Dear Customer,

You have just purchased a ROLLAND Spreader.

We appreciate the trust you place in us.

The Spreaders by ROLLAND were designed to make the most of spreading techniques. They result from our technology and our experience in this field.

This manual should be considered as part of your Rolltwin or Rollmax Spreader.

For proper use, and to exploit all the capabilities of your Spreader, we recommend that you carefully read and follow all instructions in this manual.

The proper function and longevity of your spreader depends on it as well as your safety and that of others.

Keep this instruction manual so that you can consult it in due course. It must always accompany the spreader, even in case of resale.

Non-compliance with the said instructions indemnifies the manufacturer and the dealer of all liability.

We reserve the right to make any changes to our products at any time we deem useful without obligation to modify products previously delivered or on order. We also reserve the right to change without notice models that are defined in our catalogues, brochures or on our website.

Yours faithfully.

REMORQUES ROLLAND

Z.A des Landes
29800 TREFLEVENEZ - FRANCE
Tél. : 00 33 (0)2 98 85 13 40
Fax : 00 33 (0)2 98 21 38 15
www.remorquerolland.com

Summary

1-Safety instructions

Before commissioning, study the instructions and follow the safety guidelines!

In this user guide we have marked with this symbol all hazards or risks that operators are subject or exposed to.

Signs and security stickers attached to the spreader show you that it is safe to use the machine: **Respecting the instructions = safety**

A. Normal use

The spreader is designed and manufactured for normal use as described in this manual.
Four situations are thereby defined as: parking, loading, transporting and spreading (Chapter 5).

All uses other than specified are considered non-compliant. However, a number of predictable non-conform situations are discussed and specifically prohibited. The manufacturer is not liable for resulting damages.

We must respect the rules of accident prevention and other legal safety regulations, occupational medicine and the Highway Code.
The manufacturer accepts no liability for damage resulting from an unauthorised modification of the machine.

B. General safety regulations and accident prevention.

a. **Vehicle shutdown**: Before working on the machine, stop the engine, release the hydraulic pressure engage the brakes (tractor and trailer) and remove the ignition key.

b. Before starting the tractor engine, ensure that the PTO is not engaged, that all safety devices are fitted and in good condition.

c. Never deregulate or override safety devices. For settings, care and maintenance, follow the procedures described in the manual (especially chapter 6/7)

d. It is strictly forbidden to go under the vehicle when in operation.

e. The use of the machine remains the sole responsibility of the driver. He must ensure the absence of third parties in the proximity during any manoeuvre.

f. Given the residual risk of shock or damage to the spreading device (AND its projection area) and that it is technically impossible to protect (at least in the work phase), it is the responsibility of the driver of the machine to ensure the absence of a third party in this area when the machine is in motion.

g. The driver must be in possession of all necessary means to use the machine under optimum conditions.

2- Conditions of warranty

To take full advantage of the manufacturer's warranty, ensure compliance with maintenance and usage advice given in this manual. In case of problems users should contact their dealer.

Conditions of warranty :

Spreaders lifts are covered against defects in parts and workmanship for one year from the date of commissioning.

In no event can ROLLAND SA be held responsible for an incident due to a failure to comply with instructions for use, safety or maintenance.

The warranty covers only the provision of defective parts.

The guarantee is withdrawn and we disclaim any liability :

- When the machine has been transformed by elements built outside of our workshops or those of our distributors without our permission.

- When the serial number of origin has been falsified

- If the ROLLAND factory fitted parts have been replaced by parts of another origin.

- If the damage is due to any negligence, improper use, overloading, even temporarily, to the inexperience of the user, to the penetration of a foreign body in an element of the machine during operation or from non-lubrication.

Repair, modification or replacement of parts during the warranty period cannot have the effect of extending the warranty period of equipment.

Upon receipt of your trailer, make sure it is fully compliant with the technical specifications and that it has suffered no damage.

To actuate the warranty process "CERTIFICATE OF WARRANTY - DECLARATION OF COMMISSIONING" accompanying this data sheet must be completed and returned within one month of delivery.

3 – Presentation of the vehicle

This manual is common to all spreaders in the ROLLAND range. It was designed to give you all necessary information about the vehicle you have just purchased and to allow you to get the get the most out of it.

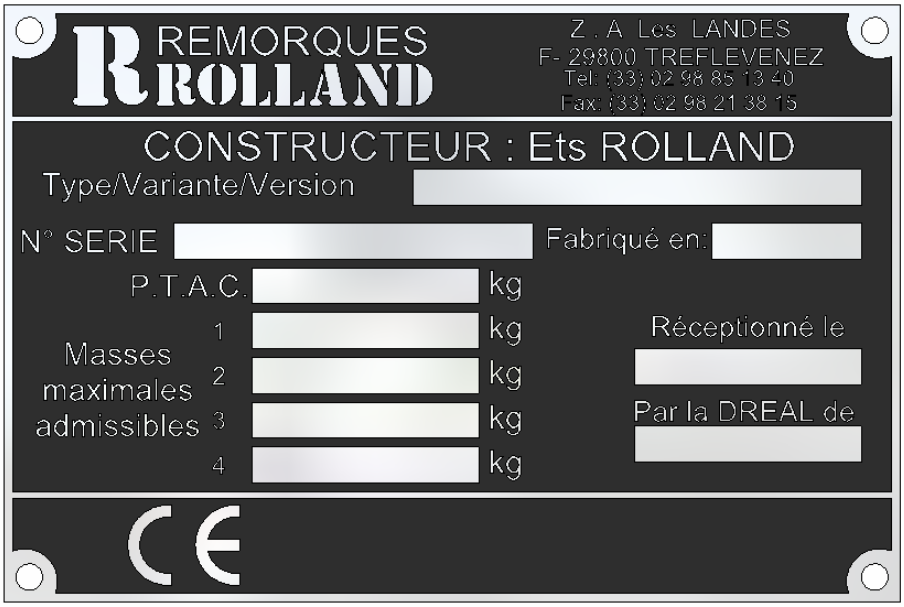
DESCRIPTION :

The spreaders are equipped with either a single axle, rocker, tandem or tri axle. They can also be equipped with the "ROLLFAST" hydraulic suspension.

They are mounted on a chassis with a drawbar, sprung or hydraulically adjustable.

Identification :

For full features of your trailer, refer to the conformity plate attached to the front right of your vehicle. In addition, a tare plate sticker specifies the permissible gross weight (GVWR) and unladen weight (UW). A stamped (serial number) is carried on the vehicle chassis
This serial number is required for any exchange warranty with your dealership or the factory



Conformity plate

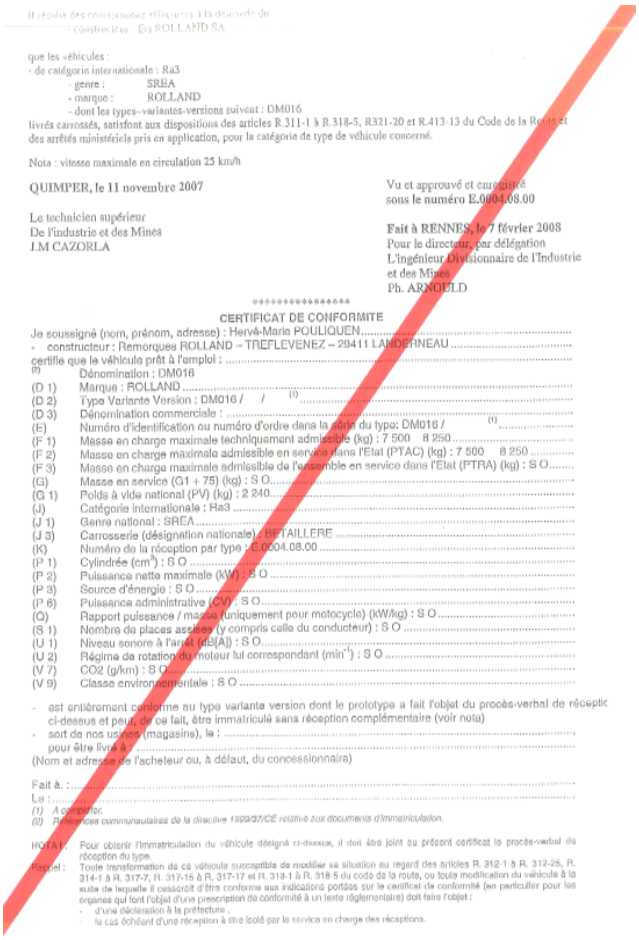
PTAC _ _ _ _ kg
PV _ _ _ _ kg

Tare sticker

Drawn agricultural vehicles fall under two distinct regulations :

- The highway code
- The labour code

Rolland vehicles come with a sheet crossed out with a red bar and a notice containing a statement of compliance. These two documents show that the two regulations have been met.



CERTIFICAT DE CONFORMITE

Je soussigné (nom, prénom, adresse) : Hervé-Marie POULIQUEN
- constructeur : Remorques ROLLAND – TREFLEVENEZ – 29411 LANDERNEAU

certifie que le véhicule prêt à l'emploi :

(8) Dénomination : DM016
(D 1) Marque : ROLLAND
(D 2) Type Variante Version : DM016 / / (1)
(D 3) Dénomination commerciale :
(E) Numéro d'identification ou numéro d'ordre dans la série du type: DM016 / (1)
(F 1) Masse en charge maximale techniquement admissible (kg) : 7 500 8 250
(F 2) Masse en charge maximale admissible en service dans l'Etat (PTAC) (kg) : 7 500 8 250
(F 3) Masse en charge maximale admissible de l'ensemble en service dans l'Etat (PTRA) (kg) : S O
(G) Masse en service (G1 + 75) (kg) : S O
(G 1) Poids à vide national (PV) (kg) : 2 240
(J) Catégorie internationale : Ra3
(J 1) Genre national : SREA
(J 3) Carrosserie (désignation nationale) : BETAILLERE
(K) Numéro de la réception par type : E.0004.08.00
(P 1) Cylindrée (cm³) : S O
(P 2) Puissance nette maximale (kW) : S O
(P 3) Source d'énergie : S O
(P 6) Puissance administrative (CV) : S O
(Q) Rapport puissance / masse (uniquement pour motocycle) (kW/kg) : S O
(S 1) Nombre de places assises (y compris celle du conducteur) : S O
(U 1) Niveau sonore à l'arrêt dB(A) : S O
(U 2) Régime de rotation du moteur lui correspondant (min⁻¹) : S O
(V 7) CO2 (g/km) : S O
(V 9) Classe environnementale : S O

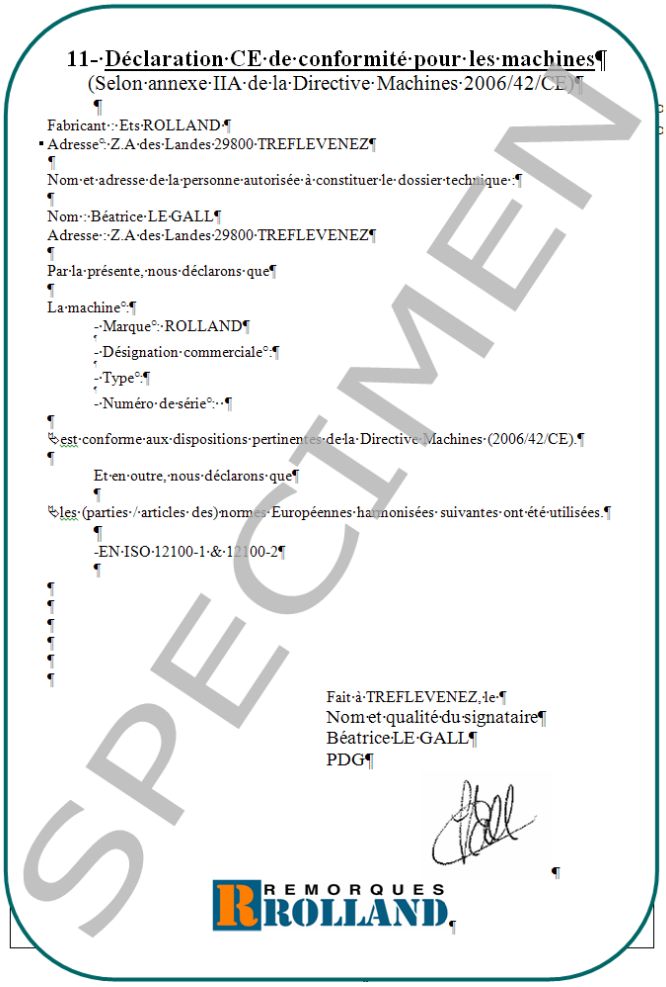
- est entièrement conforme au type variante version dont le prototype a fait l'objet du procès-verbal de réception ci-dessus et peut, de ce fait, être immatriculé sans réception complémentaire (voir nota)
- sort de nos usines (magasins), le :
pour être livré à :

(Nom et adresse de l'acheteur ou, à défaut, du concessionnaire)

Fait à :
Le :

(1) A compléter.
(2) Références communautaires de la directive 1999/37/CE relative aux documents d'immatriculation.

NOTA : Pour obtenir l'immatriculation du véhicule désigné ci-dessus, il doit être joint au présent certificat le procès-verbal de réception du type.
Rappel : Toute transformation de ce véhicule susceptible de modifier sa situation au regard des articles R. 312-1 à R. 312-25, R. 314-1 à R. 317-7, R. 317-15 à R. 317-17 et R. 318-1 à R. 318-5 du code de la route, ou toute modification du véhicule à la suite de laquelle il cesserait d'être conforme aux indications portées sur le certificat de conformité (en particulier pour les organes qui font l'objet d'une prescription de conformité à un texte réglementaire) doit faire l'objet :
- d'une déclaration à la préfecture ;
- le cas échéant d'une réception à titre isolé par le service en charge des réceptions.



11-·Déclaration·CE·de·conformité·pour·les·machines¶
(Selon·annexe·IIA·de·la·Directive·Machines·2006/42/CE)¶

Fabricant·:·Ets·ROLLAND¶
Adresse°:·Z.A·des·Landes·29800·TREFLEVENEZ¶

Nom·et·adresse·de·la·personne·autorisée·à·constituer·le·dossier·technique·:¶

Nom·:·Béatrice·LE·GALL¶
Adresse·:·Z.A·des·Landes·29800·TREFLEVENEZ¶

Par·la·présente,·nous·déclarons·que¶

La·machine°:¶
-·Marque°:·ROLLAND¶
-·Désignation·commerciale°:¶
-·Type°:¶
-·Numéro·de·série°:·¶

est·conforme·aux·dispositions·pertinentes·de·la·Directive·Machines·(2006/42/CE).¶

Et·en·outre,·nous·déclarons·que¶

les·(parties·/·articles·des)·normes·Européennes·harmonisées·suivantes·ont·été·utilisées.¶

-EN·ISO·12100-1·&·12100-2¶

Fait·à·TREFLEVENEZ,·le·¶
Nom·et·qualité·du·signataire¶
Béatrice·LE·GALL¶
PDG¶

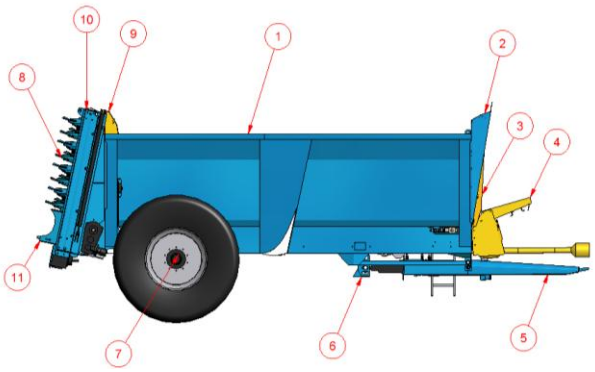
REMORQUES ROLLAND

SPECIMEN

In addition to these instructions, depending on options chosen, additional instructions (DASP, hydraulic weighing or on gauges 1.2 or 3 axles, Rollcontrol ...), will be given to you at the start by your dealer.

