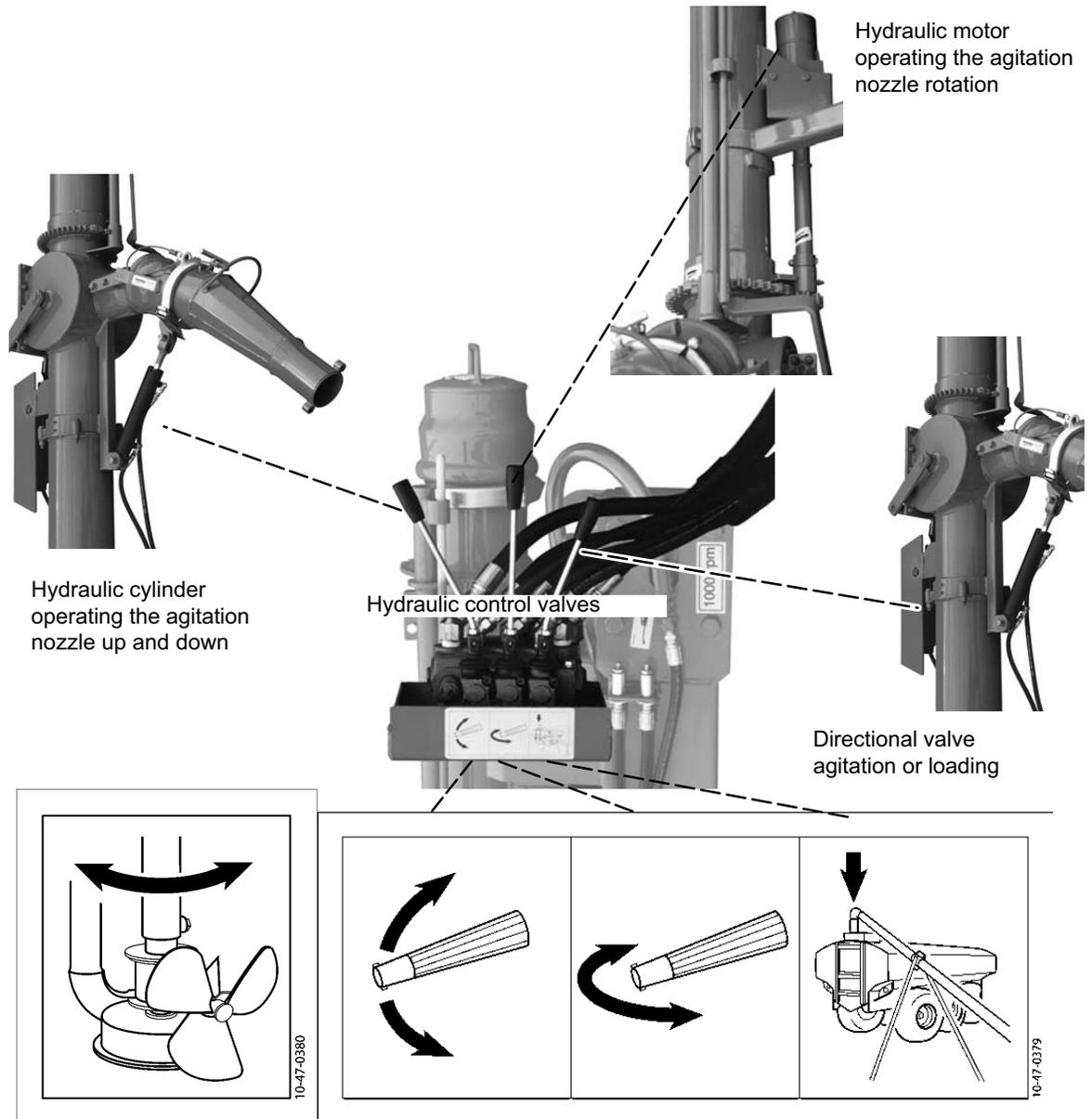


Note!

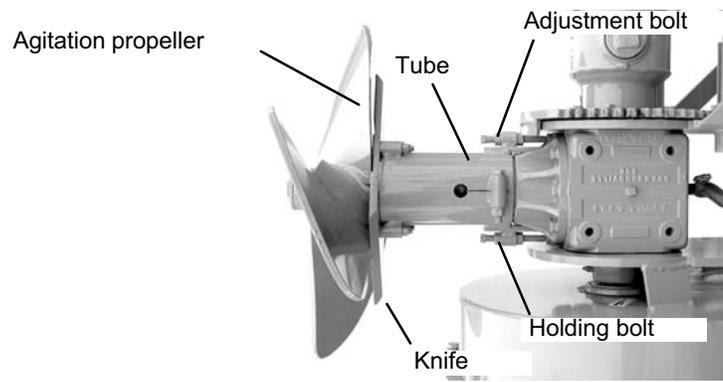
*Standard controls of the agitation nozzle and the rotation of propeller are operated manually.

3.7 Options

Hydraulic controls



Knife kit



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.

- National driver's licence for drive-on machines, stackers and other trucks.

4.2 Safety instructions for transport

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

- Only the load suspension and support equipment indicated here should be used, at the specified support points, for transport.



Also read the chapter on "Safety".

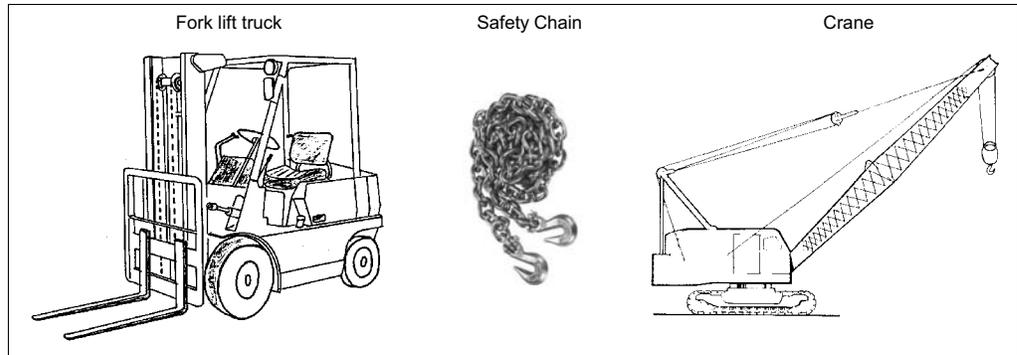
Special transport hazards:

- Projecting sharp edges may cause cuts.
- Suspended loads can fall and then there will be a risk of death - do not stand underneath suspended loads!
- Parts which are stacked too high can collapse.
- 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.
- There is a fire hazard due to the highly inflammable packing material - naked flames and smoking prohibited!
- If lubricants, preservatives, ... are not kept upright during transportation they can leak out and there is a risk of irritation if they come into direct contact with the skin.

4.3 Permissible devices and aids for transportation

The Pump is made up of heavy components.

Appropriate lifting gear and carrying devices such as, chain hoist, safety chain, fork lift truck or front loader is to be provided.



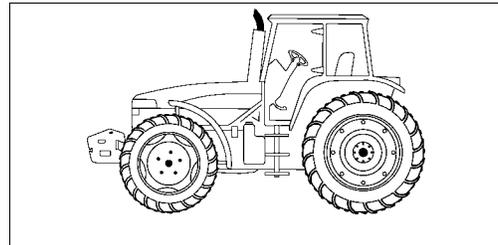
DANGER!

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

Travel (short distances)

The pump must be moved with a farm tractor.

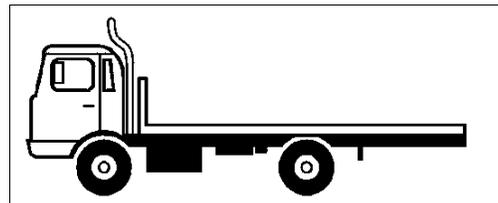
- Minimum towing capacity of;
4,400 lb [2000 kg]
- Maximum speed;
25 mph [40 km/h]



Travel (long distances)

For long distance transportation, use a truck or truck and trailer approved for public roads.

- Minimum towing capacity of;
4,400 lb [2000 kg]



4.4 Transport



Attention! Moving the pump

- The pump must be moved on a farm tractor with a minimum towing capacity of 4,400 lb [2000 kg].
 - The hitch, tires, wheels, hubs and axles of the pump are designed for agricultural use only. They are not approved to be towed at any speed above 25 mph [40 km/h].
 - For long distance transportation, use a truck and trailer approved for public roads.
 - The pump has no braking system. It is designed to be towed strictly by a farm tractor.
 - If a pump needs to be towed on a public road, use a farm tractor strong enough to easily tow and safely brake under the weight of the pump. The pump must be equipped with signal lights and reflectors recommended by the Standard ANSI/ASAE S279.12 or better if required by local laws.
-

4.5 Includes

Check the goods supplied against the packing list enclosed for completeness and damage.

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 utilization.

5 Installation

If necessary, please contact your nearest authorized technical dealer.

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



DANGER!

Read Instructions First! To prevent serious injury or death, do not operate or service this machine without first reading and understanding the operator's 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 installation, look for any damage caused during transport. Do not use damaged components!
- Use only the special tool indicated for assembly.
- In particular, make sure that the tightening torques specified are complied with.



Also read the chapter on "Safety".

Special hazards during installation:

Any on/off or emergency stop switches are to be fitted with a lock to immobilize them in the open position and a warning sign is to be put up.

- Components which have not been removed correctly may fall off or twist
- Parts loosely placed on top of each other can slip and fall off.
- Components with sharp edges which are still open and accessible represent a source of injury.
- Depressurize hydraulic/pneumatic components before working on them!
- Faulty pressure pipes and connections can lead to serious physical injury.
- Cleaning and disinfecting agents which are not connected properly may lead to caustic burns and the formation of gas.
- Leaking lubricants, solvents, preservatives, can cause injury if they come into direct contact with the skin.
- Serious injury to personnel or damage to property can be caused if the incorrect torque is applied when tightening screws.

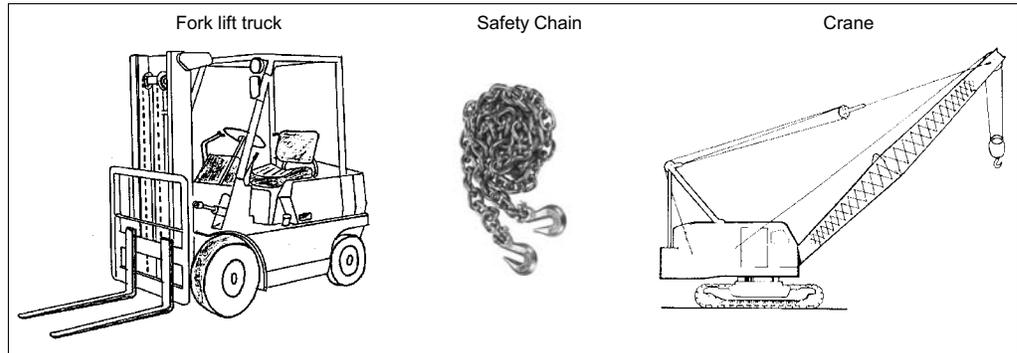
5.3 Assembly preparations



Attention!

To lift the pump and steady in place when assembling, use a lifting device with a minimum capacity of;
4,400 lb [2,000 kg].

Special tools



Local purchased items

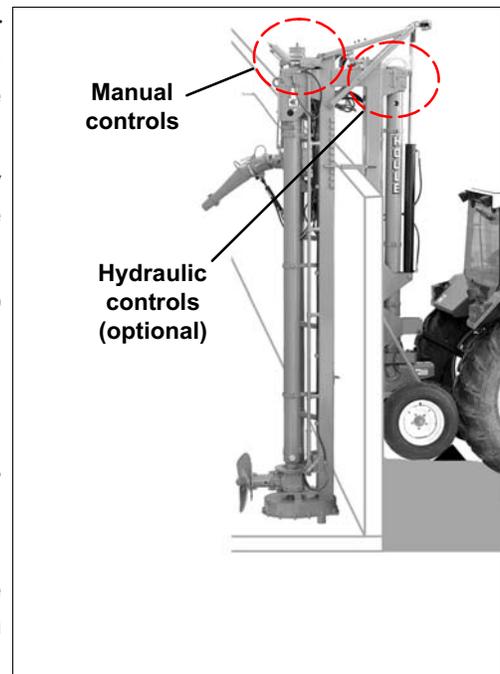
The control levers installed on the upper part of the pump can only be activated when the pump is positioned over the tank wall.

