User Manual - Machine Safety and Maintenance

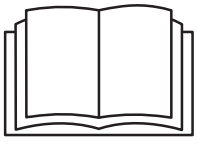
Original instructions - Always store this manual close to the machine.

MINIDUMPER HS701

STANDAR SKIP

SELF LOADING VERSION

HI-TIP VERSION



CE

MUHS70120615

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INTRODUCTION

Dear Customer,

First of all, thanks for choosing the Hinowa HS701 Dumper and we hope that you will be fully satisfied with your purchase.
Now you own a working machine you can always rely on, provided you follow the operating and maintenance instructions.

Please read this manual carefully before operating the machine, including start-up, use, maintenance, fueling or any other operations.

Safety is our first objective when we design and produce our machines. Unfortunately, any effort to improve and maintain safety during operations can be undermined by a single act of imprudence by the user.
Accident prevention is strictly related to carefulness, prudence and proper training of the personnel assigned to use, transport and maintain the machine.
Responsible users should read and comprehend these instructions thoroughly, especially the provisions dedicated to safety, then strictly apply them.
The dumper should be used only by properly trained personnel. Operating a machine without being fully aware of its technical characteristics may result in accidents affecting safety and health of persons. Please read this manual carefully prior to operating the machine and familiarize with it. In any case, the owner (even in the event that the machine is borrowed or rented) should ensure that any operators read and comprehend this manual before starting to operate the machine, including maintenance instructions; please make also sure that workers operating the machine have been trained to use it.
This manual should be regarded as a permanent component of your machine, therefore it should always remain near the dumper, placed in the specific holder on the machine. Our products are subject to continuous improvements, therefore they could be equipped with components different from the ones shown herein; please ask your Hinowa authorized dealer for any product update.
Please do not hesitate to contact your Hinowa authorized dealer for any information or intervention on our products. Our expert dealers are always ready to assist and provide you with useful information and recommendations to use the machine in the most efficient way. They can also suggest the use of suitable equipment and provide assistance to supply our original, high-quality and interchangeable spare parts.
To submit a correct request for the spare parts needed, each order should be accompanied by the serial number of the machine.

Enjoy your work with Hinowa!

CE COMPLIANCE DECLARATION

With the declaration of conformity, Hinowa confirms the conformity of the dumper to the directives and standards valid at the time of immission on the market. All the modifications or constructive integrations of the dumper performed on own initiative, may affect safety and invalidate the CE declaration.

PIATTAFORME AEREE - MINIDUMPERS - TRANSPALLET - CARRI CINGOLATI

Nogara, XX/XX/XXXX

EC DECLARATION OF CONFORMITY

THE COMPANY **HINOWA S.p.A.** main office in VIA FONTANA-37054 NOGARA (VR) ITALY

DECLARES

ON ITS OWN EXCLUSIVE RESPONSIBILITY THAT THE PRODUCT CALLED

" COMPACT DUMPER "

"DESTINED FOR GROUND MOVING PURPOSES "

MODEL	**HS701**
SERIAL NUMBER	**XXXK1**
YEAR OF CONSTRUCTION	**20XX**

TO WHICH THIS DECLARATION REFERS,COMPLIES WITH THE ESSENTIAL SAFETY REQUIREMENTS PROVIDED FOR BY DIRECTIVES 2006/42 CE, 2004/108 CE AND SUBSEQUENT MODIFICATIONS.

The person authorised to compile the Technical file is Mr.Fracca Dante established c/o HINOWA S.p.A. via Fontana 37054 Nogara –VR- Italy

Furthermore the machine complies with the directive 2000/14 CE

Type of equipment : Compact dumper	***18 All. 1***
Net installed power	*7 kW*
Notified Body n°	***ECO S.p.A. n° 0714*** *Via Mengolina,33 48018 Faenza (RA)*
Procedure applied for the conformity assessment	***Allegato VI procedure 1***
Measured sound power level	*100 dB(A)*
Guranted sound power level	*101 dB(A)*

Il Legale Rappresentante
Fracca Dante

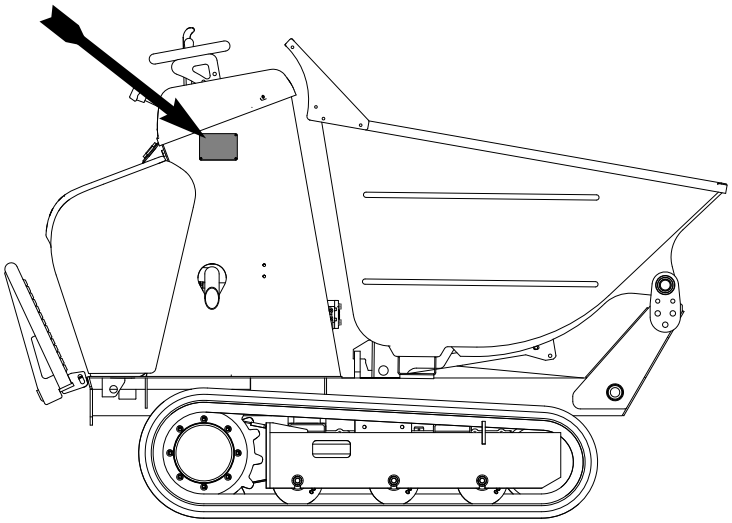
HINOWA s.p.a. - Via Fontana - 37054 NOGARA (Verona) - ITALIA - Tel. +39 (0)442 539100 - Telefax +39 (0)442 539075 - E-mail: hinowa@hinowa.it
web site: www.hinowa.com - Reg. Impr. C.C.I.A.A. 01996640239 - R.E.A. 210602 - Cod. Fisc. e Part. Iva IT 01996640239 - Cap. Soc. € 1.500.000,00 i.v.

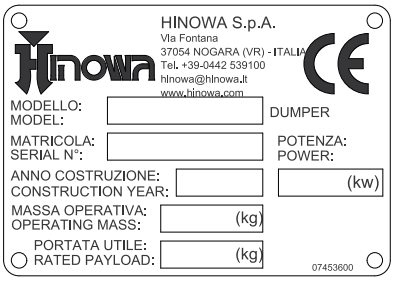
1. TECHNICAL DATA

1.1 IDENTIFICATION DATA

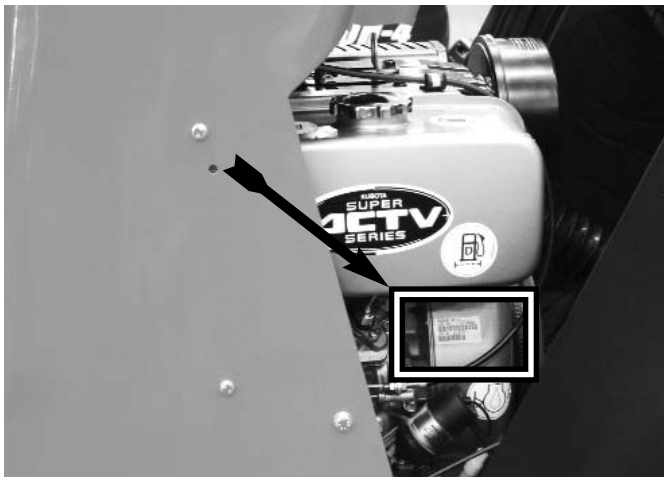
In case of request for this machines, you will have to make available the most important information, for example the serial number of the machine end the serial number of the engine.

A) CE PLATE POSITION





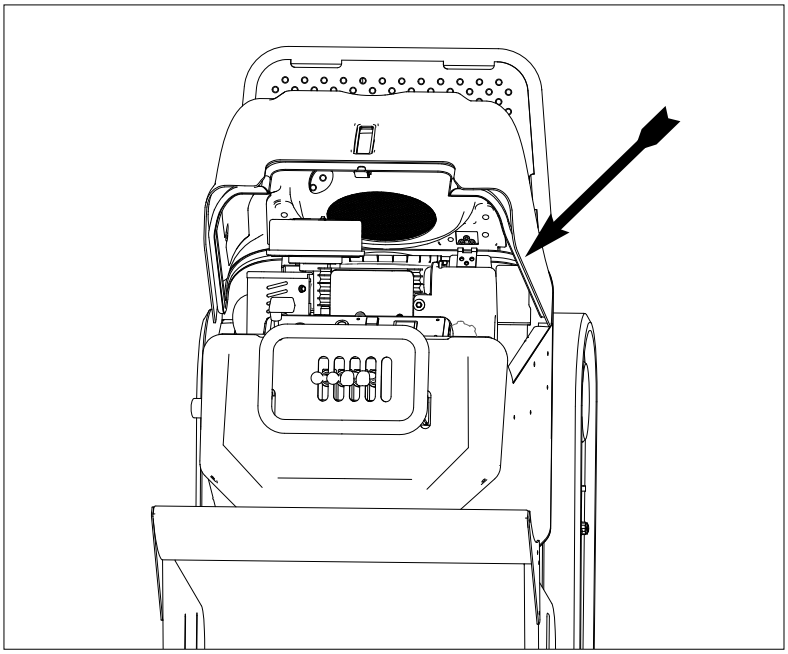
B) SERIAL NUMBER OF THE ENGINE



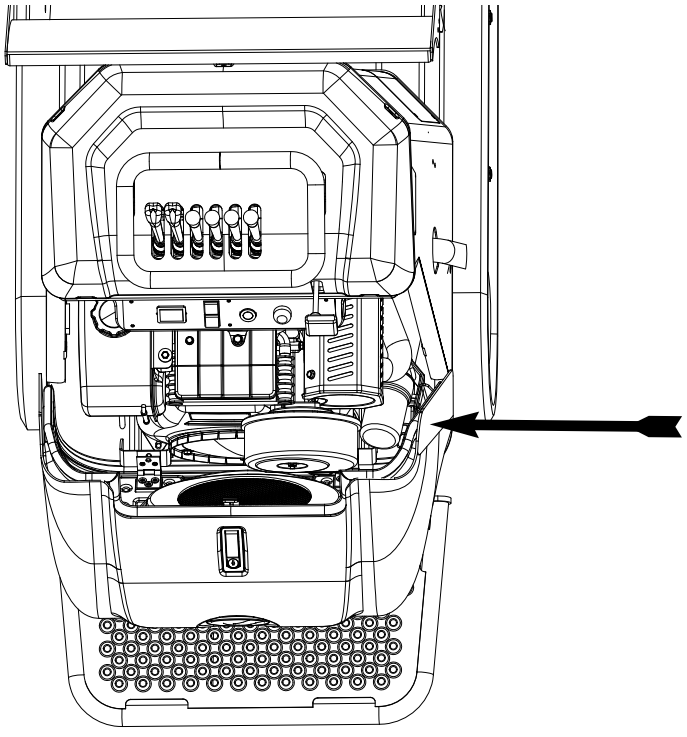
1.2 LOCALIZATION OF THE MANUAL

Keep this manual in the dedicated box in the machine**.**

1.2.1 STANDARD SKIP AND HI-TIP VERSION



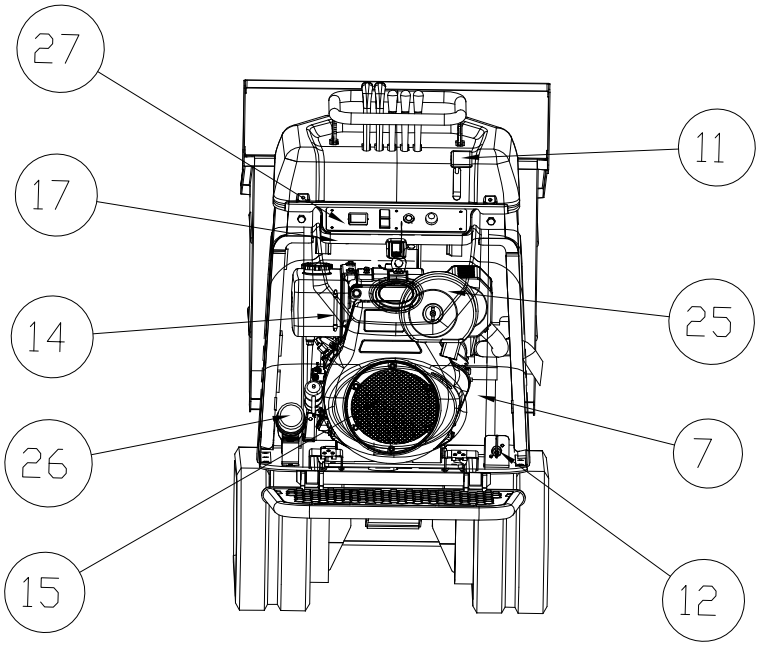
1.2.2 SELF LOADING VERSION

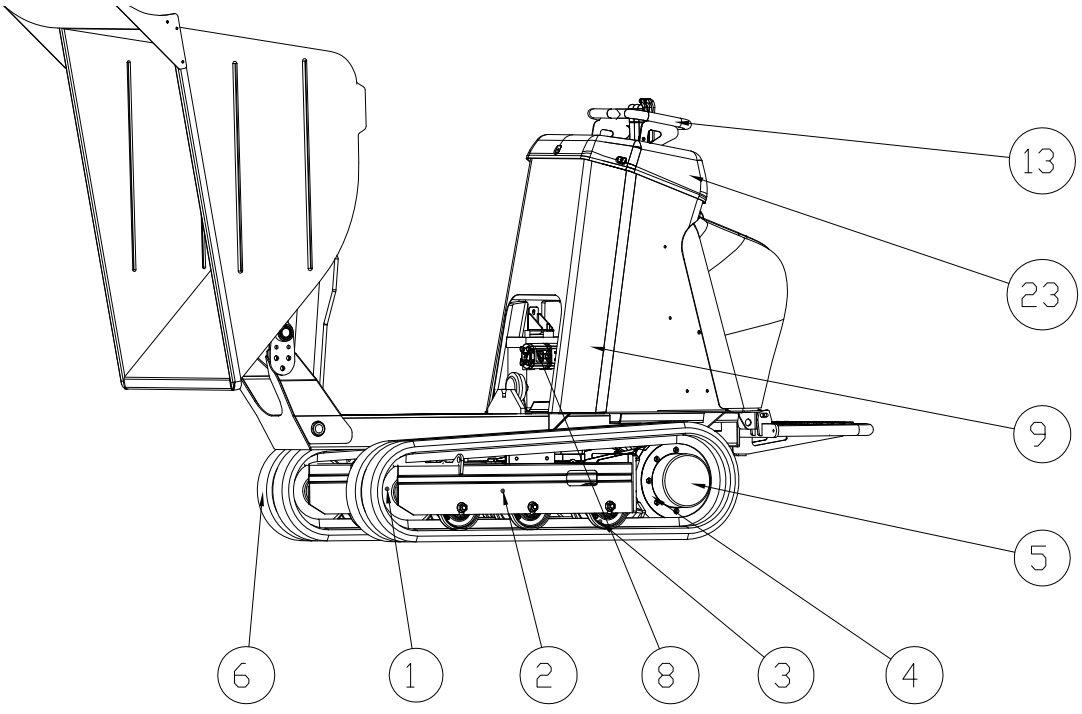


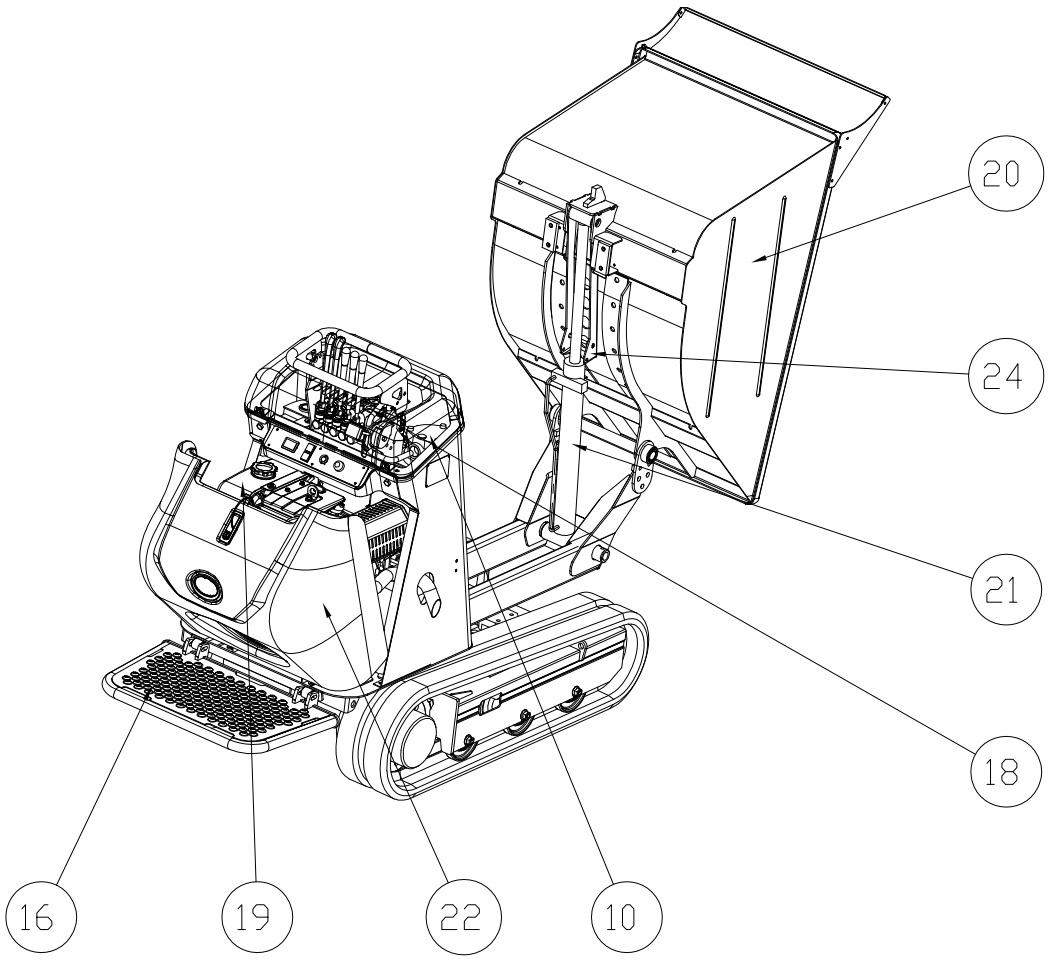
1.3 NOMENCLATURE

1.3.1 STANDAR SKIP

To facilitate the reading of safety, maintenance and operating instructions for the dumper HS701, please find the names of its important components below:



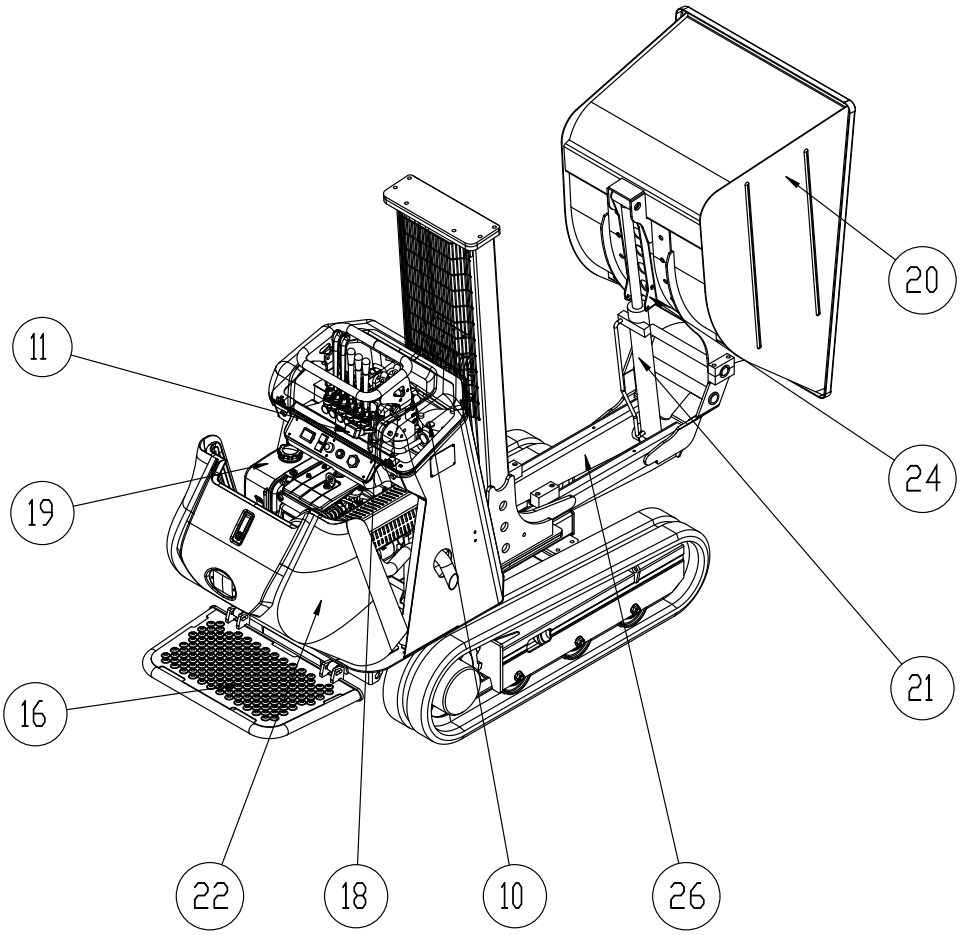


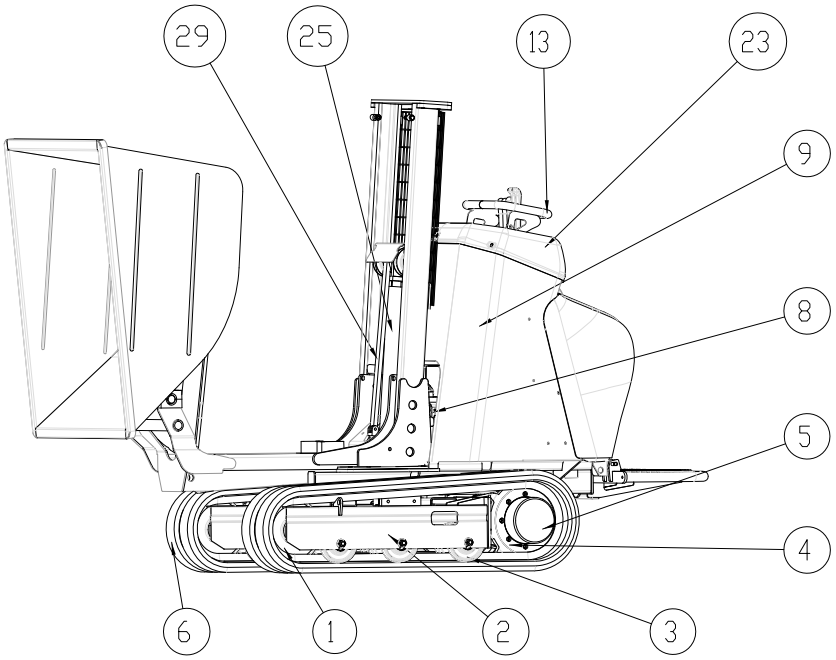


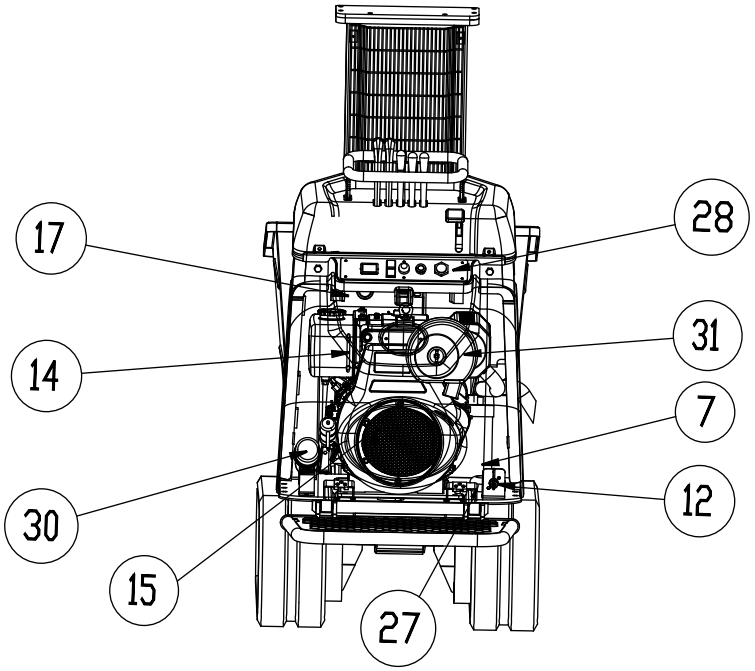
KEY

1	Idler	**15**	Engine
2	Undercarriage chassis	**16**	Platform
3	Roller	**17**	Hydraulic oil level indicator
4	Drive wheel	**18**	Hydraulic distributor
5	Drive gear	**19**	Fuel tank
6	Track	**20**	Skip
7	Battery	**21**	Skip cylinder
8	Hydraulic pump	**22**	Engine cover
9	Hydraulic oil tank	**23**	Upper cover
10	Hydraulic oil filter	**24**	Cylinder safety lock
11	Throttle	**25**	Air inlet filter
12	Battery switch	**26**	Manual housing
13	Control levers protection	**27**	Control pannel
14	Fuel level indicator		

