



Manufacturers of Agricultural Machinery

Hi-Spec Vacuum Tanker

Operators Manual

Models:

800 - 4000

rev - vt103

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Introduction

Congratulations on Purchasing a Hi-Spec Vacuum Tanker.

Please Read the Following Manual Before Using Machine.

The way you care for and maintain this machine will decide its future performance. This manual has been carefully written to help you maintain the condition of your machine. Read this manual carefully to learn how to operate and service your machine correctly. Failure to do so could result in personal injury or machine damage.

Hi-Spec Vacuum Tankers have been designed and manufactured in compliance with the following directives and standards;

Machinery Directive 2006/42/EEC.

Harmonised standards;

EN ISO 12100-1:2003, Safety of machinery Part 1: Basic terminology, methodology

EN ISO 12100-2:2003, Safety of machinery Part 2: Technical principles

EN ISO 4254-1:2005, Agricultural machinery -- Safety -- Part 1: General requirements

BS EN 707:1999+A1:2009, Agricultural machinery, Slurry Tankers, Safety

This manual should be kept within the vicinity of the machine at all times and should be considered a permanent part of your machine. It should remain with the machine should you decide to sell it.

Warranty is provided as a part of Hi-Spec Engineering's support program for customers who operate and maintain this machine and equipment as described in this manual. This warranty provides you the assurance that Hi-Spec Engineering will back its machines should defects appear within the warranty period. If the machine is abused, or modified to change its performance beyond the original factory specifications, the warranty will become void and improvements may be denied.

All information, illustrations and specifications in this manual are based on the latest product information available at the time of publication.

It is the policy of Hi-Spec Engineering to improve its products and designs whenever it is practical and possible to do so. We reserve the right to make changes or improvements at any time without incurring any obligation to make such changes on products sold previously

Thank You for Choosing Hi-Spec Engineering

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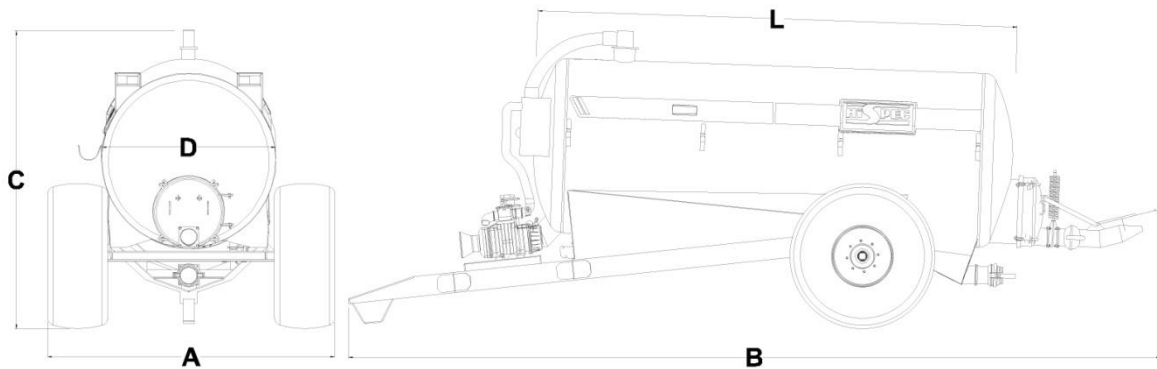
Designated Use of Machine

Hi-Spec Vacuum Tankers are a revolutionary range of highly specified vacuum tankers for the use in handling slurry. They are fitted with the very best vacuum/pressure pump and equipment, a very strongly fabricated chassis, low profile spreading system and large floatation tyres, designed to meet the demands of modern day slurry spreading.

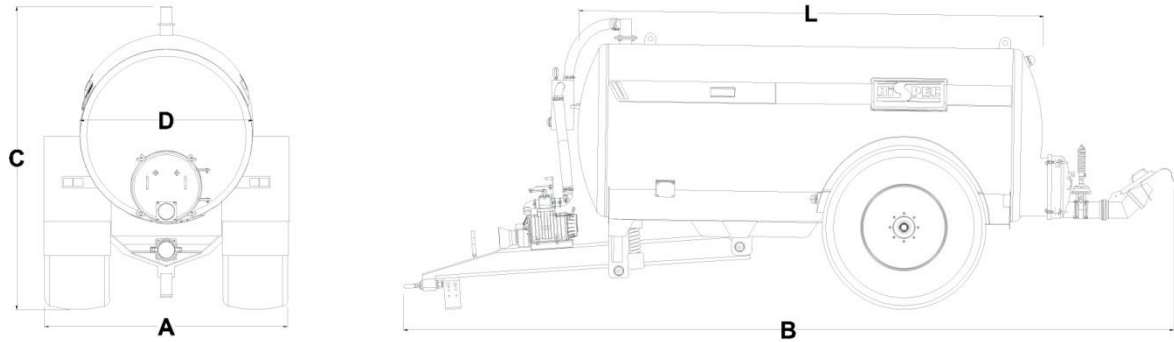
Hi-Spec Engineering will not be held responsible for any loss or damage resulting from machine applications other than those specified above. Any other use the machine may be put to is entirely at the owners/operators risk. The Designated use of a Vacuum Tanker includes that the operating, maintenance and repair instructions given by the manufacturer will be strictly fulfilled. Designated use means operating the Vacuum Tanker is exclusively for persons familiar with the machine and fully aware of the associated risks involved in operating it.

By any alteration of safety equipment, the Declaration of Conformity, as well as the CE sign on machine loses its validity

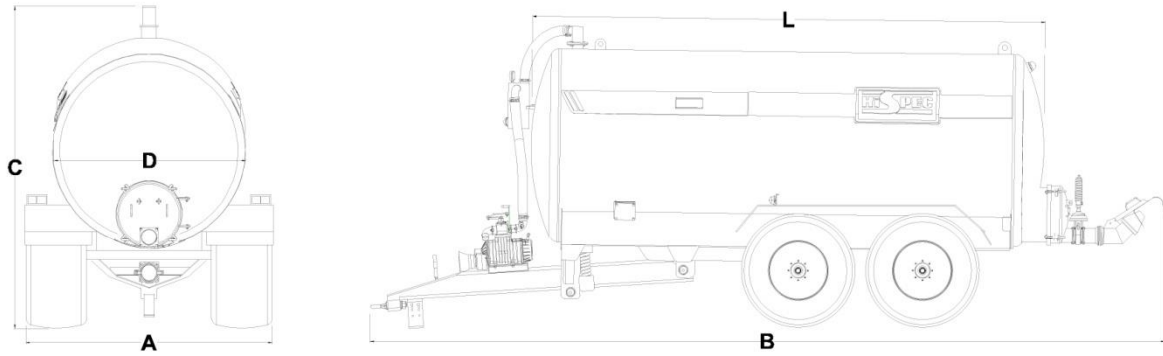
Technical Specifications and Dimensions



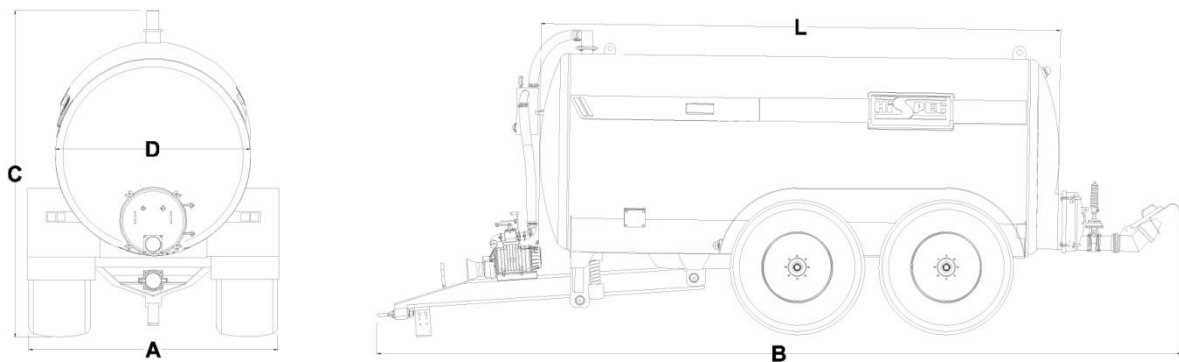
<i>Model</i>	<i>Actual Gallons</i>	<i>Width (A)</i>	<i>Length (B)</i>	<i>Height (C)</i>	<i>Tank Length (L)</i>	<i>Tank Diameter (D)</i>	<i>Unladen Weight</i>	<i>Wheel Size</i>
<i>Single axle</i>		<i>mm (ft)</i>	<i>mm (ft)</i>	<i>mm (ft)</i>	<i>mm (ft)</i>	<i>mm (ft)</i>	<i>kg</i>	
800	803	2285 (7'6")	5540 (18'2")	2360 (7'9")	3020 (9'11")	1220 (4')	1350	15x22.5
1000	1020	2260 (7'5")	6020 (19'9")	2450 (8')	3295 (10'10")	1372 (4'6")	1580	15x22.5
1150	1150	2260 (7'5")	6295 (20'8")	2450 (8')	3570 (11'9")	1372 (4'6")	1640	15x22.5
1350 (1)	1390	2400 (7'10")	6425 (21'1")	2550 (8'4")	3670 (12')	1524 (5')	1870	15x22.5
1600 (1)	1650	2500 (8'2")	7245 (23'9")	2650 (8'8")	4250 (13'11")	1524 (5')	2150	550/60-22.5
2000 (1)	2100	2560 (8'5")	7305 (24')	3020 (9'11")	4260 (14')	1740 (5'8")	3300	550/60-22.5



Model	Actual Gallons	Width (A)	Length (B)	Height (C)	Tank Length (L)	Tank Diameter (D)	Unladen Weight	Wheel Size
<i>Single axle</i>		<i>mm (ft)</i>	<i>mm (ft)</i>	<i>mm (ft)</i>	<i>mm (ft)</i>	<i>mm (ft)</i>	<i>kg</i>	
1350 (2)	1350	2390 (7'9")	6425 (21'1")	2820 (9'3")	3670 (12'1")	1524 (5')	2350	23.1-26
1600 (2)	1600	2500 (8'2")	7245 (23'9")	2820 (9'3")	4250 (13'11")	1524 (5')	2650	23.1-26
1600 (3)	1600	2500 (8'2")	7245 (23'9")	2820 (9'3")	4250 (13'11")	1524 (5')	2800	28.1-26
2000 (2)	2050	2400 (7'10")	7305 (24')	3020 (9'11")	4260 (14')	1740 (5'8")	3530	23.1-26
2000 (3)	2020	2580 (8'5")	7305 (24')	3020 (9'11")	4260 (14')	1740 (5'8")	3680	28.1-26
2300	2320	2580 (8'5")	7245 (23'9")	3050 (10')	4300 (14'1")	1866 (6'1")	3740	28.1-26
2600	2600	2610 (8'7")	8145 (26'9")	3050 (10')	4910 (16'1")	1866 (6'1")	4120	30.5-32
3000	3055	2610 (8'7")	8775 (28'9")	3200 (10'6")	5540 (18'2")	1866 (6'1")	4380	30.5 R32 Alliance