To reach these controls, a balcony (provided by the pit owners) must be fixed on the tank wall.

The balcony must be constructed to meet all local requirements regarding worker safety.

The balcony must be positioned to;

- Enable the operator to safely access the control levers while staying within the confines of the balcony.
- Permit the operator to observe the inside of the tank while staying within the confines of the balcony.



5.4 Pump assembly



Attention!

To lift the pump and steady in place when assembling, use a lifting device with a minimum capacity of;
4,400 lb [2,000 kg].

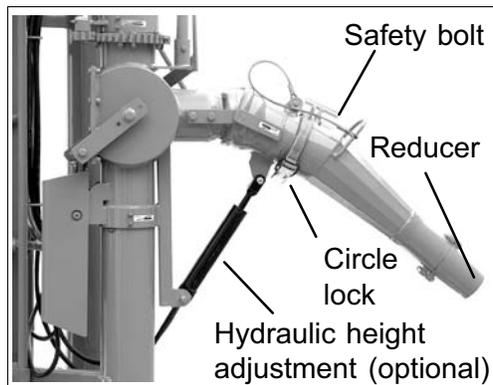
Agitation nozzle, propeller direction indicator rod and 3-point hitch cylinder

Install the nozzle on the directional valve.

Point the nozzle towards the ground.

Install the circle lock and tighten the safety bolt to secure the nozzle;

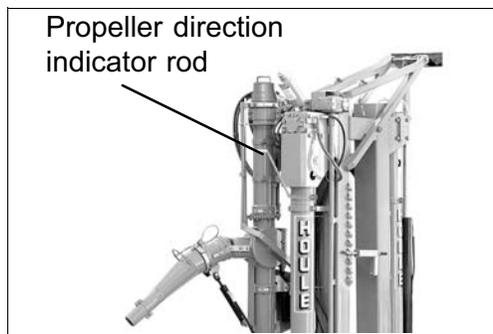
If required, install the reducer at the tip of the nozzle.



Note!

On certain pump models, the reducer is used to increase the pressure of the nozzle to reach farther, cut through thick floating crust material more effectively and/or to decrease tractor horsepower required.

Install the propeller direction indicator rod. The indicator rod must point in the same direction as the propeller.



3-point hitch cylinder

Before installing the 3-point hitch cylinder on the pump, connect the cylinder to the tractor.

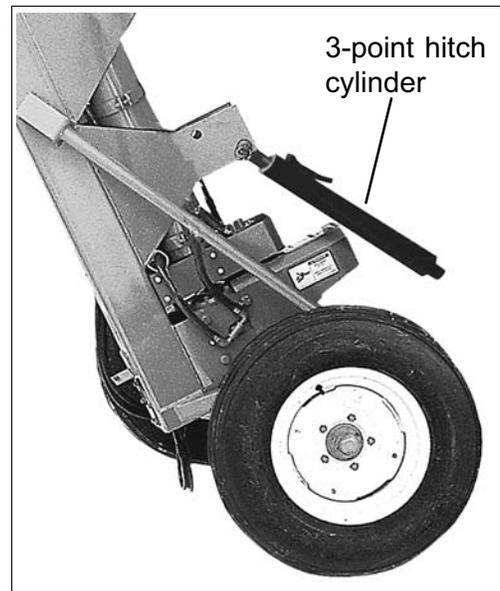
Open the cylinder safety valves.

Operate the cylinder many times at full stroke in order to fill it with oil.

Close the cylinder completely.

Shut off the cylinder safety valves.

Install the cylinder on its mount.

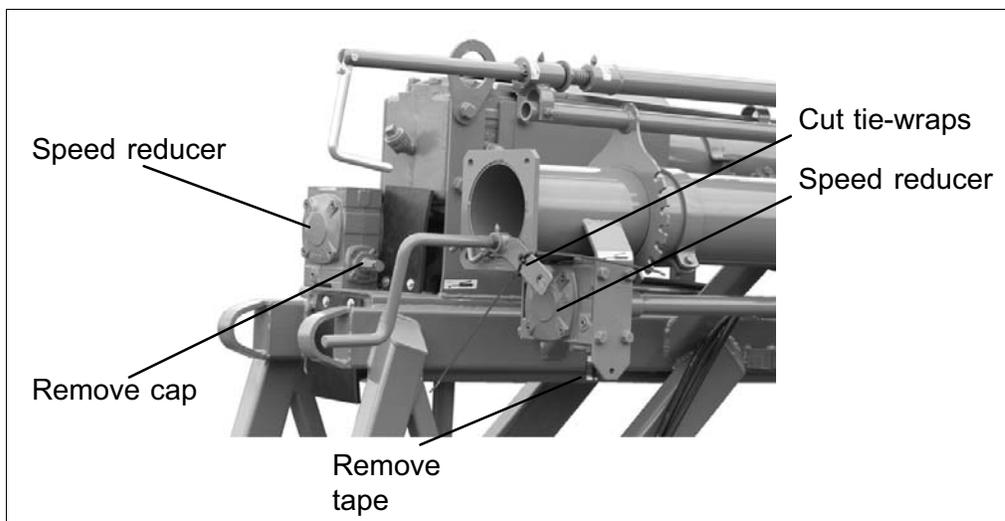


Note!

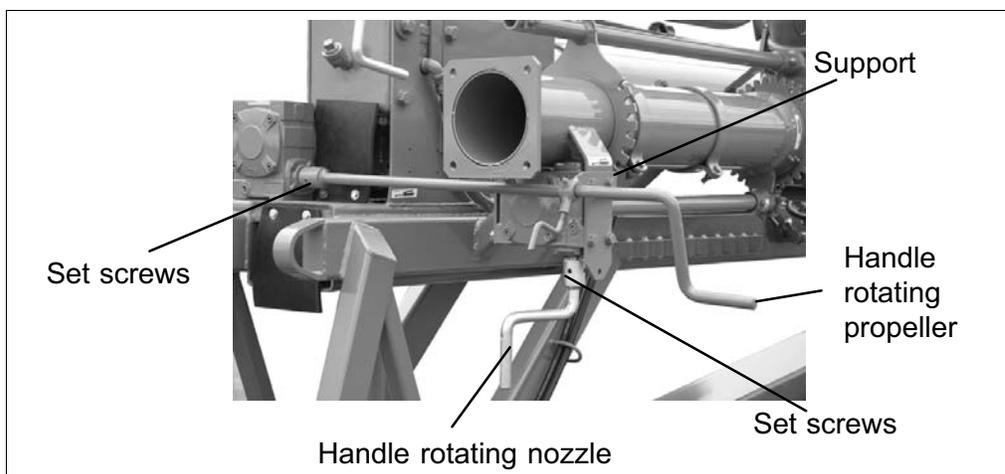
Now check the hydraulic oil level of the tractor.

Manual controls on agitation nozzle

- Remove tape from the speed reducer shaft.
- Remove the cap from the speed reducer shaft.
- Cut tie-wraps retaining the handle inside the discharge pipe.



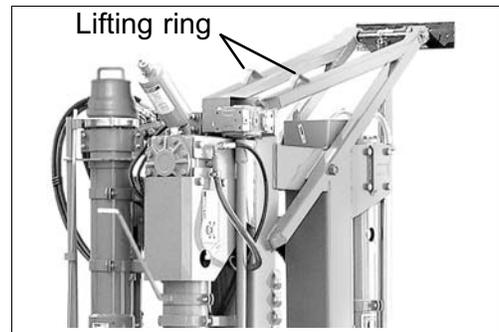
- Install the handle rotating the agitation nozzle and lock it with set screws.
- Install the handle rotating the propeller and lock it with set screws.
- Using existing bolts, install the handle support.



Setting the pump in storage position

Hook the lifting device to the lifting rings on the pump.

Lift the pump upright;

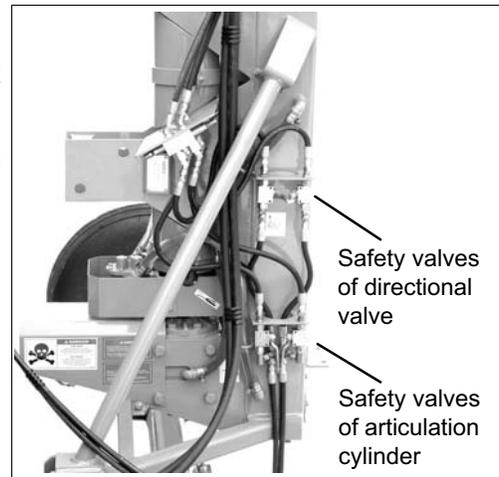


Back up the tractor close to the pump.

Do not hook the pump to the 3-point hitch of the tractor.

Connect the hoses of the articulation cylinder to the tractor.

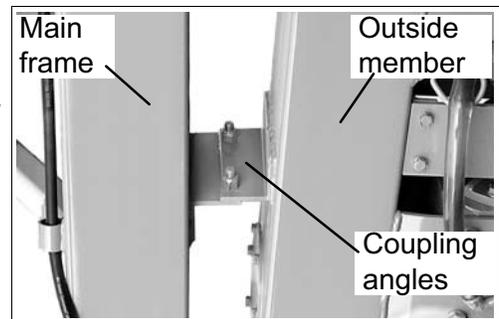
Open the safety valves of the articulation cylinder;



Remove the nuts from the bolts of the coupling angles.

Slowly operate the articulation cylinder to relieve pressure from the bolts of the coupling angles.

Remove the bolts;



Note!

Bolts and nuts can be discarded.

Install the wheels on the axle.



Attention!

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

Tighten the wheel nuts by following the sequence illustrated using a pressure of 122 N/m (90 lbs/foot).

Remove the blocks from underneath the trailer;

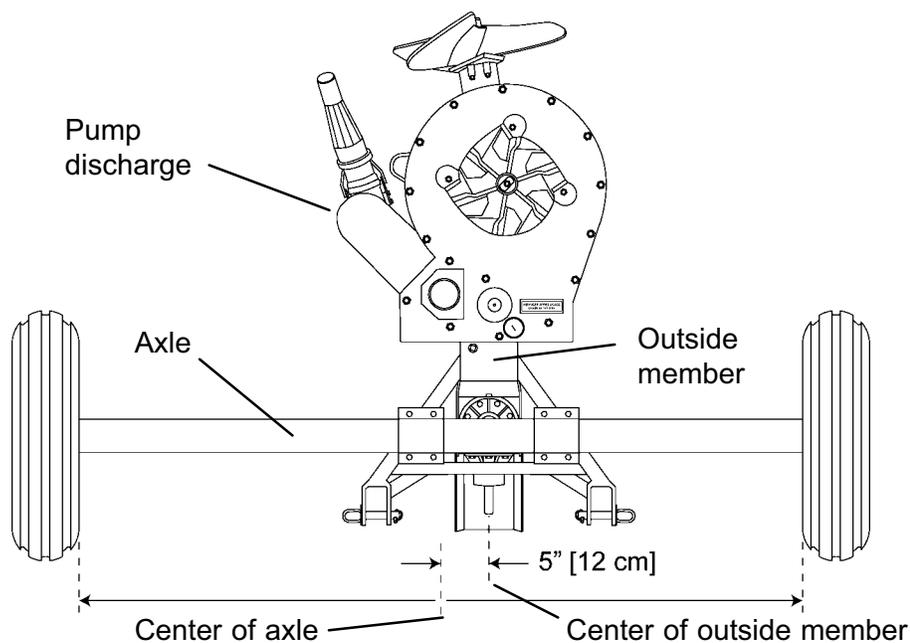


Install the axle on the outside member;



Note!

To evenly balance the weight of the pump on the axle, offset the axle 5" [12 cm] towards the pump discharge.



