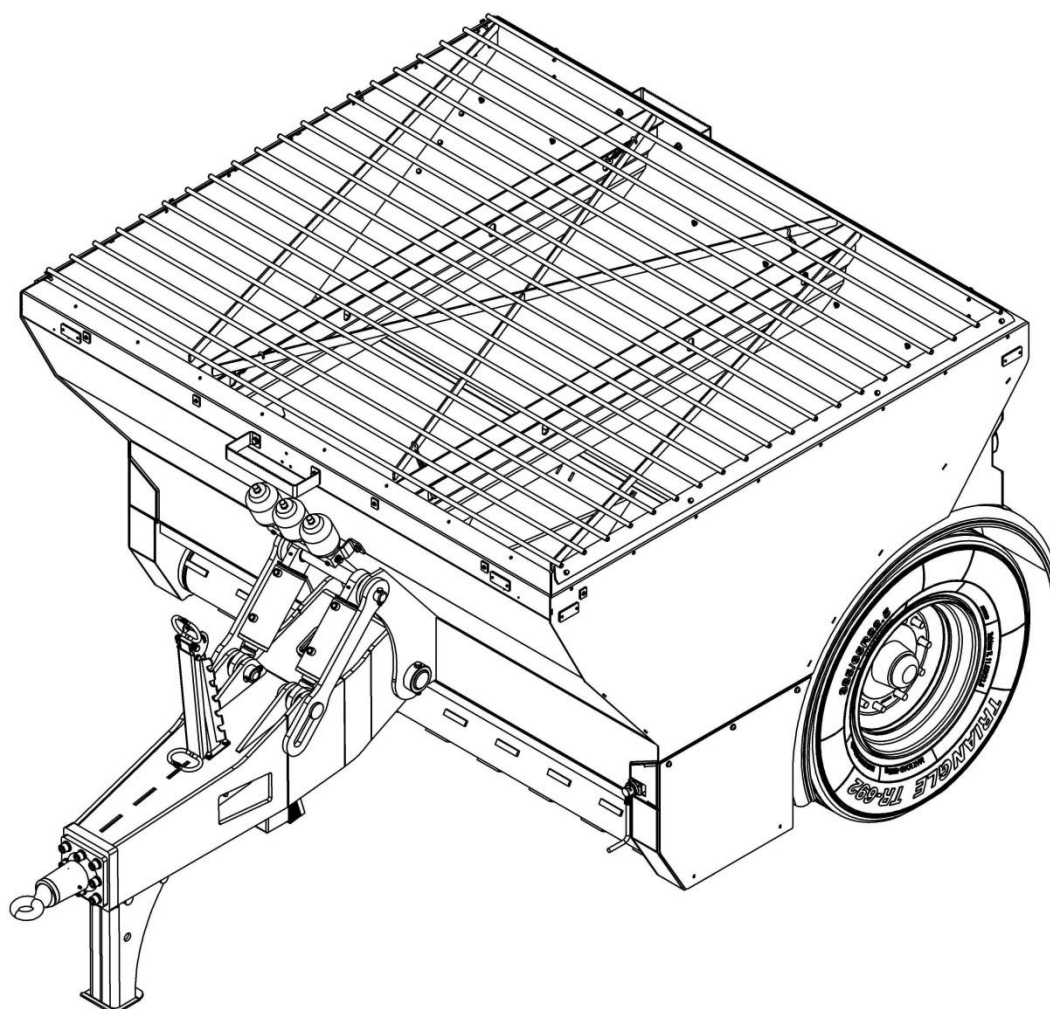


## SAND SPREADER ON WHEELS

SP 4000/6000/8000/9000



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# 1 INTRODUCTION

## 1.1 Main data

These operating instructions provide the user with rules for the operation, safe operation and maintenance of the sand spreader.

If you do not understand the information in the operating instructions, contact the dealer who sold the spreader or the manufacturer directly.

Particularly important information and instructions that must be followed are in bold type and with the word “WARNING”.

Information, hazards and safety precautions and safe work instructions are marked with the following symbol in the instruction manual:



and described in the section “Safe work instructions”.

The clock symbol indicates periodic maintenance.



## 1.2 Intended use

SP 4000 sand spreader is used for spreading salt, sand and granite chips (up to 20 mm) on roads, paths and sidewalks. **The spreader may not be used for purposes other than those specified by the manufacturer.** Proper operation is the proper preparation, maintenance and repair of the unit. It is important that you contact the manufacturer's authorized workshop if it fails.

# 2 SAFETY INSTRUCTIONS

## 2.1 General terms

These operating instructions list important instructions that must be observed during installation, operation and maintenance of the appliance, so personnel must read these operating

instructions before connecting and operating the appliance. Keep instructions within reach of employees.

In addition to the general safety instructions described in this basic section, “Safety instructions”, the following special safety instructions must also be observed.

Compliance with applicable directives, safety regulations and road traffic regulations ensure the protection of the sandblasting user and other road users from the associated hazards. In addition, following the instructions in the operating manual guarantees optimal use of the spreader and protection against damage.

## ***2.2 Qualification and training of staff***

The use, commissioning and repair of the sand spreader must only be carried out by persons who are well-versed and have been fully aware of the potential hazards. The responsible person for repair is nominated and monitored by the operator. If workers are not aware of the most important operating rules, they must receive training and instruction. The operator must check that the contents of the instructions for use are truly understood by the staff.

