

ERTAŞ PROFİL TARIM MAKİNELERİ İNŞAAT VE SANAYİ TİCARET LİMİTED ŞİRKETİ

OPERATOR'S MANUAL FOR ERTAS-1, ERTAS-2 and ERTAS-3



İstasyon Mah. Güngörmüş Sok. No:3 Kartepe-Kocaeli

The manufacturer reserves the right to introduce design modifications for the purpose of simplified maintenance and improved operation quality. Remarks and notices about design and operation of the trailer should be submitted to the manufacturer. This information allows us to evaluate objectively manufactured machines and will be used as hints for further modernization.

CAUTION!

The operator's manual is the substantial equipment of the trailer.

The user should read carefully the manual before operation and observe all recommendations given in the manual. This will ensure safe maintenance and failure-free operation of the machine.

CONTENTS

1. INTRODUCTION.	04
1.1. General information.....	04
1.2. Application of the trailer.....	04
2. OPERATIONAL SAFETY.....	05
3. OPERATIONAL INFORMATION.....	06
3.1. Braking system	06
3.2. Wiring, lighting, signalling.....	07
4. TRAILER OPERATION PRINCIPLES	08
4.1. Coupling with tractor	08
4.2. Preparation for work.....	08
4.3. Tyre maintenance manual.....	08
4.4. Loading the trailer	09
4.5. Unloading the trailer	09
4.6. Uncoupling the tractor	09
5. MAINTENANCE	10
5.1. Adjustment the Wheel bearings	10
5.2. Adjustment the brakes	11
5.3. Maintenance of pneumatic system.....	12
5.4. Storage & Preservation.	12
5.5. Maintenance of hydraulic system.....	13
5.6. Safe Use of Jacks	14
5.7. Lubrication.	14

1. INTRODUCTION

1.1 General Information

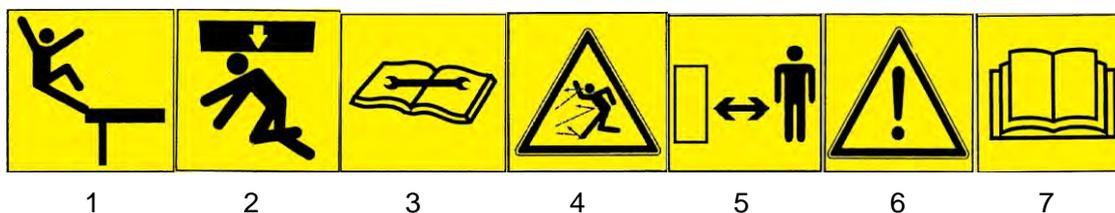
The manual describes basic rules of safe operation & maintenance of the agricultural trailer. If information contained within the manual will be not comprehensible for the user, please do not hesitate to contact your dealer or directly the manufacturer.

1.2. Application of the Trailer

The trailer is designed for transportation of of agricultural produce as well as loose and volume materials within farm limits and on public roads with the maximum speed of 30 km/h. The driving system (axles, suspension, wheels, tires) fulfils requirements for agricultural trailers, which can be used with maximum admissible speed of 30 km/h. Fulfilling of these requirements depends on proper maintenance and observation of rules given in present manual.