1.3.2 HI-TIP VERSION



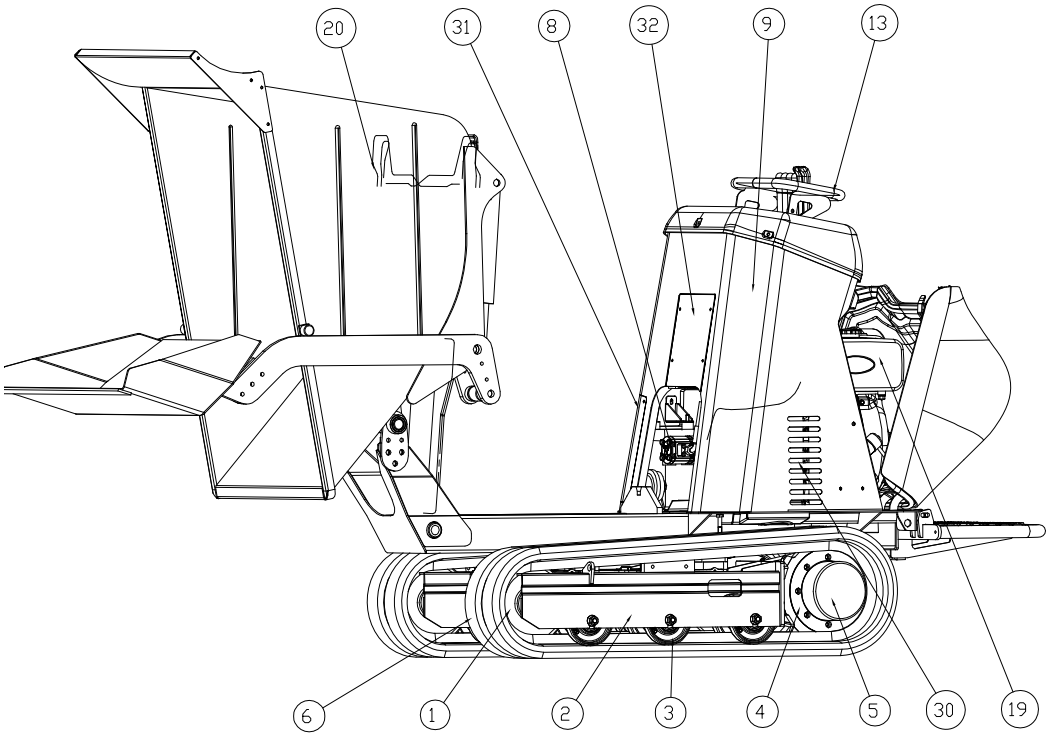


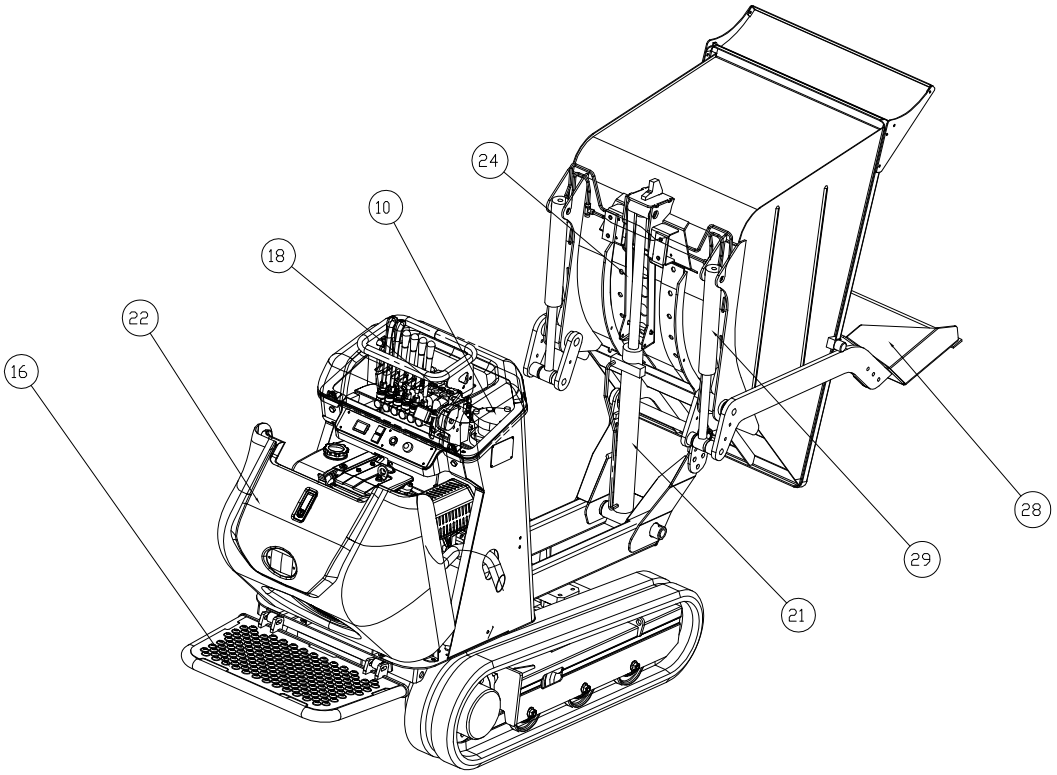


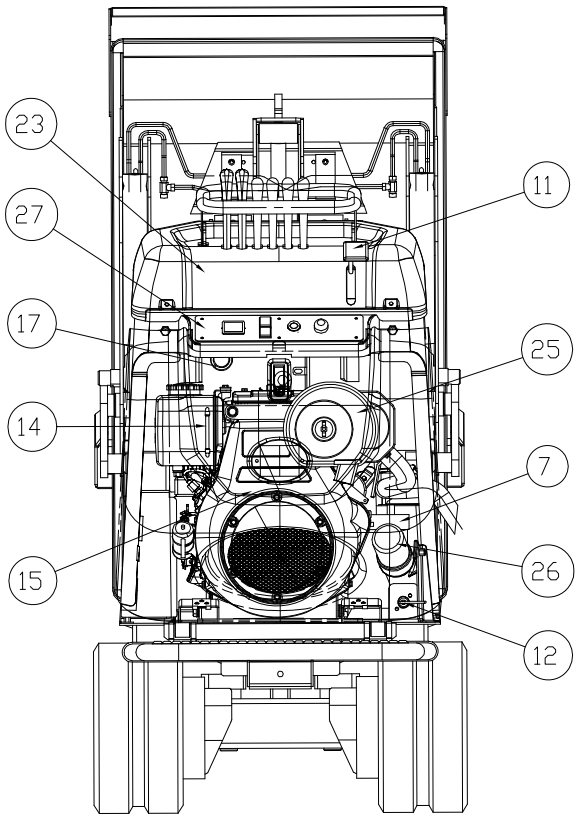
KEY

1	Idler	**17**	Hydraulic oil level indicator
2	Undercarriage chassis	**18**	Hydraulic distributor
3	Roller	**19**	Fuel tank
4	Drive wheel	**20**	Skip
5	Drive gear	**21**	Skip cylinder
6	Track	**22**	Engine cover
7	Battery	**23**	Upper cover
8	Hydraulic pump	**24**	Cylinder safety lock
9	Hydraulic oil tank	**25**	Lift cylinder
10	Hydraulic oil filter	**26**	Skip support
11	Throttle	**27**	Elettronic spirit level
12	Battery switch	**28**	Control pannel
13	Control levers protection	**29**	Chain
14	Fuel level indicator	**30**	Manual housing
15	Engine	**31**	Air inlet filter
16	Platform		

1.3.3 SELF LOADING VERSION







KEY

1	Idler	**17**	Hydraulic oil level indicator
2	Undercarriage chassis	**18**	Hydraulic distributor
3	Roller	**19**	Fuel tank
4	Drive wheel	**20**	Skip
5	Drive gear	**21**	Skip cylinder
6	Track	**22**	Engine cover
7	Battery	**23**	Upper cover
8	Hydraulic pump	**24**	Cylinder safety lock
9	Hydraulic oil tank	**25**	Air inlet filter
10	Hydraulic oil filter	**26**	Manual housing
11	Throttle	**27**	Control pannel
12	Battery switch	**28**	self loading bucket
13	Control levers protection	**29**	self loadind cylinder
14	Fuel level indicator	**30**	cooling system
15	Engine	**31**	Bended for closure battery compartmen
16	Platform	**32**	Plate for closure hydraulic pipe

1.4 INFORMATION ON SAFETY

To avoid accidents and injuries, please read carefully and understand the instructions and precautions herein before using the machine and carry out any maintenance work.

This is the caution symbol. When you see this symbol on the machine or in this manual, please be careful because there is the potential DANGER of personal injuries. Please follow all precautions and instructions.

The words **DANGER** and **CAUTION** are used in combination with the caution sign.

The word **DANGER** indicates any potentially DANGEROUS situations that may result in serious personal injuries or death if the DANGER is not avoided. Also you can cause serious damages to the machine.

DANGER

The word **CAUTION** indicates any potentially DANGEROUS situations that, if not avoided, may result in damages or light personal injuries. This wording can also be used to indicate dangers that may result in damages only to the machine.

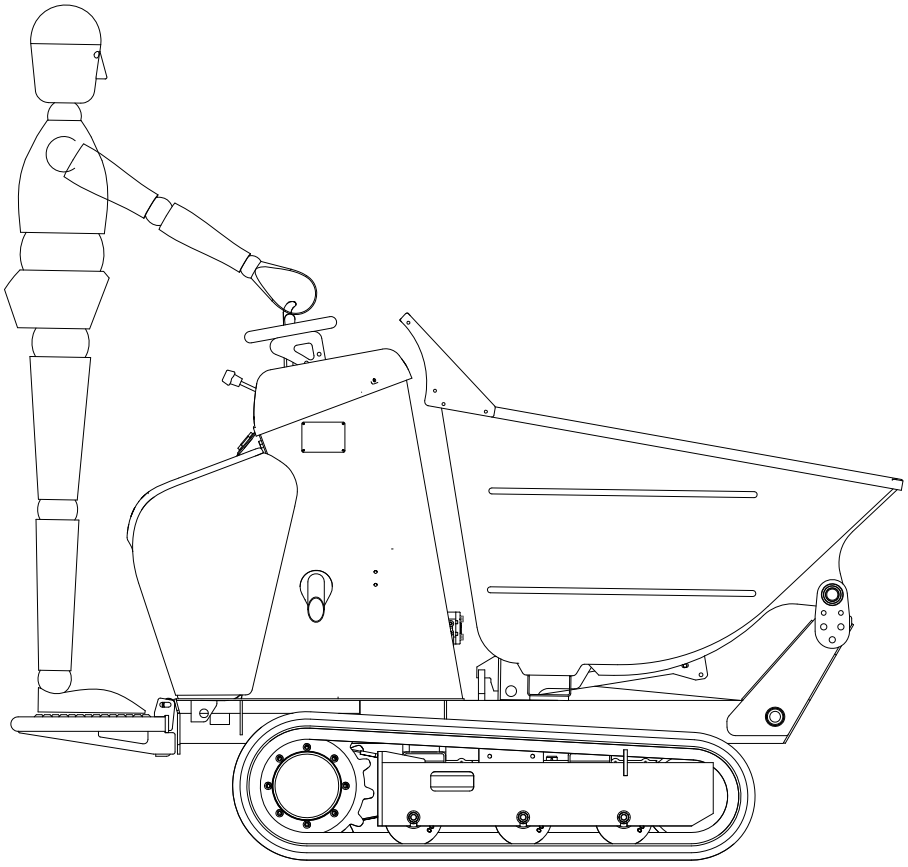
CAUTION

This message is used to indicate situations that, unless appropriate actions are taken, may result in a shorter service life of the machine.

IMPORTANT

1.5 CONTROLS STATION

The control station is located in the back of the machine with the operator standing on the platform firmly anchored to the control levers protection.



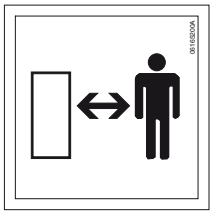
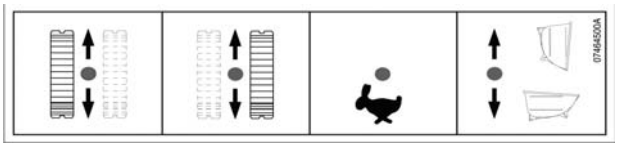
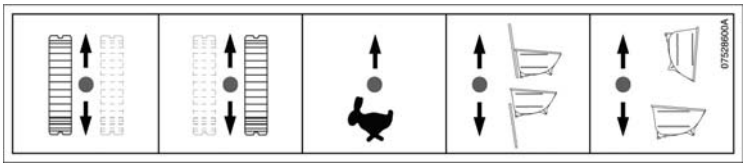
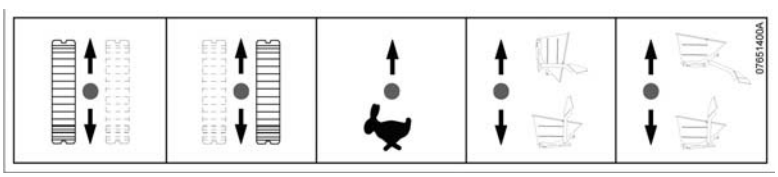
The indications "front-back" or "right-left" are intend from the point of view of the operator in the control station.

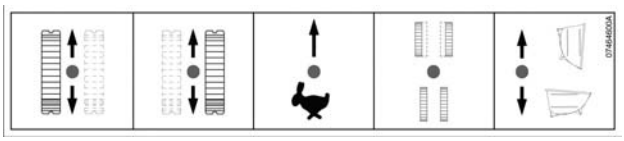
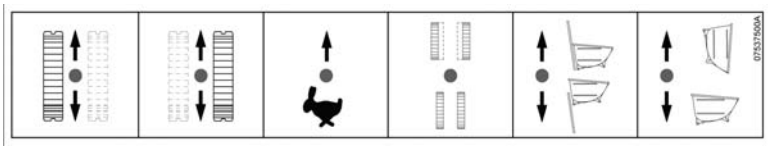
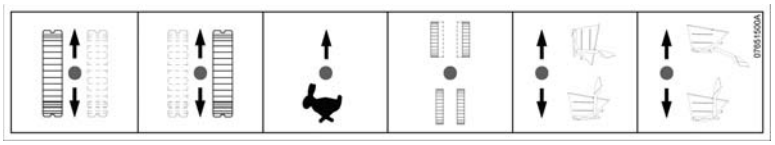
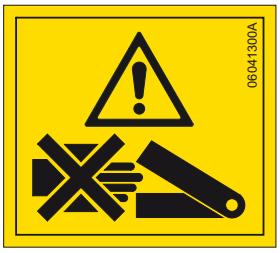
DANGER

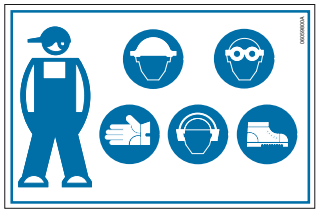
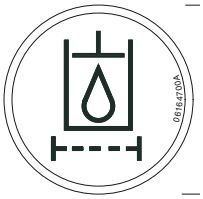
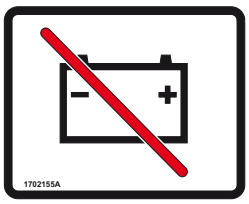
THE OPERATOR MUST OPERATE THE MACHINE ONLY FROM THE CONTROL STATION.
THE MACHINE WAS MADE AS SECURE AS POSSIBLE ALSO TAKING INTO ACCOUNT THE POSSIBILITY OF OPERATING IT OFF-ROAD; HOWEVER, IF THE OPERATOR DOES NOT OPERATE THE MACHINE FROM THE CONTROL STATION, DANGERS OF VARIOUS NATURE MIGHT ARISE WHEN WORKING, INCLUDING THE DANGER OF CRUSHING THE LOWER LIMBS WITH THE TRACKS.

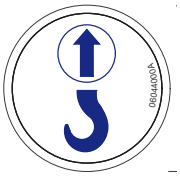
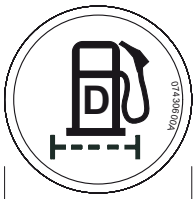
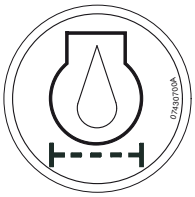
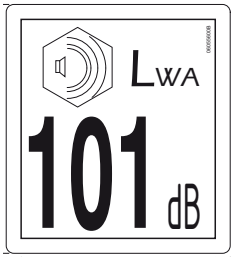
1.6 PICTOGRAMS

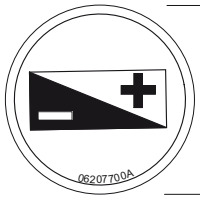
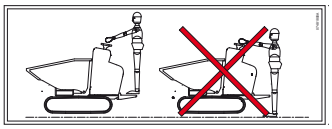
The following list show all the stickers used for the possible version of the dumper ; it's possible who some stickers are not present in a specific version of dumper

Pos.	Name	Description	Picture
06040900	REFER TO MANUAL	Please read carefully this manual before using the machine or performing any maintenance operations.	
06165200	MACHINE IN MOTION	Keep away from the machine in motion.	
06040500	DRIVING DIRECTION	This sticker indicates the recommended driving direction, so that impact with any obstacle can be muffled by the damper unit connected to the idler.	
07464500	DISTRIBUTOR CONTROLS FIXED UNDERCARRIAGE VERS.		
07528600	DISTRIBUTOR CONTROLS FIXED UNDERCARRIAGE VERS.		
07651400	DISTRIBUTOR CONTROLS FIXED UNDERCARRIAGE VERS.		

Pos.	Name	Description	Picture
07464600	DISTRIBUTOR CONTROLS EXTENDABLE UNDERCARRIAGE VERS.		
07537500	DISTRIBUTOR CONTROLS EXTENDABLE UNDERCARRIAGE VERS.		
07651500	DISTRIBUTOR CONTROLS EXTENDABLE UNDERCARRIAGE VERS.		
06041300	CRUSHING HAZARD	Indicates areas where there is a danger of crushing upper limbs for the operator.	
07397600	THROTTLE LEVER	Indicates the positions of the throttle lever to get the maximum or minimum engine speed.	
07431000	HYDRAULIC OIL	INDICATES OIL FILLING.	

Pos.	Name	Description	Picture
06059800	PROTECTIVE CLOTHING AND EQUIPMENT	When using the machine or during maintenance work, wear PPE suitable for the operations performed.	
06041200	CRUSHING HAZARD	Indicates areas where there is a DANGER of crushing for the lower limbs of the operator.	
06164700	HYDRAULIC OIL FILTER	Indicates the position of the hydraulic oil filter.	
06165000	HYDRAULIC OIL LEVEL INDICATOR	Indicates the hydraulic oil level.	
1702155	BATTERY SWITCH	Indicates the position of the Battery switch.	
06060000	ENGINE OIL LEVEL	Indicates the position of the dipstick to check the engine oil level.	
06164600	ENGINE AIR FILTER	Indicates the position of the engine air filter.	

Pos.	Name	Description	Picture
06044000	LIFTING POINTS	Indicates the points to be used to lift the machine.	
06056300	HOT SURFACE	Indicates a hot surface or area not to be touched.	
06043900	DIESEL	Indicates the type of fuel for refueling.	
07430600	DIESEL FILTER	Indicates the position of the diesel filter.	
07430700	ENGINE OIL FILTER	Indicates the position of the engine oil filter.	
06055600	GUARANTEED SOUND LEVEL	Indicates the guaranteed sound level of the dumper.	