<i>Model</i>	<i>Actual Gallons</i>	<i>Width (A)</i>	<i>Length (B)</i>	<i>Height (C)</i>	<i>Tank Length (L)</i>	<i>Tank Diameter (D)</i>	<i>Unladen Weight</i>	<i>Wheel Size</i>
Tandem axle		<i>mm (ft)</i>	<i>mm (ft)</i>	<i>mm (ft)</i>	<i>mm (ft)</i>	<i>mm (ft)</i>	<i>kg</i>	
2000	2100	2440 (8')	7305 (24')	2850 (9'4")	4230 (13'11")	1740 (5'8")	4380	560/60-22.5
2600	2600	2710 (8'11")	8145 (26'9")	3200 (10'6")	4910 (16'1")	1866 (6'1")	5700	560/60-22.5
3000 (1)	3185	2710 (8'11")	8775 (28'9")	3200 (10'6")	5540 (18'3")	1866 (6'1")	6050	560/60-22.5
3500 (1)	3500	2710 (8'11")	8915 (29'3")	3200 (10'6")	5670 (18'7")	1866 (6'1")	6350	560/60-22.5
4000 (1)	4150	2710 (8'11")	8500 (27'11")	3350 (11')	5660 (18'7")	1993 (6'6")	6550	560/60-22.5



<i>Model</i>	<i>Actual Gallons</i>	<i>Width (A)</i>	<i>Length (B)</i>	<i>Height (C)</i>	<i>Tank Length (L)</i>	<i>Tank Diameter (D)</i>	<i>Unladen Weight</i>	<i>Wheel Size</i>
Tandem axle		<i>mm (ft)</i>	<i>mm (ft)</i>	<i>mm (ft)</i>	<i>mm (ft)</i>	<i>mm (ft)</i>	<i>kg</i>	
3000 (2)	3150	2850 (9'4")	8775 (28'9")	3200 (10'6")	5960 (19'7")	1866 (6'1")	6500	750/60-30.5 Trelleborg
3500 (2)	3500	2850 (9'4")	9575 (31'5")	3200 (10'6")	6000 (19'8")	1866 (6'1")	6750	750/60-30.5 Trelleborg
4000 (2)	4100	2850 (9'4")	8500 (27'11")	3350 (11')	5660 (18'7")	1993 (6'6")	7050	750/60-30.5 Trelleborg

Safety

Recognise Safety Information.



This is a safety alert symbol. When you see this symbol on your machine or in this manual be alert to the potential for personal injury.

Follow the recommended guidelines for safe operating practice:

Understand signal words: - On machine safety signs, signal words give the level of the hazard.

Danger

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

Warning

Indicates a potentially more hazardous situation which, if not avoided, could result in death or serious injury.

Caution

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

You will find these signs located near specific hazards on your machinery.

Please pay attention to these signs for your own safety

Safety signs should be maintained and replaced when necessary. They can often become dirty, torn or unreadable due to dirt and wear and tear.

If you need a replacement sign or have lost your user manual, please contact your Hi-Spec authorised dealer or Hi-Spec Engineering directly and we would be happy to issue you with a replacement.

General Safety

Keep a first-aid kit and a fire extinguisher close by at all times, if possible, on your tractor with this operator instruction manual.

- Have an emergency plan.
- Keep all emergency numbers close by; write them into your manual.
- Inspect your machine carefully each time before use; this will only take a minute.
- Stop machine when leaving unattended.
- Children should never be in the area when your vacuum tanker is in operation.
- Using vacuum tanker is a one-man operation therefore there should be no other person(s) in the vicinity of the machine while in use.
- Remember that the first step to avoiding danger is to recognise the hazards.

Safety Checklist

- ✓ Always disconnect all power sources before carrying out any adjustment or maintenance.
- ✓ Always check around the machine making sure everything is in order; this will only take a minute.
- ✓ Study this manual. Provide training to new users. Like all farm machinery, any machine is potentially dangerous when under the control of untrained personnel.
- ✓ Always ensure guards and other safety devices are kept in good working order. Replace if necessary.
- ✓ Keep clear of all moving parts.
- ✓ Always connect the shear bolt end of the PTO shaft to the tractor.
- ✓ Always use shear bolts recommended to you by Hi-Spec Engineering.
- ✓ Always keep all hydraulic hoses and electric cables clear from PTO shaft.
- ✓ Always apply the handbrake before unhitching and park the machine in a level area.
- ✓ Always take extra precautions when using the machine on hilly or sloping ground.
- X Never permit young persons or spectators to operate PTO driven equipment or stand anywhere close by when the machine is in operation.
- X Never permit untrained personnel to operate the machine without reading this manual and or receiving training.
- X Never operate the machine without having all guards in place; they are there for your safety and protection against serious injury and death.

- X Never remove guards while there is still power going into the machine, all power must be off!
- X Never enter the machine while in operation.
- X Never wear loose clothes when operating machinery, if standing too close, your clothing can pull you into the machine.
- X Never operate the machine if you think there could be large stones or foreign objects inside, they could cause serious damage to your machine.
- X Never leave the machine running when unattended.
- X If the machine should become blocked with a stone or foreign object, do not attempt to free the object while the tractor is running.



- Keep animals and people out of slatted houses when mixing is in progress
- Secure suction hoses to prevent them falling into the tank.
- Don't stand near tank openings or stoop to floor level when mixing is in progress.
- Never enter a below ground slurry tank unless there is no alternative. If you have to go in, wear a lifeline held by 2 men.

Ventilate at floor level when mixing is in progress.

The risk of gas release from slurry is variable and difficult to predict. You may not be affected for many years when suddenly a combination of conditions leads to a build-up of gas and you literally won't know what hits you. Because you haven't been affected up to now doesn't mean that is won't happen next time.

Description of Safety Warnings and Instructions

The following is a list of safety signs and warning labels on the Hi-Spec Vacuum tankers. Look carefully and make sure you know where on the machine they are positioned and what they mean.

It is important you are fully aware of the areas of risk on your machine.



This sign reminds the operator of the hazardous gases emitted from slurry.



General caution sign. There is a danger of getting entangled in the PTO. Keep clear of machine while working.



This safety sign is to remind the operator of the maximum operating pressure. Pressure higher than this may cause serious damage to operator and tanker.

PTO Shaft Safety

The PTO shaft is a vital link in driving the machine. It is also a very dangerous piece of equipment, therefore it is important to follow the manufacturer's guidelines on maintenance and repair. These guidelines are fixed to the PTO when new. They should be removed, read carefully and then stored with this instruction manual for future reference. If the guidelines are missing from the PTO Shaft please contact your Hi-Spec dealer for another copy.

The irregular shape and connection joints of a turning shaft can cause serious injury. The rotational force of the shaft is the main hazard.

Do not wear loose fitting clothing or articles such as jewellery that might get caught in a turning PTO. The rotation of the PTO is 540 rpm when mixing. Accidents can happen very fast therefore keep a safe distance from the shaft when it is in use.



PTO Shafts account for most of tractor related fatalities.

**Make sure the shaft is guarded.
Replace the guards when they are
Damaged or missing.
Never use the machine with
Damaged or missing guards
In an emergency situation, take the PTO
Out of gear, stop the engine and set the brake.**



Getting Started

Vacuum/pressure pump

There are three different models available to suit the Hi-Spec range of vacuum tanks:

- The 9000 ltr/min fitted with drip feed lubrication system.
- The 11000 ltr/min fitted with drip feed lubrication system.
- The 14000 ltr/min fitted with drip feed lubrication system.

All pumps are fitted with a pressure/vacuum gauge and pressure relief valve, set to release at between 0.5 – 0.7 bar gauge.

Primary and secondary float valves

In the event of failing to close the sluice gate valve correctly when filling, two float valves are fitted to prevent slurry being injected by the pump. The Primary Float Valve (Fig 1, A) is positioned at the top of the tank and is designed to be closed by the rising level of liquid inside the tank. If for any reason some liquid does pass the primary float valve, it will be drawn in the Secondary Float Valve (Fig 2, B) where it will become visible through the sight glass positioned on the side. The second ball float will prevent liquid from entering the pump itself, however, some vapour may be exhausted which is normal.

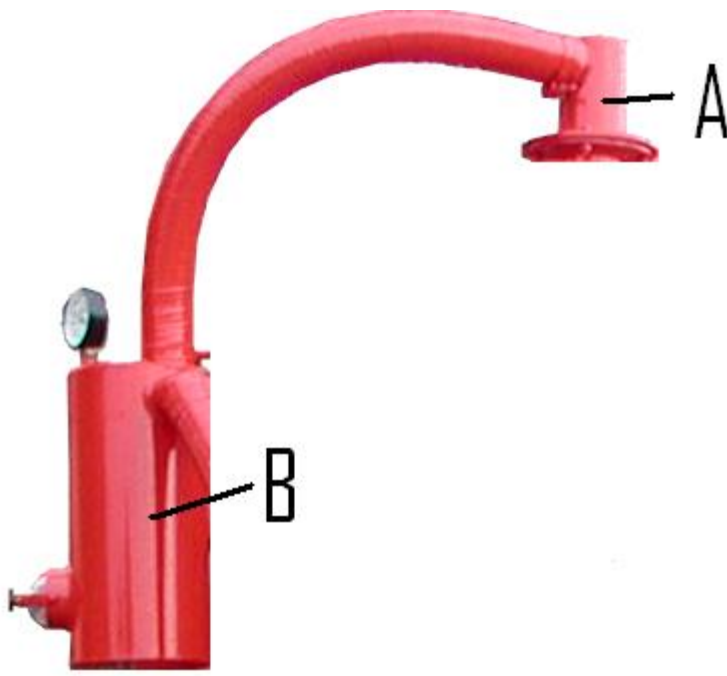


Fig 1: The primary (A)/ secondary (B) float valves.

Low Profile Spreading Attach Unit

This unit is specially designed to give the lowest possible elevation to the slurry and yet give a wide and even spread.

