MAN-06000

Shelbourne REYNOLDS

1800 - 3200 GALLON

OPERATORS MANUAL

ORIGINAL INSTRUCTIONS

POWERSPREAD PRO

Shelbourne Reynolds Engineering Ltd
Stanton
Bury St Edmunds
Suffolk
IP31 2AR
England

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Issue 9 **12/04/2023**

www.shelbourne.com

DEALER PRE-DELIVERY / INSTALLATION CHECK AND WARRANTY REGISTRATION – POWERSPREAD

DEALERS PRE-DELIVERY / INSTALLATION CHECK

IMPORTANT ⚠

All items listed below must be checked, and adjusted if necessary. The person conducting the inspection should tick each item in the space provided, indicating whether or not adjustments were required. In the event of additional work being needed, details should be given in the additional work / discrepancy box, located at the bottom of this sheet, or on a separate sheet if required. When the inspection is complete, THIS FORM MUST BE COPIED & RETURNED TO: - Shelbourne Reynolds within 30 days of delivery to customer, otherwise the invoice date to the dealer will be deemed to be the start date for the warranty period.

SERIAL NUMBER: ..... MACHINE NUMBER: .....

MODEL: .....

PLEASE TICK APPROPRIATE COLUMN FOR EACH ITEM UNDERTAKEN

Dealer Pre Customer Delivery / Installation / Commissioning	Checks OK	Adjusted
Check the PTO shaft length is compatible with the tractor.		
Rotate the auger & check there is no unusual scratching or knocking sounds.		
Ensure the chain-oiler system (Contractor only) is working correctly, & the chains are pre-greased.		
Check chains are tensioned correctly.		
Rotate the impeller, check it rotates freely, and is clear of the door and drip tray. Adjust impeller blades (Dairy) or impeller adjuster studs (Contractor & Pro) as required.		
Ensure the hoses are not taught when connected to the tractor.		
Check operation of all hydraulic services.		
Check hydraulic system for leaks.		
Check brake ram operation & adjustment.		
Check braking system for oil leaks.		
Check tyre pressures.		
Check wheel nuts for correct torque setting.		
Check operation of handbrake.		
Lubricate all grease points.		
Check in general that nuts & bolts are tight.		
Check paintwork & finish.		
Ensure that all safety guards & decals are fitted.		
Ensure that an operator's manual is supplied with the machine.		
Additional Comments:		
Dealer Representative's Name:	Date:	

Customer Instruction	Actioned
Explain the correct setting & operation of the machine to the customer.	
Ensure the machine is correctly attached to the customer's tractor.	
Ensure the maintenance schedule is explained to the customer.	
Ensure the lubrication & grease points are indicated to the customer.	
Ensure all safety precautions & warning decals are explained to the customer.	
Ensure the warranty policy is explained to the customer.	
Ensure that the operators manual is handed to the customer.	
Additional Comments:	
Dealer Representative's Name:	Date: .....

For specific details please refer to the operator's manual.

DEALER PRE-DELIVERY / INSTALLATION CHECK AND WARRANTY REGISTRATION – POWERSPREAD

Dealer Name: .....

Address: .....

.....

Post / Zip code: .....

Dealer Salesman Name: .....

Customer Name: .....

Business Name (if different from above): .....

Address: .....

.....

Post / Zip code: .....

Email Address: .....

Tel No. Home / Office: ..... Cell / Mobile: .....

SERIAL NUMBER: ..... MACHINE NUMBER: .....

MODEL: .....

Dealer Signature: .....

Print Name: ..... Date: .....

Privacy Notice

Here at Shelbourne Reynolds Engineering Ltd we take your privacy seriously and will only use your personal information to administer your account and provide the products and services you have requested from us.
We would occasionally like to contact you with details of other products you may be interested in, special offers we provide and details/invitations to shows, working demonstrations and open days, however this would be no more than once or twice per year. If you consent to us contacting you for this purpose please tick a box or boxes to say how you would like us to contact you.

Post ☐ **Email** ☐ **Telephone/SMS** ☐

If you prefer not to be contacted, then please tick this box ☐

For further information please refer to our Privacy Policy at www.shelbourne.com

Customers Signature: .....

Print Name:..... Date:.....

The customer's signature certifies that the machine was delivered in a satisfactory condition and that adequate instruction was received as to its correct operation, safety requirements, and maintenance as stated in the operator's manual. Also that the customer has read, understood, and agrees to the Terms and Conditions of Sale along with the Warranty Policy (including the disclaimers and limitations) contained in the operator's manual.

Additional work / discrepancies:

.....

.....

.....

.....

.....

This page must be faxed or emailed to Shelbourne Reynolds Engineering Ltd.
Fax No: +44 (0)1359 250464 Email: warranty@shelbourne.com

WARRANTY POLICY (ALL PRODUCTS)

MACHINE REGISTRATION

To qualify for the full benefit of the warranty set out in this warranty policy (the "**Warranty**"), it is the purchaser's responsibility to ensure that the Shelbourne authorised dealer has completed the warranty registration details and that they are submitted to Shelbourne Reynolds Engineering Ltd. within 15 days from the date of delivery. If the warranty registration has not been completed and returned to warranty@shelbourne.com before the expiration of 15 days from the date of delivery, any claims made will be refused.
Using the machine implies the knowledge and acceptance of these warranty terms.

1. LIMITED WARRANTIES

1.5 NEW MACHINE WARRANTY

All new machines supplied by **Shelbourne Reynolds Engineering Ltd**. **("Shelbourne"),** are warranted to the original purchaser, under normal use and service, to be free from defects in material and workmanship for a period of 12 months from the date of delivery to the original purchaser (the **Warranty Period**), subject to the terms set out in this warranty policy.

No other warranty is given by Shelbourne regarding the machine, and no person has any authority to give any such warranty for or on behalf of Shelbourne, other than were given in writing signed by a director of Shelbourne.

1.2 WARRANTY ON SPARE PARTS

Shelbourne warrants that any spare part or component supplied by Shelbourne or the Shelbourne authorised dealer in accordance with this limited warranty are free from defects in material or workmanship from the date of sale to the original purchaser for 6 months, subject to the conditions and limitations in clauses 2 to 5 of this warranty policy. Shelbourne will at its option, either repair or replace the defective part free of charge providing that any warranty claim is supported with a copy of the invoice to the end user for the failed part. No claims will be considered for which sales invoices are not provided. Original Purchaser shall be responsible for labour and all freight charges to and from the place where the warranty work is performed.

Shelbourne Reynolds Engineering Ltd. cannot be held responsible for any failures or safety implications arising from the use of non-genuine parts. Use of non-genuine parts may seriously affect the machine's performance and safety.

1.3 WARRANTY ON DEALER STOCK MACHINES

No warranty is available or will be given on machines held in dealer stock for more than 6 months before sale.

1.4 TRANSFER OF WARRANTY

Shelbourne may at its sole discretion allow this warranty to be transferred to a subsequent owner of the machinery for the balance of the Warranty Period, subject to all the warranty conditions being met and only with Shelbourne giving prior written consent.

1.5 EXTENDED WARRANTY - Only available on the following Trimmer & Powermix Ranges

Trimmer – 7000 & 8000 Series

Shelbourne will provide an extended Warranty on certain parts of the 7000 and 8000 Trimmer ranges for an additional 12 months, beyond the initial Warranty Period. This is indicated in the table below and is subject to all the other terms and conditions of this warranty policy. This is a conditional extended warranty offered solely at the discretion of Shelbourne and is on a parts only basis.

	Standard (0-12 months)	Extended (12-24 months)
Gearbox	✓	✓
Hydraulic Valves	✓	✓
Hydraulic Pump	✓	✓
Hydraulic Motor	✓	✓
Hydraulic Cylinders	✓	✓
Booms/Main Frame	✓	✓
PTO Shaft	✓	X
Electronic Controls	✓	✓
Hoses	✓	X
Joystick	✓	X

X = Not Covered ✓ = Covered

Note: Components not indicated have a Shelbourne standard 12 months warranty and are subject to all other terms and conditions of this warranty policy.

Powermix - All Models

Shelbourne will provide an extended Warranty on certain parts of all Powermix models for an additional 12 months and 24 months beyond the initial Warranty Period. This is indicated in the table below, and subject to all the other terms and conditions of this warranty policy.

This is a conditional extended warranty offered solely at the discretion of Shelbourne and is on a parts only basis. It is contingent on the recommended service schedule outlined in the operator's manual being followed and in the event of a claim proof of servicing will be required.

	Standard (0 - 12 months)	Extended (12 - 24 months)	Extended (24 – 36 months)
PTO Shaft	✓	X	X
Planetary Gearbox	✓	✓	✓
2 Speed Gearbox	✓	✓	✓
Hoses	✓	X	X
Scale Head	✓	✓	X
Electronic Controls	✓	X	X
Load Cells	✓	X	X
Valve Block	✓	X	X
Conveyor Belt	✓	X	X

X = Not Covered ✓ = Covered

Note: Components not indicated have a Shelbourne standard 12 months warranty and are subject to all other terms and conditions of this warranty policy.

2. EXCLUSIONS

Shelbourne will not be liable for the machine's failure to comply with the Warranty in any of the following circumstances:

1) damage due to improper use or abusive operation

2) damage or depreciation caused by normal wear and tear.

3) the machine been subjected to alteration, modification, or fitment of non-genuine Shelbourne parts without the prior consent of Shelbourne.

4) wilful or accidental damage, including (but not limited to) damage caused by contact with overhead power lines, damage caused by foreign objects (e.g., stones, metals, and any materials other than vegetation).

5) the machine has not been maintained and serviced fully in accordance with the details and maintenance schedule set out in the Shelbourne Operators Manual, and only using Shelbourne genuine parts. Proof of service work may be requested prior to approval of any claim under the Warranty.

6) failure due to use of incorrect oil or lubricants, contamination of the oil, or oil which has served its useful life or failure to carry out proper maintenance as recommended in the Shelbourne Operators Manual.

7) the original purchaser failed to follow Shelbourne's oral or written instructions (including instructions in the Shelbourne Operators Manual) for the transportation, storage, commissioning, installation, use and maintenance of the machine or (if there are none) good trade practice regarding the same.

8) where the original purchaser has continued to use the machine after they became (or should reasonably have become) aware of the defect with the machine. **Continued use of the machine after a defect is discovered could cause further failures for which Shelbourne cannot be held liable and may also have safety implications**.

9) the Shelbourne serial number plate on the machine has been removed or altered.

10) failure by the customer to release the machine for repair will not be accepted as a reason for delay in repair or submitting warranty claims.

11) the product is attached to, connected with, or used in conjunction with, any other product which it is not compatible for use with (whether that other product is a Shelbourne or non-Shelbourne product);

In addition, it is the purchaser's responsibility to ensure that where the purchased Shelbourne product is to be attached to a tractor or other vehicle, the product falls within the carrying capacity as well as compatibility of the tractor or machinery which it is to be mounted on or to. Acceptance of an order and the supply of a product by Shelbourne does not indicate Shelbourne's approval of the purchaser's intended choice of tractor or machinery for installation, nor its compatibility with the purchased Shelbourne product.

The Warranty shall not apply in respect of any:

1) wearing items including but not limited to drive belts, conveyor belts, conveyor rollers, rubber flaps, flails, skids, bearings, pins, bushes, blades, pneumatic tyres, or any other items which are soil engaging or normal wearing or consumable items

2) hoses that have suffered external damage. Complete hoses must be returned for warranty within this period. Any which have been cut or repaired will be rejected.

3) repeat or additional repairs resulting from incorrect diagnostics, unless advised by Shelbourne.

4) poor-quality previous repair work (unless carried out by Shelbourne).

3. LIMITATIONS OF LIABILITY

Shelbourne and the Shelbourne authorised dealer shall not be liable to the original purchaser under any circumstance for injuries, death, property damage or damages of any kind whatsoever directly, consequential, or contingent to any person or property caused by the use of the machine.

Shelbourne shall not be liable for any consequential loss such as the following costs or types of loss (whether direct or indirect):

1) Loss of profit;
2) Loss of or damage to goodwill;
3) Loss of sales or business;
4) Loss of agreements or contracts or business opportunity;
5) The cost of lost consumables (such as oil);
6) Any loss or costs arising from the inability to use the machine due to any defect with the machine, and during the time taken to repair or replace the machine;
7) The cost of hire or purchase of any replacement machine;
8) Recovery of broken-down machine;
9) Damage to or loss of crops or vegetation;
10) Labour cost;
11) Damage to carrying tractor;
12) Damage caused by exceeding the tractor OEM (original equipment manufacturers) specification for implement mounting and hitch capability; and
13) Any other indirect or consequential loss.

In view of the Warranty given by Shelbourne, the terms implied by sections 13 to 15 of the Sale of Goods Act 1979, and all other implied warranties or conditions regarding the quality or suitability of the machine, are, to the fullest extent permitted by law, excluded from this warranty policy and any contract or agreement between Shelbourne and either the original purchaser or the Shelbourne authorised dealer.

The liability of Shelbourne for any failure by the machine to comply with the Warranty shall be limited to repair or replacement of the product, or refund of the purchase price, of the product as set out in clause 4 of this warranty policy.
Nothing in this warranty policy limits any liability which cannot legally be limited, including liability for:

1) death or personal injury caused by negligence.
2) fraud or fraudulent misrepresentation.
3) breach of the terms implied by section 12 of the Sale of Goods Act 1979 (title and quiet possession); and
4) breach of section 2 of the Consumer Protection Act 1987.

4. WARRANTY CLAIMS

All claims must be submitted by a Shelbourne authorised dealer on behalf of the original purchaser, providing that the original purchaser has:

1) given notice in writing with full information regarding the failure, to Shelbourne (or the Shelbourne authorised dealer) during the Warranty Period, and within 15 days of discovery of the failure. The Shelbourne authorised dealer will be responsible for forwarding the claim to Shelbourne directly, and where appropriate, the Shelbourne authorised dealer may be responsible for dealing with warranty claims as directed by Shelbourne;

2) given Shelbourne (or the Shelbourne authorised dealer) a reasonable opportunity to examine the machine or the damaged or defective parts; and

3) if requested by Shelbourne (or the Shelbourne authorised dealer), returned the damaged or defective parts (via the original Shelbourne authorised dealer) within 30 days of notification of a defect, as long as the request by Shelbourne (or the Shelbourne authorised dealer) is made within that time frame, otherwise, within a time frame as specified by Shelbourne (or the Shelbourne authorised dealer).

then Shelbourne shall, at its option, repair or replace the defective parts, or refund the price of the defective parts or approve that the Shelbourne authorised dealer does the same.

5. REPAIR COSTS

The original purchaser or Shelbourne authorised dealer shall not repair, or arrange for a repair, of the machine without the prior written authority of Shelbourne. Such authority may only be given by Shelbourne service personnel. **Shelbourne will not be liable for the cost of any repairs carried out without its prior written consent to the work being done.**

If Shelbourne authorises a repair of the machine, all claims for repair costs must be submitted to Shelbourne by a Shelbourne authorised dealer within 15 days of the date of repair on a Shelbourne Warranty Claim Form (in accordance with clause 7 of this warranty policy).

Repairs should only be completed by a Shelbourne authorised dealer (or another repairer with the prior written consent of Shelbourne).

The submission of a claim is not a guarantee of payment. Shelbourne will only reimburse the reasonable costs and expenses incurred in connection with any repair. The decision reached by Shelbourne is final.

6. DAMAGE TO NEW MACHINES

All goods must be examined on receipt, please examine all machines and packages, if there is any damage or short shipment sign ‘Damaged’ or ‘Detail any item not received’ and notify both Shelbourne Reynolds warranty department by phone or E Mail and the carrier within 24 hours of any damage or missing parts. **No claims will be accepted after this time.**

7. CLAIMS PROCEEDURE

All claims must be submitted by a Shelbourne authorised dealer. Full information relating to the failure must be submitted using the claim form available on the Shelbourne website under the "Support" section, with all required fields completed with the relevant information and then emailed to warranty@shelbourne.com. Full information on warranty claim submission can be found set out in the warranty procedures document.

Where repairs are completed by a Shelbourne authorised dealer (or another repairer with the prior written consent of Shelbourne), then completed form(s) must be received by Shelbourne **NOT LATER THAN 15 DAYS** from the date of repair. When requested by Shelbourne, additional information or failed parts must be received by Shelbourne **WITHIN 15 DAYS** of claim submission.

If in exceptional circumstances a non-Shelbourne part is used for a repair, warranty reimbursement will be at no more than Shelbourne's standard dealer cost for the genuine part.

If parts are returned and the claim is subsequently rejected and you require the parts sent back to you, please notify Shelbourne within 7 days of receiving rejection notification.

Following examination of the claim and parts, Shelbourne will pay at their discretion, for any valid claim the invoiced cost of any parts supplied by Shelbourne and appropriate labour and mileage allowances if applicable. **Maximum mileage per claim is capped at 80 miles unless otherwise pre-authorised and confirmed in writing by the Shelbourne Reynolds Service Manager.**

For any claims submitted, which are intentionally misleading or fraudulent, Shelbourne shall be entitled to charge an appropriate hourly rate to recover any costs incurred as a result.

8. FAILED PARTS

Ensure that all hydraulic ports on returned components are drained of oil and securely and appropriately plugged with the caps that came fitted to the replacement components to avoid oil leakage and contamination entering the assemblies. Hydraulic cylinders must be cleaned of oil and fully retracted.

Electrical items being returned must be suitably packaged and protected to reduce the risk of transportation damage.

Due to strict time constraints enforced by our suppliers, you must immediately return any failed hydraulic components such as pumps, motors, cylinders, valves, and hoses; electrical components, such as solenoid valves, control boxes, sensors/switches; or driveline components such as gearboxes, PTOs, and bearings if the machine is still within its relevant warranty period.

Hydraulic parts such as pumps, motors and cylinders, and driveline parts such as gearboxes must be returned to us unopened and unexamined. With hydraulic valve blocks and electrical control boxes there is the ability to replace specific serviceable components within them, such as valve cartridges, spool assemblies, circuit boards, relays, switches, and joystick should the need arise to resolve a fault within.

Any parts replaced under warranty remain the property of Shelbourne. They must be returned to Shelbourne on request. In all other cases, unless informed otherwise, they must be retained for a period of 90 days after such time they must be destroyed and rendered physically unusable and not sold or reconditioned for sale to a third party.

9. REIMBURSMENT

All claims, to the extent which it has been agreed by Shelbourne that a refund will be made, will be settled with the Shelbourne dealer, by credit memo, within 30 days of acceptance of the claim.

10. EXPORT CUSTOMERS

If you are based outside of the UK, warranty terms and conditions outlined above may differ depending on your market. Please contact Shelbourne Reynolds Engineering Ltd. for further information.

Dear Customer,

Parts manuals are not supplied with this machine, but they can be ordered from your Shelbourne Reynolds dealer. Alternatively they can be downloaded from the Shelbourne Reynolds website www.shelbourne.com by clicking on the Parts and Service section of the website, and then selecting manuals followed by Powerspread Manuals.

The Machine and Parts Manual number for your machine is:

Tick	Machine No.	Manual No.	Machine Description
	609905 01	MAN-06100	Powerspread Pro 2400-3200
	609905 02	MAN-06100	Powerspread Pro 1800-2300
	609905 03	MAN-06100	Powerspread Pro Slurry Master

Powerspread Pro Serial Number **PSP**

ORDERING SPARE PARTS

To ensure you order the correct part from your SRE dealer please use the following procedure:

ALWAYS QUOTE THE MACHINE AND SERIAL NUMBERS WHEN ORDERING.

Refer to the Parts Manuals front page/s, listing the machine numbers. Select the correct machine number which is printed in the top left corner of the page (starting with 6099_ _ 01). Your machines number is listed above or can be found printed on the identification plate located on the LH side of the front sheet of the tub.

Scan down the page, and select the relevant sub assembly your required part falls within. Sub-assemblies start from 6090_ _ 01. Note the year or serial number of the machine may determine a correct sub assembly if more than one is listed.

Continue through the manual and find the relevant sub assembly parts listing. Again the number will be printed in the top left corner; the sub-assemblies are in numerical order.

Having found the correct parts list, you will find the corresponding drawing by either looking at the facing page or progressing through the manual to the next drawing.
The drawings indicate the components by item numbers, which you will find, are repeated in the left-hand side of your parts listing, and therefore referring to the correct part.

Please note that if certain parts cannot be found listed below the sub-assembly numbers, they are likely to form part of a specific optional kit. These kits will be found in numerical order further through the manual and start with KIT- _ _ _ _ _.

The tick list located on the following page of this manual will highlight the optional build kits that were specified with your machine.

OPTIONAL BUILD KIT LISTING

Non-current production highlighted

Tick	Part No.	Description
		PTO Shaft options
	KIT-03799A	Wide angle PTO shaft (Weasler)
	KIT-03799B	Wide angle PTO shaft (Walterscheid)
	KIT-59010	PTO Guard kit (2400-3200)
	KIT-59014	PTO Stowage Kit
		Towing eye / drawbar options
	KIT-03742	Heavy duty UK tow eye
	KIT-03764	Heavy duty UK drawbar
	KIT-03874	Rear drawbar kit (1800-2300)
	KIT-03875	Rear drawbar kit (single axle 2400-3200)
	KIT-59009	Rear drawbar kit (Tandem 2400-3200)
	KIT-59024	K80 Ball hitch kit
	KIT-59003	Scharmuller hitch fixing kit
		Wheel and tyre options
	KIT-03643	650/65-R30.5 Trelleborg
	KIT-59000	650/65-R30.5 BKT
	KIT-03883	560/60-R22.5, 8 Stud tandem
	KIT-03914	560/60-R22.5, 10 stud tandem
	KIT-03920	600/55-R26.5, 10 Stud tandem
	KIT-03892	620/75 R26 Alliance
	KIT-03915	650/65 R30.5 Alliance
	KIT-59021	600/55-R26.5 Alliance wheel and tyre kit
		Axle options
	KIT-03806	Single hydraulic axle (2400-3200)
	KIT-03807A	Standard tandem rear steering hydraulic axle (Hyd only) (2400-3200)
	KIT-03808	Single hydraulic axle (1800-2300)
	KIT-03913	Commercial tandem rear steering hydraulic axle (Air/hyd) (2400-3200)
	KIT-59019	Tandem air / hydraulic brake kit (commercial)
	KIT-03944	Brake connection kit (1800-2300)

	KIT-03944A	Brake connection kit (2400-3200)
Extension / slurry canopy options		
	KIT-03784	Slurry canopy kit (1800-3200)
	KIT-03891	Extension side kit (2300)
	KIT-03963	2000 Gallon extension side kit (SWB)
	KIT-03911	Extension side kit (3200)
Anti-bridge kit options		
	KIT-03823	Anti-bridging kit (2400-3200)
	KIT-03823A	Anti-bridging kit (1800-2300)
	KIT-03824	Automatic hydraulics kit (All models)
	KIT-03825	Manual hydraulics kit (All models)
	KIT-03762	Anti-bridge rear pivot kit (2400-3200)
	KIT-03762A	Anti-bridge rear pivot kit (1800-2300)
	KIT-03770	Blanking plate kit (1800-2300)
	KIT-03771	Blanking plate kit (2400-3200)
	KIT-03771a	Blanking plate kit (2400-3200)
Impellar		
	KIT-59008	Large dual impeller kit
	KIT-59020	Impeller bearing upgrade kit
General options		
	KIT-03745	Straw plate kit (2400-3200)
	KIT-59005	Tandem mudguard kit (2400-3200)
	KIT-03850	Mechanical jack
	KIT-59013	Lift off jack kit
	KIT-59011	Chain oiler kit
	KIT-59015	Slurry master door kit
	KIT-59017	LWB Weighing kit

Transfers		
	KIT-03749	Transfers kit (2400-3200)
	KIT-03749A	Transfers kit (1800-2300)
Country area kit		
	KIT-03959	UK Area kit
	KIT-03248	German Area kit
	KIT-03250	European Area kit
Extra options		

EC Declaration of conformity for machinery

(Machinery Directive 2006/42/EC, Annex II., sub. A)

Manufacturer: Shelbourne Reynolds Engineering Ltd.

