

TWOSE

Manure Spreader

MS80T Pro

OPERATOR MANUAL

Publication 668

Part No.22674.68



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IMPORTANT VERIFICATION OF WARRANTY REGISTRATION



DEALER WARRANTY INFORMATION & REGISTRATION VERIFICATION

It is imperative that the selling dealer registers this machine with Twose of Tiverton Limited before delivery to the end user – failure to do so may affect the validity of the machine warranty.

To register machines go to the Twose web site at www.twose.com, log onto 'Dealer Inside' and select the 'Machine Registration button' which can be found in the Service Section of the site. Confirm to the customer that the machine has been registered in the section below.

Should you experience any problems registering a machine in this manner please contact the Twose Office on 01884 253691.

Registration Verification

Dealer Name:
Dealer Address:
Customer Name:
Date of Warranty Registration:/...../..... Dealer Signature:

NOTE TO CUSTOMER / OWNER

Please ensure that the above section above has been completed and signed by the selling dealer to verify that your machine has been registered with Twose of Tiverton Limited.

IMPORTANT: During the initial 'bedding in' period of a new machine it is the customer's responsibility to regularly inspect all nuts, bolts and hose connections for tightness and re-tighten if required. New hydraulic connections occasionally weep small amounts of oil as the seals and joints settle in – where this occurs it can be cured by re-tightening the connection – *refer to torque settings chart below*. The tasks stated above should be performed on an hourly basis during the first day of work and at least daily thereafter as part of the machines general maintenance procedure.

TORQUE SETTINGS FOR HYDRAULIC FITTINGS

HYDRAULIC HOSE ENDS		
BSP	Setting	Metric
1/4"	18 Nm	19 mm
3/8"	31 Nm	22 mm
1/2"	49 Nm	27 mm
5/8"	60 Nm	30 mm
3/4"	80 Nm	32 mm
1"	125 Nm	41 mm
1.1/4"	190 Nm	50 mm
1.1/2"	250 Nm	55 mm
2"	420 Nm	70 mm

PORT ADAPTORS WITH BONDED SEALS		
BSP	Setting	Metric
1/4"	34 Nm	19 mm
3/8"	47 Nm	22 mm
1/2"	102 Nm	27 mm
5/8"	122 Nm	30 mm
3/4"	149 Nm	32 mm
1"	203 Nm	41 mm
1.1/4"	305 Nm	50 mm
1.1/2"	305 Nm	55 mm
2"	400 Nm	70 mm

WARRANTY POLICY

WARRANTY REGISTRATION

All machines must be registered, by the selling dealer with Twose of Tiverton Limited before delivery to the end user. On receipt of the goods it is the buyer's responsibility to check that the Verification of Warranty Registration in the Operator's Manual has been completed by the selling dealer.

1. LIMITED WARRANTIES

- 1.01. All machines supplied by Twose of Tiverton Limited are warranted to be free from defects in material and workmanship from the date of sale to the original purchaser for a period of 12 months, unless a different period is specified.
- 1.02. All spare parts supplied by Twose of Tiverton Limited are warranted to be free from defects in material and workmanship from the date of sale to the original purchaser for a period of 6 months.
- 1.03. The manufacturer will replace or repair for the purchaser any part or parts found, upon examination at its factory, to be defective under normal use and service due to defects in material or workmanship. Returned parts must be complete and unexamined.
- 1.04. This warranty does not apply to any part of the goods, which has been subjected to improper or abnormal use, negligence, alteration, modification, fitment of non-genuine parts, accident damage, or damage resulting from contact with overhead power lines, damage caused by foreign objects (e.g. stones, iron, material other than vegetation), failure due to lack of maintenance, use of incorrect oil or lubricants, contamination of the oil, or which has served its normal life. This warranty does not apply to any expendable items such as blades, flails, flap kits, skids, soil engaging parts, shields, guards, wear pads or pneumatic tyres.
- 1.05. Temporary repairs and consequential loss - i.e. oil, downtime and associated parts are specifically excluded from the warranty.
- 1.06. Warranty on hoses is limited to 12 months and does not include hoses which have suffered external damage. Only complete hoses may be returned under warranty, any which have been cut or repaired will be rejected.
- 1.07. Machines must be repaired immediately a problem arises. Continued use of the machine after a problem has occurred can result in further component failures, for which Twose of Tiverton Limited cannot be held liable, and may have safety implications.
- 1.08. Except as provided herein, no employee, agent, dealer or other person is authorised to give any warranties of any nature on behalf of Twose of Tiverton Limited.
- 1.09. For machine warranty periods in excess of 12 months the following additional exclusions shall apply:
 - 1) Hoses, external seals, exposed pipes and hydraulic tank breathers.
 - 2) Filters.
 - 3) Rubber mountings.
 - 4) External electric wiring.