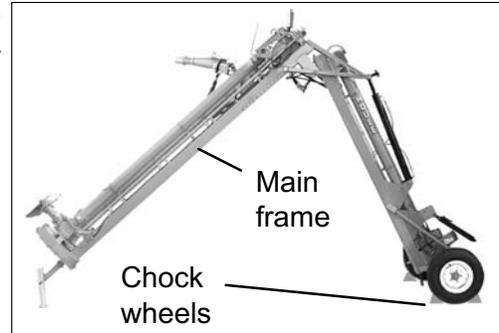
Installation

Information on disposing of installation material after installation is finished.

Operate the articulation cylinder to fully open the main frame and fill the cylinder with oil.

Shut off the safety valves of the articulation cylinder;

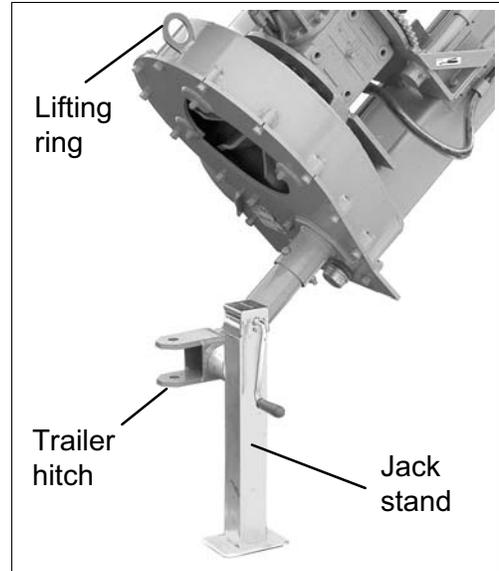
Lower the pump on the ground and block the wheels;



Hook the lifting device to the lifting ring welded on the pump housing.

Lift the pump and install the towing hitch and the jack stand.

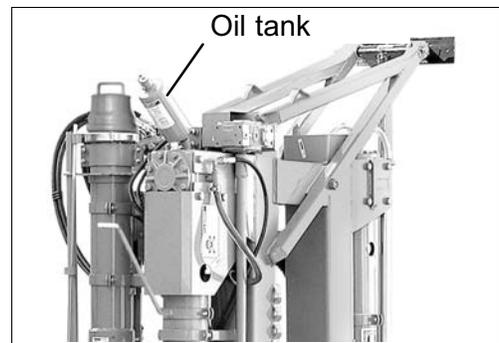
Lower the pump on the ground.



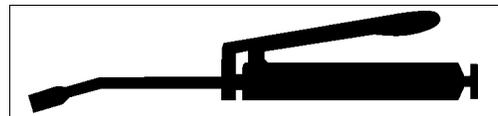
Oil tank and lubrication

Install the oil tank on the gearbox;

Fill the oil tank with SAE 80W90 gear oil to the indicated level;



Grease all parts labeled with.



5.5 Information on disposing of installation material after installation is finished.

Handle unused installation material properly and dispose in accordance with current valid local regulations on waste disposal and utilization.

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.

Any settings that have to be made (e.g. on control units) must always be made by personnel who have been suitably instructed/trained by the manufacturer.



Also see the section on "Personnel qualification".

6.2 Safety instructions for initial commissioning



DANGER!

Read Instructions First! To prevent serious injury or death, do not operate or service this machine without first reading and understanding the operator's 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?



Also read the chapter on "Safety".

Special risks involved in initial commissioning:

- If the connections for cleaning and disinfecting agents are mixed up this may cause special dangers
- Check all pressure areas for leaks.

6.3 Checks before initial commissioning

The owner should ensure that:

- Oil in the oil tank is at proper level.
 - Add SAE 80W90 gear oil if necessary.
- All grease zerks have been lubricated.
- 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 in 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 pump up and down.
- PTO driveline
 - Make sure the driveline guards turn freely;
 - Secure both ends of the driveline;
 - Keep all guards in place.

6.4 First start



Danger!

Manure produces toxic gases that can cause a loss of consciousness, asphyxia or death in a few seconds.



Manure agitation can produce toxic gases in buildings built above the pit. Toxic gases can also emanate in buildings situated by the pit and / or connected to the pit by an evacuation line.



Danger!

Rotating driveline keep away!



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.

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

Activate the pump and check the functions.



Attention!

PTO driveline must always be activated when the propeller of the pump is immersed into the manure/water. Activating the pump out of manure is only allowed for testing without exceeding one minute of operation. Running the pump propeller out of manure for more than one minute may result in damage.



Refer to the Operation section for proper procedures.

6.5 Checks after initial commissioning

Check for;

- Signs of leaks.
- Loose or damaged equipment.
- Oil in the oil tank is at proper level.
 - Add SAE 80W90 gear oil if necessary.

6.6 Handing over to the owner

Declaration of conformity and CE mark

(only necessary for European Union member states)

A declaration of conformity must be produced and a CE mark applied if a total operational installation is assembled from individual components.

If several directives apply to the total installation, the CE mark means that the requirements of all relevant directives have been met.

The technical centre/specialist dealer performing the installation work must:

- perform the installation work in accordance with the installation and safety information given in the relevant operating and installation manuals
- complete the hand-over report and have it signed
- produce the declaration of conformity for the total installation being handed over
- apply the CE mark so that it is clearly visible on the installation.

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.



Also see the section on "Personnel qualification".

7.2 Safety instructions for operation



DANGER!

Read Instructions First! To prevent serious injury or death, do not operate or service this machine without first reading and understanding the operator's 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:

- Only fit or use the product for its intended purpose.
- If the correct procedure is not followed in case of an emergency, this can result in serious injury to personnel and damage to property - therefore familiarize yourself with the instructions on what to do in an emergency.



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.

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



Danger!

Manure produces toxic gases that can cause a loss of consciousness, asphyxia or death in a few seconds.



Manure agitation can produce toxic gases in buildings built above the pit. Toxic gases can also emanate in buildings situated by the pit and / or connected to the pit by an evacuation line.



Danger!

Rotating driveline keep away!



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.

Carry out the following checks before every start:

- 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 pump up and down.
- PTO driveline
 - Make sure the driveline guards turn freely;
 - Secure both ends of the driveline;
 - Keep all guards in place.

In normal operation:

- The product may only be started from the location specified.
- During operation, operating personnel may only stand at the specified workplaces.



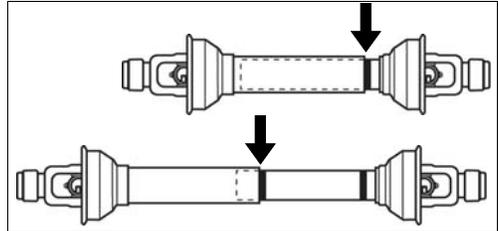
See section on "Work stations for operating personnel"

- No safety equipment may be removed or put out of operation during operation.
- Do not remove the guards located on the PTO driveline of the tractor and on the pump.
- Keep hands, feet and clothing away from all moving parts.
- Make sure that no one stands in close proximity to any moving parts before engaging the PTO.
- Never leave the pump in operation without the supervision of a skilled operator.
- Make sure that no one stands in close proximity to the pump when lifted and / or in operation.
- 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 pneumatic and hydraulic hoses are leaktight and connected correctly
 - Never use the pump if parts of the equipment appear damaged or showing signs of abnormal wear

PTO driveline

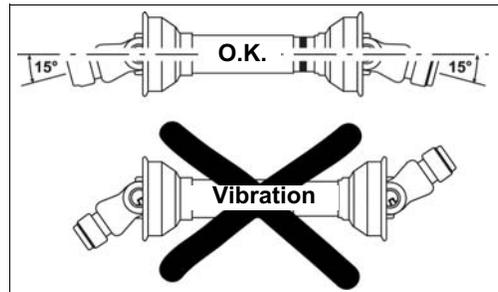
Maximum Extension and Retraction

- While operating the pump, 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 = 15°

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

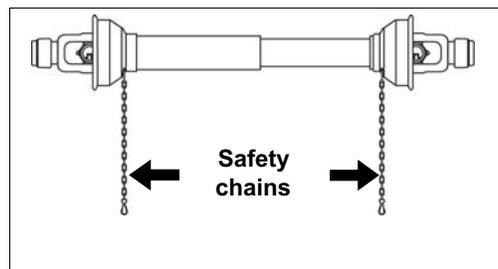


Lubrication

- On universal joints, use a high quality grease formulated specifically for intensive use.

Safety Chains (on European model only)

- 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.

7.3 Workplaces for operating personnel



Danger!

Manure produces toxic gases that can cause a loss of consciousness, asphyxia or death in a few seconds.



Manure agitation can produce toxic gases in buildings built above the pit. Toxic gases can also emanate in buildings situated by the pit and / or connected to the pit by an evacuation line.

Do not enter into a manure pit at any time.

Always follow the "Safety Procedures for Confined Spaces" before operating or maintaining the pump. These safety procedures clearly explain the risks associated with manure, procedures for a safe access to workplaces and the minimum ventilation requirements to ensure the safety of humans and livestock.



Refer to section 2.1

"Safety Procedures for Confined Spaces"



Danger!

Rotating driveline keep away!



DANGER!

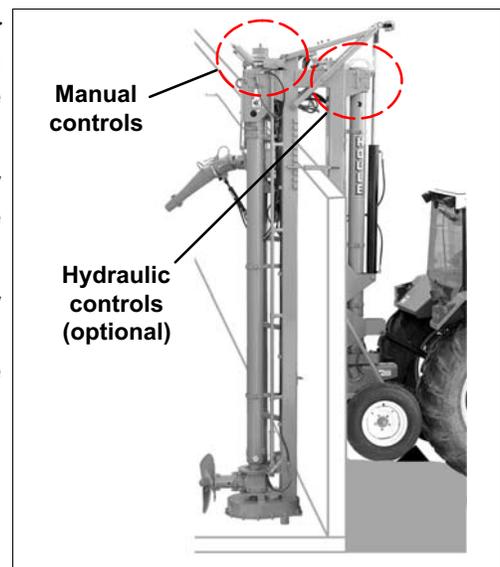
Do not climb on the trailer, outside member or any other part of the pump assembly to reach the control levers.

The operator must stand on the balcony in order to safely operate the control levers and observe the inside of the tank.

The control levers installed on the upper part of the pump can only be activated when the pump is positioned over the tank wall.

To reach these controls, a balcony (provided by the pit owners) must be fixed on the tank wall.

The operator must stand on the balcony in order to safely operate the control levers and observe the inside of the tank.



7.4 Description of the operating elements

7.4.1 Manual controls

Nozzle rotation

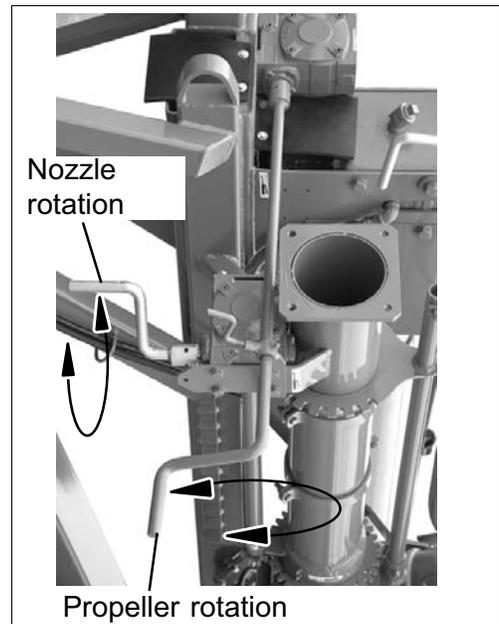
To rotate the nozzle CW turn the handle CCW.

To rotate the nozzle CCW turn the handle CW.

Propeller rotation

To rotate the propeller CW turn the handle CCW.