Address: Shepherds Grove Industrial estate,
Stanton,
Bury St Edmunds,
Suffolk.
England.
IP31 2AR

Name and address of the person *(established in the European Community/EEA)* authorised to compile the technical file *(to the authorities on request)*:

Name: Mr Neil Smith

Address: As stated above.

Herewith we declare that:	DESIGNATION	**MANURE SPREADER**
	MAKE:	**POWERSPREAD PRO**
	MACHINE No:	**609905**
	SERIAL No:	**PSP**

- is in conformity with the relevant provisions of the Machinery Directive (2006/42/EC)

Neil Smith
Director

Place : **Stanton, England.** Date :

CONTENTS PAGE

SECTION 1 INTRODUCTION

1.1 FOREWORD

This manual will aid the user when setting, operating and servicing their Shelbourne Reynolds Powerspread Pro. Scheduled information is listed to ensure the operator follows safe and efficient working procedures. It must be read & understood by all persons who are required to carry out work either on or with the machine, and should be used in conjunction with the operator's manual of the tractor or prime mover.

1.2 IMPROVEMENTS AND CHANGES

Shelbourne Reynolds Engineering are continually improving their products to meet the farmers needs and therefore reserve the right to make improvements and changes when practical to do so, without incurring any obligation to make changes and additions to equipment which has been sold previously.

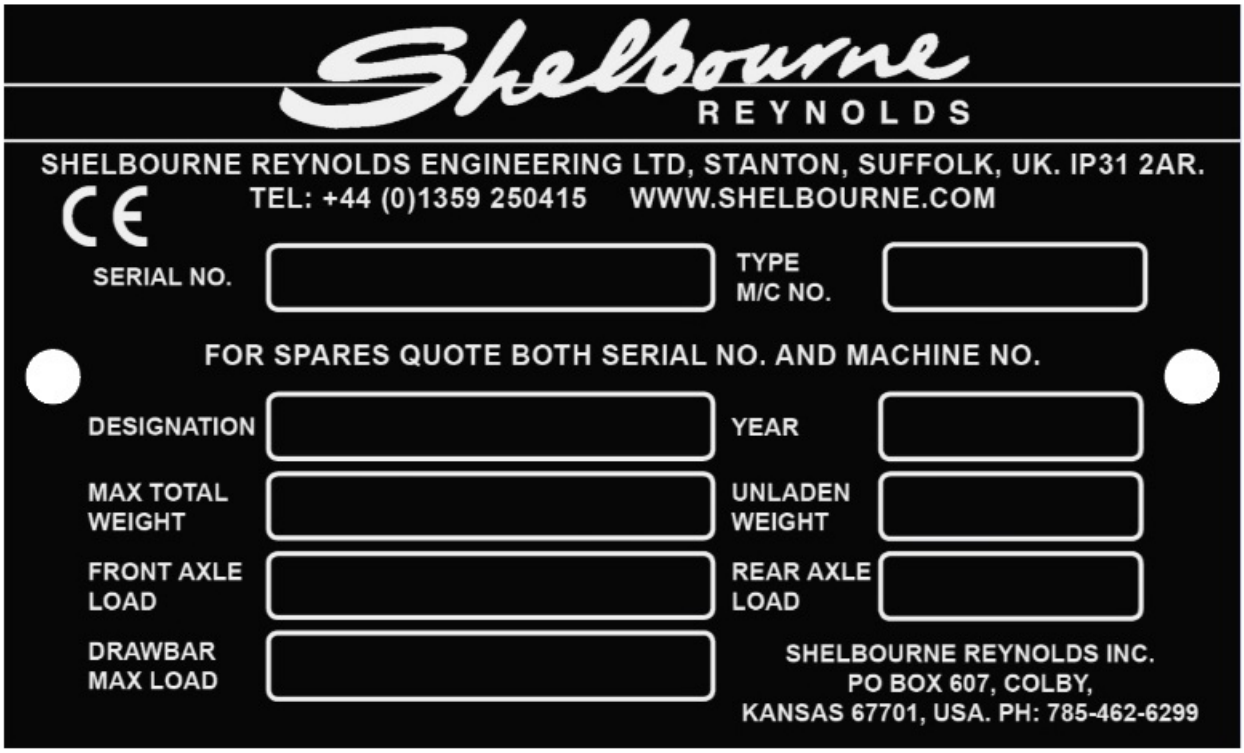
1.3 SERVICE PARTS

Use guaranteed and genuine Shelbourne Reynolds Engineering service parts on Shelbourne Reynolds machinery to ensure maximum life and best performance. These are available through your Shelbourne Reynolds Engineering dealer.

When ordering service parts always quote the model, serial number and machine number.

1.4 MACHINE IDENTIFICATION

The serial and machine numbers of the Powerspread Pro spreaders are printed on a plate located on the left hand side of the machine.



SECTION 2: SAFETY PROCEDURES

2.1 ACCIDENT PREVENTION

The following safety instructions are applicable for all sections of this manual.

Accident prevention programmes can only avert accidents with the co-operation of the persons responsible for the operation of the equipment.

For the safety of yourself and others, operate equipment with care and do not take unnecessary risks.

Please read all safety instructions contained in this operating manual with the utmost care and observe all safety signs attached to the Powermix.
Follow these instructions to help prevent accidents. These instructions must also be made available to all other users.

The tractor's manufacturer's operator's manual and listed safety precautions should also be adhered to when using the Powermix.

All relevant accident prevention regulations governing the operation of agricultural machinery, as well as other generally acknowledged health and safety regulations and road traffic regulations must be strictly observed.

The 'Safe stop' procedure is mentioned throughout this manual. It is extremely dangerous to carry out any work on a machine while it is under power. The most important safety measure to follow is the Safe Stop procedure; use it before carrying out any maintenance or adjustments, including dealing with a blockage or other problem: The procedure is as follows:

- Put the tractors handbrake on.
- Make sure the tractors controls are in neutral (equipment made safe).
- Stop the engine (or turn off the power).
- Remove the key (or lock-off the power supply).

CAUTION

This symbol will appear throughout this manual whenever your safety, the safety of others or the machinery, is involved.

2.2 SAFETY SIGNS

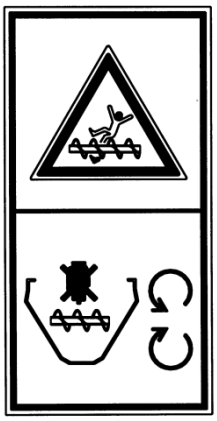
The following safety signs appear on the machine, they provide important instructions for safe work. – Take them into consideration for your safety and the safety of others. Ensure that you identify each symbol and understand its warning.
Attached to the PTO guards are additional safety signs, refer to the driveshaft operators manual for their meaning.

These safety signs must be kept in a legible condition and must be replaced if missing or damaged. This is especially the case when whole sections are replaced when making repairs. Replacement safety signs are available as spare parts through your dealer or importer.

SAFETY SIGNS

590479 01

Beware of rotating auger. Do not reach or lean into tub. Do not attempt to clear blockage when the tractor engine is running. Serious injury may result from falling into the tub with auger rotating.
(Also located on LH side & rear of machine)



800215 01

There is a crushing hazard between the frame of the impeller and the door frame of the tub when hydraulically raising the impeller assembly.

590477 01

Ensure there are no persons standing in the vicinity of the machine when the tractor engine is running. Serious injury may result from rotating parts and flying objects.

590476 01

Do not use safety rail on the impeller as a step. Serious injury may result from slipping or falling into the impeller.

TNF-0011

Stop the engine and remove the key from the tractor's ignition before carrying out any work on the machine.

TNF-0011

Carefully read the operating manual before handling the machine.

590479 01

Beware of rotating auger. Do not reach or lean into tub. Do not attempt to clear blockage when the tractor engine is running. Serious injury may result from falling into the tub with auger rotating.

193391 01

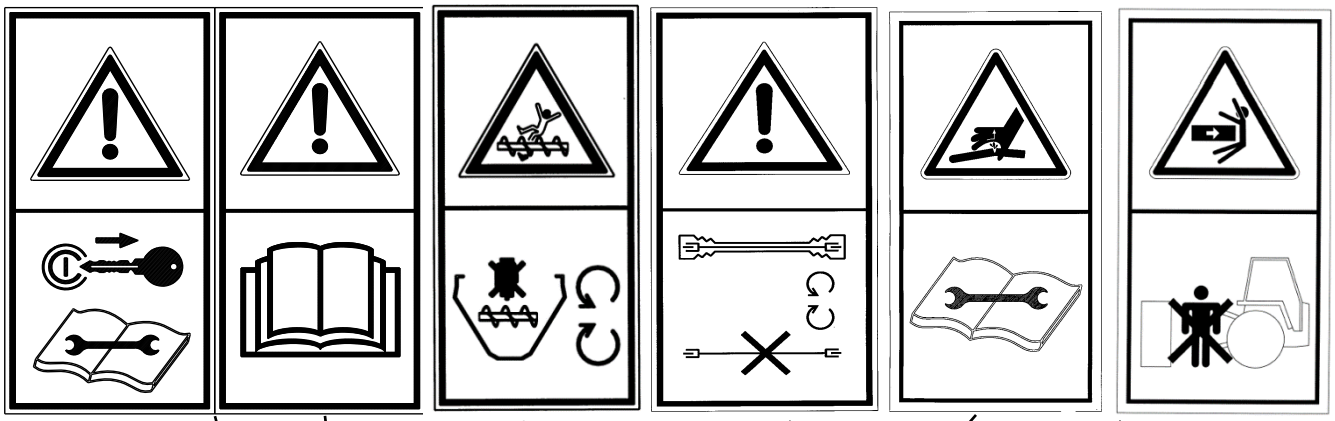
Ensure PTO shaft guards are fitted and chains attached.

800221 01

Hydraulic oil is dangerous when under pressure and can be injected into the body. Always ensure the hoses are in good order before operating.

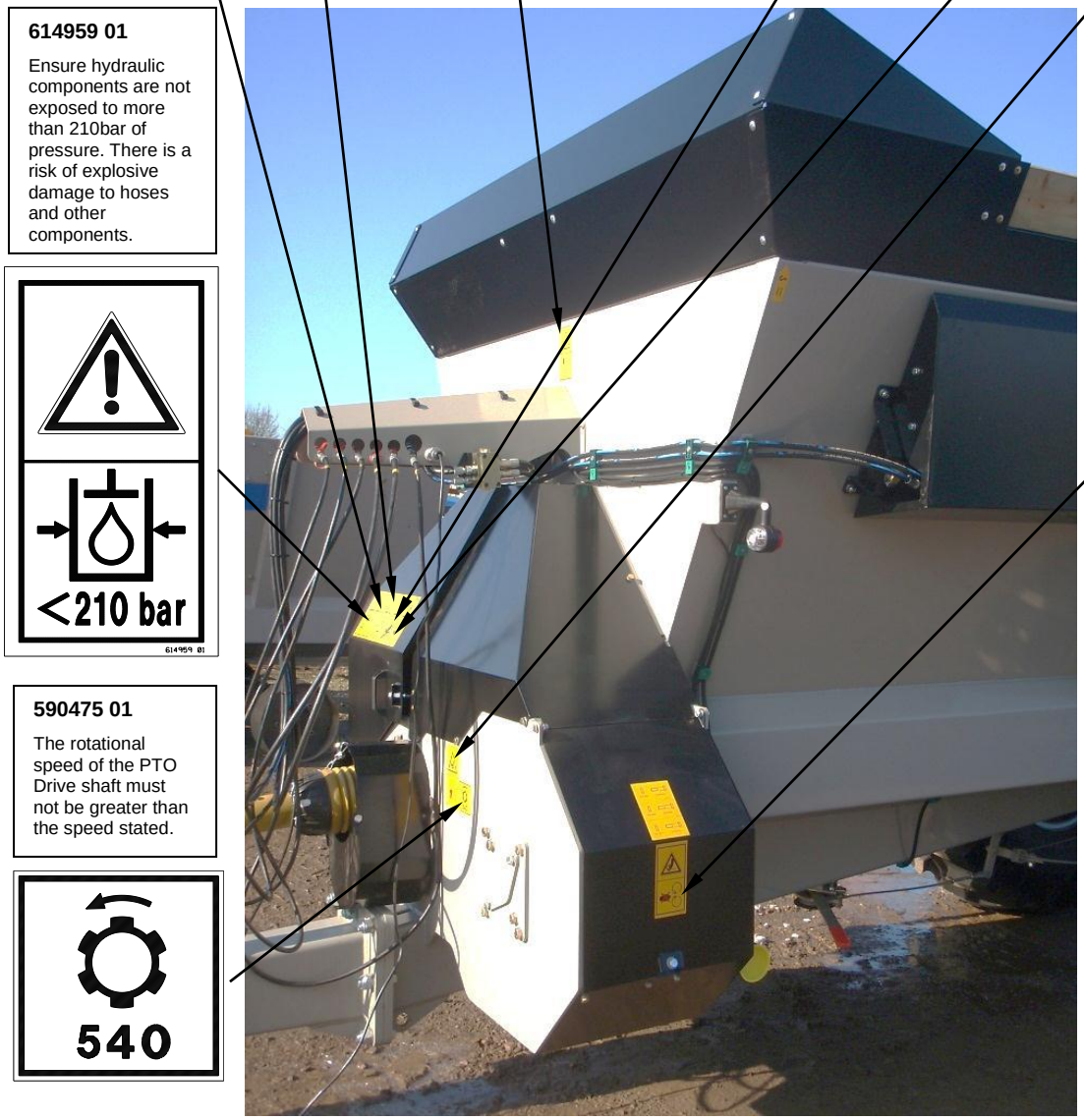
260060 01

Risk of crushing torso. Do not stand between Powerspread and tractor when hitching to tractor.



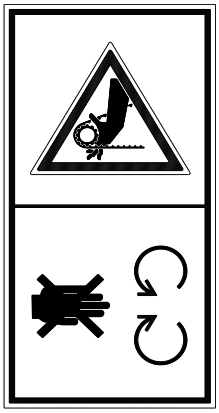
614959 01

Ensure hydraulic components are not exposed to more than 210bar of pressure. There is a risk of explosive damage to hoses and other components.



193392 01

Do not open or remove safety guard while engine is running. There is a risk of hand entanglement.



590475 01

The rotational speed of the PTO Drive shaft must not be greater than the speed stated.

2.3 ACCIDENT PREVENTION BEFORE STARTING THE MACHINE.

Read the manual thoroughly.

If moving the Powerspread by overhead lifting, use the designated lifting points. (See section 4.1). Ensure that the slings / chains are rated accordingly, and that the angles of the slings / chains are set in accordance to lifting regulations.

Ensure bystanders are at a safe distance when the Powerspread is being suspended above the ground while lifting and unloading.

Pay particular attention to the width of the machine while unloading the machine from the delivery trailer. A portion of the tyre may overhang the bed of the trailer, so care must be taken to keep the machine central, whilst moving.

Ensure bystanders are at a safe distance while moving the Powerspread from the delivery trailer using a tractor.

Ensure the hydraulic brakes are attached to the tractor before attempting to move the Powerspread.

Ensure a suitably sized tractor is used to move the Powerspread.

Ensure the tractor is fitted with Mirrors to guarantee the lateral visibility on both sides of the machine.

Ensure the machine is parked on a firm & level site and the handbrake is applied.

Do not carry out any PDI work without appropriate protective clothing and long hair tied back. (Gloves, safety boots, close fitting clothing etc.)

Review the PDI checklist, printed at the start of this manual. Check the items listed. Pay particular attention to checking wheel nuts & tyre pressures, along with checking the hydraulics and braking systems.

Before adjusting the position of the tow eye ensure the machine is parked on a firm & level site, with the handbrake applied. Ensure the machine is uncoupled from the tractor and is sitting securely on the parking foot. The tow eye weighs 35kg; therefor suitable lifting apparatus is advisable to take the weight while the fixing bolts are removed.

If the length of the PTO shaft needs adjusting always follow relevant workshop & power tool health and safety procedures / guidelines.

Follow appropriate manual handling procedures, when lifting PTO shaft.

Check there are no foreign objects inside the machine.

<u>Always perform an internal inspection inside, around and under the machine before attempting to start, transport or load the machine.</u>

The Powerspread may be used only if all safety devices, e.g. detachable guards, are fitted and in proper working order.

Familiarise yourself with the controls and functions of the machine and practice them in a safe location before attempting to start work.

2.4 ACCIDENT PREVENTION WHEN COUPLING AND UNCOUPLING TO THE TRACTOR.

The work of coupling and uncoupling the Powerspread involves a high risk of injury Follow the procedure described in section 5.4 for further information.

Ensure the pickup hitch of the tractor is rated to withstand the maximum load seen at the drawbar, and that it matches the drawbar eye of the Powerspread.

Ensure the max permissible rear axle load of the tractor will not be exceeded by the weight of the Powerspread.

Ensure the machine is parked on a firm level site for attaching and detaching, ensure the handbrake of the Powerpsread is applied.

Check that all observers are clear of the Powerspread and tractor. Warn bystanders by sounding the horn of the tractor several times.

Slowly drive the tractor towards the Powerspread – always ensure that there are no other persons in the vicinity or between the machine and the tractor.

Connect the Powerspread to the tractor hitch using only the method recommended in the tractor's operator manual.

Ensure there is sufficient clearance between the PTO shaft and the drawbar when turning on undulating ground.

Ensure the machine is parked on a firm & level site, and the 'safe stop' procedure is followed before raising / lowering the parking foot. This is to ensure that the unit does not unexpectedly move while the operator or person is in close proximity to the machine

Be aware of the pinch point between the parking foot and the drawbar while raising the parking foot.

Never leave the driver seat whilst the tractor or machine is running.

Ensure the machine is parked on a firm & level site and the 'safe stop' procedure is followed before checking the operation of the rear road lights and before connecting / disconnecting the power supply. This is to ensure that the unit does not unexpectedly move while the operator or person is in close proximity to the machine.

2.5 ACCIDENT PREVENTION WHEN USING THE HYDRAULIC SYSTEM

Ensure the machine is parked on a firm & level site and the 'safe stop' procedure is followed before connecting / disconnecting the hydraulic couplings. This is to ensure that the unit does not unexpectedly move while the operator or person is in close proximity to the machine.

Do not connect to tractor's hydraulic system if it can deliver more than 210 bar.

Due to the possibility of oil contamination on your hands / contact with hot or pressurised oil, it is recommended to use PPE (Personnel Protective Equipment), when handling hydraulic hoses & connectors.

Do not connect the hydraulic hoses to the tractor's hydraulic system until you have made sure that the system is at zero pressure on both the tractor and the Powerspread.

Do not check the hydraulic system for leaks unless the system is at zero pressure.

Hydraulic systems can generate extremely high pressures. Use proper and thorough means of searching for leakage (do not use your hands), and repair all damage immediately. Spurting hydraulic oil can cause injuries. Seek medical advice immediately in the event of injury.

Hydraulic systems can generate heat within its components, be aware if touching / servicing components directly after use.

In order to exclude the possibility of incorrect connection, all mating plugs and sockets belonging to the hydraulic connections between the tractor and the Powerspread should be marked with matching colours.

Always ensure the hydraulic hoses & fittings are in good order before operating.

2.6 ACCIDENT PREVENTION WHEN USING THE PTO SHAFT

In conjunction with the following safety measures, always refer to the safety manual supplied separately with the PTO shaft.

Ensure the machine is parked on a firm & level site and the ‘safe stop’ procedure is followed before proceeding to fit / remove or grease the PTO shaft. This is to ensure that the unit does not unexpectedly move / start up while the operator or person is in close proximity to the machine.

Do not wear loose clothing, jewellery, or hair that could become entangled with the driveline.

Be aware that the drive line may overrun for a short time after the PTO has disengaged.

Keep the PTO shaft horizontal during handling to prevent the halves from sliding apart, which could cause injury or damage the guarding. Use suitable means to move heavy PTO shafts.

Use only the PTO shaft, which is supplied with the Powerspread and is intended for use with the Powerspread.

Ensure that it is fitted with the prescribed protective equipment (protective tube and funnel-shaped PTO shaft guard must be fitted).

Be aware of the risk of pinching your fingers / hand between the guard and the end yoke of the PTO shaft

Make sure that the tubes overlap by the prescribed distance in both straight-ahead and in turning positions and are secured in such a way that they cannot rotate with the shaft.

Ensure the PTO guard safety chains are fitted and secure.

Before starting work ensure the PTO end yokes are properly engaged.

Be absolutely sure there is nobody standing in dangerous proximity to the Powerspread when you switch on the PTO shaft. Contact can cause death;

The PTO shaft speed of the tractor must correspond with the maximum permissible rotational speed of the Powerspread.

The angle of attachment will depend on the type of PTO shaft and on the type of tractor hitch. Always switch off the PTO shaft if the angle of divergence is excessive or whenever the PTO shaft is not required.

Make sure that the drawbar of the Powerspread does not interfere with the PTO guard.

2.7 ACCIDENT PREVENTION WHEN OPERATING THE MACHINE

The Powerspread must not be put into operation until the user has been given proper initial instructions either by the dealer or by one of Shelbourne Reynolds' representatives or employees.

It is the owner's responsibility that anybody else who uses the machine is competent and has received instruction or training.

PPE (Personnel Protective Equipment) is recommended while spreading certain materials due to skin irritation and inhalation of fine particles. In this case wear face / dust mask, goggles, gloves and overalls.

Only use the Powerspread on a tractor that is capable of taking its weight. Use weights or ballast as required ensuring stability of the unit.

One person should use the machine only.

Bystanders need to keep a safe distance from the Powerspread and tractor, while it is being operated or loaded. Warn bystanders by sounding the horn of the tractor several times and give them time to move away before starting.

Inspect manure before loading to ensure it does not contain any foreign objects.

Ensure the discharge door is closed prior to loading. Material may surge from the door opening which could result in injury.

Always inspect inside, around and under the machine before attempting to start, or load the machine.

When performing an internal inspection, climb the inspection ladder with caution, the steps will be slippery and there is a risk of slipping / falling.

If another person is involved in loading the Powerspread, ensure the work has been planned and a system of communication has been agreed on.

Only load the machine with a suitable device.

Do not overload the Powerspread. Ensure the load is evenly distributed in the hopper to prevent the machine becoming unstable.

Do not load the machine on a slopping / slippery site.

Keep the tractor, handler or loader windows and doors closed while loading and spreading.

If the windows of the tractor are open while spreading, it is recommended that personnel hearing protectors are used due to the noise levels involved.

The control of noise at work regulations 2005 state 85 decibels and above before hearing protectors are required.

Always operate the machine at a maximum 540rpm PTO speed.

Be aware that small stones and other similar hard objects can be thrown further than manure. Care should be taken when working near highways, public footpaths, buildings, etc.

Be aware that when the load is almost empty stones and hard objects may be ejected from the top of the hopper while the impeller is rotating.

No person may be allowed to ride or climb on the Powerspread when it is operating. Never leave the driver seat whilst the tractor or machine is running.

Always adjust the driving speed to suit the driving conditions. Avoid fast turning when driving uphill, downhill or across a slope.

Operators of agricultural machinery are at high risk of being exposed to whole body vibration syndrome (WBV). High exposures over many months or years can lead to permanent damage and back pain.

In the event of a malfunction, cease operation. Malfunctions must be eliminated immediately. Always use the ‘safe stop’ procedure before removing or opening any guards or clearing a blockage in the spreader.

Always replace all guards after making any adjustments or lubricating the machine. Replace or repair any damaged or missing guards immediately.

