TRACK BUGGIES

AT19S

SAFETY & OPERATIONS MANUAL

Manual Part #: 079256 | Revision: -
Language: English | Original Instructions

TRACK BUGGY

Safety & Operations Manual

This manual covers the Track Buggy model listed below:

Part No.	Description
076000	Buggy, AT19S

NOTICE

This manual, or a copy of it, must be kept with the machine at all times.
There is a manual storage container located on the machine for your convenience.

Allen Products are covered under one or more of the following patent numbers:
10,100,537; 9,068,301; 9,068,300; 8,360,680; 7,690,864; 7,114,876B1; 6,857,815B2; 6,582,153
With other Patents Pending.
Printed in U.S.A.

Limited Warranty & Limitation of Liability

GENERAL INFORMATION

Allen Engineering Corporation ("Allen") warrants its products to be free of defects in material or workmanship for:

TWO YEARS FROM END USER'S DATE OF PURCHASE

Warranty period begins on the date of purchase by the End User of the product. All warranty is based on the following limited warranty terms and conditions, including the disclaimer of implied warranties and consequential damages.

1. Allen's obligation and liability under this warranty is limited to repairing or replacing parts if, after Allen's inspection, there is determined to be a defect in material or workmanship. Allen reserves the choice to repair or replace.
2. If Allen chooses to replace the part, it will be at no cost to the customer and will be made available to the Allen Distributor, Dealer, or Rental Center from whom the End User purchased the product.
3. Replacement or repair parts, installed in the product, are warranted only for the remainder of warranty period of the product as though they were the original parts.
4. Allen does not warranty engines or batteries. Engine warranty claims should be made directly to an authorized factory service center for the particular engine manufacturer. Batteries are not warranted due to unknown treatment during transport, etc, and any battery claims should be directed to the battery manufacturer.
5. Allen's warranty does not cover the normal maintenance of products or its components (such as engine tuneups and oil & filter changes). The warranty also does not cover normal wear and tear items (such as belts and consumables).
6. Allen's warranty will be void if it is determined that the defect resulted from operator abuse, failure to perform normal maintenance on the product, modification to product, alterations or repairs made to the product without the written approval of Allen. Allen specifically excludes from warranty any damage to any trowels resulting from an impact to the rotors.
7. Impact damage to gear boxes is not covered under the Allen warranty and is deemed customer abuse.
8. Allen will pay shop labor on warranty items at the Allen Shop Labor Rate in existence on the date of the warranty claim. An Allen labor chart will determine the time allowed to complete a repair and will govern the shop labor hours that will be allowed.
9. Allen will pay freight on warranty replacement parts at worldwide standard ground rates. No warranty replacement parts will be shipped air freight at the expense of Allen. Allen only pays outbound freight charges when sending warranty replacement parts to the customer via ground service. Allen does not pay any inbound freight. However, if Allen determines this to be a warranted item, only then will Allen reimburse the customer for inbound freight at standard ground rates.
10. ALLEN ENGINEERING CORPORATION'S WARRANTY POLICY WILL NOT COVER THE FOLLOWING: TAXES; SHOP SUPPLIES; ENVIRONMENTAL SURCHARGES; AIR FREIGHT; TRAVEL TIME; LOSS OF TIME; INCONVENIENCE; LOSS OF RENTAL REVENUE; RENTAL COSTS OF EQUIPMENT USED TO REPLACE THE PRODUCT BEING REPAIRED; LOSS OF USE OF THE PRODUCT; COMMERCIAL LOSS; OR ANY OTHER CHARGES WHATSOEVER OR ANY LIABILITIES FOR DIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGE OR DELAY.
11. ALLEN ENGINEERING CORPORATION MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED. THIS LIMITED WARRANTY IS IN LIEU OF THE WARRANTY OF MERCHANTABILITY AND FITNESS. THERE ARE NO OTHER WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION ON THIS DOCUMENT.
12. No Allen employee or representative is authorized to change this warranty in any way or grant any other warranty unless such change is made in writing and signed by an officer of Allen Engineering Corporation.

GENERAL INFORMATION

Dealer Information & Ordering Parts

Your Dealer has Allen Engineering Corporation trained mechanics and original Allen replacement parts. Always contact the Allen Dealer who sold you this machine for Allen Certified repairs and replacement parts.

Place Allen Dealer information below for future reference.

Dealer Name: _____

Phone #: (___) -____- _____

Address: _____

City:_____ **State:**_____ **Zip:**_____

Salesman:_____ **Mobile Phone:**_____

Additional Comments:_____

_____

_____

_____

ALL INFORMATION, SPECIFICATIONS, AND ILLUSTRATIONS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE AND ARE BASED ON THE LATEST INFORMATION AT THE TIME OF PUBLICATION.

The “PARTS & DECALS MANUAL” contain illustrated parts lists for help in ordering replacement parts for your machine. Follow the instructions below when ordering parts to insure prompt and accurate delivery:

1. All orders for service parts - include the serial number for the machine. Shipment will be delayed if this information is not available.
2. Include correct description and part number from the “PARTS & DECALS MANUAL”
3. Specify exact shipping instructions, including the preferred routing and complete destination address.
4. **DO NOT** return parts to AEC without receiving written authorization from AEC. All authorized returns must be shipped pre-paid.
5. When placing an order, please contact the AEC dealer nearest you.

Model & Serial Number / Unit Identification

Manufacturer's Codes:
When ordering parts or requesting service information, you will always be asked to specify the model and serial numbers of the machine. The legends below specifically defines each significant character or group of characters of the Model Number and Serial Number codes.

Model Number

AT 19S

- 19S — **Model**
- AT — **Series**

Serial Number
The serial number found on the identification plate is a ten digit format. The model number identifies your machine and will ensure that you receive the correct replacement parts.

Serial Number Example

AT 01 19 001

- 001 — **Sequence Number**
- 19 — **Year**
- 01 — **Month**
- AT — **Series**

Unit Identification Plate Location:
An identification plate listing the model number and the serial number is attached to each unit and is located on the rear lower left side of mainframe or under the seat. Refer below for serial number and model number location. This plate should not be removed at any time.

Please record the information found on this plate below so it will be available should the identification plate become lost or damaged. When ordering parts or requesting service information, you will always be asked to specify the model and serial numbers of the machine.

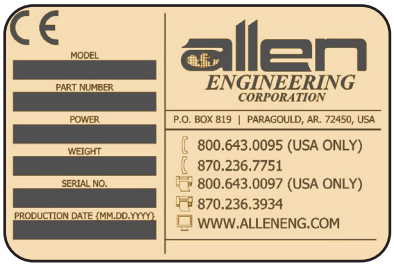
FILL IN FOR FUTURE REFERENCE

Model Number:_____

Serial Number:_____

Date Purchased:_____

Purchased From:_____



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ATTENTION!!!

THIS MANUAL MUST ALWAYS ACCOMPANY THE VEHICLE AND MUST BE READILY AVAILABLE TO THE OPERATOR.
BESIDES PROVIDING INSTRUCTIONS ON THE PROPER USE OF THE VEHICLE, IT PROVIDES WARNINGS ABOUT THE RISKS AND HAZARDS DERIVING FROM INCORRECT USE AND NON-COMPLIANCE WITH THE INTENDED USE.

TO BE KEPT FOR FUTURE REFERENCE.

Released 11.07.2023

1. GENERAL ACCIDENT PREVENTION

For the vehicle to work properly it must be set up perfectly (installation and use) and the oil level of the various mechanisms must be verified. An inaccurate inspection or incorrect installation or use can impair vehicle efficiency and compromise operator safety.

All the information and diagrams in this manual refer to the model in production at the time of publication.

For more information contact an Authorised Service Centre.

The Company reserves the right to make changes without prior notice.

Everything in this manual belongs to the company, therefore no part or diagram can be used for any other use without authorisation.

Caution is the principal factor in preventing accidents and injuries.

Before starting up the vehicle, carefully read all the instructions in this booklet. Should doubt or uncertainties arise, contact the manufacturing company.

Before starting the engine, make sure that there are no people near the vehicle, especially children.

It is strictly forbidden to transport or lift people.

Do not use the vehicle unless you are physically fit: do not drink alcoholic beverages while at work.

This vehicle is not approved for road circulation.

Do not use the vehicle on steep slopes but only on ground with a gradient that is less than the limits indicated further on.

It is strictly forbidden to abandon the vehicle while the diesel engine is running or with the ignition key inserted. The engine must always be stopped.

It is strictly forbidden for minors to use the vehicle.

Do not use the vehicle in closed or poorly ventilated areas: exhaust fumes are toxic and could be seriously harmful to the body and may even be fatal.

The vehicle must be refuelled with the engine switched off. Always keep away from flames and do not smoke.

Do not spill hydraulic or lubricating oil or any other liquid on the ground during maintenance; pick it up and dispose of it at authorised companies.

Unauthorised personnel must be prohibited from operating the vehicle by removing the ignition key. The person it is handed over to is responsible for any harm and damage caused to third parties.

It is strictly forbidden to remove the safety devices installed.

Avoid stopping the vehicle in a place where there lies the risk of a landslide, especially when fully loaded.

Avoid wearing inadequate clothing when operating the vehicle (oil-stained, torn, etc.).

It is strictly forbidden to stop or park while the Diesel engine is running. The engine must always be stopped.

Certain symbols are found in the manual and where necessary on some parts of the vehicle, followed by safety-related messages. For them to be read more easily and carefully, follow the instructions below:

DANGER!
This symbol indicates a high degree of danger and risk for the safety of the operator or other persons, including death. Use all the precautions recommended in this manual.

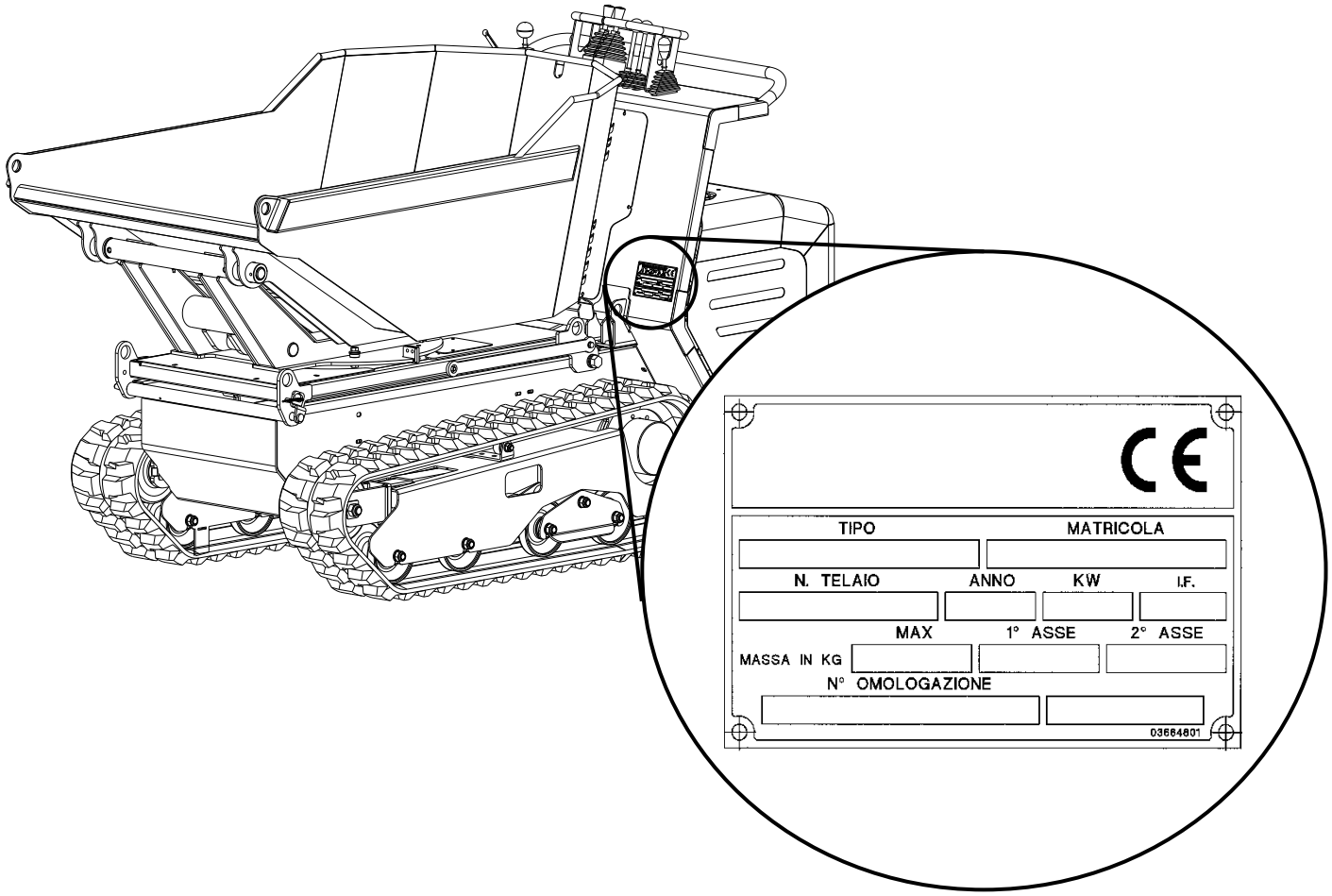
ATTENTION!
This symbol indicates a potential hazard that can be eliminated by applying and complying with the instructions provided in this manual or by using common sense.

2. MAIN CHARACTERISTICS

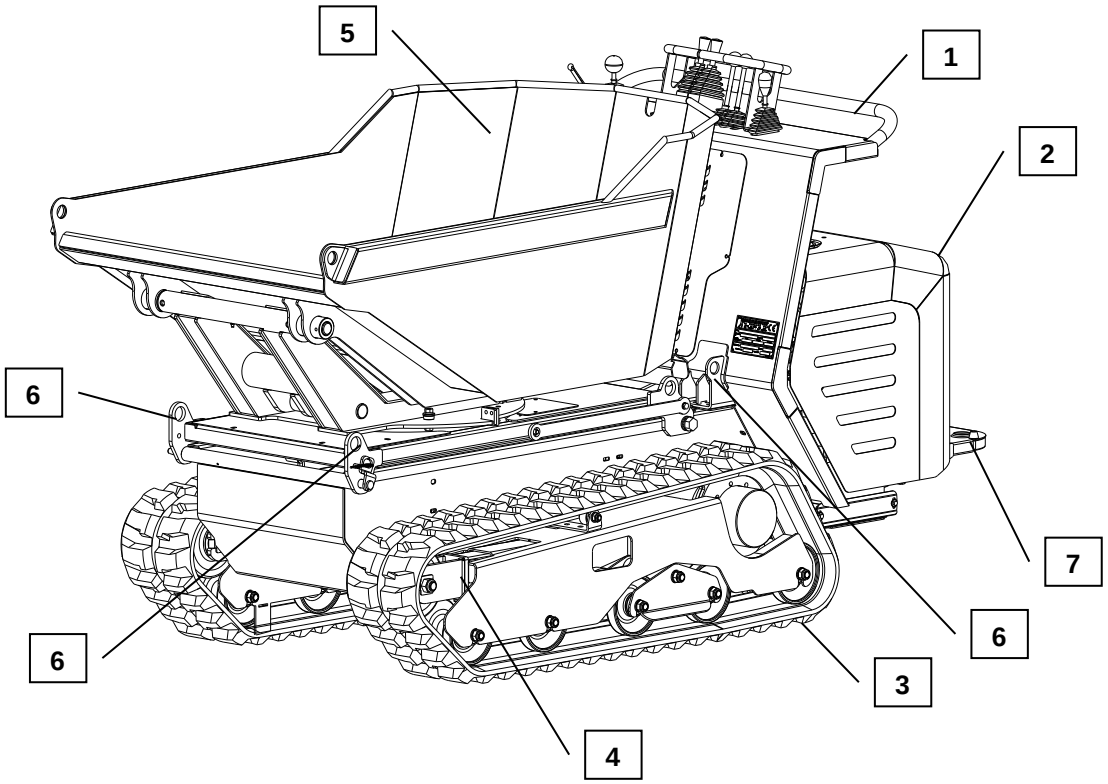
2.1. VEHICLE IDENTIFICATION

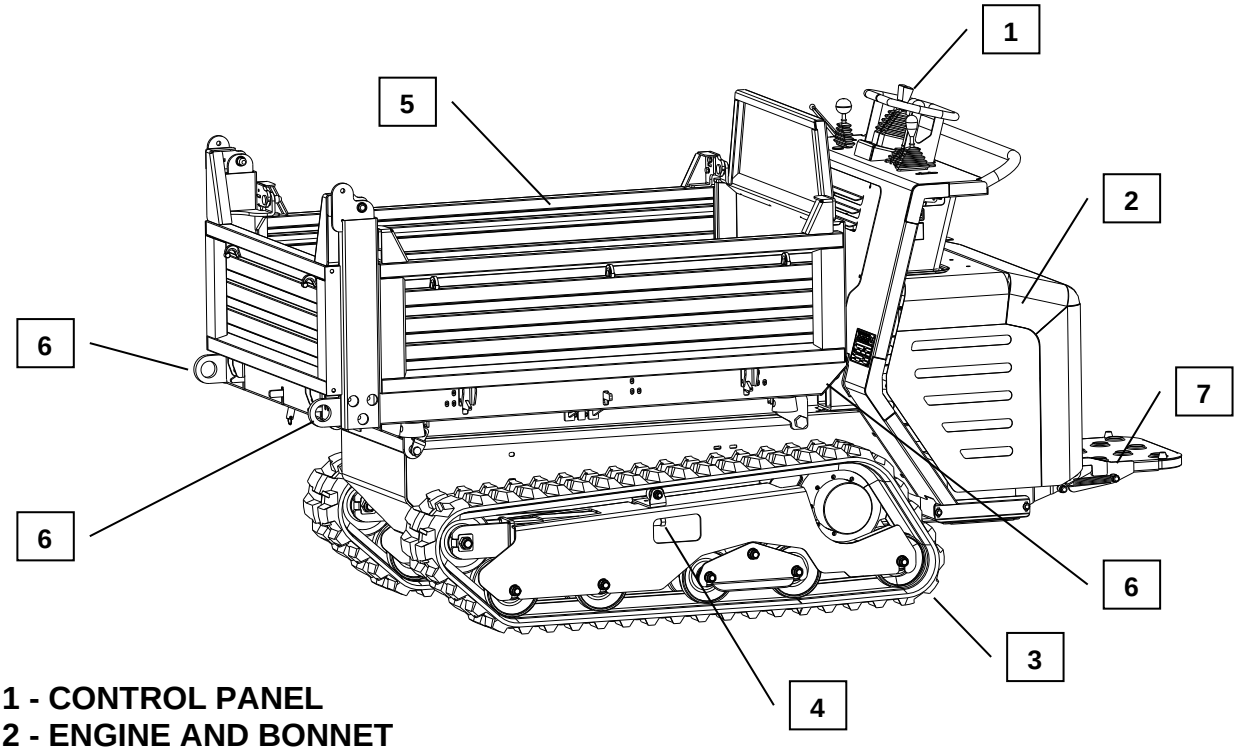
The vehicle is equipped with a special label, riveted to the front of the chassis of the driver's side (tipper side), indicating its identification data.
Always quote the type and serial number shown on the label when submitting any request.