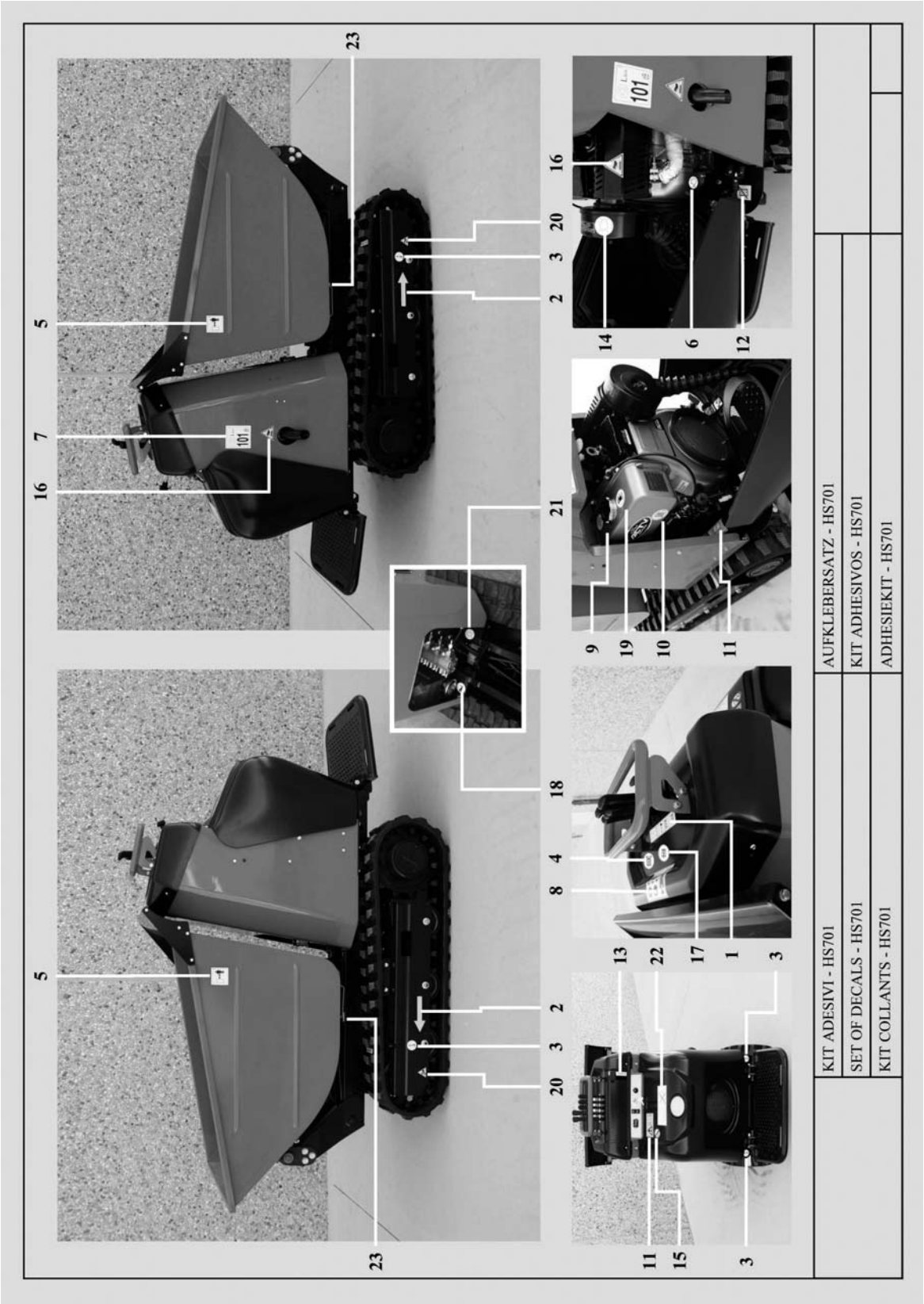
Pos.	Name	Description	Picture
06207700	BATTERY	Indicates the position of the battery.	
06169900	PROHIBITION OF PERFORMING MAINTENANCE WORK WITH MECHANICAL EQUIPMENT IN MOTION	Indicates the prohibition of performing maintenance work with mechanical equipment in motion.	
07481800	USE ONLY OPERATING FROM CONTROL STATION	Indicates the only position allowed for operate the machine.	
07538000	MAXIMUM OPERATIONAL SLOPE	Indicates the maximum slope for operate with a elevate skip without the buzzer rings	

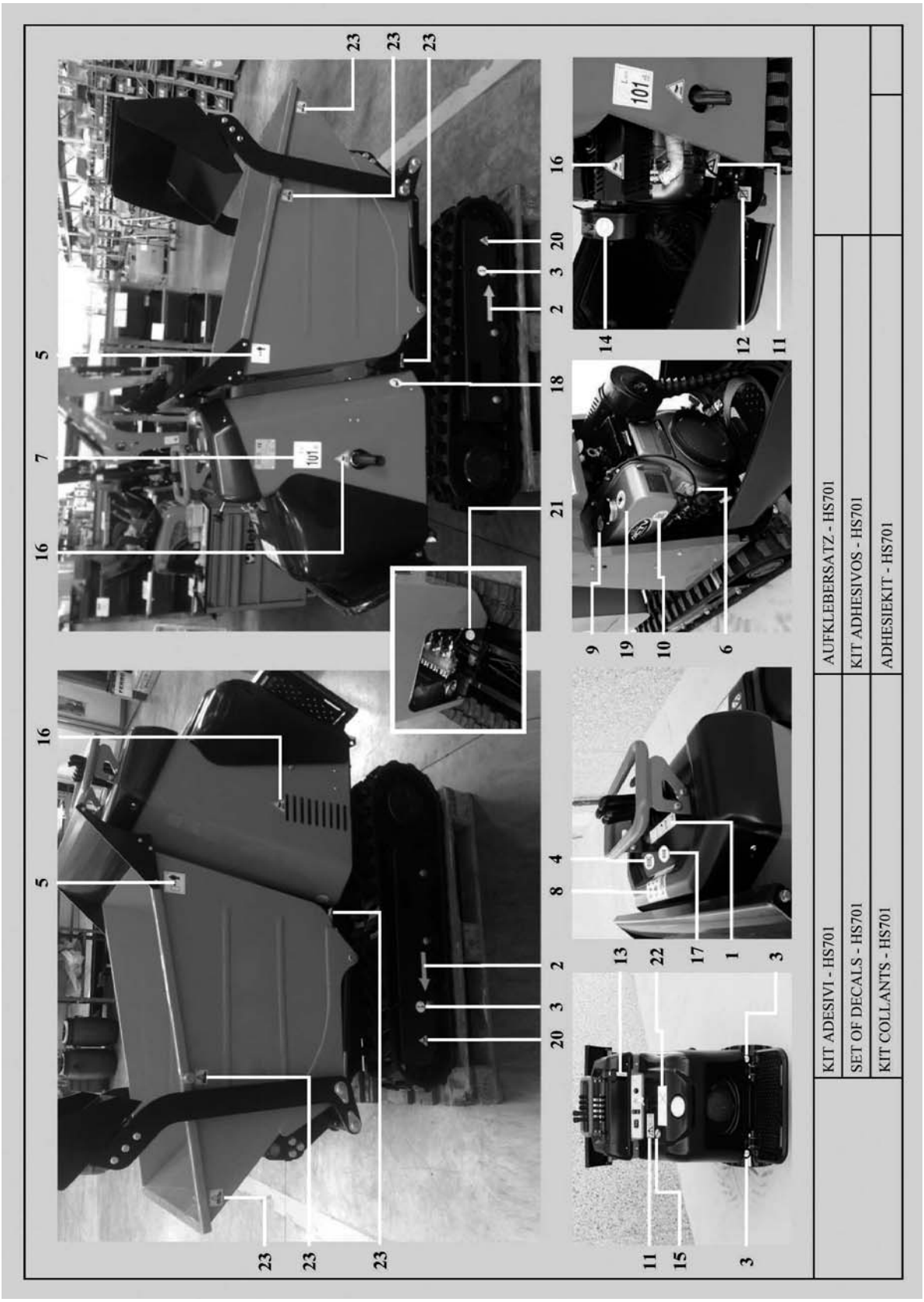
DANGER

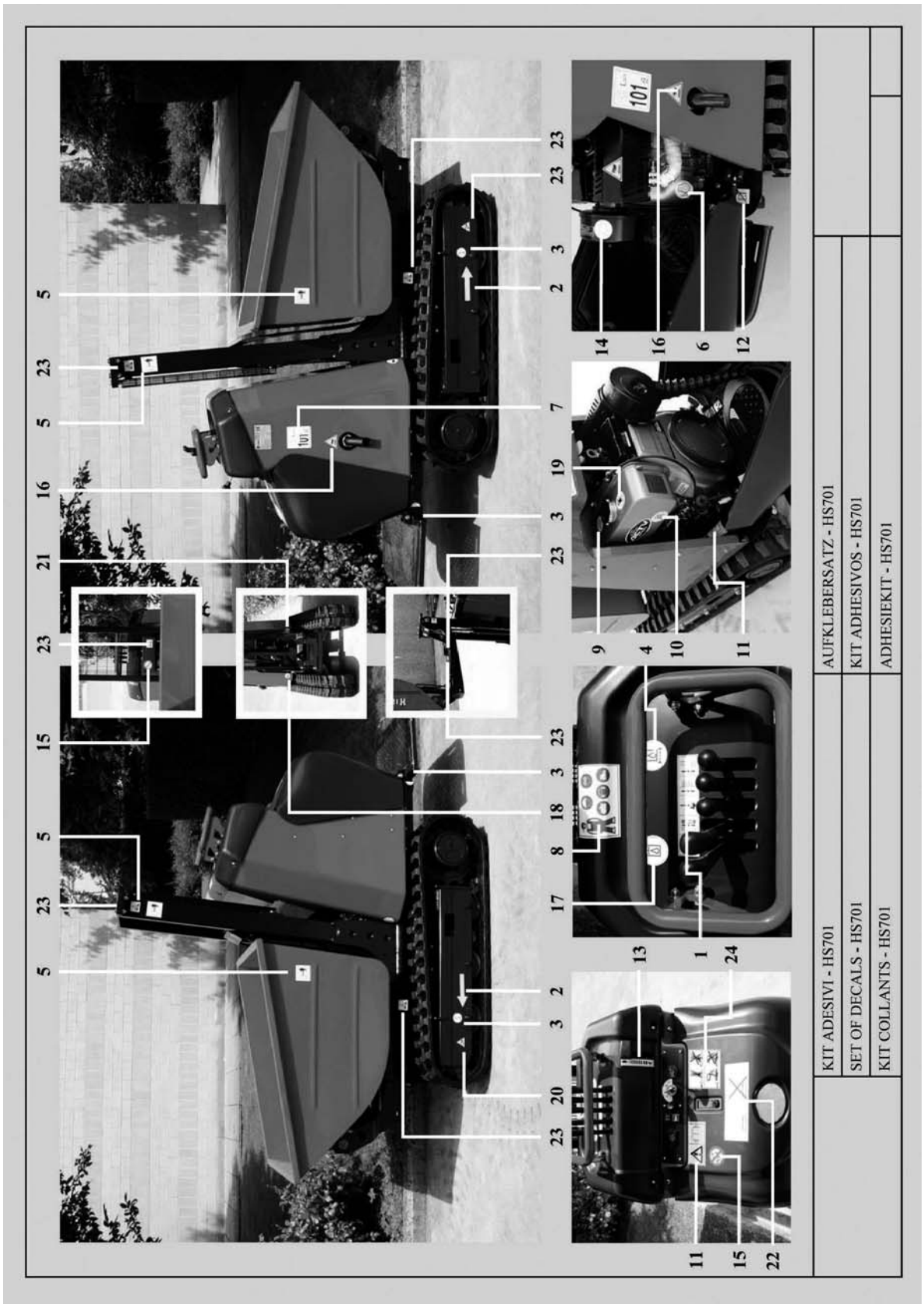
REPLACE STICKERS AND LABELS WHEN DETERIORATED.
FAILURE TO COMPLY WITH ANY REQUIREMENTS DUE TO DETERIORATION, LOSS OR FAILURE TO READ ANY SAFETY STICKER MAY RESULT IN SERIOUS ACCIDENTS.

MAKES SURE THAT ANY NEW COMPONENTS OR PARTS REPLACED MUST HAVE THE CORRECT SAFETY LABELS.

1.7 PICTOGRAMS' POSITION




KIT ADESIVI - HS701
SET OF DECALS - HS701
KIT COLLANTS - HS701
AUFKLEBERSATZ - HS701
KIT ADHESIVOS - HS701
ADHESIEKIT - HS701


KIT ADESIVI - HS701
SET OF DECALS - HS701
KIT COLLANTS - HS701
AUFKLEBERSATZ - HS701
KIT ADHESIVOS - HS701
ADHESIEKIT - HS701

2. SAFETY AND ACCIDENT PREVENTION

2.1 PLEASE READ INSTRUCTIONS CAREFULLY

DANGER

Please read carefully and make sure to understand all safety instructions, precautions and requirements herein before performing any operations on the machine.

Do not allow any personnel who is not authorized or specifically trained, to use the machine or perform maintenance work.

2.2 CLOTHING AND PROTECTIVE EQUIPMENT

Avoid wearing large clothes, rings, watches or anything that could get tangled with the equipment in motion. Avoid wearing clothes with oil or fuel stains as they are easily flammable.
While operating the machine or performing maintenance work, please wear all PPE required according to the work carried out.

2.3 NON-AUTHORIZED MODIFICATIONS

It is strictly forbidden to implement modifications to the machine that could affect its safety and operations. The manufactures is not liable for any damage or accident caused by non authorized modifications.

2.4 SAFETY VALVES

It is strictly forbidden to alter and/or tamper the safety valves of the hydraulic system. The manufacturer is not liable for any damages to persons, objects or the machine in the event that the standard settings of the hydraulic valves are tampered with.

2.5 SAFETY AND PROTECTIVE DEVICE

DANGER

Before starting the dumper, all safety devices must be installed appropriately and the operator must make sure they are working. It is forbidden to manipulate or remove the safety devices.
The safety devices can be removed or opened only if all of the following checks have been carried out:

- the dumper is stopped;
- engine off;
- after have stopped the engine take off the key;
- block the crawler of the dumper with chocks;
- lock the skip in horizontal position or in the tipped position with an lifting device supporting the weight to prevent the fall.

2.5.1 SKIP CYLINDER SAFETY LOCK

Turning and positioning the safety lock of the skip cylinder it's possible to lock the dumper skip in tipping position and avoid to involuntary closure of the skip.

DANGER

Use the safety lock only with the skip empty.

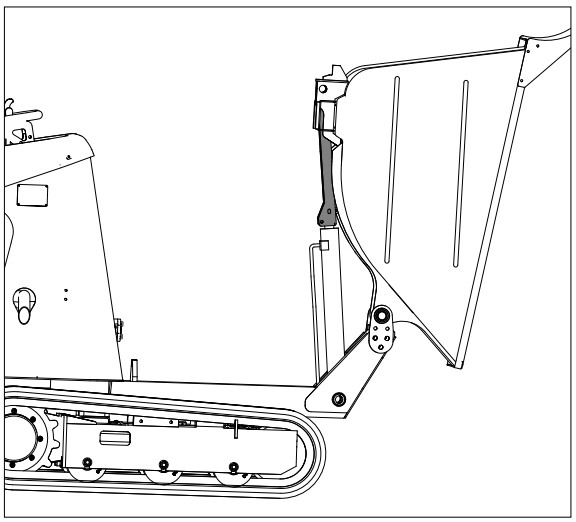
DANGER

If it's necessary to perform services or other activities with the skip in tipped position, you must use the safety lock to avoid the involuntary closure of the skip.

DANGER

Before drawing close to the machine to engage or disengage the safety stop of the skip, make sure that:

- the engine is off;
- no people are near or on the control position**.**



2.5.2 SAFETY LOCK WITH SKIP SUPPORT IN REISED POSITION

ELEVATE COMPLETLY THE SKIP SUPPORT AND BLOCK IT USING TWO SCREWS M8X50 AND TWO SELF LOCKING NUTS AS SHOWN IN THE FOLLOWING PICTURE

DANGER

Use the safety lock only with the skip empty.

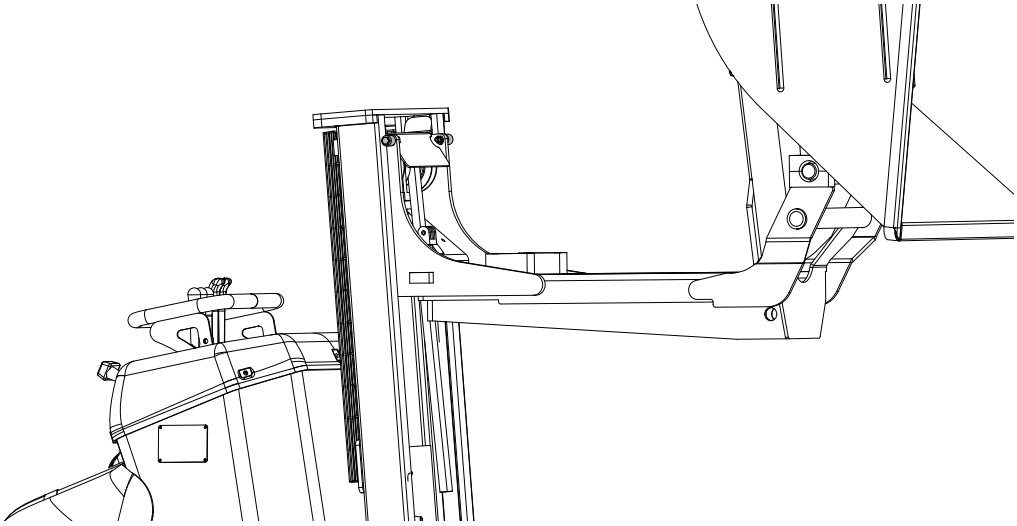
DANGER

If it's necessary to perform services or other activities with the skip in tipped position, you must use the safety lock to avoid the involuntary closure of the skip

DANGER

Before drawing close to the machine to engage or disengage the safety stop of the skip, make sure that:

- the engine is off;
- no people are near or on the control position**.**



2.5.3 BUZZER INDICATION

On the minidumper there is a buzzer, if it rings there is a risk of rollover

DANGER

If the beeper is activated the only movement admitted is lower the skip.
All the other movements are forbidden until the beeper stop to ring.

2.5.4 EMERGENCY LEVER TO SWITCH-OFF ENGINE

In the event of a failure of the electrical system, the engine can be switched off with the aid of the emergency lever.

DANGER

If the need arises to switch off the engine with this lever due to an emergency, proceed with the utmost caution, avoiding to touch the rotary or overheated components.

EMERGENCY LEVER

3. PRECAUTIONS TO BE ADOPTED BEFORE STARTING THE ENGINE

3.1 SAFETY IN THE WORKPLACE

DANGER

Before starting the engine, carefully check the load capacity and the conditions of the terrain on which to operate to find out any anomalies that may result in DANGERS for the process and cause instability to the machine.
Control the working area to verify there isn't obstacles, the terrain can support the weight of the full load dumper, the slopes are under the maximum value for the dumper (see the paragrafh with the tecnical date), visibility and illumination are adeguate in every point.
Always pay attention to persons entering the operational range of the machine. Adopt proper signaling to warn people before moving the machine, do not allow anyone to get close to the machine when working.

DANGER

The machine is NOT equipped with a rollover protective structure or protection against falling objects.
Before you start operating the machine, make sure that there are no risks of rollover or falling object that might, directly or indirectly, affect the operator.

3.1.1 NIGHT-TIME USE

DANGER

It's forbidden to use the dumper with the darkness or when the visibility is inadequate for the safety use of the dumper.

3.1.2 UNDERGROUND USE

DANGER

It is explicitly FORBIDDEN to use the machine underground, even if the site is free of an explosion risk.

3.1.3 USE IN AN EXPLOSIVE ATMOSPHERE

DANGER

It is FORBIDDEN to use the machine in sites that entail a risk of explosive atmosphere.

3.2 FIRE PREVENTION

CAUTION

Keep the engine compartment clean, remove any fragments of wood, paper and other flammable products, carefully clean any leakage of fuel, oil or flammable products, as it may result in risk of fire. Refrain from smoking or producing sparks in refueling or storage areas.
Do not overfill the tank. Make sure the cap is hermetically and safely closed after refueling.
Make sure that there are no fuel leaks during refueling. Oil vapors or leaks may ignite.
Make sure that the area is dry before starting the engine.
The muffler gets hot during operations and remains hot also after turning the engine off. Avoid touching the muffler or the parts of the hood close to it when the muffler is hot. Allow engine to cool down before operating the dumper to avoid risks of burns.

3.3 PREVENTIONS AGAINST EXHAUST FUMES

If you need to operate indoor, make sure that there is adequate ventilation. If you are unsure that ventilation is sufficient, use an extension to evacuate the exhaust fumes. Exhaust fumes may cause death.

3.4 RISK OF ELECTROCUTION

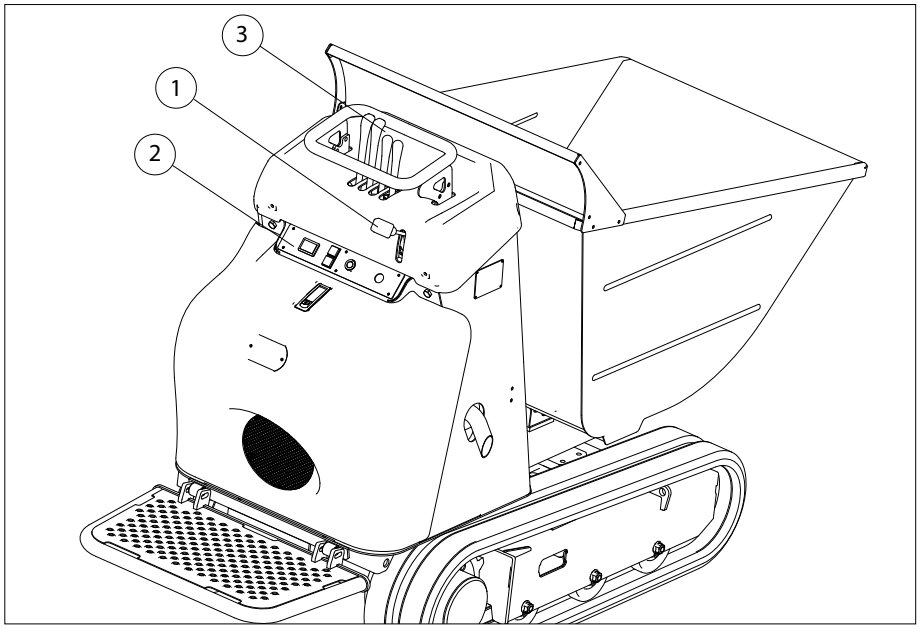
If the machine must be used near electric power lines, the user must remain at a suitable distance from the latter. The table below supplies the values relating to the minimum distance from electric power lines depending on the type of voltage.

SAFETY DISTANCE FROM POWER LINES		
LINE RATED VOLTAGE		SAFETY DISTANCE (METRES)
FROM	TO	
0 V	300 V	5
300 V	50 KV	5
50 KV	200 KV	5
200 KV	350 KV	6,1
350 KV	500 KV	7,6
500 KV	750 KV	10,7
750 KV	1000 KV	13,7

DANGER

Before starting operation, examine the work area, taking note of overhead power lines, moving machinery, such as overhead cranes and road, rail and building equipment.

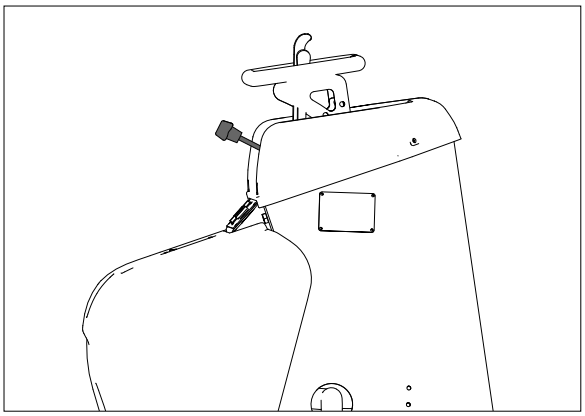
4. CONTROL STATION, CONTROL AND OPERATING INSTRUCTIONS



1. Throttle
2. Control pannel
3. Hydraulic valve controls

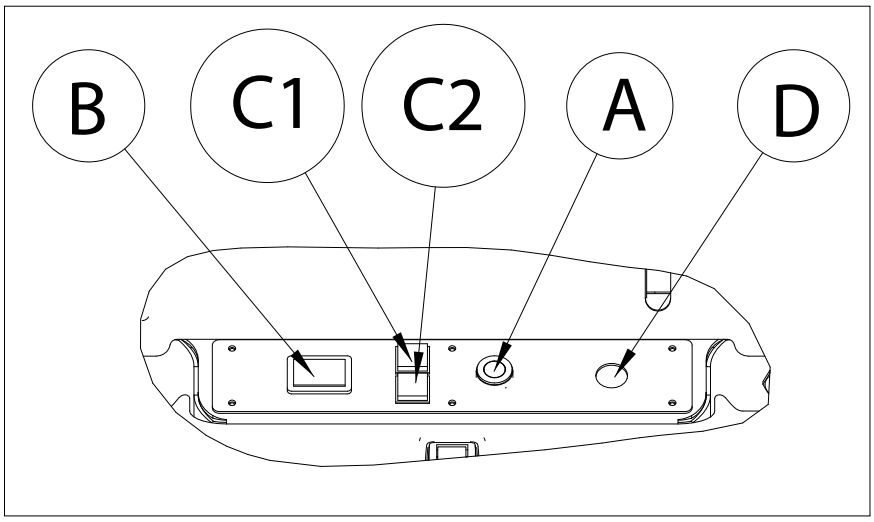
4.1 THROTTLE

For increase the revolution of the engine move down the lever, for decrease the revolution move the lever up.



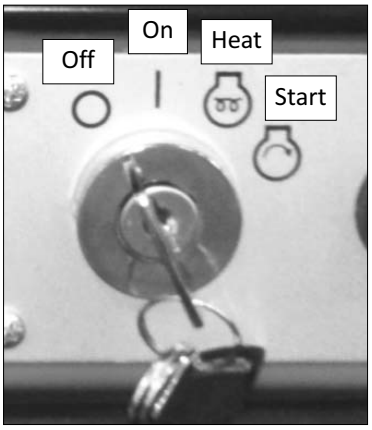
4.2 CONTROL PANEL

4.2.1 STANDARD AND SELF LOADING VERSION



A - ELECTRICAL SYSTEM AND ENGINE START/STOP SWITCH

- HEAT:
  Glow plugs preheating
- OFF:
  No circuit under current (key can be removed).
- ON:
  Ready to start engine;
  Functioning of the signaling and control instruments;
  Various components under voltage.
- START:
  Starting the engine.
  The key automatically returns to ON position.



