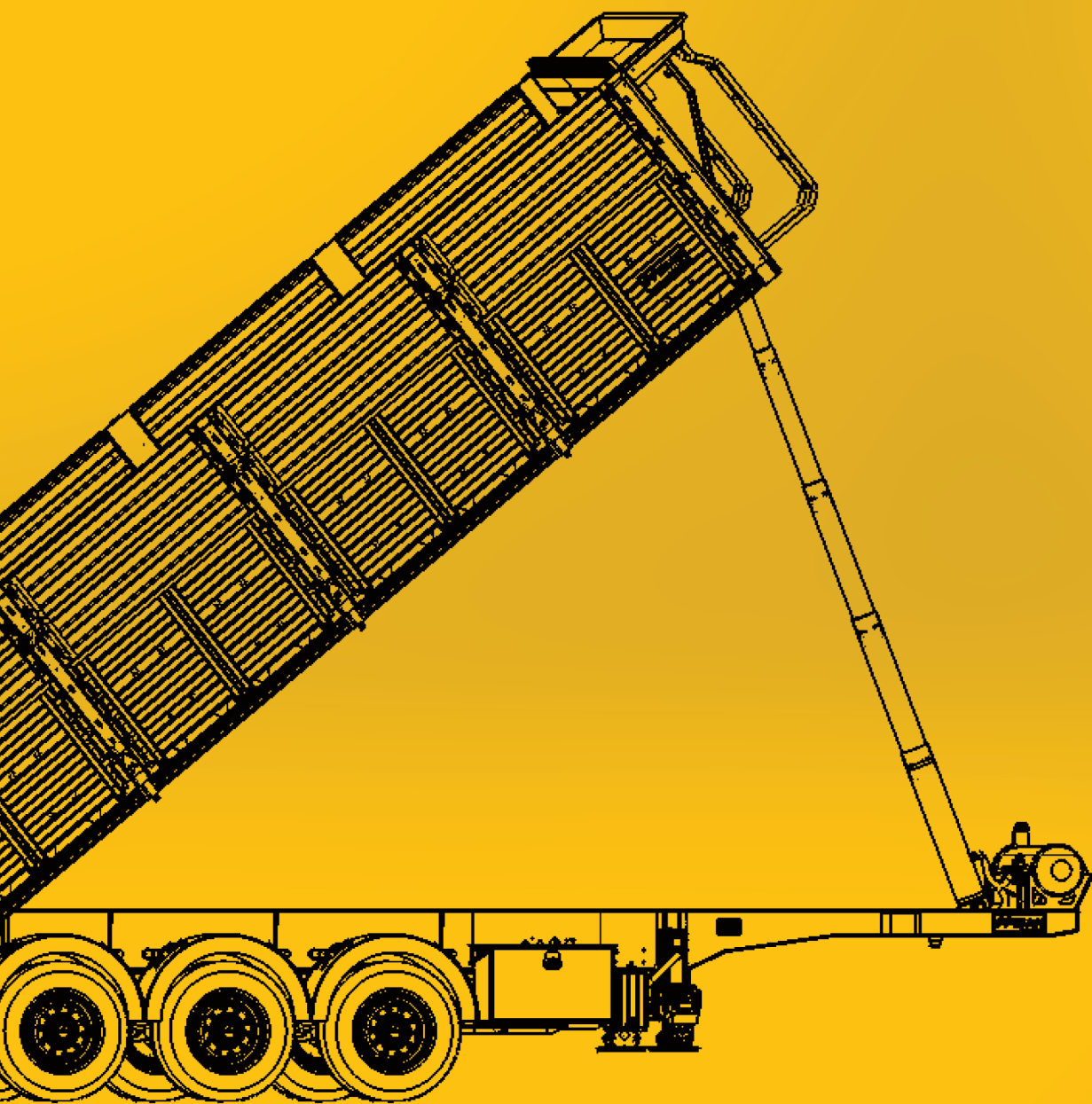


# FESAN

## MANUAL BOOK



## **Preface**

Dear Customer,

We thank you for choosing Fesan Makina Product. We wish you to use your vehicle in safe and to have fruitful earnings.

Vehicle you have bought, has been tested in Fesan Makina Factory. For you to use your vehicle in safe and secure for long years; it is necessary to follow usage, maintenance and safety instructions mentioned in this book completely.

This manual book would help you for daily usage and maintenance. So; in case of need, you should keep this manual book in a place reachable easily. Please read this manual book complete and make the person who would use the vehicle to read before drive and inform of users. Please take care of safety warnings and precautions especially and fulfill complete all warnings and instructions.

This manual book is an important part of the vehicle. It should be delivered to new owner in case of second hand sellings.

## **Commercial Rights**

All usage rights of this manual book belongs to Fesan Makina. For usage, duplication or any other way of distributing this content, confirmation should be taken from Fesan Makina.

Fesan Makina has been developing its vehicles continuously. Thereby Fesan Makina may change this manual book informations without notice. Due to these changes, Fesan Makina is not under commercial responsibility.

Correctness, lack or currency of informations mentioned in this manual book, are not guaranteed by Fesan Makina. All informations, descriptions, drawings and pictures are valid for the issue date of this manual book. The content of this manual book can not be used for any evidence of assurance commitment or guaranteed subjects. Fesan Makina does not take responsibility of damages unless commercial responsibilities occurs or any bad intention or neglect. If the content of this manual book loses legal validity in parts or partly, remained contents validity doesn't get effected from this situation.

|   |    |
|---|----|
| Preface   | 3  |
| Legal Rights                                    | 4  |
| Definitions and Abbreviations                   | 6  |
| Safety Rules to follow in First Vehicle Use     | 7  |
| Connection of Semi Trailer to Tow Truck         | 8  |
| Seperation of Semi Trailer from Tow Truck       | 8  |
| Main Usage and Safety Instructions              | 10 |
| Dumper Lifting Instruction                      | 23 |
| Dumper Landing Instruction                      | 24 |
| Maintenance and Maintenance Safety Instructions | 24 |
| Tires Maintenance and Change                    | 25 |
| Outriggers                                      | 26 |
| King Pin  | 26 |
| Electrical System                               | 26 |
| Brake and Air Suspension System                 | 26 |
| Tonage Meter                                    | 28 |
| Axle System                                     | 28 |
| Hydraulic System                                | 30 |
| Maintenance Periods                             | 31 |
| Oiling Chart                                    | 32 |
| Bolt Tightening Torque Chart                    | 36 |
| Troubleshoot Charts                             | 42 |
| Terms of Guarantee                              | 48 |
| Contact Informations                            | 50 |
| Authorized Services                             | 50 |



## Definitions and Abbreviations

**Fesan Makina:** Fesan Makina Otomotiv İnşaat Sanayi ve Tic. Ltd. Şti.

**Semi Trailer:** Trailer of that some part settles on tow truck, carrying load and some of its own weight by tow truck.

**Vehicle:** Semi Trailer

**Tow Truck:** Engine Vehicle which pulls the Semi Trailer.

**Manufacturer:** Fesan Makina

**Buyer, User:** Natural Person, Private Company or Legal Persons who buy Fesan Makina Products.

**PTO, Driveline Box:** Gear Box that transfers power from Tow Truck's transmission to hydraulic pump.

**Cylinder, Piston:** Machine that works by hydraulic pressure, provides the vehicle's case to open.

**Hydraulic Pump:** Machine that transfers energy from PTO to hydraulic oil and valve.

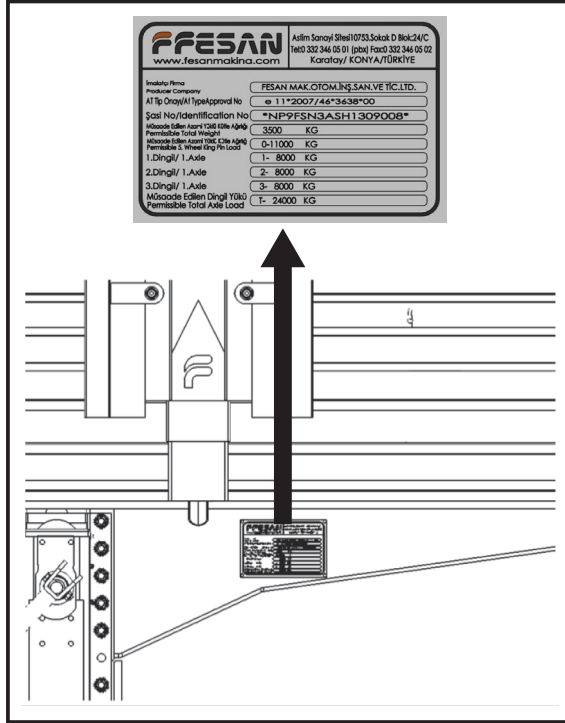
**Valve(Ventile):** Machine directs hydraulic oil and does pressure control of hydraulic system.

**Limit Control Valve:** Machine limits cylinder's opening stroke(length).

**Vehicle's Right Side:** When you look at the Vehicle from its rear, your right side is also vehicle's right side.

**Vehicle's Left Side:** When you look at the Vehicle from its rear, your left side is also vehicle's left side.

There are important informations consisting vehicle's chasis number and maximum load capacity on Chasis Plate.



PICTURE 1

## Safety Rules to follow in First Vehicle Use

- Please check if the king pin on semi-trailer, is locked safely to the fifth Wheel of tow truck.
- Please check if mechanical outriggers both sides are lifted up and actuators are connected to its housing.
- Please check the tyres and its pressure.
- Please check if park brakes have been discharged completely.
- Please check tow truck air pressure indicator before moving.
- Please check if park and foot brakes are working.
- Please check if all lighting indicators, lights and signal lamps are working. Make sure if all lighting indicators and reflectors are clean.
- For air suspension vehicles; Please wait till the vehicle is ready position to drive.
- Please check if all the fasteners are convenient to the terms of service.
- Please check if there is any oil leakage at hydraulic line and at hydraulic pump oil warning hole.

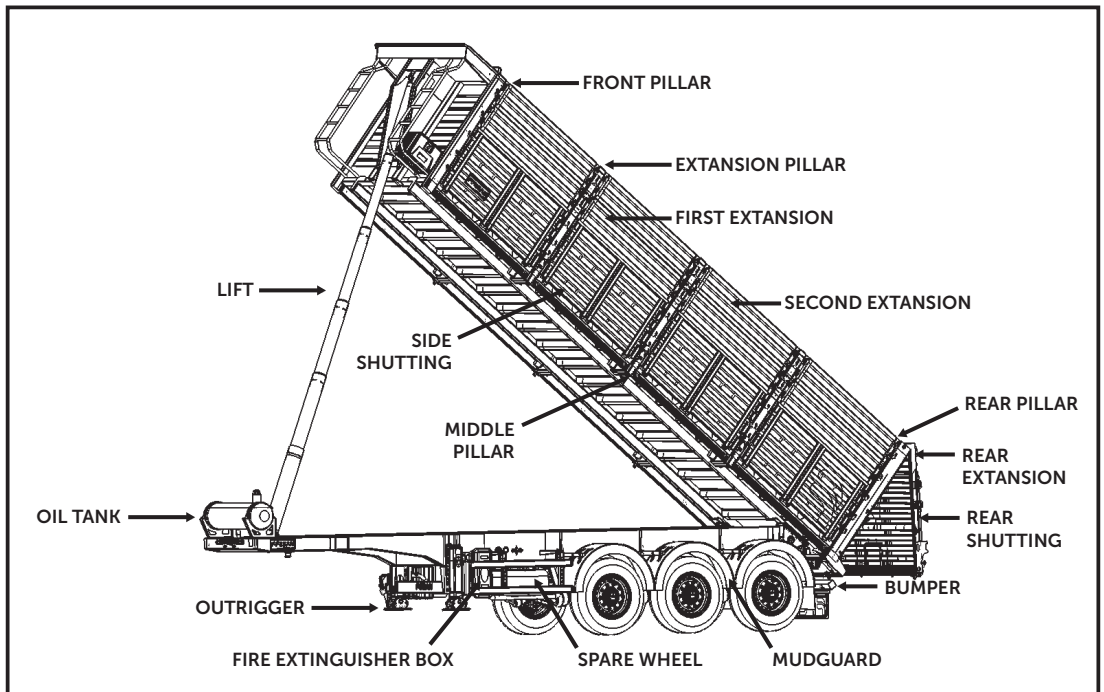
## Connecting the Trailer to Tow Truck

- Please check the king pin and connection bolts. There should not be any tearing, deformity and roughness on surface of king pin connection table.
- There must be enough non dusty and dirty grease on tow truck fifth Wheel and on locking parts.
- Locking system of tow truck fifth Wheel, should be ON position
- Please lock the brakes of semi-trailer using the park brakes. Please put Wheel wedge behind the wheels for safety.
- Using the outriggers of semi-trailer; Please adjust tow truck fifth Wheel table surface to be 5 cm higher than semi-trailer king pin table surface.
- Please move reverse the tow truck slowly with same level of semi-trailer till king pin table touch.
- Please give the engine the gun as to be hitting authomatic lock of fifth Wheel upper table sliding under the king pin table, entering fifth Wheel locking system between shoes.
- Throw tow truck into 1st gear to be sure if the king pin is locked properly. Driver must feel a strong strength on vehicle's front movement as his press to gas pedal slowly and cluth is hold by semi-trailer park brakes. So please be definitely sure the tow truck and semi-trailer are safely connected with making this test. Also check with eyes if tow truck and semi-trailer are connected.
- Please be sure if mechanical adjustments are totally moved position and guide lever is infixed on its housing.
- Please put the starter key off the tow truck.
- Please connect tow truck and semi-trailer brake couplings with pressing themselves and turning rubber gaskets, put little liquid soap if necessary. Be sure if the couplings are settled and not air leakage.
- Before connections between tow truck and semi-trailer; firstly control line(yellow), then feeder line (red) couplings should be reciprocally and correctly connected.
- Be sure if the brakes are working correctly. Please don't depart if the brake system pressure is lower than 6,5 bar.
- Please connect electric and ABS/EBS sockets. Check if the electric system is working correctly, please don't depart if there is any problem.
- Please do connections of hydraulic system. Be sure connections are properly settled and not touching to the moving parts. Check if there is any oil leakage on PTO hydraulic line and pump oil warning hole. Please don't depart if there is any oil leakage.

## Seperating Semi-Trailer from Tow Truck

- Please park your vehicle on a convenient and safe place.
- Please shut off the engine.
- After being sure of brake campanes are not hot (maximum 100 degree); apply park brakes. If park brakes are applied while the campanes are hot; then campanes may be cracked during cooling. If park brake is not applicable; then Wheel wedge should be used.

- Separate ABS/EBS couplings from each other (first red colour feeder line, then yellow colour control line). In this case braking on trailer will be applied automatically.
- Separate electric sockets.
- Separate hydraulic connections from each other and close end avoiding any dirt to enter from open end.
- Land outriggers using high speed. When the shoes touch the ground, pass the slow speed. Outriggers should not step on soft ground. Open fifth Wheel lock to release the king pin.
- Separate tow truck from semi-trailer slowly.
- Don't change height of outriggers after tow truck is separated from semi-trailer. Use wheel wedge on inclined roads.
- Tow truck should not get separated from semi-trailer unless being sure of load is completely on the outriggers.



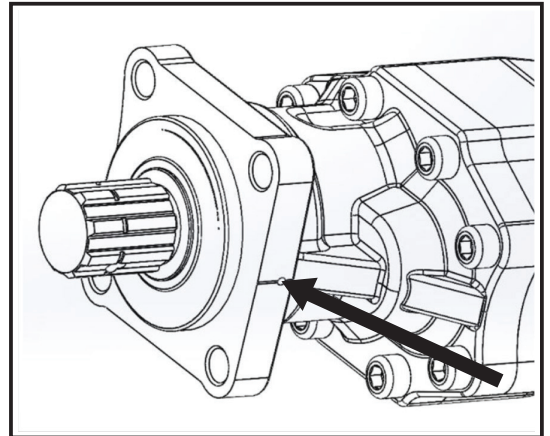
PICTURE 2: VEHICLE MAIN PARTS

## Basic Usage and Safety Instructions

- Before using vehicle; - Also manual books of mounted parts on semi-trailer, which are given with this book- to read, to understand and to apply the instruction Buyer, user and repairer responsible of all Warning, safety, usage, maintenance and guarantee contents texts in this book. If otherwise your vehicle would be out of guarantee.
- Only instructions given in this book, don't bring usage safety by itself, so please always pay attention of national and local safety precautions too.
- Load capacity remarked on semi-trailer's axle, suspension, king pin area and vehicle introducing etiquette for hydraulic system, should not be exceeded. Please do not carry over of weight, gabarite and dimensions as mentioned laws and regulations.
- Be sure that installation cables and connections between tow truck and semi-trailer are connected properly. Do not depart with vehicles which are not connected ABS/EBS cables.
- Whilst connection and separations of tow truck and semi-trailers connections are connected and separated; tow truck starter key should be off.
- Whilst connection and separations of tow truck and semi-trailers connections are connected and separated; there should not be any person on tow truck or on semi-trailer.
- Before departing; tyre pressures, cracks, cut and tears on surfaces on tyres, if there is any foreign object on tyres, tread depth should be checked and all these issues should be convenient according to the manufacturer's determined standards and legal regulations.
- All tyres should be with the same specifications, type and sizes.