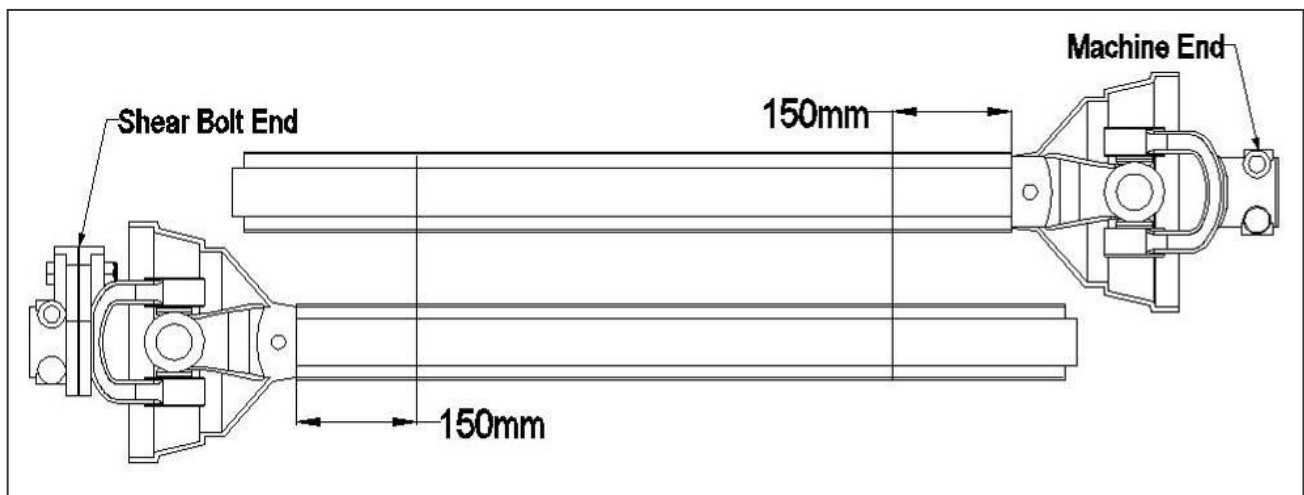
Note: leaving a low spread reduces the loss of nitrogen to the air

Initial inspection and checks after delivery

- Check pump manual for start up instructions: see page 9
- Pump should be run at 540 RPM. Before start up the pump should be checked for oil.
- When the pump is running, check the correct flow of the oil through the sight glasses of the drip oilers, adjusting the pin on the drip oiler accordingly. Drops should be 45 drops per minute at normal working conditions.
- Check that pressure relief valve releases at 0.5 – 0.7 bar gauge
- Open hydraulically controlled gate valve to check correct operation, the external return spring may have to be adjusted to allow space to sit correctly.
- If the correct spreading pattern is not achieved with the first spread, adjust splash plate until the spread pattern is satisfactory.
- Check the tightness of the bolts and wheel nuts before using machine.

Fitting PTO Shaft

- Turn the tractor to full lock to either the left or right to get the shortest point of the PTO shaft.
- Slide the PTO apart and fit the half with the shear bolt to the tractor and the other end to the machine.
- Lift the two parts of the PTO shaft up so that they are level with each other.
- Mark 150 mm (6") back from each other as shown in the diagram below.
- Cut off the excess profile.



Road Transportation

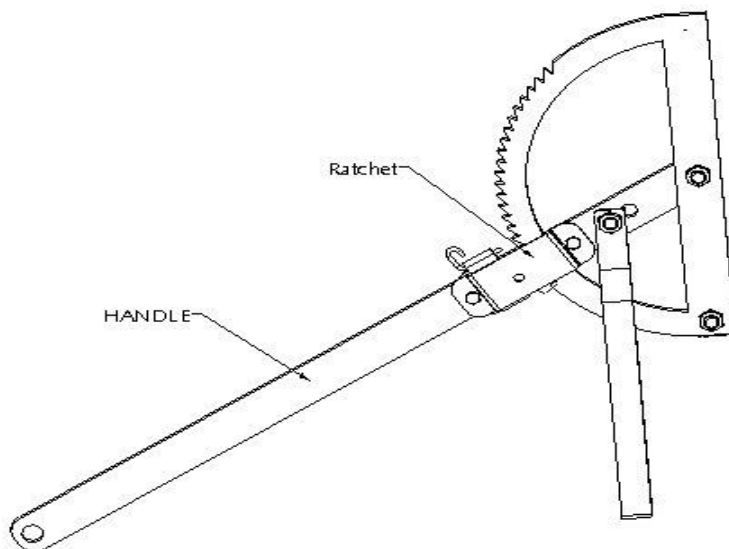
- Before bringing your machine onto a public road, it is important to check thoroughly that the machine is following all of the appropriate guidelines.
- Ensure brakes are connected and working correctly.
- Ensure lights are connected and working correctly.
- Ensure PTO is disengaged.
- Observe local maximum road speeds for this type of machine.
- Hi-Spec Engineering strongly recommends extreme care to be taken by the operator when travelling on rough roads with a loaded machine. Owners and / or operators do so at their own risk.
- The operator must ensure that any other regulations regarding road use are adhered to.
- Extreme care must be taken when negotiating acute bends with high speed tractors.
- Ensure drawbar safety chains are fitted

Emergency Breakaway Handbrake

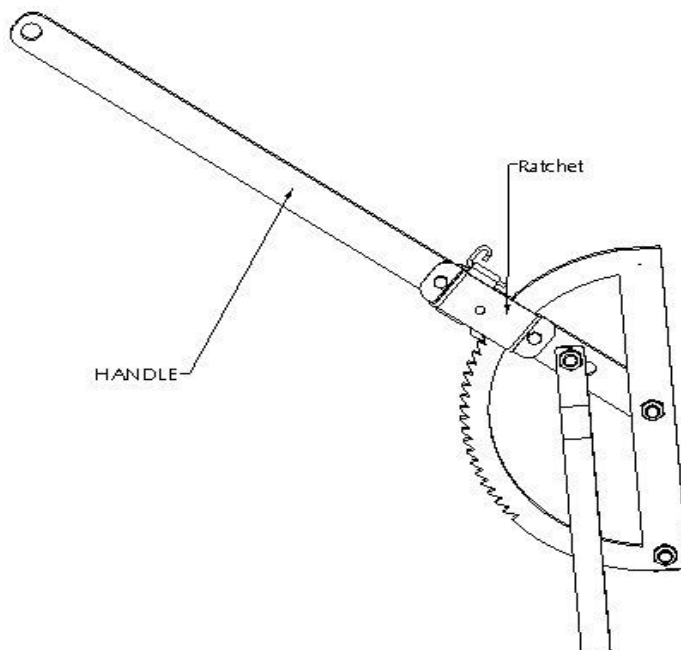
The emergency breakaway handbrake should be connected to the tractor every time the tanker is been used. It should be done using the rope provided (only on Irish models). The rope should be attached to a solid part of the tractor like the top link pin and not to a panel on the tractor.

The rope should be tight enough so it will work effectively if the vacuum tanker became detached from the tractor but loose enough that the handbrake is not been applied during normal operation.

Handbrake in the **off** position



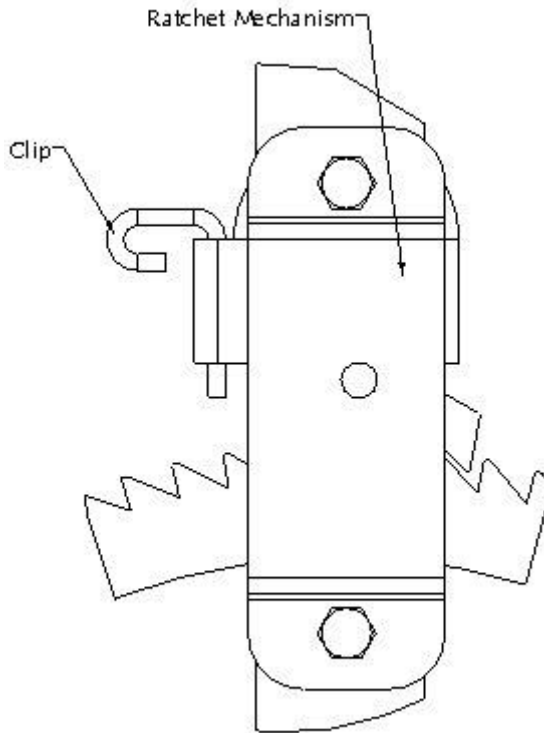
Handbrake in the **on** position



Disengaging the Emergency breakaway handbrake

It is disengaged by following the steps below:

- Make sure the clip in front of the ratchet is facing forward or turned away from the gearbox on the feeder.
- If the clip is turned towards the gearbox the ratchet mechanism will not release.



- Push the handle towards the feeder so the ratchet becomes tight against the teeth that hold it in place.
- Pull the handle away from the feeder so the ratchet will disconnect itself from the teeth.
- Push the handle back to its original off position.

WARNING: It is important to check that the handbrake be fully released when the tanker is in use. If the brake is left half applied it will cause damage to the brakes on the tanker.

Axle(s)

The axle(s) should be checked daily to ensure wheel nuts are tight. All greasing should be carried out every week. Brakes should be checked after the first week and then every 3 months to make sure they are pulling evenly.

To adjust the brakes to the acquired setting:

- First make sure the brakes are released on the tanker. (Make sure tanker is firmly secure by having wheel blocks in place.)
- Release the 2 springs that help the ram to retract.
- Remove the pin that connects the ram to the brake lever.
- The brake lever can be adjusted by turning the adjusting screw (located on the front of the brake lever facing towards the front of the machine)
- The brake levers should then be retracted fully to reset (Count the clicks when retracting. This gives a good indication to see if the brakes match up and also when it comes to resetting)
- When pin and springs are back together, turn the adjusting screw to tighten the lever and spring together.

The wheel bearings should be checked after the first week and then every 6 months. To check the wheel bearing as follows:

- Jack wheel off the ground.
- Turn wheel in both directions to check for rough points or friction.
- Turn wheel quickly and check for unusual noises such as grating.
- Grip the wheel top and bottom to check for play.
- If there is play remove the hubcap, remove the split pin.
- Tighten the castellated nut to remove all internal play.
- Release the nut by a quarter of a turn till the pin is aligned.

Steering Axle

- The 2 locking rams (Fig 8) are used to straighten the wheels just before reversing. They can also be used on steep cambers or particularly rough surfaces.
- Steering axles should be maintained the same as standard axles.
- Maintenance/ checking should be carried out before intensive use and every 3 months.
- Lubricate the kingpins.
- Make sure all nuts and screws are tight.
- Check full lock angle limit screws on the axle to make sure the tyres aren't rubbing or catching the chassis.

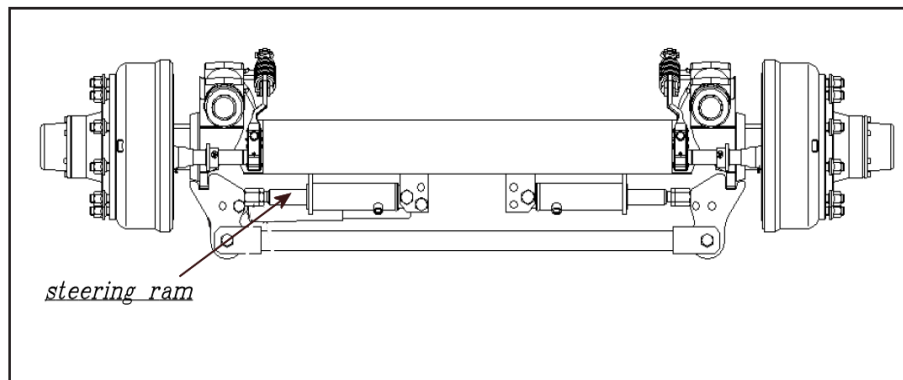


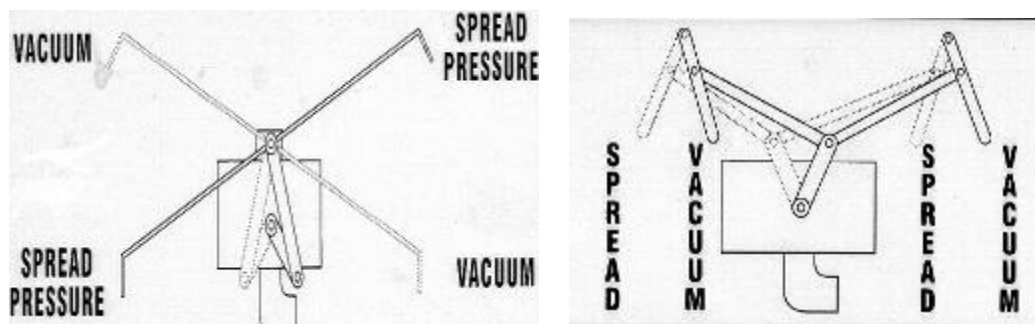
Fig 8: Steering axle, show where the steering rams lock the axle in place.