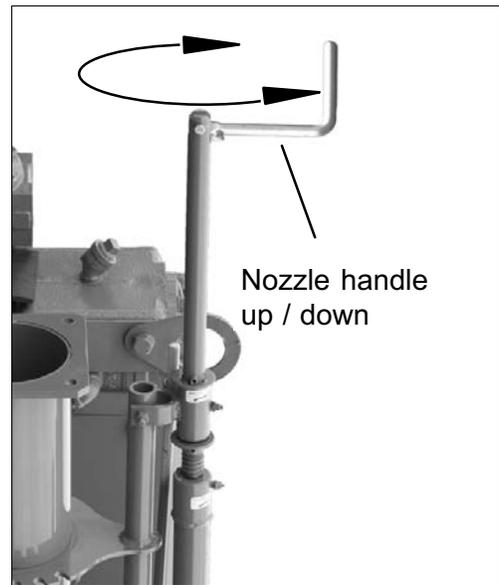
To rotate the propeller CCW turn the handle CW.



Nozzle height adjustment

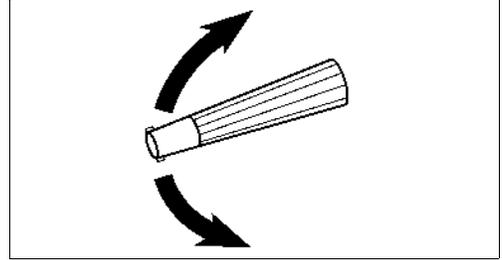
To raise the nozzle turn the handle CW.

To lower the nozzle turn the handle CCW.

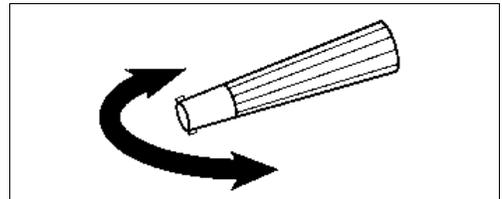


7.4.2 Hydraulic controls (optional)

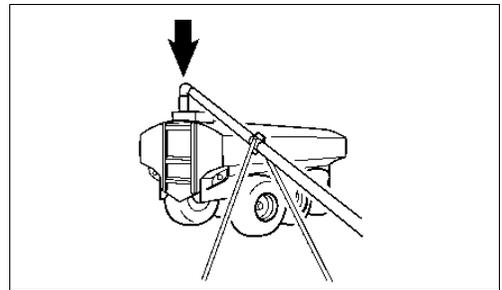
Agitation nozzle up / down



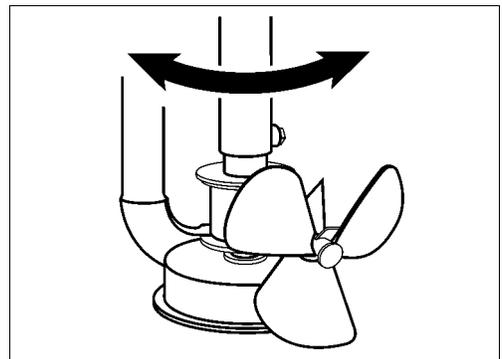
Agitation nozzle rotation



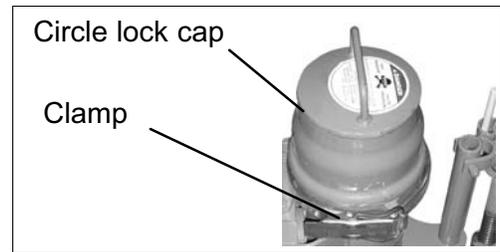
Directional valve agitation/ loading



Agitation propeller rotation



Circle lock cap on discharge pipe



DANGER!

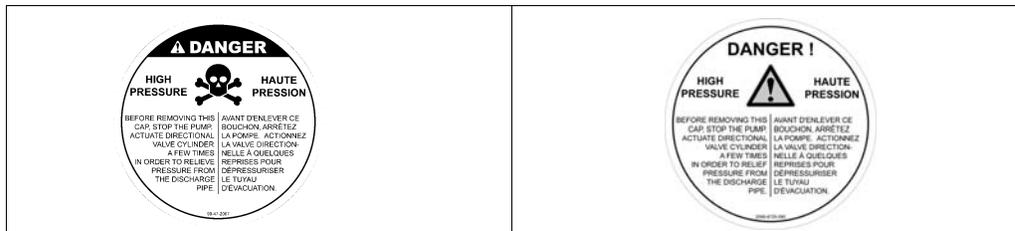
Never unlock a circle lock cap under pressure!

Unlocking a circle lock cap under pressure could cause serious injuries to anyone standing near the cap. The compressed air inside the pump discharge pipe would propel the cap with force.

Before removing the cap of the discharge pipe, stop the tractor PTO. Actuate the directional valve a few times in order to relieve pressure from the discharge pipe. Then switch the directional valve to the loading position by setting the indicator rod at its highest position

Carefully read the instructions on the circle lock cap

Before removing the cap, carefully read the instructions on the cap. The instructions require to stop the pump and actuate the directional valve cylinder a few times in order to relieve pressure from the discharge pipe.



Function of the circle lock cap

When agitating manure, the loading pipe is usually not connected to the pump discharge. If the directional valve is accidentally activated, the operator could be blasted by manure projected with force. The circle lock cap is meant to eliminate the risk of being blasted by manure projected with force if the directional valve is accidentally activated.

Compressed air under the circle lock cap

If the directional valve changes position while agitating a pit, the impeller of the pump will force manure into the discharge pipe, compressing the air inside the pipe.

7.5 Operating



Danger!

Manure produces toxic gases that can cause a loss of consciousness, asphyxia or death in a few seconds.



Manure agitation can produce toxic gases in buildings built above the pit. Toxic gases can also emanate in buildings situated by the pit and / or connected to the pit by an evacuation line.



Danger!

Do not enter into a manure pit at any time.

Always follow the *Safety Procedures for Confined Spaces* before operating or maintaining the pump. These safety procedures clearly explain the risks associated with manure, procedures for a safe access to work spaces and the minimum ventilation requirements to ensure the safety of humans and livestock.



See Safety section to find *safety procedures for confined spaces*.



Danger!

Rotating driveline keep away!

Turn off the tractor before installing or removing the PTO driveline.



Attention!

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

7.5.1 Moving the pump

Moving the pump using the towing hitch



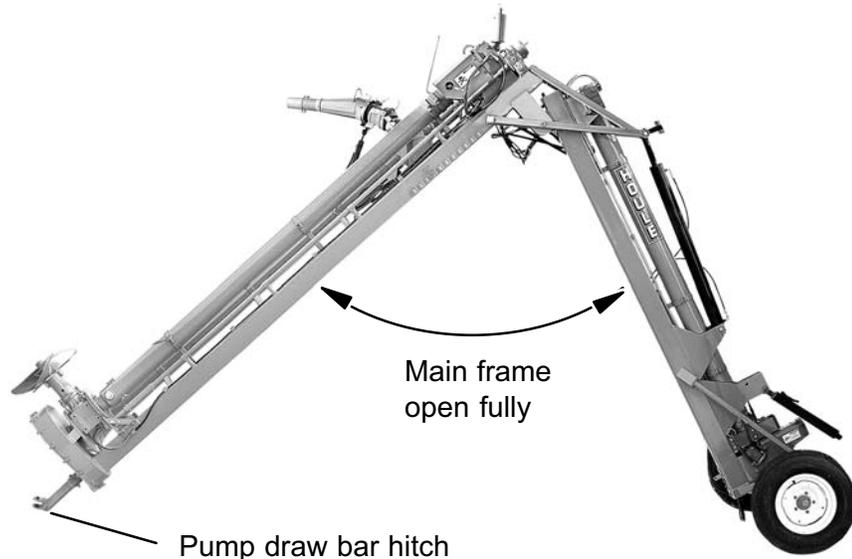
Attention! **Moving the pump**

- The pump must be moved with a farm tractor with a minimum towing capacity of;
4,400 lb (2000 kg).
- The hitch, tires, wheels, hubs and axles of the pump are designed for agricultural use only. They are not approved to be towed at any speed above 10 mph or 16 km/h.
- The pump has no braking system. It is designed to be towed strictly by a farm tractor.
- Never travel on hillsides.
- For long distance transportation, use a truck or truck and trailer approved for public roads.
- If a pump needs to be towed on a public road, use a farm tractor strong enough to easily tow and safely brake under the weight of the pump.
- If a pump needs to be towed on a public road, use a farm tractor strong enough to easily tow and safely brake under the weight of the pump. The pump must be equipped with signal lights and reflectors recommended by the Standard ANSI/ASAE S279.12 or better if required by local laws.



Attention!

Before moving the pump, make sure the main frame is open to its maximum and that the safety valves of the articulation cylinder are shut off.



7.5.2 Moving the pump using the tractor 3-point hitch



Attention! Moving the pump

- The pump must be moved with a farm tractor with a 3-point hitch minimum capacity of 10,000 lb [4,550 kg].
- The pump is designed to be towed at a maximum speed of 5 mph [8 km/h].
- 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 pump up and down.

When the pump is in storage position, back up the tractor close to the 3-point hitch cylinder.

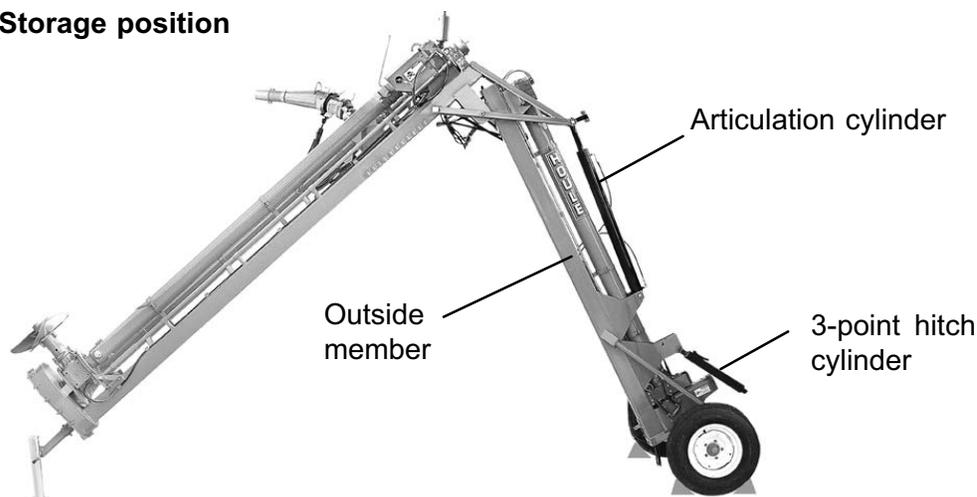
Do not hook the pump to the 3-point hitch of the tractor.

Connect hoses of 3-point hitch and articulation cylinders to the tractor;

Open the safety valves of the articulation cylinder.

Operate the articulation cylinder until the outside member is at a 90° angle with the ground;

Storage position

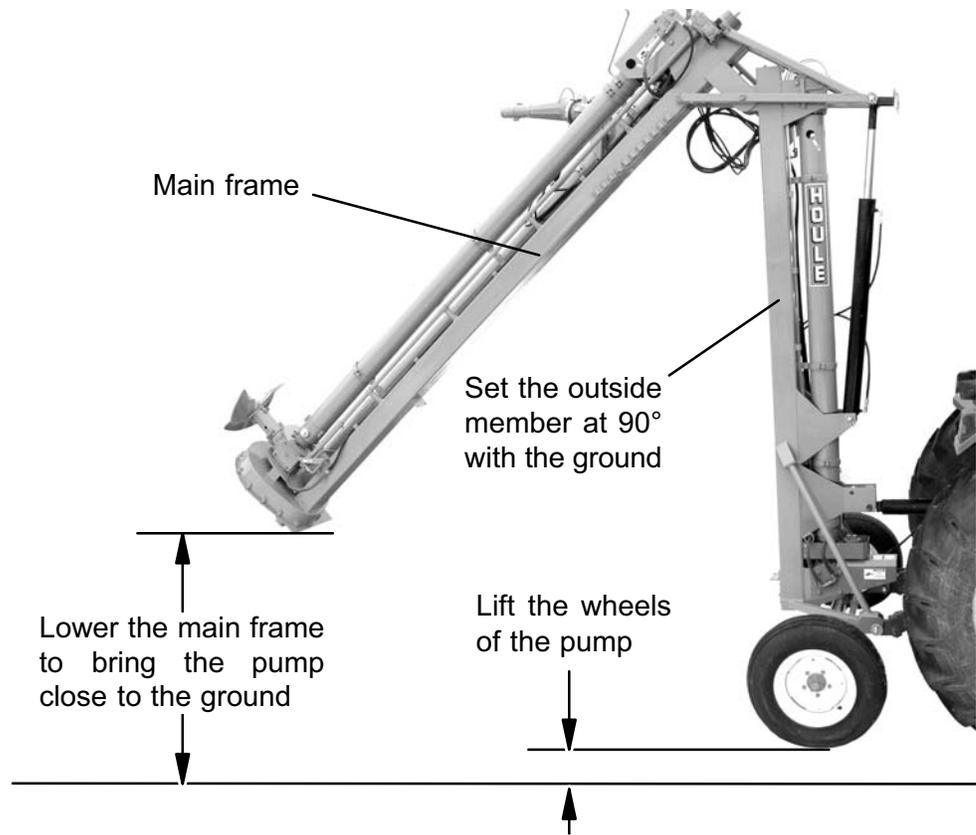


Open the safety valves of the 3-point hitch cylinder.