B - COUNTER

The counter is used for totalize the operation hours of the dumper.

C.1 LIGHT (RED): IRREGULAR OPERATING OF THE BATTERY CHARGE SYSTEM

If everything is normal, the light turns on when you turn the key of the electric system switch and it turns off as soon as you start the engine.

Irregularities may be as follows:
- the light remains on while the engine is running: check the alternator and the alternator belt tension;
- the light remains off both when engine is running and when is off: check the light of the indicator and its protection fuse.

If the causes of the inconvenient cannot be identified, please contact Hinowa customer service.

C.2 LIGHT (RED): OIL ENGINE LOW PRESSURE

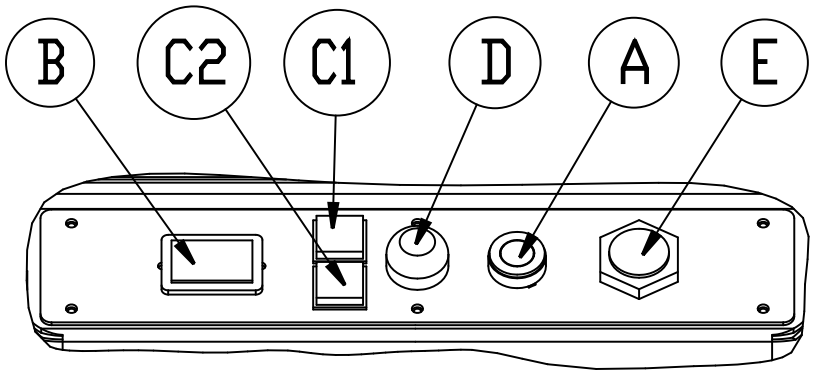
The light indicates low pressure of the engine oil, which can be due to:
- engine idle speed is too low;
- insufficient oil level;
- use of oil whose viscosity is not suitable for seasonal temperature;
- malfunctioning of the circuit;
- wrong direction of rotation.

In case of abnormal ignition, switch off the engine and please contact Hinowa customer service.

D - HORN SWITCH

If you use this switch you activate the horn.

4.2.2 HI-TIP VERSION



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- HEAT:
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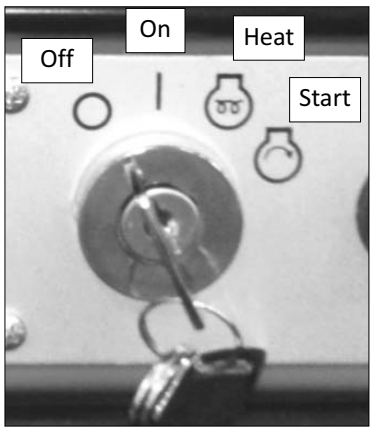
  Functioning of the signaling and control instruments;
  Various components under voltage.
- START:
  Starting the engine.
  The key automatically returns to ON position.



B - COUNTER

The counter is used for totalize the operation hours of the dumper.

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- the light remains on while the engine is running: check the alternator and the alternator belt tension;
- the light remains off both when engine is running and when is off: check the light of the indicator and its protection fuse.

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- engine idle speed is too low;
- insufficient oil level;
- use of oil whose viscosity is not suitable for seasonal temperature;
- malfunctioning of the circuit;
- wrong direction of rotation.

In case of abnormal ignition, switch off the engine and please contact Hinowa customer service.

D - HORN SWITCH

If you use this switch you activate the horn.

E- ACOUSTUC ALLARM

The beeper ring to inform the operator of the risk of tilting for the dumper.

DANGER

If the beeper is activated the only movement admitted is lower the skip.
All the other movements are forbidden until the beeper stop to ring.

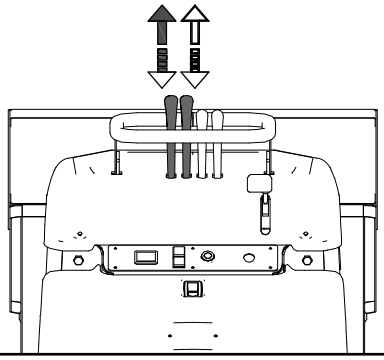
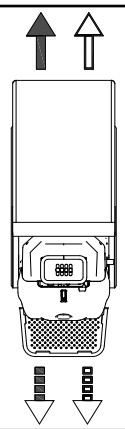
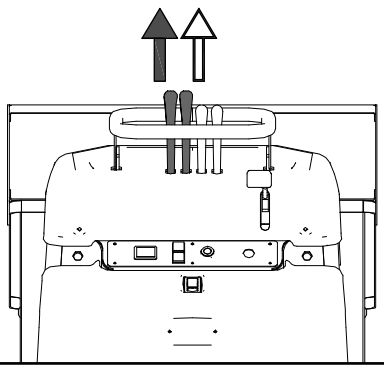
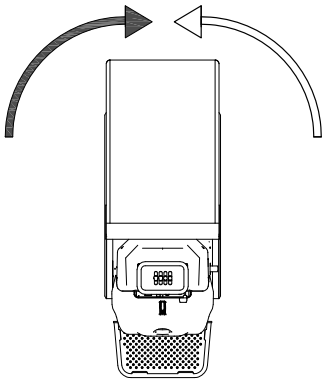
4.3 HYDRAULIC VALVE CONTROLS

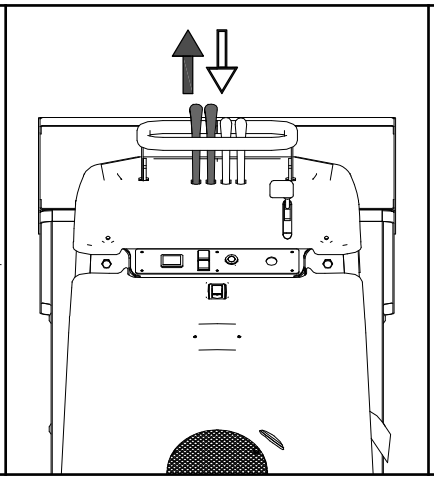
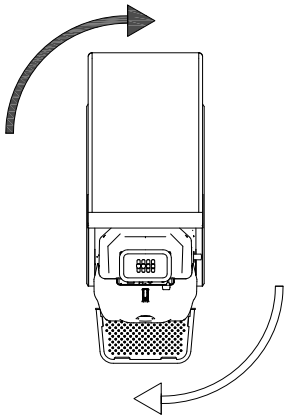
When every lever is released, with exception of the second speed , the levers returns automatically in central position and the movement is stopped.

4.3.1 OPERATING THE UNDERCARRIAGE - FIXED VERSION (THE SAME OPERATIONS CAN BE REPEATED ALSO WITH THE EXTENDABLE UNDERCARRIAGE VERSION)

THIS INFORMATION IS THE SAME FOR ALL VERSION, FOR EXAMPLE THE PHOTO SHOWN THE STANDARD SKIP VERSION; THE MOVEMENT LEVERS DESCIBED IN THIS PARAGRAPH ARE ALWAYS THE FIRST AND THE SECOND FROM THE LEFT OF THE CONTROL STATION

The movement levers allow the driver to drive the dumper forward, backward and at a curb. The left movement lever controls the left track and the right movement lever controls the right track.

Driving straight forward • Move both levers forward to drive straight forward. • Move both levers back to drive in reverse.		
Steering to the right and to the left • Move only the left lever forward to steer to the right. • Move only the right lever forward to steer to the left.		

Steering on your own axis Move one lever forward and the other lever backward.		

4.3.2 UNDERCARRIAGE EXTENSION

- Lever forward, undercarriage extended
- Lever backward, undercarriage closed.

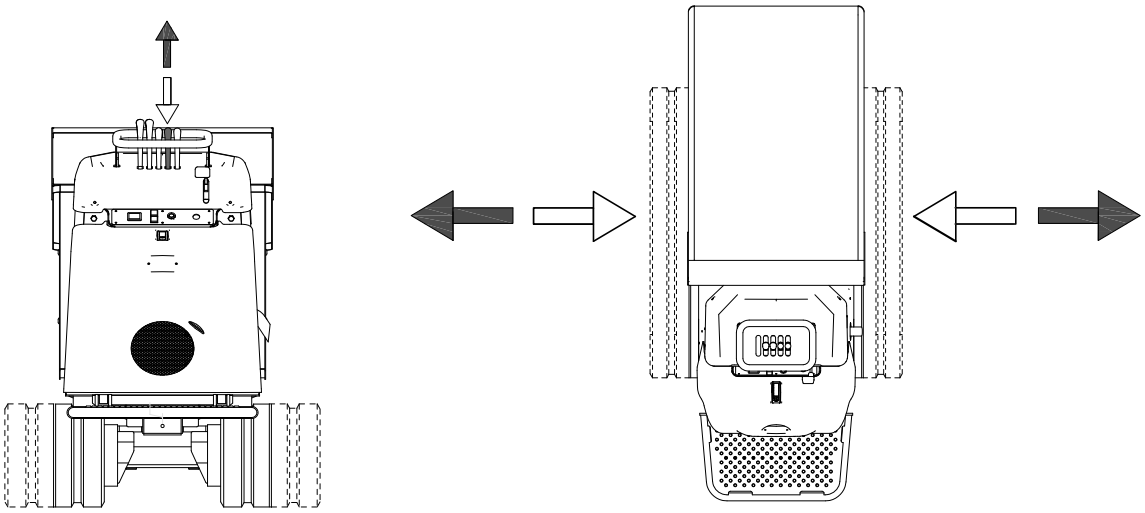
IMPORTANT

It's always suggested to operate the undercarriage widening system while tracking. This reduce friction and wear on the dumper parts and facilitate the undercarriage movement.

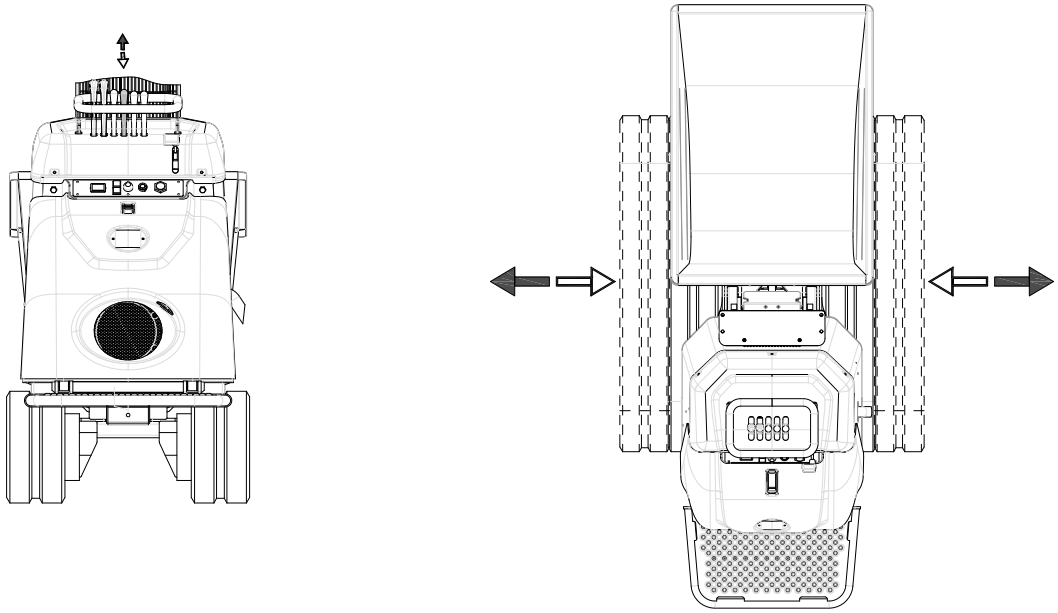
DANGER

Close the undercarriage ONLY on a flat surface.
The undercarriage closure reduce stability performance of the machine.
To operate it on a slope can create tilting effects and risk for the operator.

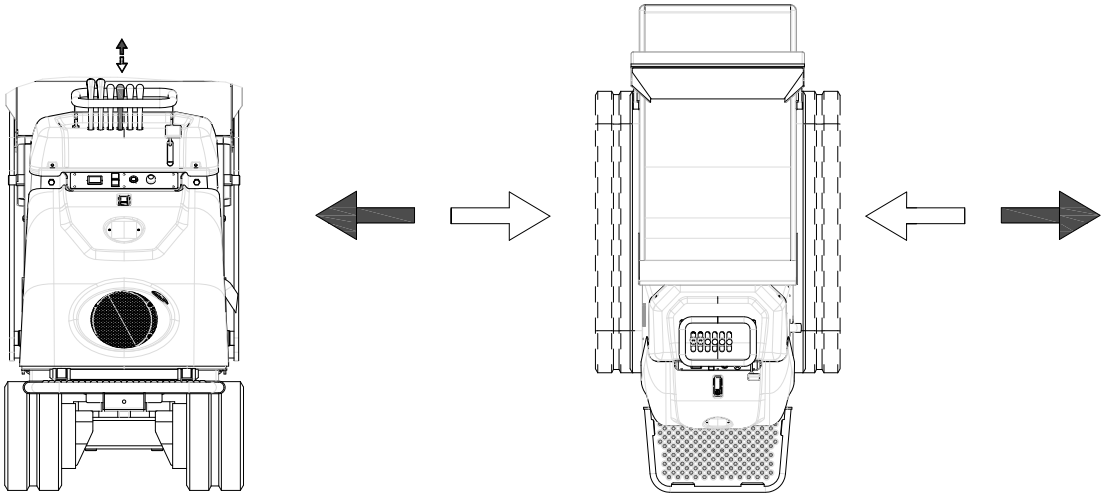
4.3.2.1 STANDARD SKIP VERSION



4.3.2.2 HI-TIP VERSION



4.3.2.3 SELF LOADING VERSION

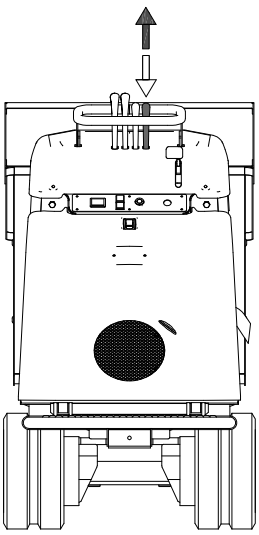


4.3.3 OPERATING THE SKIP

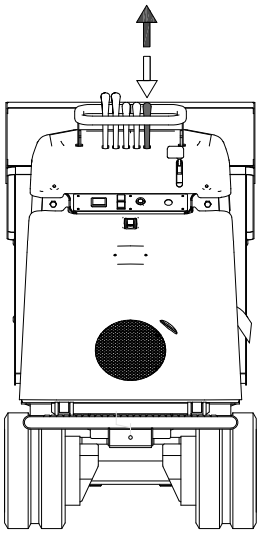
4.3.3.1 STANDARD SKIP VERSION

To unload the material inside the skip and then close it, move the lever as indicated in the picture.

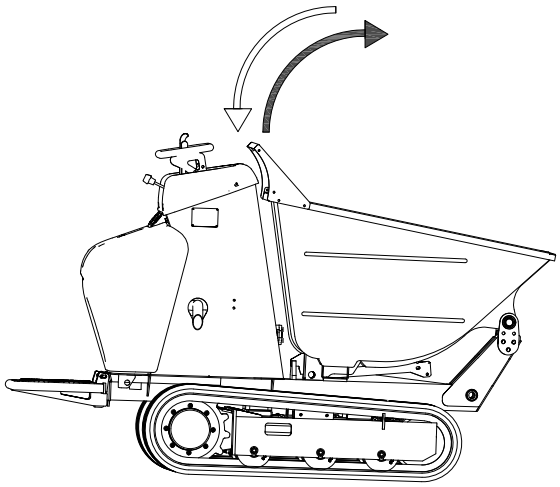
Apply this command only when the machine is stationary on a flat ground.



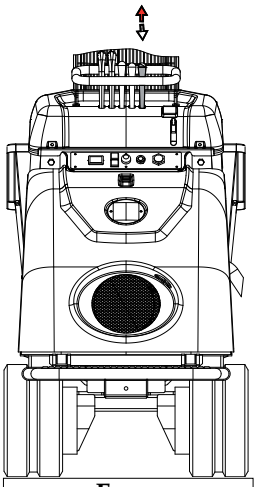
FIXED UNDERCARRIAGE



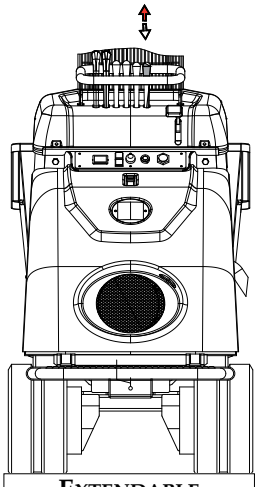
EXTENDABLE UNDERCARRIAGE



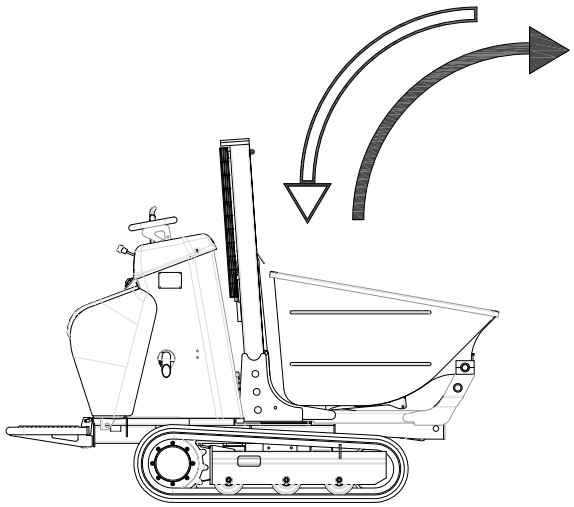
4.3.3.2 HI -TIP VERSION



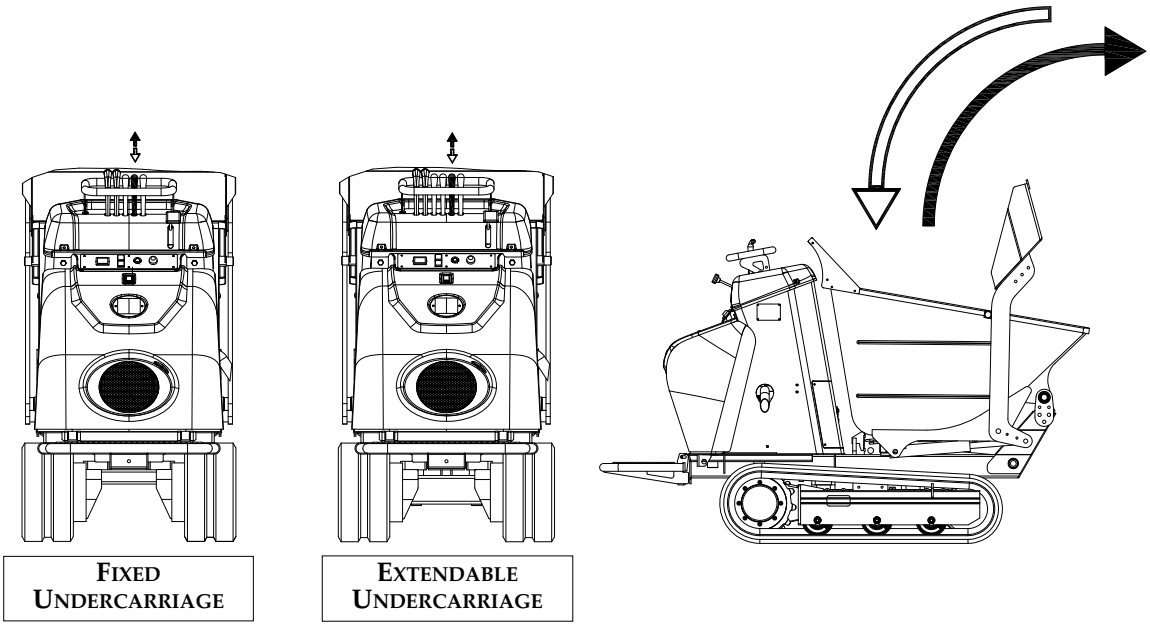
FIXED UNDERCARRIAGE



EXTENDABLE UNDERCARRIAGE



4.3.3.3 SELF LOADING VERSION



FIXED UNDERCARRIAGE

EXTENDABLE UNDERCARRIAGE

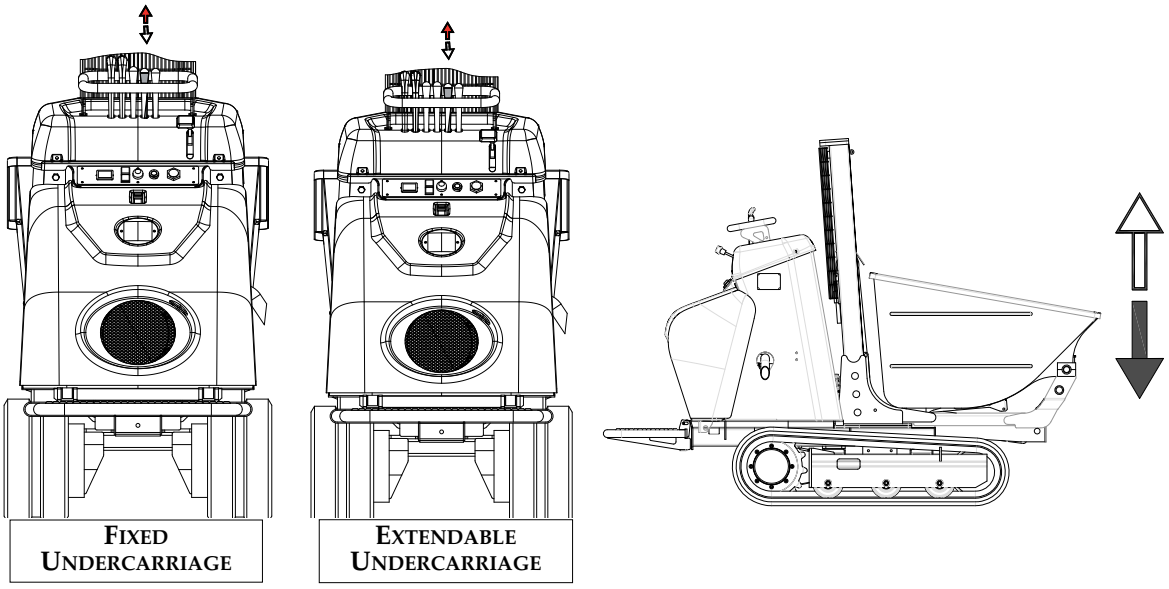
4.3.4 MOVEMENT PRESENT ONLY FOR HI TIP VERSION AND/OR SELFLOADING

4.3.4.1 LIFT THE SKIP

To lift or lower the skip move the lever as indicate in the picture.

DANGER

If the beeper is activated the only movement admitted is lower the skip.
All the other movements are forbidden until the beeper stop to ring.

