

Instructions manual

EN

TISVOL

Powered by Superior Quality



“Experience and technology at your disposal”

From Tisvol we appreciate the confidence in our company for the purchase of your vehicle.

This manual was prepared to familiarise you with the tune-up and service of the tipper.

Operating and service staff must read and follow the instructions included in this handbook before servicing, starting-up and executing the maintenance operations on this vehicle.

Make routine maintenance helps keep your vehicle in top condition, extending the life of your vehicle and improving work efficiency.





This symbol indicates “WARNING”, and is located next to the important messages regarding safety. Every time you see this symbol, read the message carefully as you are in front of some kind of danger or important instruction.

INFORMATION AND ILLUSTRATIONS SUPPLIED IN THIS MANUAL ARE CONSIDERED NON-BINDING; THE COMPANY REMOLQUES Y VOLQUETES S.L. THEREFORE, WITH THE AIM OF IMPROVING ITS PRODUCTION RESERVES THE RIGHT OF MODIFYING THIS MANUAL WITHOUT PRIOR NOTICE.

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1. RULES AND GENERAL WARNINGS

1.1 Limits of responsibility of the manufacturer

Non-respect of the precautions and warnings indicated in this manual, the inappropriate use of all or part of the equipment, the use of non-authorized spare parts, the use of the tipper by non-qualified staff violates all the security rules regarding the construction and use foreseen for the tipper and its accessories and free the company REMOLQUES Y VOLQUETES S.L. of any responsibility in the event of personal injuries or material damages.

1.2 Normative references

To elaborate this manual were use the indications described according to Annex "I" of Standard 2006/42/CE, section 1.7.4.

1.3 Conservation of the manual and of the document of certification

This manual is part of the machinery. Therefore, it must be kept and used accordingly during its operational life. Likewise, the "declaration of conformity" provided by the manufacturer must also be kept.

1.4 Definitions

Pursuant to the "MACHINERY DIRECTIVE" 2006/42/CE, the following definitions are stated:

«Danger»: source of possible injury or harm to health;

«Dangerous area»: any area inside and/or around a machine in which the presence of a person could suppose a risk for his/her safety or health;

«Person exposed»: any person that is located fully or in part, in a dangerous area;

«Operators»: person or persons in charged of installing, handling, regulating, maintaining, cleaning, repairing or moving a machine;

«Risk»: combination of the probability and the seriousness of a lesion or injury to one's health that could occur in a dangerous situation;

«Use foreseen»: use of the machine according to the information provided in the instructions manual;

«Reasonably foreseeable misuse»: use of the machine in such a way not foreseeable in the instructions manual, although that could result from an easily foreseeable human behaviour.

1.5 Tipper identification

To order spare parts, obtain information or assistance a plate is placed with several details, among which is the vehicle's serial number.

This plate will be located on the front part of the right girder of the chassis or on any other analogue structure of the machine and its design will be similar to that exposed:

TISVOL QUALITY IN MOVEMENT	REMOLQUES Y VOLQUETES S.L.	
	[]	
MOD: []	724-ESP	[]
	36.000 KG.	39.000 KG.
LONG: []	0 - 12.000 KG.	0 - 12.000 KG.
[]	1 - 8.000 KG.	1 - 9.000 KG.
	2 - 8.000 KG.	2 - 9.000 KG.
O.F: []	3 - 8.000 KG.	3 - 9.000 KG.
[]	T - 24.000 KG.	T - 27.000 KG.
<small>www.tisvol.com Tel. +34 961 465 211 Puzol (Valencia - Spain)</small>		

2. DESCRIPTION AND USE LIMITATIONS

2.1 Description

TISVOL tippers have been designed to be installed on trailers and their purpose is the transport and unloading of goods by means of the tipping of the box. The operation and design of these vehicles is similar, without significant variations except for the modifications in the construction elements of the trailer and the size or the number of axles, all these factors being irrelevant for the performance and the tipper's operating principles.

2.2 Use foreseen

The foreseen use for the machine is the transport and unloading of the goods transported ⁽¹⁾, by means of the tipping equipment.

Transport: The dump box is mounted over an industrial trailer, which is going to be pulled by a tractor. The speed of a set of vehicles of those characteristics (tractor + trailer) will not exceed 80 km/h.

Tippling: Machine was designed to be used by one single operator. The operator must always perform his task located in the driving position of the tractor, in the case of tippers with control board in the cabin, and in the case of tippers with autonomous hydraulic equipment, on the side of the vehicle, without ever entering into its dangerous area (rear part). The tipping will not start if there are people within the proximity of the working area or in contact with any part of the trailer's components.

(1)) The goods to be transported may vary depending on the thicknesses, materials and geometries and on if they are public works tippers, transports of scrap or bulk loads.

- Public Works: Earths, stones, gravel, asphalt mixtures, and other materials derived from the mining extraction and from public works.

- Transport of scrap.

- Bulk: bulk cereals, fodders, fertilizers and any material that can be loaded and unloaded in bulk.

2.3 Reasonably foreseeable misuse

Any use not foreseen in the instructions manual, as well as the transport of machines, persons or animals will be considered as misuse.

It is not allowed to overload the trailer exceeding the maximum authorised masses for which it was designed and approved.

3. SAFETY, GENERAL WARNINGS



An improper use of the tipper as well as the non-observance of the safety standards could cause a serious harm to the people and goods.

Before using the machine:

- Read this manual carefully.
- Be aware of the safety standards in force within the sector of the activity.
- Understand correctly the symbols of the safety stickers placed on the tipper. Make sure they are always visible and can be read perfectly.
- Do not operate the regulating screw of the cylinder's pressure limiting valve.
- Before tipping the box, make sure there is no obstacles, electric cables, roofs, etc. If by chance the box enters into contact with a high voltage line, come out of the vehicle immediately, trying not to touch the vehicle and the ground at the same time.
- Make sure there is nobody in the vehicle's working area.
- Before any journey, verify the good connection and appropriate functioning of the brakes system and of the lighting devices.
- Do not allow people to be transported on the trailer.