Side view

ROLLTWIN

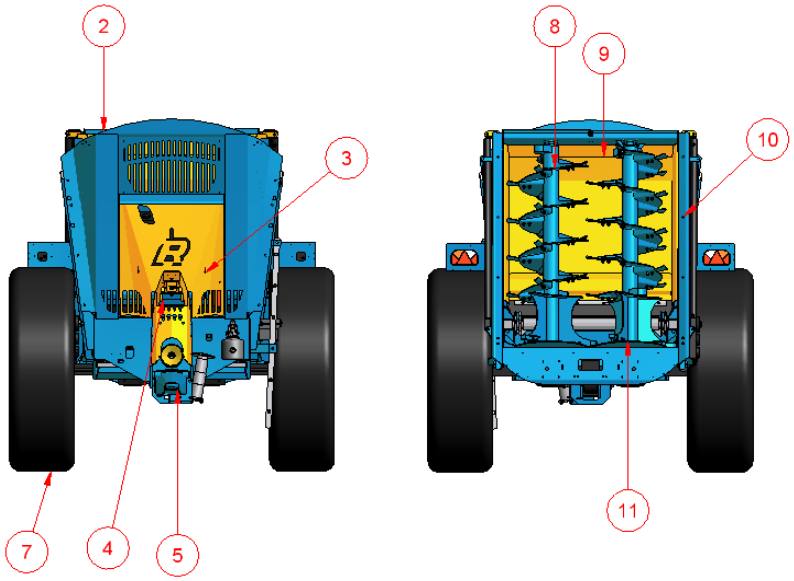


ROLLMAX

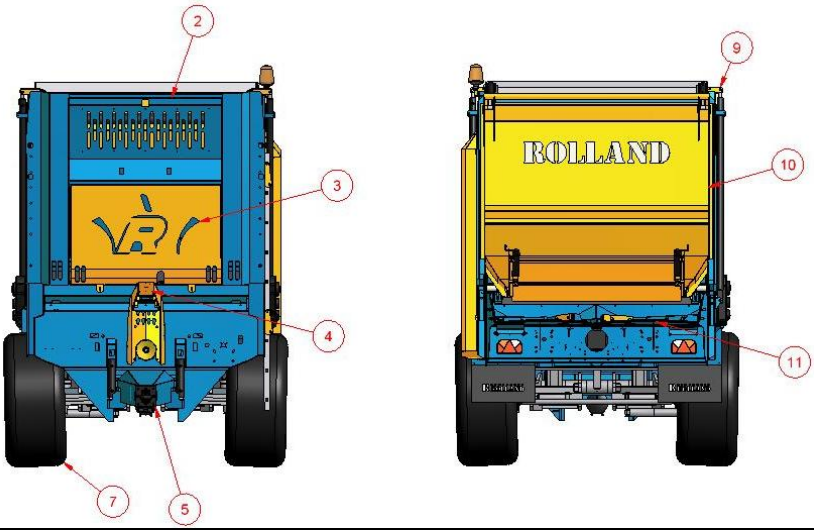
ROLLMA

Front and rear view

ROLLTWIN



ROLLMAX

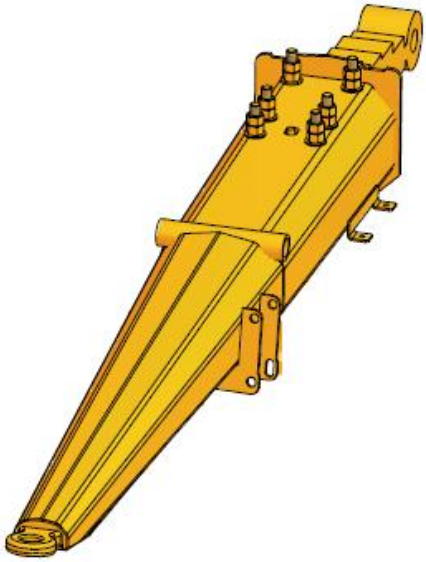


1	Body	**7**	Running gear
2	Front panel	**8**	Beaters
3	Protection cover	**9**	Slurry door
4	Hose arrier	**10**	Spreader frame (2100Kg maxi)
5	Drawbar	**11**	Spreader table
6	Drawbar adjustment		

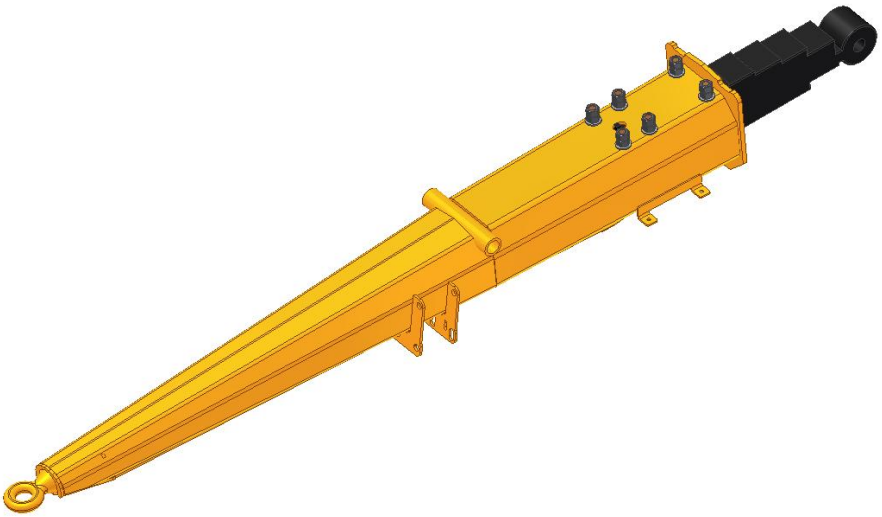
Technology and options available :

Rings :

Welded flat ring

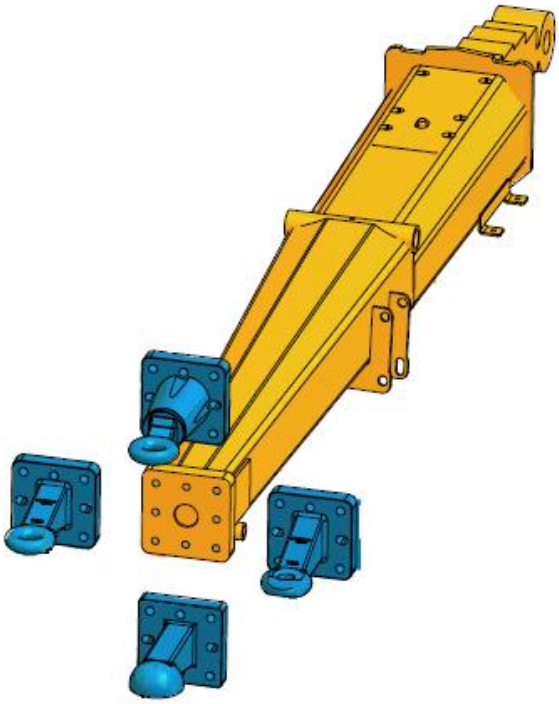


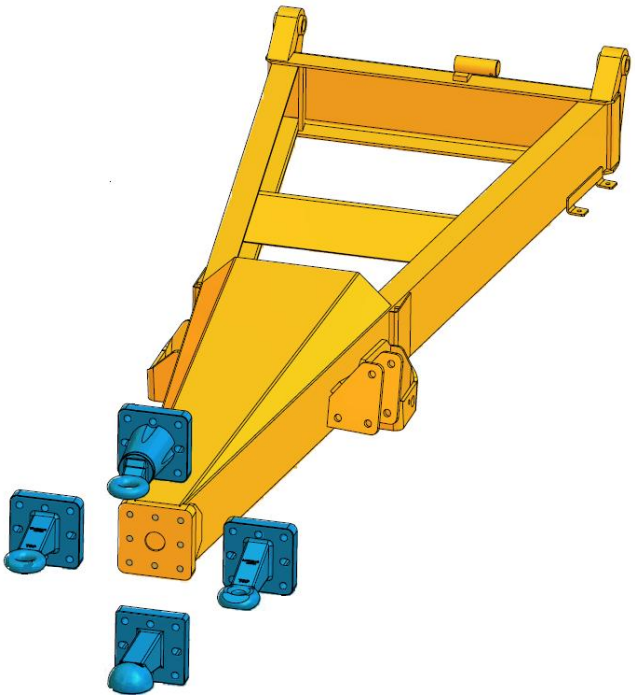
Welded rotating ring



Removable ring

Drawbars with 8 holes interface allowing several types of ring to be fitted (flat, rotating, spoon, DIN)

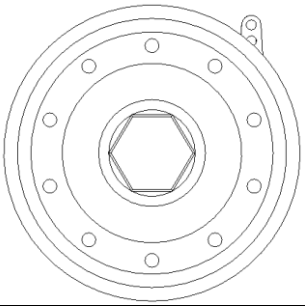
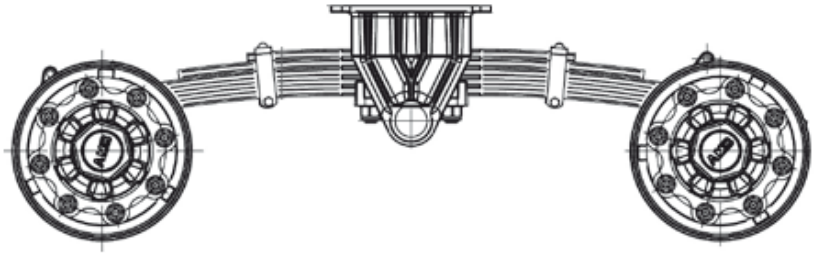
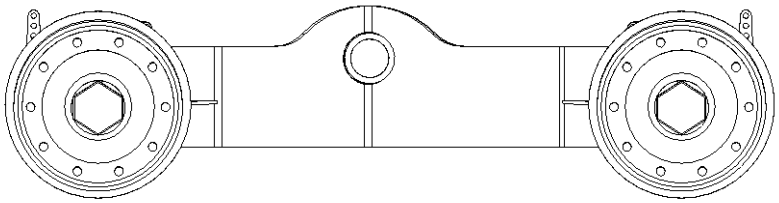
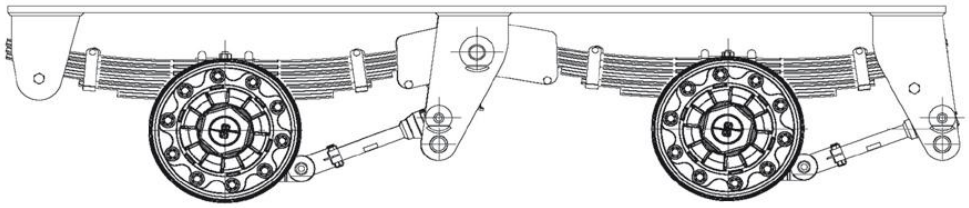
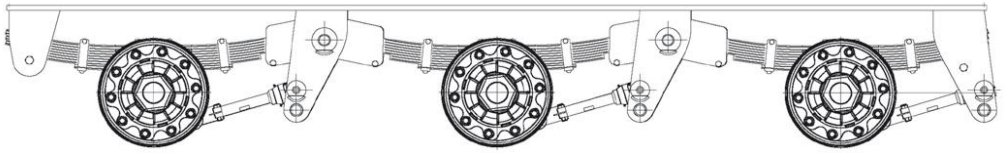
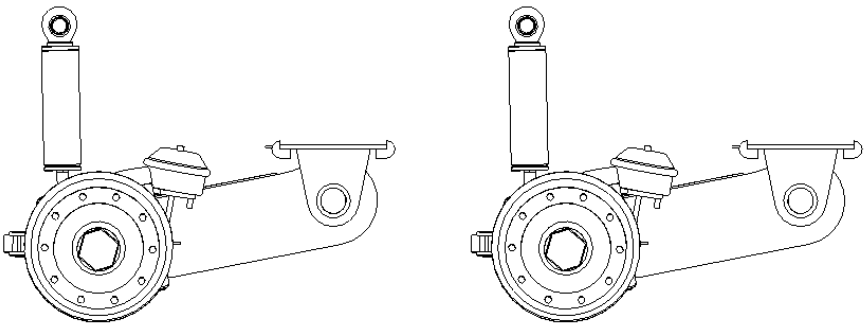




Hydraulic drawbar only on "ROLLMAX"

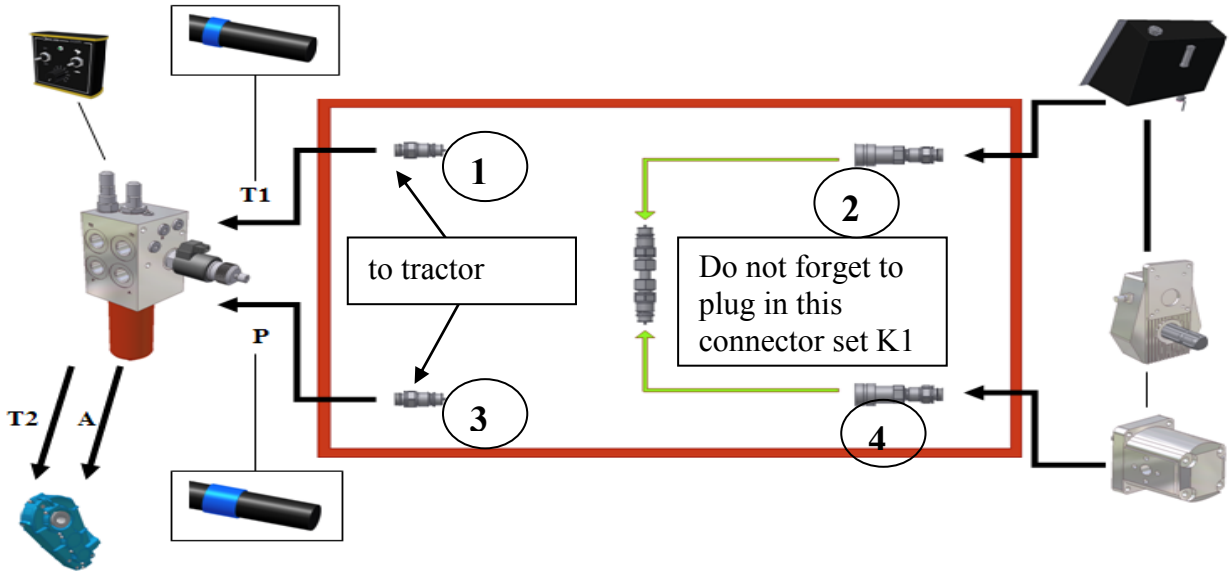
Running gear :

Driving direction

Single axle	
Bogey	
Rocker with offset shaft	
Tandem with tie rods	
Tridem	
Rollfast	

Bed control: There are several types of floor controls, in each, several functions can be managed from the electrical control box in the cabin in addition to the tractor control valve that is always available. Here in this table are the various available combinations: Wiring diagram for tractor troubleshooting (independent hydraulics).

Floor control	Function	Command	n° feed
1) Directly from the tractor: operates through hoses connected to the tractor	**1) Basic:** Bed only	manual control	110
		no display	111
		with display	112
		with display + DPA	113
	2) 2 functions : Bed + slurry door	no display	121
		with display	122
		with display + DPA	123
	3) 3 functions : Bed + slurry door + hood	no display	131
		with display	132
		with display + DPA	133
2) Pump: The pump is operated mechanically from the PTO and the gearbox located upstream (during maintenance or repair, the hoses can be connected to the tractor as in the diagram here below)	**1) Basic:** Bed only	no display	211
		with display	212
		with display + DPA	213
	2) 2 functions : Bed + slurry door	no display	221
		with display	222
		with display + DPA	223
	3) 3 functions : Bed + slurry door + hood	no display	231
		with display	232
		with display + DPA	233

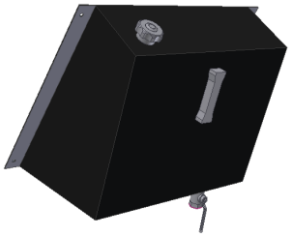
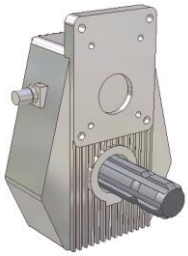
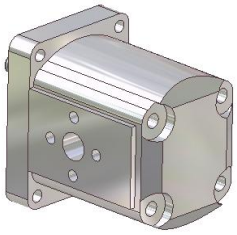
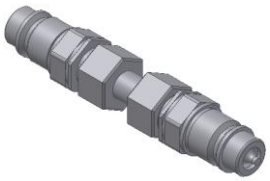
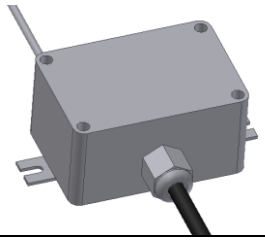
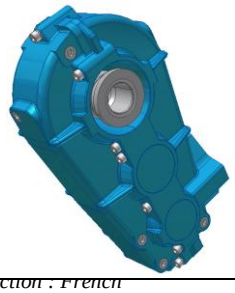


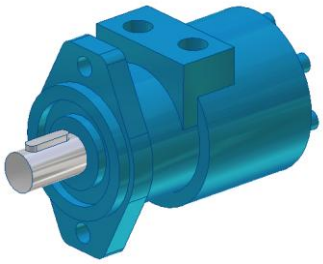
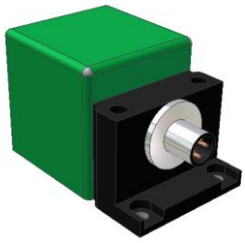
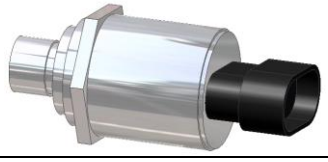
Procedure for carrying out a tractor repair: 1- Disconnect push-pull 1 + 2 and push-pull 3 + 4

1- Connect push-pull 2 + 4 together with connection kit K1
2- Connect push-pull 1 pressure side of tractor distributor
3- Connecte push-pull 3 to reflux side of tractor distributor

N.B : To reverse the direction, P and T1 must be inverted, i.e. the push-pull 1 and 3 on the tractor.

