

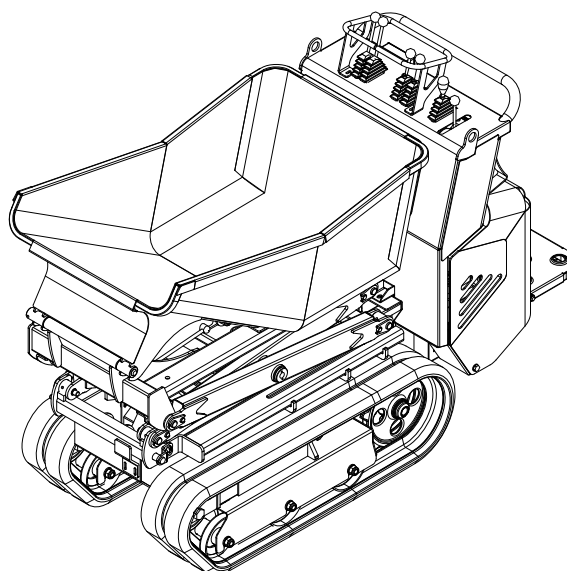
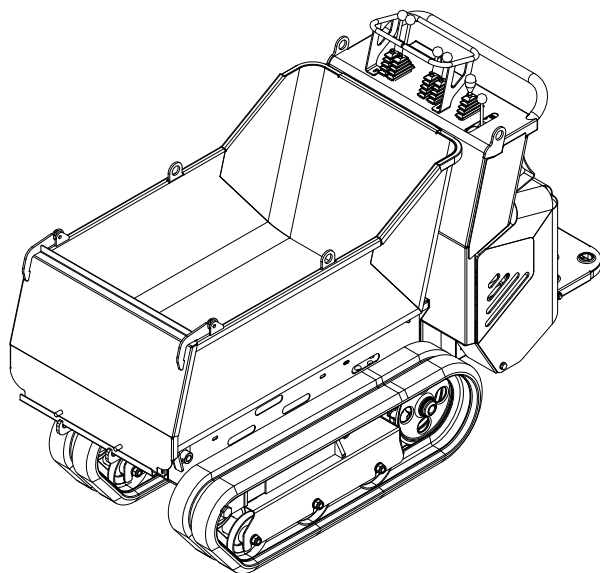
USE – MAINTENANCE

03679927

GB

*MINI*TRANSPORTER

TC50d TC50d/AV



N°

MESSERSI
machines born to work

Sede Legale: Via Arcevese, 44 - 60010 CASINE di OSTRA (AN) ITALY



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CONTENTS

1. GENERAL ACCIDENT PREVENTION.....	3#
2. MAIN CHARACTERISTICS.....	5#
2.1 MACHINE ID	5#
2.2 MAIN PARTS OF THE MACHINE	6#
2.3 CHARACTERISTICS - TECHNICAL DATA	7#
3. SAFETY - OPERATING STANDARDS.....	10#
3.1 SAFETY LABELS AND STICKERS.....	10#
3.2 GENERAL STANDARDS FOR SAFETY AND USE	11#
3.3 LIFTING AND TRANSPORTING.....	15#
3.4 HOISTING AND TRANSPORT	17#
4. DRIVING - CONTROL POSITION	18#
4.1 MACHINE CONTROLS	18#
4.2 DRIVING.....	19#
4.3 SERVICES	21#
4.4 STARTING UP AND STOPPING THE ENGINE	23#
5. GENERAL MAINTENANCE	25#
5.1 GREASE POINTS	25#
5.2 CHECKS AND CONTROLS	26#
5.3 TIGHTENING THE TRACKS.....	27#
5.4 REPLACING THE DISCHARGE HYDRAULIC OIL FILTER	30#
5.5 LUBRICANT TABLE	30#
5.6 DIESEL ENGINE	31#
5.7 MAINTENANCE SUMMARY TABLE	31#
6. HYDRAULIC TRANSMISSION SYSTEM AND SERVICES.....	32#
7. TROUBLESHOOTING: CAUSES AND REMEDIES CAUSE E RIMEDI	35#
8. NOTES ON MAINTENANCE.....	37#



WARNING!!!

THIS MANUAL MUST ALWAYS FOLLOW THE MACHINE. IT MUST BE KEPT ON HAND FOR THE OPERATOR'S USE. BESIDES INSTRUCTIONS ON CORRECT USE OF THE MACHINE, THIS MANUAL WARNS OF THE RISKS DERIVED FROM INCORRECT USE OF THE MACHINE.

TO BE KEPT FOR FUTURE REFERENCE.

Revision 03 18/01/2023

1. GENERAL ACCIDENT PREVENTION

For the machine to function properly, it must be set-up correctly (installation and use) and the oil level for the various mechanisms must be checked. Inadequate controls or errors in installation and use can compromise machine efficiency and jeopardize operator safety.

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

For further information, contact an Authorized Service Center.

The Manufacturer reserves the right to make modifications without prior notification.

Everything contained in this manual is the work of the manufacturer and no part or illustration herein can be used for other purposes without prior authorization

Prudence is the best defense in preventing accidents and injuries.

Before starting up the machine, carefully read all the instructions contained in this manual. If you have any doubts, contact the Manufacturer.

Before starting up the engine, make certain that there are no people near the machine, in particular children.

Never transport or lift anyone except the operator.

Never operate the machine unless you are in good physical condition: never drink alcoholic beverages while working.

This machine is not approved for roadway driving.

Never use the machine on steep slopes. Use it only on terrain where the slope is less than the limits indicated below.

Never leave the machine with the Diesel engine running. Always shut down the engine.

Never let minors run the machine.

Never use the machine in confined, poorly aerated spaces: the exhaust gases are poisonous and could seriously injure the body or even lead to death.

The engine must always be off when refueling. Always keep away from open flames. Do not smoke.

When performing maintenance, never throw hydraulic oil or lubricant and other liquids on the ground. Always collect and dispose of them through an Authorized Company.

Never let any unauthorized persons operate the machine. The person assigned to the machine is responsible for any damage or harm incurred by third parties.

Never remove the installed safety devices.

Never park the machine in a place with unstable ground which could give way, particularly when it is full.

Never operate the machine with inappropriate clothing (garments stained with oil, torn, etc.).

The manual and some parts of the machine bear the following symbols to indicate safety messages. To make the reading of this manual easier, follow the indications below:



DANGER !

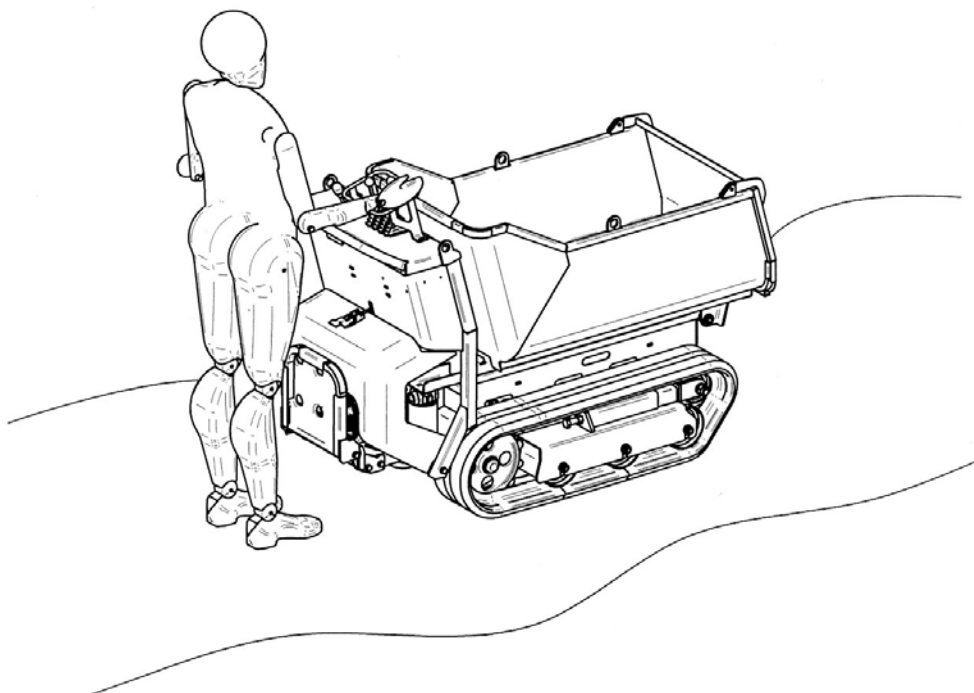
Whenever this symbol appears, there is significant danger or risk for the safety of the operator or other persons, and even the risk of death. Apply all precautions and safeguards suggested in this manual.



WARNING !

This symbol indicates the presence of a potential danger that can be eliminated by using and following the indications reported in this manual or by using good sense.