Repairs not described in these operating instructions may be performed only by authorized specialist personnel.

## ***2.3 Potential dangers if safety instructions are not followed***

Failure to follow the safety instructions can result in damage to persons, the environment and the machine. Failure to follow the safety instructions may void the right to seek repair.

In some cases, failure to follow the indications may result in the following consequences:

- Danger to persons working in unprotected workplaces;
- Malfunction of the machine;
- Ineffectiveness of the methods described in the commissioning and repair work;
- Injury to persons through mechanical and chemical effects;
- Environmental damage due to hydraulic oil leakage.

## ***2.4 Principles of safe operation of sand spreader***

The safety instructions described in these operating instructions, applicable national or local accident prevention regulations, as well as the user's workplace, operating and safety regulations must be observed.

Occupational safety and health regulations must be observed.

The machine manufacturer's safety instructions must be observed.

When working and moving on public roads, the national road traffic regulations (in Germany, StVZO (Straßenverkehrszulassungsordnung) and StVO (Straßenverkehrsordnung)) and the machine manufacturer's instructions must be observed.

**Manufacturer's instructions:**

- The sand spreader must not be used by people who do not drive the tractor.
- Failure to follow the manufacturer's operating instructions may result in risk to health and life for the operator and others.
- Anyone who uses the spreader improperly bears full responsibility for the results.
- Any modification of the sandblasting wheel design that does not meet the manufacturer's requirements will release the manufacturer from liability for damage.
- **Do not exceed the capacity of the sand spreader on the wheels.** Overloading the spreader can result in breakage of the implement, loss of steering stability and loss of performance of the braking system.
- Consumer clothing must be well-fitting and tight-fitting. Avoid loose clothing.
- Always check the spreader's condition before using it. Pay particular attention to the suspension, axle, brake system, warning lights and spreading mechanism. The hydraulic hoses must also be checked for damage, as they will quickly deteriorate when bent or pressed.
- Be extremely careful when coupling the spreader to the tractor.
- When the spreader is hitched, there must be nothing between the spreader and the tractor.
- Before attaching or removing hoses, position or secure fasteners correctly.
- Observe the permissible axle loads, total weight and transport dimensions. Inspect and secure transport devices such as lighting, warning devices and protective devices, if any.
- If the lights on the truss structures are obscured or obscured in the current position, additional lamps must be fitted.
- Make sure that the braking system, lighting and warning system comply with the traffic regulations.
- Inspect the immediate area (children) before starting and operating.
- Make sure there is sufficient visibility.
- Comply with road traffic regulations.
- Before filling the container, make sure that the spreading material is free from rocks, tools and other large objects that might damage the spreading mechanism.
- It is forbidden to take passengers while working or driving a machine.
- It is forbidden to insert or lean on the spreader container when the engine is running.

- Make sure that the spreader is not disconnected during operation.
- Do not change the steering position while driving.
- Driving speeds in a particular country where a sand spreader is used to select according to the road traffic laws of that country. **The spreader speed must not be higher than maximum design speed 40 km / h.**
- Avoid sharp turns on slopes when driving in hilly areas.
- Take into account the effects on movement, steering and braking.
- Only operate the sand spreader after making sure that all safety devices and devices are working.
- It is forbidden to stay in the work area.
- The sand spreader can only be parked when it is stationary and the tractor engine is switched off. The tractor and the sand spreader on the wheels must be fitted with a handbrake applied.
- The operator of the sand spreader cannot leave the tractor without switching off the machine.
- Lower the parking foot before leaving the spreader. Apply the handbrake of the spreader. Release the tiller. Disconnect hydraulic and electrical connections. Disconnect the drawbar locking device.
- If the sand spreader is parked on a slope, additional protection against movement must be provided by swivelling the supports under the wheels.
  - The sand spreader must not be pushed under the wheels by sharp or brittle elements (bricks or cement blocks)
- When working with tires, additional protection against movement must be provided by rotating the supports under the wheels.
- Tires should be repaired or replaced by suitably qualified personnel.
- Check that the tire pressure is correct. Because of the large temperature differences in winter, it is recommended that the air pressure be checked more frequently.
- Hydraulic unit pressure must be zero.
- Under high pressure, fluid escaping (hydraulic oil) can penetrate the skin and cause severe tissue damage. Get immediate medical advice/attention. Risk of infection!
- Attach or disconnect hydraulic hoses only at zero pressure on the hydraulic machine.
- Hydraulic hoses must be replaced after a maximum of 6 years of operation (including storage for up to 2 years).

- Regularly inspect hydraulic hose lines for damage or obsolete lines. Hose lines used to replace worn-out hoses must comply with the manufacturer's requirements.
- Spilled liquids are hazardous to the environment and must be collected and disposed of promptly.
- When searching for or collecting leaking liquids, protective equipment must be worn to prevent injury.

Before use the sand spreader, a visual inspection must be carried out as follows:

1. Status of threaded joints (fasteners) of the main structural components of the spreader.
2. Suitability of attachment of the spreader to the tractor:
  - Only use original pins and other fasteners to connect the spreader to the tractor.
  - It is forbidden to install parts or structural components in the spreader unit without the consent of the manufacturer.
  - Do not connect the sand spreader to a tractor with a lower lifting capacity. This can cause damage to the spreader and the tractor.
  - Do not carry out any cleaning, adjustment or maintenance work on the spreader without the tractor engine switched off.
  - Immediately replace damaged hydraulic hoses and pipes with original parts.
  - Do not use the spreader for not its intended purpose.
  - It is forbidden to operate the spreader on unauthorized persons or persons who are intoxicated with drugs, alcohol or other intoxicants.
  - All maintenance and repair work must be carried out in accordance with the safety regulations.