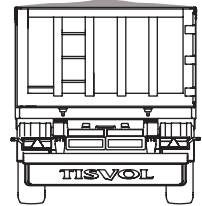
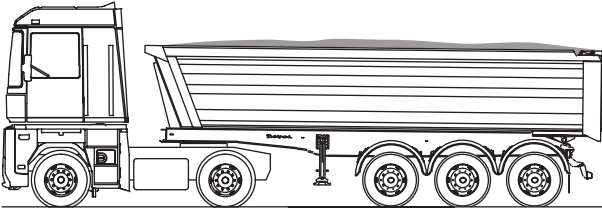


When the work is carried out on public thoroughfares, remember that it is compulsory to correctly signal the vehicle and to wear reflecting clothes on these roads.

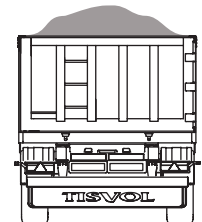
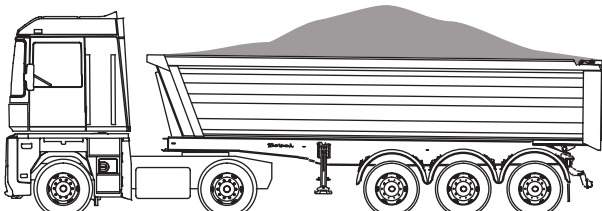
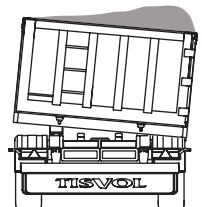
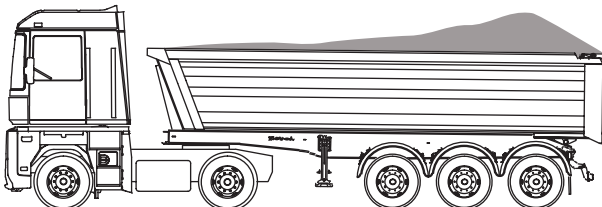
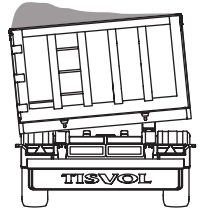
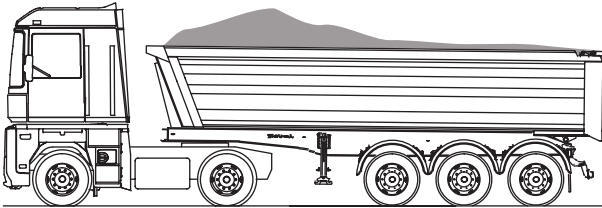
During the work:

- Tipper must be operated by one single operator. The operator's position is located or either in the cabin or on the left side of the vehicle in front of the hydraulics' control box.
- Deposit the load from the less height as possible.
- Make sure that the loading is carried out correctly, that it is correctly distributed, as this will avoid side efforts on the cylinder.
- If the load has not started to fall at half the tipping ($20^{\circ} \pm 25^{\circ}$), stop tipping as the load is stuck or stuck to the box.
- Use the luminous signing devices; keep them clean and in good working order. Change those devices that have been damaged or lost.

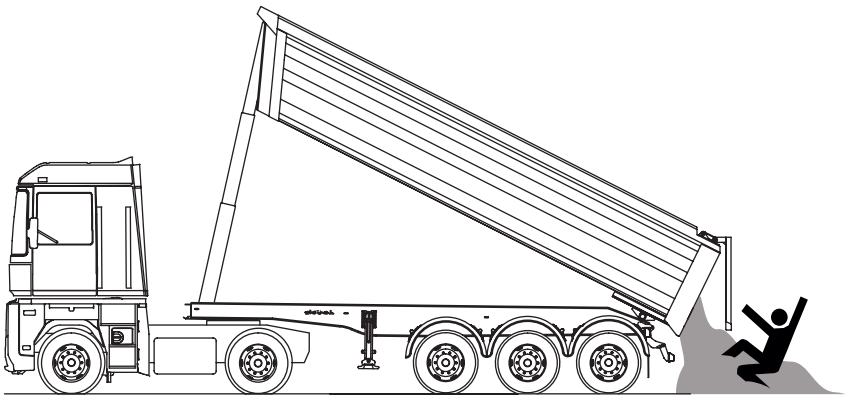
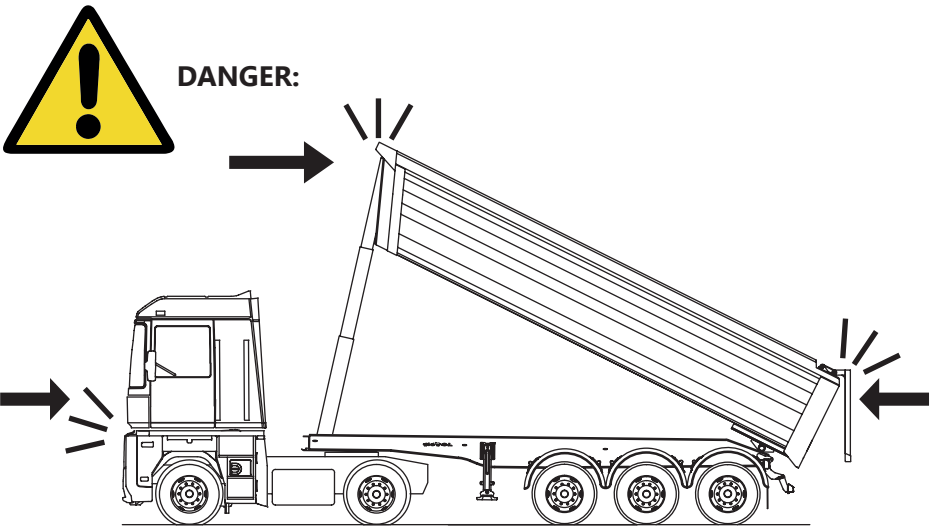
Correct use:



Misuse:



- Do not ever exceed the vehicle's load capacities over which the tipper has been installed.
- Never try to unblock the load by moving the vehicle.
- Do not move the vehicle during the tipping.
- Do not drive with the box elevated.
- When restarting an activity after significant rain, you must consider that the terrain conditions may have changed.
- Avoid working on uneven surfaces, muddy or sandy soils, or that could give away because of their own weight.
- Do not tip with the tractor and the box in angle.
- It is completely forbidden to stand between the tractor vehicle and the tipper during the work, as there is RISK OF CRUSHING.
- DO NOT EVER STAND IN THE WORKING AREA.