2. OPERATIONAL SAFETY

- The user should read carefully the manual before operation and observe all recommendations given in the manual during operation.
- If information contained within the manual will be not comprehensible for the user please do not hesitate to contact your dealer, who also provides repair & service or directly the manufacturer.
- Careless and improper operation & maintenance of the trailer as well as lack of observation of recommendations given in present manual may endanger human health and life.
- Lack of observation of safe use rules may endanger health of operators and third persons.
- There is the risk of residual danger; thus application of safe operation rules should be the basic principle of trailer's use.
- It is prohibited to use the trailer contrary to its purposes. User, who authorized the trailer in other than prescribed manner, takes all responsibility for all consequences resulting from trailer's use.
- Prior to each trailer's use check its technical condition, especially coupling system, drive system, brakes and signalling lights.
- Take special care while coupling trailer with tractor
- In the course of coupling no one is allowed to stand between trailer and tractor
- Climbing on the trailer is allowed only if the trailer is completely stopped and tractor's engine off; the trailer should be also braked with its hand brake
- Disconnected trailer should be braked. If the trailer stands on a slope or an elevation it should be protected additionally with wedges or other blunt-edged objects placed under wheels
- Admissible load must not be exceeded.
- If any operation failure or damage occurs, stop operation of the trailer and repair the damage.
- During trailer's operation use protection gloves and proper tools



- 1- Risk of falling from height.
- 2- No one should get under the trailer when the tipping system open.
- 3- Refer to technical manual for proper service procedures.
- 4- Maintain a safe distance from the machine.
- 5- Maintain a safe distance from the machine.
- 6- Read the "User Manuel".
- 7- Read the "User Manuel".

3. OPERATIONAL INFORMATION

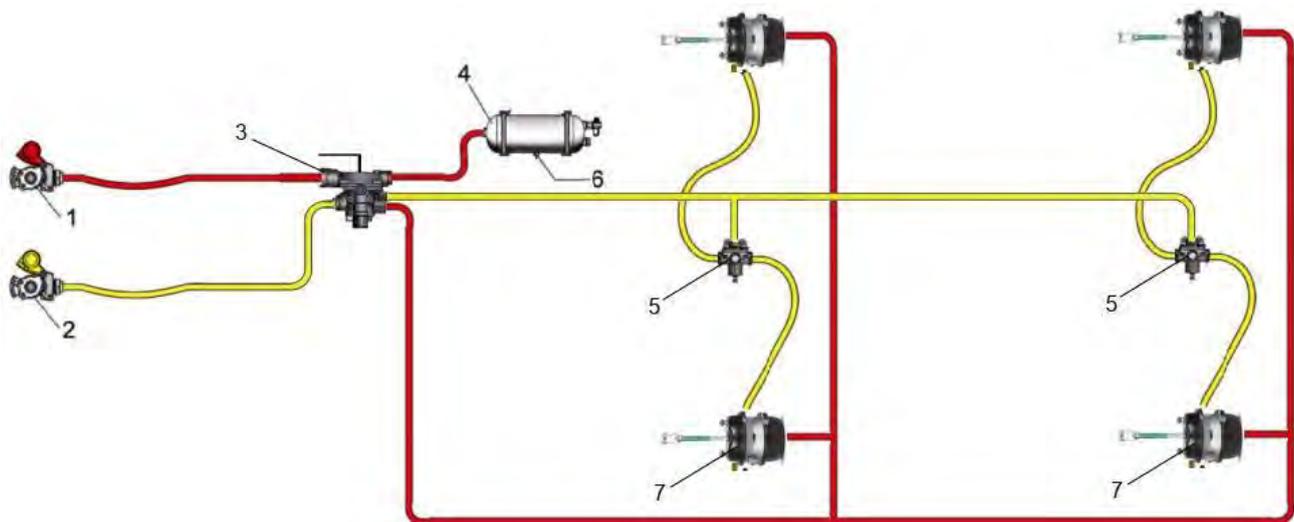
3.1 Braking System

The trailer is fitted with a braking system, which consists of:

- pneumatically controlled operational brake
- hydraulic controlled operational brake
- manually operated parking brake