For further clarification consult the methods described in the Spare Parts Manual that comes with the vehicle.
Any accessory that can be installed on the vehicle will have its own label, which is generally found on its outer part. For more information consult the documentation concerning the specific part.



2.2. MAIN PARTS OF THE VEHICLE





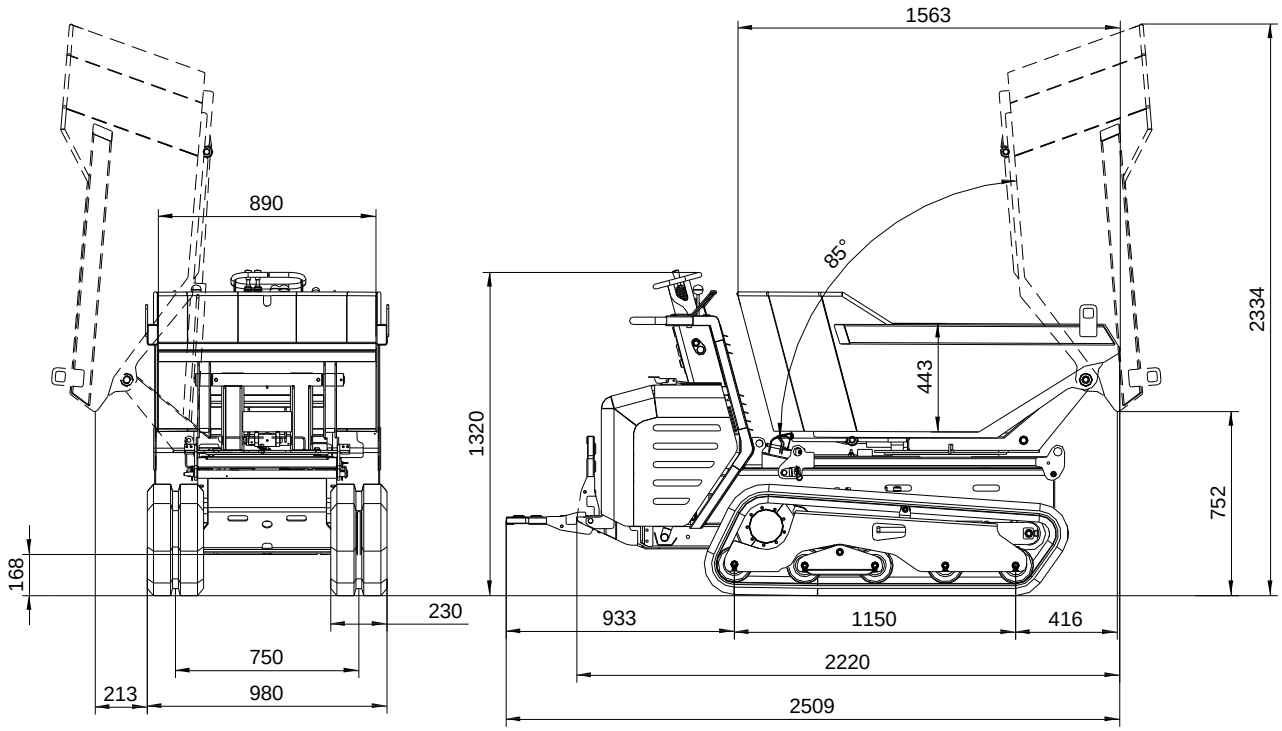
1 - CONTROL PANEL
2 - ENGINE AND BONNET
3 - TRACK
4 - TRACK ADJUSTER WITH ADJUSTING SCREW
5 - TIPPER OR BUCKET
6 - CONNECTIONS TO LIFT THE VEHICLE
7 - MOBILE PLATFORM

2.3. SPECIFICATIONS - TECHNICAL DATA

SPECIFICATIONS

The vehicle is designed and built to load, transport and unload soil, sand, excavation debris and other material that is loose or corresponds with the characteristics and performance specifications described in this manual.

TC130d / BT



TC130d / C

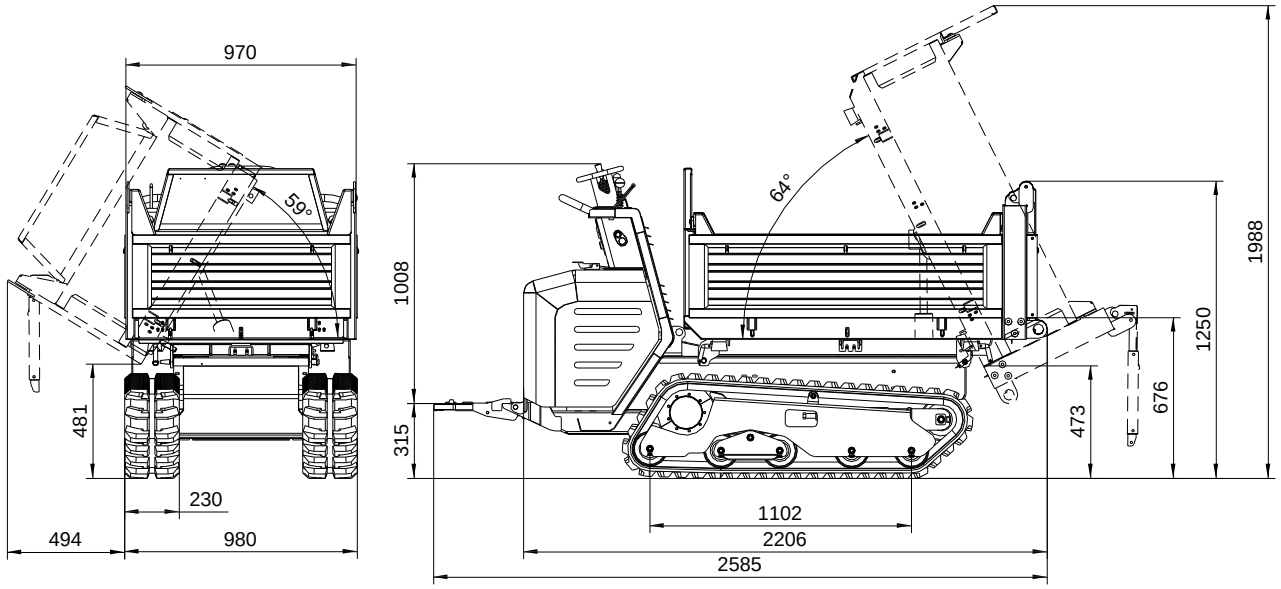


TABLE OF SPECIFICATIONS

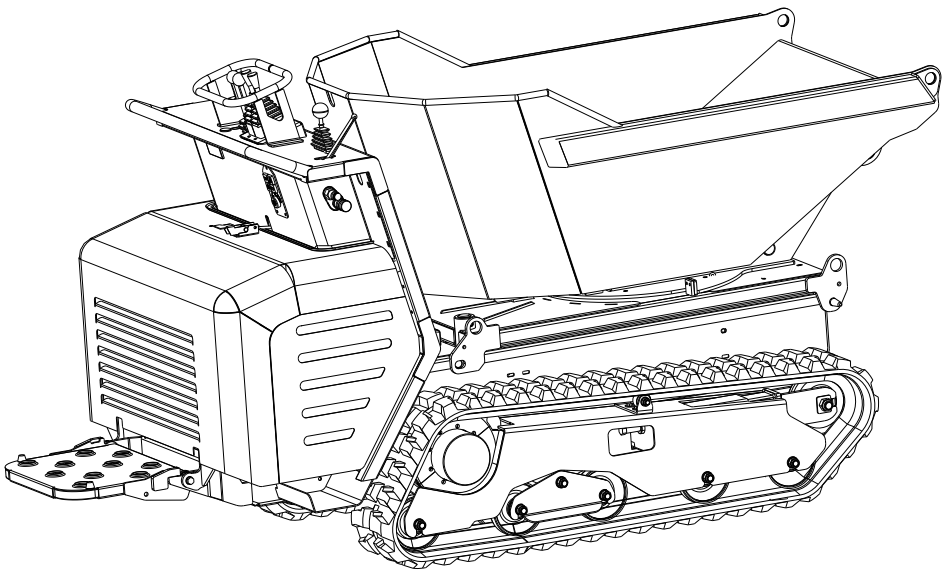
Tracked undercarriage with hydrostatic transmission that can take several pieces of equipment.
Double-acting cylinder to lift accessories from the front.
Rubber tracks in monobloc structure with a steel wire core and treated steel inserts.
A couple of pivoting rollers in the centre of the track to adapt better to the roughness of the ground.
Patented track layout to guarantee a wide supporting area, high stability and excellent driving comfort in all conditions of use.
Water cooled diesel engine; standard electric starter.
Hydrostatic transmission with 2 variable displacement pumps and 2 orbital motors. Track rotation steering.
2-lever power-assisted drive control with automatic reset to stop in an emergency.
Parking brake lever control.
Tipper with wide unloading angle.
Besides conveying aesthetic harmony, the rounded shapes facilitate unloading the transported materials.
Double-acting hydraulic power take-off (optional) to use auxiliary machinery with a max capacity of 20 l/min and pressure (P) = 190 bar.
Standard bonnet and operator platform.

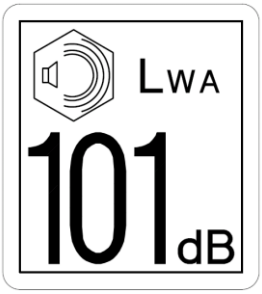
TECHNICAL DATA

		TC130d / BT	TC130d / C
Operating weight (without operator)	kg	1100	9900
Operating capacity	kg	1000	1000
Load capacity: - heaped (SAE Standard)	m^3	0,57	0,56
- flat: sand/liquid	m^3	0,46 / 0,32	0,44
DIESEL engine	type	KUBOTA D 902	
Maximum engine rotation speed	rpm	2600	
Max. power at maximum speed	HP/kW	20 / 15	
Displacement	cm^3	898	
Cylinders	No.	3	
Max. torque at 2600 rpm	daNm	5,5	
Cooling	type	liquid	
Transmission	type	Hydrostatic	
Transmission pumps with variable displacement pistons	No.	2	
Total capacity	l/min	33 x 2	
Services gear pump	No.	1	
Capacity	l/min	21	
Max. operating pressure for driving	bar	250	
Max. operating pressure for services	bar	190	
Maximum speed:	km/h	4.0	
Separate track steering system	type	Hydrostatic	
Rubber track tensioning	type	spring + adjusting screw	
Width of the rubber track	mm	230	
Specific ground pressure: - empty/loaded	kg/cm^2	0,21/0,42	
Max. gradient when fully loaded	max. %	60	
CAPACITIES			
Fuel tank capacity	l	15.2	
Hydraulic oil tank capacity	l	26	
Capacity of each reducer	bar	0.5	
Pump boost pressure	bar	22 – 24	
Sound power level at 2600 rpm	dBA	101	

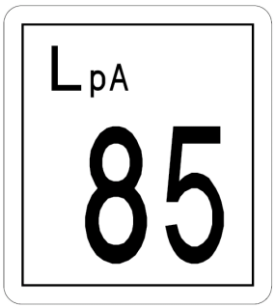
Implementation of **Directive 2000/14/EC** concerning the noise limitation generated by the operating machine.

Sound power level guaranteed at 2600 rpm: **L_{WA} = 101 dB**





Sound pressure level at operator's ear: **L_{PA} = 85 dB**



Implementation of **Directive 2002/44/EC** concerning the minimum health and safety requirements concerning the exposure of workers to the risks deriving from mechanical vibrations.

Daily action values

- **Hand-arm system:** **less than 2.5 m/sec²**
- **Whole body system:** **less than 0.5 m/sec²**

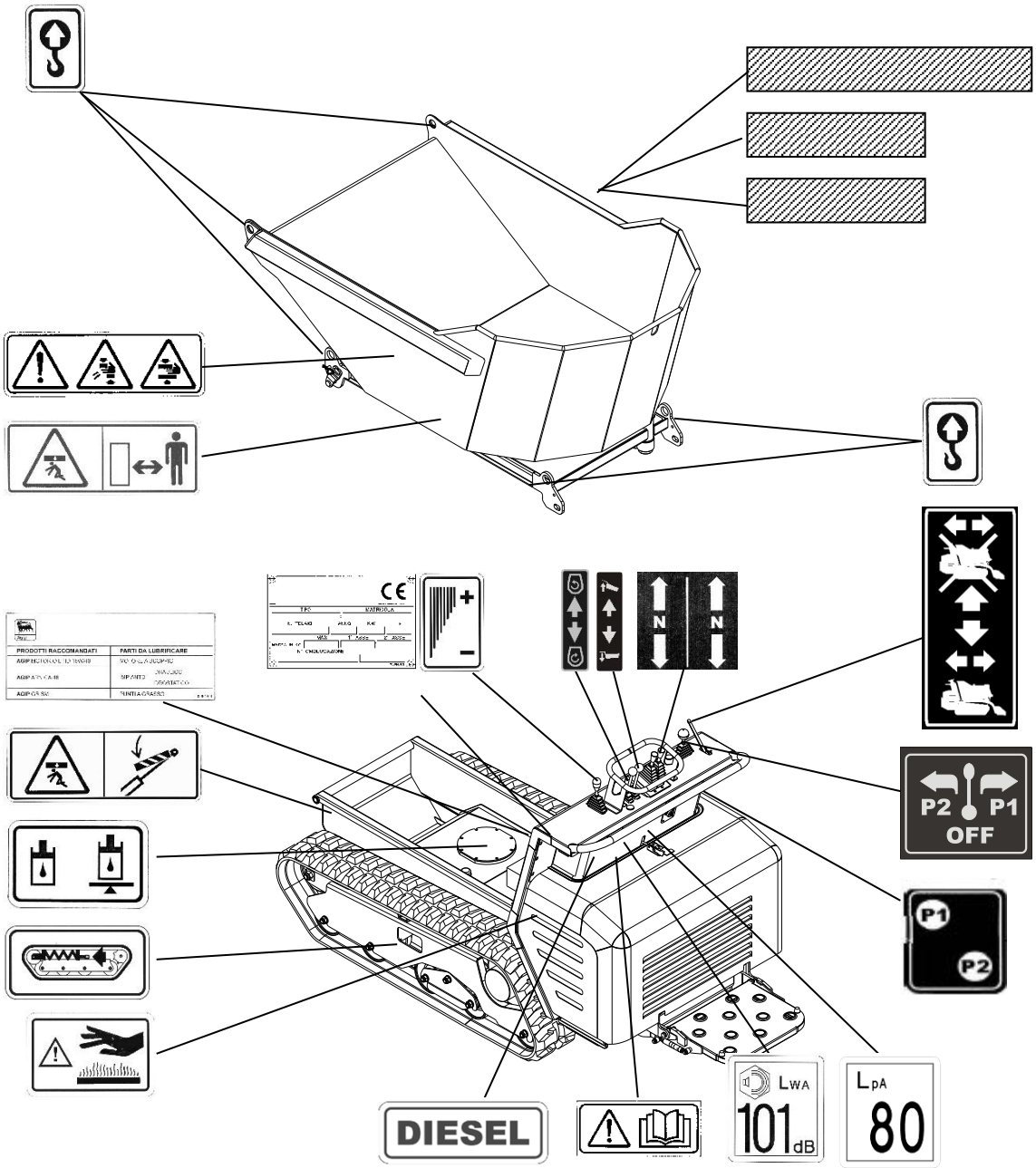
3. USE - SAFETY REGULATIONS

3.1. SAFETY LABELS AND DECALS

Besides indicating the various manoeuvres to use and control the vehicle, the affixed labels highlight the risks related to its operation.

Operators who normally wear spectacles must wear them to read the labels.

Keep all affixed labels clean and legible, while paying particular attention to the indicated safety warnings; replace any damaged or missing labels. The company is at your disposal.



3.2. GENERAL USE - SAFETY REGULATIONS

This manual contains the information required to operate the vehicle.

We recommend contacting the Manufacturer for spare parts, accessories or any other information.

The mini tracked transporter, fitted with the open tipper or bucket, is used to transport and tip material.

The transported material must be suitable for the specifications of the equipment used each time.

Avoid sudden movements; all movements and manoeuvres must be performed with utmost attention and at low speed.

Verify that no unauthorised personnel are in the work area and no one can enter or transit the range of action of the vehicle.

Stop the engine immediately if a fault should occur while handling the various moving parts of the vehicle.

Do not perform any verification, inspection or maintenance with the engine running.

It is strictly forbidden to transport or lift people besides the operator.

Comply with the information in the relevant Chapter when lifting and transporting the vehicle.

Before driving the vehicle, make sure the load has been placed properly inside the tipper.

Always make sure that the weights are balanced while driving forwards or reversing on slopes.

<u>It is forbidden</u> to move on ground where the **gradient** is both **lateral as well as longitudinal**. The ground **must be solid and compact** and always adequate for the specific load of the vehicle.

Before tipping the bucket, verify that the loaded material inside it is free to slide. Lifting the tipper with material blocked inside it can jeopardise the stability and is therefore ***<u>forbidden</u>***. The situation is even riskier when lifting and unloading sideways.

The vehicle can be used to unload on ground with a gradient that is less than 25% (lateral and longitudinal). It is forbidden to unload if the gradient is both longitudinal and lateral.

The bucket must be lifted for unloading operations very slowly in order to prevent any fluctuation that may facilitate the machine tipping over.

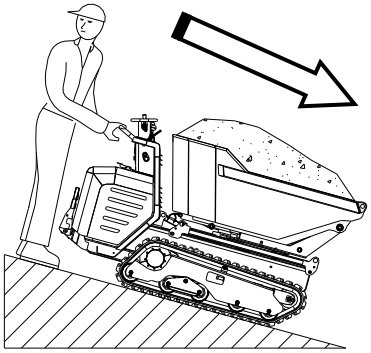
Before lifting the load, verify that the material in the bucket has been placed in a way so as to prevent the risk of it accidentally falling out while being moved.

The vehicle can be used to unload on ground with a gradient that is less than 25% (longitudinal) and 18% (transversal). It is forbidden to unload if the gradient is both longitudinal and lateral.

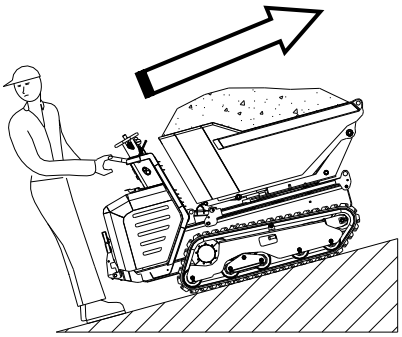
Before tilting the bucket make sure that there are no obstacles in its path, especially power cables, wires, etc.

Pay utmost attention while unloading and if in doubt, lower the bucket again and verify that the material is free to move. If the material is blocked, you can only try to release it with the bucket in the lowest position, otherwise it can cause the vehicle to overturn and risk crushing the operator and causing damage.