N.B. Warranty cover will be invalid if any non-genuine parts have been fitted or used. Use of non-genuine parts may seriously affect the machine's performance and safety. Twose of Tiverton Limited cannot be held responsible for any failures or safety implications that arise due to the use of non-genuine parts.

2. REMEDIES AND PROCEDURES

- 2.01. The warranty is not effective unless the Selling Dealer registers the machine, via the Twose web site and confirms the registration to the purchaser by completing the Verification of Warranty Registration in the operator's manual.
- 2.02. Any fault must be reported to an authorised Twose dealer as soon as it occurs. Continued use of a machine, after a fault has occurred, can result in further component failure for which Twose of Tiverton Limited cannot be held liable.
- 2.03. Repairs should be undertaken within two days of the failure. Claims submitted for repairs undertaken more than 2 weeks after a failure has occurred, or 2 days after the parts were supplied will be rejected, unless the delay has been authorised by Twose of Tiverton Limited.
- 2.04. All claims must be submitted, by an authorised Twose Service Dealer, within 30 days of the date of repair.
- 2.05. Following examination of the claim and parts the manufacture will pay, at their discretion, for any valid claim the cost of any parts and an appropriate labour allowance if applicable.
- 2.06. The submission of a claim is not a guarantee of payment.
- 2.07. Any decision reached by Twose of Tiverton Limited is final.

3. LIMITATION OF LIABILITY

- 3.01. The manufacturer disclaims any express (except as set forth herein) and implied warranties with respect to the goods including, but not limited to, merchantability and fitness for a particular purpose.
- 3.02. The manufacturer makes no warranty as to the design, capability, capacity or suitability for use of the goods.
- 3.03. Except as provided herein, the manufacturer shall have no liability or responsibility to the purchaser or any other person or entity with respect to any liability, loss, or damage caused or alleged to be caused directly or indirectly by the goods including, but not limited to, any indirect, special, consequential, or incidental damages resulting from the use or operation of the goods or any breach of this warranty. Notwithstanding the above limitations and warranties, the manufacturer's liability hereunder for damages incurred by the purchaser or others shall not exceed the price of the goods.
- 3.04. No action arising out of any claimed breach of this warranty or transactions under this warranty may be brought more than one (1) year after the cause of the action has occurred.

4. MISCELLANEOUS

- 4.01. The manufacturer may waive compliance with any of the terms of this limited warranty, but no waiver of any terms shall be deemed to be a waiver of any other term.
- 4.02. If any provision of this limited warranty shall violate any applicable law and is held to be unenforceable, then the invalidity of such provision shall not invalidate any other provisions herein.
- 4.03. Applicable law may provide rights and benefits to the purchaser in addition to those provided herein.

EC DECLARATION OF CONFORMITY

Conforming to EEC Directive 89/392/EEC

We,

TWOSE OF TIVERTON LIMITED,
6 Chinon Court, Lower Moor Way,
Tiverton Business Park, Tiverton, Devon, EX16 6SS.

Declare under our sole responsibility that:

The product (*type*) Tractor Trailed Manure Spreader.....

Product Code MS80T Pro.....

Serial No. & Date Type

Manufactured by the above company/*

.....
(* insert business name and full address if not stated above)

Complies with the required provisions of the Machinery Directive 98/37/EC, * previously Directive 89/392/EEC as amended by Directives 91/368/EEC, 93/44/EEC and 93/68/EEC.