OPERATOR CORRECTLY POSITIONED IN THE DRIVING POSITION



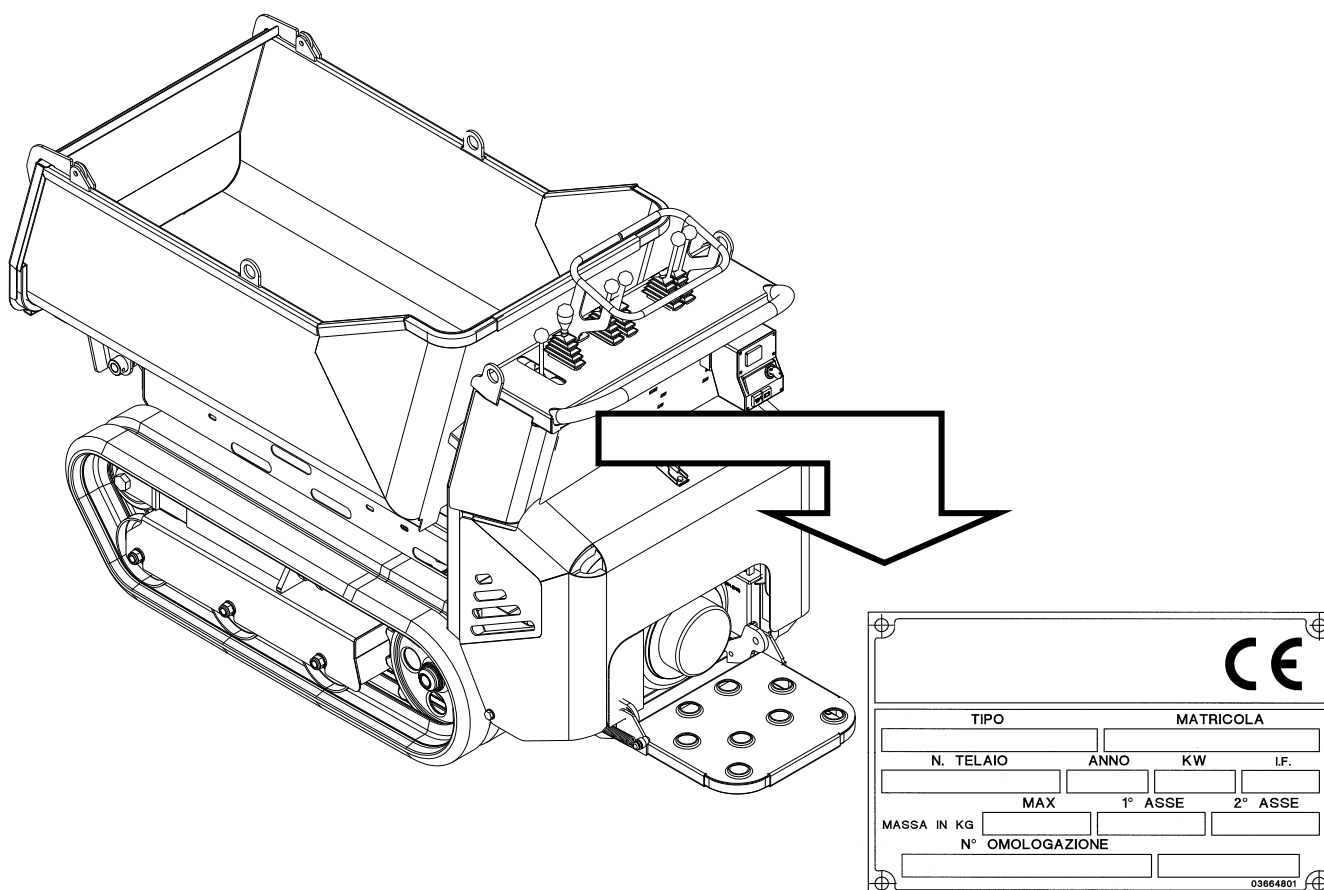
2. MAIN CHARACTERISTICS

2.1 MACHINE ID

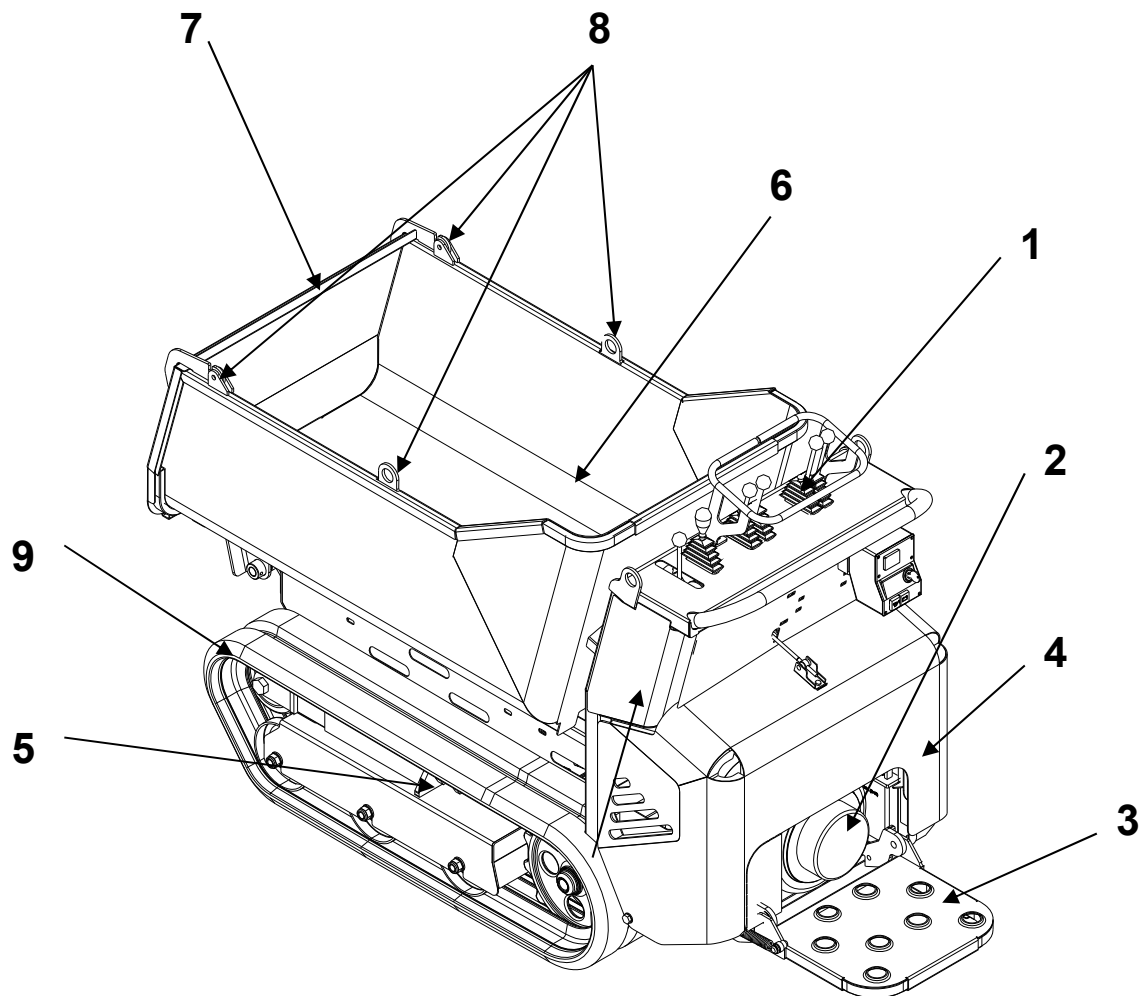
The machine is equipped with a special label bearing the information that identifies the unit. This label is riveted to the control casing on the handlebar (operator side). For any requests, always indicate the type and machine number reported on this label.

For further clarification, consult the modalities indicated in the Spare Parts Manual attached with the machine.

All accessories that can be installed on the machine must have their own label. In general, this label is visible on the outside of the accessory. For further information, see the documentation for the specific item.



2.2 MAIN PARTS OF THE MACHINE



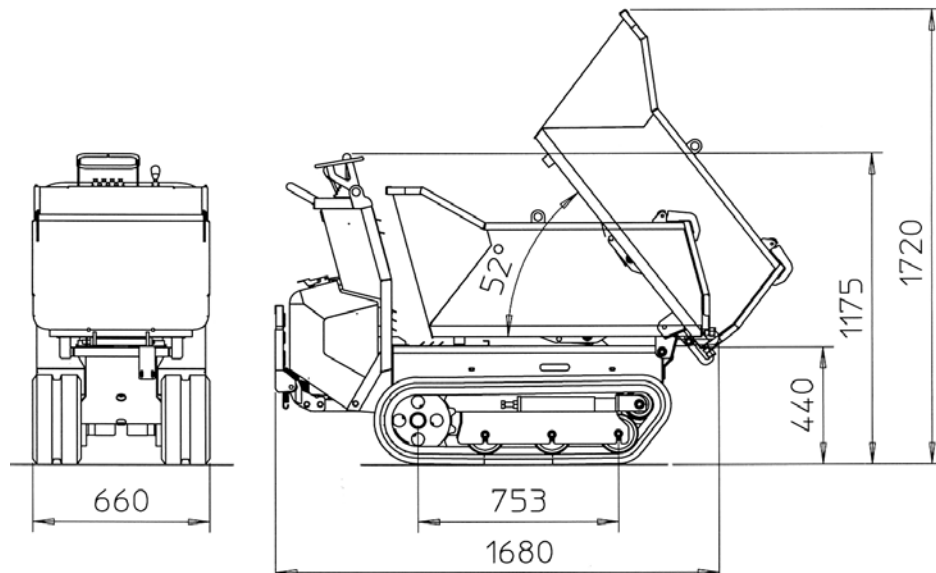
- 1 - CONTROL PANEL
- 2 - ENGINE
- 3 - MOBILE FOOTBOARD (OPTIONAL)
- 4 - ENGINE HOOD (OPTIONAL)
- 5 - SCREW TRACK TIGHTENER
- 6 - DUMP BODY OR LOAD BUCKET
- 7 - HATCH TO OPEN-CLOSE DUMP BODY OR BUCKET
- 8 - MACHINE LIFT HOOKS
- 9 - TRACK

2.3 CHARACTERISTICS - TECHNICAL DATA

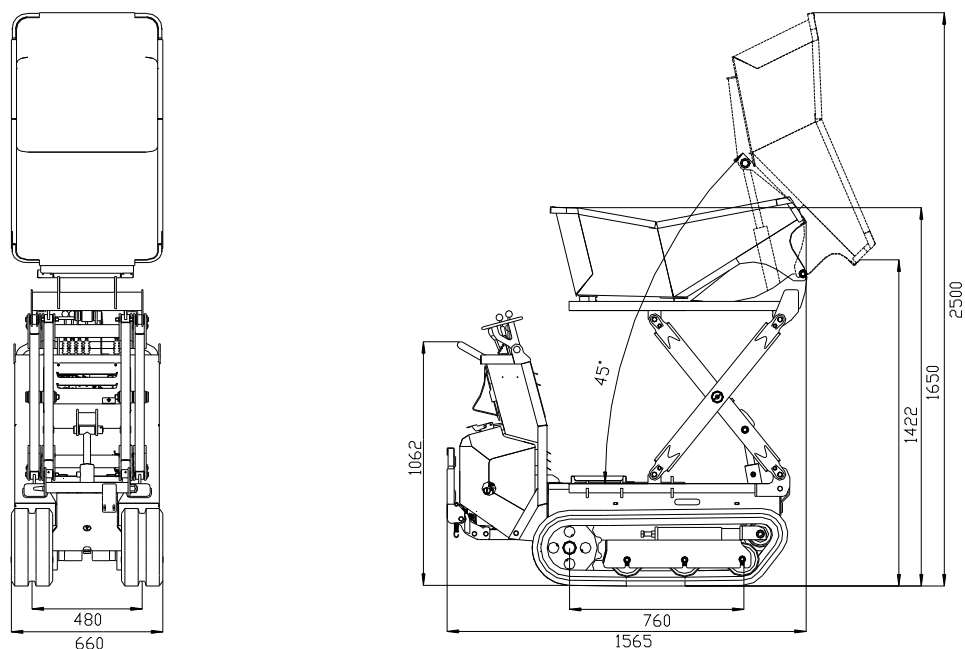
CHARACTERISTICS

The machine has been designed and built for transporting and dumping of soil, sand, excavation debris and other loose materials suitable in terms of the characteristics and performance indicated in this manual.

TC50d



TC50d/AV



This machine has a manual hydraulic transmission; each lever independently controls the movement of each track, thus guaranteeing maximum control in all operating situations.

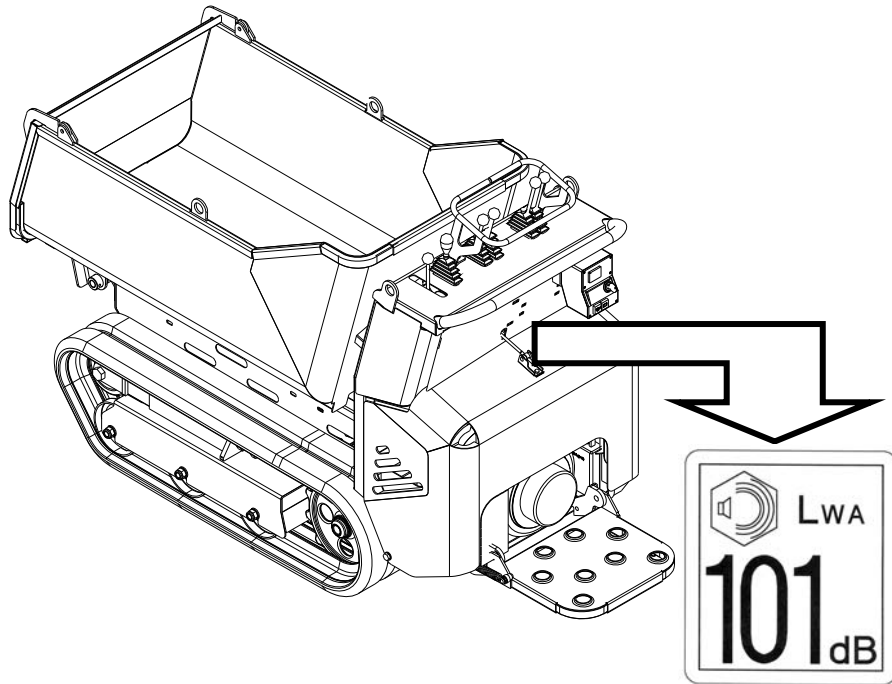
Diesel engine, air cooled. Standard electric start and manual start by rope tearing for emergencies.

TECHNICAL DATA

		TC50d	TC50d/AV
Operating weight (without operator)	Kg	380	490
Operating load	Kg	400	
Loading capacity: - piled full (SAE standard)	m³	0.310	0.205
- level: sand/liquids	m³	0.270	0.175
DIESEL Engine	tipo	YANMAR L70N6	
Max RPM	rpm	3600	
Max. power at 3600 rpm	HP/Kw	6.6/4.9	
Displacement	cm³	320	
Cylinders	n°	1	
Max. torque at 2400 rpm	daNm	1.8	
Cooling	type	Air	
Transmission	type	Hydraulic	
Transmission gear pumps	n°	3	
Total flow rate	l/min.	30	
Service gear pump	n°	1	
Flow rate	l/min.	19	
Max. operating pressure for translation	bar	190	
Max. operating pressure for services	bar	135	
Max speed	Km/h	1.6/5.2	
Independent track steering system	type	Hydraulic	
Track tightening	type	Adjusting screw	
Track width	mm	180	
Specific ground pressure: - empty / loaded	Kg/cm²	0.118/0.254	0.151/0.240
Max gradient capability	max %	30	
REFUELLING			
Fuel tank capacity	lt	3,3	
Hydraulic oil tank capacity	lt	18	
Noise emission level at 3600 rpm	dBA	101	

Implementation of **EEC Directive 14/2000** regarding limiting noise produced by operating machinery.

Guaranteed noise level: **$L_{WA} = 101 \text{ dB}$**



Acoustic pressure at operator's ear: **$L_{pA} = 80 \text{ dB}$**



Implementation of **EEC Directive 44/2002** regarding minimum safety and health prescriptions for on-the-job exposure to the risks derived from mechanical vibrations.

Daily action values

- Hand-arm system: lower than 2.5 m/sec^2
- Full body system: lower than 0.5 m/sec^2

3.2 GENERAL STANDARDS FOR SAFETY AND USE

The present manual contains the information required to run the machine.

Contact the Manufacturer for any spare parts, accessories or information you might require.



The tracked minitransporter fit with bucket or open dump body serves to carry and dump materials.



The materials being handled must comply with the characteristics of the equipment currently being used.



Avoid abrupt movements. All movements and maneuvers must be performed with utmost care and while running at a slow speed.



Check that the work area is free and that there are no unauthorized persons around. Also check that no one enters or passes within the machine operating range.

In case of operating anomalies while moving the various mobile parts of the machine, turn the engine off immediately.



Never perform any checks, controls or maintenance operations with the engine running.



Never transport or lift anyone except the operator.



The operator can only be transported on the footboard only when running on a flat surface which is paved or smooth and with a load in the bucket of at least 100 Kg.



When hoisting and transporting the machine, follow the instructions given in the specific chapter.



Before starting up the machine, make certain that the load has been positioned correctly in the dump body.

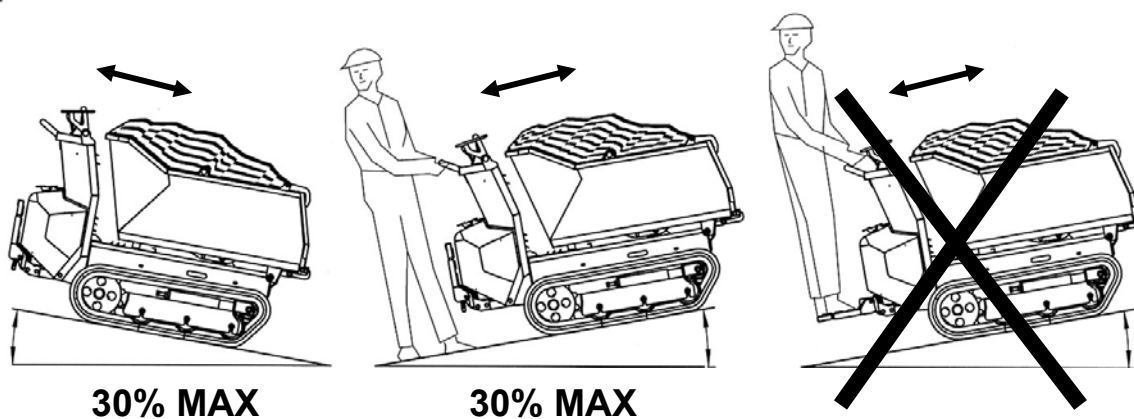


When moving over a slope, whether moving forward or in reverse, always make certain that the weight is evenly balanced.