This table explains the function of the components that make up the 18 existing types of feeds. In the column "relevant system" there are numbers that use the line advances (for example a two section distributor is used in the feeds 121, 122, 123, 221, 222, 223).

Element	Function	Relevant system
Reservoir 	Contains about 80litres of oil to power the pump (1 oil change / year or every 200 hours) Viscosity index: 46	211, 212, 213, 221, 222, 223, 231, 232, 233
Gear box 	Allows the PTO running at 1000 rpm to drive the pump at 3000 rpm (1 oil change / year or every 200 hours) Qty: 0.3 litres max Viscosity index: 400	211, 212, 213, 221, 222, 223, 231, 232, 233
Pump 	Pumps the oil from the reservoir for distribution at a rate of 50 l / min at 1000 rpm (PTO)	211, 212, 213, 221, 222, 223, 231, 232, 233
Connector set K1 	This set allows connection and disconnection of the pump controller. It is imperative for its protection	211, 212, 213, 221, 222, 223, 231, 232, 233
Terminal 	Connects all the various sensors wires into one harness	112, 113, 122, 123, 132, 133, 212, 213, 222, 223, 232, 233
Réducteur 1/40 	Reduces the motor speed so that the belt runs at feed rate.	All models

Element	Function	Relevant system
Hydraulic motor 	Supplied with oil, it drives the gear which drives the bed. One motor 160 cm ³ for the single drives and two motors 130 cm³ connected in parallel for the double drives.	All models
Proportional controller 	Ensures the distribution of oil in the circuit in proportion to a given electrical transfer. Pressure filter to be changed yearly. This block is equipped with two pressure relief valves for secure drainage and cleansing.	All electrically controlled models
Distributor dual function	Allows the oil supply for the belt and for the hatch functions	121, 122, 123, 221, 222, 223
Distributor tri-function	Allows the oil supply for the belt, hatch and hood functions	131, 132, 133, 231, 232, 233
Wheel inductive sensor 	Gives the distance travelled by the spreader	112, 113, 122, 123, 132, 133, 212, 213, 222, 223, 232, 233
Gearbox inductive sensor	Indicates the distance traveled by the bed and the speed of the bed	112, 113, 122, 123, 132, 133, 212, 213, 222, 223, 232, 233
Pressure sensor 	Informs the user of the oil pressure in the circuit.	112, 113, 122, 123, 132, 133, 212, 213, 222, 223, 232, 233
Manual control 	Ensures the distribution of oil in the circuit. The adjustment is made with the rotary selector.	110

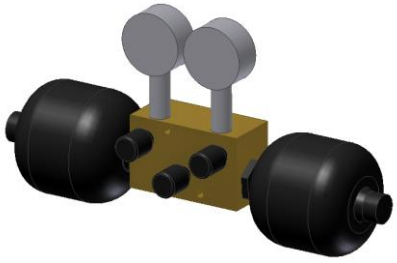
The various control boxes

Element	Function	Relevant feed
	Controls the bed and regulates its speed, two setting ranges (hare / tortoise) for optimum accuracy. The driving is done via the tractor control valve	111, 211
	Controls the bed and regulates its speed, two setting ranges (hare / turtle) for optimum accuracy. The screen displays bed speed, hydraulic pressure, and the distance traveled by the bed. The clearing is done via the tractor control valve	112, 212
	In addition to basic functions, it can reverse the direction of the bed, control the opening of the hatch (2 functions) and the operation of the TCE hood (3 functions).	121, 131, 221, 231
	In addition to basic functions, it can reverse the direction of the bed, control the opening of the hatch (2 functions) and the operation of the TCE hood (3 functions). The screen displays belt speed, hydraulic pressure, and the distance traveled by the bed.	122, 132, 222, 232
	3 function control unit and DPA (Output proportional to the progress). The screen displays bed speed, hydraulic pressure, the distance travelled by the bed.	113, 123, 133, 213, 223, 233

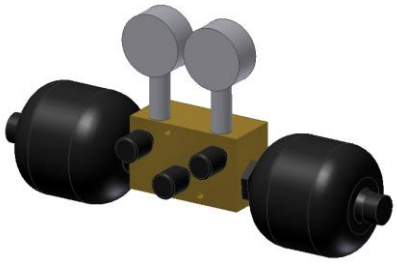
Steering axle :

- The steering axle follows the vehicle and works from the movement caused by the curves, it must be locked on the highway (at medium or high speed) and in reverse.
- **The self-steering axle** is a follower controlled by a cylinder located on the drawbar of the vehicle, it is a closed hydraulic circuit with accumulators to maintain pressure. It requires the installation of a clevis on the tractor. Note that the self-steering Rolland axle can become a follower axle when a tractor is without a clevis because locking cylinders of the follower axle have been retained. The advantage of this system is that the driver does not need to intervene when driving, neither forward nor in reverse.

The running gear with 1 self-steering axle are composed mainly of the following element :

Component	Quantity	Illustration
Hydraulic block 1 axle	1	

The running gear with 2 self-steering axles are composed mainly of the following element :

Component	Quantity	Illustration
Hydraulic block 1	2	

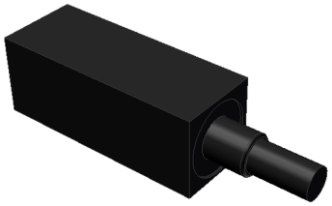
Do not connect the follower axle's locking hose during a self-steering operation.

Hydraulic headland kits:

Hydraulic headland kits are available as options on the frames C8, C11, C12, C22, C13, C23 for the ROLLTWIN spreaders and C10 for the ROLLMAX spreaders. These headland kits allow spreading at the edge of the plot. It is possible to have headland kits on the left or on the right or one on each side.

Weighing :

It is possible to equip the ROLLTWIN and ROLLMAX spreaders with a weighing system. Weight information is detected by sensors on the drawbar and the axle. The data is then memorised in the weight conrol box per client or plot. In addition to the weighing system the user can have a data processing software for managing customers or plots (storage up to 65,000 weighings). Also optionally available is a compact printer equipped with a battery rechargeable at the mains that can publish tickets with weight totals, per customer or plot.

	Weight control box
	Weight sensor
	Data processing software
	Compact printer

4 – Commissioning (PDI)

Vehicle coupling system :

The coupling may not exceed the speed of 32 km/h or 20 mph road speed. The connection is provided by a standard ring (all types of couplings can be used with hook, ring bolt or spoon coupling).

PROCEDURE

. Make sure that the tractor used can carry the nominal load of the trailer.
. After coupling the trailer to the tractor, make sure the skid is raised properly and in the resting position, securely locked.
. Check all lubrication points before the first use (see chapter Maintenance)

- **Adjustable tractor coupling(**automatic hook or pick-up coupling):
- • Approach slowly in reverse, lower hitch to coincide with the ring.
- • Once in place, raise the hitch (the ring will position itself).
- • Lock the device.
- • Raise the hydraulic or mechanical skid.

- **Fixed tractor coupling** (ring bolt, autohitch, drawbar) **:**
- Place the prop in position (ring above the ring bolt coupling or drawbar).
- Approach to adjust coupling devices (tractor and machine): :
  - the ring bolt and lower the ring (it will position itself).

OR
OR

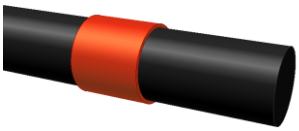
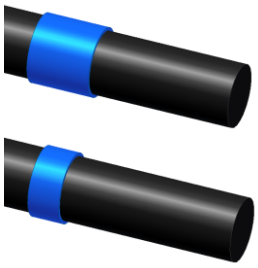
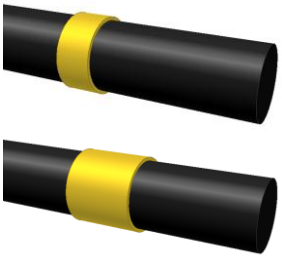
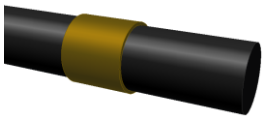
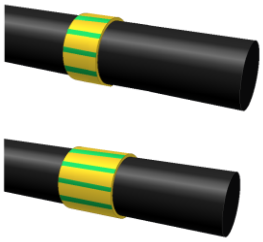
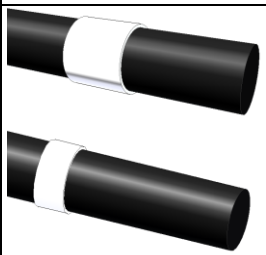
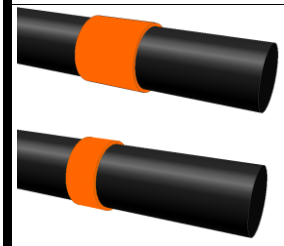
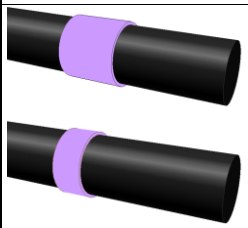
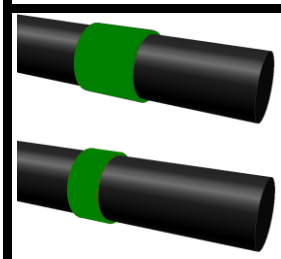
  - Pick up hitch
  - The drawbar
- Manoeuver the tractor if necessary
- Lock and raise the skid.
- Connect all hydraulic hoses (pneumatic optional).
- Connect the lights.

Tyres :

- On commissioning the vehicle, it is imperative that the tyre pressures be determined and adjusted according to the load on the tyres and the actual conditions of use.

Connecting the pressure outlets :

. The connections must be made with the engine shutdown, hydraulic pressure released and ignition key removed

Hose marking	Function	Hose marking	Function
	Brakes		Bed pressure (DE) Bed reverse (DE)
	Close hood (DE) Open hood (DE)		Load transfer (SE)
	Lock steering (SE) Lock steering (DE)		Slurry door open (DE) Close slurry door (DE)
	Extend hydraulic drawbar cylinder (DE) Retract hydraulic drawbar cylinder (DE)		Pressure hydropneumatic suspension (DE or SE) Return hydropneumatic suspension (DE or reflux)
	Pressure passive suspension (SE) Passive suspension drain (Reflux)		

*SE : single acting valve (pressure / float)
*DE : dual acting valve

Brake system **:**

The spreaders are equipped with three brake systems, each one assuring a specific function.

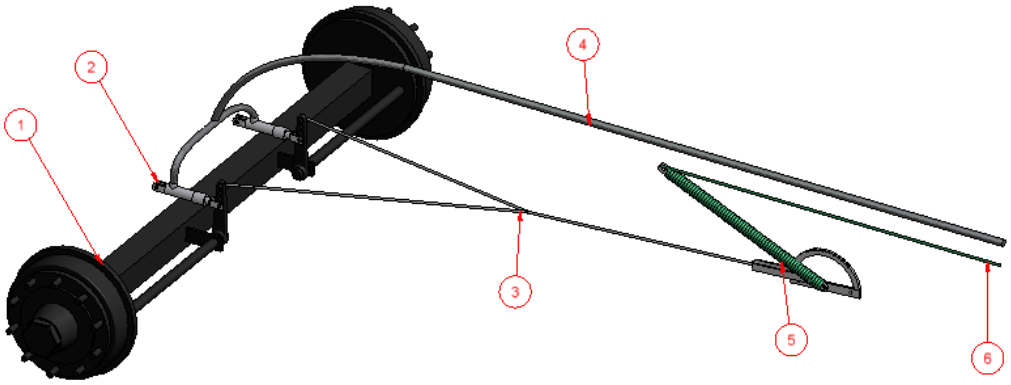
- When parking, use the mechanical hand brake. During the transport it is the hydraulic brake that is used. The third system is a safety device for in case the coupling breaks (a cord between the hand brake and a fixed point on the tractor).
- Connect the safety cord in case of breakage of the coupling that operates the parking brake. Check at the start of every season, the tension of the cable connecting to the brake rods.

PROCEDURE

. Any trailer with a GVWR more than 1.5 tons is obligatorily equipped with the braking device. It must be coupled to the tractor braking system.

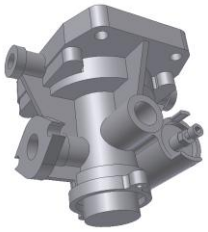
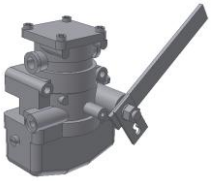
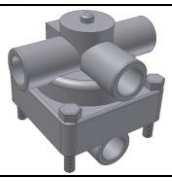
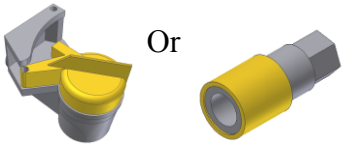
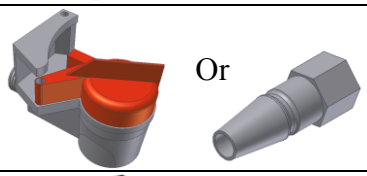
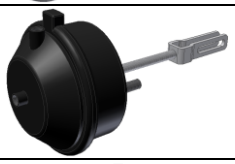
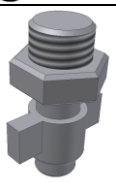
Hydraulic braking system :

- Install the red hose (4) on the pressure outlet "BRAKES" on the tractor.
- Ensure the proper functioning of control and check connections for leaks. Brake pressure: 100 to 130 bar.