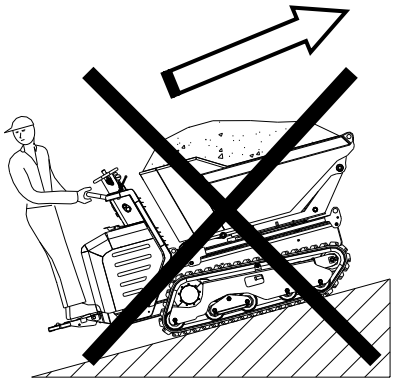
UPHILL OR DOWNHILL, LOADED



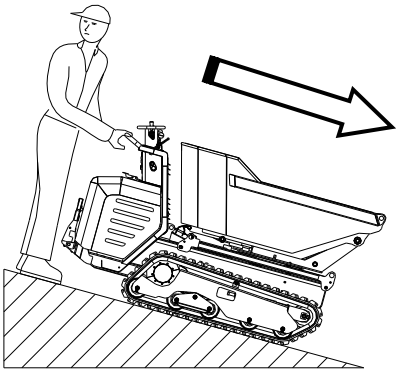
30% MAX



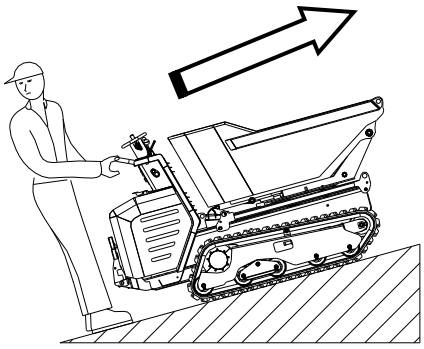
30% MAX



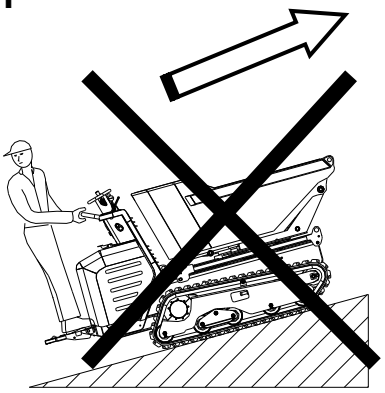
UPHILL OR DOWNHILL, EMPTY



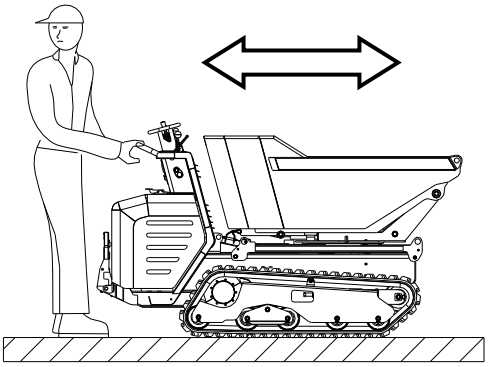
30 % MAX

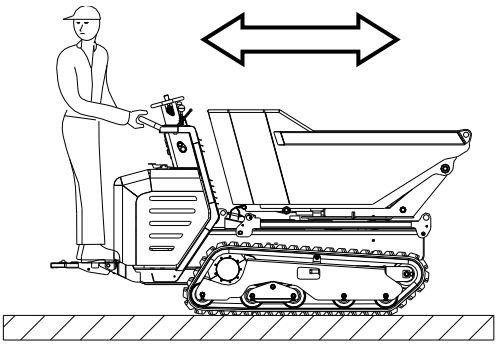


25% MAX

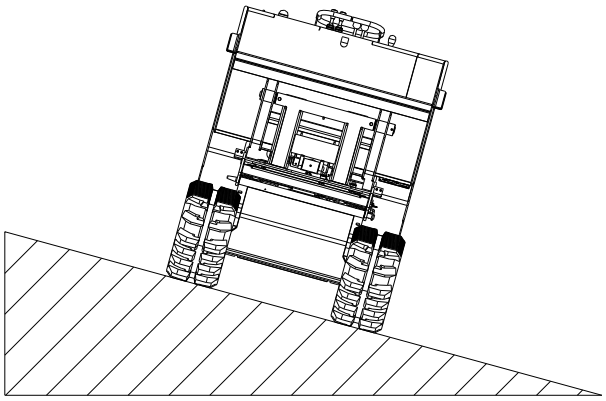


FLAT GROUND, EMPTY





UPHILL OR DOWNHILL, EMPTY AND LOADED

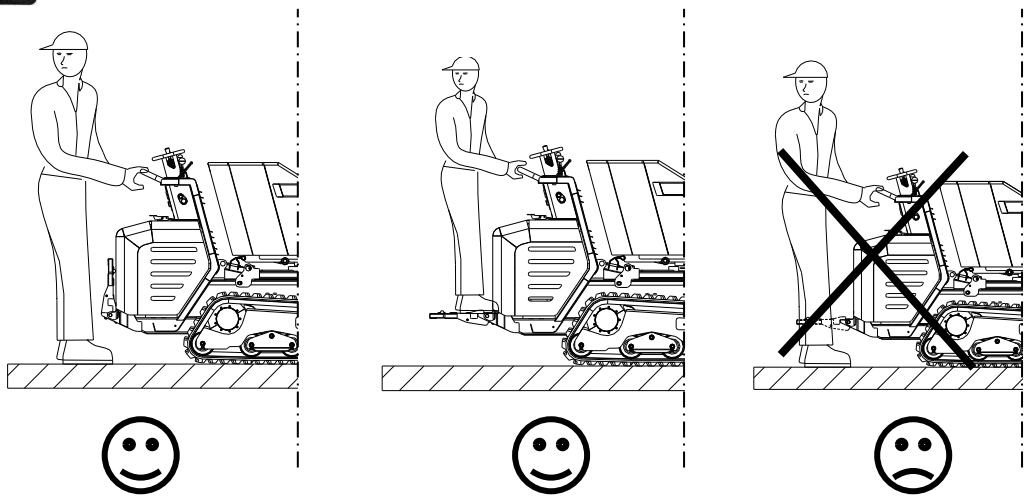


USING THE OPERATOR PLATFORM:

- The **PLATFORM** must be **LIFTED** (max. height) with the **OPERATOR** on the **GROUND**.

- The **PLATFORM** must be **LOWERED** with the **OPERATOR ON IT**.

Under no circumstances is the operator to drive while the platform is lowered.



It is **FORBIDDEN** to abandon the vehicle while the engine is running.

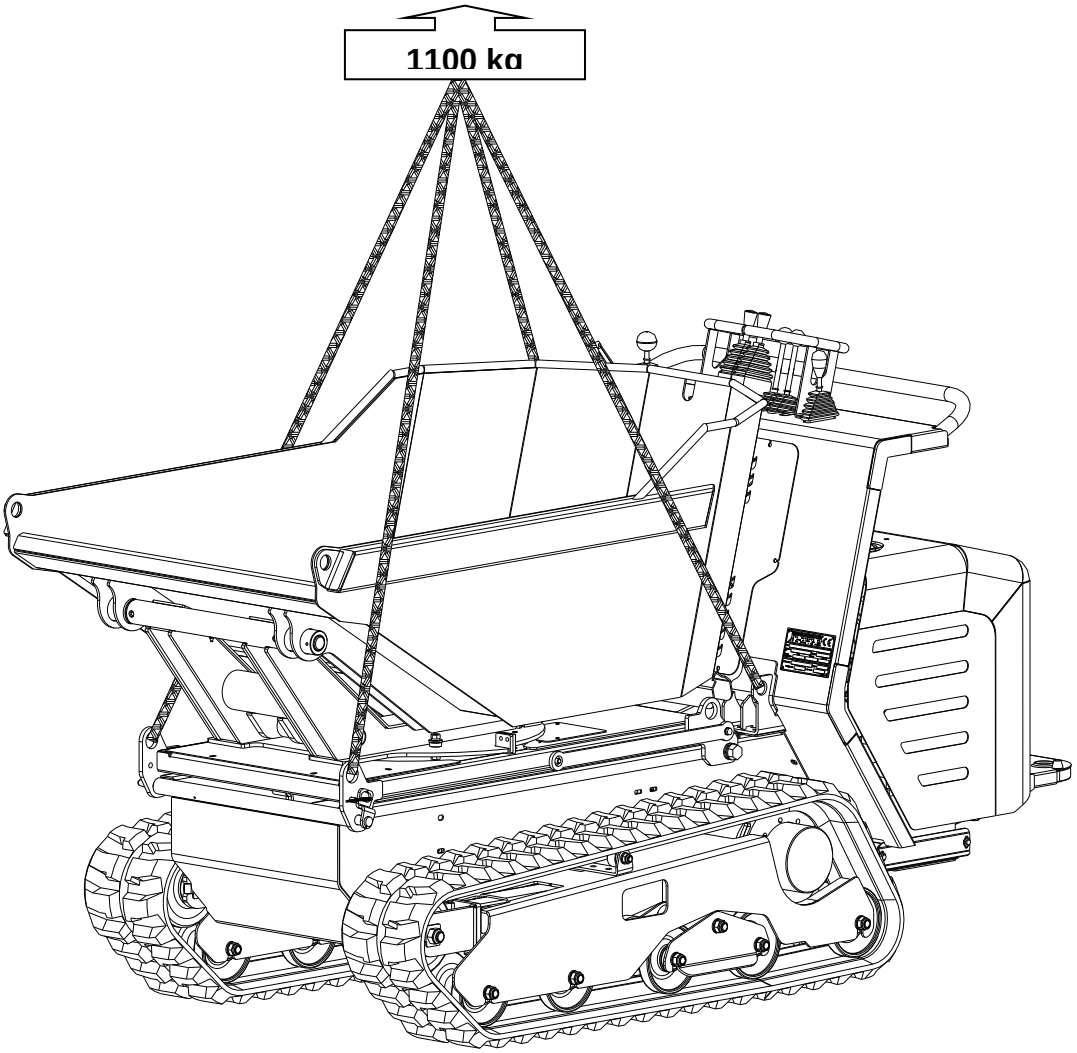
- **ATTENTION!**

ALWAYS STOP THE DIESEL ENGINE
WHEN STOPPING OR PARKING

Do not use the vehicle at the maximum speed allowed for an abnormally long time - occasionally slow down to a moderate speed. Do not drive too far in order to prevent the hydraulic components from overheating, which may cause damage.

Prevent foreign objects (gravel, stones, debris, etc.) from lodging inside the rubber track, causing interference between the various transmission parts, and posing a hazard to the relative components.

3.3. LIFTING AND TRANSPORTING



The vehicle must only be lifted when empty and it is of utmost importance to strictly comply with the following:

- Close off the lifting area and prohibit unauthorised people from entering. Do direct the load over people or things and make sure that the area where the un/loading operations are performed is clear from any obstruction (power cables, telephone line, etc.).

- It is strictly forbidden for people to pass or stand under the suspended load.

- Use cables or chains of adequate capacity for the load that is to be lifted: the empty machine, complete with the bucket, weighs about **1100 kg**.

- Hook the vehicle from the **4** points provided and proceed with the lifting operations; avoid sudden movements and use very low lifting speeds.

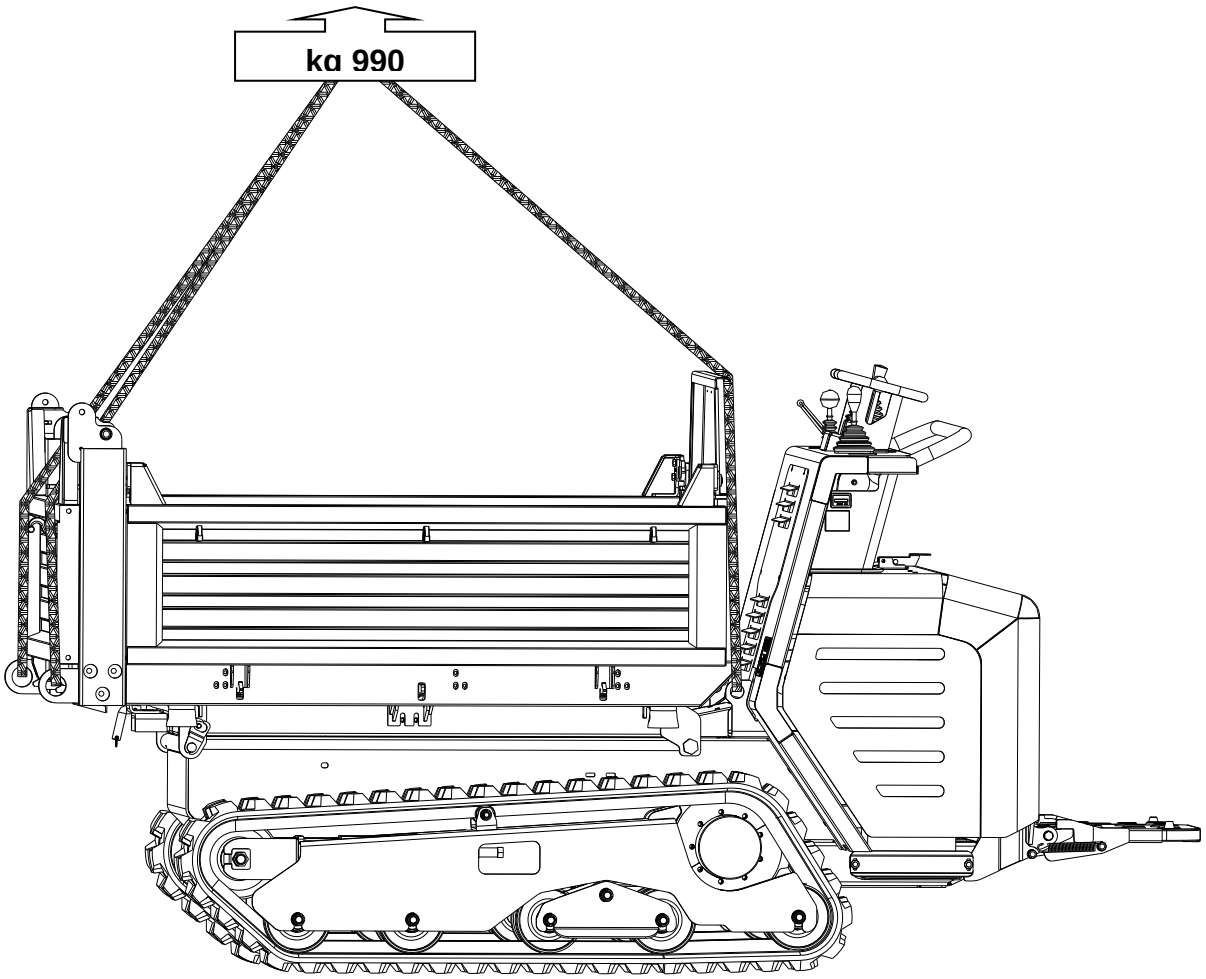
- Lift the vehicle and place it on the transport vehicle, then anchor it properly by inserting and blocking wedges at the ends of the tracks on the flatbed.

- If necessary, secure the vehicle to the flatbed with steel cables of adequate capacity.

- Unload the vehicle by following the steps in inverse order and adopting all the necessary safety precautions to safeguard the personnel involved and the vehicle itself.

 **ATTENTION!!!**

It is recommended to close the fuel valve every time the vehicle is transported or handled in order to prevent causing harm or damage.



The vehicle must only be lifted when empty and it is of utmost importance to strictly comply with the following:

- Close off the lifting area and prohibit unauthorised people from entering. Do direct the load over people or things and make sure that the area where the un/loading operations are performed is clear from any obstruction (power cables, telephone line, etc.).

- It is strictly forbidden for people to pass or stand under the suspended load.

- Use strips (not cables or chains that could damage the skip) of adequate capacity for the load that is to be lifted: the empty machine, complete with the bucket, weighs about **990 kg**.

- Check the proper position of the locking pins according to the front dumping position (*see* ***sect. 4.3***), before lifting the vehicle.

- Hook the vehicle from the **4** points provided and proceed with the lifting operations; avoid sudden movements and use very low lifting speeds.

- Lift the vehicle and place it on the transport vehicle, then anchor it properly by inserting and blocking wedges at the ends of the tracks on the flatbed.

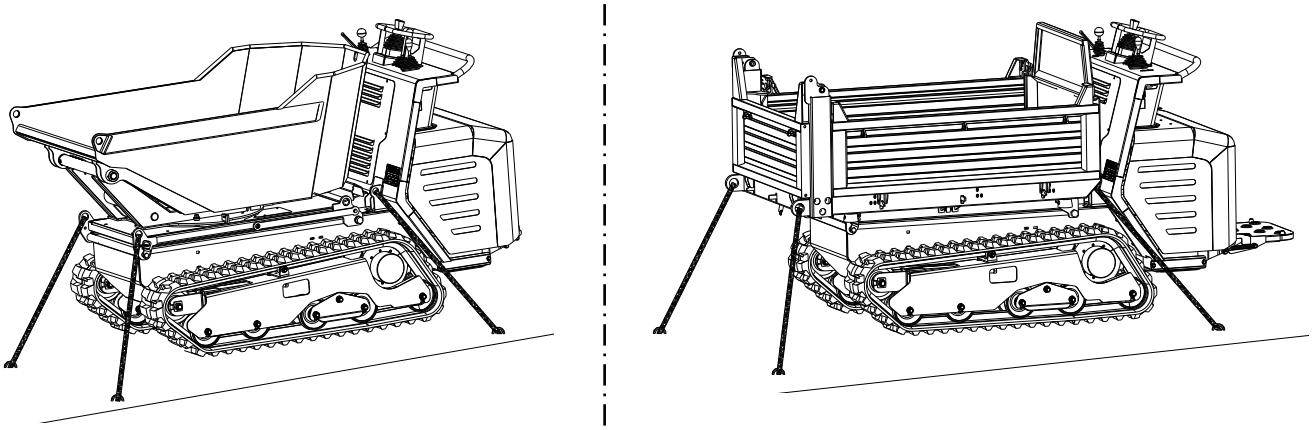
- If necessary, secure the vehicle to the flatbed with steel cables of adequate capacity.

- Unload the vehicle by following the steps in inverse order and adopting all the necessary safety precautions to safeguard the personnel involved and the vehicle itself.

 **ATTENTION!!!**

It is recommended to close the fuel valve every time the vehicle is transported or handled in order to prevent causing harm or damage.

3.4. SECURING OF THE MACHINE DURING TRANSPORT



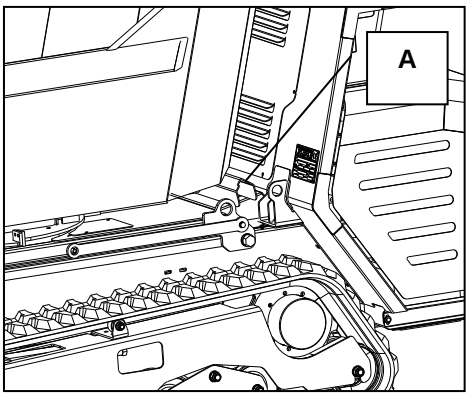
- Make sure that the overall height allowed by the truck has not been exceeded;
- Lower the tipping vessel;
- Securely anchor the vehicle to the truck loading surface by passing the ropes in the appropriate tie down points using suitable sized belts or chains;
- Before long transports during pouring rain weather, protect the engine with a plastic cover;
- Make sure that the driver of the transport vehicle knows, before leaving, the overall height, the total width and the total weight of his truck (including the dumper), as well as the legal norms relating to this type of transport and in force in the Country where the transport itself must take place!