Operating Instructions

NOTE: The sequence of operations can be varied for different applications. All instructions marked * must be strictly adhered to.

The following combinations will give quickest cycle time.

All Models



Filling:

1. Place the pump handle in the fill position and run the PTO shaft at 540 RPM max (Fig 3A/B).
2. Attach the suction hose to the gate valve.
3. Place the end of the suction hose into the slurry pit, ensuring that hose end is well covered but not flat on the bottom of the pit.
4. When a vacuum of -0.2 or greater is shown, open sluice gate valve using manually operated lever.
5. *Shut gate valve immediately when slurry appears in sight glass, ensure it closes correctly.
6. *Disengage PTO and place pump handle in the spreading position (as shown in Fig 3 A/B).

Spreading:

1. Engage PTO and operate at 540 RPM max.
2. Select correct forward speed for spreading rate.
3. Open gate valve using hydraulic control when gauge reads 0.5 bar.
4. When tank is empty, close sluice gate valve.
5. Disengage PTO shaft.

Never run the PTO shaft when it is not straight.

Rain Gun

WARNING: PTO shaft must be disengaged when the centrifugal pump is either engaged or disengaged. This is done by lever on gearbox.

1. Connect the two hydraulic hoses for the rain gun to a double acting valve on the tractor and check that it rotates through 360 degrees.
2. Engage the centrifugal pump and run for a maximum of 30 seconds at low speed to check that it works properly.
3. To fill tanker, disengage the centrifugal pump and change lever on vacuum pump to fill (see filling instructions: page 15).
4. Spreading with the rain gun, engage centrifugal pump and change lever on vacuum pump to neutral position (see spreading instructions: page 15).
5. The rain gun spreading direction can be rotated to desired direction by double acting valve from tractor.
6. A stone trap is fitted on the bottom of the tank, this is to be cleaned out regularly during the working day.
7. PTO speed maximum is 540 R.P.M.
8. The rain gun should be greased weekly to optimise the life of moving parts.

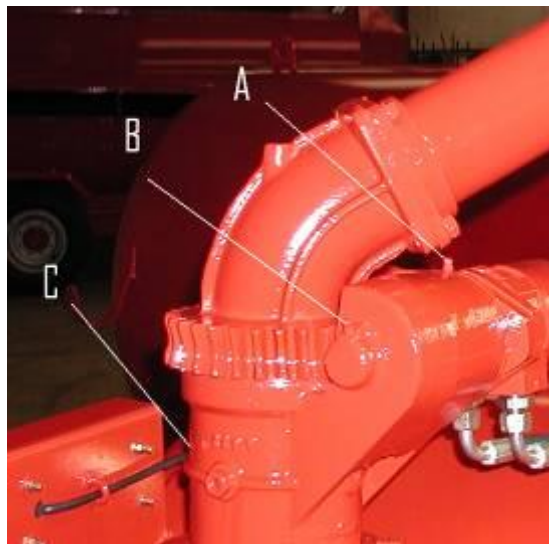


Fig 4: Grease points on the rain gun.

WARNING: In frosty weather the centrifugal pump and slurry hoses must be drained of all liquids to avoid damage.

Unloading Boom

OPERATION:

Note: When using the unloading boom for the first time, take care to make sure there is ample space. There may be air in the directional ram, which will cause a delay in movement then a sudden surge.

The speed of the unloading boom swivelling can then be controlled by using the flow control valve situated on top of the tank.

Unloading

1. Place the unloading boom in the required location. This can be achieved by using the directional and the height ram. The directional ram is fixed to a chain drive which allows the boom to rotate through over 180 degrees.
2. Start the vacuum pump and set it into the spread setting (Fig 3A/B).
3. Open the back gate.
4. When unloading is complete return the unloading boom to the transport position.

Greasing

The Unloading boom has 2 grease nipples. One on the smaller cog and the second for the swivel head. These should be greased weekly. The chain should also be lubricated.

Warning: Never travel with the boom out of it's transport position as collisions could occur with foreign objects or power cables.

Autofill

Filling operation:

1. Start the vacuum pump.
2. With the funnel in place and the flexible pipe in the slurry storage tank lower the Autofill boom into the funnel.
3. The Autofill boom ram is T-pieced into the vacuum pump handle so it all works in automatic sequence. (i.e. when boom goes down, pump handle goes to the fill position)
4. Open the gate valve on the boom.
5. When the tank is full, close the gate valve, stop the PTO and raise the boom into the transport position. (NB: The boom won't raise until the gate is fully closed)
6. Warning! Close the ball valve (Fig 5) on the boom ram if the machine is to be driven on public roads.



Fig 5: Open/ close valve for boom ram.

Operating hints:

- Increased efficiency can be achieved by having the tank under vacuum before filling operations commence. This can be done by running the vacuum pump while returning from the spreading area.
- Before disconnecting hydraulic pipes from the tractor close the ball valve on the boom ram.
- Do not run the PTO while turning.

Safety:

- Keep spectators away while operating the Autofill.
- Close the ball valve (A, Fig5) on the boom ram when on public roads.

Maintenance

Daily:

- Check hydraulic discharge valve for correct operation.
- Check tightness of wheel nuts.
- Wheel nuts should be tightened diagonally using a torque wrench
- Standard 510 Nm/ Lorry 600Nm.

Weekly:

- Check that all controls operate freely.
- Check tyre pressure: see page 28.
- Check wheel hubs, brakes, grease wheel bearings and brake nipples. Parts can be identified in Figs 9/10.
- Check all hoses for cracks. Replace if necessary.
- Check PTO guards and replace if broken.

Annually:

Wash the pump interior with half a litre of diesel oil. To do this, pass the oil into the exhaust pipe when the pump is in the pressure mode.

Note! If the pump has not been worked for a long period, the above procedure should be carried out before starting.

Check pump gearbox oil after the first 50 hours work and then at least once a year.

Tyres Pressure

Note the following tyre pressures and maximum speed must be adhered to. As per tyres quoted on our price list. (Other specifications can be quoted on request)

	Tyre Size	25km per hour	30km per hour
A	38.5/65R22.5 15X22.5		5.5 bar
B	42.5/65R22.5 16.5R22.5		6 bar
C	B20		6 bar
D	21.3X24 Up to 1600 only	2.8 bar	
E	23.1-26	1.6 bar	1.6 bar
F	28.1-26	1.6 bar	2.5 bar
G	30.5-32	2.4 bar	2.4 bar
H	550/60-22.5	2.8 bar	2.8 bar
I	600/50-22.5	2.6 bar	2.6 bar

Please Note:

23.1-26

Maximum speed - 25km per hour at 1.6 bar pressure

28.1-26

Fitted on models up to 2000

Maximum speed - 30km per hour max 1.6 bar pressure

28.1-26

Fitted on model 2300

Maximum speed - 30 km per hour at 2.2 bar pressure

30.5-32

Fitted on models up to 2500

Maximum speed 30km per hour at 2.4 bar pressure

560/60 – 22.5 Radial Tyres should have a pressure of 4 BAR.

Contractors Wheel Assemblies

The following have a maximum speed of 40km per hour

750/60 – 30.5 in lieu of 28.1.26:

750/60 – 30.5 in lieu of 30.5.32:

Dimensions:

750mm wide

1650 Overall Diameter

2000 Vacuum Tanker

Recommended Inflation Pressure: 20 P.S.I. @ 40 Km.P.H

23 P.S.I. @ 50 Km.P.H

2300 Vacuum Tanker

Recommended Inflation Pressure: 24 P.S.I. @ 40 Km.P.H

28 P.S.I. @ 50 Km.P.H

2500 Vacuum Tanker

Recommended Inflation Pressure: 27 P.S.I. @ 40 Km.P.H

31 P.S.I. @ 50 Km.P.H

Wheel removal/refitting

Due to the size and weight of trailing agricultural machines special precautions must be adhered to when removing or replacing a tyre and wheel assembly.

Due to the risks involved, wheel removal **MUST** only be carried out by skilled trained personnel (i.e. professional tyre fitter).

It is advised that before any work is carried out;

- If the machine is a hazard on a public road that suitable warning is provided to other road users;
- The machine is emptied and moved to a level area with good solid ground;
- The machine wheels are chocked and it is hitched to a tractor with its parking brake effectively engaged;
- A jacking / lifting / supporting position is chosen to maintain maximum machine stability;
- The load at the jacking / lifting point is known;
- The jacking / lifting equipment has sufficient lift capacity and is adequately maintained for the task;
- Ground conditions at the jacking point can withstand the loading;
- The hydraulics of any Forklift Truck / Telescopic Handler / etc, deployed are not solely relied upon while working in the danger zone;
- An adequately rated axle stand or other prop is positioned following the same safety procedure as for choosing the jacking point;
- There is no possibility of slippage between the safety prop (axle stand or other adequate strength support) and the machine;
- As far as possible those involved in the task stay clear of the danger zone (crush area if the machine were to collapse off its temporary support);
- Where possible, mechanical aids are used to lift / position wheels;
- High visibility clothing is worn where appropriate and where possible the work is carried out away from live traffic;
- Please consult your local Hi-Spec dealer or contact Hi-Spec Engineering Ltd directly if there are any queries.

Jacking Points

- Jacking points are provided at the rear of the machine as indicated by this symbol.



- Tanker must be empty before jacking
- Jacking and wheel removal must only be carried out by skilled trained personnel (i.e. professional tyre fitter).

Sales and Service

Ireland

Head office

Hi-Spec Engineering Ltd., Station Rd, Bagenalstown, Co. Carlow, Ireland

Tel: - +353 59 9721929 Fax: - +353 59 9721980

Email: - sales@hispec.net or info@hispec.net

After Sales Service

Contact: - Eoin Keane, Hi-Spec Engineering Ltd. Tel: - +353 87 2562963

Email: - eoin@hispec.net

Machine Servicing

Contact: - Michael Brennan, Hi-Spec Engineering Ltd. Tel: - +353 87 2403312

Spare Parts Store

Contact: Mike Nolan or Terence Byrne, Hi-Spec Engineering Ltd.

Tel: - +353 59 9721929 Fax: - +353 59 9721980

Email: - stores@hispec.net

U.K.

After Sales service:

Wales @ Southern England

Contact: - Ed Lewis, Hi-Spec Engineering Ltd. Tel: - +44 7876 452698

Email: elewis@hispec.net

Northern England & Scotland

Contact: - Gordon Brodie, Hi-Spec Engineering Ltd. Tel: - +44 7799 905130

Email: - gordon@hispec.net

For spare parts

Contact: - Your local Hi-Spec dealer. If you require a contact name and number you can telephone head office and we would be glad to assist you.

Warranty

The following is a list of warranty terms. Warranty claims will be disallowed if they do not fall into the categories shown here.