### ***2.5 Instructions for safe transportation***

When driving on public roads, you must obey the traffic regulations.

Do not leave the tractor downhill with the attached spreader. If it is necessary to park the tractor in such a position, push the tiller on the ground and apply the parking brake on the tractor and the spreader.

The sand spreader must be equipped with a slow-motion triangular reflector, pos. 1

The yellow warning work light at position 4 must be turn on during spreading.

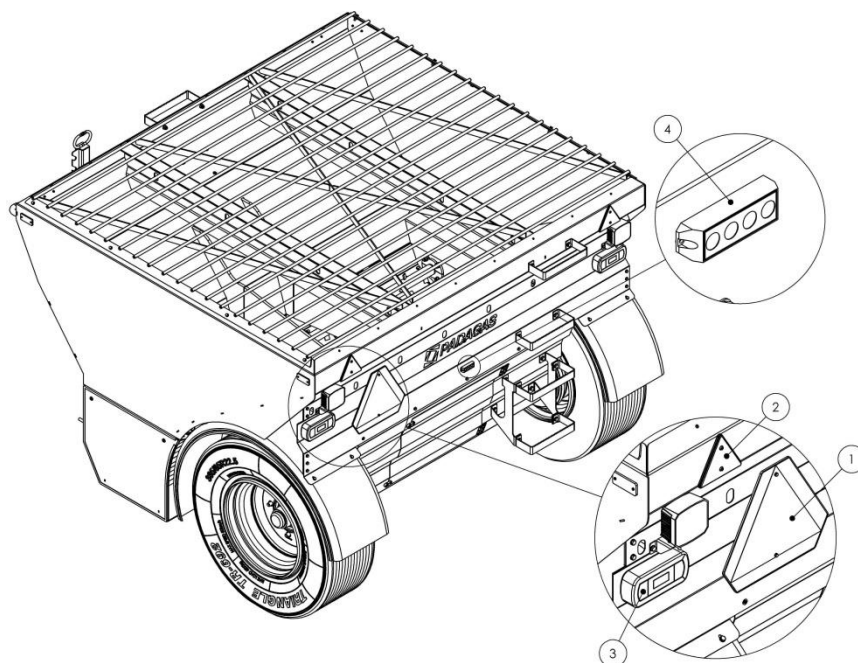



Figure 1. Warning signals and warning laights

1 poz. Slow-motion triangle reflector. 2 poz. Small triangular reflector. 3 poz. Signal light.  
4 poz. Yellow warning work light.

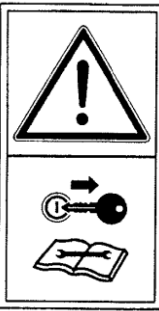




## 2.6 Directions and warnings and symbols on the sand spreader

The description and meaning of the instructions and symbols on the sand spreader are given in table no. 1.

**Table No. 1.** Directions and warnings and symbols on the sand spreader

No.	Symbol (sign) or contents of note	Meaning of symbol (sign)
1	SP-4000;6000;8000;9000	Sand spreader type.
3		ATTENTION ^ The operator must read the operating manual before operating, adjusting or maintaining the spreader.



4		<p>ATTENTION ^ Before approaching the spreader, switch off the tractor engine and remove the ignition key from the ignition switch.</p> <p>Remember to switch off the tractor engine before lubricating, adjusting, performing maintenance or repair work. Remove the ignition key from the ignition lock to make sure that no one starts the tractor before you have finished your work.</p>
5		<p>ATTENTION ^ Risk of crushing when coupled to the tractor</p> <p>Do not stand between the spreader and the tractor when coupled. Accidentally, you may be crushed and serious injury may result.</p>
6		<p>ATTENTION ^ Rotating chain / strap</p> <p>Never allow anyone to touch the chain / strap cover when the tractor engine is running and / or the spreader is in use. The chain / strap can severely injure any part of the body by touching it.</p>
7		<p>ATTENTION ^ Rotating shafts</p> <p>Never allow anyone to change the shaft (s) or open the cover when the tractor engine is running and / or the implement is in use. Rotating parts can cause serious injury to any part of the body.</p>
8		<p>ATTENTION ^ Do not put hand or other body parts in a container</p> <p>Never allow anyone to insert any body parts into the container / box while the tractor engine is running and / or the spreader is in use. Rotating shafts can cause serious injury to any part of the body.</p>

## 2.7 What requirements does a tractor have to follow?

If the tractor cab is not enclosed and silenced, the driver must wear special noise-cancelling headphones. For full control of the tractor in all weather and road conditions it is necessary that at least 20% of the tractor's total mass is concentrated on the front axle.

The individual specifications of each tractor vary, often significantly. Sometimes you may even need to adjust the weight distribution at the front by adding extra weights.

The tractor must have a double acting hydraulic socket.