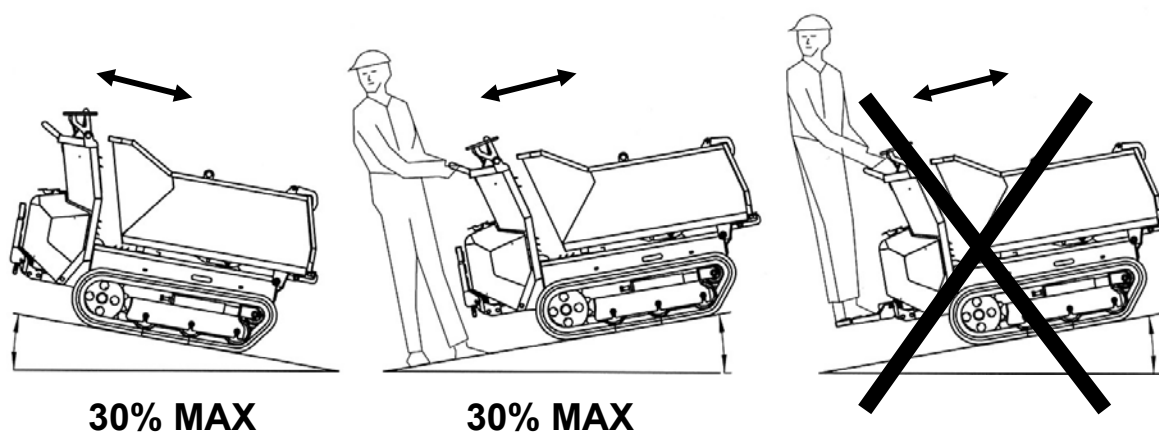


Never move over terrain that has both a **lateral** and **longitudinal slope**. The **terrain** must always be **solid and compact**.

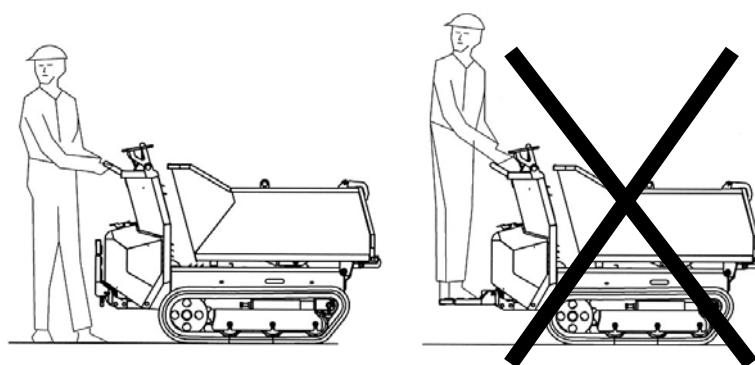
GOING UP OR DOWN, WITH LOAD



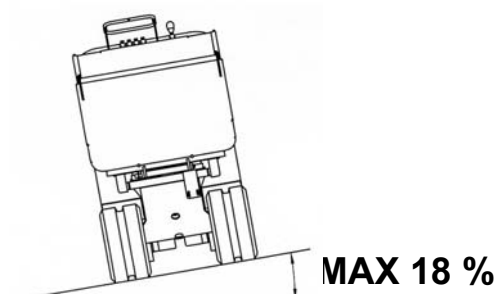
GOING UP OR DOWN, EMPTY



TRAVELING OVER A FLAT SURFACE, EMPTY



GOING UP OR DOWN, EMPTY AND WITH LOAD

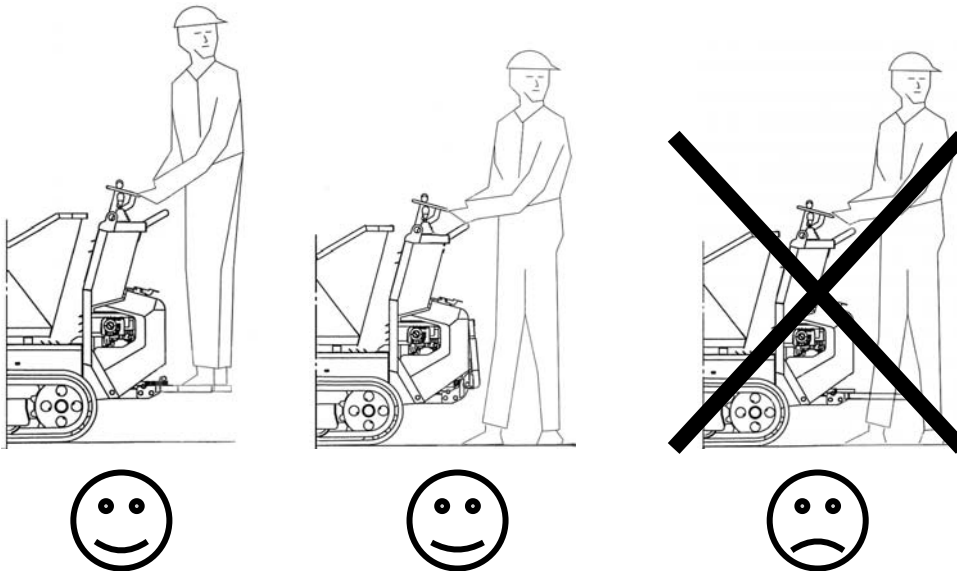


USE OF THE OPERATOR FOOTBOARD:

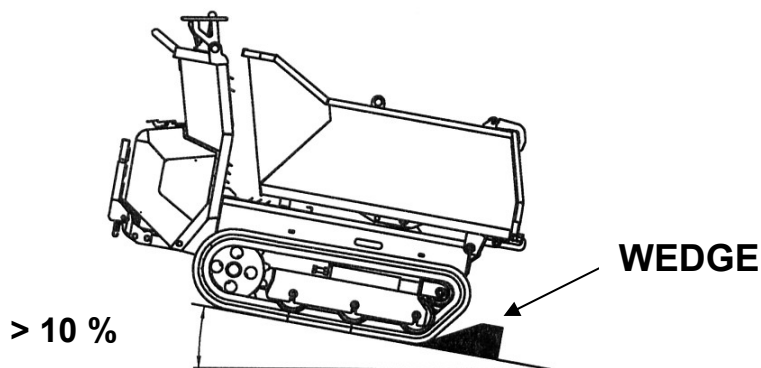
- The **FOOTBOARD** must be **LIFTED** (max height) while the **OPERATOR** is on the **GROUND**.
- The **FOOTBOARD** must be **LOWERED** with the **OPERATOR ON IT**.



Never walk behind the unit while the footboard is lowered.



Whether the machine is running **or off**, to **park** the machine with full load on a slope of more than **10%**, **insert a safety wedge** at the tracks. **The loaded machine tends to descend on its own, whether the engine is on or off.**



- **WARNING !**
WHEN STOPPING OR PARKING, ALWAYS TURN OFF
THE DIESEL ENGINE

Never use the machine at the rated maximum for excessively long periods of time. Always alternate with periods operating at more moderate rates. In particular, to prevent damage from overheating of the hydraulic parts, never make excessively long transfers.

Prevent foreign bodies (gravel, stones, debris, etc.) from wedging between the rubber tracks as this would create interference between the various transmission bodies and could damage or break them.



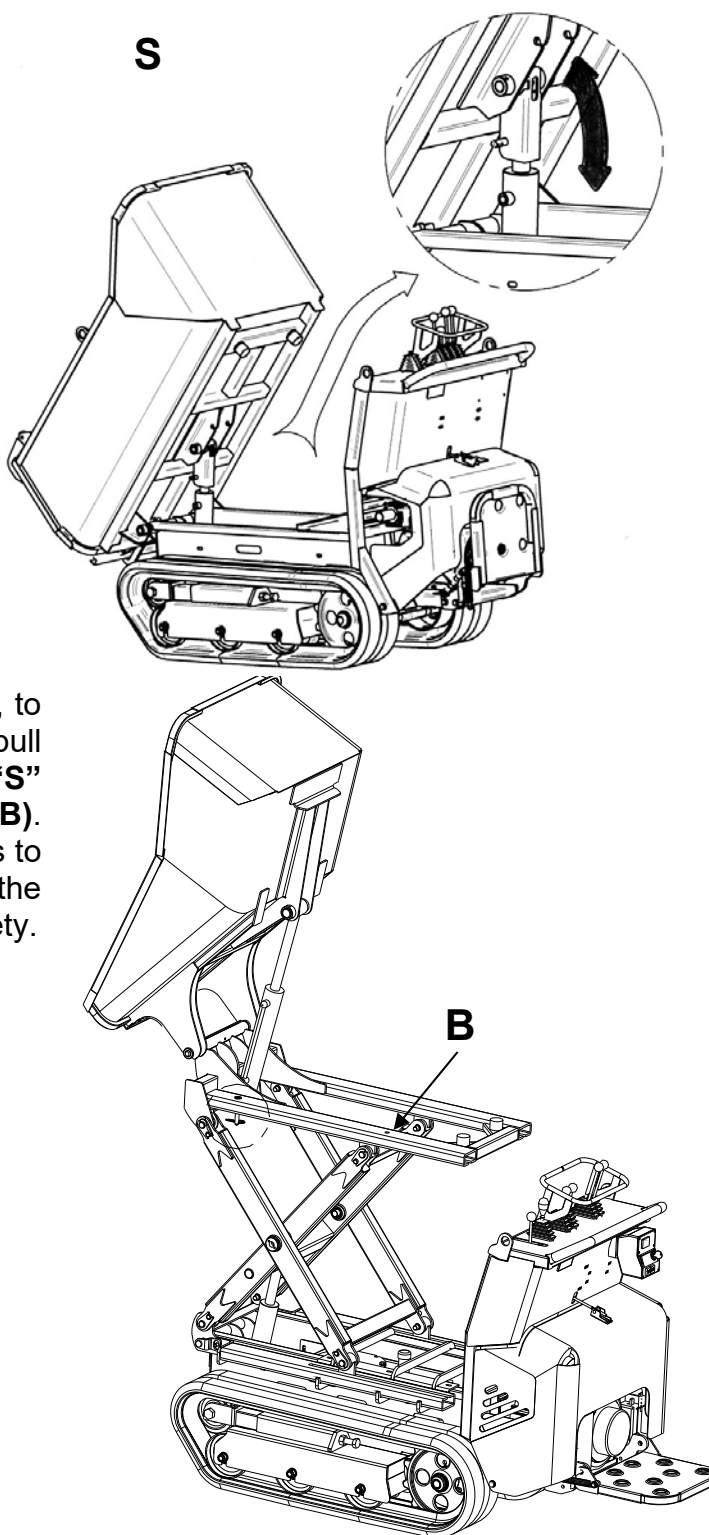
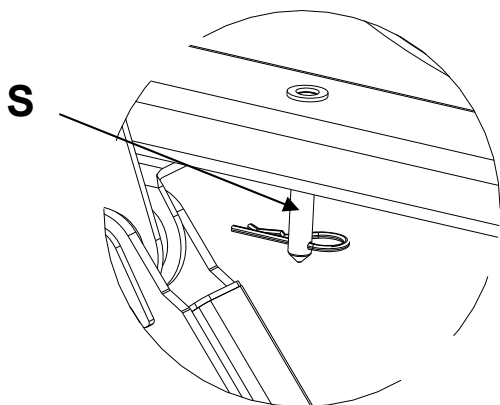
HAZARDOUS ZONES !

Because of its operating characteristics, the machine has some pinch points (lowering the dump body onto the frame, bucket, tracks) and shearing points (dump body hatch). Particular attention must be taken in using these movements. Never place limbs or parts of the body in these areas.

If maintenance needs to be performed, **the lift body must be blocked** with special safety elements “S”, supplied with the machine. They must be inserted **on the lift cylinder shaft**. Always lock with safety pin and plug.

Before parking the machine, set the bucket on the ground and the body on the frame to prevent the danger of pinching or shearing.

In case of machines fitted with Hi-Tip skip, to block the lifting scissor in upper position, pull the elastic plug away from the safety pin “S” and insert it into the appropriate hole (ref.B). Always insert the elastic plug. This enables to block the body lifting chassis to make the operation/work on the machine in total safety.



3.3 LIFTING AND TRANSPORTING

See section 2.3 of this manual for the “overall dimensions of the machine”, while for the loading on a lorry by using ramps, follow what explained below.