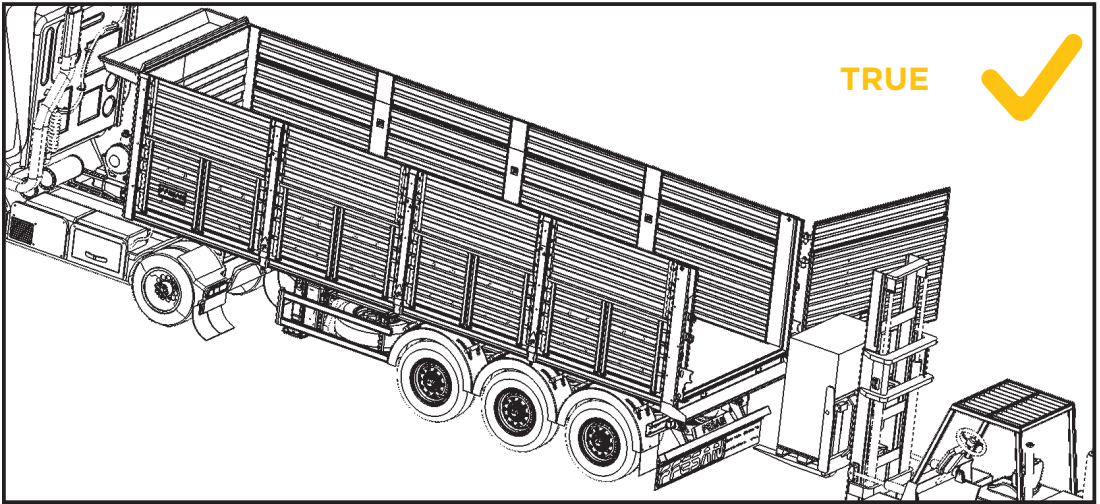
### Before departing;

- Loading ramps should be removed, mechanical outriggers should be as driving position.
- All shuttings and extensions should be closed and pins should be put in their places.
- Please check spare Wheel carrier parts and connections.
- Please check mudguards general situation and connections.
- Please check if signals are working properly, clean on lamps.
- Be sure if leveler valve at suspension system, is on driving position.
- Please check tow truck air pressure indicator and air line.
- Please check all brake systems working.
- Please check all connections of hydraulic line and if there is any oil leakage in this line or not.
- Please check if there is any oil leakage from hydraulic pump oil warning hole. (PICTURE 3)
- Please be sure if the dumper is off, if the control buttons are in convenient positions and if PTO is not put into use.

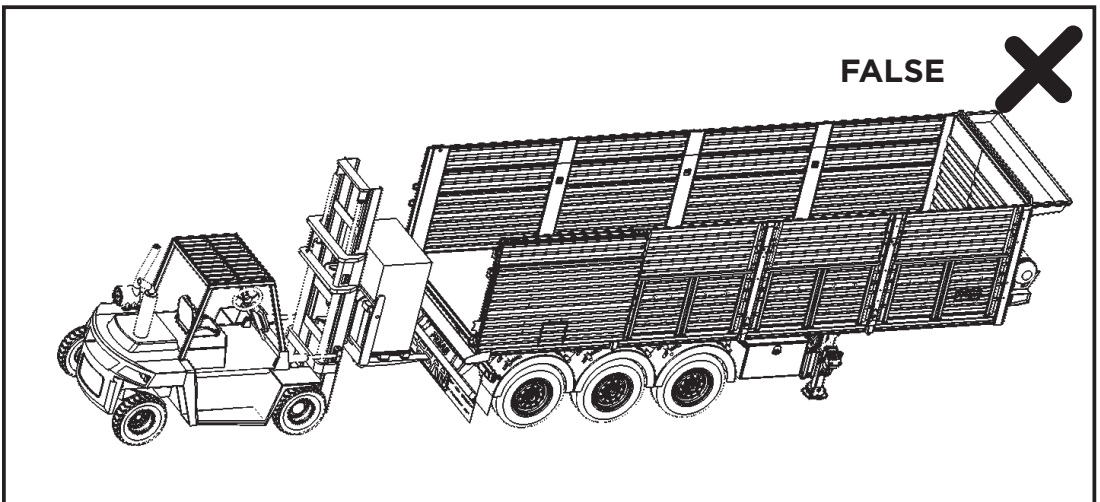


PICTURE 3: PUMP OIL WARNING HOLE

- Vehicle should be used by convenient authority persons, inclined person to use semi-trailer, who fully read and understood this book, know and apply legal security standards.
- The persons who use the vehicle, can not use medicine that effects his reactions and alcohol.
- Users should always use personal safety equipments and should not wear things which would be attached working parts like; ring, bracelet, watch or torn and wide wearings.
- Without tow truck; vehicle should not be loaded and released.
- If there is load on frontal parts of semi-trailer's mechanical outriggers-to avoid inclination on semi-trailer-it is a must tow truck to be connected to semi-trailer or semi-trailer should be supported from king pin section. (PICTURE 4, PICTURE 5)

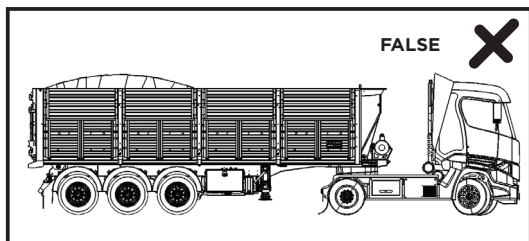


PICTURE 4

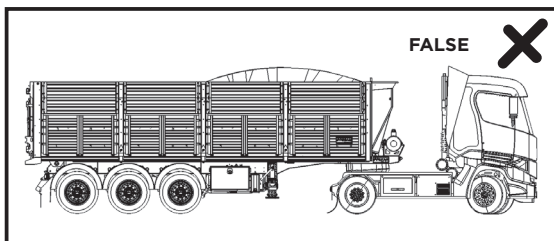


PICTURE 5

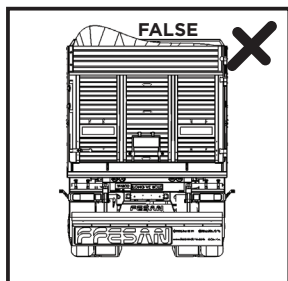
- Please check if the load on vehicle is properly distributed and settled conveniently according to the working situations. If the load is centered in front of the case; then it causes high pressure on hydraulic system, if the load is centered on sides and on rear, then it causes vehicle fall over. A platform providing right and equal load distribution on semi-trailer, should must be settled under high specific weight and narrow bottom space loads. (PICTURE 6, PICTURE 7, PICTURE 8, PICTURE 9)



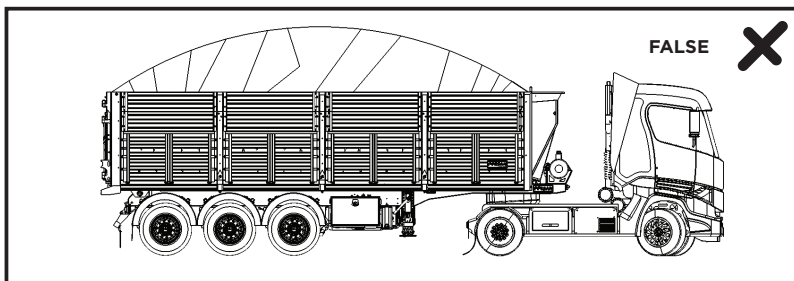
PICTURE 6



PICTURE 7

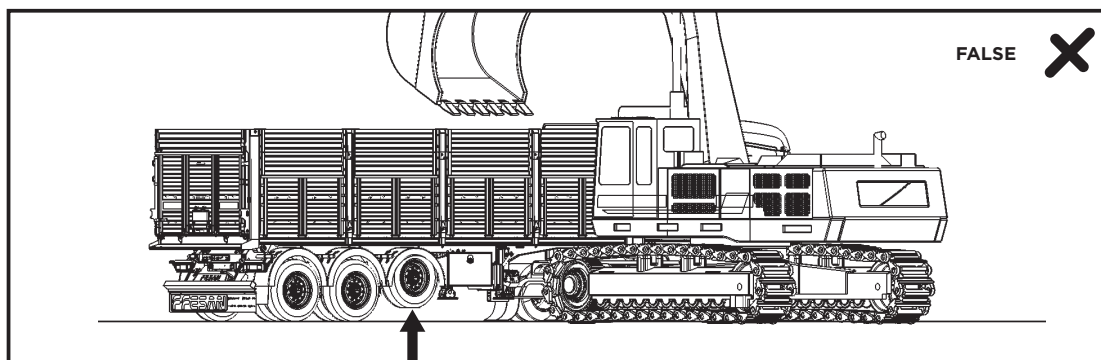


PICTURE 8



PICTURE 9

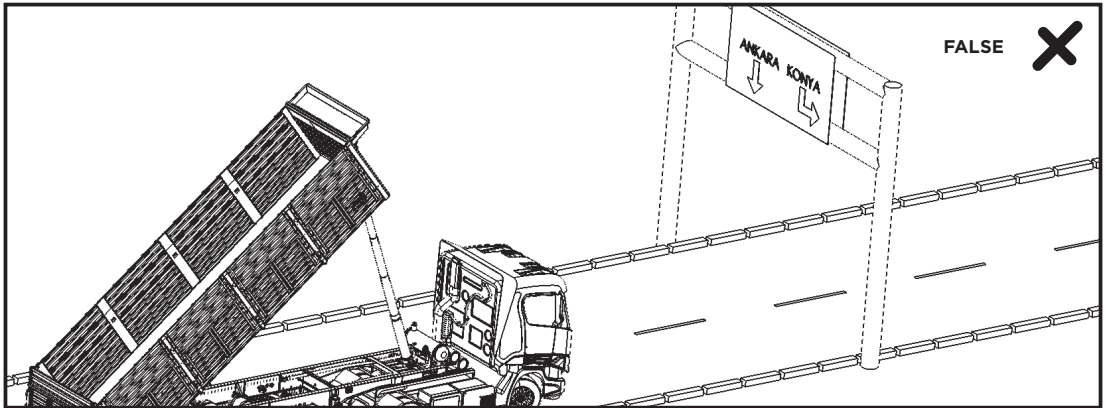
- Safety precautions to avoid the load to move during driving, should be taken.
- Necessary precautions to avoid floor covering to be damaged or broken by pallets or other packing types, should be taken.
- Please pay attention the load should be settled not to touch the ground, fall down, pour down, leak, flow over or make noise, or block driver sight.
- Rear shutting is not convenient for forklift to move on it whilst loading.
- Loading is not allowed when front axle is up position. (PICTURE 10)



PICTURE 10



- On rippled roads; angle between king pin and fifth Wheel, should not be over than 3 degrees from sides, 7 degrees from rear and 5 degrees from front.
- In cold weathers; do not put liquid into the air fittings against the freezing.
- Whilst waiting at parking area; semi-trailer's brake, electric, ABS/EBS and oil hose connections covers should be closed.
- Please do not shift the gear to neutral on downhill drivings. Meanwhile to avoid the brakes to be worn off heat; you can take advantage of retarder on your tow truck (if there is).
- There should be brake adaptation with tow truck and semi-trailer. Neither semi-trailer should push the tow truck from back, nor semi-trailer shouldn't pull the tow truck by advance and strong brake, in this regard braking capacity of tow truck and semi-trailer, would be over and balatas, tyres, axles, campanes and discs and other connection parts would be worn out and damaged fastly.
- It is important to have reciprocally same value brake functions of qatar consisting tow truck and semi-trailer; otherwise there may be seen Wheel heatings which may cause pullings towards to the sides and other problems at qatar.
- Using the brake systems which is on some tow trucks and provides only semi-trailer's brake during driving, is not convenient to the 71/320/EEC Brake Regulation and not allowed to use it. All failures and damages occurs due to this situation, is accepted as out of guarantee.
- Please pay attention to the obstacles like bridge, tunnel, caution signs and trees which may damage to the body of semi-trailer. Convenient 5th Wheel height and maximum gabari height of the semi-trailer is 4 mt. (PICTURE 11)

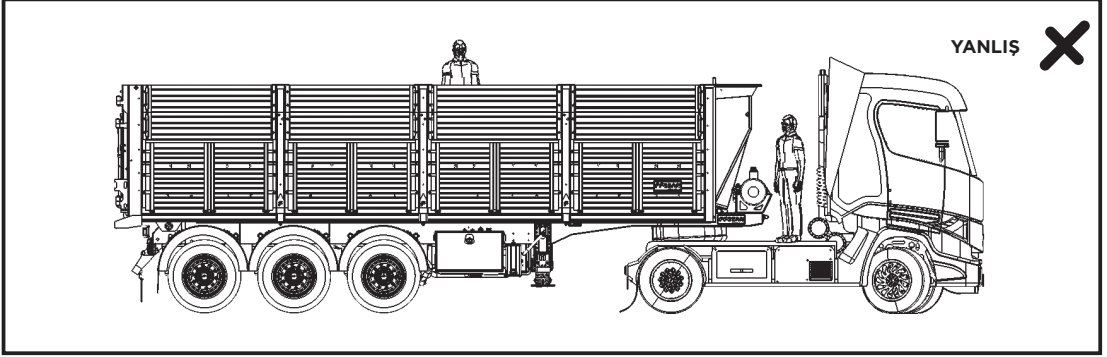


PICTURE 11

- Whilst semi-trailer's shuttles are opening; releasing or falling of the load should be considered and necessary precautions must be taken.
- To check the electrical system; ever do not give alternative current to the system.
- For new systems to be added and revises to be done to the electrical system; confirmation should be taken from Fesan Makina.
- On the vehicles that electrical system is grounded to the chasis( the ones negative poles connected to the chassis); all welding works are forbidden.
- If not necessary; please do not change suspension level settings when the vehicle is loaded.

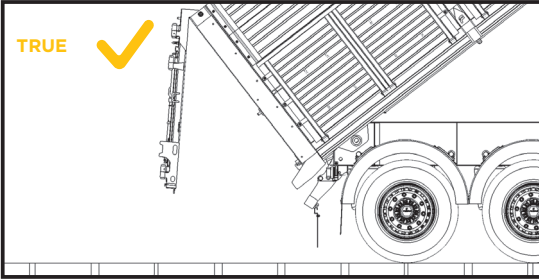


- During the driving; do not let any person to be on semi-trailer.  
(PICTURE 12)

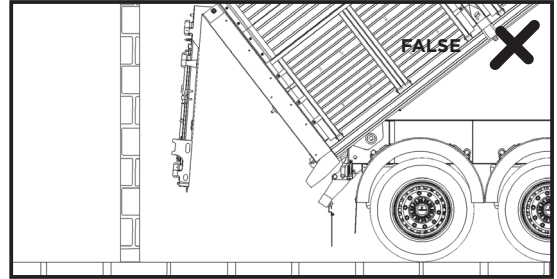


PICTURE 12

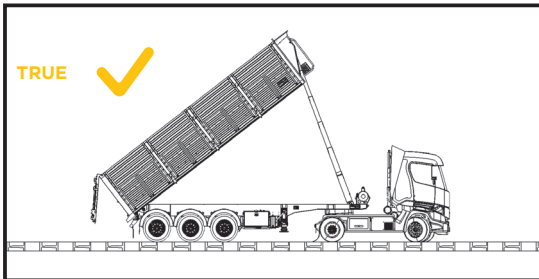
- Unless having necessary precautions and permits; it is forbidden to carry the dangerous and harmful substances.
  - Please do not use vehicles which are not stable technically. Be sure failures and damages have been repaired.
  - Do not do any changes on the vehicle unless Fesan Makina's written permit.
  - All connections and moving mechanisms should be greased after the vehicle is washed up every time.
  - Against to slip down; Avoid all steps and platforms from grease, oil, mud and dirt.
  - Please keep first aid kit and fire extinguisher in the vehicle.
  - It is forbidden to use the vehicle in closed places and underground.
  - There should be enough lightings at dumper discharging area
  - There should be enough space at dumper discharging area for safely discharging.
- (PICTURE 13, PICTURE 14)



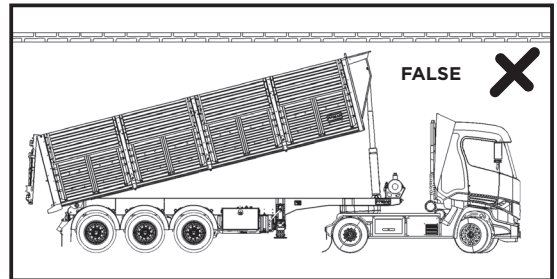
PICTURE 13



PICTURE 14

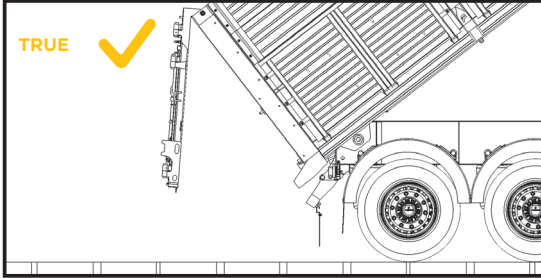


PICTURE 15

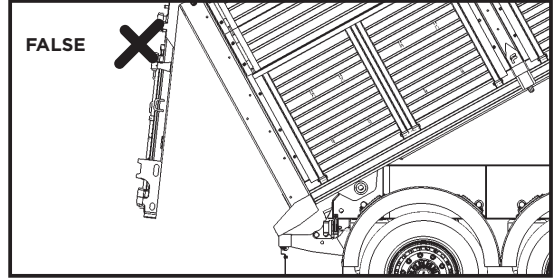


PICTURE 16

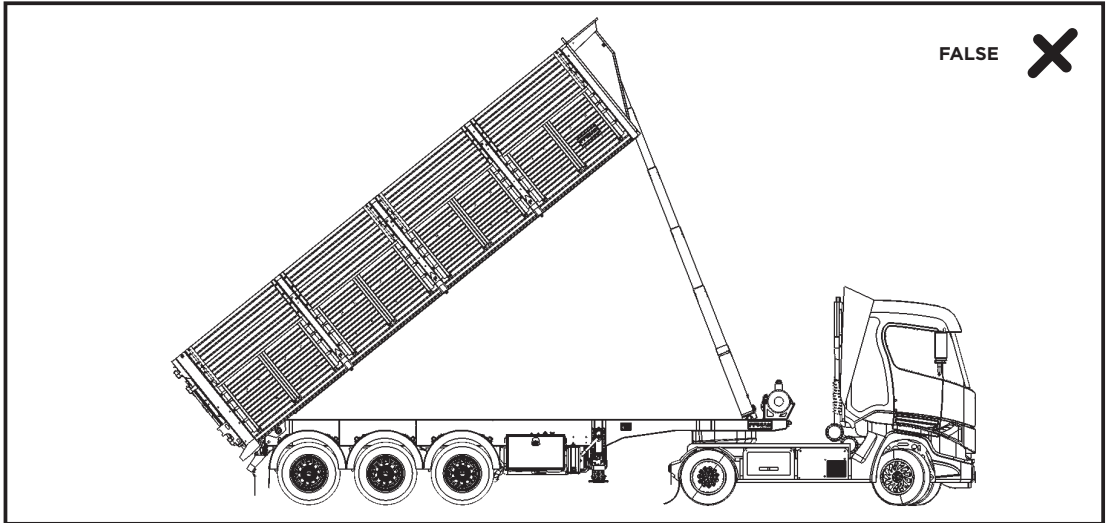
- Before lifting dumper; Please make sure if rear bumper axle is in correct position and correct shutting pins (nails) have been removed. Otherwise moving case hits to the bumper, locked shutting doesn't open. (PICTURE 17, PICTURE 18, PICTURE 19)
- Before dumpering; take off in orders the nails shown at PICTURE 20.