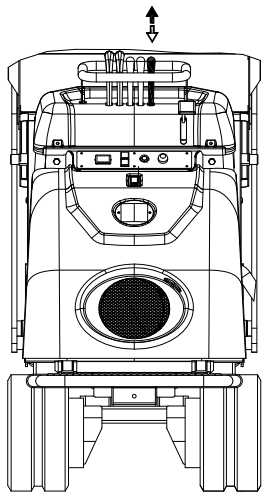


FIXED UNDERCARRIAGE

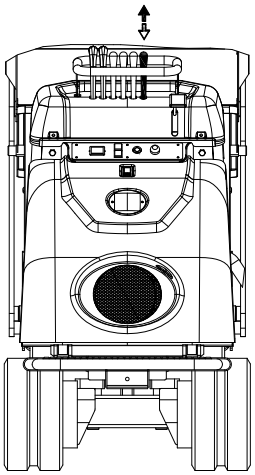
EXTENDABLE UNDERCARRIAGE

4.3.4.2 MOVE THE BUCKET

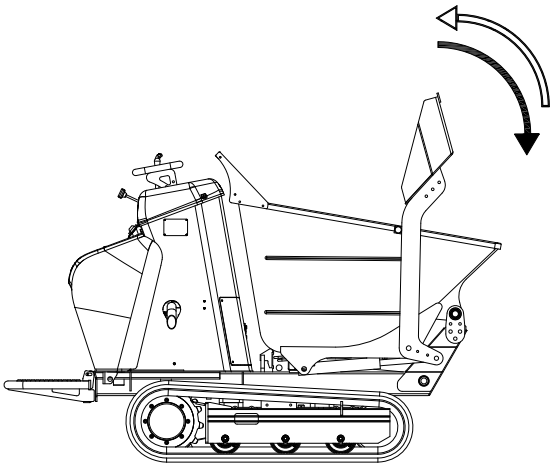
To load the material and then lower the blade, move the lever as indicated in the picture. the progressive movement of the lever controls the speed of the blade



FIXED UNDERCARRIAGE



EXTENDABLE UNDERCARRIAGE



4.4 OPERATING THE 2nd DRIVE SPEED AND THE UNDERCARRIAGE SYSTEM

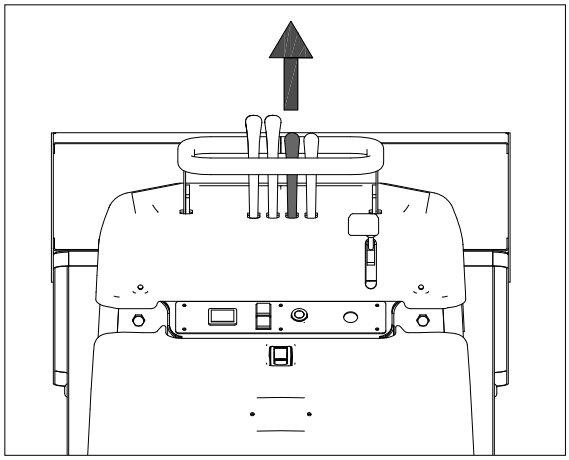
- **2ND DRIVE SPEED**

To operate the 2nd drive speed of the carriage, move the lever as indicated in the picture.

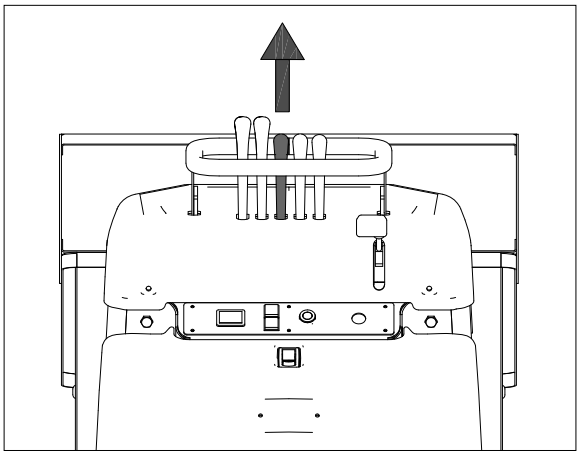
DANGER

Apply this command only when driving on a flat ground.

4.4.1 STANDARD SKIP VERSION

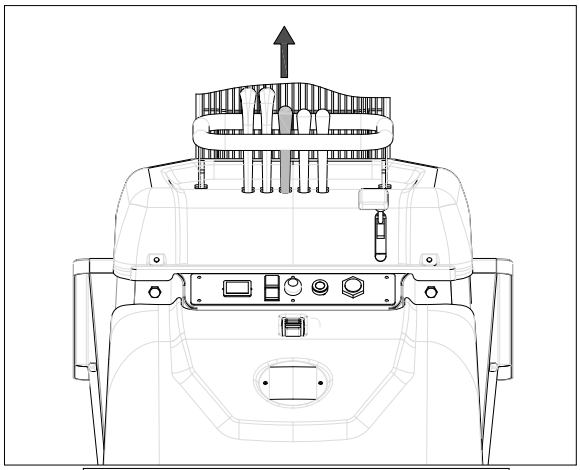


FIXED UNDERCARRIAGE

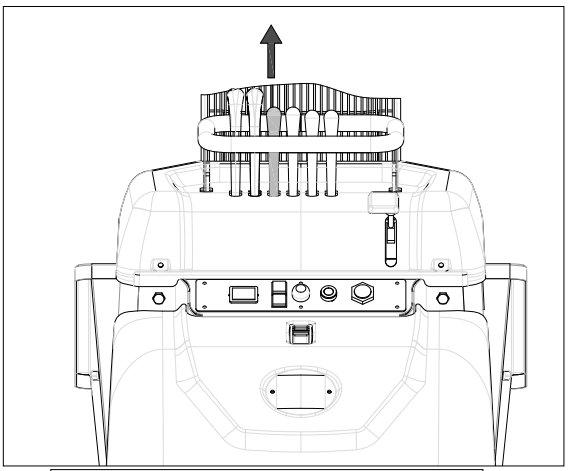


EXTENDABLE UNDERCARRIAGE

4.4.2 HI TIP VERSION

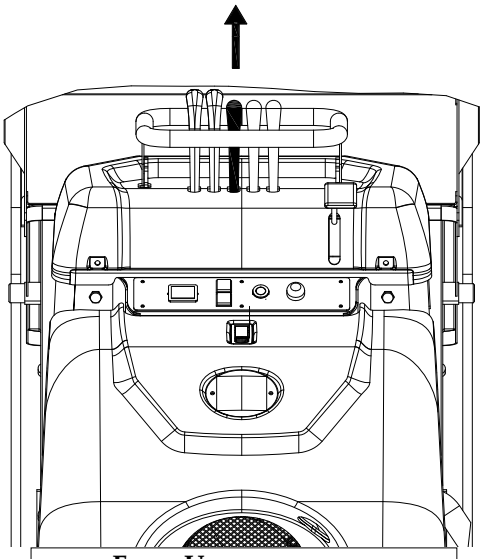


FIXED UNDERCARRIAGE

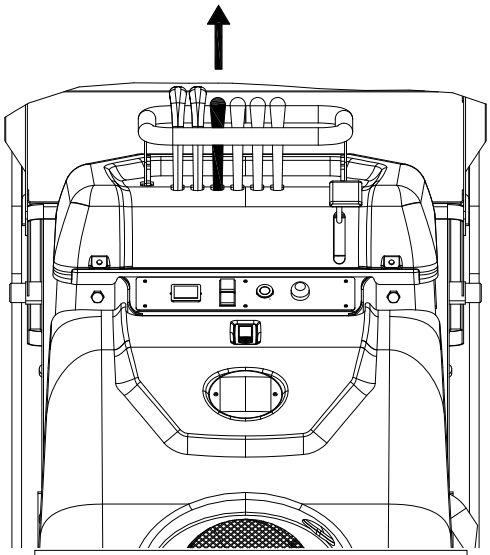


EXTENDABLE UNDERCARRIAGE

4.4.3 SELF LOADING VERSION



FIXED UNDERCARRIAGE



EXTENDABLE UNDERCARRIAGE

Do not disengage 2nd speed while the machine is moving. The deceleration it would trigger could cause personal injuries and damage the machine.

5. USE AND PRECAUTION TO BE TAKEN WHILE WORKING

5.1 DIESEL ENGINE CONTROLS

IMPORTANT

FOLLOWING IS PRACTICAL INFORMATION FOR USE AND MAINTENANCE OF THE DIESEL ENGINE; FOR DETAILED INFORMATION PLEASE READ THE ENGINE MANUAL SUPPLIED WITH THE MACHINE.

5.1.1 RUNNING-IN OF THE ENGINE

IMPORTANT

During the first 50 hours of the engine you must absolutly respect the following point:

- heat the engine with a low RPM and with a limited load but not at the idle speed;
- not exceed the necessary load for the dumper.

5.1.2 PRECAUTIONS WHEN STARTING THE ENGINE

Check that all the components of the machine are properly maintained and set before starting the engine, as indicated in this manual.
Inform people around you that you are about to start the machine. Do not allow anybody to climb onto the machine.
Do not operate the machine and any connected equipment under the effect of alcohol, drugs or fatigue.

- **STARTING THE ENGINE**

CAUTION

To avoid personal injuries:

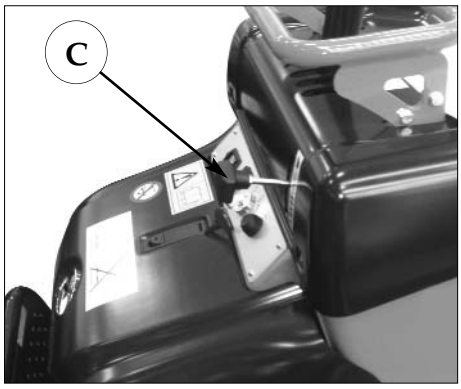
- Keep children away from the machine while the engine is running.
- Make sure that the machine is on a flat surface.
- Do not let the engine run on an inclined surface.

- To avoid intoxication by exhaust fumes, do not let the engine run indoor without proper ventilation.
- To avoid risks of personal injuries, keep your hands and body away from rotating parts, such as the cooling fan, fan drive V-belt, pulley or flywheel.
- Reinstall protective elements and safety guards and clean all maintenance tools when restarting the engine following maintenance work.

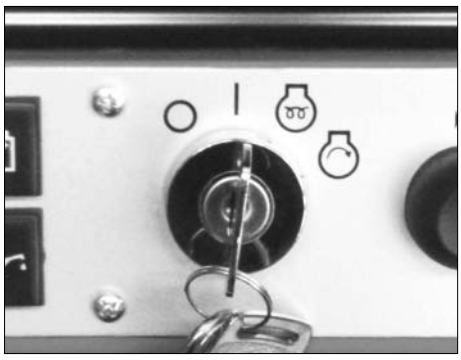
IMPORTANT

Do not use ether or other fluids to start engine with the air inlet, as it may cause serious damage.

1. Place the throttle lever (C) halfway between maximum and minimum.



2. Insert ignition key and turn to the "ON" position.



3. Turn the ignition key to the "HEAT" position and hold it in that position for a period of time following the table below.

IMPORTANT

THE ENGINE NEEDS PREHEATING IF THE AMBIENT TEMPERATURE IS MINUS OR EQUAL OF 5°.
YOU MUST PREHEATING FOR 5 SECONDS.
However, this operation is not necessary if the engine is already warm.

Ambient temperature	Duration of preheating
more + 10° C	not necessary
10° C untill - 5° C	about 5 seconds
less - 5° C	about 10 seconds

4. Turn the ignition key to the "START" position, the engine should start running. Release the key as soon as the engine starts up.

5. Check that the oil pressure and charge indicators are off.
If the lights are on, stop the engine immediately and investigate the cause (see paragraph No. 4.2 ("*Control panel*").

6. Warm up the engine load at medium rpm before you start working.

5.1.3 START THE ENGINE WITH LOW BATTERY VOLTAGE

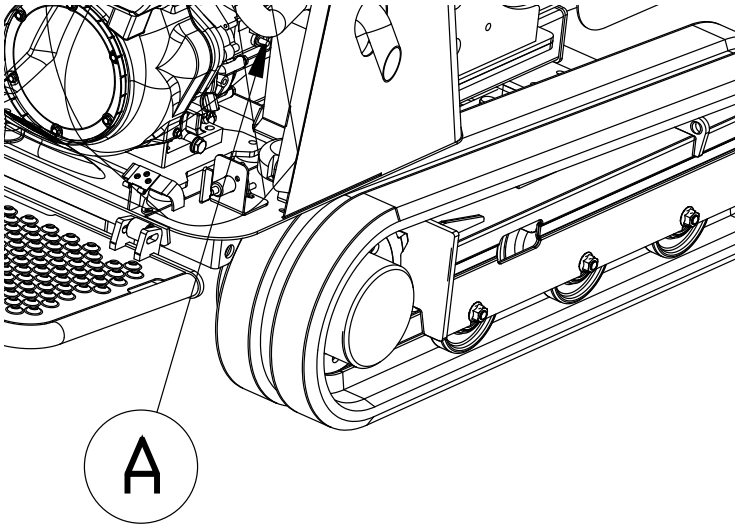
In case who the voltage of the battery is not enough to start the engine, proceed as indicate in the following point

- Open the engine cover

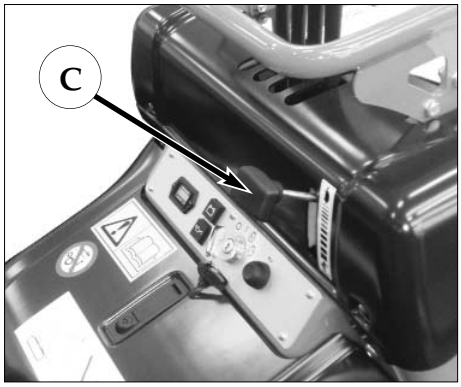
CAUTION

- Connect using wire with sheath and electric clamps the negative pole of the new battery with the copper braid on the lower right side of the engine
- Without touch any component of the dumper or the negative pole of battery connect using wire with sheath and electric clamps the positive pole of the new battery and the nuts on the right side of the engine indicate in the below picture with the letter A
- Carry on from the point 1 to the point 5 of the upper list.

- Disconnect the electric clamp starting from the negative pole of the battery and the copper brain without touch the positive pole or the other clamp on the engine
- Remove the other electric clamps from the nuts on the engine and then on the positive pole of the battery without touch the negative pole
- Close the engine cover and proceed with the 6 point on the upper list



5.1.4 STOPPING THE ENGINE



1. Return the throttle lever (C) in the idle position and allow the engine to idle.
2. Turn the ignition key to the OFF position.
3. Once the start switch is in the "OFF" position, remove the ignition key.

CAUTION

Do not touch the muffler and the engine while the engine is running, or for a certain period of time after the engine is off.

5.1.5 CHECKS WHILE DRIVING

While driving, perform the following checks to make sure all parts are working correctly.

• **OIL PRESSURE INDICATOR (SEE PARAGRAPH 4.2)**

The indicator turns on to signal that the pressure of the engine oil is below the prescribed level. Should this occur while driving, stop the engine immediately and check the following:

1. Engine oil level (see "Checking the oil level" paragraph No. 6.2.1 "*Engine oil*".)

• **BATTERY CHARGE SYSTEM INDICATOR (SEE PARAGRAPH 4.1)**
The indicator turns on if the charge system doesn't work correctly and not charge the battery.

DANGER

If the battery is discharged is impossible the normal switchoff of the engine.
Switch off the engine (see paragraph "*Emergency lever to switch-off engine*") and repair or replace the component damaged with the assistance of the service Hinowa.

• **FUEL**

Make sure that the fuel tank does not empty completely, verify the level using the information in the paragrafh " *refuelling fuel* " . In such case, air could be introduced in the fuel supply system.
The bleeding of the system is automaticaly.

CAUTION

To avoid personal injuries:
- **Check suspected leaks using a piece of carton or wood; do not use hands or other body parts. In case of injuries due to fluid leakage, seek medical attention immediately. The fluid may cause gangrene or severe allergic reactions.**
- **Check any leakage from fuel pipes or fuel injection pipes. Use safety goggles or other eye protection equipment to perform these operations.**

• **COLOR OF THE EXHAUST FUMES**

If the engine is kept running within the rated power limits:
- The color of the exhaust fumes is neutral;
- If the power slightly exceeds the rated power limits, the color of the exhaust fumes can be slightly different, with a constant limit of rated power;
- If the engine is kept running continuously with the emission of dark exhaust fumes, this can cause severe damage.

• **STOP THE ENGINE IMMEDIATELY IF:**

- the engine suddenly revs up and down;
- you hear abnormal noises;
- the exhaust fumes turn dark;
- the oil pressure indicator lights up.

5.2 BATTERY SWITCH

The machine is equipped with a battery switch (A) as indicated in the picture.

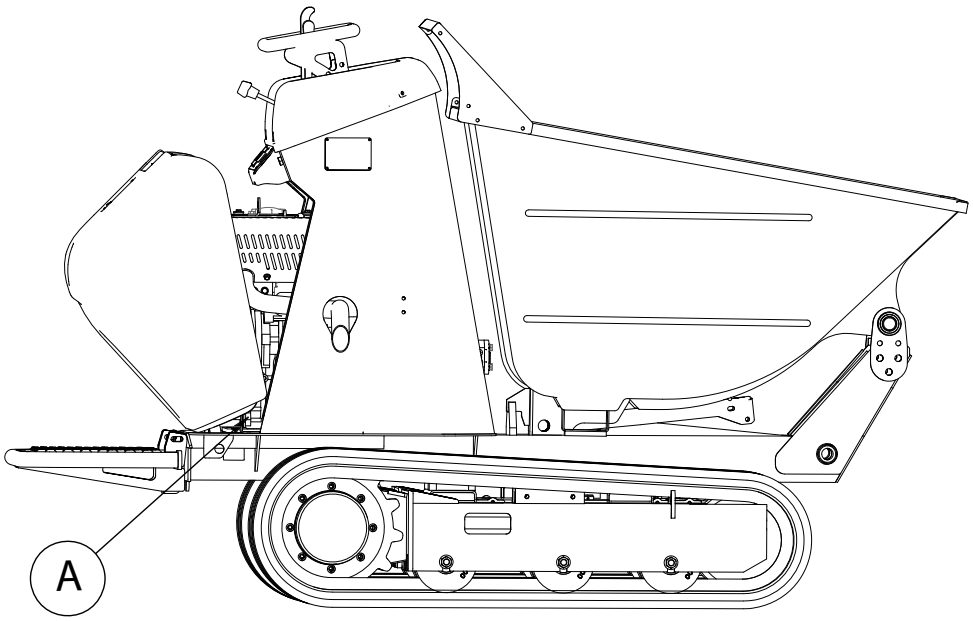
This device is installed under the engine protection cover and allows interrupting the electric circuit of the machine.
It must be operated each time you do not use the machine for prolonged periods of time or during inspection and maintenance work on machine components.
Turning the ignition key clockwise connects the electric circuit of the machine, while turning it counter-clockwise interrupts the electric circuit.

DANGER

The battery switch should be operated only when the machine is turned off.

CAUTION

Open the engine protective cover only when the engine is turned off.



5.3 PRECAUTIONS WHEN DRIVING

- To avoid incurring into accidents or losing control, do not climb on the machine body; position yourself on the platform in the back and hold the handle firmly (reference in paragraph *Controls station*).
- Keep children and animals away from work area in order to avoid any injury from contact with the machine.
- **Use the dumper only if the work area is properly lighted.**
- **By all means, avoid climbing onto the steps, but use a ramp with a slope measuring as per machine specifications.**
- The skip must be lowered when driving.
- Check the soil in terms of its load-bearing capacity, for the presence of any holes or other obstacles.
- Keep at a safety distance from cliffs and excavation perimeters, as they could collapse.
- Drive with caution on uneven soil. If soil irregularities are excessively high-up or deep, drive around them.
- When the operator leave the dumper, lower the skip, turn off the engine and make sure the dumper cannot be restarted (take away the ignition keys).

CAUTION

It is strictly forbidden to transport people on the skip or on other machine's part.

5.3.1 DRIVE

CAUTION

- Set the throttle lever at the corret position in function of the load of the dumper, the conditions and the slope of the terrain.
- Verify that all the security indications are correctly applied.
- If the dumper is equipped with variable undercarriages, be sure to drive with the extended undercarriage. This increase the stability and safety of the dumper. If limited spaces don't allow to wide the undercarriage, do a double check of the ground conditions (consistancy, slope).
- Push forward both lever of the traslation for move the dumper straight forward, if you release the lever the dumper will be immediatly stopped; if you move back the levers you will do the same thing in backward direction.
- For increase the speed, put the control valve levers toward end stroke or put down the throttle lever.

DANGER

When driving on muddy or sloping soil, proceed slowly.

5.3.2 SAFETY WARNING FOR DRIVE ON SLOPES

DANGER

Avoid driving on slopes with a higher gradient than that tolerated by the machine (see paragraph No. 7.1 "*Technical specifications*").
Always drive slow on slopes, being particulary careful of slope changes, when the risks of overturning is higher.
If the dumper is equipped with variable undercarriage, be sure to drive on slope with the undercarriage extended.

Always exert the utmost caution when driving uphill and downhill. Fast driving is forbidden.

Always drive up or down sloping ground with the machine axle aligned with the slope. Never drive along a slop or climb up or down diagonally.

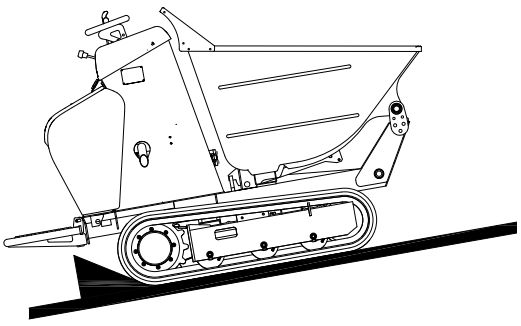
It is forbidden to drive downhill at secondary speed.

It's forbidden steering for reverse the direction when driving on slopes.

During uphill with full skip load drive forward, when downhill with full skip drive backward.

During uphill with empty skip drive backward, when downhill with empty skip drive forward.

Before climbing a slope, make sure that it does not exceed the degrees indicates in the technical specification for the affected version and that engine and hydraulic oil are properly warmed up.



The max side slope on which the machine can be driven is indicated in the same paragraph.

5.3.3 MANEUVERS ON SOFT SOIL

DANGER

Avoid driving on very soft soil that does not have sufficient consistency to firmly support the weight of the machine.
ALWAYS CHECK THAT THERE IS NO RISK OF IT TIPPING OVER.
The machine is not equipped with a rollover protection structure.

5.4 SKIP

For unload the skip see the indication at the paragrafh " *operating the skip* ".

CAUTION

When operating the skip, you must at all times observe the following safety warnings:

- Never operate the skip if the dumper is on sloping ground or on tender soil. This is a potentially hazardous situation, as the dumper could tip over due to its loss of balance.
- Dot not overload the machine. Overloading it could shorten the life-span of its components, material to drop out of the skip or the dumper to tip over. In any case, do not exceed the capacity displayed on the CE marking.
- Check that no one is stationing nearby the dumper. If need be, alert by-standers by honking the horn.
- If the load sticks to the bottom of the skip, for instance, if the material is wet clay or frozen, do not tip the skip over, because the dumper may lose balance and tip over.
- Do not transport liquid concrete with the dumper.
- The concrete would seep into the mobile components, causing damage or corroding the skip.

5.5 LIFTING THE SKIP ONLY HI-TIP VERSION

For elevate the skip see the indication at the paragraph " *lift the skip*" .
There is a buzzer to alert the operator if the dumper is on a slope over the paragraph *"Technical specifications"* indication degree and the bucket support is elevate from the frame of the dumper.

DANGER

If the beeper is activated the only movement admitted is lower the skip.
All the other movements are forbidden until the beeper stop to ring.

When operate the lift of the skip, you must at all time observe the following safety warnings:

- If the buzzer rings immediately lower the support for avoid to tip over the dumper or loss stability.
- It's forbidden to translate with the support skip raised from the frame and/or the buzzer is ringing
- Never operate the lifting of the skip if the dumper is on tender soil. This is a potential hazardous situation, as the dumper could tip over due to its loss of balance.
- It's forbidden to operate the lifting when the dumper is moving
- Check that no one is stationing nearby the dumper . if need be, alert by-standers by honking the horn.