- Close the loading/unloading areas, forbidding the entrance to foreign people and clearing the zone from obstacles and dangerous stuffs.
- Loading and unloading operations have to be done in a flat and compact surface.
- Check that the transport vehicle is in perfect condition. Apply the hand brake and insert safety wedges at the front and rear of the rear axle tyres. The vehicle engine must be off and the key removed from the ignition. The body must be level.
- Position the machine at the rear of the truck, ensuring that the longitudinal axle coincides with that of the truck.
- Check that the ramps are suitable for the vehicle to be loaded. **Only** use **homologated** and/or **certified ramps**.
- Check that the ramps are perfectly clean and free of grease and that there is no risk whatsoever of the tracks slipping.
- Check that the ramps are long enough to avoid problems during ascent and descent of the machine. Particularly check the length of the ramps, taking note their angle with the lorry loading platform has to be between 15° and 16° (30%).
- Check that the ramps are properly coupled to the transport vehicle and appropriately spaced. The width of the ramp must be such as to allow comfortable passage of the track.
- The ascent and descent operations must always be carried out with the machine running and the hydraulic oil at operating temperature.
- Do not use the ramps as a gangway for crossing from one vehicle to the next.
- Load and unload the machine in correct driving ways, as explained below.
- Before ascending or descending, check perfect alignment between the tracks and the ramps. Do not steer or adjust direction while on the ramps. If necessary, return to the point of departure, repositioning correctly.
- Caution with pivoting in the connection area between the ramps and the loading platform of the truck; the steep slope must be negotiated by moving very slowly and with extreme caution. Be twice as careful in the descent phase since the unbalance towards the bottom in this case is much higher.
- All the loading and unloading operations of the machine must be carried out and co-ordinated by at least a second person who controls good progress of the operations.

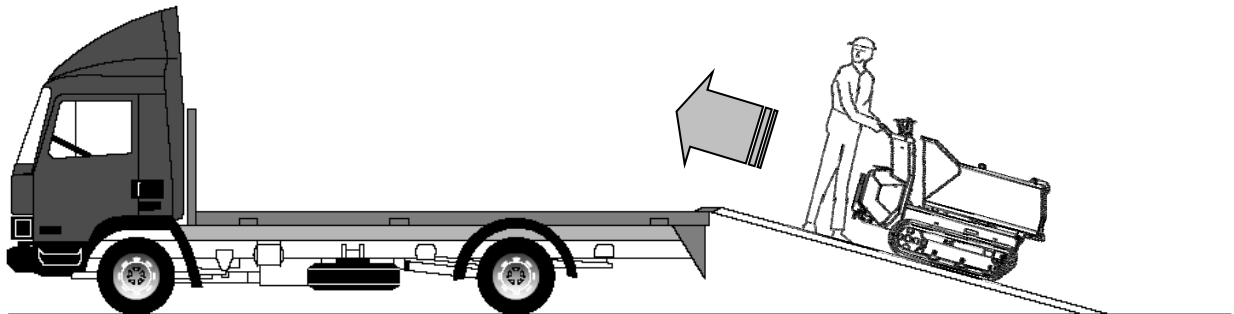


ATTENTION!!!

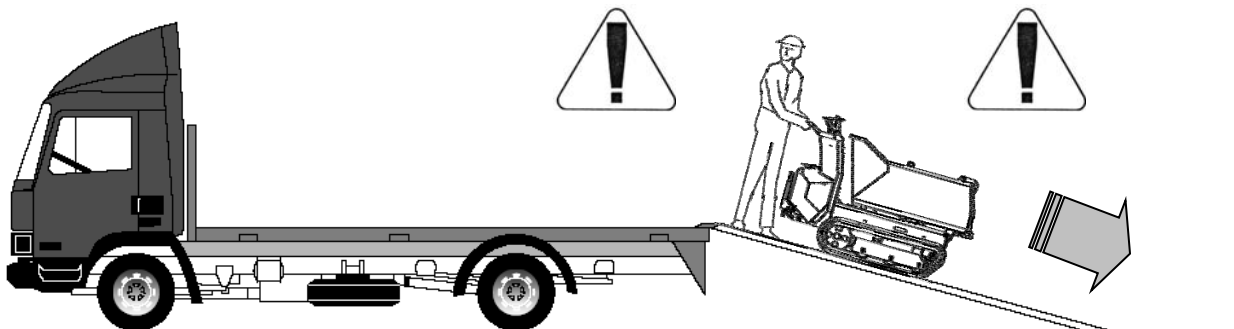
It is recommended to close the fuel valve every time the vehicle is transported or handled in order to prevent causing harm or damage.

To load and unload the transporter from the truck, it is suggested to act as shown below. Particular attention has to be taken during the overcome of the connection between the ramps and the lorry loading platform, which can cause an excessive gradient.

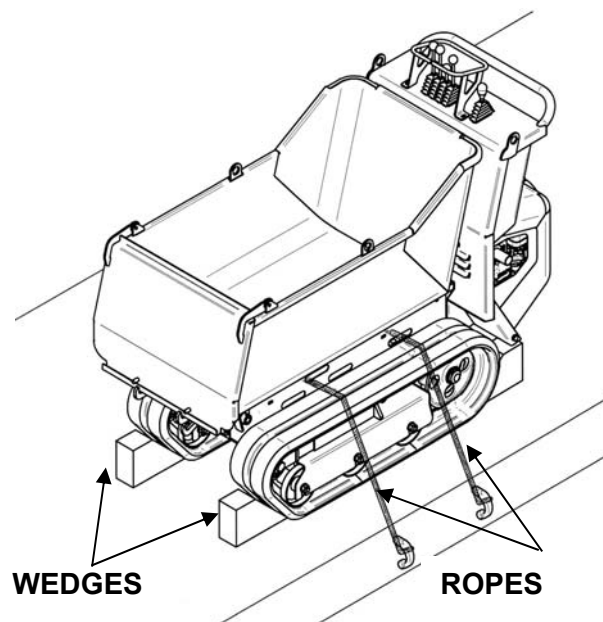
ASCENT



DESCENT



TRANSPORT

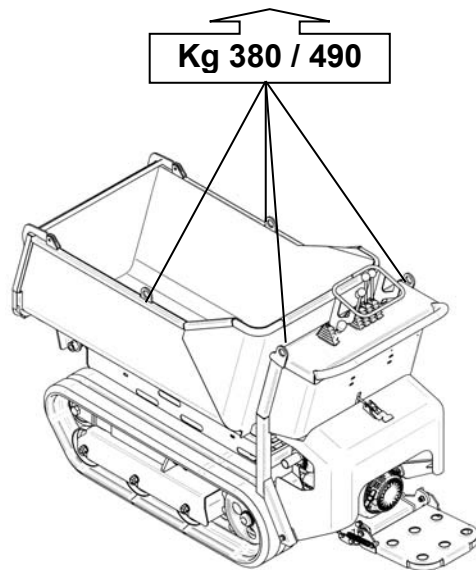


3.4 HOISTING AND TRANSPORT



The machine must be lifted **only when empty** and carefully following the indications below:

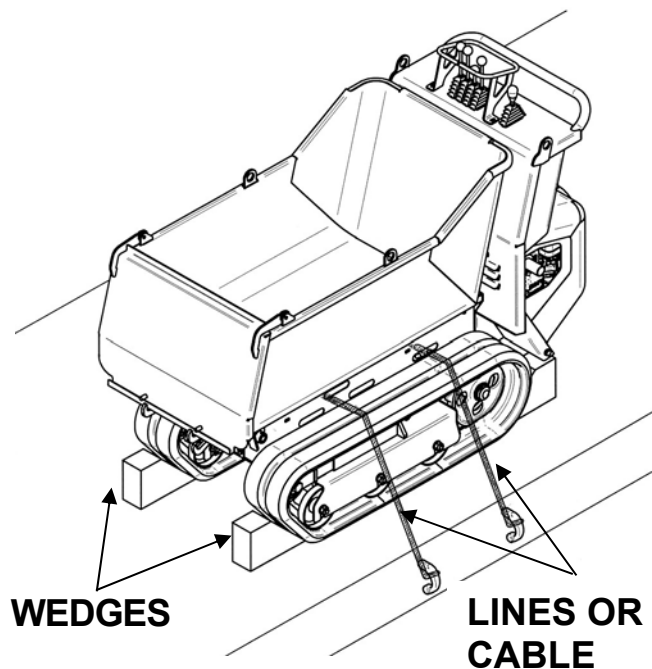
- There are four lift connections, two on the front of the bucket and two on the sides of the driver's station. (see figure).
- Fence off the lift area to prevent people from accessing the zone: do not lift over people or things and make certain that the area involved in the loading/unloading operations is free of any obstacles (electrical cables, telephone wires, etc.).
- Never walk or stand under hanging loads.
- Use cables or chains rated for the weight to be lifted: when empty the machine fitted with bucket weighs approximately **380 Kg**. The machine fitted with high tip skip weighs approximately **490 Kg**.
- Hook up the **4 points on the machine and lift. Avoid abrupt movements and lift very slowly.**
- Lift the machine and position it on the transport vehicle. Then anchor it by inserting wedges at the ends of the tracks and locking them to the base. If it proves necessary, secure the machine to the load base with adequately rated steel cables.
- To unload the unit, follow the above instructions in inverse order. Always take all safety precautions necessary to ensure the safety of the people involved and of the machine itself.



WARNING!

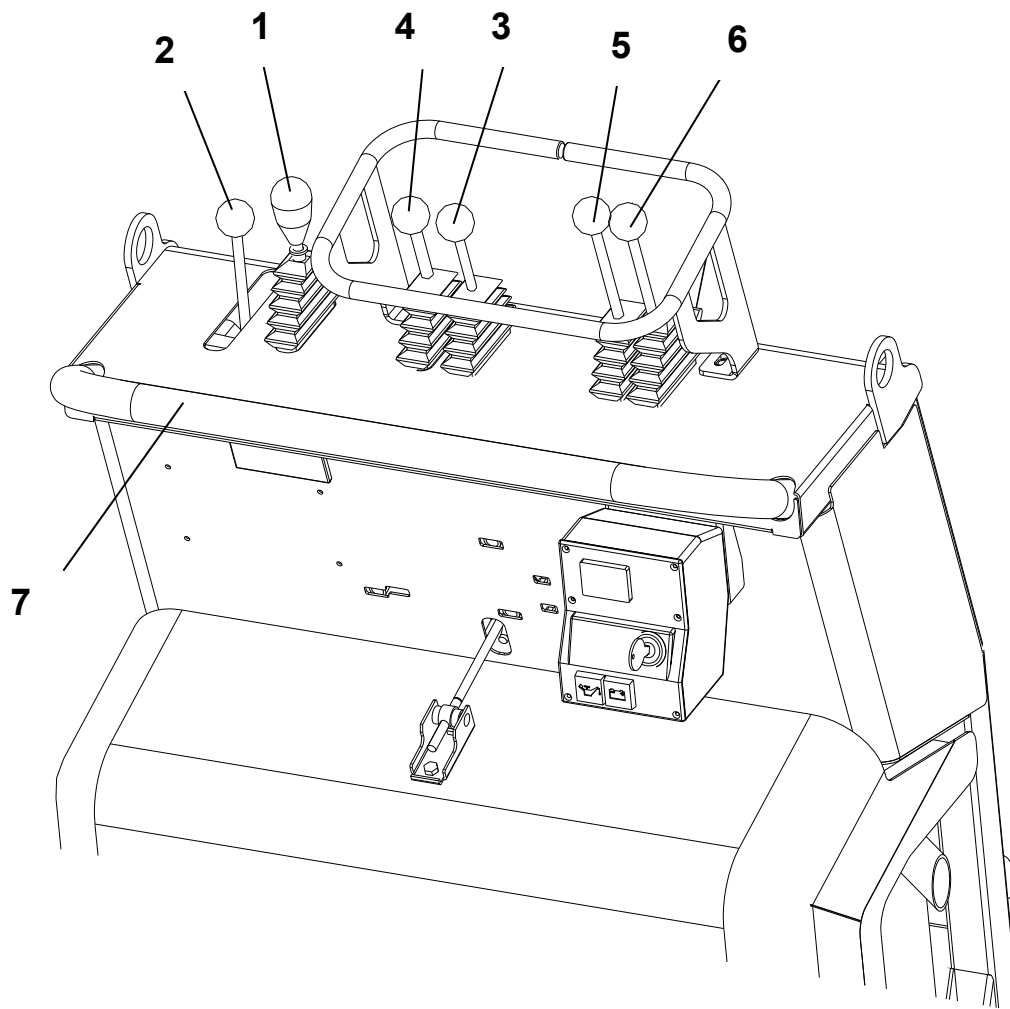
To prevent the possibility of injury or property damage, we recommend always closing the fuel tap whenever the machine is transported or moved.

For transport, always follow the current Highway Code and specific regulations in force in the country where the unit is being used.