For the relevant implementation of the safety and health requirements mentioned in the Directives, the following standards have been respected:

EN 292-1/1991 EN292-2/1991 EN294/1992 EN349/1993

EN 1553/1999 EN 1152/1994 EN 953/1997 EN 982/1996

Signed John Frank.....
on behalf of TWOSE OF TIVERTON *Responsible Person*

Status: Chief Design Engineer

Date: February 2011

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Description of Machine

The Twose MS80T Pro is a twin axle manure spreader with a 5300kg load capacity. The machine features a hydraulically operated rear tailgate, hydraulic drive chain conveyor and four vertical spreader rotors for optimum spreading of manure with full operation of the machine direct from the tractor cab.

The self-contained spreader unit is simply removed and replaced with a tail wall section to convert the base unit into a handy cargo trailer. With its wide tyres, overrun braking system and rear lighting this makes it an ideal transporter for a wide variety of duties and tasks.



Technical Data

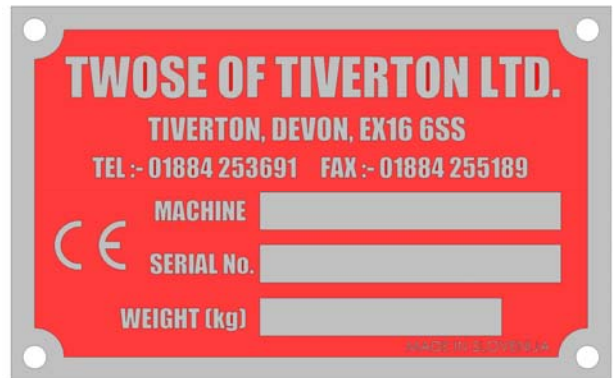
Specification	MS80T Pro
Machine Length (Max)	6.72m
Machine Width (Max)	2.22m
Machine Height (Max)	2.69m
Height without spreading device	1.69m
Sidewall Height	0.5m
Load Surface	8.86m ²
Load Capacity	(4.43 – 9.5)m ³
Laden Weight	8000kg
Weight Capacity	5300kg
Machine Weight	2700kg
Front Axle Load	3500kg
Rear Axle Load	3500kg
Drawbar Load	1000kg
Tractor Requirement (Min)	60kW / 80HP
Axle Width	1700mm
Tyres	15.0/55-17 (10PR)
Tyre Pressure	3.5 bar
PTO Speed (Max)	540RPM

Machine Record Plate

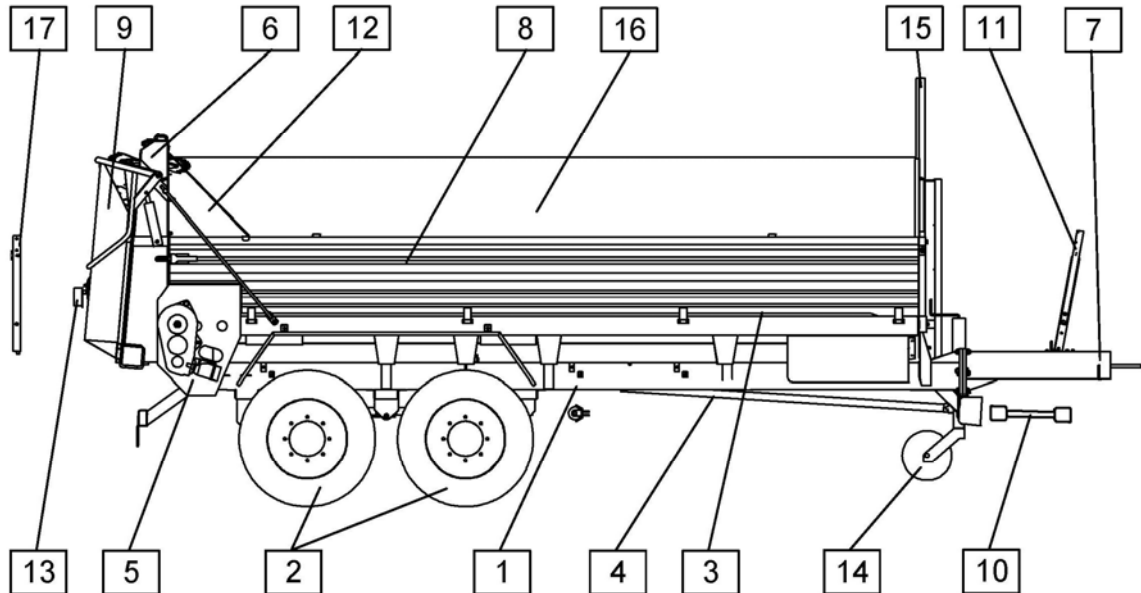
The information stated on the plate is;

- Machine
- Serial No.
- Weight (kg).