Hook the pump to the tractor 3-point hitch.

Operate the tractor 3-point hitch to lift the wheels of the pump off the ground.

Remove the towing hitch and the jack stand



Attention!

Lower the tractor 3-point hitch to maintain the wheels of the pump close to the ground when traveling. Operate the articulation cylinder to lower the main frame close to the ground and transfer part of the load towards the front of the tractor.

7.5.3 Positioning the pump



Attention!

Make sure the hydraulic circuit of the tractor contains sufficient hydraulic oil to safely articulate the pump up and down.

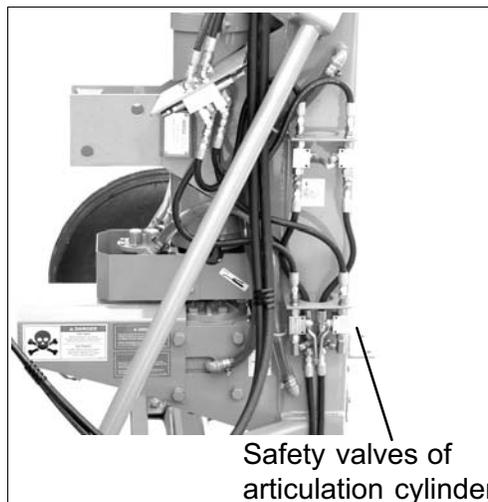


Note!

To speed up the agitation time, it is recommended to install the pump in liquid near solid masses.

The manure crust floating on the surface of the tank must be thinner than 12" [30 cm] thick to avoid bending the pump when penetrating the crust.

Open the safety valves of the 3-point hitch cylinder and the articulation cylinder;



Back up the pump close to the tank;
Operate the articulation cylinder to lift the main frame to the maximum;
Slowly back up until the wheels of the pump lean against the wall of the tank.



Back the wheels of the pump against the wall of the tank;

Operate the 3-point hitch cylinder until the outside member is parallel to the wall of the tank;

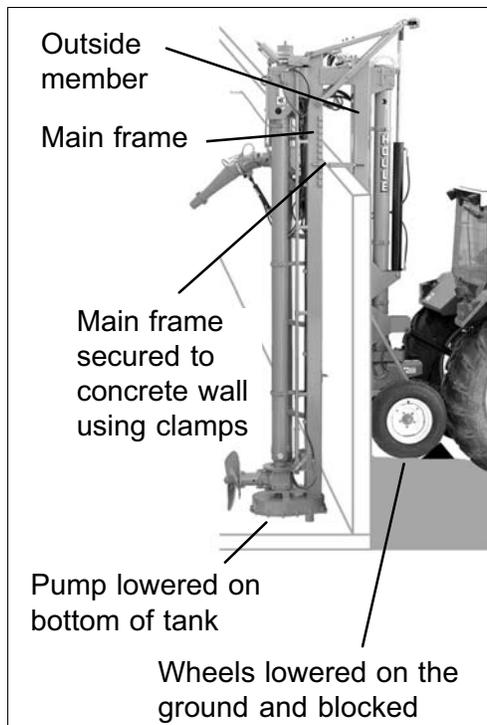
Operate the articulation cylinder so that the main frame is parallel to the wall of the tank;

Operate the tractor 3-point hitch to lower the pump on the bottom of the tank and set the wheels on the ground;

Secure the main frame to the concrete wall of the tank using the clamps provided for that purpose;

Shut off the safety valves of the articulation cylinder and the 3-point hitch cylinder;

Block the wheels of the pump;



DANGER!

When the pump touches the bottom of the tank, make sure both wheels rest solidly on the ground.

Unhook the pump from the tractor.

Move the tractor forward until the distance between the tractor PTO and the pump PTO is approximately 52" [132 cm].

Put the parking brake of the tractor on.

7.5.4 Agitation mode



Danger!

Rotating driveline keep away!

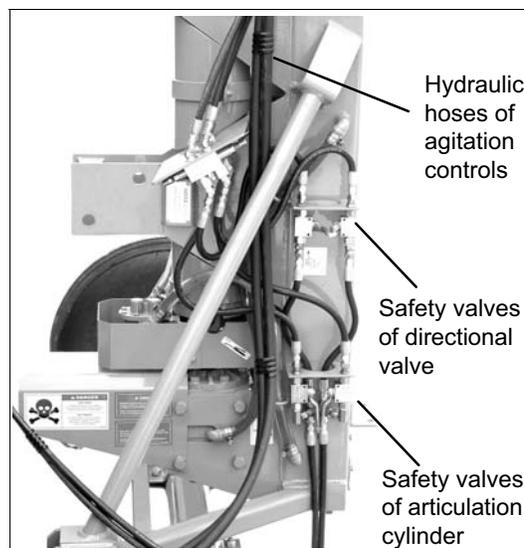
Turn off the tractor before installing or removing the PTO driveline.



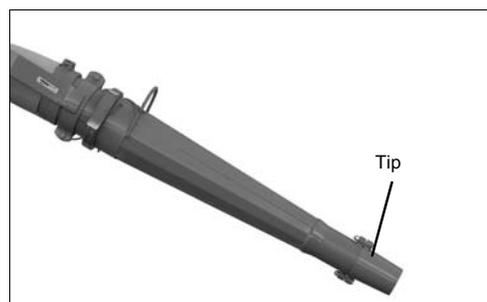
Attention!

The safety valves of the 3-point hitch cylinder must be shut off when agitating and transferring manure.

Install the PTO driveline;
Connect the hydraulic hoses of agitation controls to the tractor.
Open the safety valves of directional valve;



- Install the handle rotating the agitation nozzle (standard handle only);
- Set the directional valve to the agitation mode at its lowest position.
- Engage the PTO at minimum RPM.
- Gradually increase the PTO to 540 or 1000 RPM, depending on the PTO model.
- Using the nozzle controls (rotation, up/down) and the direction control of the propeller, agitate the content of the pit.
- Operate the agitation nozzle to break chunks and direct them towards the pump intake.
- A boltable tip may be installed on the nozzle to improve thick crust cutting. The tip should be removed when crust has been broken up or when there is a thin crust.



- To speed up agitation, move the agitation nozzle from liquid to solids.
- Tilt the pump lightly towards the tractor;



Note!

Never allow the propeller and the nozzle to operate in the same direction for long periods of time without supervision.
Agitate the pit thoroughly before transferring.

- When the whole content of the pit is mixed, gradually decrease the PTO to minimum RPM.
- Turn off the pump.



Refer to section 7.4

Description of the operating elements

7.5.5 Manure transfer mode



Note!

Thoroughly agitate the content of the reservoir before transferring the manure.



Danger!

Rotating driveline keep away!

Turn off the tractor before installing or removing the PTO driveline.



Attention!

The safety valves of the 3-point hitch cylinder must be shut off when agitating and transferring manure.



DANGER!

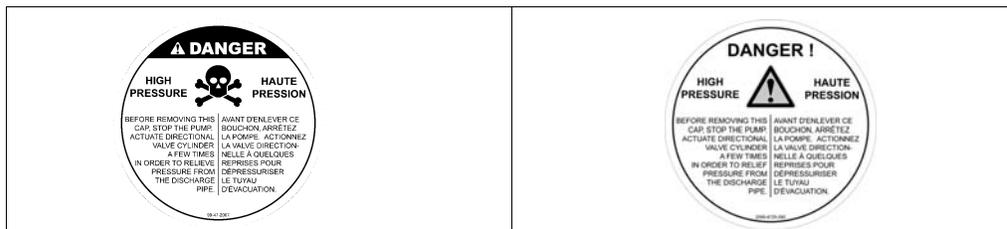
Never unlock a circle lock cap under pressure!

Unlocking a circle lock cap under pressure could cause serious injuries to anyone standing near the cap. The compressed air inside the pump discharge pipe would propel the cap with force.

Before removing the cap of the discharge pipe, stop the tractor PTO. Actuate the directional valve a few times in order to relieve pressure from the discharge pipe. Then switch the directional valve to the loading position by setting the indicator rod at its highest position

Carefully read the instructions on the circle lock cap

Before removing the cap, carefully read the instructions on the cap. The instructions require to stop the pump and actuate the directional valve cylinder a few times in order to relieve pressure from the discharge pipe.



Function of the circle lock cap

When agitating manure, the loading pipe is usually not connected to the pump discharge. If the directional valve is accidentally activated, the operator could be blasted by manure projected with force. The circle lock cap is meant to eliminate the risk of being blasted by manure projected with force if the directional valve is accidentally activated.

Compressed air under the circle lock cap

If the directional valve changes position while agitating a pit, the impeller of the pump will force manure into the discharge pipe, compressing the air inside the pipe.

- Remove the cap of the discharge pipe;
- Install the loading pipe using the circle lock.
- Stabilize the loading pipe according to the instructions supplied with the loading pipe.
- Set the directional valve to the transfer mode (indicator rod at the highest position);
- Engage the PTO at minimum RPM;
- Gradually increase the PTO RPM until the desired transfer capacity is reached.
- Before loading is completed;
- Gradually decrease the PTO RPM to minimum.
- Stop the PTO.
- Set the directional valve to the agitation mode.
- Once finished, remove the loading pipe from the auxiliary pipe.
- Position back the circle lock cap on the auxiliary pipe using the circle lock.



Note

When the PTO RPM is at minimum, the directional valve can be switched from the loading mode to the agitation mode between two spreader loads.

7.5.6 Removing the pump from the tank



Danger!

Keep all articulated components away from electric power lines

Remove the PTO driveline from the pump;

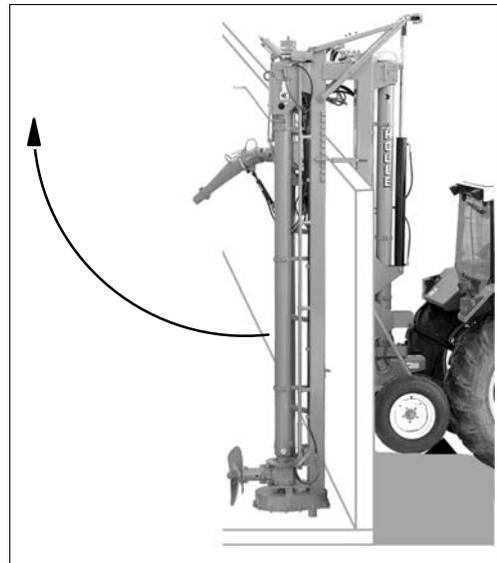
Attach the 3-point hitch to the tractor;

Operate the articulation cylinder to raise the pump over the wall of the tank;

Remove the wheel chocks blocking wheels;

Slowly move the pump away from the wall of the tank;

Operate the articulation cylinders to lower the main frame. The main frame must lean on the outside member.



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.



Also see the section on "Personnel qualification".

8.2 Safety instructions for troubleshooting



Danger! **Read Instructions First!**

To prevent serious injury or death, do not operate or service this machine without first reading and understanding the operator's 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.
- Ensure that safe disconnection can be carried out by a second person at any time.
- Secure the range of action for any moving parts.



Also read the chapter on "Safety".