3.5. SAFETY RETAINER TO PERFORM OPERATIONS ON THE MACHINE WITH THE BUCKET RAISED

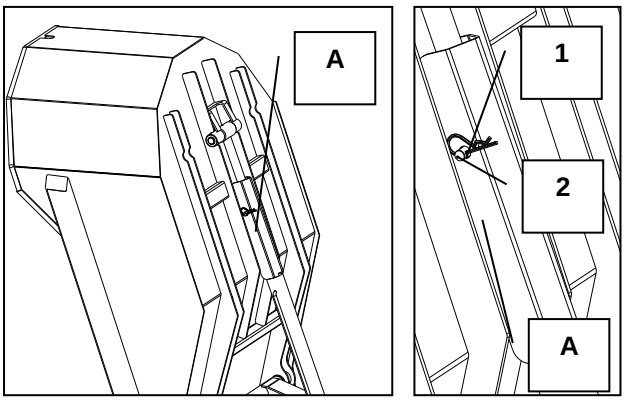
DANGER ZONES!

Due to the functional characteristics, the vehicle has a few parts that pose the risk of crushing (tipper descending on to the chassis, the track, etc.) and shearing, therefore, particular attention must be paid during these manoeuvres, avoiding to interpose limbs or body parts within these areas.

If maintenance must be performed, **the raised tipper must be blocked** with a special **safety element A**, supplied with the vehicle, which is to be inserted **on the rod of the lifting cylinder** by moving it from the **transport position B** to the **safety position C** shown in the figure.
Always block with a safety pin and pivot.
This precaution is necessary for the safety of the operator or technician who is to perform maintenance.



Position B

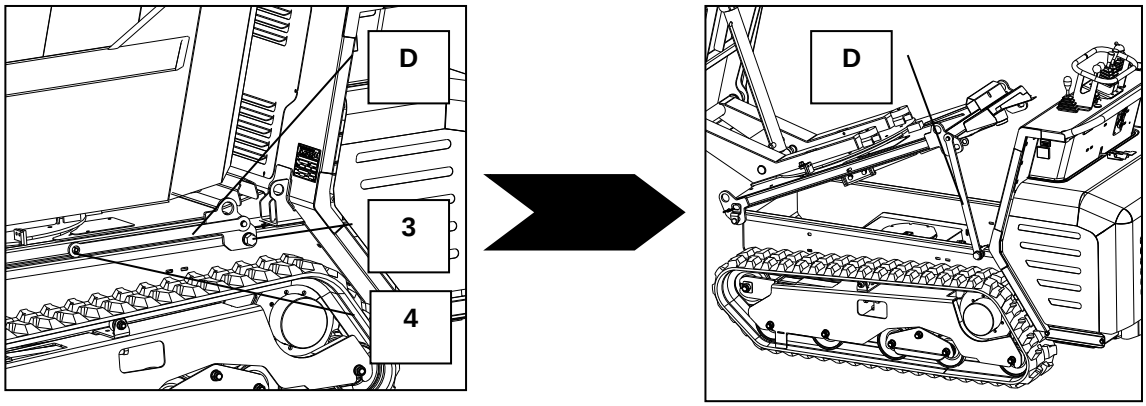


Position C

Proceed as follows to engage the safety retainer:

- release cotter pin **"1"**;
- remove pin **"2"**;
- position the safety element **"A"** on the rod of the tipper lifting cylinder (refer to **"Position C"**);
- reinsert the locking parts (pin and cotter pin) in this position, as shown in the **"Position C"** diagram.

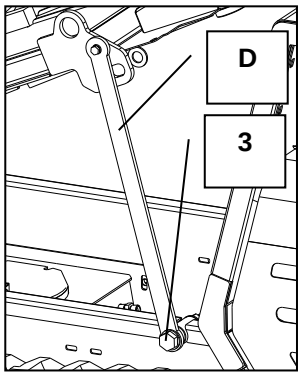
If maintenance must be performed on the tracked undercarriage (hydraulic oil tank, hydraulic pumps, etc), **the frame of the tipper must be lifted and blocked** with a special **safety element D**, supplied with the vehicle, by moving it from the **transport position E** to the **safety position F** shown in the figure.
Always block with the safety screw.
This precaution is necessary for the safety of the operator or technician who is to perform maintenance.



Position E **Position F**

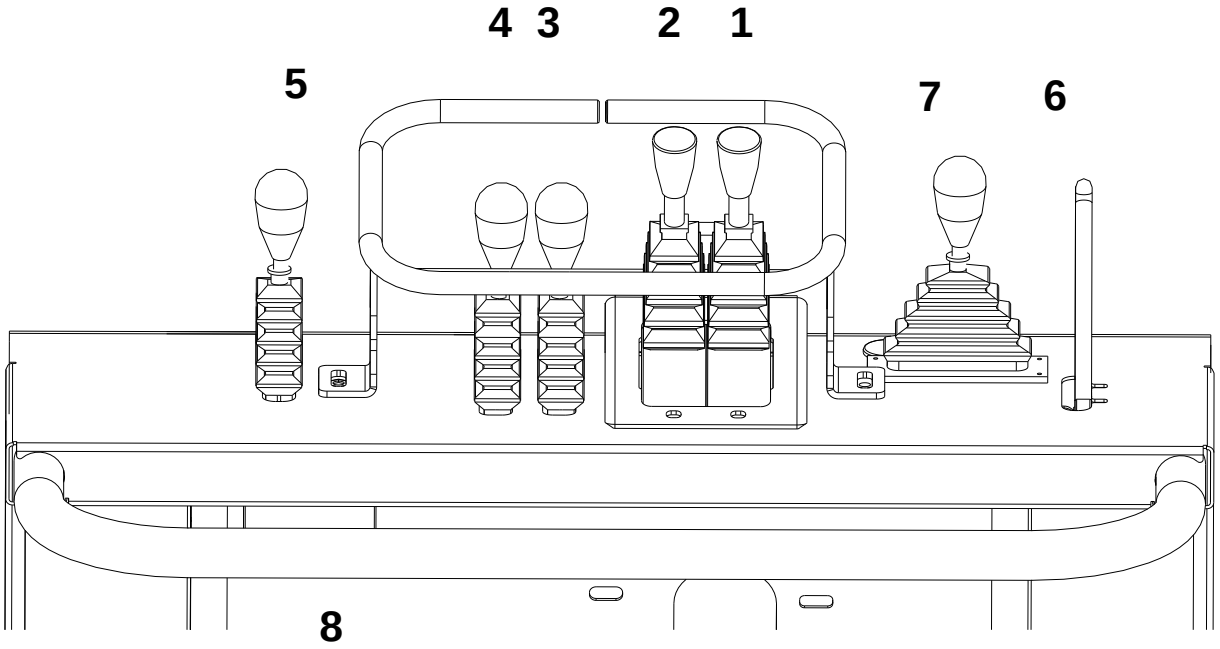
Proceed as follows to engage the safety retainer:

- loosen screws **"3"** that fasten the frame of the tipper to the tracked undercarriage;
- release cotter pin **"4"**;
- lift the frame of the tipper;
- rotate the safety element **"D"** and bring it to the safety position (refer to **"Position F"**);
- reinsert screw **"3"** in this position as shown in the **"Position F"** diagram.



4. DRIVING POSITION-CONTROLS

4.1. VEHICLE CONTROLS



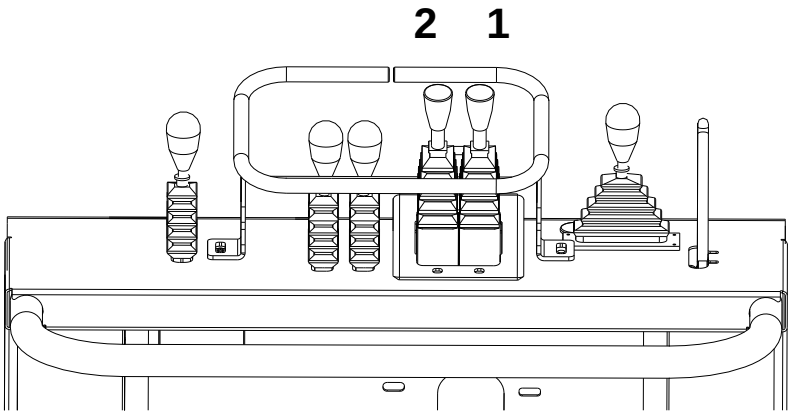
1 – RIGHT TRACK DRIVE CONTROL LEVER
2 – LEFT TRACK DRIVE CONTROL LEVER
3 – LOADING BUCKET UP-DOWN CONTROL LEVER
4 – LOADING BUCKET ROTATION CONTROL LEVER
5 – ACCELERATOR CONTROL LEVER
6 – CONTROL LEVER TO ENGAGE/RELEASE THE PARKING BRAKE
7 – HYDRAULIC POWER TAKE-OFF CONTROL LEVER *
8 – DRIVING HANDLE

(*) *Optional*

Comply with the following to operate the various controls:

4.2. DRIVE

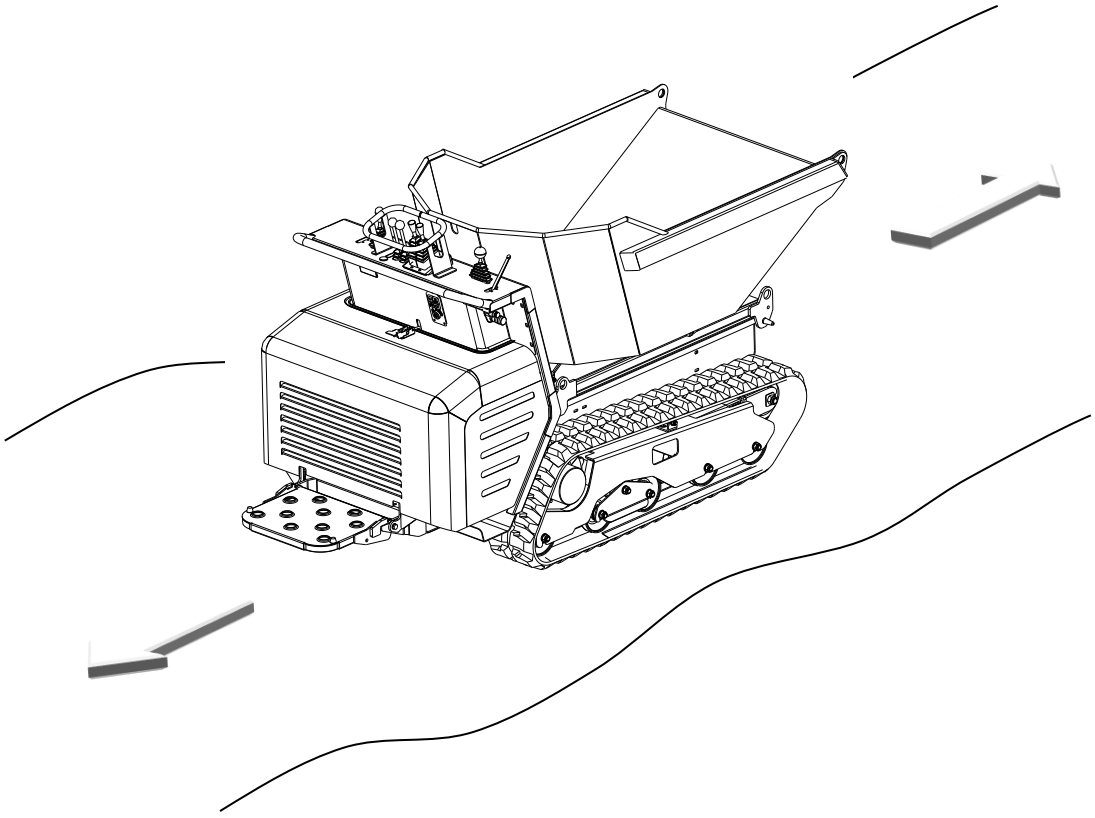
The vehicle drive is activated via levers **“1”** and **“2”**.



Hereunder are the detailed descriptions of the manoeuvres that are to be performed to drive forward, backward and to steer.

FORWARD GEAR: bring levers **“1”** and **“2”** simultaneously forward.

REVERSE GEAR: bring levers **“1”** and **“2”** simultaneously backwards.

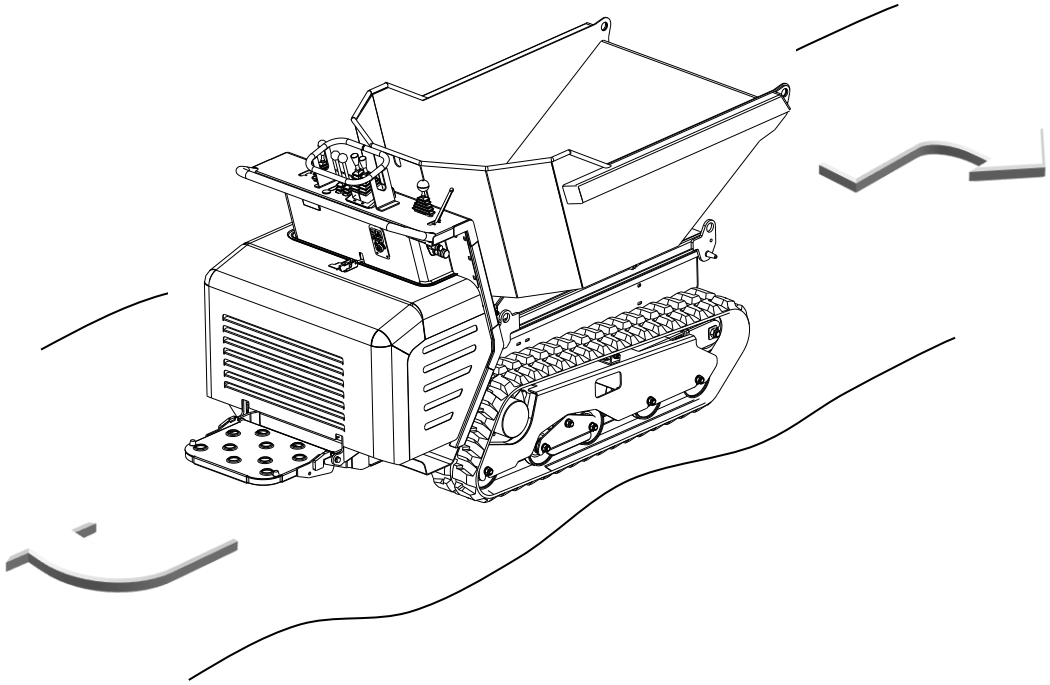


STEERING FORWARD TO THE RIGHT:

WITH THE VEHICLE STOPPED: bring lever **"2"** forward with respect to lever **"1"**
WHILE THE VEHICLE IS MOVING: reverse lever **"1"** with respect to lever **"2"**

STEERING BACKWARDS TO THE RIGHT:

WITH THE VEHICLE STOPPED: bring lever **"2"** backwards with respect to lever **"1"**
WHILE THE VEHICLE IS MOVING: bring lever **"1"** forward with respect to lever **"2"**



STEERING FORWARD TO THE LEFT:

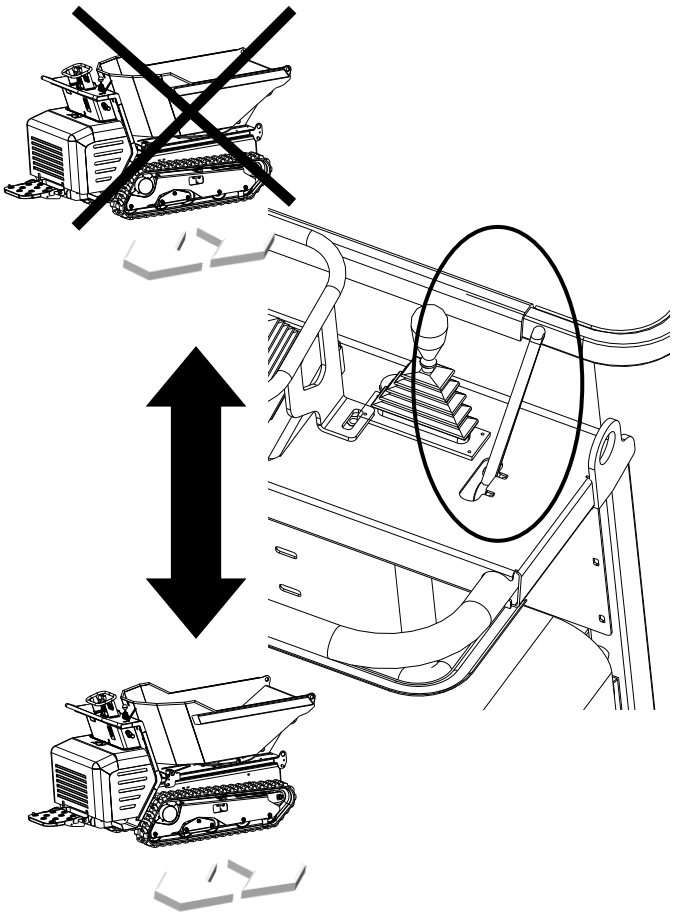
WITH THE VEHICLE STOPPED: bring lever **"1"** forward with respect to lever **"2"**
WHILE THE VEHICLE IS MOVING: bring lever **"2"** backwards with respect to lever **"1"**

STEERING BACKWARDS TO THE LEFT:

WITH THE VEHICLE STOPPED: bring lever **"1"** backwards with respect to lever **"2"**
WHILE THE VEHICLE IS MOVING: bring lever **"2"** forward with respect to lever **"1"**

ALL STEERING AND DIRECTION OF TRAVEL CORRECTION MANOEUVRES MUST BE MADE SMOOTHLY AND CAUTIOUSLY.

Lever "6": control lever to engage/release the parking brake

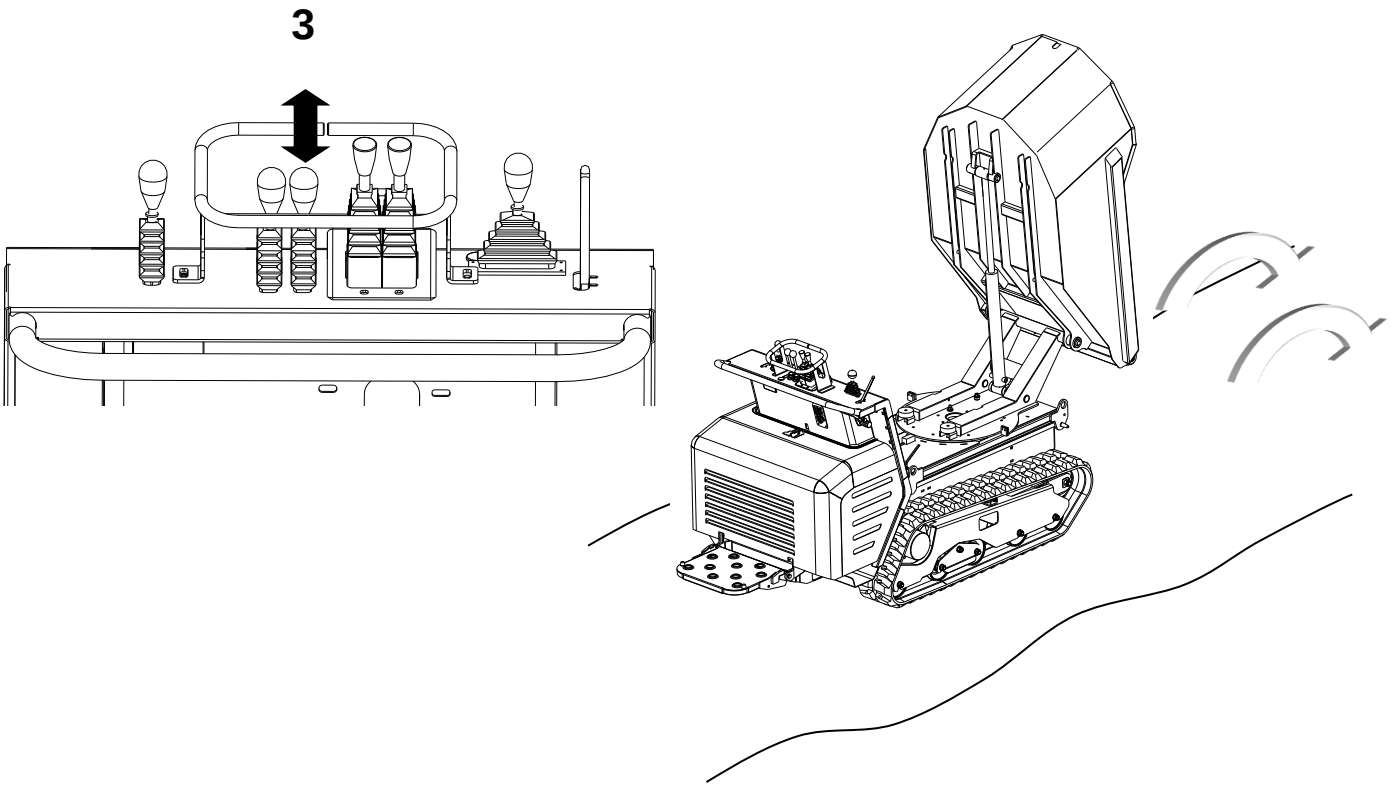


The lever must be set downwards while driving.