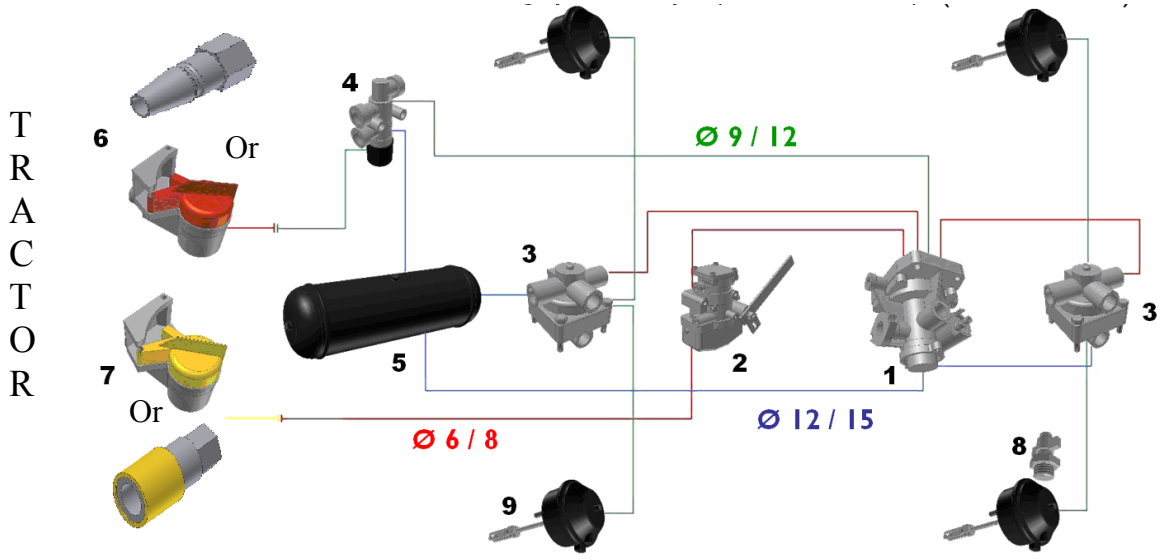


Reference	Element	Function
1	Brake drum	Ensures braking
2	Brake cylinders	Actuates the brake rods during transport
3	Brake cables	Is the link between the hand brake and the brake rods
4	Hose (connected to the tractor)	Supplies the brake cylinders with oil
5	Parking brake	Hand brake
6	Coupling failure cord (attached to a fixed point on the tractor)	Engages the handbrake should the coupling break

Pneumatic braking system

Element	Function	Illustration
Emergency relay valve (VRU)	Ensuring the service brake and the automatic braking of the trailer in case of coupling breakage or pressure drop in the supply line	
Static corrector (optional)	Adjusts the brake pressure, that is the brake force, depending on the load condition of the vehicle.	
Relay valve (optional)	Allows the control circuit to control the permanent circuit.	
Shunt valve	Allows the release of the service brake of the trailer after initiation of automatic brake caused by the disconnection of the hoses.	
Reservoir + purge	Compressed air tank. The purge allows the moisture in the circuit to be evacuated.	
Coupling control controler (yellow)	Permits the braking between tractor and trailer	 Or
Coupling Feed (red)	Ensuring the continuous supply between the tractor and trailer.	 Or
Brake chamber	Ensuring the service brake system with its front part and the parking brake with its rear part for the dual spring cylinder.	
Pressure outlet	Used to control the pressure in the system	

N.B : The brake can also be mixed (hybrid pneumatic/ hydraulic fitting) (mounting for 40 kmh prohibited)



1 Emergency relay	2 Fixed correcteur	3 Relay valve	4 Brake valve	5 Reservoir
6 Feed	7 Control	8 Pressure	9 Brake cylinders	

Example of air braking system on 2 axles (40 kmh)

Installation of the drive shaft :

PROCEDURE

. All drive shafts must be equipped with safety guards in good condition.
. Deteriorated guards must be replaced immediately
. Do not forget to install guards and to restrain them with chains.
. Never operate a PTO without the foreseen guards.
. Wearing loose clothing may be the cause of accidents.

. During the first use, it may be necessary to adjust the length of the drive shaft. To do this :

- Ensure the correct length of the drive shaft tubes.
- Tube can be damaged if the turning circle is too severe
- Interlock the tubes a minimum of 4500 mm.

On transmissions there are several types of security, safety shear bolt or torque clutches cams. In case of a shear bolt, it should be replaced by a bolt of the same type and same quality as the original. Replacement by a stronger bolt will damage the vehicle.

N.B : for commissioning, operation and maintenance of the transmission (primary and secondary), refer to the manufacturer's specific instruction manuals provided with the machine.

Electrical connections :

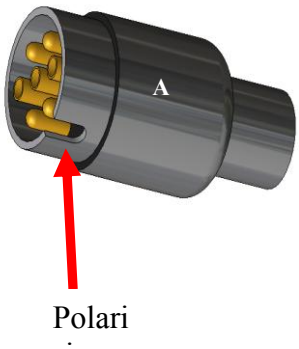
1- LIGHTING

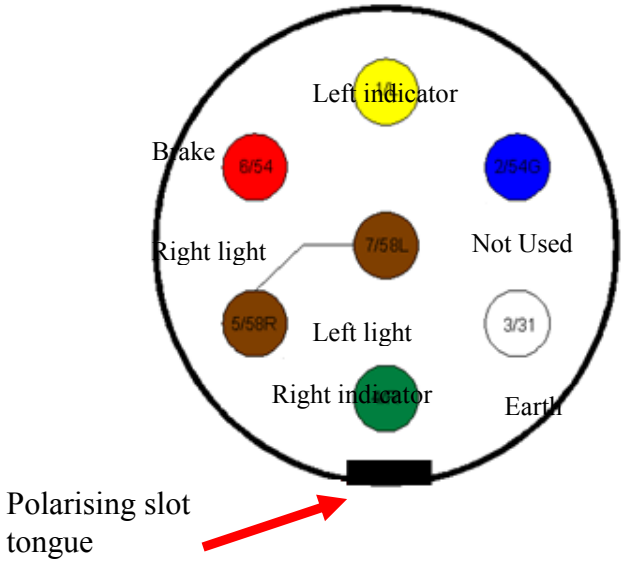
The machines are equipped with standard lighting which follow the legal requirement for road use.
Spreaders are fitted with regulation lighting, for that reason, it is necessary to connect them to the tractor electrically.

PROCEDURE

. Never leave without checking the operation of the vehicle lighting: your safety and that of others depend on it.
. Do not leave the wires hanging near the transmission

- Connect the multipin (A) without forcing it and in the right direction, the tongue must be in the slot.





Careful: our wiring is designed to cope with the flow of current independently to the left and right hand lights. Depending on your tractor a bridge on your tractor socket may be necessary. If this is the case: Rolland cannot take any responsibilty for an overheated circuit. This modification is done by the client and is his responsibilty.

2- OPTIONAL EQUIPMENT

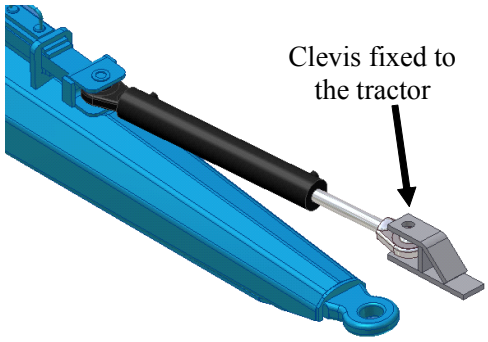
- Connect the 3-pin plug (B) without force, the direction is indicated by the flat section.
- This socket is present on all machines equipped with electronic boxes or those equipped with weighing or centralised lubrication

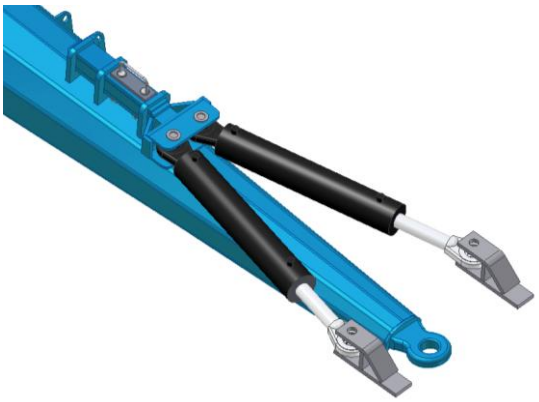
Installing the self-drive system :

The option of self-steering axle requires the installation of a steering actuator. Depending on your trailer, one or two clevis forks must be mounted on your tractor. These are provided but the adaptation and installation are not covered by ROLLAND. In fact, depending on the make and model of tractor, the forks' position may vary slightly.

For 1 self-steering axle

For 2 self-steering axles





While the tractor is completely turned (wheel in contact with the drawbar), verify that approximately 20mm margin at extremeties of the undercarriage piston rods remains, i.e. that they are not fully retracted or extended.

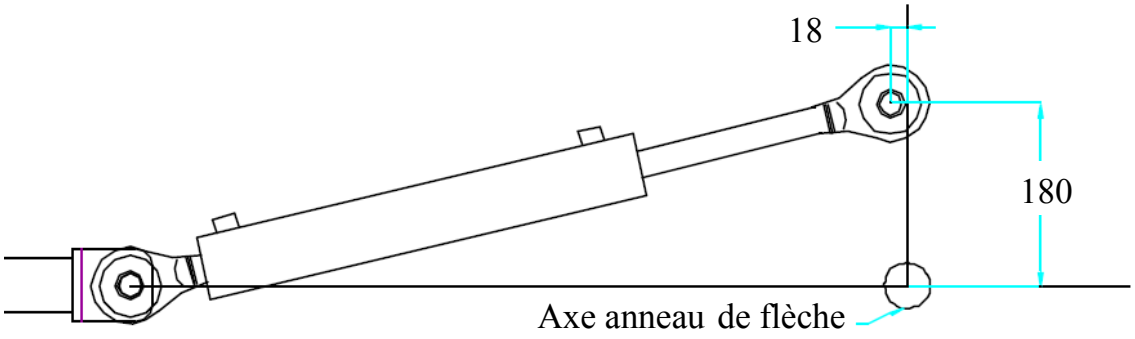
Installation of the clevis forks:

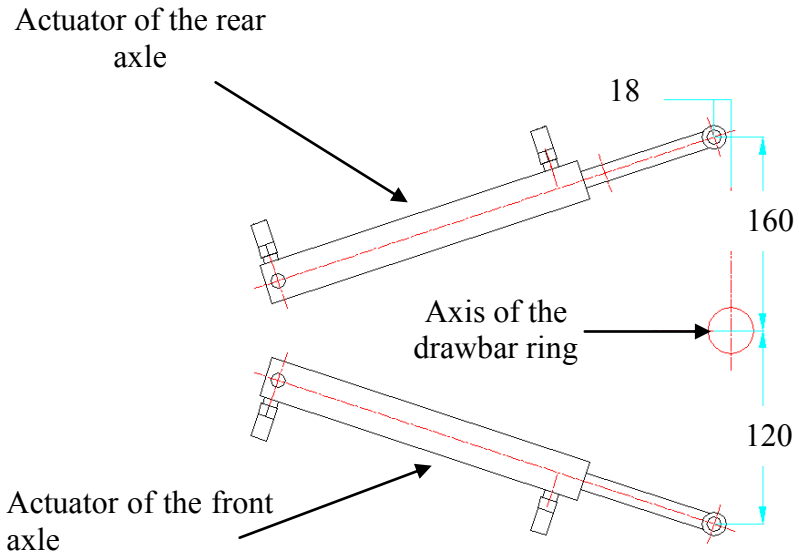
The axes of the cylinder swivel and the ring of the drawbar must be at a distance of :

- 180 mm for mounting in a single cylinder link
- 120 mm / 160 mm for mounting in a double cylinder link

The axis of the cylinder swivel must be decreased by :

- 18 mm with respect to the axis of the ring.





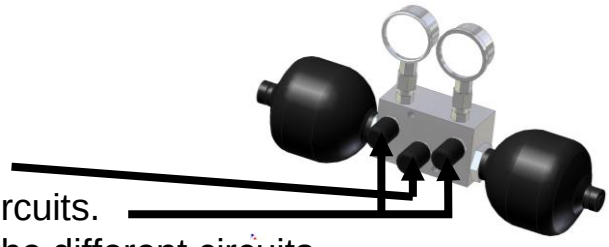
Installing the cylinder :

For this operation, no pressure may be present in the circuit. If your installation has only one cylinder, the automatic latching system allows its installation easily. Simply attach the cylinder to the tractor and slowly steer it round to lock it. However if your vehicle has two cylinders on its drawbar, install the cylinders manually.

The adjustment should be made with tractor and trailer coupled and properly aligned, wheels straight, cylinder(s) attached. It is advisable to advance in a straight line for about 10 meters. Make sure the tractor handbrake is engaged.

.

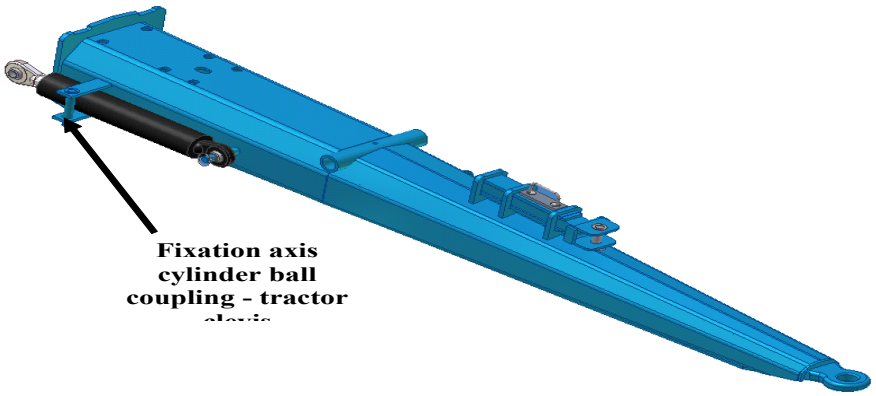
PROCEDURE



- Close the circuit selector valve(s)
- Open the isolating valves of the different circuits.
- Using a hand pump, raise the pressure in the different circuits
- Between 20 and 35 bar for mounting a single cylinder with a diameter 40/80 (the valve on the hand pump must be closed)
- Between 20 and 35 bar for mounting two cylinders
- Once the pressures are stable (a difference of 5 bar can be tolerated), close the valves of the different circuits.
- To reuse the hydraulic support, simply reopen the valve(s) selector. (make sure the valves of the self-drive circuit are closed)
- To release the pressure from the circuit, the valves on the circuit selector must be closed, open the valves for the various circuits and open the tap of the hand pump. The oil then returns to the pump.

Concerning follower and self-steering axles

- Any self-controlled running gear can be used in steering mode. To do this, simply place the cylinder(s) to the side(s) of the drawbar in the space provided for this purpose. The axis ball cylinder - tractor clevis then serves to block the cylinders. The pressure in the circuit must always be released (monitor through the pressure gauges). For locking the follower axle, a hose, labeled yellow-green, is located on the hose holder.



In the self-steering (or forced) mode, it is forbidden to use the steering axle locking hose, as this may cause great damage to the hydraulic system. Thus, to avoid any risk of error, it is highly recommended not to connect this hose (marked by striped yellow and green markings) to the tractor in self-steering mode.
. Before steering, ensure that nothing is blocking the rotation of the wheels.

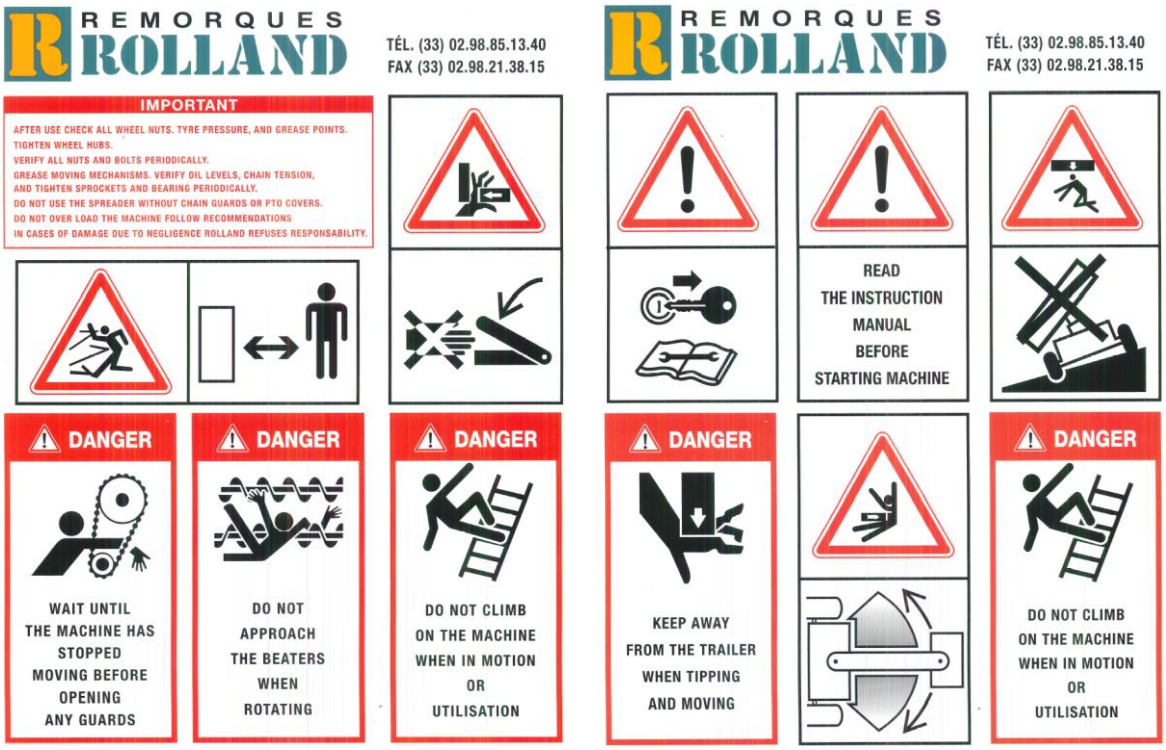
- It is imperative that the hydraulic system of the axles is purged of all air.
- Do not exceed recommended pressures in the process of pressurizing the circuit because the membranes of the accumulators may be damaged and no longer fulfill their role.