Special dangers involved in troubleshooting:



Danger!

Manure produces toxic gases that can cause a loss of consciousness, asphyxia or death in a few seconds.



Manure agitation can produce toxic gases in buildings built above the pit. Toxic gases can also emanate in buildings situated by the pit and / or connected to the pit by an evacuation line.



Danger!

Do not enter into a manure pit at any time.

Always follow the *Safety Procedures for Confined Spaces* before operating or maintaining the pump. These safety procedures clearly explain the risks associated with manure, procedures for a safe access to work spaces and the minimum ventilation requirements to ensure the safety of humans and livestock.



Danger!

Rotating driveline keep away!

Turn off the tractor before working on 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.

8.3 Troubleshooting possible faults

Symptom	Possible cause	Remedy
Pump is not working properly or not at all.	Broken PTO shear bolts.	Replace PTO shear bolts.
	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; 11.4
	Foreign material in the directional valve.	Remove cover and clean out.
	Obstruction in the impeller intake.	Lift the pump and clear the obstruction.
	Worn out impeller/housing	Replace part.
	Lack of lubrication	Refer to section; 9.3
Vibration in the driveline.	The PTO joints are out of alignment.	Refer to section; 7.2
	Foreign material wrapped on propeller	Remove foreign material; Adjust knife kit;
The main frame or outside member will not move properly.	The safety collars are holding the outside member in the traveling supports.	Remove the safety collars.
	Safety valve is closed.	Open valve.
	Lack of lubrication	Refer to section; 9.3
	The hydraulic hoses are not connected properly.	Refer to section; 7.4
	There is a leak in the hydraulic system.	Look for signs of fluid. Repair defective parts.
Symptom	Possible cause	Remedy
The main frame or outside member will not move properly.	Hydraulic fluid level in the tractor is low.	Add fluid as required in the tractor's manual.
	Cylinder is defective.	Replace defective part.
	The trailer is positioned too close to the tank.	Refer to section; 7.5
Not chopping long material	Knife kit worn or out of adjustment.	Replace or adjust knife kit; Refer to section; 9.4

9 Maintenance

If necessary, please contact your nearest authorized 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



DANGER! **Read Instructions First!**

To prevent serious injury or death, do not operate or service this machine without first reading and understanding the operator's 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:

- 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 times specified.
- Maintenance work should only be performed with the tools envisaged for this purpose.
- Also note the special information in this manual for the individual components.
- Only use the media specified.
- 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:

- 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.
- Disconnect all pressure units from the pressure source and make sure they cannot be switched back on again unintentionally.
- There are suitable hoists and load suspension devices available for changing larger parts.
- 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.
- Injury can be caused by contact with leaking liquids (describe in more detail if necessary).



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.

-
- Serious injury to personnel or damage to property can be caused if the incorrect torque is applied when tightening screws.
 - Unsecured manual operation means a higher risk of injury due to crushing/shearing/being pulled in/...

After completing the maintenance work, check the following:

- The installation values set before the work are not altered by the work (report).
- Any screwed connections that were loosened earlier have been tightened.
- Any guards, cover, lids, sieves, filters, ... that were removed earlier have been put back again correctly.
- All safety equipment is working perfectly again.
- Have all of the tools, materials and other equipment that were used been removed from the working area again?
- The working area has been cleaned.
(possibly to remove any fluids or similar substances that came out of the machine)
- Operation has been checked after maintenance work has been completed or parts replaced. Produce a full test report if necessary.
- Follow the maintenance and safety instructions on the labels affixed to the pump.



**Refer to section 2.5 Protective devices
Maintenance and Safety Labels**

- Do not remove the labels at any time.
- Stop the PTO before lubricating, maintaining and adjusting.
- Lubricate, maintain and store the pump according to instructions in this Manual.

9.3 Inspections and preventive maintenance

Lubrication



Danger!

Manure produces toxic gases that can cause a loss of consciousness, asphyxia or death in a few seconds.



Manure agitation can produce toxic gases in buildings built above the pit. Toxic gases can also emanate in buildings situated by the pit and / or connected to the pit by an evacuation line.

Never attempt to change the oil or to grease the lower joint of the pump driveline while the pump is in the reception pit.



Danger!

Rotating driveline keep away!

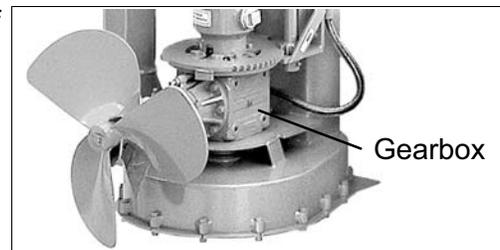
Turn off the tractor before lubricating or cleaning the pump.

Oil level

- The oil tank must be filled to the indicated level when the pump is operating. Add oil when required;
- Add SAE 80W90 gear oil if necessary.

9.3.1 After emptying each pit

- Grease the upper and lower joints of the pump driveline;
- Grease the 3 shafts of the bottom gearbox.



9.3.2 Every 5 hours



Note!

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

- Grease joints and sliding section of PTO driveline.
On universal joints, use a high quality grease formulated specifically for intensive use.



9.3.3 Every 10 hours

- Grease the articulation and pivots of the agitation nozzle;
- Grease the directional valve.

9.3.4 Every 50 hours

- Check the tension of the oil coolers belts.

9.3.5 Every 75 hours

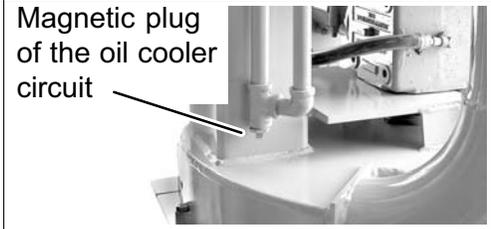


Note!

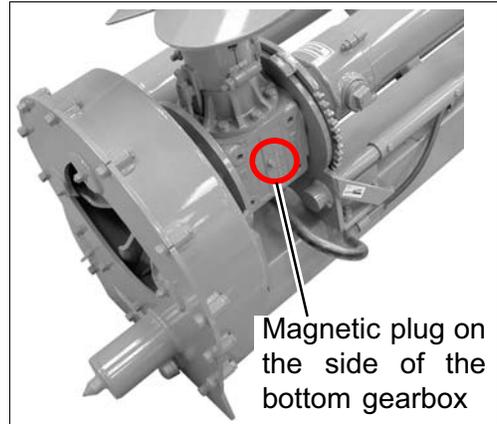
Use gearbox oil SAE 80W90.

To change the oil of the pump main frame:

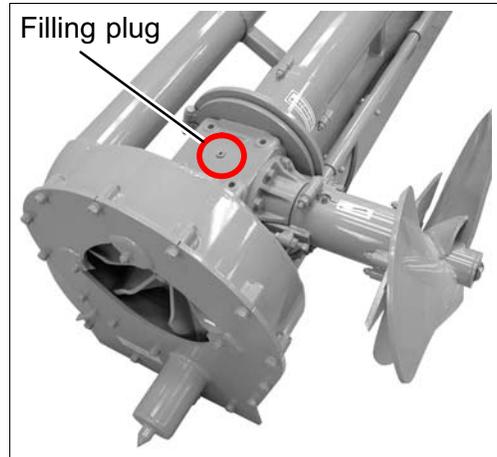
- Remove the magnetic plug located at the bottom of the oil cooler pipes.



- Remove the magnetic plug located on the side of the bottom gearbox.



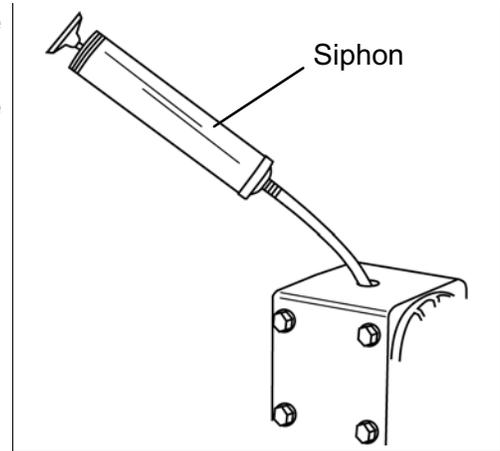
- Rotate the gearbox so that the hole of the magnetic plug faces downwards and remove the filling plug located on the other side of the gearbox.
This allows air to enter at the top of the gearbox and the oil to drain from the bottom.



Maintenance

Inspections and preventive maintenance

- Remove the oil tank located on the top gearbox;
- Use a siphon to complete the drainage of both gearboxes;



- Clean and reinstall both magnetic plugs;
- Fill the bottom gearbox with oil and reinstall the filling plug;
- Fill the top gearbox with oil and reinstall the oil tank;
- Fill up the oil tank to the indicated level.



Attention!

After an oil change of the 2 gearboxes of the pump main frame, run the pump for 1 minute only.
Stop the pump and check the oil level.
Add oil if necessary.

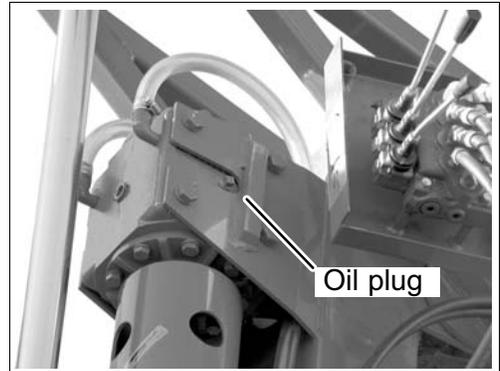
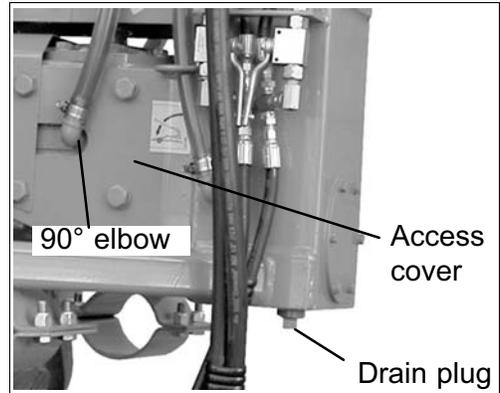
To change the oil of the outside member:



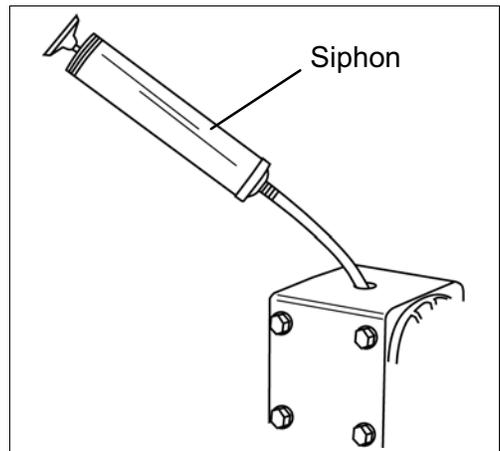
Note!

Use a container with a minimum capacity of 8 gal. [30 L].

- Remove the drain plug located under the outside member and collect the oil in a proper container
- Remove the access cover bolted at the bottom of the outside member and clean out the reservoir of any accumulation of deposits;
- Disconnect the hose and unscrew the 90° elbow on the side of the lower gearbox;
- Remove the oil plug on the side of the upper gearbox;



- Use a siphon to complete the drainage of both gearboxes;



- Reinstall the oil plug on the upper gearbox;
- Reinstall the 90° elbow on the lower gearbox and reconnect the hose;
- Remove the dip stick located on the side of the pump outside member, and fill with approximately 8 gal. [30 L] of SAE 80W90 gear oil.

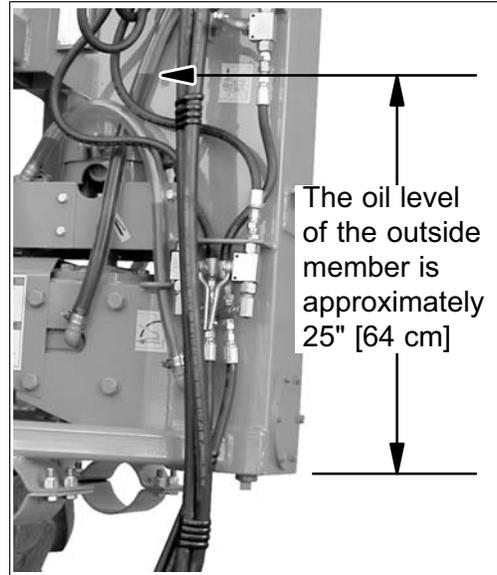


Attention!