5.6 PRECAUTIONS TO ADOPT WHEN TRANSPORTING A LOAD

To avoid accidents or tipping over, do not exceed the load limits listed in paragraph *"Technical specifications"* and displayed on the CE marking (ref. par. 1.1 *Identification data*) under the entry "RATED PAYLOAD".

Make sure that the load holds tight, that it does not stick out of the edges of the skip or obstructs the view when transporting it.

To avoid the skip from tipping over, be careful not to change the dumper's direction when driving on slopes.

Do not employ the dumper on uphill or downhill slopes with a front and side tilt of more than indicate in the technical specification.

Be careful when driving the dumper in reverse as there are increased risks of fall or sliding.

On steep downhill or uphill slopes, always drive at minimum speed. Be especially careful during changes in the slope.

Never station between the frame and a lifted skip, if it is not locked tight with its cylinder safety lock.

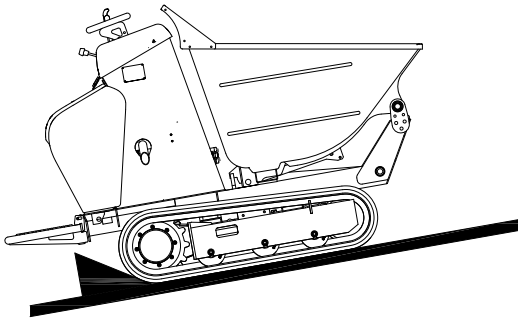
5.7 PARKING AND STOPPING THE MACHINE ON SLOPES

Parking and stopping the machine on slopes is extremely DANGEROUS. If parking or stopping on slopes cannot be avoided, use the following precautions:

1. Always check that the terrain is sufficiently strong to ensure stability of the machine.

2. When stopping the machine on slopes, even for a short period of time, apply strains under the tracks downhill.

3. Be sure that the undercarriage is in wide position if the minidumpers is equipped with variable undercarriage.

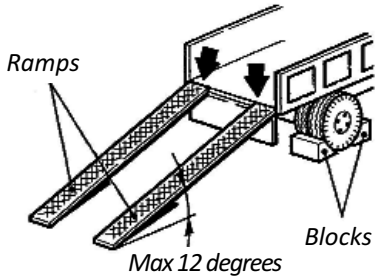


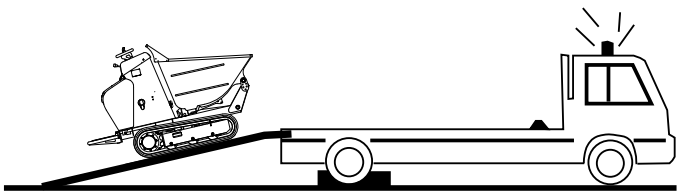
5.8 TOWING THE MACHINE

IMPORTANT

It is strictly forbidden to tow the machine.
Any attempt to tow the machine could cause o damage to the dumper transmission.

5.9 LOADING/UNLOADING THE MACHINE ON/OFF A TRANSPORT VEHICLE

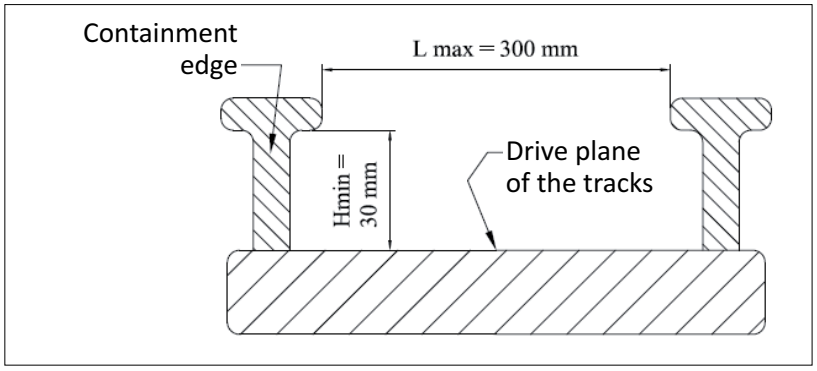




The dumper is a very handy and stable machine to drive, yet we recommend the operator to use it with care even while performing those operations that may seem simple.

During the loading/unloading operations from a truck or trailer through the use of ramps, please follow the indications below:

- Make sure that the truck or trailer has adequate capacity to transport the dumper. Please refer to the weight as indicated in the paragraph "Technical data" herein.
- Park the truck or trailer on flat ground.
- Choose ramps of adequate length to ensure a maximum angle of inclination with respect to the ground lower than or equal to **12 degrees**. As a general rule, if the truck/trailer ramps rest on a surface with no slope variations, the above requirement is met when the ratio between the length of the ramps and the height of truck/trailer bed from the ground is higher than or equal to 4,8.
- Make sure that the ramps are equipped with side containment edge having size and shape as indicated by the diagram below:



- Make sure that the ramps are of adequate capacity to support the machine. Please refer to the weight as indicated in the paragraph "Technical data" herein.
- Make sure that the ramps and truck/trailer bed are clear of debris or slippery material.
- The truck/trailer must be stationary with the wheels blocked, the parking brake engaged, the engine turned off, without the ignition key inserted in the control panel and the bed in flat position.
- The ramps should be firmly supported by and fixed to the structure of the truck/trailer bed. Make sure that the ramps are effectively attached to the truck/trailer before using them.
- The highest point of the tracks must be on the same level of the truck/trailer bed.
  No steps shall be present between the ramp and the truck/trailer bed.
- Extend the dumper undercarriage before engaging the ramps (only for extendable undercarriage version).
- Adjust the distance between the ramps according to the tracks – Always unload the dumper before engaging the ramps.

IMPORTANT

- **Engage the ramps with the front of the machine.**

IMPORTANT

- **In the proximity of the tilt variation between the ramps and the trailer/truck bed, drive very slowly in order to avoid jolting.**

IMPORTANT

- **Drive very slowly on the ramps by adjusting the speed lever. Drive at MINIMUM speed during tilt variations. Keep a constant speed. Avoid abrupt starting and braking.**
  Before engaging the ramps, make sure that each track is COMPLETELY within the plane of each ramp. While engaging the ramps, drive the machine keeping a PERFECTLY straight trajectory, making sure at ALL times that each track is COMPLETELY within the plane of each ramp.

- Place the machine so that no parts of it protrude from the truck/trailer shape.

For descending, proceed following the above indications and instructions.

IMPORTANT

If the ramp inclination is excessive, adjust it or, if this is not possible, use longer ramps.

5.10 PRECAUTIONS WHEN TRANSPORTING THE MACHINE

TRANSPORT CONFIGURATION

When transporting the dumper on a truck, trailer or other vehicle, make sure that the machine is configured as follows:

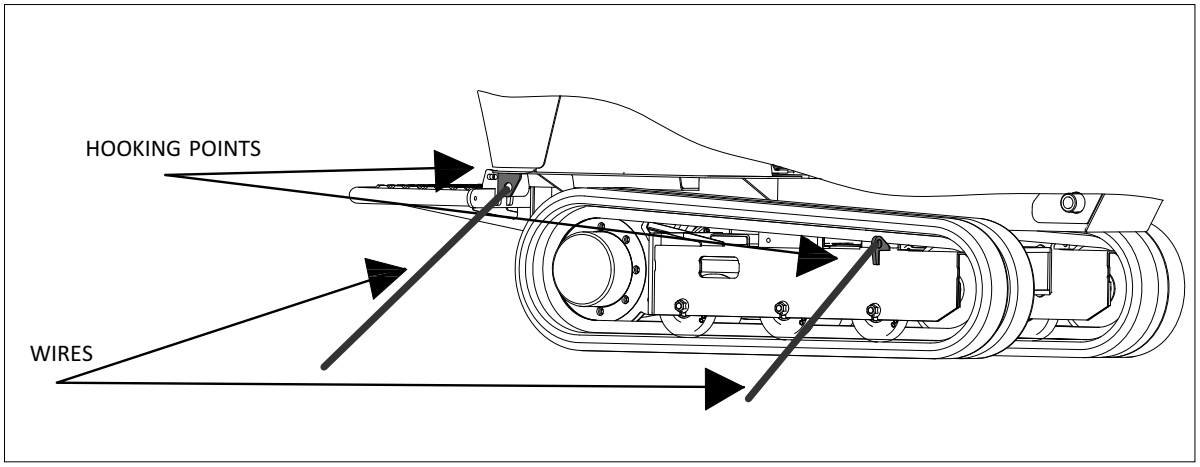
- Skip completely empty. Unfastened loads in the skip could move during transport or fall out of it. Any load inside the skip raises the center of gravity of the machine, impairing its stability.
- Skip and bucket completely closed.

- Skip support at the lower position and bucket at the upper position (if the component are present on the dumper).
- No operator in the workstation or in any other position or nearby the machine.
- Engine off.
- Key removed from the control pannel.
- All the covers closed.
- Machine fully assembled (all parts).

When transporting the machine, remember to firmly fasten the frame of the right and left tracks to the truck bed with the aid of metal wires and soft guards.

Do not allow the metal wires to make direct contact with the rubber tracks.

The fixing points (see figure below) are located on the undercarriage and are identified with : the same symbol indicate in the paragraph " lifting the machine""



5.11 LIFTING THE MACHINE

For the proper lifting of the machine, please follow the safety instructions below:
- Place the machine on a horizontal plane;

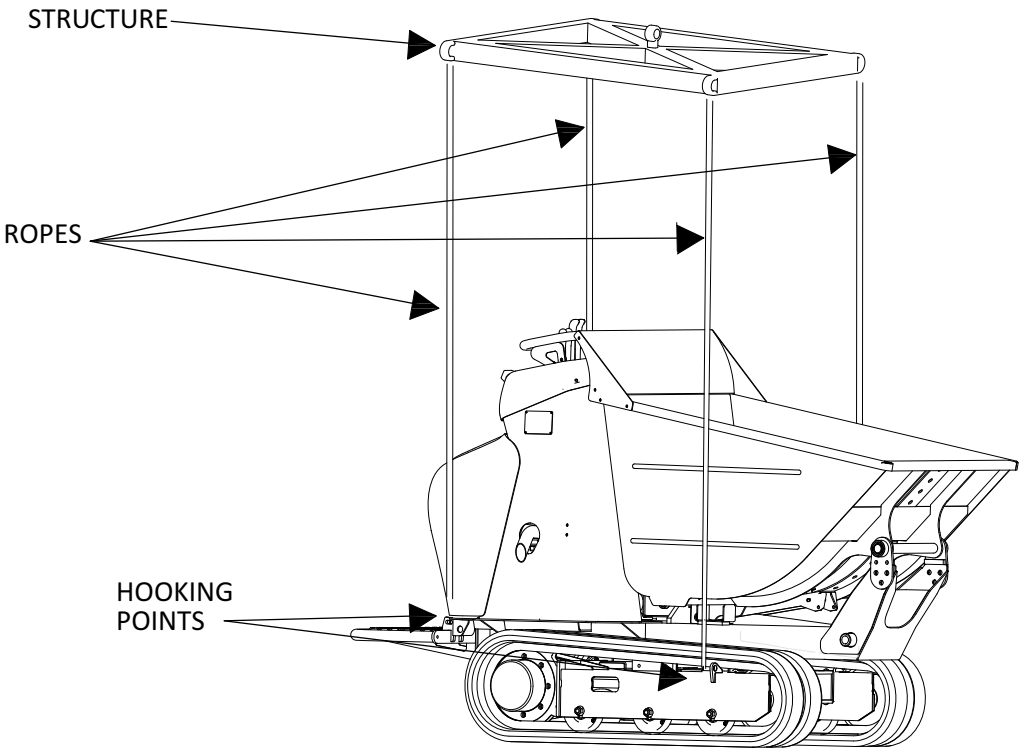
- No one should occupy the driving position during lifting operations;
- Check that there are no persons in the area;
- Use cables strong enough to support the machine weight;
- Pay particular attention to any sharp edges that could damage the lift cable and protect it accordingly.
- Comply with the applicable standards and norms of good practice in choosing the right lifting systems, cables, fixing systems, etc. and when performing lifting tasks.
- Prepare an operating plan for the lifting tasks, meticulously analysing the risks.
- Remove any load/object from inside the skip.

LIFTING POINTS

There are four lifting points on the dumper. One is located on the right side member, one on the left side member and the other two on the basis of the structure.
They are identified by this symbol:

CAUTION

To lift the machine use a structure wide enough not to interfere with the machine elements, connected through ropes as shown in the picture.
Both the ropes and the structure should comply with current legislation.



5.12 USE OF UNDERCARRIAGE WITH RUBBER TRACKS

Avoid the following situations when operating a carriage with rubber tracks:

1. Avoid driving on hard, rocky and irregular surfaces, such as river rocks, gravel, etc.
2. Do not expose the rubber tracks directly to the sunlight for more than 3 months.
3. Avoid improper steering on asphalt and concrete as much as possible, since this leads to wear of skids. In addition, avoid driving on concrete roads whose temperature is higher than 60 degrees, as it may result in wear on the tracks as well as damage to the road surface.
4. Driving with a loose track on an irregular surface may lead to the detachment of the skid and/or damage to the rubber track.
5. Rubber tracks are needed only for soft terrain, not hard and abrasive surfaces such as sand, rocks, stones, etc. Using the rubber tracks on these surfaces may lead to their premature wear and tear and deformation.
6. Avoid any contact of hard edges of concrete, etc. with the rubber tracks.
7. Fuels or synthetic oils must not come in contact with the rubber tracks. However, if that occurs, clean the tracks immediately.
8. The use of rubber tracks on coastal marine areas should be avoided, as sea air or salt in general corrode the adhesion between the rubber and the metal core inside.

5.13 PRELIMINARY CHECK BEFORE START THE WORK

Every day before use the dumper take the following points:

- Check there isn't losses from the idraulic components of the machine. If there is a losses repair or replace the component damage and adjust the oil level if it's necessary.
- Thoroughly clean the machine and check that there is no onset of corrosion and that there are no cracks round-about all welded parts.
- Check the correct track tensions and the integrity for all component of the undercarrige.
- Verify that there isn't component damage, broke or losses; the correct torque for security bolts, nuts, rings. Replace, fasten and adjust following the instruction of the manufactures before use the machine.
- Remove debris that can cause fire or breaks, take particular attention for the area around the engine.
- Clean the control lever protection and the platform and levers from oil or debris that can prevent the execution of the maneuvers and endanger the operator. Check the integrity of the elettrical componets.
- Check the state of the stickers on the machine, that must to be visible.

- Check the fuel level for preventing stop of the engine due to no fuel in the tank.
- Verify the correctly operation of all safety devices.
- Check the engine oil level (see the paragrafh of the maintemance).

5.14 ENGINE EMERGENCY STOP

For stop the engine in case of danger follow the procedure below:

1. Release all the control lever (see paragraph *" hidraulic valve controls"*) in order to arrest all movement of the machine.
2. Rotate the start/stop switch (see paragraph *"engine key") at the* OFF position, in this case engine is stopped.

If there is a damage at the elettrical circuit and the stop don't switch off the engine put the throttle at the minimun position and close the skip for stop the engine and if the engine don't stops use the indication in the paragrafh *"emergency lever to switch off engine"* .

6 MAINTENANCE

6.1 SAFETY INSTRUCTIONS TO CARRY OUT MAINTENANCE WORK

- Spare parts must comply with the technical specifications established by the manufacturer. This is ensured by the use of original spare parts.
- It is extremely DANGEROUS to make mistakes. Before carrying out repairs or greasing read carefully the user's and maintenance manual.
- Handle each part with the utmost attention. Keep hands and fingers away from slots, gearing and the likes. Always use approved protection equipment, such as safety goggles, rubber gloves and safety shoes.
- When working on the electrical system, always wear safety goggles and remove rings, wristwatches and any other metallic jewels. As a general prescription, do not use fuel to clean parts.
- Interventions on the auxiliary electrical system must be carried out exclusively by our Customer Service in order to ensure compliance with current laws and regulations (EN 60204 and national laws).
- Always disconnect the batteries using the appropriate battery switch (ref. paragraph 5.2), before any intervention on the electrical system.
- Hydraulic pipes must be laid and installed in a workmanlike manner.
- Tampering with the hydraulic circuit may lead to severe DANGER in using the dumper.
- Do not dispose of lubricants in the environment. Collect and dispose of these products in accordance with laws and regulations in force in each single country.
- Check the machine at least once a day for any visible damages (corrosion, structural integrity, welding). Any changes emerged (including functional changes) must be immediately reported to the officer in charge. Stop down and lock the machine immediately and proceed with more accurate checks.
- A fluid leaking under pressure may penetrate the skin. Always relieve pressure before disconnecting the hydraulic pipes and tighten the fittings before pressurizing. Keep hands and body away from pinholes and nozzles from which liquid is leaking at high pressure. Use a piece of carton or paper to identify leaks.
- Heavy parts must be lifted through the use of a lifting device of adequate capacity.

CAUTION

Before performing any maintenance task, make sure that the following safety conditions have been checked:

- Remove all components from the skip and the buket.
- Close completly the skip. If it is necessary to maintain the skip tipped block it using the lock (*see paragraph safety and protective device*). Move all the lever in all the direction few times for release the residual pressure.
- Lower the bucket on the terrain, turn off the engine and extract the key from the control panel.
- Lower the skip support or it is necessary to maintain it in upper position using the lock indicate in the paragraph " safety and protective device".
  Move all the lever in all the direction few times for release the residual pressure.

- Rotate counterclockwise the battery switch.

After you have verify all the upper condition, open the engine cover or the distributor cover to perform the maintenance .

At the end of the maintenance operation close the cover and remove the key.

In case that for maintenance, it has been necessary to remove some fixed or mobile repairs, check that all the repairs are correctly positioned and fixed on the machine before the end of the maintenance operations.

Lack of respect of the instructions described above may be dangerous for people.

6.2 TABLE OF RECOMMENDED FLUIDS

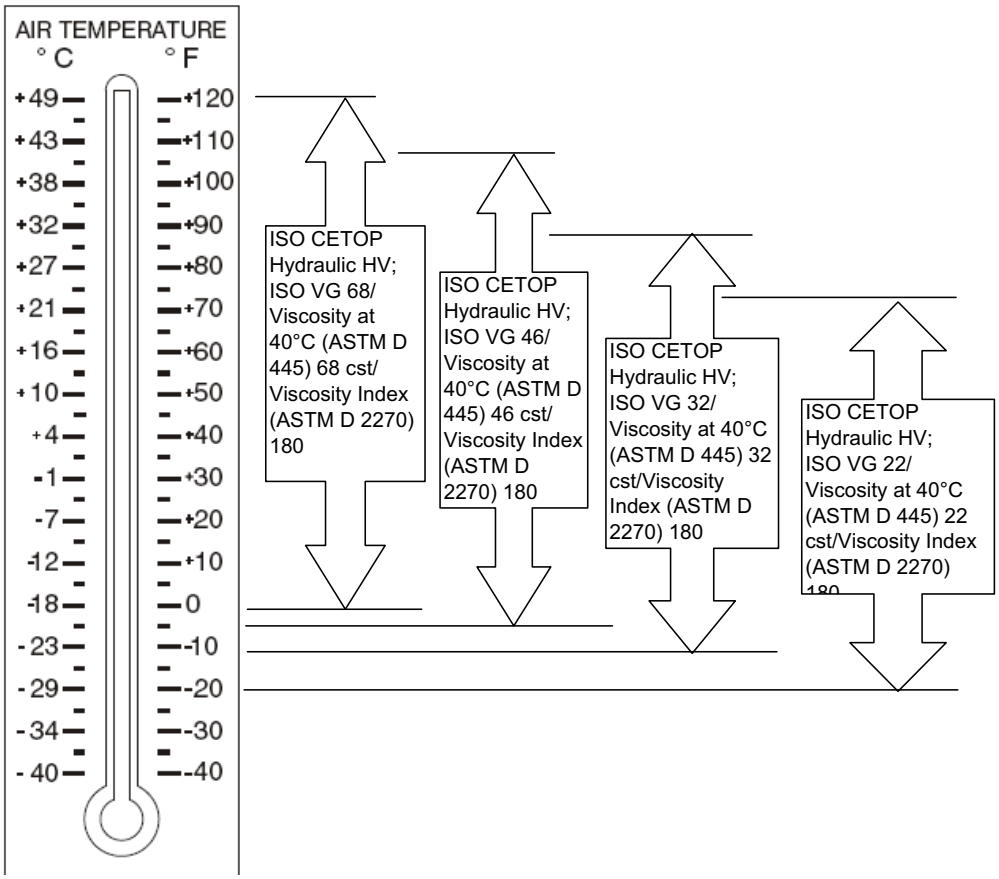
6.2.1 ENGINE OIL

The engine oil must be higher than CC class (API).
The type of the engine oil must to be change in function of the environment temperatur.

above 25°C	SAE30 or SAE10W-30 SAE10W-40
0°C up to 25°C	SAE20 or SAE10W-30 SAE10W-40
below 0°C	SAE10W or SAE10W-30 SAE10W-40

If you utilize a different type of oil, you must be certain that there isn't oil in the engine before insert the new type of oil in the oil pan.

6.2.2 IDRAULIC OIL



6.2.3 FUEL

Diesel No.2-D; No.1-D diesel fuel if temperature is below -10°C.

6.2.4 GRASE

We raccomended to use of grase suitable for use in the construction equipment industry .
Type **EP. NLGI 2** with the thickener base SOAP LITHIUM or MOLYBDENUM DISULPHIDE

6.3 ENGINE MAINTENANCE

No.	Part		Q.ty	Interval (hours)					
				8	25	100	300	500	1000
1	Engine oil	Check level		•					
		Replace	1,7 l		•*	•#			
2	Air filter	Cleaning		•$		•			
		Replace	1					•€	
3	Diesel filter	Replace	1					•	
		Cleaning				•			
4	Fuel tank	Cleaning					•		

*= First replacement.
#= At least once a year.
$= if the dumper works in a dusty place clean the filter at least one times a day.
€= at least one time every years or every 6 cleaning back.

6.3.1 REFUELLING FUEL

DANGER

The fuel is flammable and it's may be danger. Use with great attention.

CAUTION

For avoid personal injuri:

- Not be mixing the diesel fuel with gasoline or alcohol. This mix can cause explosion.
- Pay attention, don't spill the fuel during the refuelling. If it should happen, clean it immediatly for avoid possible burn.
- Don't forgotten of stop the engine before refuelling of fuel. Keep away from the fire the engine.
- Verify that the engine is refilling when perform the daily and periodic maintenance, during the fuel refuelling, the repairing and the clearing. Don't smoke when are working around the batery and refuelling of fuel.
- Refill of fuel after the engine is completly cooled.
- Even clean the leakage of fuel and lubrificant.

Control of the fuel level and refuel

1. Check the fuel level after have open the engine cover looking the visual level on the tank.
2. If the fuel is not enough, refuel without exeed the upper limit of the fuel tank.
3. The fuel cap for refill the fuel tank, is under the engine cover (see paragrafh 1.3) and it's indicate with a sticker reported below.

IMPORTANT

During the refuel of fuel utilize a filter for avoid that dirty and sand damage the injection pump.

6.3.2 FUEL FILTER MAINTENANCE

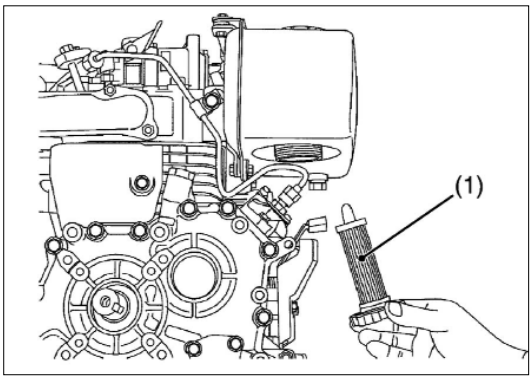
DANGER

Before replacing the filter, you must let the engine cool down. Every trace of oil spilled during filter replacement must be accurately cleaned to prevent slipping and accidents.