Concerning the follower axles

For locking the steering axle, a hose labeled yellow-green is located on the hose holder.

. On the highway in steering mode, it is advisable to lock the axle(s) to avoid any risk of an accident involving an unplanned movement of the trailer, especially when your vehicle is laden.

5 – Normal use and instructions



Above, the explicit representation of icons shown on the vehicles representing the various risks (risk of crash, fall risk, etc. ...).

<u>Parking:</u>

During storage of the vehicle the observance of certain rules is mandatory for your safety but also in order to have a vehicle ready for use when needed.
.

- It is recommended to store the vehicle in a covered location.
- The vehicle must be unladen on its stand.
- The brakes on.
- The storage area must be flat (slope of 10° maximum) and stable.
- The hydraulic hoses re-connected on the hose holder.
- Lubrication has been carried out (see maintenance chapter)
- Lubricate extended cylinder rods (rams).

Loading :

Any damage due to overloading is in no case covered by manufacturer's warranty.

.Never exceed the vehicle payload
.Check the good load distribution on the vehicle
.Check the balance of the load, good stability and manoeuverability of the vehicle.
. Ensure during loading that no hard substance (stone, pieces of wood, iron, etc.) is loaded into the spreader, it could cause damage.
. When used in freezing weather check the mobility of the slats of the bed before loading.

Transport

The spreaders are designed to travel at 32 km / h or 20 mph (see table) according to the model. They are approved for the highway.

. Respect the highway code.
. Never leave without first checking the correct function of the vehicle's lighting: your safety and that of others depends on it.
. Check the inflation pressure of the tyres (see chapter Maintenance).
. Moving across a hillside with a loaded hook lift can be dangerous. To the extent possible, move with the axis of the slope. If not possible, avoid driving with a load greater than 50% of the nominal load.
. For maximum safety, it is imperative not to exceed a gradient of 15% (obstacles, ruts, ditches).

Bed shaft counter (hubodometer) optional..

This meter is configured for a wheel type 305 70 R 19.5. If your vehicle is equipped with different wheels, a correction of the display of the hubodometer is necessary to obtain an exact distance.

.Examples of correction values :

Description of the wheel	Circumference	Diameter	Correction value
18/22.5 (445 65 R 22.5)	3505	1130	1.26
500 60 R 22.5	3705	1180	1.33
550 60 R 22.5	3862	1230	1.38
600 55 R 26.5	4176	1330	1.5

Real value = value read x correction value

For all other dimensions, please go to page 40.

Spreading

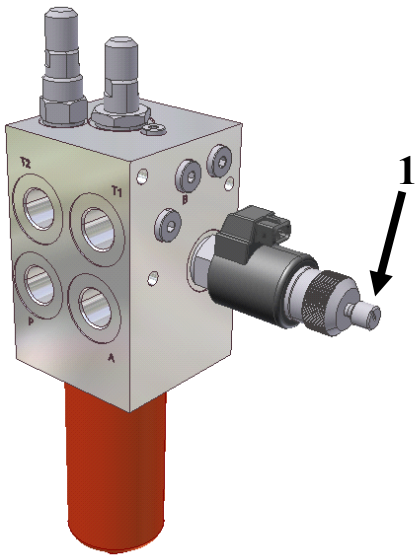
Set the PTO in motion without accelerating and bring it to normal speed of 1000 rpm. All ROLLAND spreaders are designed to operate in this regime except in exceptional cases (540 rpm). In all cases, the plan to use is specified by a sticker on the hose carrier at the front of the vehicle.

If the quality of the spreading is not satisfactory, several factors may be the cause, seek the reason among the following points:

- Adjust the settings relative to the dung.
- The load (irregular, non-homogeneous).
- The power of your tractor (too weak).
- The speed of the PTO (too slow - monitor the plan). Check the flow.

If a beater jams on the deck, reverse or advance the bed to clear the beaters, stop the machine (see § 1-1 on page 3) and manually remove the material blocking the machine from the rear (see page 32). To perform this operation, it is advisable to wear personal protective equipment (gloves, goggles, helmet, ...)

The controller can also be operated manually in case of failure. To switch to manual mode you must turn the screw 1 clockwise. From the tightening of the screw the controller switches to manual mode, then just fine tune as needed. To return to the electrical control, simply wind out the screw entirely. In case of failure of the distributor or control box, it is possible to connect the hoses directly to the tractor.



ALL WORK AT THE REGULATOR (MANUAL ADJUSTMENT AFTER A REPAIR FOR EXAMPLE) MACHINE MUST BE SHUTDOWN COMPLETELY (TRACTOR ENGINE OFF, IGNITION KEY REMOVED). TO RESTART, SEE § 1-2 on page 3).

THE SAME INSTRUCTIONS MUST BE RESPECTED IN THE CASE OF THE MANUAL REGULATOR (SEE PAGE 12). IN ADDITION, THE REAR WINDOW OF THE TRACTOR CAB MUST BE CLOSED WHEN OPERATING THE MACHINE.
(SEE, GENERAL SAFETY REGULATIONS PAGE 3)

6 – Settings

Preamble: Unplug the power supply before carrying out any adjustments (see § 1-1 on page 3)

Adjustments to the mechanical drawbar :

Adjustments to the mechanical drawbar :

The setting of the drawbar enables a level body according to the coupling height, giving a greater flexibility and a maximum weight transfer to the rear axle of the tractor.

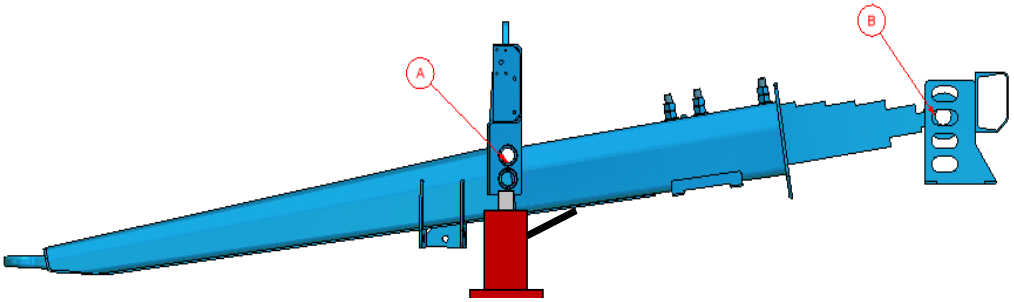
N.B : For the first commissioning, the dealer will take care of adjusting the drawbar.

PROCEDURE

. Carry out the adjustments on an empty vehicle.
. Operate on a firm, level ground.
. Make sure the parking brake (tractor and trailer) is engaged..
. Install the safety peg above the ring bolt of the tractor..

- Put the machine on chocks with the help of a jack (lifting capacity: 5T) placed at the front of the chassis.
- Remove the setting pin of the drawbar (item B).
- Position the drawbar so that the spreader is level when coupled to the tractor.
- The position of the drawbar will be adjusted to the next higher hole. Thus the spreader will be slightly nose up.
- Replace the setting pin.
- Remove the jack.

The top hole is used for large diameter wheels, the distance between each hole being 7cm.



Jack 5T

7 – Care and maintenance

To carry out the maintenance under good conditions, the following safety rules must be met :

- **Block the wheels.**
- **Engage the mechanical brake. (hand brake)**
- **Unload the vehicle.**

1- Check the brake system (every 6 months)

a- Parking and emergency brake

- Verify the correct tension of the parking / emergency brake. The parking brake lever should not be able to reach the last ¼ of the ratchet. If this is not the case, tighten the cable.
- Procedure for tensioning the cable :

Set the parking brake lever in the off position and ensure the immobilisation of the vehicle by placing chocks in front and behind the wheels.

- Loosen the cable clamps on one side,
- Re-tension the cable
- Re-tighten the cable clamps
- Perform a test
- If it appears that the brake rods (see fig.1 below) require too much angle to allow for efficient braking, take up the play at the pads (see the following: b)

b- Service brake

- Check operation of the brake cylinders, make sure they are not at full-stroke and control their mounts and the return springs (cylinders should not extend more than two thirds of their maximum stroke or 100mm).
- If this is not the case, proceed to remedy the brake linings.
- To do this :
  - Set the parking brake lever in the off position and ensure the immobilisation of the vehicle by placing chocks in front and behind the wheels.
  - Remove the circlip at the end of the brake cam (see fig1 next page)
  - Disconnect the link rod of the cam.
  - Using a pipe wrench for example, exert a torque on the brake cam simulating the braking.
  - Replace the link rod on the cam in this position.
  - Replace the circlip.
- N.B :

- If your vehicle is equipped with brake slack adjusters, bring the pads closer by turning the bolt provided for this purpose with a 19 spanner (see Fig. 2).In a clockwise direction close the bolt until you feel resistance and then back off a ¾ turn (see Fig. 2).
- If your vehicle is equipped with self-adjusting rods, the operation of lining play compensation manages itself.

- Check lining wear through the hole provided for this purpose.
- If the pads are unusable or questionable, contact your local ROLLAND dealer.

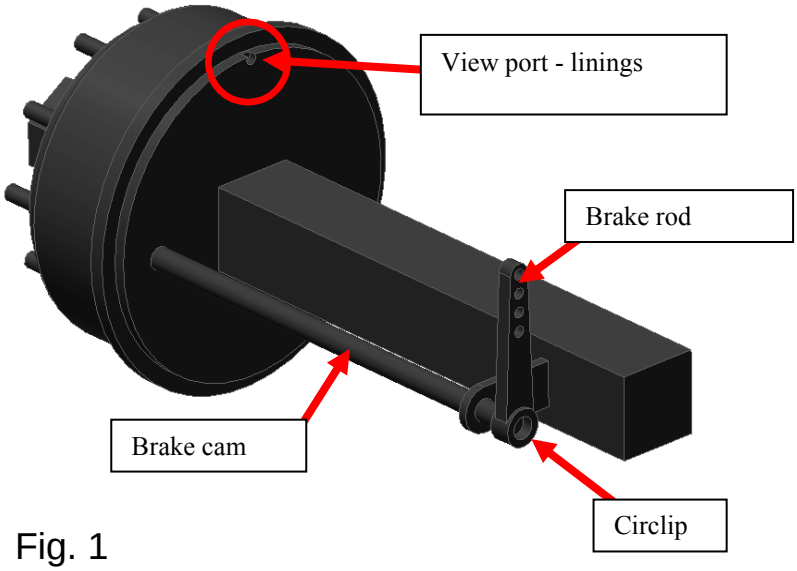


Fig. 1

Fig. 2

c- ***Check wheel hub bearings*** :

The bearings are wearing parts; their lifespan depends on working conditions, load, speed and especially their adjustment and lubrication.

- To check the play of hub bearings, lift the axle (vehicle shut down (see § 1-1 on page 3) and empty) so that the wheel does not touch the ground (need for a jack 5T capacity in line under the axle) and grasp the wheel right and left trying to move it.
- Monitor after the first commissioning.
- Every 2 years, verify the adjustment of tapered bearings. Excessive play may damage the bearing seats and braking devices.

d- ***Checking the hub caps*** :

- For push on caps, visually check that they are fully fitted into the hubs.
- For screw caps, make sure they are properly seated at the front of the hub.

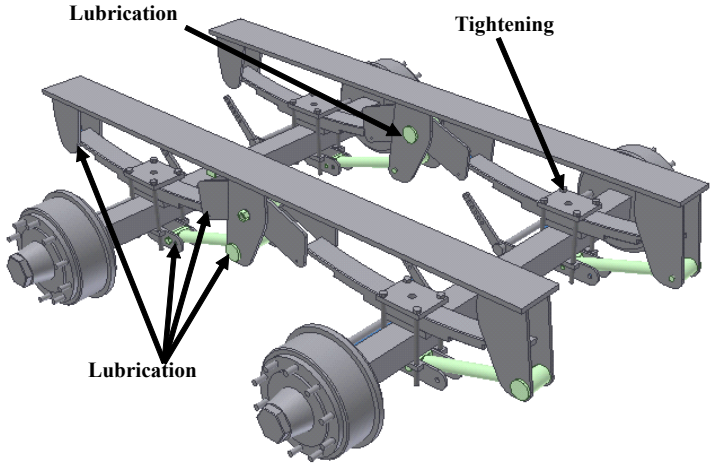
2- Maintenance of the running gear :

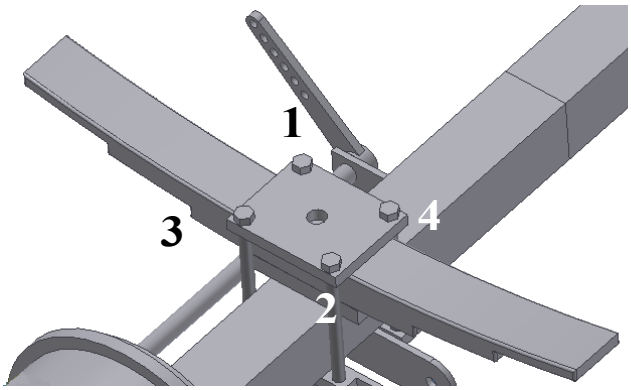
Maintenance work on the running gear must be performed by qualified and competent staff with the appropriate tools and a specialised workshop approved by the vehicle manufacturer.

General inspection

For : ½ tandem, tandem rods

- Check and tighten all the nuts on the axle fixation flanges and the draw rods if present. (follow the order of Diagram 2)
- Grease the various pivot pins and the end of the springs in their slide (Figure 1).

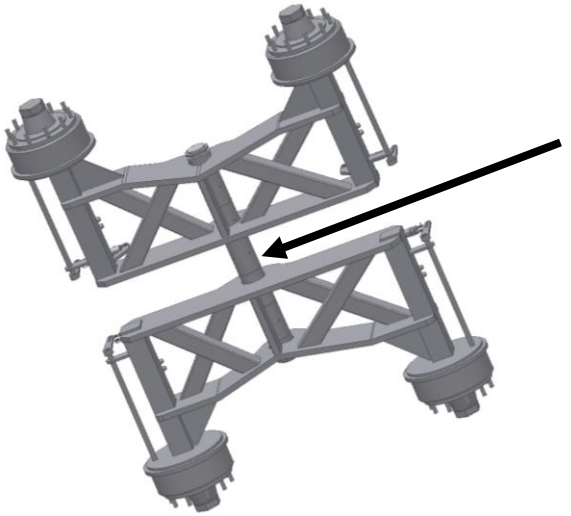




Plan 1 **Plan 2**

Case of the rocker axle or Rollfast

- Check the absence of play in the axis of the rocker bar.
- Lubricate the various points (14 per axis of the rocker bar or Rollfast)



14 grease nipples along this axis

3- Cleaning and lubricating :

Clean the body with copious amounts of water after each transport of corrosive or soiled goods. After washing, follow up with a general lubrication (oil spray) and verify the brake functions. For all cleaning and lubrication operations, the machine should be shut down (see §1-1 of page 3)

Every 10 hours:

-Grease the bed chain drive front and rear

- Greasing of the PTO drive shaft

Every 50 hours:

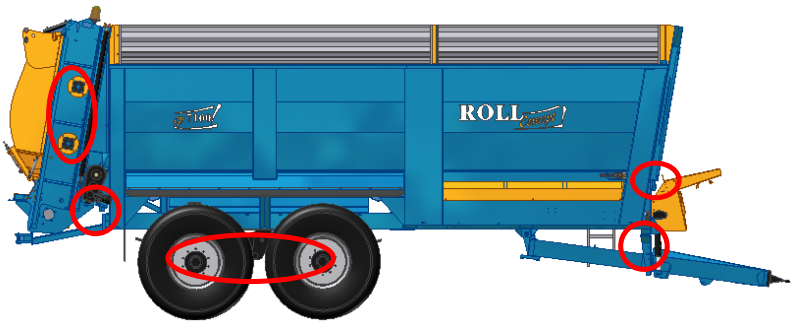
-Grease the axle, the drawbar and the drive shaft bearings

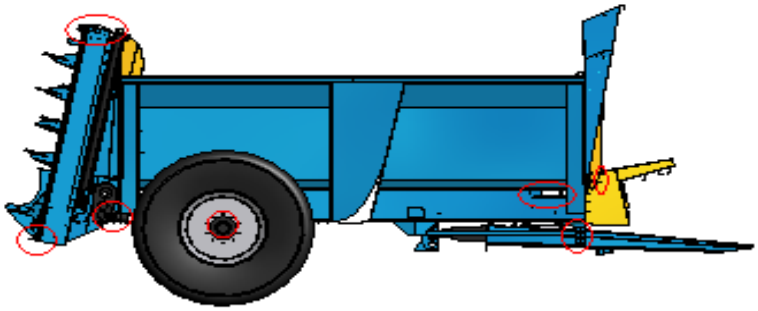
1 to 3 times/year (depending on use intensity) :

- Grease the beater bearings (to the right of the TCE, at the top of the verticals (in the upper casing)) Provide adequate means of access (see page 32)

-Grease the drive shaft bearings

The grease points are represented by red dots on the diagram below. The oil of the various mechanical boxes (gearboxes, gearbox and bevel) should be replaced every year or every 200 hours in accordance with the amounts shown in the "maintenance of mechanical boxes." The recommended oil is SAE 140.