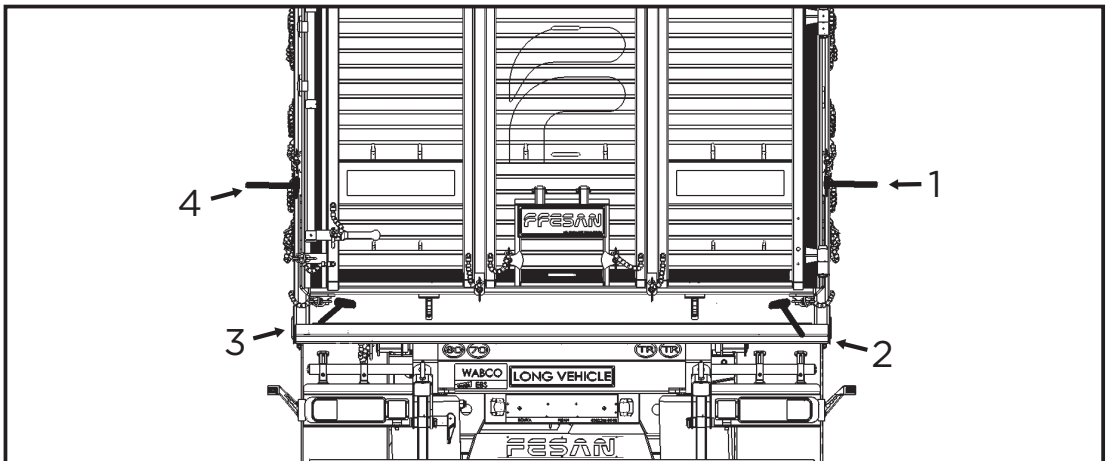
PICTURE 17



PICTURE 18

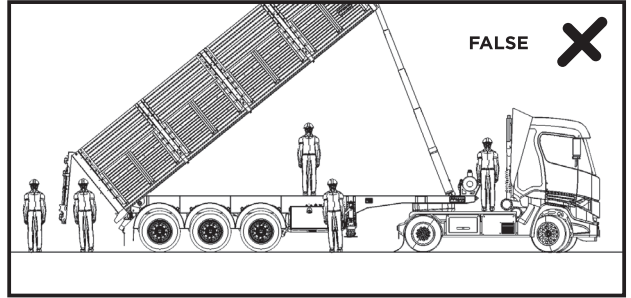


PICTURE 19



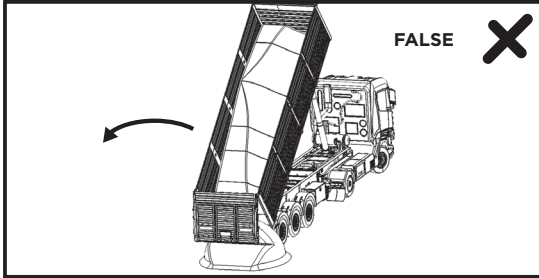
PICTURE 20

- When dumper is upper position; please do not get under it. Do not walk around the vehicle. Keep your distance in safety. (PICTURE 21)

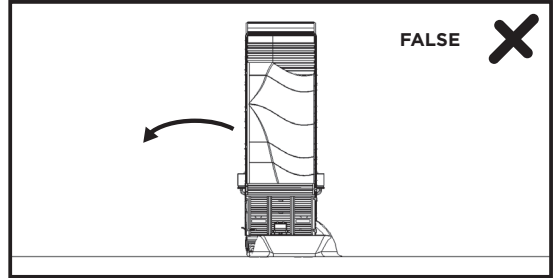


PICTURE 21

- Non flowing or unequally flowing loads may cause damage to your vehicle. (PICTURE 22, PICTURE 23)

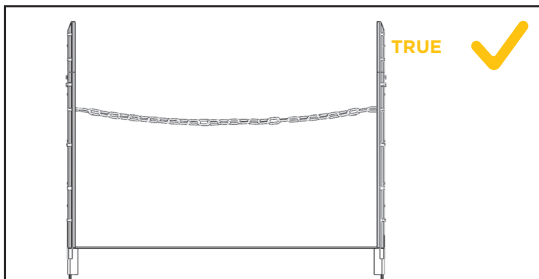


PICTURE 22

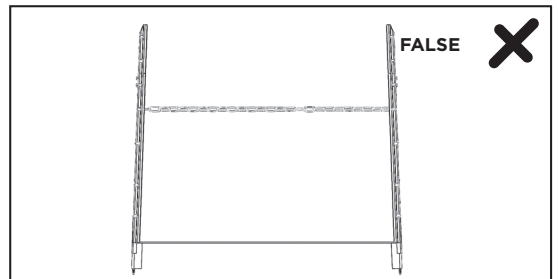


PICTURE 23

- Oil temperature in hydraulic oil tank, should not be over 60 degree.
- Even if dumper tow truck starter key is in off position; you can use control buttons to land it. Before landing; please check around.
- Please do not change pressure adjustments of directional valves.
- To discharge the load; lifting and landing of case, moving the vehicle to the front and rear, shaking the case are **STRICTLY FORBIDDEN AND VERY DANGEROUS**. If Any kind of these cases damages the vehicle or cause any accident, the vehicle is not given warranty and Fesan Makina is not responsible from damages and accident results.
- Squeeze pillar chains as much as only to release its gap. With more squeeze; you may cause the mapa to be broken, damage pillars and case. (PICTURE 24, PICTURE 25)

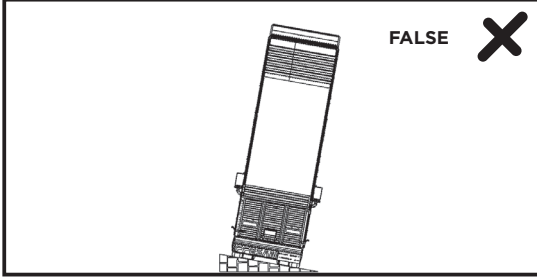


PICTURE 24

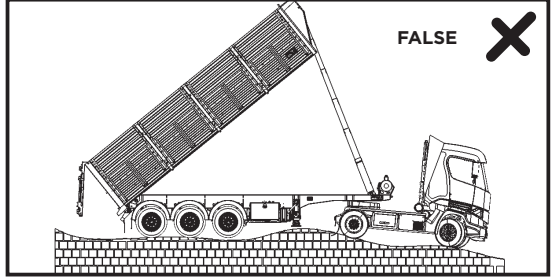


PICTURE 25

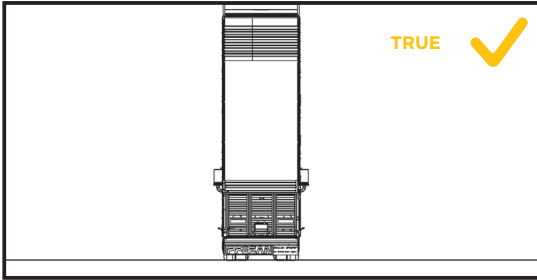
- Do not do any dumper lifting and landing work on inclined and rough areas. (PICTURE 26, PICTURE 27, PICTURE 28, PICTURE 29)



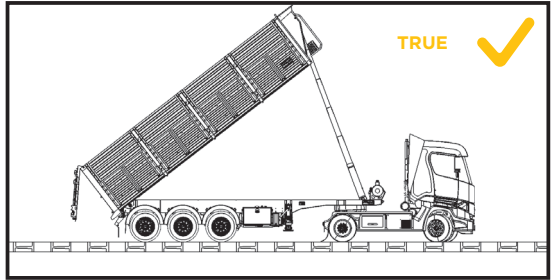
PICTURE 26



PICTURE 27

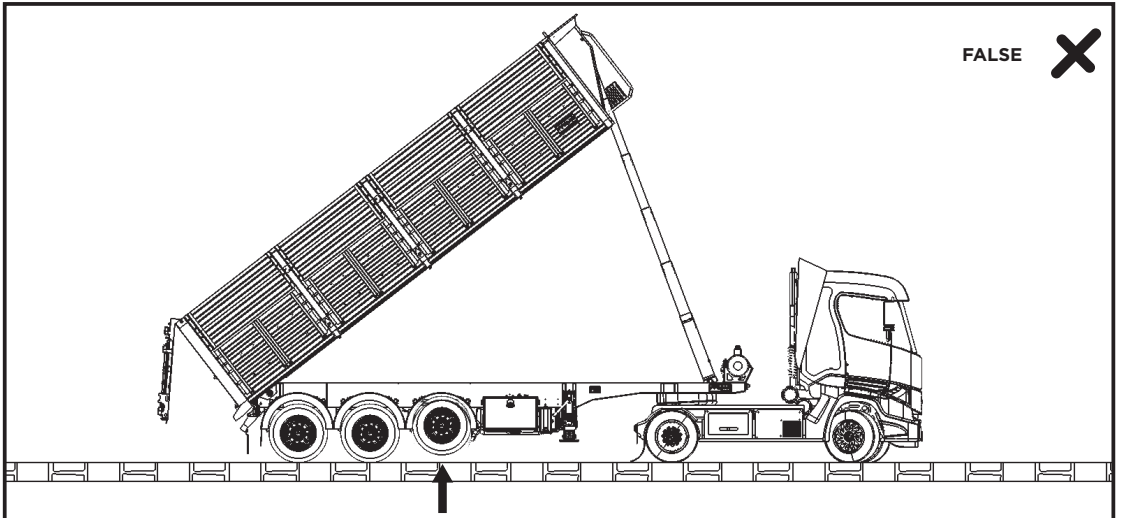


PICTURE 28



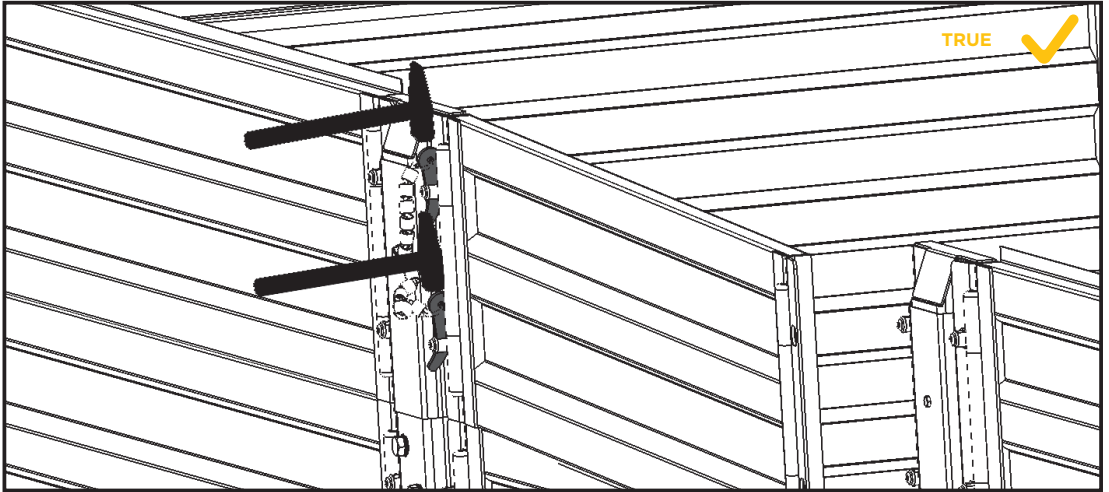
PICTURE 29

- All axles should be touching to the ground on dumper landing Works. Lifted axles should be landed. (PICTURE 30)



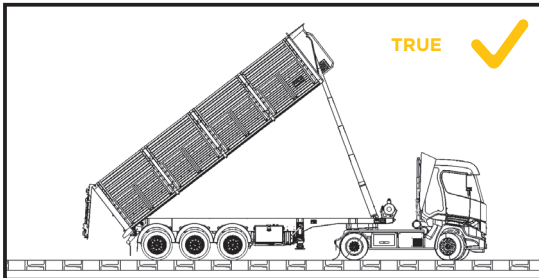
PICTURE 30

- Whilst extension is opened; extension pims (nails) on hinged side should be nailed very good. After this done; extensions should be opened. When you close the extensions; close the upper side first. (PICTURE 31)

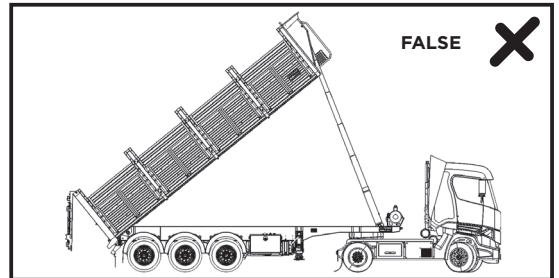


PICTURE 31

- On double extensions vehicles; it is strictly forbidden dumpering (lifting case) with single extensions. If Any kind of these cases damages the vehicle or cause any accident, the vehicle is not given warranty and Fesan Makina is not responsible from damages and accident results.(PICTURE 32, PICTURE 33)



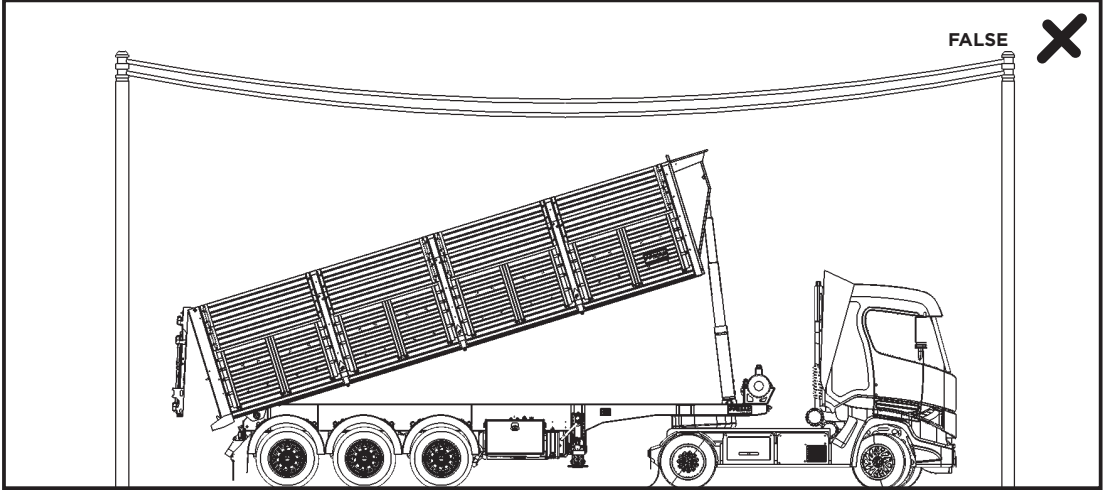
PICTURE 32



PICTURE 33

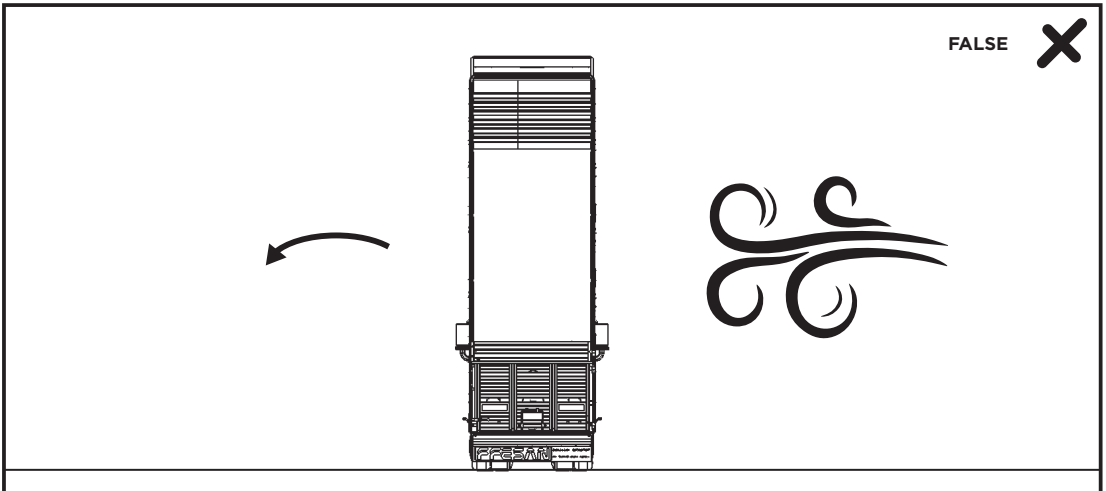
- Please do not turn on or off PTO button when clutch pedal is not stepped.
- During case is opened; engine rotation should not be over from hydraulic pump manufacturer's suggestions. Stepping on the gas to increase engine rotation, gives serious damages to hydraulic pump and cylinder.