Keep hands away from moving parts i.e. Impeller, door, drive chains, PTO shafts.

Do not reach into the tub due to a risk of entanglement by the auger.

Be aware that the drive line may overrun for a short time after the PTO has disengaged.

Keep a safe distance from the impeller assembly when it is being lowered or raised, as there is a risk of impact / crushing.

Ensure the machine is parked on a firm & level site and the ‘safe stop’ procedure is followed before adjusting the spreading deflector. Approach the machine only when the impeller has stopped rotating.

While adjusting the spreading deflector, be aware of the pinch point when retracting the retaining pin and re-positioning.

Ensure the machine is parked on a firm & level site and the ‘safe stop’ procedure is followed before raising / lowering the Ladder extension. This is to ensure that the unit does not unexpectedly move while the operator or person is in close proximity to the machine

While raising / lowering the ladder extension, be aware of the pinch point when retracting the retaining pin and re-positioning.

Keep children away from the machine at all times.

2.8 ACCIDENT PREVENTION WHEN TAKING ON PUBLIC ROADS

UK road traffic regulations must be observed when towing the Powerspread on the public highway.

The Powerspread must be in a road-worthy condition.

Check the tyre pressures regularly. Incorrect tyre pressure will reduce the carrying capacity of the tyre as well as the life of the tyre.

Regularly check & tighten wheel nuts to the recommended torque.

Only use the Powerspread on a tractor that is capable of taking its weight. Use weights or ballast as required, ensuring stability of the unit.

Observe the maximum permissible width for road transport.

Disconnect the PTO driveshaft and all hydraulic connections (excluding braking service) from the Powerspread during road transport so it cannot be inadvertently operated.

Ensure that all braking systems and lighting systems are in full working order. Make sure they are connected, and the vehicle towing the Powerspread can fully and correctly operate them.

Ensure the rear road lights are free of debris and are clearly visible.

Do not overload the machine. Observe the maximum permissible axle loads, the load bearing capacity of the tyres and the maximum total weights in order to ensure adequate steering and braking. Attached implements also influence the behaviour of the tractor.

When transporting slurry and semi-solid material, allow sufficient room at the front of the spreader to prevent "forward surge" and consequent over-spill if emergency braking should be employed.

No person may be allowed to ride on the Powerspread.

Always adjust the driving speed to suit the driving conditions. Avoid fast turning when driving uphill, downhill or across a slope. Braking performance and turning ability will be affected when implements are connected to the tractor.

Be aware of the width, height and length of the when transporting on the public highway or near obstructions.

2.9 ACCIDENT PREVENTION WHEN LEAVING THE MACHINE

Never leave the driver seat whilst the tractor or machine is running.

Park the machine on a firm and level site.

Follow the safe stop procedure before leaving the tractor cab. If being left unattended lock the tractor cab.

When unhooking the Powerspread, apply the machines parking brake before moving the tractor away.

Do not leave the machine adjacent to a building, hay stack or the like, where persons could climb and fall into the tub.

Store the PTO shaft on the stand provided, and locate the hydraulic hoses in the hose parking station positioned at the front of the machine.

Even when the machine is not running, certain components can be moved or rotated by hand, causing injury to fingers or hands due to trapping. Wherever possible secure components during storage to prevent accidental injuries.

2.10 ACCIDENT PREVENTION WHEN CHANGING A WHEEL

Position the machine on a flat hard standing surface capable of withstanding the loading of a jack.

Where possible avoid changing a wheel near live traffic.

Wear High visibility clothing and position warning signs / cones if a wheel needs to be changed near live traffic.

If carrying out the procedure on a public highway, consider the gradient of the camber before jacking and propping.

Before jacking ensure the wheels are chocked and the machine is hitched to the tractor with its parking brake effectively engaged.

Be aware that small movements in a liquid load may cause the machine to become unstable.

Know the weight of the load and only use adequately rated equipment for the load.

It is advisory to use air actuated jacks that can extend high enough to reach the jacking point. Standard trolley or bottle jacks will not have sufficient travel height.

Do not lift the machine by top crane hook when changing a wheel.

Never rely on the hydraulics / air of any lifting equipment. Do not use uneven timber or cement blocks as props, always use heavy duty axle stands

Stay clear of the danger zone / crush area if the machine were to collapse off its temporary supports.

Use mechanical aids to lift / position wheels.

Ensure the wheels are safely replaced, the wheel nuts are correctly torqued, and the repair site is cleared.

Do not attempt to change a wheel unless you have the proper equipment and experience to do the job. If in doubt use a skilled professional. The cost is minimal compared to the costs associated with the serious consequences if something goes wrong.

2.11 ACCIDENT PREVENTION WHEN REMOVING A FOREIGN OBJECT FROM THE MACHINE.

Do not attempt to remove a foreign object from the machine unless you are wearing appropriate protective clothing (PPE). (Gloves & safety boots etc.)

Ensure the impeller has stopped rotating before you approach the machine.

Ensure the impeller lift cylinder is primed with oil before lowering the impeller, as air in the system may cause the impeller to suddenly fall.

Before proceeding to clear a blockage from the door area or removing / replacing the impeller fixing nuts, firstly follow the safe stop procedure and ensure the machine is parked on a firm / level site.

Ensure there is no one in the vicinity of the spreader while the impeller is hydraulically lowered via the hydraulic service.

Chock the discharge door, to prevent the door from inadvertently dropping, while the blockage is being cleared.

Caution must be taken while digging manure from the door area. Disturbing the manure may make the load unstable and cause it to unexpectedly flood from the door area.

The offending object may be heavy, approach lifting the object from the machine with care, if in doubt use lifting apparatus.

Be aware that energy in the form of tension will be stored in the drive chains after a sudden stop. Hence the auger or impeller may suddenly rotate after a blockage is removed.

Ensure there are no bystanders near the machine when the impeller is hydraulically raised to its working position, as there is a danger of finger / hand entrapment.

Once the impeller has been raised and secured by the retaining nuts, rotate the impeller by hand to ensure it spins freely. Always wear PPE while undertaking this task as the impeller blades may be sharp and there is a risk of finger / hand entrapment between the rotating impeller and drip tray.

If the blockage is not accessible from the door area, it may be necessary to remove it from inside the tub. Before entering the tub follow the ‘safe stop’ procedure and as an extra precaution disconnect the PTO shaft & hydraulic services from the tractor. Enter the tub only via the rear inspection ladder provided. Climb the inspection ladder and enter the tub with caution, the steps could be slippery and there is a risk of slipping / falling.

Assess the stability of the muck before climbing into the tub as there is a danger of the material collapsing around you or sinking. <u>If in doubt do not enter the tub.</u>

Do not enter the tub if it contains slurry or semi-solid material as there is a risk of drowning / suffocation.

There is a risk of musculoskeletal injury (MSI) caused by the overexertion and repetitive motion of manual digging manure to remove a blockage.

Before using the auger reversing facility to remove a blockage, Ensure there are no bystanders in the vicinity of the machine, as there is a risk of material being ejected from the top of the tub.

Do not approach or stand in the vicinity of the machine while running the auger in reverse as there is a risk of impact from flying objects, due to the impeller rotating.

Do not stand in the vicinity of the machine while running the auger in reverse as there is a risk of entanglement from the rotating impeller / PTO shaft.

2.12 ACCIDENT PREVENTION WHEN SERVICING OR WORKING ONTHE MACHINE

Ensure the machine is parked on a firm & level site and the 'SAFE STOP' procedure is followed before servicing or working on the machine. This is to ensure that the unit does not unexpectedly move or start up while the operator or person is in close proximity to the machine

The Powerspread must be maintained and repaired only by persons who are familiar with its working and have been made fully conversant with the risks involved.
If in doubt contact a qualified engineer

Any malfunctions or defects, which might affect the safe operation of the Powerspread, must be immediately eliminated.

Do not carry out any work without appropriate protective clothing and long hair tied back. (Gloves, safety boots, close fitting clothing etc.)

Do not climb on the machine to access grease points as parts of the machine could be extremely slippery. Always use suitable climbing apparatus.

While loosening / tightening nuts & bolts avoid overreaching yourself and consider the consequences of the spanner slipping, or the fastener suddenly breaking or coming loose. If the result is likely to involve a fall, or the removal of flesh from your knuckles, then reconsider your approach.

When replacing the auger drive shearbolt be aware of a pinch point between the free running sprocket and auger shearbolt hub, when aligning the shearing faces.

Ensure open drive guards are correctly secured before tensioning the drive chains.

Be aware that the drive line will overrun for a short time after the PTO has disengaged.

When entering the tub to remove a build-up of foreign material such as plastic baling twine from the auger tube, or to replace the auger paddle shearbolt, firstly follow the 'safe stop' procedure. As an extra precaution disconnect the PTO shaft & hydraulic services from the tractor. Enter the tub only via the rear inspection ladder provided. Climb the inspection ladder and enter the tub with caution as the steps could be slippery and there is a risk of slipping / falling.

When removing a build-up of foreign material from the auger core / impeller assembly always follow relevant workshop & power tool health and safety procedures / guidelines

Ensure there is plenty of ventilation in the workshop. Never operate the engine of the towing vehicle in a closed building. The exhaust fumes may cause asphyxiation.

It may be necessary to rotate the auger to gain access to the auger paddle shearbolt. If the machine cannot be started via the tractor PTO, manually rotating the impeller assembly by hand will in turn rotate the auger. It will require approximately 50 turns of the impeller to turn the auger 1 revolution. When rotating the impeller take care not to pinch or trap your hands / fingers between the drip tray and the impeller assembly.

When replacing the auger paddle shearbolt, consider the weight of the paddle assembly and, and the potential pinch point as it pivots.

Beware when replacing / turning over the impeller blades as the corners / edges may have worn to a sharp edge.

Chock the impeller to stop it from spinning while replacing / turning the impeller blades, as there is a risk of hand / finger entrapment.

Ensure the impeller blade fixing nuts are tightened to the correct torque.
(See section 7.1)

Never work underneath or next to the machine unless the Powerspread is perfectly stable, the handbrake applied and the ground is firm.

Never work underneath or near the Powerspread if it has been raised using only a jack. Always make sure the jack is used in conjunction with stands or other effective supports, and that the jack & stands used can bear the weight.

Always tighten wheel nuts and other components to the stated recommended torque.

Some parts such as brake drums may become extremely hot in use.

Perform an inspection of the tyre before inflation. Check for any defects and wear which may reduce its capacity to withstand its stated inflation pressure.

The tyre should be inflated to its correct pressure, according to the tyre manufacturer's load/inflation specifications. Always stand to the side when inflating a tyre. An inflation cage should be used when inflating large tyres

Replace all guards after servicing.

Respect the environment and do not dump oil & grease. They should be disposed of in accordance with the regulations at a waste collection point, waste disposal centre or recycling centre.

2.13 ACCIDENT PREVENTION WHEN CLEANING AND STORING THE MACHINE

If the Powerspread is connected to a tractor while cleaning, ensure the ‘safe stop’ procedure is followed and the machine is parked on a firm level site. This is to ensure that the unit does not unexpectedly move / start up while the operator or person is in close proximity to the machine.

Do not clean the machine without appropriate protective clothing and long hair tied back. (dust mask, goggles, Gloves, safety boots, close fitting clothing etc.)

When unhooking the Powerspread, apply the machines handbrake before moving the tractor away.

Do not leave the machine adjacent to a building, hay stack or the like, where persons could climb and fall into the tub.

Store the PTO shaft on the stand provided and locate the hydraulic hoses in the hose parking station at the front of the machine.

Do not run the machine while cleaning.

If the need arises to rotate the impeller by hand during cleaning, always wear PPE as the impeller blades may be sharp and there is a risk of finger / hand entrapment between the rotating impeller and drip tray.

If cleaning machine using a steam cleaner or pressure washer, follow the recommended precautions given by the washing equipment manufacturer.

When entering the tub, to clean the machine, firstly follow the ‘safe stop’ procedure. As an extra precaution disconnect the PTO shaft & hydraulic services from the tractor. Enter the tub only via the rear inspection ladder provided. Climb the inspection ladder and enter the tub with caution, as the steps could be slippery and there is a risk of slipping / falling.

Do not climb on or over parked / stored machine, due to a risk of falling in or off.

Even when the machine is unattached, certain components can be moved or rotated by hand, causing injury to fingers or hands due to trapping. Wherever possible secure components during storage to prevent accidental injuries

2.14 NOISE EMISSIONS

Sound pressure level measured at operator's seat in tractor cab.	Just tractor running. (full operating speed)	Tractor window closed.	68 dB(A)
		Tractor window open.	72 dB(A)
	Tractor and Powerspread running. (full operating speed)	Tractor window closed.	68 dB(A)
		Tractor window open.	90 dB(A)

Sound pressure levels measured all around the tractor and Powerspread at a distance away of 1 metre and a height of 1.6 metres, ranged from 84 - 96 dB(A).

(The above test results were obtained using a randomly selected / modern tractor)

If the windows of the tractor are open while operating, it is recommended that personnel hearing protectors are used due to the noise levels involved.
The control of noise at work regulations 2005 state 85 decibels and above before hearing protectors are required.

2.15 PROPER USE

Shelbourne Reynolds Powerspreads are based on state-of-the-art technology and are manufactured in accordance with recognised safety requirements. Nevertheless the use of the Powerspread does not preclude the risk of injury to the user or third parties and/or the risk of damage to the Powerspread itself or to other materials or items of equipment.

Always make sure that the Powerspread is in a technically perfect condition and that it is used properly and for its intended purpose and entirely in accordance with the instructions given in this manual. Any malfunctions or defects, which might affect the safe operation or the Powerspread, must be immediately eliminated.

The Powerspread must be used, maintained and repaired only by persons who are familiar with its working and have been made fully conversant with the risks involved.

OEM replacement parts and accessories from Shelbourne Reynolds have been specially designed for use with the Shelbourne Reynolds Powerspread. Any replacement parts and accessories not supplied by Shelbourne Reynolds have not been tested and approved by us. The installation and/or the use of non-Shelbourne Reynolds products may under certain circumstances have a negative influence on the given design features of your Powerspread and may therefore adversely affect it's safe and reliable operation and your safety. Shelbourne Reynolds cannot therefore be held liable for damage or injury caused by the use of non-OEM replacement parts or accessories. The Shelbourne Reynolds Powerspread is intended for use on typical farms and to be employed in spreading many types of manure from thin slurry to heavy farmyard manure. Any uses other than those for which the Powerspread is intended, such as transportation, will automatically exempt Shelbourne Reynolds or the supplier from its/his liability in respect of ensuing damage. Such cases of improper use will therefore be entirely at the user's own risk.

All relevant accident prevention regulations, as well as other generally acknowledged health and safety regulations and road traffic regulations must be strictly observed.

Improper use also comprises failure to observe the instructions given in this operating manual and the manufacturer's maintenance and servicing requirements.

2.16 NO LIABILITY FOR CONSEQUENTIAL DAMAGE

Even though your Shelbourne Reynolds Powerspread has been manufactured with the utmost care and you are using it properly, fluctuations and interruptions in spread rate may still occur.

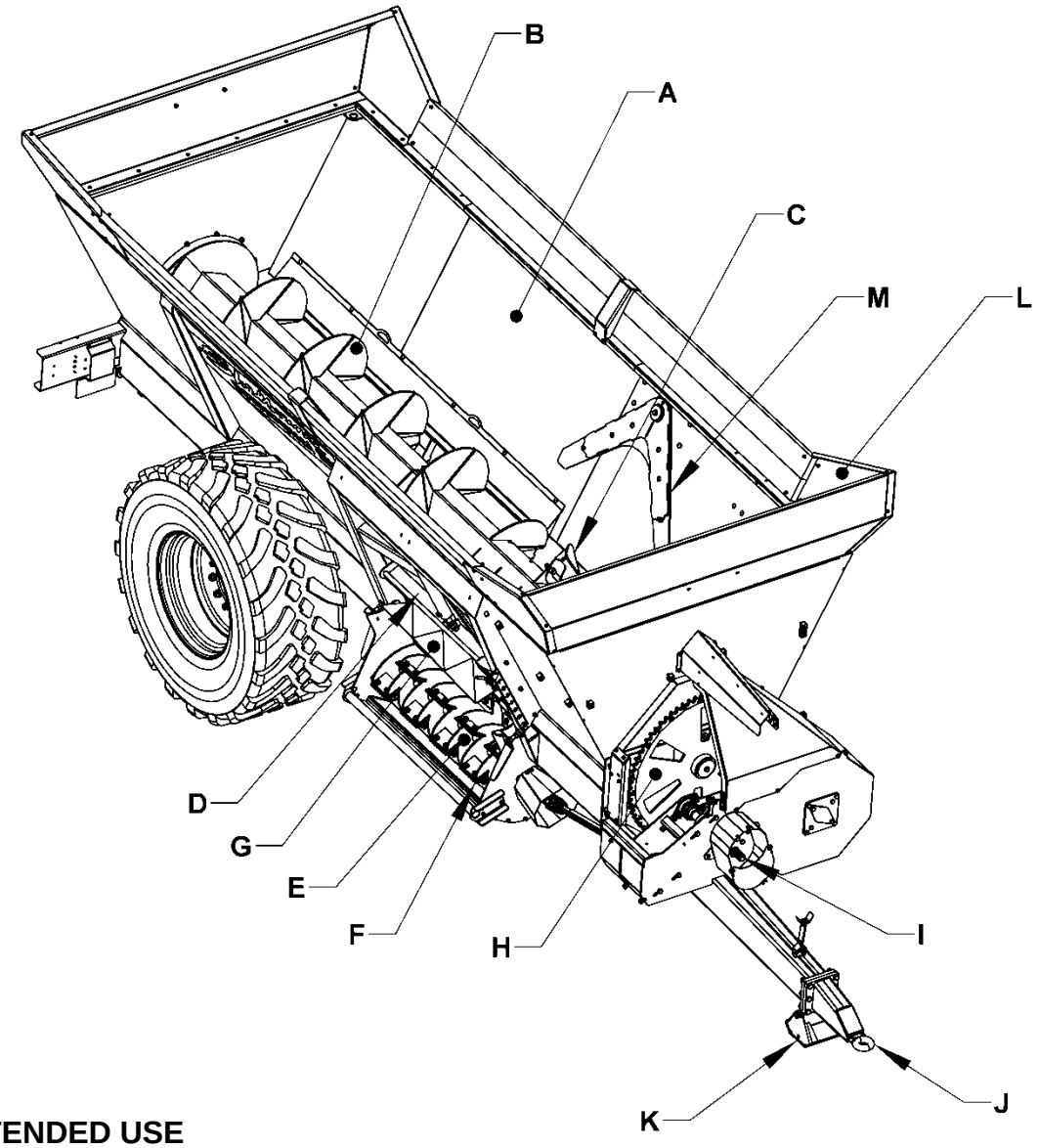
It is the duty of the operator/user to ensure that foreign objects, e.g. rocks and tyres etc. are not allowed to enter the machine. Failure to observe this may result in damage to the Powerspread and/or injury to the operator.

Any claims for damages not directly incurred by the Powerspread cannot be accepted. By the same token, Shelbourne Reynolds cannot be held liable for any consequential damage resulting from incorrect use of the Powerspread.

SECTION 3 SPECIFICATION AND DESCRIPTION

3.1 DESCRIPTION

The machine consists of a tapered tub (A), with a central horizontal auger (B). Fitted to the auger are shearbolt protected auger paddles (C). On the RH side of the machine is a hydraulically operated door (D), and a discharge impeller (E). Hardox blades (F) are bolted to the impeller. Above the impeller there is an adjustable spreading deflector (G). The auger and impeller are driven via a heavy-duty chain drive (H), which is powered by a PTO shaft (I). Bolted at the front of the drawbar is a UK tow eye (J) & pivoting parking foot (K). As an option the machine may be fitted with slurry / extension sides (L), and a anti-bridging kit (M).

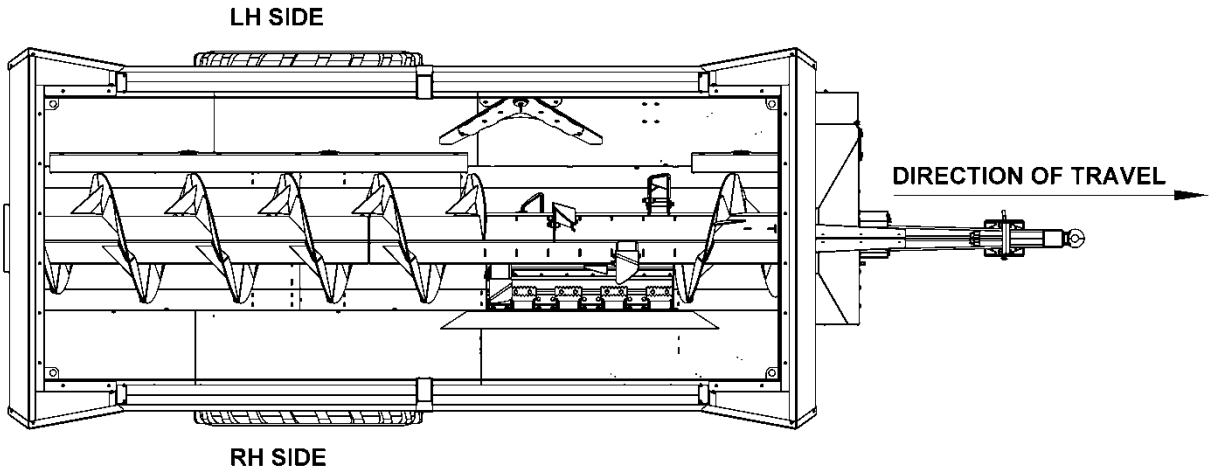


3.2 INTENDED USE

The machine is intended to be used on typical farms or by contract spreading companies. It is employed for loading and spreading varying types of manure. Typical manure types include slurry, compost, chicken muck, fibrous farmyard manure & sewage sludge.
Adjusting the door height, spreading deflector & ground speed can vary the application rate, to ensure optimum results, whether spreading is undertaken on grass or arable land.

3.3 FEATURES & BENEFITS

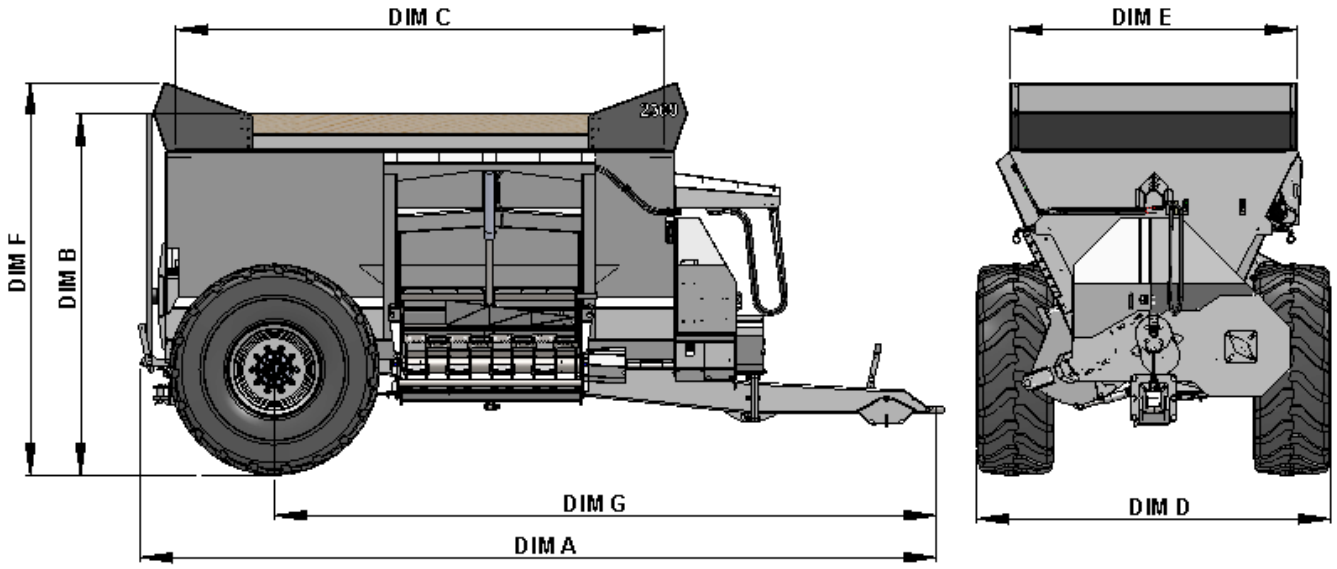
RIGHT AND LEFT HAND OF THE MACHINE AS TERMED IN THIS MANUAL IS FOR AN OPERATOR SITTING IN THE TRACTOR SEAT LOOKING FORWARD.