Instructions for cleaning

Caution: this operation requires special precautions in addition to those cited throughout this document (pages 3, 17, 20 and 26 in particular) and in this chapter.

Mandatory:

- Ensure the machine is stopped and the discharge of the device is complete.
  - Use the side ladder for this purpose
  - Warning, there is no means of access to the interior of the vehicle.

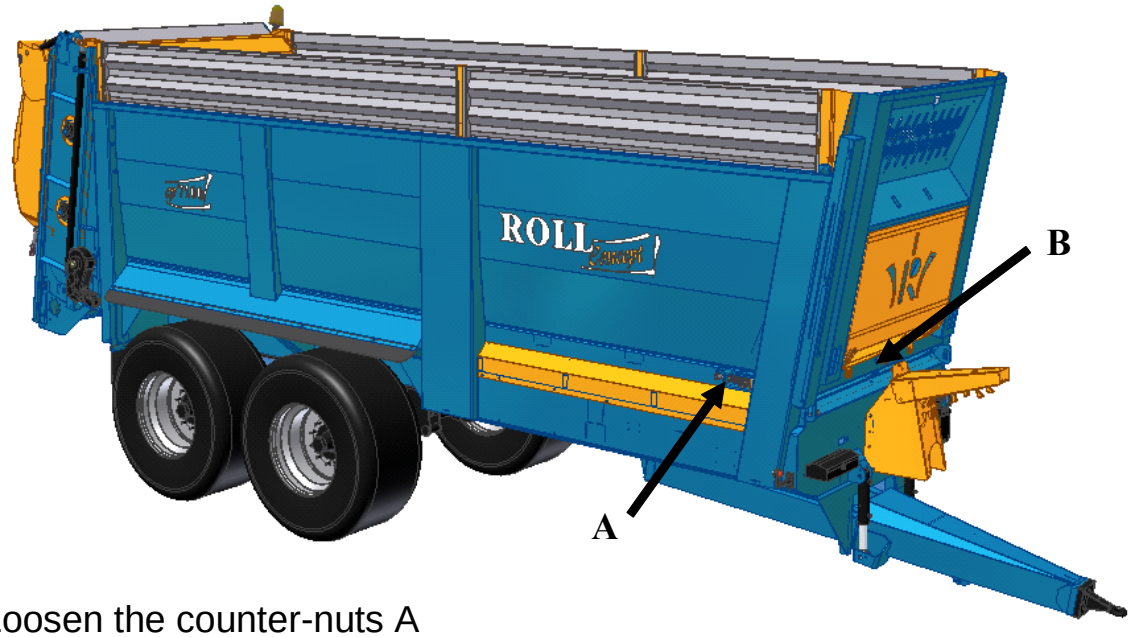
- If, however, an intervention inside the body is required, equipment (not supplied) type scaffolding must be used to enter, with railings and other safety precautions. In general, all interventions higher than the floor must be done with adequate means of access.

- All interventions, which are more toward the back of the machine, must be done with the machine off, PTO disconnected and using personal protective equipment (goggles, gloves etc..) recommended for the use of specific tools by their manufacturer for example :
  - High pressure cleaner for washing the screws and beaters
  - A cutting tool to cut the strings
  - Etc

- The rotation of the bed and all other functions (slurry door, hood) are sometimes necessary. All our machines permit these functions independently of the rotation of the PTO. This ensures the non-rotation of moving parts particularly with the " autonomous control". In fact in the latter case, a connection kit comes with the machine (see pages 10 to 13) to allow the bed to be supplied directly with oil from the tractor.

4- Adjustment of the bed tension :

This adjustment must be performed every 50 hours of use. It prevents premature wear of components and keeps the chains in position. To carry out the tension adjustment of the 2-chain there are 2 stretchers (A) outside the skip, for the 4-chain, there are the two tensioners (A) and 2 more (B) in the middle.

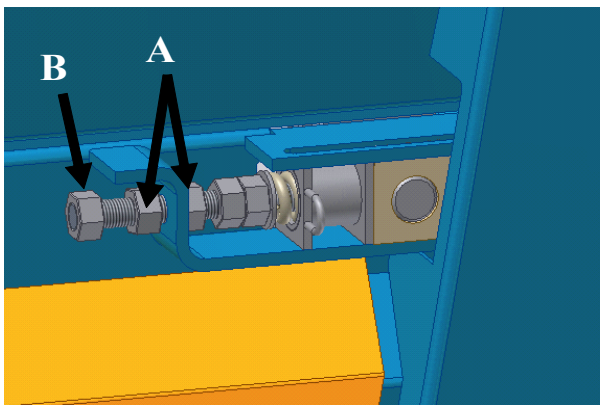


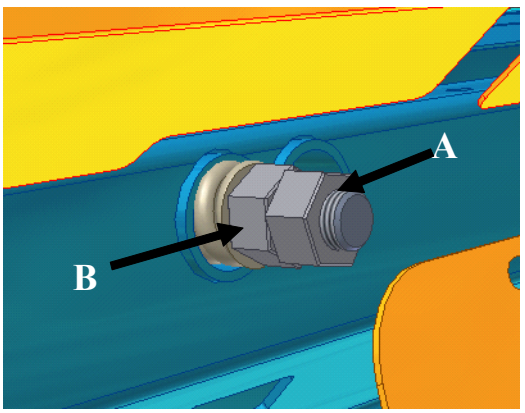
Loosen the counter-nuts A

The tensioning of the bed is done by compressing the spring by tightening the nuts B

Proper tension translates into a lift-off between 5 and 10 millimeters of the first bar of the bed in relation to the guide plates under the spreader.

Tension control to be performed every 10 hours (adjust tension if necessary)

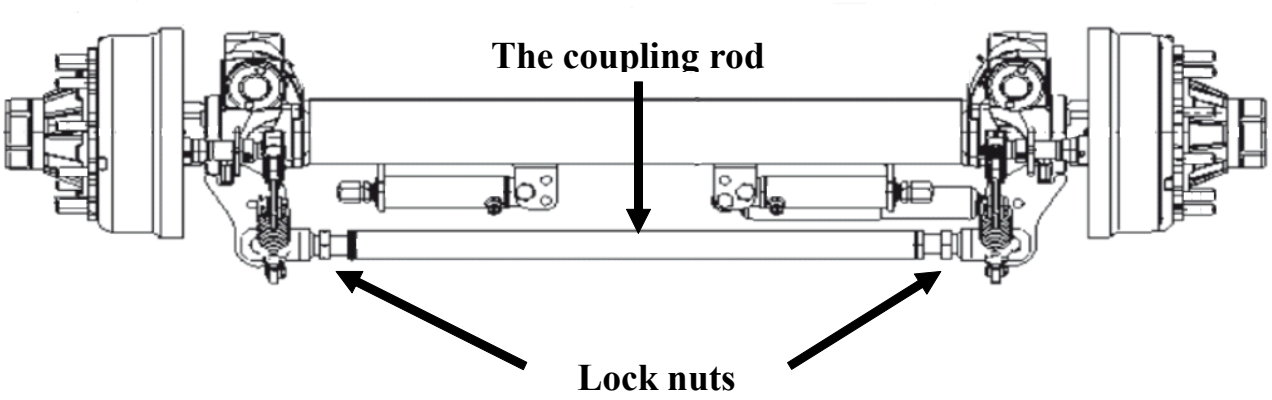




5- Steering axle :

Checking and adjusting the alignment

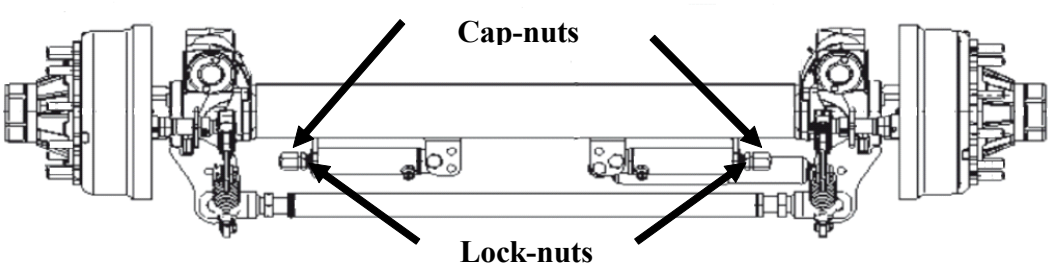
- Immobilise the vehicle, the steering axle well inline, lock cylinders retracted, on a level surface.
- Measure the distance between the front wheels and the rear follower axle. The same value should be found.
- If this is not the case, unblock the 2 lock nuts of the coupling rod, and rotate it in order to get the distance at the front to be identical to that at the back.
- Tighten the lock nuts firmly.



Adjusting the locking cylinders

Periodically check the cap-nut and its lock-nut. After the alignment, proceed to adjust the locking cylinders as follows

- Unscrew the lock-nuts
- Screw on the cap nuts.
- Develop and maintain pressure in the cylinders.
- Unscrew the cap nuts to have them pressing against the stops
- Screw down the lock-nuts firmly in order to lock the setting.



6- Maintaining the regulator and hydraulic unit :

- Shutdown the vehicle (see §1-1 of page 3)
- Check the oil level and tightness of the tank. Remember to change the oil and regulator filter every year. To change the filter, unscrew the protection bowl (red). Clean the inside of the bowl with a cleaning agent (do not use cloth or paper towels), change the filter and then replace the bowl.
- Check the oil level of the gear-box. Make a first oil-change after 50 hours of use and thereafter annually at least.
- Check the condition of the hose.

7- Bed control :

- Shutdown the vehicle (see §1-1 of page 3)
- Check the wear of chain drives and bearings, lubrication is mandatory (centralised lubrication).
- Check the condition and fastening of the bed slats.

8- Transmission maintenance :

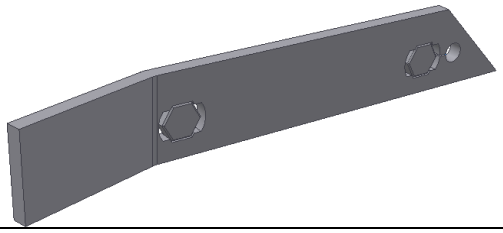
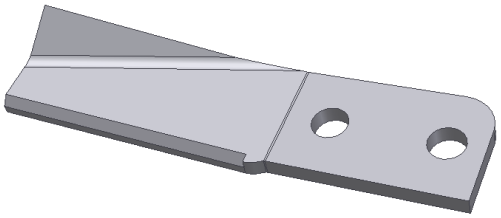
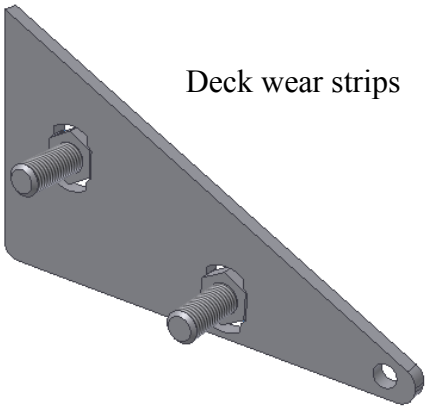
The maintenance of this element is primordial for your safety.

- Shutdown the vehicle (see §1-1 of page 3)
- Check as often as possible the protection cover of the universal joints
- Lubricate the various elements of the PTO and the bearings of the shaft (periodicity page 31).
- Check the wear of shims on the drive shaft and the lubrication.
- Lubricate also the universal joints at the ends of the angle transmissions.
- To optimise the function directly from the tractor a reflux without brake (push-pull type) is recommended.
    - Output tractor direct about 60L/min for a manual control type MTKA, otherwise risk of overheating and possible engine failure.
    - Output tractor 80L/min for a proportional type regulation with an electrical control in the cab
    - Every year, change the oil in the reservoir, change the regulator filter and change the unit mesh filter.

WORK ON ANY ELEMENT OF TRANSMISSION (SHAFTS, CARDANS, BEARINGS, ...) MUST BE DONE ONLY ON A FULLY SHUTDOWN MACHINE (STOP THE TRANSMISSION AND TRACTOR ENGINE). REMOVE THE KEYS

9- Replacing the wearing parts:

The spreader assembly contains parts that wear and must be replaced regularly, there is no advised service life for these parts as they wear out faster or slower depending on the type of manure or according to settings made by the operator.

<table>
<tr><th>Element</th><th colspan="2">Quantity (per beater or per disc)</th></tr>
<tr><td>Wear arm - disc
  </td><td colspan="2">3</td></tr>
<tr><td rowspan="8">Beater point
  2 types of blade: left and right
  </td><td>C8</td><td>15</td></tr>
<tr><td>C10</td><td>19</td></tr>
<tr><td>C11</td><td>20</td></tr>
<tr><td>C12</td><td>20</td></tr>
<tr><td>C13</td><td>22</td></tr>
<tr><td>C22</td><td>21</td></tr>
<tr><td>C23</td><td>19</td></tr>
<tr><td>TCE</td><td>15</td></tr>
<tr><td> 
Deck wear strips</td><td colspan="2">2</td></tr>
</table>

10- Maintenance of mechanical housings:

Shutdown the machine completely (see § 1-1 on page 3)
Change the oil in the various mechanical boxes every year or after 200 hours using the SAE 140 respecting the following quantities:

Assembly	Housing (In the direction of travel)	Oil quantity (in litres)
C8	Middle	1.2
	Left	2.2
	Right	2.2
C10	Middle	1
	Left	1.8
	Right	1.8
C11	Middle	1.2
	Left	2.2
	Right	2.2
C12	Middle	1.2
	Left	2.2
	Right	2.2
C13	Middle	1.2
	Left	2.2
	Right	2.2
C22	Middle	1.2
	Left	2.2
	Right	2.2
C23	Middle	1.2
	Left	2.2
	Right	2.2
TCE	Middle	1.2
	Left	2.5
	Right	2.2
	Exterior transmission angle	1.2
	Beater (x2)	0.8
TCEI	Middle	1.8
	Left	1.5
	Right	1.8
	Exterior transmission angle	1
	Beater (x2)	0.7

Bed	Bed drive casing (right or left and right)	2.8
Hydraulic unit	Gear pump casing	0.3
		Visco 400

11- Wheels and tyres:

Check the wheel nuts and tyre pressures regularly

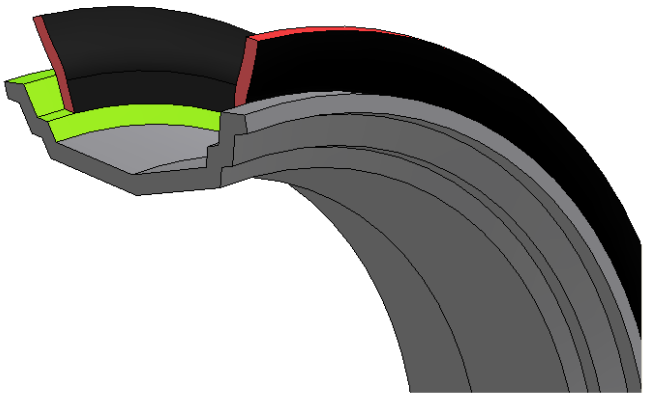
Inflation

Proper inflation of tyres allows optimum grip, comfort and performance. Also the tyres will last longer and the surfaces will be preserved.