- During dumper is lifting and landing; Please check around if there are any living being or if there are any situation to block dumper or load movement. If there are any blockage; do not lift the dumper. Do not lift dumper near to the electrical lines. (PICTURE 34)



PICTURE 34

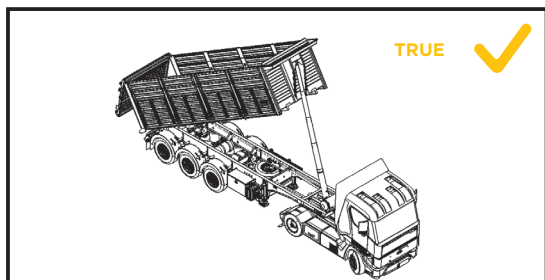
- In windy times; do not discharge the load using the wind. Wind may change the balance center of vehicle and may cause the vehicle to tip over. (PICTURE 35)



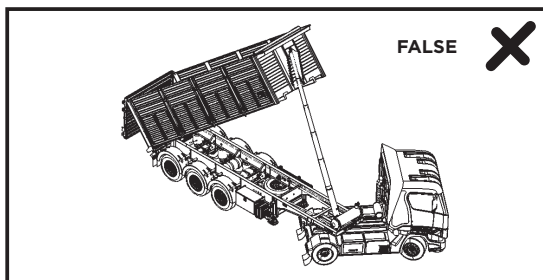
PICTURE 35



- During dumper lifting and loading the vehicle, tow truck and semi-trailer should be in same directions. (PICTURE 36, PICTURE 37)

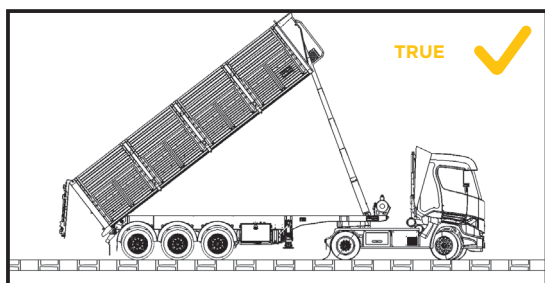


PICTURE 36

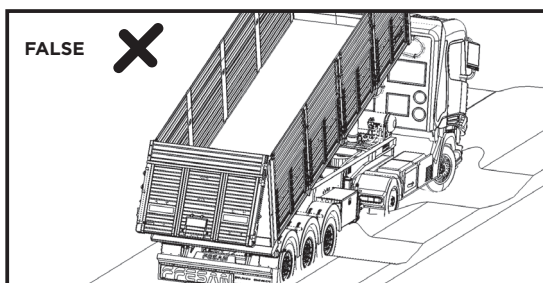


PICTURE 37

- Please do not do vehicle loading, discharging and dumpering on soft grounds. Otherwise very serious damages may be caused. Only you can discharge dumpering the case on hard grounds. (PICTURE 38, PICTURE 39)

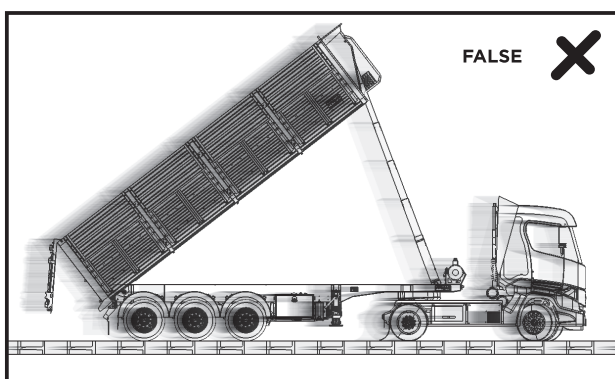


PICTURE 38: HARD GROUND

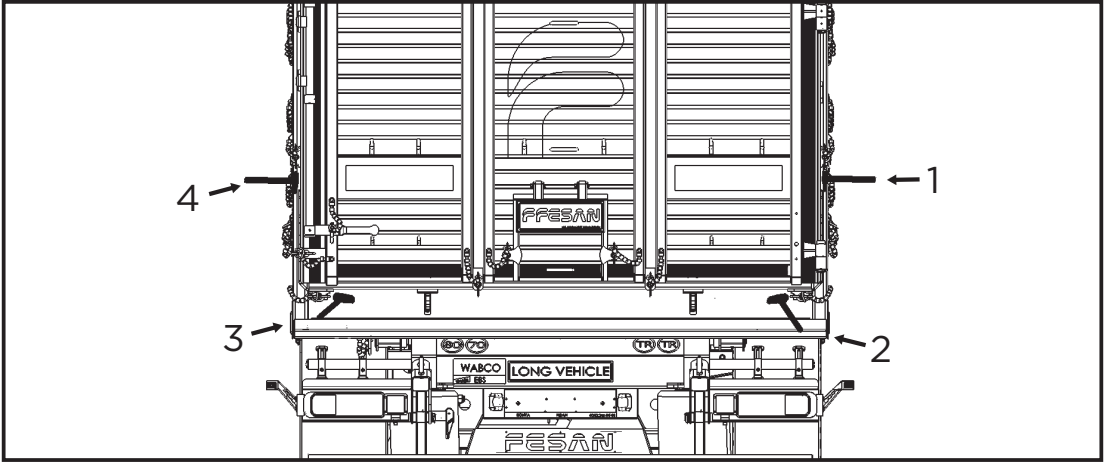


PICTURE 39: SOFT GROUND

- Do not change any connection points during dumper's lifting and landing period.
- Do not move the vehicle when the Dumper is on lifted position. Before departing; please check if the dumper is down or not. When PTO is on; do not move the vehicle (PICTURE 40)

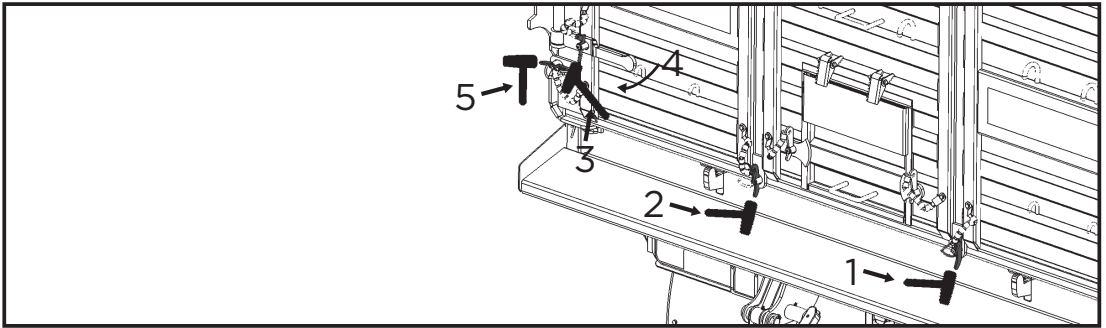


PICTURE 40

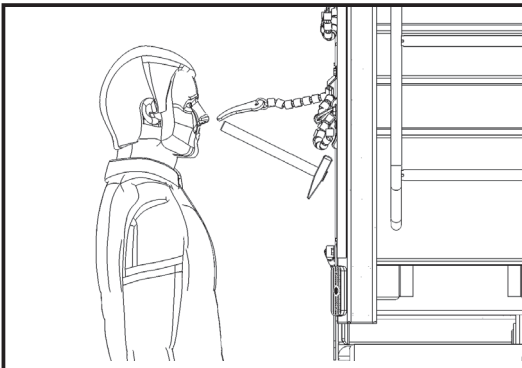


PICTURE 41

- Before opening rear shuttling to the side; fix frame nails shown on PICTURE 41 with hammer. Otherwise frame would move to the right side with rear shuttling. When rear shuttling is opened to the side, take off the pins shown on drawing with the orders. Turn the arm towards to the arrow. Shutting would be free. If the vehicle is with load, consider the load would flow down and give damages and take necessary precautions. (PICTURE 42)



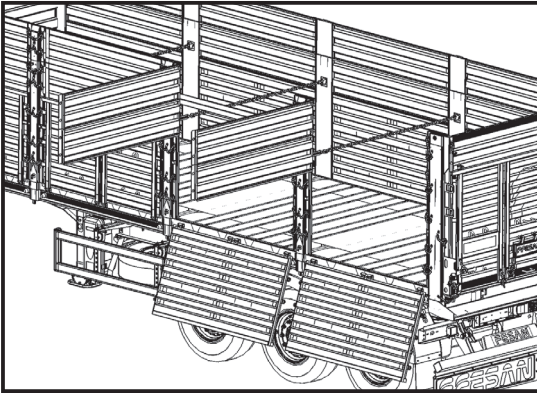
PICTURE 42



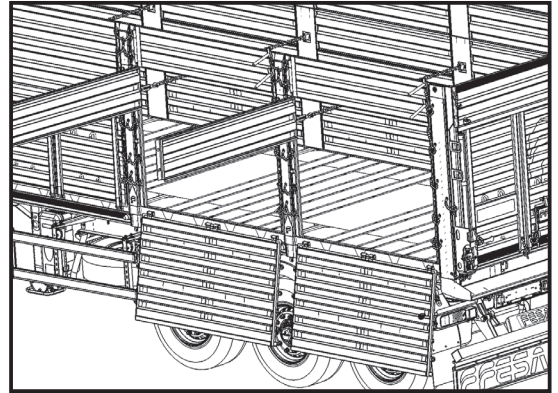
PICTURE 43

- When you take off the nails; do not stay opposit on them. Taken off Nails may cause serious injurings hitting you. (PICTURE 43)

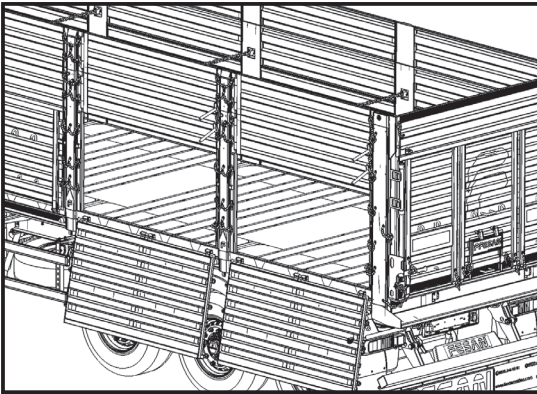




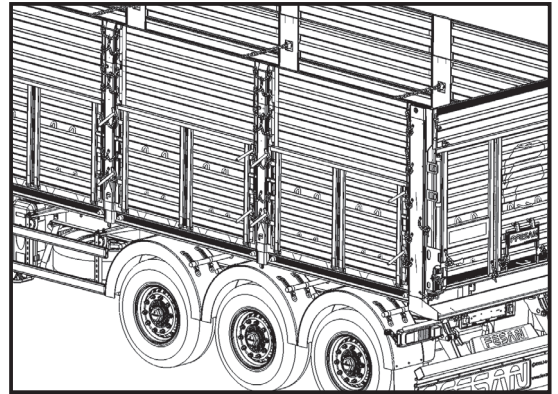
PICTURE 44



PICTURE 45



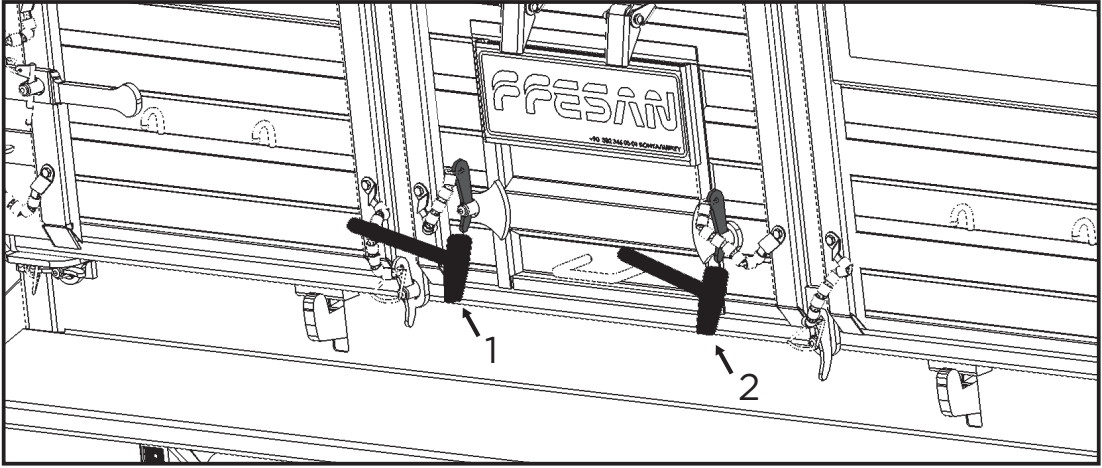
PICTURE 46



PICTURE 47

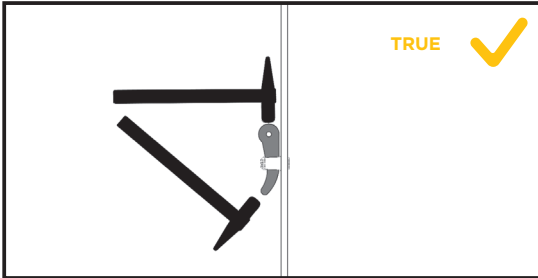
- When you open the shuttings follow pictures in order PICTURE 47, PICTURE 46, PICTURE 45, PICTURE 44,
- When you close the shuttings follow pictures in order PICTURE 44, PICTURE 45, PICTURE 46, PICTURE 47,
- Before opening extensions to right and left Fix completely the nails.  
Before opening extensions to right and left; nails fixed sides should be good fixed. Then open the extensions. Otherwise the extensions would be opened hardly.

- You can open wheat shutting taking off the pims according to the Picture (PICTURE 48)

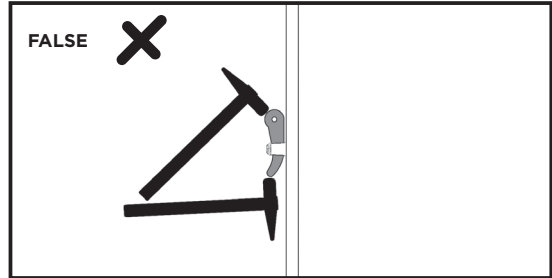


PICTURE 48

- Correct fixing and taking off method of pims on shuttings, are shown on Picture 49. Method shown on Picture 50 is false.



PICTURE 49



PICTURE 50

## Dumper Lifting Instructions

Stop the vehicle on flat and hard ground.  
 Vehicle's service pressure should be minimum 6 bar.  
 Fix the vehicle on its stopped place with hand brake.  
 Make sure the Rear shutting is fully open.  
 Open the bumper lock and land the bumper down.  
 Otherwise when the case moves it hits to the bumper.

If the hydraulic system is controlled by control switch;  
Control buttons should be completely off. Put the on buttons to off position. Shift the gear to neutral stepping the clutch. Put on the PTO key. As you leave the clutch pedal slowly, PTO warning light will be on, hydraulic pump must have been on work and cylinders must be starting to open.

When the cylinder comes into opening limit; limit control valve must be on and cylinder opening must be stopped. So; it blocks the case to be over than determined degree.

If the hydraulic system is controlled by joystick;  
Joystick arm should be on starting position. Shift the gear to neutral stepping the clutch. . Put on the PTO key. As you leave the clutch pedal slowly, PTO warning light will be on, hydraulic pump must have been on work, recirculation of oil must be between pump and oil tank. To open the cylinder; put the joystick arm on lifting position. When the cylinder comes into opening limit; limit control valve must be on and cylinder opening must be stopped. So; it blocks the case to be over than determined degree.

## **Dumper Download Instruction**

If the hydraulic system is controlled by control switch;  
After discharging the load in the case; Put the PTO on position stepping the clutch. Make sure the warning light on control switch should be off. Leave the clutch pedal slowly. Move the case using only one of slow and fast lifting preferations on the button. If there is load in the case; slow lifting button and if the case if empty then fast lifting button is used. When the case sits on its place; control switches should be off position. Make sure rear shutting is closed. Check around of vehicle safety.

If the hydraulic system is controlled by joystick;  
After discharging the load in the case; Put the PTO off position stepping the clutch. Make sure the warning light on joystick should be off.. . Leave the clutch pedal slowly. Put the joystick arm on lifting position. When the case sits on its place; put the joystick arm on starting position.  
Make sure rear shutting is closed. Check around of vehicle safety.

## **Instructions For Maintenance And Maintenance Safety.**

- It is a must to do all complete maintenance Works in scheduled times regularly for semi-trailer to work in long time and safety. These warnings are for your safety of life and property. In case of not paying attention on these warnings; possibly occuring damages will not be corresponded and product stays out of guarantee.

Whilst using and doing maintenance; tow truck manufacturers determined usage, maintenance and safety instructions should be followed.

- During making maintenance of a part in high place; only use safety ladders.
- It is a must to do maintenance Works by authorized persons.
- 6 months maintenance works are done at authorized services. Otherwise the vehicle is taken out of warranty and Fesan Makina will not be hold responsible for any damages occurs or will occur.
- In case of using spare parts excluding original spare parts, vehicle's warranty will not be valid.
- In maintenance period; Please keep away your head, hair, hands, fingers, feet from tow truck's and semi-trailer's working and turning parts. Please do not start maintenance and control works before all moving parts stop and without being sure about safety if there is load in semi-trailer.
- To check the semi-trailer and to do maintenance of semi-trailer; first stop the engine of tow truck, take off the starter key, lock the park brakes, take precautions personally and in environment.
- Before starting maintenance work; wait for working parts to be cooled. There may be burnt due to heat on brake equipments and hydraulic oil checkings.
- Before greasing work; Clean dirt and filth on lubricator, on surfaces and around of parts to be greased.
- During the maintenance time; Don't approach with fire to the vehicle and to tow truck.

## **Tyre Changing and Maintenance**

- All jacking-up works should be done in safety conditions on a straight and solid ground, park brakes pulled, Wheel wedge put. Jacking up Works are not allowed under vehicle's chassis casting parts.
- After you loosen Wheel nuts by nut runner; lift the vehicle with jack safely.
- Take the Wheel out removing Wheel nuts.
- To put the Wheel into its place; grease the nuts and check if the ring is turning comfortably or not.
- Put the Wheel as much closer as possible to the hub. Cross the stud thrusts from the rim holes. During this work; make sure thrust gears don't get damaged.
- Put Wheel nuts and turn by hand till as much as you can, use nut squeezing guns only to get spaces.
- Put the jack down and squeeze the nuts by torque key again with the informations mentioned at torque list (PAGE 36). Do this work again after 50 km. Check all wheels with torque key in first week. After some time check Wheel nuts with torque key with the informations mentioned at torque list values once in a week.
- Wheel nuts should not be squeezed too much or too weak, but by the torque values.
- Before driving tyres and rims situations should be checked.
- Tyre air pressure values should be checked regularly according to producer's determined standards. Pressure values mentioned on tyre sides, are valid for cold situation tyres, when the tyre is hot; then its pressure gets higher, in this case tyre's air pressure should not be decreased. Tyre air pressure controls should be done when the tyre is cold.

## Outriggers

- Outriggers that taken arm completely out, Works in fast mode. It can be used in fast mode till the outriggers touch to the ground.
- Outriggers that taken arm completely in, Works in slow mode. When outrigger touches to the ground, it Works in slow mode. After every time of work put the outrigger arm in and get it slow mode position.
- Before each use; please check if there is any cracked, crushed, broken, bending on the outriggers.
- On loaded time and on semi-trailer's seperated from tow truck; mechanical feet should not be used to lift to the vehicle like jack.
- Do not put the pressure water directly to the shaft channels and to the gear box when the vehicle is on cleaning.
- Do not change center of gravity of semi-trailer using the outriggers; otherwise semi-trailer tips over to the side.
- Check worm screw and nut after a year, if there is no abrasion; then grease it, if there is abrasion; then please apply to authorized service.