Machine and serial number should be quoted when ordering replacement parts.



















Component Identification










- | | |
|-----------------------------------|---------------------|
| 1. Frame | 10. PTO Shaft |
| 2. Wheels / Axle | 11. Regulator Valve |
| 3. Scraper bed | 12. Protections |
| 4. Spreader Unit mechanical drive | 13. Rear lighting |
| 5. Spreader Unit hydraulic drive | 14. Jockey wheel |
| 6. Spreader Unit | 15. Front wall |
| 7. Drawbar | 16. Wall extension |
| 8. Side wall | |
| 9. Rear tailgate | |

Safety Information

In the interest of safety it is important that great care is adopted at all times during the attachment, transportation, operation and maintenance of this machine. Both the owner and the operator of the machine should read and understand the following section to ensure the safety of themselves and all other persons who enter into the close proximity of these machines.

-  In addition to the instructions stated here always abide by general safety regulations.
-  Safety and warning decals placed on the machine give important instructions for safe work - take them into consideration for your safety and the safety of others.
-  Never attempt to operate the machine with safety guards removed.
-  When driving on public roads always abide by traffic signs and road regulations.
-  Familiarise yourself with the controls and functions of the machine and practice them in a safe location before attempting to start work.
-  Never approach a machine whilst it is working or running – switch off the machine and wait until it has stopped fully before approaching.
-  Do not wear loose fitting clothes in the vicinity of the machine - clothes should fit tight to the user's body.
-  Check no one is near to, or on, the machine before attempting to start or transport it - ensure your visibility is kept clear at all times.
-  Never permit anyone to ride on this machine.
-  Implements should always be attached according to the manufacturer's instructions and fastened correctly to the prescribed devices using the correct components.
-  When disconnecting the machine from the tractor select a firm level site and use the support wheel.
-  Take care when connecting or disconnecting the implement – keep onlookers at a safe distance.
-  Ensure controls for the machine are positioned so the machine cannot be accidentally started during transport.
-  For transportation on the road, prepare and secure the machine according to the manufacturer's instructions.
-  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. Braking performance and turning ability will be affected when implements are connected or mounted to the tractor - allow extra time for turning and braking.

-  Never attempt to operate a machine with safety devices removed or incorrectly secured.
-  Ensure all bystanders are kept at a safe distance from a moving or working machine.
-  Even when the machine is unattached some hydraulic or mechanical components on the machine are able to be rotated or moved by hand and are therefore capable of causing injury to fingers or hands due to trapping. Wherever possible secure these components during storage to prevent accidental injuries.
-  Always place the machine in a safe position before leaving the tractor - switch off the engine and remove the ignition key.
-  Never permit anyone between the machine and the tractor whilst it is working or when the machine is in a raised position.
-  Only use the machine on a tractor that is capable of taking its weight - use weights or ballast as required to ensure stability of the unit.
-  Always be aware at all times of the width, height and length of any machinery you are operating – especially when transporting on the public highway or near obstructions.

Although the information given here covers a wide range of safety subjects it is impossible to predict every eventuality that can occur under differing circumstances whilst operating this machine. No advice given here can replace 'good common sense' and 'total awareness' at all times but will go a long way towards the safe use of your Twose machine.

Safety Decals



1. **WARNING!** Always 'Read the Operator Manual'.
2. **DANGER!** Keep clear of Articulation Zone.
3. **WARNING!** Switch off tractor engine & remove key before performing maintenance or repair.
4. **DANGER!** Keep off machine when PTO connected and tractor engine running.
5. **DANGER!** Keep clear – risk of crushing when parts move or are moving.
6. **DANGER!** Wait until machine has stopped completely before approaching.
7. **DANGER!** Keep clear whilst tractor or machine is running.
8. **DANGER!** Keep clear of danger area between tractor and machine.
9. **WARNING!** Maximum 540RPM.
10. **DANGER!** Hydraulic Tailgate – Keep clear.
11. **WARNING!** Do not unhitch a half empty machine – risk of
12. **INFORMATION!** PTO Shaft cutting info.