4. DRIVING - CONTROL POSITION

4.1 MACHINE CONTROLS



- 1 - ACCELERATOR LEVER
- 2 - SPEED SELECTOR LEVER
- 3 - LOAD BUCKET UP-DOWN LEVER
- 4 - DRIVING LEVER FOR THE LIFTING OF THE UNLOADING SKIP (*AVAILABLE ONLY ON TC50d/AV*)
- 5 - LEFT TRACK LEVER
- 6 - RIGHT TRACK LEVER
- 7 - DRIVING HANDLEBAR

To operate the various commands, follow the indications reported below:

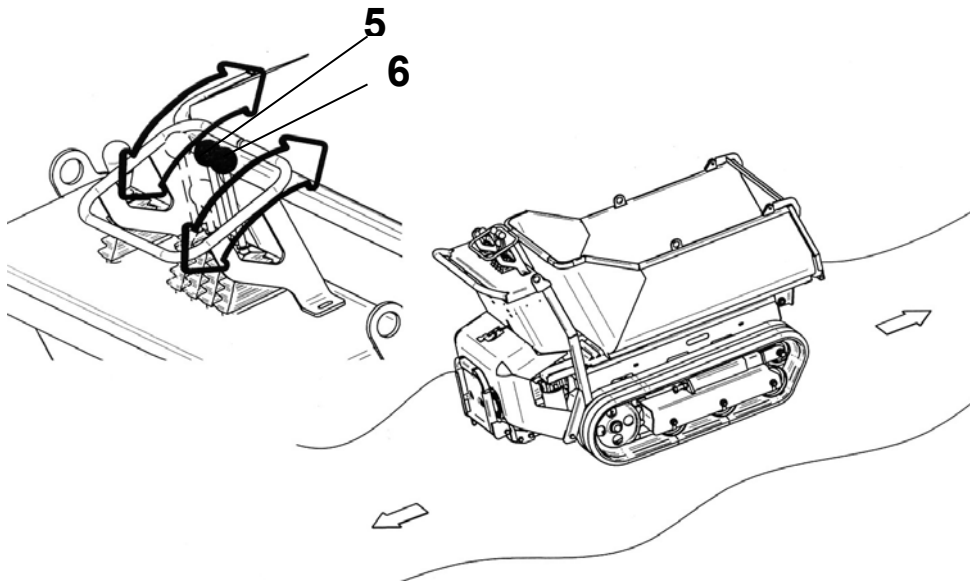
4.2 DRIVING

To drive the machine, operate levers “5” and “6”.

We will now take a close look at the operations required to drive forward, back and to steer.

FORWARD: push levers “5” and “6” forward simultaneously by the same amount.

FORWARD: push levers “5” and “6” back simultaneously by the same amount.



TURNING RIGHT WHEN DRIVING FORWARD:

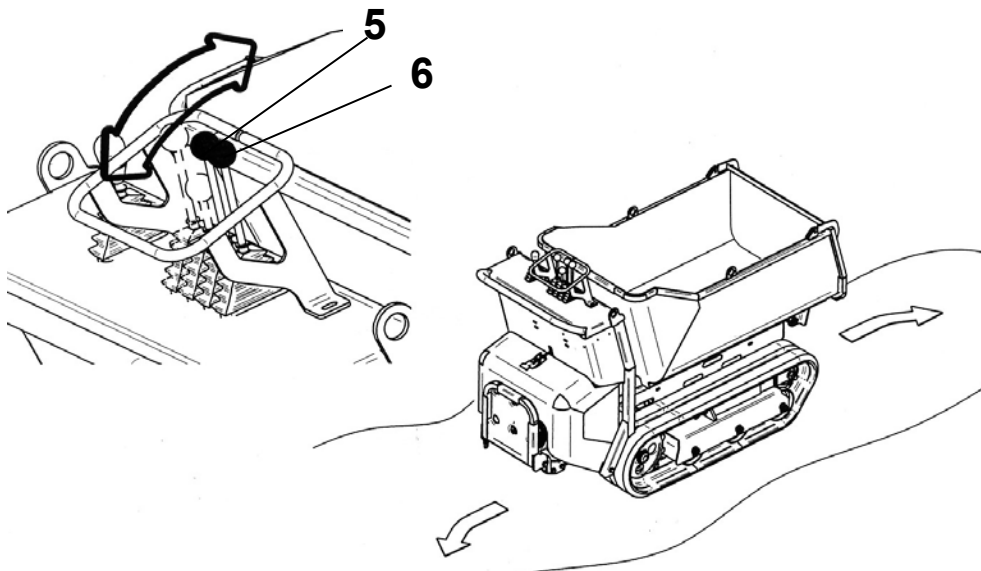
WITH THE MACHINE AT A STANDSTILL : - push lever “5” forward of lever “6”
- (this maneuver is facilitated in **SLOW** drive)

WITH THE MACHINE MOVING: pull lever “6” back vs. lever “5”

TURNING RIGHT WHEN BACKING UP:

WITH THE MACHINE AT A STANDSTILL: - pull lever “5” back vs. lever “6”
- (this maneuver is facilitated in **SLOW** drive)

WITH THE MACHINE MOVING: push lever “6” forward vs. lever “5”



TURNING LEFT WHEN DRIVING FORWARD:

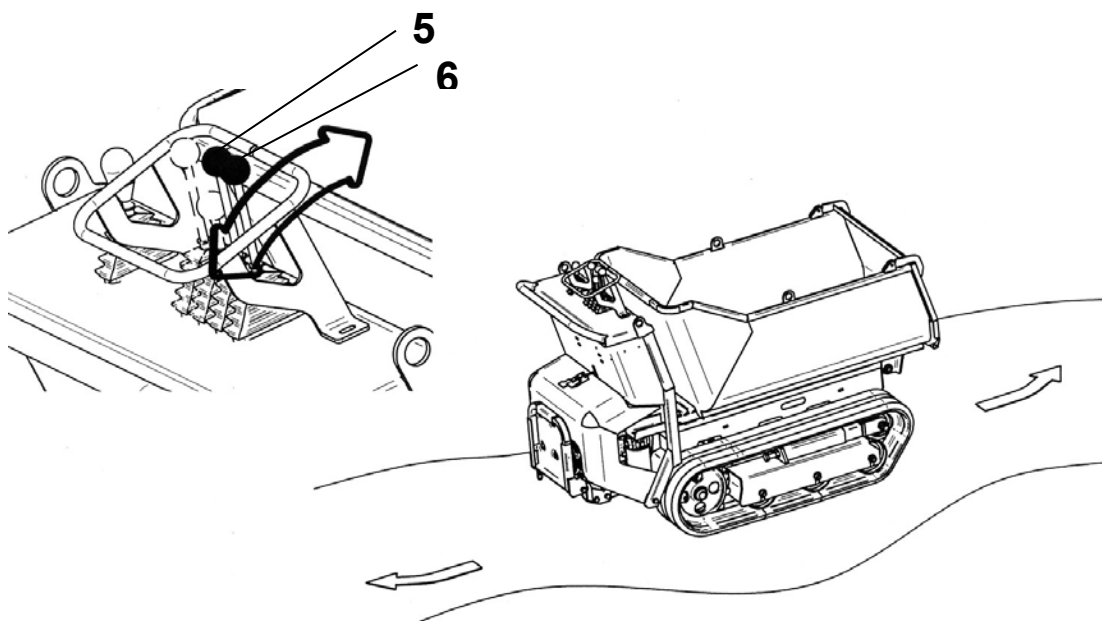
WITH THE MACHINE AT A STANDSTILL : - push lever "6" forward of lever "5"
- (this maneuver is facilitated in **SLOW** drive)

WITH THE MACHINE MOVING: pull lever "5" back vs. lever "6"

TURNING LEFT WHEN BACKING UP:

WITH THE MACHINE AT A STANDSTILL: - pull lever "6" back vs. lever "5"
- (this maneuver is facilitated in **SLOW** drive)

WITH THE MACHINE MOVING: push lever "5" forward vs. lever "6"



ALL STEERING AND DRIVING DIRECTION CORRECTION MANEUVERS MUST BE PERFORMED SLOWLY AND WITH CAUTION.

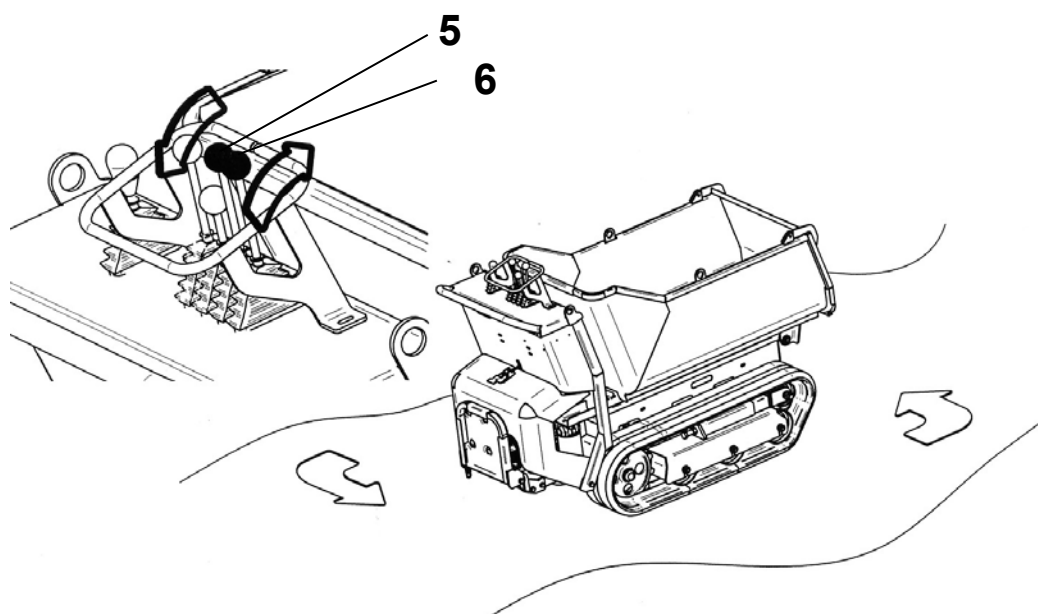
COUNTERSTEERING LEFT AND RIGHT: set levers "6" and "5" in symmetrically opposite positions.

TO THE RIGHT: Push lever "5" forward and lever "6" back

TO THE LEFT Push lever "6" forward and lever "5" back

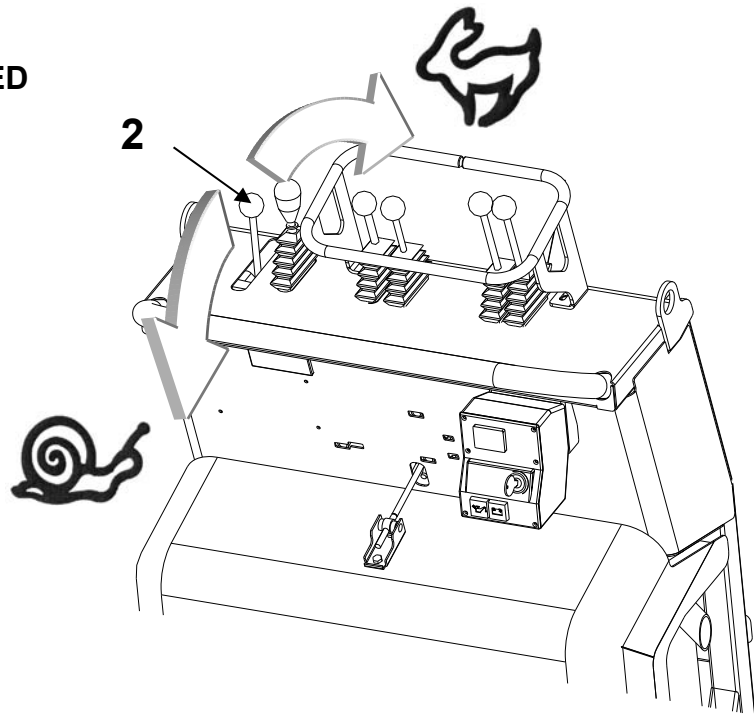


The maneuver must be performed very carefully using utmost caution and, if possible, with the machine moving slightly.



Lever “2”: speed selector

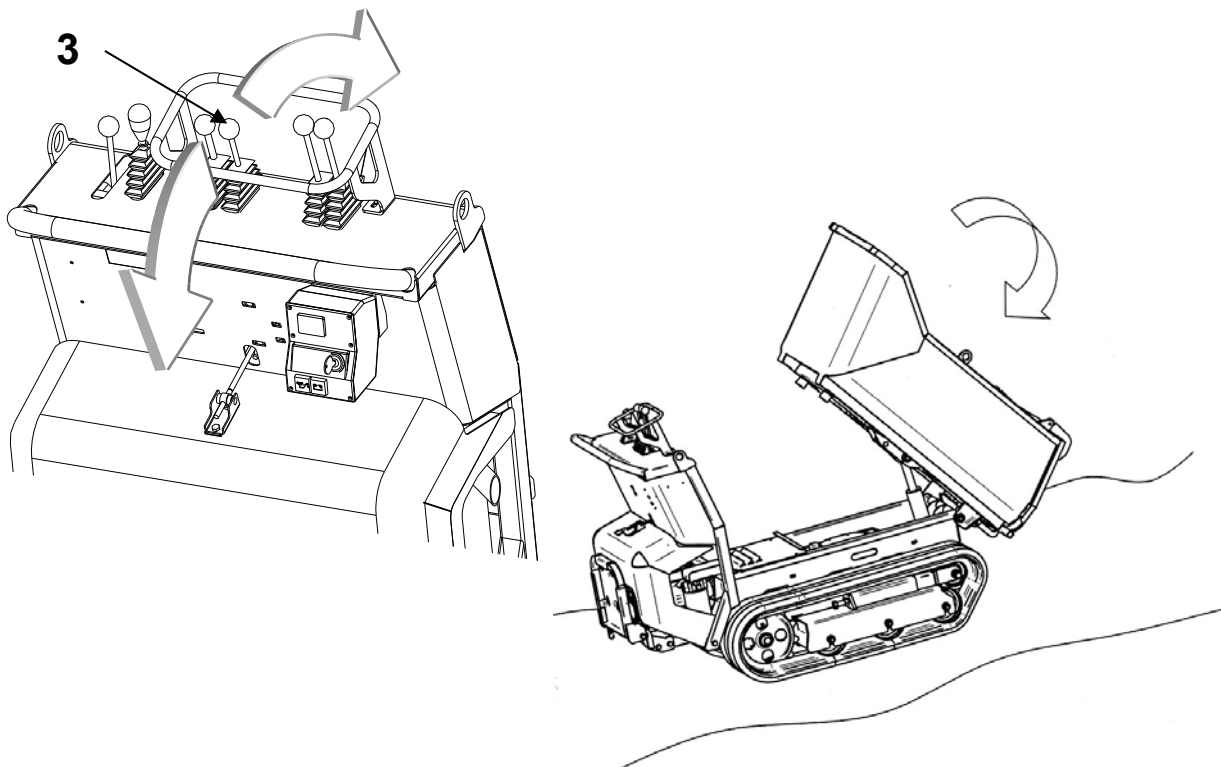
LEVER FORWARD: FAST SPEED
LEVER BACK: SLOW SPEED