## King Pin

- Please check king pin before to connect semi-trailer to the tow truck. There should not be dirt and dust on king pin. If there are cracked, ruined and deformation on king pin; please apply to the authorized service.
- No reparation on king pin is allowed at all. When king pin is changed; also connection bolts should be changed too.
- You should check if the King pin and fifth Wheel connection table work pink with each other. If there is gap on fifth Wheel connection table, gap should be brought to standarts according to the towtruck producer instructions.
- Plenty of enduring grease should be applied on connection table and around king pin.

## Electrical System

Electrical system Works with 24V. Electrical sockets contain 7 and 15 pim connection.

- Please check connection sockets in every driving. If there is corrosion; change the sockets.
- Check if socket's protector covers are closed against to the dirt and dust.
- Check if lamps connection situations. Check if the signals are working correctly and completely before driving. Clean surface of lamps.

## Brake and Air Suspension System

There are two lines (feeding is red, control is yellow) brake system are used on semi-trailer. There are load equalizer authomatic brake valves, EBS or ABS valves which distribute brake strength to the axles in the same time and equally on the vehicle. When feeding line is removed or broken, authomatic brake system Works and semi-trailer brakes are locked.

PICTURE 51



To work brake system convenient and safely; tow truck and semi-trailer adjustments have to be coherent. Otherwise it may cause serious broken.

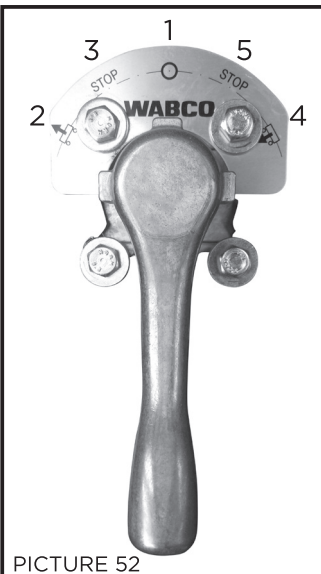
If there is trailer brake on your tow truck; it should be removed.

To hold this equipment at your tow truck is not convenient for 71/320/EEC brake regulations and it is unnecessary. If there is any problem on EBS system; apply to the authorized service as soon as possible.

There are spring brake chambers on semi-trailer. Chamber's Relief section Works independently from service sections. To put into use the park brake; pull park valve button (red colour) outward, to cut it out; push the button backward. If there is problem on park brake; please contact to the authorized service.

To inactivate park brake function and to drive the vehicle :

- Remove it dismantling from thick gear nut on spring brake chamber.
- Remove plastic plug which is behind of brake chamber.
- Push the thrust spiked side from the hole behind of brake chamber into inside and lock it turning 1/4 cycle clockwise.
- Squeeze thrust putting nut till spring inside chamber is tightened.
- Take the vehicle to the closest service.



PICTURE 52

It is independent from brake system. Brake circuit provides air passage to air suspension circuit after providing necessary air pressure for its own system. So; there is pressure protector valve on passage from air cylinder to air suspension circuit. Even if there is leakage on suspension system, brake system doesn't get effected from this leakage. In case of deactivation of suspension system; you can take your vehicle with 20 km/ hour speed to the closest service. It is strictly forbidden to change valve adjustments.

**Lifting Landing Valve**

This valve has five positions

- 1- Driving position
- 2- Lifting location
- 3- Stopping the lift location
- 4- Landing location
- 5- Stopping the landing location



Lifting valve should be on driving location whilst the vehicle is to run. Semi-trailer air pressure should be 6.3 bar. Lifting and landing work only can be applied when semi-trailer is connected to tow truck, brakes released, mechanical feet are liften from ground. It is forbidden to try to change adjustments of lifting and landing valve and to force the button. There is front axle lifting function on EBS air suspension system. Front axle can be lifted authomatically providing the tyres don't touch to ground to extend tyre life. Lifting axle systems are completely sensitive to the load and work authomatically.

The valves which are on Brake and air suspension system, doesn't need to be maintenance. If these valves are broken, please contact to authorized service as soon as possible. Before every time driving; release possibly accrued water in pressured air by the help of water releasing valve on air cylinders. Every 6 months or every 50.000 km controls of air cylinders, air circuit valves and connections should be done by authorized services.

## Tonage Indicator

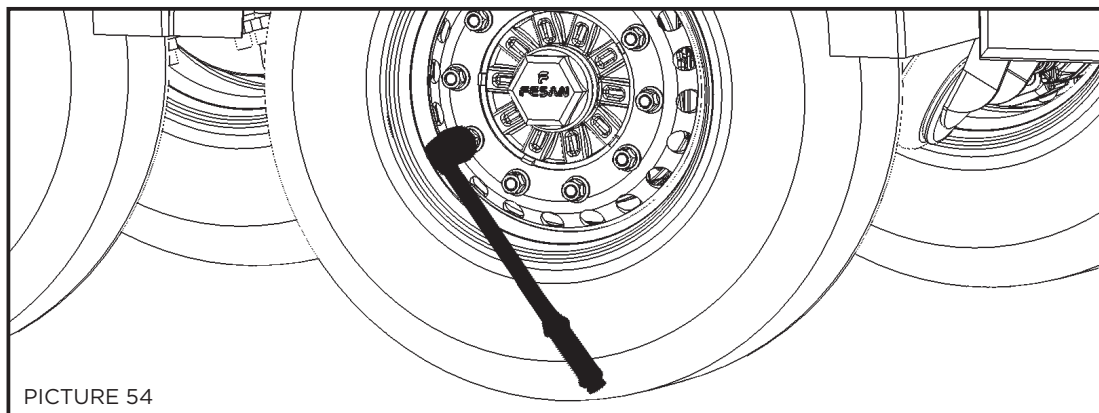


PICTURE 53

You can see approximately load tonage on each axles from tonage indicator when your vehicle is loaded and driving.

## Axle System

Make squeeze your Wheel nuts crossing with 630 Nm torque when you buy your vehicle first. Do this work again after first 50 km. Check all wheels with torque key in first week. Afterwards once a week check Wheel nuts with torque key according to the determined values. Repeat this work on each tyre change.

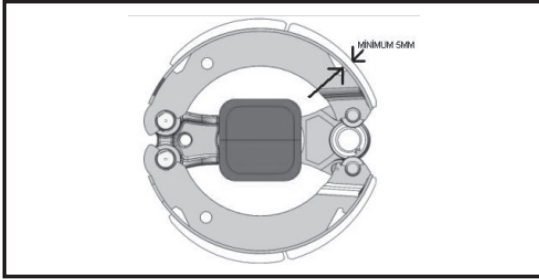


PICTURE 54

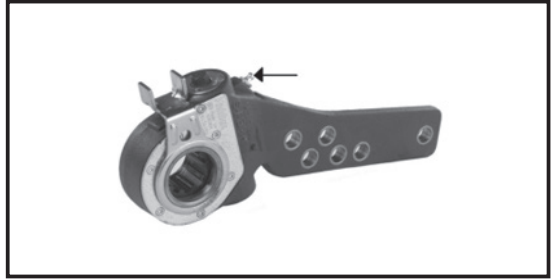
It is necessary control of your vehicle's bearing adjustments to be done by authorized control and maintenance persons after the end of first 5.000 km. After first adjustment; This adjustment should be done again in every three months or in every 25.000 km.

Please check brake shoe thickness. Pay attention to be shoe thickness is min. 5 mm. Check it from abrasion indicator. Look opening rubber caps from peep-hole which is on campagne dust plate. If brake shoes are lower to 5 mm or Show critic worn limit; then it should be changed. Close again rubber cap; when brakes are released and emergency brake is left, if gauge arm on brake adjuster box which shows brake shoes situation is in horizontal position; then it means that brake shoe thickness is in critic situation.

In some cases brake adjuster may be mounted in normal (vertical) position. In that case abrasion indicator would be in different position. If abrasion indicator is roughly in right angle (90 degree); then brake shoes should be changed.



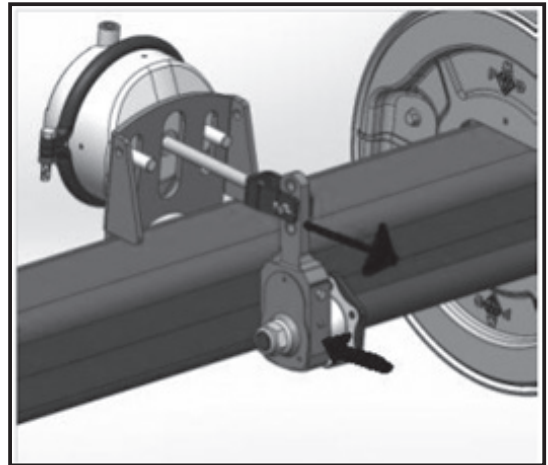
PICTURE 55



PICTURE 56

Montly or in every 10.000 km; please check the work of authomatic and manual brake adjuster. Turn adjustment screw  $\frac{3}{4}$  cycle reverse (opposite to clockwise) with box wrench. It is necessary to move 50 mm of 150 mm length brake adjuster arm. Move brake adjuster arm couple of times manually. After this work it comes to authomatic adjustment place. Clutch voice sounds and adjustment screw turns a little towards clockwise, put rubber cap on and grease.

When grease cap and axle nuts are squeezed; air gun should not be used.

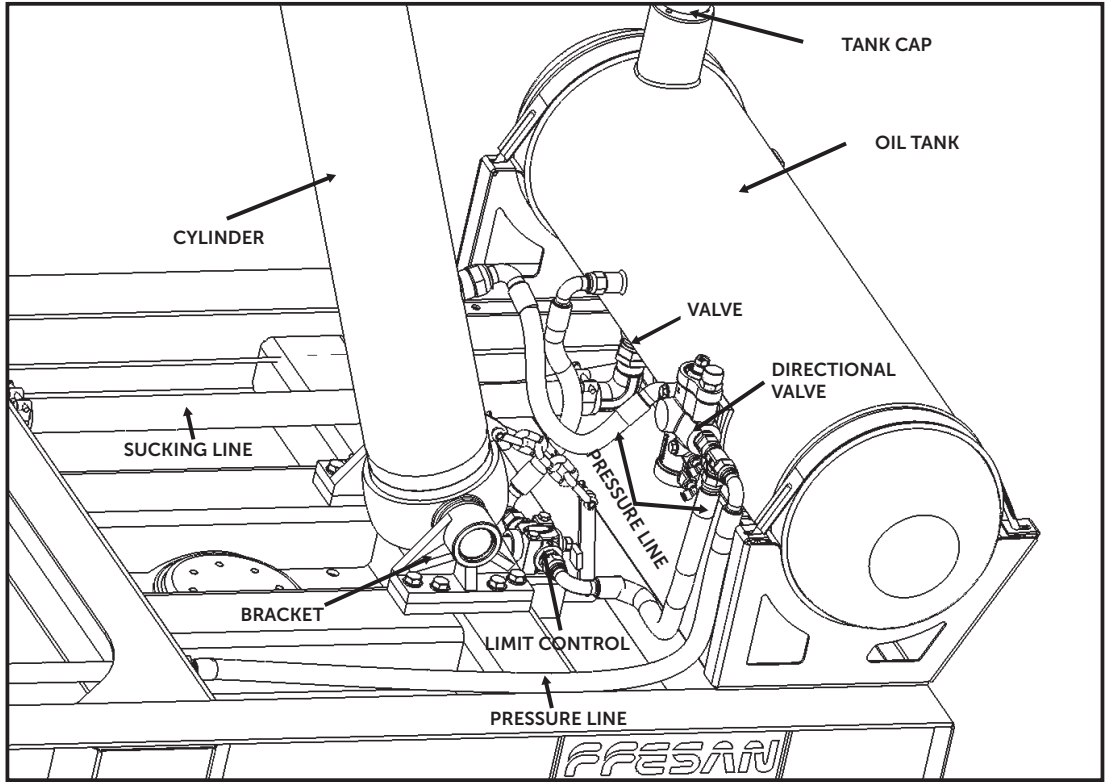


PICTURE 57



## Hydraulic System

It is dumper lifting and landing system according to hydraulic principles.



PICTURE 58: HYDRAULIC SYSTEM MAIN PARTS

## Maintenance Periods

Please do controls and maintenance of your vehicle according to below indicated chart periods, change parts if necessary.

### For each long driving maintenance

- Air pressure on tyres
- General situation of tyres
- General situation of king pin
- Lamps
- Water release from air cylinders
- Cylinder connections and oil leakages
- Hydraulic Pump oil leakages
- If there is oil coming from oil warning hole of hydraulic Pump
- Directional Valve Connections and oil leakages.
- Hydraulic pipes connections and oil leakages
- Joystick and control buttons working situation.
- Air line connection and air leakages
- Oil Tank connections and oil leakages.
- Hydraulic oil level control
- Controlling if hydraulic pipes, air and electrical lines are touching vehicle's moving parts or not.
- If Rear shutting lock is working.
- Eye control of moving parts
- Extra Wheel connection controls
- Brake system working control
- Closing control of connection sockets caps

### Weekly or 5.000 km maintenance

Additionally each long drive maintenance; below maintenances should be done.

- Grease cap squeezing
- Wheel nuts controls
- King pin abrasion control
- Bolts connections control
- Axles controls
- Springs and spring connection apparatus control
- Service bellows connection controls
- Emergency bellows connection controls
- Cylinder bracket connection bolts control.
- Limit control connection bolts control.
- Valve connection bolts control.

### Montly or 10.000 km maintenance

Additionally each long drive and weekly maintenance; below maintenances should be done.

- King pin connection bolts
- Axle bearing adjustments.
- Brake adjusters
- Brake shoes and campaigns
- Connection sockets pims situation and corrosion controls

### 3 months or 25.00 km maintenance

Additionally each long drive, weekly and monthly maintenance; below maintenances should be done.

- Suspension system
- Shock absorbers
- Spark plug arms and cradle collar

### 6 months or 50.000 km maintenance

Additionally each long drive, weekly, monthly and 3 months maintenance; below maintenances should be done.

- King pin change
- Hydraulic oil change
- Electrical maintenance
- Brake chambers control

### Yearly or 100.000 km maintenance

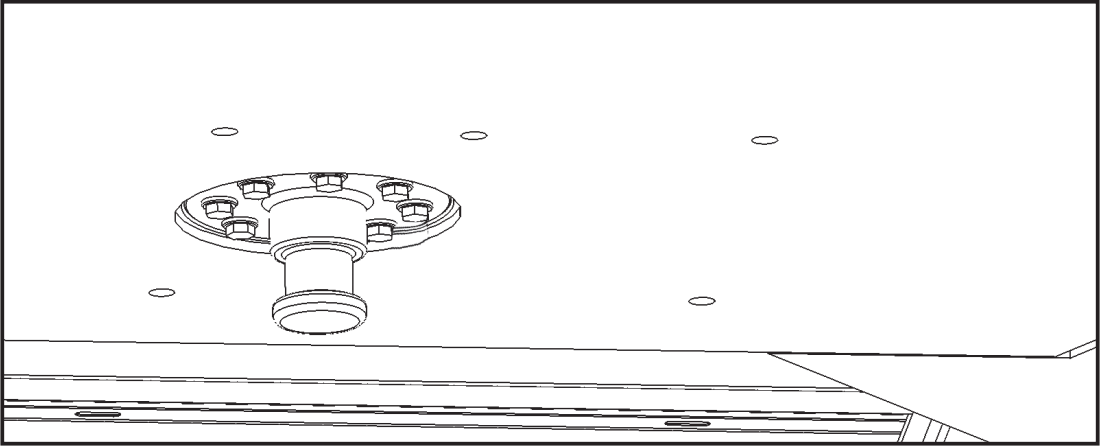
Additionally each long drive, weekly, monthly, 3 months and 6 months maintenance; below maintenances should be done.

- Axle maintenance
- Outriggers worm gear and nuts control

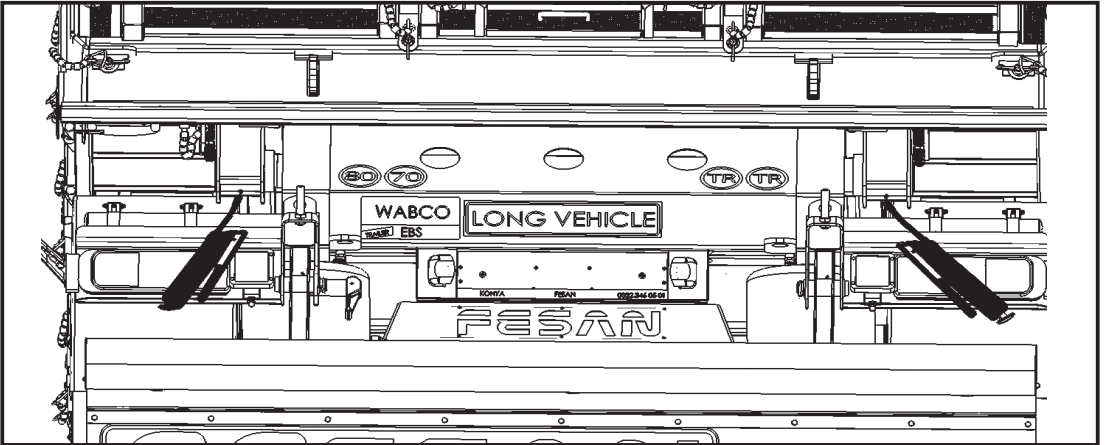
## Greasing Chart

Please grease continuously determined areas, determined periods and determined greases on greasing chart. After waship your vehicle up; grease complete of greasing areas. Otherwise it may cause serious problems on your vehicle.