We strongly discourage:
- An under-inflation, which distorts the carcass and may cause a tyre failure.
- The over-inflation which reduces the area of contact with the ground resulting in a loss of adhesion. In addition the casing is more sensitive to shocks.

Assembly

- Mount the tyres only on the rims they are designed for.
- Use rims clean and in good condition, working with clean surfaces.
- Use the appropriate tools for the tyres and rims.
- To facilitate assembly and disassembly, lubricate the seating (green) and the beads of the casing (black) with a suitable product as shown in the sketch below.



- With a new tyre, use a new inner tube. Use an inner tube corresponding to the size of the tyre.
- After mounting a tyre, ensure the correct centering of the tyre on the rim: if this is not the case, inflate, deflate and inflate again until the centering is good. Always use the maximum pressure for positioning the beads on the rim seat 2.5bars (35 psi). Then adjust the pressure to use or to store.
- When transporting the equipment by road, rail or boat, you must inflate the tyres to 2.5 bar (35 psi) to avoid damage from the mooring systems.

Features of tyres available for the Rolltwin :

Type	Service pressure	Max. load at 40km/h*	Dimensions	Correction value hubodometer
18 4/30 A324 Alliance	3.2	4080	1550x467	1.68
18 4/34 A324 Alliance	4.2	4200	1632x467	1.77
18 4/38 A356 Alliance	4.8	6270	1733x516	1.88
23 1 R26 Prostor	2.8	5000	1605x587	1.74
23 1/26 A347 Alliance	2.8	5030	1605x587	1.74
620/75 R26 A375 Alliance	3.8	6325	1595x625	1.73
650/60 R 34 Els Nokian	4	9400	1644x650	1.78
650/65 R 30.5 A380 Alliance	4	9660	1623x650	1.76
620/75 R 30 Michelin	4	5600	1710x604	1.85
650/75 R 32 A360 Alliance	3.9	7245	1793x645	1.94
650/65 R 26.5 A360 Alliance	4	9110	1520x650	1.65
580/70 R 38 A370 Alliance	3.3	5950	1817x577	1.97
650/65 R 30.5 Michelin Cargo	4	9660	1623x662	1.76
650/65 R 34 Els Nokian	4	9400	1645x650	1.78
650/65 R 26.5 A380 Alliance	4	9110	1520x650	1.65
710/50 R 30.5 Michelin Cargo	4	8840	1495x728	1.62

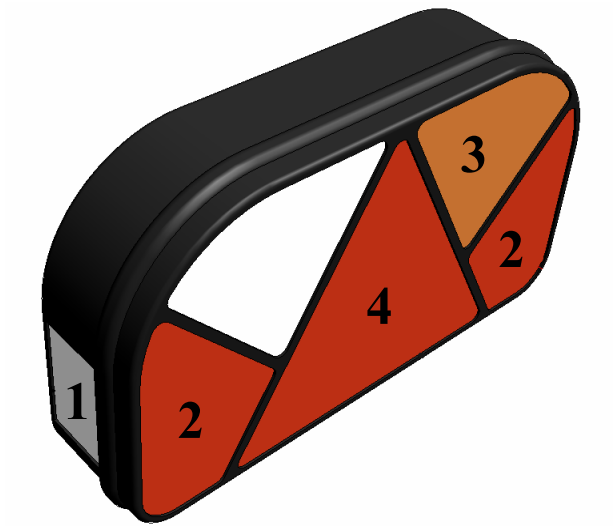
Characteristics of tyres available for the Rollmax

Type	Service pressure	Max. load at 40km/h*	Dimensions	Correction value hubodometer
550/60 22.5 Diagonal/Divers	3	5300	1360x645	1.48
560/60 22.5 A380 Alliance	4	6710	1245x554	1.35
560/60 R 22.5 Nokian country	4	6300	1244x560	1.35
560/60 R 22.5 Michelin cargo	4	6290	1250x560	1.36
580/65 R 22.5 Nokian Country	4	7250	1300x580	1.41
600/55 26.5 16PL	4	6390	1348x626	1.46
600/55 R26.5 Michelin Cargo	4	6390	1348x626	1.46
620/60 R26.5 Nokian Country	4	7900	1400x620	1.52
600/55 R26.5 A380 Alliance	4	7450	1350x620	1.46
650/55 R26.5 A380 Alliance	4	7900	1360x645	1.48

** not all vehicles are approved to 40 km / h, there are versions 40km / h or 32 km / h. For the type of vehicle, check the sticker on the left rear of the vehicle or the certificate of conformity.*

12- Lighting:

When replacing a bulb, be sure to respect the indicated power and the connection of the wire.



reference	function	colours
1	Number-plate lighting	white
2	Brake lights + stop	red
3	Indicators	orange
4	Reflector	red

Note: There is an option to automatically protect the lighting against dung spray. The lights remain in good condition and well visible to people behind the vehicle on public roads. The principle is: the protection is activated whenever the moving floor is engaged.

ENSURE THE ABSENCE OF THIRD PARTIES IN THE AREA OF PROTECTION ACTION.

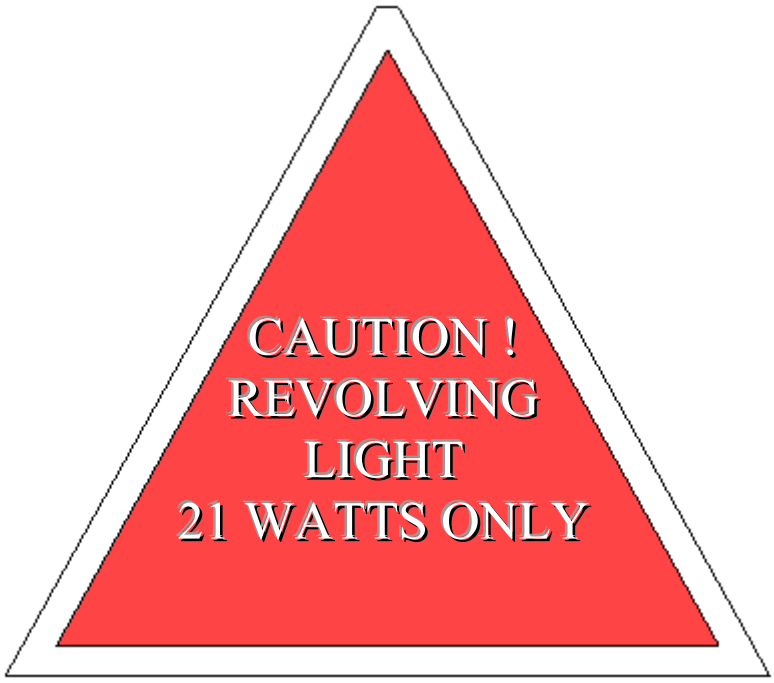
8 – Assembly

Installation of a Beacon :

The beacon can be powered via the sidelights, in some cases it can be powered via a 3-pin plug.

- If the power is supplied via the side lights, the maximum power of the beacon is 21 watts

(text in triangle: Caution! Revolving light 21 watts only)

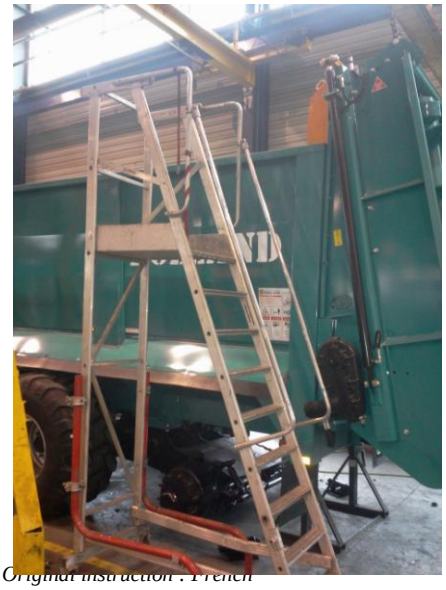


Equipment assembly :

These operations are the responsibility of the dealer, as he alone is trained and approved. Means of access to the machine must be in place to ensure there are no risks of falling, among others.

PROCEDURE

- After having smeared with grease, install the rear posts. The grease facilitates their mounting and demounting because adjustments are optimized to ensure the tightness of the assembly. Fix the sheet metal cladding to the posts mounted at the rear (side inner body).



Example of means of access for the installation of silage equipment

- Install the rear panels, the middle pillars then fix them with the bolts provided for this purpose.

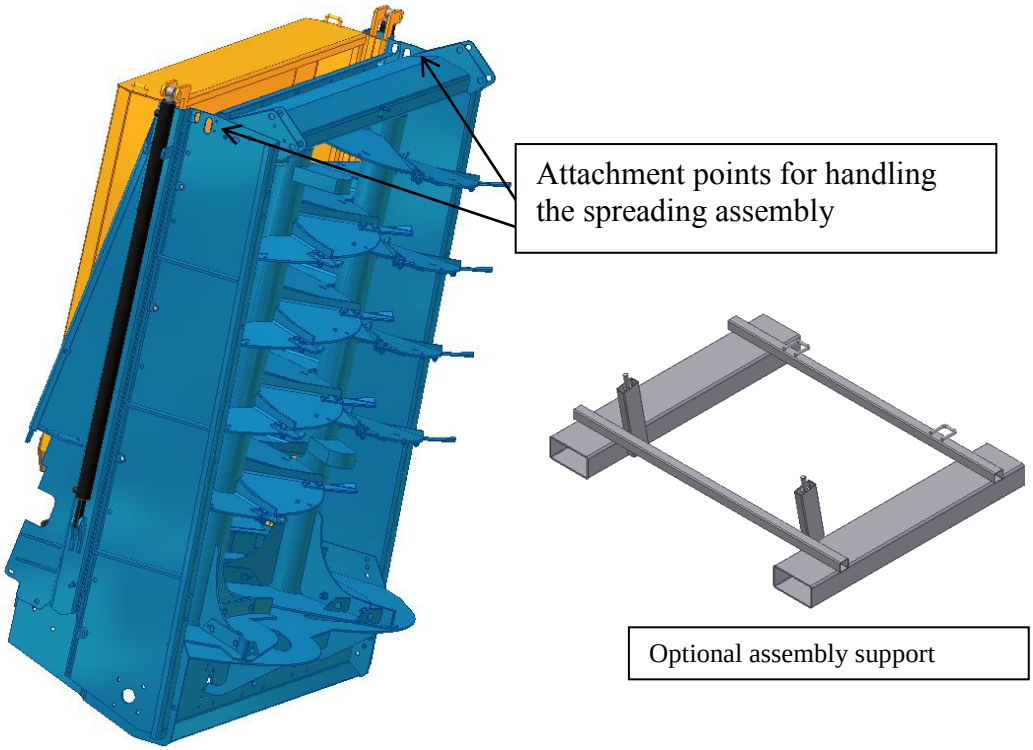
- Install the front risers followed by the front pillars and then fix them with the bolts provided for this purpose.

Procedure for mounting the silage doors (option Rollmax)

Before installing your silage door, you must remove the beater frame of your spreader. The operation must be performed by your ROLLAND dealer, the only ones authorised, trained and to have the tools.

Procedure for removal of the tool frame

- Disconnect the secondary drive shaft
- Using slings, hook the framework to an overhead crane (minimum capacity 2.5 tons for the slings and the crane). The attachment points are specified in the following diagram. The weight of each subassembly is specified by stickers.



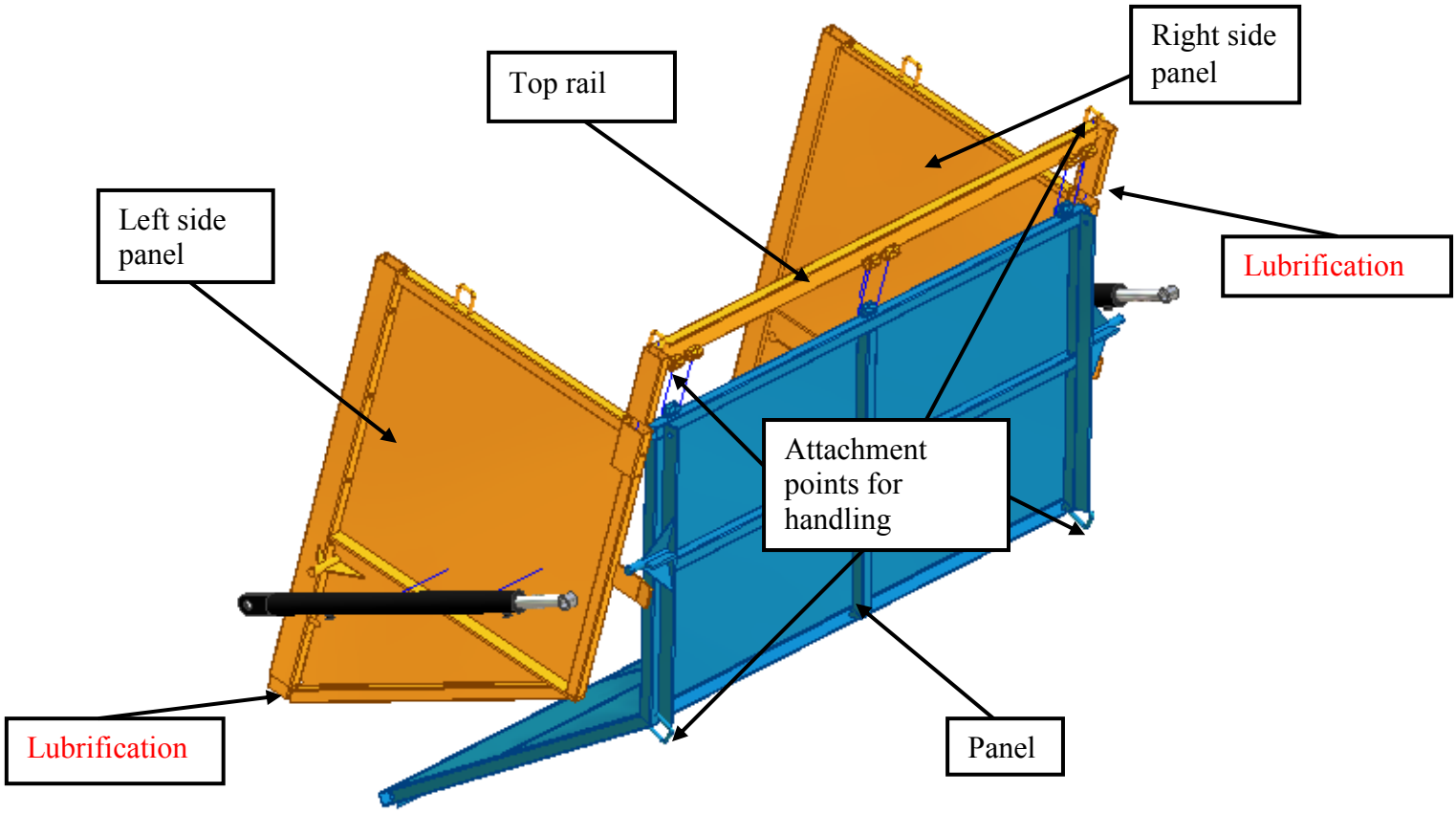
- Loosen and remove the fixing bolts of the body.
- Remove the frame using the crane and place it on its support. Fix it to the support, using the nuts and strap(s) provided. After checking the tightness and stability, the slings can be removed.
- In the absence of a frame support, place the frame flat on the floor on the hatch side.

Silage panels :

- After having smeared with grease, install the rear posts. The grease facilitates their mounting and demounting because adjustments are optimized to ensure the tightness of the assembly. Fix to the body of the spreader using the bolts provided.
- Then install the panel (weight approximately 80 kg) using a hoist or a loader. Lock in place with the pins provided.