4.3 SERVICES

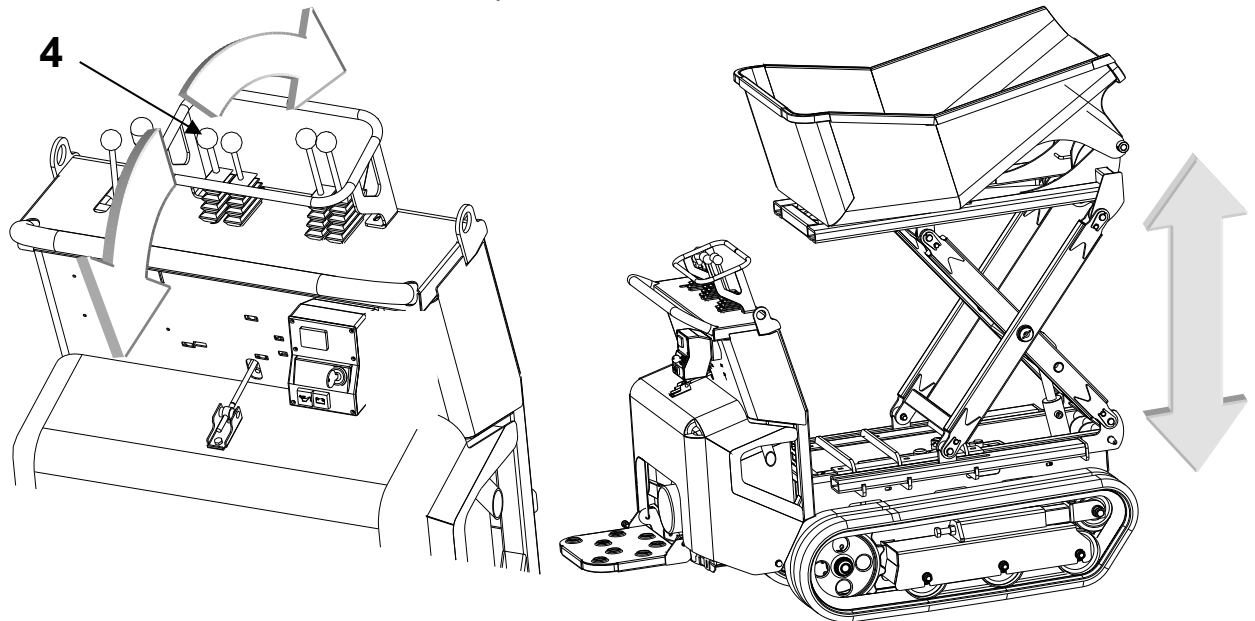
Lever “3”: bucket or dump body control

This lever controls tipping of the dump body. To lift the dump body, push the lever forward; to lower the body, just pull the lever back.



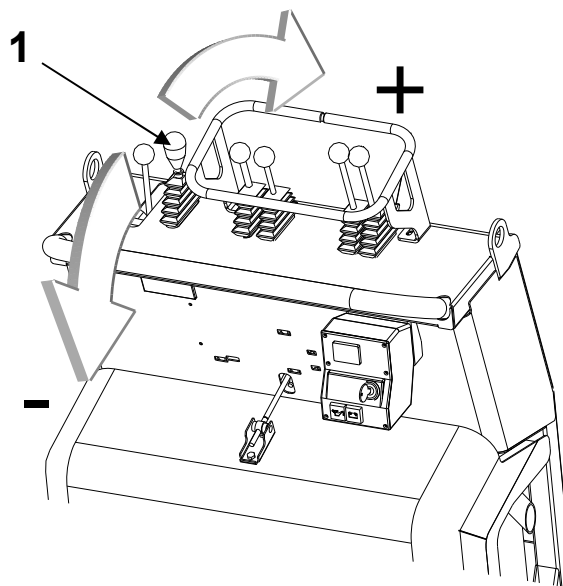
Lever “4”: driving lever for the lifting of the unloading skip

Activation of the lever allows to lift the frame-loading bucket unit for high unloading. Pull the lever down to lift the frame. Push up the lever to lower the bucket.



Lever “1”: accelerator

When the engine is started up, this lever must be at the midpoint.



WARNING!

Use the levers carefully to avoid endangering surrounding people and property.

To ensure good machine performance for a long time, never use excessive force on the transmission and never overload the endothermic engine.

4.4 STARTING UP AND STOPPING THE ENGINE

The minitransporter is powered by a diesel engine. By way of example, a synthesis of the engine user's manual is reported below.

For further details, see the user's manual for the engine installed in the machine.

The engine starter is electric type. It is possible, for emergency cases, to use the rope to manually start it.

Before starting up the engine, check that the machine is in perfect condition and, in particular, check the following:

Check that all fluids are up to level (engine oil, hydraulic oil and fuel).

Check that there is no carryover of liquid from the fuel feed circuit and hydraulic oil circuit or from other elements in an oil bath.

Check that none of the hydraulic hoses are damaged, worn or burnt.

Check that there are no foreign bodies in the tracks and other machine parts.

Check that the degree of wear on the tracks permits use of the machine.

Check that none of the sheaths on the electrical cables are damaged or worn and that none of the cables are burnt.

Moving the machine control levers, check that there is no gripping or seizing of the various tools.

If one of the above controls gives a negative result, eliminate the problem and repair the element, working independently if the operations involved are covered in this manual. If not, contact an authorized service center to perform any other operations.

Before starting up the engine, set the accelerator lever at its midpoint.

Once the engine has been started up, let it idle for approximately 1 minute so that the oil can reach all lubrication points and that the hydraulic oil powers the various users. For the following 5 or 10 minutes, operate accelerating slowly. Only after this time has elapsed is the machine ready for full operation.

N. B. The engines are built to operate even if they are exposed to the weather (machines without hood). Nevertheless, in order to prevent rapid oxidation of ferrous parts (conveyors, flywheels, self-winding spring, etc.), if the machine is to remain unused for long periods of time (a few hours) in the rain or snow, it is advisable to protect the engine with a tarpaulin and remove it **before starting to work**.

For details on the operations required to start-up and shutdown the engine, follow the instructions given below.



WARNING!

ENGINE REQUIRES DIESEL

HOW TO ENSURE EXCELLENT START-UP EVERY TIME

OPERATION N° 1 – move the throttle lever at the centre of its stroke.

OPERATION N° 2 – turn the key “D” in clock wise from pos ZERO (pict. “A”) to position ON (as in pict. “B”) and then to position START (as in pict. “C”) to start the ignition.

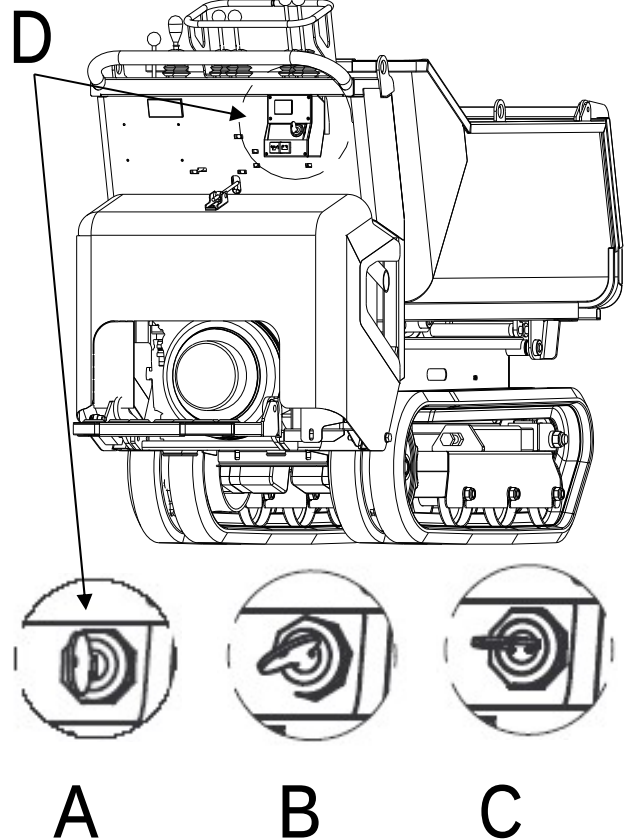
After the engine starting the key automatically come back to position ON (pict. “B”).



NEVER PROLONG START-UP

OPERATION N° 3 to stop the engine move the throttle lever to minimum and then to position “STOP” compressing the limit spring and getting the engine switch off. Realising the lever after the stop it will automatically return to minimum position.

OPERATION N° 4 – turn the key “D” anti-clockwise, to the “OFF” position (Ref. “A”).



MANUAL START-UP

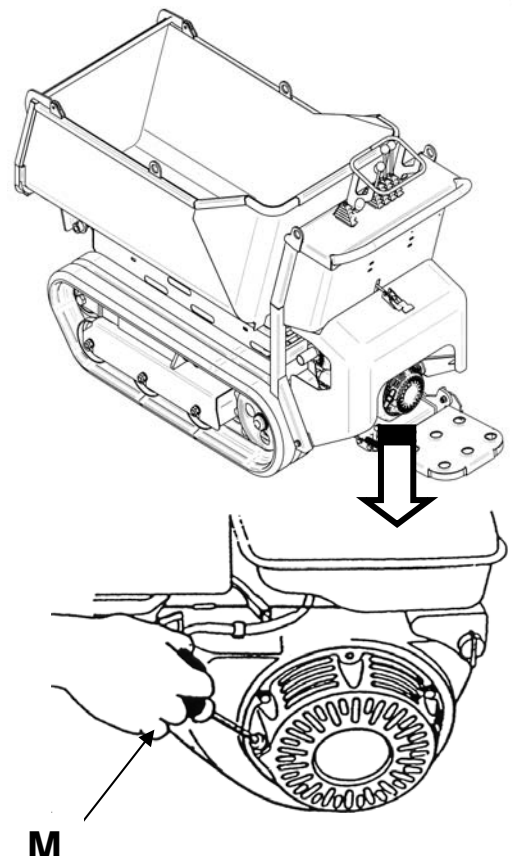
OPERATION N° 1 – lower the footboard.

OPERATION N° 2 - turn the key “D” in clock wise from pos ZERO (pict. “A”) to position ON (as in pict. “B”).

OPERATION N° 3 - set the accelerator at its midpoint.

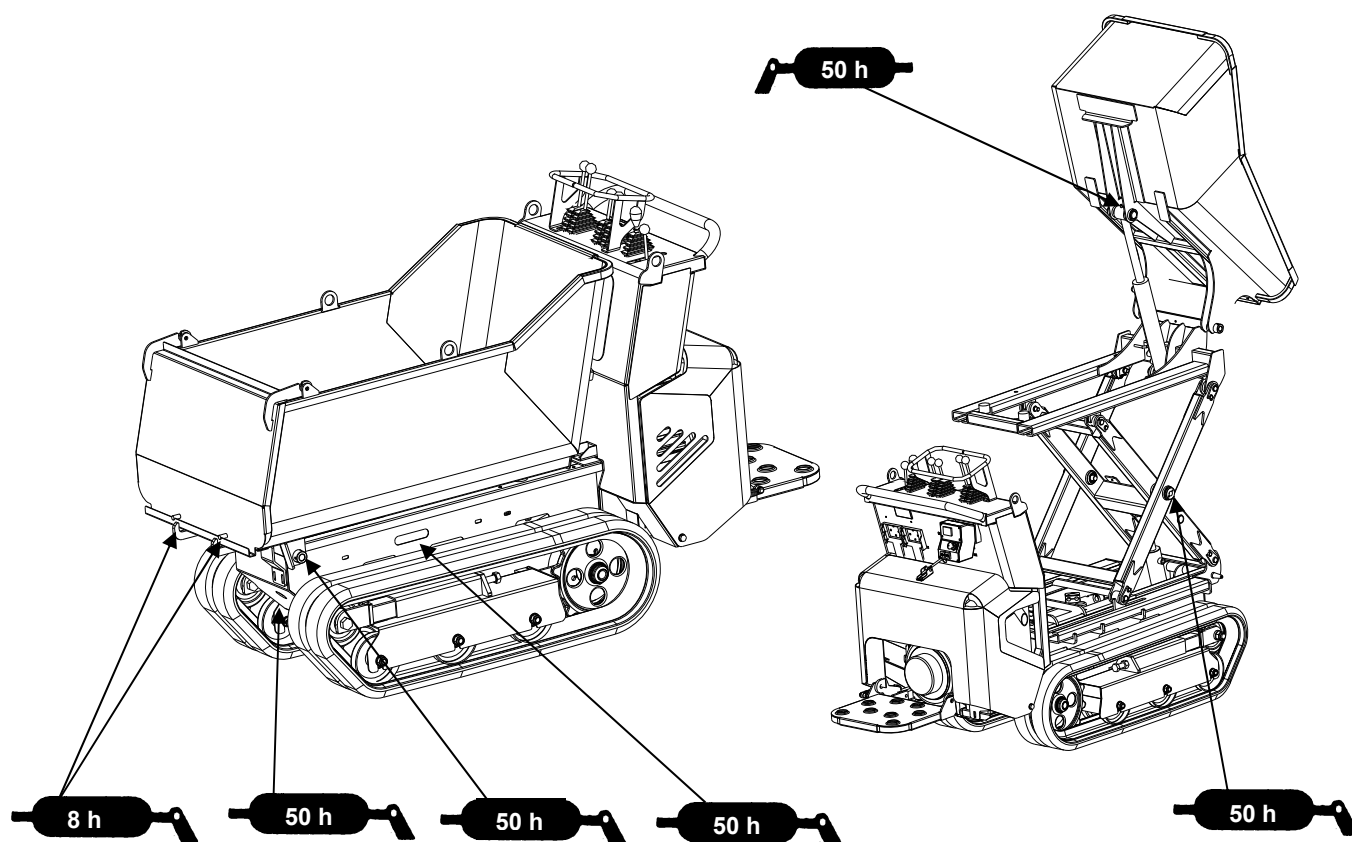
OPERATION N° 4 – grip the handle “M” of the starter device and pull slowly until it exerts resistance. Then tug on the cord very fast exerting great force to overcome the compression and start-up the engine. If the engine does not start-up immediately, release the handle so that the cord can self-wind and then repeat the operation.