THE SHELBOURNE REYNOLDS POWERSPREAD PRO

FEATURES	BENEFITS
Shearbolt protected chain drive	For maximum protection of the drives.
Patented centre discharge auger provides boiling movement of manure.	High rates of discharge and material well broken up in hopper.
Shearbolt protected auger paddles	Maximum protection against stones and foreign objects.
Wider vertical centre lift door.	Allows an even discharge of manure at any door setting, utilising the total impeller width.
Wider overshot impeller.	Provides a fine even spread at widths of up to 18 metres.
Impeller can hydraulically pivot away from the door.	Allows full access to door opening for easy removal of stones & obstructions.

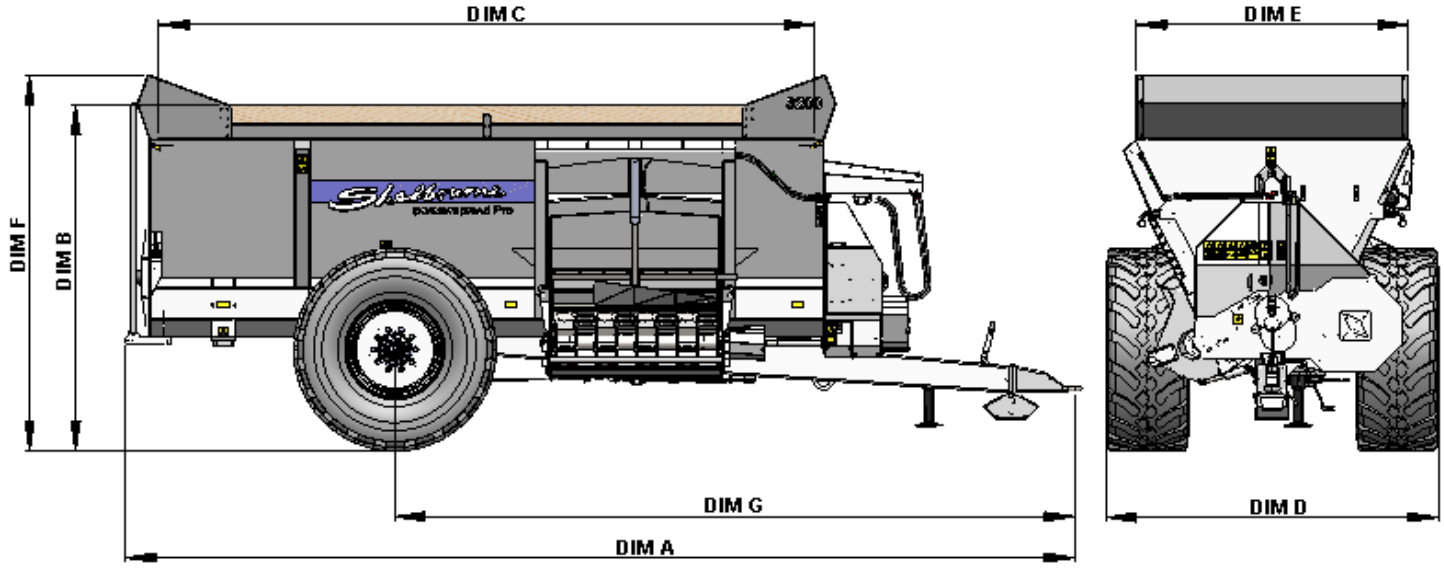
3.4 TECHNICAL SPECIFICATIONS



Model	**1800**	**2300**
Capacity/ Level	8000 litres 1800 gallons (UK) 2200 gallons (US)	10500 litres 2300 gallons (UK) 2800 gallons (US)
Volume / Level	8 m^3 (283 ft^3)	10.5 m^3 (371 ft^3)
Overall Length (A)	6091mm (20')	6091mm (20')
Width over tyres (D)	2700mm (8'10")	2700mm (8'10")
Loading height (B)	2462mm (8'1")	2727mm (8'11")
Opening length (C)	3213mm (10'7")	3658mm (12')
Width at top of tub (E)	2180mm (7'2")	2180mm (7'2")
Overall height (F)	2632mm (8'8")	2975mm (9'9")
Centre of wheel to tow hitch (G)	5035mm (16'6")	5035mm (16'6")
Tyre size	620/75R26	620/75R26
PTO speed	540rpm	540rpm
Recommended size of tractor	120hp UPWARDS	120hp UPWARDS
Unladen weight	4150kg (9150 lbs)	4380kg (9658 lbs)
Gross weight	**11350kg (25027 lbs)** **same as above*	**13280kg (29282 lbs)** **13830kg (30495 lbs)*
Unladen Drawbar weight	1104kg (2434lbs)	1166kg (2571 lbs)
Max Axle weight	**8663kg (19102 lbs)** *** same as above*	**10157kg (22396 lbs)** **10586kg (23342 lbs)*
Max Drawbar weight	**2687kg (5925 lbs)** *** same as above*	**3123kg (6886 lbs)** **3244kg (7153 lbs)*
Spread width	up to 18 m	up to 18 m
Door size (width)	1320mm	1320mm
Door operation	Double acting hydraulic ram	Double acting hydraulic ram
Max road speed	20mph (32km/h)	20mph (32km/h)

Note: All weights & other data are approximate.

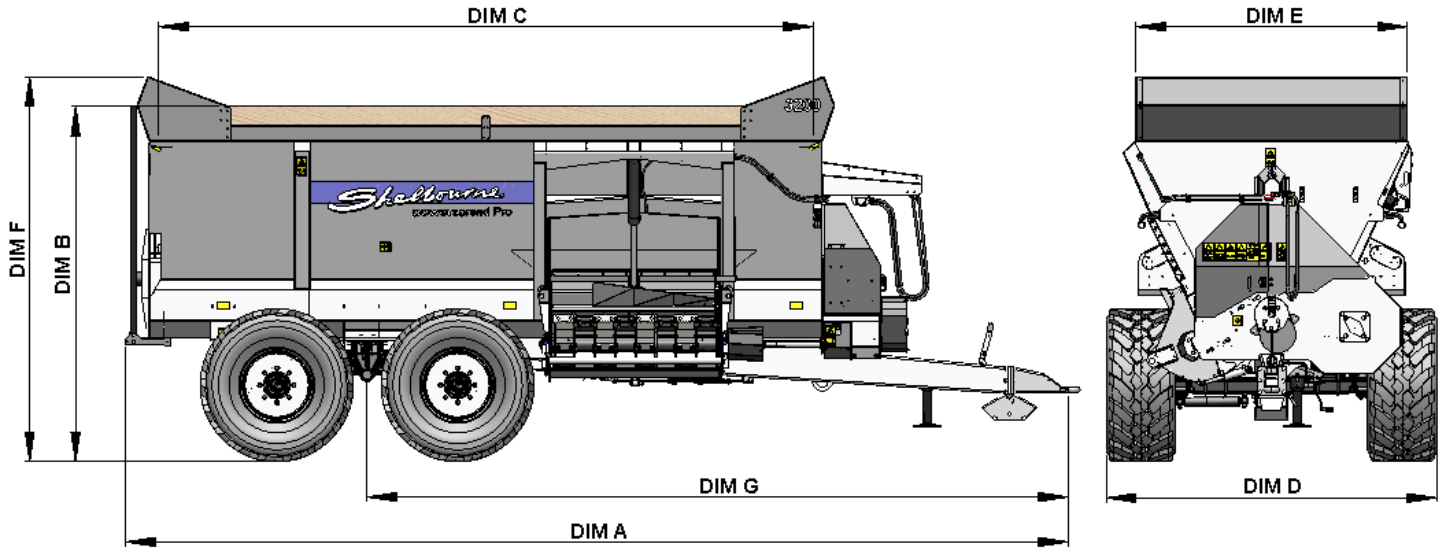
- **Weights in bold text and a 20mph (32km/h)-speed limit must not be exceeded if the machines are to be taken on public roads. These weights are based on UK road regulations stating that the weight at the wheels must not exceed 10170kg on a single axle.**
- *Increased weights are for field use only (max speed 10km/h). They are derived from the maximum weights you can physically put into the machine, (figures based on manure being no heavier than 900kg/m^3).



Model	**2400**	**3200**
Capacity/ Level	11000 litres 2400 gallons (UK) 2900 gallons (US)	14500 litres 3200 gallons (UK) 3850 gallons (US)
Volume / Level	11 m^3 (388 ft^3)	14.5 m^3 (512 ft^3)
Overall Length (A)	7650mm (25'1")	7650mm (25'1")
Width over tyres (D)	2650mm (8'8")	2650mm (8'8")
Loading height (B)	2498mm (8'2")	2775mm (9'1")
Opening length (C)	4751mm (15'7")	5313mm (17'2")
Width at top of tub (E)	2180mm (7'2")	2180mm (7'2")
Overall height (F)	2668mm (8'9")	3013mm (9'11")
Centre of wheel to tow hitch (G)	5444mm (17'10")	5444mm (17'10")
Tyre size	650/65R30.5	650/65R30.5
PTO speed	540rpm	540rpm
Recommended size of tractor	120hp UPWARDS	120hp UPWARDS
Unladen weight	5050kg (11135 lbs)	5310kg (11709 lbs)
Gross weight	**11850kg (26129 lbs)** **15050kg (33185lbs)*	**12110kg (26703 lbs)** **18310kg (40374 lbs)*
Unladen Drawbar weight	1014kg (2236lbs)	1049kg (2313 lbs)
Max Axle weight	**9912kg (21856 lbs)** **12677kg (27953 lbs)*	**10137kg (22352 lbs)** **15495kg (34166 lbs)*
Max Drawbar weight	**1938kg (4773 lbs)** **2373kg (5232 lbs)*	**1973kg (4350 lbs)** **2815kg (6207 lbs)*
Spread width	up to 18 m	up to 18 m
Door size (width)	1320mm	1320mm
Door operation	Double acting hydraulic ram	Double acting hydraulic ram
Max road speed	20mph (32km/h)	20mph (32km/h)

Note: All weights & other data are approximate.

- **Weights in bold text and a 20mph (32km/h)-speed limit must not be exceeded if the machines are to be taken on public roads. These weights are based on UK road regulations stating that the weight at the wheels must not exceed 10170kg on a single axle.**
- *Increased weights are for field use only (max speed 10km/h). They are derived from the maximum weights you can physically put into the machine, (figures based on manure being no heavier than 900kg/m^3).



Model	**2400**	**3200**
Capacity/ Level	11000 litres 2400 gallons (UK) 2900 gallons (US)	14500 litres 3200 gallons (UK) 3850 gallons (US)
Volume / Level	11 m^3 (388 ft^3)	14.5 m^3 (512 ft^3)
Overall Length (A)	7650mm (25'1")	7650mm (25'1")
Width over tyres (D)	2655mm (8'8")	2655mm (8'8")
Loading height (B)	2577mm (8'6")	2853mm (9'4")
Opening length (C)	4751mm (15'7")	5313mm (17'5")
Width at top of tub (E)	2180mm (7'2")	2180mm (7'2")
Overall height (F)	2748mm (9')	3091mm (10'2")
Centre of wheel to tow hitch (G)	5660mm (18'7")	5660mm (18'7")
Tyre size	560/60R22.5	560/60R22.5
PTO speed	540rpm	540rpm
Recommended size of tractor	120hp UPWARDS	120hp UPWARDS
Unladen weight	5770kg (12723 lbs)	6030kg (13296 lbs)
Gross weight	18290kg (40329 lbs)	18290kg (40329 lbs)
Unladen Drawbar weight	1139kg (2511lbs)	1190kg (2624 lbs)
Max Axle weight	15046kg (33176 lbs)	15039kg (33161 lbs)
Max Drawbar weight	3244kg (7153 lbs)	3251kg (7169 lbs)
Spread width	up to 18 m	up to 18 m
Door size (width)	1320mm	1320mm
Door operation	Double acting hydraulic ram	Double acting hydraulic ram
Max road speed	20mph (32km/h)	20mph (32km/h)

- **The tandem axle model can be towed loaded on the public highway up to a gross weight of 18290kg, but a 20mph (32km/h)-speed limit must not be exceeded as the machine is not equipped with ABS. These weights are based on UK road regulations stating that the gross weight of an unbalanced tandem axle trailer must be limited to 18290kg. (Inclusive of the weight imposed on the towing vehicle**

SECTION 4 HANDLING & TRANSPORTATION

Refer to section 2 for safety procedures.

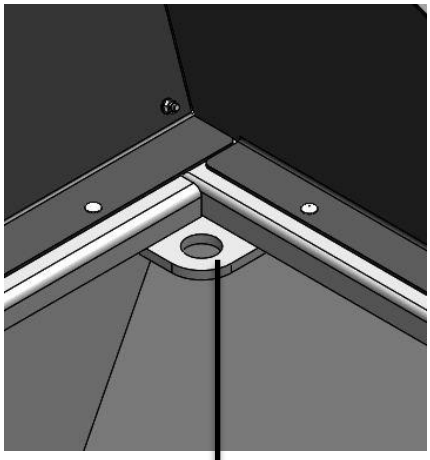
4.1 HANDLING

Refer to section 2.3 – Accident prevention before starting the machine for safety procedures.

The Powerspread should only be moved by one of the following methods:

1. By the use a crane type-lifting device (Tele-handler, jib / gantry crane)
2. Attaching to a tractor / towing vehicle

If using method 1, firstly attach an appropriate overhead lifting device, with sufficiently rated slings / chains. Next connect the slings / chains to the machines lifting eyes which are positioned in each corner at the top of tub. When all bystanders are clear of the danger / crush zone, slowly lift the Powerspread from the ground / delivery trailer. Ensure the machine lifts level, it may be necessary to lower the machine to the ground and adjust the sling / chain lengths to accomplish this.
Once the machine is raised and hanging level, carefully and gently move it to lessen swinging, and lower it to the ground as soon as possible.



The centre of gravity of the machine is approximately 1.8m back from the inside of the front panel of the tub for 1800-2300 models & 2.3m from the inside of the front panel of the tub for 2400-3200 gallon models.

(Please note, these dimensions are only approximate and fine adjustments may be required to ensure, the machine lifts level)
If method 2 (attaching to a tractor / towing vehicle) is chosen to move the Powerspread, ensure the below procedure is followed:

Refer to section 2.4 – Accident prevention when coupling & uncoupling to a tractor for safety procedures

1. Secure the Powerspread against rolling by applying the handbrake / positioning wheel chocks.
2. Reverse the tractor slowly towards the tow eye of the Powerspread, ensure there are no bystanders positioned in the danger / crush zone
3. Lower the pick-up hitch, and manoeuvre the tractor, so the pickup hitch is directly underneath the tow eye of the Powerspread.
4. Raise the pick-up hitch, ensuring the tow eye of the Powerspread is engaged, and locked in position.
5. Switch off the tractor, apply the tractors handbrake and pull out the ignition key.
6 Connect the braking coupling.
7. Disengage the handbrake of the Powerspread.
8. Slowly manoeuvre the Powerspread. If removing from / loading a delivery vehicle pay particular attention to the width of the machine as a portion of the tyre may overhang the bed of the lorry, so care must be taken to keep the machine central.

4.2 TRANSPORTATION

Refer to section 2.8 – Accident prevention when taking on public roads for safety procedures.

Refer to section 2.3 – Accident prevention before starting the machine for safety procedures

Transporting on delivery vehicle:
Ensure the Powerspread is securely fastened to the deck of the lorry. Use adequately rated ratchet straps which are in good order and use the transport eyes located on the axle and the underside of the drawbar for securing. Finally block the wheels and activate the handbrake.

Transporting on public highway:
UK road traffic regulations state that the maximum weight bearing down on a single axle must be limited to 10170kg. On the tandem axle model, road traffic regulations state that the maximum gross weight of the towed vehicle must not exceed 18290kg. (Inclusive of the weight imposed on the towing vehicle), and the maximum permitted axle weight must not exceed 18000kg. – The weights stamped on the machines identification plate will ensure this figure is not exceeded, and must be adhered to if the machine is to be taken on public roads.

The Powerspread must not be towed on the public highway at a speed greater than 20 mph. UK road traffic regulations state that a speed of 20mph must not be exceeded if the towed vehicle weighs more than 3500kg and does not have all axle suspension, and ABS brakes fitted, or if it's overall width is between 2.55 & 3m. (The Powerspread falls into both categories)

UK road traffic regulations also state that brakes controlled by the tractor / drawing vehicle should be fitted to a towed vehicle weighing more than 3500kg.
Standard lighting and hydraulic brake coupling connections are provided with the Powerspread, and must be connected when towing the machine on the public highway.

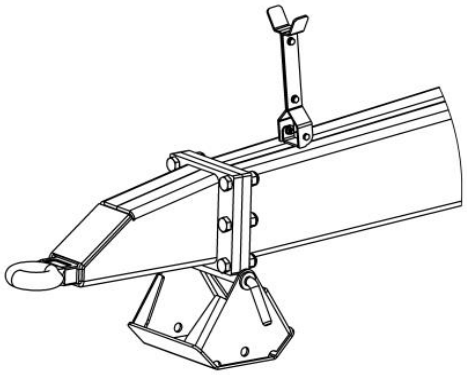
SECTION 5 PREPARATIONS FOR USE

Refer to section 2 for safety procedures.

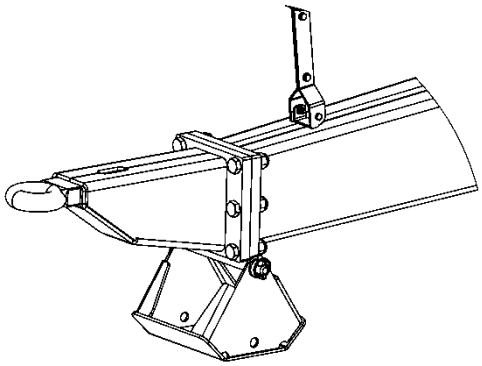
5.1 ADJUSTING THE DRAWBAR HEIGHT

Refer to section 2.3 – Accident prevention before starting the machine for safety procedures.

Due to differences in height of tractor pick up hitches, it may be necessary to rotate the front tow eye section through 180 degrees(2400-3200 models only). This is to ensure the Powerspread is sitting level when attached to the tractor. Measure the height of the tractor pick up hitch from the ground and select the closer of the two alternative positions as shown below:



Standard position
Tow eye height from ground = 450mm



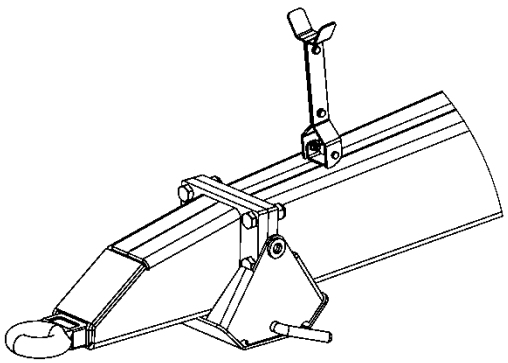
High position
Tow eye height from ground = 600mm

After adjustment replace the 6 off M20 x 80mm bolts ensuring they are tightened to 435Nm (321lb-ft).

5.2 RAISING THE DETACHABLE PARKING FOOT

Refer to section 2.4 – Accident prevention when coupling and uncoupling to the tractor for safety procedures.

Once the Powerspread has been attached to the tractor, the detachable parking foot must be moved to the raised position. Simply remove the securing pin, raise the foot and insert the pin through the lower hole in the foot. Re-fit the lynch pin to secure.
(See detail left)



Note: This is advisable to gain extra ground clearance.

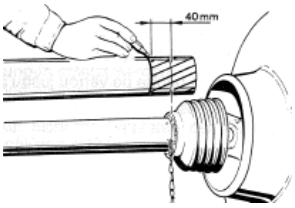
5.3 ADJUSTING THE PTO DRIVE SHAFT LENGTH

Refer to section 2.3 – Accident prevention before starting the machine for safety procedures.

Refer to section 2.6 – Accident prevention when using the PTO shaft for safety procedures.

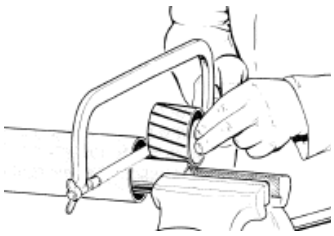
The correct length of the PTO drive shaft may vary depending on the tractor in use. It may be necessary to shorten the PTO drive shaft.

The length adjustment is to be carried out as follows:

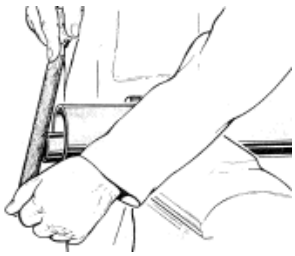


To adjust the lengths hold the half shafts next to each other in the shortest working position and mark them 40mm as shown.

Shorten the inner and outer guard tubes equally.



Shorten the inner and outer Sliding profiles by the same length as the guard tubes.



Remove all sharp edges and burrs, grease the sliding . Profile tubes

Grease the profile tubes before they are assembled, as they will otherwise be exposed to high friction forces.

Ensure the inner and outer PTO shafts are overlapped by at least 250mm when the tractor and machine are straight. Check that the PTO shaft will not run out of slide travel before the tractor reaches its full articulation as this will damage to the shaft and Injury may result.

Ensure the lift links do not foul on the machine or PTO shaft when turning.

Make sure the tractors 540-rpm PTO speed is selected at all times.

5.4 COUPLING & UNCOUPLING

Refer to section 2.4 – Accident prevention when coupling & uncoupling to the tractor for safety procedures.

The Powerspread is supplied with a 50mm diameter heavy-duty UK type tow eye, as the drawbar loading is too high for use on a tractor drawbar. The machine should only be used on the automatic pick up hitch of the tractor

A parking jack is not supplied with the spreader; instead a pivoting parking foot is positioned to the underside of the drawbar. This enables the automatic pick up hitch hook to easily move under the tow eye when attaching the spreader.

COUPLING OF TRACTOR

1 Secure the Powerspread against rolling by applying the parking brake.
2 Reverse the tractor slowly towards the tow eye of the Powerspread.
3 Lower the pick-up hitch, and manoeuvre the tractor, so the pickup hitch is directly underneath the tow eye of the Powerspread.
4 Raise the pick-up hitch, ensuring the tow eye of the Powerspread is engaged, and locked in position.
5 Ensure all tractors hydraulic spool valves are in their neutral position. Apply tractors parking break and switch off the tractor and pull out the ignition key.
6 Connect the PTO shaft, ensuring that the overrun clutch, is mounted on the Powerspread side.
7 Connect and secure the PTO guard safety chains.
8 Connect the lighting socket.
9 Connect the braking coupling.
10 Connect the door / anti-bridge / drop down impeller hydraulic services
11 Move the detachable foot to the raised position (see section 5.2).
12 Disengage the Powerspreads handbrake.