After an oil change of the gearboxes of the pump outside member, run the pump until the oil cooler pump has filled the upper gearbox of the outside member of the pump.
Stop the pump and check the oil level.
Add oil if necessary.

Checking the oil level in the outside member:

- To verify the oil level inside the outside member, check the distance between the bottom of the outside member and the oil level inside the clear hose located between the lower gearbox and the oil reservoir;
- The distance between the oil level and the bottom of the outside member must be approximately 64 cm (25") when the pump is stopped and in a vertical position.



Attention!

Wipe out any oil spill.
Safely dispose of used oil by following local and/or state regulations concerning the proper handling of dangerous goods.

Cleaning the pump



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 pump.



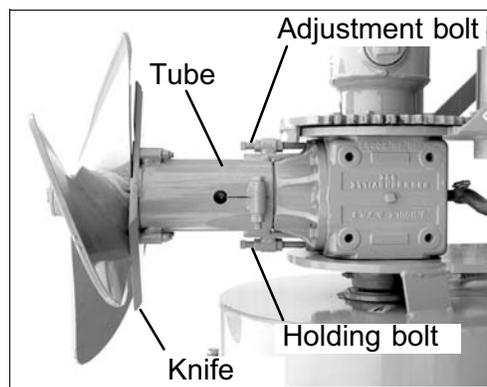
9.4 Repairs

PTO driveline shear bolts

Tractor PTO	Part No.	Dimensions	Grade	Quantity
1-3/8" - 6 splines	10-24-0467	3/8"-16NC x 1	8	2
1-3/8" - 21 splines	10-24-0401	3/8"-16NC x 1	2	2
1 3/4" - 20 splines	10-24-0467	3/8"-16NC x 1	8	2

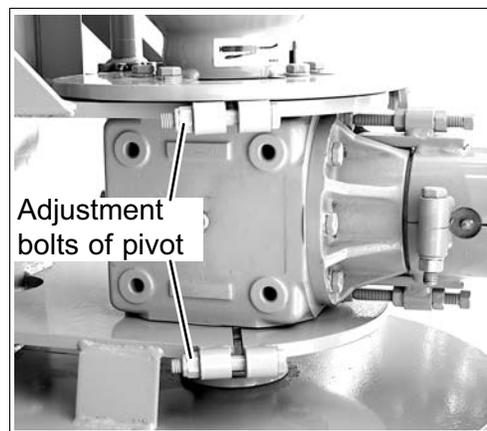
Knife Kit Adjustment

- Loosen up the holding bolts;
- Using the adjustment bolts, slide the tube so that the knife ends up being right next to the propeller;
- Tighten up the holding bolts.



Adjustment of the bottom gearbox pivot on the main frame (when required)

- To reduce vibrations, tighten up the adjustment bolts of the bottom gearbox pivot. Allow just enough play so that the gearbox turns freely.



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



Danger!



DANGER!
Read Instructions First!

To prevent serious injury or death, do not operate or service this machine without first reading and understanding the operator's 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:

- All of the steps involved in the decommissioning work must be worked through in the order specified.
- First of all, make the operating area for decommissioning completely safe.
- Make sure that operating media are disposed of without harming the environment.



Also read the chapter on "Safety".

Special dangers involved in decommissioning:

- 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



Danger!

Rotating driveline keep away!

Turn off the tractor before lubricating or cleaning the pump.

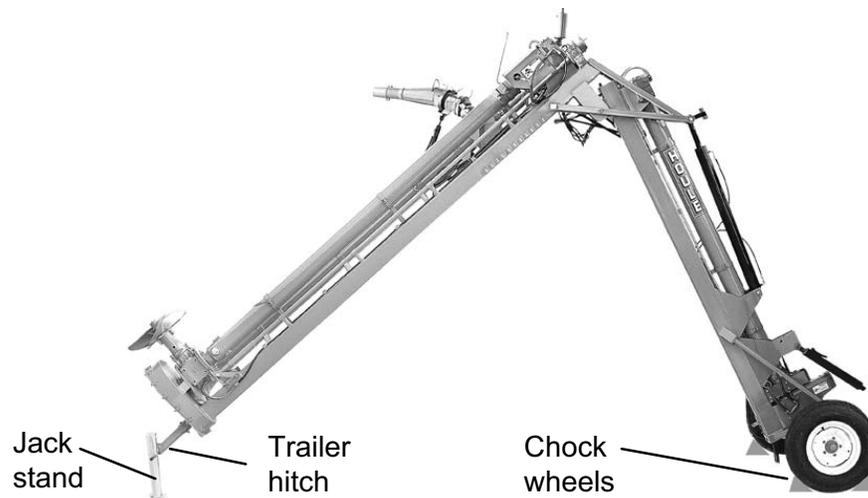
Storage

- Park the pump on a flat and firm surface.
- Block the wheels;



Note!

For increased stability, remove the jack stand and the towing hitch. Set the impeller housing on the ground;



- Remove the cover of the directional valve and clean the housing. Be sure to clean out any accumulation of dry manure;



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 pump.



- Drain the driveline guards (located on the main frame) and the impeller housing;
- Grease the driveline joints and all parts labeled with;



Refer to section 11.2 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 utilization.

11 Appendix

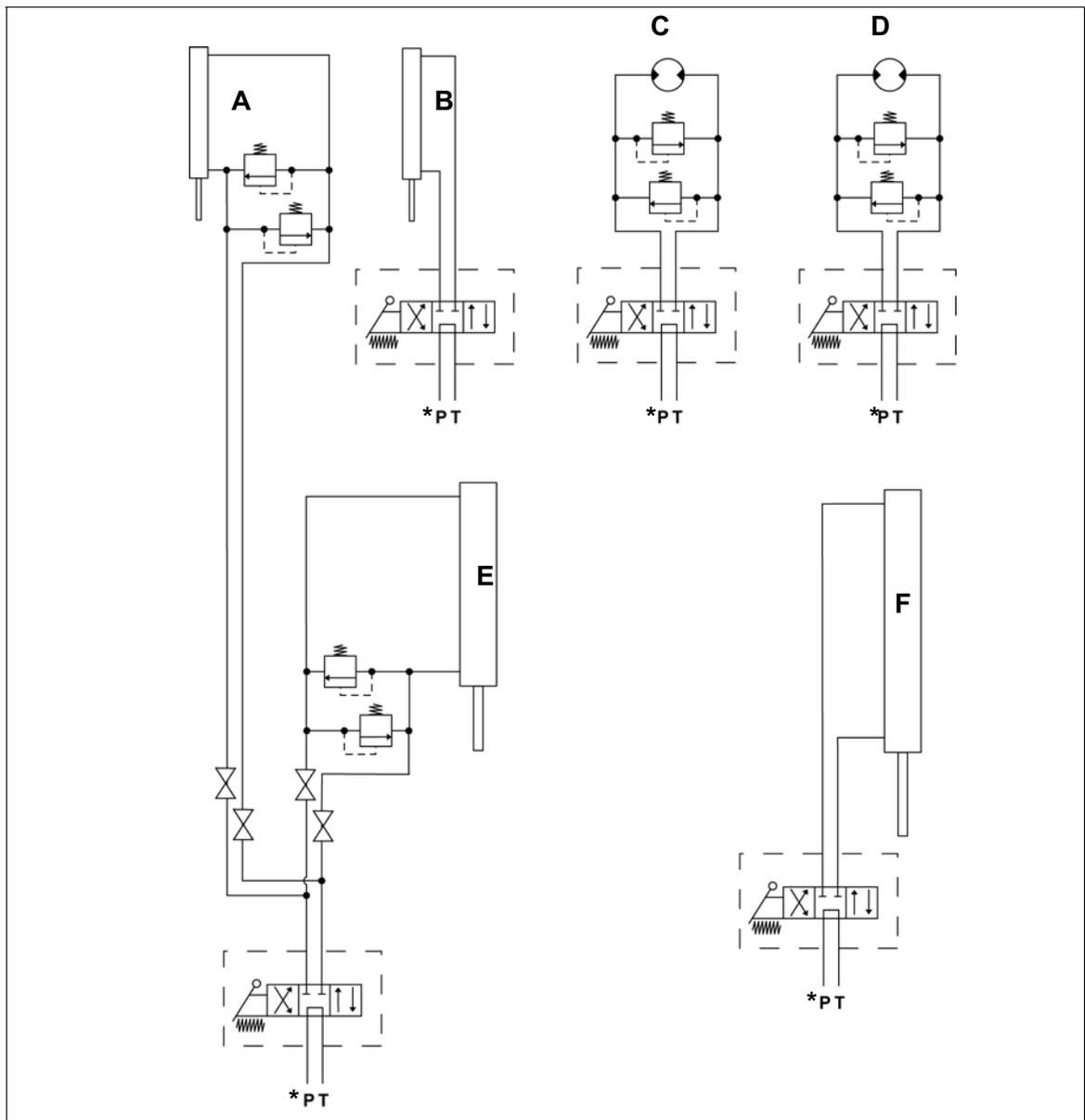
11.1 Hydraulic schematic

Hydraulic controls



Note!

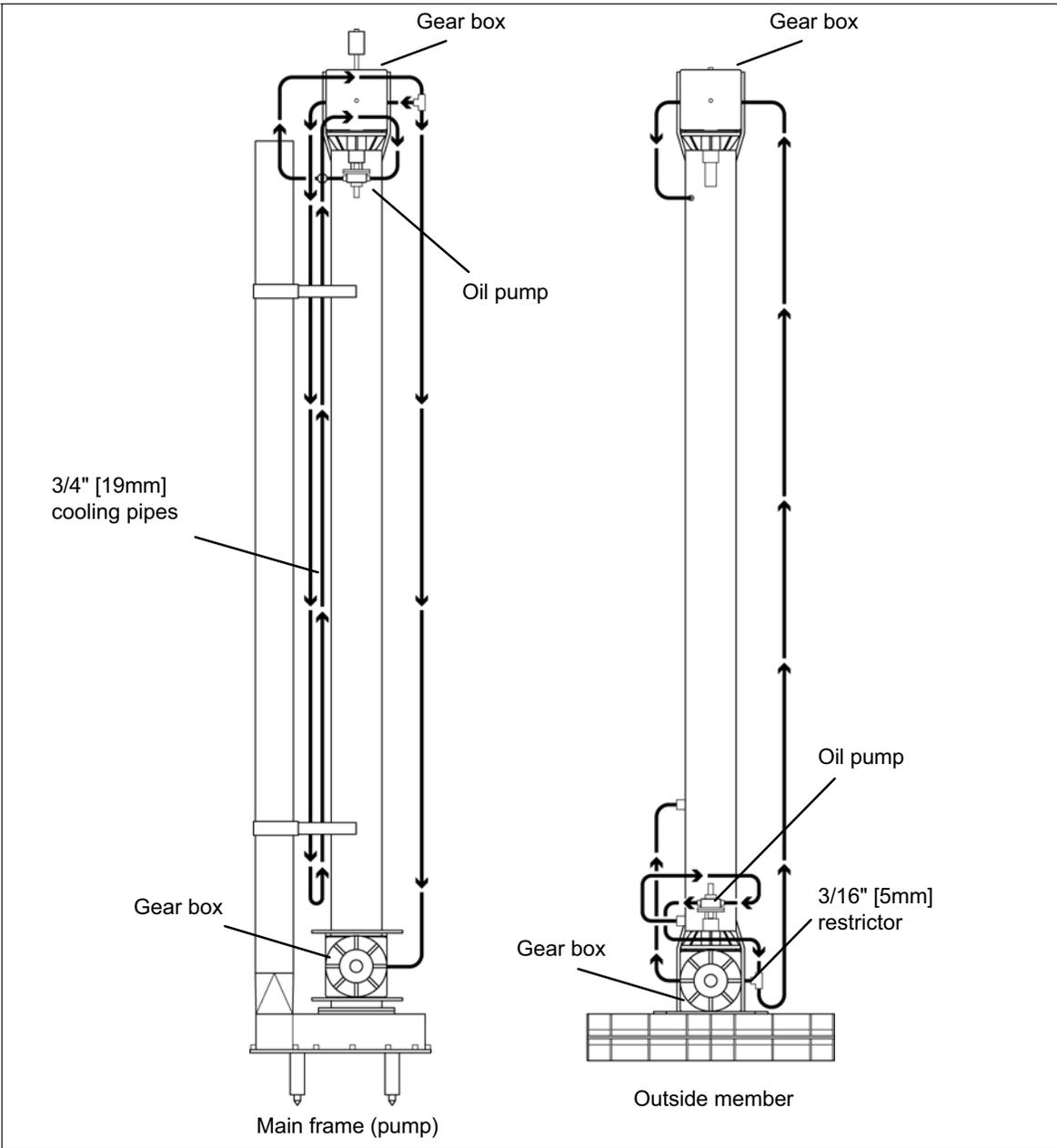
The diagram illustrates all hydraulic controls available on the pump. The dashed frame shows a component equipped with a control lever.