Bring lever **"6"** upwards to engage the parking brake.

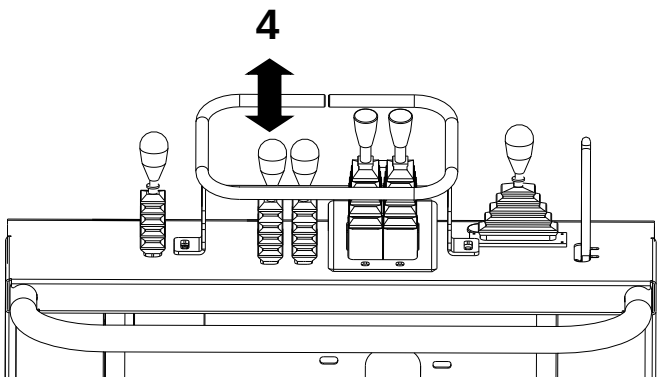
4.3. SERVICES

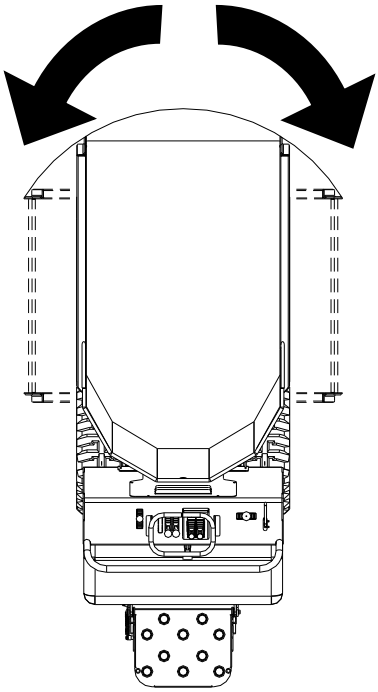
Lever "3": bucket or tipper control
Tilts the bucket over. Bring the lever forwards to lift the bucket and backwards to lower it.



Lever "4": loading bucket rotation control

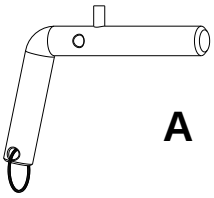
Rotates the loading bucket clockwise or anti-clockwise. Bring the lever forwards for the bucket to rotate clockwise and backwards for it to rotate anti-clockwise.

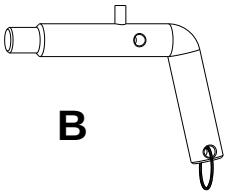




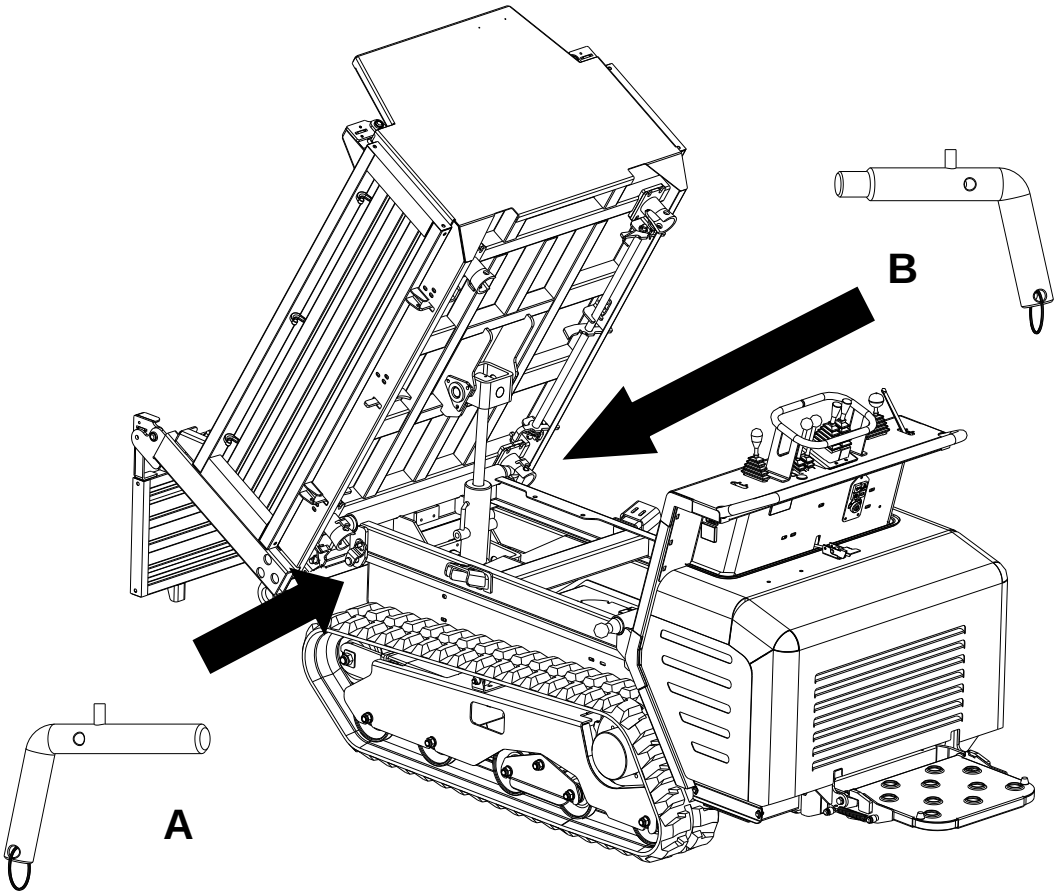
Body dumping

Before dumping the body check the proper position of the docking pins **"A"** and **"B"** according to the unloading position.

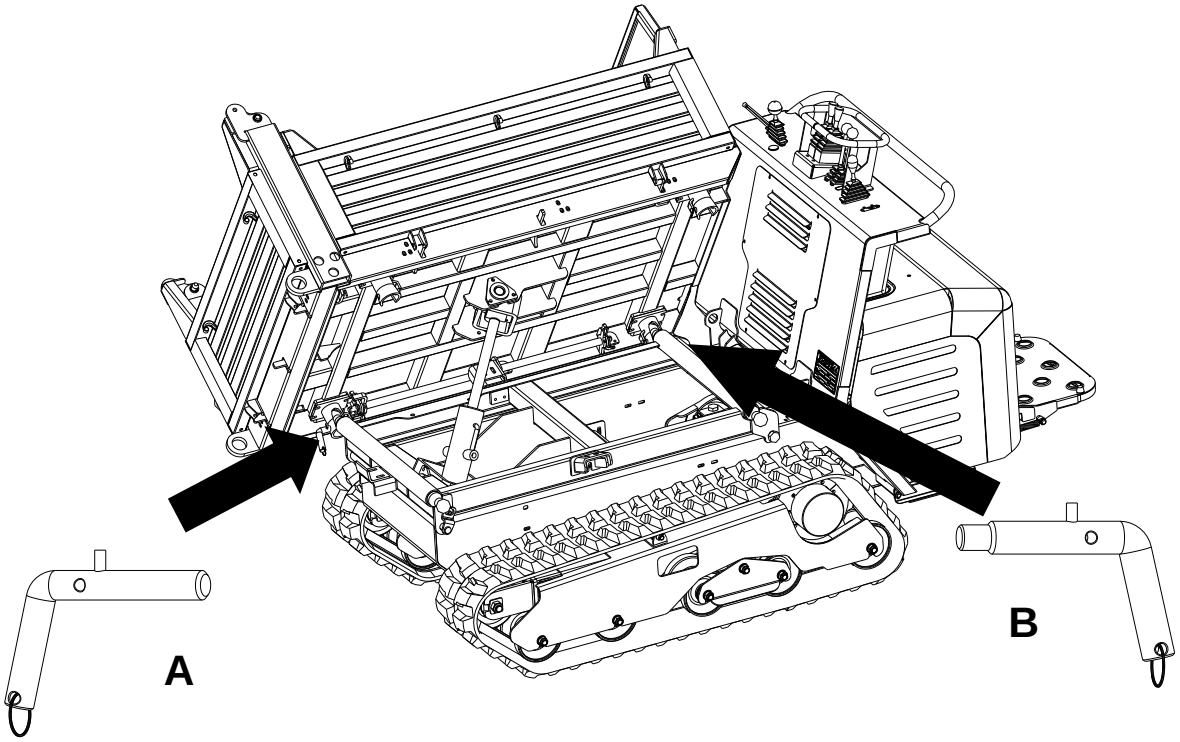




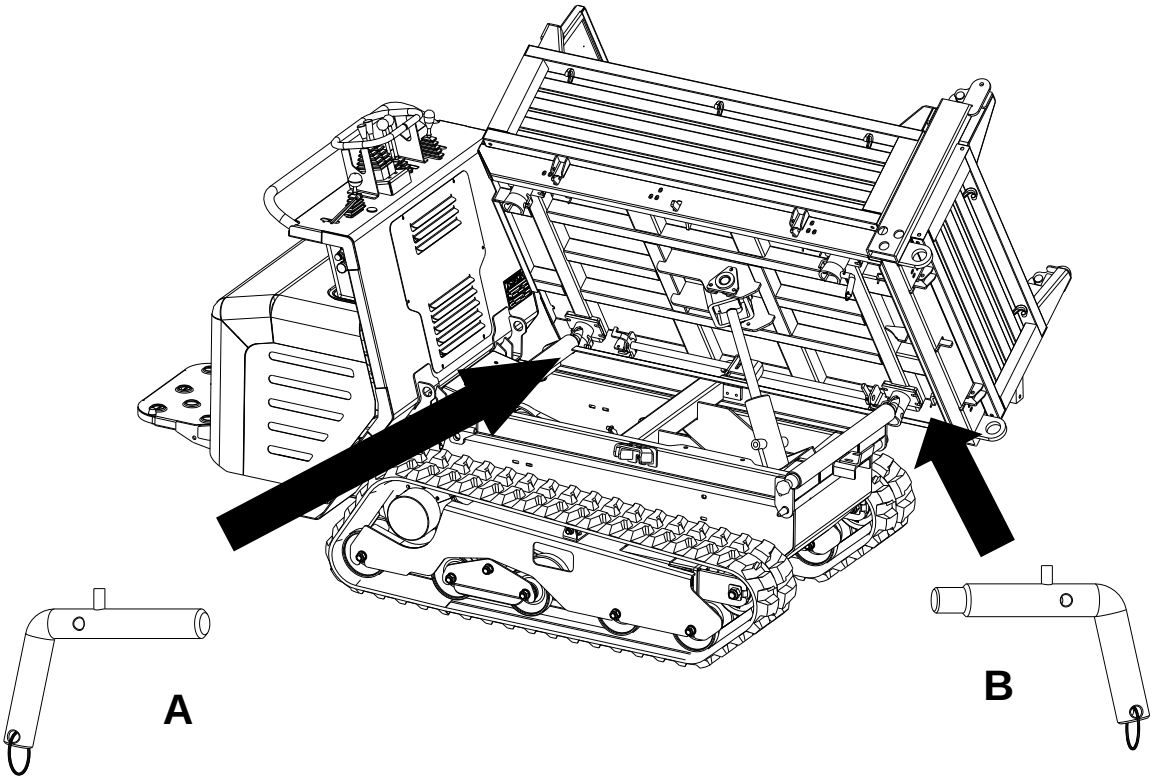
Front dumping – Position 1



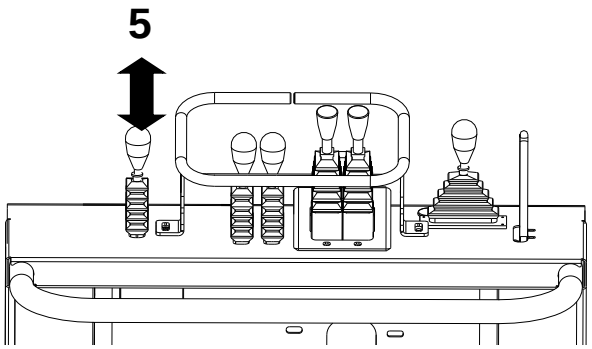
Right side dumping – Position 2



Left side dumping – Position 3



Lever "5": accelerator control.
This must be set to the middle of its adjustment range when the engine is started.



ATTENTION!

Use the levers in a way that the health and condition of surrounding people and objects is not jeopardised.

The vehicle's performance levels are maintained over time by avoiding excessive stress on the transmission and the relative overload of the endothermic engine.

4.4. STARTING AND STOPPING THE ENGINE

The endothermic engine is the source of energy in the mini transporter. The table below shows an excerpt from the use and maintenance manual of the engine.
Refer to the use and maintenance manual of the engine supplied with the vehicle for the details.

Before starting the engine, check that the vehicle is in perfect working order and perform the following checks:

- Verify that the supply points are level (engine oil, hydraulic oil and fuel).
- Verify that no fuel leaks from the supply circuit, no oil leaks from the hydraulic circuit and there are no leaks from the other elements in an oil bath.
- Verify that no hydraulic pipes are damaged, worn or burnt.
- Check that there are no foreign bodies interposed between the track and other parts of the vehicle.
- Verify that the state of preservation and wear of the track is adequate for vehicle use.
- Verify that there are no electrical wires with damaged and worn sheaths or with burns.
- Move the control levers of the vehicle to check that there are no jams or blockages.

If one of the above mentioned checks is not successful, the cause must be eliminated and proper vehicle operation restored. The cause may be eliminated by referring to the solution described in this manual, if applicable, or by contacting the technical support department.

Set the accelerator lever to the middle of its adjustment range before the engine is started.

Once the engine is started, let is run at low speed for about 1 minute to allow the oil to reach all points that are to be lubricated and supply hydraulic oil to all the various services. Gradually increase the speed over the next 5 or 10 minutes and only then will the vehicle operate correctly.

Note: engines are built to operate regularly, even if they remain exposed to the elements (uncovered machines). However, in order to protect the ferrous parts from rapid oxidation (conveyors, flywheel, etc.) it is advisable to protect the engine by covering it with a sheet when not used for long periods of time (a few hours) adverse environmental conditions such as rain or snow.

Refer to the following pages for details regarding the operations that must be performed to start and stop the engine.

ATTENTION!
DIESEL ENGINE WITH DIESEL FUEL

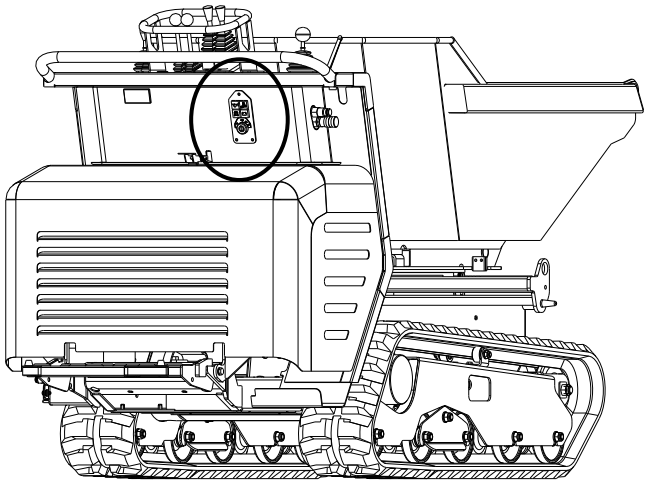
HOW OPTIMAL START-UPS ARE ALWAYS OBTAINED

OPERATION No. 1 – bring the accelerator control to approximately the middle of its adjustment range.

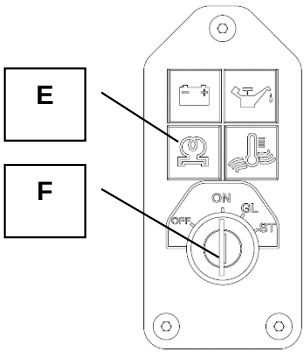
OPERATION No. 2 – turn the key **"F"** (Ref. **A**) clockwise towards position "ON" (Ref. **B**) and then towards position "GL" (Ref. **C**) to preheat the spark plugs. Hold the key in this position until the LED goes off (Ref. **E**) then bring the key to the "START" position (Ref. **D**) to start the engine.
Once the engine is started, the key automatically returns to the "ON" position (Ref. **B**).

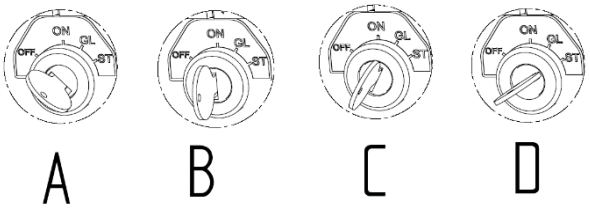
DO NOT PROLONG THE START-UPS

OPERATION No. 3 stop the engine by bringing the accelerator control to the minimum of its adjustment range.



OPERATION No. 4 – turn the key **"D"** clockwise,
until it reaches the "OFF" position (Ref. **"A"**).