UNCOUPLING OF TRACTOR

1 Ensure all tractors hydraulic spool valves are in their neutral position apply tractors parking brake and switch off the tractor and pull out the ignition key.
2 Ensure the Powerspeads handbrake is engaged.
3 Ensure the detachable foot is secured in its lower position.
4 Disconnect the door / anti-bridge / drop down impeller hydraulic services.
5 Disconnect the braking coupling.
6 Disconnect the lighting socket.
7 Locate the hydraulic hoses & lighting cable in the hose parking station at the front of the machine.
8 Disconnect the PTO guard safety chains, remove the PTO from the Powerspread and park the PTO shaft on the parking stand.
9 Start the tractor, and lower the pick-up hitch until the detachable foot sits firmly on the ground.
10 Manoeuvre the tractor away from the Powerspread.
11 Switch off the tractor and pull out the ignition key.

5.5 CONNECTING THE HYDRAULIC SUPPLY

Refer to section 2.5 – Accident prevention when using the hydraulic system for safety procedures.

With a clean cloth wipe any dirt from the couplings before connecting to the tractors hydraulic system.

Proceed to connect the hydraulic brake coupling and the auxiliary hydraulic couplings to the tractor via the 1/2 BSP male quick release couplings provided.
The Powerspread requires a double acting supply to raise and lower the discharge door & a single / double acting supply to operate the drop down impeller function.
If the machine is equipped with an optional anti-bridge kit, a further double acting supply is required.

If the quick release couplings are not compatible with the tractor, change to suitable connectors for the required application. If the tractor is fitted with a flow control valve, adjust to minimum flow rate.

Having pushed the hose ends into the tractor spool valves, ensure that the hoses do not hang down and obstruct the tractor lift arms or any moving parts.

Ensure the hydraulic hoses are long enough, to suit the tractor, and are not taught

5.6 CONNECTING THE POWER SUPPLY

Refer to section 2.4 – Accident prevention when coupling & uncoupling to the tractor for safety procedures.

The electrical connection for the lighting system is a standard 7-pin plug for a 12 V service.
Ensure the 7-pin plug is clean, and proceed to fit it to the mating socket located on the tractor.

5.7 USING THE HANDBRAKE

Refer to section 2.7 – Accident prevention when operating the machine, for safety procedures.

Two handbrake types have been supplied with the Powerpsread. A multi-stroke ratchet type and a rotary spindle type.

Multi stroke ratchet type (See right)
To apply the handbrake, give the handle short clockwise thrusts until resistance and subsequent tightening of the cable occurs.

To release the handbrake rotate the handle sharply in an anti-clockwise direction to disengage the ratchet mechanism.

Rotary spindle type (See below – crank handle shown in resting position)
To apply the handbrake swivel the crank handle from its resting position by 180º and then rotate the handle clockwise to tighten the cable which in turn will activate the brake. (The tightening force required to apply the handbrake is approximately 165N or approx. 17kg)

To release the handbrake turn the crank handle anti-clockwise until the cable goes slack, swivel the handle 180º and place back in its resting position.

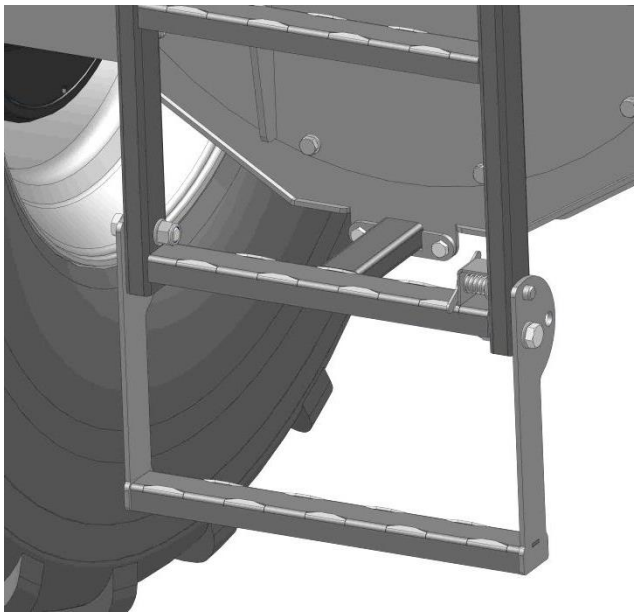
5.8 RAISING & LOWERING THE LADDER EXTENSION

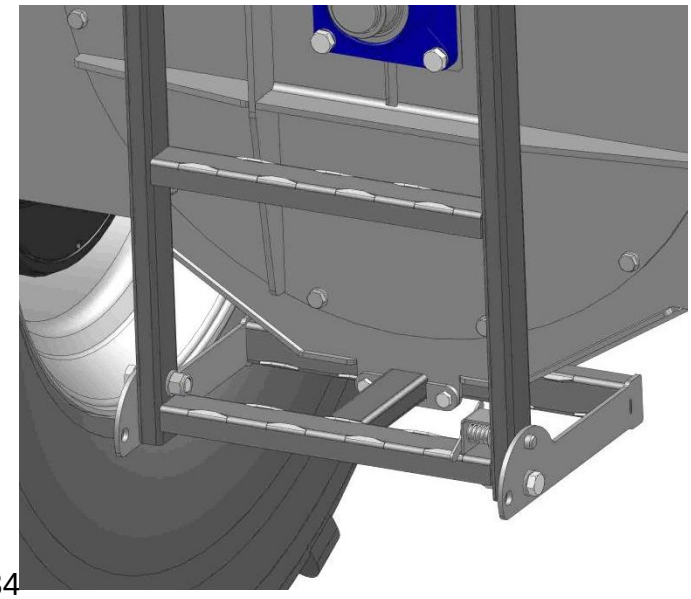
Refer to section 2.7 – Accident prevention when operating the machine, for safety procedures.

The Powerspread is supplied with a rear ladder. This should be used to gain access to the inside of the tub to change the auger paddle shearbolts, and to view the load to be spread.

Do no climb the ladder or enter the tub before following the ‘safe stop’ procedure.

The lower portion of the ladder can be raised to gain extra ground clearance during spreading by simply retracting the sprung loaded pin and rotating the ladder extension in a downwards direction. (See Below)





5.9 CHECK BEFORE USE

Refer to section 2 for safety procedures.

Your dealer should have undertaken all assembly work and pre delivery checks. As a precaution before you use your new Powerspread, please do the following:

1. Read the operators manual carefully.
2. Check that the Powerspread is mounted correctly and that it is undamaged.
3. Check the movements of the PTO drive shaft, and that the safety chains on the safety guards have been secured correctly.
4. Check that the hydraulic hoses are correctly mounted & long enough.
5. Check that the electrical connection is correct.
6. Check that the tow eye is positioned at the correct height in relation to the tractor.
7. Check the tightness of the wheel nuts.
8. Check tyre pressures.
9. Check there are no foreign objects inside the tub.
10. Ensure 540 rpm PTO speed is selected.
11. Ensure there are no observers in or around of the machine before starting the machine.

The Powerspread has been tested and declared error-free at the factory. However, you should do as follows before using the machine:

Start the machine at low rpm. Listen for any unusual knocking sounds, if there are no unusual sounds increase the PTO rpm. If there is any doubt stop the tractor & Powerspread immediately, check the machine visually to find possible fault, and then seek authorised advice.

SECTION 6 FIELD OPERATION AND SPREADING

Refer to section 2 – Accident prevention for safety procedures.

The machine is designed to run at 540rpm PTO speed. Spreading should be done in straight-line bouts. Avoid spreading while turning corners, as this will cause vibration in the PTO drive.

6.1 GENERAL WEIGHTS OF DIFFERENT MATERIALS

MATERIAL	APPROXIMATE WEIGHT (kg/m^3)
Cattle manure, fresh	600-800
Cattle manure, rotten	800-1000
Dry Poultry muck	400-600
Pig Manure	700-900
Sludge	900-1100
Slurry	800-1000
Compost	400-600

Use the above chart as a guide. Ensure you do not overload the Powerspread.

6.2 LOADING THE MACHINE

Refer to section 2.7 – Accident prevention when operating the machine, for safety procedures.

Always close the door before loading the Powerspread.

While loading dry straw or clamp manure precautions should be taken if large slabs or lumps, particularly from the front of feeding troughs, are encountered.
Always endeavour to slide these down the side into the hopper and do not position them directly onto the top of the auger as this may cause bridging and will prevent an even spread pattern.

To prevent over-spill at the front of the machine while spreading it is advisable to heap more material at the rear of the machine than the front. Material will be transported to front of the machine, quicker than the back due to the door position & auger design. Please note this is the opposite of how a rear beater manure spreader is loaded, where more material is generally heaped at the front.

In order to achieve higher discharge rates when spreading unrotted, compressed material, the material should be broken up when loading into the machine. The use of grab-buckets should be avoided; always use manure forks.

All free flowing muck/slurry must not be overfilled or the material will be discharged over the side during transport.

Do not overload the Powerspread as this will result in material spilling from the front / sides of the machine during spreading/transport.

6.3 DISCHARGE RATE

The machine is designed with a single auger speed of 13rpm. This optimum auger speed coupled with the 1.32m wide door and impeller means a high discharge rate can be achieved.

For a finely shredded spread with a low discharge rate the door opening will be small. However the auger will still transport the manure to the discharge door at the same speed resulting in a "bottle-neck" of material which causes a "boiling up" effect. This helps break down the manure further before it is finally ejected onto the impeller blades and discharged.

The discharge or spread rate of the Powerspread depends very much on the type of material being spread. For a given material it will be found that there is an ideal door position for maximum throw of the material and maximum shredding of the manure. It is essential that the standard PTO speed of 540 rpm is maintained at all times and the discharge rate varied according to the door opening and the forward speed of the tractor. A further variant is the amount of overlap between each run which, in most cases, will average 6m (20ft).

6.4 DOOR OPENING SETTINGS

As a general rule it is better in heavy straw manure to open the door wide when starting the machine running, and then closing the door to give the desired spread rate and shredding capabilities.

The opposite applies with thin slurry, as a very small door opening will be required (possibly as low as 25mm / 1").
When spreading slurry the machine should be running at the correct 540 rpm PTO speed before the door is opened. The door should be opened slowly, watching the door indicator and the spread width to gauge a satisfactory spread rate.
The door opening will depend completely on the type and consistency of the material being spread and the spread rate desired by the operator.

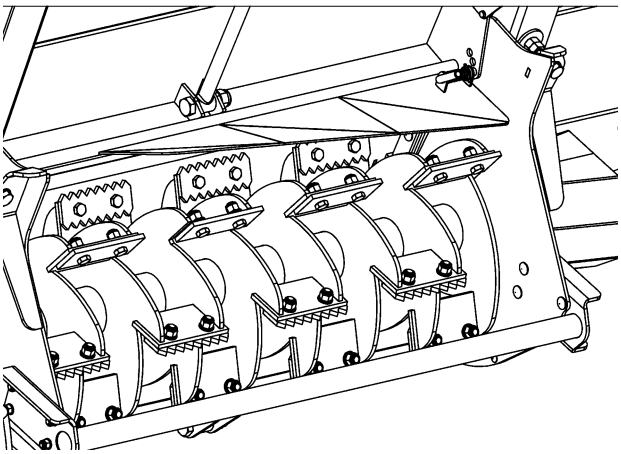
These are approximate guide settings, and may vary for certain conditions i.e. grassland or arable land (see chart below).

DOOR HEIGHT	MANURE TYPE
7-8	Only used to clear blockage
6	Used for high discharge rates
4-5	Fresh muck
4-5	Rotten muck
3-4	Dry chicken muck / Compost
2-3	Sludge
1-2	Slurry
1	Door closed

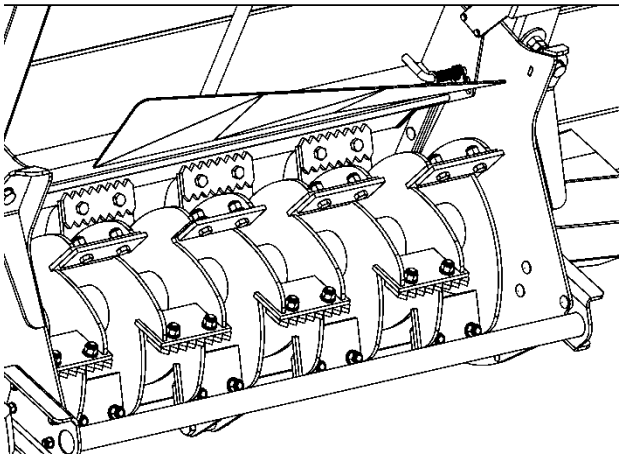
6.5 SETTING THE SPREADING DEFLECTOR

Refer to section 2.7 – Accident prevention when operating the machine, for safety procedures.

The adjustable spreading deflector has been designed to give you the optimum spread pattern when spreading slurry.
By operating the sprung lever & rotating the assembly, the spreading deflector can be set in any one of three positions. The lower two positions are for spreading slurry and the top position is for spreading general manure.



SPREADING DEFELCTOR SET FOR SLURRY



SPREADING DEFLECTOR SET FOR GENERAL MANURE.

6.6 PROCEDURE FOR SPREADING

Refer to section 2.7 – Accident prevention when operating the machine, for safety procedures.

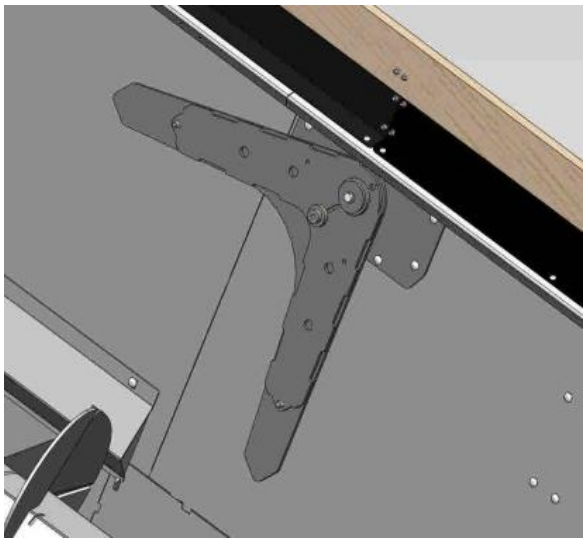
As a general rule, for all material except slurry, open the door to position 3 before engaging the PTO. For slurry, start with the door closed, and ensure the machine is running at full 540rpm PTO speed before the door is opened.
Ensure the PTO is engaged gently at low engine rpm's and gradually and positively bring up to 540rpm PTO speed. At the same time move forward at the required speed and then immediately adjust the hydraulic door to the required position on the indicator. This position will depend on the type and consistency of the material being spread, the position of the spreading deflector, and the operator's judgement of spread rate and pattern.
Some materials will cause partial blockage of the discharge door, (when the auger flights are not fully covered the discharge rate will reduce), therefore it may be necessary to increase the door opening for the last part of the load.

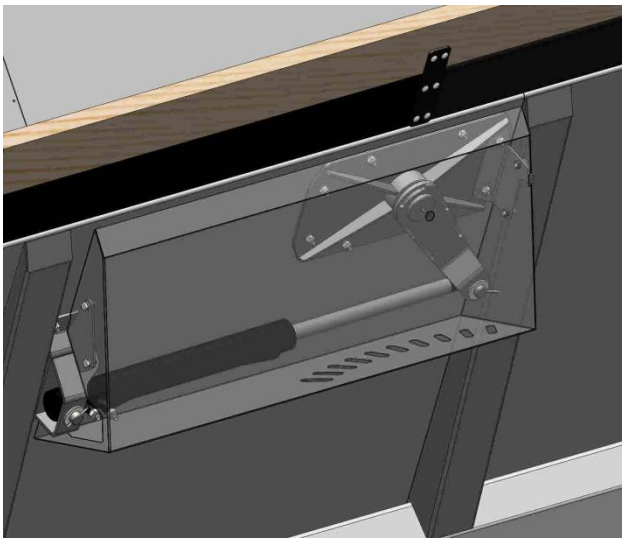
6.7 OPERATING THE ANTI-BRIDGING ARM

Refer to section 2.7 – Accident prevention when operating the machine, for safety procedures.

An anti-bridging kit can be fitted to this machine as an option. Some manure types which contain a high straw content, are prone to bridging, when this occurs it greatly reduces the machines ability to produce a consistent discharge rate.

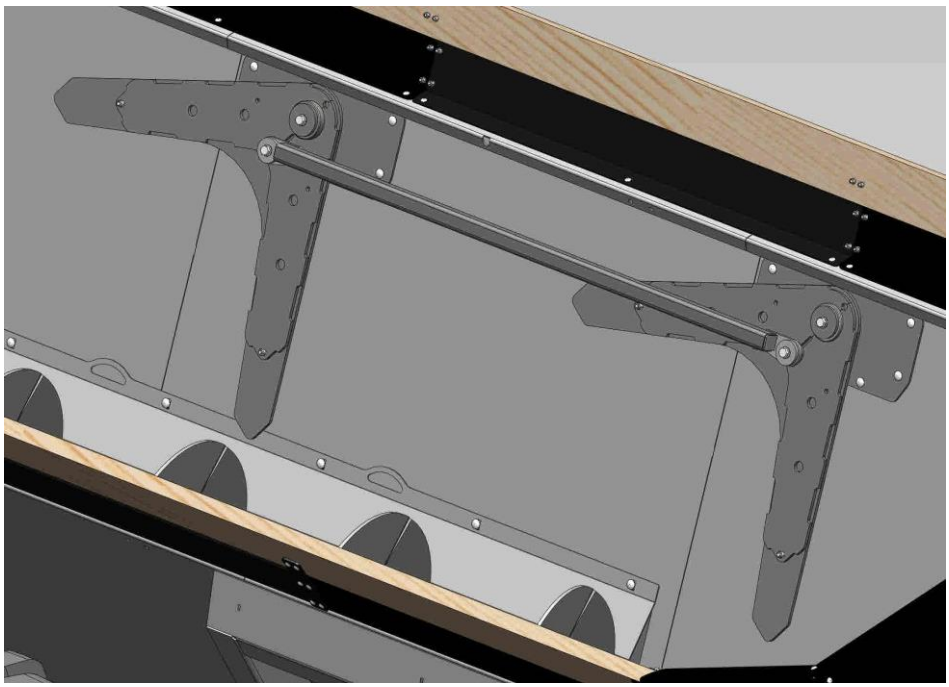
This device is designed to dislodge material from the side wall of the tub by reciprocating backwards and forwards, which in turn prevents the bridging effect from occurring.





Above - Anti-bridging kit

Part No: KIT-03823A - 1800-2300 models
KIT-03823 - 2400-3200 models



Above – An optional rear pivot is available to reduce extreme bridging conditions.

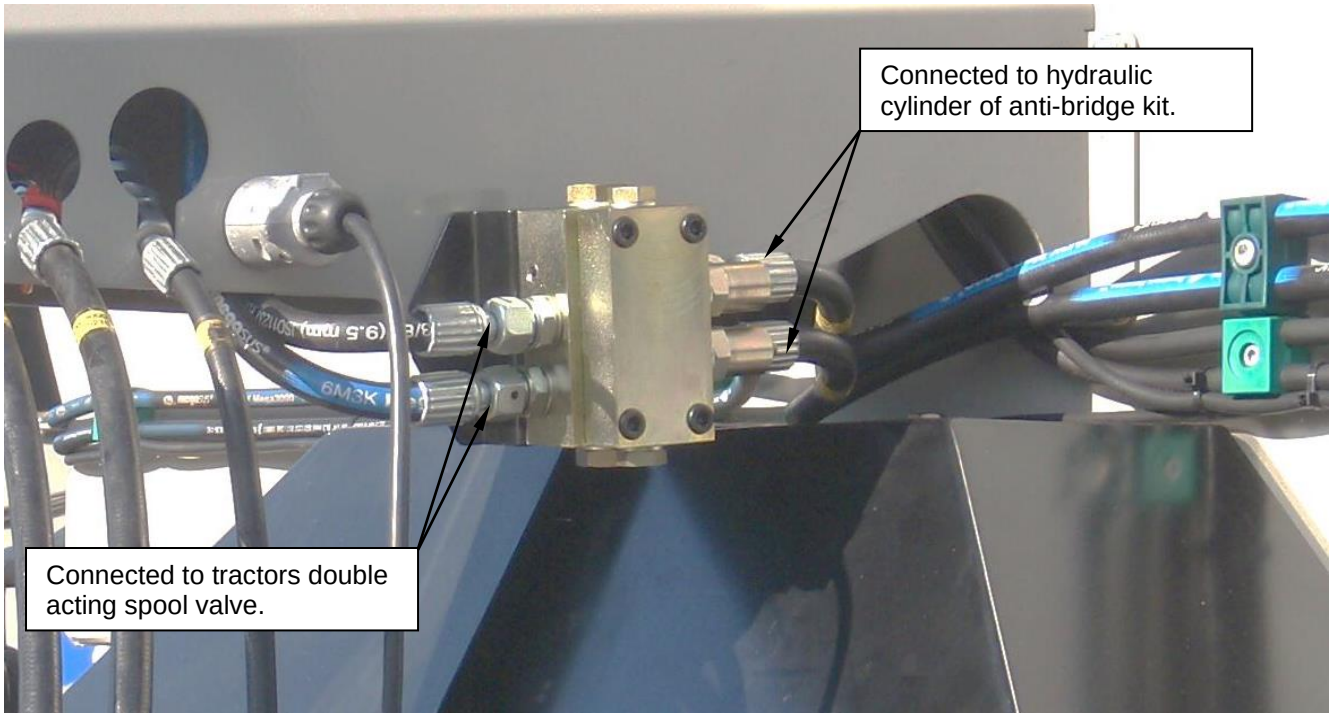
Part No: KIT-03762A – 1800-2300 models
KIT-03762 – 2400-3200 models

Anti-bridge kit hydraulic options:

The anti-bridging arm can be operated manually by engaging the tractors double acting spool valve or it can be operated via a reciprocating valve, which enables the anti-bridging arm to continually move backwards and forwards during spreading

Automatic hydraulic option containing the reciprocating valve

Part No: KIT-03824 - All models



The manual hydraulic option simply connects 2 hydraulic couplings to the hydraulic cylinder of the anti-bridge kit, and is operated by a double acting spool valve on the tractor.

Part No: KIT-03825 - All models

6.8 REMOVING FOREIGN OBJECTS FROM THE MACHINE

Refer to section 2.11 – Accident prevention when removing a blockage from the machine for safety procedures.

If during spreading a knocking sound is heard or sparks are seen coming from the impeller, then there will be a foreign object such as a stone in the machine. If this happens open the discharge door wide to allow the object to be thrown out. If the object is not cleared immediately, follow the ‘safe stop procedure and investigate.

The safest method of removing an obstruction is via the discharge door. Open the door fully and then follow the ‘safe stop’ procedure. Carefully inspect the area surrounding the impeller to see if the obstruction is visible. Remove the offending object if there is sufficient clearance between the impeller and door.

If there is not sufficient clearance or the foreign object is still not visible, the next step is to hydraulically lower the impeller to gain further access (see section 6.11). As a precaution, chock the discharge door to prevent it from inadvertently dropping, and proceed to dig material from the door opening until the foreign object is visible and can be removed safely. Caution must be taken while digging manure from the door area as disturbing the manure may make the load unstable and cause it to unexpectedly flood from the opening.

If the foreign object is still not accessible, the next step is to reverse the auger for approximately 10 seconds with the door open (see section 6.10). After reversing follow the ‘safe stop’ procedure and once again examine the area surrounding the impeller to see if the obstruction is now evident. Also look inside the tub via the inspection ladder to see if the reversing action has lifted the foreign object to the top of the load.

If the above procedures do not work, it may be necessary to remove the foreign object from inside the tub. Before entering the tub, follow the ‘safe stop’ procedure and wait for all moving parts to stop. As a precaution, disconnect the PTO shaft & hydraulic services from the tractor to ensure the machine is not inadvertently operated. Enter the tub only via the rear inspection ladder provided. Assess the stability of the muck before climbing into the tub as there is a danger of the material collapsing around you or sinking. If you are not 100% confident in the stability of the load do not enter the tub.