Maintenance and controls:

- Do not carry out maintenance tasks if you have not read and understand the instructions and warnings on this manual.
- Use individual protection devices.
- Be careful with the pressure fluids; never use your hands to find leaks. Protect your hands and your body from pressure fluids.
- Avoid risks unloading the pressure of the hydraulic system and other systems.
- In the case of carrying out any welding work on the tipper, never place the mass over an hydraulic element, or ever weld anything near the tyres, and in the case it is necessary, then cover them up or dismantle them.
- Periodically grease all the turning points of the tipper for their correct operation.
- **DO NOT WORK UNDER THE BOX WITHOUT THE SUPPORT FROM ANY SAFETY THAT STOPS THE BOX FROM FALLING.**
- Observe the provisions regarding prevention of accidents for all the maintenance works.
- Observe the guidelines regarding environmental protection.

Safety Equipment:



It is advisable to have in the tractor unit a first aids kit, as well as the emergency services telephone numbers.



Observe the standards regarding the use fire extinguishers. If you are going to work with flammable materials, you should always have a fire extinguisher in the cabin.

Use of the individual protection equipment:



4. COUPLING OF THE TRACTOR VEHICLE



Before starting, make sure that there is nobody near the vehicle.

- Manoeuvre the tractor unit backwards slowly, aiming to centre it with the trailer. In the case another person intervenes for the coupling of the trailer, this person must indicate the manoeuvres with plain gestures and always stay on the side, never between the tractor unit and the trailer.
- The trailer must be parked on a flat and uniform surface and with the parking brake on.
- The coupling plate must be at approx. 50 mm under the plate of the fifth wheel (adjust with support legs and/or with the pneumatic suspension of the tractor unit if it has it).
- Verify if the closing of the drawbar coupling is in retraction position, if not, open the fastener:



- Manoeuvre the tractor unit slowly towards the trailer and proceed with the coupling. The fifth wheel device will block automatically.
- Once the vehicle has been coupled, visually confirm that the 5th wheel safety lock is properly fixed, or simply make a small pull with the tractor to ensure that it is perfectly engaged.
- Connect the hoses of the pneumatic, electric and hydraulic systems (when applicable). The standards couplings do not enable a wrong connection.
- Elevate the fifth wheel and collect the support legs before setting-off.
- Verify the working order of the lighting devices before setting-off.

5. LOADING AND UNLOADING OPERATIONS

Perform the loading and unloading on a levelled surface, always verify that the brakes are on before loading and unloading. Do not overload the trailer or the tractor unit; revise the features certificates to know their capacities.

Below are some of the unit weights (as a guideline) of the most common products, take into consideration the cubic capacity of your trailer to know the load you are going to take according to the type of product. For other products look up their unit weight and in any case do not exceed the trailer's load capacities:

Unit weight and angle of internal friction of different materials		
Material	Apparent unit weight (Kg/m³)	Angle of internal friction
Agriculture products		
• Oat	450	30°
• Sugar	750	35°
• Barley	650	25°
• Rye	800	35°
• Peas	800	25°
• Flower and bran	500	45°
• Pressed hay	170	-
• Beans	750	30°
• Maize	750	25°
• Grinded Malt	400	45°
• Potatoes	750	30°
• Sugar beet dried and cut	300	40°
• Beet, turnips and carrots	750	30°
• Semolina / Rice	550	30°
• Wheat	750	25°
• Grape	800	30°
Other materials		
• Artificial fertilizers	1.200	40°
• Carbide	900	30°
• Compact manure	1.800	45°
• Loose manure	1.200	45°
• Fish meal	800	45°
• Ice	900	30°
• Common salt	1200	40°

Unit weight and angle of internal friction of different materials

Material	Apparent unit weight (Kg/m ³)	Angle of internal friction
Construction materials		
• Clay	-	45°
• Sand	1.500	30°
• Pumice gravel	700	35°
• Wet sand	-	40°
• Lime in powder	1.000	25°
• Lime in lump	1.000	45°
• Coal	-	30°
• Rubble or brick dust	1.300	35°
• Cement in sacks	1.600	-
• Cement in powder	1.200	25°
• Coke ashes	700	25°
• Cement clinker	1.500	30°
• Slag from Blast Furnaces (granulated)	1.100	25°
• Slag from Blast Furnaces (in chunks)	1.500	40°
• Gravel	1.700	40°
• Stone	-	30°
• Gypsum and plaster	1.250	25°

5.1 Loading process

- Make sure that the tipping control is in floating position so that the box rests directly on the chassis and does not rest on the cylinder.
- Follow the loader's instructions, use the rear mirrors and keep visual contact with the loader when moving the vehicle.
- Once it is loaded make sure there are no remains that could fall and cause damages to the rest of the thoroughfare users.



Before loading, make sure that the doors are well closed and the ironworks are over.

5.2 Use of the canvas



If you are going to work over the canvas extreme your precautions, as there is a risk of vertical fall in some cases higher than 3 meters. Gather information about the legislation regarding works on heights.

There are several models of canvases for vehicles with dump box.

The front canvases that are mounted over a system of cables whose handling, extension and Collection of the canvas is carried out manually by means of a crank, located on the front bottom part, which transmits the movement through a chain to the system of pulleys that guide the canvas or a "Cardan" type bar. To free the system, the lock must be off. This process may also be carried out manually from the control station on the boxes that form this system. Another type is a side lever system that is operated manually. It is a plain system that consists of rolling the canvas from the side where it couples to the lever to the opposite side. For this, previously the canvas stretchers must be left loose located on the same side of the lever on the lower part of the box.

5.3 Opening and closing of doors

- Remove the door safety locks before tipping and place them again once it has been loaded. These locks may be bolts, pins, screwed bar system with nut...
- Open the book type doors or the gate with a manual vertical turn, using the bar fastening in the first case. When they are folding doors there are two models, mechanical and hydraulic, in any case the opening of the gate is carried out automatically when starting to dump.

Universal Door



One Sheet Door



The doors are equipped with the double hinge arm as a security element, when the door rests on the unloaded merchandise. However it is recommended not to continue tilting in extreme conditions.