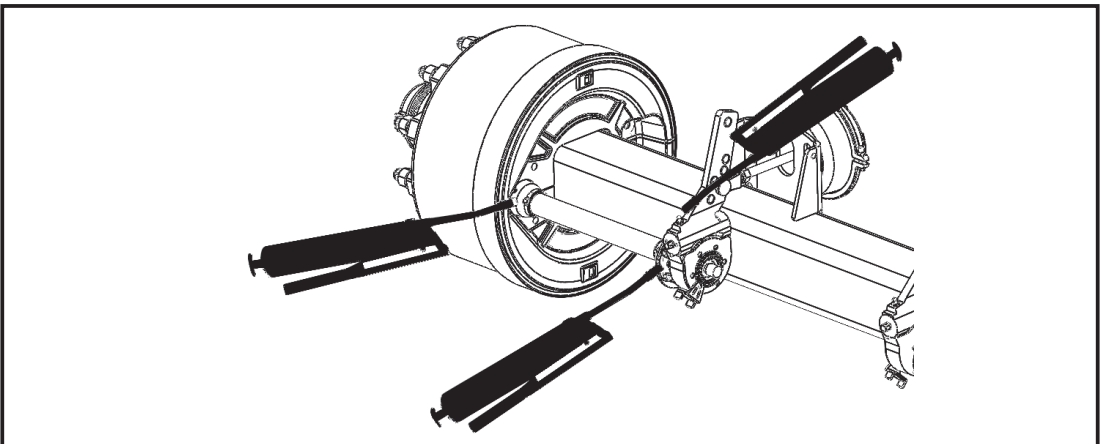
|                                  | Weekly or<br>5.000 km | Monthly<br>or 10.000<br>km | 3 months<br>or 25.000<br>km | Grease to be<br>used | Picture            |
|----------------------------------|-----------------------|----------------------------|-----------------------------|----------------------|--------------------|
| King Pin                         | ✓                     |                            |                             |                      | PICTURE 59         |
| Dumper Tipping Mile              | ✓                     |                            |                             |                      | PICTURE 60         |
| Rear Shutting Opening Miles      | ✓                     |                            |                             |                      | PICTURE 62         |
| Rear Shutting Tipping Miles      | ✓                     |                            |                             |                      | PICTURE 63         |
| Cylinder up and Down Connections | ✓                     |                            |                             |                      | PICTURE 64         |
| Rear Bumper Connections          | ✓                     |                            |                             |                      | PICTURE 65         |
| Outrigger moving parts greasing  |                       | ✓                          |                             |                      | PICTURE 66<br>- 67 |
| Brake Adjusters                  | ✓                     |                            |                             |                      | PICTURE 61         |
| S Mile Outer Housing             | ✓                     |                            |                             |                      |                    |
| S Mile Inner Housing             | ✓                     |                            |                             |                      |                    |



PICTURE 59



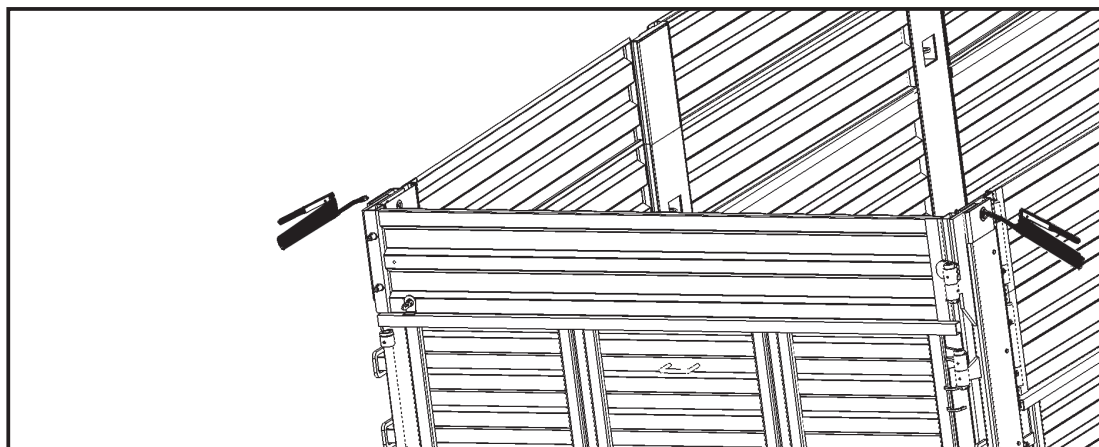
PICTURE 60



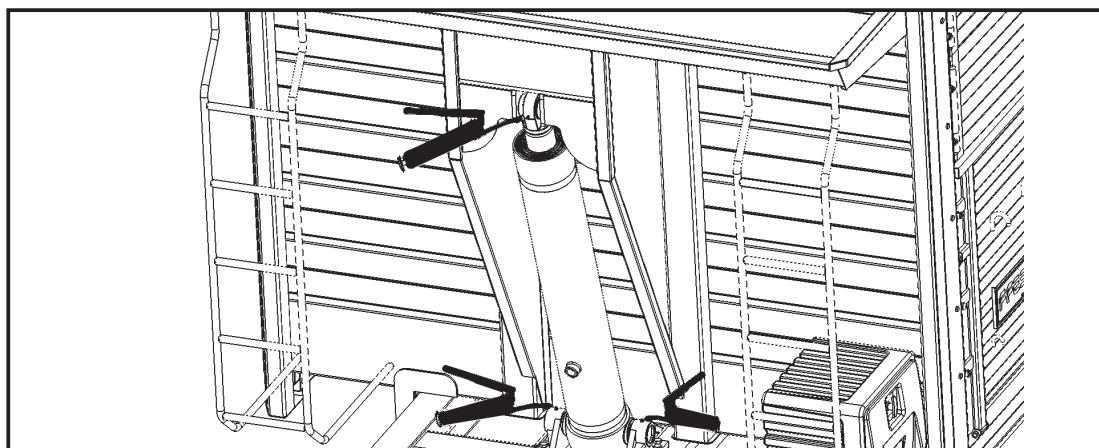
PICTURE 61



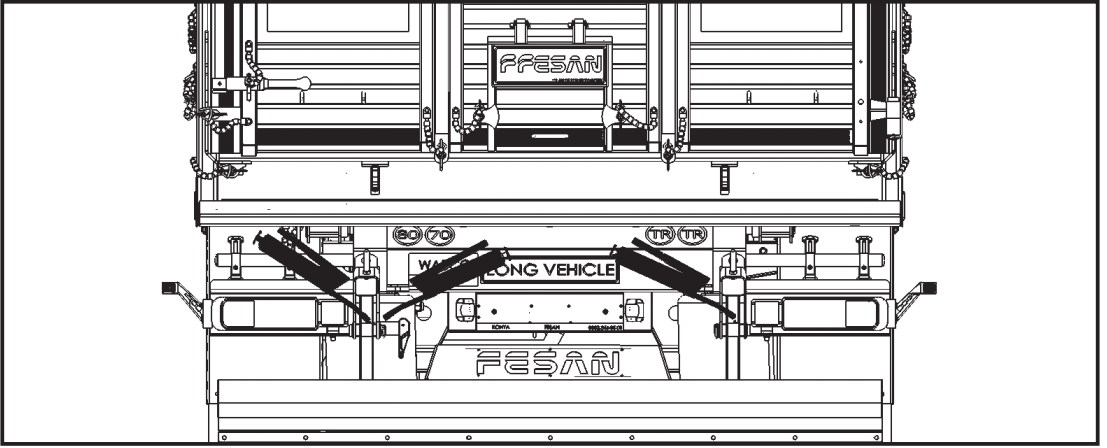
PICTURE 62



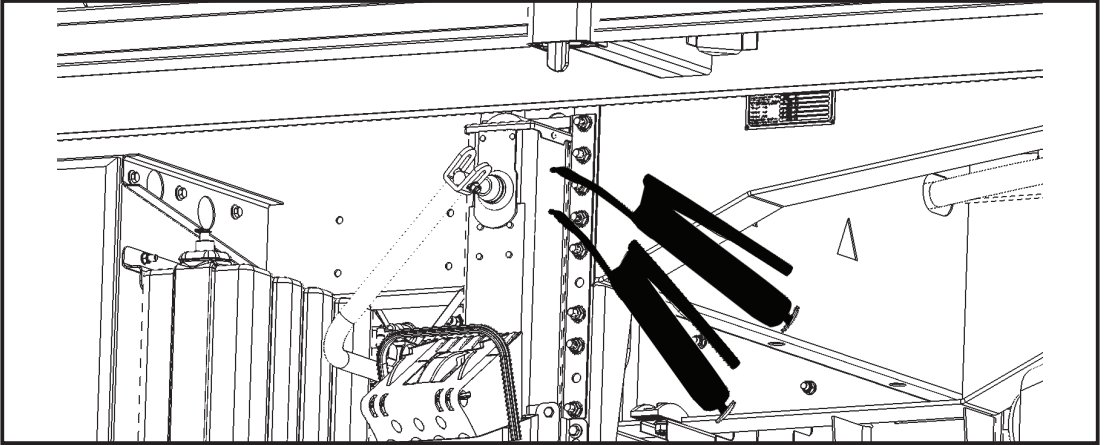
PICTURE 63



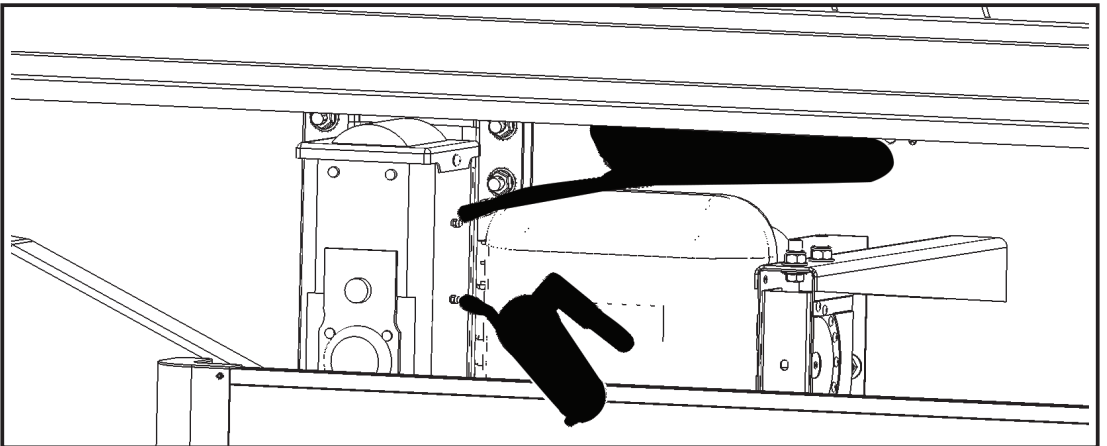
PICTURE 64



PICTURE 65



PICTURE 66

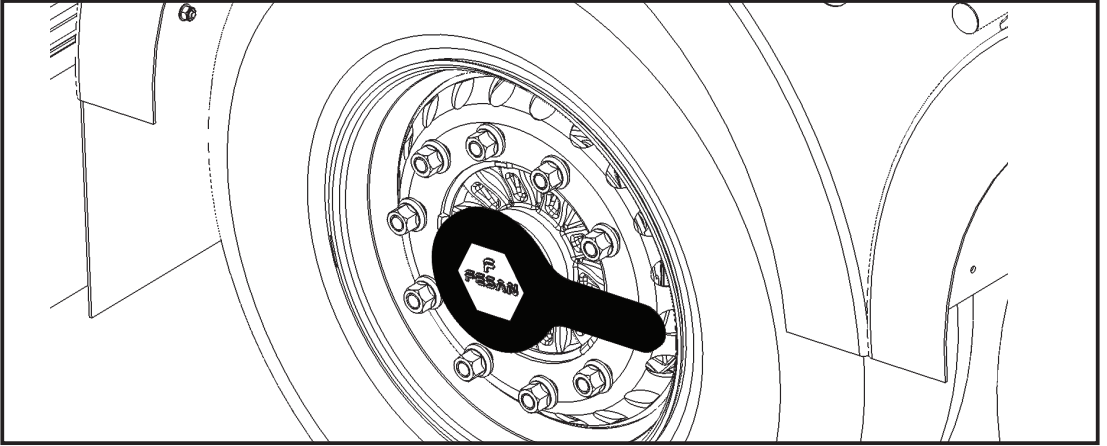


PICTURE 67

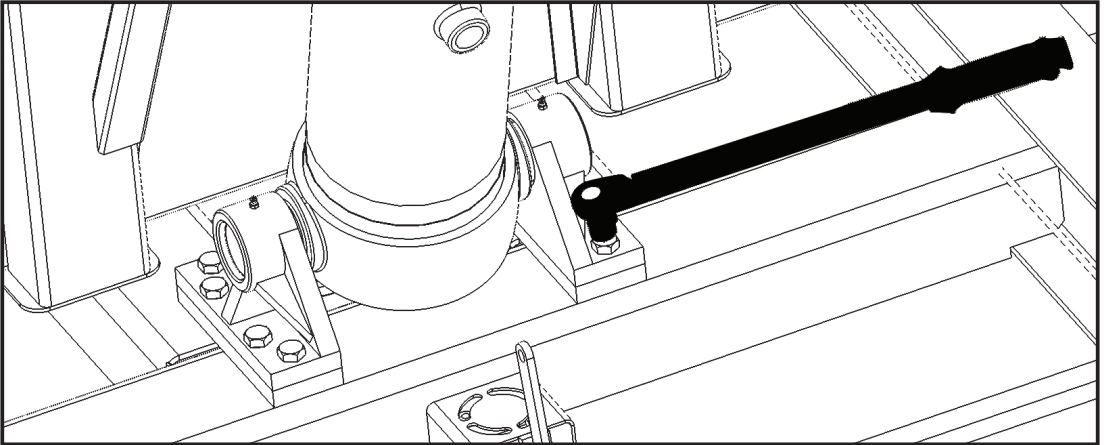
## Bolts Squeezing Torques Chart

Please squeeze bolt connections on your vehicle, as determined in below chart periods and values. Otherwise it may cause serious problem on your vehicle.

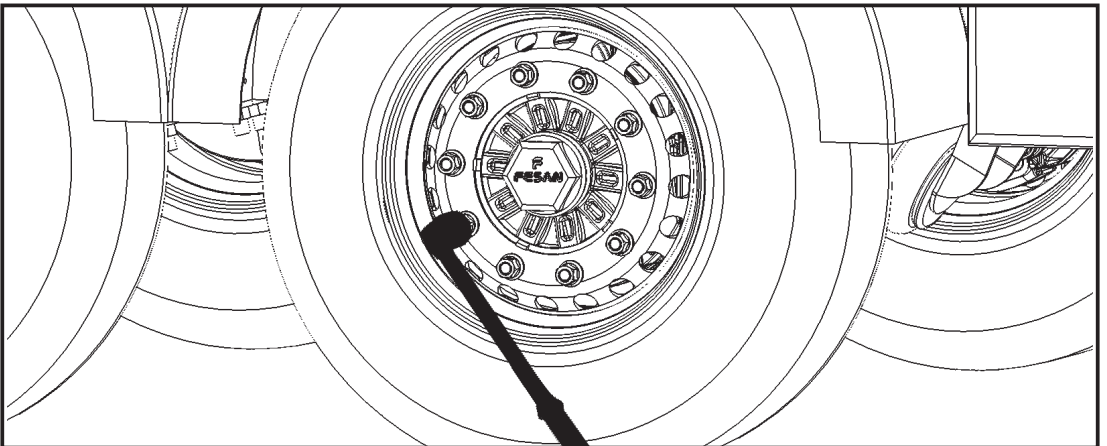
|   | Weekly<br>or 5.000<br>km | Month-<br>ly or<br>10.000<br>km | 3 Mont-<br>hs or<br>25.000<br>km | Squeeze<br>Torque | Picture    |
|---|--------------------------|---------------------------------|----------------------------------|-------------------|------------|
| Grease Cap Squeezing  | ✓                        |                                 |                                  | Manual            | PICTURE 69 |
| Wheel Nuts Squeezing Controls                                   | ✓                        |                                 |                                  | 630 Nm            | PICTURE 71 |
| King Pin Connection Bolts                                       |                          | ✓                               |                                  |                   | PICTURE 72 |
| Dumper Tipping Mile Bolts                                       |                          | ✓                               |                                  |                   | PICTURE 73 |
| Outtrigger  |                          | ✓                               |                                  |                   | PICTURE 74 |
| Spring Caps U Squeezing Nuts                                    |                          | ✓                               |                                  | 690 Nm            | PICTURE 75 |
| Spring and Spring Connection Apparatus                          | ✓                        |                                 |                                  |                   | PICTURE 76 |
| Suspension Chamber Connections                                  |                          |                                 | ✓                                |                   | PICTURE 77 |
| Service Chamber Connections                                     |                          | ✓                               |                                  |                   | PICTURE 82 |
| Emmergency Chamber Connections                                  |                          | ✓                               |                                  |                   | PICTURE 83 |
| Shock Absorber  |                          | ✓                               |                                  |                   | PICTURE 76 |
| Hydraulic Couplings<br>BSP(3/4",1",1+1/4"), UNF(1 1/16, 1 5/16) |                          |                                 | ✓                                | 270 Nm            | PICTURE 78 |
| Cylinder bracket connection bolts                               |                          | ✓                               |                                  | 150 Nm            | PICTURE 70 |
| Cylinder air release bolt                                       |                          | ✓                               |                                  | 20 Nm             | PICTURE 79 |
| Limit control connection bolts M10                              |                          |                                 |                                  | 30 Nm             | PICTURE 80 |
| Valve connection bolts M8                                       |                          |                                 |                                  | 15 Nm             | PICTURE 81 |
| Valve connection bolts M10                                      |                          |                                 |                                  | 30 Nm             |            |