## 2.8 Attaching a sand spreader to the tractor

Before attaching the spreader to the tractor, make sure that the parking brake is applied to the sand spreader. **The spreader may only be attached to a tractor with a permissible vertical load of more than 3000 kg.**

Procedure for attaching the sand spreader to the tractor:

1. Check that the parking brake is applied to the spreader.

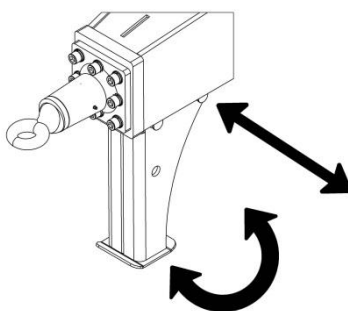


Figure 2. Support leg.

2. When attaching the sanding spreader's towing eye to the towing device of the tractor, make sure that the coupling is secure.
3. Connect the hydraulic, brake and electrical connections to the tractor
4. Raise the support leg, see figure 2.

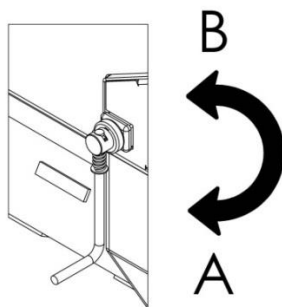


Figure 3. Parking brake.

A - Apply the parking brake, B - Release the parking brake.

5. Release the parking brake, see figure 3.

**ATTENTION!**



When attaching a sand spreader, there is nothing between it and the tractor. The driver of the tractor must be extremely careful and make sure that there is no danger in the area.

When connecting the hydraulic hoses to the tractor, make sure that no oil pressure is exerted on the system.

When connecting the power cables and hydraulics, make sure that they do not get caught in the tractor's moving parts or interrupted by the tractor when turning.

The sand spreader must not be operated until the support leg has been raised and the parking brake has been released.

## 2.9 Device adjustment, setting

There are several ways to set the required spread rate:

1. The amount of spreading material is controlled by the hydraulic flow regulator located on the drawbar.
2. Flow controller pressed by hydraulic cylinder. Make sure the distribution is adjusted uniformly, otherwise the material spreading behind the machine will not fall evenly. **Flow controller can't be over pressed, because it can damage the rubber.**

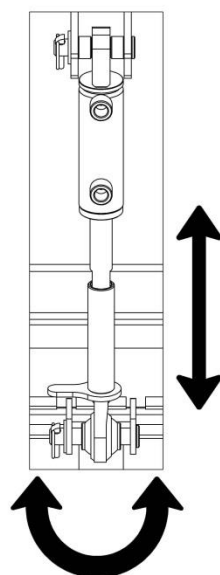


Figure 4. Flow controller hydraulic cylinder regulation.

3. Automatic adjustment - the shaft speed depends on the driving speed of the tractor.
4. Manual adjustment - the shaft speed is set manually, regardless of the tractor's speed.

Note: The points mentioned here affect the spread rate.

### **2.10 Loading the device**

The sand spreader container can only be loaded when the spreader is hitched to the tractor and in a horizontal position. Always try to load the container evenly, which will help ensure the stability of the spreader.

#### **ATTENTION!**



Do not exceed the maximum capacity of the sand spreader during loading.  
Before loading the container, make sure that there are no stones, tools or other items.  
The spreading material in the container must be evenly distributed.  
The spreading material must be selected so as not to damage the surface of the spreading path.

Avoid bulk loading of spreading material during loading as this may damage the spreading mechanism. Loading of materials other than those recommended by the manufacturer is prohibited.

### **2.11 Maintenance**

The user must ensure that all repairs, checks and installation work are carried out by authorized specialist personnel who are familiar with the operating instructions of the machine.

All work can only be performed when the machine is switched off. It is essential to follow the machine shutdown procedure described in the machine manual.

If repairs are carried out on a raised appliance, it must be rigidly supported by suitable support elements.

Upon completion of work, immediately re-install and activate all safety and protective equipment.

After the machine has been repaired, the instructions listed in the operating instructions must be observed.

When servicing and repairing, observe the following guidelines:

- Switch off the tractor engine and remove the ignition key before carrying out maintenance and repair work.
- Wear appropriate clothing and tools during work.
- Repairs must be carried out by an authorized company during the warranty period.
- When replacing sand spreader parts, use only original spare parts or those specified by the manufacturer. Failure to do so may result in serious or fatal injury to persons working with the spreader or third parties and risk of damage to the spreader.

Before disconnecting the spreader from the hydraulic system, reduce the pressure in the hydraulic system to zero.



**If the spreader has not been used for more than 4 weeks, it must be carefully checked before using.**

The technical condition of the spreader should be checked:

- Before using the spreader.
- The frequency of the inspections.
- After a break in repair and operation.

The lifetime of the hydraulic hoses and pipes must not exceed 6 years.

The inspection shall include verification of:

- Fixing of all bolts; tighten if necessary.
- Tightness of hydraulic unit.
- Proper attachment of all protective devices.
- The condition of the slip parts and the functioning of the safety catches.
- Check, clean and grease the lubrication points.

First check the tightening of bolts and nuts after 10 hours of operation, then periodically (approximately every 500 hours of operation); tighten if necessary.

A = thread size

The resistance class is indicated on the screw head.