To turn off the engine, read above.



5. GENERAL MAINTENANCE

5.1 GREASE POINTS



Refill the grease points  at the times indicated.
(for the type of grease, follow the indications in the lubricant table)

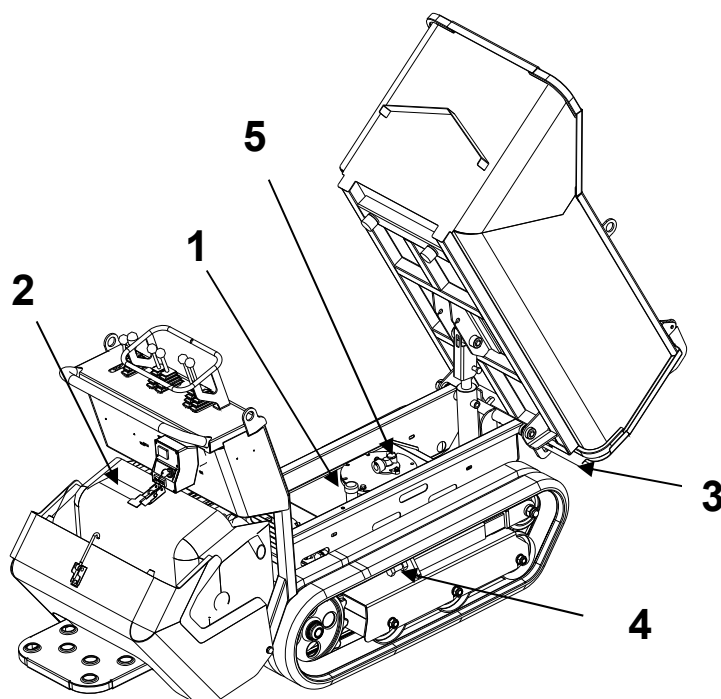
Always keep the lubricators clean and efficient, and replace them when they are worn or damaged.

Careful, constant greasing of the machine ensures perfect efficiency and safety.

Also grease all those parts that are exposed to the weather and that require protection to prevent oxidation.

5.2 CHECKS AND CONTROLS

Pay particular attention to the items indicated below:



1 – HYDRAULIC OIL TANK FILLING CAP

2 – FUEL CAP

3 – AUTOMATIC DUMPER HATCH OPENING DEVICE

4 – TRACK TENSION REGULATION DEVICE

5 – DISCHARGE HYDRAULIC OIL FILTER

1 – HYDRAULIC OIL TANK FILLING CAP

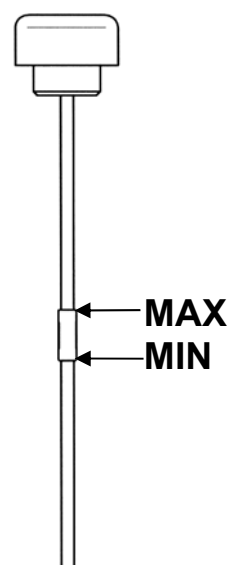
Complete change **Lt. 19**, for the type of grease, follow the indications in the lubricant table.

Replace the oil after the first **200 HOURS** of operation and every **1000 HOURS** thereafter or once a year.

To fill or top up, check that the oil is between the min. and max. levels on the dip stick incorporated in the screw down cap. This control must be performed with the bucket raised (cylinder extended) and the machine on a flat surface.

ALWAYS KEEP THE LEVEL BETWEEN MINIMUM AND MAXIMUM

Never overfill because the tank serves as an oil expansion tank during machine operation.



2 – FUEL CAP

Never fill the tank until gasoline overflows. Always leave a space (approximately 1/5) for the fuel to expand inside of the tank.

WARNING! : ENGINE REQUIRES DIESEL

TANK CAPACITY liters **2.7**

RANGE *approximately* hours **2.0**

3 – AUTOMATIC DUMPER HATCH OPENING DEVICE

The device starts working, making it possible to release and secure the hatch automatically when the dumper body is being lifted.

Periodically check both the fixed and mobile parts of the device to ensure that they are always efficient.

4 – TRACK TENSION REGULATION DEVICE

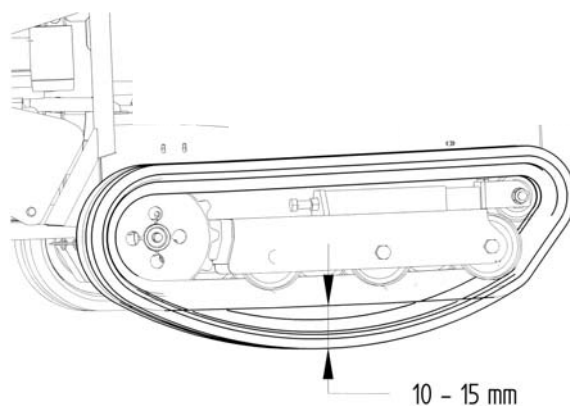
This device is used to restore correct track tightness if they loosen during use.

5.3 TIGHTENING THE TRACKS

With use, the tracks tend to loosen.

When operating with loose tracks, they tend to slip over the driving wheel teeth causing it to jump its housing or to work in precarious fashion, damaging and causing wear to the housing.

Never allow this situation to occur. To restore correct track tightness, proceed as follows:



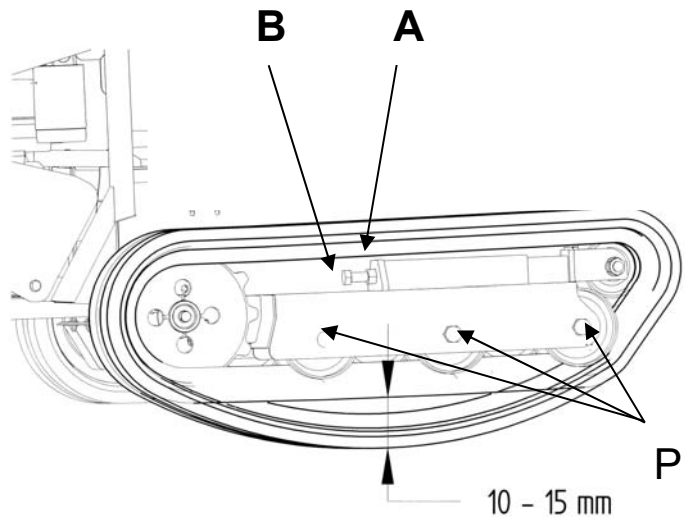
Set the machine on a flat surface with compact ground, better on an asphalt or stone pavement. Lift the machine and set it on blocks or supports rated for the weight of the machine so that the tracks are approximately **100 mm** off the ground.

Measure the track midline vs. the horizontal line; the reading must not be more than **10 – 15 mm**.

If the distance is greater, proceed as follows:

- loosen lock-nut “A” (with a 27 wrench).
- tighten screw “B” (with a 27 wrench) until the correct tightness is restored.
- lock screw “B” tightening lock-nut “A” thoroughly.

At this point, track tightness has been restored to the original tension found with new tracks.



Run the track blank for a few minutes so that it can settle in. With the track not running, check that the track tightness is correct. Then raise the machine and set it on the ground. It is now ready to use.

Periodically check that the support pins for rollers “P” are perfectly locked. This is done by checking that the lock-nut on the inner part is perfectly tightened.

Once a day, clean all moving parts of the machine.

USING THE MACHINE

In order to safeguard the integrity and functionality of the track, follow the indications below:



- Avoid sharp turns and frequent changes of direction while driving on the road, in particularly on rough, hard terrains full of sharp, uneven points with a high degree of friction. **DO NOT COUNTERSTEER.** To turn to the right and left, whether driving or at a standstill, only operate one track.
- Prevent the tracks from coming into contact with protrusions or sharp, cutting objects while driving.
- Prevent the tracks from coming into contact with oils, solvents, fuel or other corrosive materials. If they do, clean the substance away immediately and wash the tracks.
- Avoid extended use of the machine in marine or salty environments since this can cause the metal core to detach from the rubber.
- The basic characteristics of the rubber used to produce the tracks require that they be used at temperatures ranging from **– 25°C to + 55°C**.
Never leave the tracks exposed to the weather for extended periods of time: abrupt variations in climate can cause premature aging.
- Wear of the transmission wheels can cause abrasions or cause the metal core to come out of the track. Replace promptly when this occurs.

OPERATING ANOMALIES AND PROBLEMS

FAILURE OF THE TRACK STEEL CORDS

- Excessive tightening of the track plus use on gravel and loose material that can accumulate between the track and the carriage.
- Track jumping the guide wheels.
- Strong friction in cases of excessively frequent and rapid changes of direction.

WEAR OR BREAKAGE OF THE METAL CORES

- Excessive tightening of the tracks.
- Improper contact between the notched wheel and the track (notched wheel worn, debris wedged between tooth and track, etc.).
- Use on sandy terrain.

DETACHMENT OF METAL CORE FROM RUBBER

- Excessive abrasion between the internal side portions of the track and the guide rollers (excessively frequent and rapid steering and countersteering).
- Harpooning of the notched wheel, wear during rotation.



WARNING !

The above problems require immediate replacement of the damaged track.

ABRASIONS OR LACERATIONS DUE TO FATIGUE OR OUTSIDE FACTORS

- Generally these problems are caused both by the way the machine is used and the nature of the site where the unit is operating. These lacerations of the track can be reduced, but not eliminated, by attentive, responsible use of the machine and do not require immediate replacement of the track, even if it is reaching the end of its life span and it is time for it to be replaced. **It is best to replace the tracks also when the treads are reduced to approximately 2 - 5 mm.**
- Abrasions, lacerations, cuts on the outer surface of the track (the surface in contact with the terrain) are, in most cases, due to contact with sharp stones or cutting materials (sheet metal, glass, nails, brick chips, etc.) which can cut and partially or completely remove parts of the track. Obviously, because of the properties of the rubber, this is inevitable although it depends on the specific use and operating conditions.



N.B.: the integrity of the rubber track and the speed with which it is worn depends mainly on the use and the way the machine is used.

5.4 REPLACING THE DISCHARGE HYDRAULIC OIL FILTER

The filter is located inside the hydraulic oil tank (see picture).

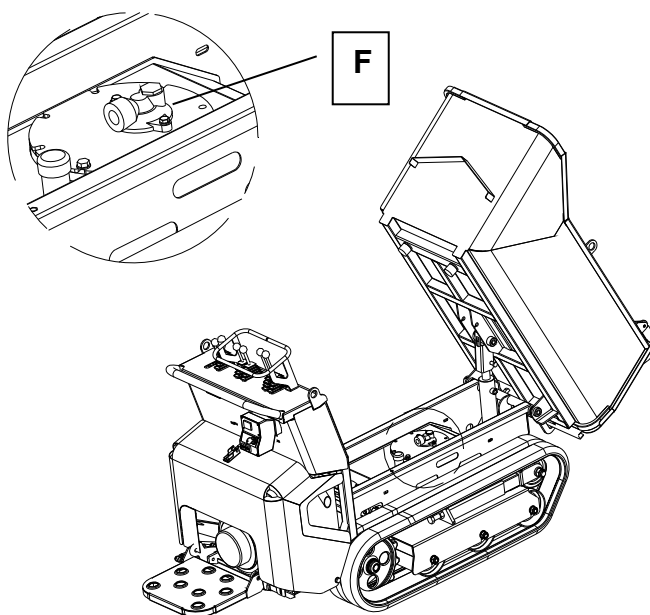
Replace the filter after the first **50 HOURS** of operation and every **500 HOURS** thereafter.

Unscrew the filter “F” and replace it with another having the same characteristics:

Filter rating: 30 micron.

Nominal flow rate: 50 l/min.

N.B.: the filter change operation must be performed without allowing any of the oil that leaks out during emptying and replacement to seep into the environment.



IT IS BEST TO PERFORM THESE OPERATIONS OVER AN IMPERMEABLE OR PLASTIC CLOTH.



THE OIL MUST BE DISPOSED OF THROUGH AN AUTHORIZED COMPANY

5.5 LUBRICANT TABLE

Agip		
RECOMMENDED PRODUCTS	PARTS TO BE LUBRICATED	QUANTITY (Liters)
AGIP SIGMA S 30	DIESEL ENGINE	See engine manual
AGIP ARNICA 46	HYDRAULIC SYSTEM AND HYDRAULIC SYSTEM	19
AGIP GR SM	GREASE POINTS	As needed

It is possible to replace the suggested products with other brands as long as they have the same characteristics.