PICTURE 69

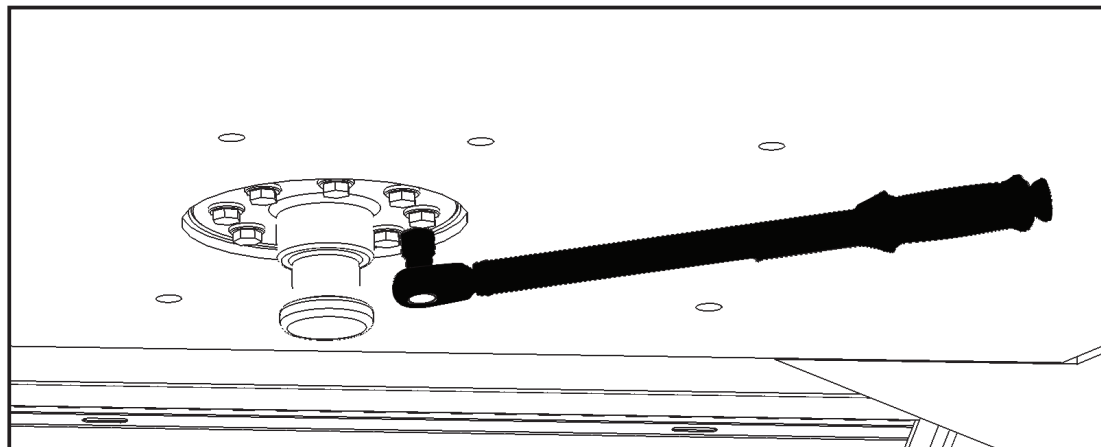


PICTURE 70

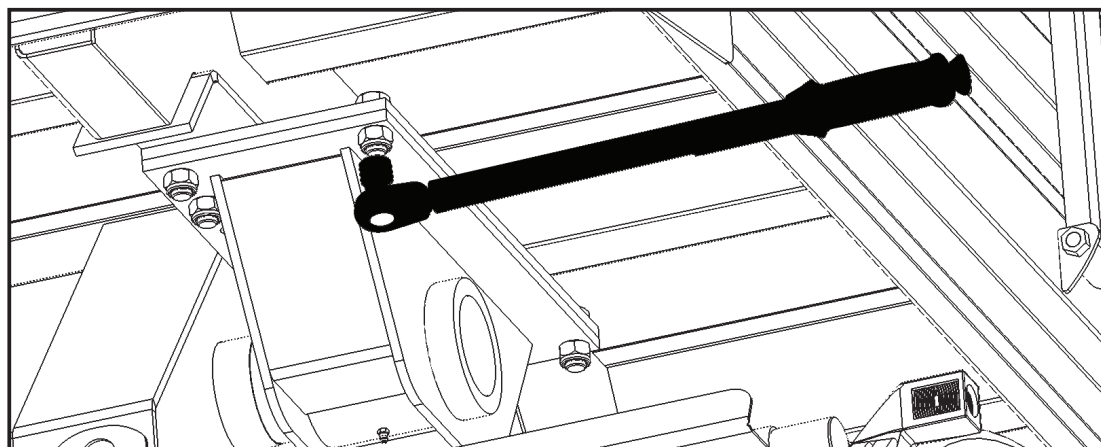


PICTURE 71

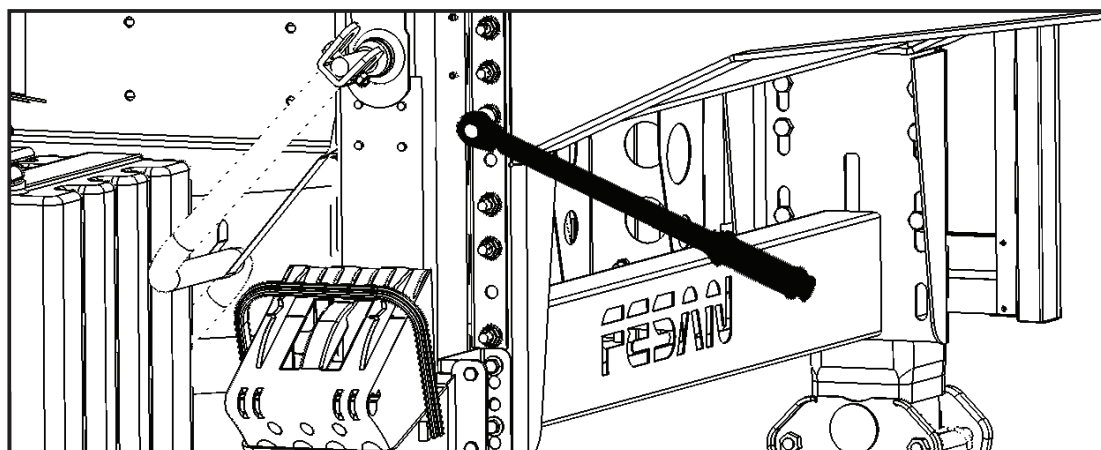




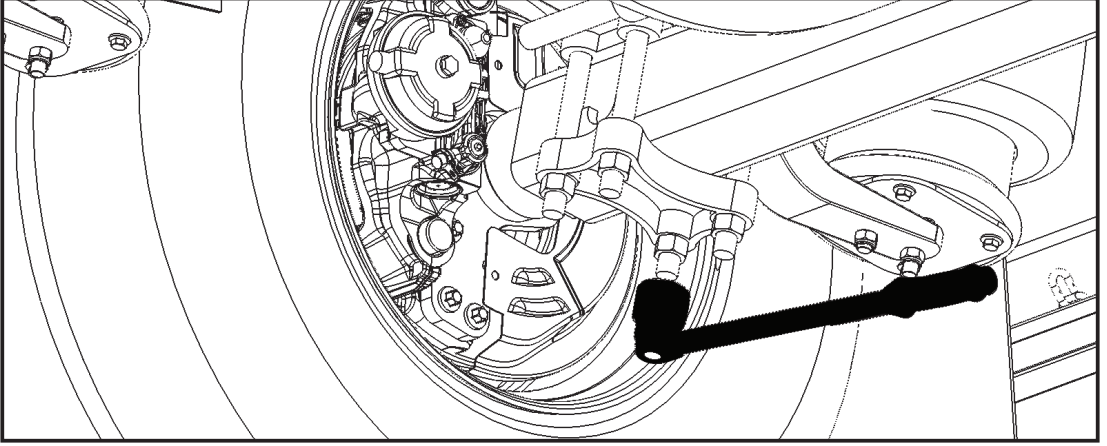
PICTURE 72



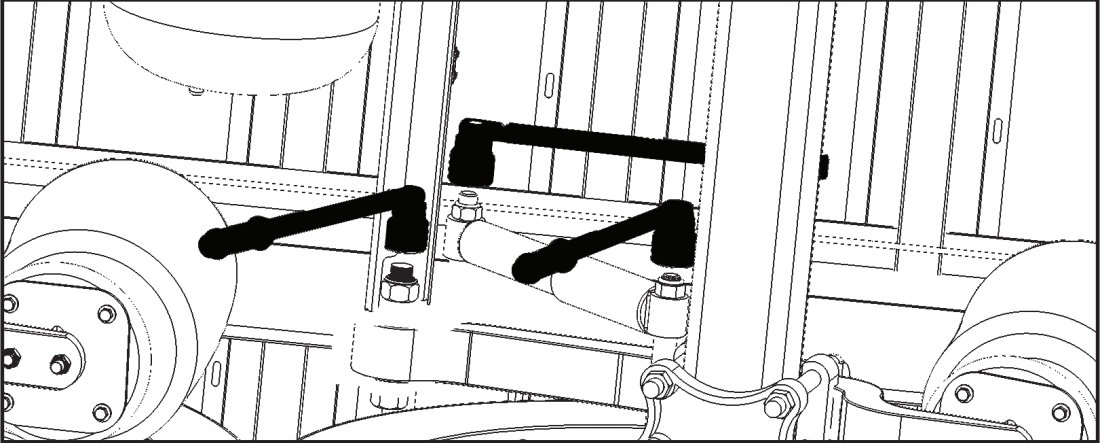
PICTURE 73



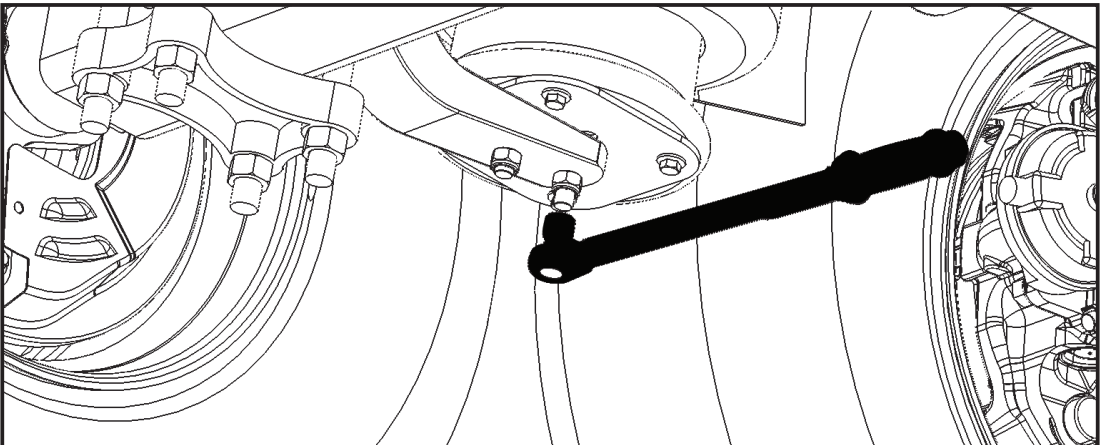
PICTURE 74



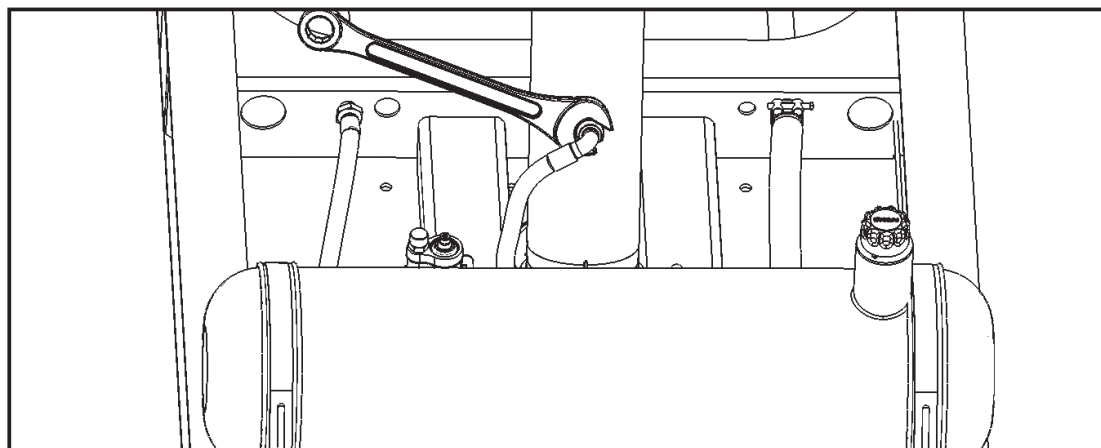
PICTURE 75



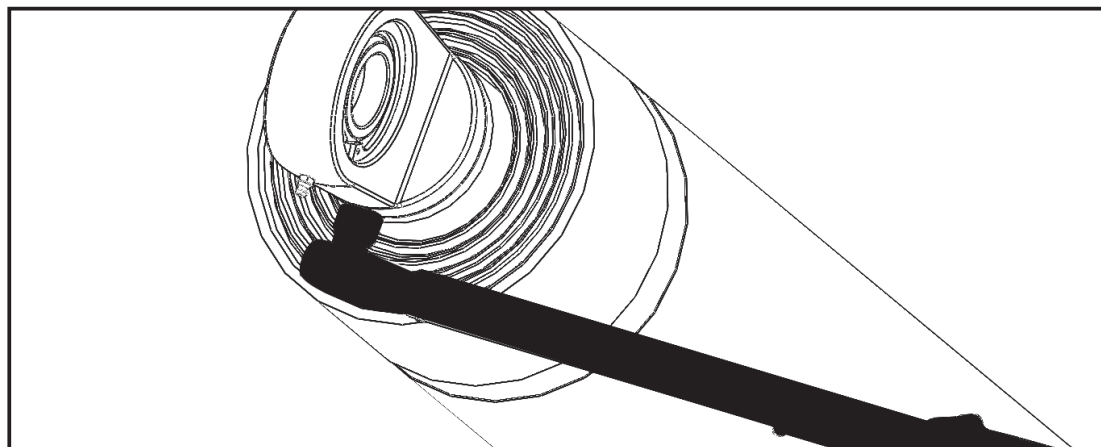
PICTURE 76



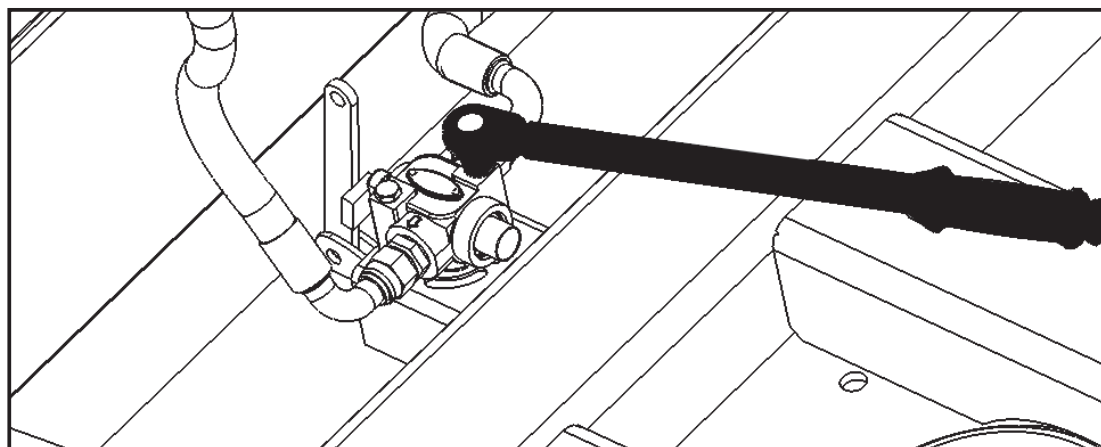
PICTURE 77



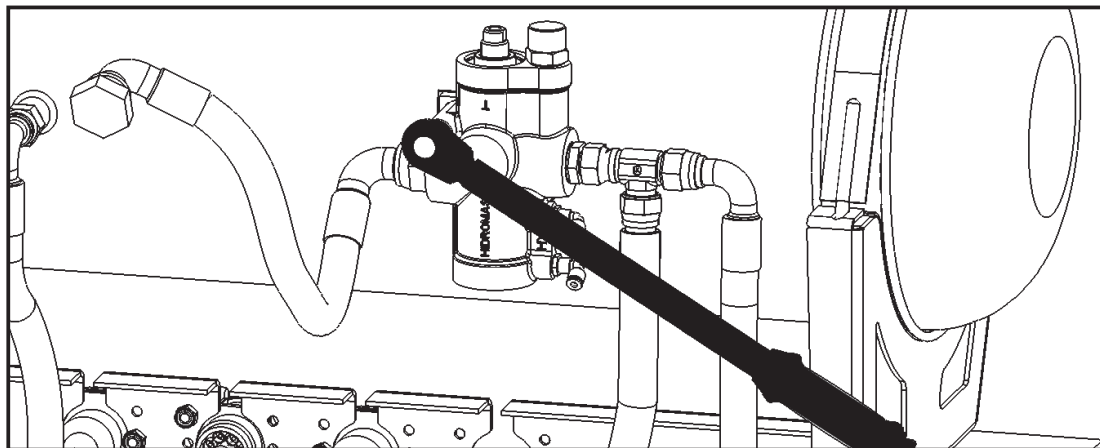
PICTURE 78



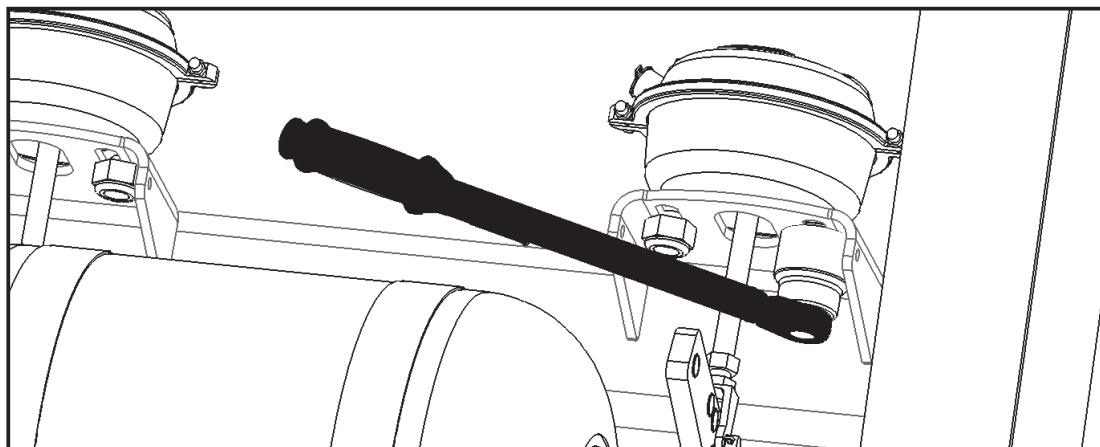
PICTURE 79



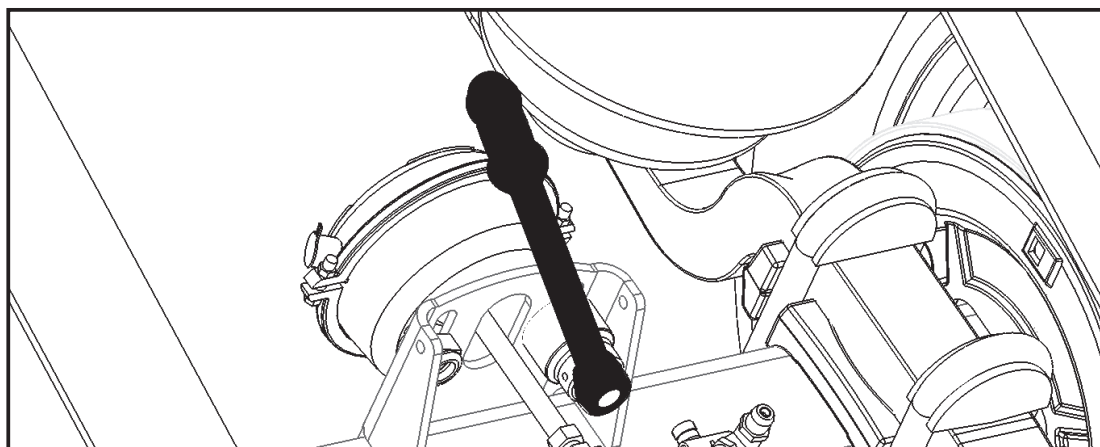
PICTURE 80



PICTURE 81



PICTURE 82



PICTURE 83

## Trouble Shooting Chart

| Subject                   | Wheel, Greasing Cap and Tyres                   |   |
|---------------------------|---|---|
| Signs                     | Reason  | Resolve                                     |
| Tyres making voice        | Wheel bearings are broken                       | Change bearings                             |
|                           | Rim may be inclined                             | Change rim                                  |
|                           | Axle may be inclined                            | Apply to authorized service                 |
| Tyres are worned timeless | There may be much or low air pressure in tyres. | Make tyres in convenient pressure           |
|                           | Wheel nuts and bolts may be loosened            | Squeeze bolts and nuts                      |
|                           | Axle may be inclined or not adjusted            | Apply to authorized service                 |
|                           | Tyres may not be convenient with each others.   | Change tyres conveniently with each others. |
|                           | Wheel bearings may be loosed or tightened.      | Adjust the bearings                         |