Do not under any circumstances enter the tub if it contains slurry or semi-solid material as there is a risk of drowning / suffocation.

6.9 SHEARBOLT PROTECTION

Refer to section 2.7 – Accident prevention when operating the machine, for safety procedures.

Refer to section 2.6 – Accident prevention when using the PTO shaft for safety procedures.

A shearbolt system is fitted to the impeller drive and auger drive of the machine. The shearbolts are rated sufficiently to not break at start-up or in general use but help to protect the driveline in the event of a foreign object entering the machine
Additional shearbolts are also fitted to the discharge paddles

IMPELLER DRIVELINE SHEARBOLT

The shearbolt to protect the Impeller drive is positioned at the drive end of the impeller PTO shaft.
If the impeller encounters an obstruction and shears a bolt, follow the procedure as described below:

1. Stop the tractor PTO immediately and close the discharge door
2. Follow the 'safe stop, procedure.
3. Visible check the impeller area, try rotating the impeller by hand, if the impeller rotates freely then replace the shearbolt.
4. If the Impeller does not rotate by hand, try to locate the obstruction. It may be necessary to raise the discharge door, or hydraulically lower the impeller to gain access. (See section 6.11)
5. Remove the obstruction.
6. Replace the shearbolt and re-fit the guard and safety chain before continuing to spread.

The impeller drive shearbolt is made from special material. Normal commercially available bolts are not suitable.
The shearbolt must be genuine Shelbourne Reynolds service parts. If not, the company will not consider any claim made under the warranty and no liability shall be attached to the company.

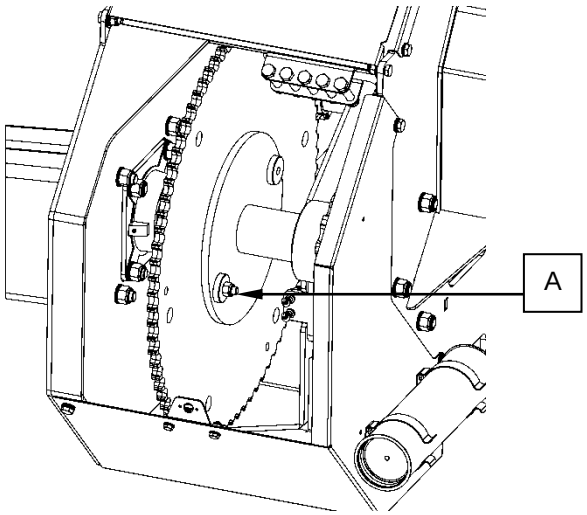
Impeller drive Shearbolt part number.	BLTA10380
Nut part number	NUT-0265

AUGER DRIVE SHEAR BOLT

Refer to section 2.7 – Accident prevention when operating the machine, for safety procedures.

If the main auger encounters an obstruction, then the shearbolt system should disengage the drive to the auger protecting the auger driveline. The drive will still rotate the impeller but the auger rotation will stop.

The auger drive shearbolt (A) is located under the LH drive guard (see sketch below):



Follow this procedure when changing the auger drive shearbolt:

1. Stop the tractor PTO immediately and close the discharge door
2. Follow the ‘safe stop, procedure.
3. Open the LH guards by undoing the M12 locking fastener.
4. Remove all pieces of the broken shear bolt from the shearbolt bush in the drive sprocket & shearbolt hub.
5. Align one of the holes in the shearbolt hub to the hole in the drive sprocket by rotating the drive sprocket by hand.
6. Replace the shearbolt.
7. Close the guard and lock by tightening the M12 fastener.

It is likely the cause of the shearbolt breakage will still be present inside the tub. Hence, it is advisable to use the reverse facility to try and dislodge the foreign object before restarting the machine to reduce the chances of another shearbolt breakage.
(See section 6.10)

The Auger drive shearbolt is made from special material. Normal commercially available bolts are not suitable.
The shearbolt must be genuine Shelbourne Reynolds service parts. If not, the company will not consider any claim made under the warranty and no liability shall be attached to the company.

Auger drive shearbolt part number.	BLTA12440
Nut part number	NUT-0269

6.10 AUGER REVERSING FACILITY

Refer to section 2.6 – Accident prevention when using the PTO shaft for safety procedures

Refer to section 2.11 – Accident prevention when removing a blockage from the machine for safety procedures.

If an obstruction is encountered which is large enough to continuously shear the auger drive shearbolt, you can reverse the drive simply by moving the PTO shaft from the main drive shaft (B) to the reverser shaft (C).
Reversing the auger will create a cushioned start-up for the tractor, as the auger is allowed to build up momentum before it encounters the obstacle which initially broke the shear bolt.

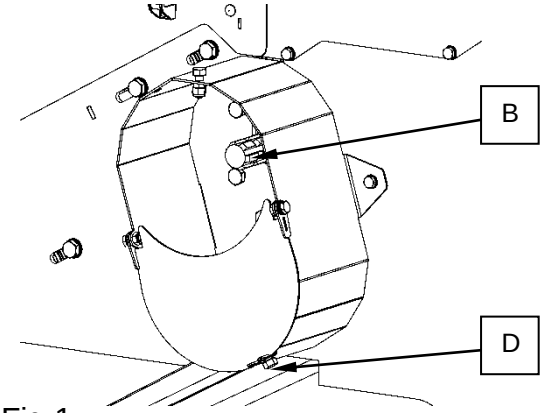


Fig 1

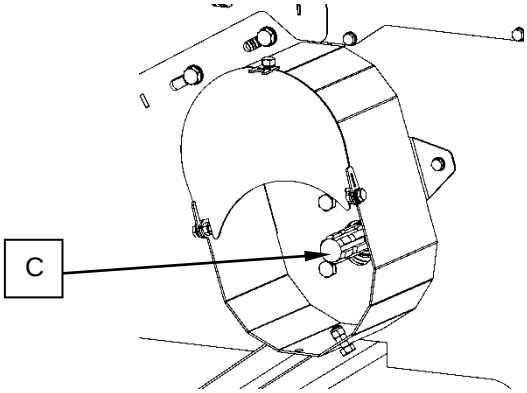


Fig 2

To gain access to the reverser shaft, simply slacken the locking screw (D), and rotate the front guard through 180 degrees, as shown in fig 2.

Reverse the auger for a maximum of only 10 seconds. Then return the PTO shaft to drive shaft (B). Ensure the front drive guard is locked via screw (D) and the safety chains are fitted and secure before engaging the PTO.

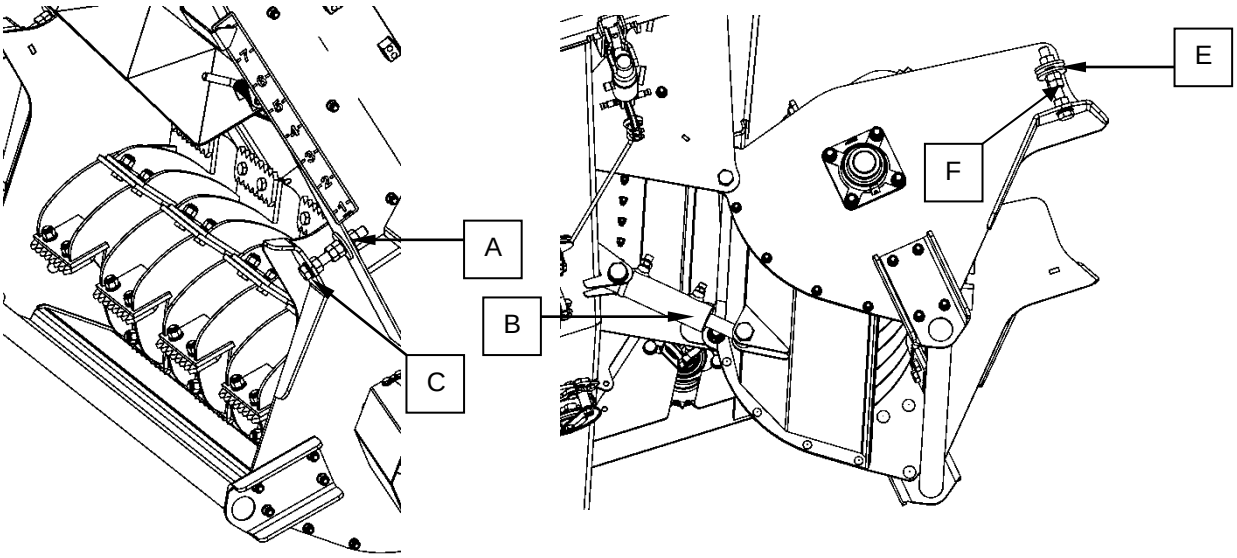
6.11 LOWERING THE IMPELLER

Refer to section 2.11 – Accident prevention when clearing a blockage from the machine for safety procedures.

The impeller can be hydraulically lowered to gain more access when removing a foreign object from the door opening.

To lower the impeller follow the below procedure:

1. Follow the ‘safe stop, procedure.
2. Slacken the 2 nuts (A) on both sides of the impeller until the nut is level with the end of the setscrew (C).
3. Connect the hydraulic hose to a spool on the tractor to operate the lift ram (B).
4. Operate the spool to extend the lift ram, to ensure the ram is primed with oil.
5. Follow the ‘safe stop, procedure.
6. Remove the 2 nuts (A) & the washer (E) on both sides of the impeller. The impeller will slowly drop as the oil disperses from the lift ram, when operating the tractor spool.
7. Do not adjust the 2 nuts (F), as these together with the washer acts as a stop to set the impeller position.
8. Raise the impeller by operating the hydraulic spool of the tractor to extend the lift ram (B).
9. Follow the ‘safe stop, procedure.
10. Re-fit the 2 nuts (A) & the washer (E) on both sides of the impeller, tighten until they hit the stop washer.
11. Turn the impeller by hand to ensure it runs freely.



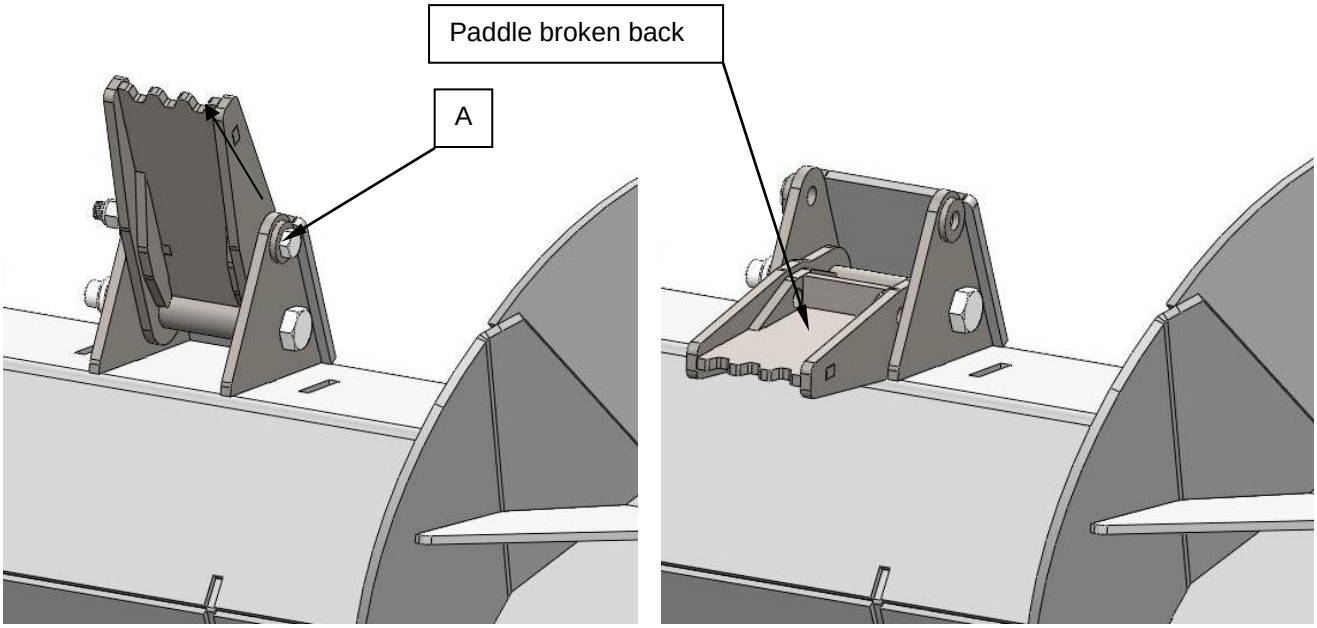
6.12 SHEARBOLT PROTECTED AUGER PADDLES

Refer to section 2.6 – Accident prevention when using the PTO shaft for safety procedures..

Refer to section 2.12 – Accident prevention when servicing and working on the machine for safety procedures.

The Powerspread is fitted with 6 shearbolt protected auger paddles on its auger. These are designed to feed material to the door opening.

If a large obstruction is encountered, the paddle will try and push it round with the auger, as it rotates. If the blockage is too large and jams against the tub wall, the shearbolt (A); will break, resulting in the paddle being forced back against the auger core to avoid the blockage.



If the spread pattern becomes erratic or excessive noise is present then the machine should be stopped and investigated after the discharge of the current load, possible cause maybe the shearbolt(s) have broken on the auger paddles, or the obstruction is too large for the machine to dislodge.

The ability of the paddle to break back once the force exceeds the shearbolt rating reduces the risk of damage to the body, door or impeller.
Under **NO** circumstances should the paddles be welded solidly and the shearbolt removed as this will invalidate the warranty of the Powerspread.

The shear bolts must be genuine Shelbourne Reynolds service parts. If not, the company will not consider any claim made under the warranty and no liability shall be attached to the company.

Paddle shearbolt part no:	SCCA16533 (Up to & including serial number PSP18130311) BLTA16810 (Serial number PSP24130330 & on)
Nut part no.	NUT-0271

If the auger paddle shearbolts need to be changed follow this procedure:

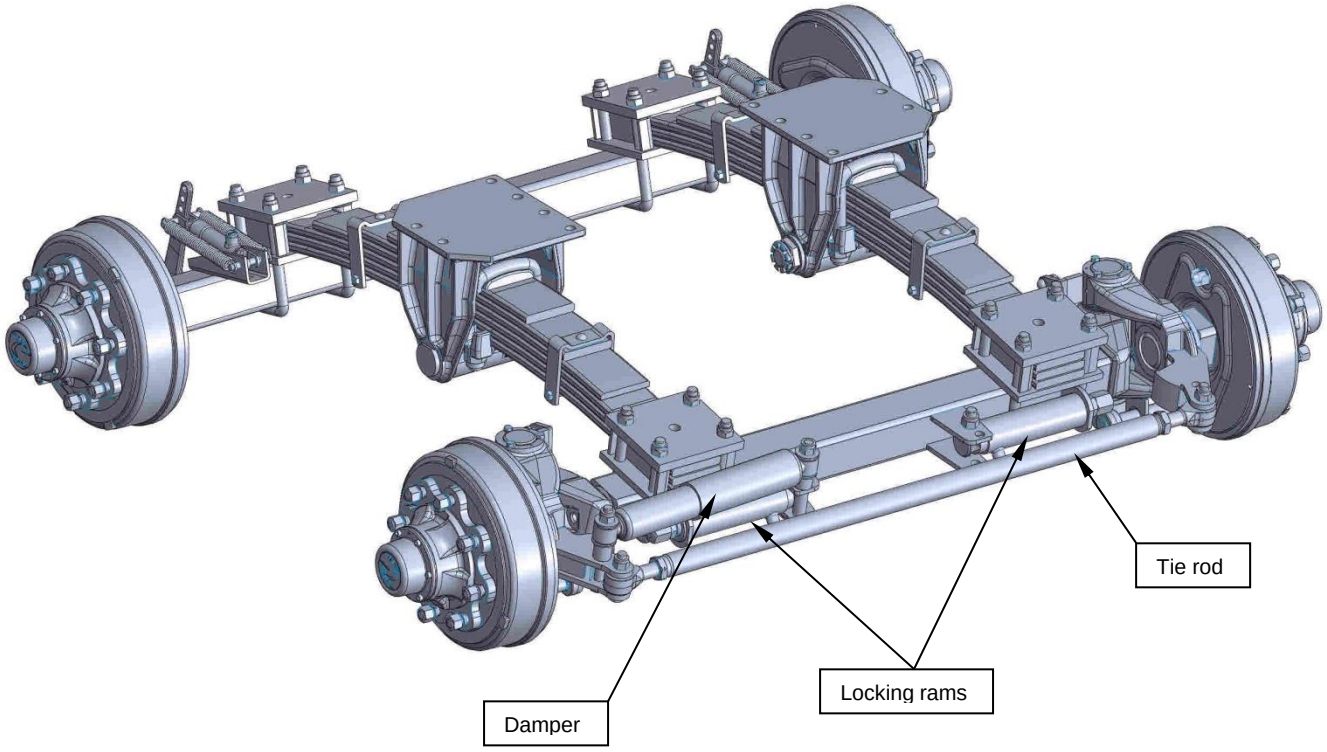
1. Follow the ‘safe stop, procedure.
2. Disconnect the PTO shaft and hydraulic services from the machine.
3. You will need 2 off 24mm spanners, replacement shearbolts and nuts and a pry bar to remove any excess manure from around the paddle.
4. Enter the tub only via the rear inspection ladder provided. Pay particular caution while standing on the auger core, as the surface will be slippery.
5. Re reconnect the PTO shaft and safety chain before continuing to spread.

6.13 OPERATING THE STEERING AXLE

Refer to section 2.7 – Accident prevention when operating the machine, for safety procedures.

The Powerspread can be specified with a tandem bogie assembly which incorporates a steering rear axle. Steering axles contain two spindles which swivel about a kingpin. This can considerably reduce tyre wear, improve the manoeuvrability of the machine and significantly reduce parasitic forces on the chassis and wheels.
The wheel alignment is finely controlled by a tie rod which is adjusted by turning the tie rod with a left-hand thread at one end and a right-hand thread at the other
There is a damper to reduce oscillations and also stabilises the mechanism, and two locking rams are used to straighten the wheels just before reversing. The Locking rams can also be activated while manoeuvring on steep cambers or on particularly rough surfaces (bumps, potholes, etc.).

The locking rams are activated via the hydraulic service connected to a spool valve of the tractor.

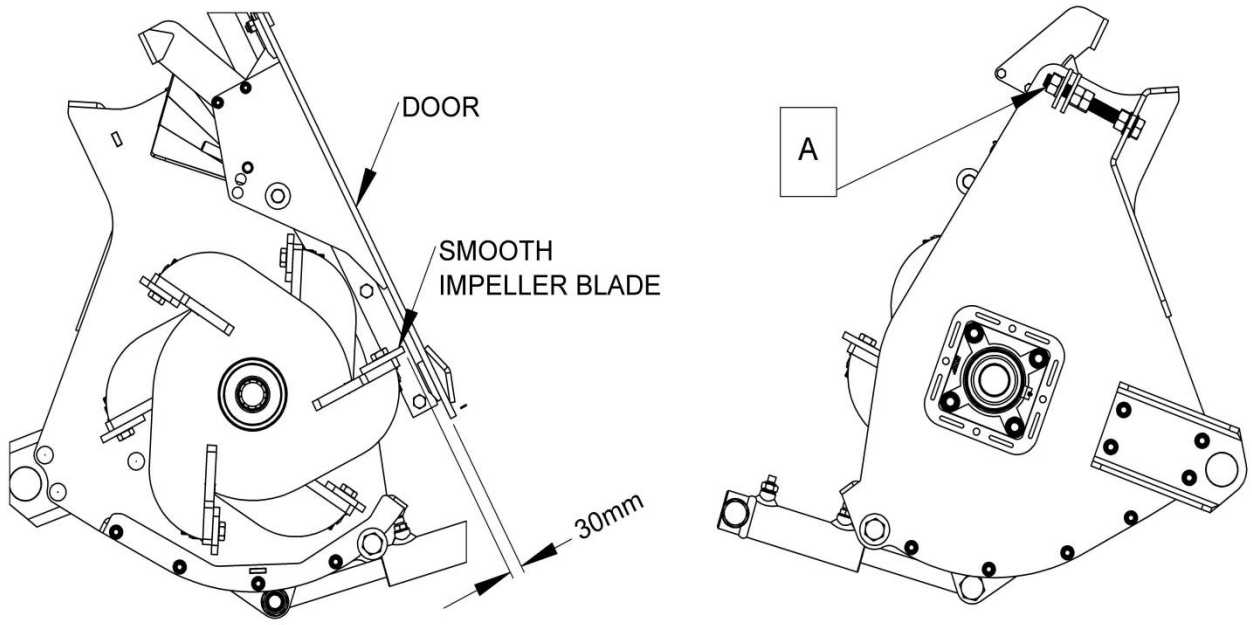


SECTION 7 ADJUSTMENTS AND MAINTENANCE

Refer to section 2.12 – Accident prevention when servicing & working on the machine for safety procedures.

7.1 IMPELLER BLADE ADJUSTMENT

It is important to set the impeller a certain distance from the door to maintain a good spread pattern, and to prevent impact damage between the impeller or door assemblies. Each Impeller blade is attached to the impeller by two bolts. The impeller should be adjusted to give 30mm clearance between the tip of the smooth blades and the outside face of the discharge door when closed (see diagram below).
The smooth blades should protrude approximately 2mm (5/64") further than the teeth on the serrated blades.



As the impeller blades wear, the whole impeller can be adjusted inwards. The distance can be easily adjusted by slackening or tightening the nuts (A) located on each side of the impeller assembly.

Once adjusted to the required distance from the door, all nuts should be tightened.

It is important to periodically check the condition of the impeller blades. Leaving the impeller blades to wear excessively can lead to an expensive repair bill of the impeller assembly itself.
When the blades are fully worn on one edge they should be turned over and the second edge can be used to prolong the life of the impeller blade.
The impeller blades are fixed to the impeller assembly by 2 x M16 fasteners. It is important these are tightened to 210Nm (155lb-ft) after rotating / replacing.

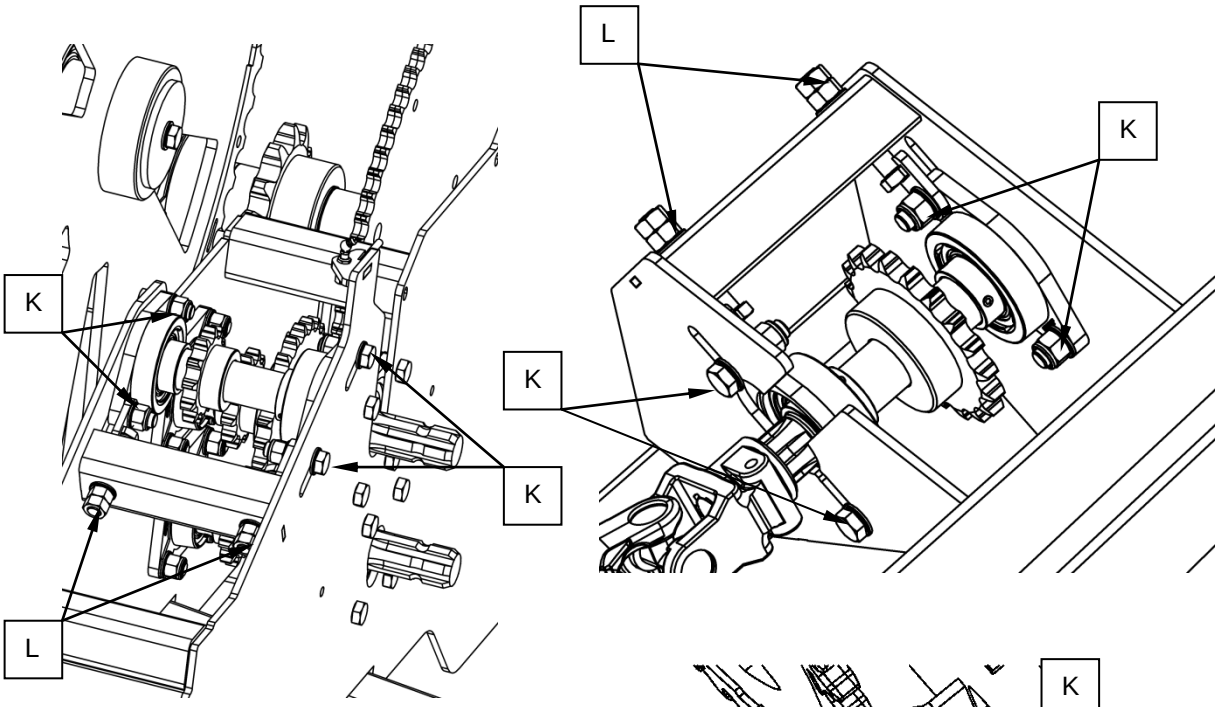
Do not set the impeller closer than 30mm from the door as impact & subsequent damage to the impeller will occur.