Silage Door « LOULOU »

- After having smeared with grease, install the side panels. The grease facilitates their mounting and demounting because adjustments are optimized to ensure the tightness of the assembly. Fix to the body of the spreader using the bolts provided.
- On the ground assemble the panel with the top rail by means of the axes provided. Be careful to put in place the pins to lock the assembly.
- By means of a crane, a hoist or a loader put the assembly in place, panel + traverses. Then fasten the side panels using the bolts provided.
- Complete by installing the cylinders with the drum on the body side.



For all operations carried out at heights, a means of access, type scaffolding, must be available, respecting the standards for this type of equipment and respecting the standards for this type of product (railings, etc ...).

The cylinders for opening the silage door "LOULOU" are fitted with dual control valves. Beware of any residual pressure present between the valve and cylinder.

9 – Annexes

ANNEX 1

INSTRUCTION FOR USE OF THE HYDRAULIC DRAWBAR SUSPENSION

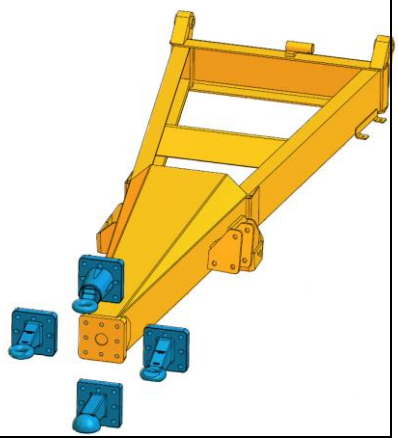
1- PRESENTATION OF THE SYSTEM

All drawbars with a damping system rather than a mechanical leaf spring but consisting of elements using hydraulic technology are called drawbar with hydraulic suspension.

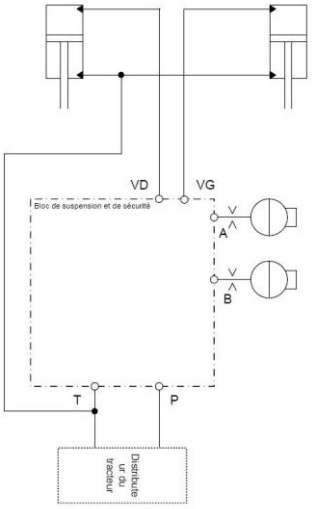
The system is governed by the tractor. The operator can correct at any time the height of the drawbar.

2- OPERATING PRINCIPLE

The system is mainly composed of the following elements :

Component	Quantity	Illustration
Suspension cylinder	2	
A drawbar suspension unit equipped with 2 diaphragm accumulators	1	
Drawbar	1	

The various elements are assembled according to the following plan :



3- RECOMMENDATIONS FOR SETTINGS AND USE

- The drawbar should be adjusted so that the chassis of the trailer is horizontal.
- However, some cylinder movement must be possible to absorb dynamic impacts (≈ 3cm)

2 modes of operation are possible :

- The operator predefines once and for all its coupling height. In this case he may leave the supply hoses unconnected on the tractor. It should be noted that the drawbar works in closed circuit; that is to say that when loading the spreader, the spreader will sink down, when you start tipping, the cylinders will again be deployed and no correction will be possible.

→This method is strongly discouraged despite a possible saving of a distributor on the tractor.

- Or the user leaves the hoses permanently connected to the tractor. This will allow an instant correction of the height of the drawbar to compensate for the movement of the cylinders due to the load variation in the vehicle.

→Such use is the "normal" use of the system.
→By working this way we obtain the maximum suspension flexibility.

N.B : 2 adjustments are possible at the upper catch of the cylinder. The method for changing the catch is identical to that of the sprung drawbar (see page 28)

ANNEX 2

INSTRUCTIONS FOR THE PASSIVE SUSPENSION OF AN Axle (closed circuit)

1- PRESENTATION OF THE SYSTEM

All axles are equipped with an independent damping system that are said to be with passive or closed circuit suspension.

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The circuit is completely independent of the tractor. The suspension is set once and for all (even though it is changed occasionally). The adjustment is made so that an optimal displacement is supported. The cylinder movement being 200 mm, the optimal displacement is ± 100 mm.

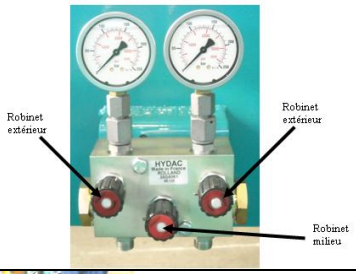
The user cannot correct the height of his vehicle on the move.

2- OPERATING PRINCIPLE

The system is composed mainly of the following components:

- 4 suspension cylinders for a vehicle with 2 axles (6 for a 3-axled vehicle)
- 1 hydraulic suspension control block
- 2 piston accumulators

The system is composed mainly of the following components:

Component	Quantity	Illustration
Suspension cylinder	4 cylinders for a vehicle with 2 axles (6 for a 3-axled vehicle)	
Passive suspension block	1	
Accumulators	2	

2 comments :

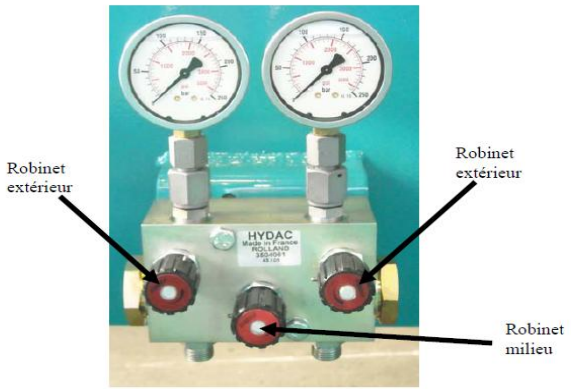
⇨ A system for counter roll of the vehicle is provided in the assembly. Oil will never "take the easy route". The load will constantly be equal over the four wheels, which allows us also to "dispense" with tipping stabiliser.
⇨ The pressure relief valve is intended for smoothing out any abnormal pressure peaks (violent dynamic shocks).

3- RECOMMENDATIONS FOR SETUP AND USE

a. To increase the height of the suspension (raising the body) :

To add oil to the suspension system (if, for example, the height is considered insufficient), proceed as follows:

- Bloc de suspension passive :



- Connect the hose identified by a marking (long green) to the tractor.
- Open the two outer taps of the block (see photo). The middle tap must be closed.
- Supply the oil circuit via the hose connected to the tractor until the required height is achieved.
- Close the two outer taps again and open the middle tap.
- Release the residual pressure present in the hose by positioning the tractor distributor on "float"
- Disconnect the hose (long green) from the tractor.
- Only the return drain hose (short green) remains connected.

WARNING Note that the height of the skip will vary depending on the load present inside.

b.To decrease the height of the suspension (lower the body) :

To remove the oil from the suspension system (for example, if the height is considered too high), proceed as follows:

- Connect the hose identified by a marking (long green) to the tractor.
- Open the two outer taps of the block (see photo). The middle tap must be closed
- Set the relevant distributor of the tractor on position "float" until the required height is achieved.
- Close the two outer taps again and open the middle tap.
- Release the residual pressure present in the hose by positioning the tractor distributor on "float".
- Disconnect the hose (long green) from the tractor.
- Only the return drain hose (green short) remains connected.

RECOMMENDATIONS FOR USE :

The hose used to adjust the height of the skip should be connected only in case of need to work on the suspension. In normal operation, this hose should be stored on the hose holder.
In contrast, the hose "drain" (oil reflux by high over pressures) must be permanently connected to the tractor.

ANNEX 3

INSTRUCTIONS FOR THE HYDROPNEUMATIC SUSPENSION OF AN AXLE (open circuit)

- **PRESENTATION OF THE SYSTEM :**

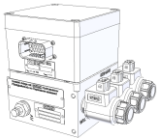
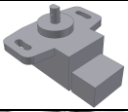
All undercarriages equipped with a damping system with instant automatic level correction are said to have hydropneumatic suspension.

The system is permanently coupled to the tractor. The ideal is to provide a single acting valve (LS if possible) and a free return to the source. Pressure can also be taken at the pump outlet without using a distributor since a continuous pumping is required.

The vehicle corrects its height instantly, which is to say that when loading the vehicle, the hydraulic system will demand the tractor to re-adjust the height of the skip and vice versa, during unloading, the system will return oil to the tractor..

- **PRESENTATION OF THE SYSTEM :**

2-1 : The system is composed mainly of the following components :

Component	Quantity	Illustration
Suspension cylinders	4 cylinders for a vehicle with 2 axles (6 for a 3-axled vehicle)	
Diaphragm accumulators	4 cylinders for a vehicle with 2 axles (6 for a 3-axled vehicle)	
Hydraulic suspension control block	1	
Pressure compensator	1	
Vehicle level detectors	2	
Cab-located control box	1	

2-2 Functions of the buttons on the control box :

- Red button:

  Up → manual raising of the vehicle

  Down → manual lowering of the vehicle
- Green button :

  set to automatic mode or system initialisation (chapter 3-1)

2-3 Hydraulic connection diagram :

For confidentiality reasons, we will not disclose our hydraulic circuit diagram. In case of hydraulic concerns, please contact us..

Comment :

- A system for counter roll of the vehicle is provided in the assembly. Oil will never "take the easy route". The load will constantly be equal over the four wheels, which allows us also to "dispense" with a tipping stabiliser.

-The pressure relief valve is intended for smoothing out any abnormal pressure peaks (violent dynamic shocks).

3. **RECOMMENDATIONS FOR SETUP AND USE**

3-1 Initialisation of the system :

Like with any electronic control system, an initialisation is required so that the system is able to instantly know its position relative to its upper and lower limits.

The initialisation consists of the detection, validation and memorisation of the upper and lower limits.

- Initialisation procedure :

- A blinking 1-1 appears on the box (see decoding blinks p8-9)

Using the red button, fully raise the suspension manually. Do not release the button until the cylinders are completely deployed (200 mm travel)

- Wait 2 seconds in the upper position.
- Using the red button, fully lower the suspension manually. Do not release the button until the cylinders are completely retracted (the vehicle must be horizontal)
- Wait 2 seconds in the lower position.
- Return to the "auto" mode by tilting the green button.
- The vehicle will automatically find its position and the LED lights permanently on the box

Remarks :

-

The initialisation parameters are stored in the box. It is not necessary to restart the process at every power up of the system. Initialisation has already been done in the factory. An initialisation on-site may be required only in case of an intervention on any of the system components.

-

If the vehicle does not automatically find its position and blinking 1-1 on the box indicator continues, it means there is a problem at one of two sensors at the rear (bad adjustment range) → contact us.

3-2 : Decoding the blinking of the box indicator :

When the control box light flashes, the operation is not in a "normal" state.

- Either the system is in its initialisation phase (blinking 1-1)
- Or the system has detected an anomaly. The system therefore closes down. No action is possible (automatic or manual mode).

The system is able to detect the following defects :

- Failure or breakage of the wire link of the position sensors (electrical connection)

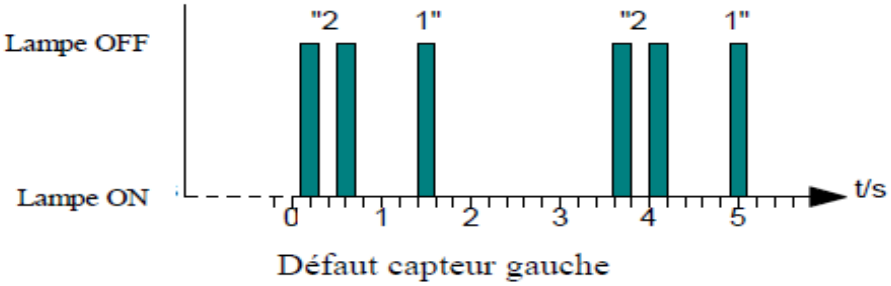
- Overload or breakage of the wire connection of the solenoids (electrical connection)

If one of these fault situations occurs, the lamp flashes and the solenoid control switches off for safety reasons. Similarly, in manual mode, no function can be executed.

The user must validate the fault by switching off the power to the electronics module for 3 seconds and then putting it back on.

<u>Flashing signals & fault codes provided by the box indicator</u> :

Example for fault code "2-1"
:



Defect left sensor

Decoding table of the signals emitted by the box indicator:

Indicator signal	Components to be checked	Possible cause of the defect
Permanent signal		Automatic mode, no defects
‘’1-1’’		Initialisation mode, no defects
‘’2-1’’	Left position sensor	Wire link broken or not connected. Output signal of the position sensor out of range, check the mechanical adjustment
‘’2-2’’	Right position sensor	Wire link broken or not connected. Output signal of the position sensor out of range, check the mechanical adjustment
‘’3-1’’	Solenoids - **WSL** (**WS1)** - **WSR** (**WS2)**	Wire link broken or not connected. Possible overload Check the connection LGND
‘’3-2’’	Solenoid **WK**	Wire link broken or not connected. Possible overload Check the connection LGND

REMARKS :
Several options can be grafted onto this system.

4-1 : Option lift axle :

An option "lift axle" is available on this type of suspension. This option relieves the front axle or lifts the front wheels completely.

This function replaces fully the weight transfer (or tipping stabiliser)

.

: If vehicle is equipped with a steering axle (or forced follower), it is strictly forbidden to raise the front axle at a medium or high forward speed (on the highway). The function should be used only when tipping or by lack of grip traction on the ground, for example, as in the case of the spreader.

4-2 : Load weight option :

A load weight option is available for this type of suspension.

A battery of three pressure sensors measures the hydraulic pressure at different locations within the system. This pressure information is transcribed to a box in the cabin which gives us information on the load in the vehicle.

A patent for this system has been applied for by Ets Remorques ROLLAND

10 – Maintenance log

Operations to be performed at the start (the DEALER)

Date	Operation	Remark	Initial
	-Check the wheel nuts	**After 50 km, then 2 times per year or at the beginning of each campaign.**	
	- Check inflation pressures	**2 times per year or at the beginning of each campaign.**	
	- Check tightness of the axles or the rocker pin	**2 times per year or at the beginning of each campaign.**	
	- Lubrication of the points indicated in the instructions	**Verify before each use**	
	- Check the correct tension of the service brakes, the emergency and parking brakes.	**Adjust the play as necessary**	

Maintenance log

Date	Operation	Remark

11- EC declaration of conformity for machinery

(According to Annex IIA of the Machinery Directive 2006/42/EC)

Manufacturer : Ets ROLLAND
Address : Z.A des Landes 29800 TREFLEVENEZ

Name and address of the person authorised to compile the technical file:

Name : Béatrice LE GALL
Address : Z.A des Landes 29800 TREFLEVENEZ

Hereby, we declare that

The machine :

- Make : ROLLAND
- Commercial designation:
- Type :
- Serial no. :

↳ complies with the relevant provisions of the Machinery Directive (2006/42/EC).

Furthermore, we declare that

↳ the following (parts / sections of) harmonised European standards were used..

-EN ISO 12100-1 & 12100-2

TREFLEVENEZ,
Name and position of the signee
Béatrice LE GALL
CEO

REMORQUES ROLLAND

12- *CERTIFICATE OF WARRANTY - DECLARATION OF COMMISSIONING*

A copy to be stored in this manual

OPERATOR

Name : …….
Address : ……
Postcode : ……City: ……..Country……..
Telephone : …… Mobile tel. ……
Fax : …… Email : ……

VEHICLE

Vehicle type : ……
Serial N° (on the invoice or the conformity plate) : ……
Date of purchase : ……
Date of delivery : ……

WARRANTY CONDITIONS

Our vehicles are guaranteed for 1 year from the date of delivery. Conditions of use are specified in the booklet of commissioning supplied with the vehicle. In all cases the user must observe the rules of use prescribed, otherwise the warranty will not be accepted. Travel and transport are not covered by the warranty. Only fully paid vehicles will benefit from the warranty. In case of problems the user must first contact the dealership.

☐ **I certify having read the commissioning and maintenance manual and undertake to comply with the instructions contained therein, to qualify for the 1 year warranty**

Name and signature of the commissioner : **Signature of the operator :**

Your opinion is of utmost importance

Help us evovle by replying frankly to our question : (*check according to your choice)

	Good	Average	Bad
Delivery respected			
Delivery quality			
First impressions of machine			
Satisfaction of first use			

Your decision to buy : (* please number from 1 to 3)

	Quality / Price
	Design of product
	Dealer relations
	Delivery
	Reputation of brand
	Quality of brand
	Reliability of brand

Your comments : ……
……
……