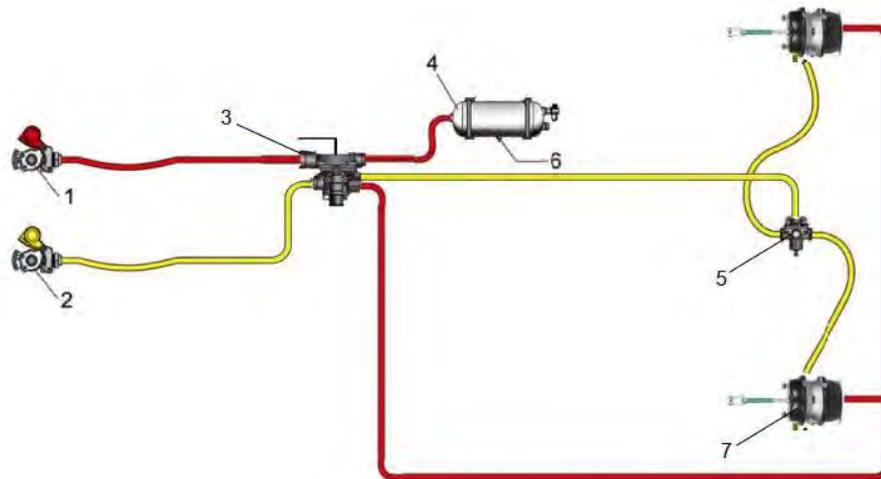
The operational brake (pneumatic) is actuated from driver's seat with a brake pedal. In the case of disconnection from tractor's pneumatic system of the brake is actuated automatically.

The operating brake diagrams for vehicles ERTAS-1 , ERTAS-2 and ERTAS-3 are given below.



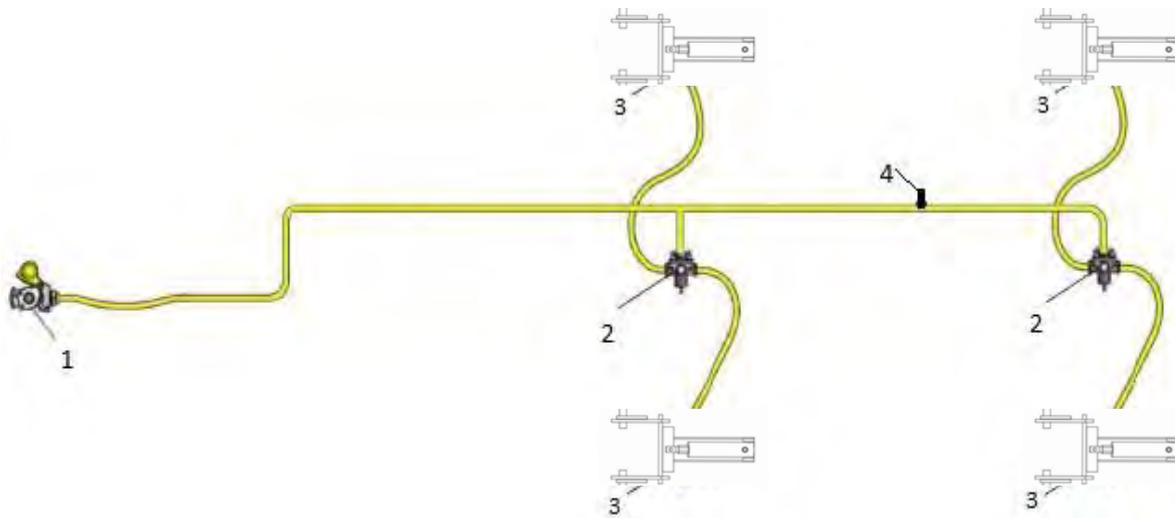
ITEM	DESIGNATION	ITEM	DESIGNATION
1	Coupling head with filter "supply" (red)	6	Drain valve
2	Coupling head with filter "brake" (yellow)	7	Brake chamber with parking brake
3	Trailer brake valve with 3-way valve		
4	Air reservoir (80 lt)		
5	Pressure ratio valve (optional)		

Figure 1 - 2 axle Drawbar trailer - ERTAS-2



ITEM	DESIGNATION	ITEM	DESIGNATION
1	Coupling head with filter "supply" (red)	6	Drain valve
2	Coupling head with filter "brake" (yellow)	7	Brake chamber with parking brake
3	Trailer brake valve with 3-way valve		
4	Air reservoir (60 lt)		
5	Pressure ratio valve (optional)		