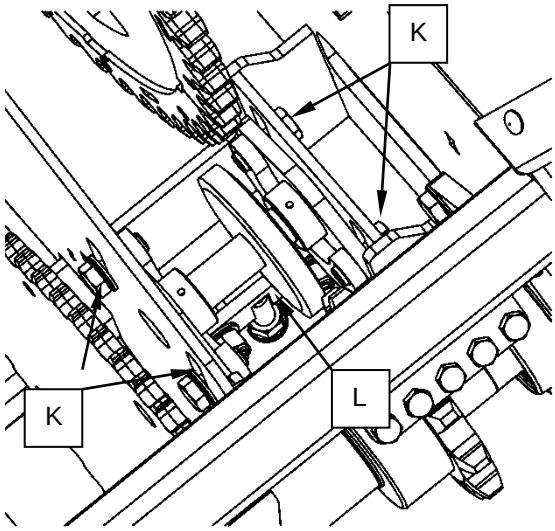
7.2 DRIVE CHAIN TENSIONING

Refer to section 2.12 – Accident prevention when servicing and working on the machine for safety procedures

The Powerspread is fitted with 3 simplex chains of various sizes to drive the auger and impeller. All chains are fitted with a tension adjuster (see diagrams below). The correct chain tension will have been set at the factory but it should be regularly checked during field use. Failure to regularly adjust the chain tensions will severely reduce the life of the chain and greatly increase the chances of breaking a shearbolt on start up.

To tension the chain, firstly slacken bolts (K), then adjust the plain nuts (L) to move the sprocket up or down to the required position, and finally tighten bolts (K) to lock the whole assembly in position. Make sure the chain is physically felt and checked as it is tightened.





Follow the method as described below to ensure the chain tensions are set correctly.

The total slack in the chain can be determined by counter rotating the sprockets so one strand is taut, and then measuring the total sag between the chain and a straight edge midway between the sprockets
The sag should be 1-2% of the centre distance. (See Fig 3.- Shown overleaf, for approximate dimensions).

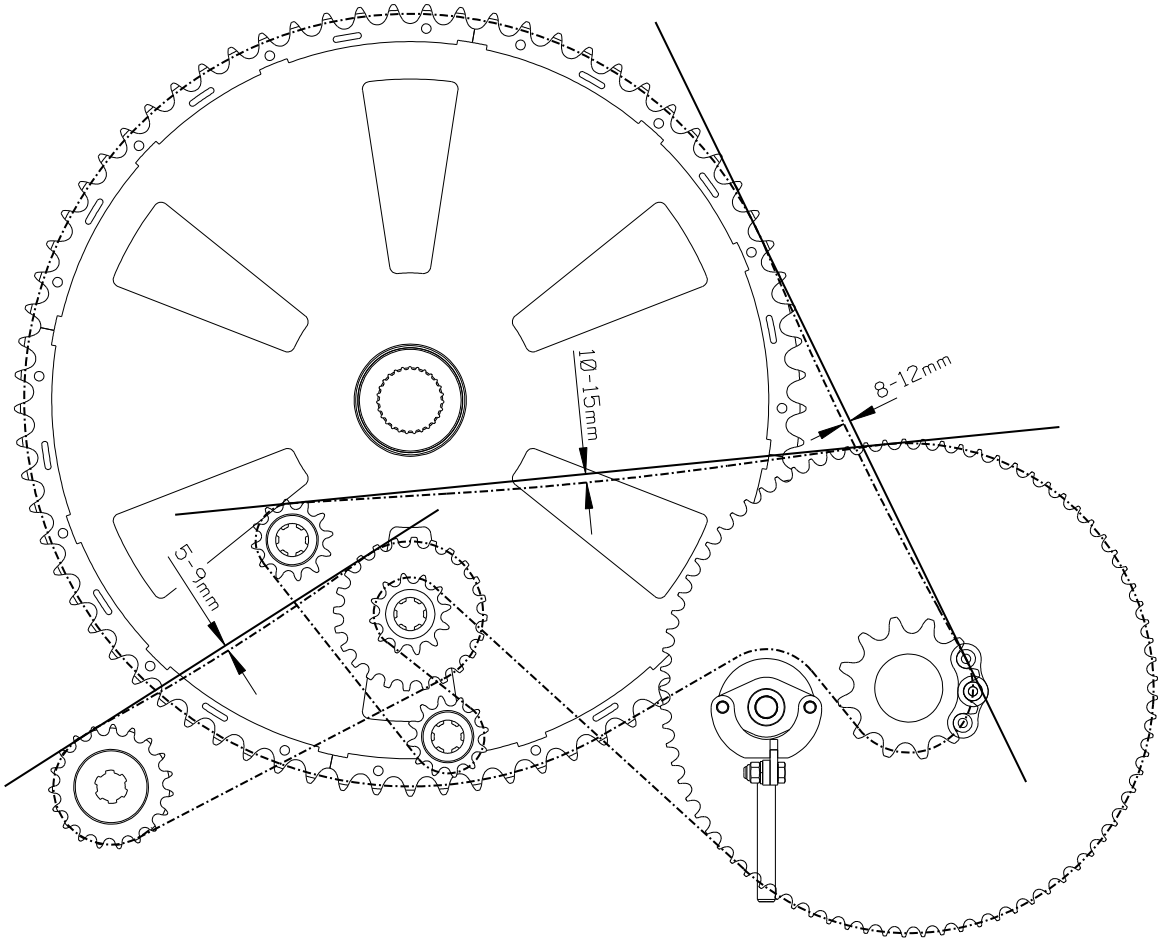


Fig 3.

7.3 CHECKING / TIGHTENING OF WHEEL NUTS

Refer to section 2.12 – Accident prevention when servicing and working on the machine for safety procedures.

Number of studs, stud size and nut type	Torque (Nm)	Torque (lb/ft)	Socket size
10 studs, M22 x 1.5mm pitch, “Bec” taper cone nut	510	376	32mm
8 studs, M20 x 1.5mm pitch, “Plain nut & split coned washer & Bec taper cone nut”	380	280	30mm

The wheel nuts must be tightened diagonally using the appropriate sized socket to the torque stated using a torque wrench.

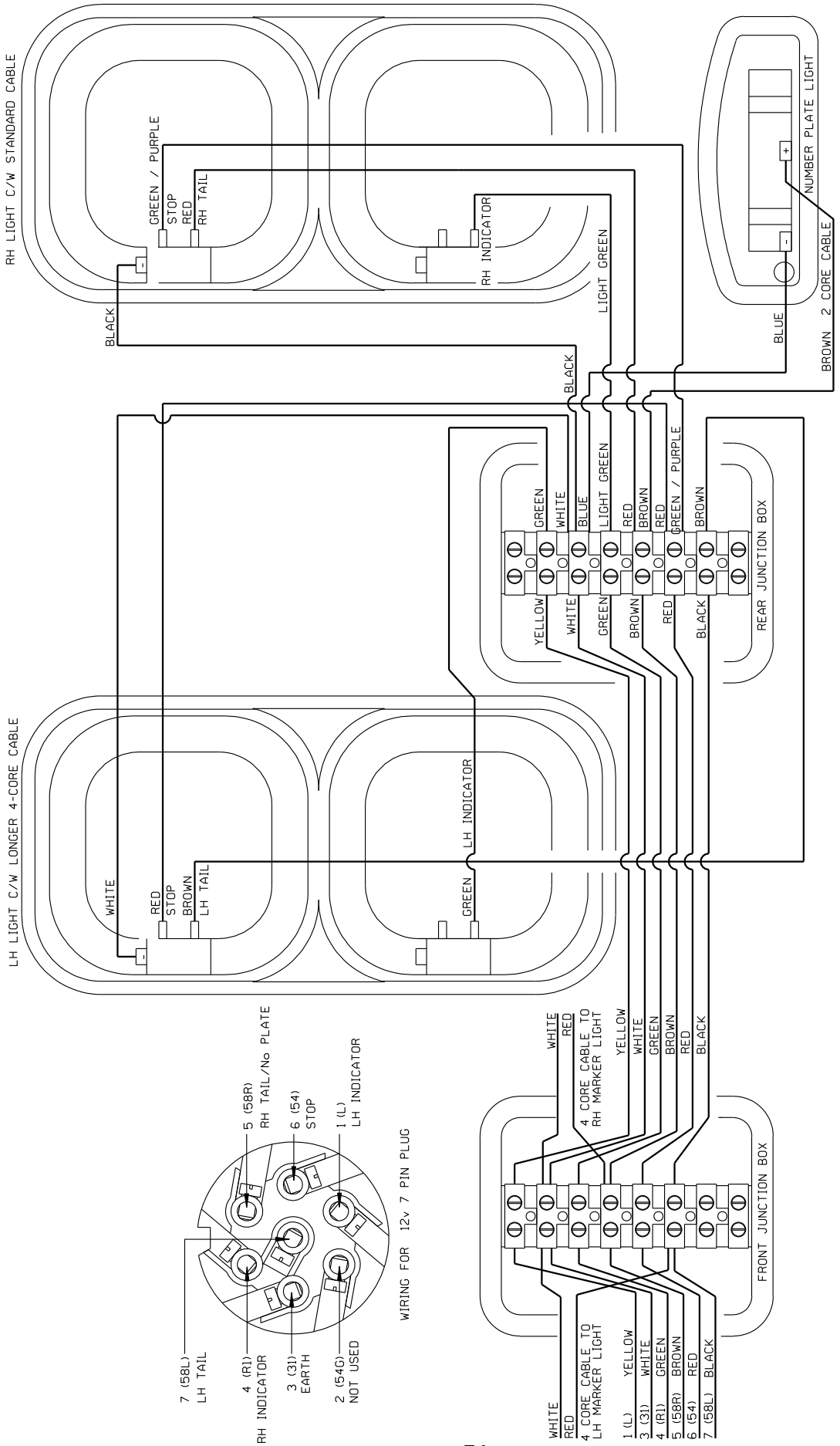
It is recommended that wheel nuts should be checked / tightened :

- Before use at Pre Delivery Inspection stage.
- After the first use / laden journey.
- After the first day of use. Depending if the wheel nuts have become loose then repeat check / tighten daily until no loosening occurs.
- After the first week of use. Depending if the wheel nuts have become loose then repeat check / tighten weekly until no loosening occurs.
- Regularly during use onwards.

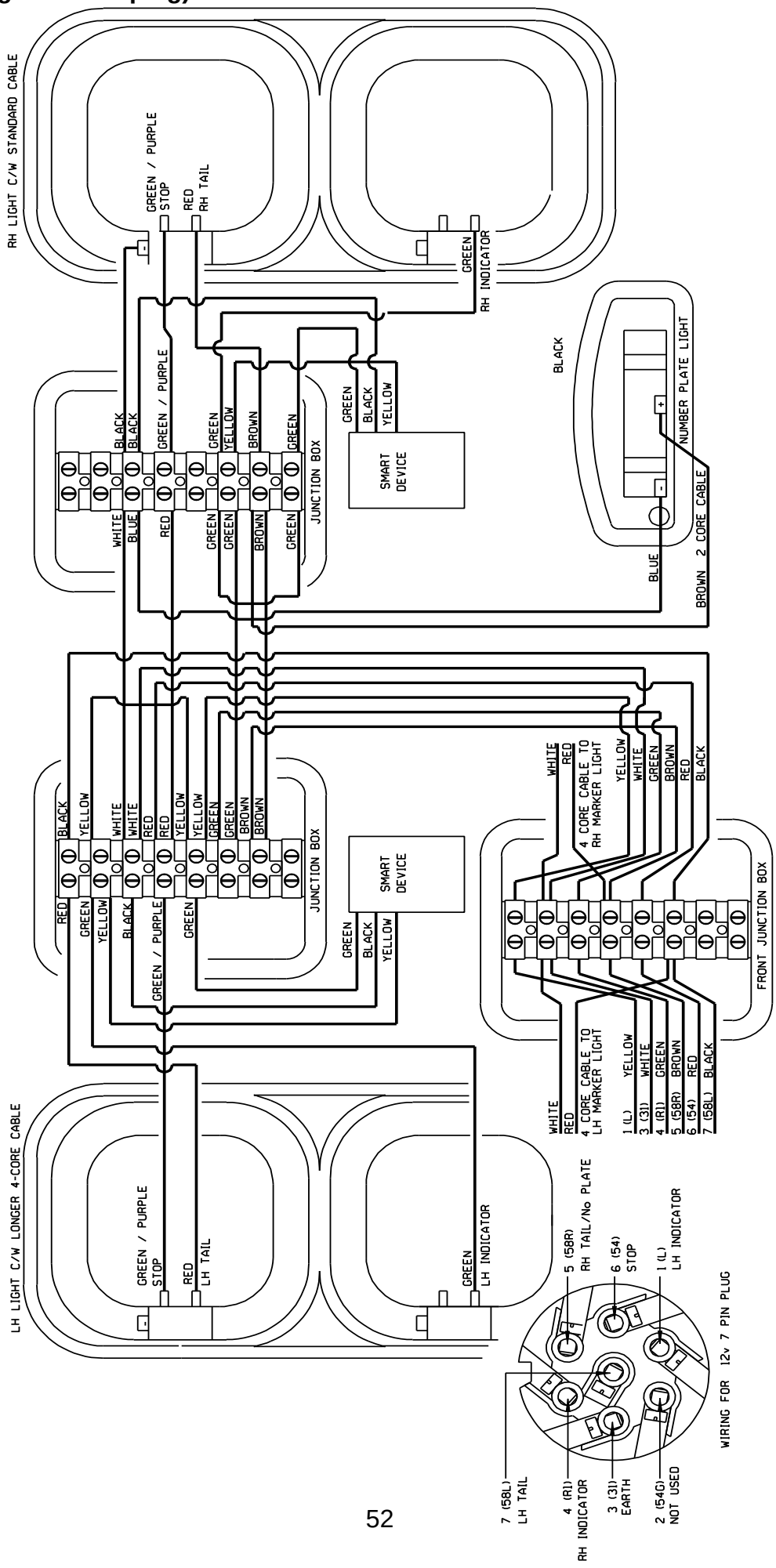
<u>Repeat every time the wheels are changed or removed.</u>

7.4 ELECTRICAL WIRING DIAGRAMS

Standard Lights (non LED)



LED lights
(Pre flyingLead and plug)



7.5 TYRE PRESSURES

Refer to section 2.12 – Accident prevention when servicing and working on the machine for safety procedures.

To ensure maximum tyre life and performance, it is advisable to check the tyre pressure every 2 weeks. If the machine has not been used for a long period, check the tyre pressures before putting the machine back into operation. Ensure there are dust caps on the valves.

The Powerpsread is supplied with the following wheel & tyre assemblies:

1800-2300	23.1-26 16PR Crossply Alliance	Inflate to 2.3 bar (33 psi)
1800-2300	23.1-26 18PR Crossply Starmaxx	Inflate to 2.41 bar (35 psi)
2400-3200	650/65-R30.5 Trelleborg Twin Radial	Inflate to 3.0 bar (44 psi)
2400-3200(tandem)	500/60-22.5 16PR Crossply Starmaxx	Inflate to 2.8 bar (41 psi)
3200(tandem)	560/60-22.5 Alliance 885 flotation	Inflate to 3.5 bar (51psi)
1800-2300	650/65-R30.5 Alliance A380	Inflate to 4.0 bar (58psi)
1800-2300	620/75-R26 Alliance A360	Inflate to 3.2bar (46psi)

IMPORTANT - When inflating tyres it is recommended to –

- firstly inspect tyre and wheel for any cuts or damage, replace or get repaired if necessary.
- use a clip on airline connector, do not use the type that requires the operator to hold in place on valve.
- use an airline that allows the operator to stand at least 3 meters away from tyre.
- use a calibrated pressure gauge.
- stand to the side of the tyre, in line with the tread, do not stand facing the side wall of the tyre.
- never lock on the pressure gauge, always manually activate gauge.
- keep bystanders clear at all times while inflating.
- wear appropriate PPE, safety shoes / clothing, glasses, gloves and ear defenders.
- only inflate to the correct pressure for the size and ply rating stated, never over inflate.

7.6 MAINTAINING THE HYDRAULIC SYSTEM

Refer to section 2.5 - Accident prevention when using the hydraulic system for safety procedures.

Do not operate the machine at a pressure higher than 210bar.

Check the hose ends and other hydraulic connections reguarly to ensure there are no leaks.

Check the hoses themselves regularly to ensure there is no damage to the sheathing. If the steel braiding has been exposed it should be covered with self-adhesive tape to protect it from rust. If the braiding itself has become damaged then the hose should be replaced, as there is a danger it could burst.

Ensure that a replacement hose is of the same pressure rating as the hose it replaces. Always use 2 spanners when tightening hoses.

Recommended torque settings for hose nuts:

SIZE (BSP)	NUT TORQUE SETTING			
	Min		Max	
	Nm	lbf-ft	Nm	lbf-ft
1/4”	15	11	18	13
3/8“	26	19	31	23
1/2“	41	30	49	36
5/8“	50	37	60	44
3/4“	70	52	80	59
1”	105	77	125	92

7.7 RECOMMENDED TORQUE FOR FASTNERS

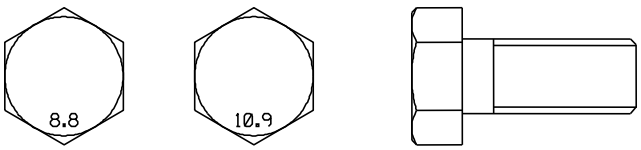
Refer to section 2.12 - Accident prevention when servicing and working on the machine for safety procedures

The table shown below provides the correct torque values for various fasteners.

- Tighten all fasteners to the torques specified in the chart unless otherwise stated in this manual.
- Check tightness of fasteners periodically, using torque chart as a guide.
- Replace hardware with the same strength fastener.
- Torque figures are valid for non-greased or oiled threads unless otherwise specified.
- Do not grease or oil fasteners unless specified. When using locking elements, increase torque values by 5%.

THREAD DIAMETER.	WRENCH SIZE (mm)	BOLT TORQUE / GRADE*			
		8.8		10.9	
		lbf-ft	Nm	lbf-ft	Nm
M5	8	4	6	7	9
M6	10	7	10	11	15
M8	13	18	25	26	35
M10	17	37	50	52	70
M12	19	66	90	92	125
M14	22	103	140	148	200
M16	24	166	225	229	310
M20	30	321	435	450	610
M24	36	553	750	774	1050

* Torque categories for fasteners are identified by their head markings



7.8 CHECKING THE AXLE HUBCAPS

Refer to section 2.12 for accident prevention when servicing and working on the machine for safety procedures

Check that the hubcaps are in place and in perfect condition.

Missing or damaged hubcaps must be replaced immediately, to avoid dirt penetrating into the hub, and consequently damaging the wheel bearings.

For press fit hubcaps, check visually that they are fully home.

For hubcaps attached using screws, fit a new gasket if the hubcap is removed, and check the tightness of the screws regularly (every 3 months).

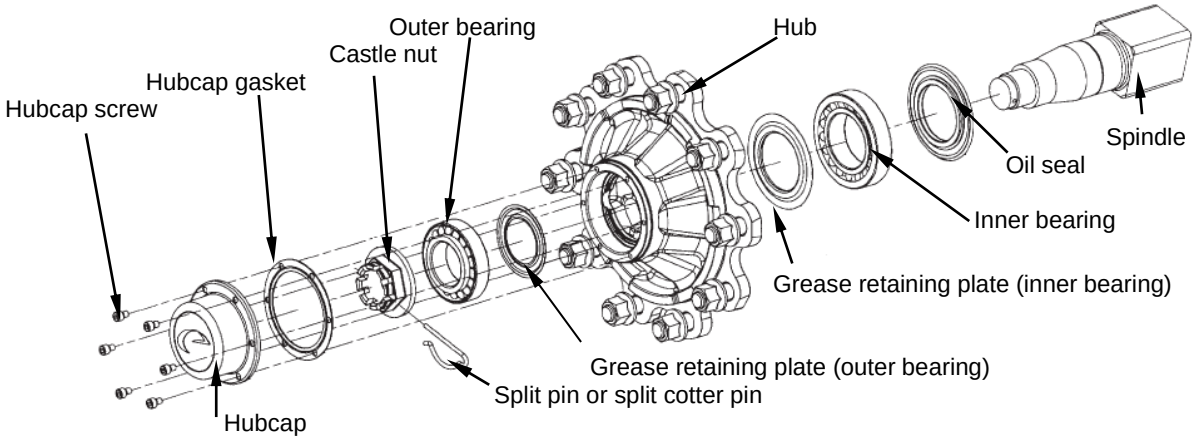
7.9 CHECKING THE WHEEL BEARINGS

Refer to section 2.12 - Accident prevention when servicing and working on the machine for safety procedures.

Wheel bearings are subject to wear; their lifetime depends on the operating conditions, the load, speed, adjustment and lubrication.

They should be checked after the first 1000km, before intensive use or every 3 months or 5,000km.

To check for play in the wheel bearings, raise the axle until the wheel is no longer resting on the ground.
Release the brake, and grip the wheel at the top and the bottom, and check the play by trying to tilt it.
If you can feel any play, adjust the wheel bearing, as described below



1. Remove the hubcap.
2. Remove the cotter pin or hairpin clip from the spindle.
3. Tighten the castle nut (Right hand thread) to take up the internal play, (the spherical roller bearings should then be firmly held between the hub seating , the pressure ring spindle and castle nut
4. The rotation of the hub should feel to be slightly stiff, slacken the castle nut until there is no friction between the castle nut and the outer bearing, and the hole for the pin is aligned with a notch in the castle nut.
5. Tap the hub gently using a mallet to shake down the assembly.