Tractor Requirements

The tractor to which this machine is to be fitted must meet the following criteria:

- 540RPM Drive Output
- 1 x Single acting hydraulic connection.
- 2 x Double acting hydraulic connections.
- Electrical connection.

Attachment to Tractor

Attachment and removal of the machine should always be performed on a firm level site.

With the tractors hitch and the machines drawbar set at approximately the same height reverse the tractor slowly and squarely up to the machine.

Hitch machine to tractor.

Fit PTO shaft ensuring the slip clutch end is nearest to the machine. *On initial installation the PTO shaft must be measured, and if necessary cut to the correct length.*

Note; The machine is fitted with an 'overrun braking system' on the drawbar, therefore an additional 80mm should be cut off the shaft length to allow for drawbar movement.

Fit torque chains to PTO guards to prevent them from rotating with the shaft.

Connect hydraulic hoses.

Connect electric cable and check the lighting equipment functions correctly.

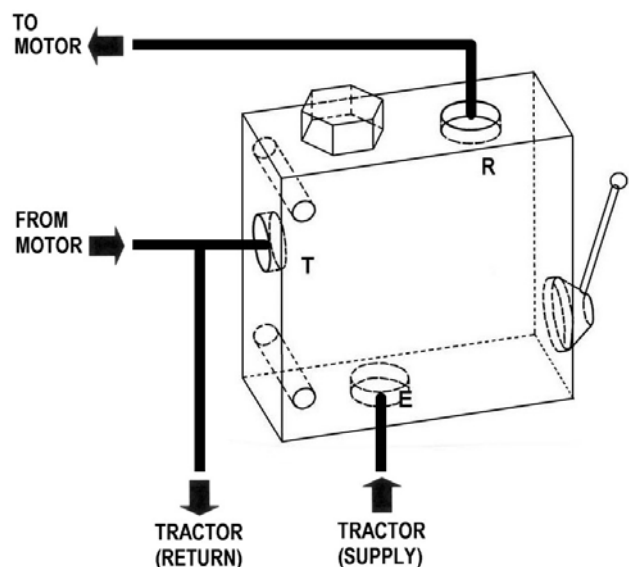
Raise and secure the jockey wheel in its highest position.

Hydraulic Connections

Connect the hose for the hydraulic ram that operates the rear tailgate of the machine to a single-acting connection on the tractor.

The scraper bed control valve hoses should be connected as illustrated opposite with the supply and return hoses being attached to the tractor via double-acting connections.

When correctly connected, ensure all persons are clear of the machine before checking and setting the scraper bed speed by operating the tractors hydraulic control and moving the handle on the valve to the desired position for the required working speed.



Scraper Bed Operation

When correctly, set as described previously, future operation of the scraper bed, either forwards or backwards, can be performed from the tractors cab using the tractors control lever. The operating speed of the scraper bed may need to be varied in order to suit differing work conditions such as spread density, driving speed and type of manure etc.

Loading the Machine

When loading the spreader ensure the manure is loaded evenly over the surface of the bed. Do not load the machine higher than 10cm above the side boards or with material hanging over the sides. Ideally, the load should be trapezoid shaped and placed on the bed with a gap between the load and the spreading rotors; this will avoid overloading the drive when the spreading unit is started.

Working the Machine

To start work, raise the tailgate by operation of its hydraulic ram and engage the PTO to switch on the spreading rotors. Operate the control to slowly start the scraper bed, as the manure comes into contact with the spreading rotors increase the bed speed to the desired setting and begin forward movement with the tractor.

WARNING! Do not operate a loaded scraper bed without the spreading rotors running – this will risk damaging components.

Although speed of forward travel primarily determines the amount of spread, other factors will also have an affect such as, scraper bed speed, manure's specific weight and the load height. With practice and experience the operator will soon be able to determine the optimum settings and work speed required to achieve the desired spread.

When working the machine always avoid tight turns. Stop operation of the machine and disengage the PTO for headland turning.

When the load has been spread, switch off the scraper bed and disengage the PTO, once the spreading rotors have stopped turning operate the control for the hydraulic ram to place the tailgate into its down position – the machine is now ready for transport.