6. TIPPING OPERATION



THE TIPPING OPERATION MUST ONLY BE POSSIBLE WHEN ALL THE FOLLOWING CONDITIONS TAKE PLACE:

- That all the couplings between the tractor and the trailer are carried out.
- That the whole set is placed on a steady and flat ground so that all the axles are aligned.
- That there is nobody close to the tipping area.
- That there is no strong side winds.
- That there is no risk of making contact with electrical lines.
- That the canvas is collected.



To avoid a strong impact on the vehicle bring the drive lever almost until the neutral position, with this we achieve a light settlement of the bodywork on the chassis.

The sound indicator (previously connected by the driver) will not stop until the tipper has come down completely, once it has come down the pilot light in the tractor cabin will also turn off.

6.1 Raising of the tipper with control in the cabin

- Start the vehicle with the gear lever on neutral gear.
- With your foot on the clutch move the tipping operation lever to position (2), keep the lever in this position and let go of the clutch, the tipper will elevate until we operate the clutch or until it reaches its maximum tipping angle.
- Once it is elevated move the operation lever to the neutral position (1).



Do not accelerate the motor of the vehicle when tipping. The amount of revolutions of the vehicle during the tipping must be as close to idle speed as possible.

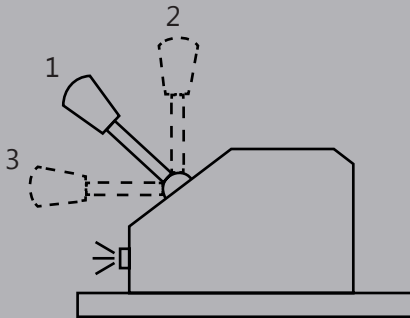
6.2 Descent of the tipper with control in the cabin

With the gear lever on neutral gear, move the operation lever to position (3). This lever may remain permanently in the descent position.

The tractors may be equipped with a large variety of types of controls in the cabin, below are two common examples of these types of control:

Pneumatic control

Description: This control is placed in the cabin to the right of the driving position and has three positions:

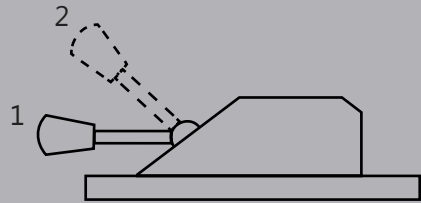


- 1 - NEUTRAL GEAR (STOP)
- 2 - ELEVATION OF THE TIPPER
- 3 - DESCENT OF THE TIPPER

The pilot light indicates when the tipper is elevating.

Mechanical control

Description: This control is placed in the cabin to the right of the driving position and has two positions:



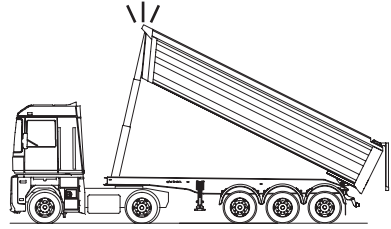
- 1 - NEUTRAL GEAR (STOP)
- 2 - PUMP OPERATION

The elevation and descent of the tipper is carried out by means of some buttons located on the vehicle's dashboard under the indicators.

7. TRANSPORT

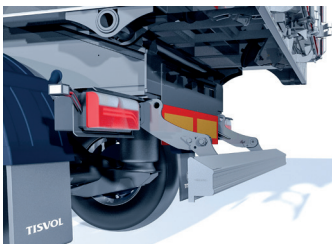


Never drive with the box up, there is risk of overturning, of crashing into electrical lines, bridge, balconies, etc.

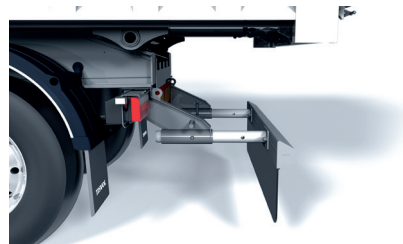


- Respect the Driving Code and never exceed the speed limits.
- Adopt the speed to the conditions of the road, the traffic and the weather condition; put chains on the wheels of the lorry and of the trailer when the driving conditions therefore require so.
- After using the tipper, you must close the canvas, verify the general cleaning of the vehicle and check the perfect closing of the door, to avoid the impact of flying particles to the users of the public thoroughfares.
- Before starting-off remember that during the works the lighting devices could have got dirty, make sure you clean them before setting-off.
- Pay attention to the height of the loads carried when driving under bridges, viaducts or tunnels.
- Never go down slopes with the gear lever on neutral gear, but always on the short gear that corresponds to the slope and to the load. The abuse of the brakes on the slopes could cause "Fading" if you have drum brakes, as the drums get hot until they are dilated leaving the vehicle without the possibility to stop when it needs to.
- Rear bumper having mounted the vehicle is approved and may be of two types. Either the folding or extensible bumper, whenever the vehicle is driving must take it in the correct position, as shown in the drawings:

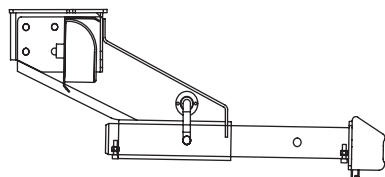
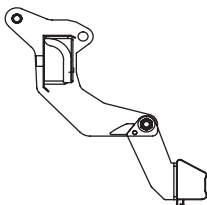
Folding Bumper



Extensible bumper



Under-run protection bar must be onside when driving begins:



8. UNLATCHING AND PARKING THE TRAILER

To unlatch the trailer from the tractor, proceed in the following way:

- Park the trailer on a flat and even surface.
- Operate the trailer's parking brakes.
- Elevate the tractor's suspension (in the case it has it).
- Lower the trailer's support legs until they reach the ground, if necessary remember that the support legs have a "slow" position that enable lifting the fifth wheel of the tractor when this does not have suspension control, in which case elevate approximately 50 mm from the contact with the floor.
- Open the lock of the fifth wheel by pulling its handle.
- Disconnect the hoses of the pneumatic, electric and hydraulic system.
- Manoeuvre the tractor slowly forward and proceed to the unlatching.
- Remove the tractor from the trailer and before leaving the vehicle remember to lock all the drawers with tools and equipment before leaving the vehicle.
- If necessary place the wheel chocks on the trailer even on sand grounds, use wooden boards beneath the point of support.