| Subject                              | Mechanical Riggers   |                                       |
|--------------------------------------|--|---------------------------------------|
| Signs                                | Reason   | Resolve                               |
| Actuator is hardened whilst turning. | Pipe which transfers movement to other rigger may be inclined or vibrant | Change intermediate pipe              |
|                                      | Grease may be deficient or wrong grease may be used.                     | Use convenient and sufficient grease. |
|                                      | Mechanical parts may be damaged  | Apply to authorized service           |

| Subject   | Air Parts   |  |
|---|---|--|
| Signs   | Reason  | Resolve                                  |
| When brakes are released; gets too much air leakage | Valves must leak air  | Apply to authorized service              |
| There are too much water or oil in air line         | Semi-trailer or tow truck air cylinders have not been enough often released | <b>Release air cylinders ..... time.</b> |
|   | Tow truck air compresor must be broken                                      | Apply to authorized service              |

| Subject                           | Electric   |                                    |
|-----------------------------------|--|------------------------------------|
| Signs                             | Reason   | Resolve                            |
| One or more lamps are not working | Lamps must be broken   | Change bulps                       |
|                                   | Cable must be broken   | Change cable                       |
|                                   | Connection edges must be dirty or rusty                      | Clean connection edges             |
| Any lamp is not working           | Main cable must be broken                                    | Change main cable                  |
|                                   | Electrical socket must be broken                             | Change socket                      |
|                                   | Electric must not flow from Tow truck electrical connections | Do maintenance at towtruck service |
|                                   | There must be broken at Electric distibuiton box             | Apply to authorized service        |
| Lamps are working very low        | Tow truck battery must be discharged                         | Charge the battery                 |
|                                   | Edges on electric socket, must be dirty or rusty             | Clean or change electric socket    |

| Subject  | Suspension System                                       |   |
|--|---|---|
| Signs  | Reason  | Resolve   |
| Air bags are flat, suspension is not holding                         | There must be too low air intake                        | Risen up system pressure to 6 bar   |
|  | There must be leakage at air line or air bags.          | Repair the leakages   |
|  | There must be blockage in air filter                    | Dismantle filter element, clean or change it  |
|  | There must be problem at valves                         | Apply to authorized service   |
| Suspension is decreasing fastly when the vehicle is in park position | There must be leakage in air lines or air bags          | Repair the leakages   |
| Overworn air bags  | There must be touch of air bag to chassis, tyre or rim. | Check if the tyre sizes are convenient for the vehicle, check if the tyres are flat or not. |
|  | Air bag is holding too much                             | Apply to authorized service   |
|  | There must be too low air intake                        | Risen up system pressure to 6 bar. apply to authorized service for valve adjustments        |
|  | Worn, oil leaked shock absorbers                        | Change shock absorbers  |
| Semi-trailer driving height is over or low                           | Level valve is broken                                   | Apply to authorized service   |
| There is compulsion on traction                                      | Leaf Spring pivot bolt is broken                        | Apply to authorized service   |
|  | Axle U bolts are loosened                               | Apply to authorized service   |
|  | Leaf Springs are broken or cracked                      | Apply to authorized service   |
|  | Axle is inclined or twisted                             | Apply to authorized service   |
| Leaf springs don't work, there is too much shake                     | Leaf Springs are broken or cracked                      | Apply to authorized service   |
|  | Load balance is not good                                | Correct the load balance  |
|  | There is Overload                                       | Release overload manually till allowed load   |

| Subject                   | Front Axle Lifting                   |  |
|---------------------------|--------------------------------------|--|
| Signs                     | Reason                               | Resolve                                      |
| Front axle is not lifting | There must be too low air intake     | Air pressure should be 7.5 bar               |
|                           | There must be blockage in air filter | Dismantle filter element, clean or change it |
|                           | There must be air leakage            | Repair the air leakages                      |
|                           | Valves must be broken                | Apply to authorized service                  |

| Subject                                       | Brake System  |   |
|---|---|---|
| Signs   | Reason  | Resolve   |
| Brakes are not released even if pedal is left | Brake moving parts must be dis-greased or corrosioned               | Apply to authorized service                     |
|   | Brake hoses must be broken  | Apply to authorized service                     |
|   | There must be broken at tow truck service (yellow) line             | Apply to authorized service                     |
|   | There must be broken at tow truck feeding (red) line                | Apply to authorized service                     |
|   | Handbrake must be on.   | Release handbrake, park valve                   |
| Brakes are not working                        | Brake shoes must be insufficient                                    | Change brake shoes                              |
|   | Brake adjustments are not good                                      | Apply to authorized service                     |
|   | There must be air leakage   | Repair air leakage                              |
|   | There must be broken at brake mechanical parts                      | Apply to authorized service                     |
|   | Brake chamber must be broken  | Apply to authorized service                     |
|   | Campaines must be worn out  | Apply to authorized service                     |
|   | Brake adjustments must be broken between towtruck and semi-trailer  | Do brake adjustments at towtruck service        |
|   | There must be problem on valve adjustments                          | Apply to authorized service                     |
|   | There must be problem connection lines of towtruck and semi-trailer | Control and repair it or change it with new one |

| Subject, Signs   | Dumper is not lifting   |
|--|---|
| Reason   | Resolve   |
| Air pressure must be too low   | Check air pressre and leakages  |
| Hydraulic oil must be too low  | Check hydraulic oil level, add if it is to low  |
| There must be air in hydraulic system  | Loosen up intake bolt on cylinder and get the air in the system, squeeze the bolt again |
| Vane under oil tank, must be turned off or there must be blockage at sucking pump line                             | Apply to authorized service   |
| There must be blockage at pressure lines   | Check the line  |
| PTO must not be activated  | Apply to authorized service   |
| Hydraulic pump must not be activated   | Apply to authorized service   |
| Hydraulic pump must be broken  | Apply to authorized service   |
| Valve must not be activated  | Apply to authorized service   |
| There must be oil leakage in cylinder  | Apply to authorized service   |
| Jacks which connects sucking and pressure lines between semi-trailer and towtruck, must not be connected or broken | Check the jacks   |
| There must be leakage on connection and oil hoses  | Repair the oil leakages   |



| Subject, Signs   | Not all stages of cylinder, are working                       |
|--|---|
| Reason   | Resolve   |
| Due to overload; direction valve pressure control must be activated. It must be blocking oil pressure to be risen up as hydraulic oil is not flowing to cylinder but oil tank. | Some amount of load should be released                        |
| Direction valve pressure adjustment must be changed  | Apply to authorized service                                   |
| There must be too low hydraulic oil  | Check hydraulic oil level, add hydraulic oil if it is too low |
| Limit check valve angle value must not be adjusted   | Apply to authorized service                                   |

| Subject, Signs  | Even if air comes but direction valve is not working |
|---|--|
| Reason  | Resolve  |
| Direction valve must be broken                            | Apply to authorized service                          |
| Direction valve bolts must be unbalanced or over squeezed | Check connection bolts                               |
| Air pressure must be too low                              | Check air pressure and leakages                      |

| Subject, Signs                                     | Cylinder is opening very slow |
|--|-------------------------------|
| Reason   | Resolve                       |
| Pump flow must be too low                          | Apply to authorized service   |
| Pump efficiency must be too low                    | Apply to authorized service   |
| Direction valve pressure adjustment must be broken | Apply to authorized service   |
| There must be oil leakage on hydraulic line        | Check hydraulic line          |

| Subject, Signs   | Dumper is shaking whilst lifting  |
|--|---|
| Reason   | Resolve   |
| There must be air in hydraulic system                      | Loosen up intake bolt on cylinder and get the air in the system, squeeze the bolt again. Check connections where may be taken the air |
| There must be too low hydraulic oil                        | Check hydraulic oil level, if it is too low; add more oil   |
| There must be shakings in cylinder up and down connections | Check the spaces given in manual book of producer   |
| Sucking line must be blocked                               | Check the jacks and suction line  |

| Subject, Signs   | If the dumper is landing when clutch is stepped. |
|--|--|
| Reason   | Resolve  |
| Direction valve or limit control mile must be dipped back into | Yetkili servise başvurun.                        |

| Subject, Signs   | If the cylinder keeps opening when the valve is in landing position |
|--|---|
| Reason   | Resolve   |
| Direction valve or limit control mile must be dipped back into | Apply to authorized service   |

| Subject, Signs                                | If the cylinder is closing too slow |
|---|-------------------------------------|
| <b>Reason</b>                                 | <b>Resolve</b>                      |
| There must be problem in air line             | Check the air line                  |
| Direction valve mile must be dipped back into | Apply to authorized service         |
| Return line must be blocked                   | Check the return line               |

| Subject, Signs                                 | If oil to control button or joystick |
|--|--------------------------------------|
| <b>Reason</b>                                  | <b>Resolve</b>                       |
| There must be problem in direction valve seals | Apply to authorized service          |
| There must be problem in PTO seals             | Apply to authorized service          |

| Subject, Signs               | If the cylinder is closing very fast |
|------------------------------|--------------------------------------|
| <b>Reason</b>                | <b>Resolve</b>                       |
| Return line must be very big | Apply to authorized service          |

| Subject, Signs                          | If there is oil leakage in cylinder |
|---|-------------------------------------|
| <b>Reason</b>                           | <b>Resolve</b>                      |
| There must be problem in cylinder seals | Apply to authorized service         |
| Cylinder stage pipes must be damaged    | Apply to authorized service         |
| Hydraulic oil must not be clean         | Change hydraulic oil                |

| Subject, Signs  | If pump is over noise or shake whilst working   |
|---|---|
| <b>Reason</b>   | <b>Resolve</b>  |
| Pump must be worn out or damaged  | Apply to authorized service   |
| There must be air in hydraulic system   | Oil must seem foamy. Check hydraulic circuit completely, especially hydraulic pump sucking line and records. Air should not enter from these connections to the line. |
| There must be cavitation occurred. Cavitation is air that enters to hydraulic oil, burnst in pressure risen up points | Problems must be repaired checking sucking lines not to get air. Oil viscosity must be high, so low viscosity oil should be used                                      |

| Subject, Signs                           | If the pump is overheated (hydraulic oil temperature should be over 60 degree) |
|--|--|
| <b>Reason</b>                            | <b>Resolve</b>   |
| Pump must be broken or damaged           | Apply to authorized service  |
| Hydraulic oil must be low                | Check hyduralic oil level. Add oil if it is low                                |
| Hydraulic oil must be dirty              | Change hydraulic oil   |
| There must be blockage in pressure lines | Check hydraulic line   |
| Oil must be very thin                    | Use high viscosity oil   |
| System must be working too much          | Use oil cooler   |

| Subject, Signs                      | There is foam in hydraulic oil |
|-------------------------------------|--------------------------------|
| <b>Reason</b>                       | <b>Resolve</b>                 |
| Hydraulic oil must be low           | Change hydraulic oil           |
| Pump must get air from sucking line | Check pump sucking line        |
| Pump seal must be damaged           | Apply to authorized service    |

| Subject, Signs                 | Rear cap can not be opened    |
|--------------------------------|-------------------------------|
| <b>Reason</b>                  | <b>Resolve</b>                |
| Lock spring must be removed    | Put the spring into its place |
| Lock junctures must be oilless | Oil the junctures             |

## **Warranty Conditions**

Warranty conditions consist only cases of any broken due to material, workmanship and montage faults of vehicle to be done at the Fesan Makina authorized services during warranty period and workmanship, changing parts costs would be corresponded by Fesan Makina. Other situations are out of guarantee.

Warranty period is .....Year from the date of delivery of the vehicle.

Warranty conditions do not contain costs of carrying load, delays, good or service losts, third party's losts and damages, enviroment damages, accident, loss and Fesan Makina is not considered as responsible for any of above mentioned situations.

Warranty conditions are valid when the vehicle is in Turkey borders and when the vehicle is at work.

To be able to consider warranty conditions of the vehicle; it is necessary to be sales invoice from Fesan Makina.

Vehicles of the customers registered at Fesan Makina, are under warranty. If the vehicle is sold to another person before warranty period is over; new owner of the vehicle has to be registered to Fesan Makina System to be able to have advanage from the warranty conditions and new owner has to get the vehicle controlled at authority services.

Warranty is valid in case of following instructions of usage, maintenance, safety and service as mentioned in this manual book.

To be able to get Failures under warranty conditions; it is must to apply authority service during the valid warranty period.

All Parts produced by another producer which are used at production and mountage of the vehicle, are under warranty of their own producer. This warranty condition can not be extended or widened. In case of followed instructions of usage, maintenance, safety and service, prepared for these kind of parts and during determined period the vehicle is under guarantee. Warranty decision of these kind of parts would be given by those parts own producer.

For the vehicles under warranty; only damaged parts are going to be repaired. During the vehicle is in warranty period; new warranty period can not be started for changed or repaired parts. Warranty period of these parts, is limited as the vehicle's warranty period. If there are no case and chassis etiquettes on the vehicle; it is out of warranty.

The parts which are not determined as warranty cover, are out of warranty. Normally to be worn out and worn off parts (tyres, rims, shock absorbers, brake shoes, hydraulic oils, bulbs, fuses...etc.) are out of warranty.

All kind of interventions, repairs, adjustments and maintenance Works done on vehicle by an unauthorized services, put the vehicle out of warranty.

In case of non original parts of Fesan Makina of used and changed parts during repair and maintenance; vehicle stays as nonwarranty situation.

Damages and failures from Systems on towtruck, from outer factors or from third party persons, are out of warranty.

Damages occurred from overloading and from unbalancing loads, are out of warranty. Damages occurred from loads of Non flowing or unbalance flowings, are out of warranty.

Damages occurred from insufficient greasing/oiling, are out of warranty. In case of not using recommended greases/oils, vehicle stays out of warranty.

Parts changes and repairs which are under warranty, do not mean responsibility or accepting failure by the producer.

Repair Works and part changings under warranty are made only at authority services and in normal hours of work. For the Works out of work hours; extra fee will be asked.

Nonwarranty repairs and part changings will be payable.

Car renting, accomodation and all costs of vehicle reaches to the authority service, are out of warranty.

Failures and damages occurred from rough road land conditions, are out of warranty.

## Quality Certificates



## Contact Informations

### Fesan Makina Otomotiv İnşaat San. ve Tic. Ltd. Şti.

Address: Konya 3. Organize San. Böl. 10. Sk. No: 2 Selçuklu / Konya - TURKEY  
Phone : +90.332 346 05 01  
Fax : +90.0332 346 05 02

[www.fesanmakina.com](http://www.fesanmakina.com)  
[info@fesamakina.com](mailto:info@fesamakina.com)

## Authority Services

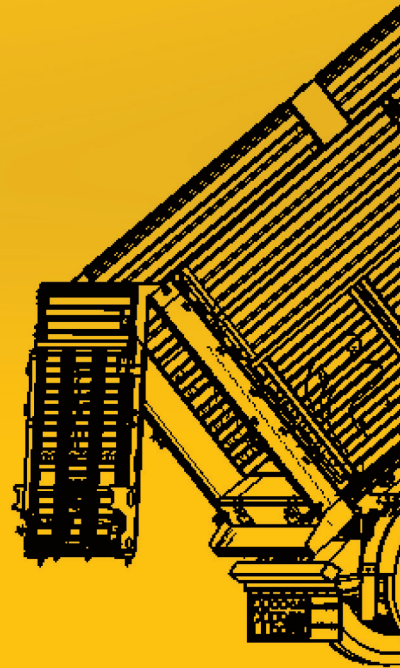
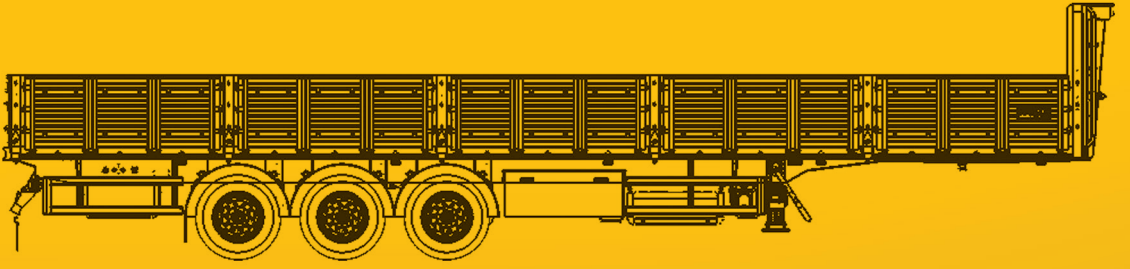
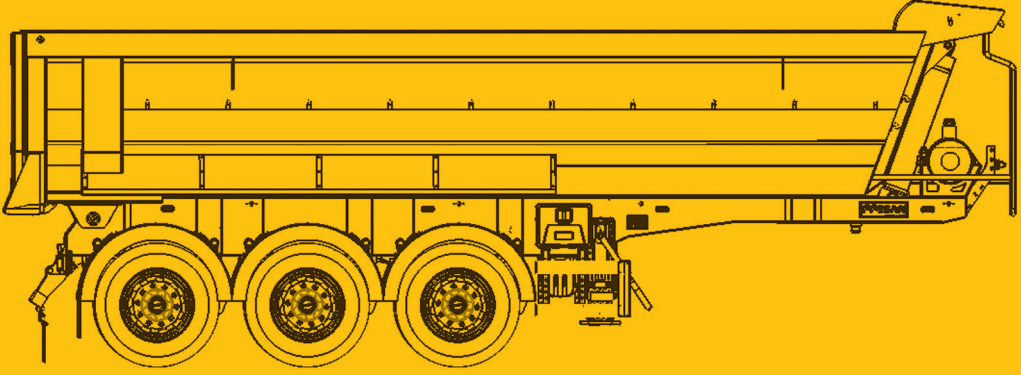
### Fesan Makina Service

Dear customers, please contact only to our authorized persons of service from our factory for all warranty, service, repair and insurance Works.

Adreess: Konya 3. Organize San. Böl. 10. Sk. No: 2 Selçuklu / Konya - TURKEY  
Phone : +90.332 346 05 01  
Fax : +90.332 346 05 02

[www.fesanmakina.com](http://www.fesanmakina.com)  
[info@fesamakina.com](mailto:info@fesamakina.com)





## MADE IN TURKEY

**A:** Konya 3. Org. San. Böl. 10. Sk. No: 2 Selçuklu / Konya - TURKEY

**P:** 0.332 346 05 01 (pbx) **F:** 0.332 346 05 02

**E:** [info@fesankar.com](mailto:info@fesankar.com)

[www.fesankar.com](http://www.fesankar.com)