Warranty Terms

1 Year Warranty on Vacuum Pump, manufacturing defects

NO Warranty on the following:

- ⊗ PTO Shafts
- ⊗ Hydraulic fittings
- ⊗ Hydraulic hoses
- ⊗ Electrical connections between machine and tractor
- ⊗ Suction hoses

NO Warranty allowed for breakdowns due to:

- ⊗ Misuse of the machine, e.g. overloading by the operator
- ⊗ Lack of maintenance, e.g. failure to carry out regular oiling and greasing of components and bearings where appropriate

Conditions of Sale

General

In these conditions the word "Company" means Hi-Spec Engineering Limited. The word "dealer" means a customer of Hi-Spec Engineering Ltd. Purchasing machines from them for resale at recommended retail prices and the word "first user" means the first person to whom the dealer sells any goods for actual use. The company's employees may negotiate orders and issue quotations but an order is only binding on a company when it has acknowledged the order in writing on the company's official acknowledgement forms.

Such acknowledgement and confirmation will only be given subject to these conditions of sale. The acceptance of delivery of the goods either at the dealer's premises or those of the first user if delivered direct to the first user shall bind the dealer and the dealer shall only sell to the first user on conditions which incorporate the company's warranty. If he fails to sell the dealer shall have no claim whatsoever against the company except insofar as the company will honour the warranty to the dealer and through him to the first user. The term goods where used means such articles as are invoiced by the company whether manufactured, imported, distributed or otherwise sold by them.

Delivery

Should the company be prevented from delivering any goods owing to any lockout, strike, weather conditions, or other exceptional causes occurring either at their own premises, or elsewhere, then delivery shall be postponed until a reasonable time after the occurrence has ceased to cause delay, unless the parties shall mutually agree to the cancellation of the contract in respect of such goods.

Cancellation of Orders

The only ground for acceptance of a cancellation of an order shall be the non acceptance of these terms and conditions by the dealer and then only if

Within seven days of receiving notification of the terms and conditions the dealer notifies the company in writing of its non-acceptance.

The dealer pays the company any losses suffered including any carriage charges if these have been incurred.

Delays

While every effort has been made to adhere to delivery dates or times quoted by the company, such dates or times given though given in good faith are mere estimates only. The company accepts no responsibility for delay in delivery or for the consequences of such delay however caused nor shall the dealer be entitled to reject goods thereof by reason.

Design

No responsibility is accepted for any deviation from drawings or from illustrations in catalogues, price lists, brochures or advertising material for discrepancies in weight, rated outputs. Performance from those mentioned here in which shall be treated as illustrative and approximate only.

Price

Any fluctuation in prices arising after the contract but before dispatch shall entail adjustment in the contract price and the price to be paid shall be fixed at the date of dispatch.

Damage, Shortage or Loss

The company do not accept any responsibility for any damage, shortage or loss in transit when goods are dispatched to instructions and where the transit is affected through a third party and not by the Company itself.

Conditions of Resale

The dealer shall only re-sell any of the company's products with the full and unaltered warranty that is issued with every machine invoiced by the company. If the dealer either through negligence or for any other cause fails to get the agreement of the first user to accept this warranty the dealer shall have no other recourse against the company except that contained in these conditions of sale and he dealer expressly agrees that in accepting delivery he has recourse in law against the company nor will he join the company as third or other party in any action which results against him from the resale of the company's products.

Warranty

The Company warrants its products through the dealer and through the dealer to the first user. The dealer shall only re-sell the company's machines with the benefit of the company's warrants. The said warranty is as follows:

The company warrants, subject as hereinafter provided, that all new goods supplied by it shall be free from defects in material and workmanship, its liability under such warranty being limited to making good at a factory to be nominated by it, such parts or parts which shall within twelve calendar months from the date which the product was delivered new to the retail purchaser be returned to the company or its authorised representative which the company is satisfied on its examination of the part or parts to have been defective in material or workmanship provided that. All replaced parts shall become the property of the company.

The foregoing warranty does not extend to any product which shall have been repaired, altered, neglected or used in any way so as, in the judgement of the company (whose decision is final) may have adversely affected its stability or reliability, nor does this warranty apply to proprietary articles, accessories or parts not manufactured by the company but where any such warranty is given by the manufacturers of such articles, accessories or parts any benefits under such warranty will be passed on by the company.

The company will not be responsible for damage or loss caused by incorrect machine settings, ground speed or operation of the machine in unsuitable conditions and the company's decision as to the suitability of the condition shall be final. Fair wear and tear is excluded from any claim and no responsibility whatsoever is accepted for damage, which in the company's Opinion is caused by hazards of soil, stones or foreign objects.

The warranty is transferable to a second or subsequent owner (within the warranty period) subject to the company being notified in writing of this change of ownership.

Complaints referring to faulty or incomplete deliveries or to obvious faults must be notified to the dealer in writing within fourteen days after receipt of goods. In the absence of such notification delivery shall be considered as having been accepted as in good order and condition.

The company does not give any warranty in respect of its goods except therefore going Warranty which is given expressly in lieu of and excludes all other warranties and conditions expressed or implied whether under common law, Statute or otherwise and every form of liability for loss or damage direct or consequential or for any accidents resulting from defective material faulty workmanship or otherwise, is expressly excluded.

Liability

In no circumstances whatsoever shall the Company's liability (in contract, tort or otherwise) to a buyer under, out of or in connection with this contract or the goods supplied exceed the invoice price of the particular goods in regard to which component is made.

Title of the Goods

The title in the goods shall not pass to the customer until the customer shall have discharged all sums due by the customer to the company at the date of the final handing over of the possessions of goods

Interest

If the customer shall fail to pay any sum due in foot of this transaction within fourteen days after the same shall become due, the customer shall pay interest thereon calculated from the due date of payment at the annual rate equal to 4% over the prime rate charged from time to time by the associated banks on secured loans to individual customers.

Registration Forms



Hi-Spec Engineering Ltd.
Station Rd., Bagenalstown,
Co. Carlow, Ireland
Tel: - 059 9721929
Fax: - 059 9721980

Please complete the following forms in full.



The first is a warranty registration form; this form is issued in accordance with our conditions of sale and with particular reference to the condition governing warranty. We cannot process a claim unless all particulars are supplied.

The second is an acceptance form, which the purchaser is asked to sign to acknowledge he/she has received a copy of the Operator manual and full training for the machine purchased.

Please do not sign if you have not received both of these.

Warranty Registration

Date of Purchase: _____

Purchaser's Name: _____

Signature: _____

Address: _____

Phone: _____

Dealer's Name: _____

Signature: _____

Address: _____

Phone: _____

Machine Type: _____

Machine Model: _____

Serial Number: _____

Training & Operator Manual Registration

Please sign the following declaration to state that on the day you (the purchaser) purchased a Hi-Spec Vacuum Tanker you received an operator manual and training instructions.

I, the purchaser have received my Hi-Spec Vacuum Tanker Operator Manual and training from the below dealer

Purchaser: _____	Signature: _____
Date: _____	
Dealer: _____	Signature: _____
Date: _____	

This copy is to be kept in your manual for your reference.



Registration Forms



Hi-Spec Engineering Ltd.
Station Rd., Bagenalstown,
Co. Carlow, Ireland
Tel: - 059 9721929
Fax: - 059 9721980

Please complete the following forms in full.

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The second is an acceptance form, which the purchaser is asked to sign to acknowledge he/she has received a copy of the Operator manual and full training for the machine purchased.

Please do not sign if you have not received both of these.

Warranty Registration

Date of Purchase: _____
Purchaser's Name: _____
Signature: _____
Address: _____
Phone: _____
Dealer's Name: _____
Signature: _____
Address: _____
Phone: _____
Machine Type: _____
Machine Model: _____
Serial Number: _____

Training & Operator Manual Registration

Please sign the following declaration to state that on the day you (the purchaser) purchased a Hi-Spec Vacuum Tanker you received an operator manual and training instructions.

I, the purchaser have received my Hi-Spec Vacuum Tanker Operator Manual and training from the below dealer

Purchaser: _____ Signature: _____
Date: _____
Dealer: _____ Signature: _____
Date: _____

This copy is to be posted to Hi-Spec Engineering or given to your dealer



Declaration of Conformity

EC Machinery Directive

2006/42/EC

We hereby certify that the machinery stipulated below complies with all relevant provisions of the EC Machinery Directive and the National Laws and Regulations adopting this Directive.

Modifications to the machine without prior approval from the undersigned will render this declaration null and void.

Machine Description and Function:	Vacuum Tank designed for the use of handling and spreading slurry
Make:	Hi-Spec
Model:	800 – 4500 gallon
Serial Number:	
Manufacturer:	Hi-Spec Engineering Ltd.
Address:	Station Rd, Bagenalstown, Co. Carlow, Ireland

Technical file compiled by: Derek Whelan, Myshall, Co. Carlow

Harmonised standards applied:

EN ISO 12100-1:2003, Safety of machinery Part 1: Basic terminology, methodology
EN ISO 12100-2:2003, Safety of machinery Part 2: Technical principles
EN ISO 4254-1:2005, Agricultural machinery -- Safety -- Part 1: General requirements
BS EN 707:1999+A1:2009, Agricultural machinery, Slurry Tankers, Safety