5. GENERAL MAINTENANCE

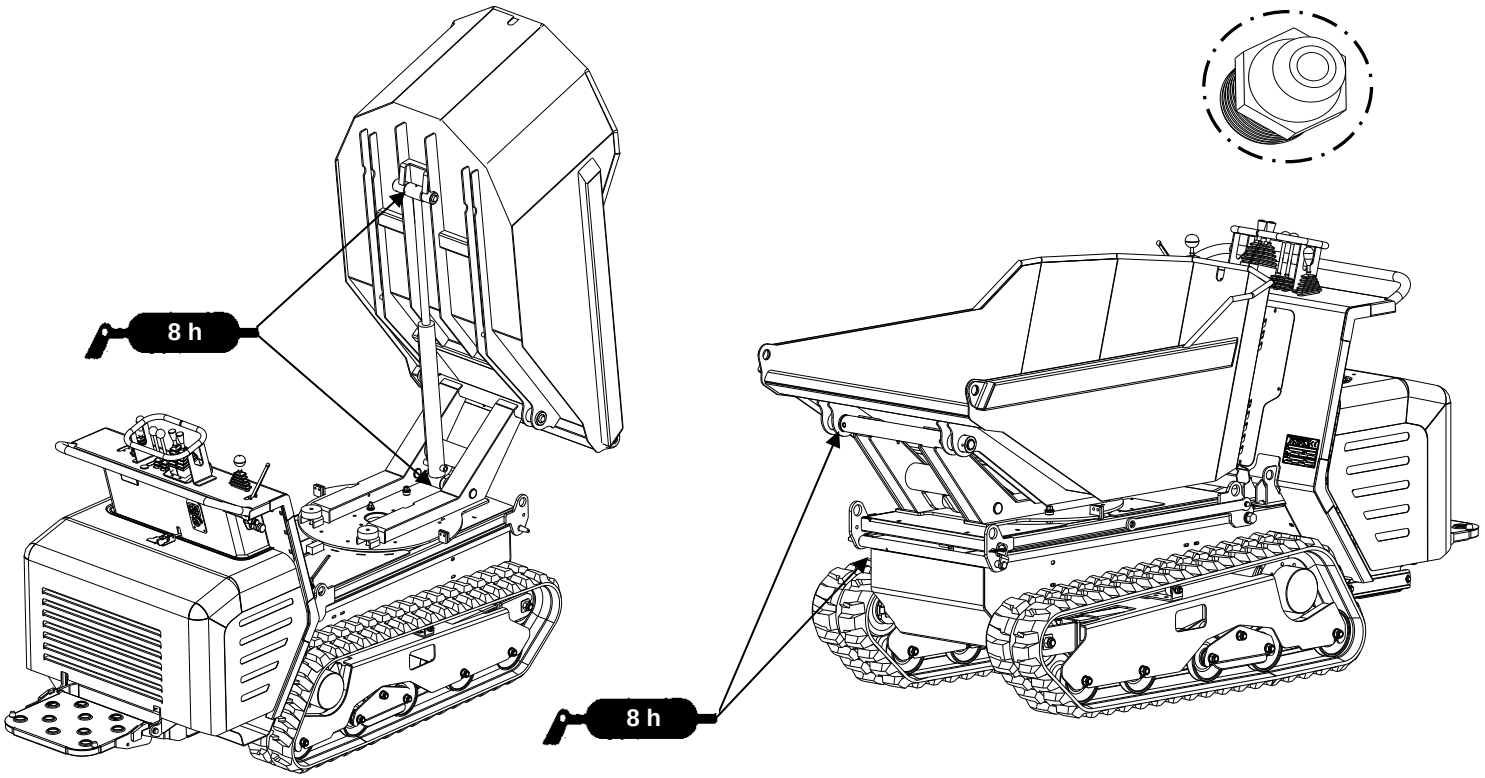
5.1. GREASE FITTINGS

Periodically grease the indicated points. The lubrication intervals and the lubricant that is to be used are indicated in the table of lubricants below.

It is recommended to keep all the grease fittings clean and efficient and replace them if inefficient or damaged.

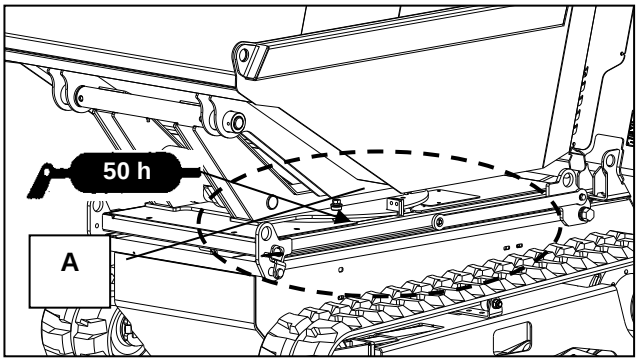
A thorough inspection and constant greasing allow the vehicle to operate perfectly efficient and safely.

Also grease the parts exposed to the elements as they require adequate protection against oxidation.



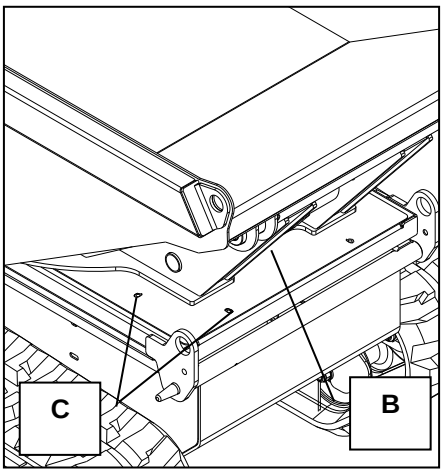
5.2. GREASING THE SLEWING RING

The slewing ring **"A"** that rotates the loading bucket of **TC130d** must be regularly greased (*every 50 h*) to maintain optimal conditions of use.

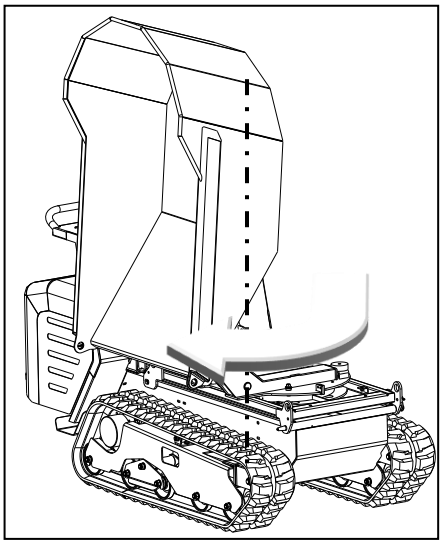


Follow the steps below for the complete greasing procedure

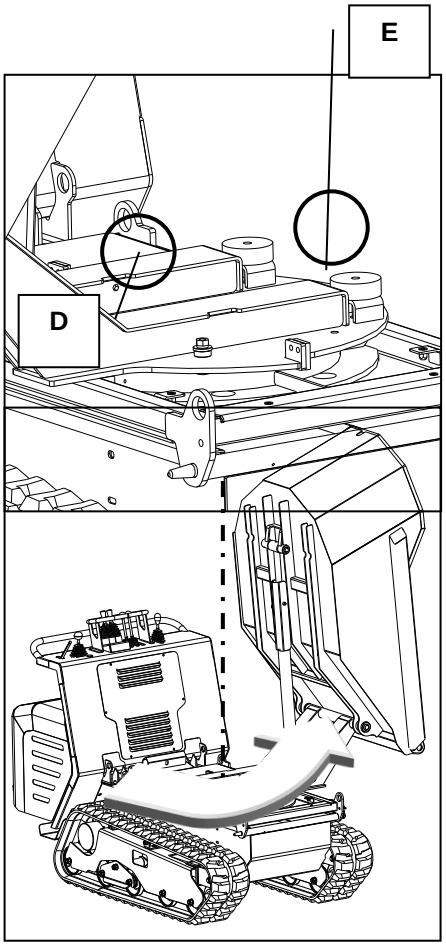
- Remove the casing **"B"** by loosening the 4 screws **"C"**.



- Tilt the loading bucket, insert the safety hook (refer to *sec. 3.4*) and turn the bucket completely to the right as shown in the figure at the side.

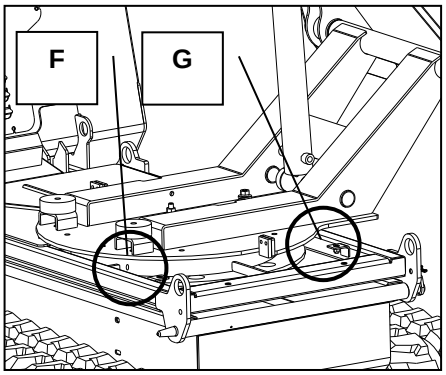


- Grease the rotation slewing ring through the 2 greasing points **“D”** and **“E”**, making sure to apply more grease to the front left point **“E”**.



- Turn the loading bucket completely to the left as shown in the figure at the side.

- Grease the rotation slewing ring through the 2 greasing points **“F”** and **“G”**, making sure to apply more grease to the front right point **“F”**.

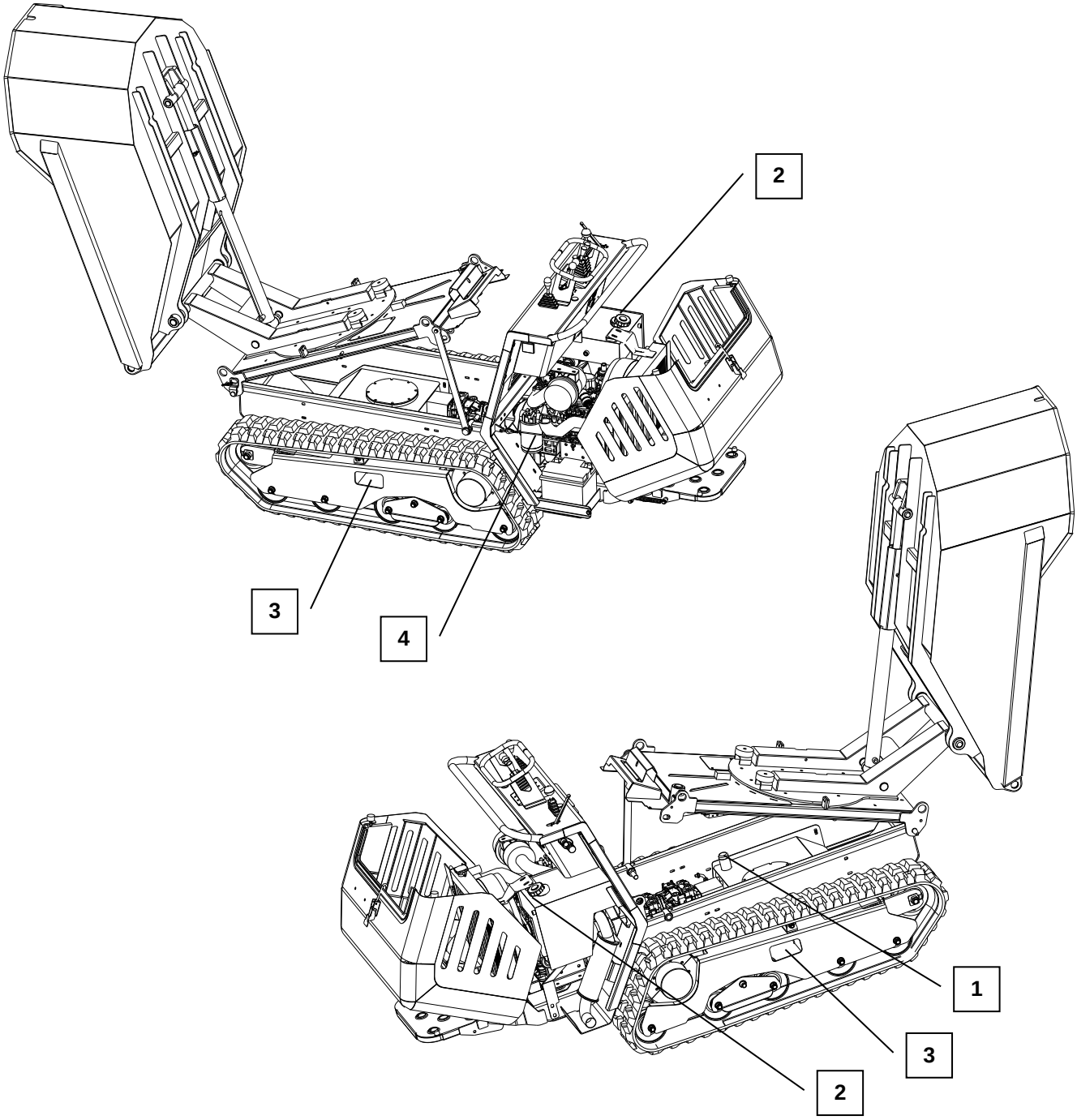


- Repeat the greasing procedure again and lastly turn the bucket completely, several times, on both sides so as to distribute the grease evenly over the entire surface of the slewing ring.

Repeat the greasing procedure on the slewing ring every **50 hours** of vehicle operation.

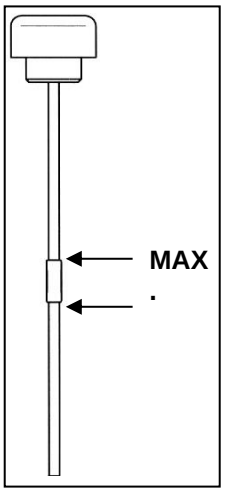
5.3. CHECKS AND INSPECTIONS

Pay particular attention to that listed and shown below:



1 – HYDRAULIC OIL TANK FILLER CAP
2 – FUEL FILLER CAP
3 – DEVICE TO ADJUST THE TENSION OF THE TRACKS
4 – HYDRAULIC OIL INTAKE FILTER
1 – HYDRAULIC OIL FILLER CAP

A complete change consists of **26 l**; the type is indicated in the relative table of lubricants.
Change the oil after the first **200 HOURS** of operation and then every **1000 HOURS** or once a year.

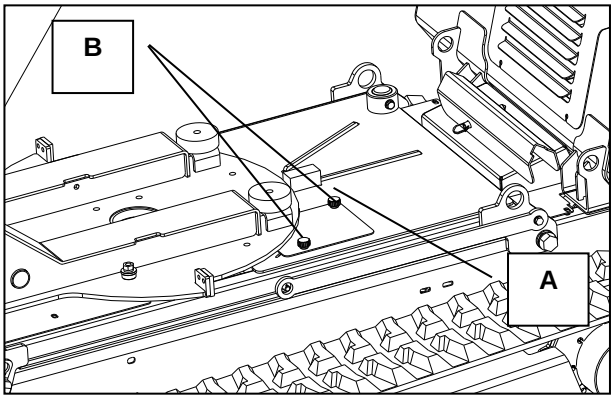


When filling or topping-up, check that the oil is between the min. and max. indications on the dipstick that forms part of the cap. It must be checked with the bucket raised (extended cylinder) and the vehicle level.

IT MUST ALWAYS BE KEPT BETWEEN THE MINIMUM AND MAXIMUM LEVELS

Do not overfill the tank as it also acts as a container for the oil expansion while the vehicle is used.

An inspection lid **"A"** is found on the vehicle to facilitate topping-up the hydraulic oil. The filler cap is reached by loosening the 2 screws **"B"** and removing or shifting lid **"A"**.



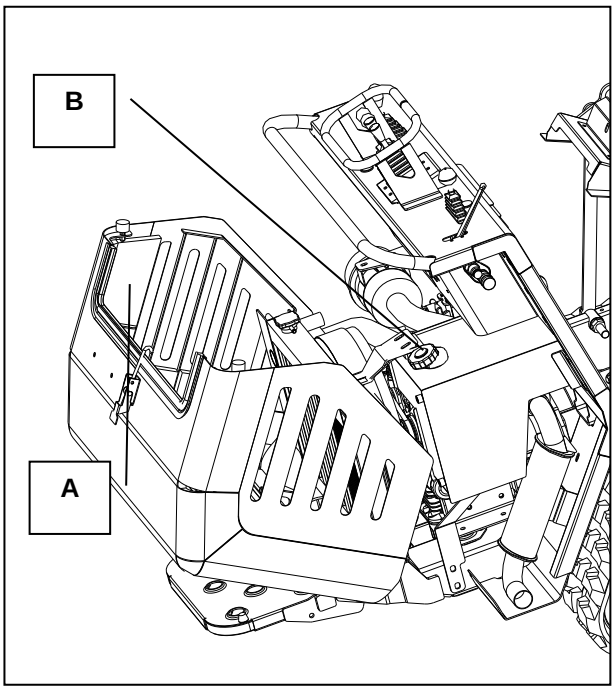
2 – FUEL FILLER CAP

Open the bonnet by acting on the locking device **"A"** and top-up through cap **"B".**

When refuelling, it is recommended to fill the tank up to ¾ of the maximum overflow level in order to leave space (about ¼) for fuel expansion.

ATTENTION! DIESEL ENGINE REFUELLED WITH DIESEL FUEL

Fuel tank capacity: 15.2 l



3 – DEVICE TO ADJUST THE TENSION OF THE TRACKS

The device restores the correct track tension as it may loosen during use.

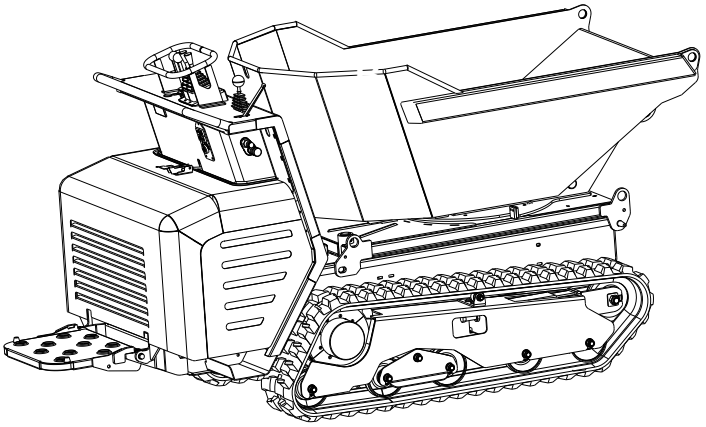
5.4. TRACK TENSION

The tension of the tracks tends to decrease with use.
If the track is used when loose it tends to override the teeth of the driving wheel and comes out of its housing or wears and ruins the latter if used improperly.
This must never occur, and the correct track tension is restored as follows:

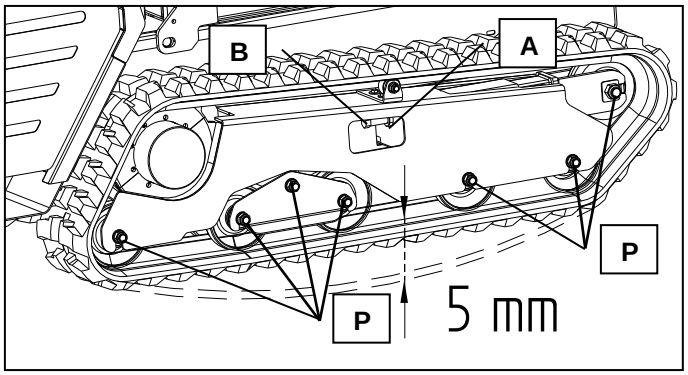
Set the vehicle on a flat area where the ground is compact; asphalt or paved ground is better. Lift the vehicle and set it on blocks or supports of adequate capacity for the tracks to remain at a distance of about **100 mm** from the ground.
Measure the arrow in the middle of the track with respect to the horizontal line; the value must not exceed **5 mm**.

If the distance is greater, proceed as follows:

- loosen the counter nut **"A"**.
- tighten the screw **"B"** until the correct tension is reached.
- block the screw **"B"** by tightening the counter nut **"A"** well.



The tension of the tracks will then be restored back to the initial tension of the new tracks.
Turn the track with no load for a few minutes for it to settle in place. With the track stationary, check that its tension is correct and then lift the vehicle and rest it on the ground and it is ready for use.



Clean all the mechanical moving parts of the vehicle every day.

Regularly verify that the pivots that support the rollers **"P"** are securely blocked by making sure that the lock nuts are perfectly tightened.