Figure 2 - 1 axle Rigid drawbar trailer - ERTAS-1



ITEM	DESIGNATION
1	Jack head hydraulic system hoses and pipes
2	Pressure ratio valve (optional)
3	Brake chamber with parking brake
4	Drain valve (optional)
5	Pressure ratio valve (optional)

Figure 3 - 2 axle Rigid drawbar trailer - ERTAS-3

3.2 Wiring, Lighting, Signalling

The wiring system is adapted for power supply with 24 V or 12 V DC. Trailer and tractor electrical systems should be connected together with suitable connection conduit.

4. TRAILER OPERATION PRINCIPLES

4.1 Coupling with Tractor

Prior to coupling with tractor check if the trailer is braked with the parking brake. To couple trailer with tractor it is necessary to perform following operations:

- Position the hitch rod eye on suitable level.
- Precise adjustment of the rod can be achieved by adjustment of the hitch spring tension with use of the tensioning screw.
- Draw back the tractor, couple hitch rod eye with the upper tow coupling on the tractor and check its fastening.
- Connect electrical, hydraulic and brake conduits to the tractor.
- Unlock the trailer parking brake

4.2 Preparation for Work

During preparation for work it is necessary to check following items:

- condition of tyres and tyre pressure
- fastening of nuts fixing wheels and hitch rod
- condition of other screw connections
- function of lighting & signalling systems
- function of braking system
- condition and function of wall locks and hinges
- function of hydraulic tilting system (if any)

4.3 Tyre Maintenance Manual

- During assembly & disassembly of tyres protect the trailer against unintended movements.
- Repair or replacement of tyres should be performed by trained personnel and with suitable tools.
- After each wheel mounting tighten the nuts after first 10 hrs and check their tightening every next 50 hrs.
- Regularly check and preserve proper tyre pressure according to the manual (especially after longer standstills).

- Check the tyre pressure also during intensive daily work. Take into consideration the fact that the increase of tyre temperature may cause tyre pressure growth even by 1 bar. In the case of such pressure & temperature increase reduce the load or / and speed.
- Never reduce the tyre pressure through inflation valves if the pressure has grown due to the temperature.
- Protect tube inflation valves with suitable nuts to avoid penetration of impurities.
- Do not exceed the maximum trailer's speed.
- In the course of daily work make at least one-hour lasting pause at noon.
- Make 30 minutes lasting pauses for cooling down the tires after each 75 km or 150 minutes of continuous drive depending on which occurs first.
- Avoid holes, sudden and violent manoeuvres and reduce speed during turning.

4.4 Loading the Trailer

It is allowed to load the crate only if it is coupled with a tractor and stands on the level ground. Loading should be arranged uniformly on the entire load crate floor, if possible.

It is recommended to use a crane, a loader or a conveyor for loading. Prior to loading check if wall locks & hinges and the chute flap are closed

4.5 Unloading the Trailer

Unloading is performed through tilting the load crate backwards or sideways. Automated unloading should be executed as follows:

- Place the trailer on flat ground, brake the tractor and the trailer with the parking brake.

During unloading the tractor should be positioned as to drive forward.

- Place the bolts with grips connecting the load crate with lower frame on the unloading side
- Open lower locks and relevant wall locks (according to unloading direction)
- Tilt the load crate with the hydraulic cylinder

4.6. Uncoupling the Tractor

To uncouple the trailer perform following actions:

- Stop the tractor and the trailer with the parking brake.
- Disconnect electric, hydraulic and brake conduits; protect their ends from dirt.
- Uncouple the hitch rod cable from the tractor's towing hook and drive away with the tractor

5. MAINTENANCE

5.1 Adjustment of Wheel Bearings

Check wheel bearings periodically by the following procedure:

- With the trailer connected to the tow vehicle on level ground, set the tow vehicle parking brake and chock the wheels.
- Chock the trailer wheel opposite the hub to be removed. Place chocks both in front and behind the tire.
- Position the service jack on the frame as near the wheel to be removed as possible.
- Rotate the elevated wheel and listen for any noise. If your trailer is equipped with brakes, be certain that the (drum-style) brake shoes are not dragging. Feel the wheel for any roughness in its rotation.
- A quiet and smooth rotation indicates that the bearings are in good shape. If a noise, grinding sound or roughness in rotation are evident, please contact your dealer for proper procedure.
- At this time the wheel bearing adjustment should be checked. At the factory, ERTAŞ TARIM MAKINALARI sets the proper torque to maximize bearing life but on occasion it may be necessary to make an adjustment due to normal wear. To check if bearing adjustment is needed, grip the edge of the wheel to see if it rocks, or can move laterally. If the wheel moves at all, an adjustment is necessary.
- First, remove the bearing protector or dust cap and the bearing retainer or cotter pin. Always replace the retainer or cotter pin. **DO NOT REUSE!** Tighten the spindle nut a little more than "finger tight" (approximately 20- 24 inch pounds). When the nut is tensioned properly the wheel should rotate easily and have no end play. Reassemble in reverse of disassembling using a new retainer or cotter pin.

NOTE : Bearing adjustment should be checked after the first 120 kilometers of service and every year after

- If needed, grease hubs carefully after launch or before storage. Do not add grease when hub is cold, too much grease could damage brake shoes and hub seal.

5.2 Adjustment of Brakes

The brakes should be adjusted if:

- excessive play between shoe and drum appears due to wear of brake shoes; braking efficiency falls down
- Brakes operate uneven and not simultaneously.

If brakes are adjusted properly braking of both wheels should take place in the same moment.

Adjustment of brakes consists in adjustment of position of the brake cam arm (1) (Fig. 3) in relation to the cam shaft (2). For this purpose loose the nut (4) and change position of the arm on the multi-groove end of the shaft (2) towards proper direction i.e.:

- backward – if the brake brakes to late
- forward – if the brake brakes to soon

Perform adjustment separately for each wheel. After proper brake adjustment cam arms should form the angle of 90° in relation to pneumatic cylinder push rod whilst the braking power is greatest. Parking brake should be adjusted if the brake cable is excessively stretched or if cable clamps are loosened. Cable length should be matched so that by fully loosened parking and working brakes the cable would be loose and hang down by $1 \div 2$ cm

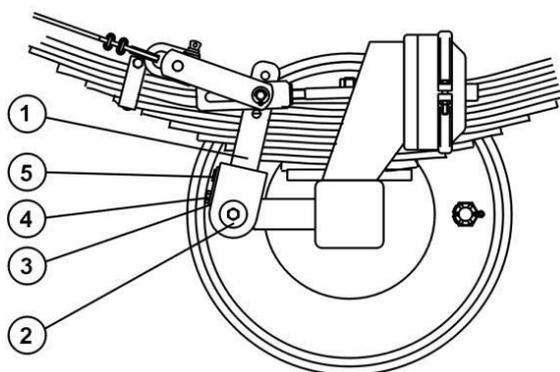


Figure 3 – Brake Adjustment Elements

- 1- Brake cam arm
- 2- Brake cam shaft
- 3- Locking plate or sleeve
- 4- Securing screw
- 5- Adjustment screw

5.3 Maintenance of Pneumatic/Hydraulic System

In the scope of maintenance operations it is necessary to perform inspection of pneumatic system tightness, especially at all connections. Tightness test should be executed with system pressure rated at ca. 600 kPa (6,0 kg/cm²).

If conduits, sealings or other elements of the system are damaged, air will get out in points of damage with typical hiss or – in the case of small leakage – in the form of small air bubbles. It is used as oil in hydraulic systems.