Signed: _____

Date: **28th November 2014**

Name: **Mike Nolan**

Position: **Managing Director**

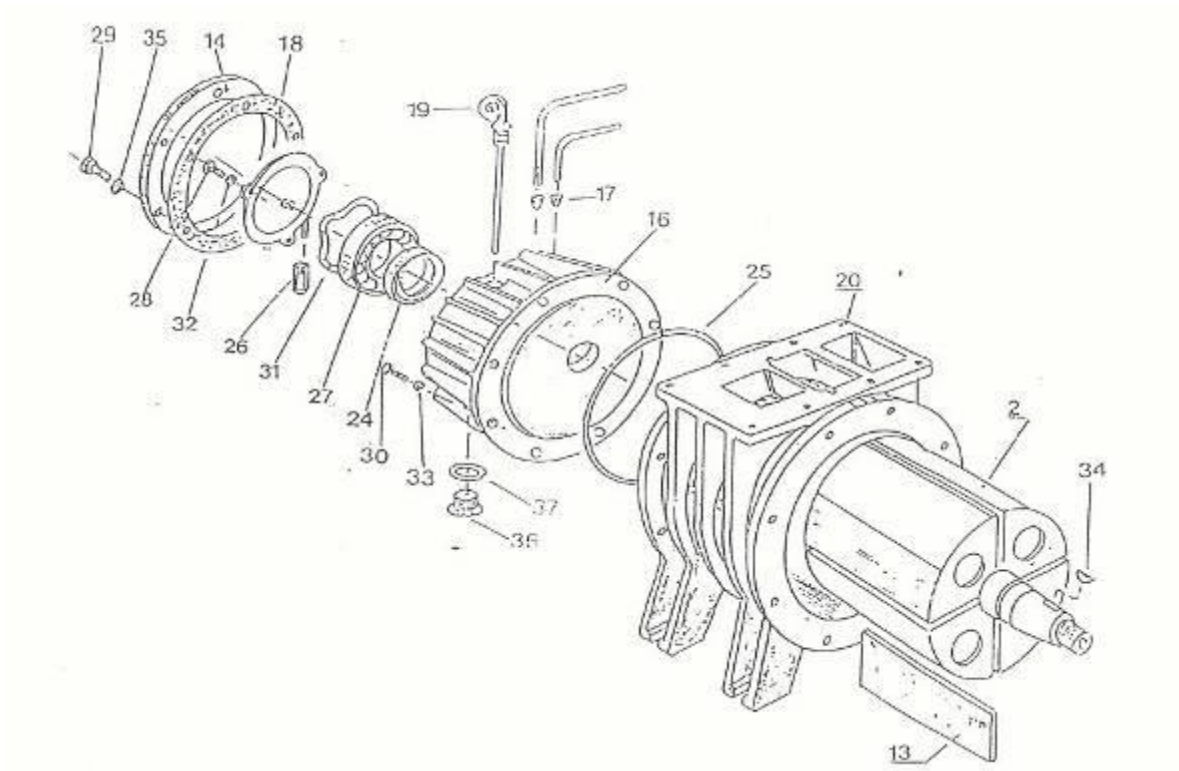
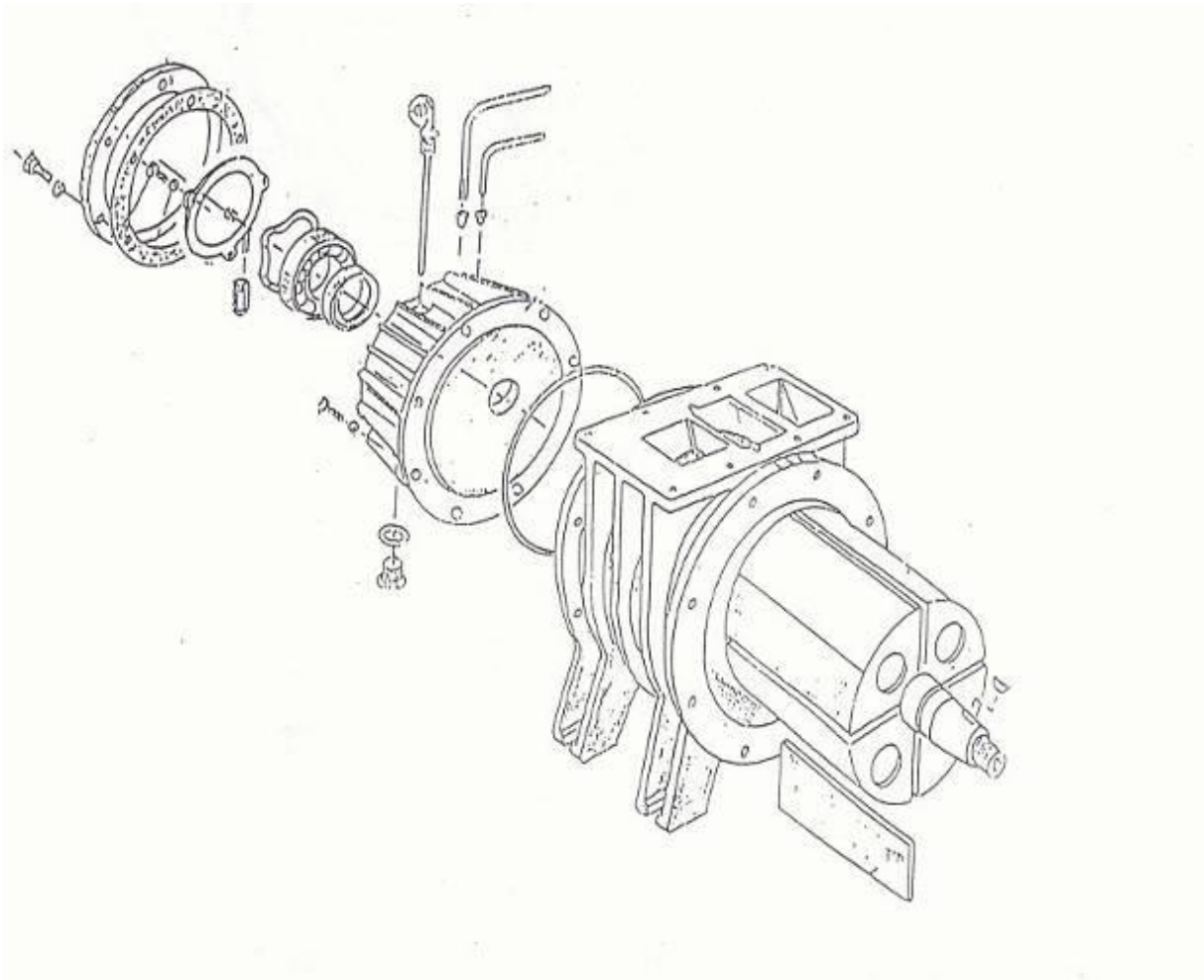
Being the responsible person appointed by the manufacturer.

Hi-Spec Engineering reserve the right to make changes and improvements at any time without incurring any obligation to make such changes on products previously sold.