Table No. 2

		Strength class		
		8.8	10.9	12.9
Thread size	M5	6 Nm	8,5 Nm	10 Nm
	M6	10 Nm	15 Nm	18 Nm
	M7	17 Nm	24,5 Nm	28 Nm
	M8	25,5 Nm	35 Nm	42 Nm
	M10	50 Nm	71 Nm	85 Nm
	M12	87 Nm	123 Nm	147 Nm
	M14	135 Nm	194 Nm	235 Nm
	M16	211 Nm	299 Nm	358 Nm
	M18	289 Nm	412 Nm	490 Nm
	M20	412 Nm	576,5 Nm	669 Nm
	M22	559 Nm	784 Nm	941 Nm
	M24	711 Nm	1000 Nm	1196 Nm

All tightening torques are given for metric threads according to DIN 13.

Friction number 0.14 - for new non-greased bolts. The above values are

indicative values recommended by various bolt manufacturers. We do not assume responsibility for the use of these meanings.

### **3 SUPPLEMENTARY FIGURES**

#### ***3.1 Documentation shall be provided with the sand spreader***

The following documents shall be supplied with the sand spreader:

- Operating Instructions
- Axle Servicing Instruction.
- Warranty Certificate.

#### ***3.2 Warranty terms***

The manufacturer guarantees that the spreader will function properly if the spreader is operated in accordance with the technical requirements and conditions of this manual.

During the warranty period, defects found during operation will be rectified within 14 days or such other period as may be specified after the spreader has been handed over to the after-sales service.

The warranty does not cover sand spreader components and parts which, under normal conditions of use, wear out before the end of the warranty period, for example - for flow control rubbers. In addition, the warranty does not cover mechanical or other damage caused by improper use and adjustment or improper maintenance.

**ATTENTION!** The buyer of the sand spreader must ask the seller to prepare the warranty and claim documentation properly. If the documentation does not specify the date of purchase or the stamp of the service company, the manufacturer may refuse to accept claims from the owner of the sprayer.



#### ***3.3 Disposal of the sand spreader after decommissioning***

If the user has decided to discontinue the spreader, the spreader must be handed over to a waste disposal company designated by the authority. Remanufactured parts remaining after the spreader repair must also be handed over to the recycling facility.

## 4 INSTRUCTIONS FOR USE

### 4.1 Technical specification

Table No. 3

Model	SP-4000	SP-6000	SP-8000	SP-9000
Overall Width	2574 mm	2574 mm	2574 mm	2574 mm
Spreading width	2238 mm	2238 mm	2238 mm	2238 mm
Length	3783 mm	3783 mm	3783 mm	3783 mm
Height	1875 mm	2239 mm	2514 mm	2689 mm
Container capacity	4.4 m <sup>3</sup>	6.4 m <sup>3</sup>	8 m <sup>3</sup>	9 m <sup>3</sup>
Empty weight:	2200 kg	2350 kg	2440 kg	2480 kg
Maximum possible weight	13,000 kg	13,000 kg	13,000 kg	13,000 kg
Flow rate at max 160 bar. pressure	60 l/min	60 l/min	60 l/min	60 l/min
The size of the spreading material	0-20mm	0-20mm	0-20mm	0-20mm

Dimensions and weights are preliminary and subject to change. The manufacturer reserves the right to change the product design and construction without notice.












Trailed sand spreader for tractors.

## 5 OPERATING THE SAND SPREADER

The user must read the operating manual before operating the sand spreader. Follow the guidelines for proper use of the unit.

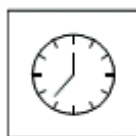
### 5.1 Axle care

Table No. 4, Service.

 GREASING   SERVICE	After the first 10 hours of operation with a fully loaded axle	After the first 200 hours of operation or after 300 km	After every 500 hours of operation or 8500 km	After every 1500 hours of operation or 25000 km	After every 3000 hours of operation or 50,000 km
<b>Oiling</b> Use special lubricants <b>ADR Lithogrease 3</b>					
A - Hub bearings					
B - Brake cam bearings					
C - Brake levers					
<b>SERVICE</b>					
1 - Check the tightening torque of the nuts					
2 - Check the brake pads					
3 - Check hub bearing nut, adjust if necessary					
4 - Check the stroke of the brake linkage and adjust if necessary					

For detailed axle care, see the axle manufacturer's manual.

### 5.2 Wheel nut tightening check

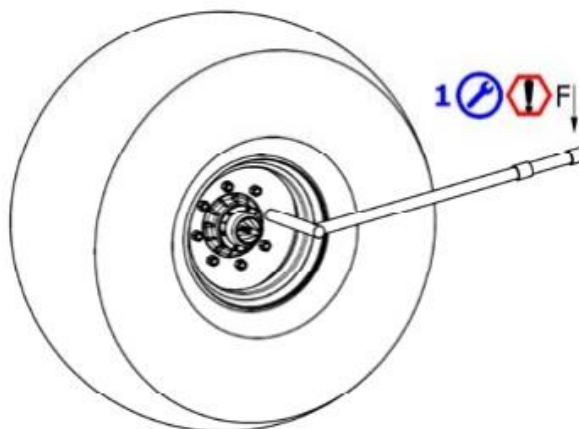


**To check the wheel nut tightening:**

- After driving the first 10 operating hours with full load.
- After changing wheels.
- Every 500 operating hours or every 8500 kilometres driven and up to one year after use.