Small leakage can be detected with soap water or washing agent. Damaged sealings or conduits replace with new ones. If the reason of leakage is the damaged pneumatic/hydraulic cylinder – regenerate it.

Periodically remove condensed water from the air tank. For this purpose pull out the drain valve arbour located in the upper part of the tank. Compressed air will push the water out. After loosening the arbor the valve should close automatically and stop airflow from the tank.

Once a year just before the winter unscrew the drain valve and clean it from accumulated dirt.

5.4 Storage & Preservation

After work clean the trailer and wash with water stream. If the varnish coat is damaged, clean such place from rust and dust, degrease, and paint of the same colour and uniform layer thickness. If damaged places will not be painted immediately, cover them with thin layer of grease or anticorrosion agent.

It is recommended to store the trailer in a closed or roofed storage. If the trailer is stored outdoor for long period protect it from atmospheric influence, especially from agents causing corrosion and ageing of tyres.

5.5 Maintenance of Hydraulic System

Preliminary Information

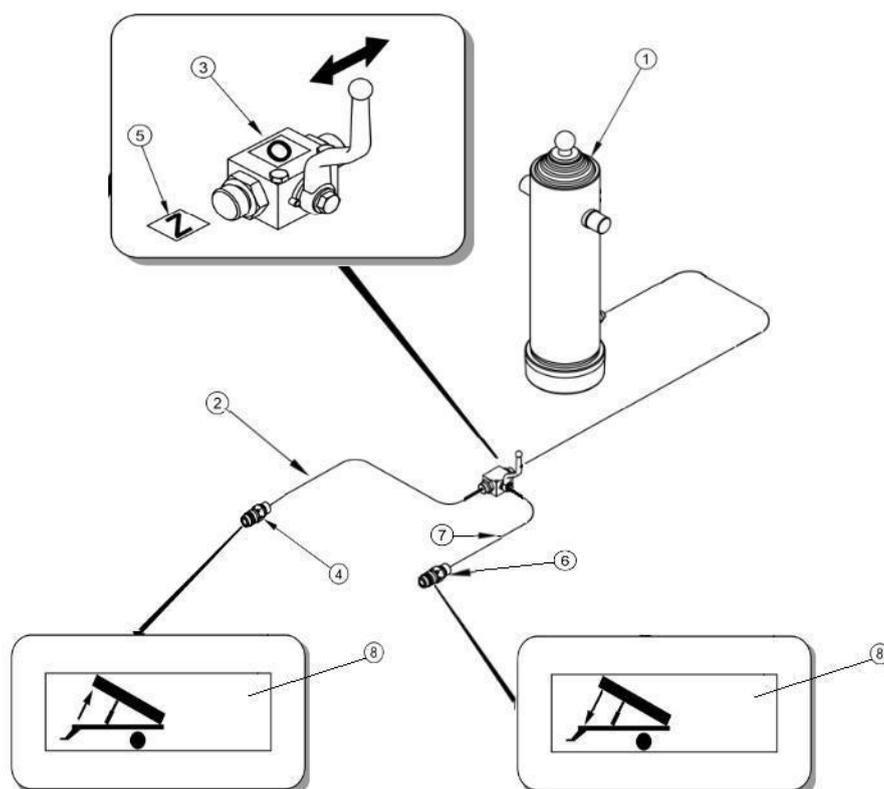
Work connected with the repair, change or regeneration of hydraulic system components should be entrusted to specialist establishments, having the appropriate technology and qualifications for this type of work.

Checking Hydraulic System Tightness

- > Hitch trailer to tractor.
- > Connect all hydraulic system conduits according to service instructions.
- > Clean connections and cylinders
- > Conduct test tipping of load box backwards
- > Open and close the tailgate several times.
- > Press tractor brake pedal several times
 - >> Only if the trailer is equipped with hydraulic brake system
- > Check tightness of hydraulic system, inspect cylinders and hydraulic conduits.