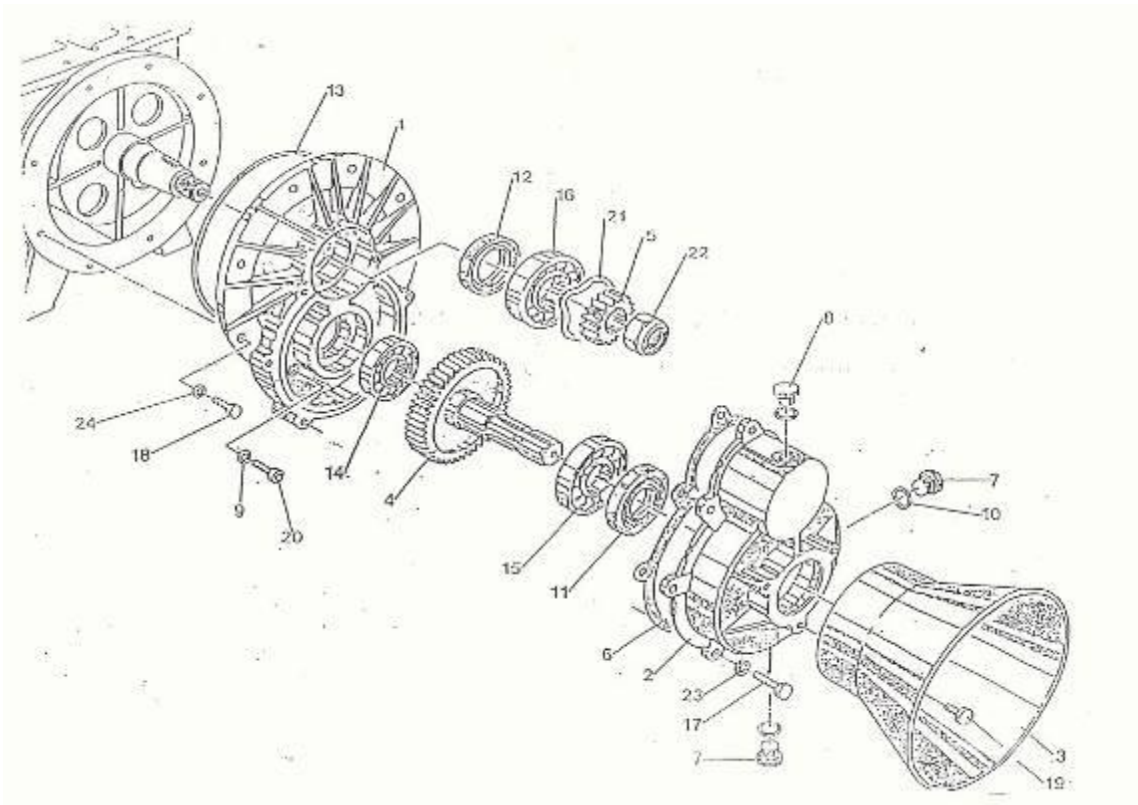


Parts List

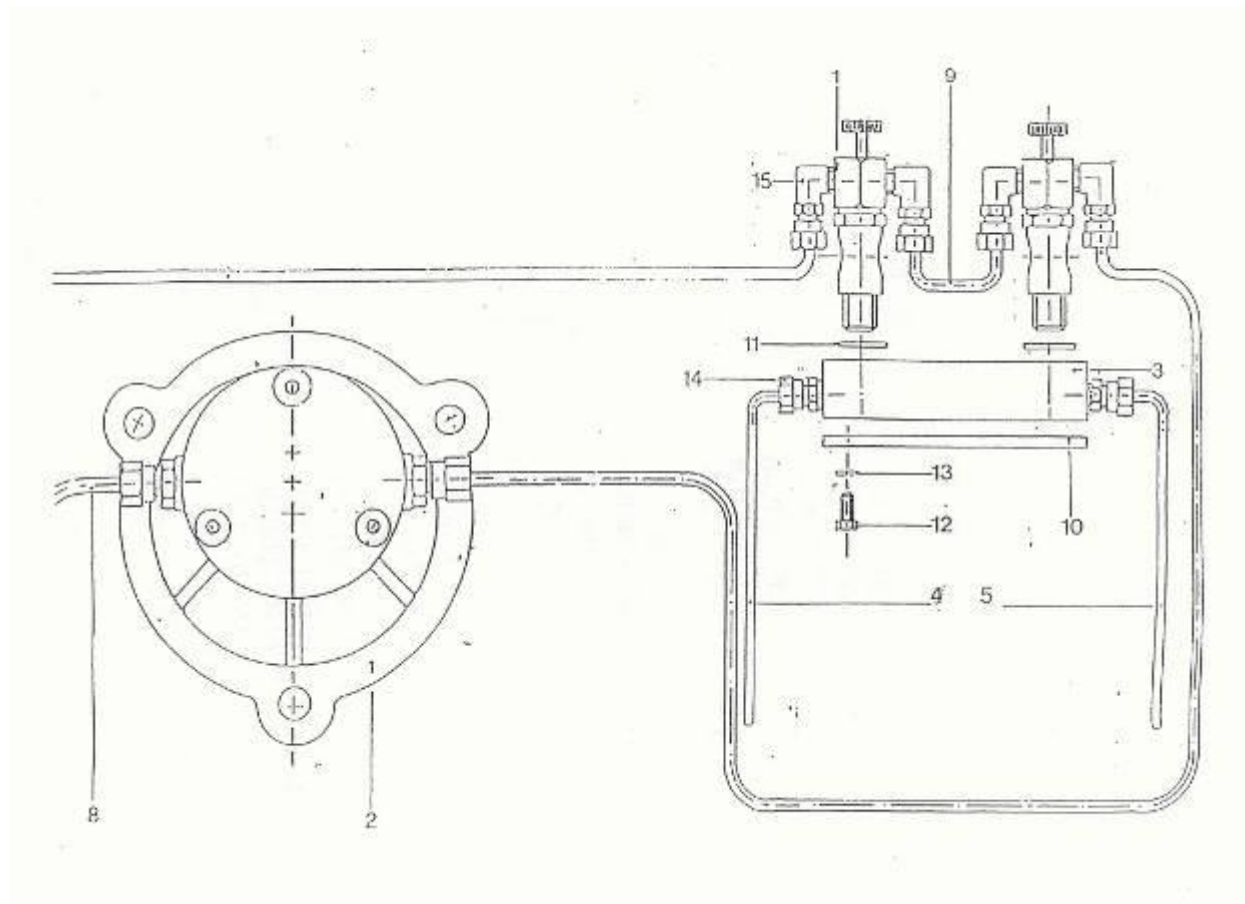
Jurop Vacuum Pump



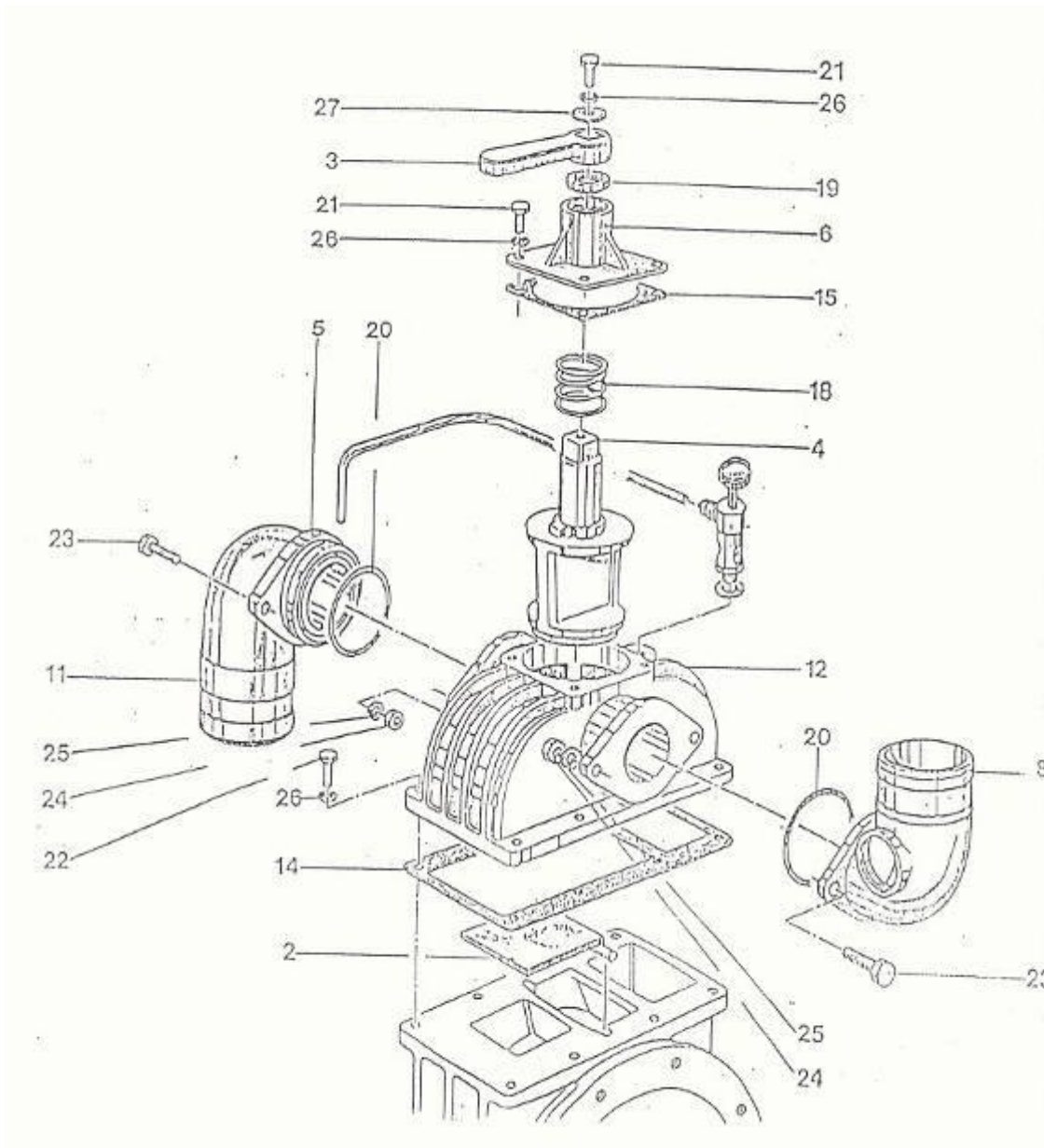
Part no.	Code	Description
2	15215-004-0 15215-005-0	Rotor } Rotor
6*	16016-008-0 16016-010-0	Normal Vane } Normal Vane }
14	16401-000-0	Deckel
16	16125-006-0	Oil Box
17	16426-000-0	Gasket
18*	16807-003-0	Gasket
19	16836-000-0	Plug for Oil level
20	16875-004-0 16875-005-0	Pump Housing } Pump Housing }
24*	4022-2001-10	Double Seal Ring
25*	4022-2002-40	O Ring
26	16851-002-0	Flat Washer
27*	4023-1000-40	Bearing (6308)
28	4026-1004-08	Screw
29	4026-1003-04	Screw
30	4026-1005-10	Screw
31*	4026-3000-20	Ring
32	4026-3509-09	Tooth Washer
33	4026-3509-10	Tooth Washer
34*	4026-5000-18	Woodruft
35	4026-3509-08	Tooth Washer
36	16840-000-0	Plug
37	16851-002-0	Flat Washer



Part no.	Code	Description
1	16105-000-0	Flange
2	16121-000-0	Box
3	16426-000-0	Gasket
4*	16510-000-0	Gear
5	16510-001-0	Pinion
6*	16807-000-0	Gasket
7	16840-000-0	Relief Plug
8	16840-001-0	Suction Plug
9	16840-001-0	Flat Washer
10	16851-002-0	Flat Washer
11*	4022-2000-40	Seal Ring
12*	4022-2001-10	Double Seal Ring
13	4022-2002-40	OR Ring
14*	4023-1000-20	Bearing (6207)
15*	4023-1000-30	Bearing (6208)
16*	4023-1000-40	Bearing (6308)
17	4026-1004-10	Screw
18	4026-1005-10	Screw
19	4026-1014-03	Screw
20	4026-1205-05	Screw
21*	4026-3000-20	O Ring
22	4026-3056-14	Self Locking Nut
23	4026-3509-09	Tooth Washer
24	4026-3509-09	Tooth Washer



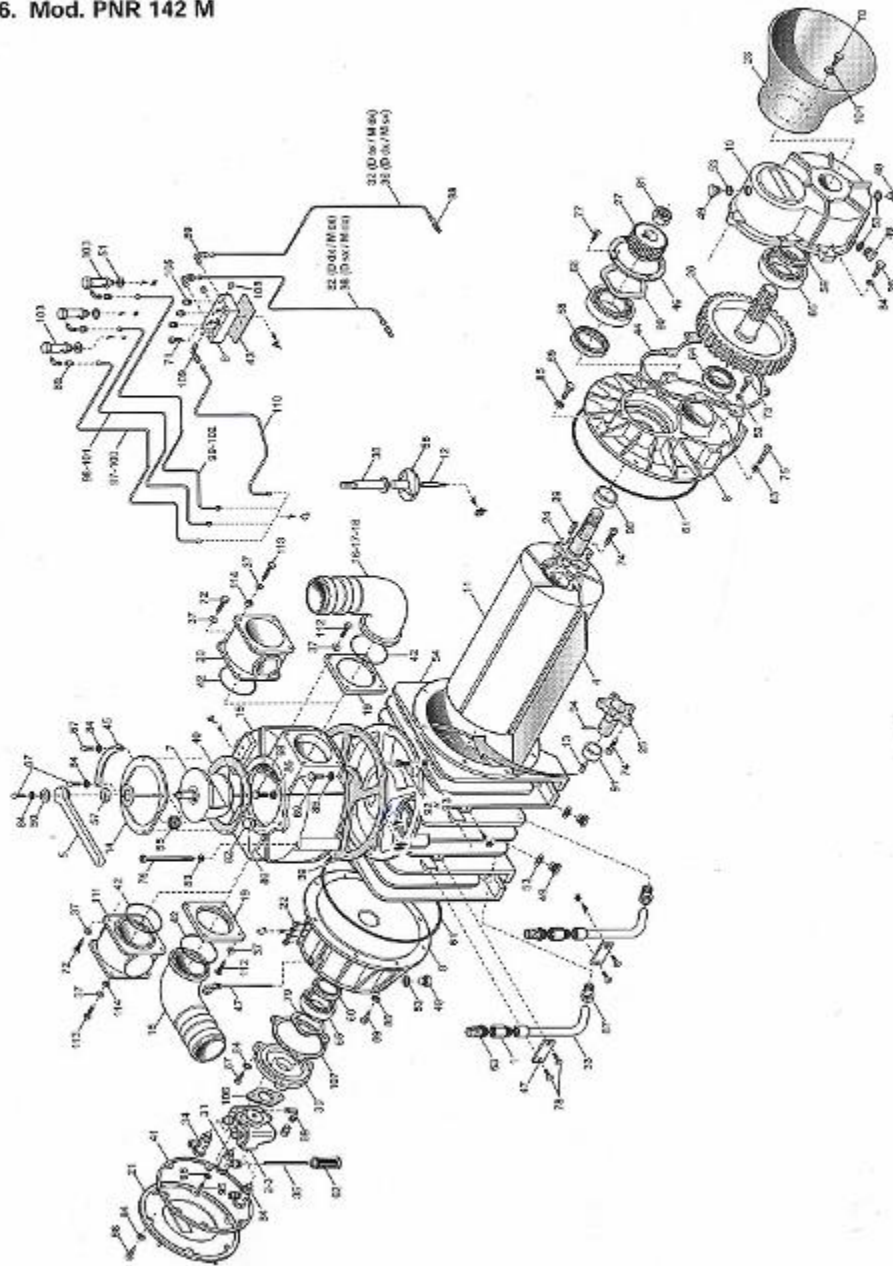
Part no.	Code	Description
1*	14012-004-0	Oiler
2	14072-005-0	Gear Oil Pump
3	16081-000-0	Distributor
4	16630-186-0	Oil Pipe
5	16630-185-0	Oil Pipe
8	16630-105-0	Oil Pipe
9	16630-110-0	Oil Pipe
10	16811-001-0	Keep Plate
11	16851-000-0	Washer
12	4026-1013-01	Screw
13	4026-3515-04	Tooth Washer
14	4026-7020-00	Connection
15	4026-7060-00	Connection



Part no.	Code	Description
----------	------	-------------



2	15936-000-0	Butterfly Valve
3	16055-000-0	Handle
4	16085-000-0	Switch
5	16101-000-0	Flange
6	16231-000-0	Cap Nut
8	16271-002-0 }	Suction Pipe }
	16271-003-0 }	Suction Pipe }
11	16271-005-0	Exhaust
12	16275-000-0	Manifold
14	16806-001-0	Gasket
15	16807-002-0	Gasket
18	16910-000-0	Spring
19	4022-2000-30	Seal Ring
20	4022-2002-50	O Ring
21	4026-1004-08	Screw
22	4026-1004-10	Screw
23	4026-1016-13	Screw
24	4026-3080-07	Nut
25	4026-3506-09	Spring Washer
26	4026-3509-09	Spring Washer
27	4026-3560-05	Flat Washer