Spreader Unit Protection

The spreader unit is protected from overload by the slip clutch on the PTO driveshaft; in the event of the clutch slipping operation of the scraper bed should be halted immediately and if necessary reversed to dissipate the overload. Only restart the scraper bed when the burden is reduced enough for the spreader unit to work correctly.

DANGER! Never approach a machine that is running or attempt to manually clear a blocked machine whilst it is running – there is risk of serious injury or death.

Using the Machine as a Trailer

The machine can easily be transformed into a cargo trailer by simply removing the spreader unit and replacing it with its rear tail wall; in this mode it can be used for transportation of field crops, bales or sacks etc. but it is not advisable for use in transporting sand, soil, stones etc. as these materials can damage or block the scraper bed components.

WARNING! The spreader unit's weight is approximately 300kg; therefore, overhead lifting gear and suitable chains or slings capable of safely lifting the unit must be used. Ensure all persons are kept at a safe distance when handling the unit.

The procedure for removing the spreader unit is as follows;

Attach to tractor to support the machine.

Disconnect hydraulics and electrics.

Disconnect drive joint from the spreader unit.

Attach lifting gear to the lifting eyes on the top of the spreader unit.

Remove rear lighting from the spreader unit.

With the spreader unit supported by the lifting gear release spreader unit fixings.

Slowly lift spreader unit off the trailer using lifting gear and place in safely on the ground.

Lift and fit rear trailer wall and refit rear lighting.

The trailer is now ready for use.



The procedure for replacing the spreader unit is basically a reversal of the above.

Note: Always ensure the trailer is attached to a tractor when replacing the spreader unit to prevent the front of the trailer from lifting.

Maintenance

With regular correct maintenance your machine will give you optimum performance and a long working life.

When working on the machine for maintenance, cleaning or repairs, the machine must be securely supported on firm level ground with the wheels chocked front and rear. If attached to a tractor the engine must be switched off and the starting key removed and pocketed. If working on a raised machine always ensure it is adequately and safely supported.

It is advisable that protective gear such as gloves, safety glasses, boots etc. are worn when working on the machine and that the correct tools for the job are used.

Initial Use of a New Machine

Check tightness of nuts and bolts every couple of hours and retighten if required.

Check chain tension after every first 10 uses of a new machine and tighten if necessary.

General Maintenance

Check tightness of all nuts and bolts on a regular basis and retighten if required.

Grease the machine with Lithium based grease at the interval stated in the lubrication chart. Lubricate the PTO shaft according to the manufacturer's instructions.

Check chain tension at the lubrication intervals and tighten if necessary; tensioners are located in the front under the loading surface, remove nut and tighten screw to move the tensioner forward to re-tighten the chain, replace the nut tightly and re-check tension. Correct tension is achieved when the chain can be lifted off the scraper bed in the centre of its run by a maximum of 50mm (2").

Over a period of time the chain will become stretched to a point where no further adjustment is available, at this point one or two links should be removed from the chain to allow further tensioning.

Note; when removing links from chains ensure the same number is removed from each.

Clean and wash the machine at the end of every use; manure can rapidly cause rusting of components so it is especially important to keep the machine clean and well lubricated.

Post Storage Maintenance

At the start of a new seasons work the following checks should be made;

Check and lubricate all drive chains.

Check chain tension of scraper bed.

Fully lubrication of the machine as per lubrication details below.

Check machine controls.

Check brakes and braking components.

Check lighting components.

Check all machine guarding.