Tighten the wheel nuts as shown in table no. 2 using a dynamometer key. If you do not have a torque wrench, use an extension wrench. Before the last column of the table the lever length corresponding to the tightening torque calculated by the force  $F = \text{about } 60 \text{ kg}$  is indicated.



### 5.3 Master brake adjustment and maintenance

Adjustment of the brakes is necessary when:

- When the brake pads wear out and the brakes lose their effectiveness.
- When the wheels begin to brake unevenly.

If the brakes are correctly adjusted, the sand spreader wheels brake evenly and efficiently.

Brake pads should be replaced if worn.



**The main brake system shall be checked after every 500 service hours or 8500 km and serviced as necessary.**

### 5.4 Parking brake adjustment and maintenance

The parking brake shall be adjusted when:

- The rope stretched.
- The rope breaks or the rope clamp is lost.
- After major brake repairs.
- After parking brake repair.

Make sure the main brakes are properly adjusted before adjusting the parking brake.

Parking brake adjustment:

- Place the sand spreader on a level surface.
- Place the supports under the wheels.
- Unscrew the parking brake lever completely and turn it anti-clockwise.
- Loosen the cable clamp
- Shorten the rope and tighten the rope clamp.

When the parking brake lever is fully released, the parking brake cable should have a maximum clearance of 10 - 20 mm.

### 5.5 Hydraulic system and its connection

When connecting the hydraulic hoses, ensure that the hoses are not bent and protected from damage. It is important that the tractor's hydraulic hoses are correctly connected to the spreader's hydraulic hoses. Otherwise, the shaft will rotate in the opposite direction and damage the unit.

### 5.6 Lubrication

The sanding spreader must be lubricated by hand grease. Remove any excess grease after lubrication.

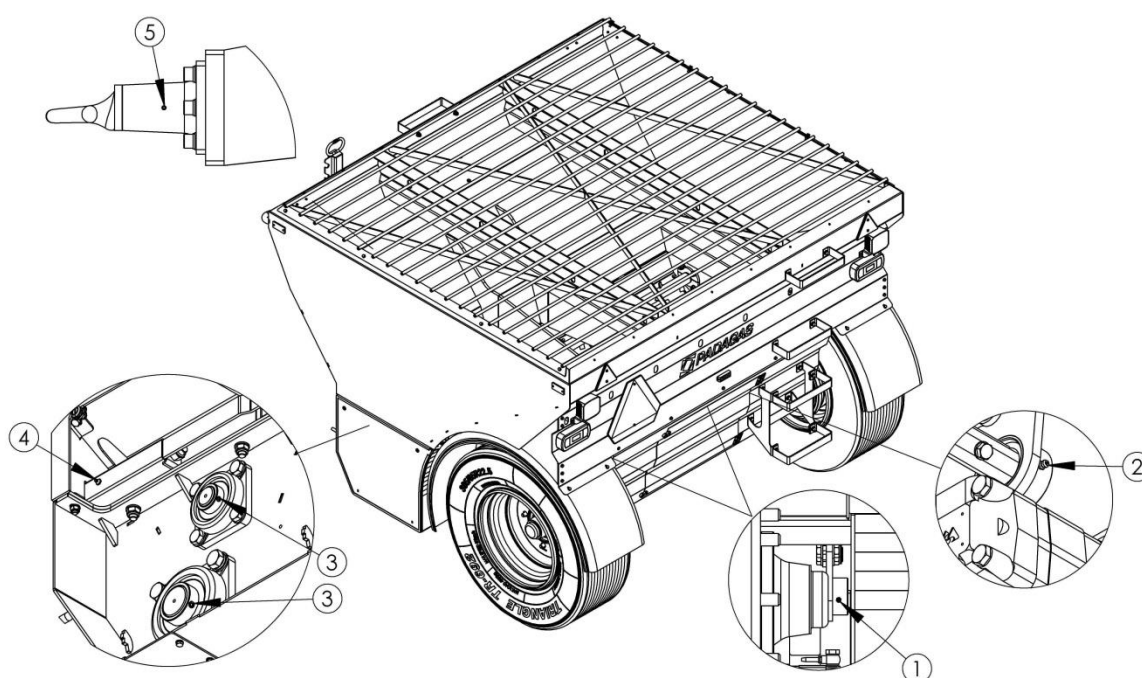


Figure. 5 Lubrication points.

### 5.7 Ordering of spare parts

When ordering spare parts, please specify the spreader type, serial number and year of manufacture. You can find this information on the plate.