Jurop**9.6. Mod. PNR 142 M**

Parts list PNR 142 M

Pos. Code	Description	Quantity	Pos. Code	Description	Quantity		
1	1493300200	Air injection valve PNR 142	2	60	4022200111	Seal 72x48x15	1
2	4024250500	Automatic lubricating pump (cw rotation)	1	61	4022200311	OR 4975	2
3	4024250000	Automatic lubricating pump (ccw rotation)	1	62	4022300001	Nylon filter Ø6	1
4	1601605200	Vane PNR 142	5	63	4022301004	Silencer-filter 3/4"	2
5	1605500100	Handle PNR 142	1	64	4023100018	Bearing 6206	1
6	1608100210	Distributor PNR 142	1	65	4023100040	Bearing 6308	2
7	1608500700	Conveyor PNR 142	1	66	4023100046	Bearing 6309	1
8	1610507900	Flange PNR 142 M	1	67	4026100408	Screw M8x20	8
9	1612500900	Oil tank PNR 142	1	68	4026100410	Screw M8x25	6
10	1612503000	Gearbox PNR 142 M	1	69	4026100510	Screw M10x25	18
11	1621503200	Rotor PNR 142	1	70	4026101404	Screw M8x12	3
12	1622002500	Check valve shaft PNR 142	1	71	4026120305	Screw M6x25	2
13	1622002800	Shaft M10	1	72	4026102807	Screw M8x25	(4)
14	1623500300	Conveyor cap PNR 142	1	73	4026120505	Screw M10x25	1
15	1627501100	Manifold PNR 142	1	74	1672001600	PNR rotor screw M10	10
16	1627102400	Conveyor Ø 100	1-2	75	4026120510	Screw M10x50	2
17	1627102700	Conveyor Ø 80	1	76	4026120519	Screw M10x110	2
18	1627102800	Conveyor Ø 76	1	77	4026155505	Screw M5x16	4
19	1610101100	Conveyor flange	2	78	4026155805	Screw M6x16	4
20	1627102500	Conveyor with safety valve connection	(1)	79	4026300020	Compensation ring Ø90	1
21	1640101000	Oil tank cap PNR 142	1	80	4026300025	Compensation ring Ø100	1
22	1642600000	Pipeline protection	4	81	4026306115	Nut M36x3	1
23	1642600100	Drive shaft protection	1	82	4026322006	Nut M16	1
24	1650012800	Front shaft PNR 142 M	1	83	4026350608	Grower washer M10	4
25	1650013000	Rear shaft PNR 142	1	84	4026350809	Washer M8	21
26	1651005200	Gear PNR 142 M	1	85	4026350910	Washer M10	18
27	1651005300	Pinion PNR 142 M	1	86	4026414611	Pin 3x24	1
28	4026100411	Screw M8x30	7	87	4026701301	Fitting G1/2x18	2
29	4028501004	Tab 12x8x45	1	88	4026702000	Fitting Ø4-1/8	4
30	1610506500	Automatic lubrication pump flange R-PNR-PNE	1	89	4026708000	Fitting 90° Ø4-1/8	6
31	4026706104	Fitting Ø6-1/8	1	90	4023130035	Bushing 55x45x22	1
32	1663016310	Rear lubricating line PNR 142 D rh/M lh	1	91	1624007500	Bushing 48x40x22	1
33	1663014000	Air injection valve pipe 1/2" PNR 142	2	92	4026120400	Screw M8x12	1
34	4026706101	Fitting Ø4-1/8	1	93	1685100800	Alu washer 14x8x1,5	1
35	1663041100	Suction line for aut. lubricating pump PNR 102-122-142	1	94	4026414617	Pin 3x40 (*)	1
36	1663016610	Rear lubricating line PNR 142 D lh/M rh	1	95	4026120304	Screw M8x16	2
37	4026350606	Washer grower M8	8(12)	96	4026350908	Washer M6	2
38	1672001200	Check valve stop	1	97	1663034200	Rear oil dripper lubricating line PNR 142 D lh/M rh	1
39	1680606300	Manifold gasket PNR 142	1	98	1663034300	Centering oil dripper lubric. line PNR 142 D lh/M rh	1
40	1680702500	Conveyor gasket PNR 142	1	99	1663034400	Front oil dripper lubric. line PNR 142 D lh/M rh	1
41	1680702700	Oil tank cap gasket PNR 142	1	100	1663034500	Rear oil dripper lubric. line PNR 142 D rh/M lh	1
42	4022200310	OR 6362	2(3)	101	1663034600	Centering oil dripper lubric. line PNR 142 D rh/M lh	1
43	1680703700	Distributor gasket PNR 142	1	102	1663034700	Front oil dripper lubric. line PNR 142 D rh/M lh	1
44	1680707200	Gearbox gasket PNR 142 M	1	103	1401200700	Oil dripper automatic lubrication	3
45	1681005300	Plate vac-press PNR 142	1	104	4026356002	Flat washer M8 galvanized	3
46	1681006500	Compensation ring bracket	1	105	4022301000	Oil block filter G 1/8	3
47	1681006600	Bracket	2	106	1680609700	Oil pump gasket	1
48	1683600300	Oil stick	1	107	1680609800	Oil pump flange gasket	1
49	1684000000	Plug G3/8	6	108	4026910601	Plug G1/8	2
50	1685002800	Washer 30x8,5x4	1	109	4026706003	Fitting 90° G1/8 ø6	1
51	1685100000	Alu washer 14x20x1,5	3	110	1663043700	Oil drain line PNR 142 D dx	1
52	1685100100	Alu washer 10x16x1,5	1		1663043800	Oil drain line PNR 142 D sx	1
53	1685100200	Alu washer 17x22x1,5	6	111	1627102600	Conveyor	(1)
54	1687501800	Housing PNR 142	1	112	4026102801	Screw M8x35	8
55	1691000200	Conveyor spring	1	113	4026102810	Screw M8x40	(4)
56	1693500000	Check valve PNR 142	1	114	4026308006	Nut M8	(4)
57	4022200030	Seal 41x27x10	1				
58	4022200113	Seal 70x55x15	1				
59	4022200040	Seal 72x40x10	1				

(*): on models with cw (right hand) rotation

1892002400 Gaskets kit PNR 142 D 1

Axles

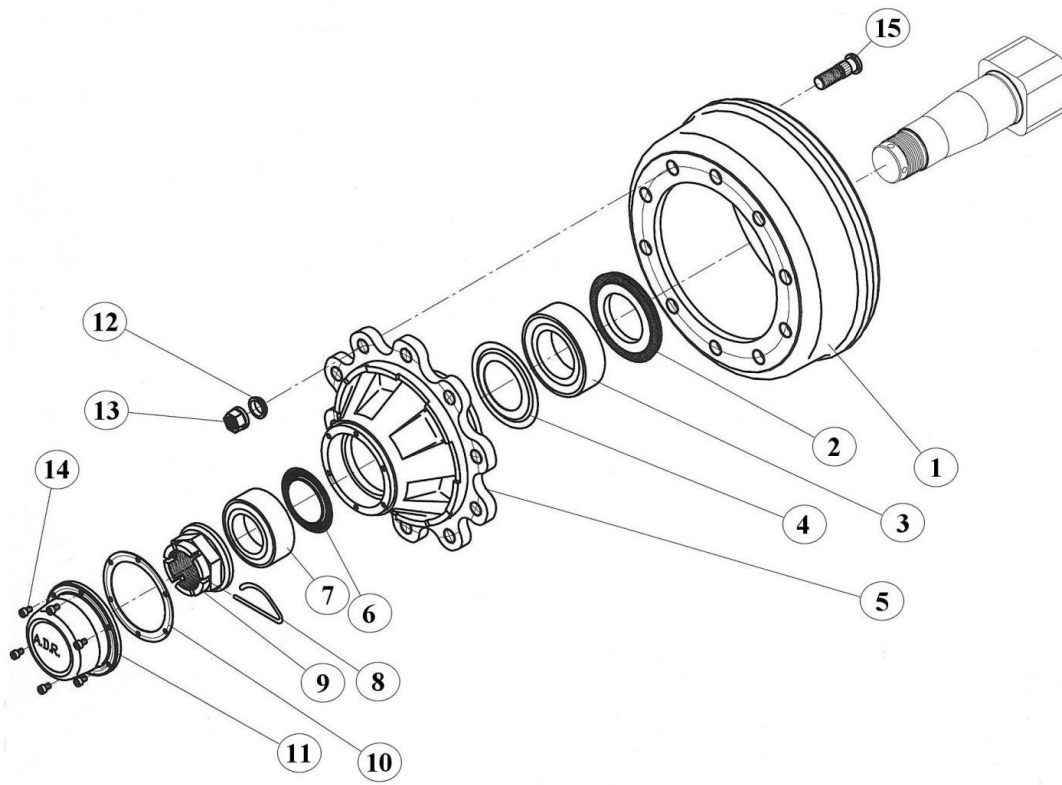


Fig 9: Wheel assembly.

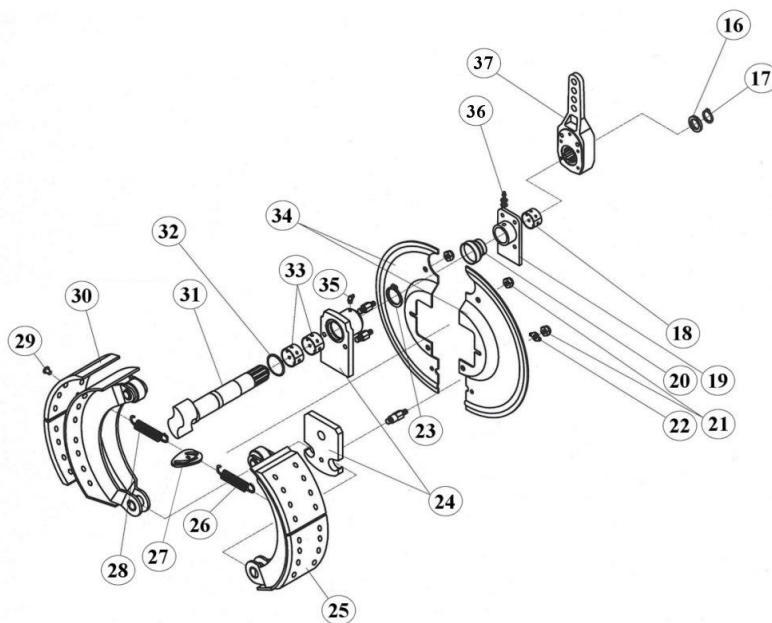


Fig 10: Brake assembly.

Part no.	Code
1	Brake drum
2	Inner bearing seal
3	Inner bearing
4	Inner bearing dust cap
5	Hub
6	Outer bearing seal
7	Outer bearing
8	Split pin
9	Castle nut
10	Hub cap gasket
11	Hub cap
12	Tapered washer
13	Wheel nut
14	Hub cap bolt
15	Wheel stud
16	Cam lever washer
17	Cam lever circlip
18	Cam rod bush
19	Cam rod bracket
20	Cam rod seal
21	M10 nut
22	M10 washer
23	Cam rod circlip
24	Brake pivot
25	Brake shoes
26	Spring
27	Adjustor plate
28	Spring
29	Fixing rivet
30	Brake pad
31	Cam rod
32	Cam rod washer
33	Cam rod inner bushes
34	Back plate
35	Grease nipple
36	Outer grease nipple
37	Cam lever