VEHICLE USE

In order to safeguard the integrity and functionality of the track, please follow the recommendations and specifications below:

- Avoid sudden turns and changes in direction while driving on the road, especially on rough and hard ground, bumpy and sharp ground or with high friction**. DO NOT COUNTERSTEER**; turn only one track to go round a bend, both while driving as well as when stationary.
- While driving, prevent the tracks from coming into contact with protrusions and parts with sharp and pointed edges.
- Prevent the tracks from coming in contact with oils, solvents, fuel or other corrosive materials; otherwise, clean and wash immediately.
- Prevent prolonged use of the vehicle in marine areas or in a salty environment, as this enhances the detachment of the metal core from the rubber.

- Due to the basic characteristics of the rubber that the track is made of, it is recommended to use it in temperatures ranging from **– 25°C to + 55°C**.
- Do not leave the tracks exposed to the elements for prolonged periods; sudden climate changes will enhance premature ageing.
- Any wear on the transmission wheels can cause abrasions or the metal core of the tracks to emerge; these must be promptly replaced.

TROUBLESHOOTING

BROKEN STEEL ROPES OF THE TRACK
- Excessive track tension combined with it being used on stones and loose material that accumulate between the track and the undercarriage.
- The track emerging from the guides on the wheels
- High friction in the case of successive and rapid changes in direction.

WORN OR BROKEN METAL CORES
- Excessive track tension
- Incorrect contact between the sprocket and the track (worn sprocket, debris interposed between the sprocket and the track, etc.)
- Used on sandy ground

DETACHED METAL CORES FROM THE RUBBER
- Excessive abrasion of the inner sides of the track with the guide rollers (excessive and sudden steering and countersteering).
- Worn and entangled sprocket while turning.

ATTENTION!!!
The anomalies listed above require the damaged track to be replaced immediately.

ABRASIONS OR TEARS DUE TO FATIGUE OR EXTERNAL FACTORS
- Generally, these problems are caused by the way the vehicle is used or the environment in which the work is carried out. These changes in the track can be reduced but not eliminated by using the vehicle with care and responsibly, which allow the track to be used without being replaced, even though it is nearing the end of its life cycle and it must be replaced. **It is recommended to replace it even if the tread is reduced to about 2 to 5 mm.**
- Abrasions, tears and cuts on the outer surface of the track (that in contact with the ground) are more often due to contact with sharp stones or cutting material (metal sheets, glass, nails, brick chips, etc.), which cut and partially or completely remove parts of the track. It is clear that from the aspect related to the rubber characteristics, this is inevitable even though it depends on the specific use and service conditions.

NOTE: The integrity of the rubber track and the fact that it wears sooner or later mainly depend on how the vehicle is used.

5.5. REPLACING THE HYDRAULIC OIL FILTER

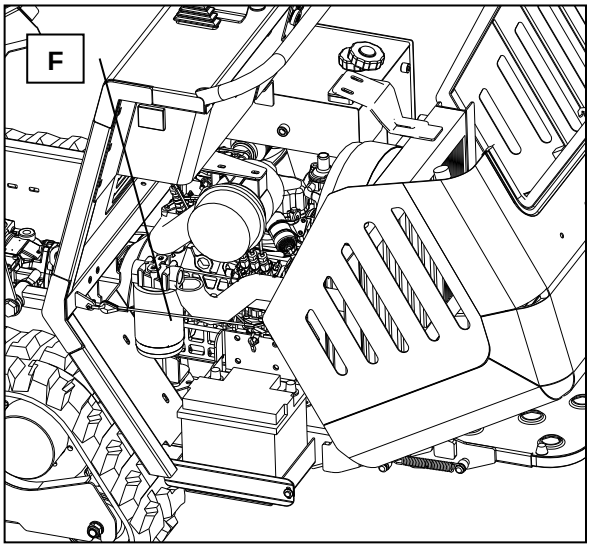
The filter is positioned on the outside, under the bonnet (refer to the figure).

The filter must be replaced after the first **50 HOURS** of operation and then every **500 HOURS**.

Loosen the filter **"F"** and replace it with another that has the same characteristics:

Degree of filtration: 10 micron.
Nominal flow rate: 50 l/min.

NOTE: <u>each time the filter is replaced, any oil that leaks must not be released in the environment.</u>



IT IS ADVISABLE TO CARRY OUT THIS OPERATION OVER WATERPROOF OR PLASTIC SHEET.

THE OIL MUST ONLY BE DISPOSED OF AT AUTHORISED COMPANIES.

5.6. REPLACING THE AIR FILTER

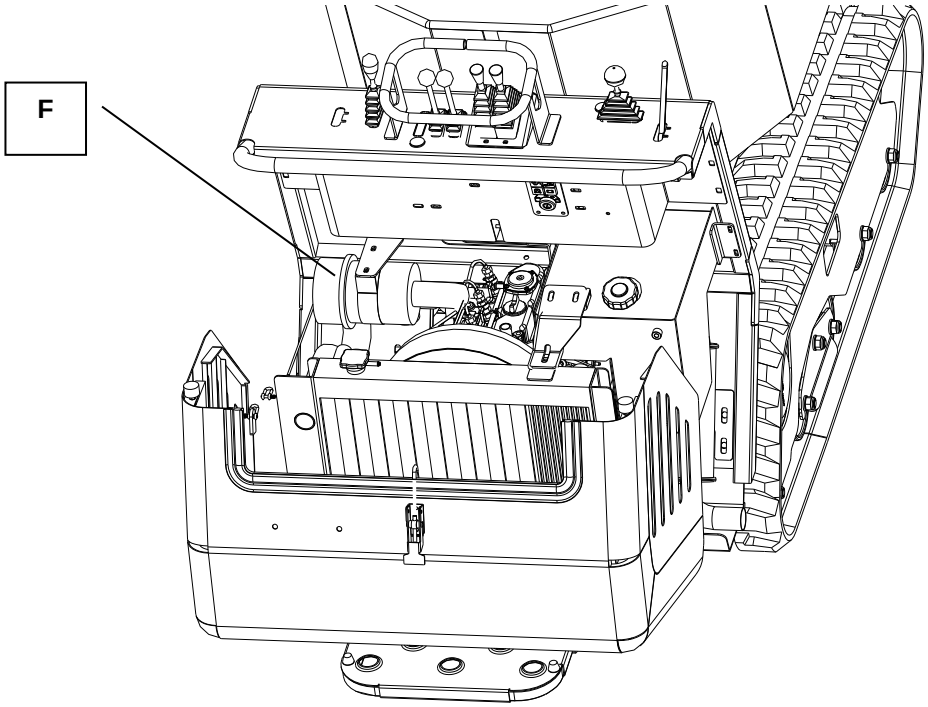
The air filter **"F"** is located under the engine bonnet.

To clean the cartridge, it is sufficient to remove the top cover, remove the cartridge and clean with compressed air. Do not use solvents, brushes or rags to prevent damage to the cartridge.

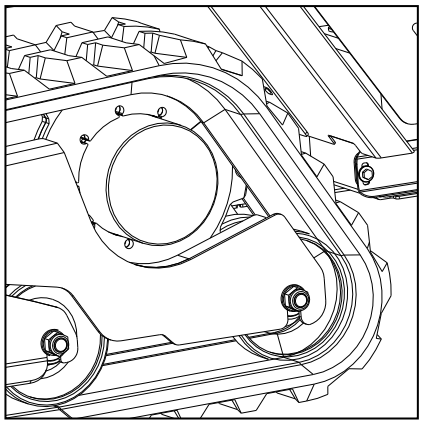
The air filter should be replaced with another one having the same characteristics.

The filter should be cleaned every **50 hours** of operation and the replacement must be done every **200 hours**.

THE AIR FILTER CLEANING OPERATION MUST BE DONE ONLY WITH AIR PRESSURE, KEEPING PROPER DISTANCE FROM THE CARTRIDGE AS THE AIR JET MAY DAMAGE IT.



5.7. WHEEL GEARS



Each track is driven by a reducer, coupled to a hydrostatic motor, fitted with an internal brake with negative-type of multiple discs.

The brake is activated by the hydrostatic system by means of the transmission levers (forward - reverse).

The brake is always engaged (parking) when the engine is off.

ATTENTION!!!

STOPPING THE VEHICLE WITH THE ENGINE OFF IS ALWAYS GUARANTEED WITH THE NEGATIVE BRAKE. WHILE THE ENGINE IS RUNNING, THIS CAN ONLY BE APPLIED BY ACTIVATING THE COMMAND FROM THE DRIVER'S SEAT (refer to ***sec. 4.1***).

MAINTENANCE AND REPAIRS MUST ALWAYS BE PERFORMED BY ADEQUATELY TRAINED PERSONNEL.

5.8. INSPECTING, FILLING AND CHANGING THE OIL IN THE WHEEL GEARS

Regularly verify that there are no leaks and that the oil reaches the correct level when the machine is stationary and the reducers are positioned as shown below. If necessary, top-up.

ATTENTION!!!

TOPPING UP MORE THAN 10% OF THE TOTAL AMOUNT MAY BE INDICATIVE OF A LEAK IN THE REDUCER.

The oil must be changed after the first 100 hours of operation.

It must then be changed after 2000 hours of operation or once a year.

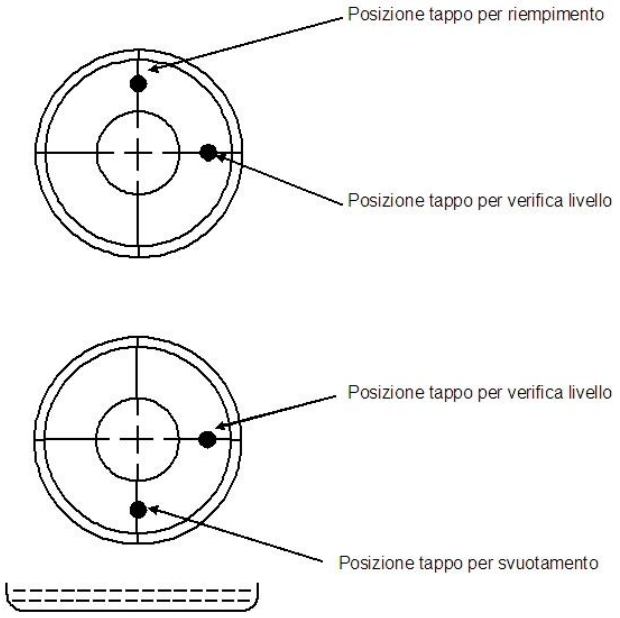
Capacity of each reducer: 0.5 l
The type is indicated in the relative table of lubricants.
The reducer is emptied immediately after operation, while the oil is still hot, in order to prevent any impurities from depositing.
Be particularly careful when emptying as hot oil may cause severe burns.
Clean the cap with detergent while paying particular attention to cleanliness during the filling phase.
Cleaning is essential for the vehicle and especially the hydrostatic system to operate correctly.

The regular checks on the reducer brake are limited to inspecting the oil level of the reducer itself and verifying there are no external leaks.
Therefore, this section does not require particular maintenance.

If the oil level in the reducer should decrease or increase when there are no external leaks, the internal seals of the reducer itself must be checked by an authorised service centre.

The vehicle must be level and horizontal and the engine OFF when verifying the level, topping up, refuelling and emptying.
Insert an adequately sized container under drain plug to collect the oil.

DO NOT DISPOSE OF USED OIL
IN THE ENVIRONMENT.



5.9. TABLE OF LUBRICANTS

Agip		
RECOMMENDED PRODUCTS	**PARTS TO BE LUBRICATED**	**QUANTITY (Litres)**
AGIP SIGMA S SAE 30	ENDOTHERMIC ENGINE	3,2
AGIP ARNICA 46	HYDRAULIC SYSTEM AND HYDROSTATIC SYSTEM	26
AGIP GR SM	GREASE FITTINGS	As required

The recommended products can be replaced with other brands provided they have the same characteristics.

5.10. DIESEL ENGINE

With regards to use, topping-up, starting and stopping, inspections, cleaning and maintenance, refer to the information and recommendations in the use and maintenance manual of the manufacturing companies supplied with the vehicle.

DIESEL

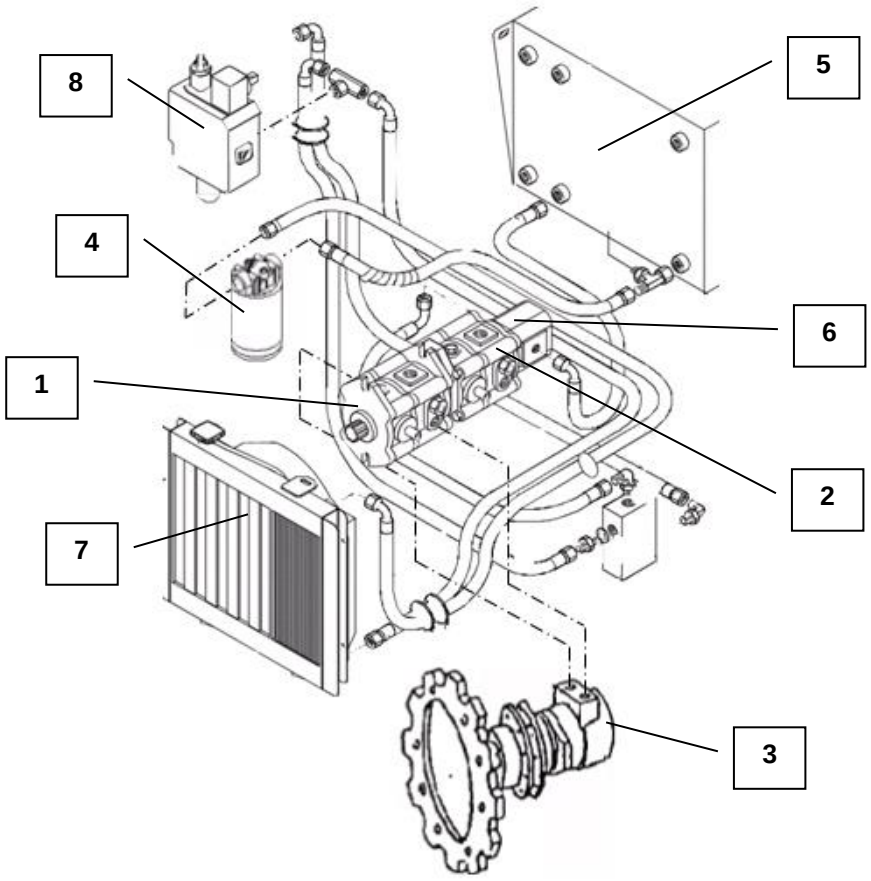
5.11. MAINTENANCE SUMMARY TABLE

OPERATION TO BE CARRIED OUT	COMPONENT	ELAPSED HOURS BEFORE CHANGING		
		50	100	200
REPLACE	Oil filter cartridge	●		
	Hydraulic oil			●

OPERATION TO BE CARRIED OUT	COMPONENT	SUCCESSIVE SCHEDULES IN HOURS					
		8	50	100	200	500	1000
CLEANING	Track	●					
	Loading bucket	●					
	Pump body protection compartment	●					
	Hydraulic oil tank						●
INSPECTION AND RESTORE (if necessary)	Track tension		●				
	Hydraulic oil			●			
REPLACE	Oil filter cartridge					●	
	Hydraulic oil						●
GREASE	Grease points	●	●				

ATTENTION!
Refer to the information provided in the Manufacturer's manual supplied with the vehicle when inspecting the diesel engine.

6. HYDROSTATIC TRANSMISSION SYSTEM



1. RIGHT TRACK HYDRAULIC PUMP
2. LEFT TRACK HYDRAULIC PUMP
3. DRIVE GEARMOTOR
4. ENGINE OIL FILTER
5. HYDRAULIC OIL TANK
6. SERVICE HYDRAULIC PUMP
7. WATER/OIL RADIATOR
8. DISTRIBUTOR POWER TAKE-OFF (OPTIONAL)

ATTENTION!!!

Refer to the paragraph CHECKS AND INSPECTIONS when changing the oil filter.

6.1. HYDRAULIC SYSTEM INSPECTIONS, CHECKS AND PRESSURE CALIBRATION

Every part of all the manufactured vehicles is thoroughly checked and tested in order to provide the customer with a perfectly efficient and functional vehicle from a mechanical, electrical and hydraulic aspect.

The vehicle is equipped with quick couplings that facilitate the hydraulic system inspection operations as the calibration values of the pressures of the individual services are verified on these.

ATTENTION!!!

DO NOT INSERT YOUR HANDS, BODY PARTS OR TOOLS NEAR THE RADIATOR FAN AS THIS STARTS-UP AUTOMATICALLY.

IMPORTANT!!!
For the vehicle to be used correctly it is recommended to bring the hydraulic oil to the operating temperature by letting the endothermic engine run with no load and slightly accelerated for about 5-10 minutes.

NOTE: IF IN DOUBT, UNCERTAIN OR IN DIFFICULTY, IT IS RECOMMENDED TO CONTACT AN AUTHORISED SERVICE CENTRE

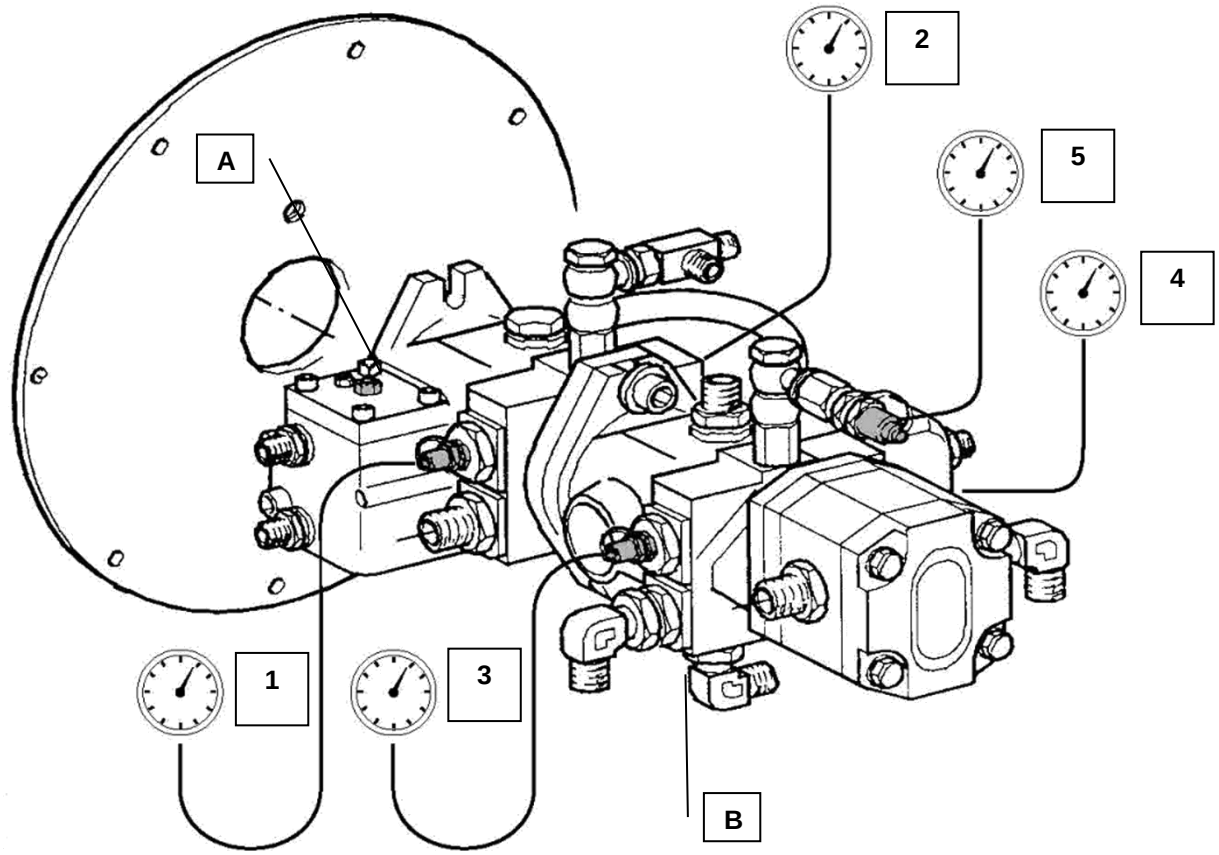
The track steering control levers on the control panel have an automatic return to zero function (neutral position), regardless of the speed of the endothermic engine.