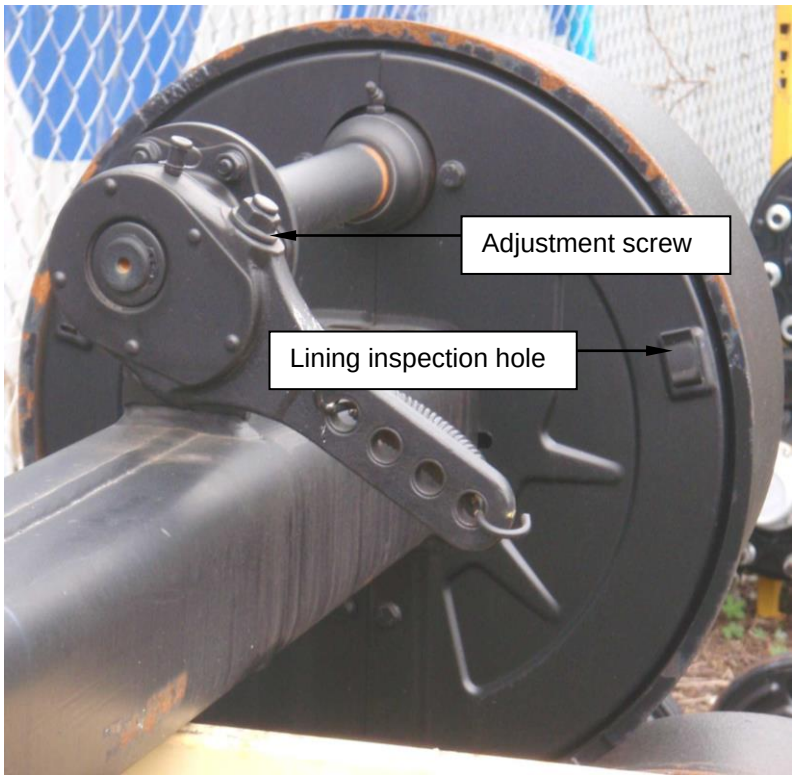
6. Check that the hub rotates more freely, it is best to be too free rather than too tight.
7. When the hub has been adjusted, fit a new split cotter pin.
8. Refit the Hubcap, and tighten the hubcap screws.
9. When the wheel has been re-fitted, turn it slightly. It should come to rest with a slow rocking movement due to the imbalance

In normal operating conditions, lubricate the bearings every 2 years or every 40,000km, or when the brake shoes are replaced.

The axle hubs will need to be disassembled in order to lubricate the wheel bearings, this work should be carried out in a clean environment with appropriate tools as any contamination can damage the bearings or even the spindle.

7.10 CHECKING BRAKE CLEARANCE & WEAR

Refer to section 2.12 - Accident prevention when servicing and working on the machine for safety procedures.



Check and test the brakes before intensive use and every 3 months.

Check the brake wear, and the clearance between the brake linings and the drum visually, by looking through the lining inspection hole.
It is probable that the linings are worn when the hydraulic cylinder travel has increased significantly.

The brake shoes should be replaced if the minimum lining thickness of 5mm is reached.

When replacing the brake shoes, always re-pack the bearings with grease.

The brake levers may need adjusting when the brake shoes begin to wear. This is done by taking up the slack when the hydraulic brake cylinder reaches about two thirds of its maximum travel. To take up the slack, turn the adjustment screw on the lever to move the brake lever (shown above).
The brake operating levers contain several holes. Always mount the hydraulic cylinder and the handbrake cable in the original holes, as this will alter the machines braking efficiency.

If in doubt please consult your dealer to carry out this work.

7.11 MAINTENANCE OF THE STEERING AXLE

Refer to section 2.12 - Accident prevention when servicing and working on the machine for safety procedures.

Steering axles should be maintained identically to standard axles, as described previously in sections 7.8, 7.9 & 7.10. However they do require extra maintenance and adjustments as described below.

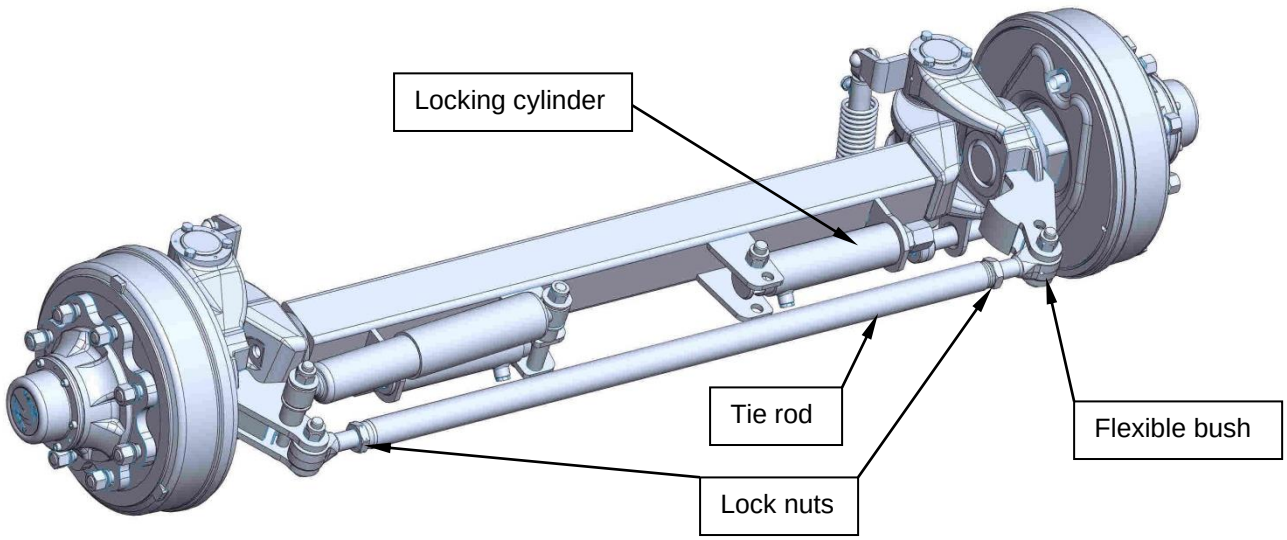
Before intensive use and every 3 months:

- Lubricate the kingpins.
- Tighten the screws and nuts and all parts mounted on the axle (chambers, cylinders and mountings, locking, cylinders, damper, tie rod, etc).
- Check that the tie rod has not been accidentally bent as this adversely affects the steer axle, in particular the wheel alignment.
- Check the full-lock angle limit screws on the axle.
- If the steer axle oscillates, check the damper. Oil traces do not indicate that the damper is unserviceable but a major oil loss will result in its failing. Uncouple it at one end and push it in and out by hand for the whole travel. If there is little resistance, replace the damper. Also replace the damper if it is badly dented.
- Ensure that the damper is mounted the right way round. A new damper should have the label at the top.
- Look for and correct any leaks of air or hydraulic fluid from the chambers, cylinders and damper.

Checking and adjusting the wheel alignment:

Before adjusting the wheel alignment, check that the flexible bushings at the ends of the tie rod are in good condition and replace them if necessary.
Align the wheels with the vehicle on a smooth, level surface.
The wheel alignment must be adjusted with the locking cylinder pistons retracted.
Measure the distance between the rims at the front and at the back of the wheels: the distance should be the same.
If the wheel alignment is not perfect, adjust it as follows, with the locking cylinder pistons still retracted

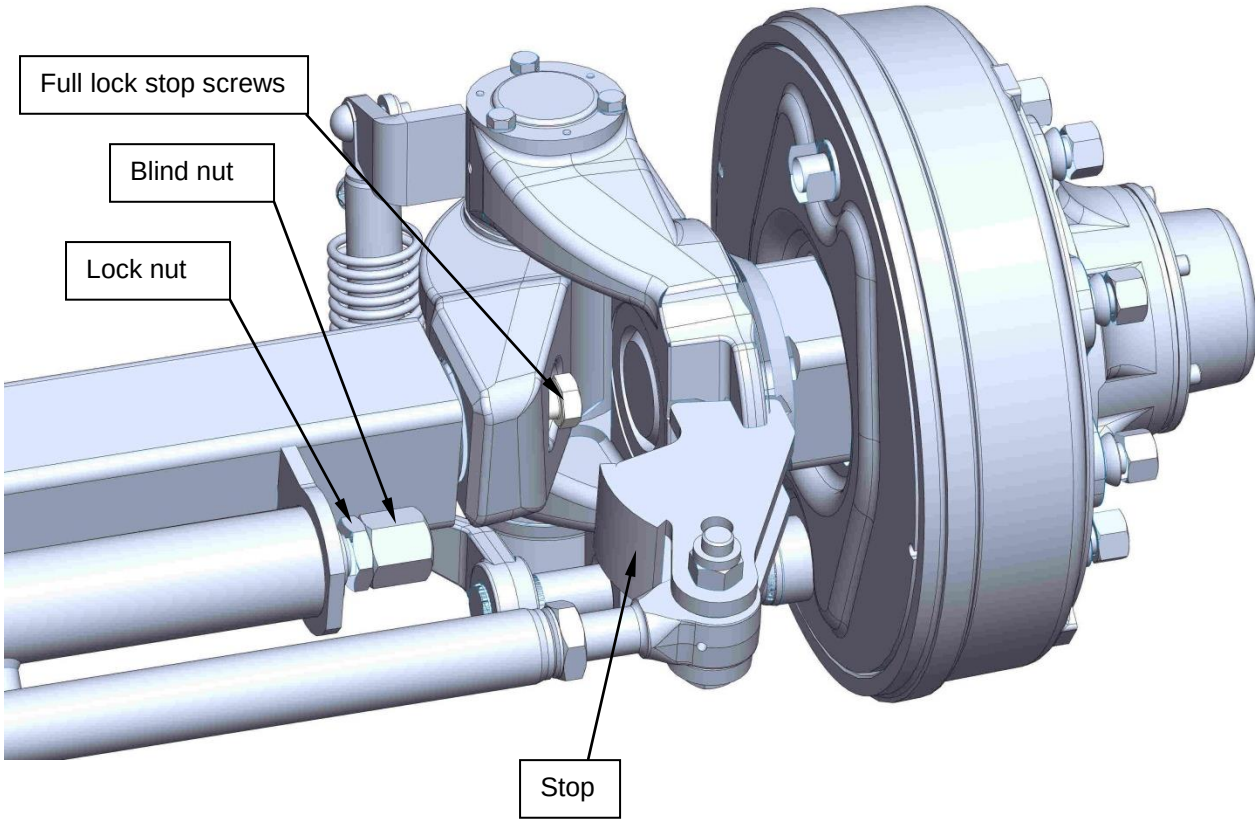
- Slacken the 2 lock nuts on the end of the tie rod.
- Turn the tie rod to pull or push the wheels until the distances are the same. The wheels may be set to have a slight toe in (distance at the front less than the distance behind) of no more than about 4 mm but never adjust with toe out.
- Lock the lock nuts when the tie rod has been adjusted and then adjust the locking cylinders



Adjusting the locking cylinders:

- Move the lock nuts and the blind nuts as close as possible to the body of the cylinder.
- Without operating the locking rams, align the steer axle and the vehicle on a smooth, level surface.
- Pressurise the rams and maintain the pressure.
- Screw the blind nuts to contact the stops without forcing
- Screw the lock nuts to contact the blind nuts.
- Tighten the lock nuts firmly
- Check that the wheels are still aligned.

The only maintenance required for the locking rams is to keep them perfectly clean, in particular the surface of the ram rod. If the seals are leaking, they can be replaced.



Adjusting the full lock stop screws

Check the full-lock angle regularly by turning fully to the right and to the left and checking that the tyres do not touch the Powerspread body or suspension as this might wear or damage the tyres. Adjust the full-lock stop screws, if appropriate and tighten the lock nuts.

7.12 MAINTENANCE OF THE BOGIE SUSPENSION

Refer to section 2.12 - Accident prevention when servicing and working on the machine for safety procedures.

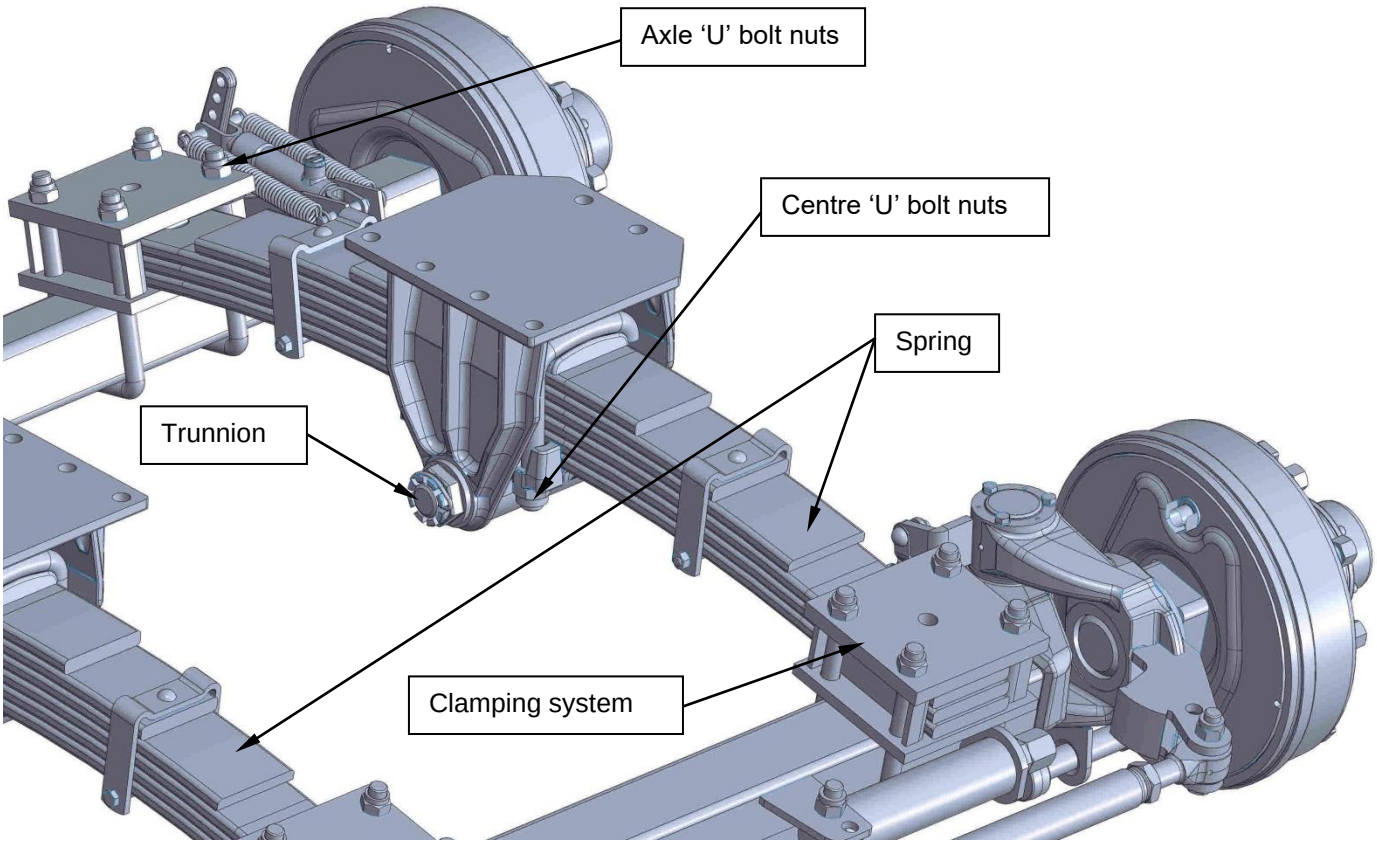
After the first laden journey, before intensive use and every 6 months:

- Tighten the axle U-bolt nuts diagonally to a torque of 440Nm
- Tighten the centre U-bolt nuts diagonally to a torque of 590Nm
- Tighten the bolts that connect the Bogie suspension to the tub of the Powerspread to a torque of 435Nm.
- Lubricate the central trunnion.

Every year

- Check the play between the bushings and the trunnions and, if there is excessive play, replace the worn parts.
- Check the general condition of the springs: clean them thoroughly and brush the sides of the springs to check for cracks.
- If there is any play between the spring and the axle, check the whole of the clamping system (the rubber pad, the clamping box and plate and the alignment pin.

Under harsh or intensive operating conditions, maintenance should be carried out more frequently.

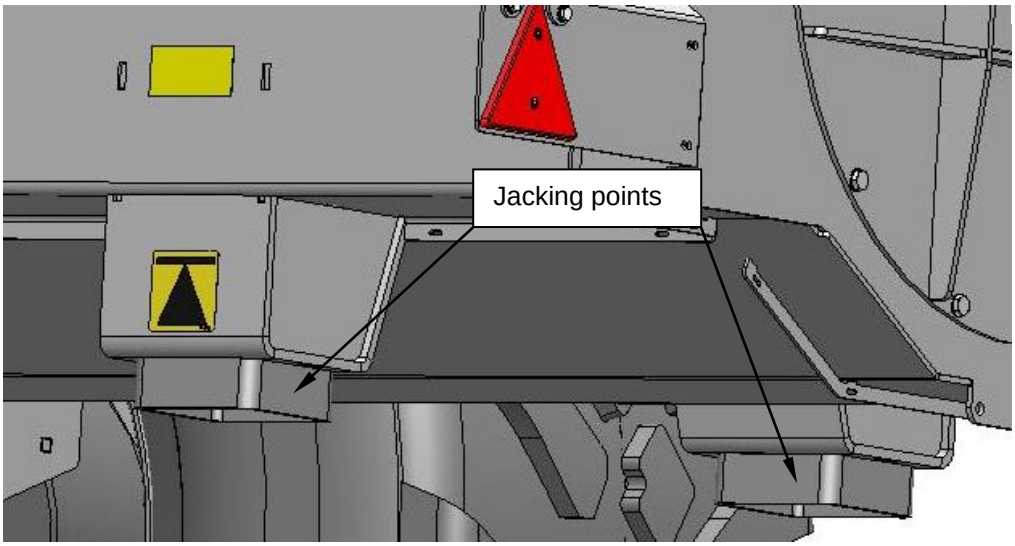


7.13 CHANGING A WHEEL

Refer to section 2.10 - Accident prevention when changing a wheel for safety procedures.

- Park the machine on a flat hard standing surface capable of withstanding the loading of a jack.
- Ensure the wheels are chocked and the machine is hitched to the tractor with its parking brake engaged.
- Locate the jacking mechanism in the jacking point provided (see drawing below). It is advisory to use an air actuated jack to enable the tyre fitter to stand clear of the danger zone while jacking.
- Raise the jack until it is supporting (but not lifting) the machine.
- Loosen the wheel nuts, and slowly raise the machine to the correct height. The jack should have an extension of at least 450mm to ensure there is sufficient clearance for the tyre to be replaced when fully inflated
- Prop the axle with heavy duty axle stands positioned as close to the wheel as possible.
- Remove the wheel nuts.
- Use a mechanical lifting aid to remove the wheel.
- Once repaired replace the wheel using a mechanical lifting aid and tighten the wheel nuts by hand until they are all located in the countersink holes of the nave plate.
- Carefully remove the axle stands.
- Lower the machine without applying the full weight on the tyre and tighten the nuts with a torque wrench.
- Lower the machine to the ground and remove the jack.
- Finish by checking the wheel nuts are tightened to the correct torque.

The symbol shown right is displayed on the machine and is there to identify the locations on the machine where a jack mechanism can be used.



Do not attempt to change a wheel unless you have the proper equipment and experience to do the job. If in doubt use a skilled professional. The cost is minimal compared to the costs associated with the serious consequences if something goes wrong.

7.14 STORAGE & CLEANING

Refer to section 2.13 for accident prevention when cleaning and storing the machine for safety procedures.

Clean the machine thoroughly, making sure that high-pressure water does not contact bearings, seals or electrical components. Avoid washing paintwork at very close range or at very high pressure.

The machine should be stored undercover, to protect it from the effects of sun and rain. Make any necessary repairs and then apply grease to all grease points until fresh grease shows. Also, apply a layer of grease to all unprotected surfaces that are prone to corrosion, in particular any exposed hydraulic cylinder rods. (This grease should be carefully removed prior to the next use of the machine, as it will contain sufficient dirt to damage the cylinder seals.

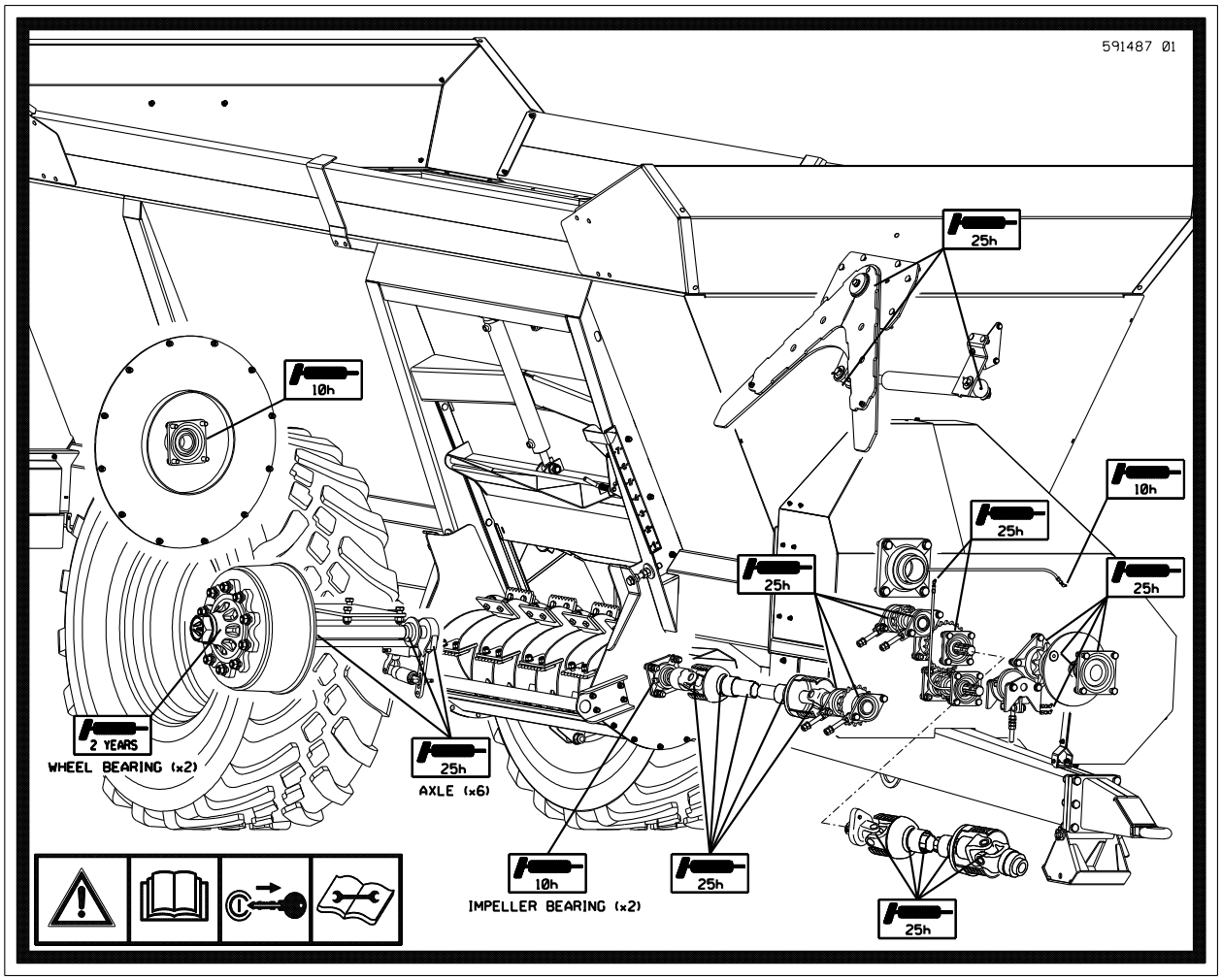
If the machine is to be kept outside, it should be parked with the door open to prevent water sitting in the bottom of the tub, and to prevent the doors hydraulic cylinder from rusting.

Park the hydraulic hoses and 7-pin plug in the parking station as shown below to prevent damage during storage:

When the Powerspread is not in use stow the PTO shaft as shown below to prevent damage:

SECTION 8 LUBRICATION

Refer to the diagram below for greasing points:



GREASE EVERY 10 HOURS

Grease the front & rear impeller bearings.
Grease the front & rear auger bearings.
Oil the drive chains.

GREASE EVERY 25 HOURS.

Grease the universal joints & guard bearings of the impeller & input PTO shafts
Grease remaining front drive bearings (x10).
Grease brake cam rods & levers on axle (x6).
Grease the pivot pins on the anti-bridge assembly
Grease the pivot bush on the anti-bridge assembly

GREASE EVERY 2 YEARS

Check & grease wheel bearings.