It is recommended to empty the suspension before unlatch with the loaded trailer.

9. MAINTENANCE / REPAIR

9.1 General warnings

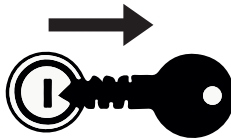


IF THE MAINTENANCE TASKS ARE NOT PERFORMED PERIODICALLY, THERE IS THE RISK OF DANGER BOTH FOR THE DUMP TRAILER AND FOR YOU AND THE REST OF THE USERS OF THE PUBLIC THOROUGHFARES.

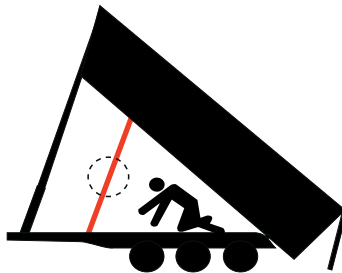
Whenever you perform a maintenance task, follow the safety warnings referred to on point 3 of this manual, moreover pay attention to the following precautions:



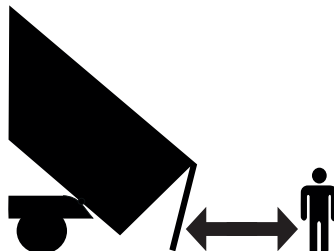
- Stop the motor of the tractor and remove the starting key before performing repairs, cleaning, lubrication or maintenance tasks:



- When elevating the bodywork and when it is foreseen to perform any kind of maintenance task between the bodywork and the vehicle's chassis a safety wedge must be used to be placed between the box and the chassis:



- Do not stand near the vehicle when the lifting operation is being performed:



9.2 Maintenance intervals

Daily: Visually verify the fixing nuts on the wheels, the pressure of the wheels and their use, as well as verifying the good operation of the electric installation and of the ABS and EBS system, this system provides the vehicle with a greater active safety, greater braking effectiveness and considerable saving in the use of the tyres.

After one month on the road: Verify the wheels' nut tightening. This revision is necessary, also, whenever a wheel has been dismantled for any reason. The tightening par must be between 600 and 700 Nm.

Every month: Change the oil on the disc of the fifth wheel, prior to its cleaning and that of the King-Pin disc, all the vehicle's elements, that for their correct operation and durability need greasing, are provided of a easy access greaser, protected by a red colour top for easy location:



Every 3 months: Check the visual indicator of the wear of the brake pads. The disc brakes have this indicator on the brakes pin, as indicated on the axles' maintenance manual. And the drum brakes have this indicator on the automatic brake levers.

Every 6 months: You must tighten the suspension elements to verify their good maintenance, besides from verifying the ALB valve (if it has one) and cleaning the filters of the pneumatic valves.

Every year: The clearances of the joints must be revised and the suspension elements tightened to verify their good maintenance, as well as verifying the ALB valve (if it has one) and clean the filters of the pneumatic valves.

With autonomous hydraulic device: Every 300 hours change of filter and every 2000 hours change of oil.

These periods are stipulated according to the usual use of a vehicle on the road and therefore in the case of use on severe conditions, the periods must be reduced.

Regardless of the basic revisions, it is recommended to carry out a more exhaustive visual inspection before departing on any long journey or when appreciating a malfunction.

It is necessary to take into consideration that the hydraulic device of the tractor Vehicle that is to be latched on to the trailer must not exceed the maximum work pressure of 180 ATM.

9.3 Characteristics of the maintenance operations

Greasing:

- Before the greasing, clean the parts affected by dust, water or mud.
- Inject grease until it comes out clean through the lubrication point.
- Do not mix lubricants of different brands, or of different specification.

Oil deposit: (when assembled)

- To verify the vehicle's level of oil it must be in horizontal position and the oil must be cold.
- In the case of having to add oil keep the top and the surrounding area clean and use hydraulic oil, with the following basic details, for other oil specifications consult the manufacturer:
 - Viscosity, Cst 40° between 20 and 40.
 - Inflammation point around 190°.
 - Icing point-20°.
 - NAS cleaning level between 8 and 9.

GENERAL WARNINGS ON THE USE OF HYDRAULIC OILS:

- Oils must never be mixed.
- A good amount of oil assures a correct sealing and a good maintenance of the hydraulic group.
- Keep the oil deposit closed, performing the air aspiration by means of a filling top provided from its corresponding filter.
- Keep the aspiration and return filters clean.
- Keep a correct level of oil. This must contain between 35% to 40% more of the maximum work volume of the cylinder.
- Change of oil must be carried out exclusively by a professional. Keep the oil removed until you can through it away according to the standards of environment protection.

Hydraulic hoses:

- Search for possible leaks.

Stickers and lighting devices:

- Verify the condition of the stickers and the lighting and signposting devices.

Tyres and wheels:

- Verify the condition of the tyres, good condition of the tread, and of the sides making sure there are no lumps or cracks.
- Verify the inflation pressure of the tyres.

Screws:

- Re-tighten the screws of the box elevation cylinder.
- Re-tighten both screws on the turning bar supports.
- Verify the tightening pair of the wheel studs.

Cleaning:

- Wash the trailer, thoroughly removing all the remains of materials and dirt deposited on the machine.