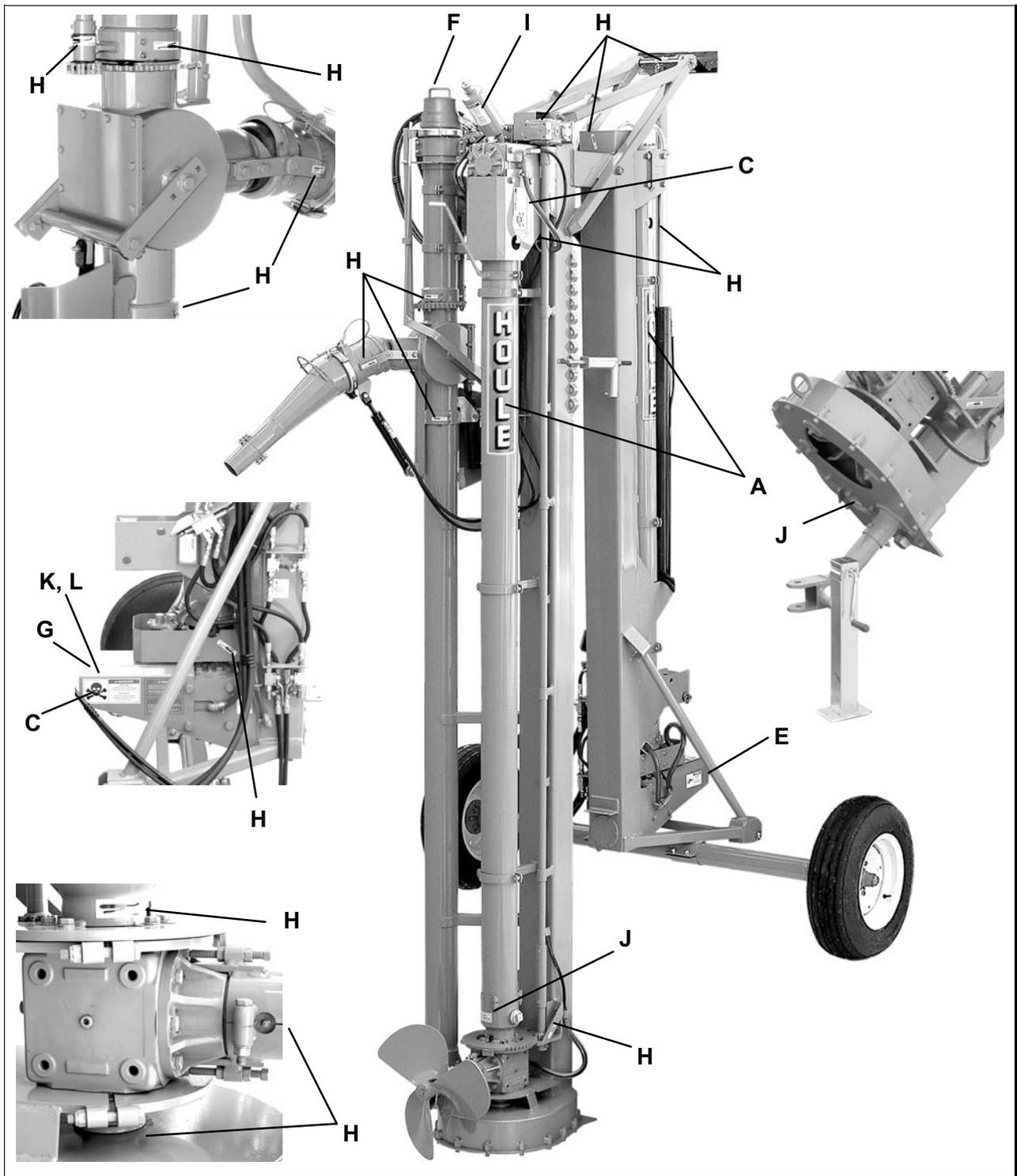
* All components equipped with a control lever may be connected together using the same tractor outlet.

A	Directional valve cylinder	B	Nozzle height cylinder
C	Nozzle rotation motor	D	Propeller rotation motor
E	Articulation cylinder	F	3-point hitch cylinder

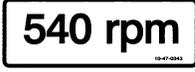
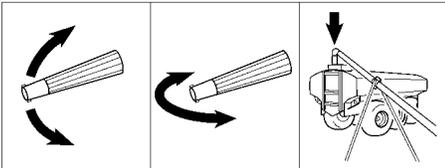
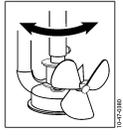
Cooling system



11.2 Label position



	American	European
A	 <p>2010-4700-400</p>	
C	 <div data-bbox="711 424 850 533" style="border: 1px solid black; padding: 2px;"> <p>▲ DANGER</p> <p>TOXIC GASES MAY BE PRODUCED. TOXIC GASES THAT CAN CAUSE LOSS OF CONSCIOUSNESS, ASPHYXIA OR SUFFOCATION IF INHALED.</p> <p>GAZ TOXIQUES LE FLAMME PRODUIT DES GAZ TOXIQUES QUI PEUVENT CAUSER LA PERTE DE CONSCIENCE, L'ASPHYXIE OU LA MORT EN QUÉLQUES SECONDES.</p> </div> <p>2099-4720-010</p>	
D		 <div data-bbox="1156 613 1341 688" style="border: 1px solid black; padding: 2px;"> <p>DANGER !</p> <p>KEEP ALL ARTICULATED COMPONENTS AWAY FROM ELECTRIC POWER LINES</p> </div> <p>2099-4725-070</p>
E	 <div data-bbox="711 751 850 865" style="border: 1px solid black; padding: 2px;"> <p>▲ DANGER</p> <p>ROTATING DRIVELINE. KEEP AWAY!</p> <p>ARBRE DE COMMANDE ROTATIF. GARDEZ VOS DISTANCES!</p> </div> <p>2099-4720-020</p>	
F	 <div data-bbox="630 940 815 1129" style="border: 1px solid black; border-radius: 50%; padding: 5px;"> <p>▲ DANGER</p> <p>HIGH PRESSURE HAUTE PRESSION</p> <p>BEFORE REMOVING THIS CAP, STOP THE PUMP. ACTIVATE DIRECTIONAL VALVE CYLINDER A FEW TIMES. IN ORDER TO RELIEVE PRESSURE FROM THE DISCHARGE PIPE.</p> <p>AVANT D'ENLEVER CE BOUCHON, ARRÊTEZ LA POMPE. ACTIONNEZ LA VALVE DIRECTIONNELLE À QUELQUES REPRISES POUR DÉPRESSURISER LE TUYAU D'ÉVACUATION.</p> </div> <p>2099-4720-070</p>	 <div data-bbox="1101 940 1302 1129" style="border: 1px solid black; border-radius: 50%; padding: 5px;"> <p>DANGER !</p> <p>HIGH PRESSURE HAUTE PRESSION</p> <p>BEFORE REMOVING THIS CAP, STOP THE PUMP. ACTIVATE DIRECTIONAL VALVE CYLINDER A FEW TIMES. IN ORDER TO RELIEVE PRESSURE FROM THE DISCHARGE PIPE.</p> <p>AVANT D'ENLEVER CE BOUCHON, ARRÊTEZ LA POMPE. ACTIONNEZ LA VALVE DIRECTIONNELLE À QUELQUES REPRISES POUR DÉPRESSURISER LE TUYAU D'ÉVACUATION.</p> </div> <p>2099-4725-090</p>
G	<div data-bbox="630 1192 782 1306" style="border: 1px solid black; padding: 2px;"> <p>▲ WARNING</p> <ul style="list-style-type: none"> ALWAYS STOP THE EQUIPMENT BEFORE SERVICING AND MAINTENANCE. NEVER RELEAS THE EQUIPMENT WHILE IT IS RUNNING. KEEP ALL PRESSURE WARE GUARDED IN PLACE. KEEP HANDS AND LOOSE CLOTHING AWAY FROM MOVING PARTS. MAKE SURE EVERYONE IS CLEAR FROM MOVING PARTS BEFORE STARTING THE EQUIPMENT. REFER TO THE OPERATOR'S MANUAL FOR OPERATING AND MAINTENANCE INSTRUCTIONS. </div> <div data-bbox="630 1306 782 1419" style="border: 1px solid black; padding: 2px;"> <p>▲ AVERTISSEMENT</p> <ul style="list-style-type: none"> ARRÊTEZ L'ÉQUIPEMENT AVANT TOUTE RÉPARATION OU ENTRETIEN. NE JAMAIS RELÂCHER L'ÉQUIPEMENT PENDANT QU'IL EST EN MARCHE. GARDEZ TOUS LES WARE EN PLACE. GARDEZ LES MAINS, LES VÊTEMENTS LOUÉS LOUS DES PARTIES EN MOUVEMENT. ASSUREZ-VOUS QUE TOUTE PERSONNE PRÈS DES PIÈCES EN MOUVEMENT AVANT DE COMMENCER L'ÉQUIPEMENT. CONSULTEZ LE MANUEL D'OPÉRATEUR POUR LES INSTRUCTIONS D'OPÉRATION ET D'ENTRETIEN. </div> <p>2099-4721-020</p>	<div data-bbox="1101 1192 1341 1348" style="border: 1px solid black; padding: 2px;">  <p>ALWAYS STOP THE EQUIPMENT BEFORE SERVICE AND MAINTENANCE</p>  <p>READ THE OPERATOR'S MANUAL FOR SAFETY INFORMATION AND FOR OPERATING, SERVICING AND MAINTENANCE INSTRUCTIONS</p> </div> <p>2099-4725-110</p>
H	 <p>03-47-0124</p> <p>2003-4701-240</p>	

	American	European
I	 <p>2099-4724-090</p>	
J	 <p>2010-4701-590</p>	
K	 <p>2010-4703-430</p>	
L	 <p>2010-4703-440</p>	
M	 <p>2010-4703-790</p>	
N	 <p>2010-4703-380</p>	

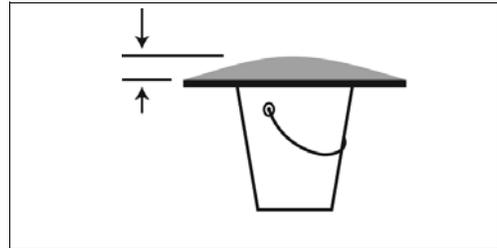
11.3 Abbreviations

Units	
@	at
°	Degrees (angles)
CE/ EC	European Union
cm	Centimeters
CW	Clockwise
CCW	Counterclockwise
gal	Gallon
Hp	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

11.4 Consistency test

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.



Ratio (Free stall manure vs Water added)	1 : 2	1 : 1 1/2	1 : 1	2 : 1
Approximate thickness on 24" (60cm) disc	1/8" (3mm)	1/4" (6mm)	1/2" (12mm)	3/4" (18mm)

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