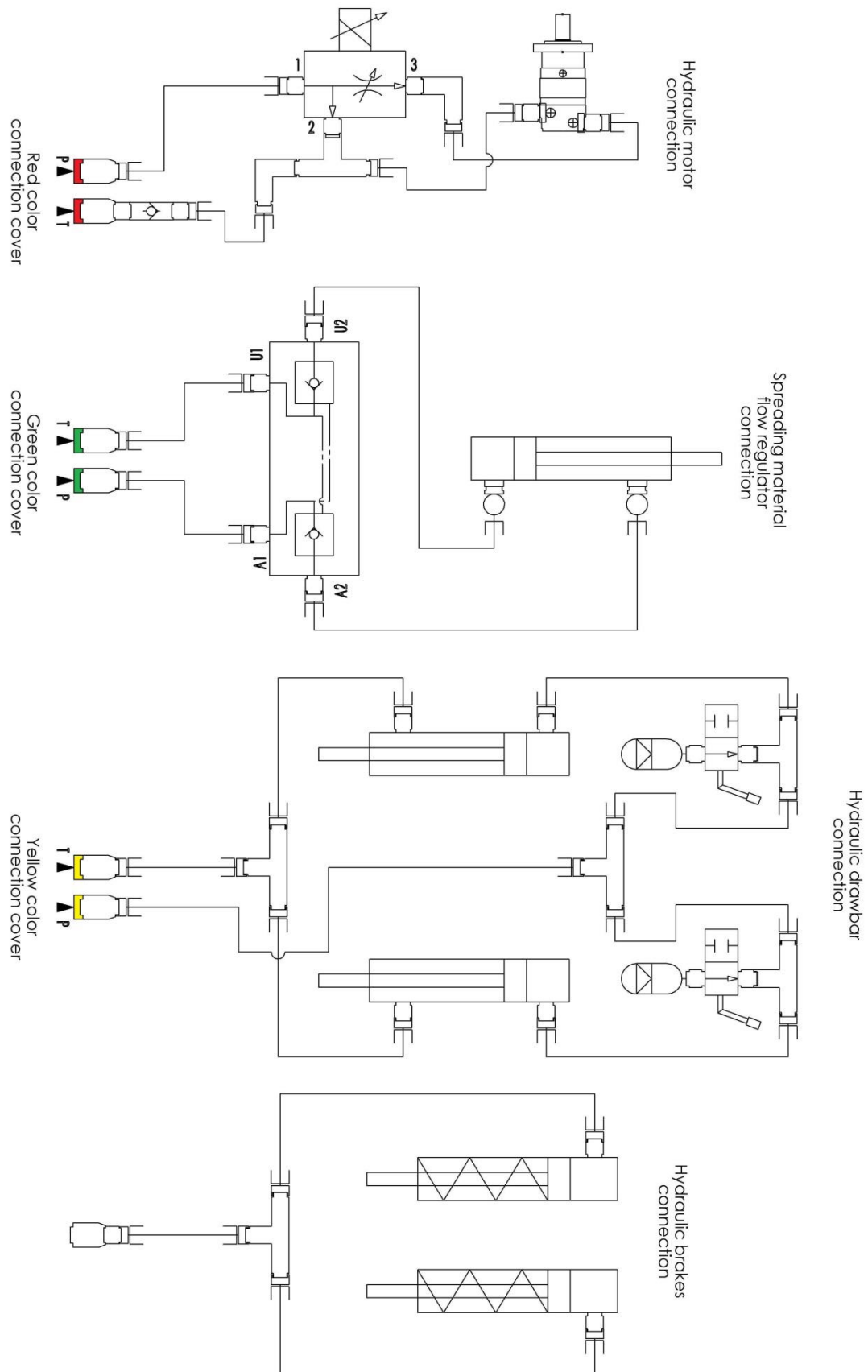
This description provides the instruction for operating ECOMAT vehicle system control panel and presents the peculiarities of the system control.