Canvases:

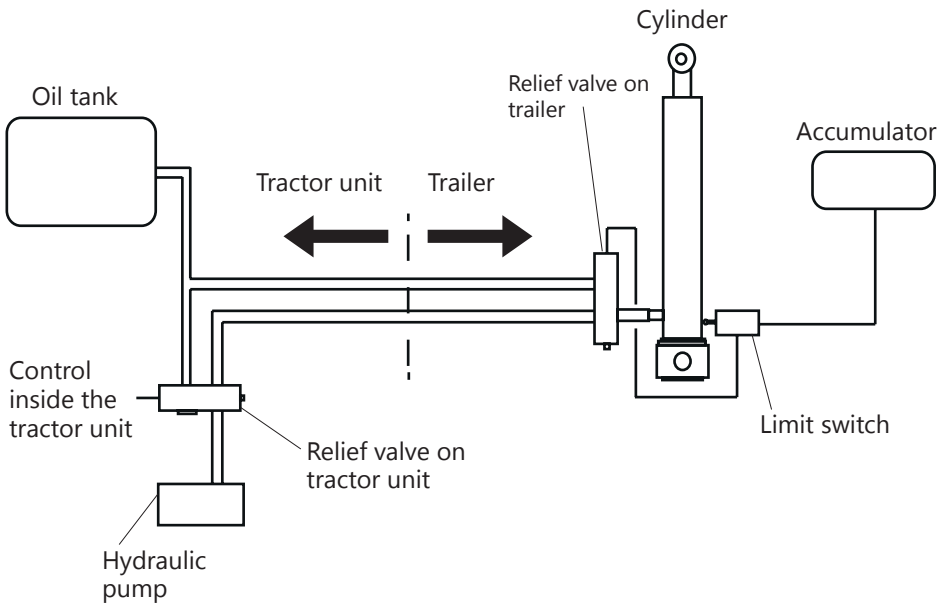
- The tightening of the cable stretches with use, especially the first months of operation. To avoid this problem you must tighten both cables by re-positioning the pulleys located on both sides of the box, on top rear part, by means of a bolt firmly fixed to these pulleys.
- Greasing of the bearings of the movement transmission axle of the pulley system lever that guides the canvas.

Axles:

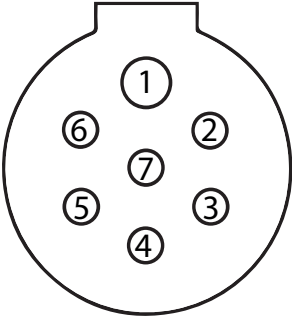
- Follow the instructions provided by the manufacturer of the axles.

9.4 Hydraulic / Electric circuit diagram

Standard assembly with control in cabin:

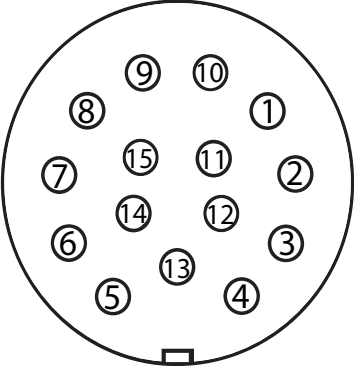


Standard headlights plan of a vehicle:



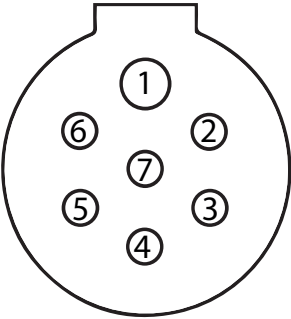
Lights code female connector of 7 pins 24S (white) ISO 3731

- 1-Mass (13 of 15 pins)
- 2-(14 of 15 pins)
- 3-Back-up light (8 of 15 pins)
- 4-(9 of 15 pins)
- 5-Acoustic signal when the vehicle is tipping up (15 of 15 pins)
- 6-(12 of 15 pins)
- 7-Rear fog lamp (3 of 15 pins)



Lights code female connector of 15 pins ISO 12098

- 1-Left turn signal (3 of 24N)
- 2-Right turn signal (5 of 24N)
- 3-Fog lamp (7 of 24S)
- 4-Mass (1 of 24N)
- 5-Left position and clearance lights (2 of 24N)
- 6-Right position and clearance lights (6 of 24N)
- 7-Stoplight (4 of 24N)
- 8-Back-up light (3 of 24S)
- 9-(4 of 24S)
- 10-(N/D)
- 11-(7 of 24N)
- 12-(6 of 24S)
- 13-Mass for data line (1 of 24S)
- 14-(2 of 24S)
- 15-Acoustic signal when the vehicle is tipping up (5 of 24S)



Lights code female connector of 7 pins 24N (black) ISO 1185

- 1-Mass (4 of 15 pins)
- 2-Left position and clearance lights (5 of 15 pins)
- 3-Left turn signal (1 of 15 pins)
- 4-Stoplight (7 of 15 pins)
- 5-Right turn signal (2 of 15 pins)
- 6-Right position and clearance lights (6 of 15 pins)
- 7-(11 of 15 pins)

9.5 Revision tables

Pre-Delivery revision performed at Tisvol



Axles, suspension and wheels:

- Verify alignment of axles
- Visually verify the shock absorbers and silent-blocks
- Verify tightness of suspension elements (according to manufacturer's manual)
- Greasing of axles with drum brakes (on disc brake it is not necessary)
- Verify tightness of wheel nuts (600 Nm – 700 Nm)

Pneumatic installation:

- Bleed drums
- Check worn patches and pinching of pipes
- Verify leaks in the circuit
- Verify overall levelling

Electric installation and ABS:

- Verify lights and functioning of electrovalves (if the is any)
- Configure and verify the ABS or EBS system

Structure:

- Greasing of the tilting beam, locks and bolts on the door articulation
- Verify King-Pin and screws on the fifth wheel plate
- Tilt, verify interference and regulate the limit switch according to client

Canvas:

- Verify correct operation of canvas

Observations:

REVISION TABLE N° 1

6 months or 50.000 Km

Axles, suspension and wheels:

- Verify thickness of brake pads (≥ 11 mm) or shoes (≥ 5 mm)
- Verify alignment of axles
- Visually verify the shock absorbers and silent-blocks
- Verify tightness of suspension elements (according to manufacturer's manual)
- Greasing of axles with drum brakes (on disc brake it is not necessary)
- Verify tyre inflation (8.5 bar) and irregular and worn patches
- Verify tightness of wheel nuts (650 Nm)

Installations:

- Bleed drums
- Verify pneumatic installation and revise leaks
- Verify lights and functioning of electrovalves
- Verify the ABS or EBS system

Structure:

- Visual revision of structure
- Greasing of the tilting beam, locks and bolts on the door articulation

Canvas:

- Verify correct operation of canvas
- Greasing of axis bearing (canvas guides)
- Verify tightening of cables (canvas guides)

Observations:

6 months

REVISION TABLE N° 2

12 months or 100.000 Km

Axles, suspension and wheels:

- Verify thickness of brake pads (≥ 11 mm) or shoes (≥ 5 mm)
- Verify thickness of discs (larger than 37mm)
- Verify alignment of axles
- Visually verify the state of the shock absorbers and silent-blocks
- Verify tightness of suspension elements (according to manufacturer's manual)
- Greasing of axles with drum brakes (on disc axles it is not necessary)
- Verify tyre inflation (8.5 bar) and irregular and worn patches
- Verify tightness of wheel nuts (650 Nm)
- Verify looseness of wheel hubs

Installations:

- Bleed drums
- Verify pneumatic installation and revise leaks
- Verify lights and functioning of electrovalves
- Verify the ABS or EBS system

Structure:

- Visual revision of structure
- Greasing of the tilting beam, locks and bolts on the door articulation
- Unlatch and verify King-Pin and screws on the fifth wheel plate

Canvas:

- Verify correct operation of canvas
- Greasing of axis bearing (canvas guides)
- Verify tightening of cables (canvas guides)

Observations:

1 year

REVISION TABLE N° 3

18 months or 150.000 Km

Axles, suspension and wheels:

- Verify thickness of brake pads (≥ 11 mm) or shoes (≥ 5 mm)
- Verify alignment of axles
- Visually verify the shock absorbers and silent-blocks
- Verify tightness of suspension elements (according to manufacturer's manual)
- Greasing of axles with drum brakes (on disc brake it is not necessary)
- Verify tyre inflation (8.5 bar) and irregular and worn patches
- Verify tightness of wheel nuts (650 Nm)

Installations:

- Bleed drums
- Verify pneumatic installation and revise leaks
- Verify lights and functioning of electrovalves
- Verify the ABS or EBS system

Structure:

- Visual revision of structure
- Greasing of the tilting beam, locks and bolts on the door articulation

Canvas:

- Verify correct operation of canvas
- Greasing of axis bearing (canvas guides)
- Verify tightening of cables (canvas guides)

Observations:

18 months

REVISION TABLE N° 4

24 months or 200.000 Km

Axles, suspension and wheels:

- Verify thickness of brake pads (≥ 11 mm) or shoes (≥ 5 mm)
- Verify thickness of discs (larger than 37mm)
- Verify alignment of axles
- Visually verify the state of the shock absorbers and silent-blocks
- Verify tightness of suspension elements (according to manufacturer's manual)
- Greasing of axles with drum brakes (on disc axles it is not necessary)
- Verify tyre inflation (8.5 bar) and irregular and worn patches
- Verify tightness of wheel nuts (650 Nm)
- Verify looseness of wheel hubs

Installations:

- Bleed drums
- Verify pneumatic installation and revise leaks
- Verify lights and functioning of electrovalves
- Verify the ABS or EBS system

Structure:

- Visual revision of structure
- Greasing of the tilting beam, locks and bolts on the door articulation
- Unlatch and verify King-Pin and screws on the fifth wheel plate

Canvas:

- Verify correct operation of canvas
- Greasing of axis bearing (canvas guides)
- Verify tightening of cables (canvas guides)

Observations:

2 years

REVISION TABLE N° 5

30 months or 250.000 Km

Axles, suspension and wheels:

- Verify thickness of brake pads (≥ 11 mm) or shoes (≥ 5 mm)
- Verify alignment of axles
- Visually verify the shock absorbers and silent-blocks
- Verify tightness of suspension elements (according to manufacturer's manual)
- Greasing of axles with drum brakes (on disc brake it is not necessary)
- Verify tyre inflation (8.5 bar) and irregular and worn patches
- Verify tightness of wheel nuts (650 Nm)

Installations:

- Bleed drums
- Verify pneumatic installation and revise leaks
- Verify lights and functioning of electrovalves
- Verify the ABS or EBS system

Structure:

- Visual revision of structure
- Greasing of the tilting beam, locks and bolts on the door articulation

Canvas:

- Verify correct operation of canvas
- Greasing of axis bearing (canvas guides)
- Verify tightening of cables (canvas guides)

Observations:

30 months

REVISION TABLE N° 6

36 months or 300.000 Km

Axles, suspension and wheels:

- Verify thickness of brake pads (≥ 11 mm) or shoes (≥ 5 mm)
- Verify thickness of discs (larger than 37mm)
- Verify alignment of axles
- Visually verify the state of the shock absorbers and silent-blocks
- Verify tightness of suspension elements (according to manufacturer's manual)
- Greasing of axles with drum brakes (on disc axles it is not necessary)
- Verify tyre inflation (8.5 bar) and irregular and worn patches
- Verify tightness of wheel nuts (650 Nm)
- Verify looseness of wheel hubs

Pneumatic installation:

- Bleed drums
- Check friction and grip of the pipes
- Check circuit leaks
- Check levelling

Electric installation and ABS:

- Verify lights and functioning of electrovalves (if the is any)
- Verify the ABS or EBS system

Structure:

- Look for early crack or irregular deformations
- Greasing of the tilting beam, locks and bolts on the door articulation
- Unlatch and verify King-Pin and screws on the fifth wheel plate

Canvas:

- Verify correct operation of canvas
- Greasing of axis bearing (canvas guides)
- Verify tightening of cables (canvas guides)

Observations:

3 years

REVISION TABLE N° 7

42 months or 350.000 Km

Axles, suspension and wheels:

- Verify thickness of brake pads (≥ 11 mm) or shoes (≥ 5 mm)
- Verify alignment of axles
- Visually verify the shock absorbers and silent-blocks
- Verify tightness of suspension elements (according to manufacturer's manual)
- Greasing of axles with drum brakes (on disc brake it is not necessary)
- Verify tyre inflation (8.5 bar) and irregular and worn patches
- Verify tightness of wheel nuts (650 Nm)

Installations:

- Bleed drums
- Verify pneumatic installation and revise leaks
- Verify lights and functioning of electrovalves
- Verify the ABS or EBS system

Structure:

- Visual revision of structure
- Greasing of the tilting beam, locks and bolts on the door articulation

Canvas:

- Verify correct operation of canvas
- Greasing of axis bearing (canvas guides)
- Verify tightening of cables (canvas guides)

Observations:

42 months

REVISION TABLE N° 8

48 months or 400.000 Km

Axles, suspension and wheels:

- Verify thickness of brake pads (≥ 11 mm) or shoes (≥ 5 mm)
- Verify thickness of discs (larger than 37mm)
- Verify alignment of axles
- Visually verify the state of the shock absorbers and silent-blocks
- Verify tightness of suspension elements (according to manufacturer's manual)
- Greasing of axles with drum brakes (on disc axles it is not necessary)
- Verify tyre inflation (8.5 bar) and irregular and worn patches
- Verify tightness of wheel nuts (650 Nm)
- Verify looseness of wheel hubs

Installations:

- Bleed drums
- Verify pneumatic installation and revise leaks
- Verify lights and functioning of electrovalves
- Verify the ABS or EBS system

Structure:

- Visual revision of structure
- Greasing of the tilting beam, locks and bolts on the door articulation
- Unlatch and verify King-Pin and screws on the fifth wheel plate

Canvas:

- Verify correct operation of canvas
- Greasing of axis bearing (canvas guides)
- Verify tightening of cables (canvas guides)

Observations:

4 years

REVISION TABLE N° 9

54 months or 450.000 Km

Axles, suspension and wheels:

- Verify thickness of brake pads (≥ 11 mm) or shoes (≥ 5 mm)
- Verify alignment of axles
- Visually verify the shock absorbers and silent-blocks
- Verify tightness of suspension elements (according to manufacturer's manual)
- Greasing of axles with drum brakes (on disc brake it is not necessary)
- Verify tyre inflation (8.5 bar) and irregular and worn patches
- Verify tightness of wheel nuts (650 Nm)

Installations:

- Bleed drums
- Verify pneumatic installation and revise leaks
- Verify lights and functioning of electrovalves
- Verify the ABS or EBS system

Structure:

- Visual revision of structure
- Greasing of the tilting beam, locks and bolts on the door articulation

Canvas:

- Verify correct operation of canvas
- Greasing of axis bearing (canvas guides)
- Verify tightening of cables (canvas guides)

Observations:

54 months

REVISION TABLE N° 10

60 months or 500.000 Km

Axles, suspension and wheels:

- Verify thickness of brake pads (≥ 11 mm) or shoes (≥ 5 mm)
- Verify thickness of discs (larger than 37mm)
- Verify alignment of axles
- Visually verify the state of the shock absorbers and silent-blocks
- Verify tightness of suspension elements (according to manufacturer's manual)
- Greasing of axles with drum brakes (on disc axles it is not necessary)
- Verify tyre inflation (8.5 bar) and irregular and worn patches
- Verify tightness of wheel nuts (650 Nm)
- Verify looseness of wheel hubs

Installations:

- Bleed drums
- Verify pneumatic installation and revise leaks
- Verify lights and functioning of electrovalves
- Verify the ABS or EBS system

Structure:

- Visual revision of structure
- Greasing of the tilting beam, locks and bolts on the door articulation
- Unlatch and verify King-Pin and screws on the fifth wheel plate

Canvas:

- Verify correct operation of canvas
- Greasing of axis bearing (canvas guides)
- Verify tightening of cables (canvas guides)

Observations:

5 years

REVISION TABLE N° 11

66 months or 550.000 Km

Axles, suspension and wheels:

- Verify thickness of brake pads (≥ 11 mm) or shoes (≥ 5 mm)
- Verify alignment of axles
- Visually verify the shock absorbers and silent-blocks
- Verify tightness of suspension elements (according to manufacturer's manual)
- Greasing of axles with drum brakes (on disc brake it is not necessary)
- Verify tyre inflation (8.5 bar) and irregular and worn patches
- Verify tightness of wheel nuts (650 Nm)

Pneumatic installation:

- Bleed drums
- Check circuit leaks
- Check levelling

Electric installation and ABS:

- Verify lights and functioning of electrovalves (if the is any)
- Verify the ABS or EBS system

Structure:

- Look for early crack or irregular deformations
- Greasing of the tilting beam, locks and bolts on the door articulation
- Unlatch and verify King-Pin and screws on the fifth wheel plate

Canvas:

- Verify correct operation of canvas
- Greasing of axis bearing (canvas guides)
- Verify tightening of cables (canvas guides)

Observations:

66 months

REVISION TABLE N° 12

72 months or 600.000 Km

Axles, suspension and wheels:

- Verify thickness of brake pads (≥ 11 mm) or shoes (≥ 5 mm)
- Verify thickness of discs (larger than 37mm)
- Verify alignment of axles
- Visually verify the state of the shock absorbers and silent-blocks
- Verify tightness of suspension elements (according to manufacturer's manual)
- Greasing of axles with drum brakes (on disc axles it is not necessary)
- Verify tyre inflation (8.5 bar) and irregular and worn patches
- Verify tightness of wheel nuts (650 Nm)
- Verify looseness of wheel hubs

Pneumatic installation:

- Bleed drums
- Check friction and grip of the pipes
- Check circuit leaks
- Check levelling

Electric installation and ABS:

- Verify lights and functioning of electrovalves (if the is any)
- Verify the ABS or EBS system

Structure:

- Look for early crack or irregular deformations
- Greasing of the tilting beam, locks and bolts on the door articulation
- Unlatch and verify King-Pin and screws on the fifth wheel plate

Canvas:

- Verify correct operation of canvas
- Greasing of axis bearing (canvas guides)
- Verify tightening of cables (canvas guides)

Observations:

6 years

10. REQUEST FOR WARRANTY AND LIST OF OFFICIAL SERVICES

- Steps to follow to request a warranty case:

1. **Phone contact** with your **official dealer**.

2. Indicate, to the person of Reception, the **last 5 digits of the chassis number**, as well as your contact information

3. Indicate a **small description of the technical problem** or breakdown

4. The **Person Responsible for Warranties will contact You** to give a solution to the case

- You can find the nearest garage on our website in section "After Sales Service" (<https://tisvol.com/corp/en/after-sales-service/>):



TISVOL

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Av/Progres, 17 · Pol. Ind. Campo Anibal
46530 Puzol · Valencia (Spain)
Tel: +34 961 46 52 11 · tisvol@tisvol.com

www.tisvol.com

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Powered by Superior Quality

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46530 Puzol · Valencia (Spain)
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