CAUTION

The fuel must be disposed of in accordance with current laws and regulations. Do not pour it on the ground or into a drain. The fuel filter must be disposed of in accordance with current laws and regulations.

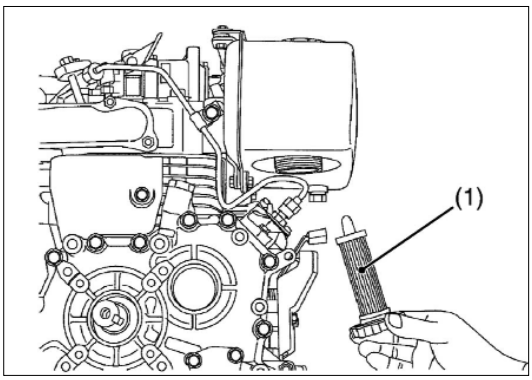
- **Cleaning Fuel Filter**
  - Empty the fuel tank and disconnect the fuel pipe.
  - Loosen the ring nut and take out the filter (1).
  - Wash the filter clean off impurities with fresh fuel.
  - Take much care when handling the element because it is very fragile.



CAUTION

If the element should have holes, replace it with a new one. A damaged element will shorten the service life of the nozzle and injection pump.

- **Changing Fuel Filter**
  - Empty the fuel tank and disconnect the fuel pipe.
  - Loosen the ring nut and take out the filter (1).
  - Replace the filter (1).
  - Take much care when handling the element because it is very fragile.



CAUTION

A damaged element will shorten the service life of the nozzle and injection pump.

6.3.3 ENGINE OIL

CAUTION

For avoid personal injury:
- Verify that the engine is off before check or replace the engine oil;
- Don't touch the muffler, or the exaust pipe becouse are hot, it can cause serious burns;
  verify the engine is off and cooled before make ispection, maintenance or cleaning;
- The contact between oil and skin may be harmful, wear gloves before operate with oil, if got dirty part of body with oil, clean immediatly.

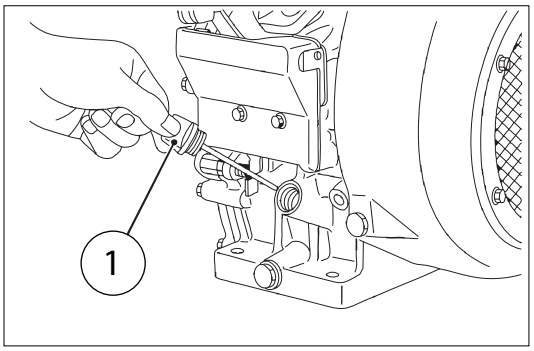
• **CHECKING OIL LEVEL**

Check the engine oil level every day or every 8 working hours.

Carry out the check with the engine turned off and the machine on a flat surface.

Carry out the check before starting up the engine or 5 minutes after turning it off.

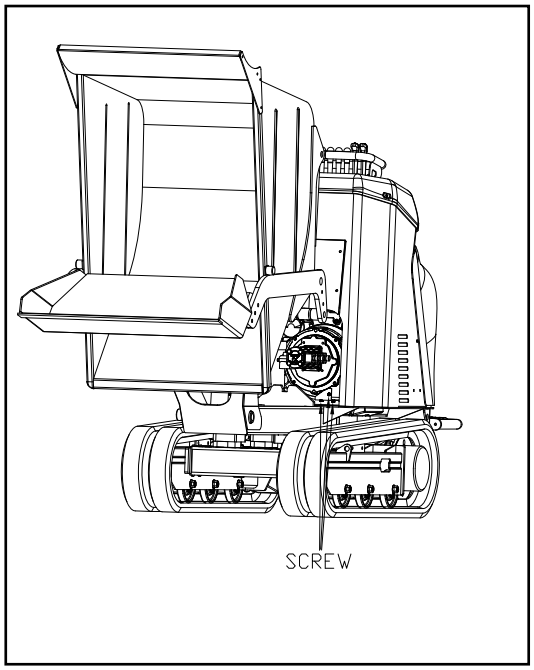
Open the engine cover, lift out the dipstick (**1**), clean it with a clean cloth, reinsert it into its housing and lift it out again. If the oil level is close or lower than the minimum mark on the dipstick, refill through the hole for the dipstick, using the oil indicated in the table of reccomended fluids.

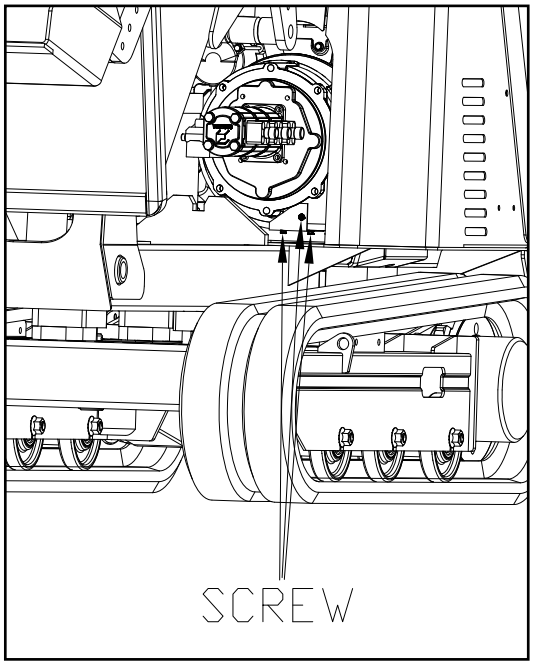


Wait for 5 minutes before the oil descends into the oil pan and then check its level again.

• **ENGINE OIL REPLACEMENT**

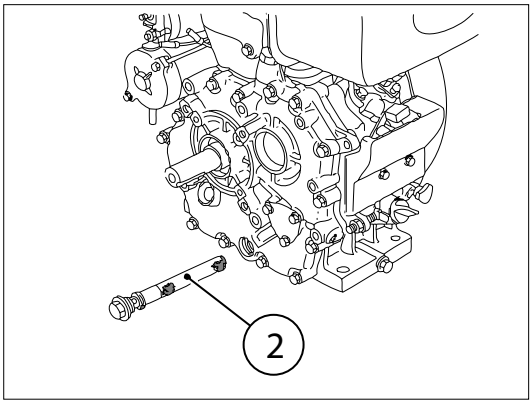
1. After warming up the engine, tilt the skip and lock it with the cylinder safety lock, turn off the engine, open the engine cover. If present, after opened the engine cover unscrew the 3 screw of the cover of the hydraulic oil cooler end them remove it see picture below.
   Loosen the oil strainer (**2**) and drain the oil completely.





2. Put the oil strainer and supply the specified quantity of the specified oil through the hole for the dipstick.

3. reposition all the components and the screws removed in the previous position in order to use the dumper



Clean the oil strainer each time oil is changed.

1. Clean the oil strainer with fuel oil.
2. If the oil strainer is deformed or broken, replace it.

6.3.4 ENGINE AIR FILTER MAINTENANCE

IMPORTANT

It is a good thing to clean the filter element on a daily basis.
In case of excessive dirt replace the filter.

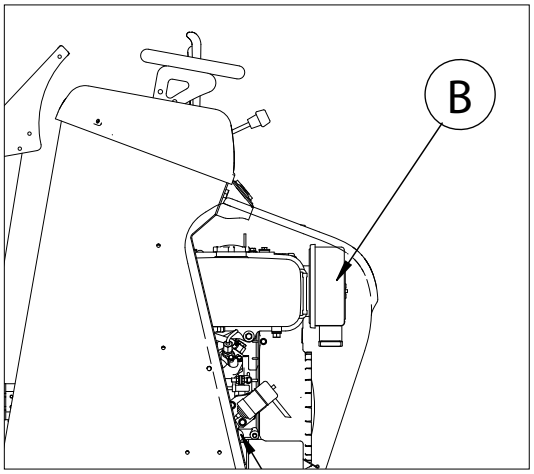
The filter element must be replaced every 6 times of cleaning or after a year's work.

Turn off the engine before performing maintenance of the air filter.

Any time you perform maintenance of the air filter, make sure that all hoses are in good condition and the clamps are properly tightened.

Please follow the steps below for the maintenance of the filter element:

- Open the engine cover.
- Unscrew the latch. Remove the cover (B) and laydown it in the bonnet. Be carefully to avoid damages to the gummy tube for air inlet.
- Remove the cartridge.
- Check that dirt filter element is not damaged.



- To clean the element, use clean dry compressed air on the inside of the element. Air pressure at the nozzle must not exceed 205 kPa (2.1 kgf/cm^2, 30 psi). Maintain reasonable distance between the nozzle and the filter.
- Clean the inside of the filter box with a clean cloth.
- Reinstall the cartridge in its casing and then screw the latch.
- Reinstall the cover.

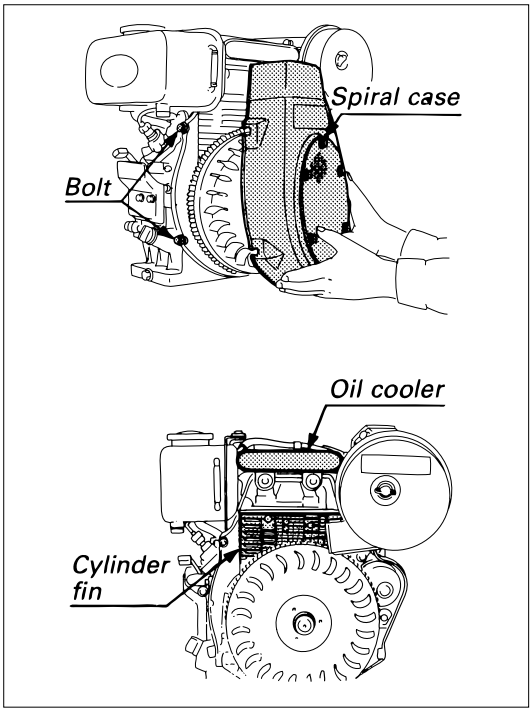
6.3.5 CLEAN OIL COOLER

CAUTION

Always stop the engine before cleaning the oil cooler.

1. Loosen the four bolts and remove the spiral case.

2. Check if the cylinder and oil cooler fins are clogged with dust. If so, blow it off using an air gun. As the oil cooler fins are fragile, to prevent damage, never use a screwdriver or spatula.



6.4 HYDRAULIC SYSTEM

No.			Q.ty	INTERVAL (HOURS)					
				10	50	100	150	250	1000
1	HYDRAULIC OIL	Check level		•					
		Replace	l 33		*•				•
2	HYDRAULIC OIL FILTER	Replace	1					•	
3	GEAR BOX OIL	Check level				•			
		Replace	l 0,5 each				*•		•

* First replacement

Before any operation on the idraulic system, verify that all the fluid under pressure are eliminate.

- Stop the dumper on a flat surface and on a solid terrain, with the bucket closed or open with it's lock, in function of what must be done.
- Stop the engine and remove the key from the control pannel.
- Open the filler cap following the indication in the paragraph hydraulic oil .
- Position itself on the control station and check no people around the dumper.
- Move several times all the distributor levers on each direction.

Operating in this mode, all the presure in the idraulic pipes has been downloaded.
Take however attention becouse it's possible there is residual pressure in the idraulic pipes.

6.4.1 HYDRAULIC OIL

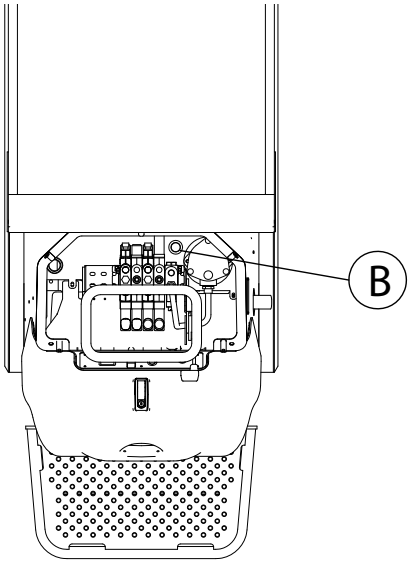
- **Check**
  To check the hydraulic oil level, place the machine on a flat surface, with undercarriage (if applicable) and skip closed skip support in lower position and bucket lowered on the terrain, and check that the oil level is about half of visual level **A**.
  Otherwise, add the necessary oil through filler cap **B**.

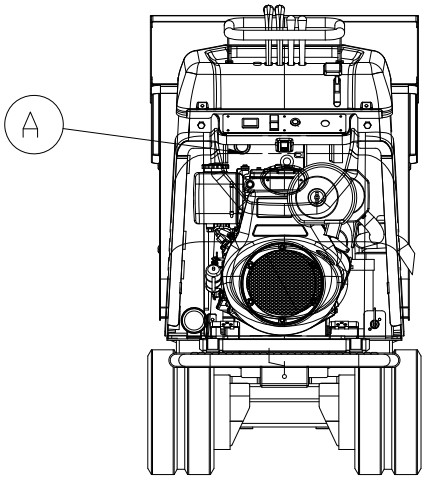
- **Replacement**
  To replace the hydraulic oil, please proceed as follows:
  - open the skip and lock it using its dedicate locker;
  - check the skip support in lower position.
  - position the bucket on the terrain.
  - turn off the engine;

IMPORTANT

Unscrew a turn the filler cap and wait untill the air under pressure are completly out from the tank.
- disconect the upper pipe between the cylinder and the distributor near the cylinder;
- start the engine at the minimum and moving slowly the lever in order to close the dumper, put out in the appropriate container all the oil;
- turn off the engine;
- reconnect the pipe and fill the tank through filler cap.

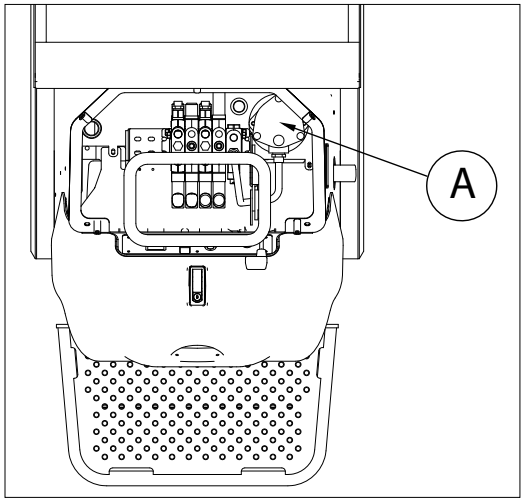
Avoid mixing oils by different manufactures.





6.4.2 HYDRAULIC OIL FILTER

Replacement



The hydraulic oil filter (A) is located in the upper part of the hydraulic oil tank under the protective cover of the control valve. To access it, remove the control lever protection, unscrew the screws of the cover and then loose the nuts under the levers; unscrew the levers and then remove the cover.
Before open the oil cap unscrew a turn the oil cap for release the pressure (see the paragrafh 6.4.1).
Open the hydraulic oil cap.

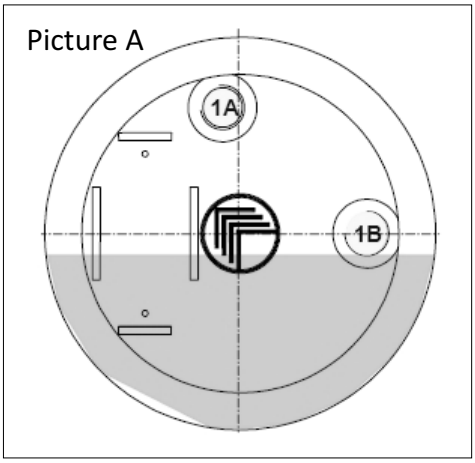
Unscrew the screws on the filter cover and remove it, change the filter and replace the filter cover using it's screws;
finally replace the cover, screw, the levers and lock every lever using it's nut, screw the screws of the cover; block using it's screws the control lever protection.

6.4.3 GEARBOX OIL

- **Gearbox oil check**

Oil level of the gearbox must be checked every 100 hours. Stop the gearbox with cap **1B** in correspondence with the horizontal axis. Remove the cap as indicated in picture A and check that the oil level is in correspondence with it. Otherwise, refill from fill cap **1A** up to reaching the level; at the end of the operations, close the caps.

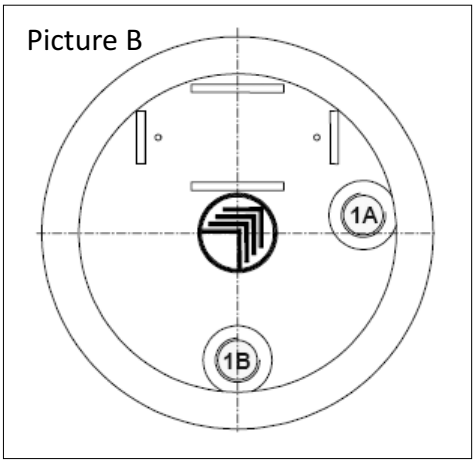
Picture A



- **Gearbox oil replacement**

The gearbox oil must be replaced for the first time after 150 working hours, then every 1000 working hours.
To replace it, follow the following steps:
- stop the gearbox with cap **1B** positioned in the lower part of the gearbox as indicated in picture B;
- remove both caps and let the oil drain out completely;
- place the gearbox as described above and refill.

Picture B



IMPORTANT

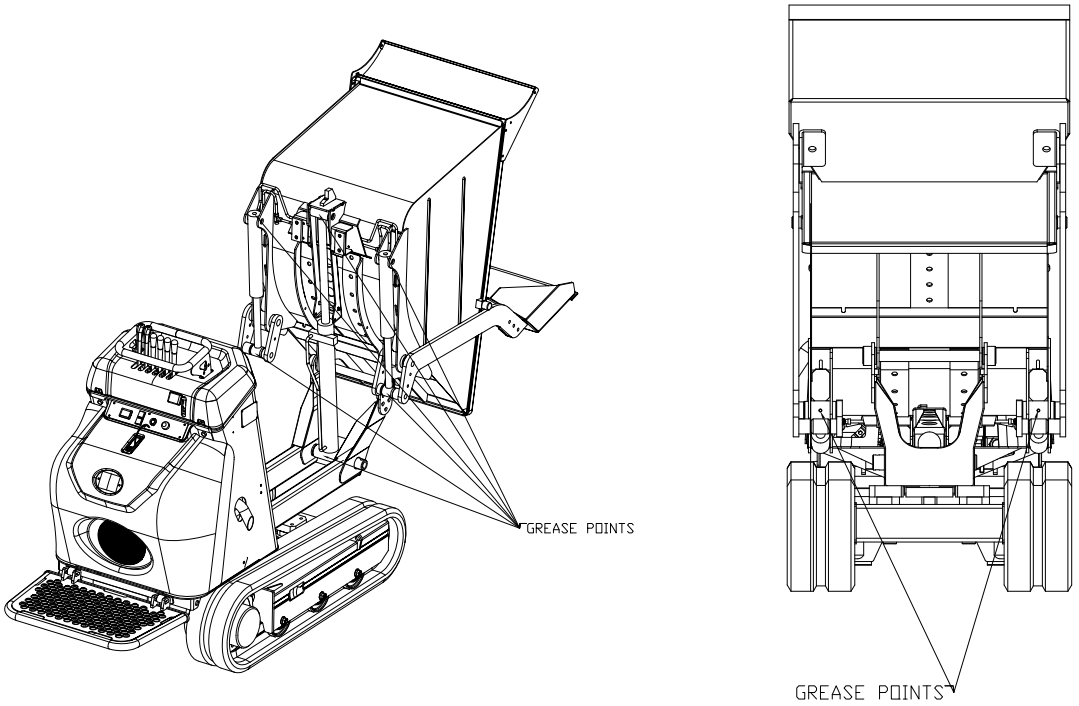
Avoid using different oil types and brands.

Choosing the appropriate gearbox oil

For gearboxes, we recommend gear oils with EP additives and viscosity according to ISO VG150 or SAE 80W/90 (-20 degrees/+30 degrees) or SAE 85W/140 (+10 degrees/+45 degrees).

6.5 GREASE POINT

Every 10 hours of work greasing the point indicate in the picture below (if present in the version), use only the recommended lubrificants in order to protect pins and connections from wear



6.6 MAINTENANCE ON THE LIFTING MECHANISMS (ONLY FOR HI-TIP VERSION)

The skip support is raised on the hi-tip version using a chain mechanism
This chain needs to be greased periodically (recommended once a month), depending on the operating conditions. The play and wear of the chain should be checked frequently, together with the condition of the chain coupling pins and the coupling pins to the fixed part.
Measure the distance between the pins making up the chain and check that this does not exceed 2% of the rated value.
In practice, the check can be performed as follows:
- Completely close the lifting cylinder, resting the skip support on the base of the machine .

DANGER

Extend the lift cylinder to clear the access area to the chain.

- Measure the distance between the pins on 45 links in the chain.
  The total measurement must not exceed 867 mm.
- If the measured distance exceeds this value, immediately replace the chain.
  This check must be performed every month.
  Every day check that the body sliding guide is clean.

6.7 ELECTRIC SYSTEM

6.7.1 BATTERY REPLACEMENT

CAUTION

Don't touch with the key or other material both the poles of the battery becouse it's possible to damage the battery, the elettrical system or get an elettric shock.

6.7.1.1 STANDARD SKIP AND HI-TIP VERSION

In order to replace the battery open the skip of the dumper , block it using the cylinder safety locker and turn off the engine.
Disconect the pipe on the cylinder for lift the support and than remove it (only for hi-tip version).
Disconnect the battery swich and then remove the cablage of the battery and the battery lock.
Remove the battery rotating it and moving it out upper the pump.Install a new battery, block it using the battery lock and then reconnect all the component.

6.7.1.2 SELFLOADING VERSION

In order to replace the battery open the skip of the dumper , block it using the cylinder safety locker and turn off the engine.
remove the battery cover and disconnect the battery swich and then remove the cablage of the battery and the battery lock.
Remove the battery and install a new battery, block it using the battery lock and then reconnect all the component.

6.7.2 BATTERY

Checking electrolyte (for batteries requiring maintenance) and terminals.

IMPORTANT

Caution: the battery gas can explode. Keep candles and flames away from the battery. Use an electric torch to check the electrolyte level.
The sulfuric acid in the electrolyte is poisonous. It is strong enough to burn skin, cause damages to clothing and blindness if it comes into contact with eyes.

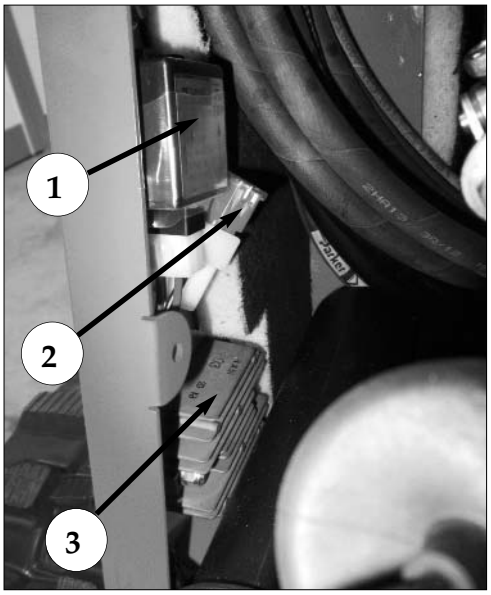
In order to avoid personal injuries:
a. Place the battery in a ventilated area;
b. Wear the required PPE such as safety glasses and rubber gloves.

If the battery fluid comes into contact with the skin or clothing, immediately rinse with water, then wash thoroughly with soap. If it comes into contact with the eyes, immediately rinse them with clean water for 15 minutes and then seek medical attention.