5.6 DIESEL ENGINE

For operation, refueling, start-up and shutdown, controls and cleaning, and for maintenance, follow the indications given in the User's Manual that the Manufacturer has supplied with the machine.



5.7 MAINTENANCE SUMMARY TABLE

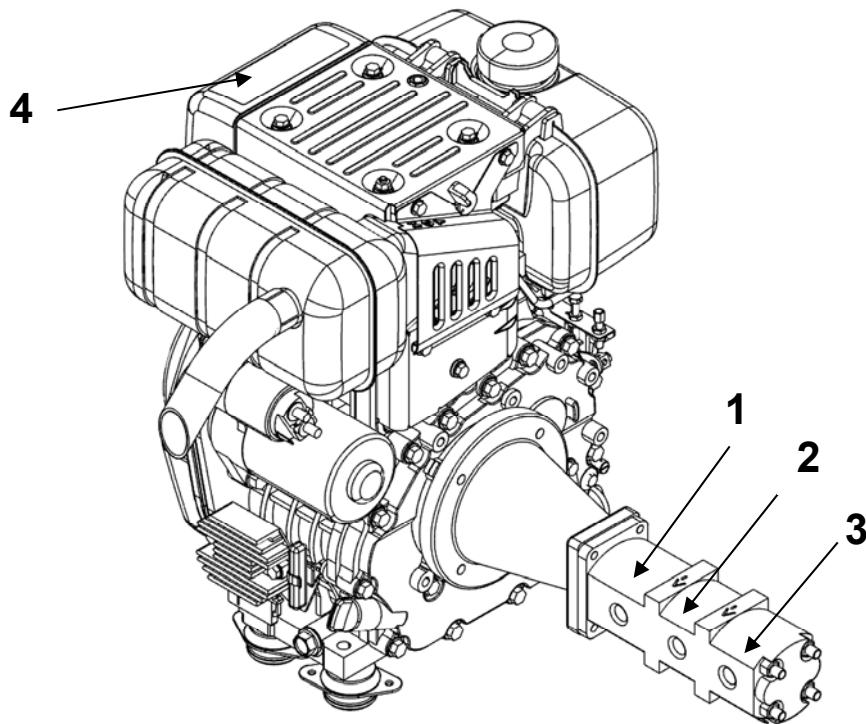
OPERATION TO BE PERFORMED	COMPONENT INVOLVED	HOURS FOR FIRST REPLACEMENT		
		50	100	200
REPLACEMENT	Oil filter cartridge	●		
	Hydraulic oil			●

OPERATION TO BE PERFORMED	COMPONENT INVOLVED	FREQUENCY OF SUBSEQUENT REPLACEMENTS (in hours)					
		8	50	100	250	500	1000
CLEANING	Tracks	●					
	Dump body and bucket	●					
	Pump body guard space	●					
	Hydraulic oil tank						●
CONTROLS AND POSSIBLE REPAIR	Track tightness		●				
	Hydraulic oil			●			
REPLACEMENT	Oil filter cartridge				●		
	Hydraulic oil						●
GREASING	Grease Points	●					

WARNING!

For the controls to be performed on the endothermic motor, see the User's Manual the Manufacturer has supplied with the machine.

6. HYDRAULIC TRANSMISSION SYSTEM AND SERVICES



- 1 - HYDRAULIC GEAR PUMP FOR SERVICES AND 2nd SPEED
- 2 - HYDRAULIC GEAR PUMP CONNECTED TO HYDRAULIC MOTOR CONTROLLING **LEFT** TRACK
- 3 - HYDRAULIC GEAR PUMP CONNECTED TO HYDRAULIC MOTOR CONTROLLING **RIGHT** TRACK
- 4 - ENDOTHERMIC ENGINE

REFERENCE VALUES FOR CALIBRATION OF THE HYDRAULIC SYSTEM AND SERVICES SYSTEM.

MEASUREMENT POINT	PRESSURE TO BE DETECTED	MANOMETER FULL SCALE	TYPE OF CONNECTION	CORRESPONDING ENGINE RPM
P1	135 ± 5 bar	250 bar	3/8" G	3600 rpm
P2	190 ± 5 bar	250 bar	3/8" G	3600 rpm
P3	190 ± 5 bar	250 bar	3/8" G	3600 rpm

HOW TO CHECK AND RESTORE THE PRESSURE IN THE HYDRAULIC SERVICE AND TRANSLATION SYSTEM

All connection points to be used in controlling and regulation are located on the control distributor.

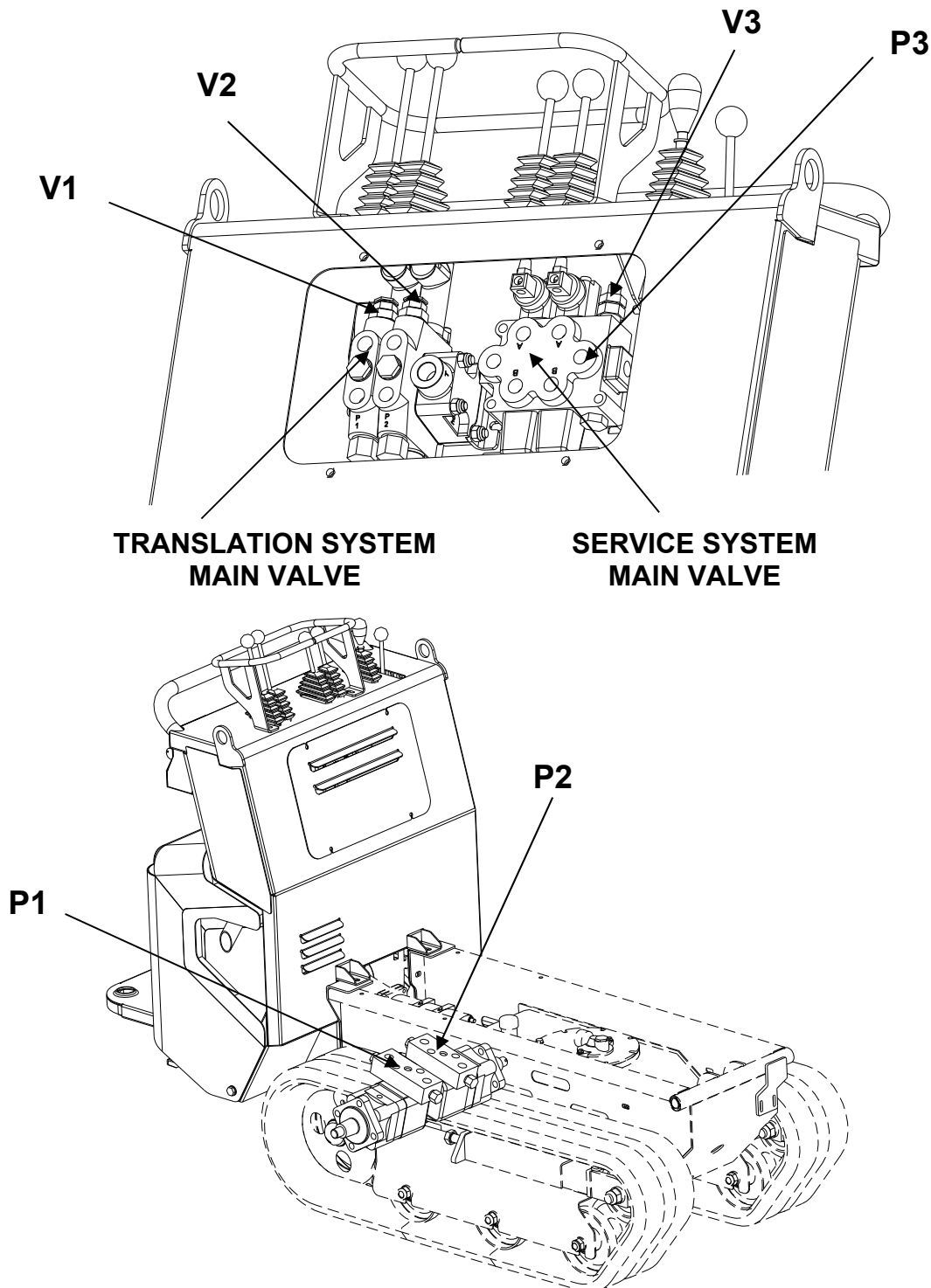
Start the checks following the indications given below. The reading must match that indicated in the previous table.

Disconnect the hydraulic hoses only at point (**P3**) and insert the 3-way connection for control and calibration of the service system and hook up the manometer with the appropriate scale in the connection left free. To control and calibrate the translation system use the points (**P1** e **P2**). The connections are to be hooked up in series and are therefore already present.

P1 – RIGHT TRACK PRESSURE DETECTION POINT

P2 – LEFT TRACK PRESSURE DETECTION POINT

P3 – SERVICE PRESSURE + 2nd SPEED DETECTION POINT



RIGHT TRACK

To check correct pressure, once the manometer has been positioned in measuring point “P1”, lock the right track by setting a fixed point between the drive wheel and the machine frame. Rev up the engine to the set number of revolutions (**3600 rpm**) and read the pressure indicated on the manometer. If it does not match the setpoint, operate the max. pressure valve “V1” set on the distributor, turning it until the pressure indicated in the table has been reached.

LEFT TRACK

To check correct pressure, once the manometer has been positioned in measuring point “P2”, lock the left track by setting a fixed point between the drive wheel and the machine frame. Rev up the engine to the set number of revolutions (**3600 rpm**) and read the pressure indicated on the manometer. If it does not match the setpoint, operate the max. pressure valve “V2” set on the distributor, turning it until the pressure indicated in the table has been reached.

HOW TO CHECK AND RESTORE THE PRESSURE IN THE SERVICE SYSTEM (BUCKET, HIGH TIP SKIP OR OTHER ACCESSORIES).

To check correct pressure, once the manometer has been positioned in measuring point “P3”, bring the bucket or other accessory that uses the machine lift cylinder to the end of its stroke. Rev up the engine to the set number of revolutions (**3600 rpm**) and read the pressure indicated on the manometer. If it does not match the setpoint, operate the max. pressure valve “V3” set on the distributor, turning it until the pressure indicated in the table has been reached.

WARNING !



Carefully follow the indications supplied, remembering that the checks and pressure controls must be performed with the hydraulic oil at operating temperature (**approximately 50-60°C**).



WHEN CONNECTING AND DISCONNECTING THE POINTS FOR INSERTING THE MANOMETER, CHECK FOR OIL LEAKS. IT IS ADVISABLE TO PERFORM THE ABOVE OPERATION OVER AN IMPERMEABLE OR PLASTIC SHEET.



- DO NOT DISPERSE OIL IN THE ENVIRONMENT.
- THE OIL MUST BE DISPOSED OF THROUGH AN AUTHORIZED COMPANY.

7. TROUBLESHOOTING: CAUSES AND REMEDIES

PROBLEM	CAUSE	SOLUTION
The machine moves jerkily	There is no oil in the tank	Check the level and top up if necessary
	Air in the hydraulic transmission system	Check that the piping and connections are intact
	Hydrost. syst. oil filter plugged	Replace filter cartridge
	Lever operated too abruptly and too fast	Operate the lever delicately
The machine does not use all its power and does not achieve maximum performance	The hydraulic oil used differs from the one indicated	Check and replace with suitable oil if necessary
	Hydrost. syst. oil filter. plugged	Replace filter cartridge
The tracks tend to jump the traction housing	The track has loosened with use	Adjust following the indications reported in the paragraph on "CHECKS AND CONTROLS" under GENERAL MAINTENANCE
One of the two tracks is blocked	Foreign bodies have worked their way in between the track and the frame	Remove the foreign body
	Hydraulic motor failure	Contact an authorized workshop
	Pump damaged	Contact an authorized workshop
	Hydraulic piping failure	Check and replace if necessary
The dump body hatch does not open or close	Hook device damaged	Check lever, seat, etc. and restore the original condition if necessary
The engine does not start	Start-up starter or switch set in the wrong position	Restore correct position as indicated in the engine user's manual
	Fuel tank empty	Check and refuel if necessary
	Wrong fuel used	Check and, if necessary, clean out the tank and replace
The raised dump body does not descend	Mechanical impediment	Remove the obstacle
	Articulation pin blocked	Grease
	Cylinder or gasket damaged	Check and replace if necessary

The dump body does not rise	Joint and or hydraulic pump failure	Check and replace if necessary
	Hydraulic piping failure	Check and replace if necessary
	Distributor pressure too low	Check and restore if necessary
	Cylinder or gasket damaged	Check and replace if necessary
The machine does not move in either driving direction, even if the levers are moved	Hydraulic pipe broken between hydraulic motor and pump	Check and replace if necessary
	Pump and/or hydraulic motor damaged	Contact an authorized workshop
Problem in the translation system (the machine does not move or steer)	Hydraulic oil overheated	Wait until the hydraulic oil cools, then try again
Even if the lever is moved, the corresponding track does not move	Hydraulic pump failure	Contact an authorized workshop
	Hydraulic piping failure	Check and replace if necessary
Hydraulic oil overheated	Low hydraulic oil level	Check and restore if necessary

IF NECESSARY, PLEASE CONTACT AN AUTHORIZED SERVICE CENTER OR THE MANUFACTURER

8. NOTES ON MAINTENANCE

DATE	WORK PERFORMED	HOURS WORK	PARTS INVOLVED