## 6 HYDRAULIC SYSTEM

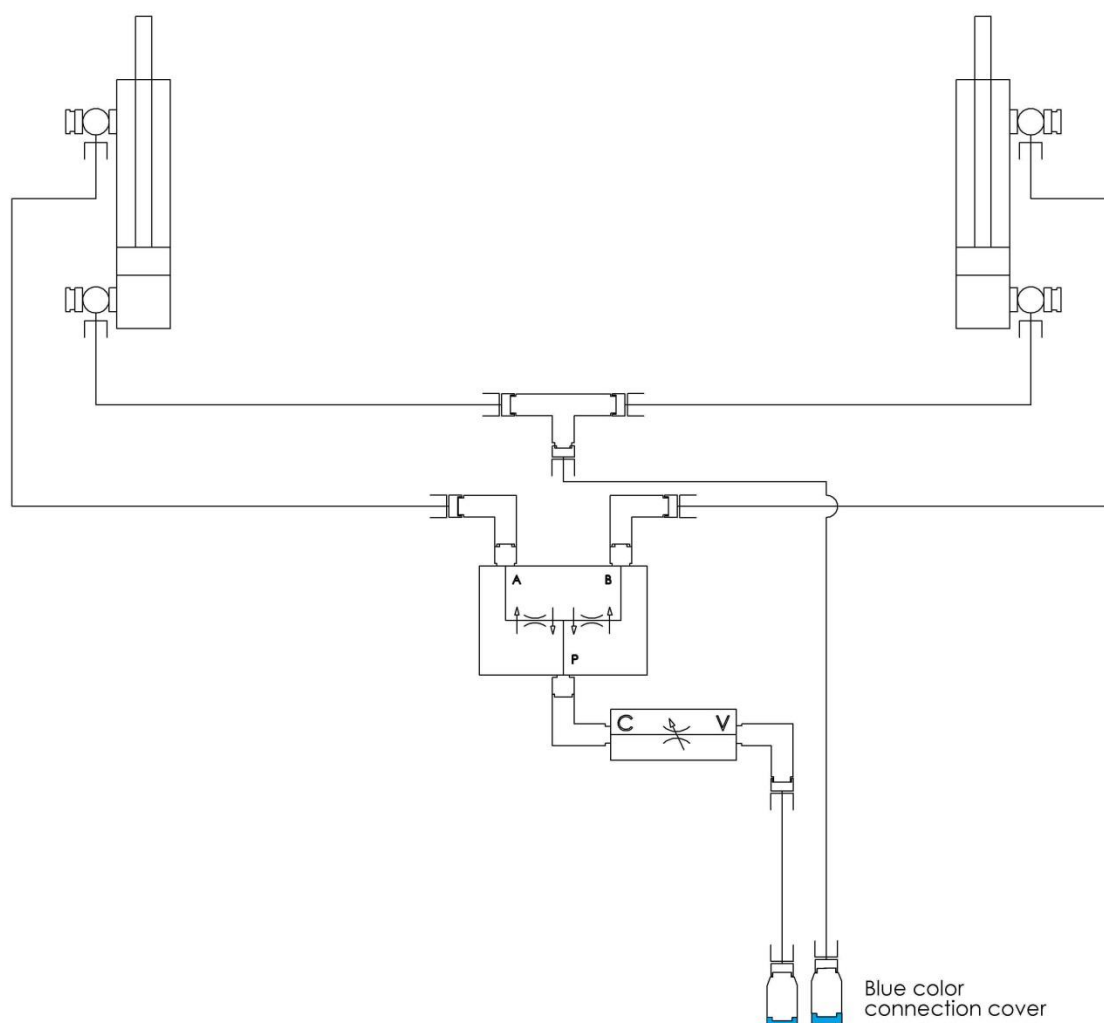
### 6.1 *Hydraulic drawbar*

The drawbar's hydraulic system is supplied by the tractor's external hydraulic system through the hydraulic conduits which are connected to the sockets of a single section of the tractor's hydraulic system by means of quick couplers. Raising or lowering the drawbar is carried out in order to level the spreader and is done by withdrawing or extending the hydraulic cylinders rods. The system includes two hydraulic accumulators which are pre-set for pressure of 50 bar. The purposes of the accumulators are to amortize vibrations transferred to the tractor.

## 6.2 Spreader hydraulic scheme



### 6.3 Spreader cover hydraulic scheme



## 7 AUTOMATIC SPREADER ECOMAT USER MANUAL

### 7.1 Control panel

Control panel is a system control tool for operating automatic spreader. The activity of spread flowgate and machine speed may be observed in the control panel. The system may be operated automatically or manually.

### 7.2 Parameters

If automatic mode is activated, spread flowgate will move proportionally to the speed of the vehicle. The faster the vehicle moves, the faster the flowgate spreads. If the machine stops, the flowgate will stop spreading. Operating coefficient of the flowgate may be changed.



Machine speed display shows the speed of a moving vehicle. If automatic mode is activated, the spread flowgate will be controlled according to the speed.

Current position of spread flowgate shows the position of the flowgate. Fully opened flowgate position is 100% (maximum sand/salt spreading), fully closed flowgate position is 0% (sand/salt is not spread).

Set position of spread flowgate shows desired flowgate opening position displayed on the right scale of control panel.

BUTTON	PURPOSE
1	AUTOMATIC mode On
2	MANUAL mode On
3	Switch the first lamp On/Off
4	Switch the second lamp On/Off
5	Increase coefficient/flowgate speed
6	Reduce coefficient/flowgate speed
7	Flowgate opening coefficient

Flowgate opening coefficient is intended for flowgate control. Standard coefficient is 1.00. This coefficient is used during automatic operation if at a lower speed the spreading flow should be increased and vice versa. This is a multiplier multiplied by the speed of the vehicle. The result controls spread flowgate. If the coefficient is  $> 1$ , the spread flow will be faster. If the coefficient is  $< 1$ , the spread flow will be slower. This is possible only during automatic operation. The coefficient may be increased or reduced by pressing buttons 5–6.

### **7.3 Automatic operation**

Automatic mode is activated by pressing button 1 (the icon above turns green). Automatic operation of spread flowgate is related to vehicle speed and coefficient. When the vehicle moves faster, the flowgate will be opened wider, therefore, spreading flow will increase; if the vehicle drives at a slower speed, spreading flow will be reduced. The coefficient is for increasing or reducing the spreading flow. Default coefficient is 1. Spreading speed may be adjusted depending on the needs: if at a lower speed the spreading flow should be higher, the coefficient has to be increased, and on the contrary, if at a higher speed the spreading flow should be lower, the coefficient has to be reduced. If the coefficient is  $> 1$ , the spreading flow will be faster. If the coefficient is  $< 1$ , the spreading flow will be slower. The coefficient may be increased or reduced by pressing buttons 5–6.

### **7.4 Manual operation**

Manual mode is activated by pressing button 2 (the icon above turns green). Upon activating manual mode, the arrow of the set position of the spread flowgate turns yellow. This is an indication that the flowgate will be controlled manually and will not depend on the speed of the vehicle.

The flowgate is controlled manually by using buttons 5 and 6. By pressing the buttons, the flowgate is opened or closed (the spreading flow is increased or reduced).

### **7.5 Lamps**

Lamps are switched on/off by using buttons 3–4. By pressing one of the buttons, the lamp is switched on and the icon on the display turns yellow. By repeatedly pressing the same button, the lamp is switched off. Lamps may be switched on/off during both manual and automatic operation.

If this symbol appears, the connection cable for the screen and control equipment must be inspected. This symbol indicates that the connection between the screen and controls was not detected.





## 7.6 Automatic control electrical scheme