In the event of confirmation of oil on hydraulic ram cylinder bodies ascertain origin of leak. Inspect hydraulic seals when ram cylinder is completely extended. Minimum leaks are permissible with symptoms of "sweating", however in the event of noticing leaks in the form of "droplets" stop using the trailer until faults are remedied. If unreliability is evident in brake cylinders do NOT use trailer with damaged system until faults are remedied.

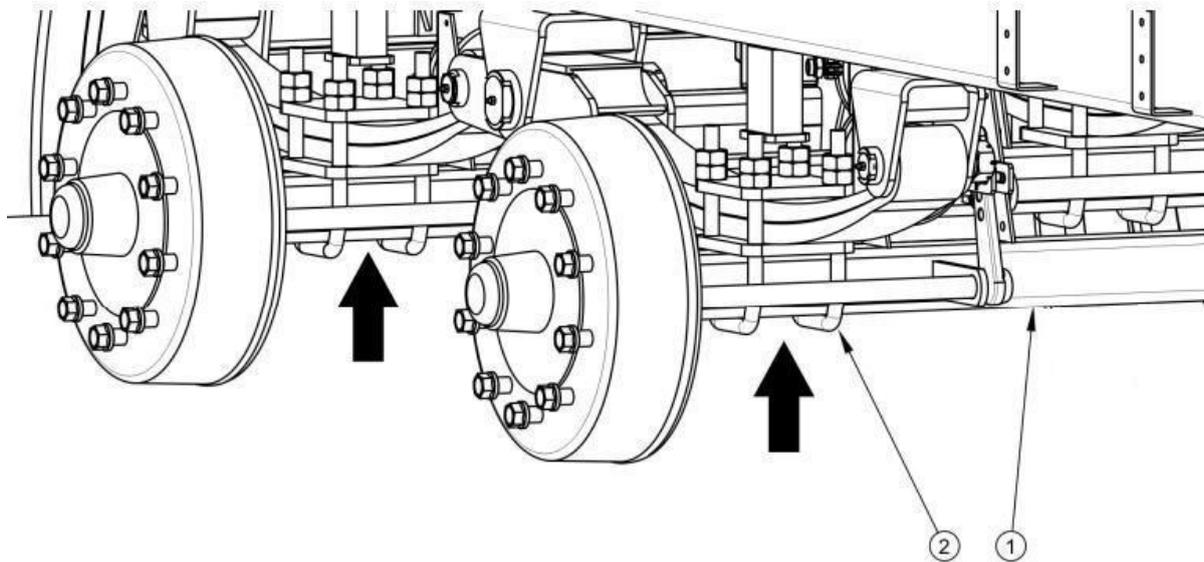
The hydraulic hoses shall be inspected in every 6 months.



- (1) telescopic cylinder
- (2) supply line
- (3) three way cut-off valve (locking device)
- (4) supply socket
- (5) information label
- (6) unloading socket
- (7) unloading line
- (8) information label

5.6 Safe Use of Jacks

The lifting jack should be placed under the axle between U bolts (2) securing axle (1) to leaf springs, or as near as possible to leaf spring mounting. Recommended fulcrum is marked with an arrow. Lifting jack must be suited to weight of trailer.



5.7 Lubrication

Trailer lubrication should be performed with the aid of a manually or foot operated grease gun, filled recommended grease. Before commencing work insofar as is possible remove old grease and other contamination. Remove and wipe off excess oil or grease. Change of grease in hub bearings should be entrusted to specialised service points, equipped with the appropriate tools. According to the recommendations of the axle Manufacturer, dismantle the entire hub, remove the bearing and individual sealing rings. After careful washing and inspection, mount lubricated elements. If necessary, bearing and seals should be replaced with new parts. Lubrication of axle bearings shall be performed at least once in 2 years.

Trailer's lubrication points

Grease point of axles	Grease point of springs	Grease point of turntable
		