If over time, even though the levers are in the zero position (neutral), the vehicle moves slowly forward or backward or starts to rotate, screw **"A"** and/or **"B"** of the pump, which triggers the track to move must be tightened, or possibly both.

6.2. ADJUSTING AND RESETTING THE DRIVE HYDROSTATIC PUMPS

The track steering control levers on the control panel have an automatic return to zero function (neutral position), regardless of the speed of the endothermic engine.

If over time, even though the levers are in the zero position (neutral), the vehicle moves slowly forward or backward or starts to rotate, screw **"A"** and/or **"B"** of the pump, which triggers the track to move must be tightened, or possibly both.



Proceed as follows to adjust and reset the pump/s:

- Set the vehicle on flat and level ground.
- Set the gauges (range 0 to 40 bar) in position **"1"** and **"2"** to adjust the **right track** and in position **"3"** and **"4"** to adjust the **left track**.
- Start the vehicle and bring the engine to maximum power.
- Gauges **"1"** and **"2"** must indicate the same pressure (value ranging between **22** and **24 bar**). If not, act on screw **"A"** until the same pressure is read and then reset the pump of the **right track**.
- A similar adjustment must be made to points **"3"** and **"4"** acting on screw **"B"**. In this case, the pump of the **left track** will be reset.

6.3. VERIFYING THE BOOST PRESSURE OF THE PUMPS

- With the vehicle stationary and the engine off, connect a **40 bar** full-scale gauge to point **"5"** and then start the endothermic engine and bring it to the max. power allowed.
- The pressure must then read **22 ÷ 24 bar**.

6.4. VERIFYING THE MAXIMUM HYDROSTATIC DRIVE PRESSURE

- Always with the vehicle stationary and the engine off, connect 2 **400 bar** full-scale gauges to points **"1"**, **"2"**, **"3"** and **"4"**, start the endothermic engine and bring it to the max. power allowed.
- Operate the drive lever corresponding to the track to the service of which the gauge has been connected, taking care to block the piloted track and progressively bringing the drive lever completely forwards or backwards.

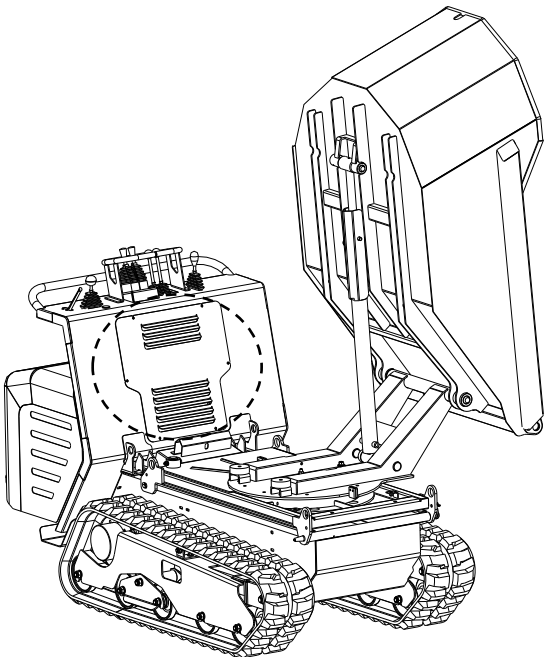
GAUGE POSITION	CORRESPONDING GEAR	RELATIVE TRACK	PRESS. TO BE READ
1	forward	right	**245 ÷ 255 bar**
2	reverse	right	
3	reverse	left	
4	forward	left	

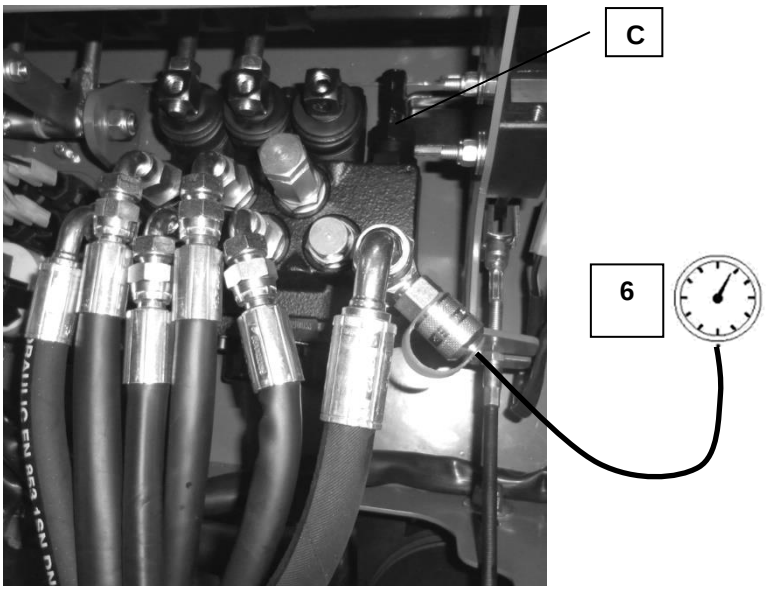
- The gauge set at points **"1"**, **"2"**,**"3"** or **"4"** must indicate a pressure of **250 bar**.

ATTENTION!!!

WHEN TESTING THE 4 SERVICES, THE BOOST PRESSURE READ AT POINT **"5"** MUST REMAIN UNALTERED, RANGING BETWEEN THE LIMITS INDICATED PREVIOUSLY (**22 – 24 bar**).

6.5. VERIFYING AND CHECKING THE HYDRAULIC SYSTEM SERVICE PRESSURES





The operation consists of detecting the maximum distributor pressure. Verify by following the instructions below:

- with the vehicle stationary and the engine off, connect a **250 bar** full-scale gauge to position **"6"**;
- start the engine and bring it to a speed of about 2000 rpm (ACCELERATOR LEVER = ¾ OF THE MAX. RANGE) then read the pressure indicated on the gauge;
- if the detected pressure differs from the calibration value (**190 bar**) by over 5 bar, restore it by acting on the adjusting screw **"C"** at the end of the distributor pressure relief valve.

Complete all the verifications and inspections, bring the hydraulic service system and the hydrostatic drive system to the the initial operating conditions.

NOTE: for the pressures to be set correctly, it is recommended to take the above mentioned readings with the hydraulic oil at an operating temperature of about 65 °C.

It is also advisable to have the above mentioned checks and inspections carried out by an authorised workshop and always in compliance with the instructions provided by the TECHNICAL SUPPORT DEPARTMENT.

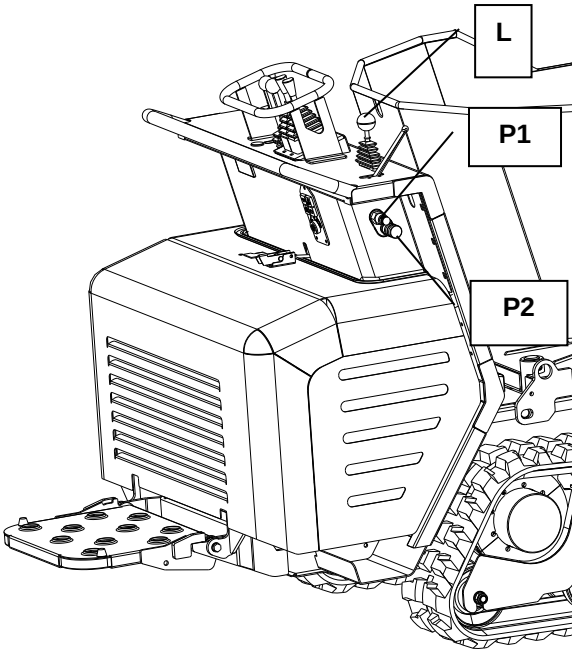
7. HYDRAULIC POWER TAKE-OFF PTO

SPECIFICATIONS:

The vehicle can be equipped with a double-acting hydraulic PTO (OPTIONAL) to use auxiliary machinery, accessories or hydraulic equipment.
Its main specifications are:

MAX FLOW RATE **20 l/min**
PRESSURE **190 bar**

The PTO flow rate and pressure output is directly proportional to the number of revolutions of the diesel engine. Therefore, the flow rate can vary from a minimum of **0 l/min** up to a maximum of **20**.



Follow the instructions below when using the PTO:

- bring the accelerator lever to the minimum;
- connect the equipment that is to be used on the couplings **"P1"** and **"P2"** of the PTO (hammer, pump, etc.);
- increase the number of revolutions of the diesel engine by acting on the accelerator lever until the oil flow rate corresponds to the correct operation of the connected equipment.

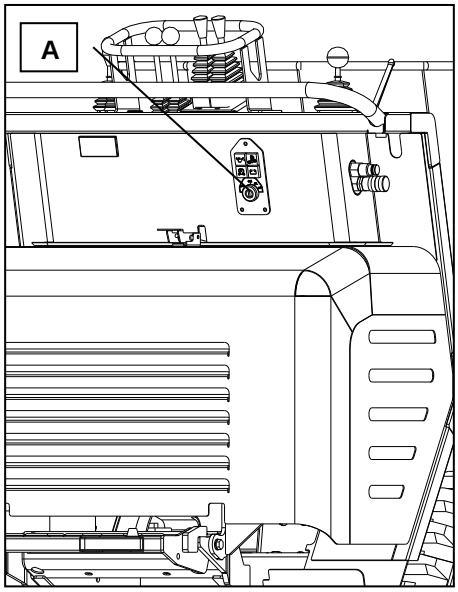
NOTE: before disconnecting the connections of the quick couplings on the PTO, **ALWAYS** bring the control lever **"L"** of the distributor to the neutral closing position (centre) and bring the number of revolutions of the diesel engine to the minimum. Otherwise, once the engine is stopped, it will not restart.

ATTENTION!!!

DO NOT USE THE POWER TAKE-OFF CONTINUOUSLY FOR A LONG TIME. IT IS RECOMMENDED TO ONLY USE THE VEHICLE AT THE MAXIMUM PRESSURE FOR SHORT PERIODS, OCCASIONALLY SLOWING DOWN TO A MODERATE SPEED.

8.ELECTRICAL SYSTEM

Battery **"B"** is found under the bonnet, on the left side when facing the mini transporter from the front.



BATTERY SPECIFICATIONS:

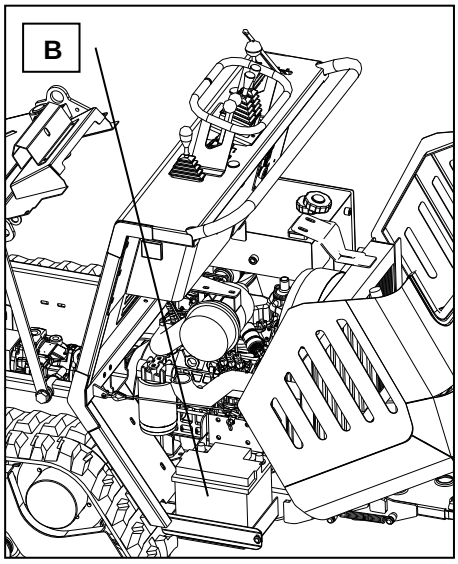
VOLTAGE: 12 V
CONSUMPTION: 55 Ah
DISCHARGE: 450 A

A - IGNITION KEY

B - BATTERY

The key in switch **"A"** is only removed when this is disconnected ("OFF" position).

ATTENTION!



Verify the level of the battery liquid every **100 HOURS.**

Follow the instructions found on the casing of the battery itself to check the level.

Only distilled water must be used to top-up - do not use acid. The electrolyte may leak due to it reaching boiling point and cause severe burns.

Always make sure the filler caps are closed perfectly.

Do not drain the battery completely.

If it drains quickly, have the voltage regulator checked. If this is not the cause, recharge the battery or possibly replace it.

The used battery must be disposed of by an authorised Company or personnel.

THE LIQUID INSIDE THE BATTERY IS HIGHLY CORROSIVE. PROTECT YOUR EYES AND HANDS WHEN CHECKING AND RESTORING THE LEVEL.

RISK OF BURNS!
RISK OF SCALDING!

Keep the cable terminals fastened well and protected with grease or even better with pure Vaseline.

When disconnecting the battery, the earth wire (-) must be disconnected first.

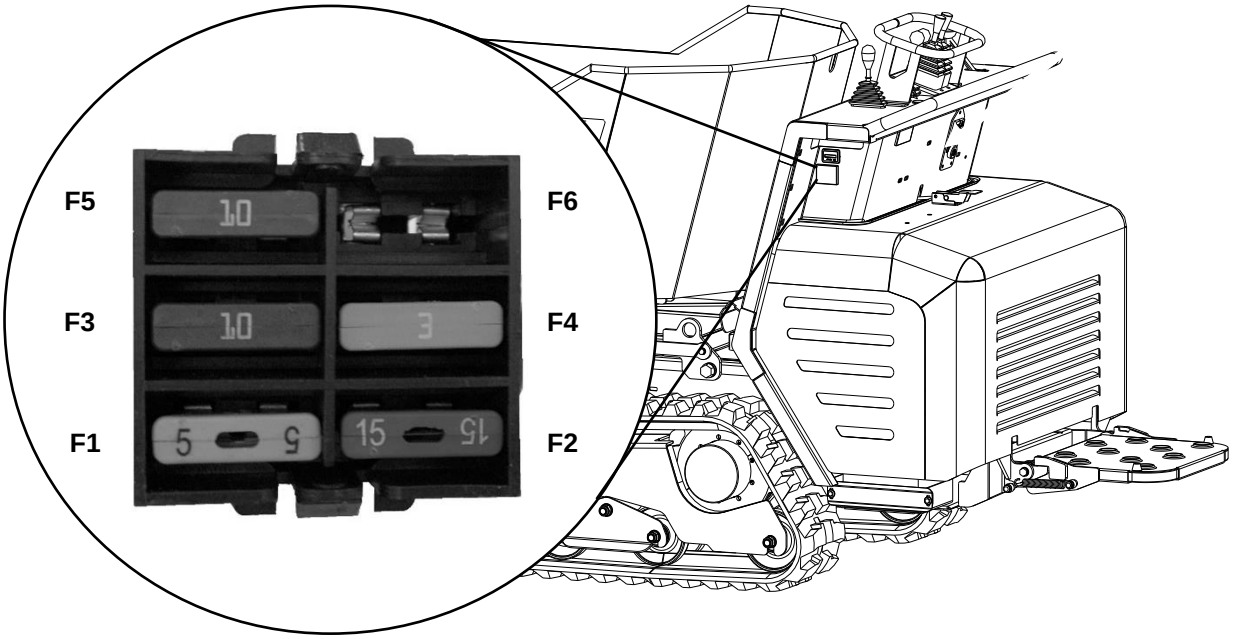
When connecting the battery, the positive wire (+) must be connected first.

Keep metal tools and objects away from the battery poles as these may short-circuit the terminals and pose a risk of burns.

Always contact **Authorised Workshops** to charge the battery.

The fuse box is located on the left side of the vehicle, opposite the PTO. Access is immediate.

FUSES



REF.	PROTECTED DEVICE	CAPACITY
F1	Starter fuse	5 A
F2	Engine stop fuse	15 A
F3	Alternator energising fuse	10 A
F4	Meter fuse	3 A
F5	Pre-heating fuse	10 A
F6	Not used	-

9. TROUBLESHOOTING: CAUSES AND SOLUTIONS

PROBLEM	CAUSE	SOLUTION
The vehicle jerks	No oil in the tank	Check the level and top-up, if necessary
	Air in the hydraulic drive system	Verify the efficiency of the pipes and fittings
	Clogged hydrost. oil filter	Replace the filter cartridge
	Control levers operated too abruptly and quickly	Operate the lever gently
The vehicle does not make use of all its power and does not perform at its maximum performance levels	Use different hydrostatic oil from that indicated	Check and replace it with adequate oil, if necessary
	Clogged hydrostatic oil filter	Replace the filter cartridge
The track tends to come out from its housing	Loosened track due to use	Adjust in accordance with the instructions provided in the paragraph CHECKS AND INSPECTIONS of the GENERAL MAINTENANCE
One of the two tracks is blocked	A foreign body is lodged between the track and the chassis	Remove the foreign body
	Faulty hydrostatic motor	Contact an authorised workshop
	Damaged pump	Contact an authorised workshop
	Broken hydraulic pipes	Check and replace, if necessary
The loading tipper door does not open or close	Damaged coupling device	Check the lever, housing, etc. and if necessary, restore the original conditions
The engine does not start	Burnt spark plugs	Verify the integrity of the spark plugs and the electrical circuit and replace, if necessary
	Flat battery / oxidised terminals	Verify and clean or replace
	Empty fuel tank	Check and top-up, if necessary
	Incorrect fuel	Verify and if necessary, replace after cleaning the tank
	Damaged starter or electromagnet	Contact an authorised workshop

PROBLEM	CAUSE	SOLUTION
The loading tipper does not rise or tilt	Faulty joint and/or hydraulic pump	Check and replace, if necessary
	Broken hydraulic pipes	Check and replace, if necessary
	Distributor pressure too low	Verify and restore, if necessary
	Damaged cylinder or sealings	Verify and replace, if necessary
The vehicle does not move in either direction even though the levers are operated	Broken hydraulic pipes between the hydrostatic motor and the pump	Verify and replace, if necessary
	Damaged hydrostatic motor and/or pump	Contact an authorised workshop
Problems in the drive system (the vehicle does not move or steer)	Overheated hydraulic oil	Wait for the hydraulic oil to cool down sufficiently and try again
Despite the lever is operated, the corresponding track does not move	Faulty hydraulic pump	Contact an authorised workshop
	Broken hydraulic pipes	Check and replace, if necessary
Excessively overheated hydraulic oil	Low hydraulic oil level	Verify and restore, if necessary

Refer to the information provided in the relative manual supplied with the vehicle when inspecting the endothermic engine.

10. NOTES ON MAINTENANCE

DATE	WORK COMPLETED	HOURS OF WORK	PARTS INVOLVED

AEC FACTORY & HEADQUARTERS

819 S. 5TH STREET
PARAGOULD, ARKANSAS 72450
870.236.7751
800.643.0095 (TOLL FREE (USA ONLY)

MAILING

PO BOX 819
PARAGOULD, ARKANSAS 72451

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