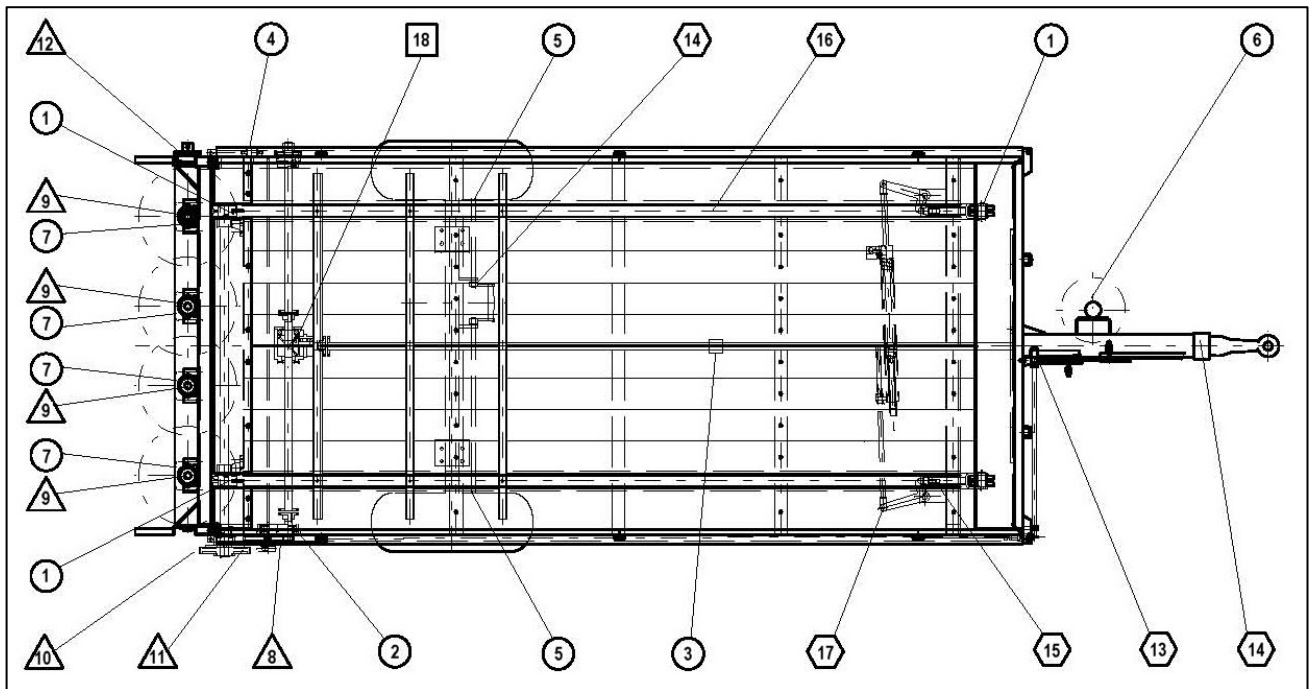
Cleaning and Washing





The machine should always be washed immediately after use and always prior to storage. Lubricated the machine afterwards as detailed in the lubrication section.

If a high pressure washer is to be used ensure the jet nozzle is kept at least 0.7m away from the surface of the machine; some washers are extremely high powered and capable of removing paint work.

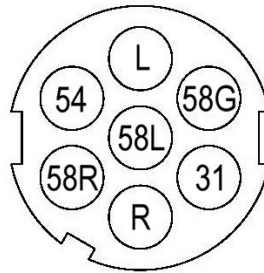
Lubrication

Refer to the chart and illustration below for details of lubrication points and frequency.



Ref.	Component	Points	Ident.	Lubricant	Frequency	Method
1.	Bearing bracket	3		Lithium grease	Every 20 hours of work and after detachment or prior to storage.	With hand lubricator.
2.	Gear drive	2		Energrease		
3.	Gliding bearing	1		LS EP 2/BP or equivalent.		
4.	Chain tensioner	3				
5.	Spindle	2				
6.	Jockey wheel	2				
7.	Drive	4				
8.	Gear drive	4		Lithium grease	After every washing and after dismantling.	With hand lubricator.
9.	Bearings	3		Retinax		
10.	Locker			AM / Shell or equivalent.		
11.	Locker wheel					
12.	Chains					
13.	Brake handle			Machine oil	After every washing and after dismantling.	With oil lubricator.
14.	Hand-brake			Energol GR		
15.	Tensioner screw			200 EP/Shell or equivalent.		
16.	Rod					
17.	Bolts					
18.	Gearbox			Semi-liquid Energrease SE L SO/BP or equivalent.	Every 6 Months.	Fill to level with the filling hole.

Electrical Connections



Connection	Function	Wire colour
L	Left Indicator	Brown
54G, 58L	---	---
31	Earth	Yellow / Green
R	Right Indicator	Blue
58R	Side Lights	Black
54	Stop Lights	Black / Red