Follow the steps below to check and refill the battery fluid:
a. Make sure to turn the engine off and the ignition key to OFF position.
b. Disconnect the battery switch.
c. Remove the terminals.
d. Remove the battery fluid caps.
e. Add distilled water if needed (the battery fluid level should always be between the minimum and maximum indicated on the battery itself). Make sure to check this before charging the battery.
f. Close the caps again.
g. Reinstall the terminals.

6.7.3 FUSES AND RELAYS

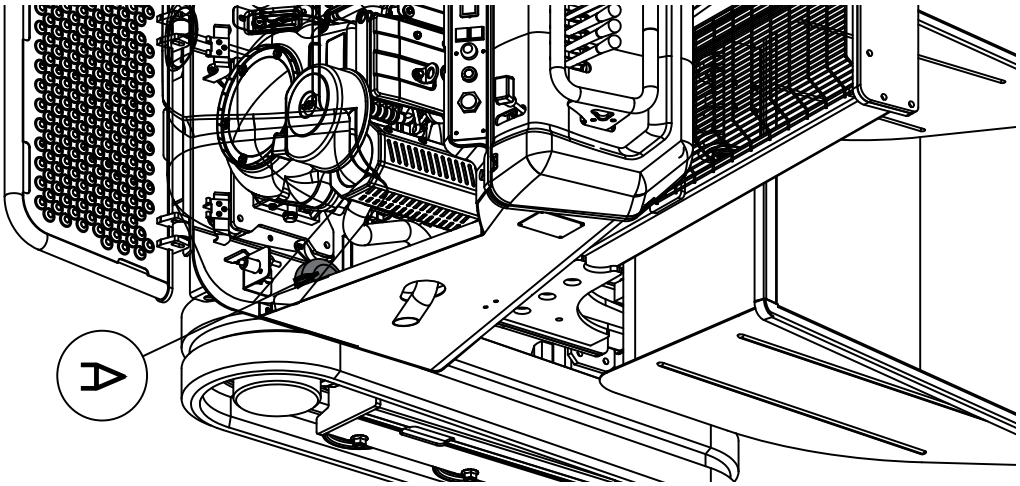
The fuses and the relays of the machine are located on the left surface of the dumper; for removale and replaice the components open the engine cover and look down in the left.
Before to operate with fuses and relays check the engine is off and the battery switch is switched off.



1. TIMER ENGINE STOP
2. FUSE F1
3. REGULATOR

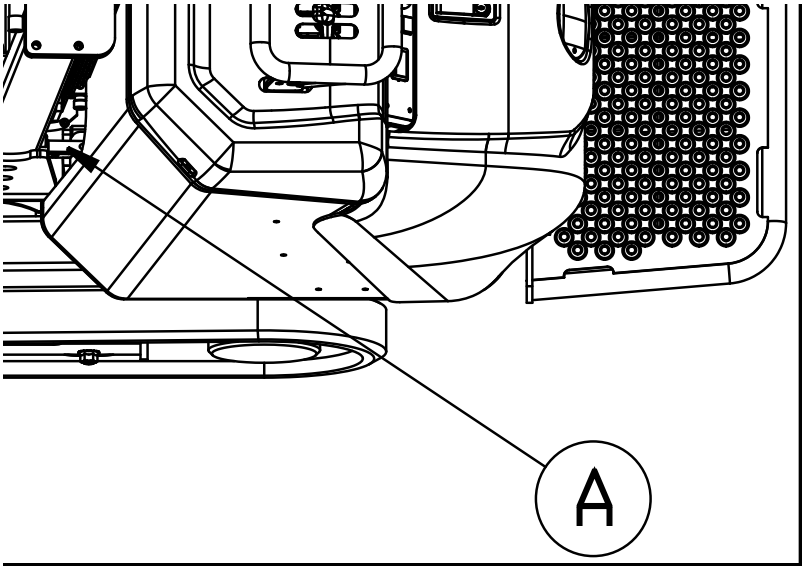
6.7.4 TILT INDICATOR (only for hi tip version)

Behind the battery swich there is a tilt indicator, see in the photo below the indication with the letter A.



6.7.5 CONTACT SENSING (only for hi tip version)

The contact sensing is positionade in the lower left front of the master; indicate in the following photo with the letter A.
For change it disconect the battery swich cut the cable and than remove the screw. prepare a plug on the new contact and on the cable cut on the dumper. install with the screw the new sensor and than connect the plug.



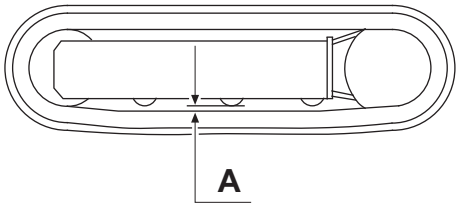
6.7.6 CHECK THE ELETTRICAL SYSTEM WITH THE BUZZER (only for hi-tip version)

start the engine and raise the skip support, stop the engine and then turn the key from the 0 to the AC position, rotating the key the buzzer must rings for an instant. If the buzzers don't rings contact the support Hinowa.

6.8 RUBBER TRACKS MAINTENANCE

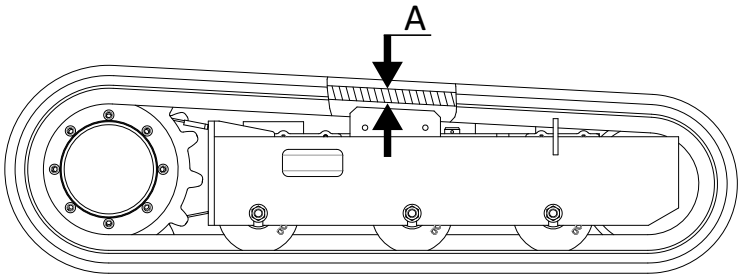
6.8.1 CHECKING TRACK TENSION

Stop your machine on a flat and solid ground. Raise your machine off the ground safely and support it by applying stable blocks or jack stands under the undercarriage frame. In correspondence with the undercarriage central roller, measure distance **A** of the bottom of the roller to the hard internal part of the rubber belt. Track tension is normal if measure **A** is between 10 and 15 mm.
If the tension is not within the above measure, or too tight, please follow the procedure illustrated in the following paragraph.



AS AN ALTERNATIVE TO THE ABOVE-MENTIONED PROCEDURE, YOU CAN FOLLOW THE PROCEDURE BELOW. IN THIS CASE, THE CHECK IS LESS ACCURATE AND PRECISE.

Stop your machine on a flat and solid ground.
In correspondence of the upper skid of the carriage, measure distance **A** of the bottom of the skid to the hard internal part of the rubber belt, lifting the belt manually. The track tension is normal if measure **A** is between 10 and 15 mm.
If the tension is not within the above measure, or too tight, please follow the procedure illustrated in the following paragraph.

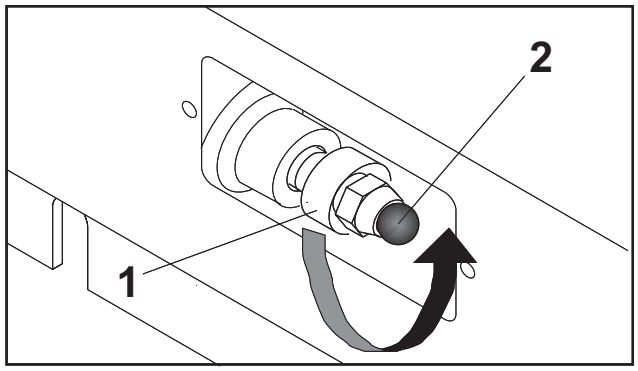


6.8.2 TENSIONING RUBBER TRACKS

The grease contained in the hydraulic tracks is under preassure.

When gravel or mud is stuck between the sprocket teeth and track links, remove it before tightening the tracks.

- To tighten the tracks, connect a grease gun to grease fitting 2 and add grease until the track tension reaches the indicated values (preferably use a pneumatic pump with 100 bar operating pressure).
- Clean up any grease spillage.



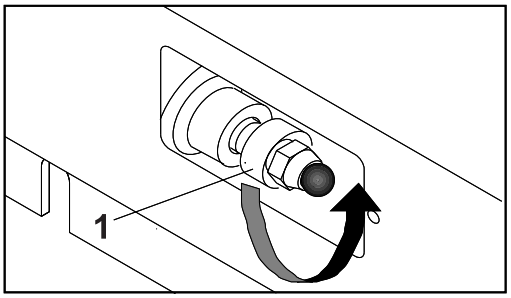
DANGER

If the track is still loose after greasing, this is an abnormal behavior. In such case, please contact Hinowa customer service.

6.8.3 REMOVING RUBBER TRACKS

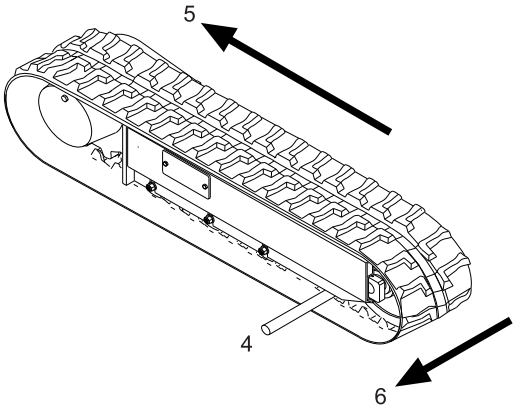
1. Stop your machine on a flat and solid ground. Lift the machine using the description at the paragrafh 5.11.

2. To loosen the track, slowly unscrew grease release valve (1) counter-clockwise for no more than a turn. One turn of valve 1 is enough to loosen the track.



3. If the grease does not start draining out, rotate the track slowly.

4. Use a pry bar (4) of adequate length to force a tooth of the central wheel out of the idler, then rotate the track slowly (5) using the pry bar to help it out, if necessary. Force (6) sideways to slide the track and lift it from the idler.

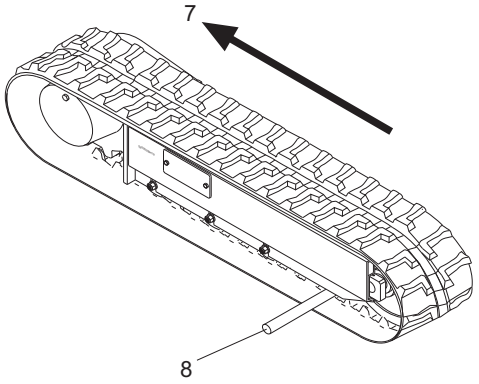


6.8.4 INSTALLING RUBBER TRACKS

DANGER

1. Before installing the rubber tracks, make sure that you are always in safe conditions with the machine suspended from the ground, as indicated in the previous paragraph.

2. Check that the grease contained in the hydraulic cylinder has been removed.



3. Mesh the track links with the track teeth of sprocket wheel and place the other end of the track on the idler.

4. Rotate the drive wheel to reverse slowly (7) pushing into the frame.
   If necessary, help yourself with a pry bar (8), especially to "walk" the first teeth in past the idler.

5. Make sure that the track links are properly meshed in the sprocket and idler.

6. Adjust the track tensioning (see paragraph No. 6.5.2 "*Tensioning rubber tracks*").

7. Lower the dumper down to the ground.

6.9 TIGHTENING BOLTS AND NUTS

An essential part of the dumper maintenance is to check bolts, nuts and parts in general that may be subject to loosening.
Pay particular attention to frame components such as idlers, gear motors, drive wheels and tracks. Check that they are sufficiently tightened according to the following table.

Thread diameter mm	Pitch mm	kgf•m
6	1	1,3 ± 0,15
8	1,25	3,2 ± 0,3
10	1,5	6,5 ± 0,6
12	1,75	11 ± 1
14	2	17,5 ± 2
16	2	27 ± 3
18	2,5	37 ± 4
20	2,5	53 ± 6
22	2,5	73 ± 8
24	3	92 ± 10
27	3	135 ± 15
30	3,5	184 ± 20

6.10 STORAGE OF THE MACHINE

1. Check the machine. Repair worn or damaged parts. Install new parts if needed.
2. Clean the filter elements of the air filter.
3. Lubricate all grease points.
4. Put stable blocks under the tracks.
5. Wash the machine.
6. Remove the battery and put it in a dry place, after charging it completely.
7. Paint the necessary parts to avoid rust.
8. Store the machine in a dry and safe place. If you store it outdoor, cover it with a tarp against the rain after the machine has cooled down.
9. Fill the tank with fuel so as to avoid formation of rust inside.
10. When the engine is not used for a long time, let it run without load for about 5 minutes every 2 or 3 months, so as to keep it clean and free from rust. If the engine is kept without ever running it, the air humidity may condense on its sliding parts and cause rust.

• **Removal of the machine from storage**

CAUTION: turn the engine on only in a well-ventilated area.

1. Check the level of all fluids.
2. Turn the engine on at half speed for some minutes before starting to operate.
3. Operate all hydraulic parts several times.
4. Carefully check the whole system before operating the machine with full load.

7. TECHNICAL SPECIFICATIONS

7.1.1 TECHNICAL CHARACTERISTICS STANDARD DUMPER BED VERSION

DIESEL ENGINE

Manufacturer and type .....KUBOTA OC95
Pistons and displacement .....mono-cylinder 416 cc
Gross max power .....9,4 HP - 3600 rpm
Electric start .....12 volt
Maximum operating temperature .....40° C
Setting rpm 3400

HYDRAULIC SYSTEM

Pumps, number and type .....3 gear pumps 4 - 4 - 4 cm^3
Liters/min capacity .....14,2 l/1'
Pressure .....165 bar P1 -P2 / 95 bar P3

UNDERCARRIAGE

Track width .....180 mm
Rollers per side .....3 + slide
Translation speed .....2,6 - 3,8 km/h
Optional hydraulic extension (only for extendable version) .....758/1058 mm

OPERATING WEIGHT

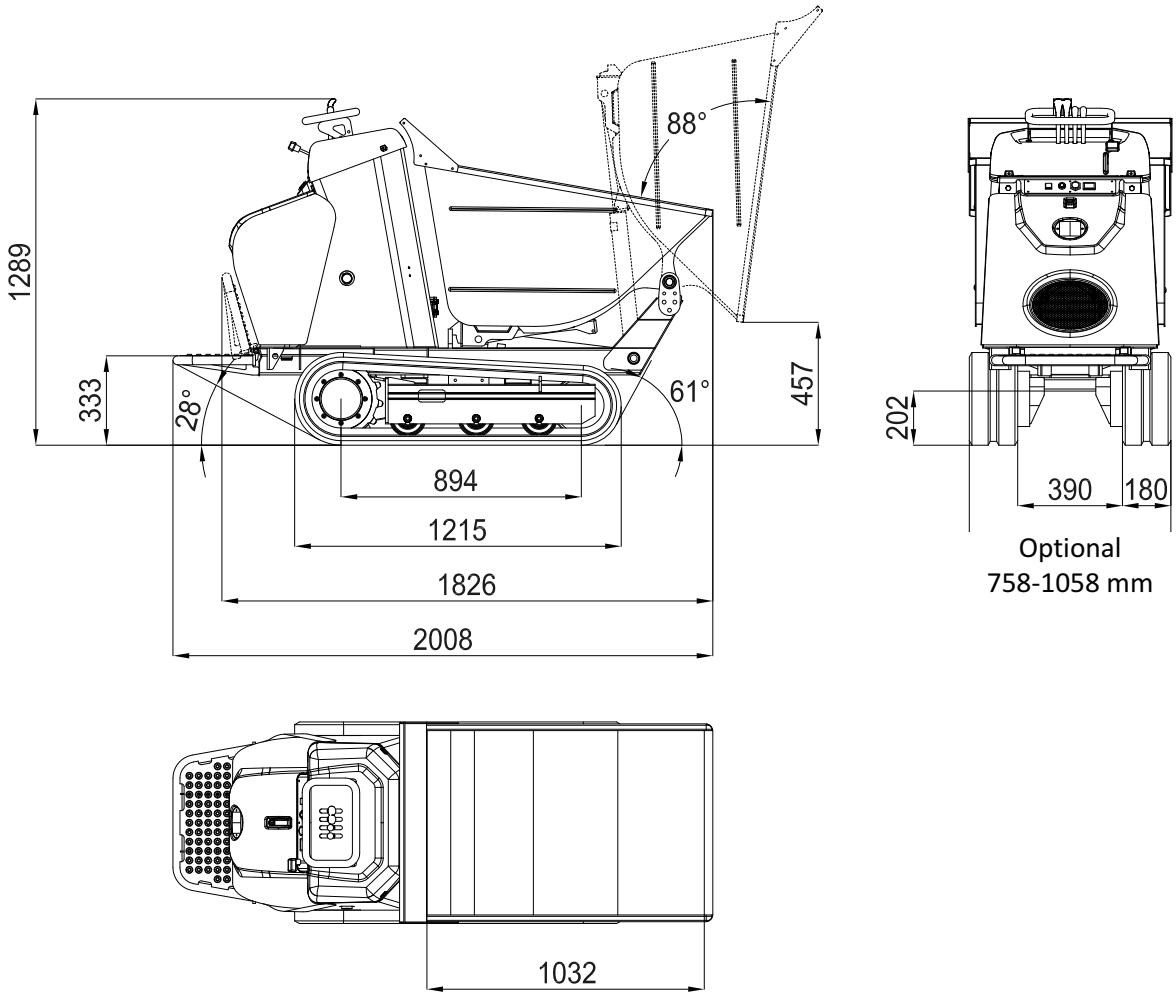
Operating weight without operator (fixed undercarriage) .....580 kg
Operating weight without operator (extensible undercarriage) .....660 kg

PERFORMANCE

Max slope front .....15°
Max slope side .....20°
Capacity .....700 kg

Sound pressure level at operator's ear .....92 dB (A)
Sound pressure level measured .....100 dB (A)
Sound pressure level guaranteed .....101 dB (A)

Vibrations transmitted to the operator's hand/arm system during
normal off-road use of the machine (HAV) .....Aw 2,14 m/s^2
Vibrations transmitted to the operator's body as a whole during
normal off-road use of the machine (WBV) .....Aw 0,61 m/s^2



Dimension reported in this drawing are nominal.Real value of each dimension can be influenced by tollerance in the manufacture of the component, play in the connections, elastic deformations due to the effects of forces.

7.1.2 TECHNICAL CHARACTERISTICS HI-TIP VERSION

DIESEL ENGINE

Manufacturer and type .....KUBOTA OC95
Pistons and displacement .....mono-cylinder 416 cc
Gross max power .....9,4 HP - 3600 rpm
Electric start .....12 volt
Maximum operating temperature .....40° C
Setting rpm 3400

HYDRAULIC SYSTEM

Pumps, number and type .....3 gear pumps 4 - 4 - 4 cm^3
Liters/min capacity .....14,2 l/1'
Pressure .....165 bar P1 -P2 / 95 bar P3

UNDERCARRIAGE

Track width .....180 mm
Rollers per side .....3 + slide
Translation speed .....2,6 - 3,8 km/h
Hydraulic extension (only for extendable version) .....758/1058 mm

OPERATING WEIGHT

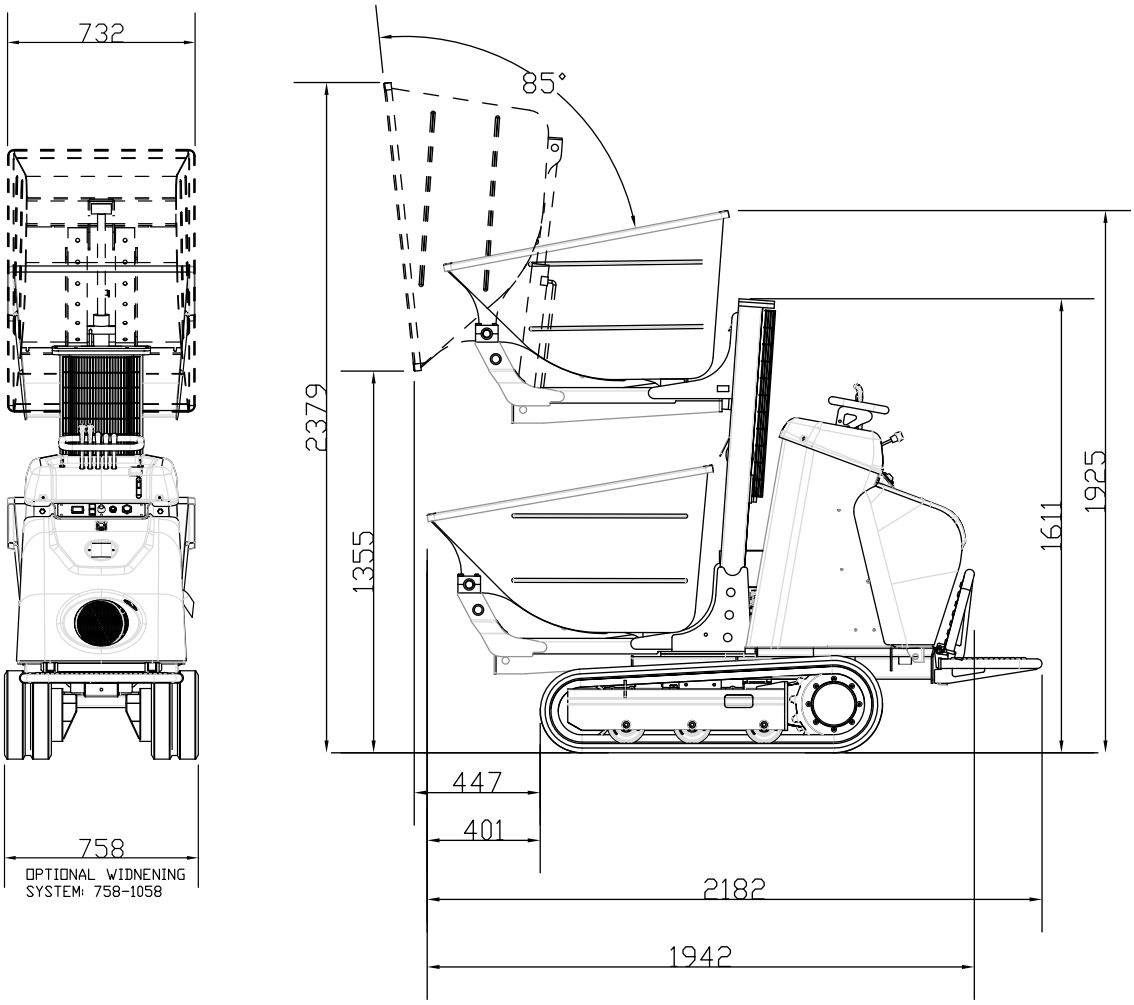
Operating weight without operator (fixed undercarriage) .....660 kg
Operating weight without operator (extensible undercarriage) .....740 kg

PERFORMANCE

Max slope with skip in lower position .....15°
Max slope with skip raised .....8°
Capacity .....550 kg

Sound pressure level at operator's ear .....92 dB (A)
Sound pressure level measured .....100 dB (A)
Sound pressure level guaranteed .....101 dB (A)

Vibrations transmitted to the operator's hand/arm system during
normal off-road use of the machine (HAV) .....Aw 2,14 m/s^2
Vibrations transmitted to the operator's body as a whole during
normal off-road use of the machine (WBV) .....Aw 0,61 m/s^2



Dimension reported in this drawing are nominal.Real value of each dimension can be influenced by tollerance in the manufacture of the component, play in the connections, elastic deformations due to the effects of forces.

7.1.3 TECHNICAL CHARACTERISTICS SELF LOADING VERSION

DIESEL ENGINE
Manufacturer and type .....KUBOTA OC95
Pistons and displacement .....mono-cylinder 416 cc
Gross max power .....9,4 HP - 3600 rpm
Electric start .....12 volt
Maximum operating temperature .....40° C
Setting rpm 3400

HYDRAULIC SYSTEM
Pumps, number and type 3 gear pumps - .....4 cm^3
Liters/min capacity .....14,2 l/1'
Pressure .....165 bar P1 -P2 / 95 bar P3
Hydraulic oil cooling ..... air cooler

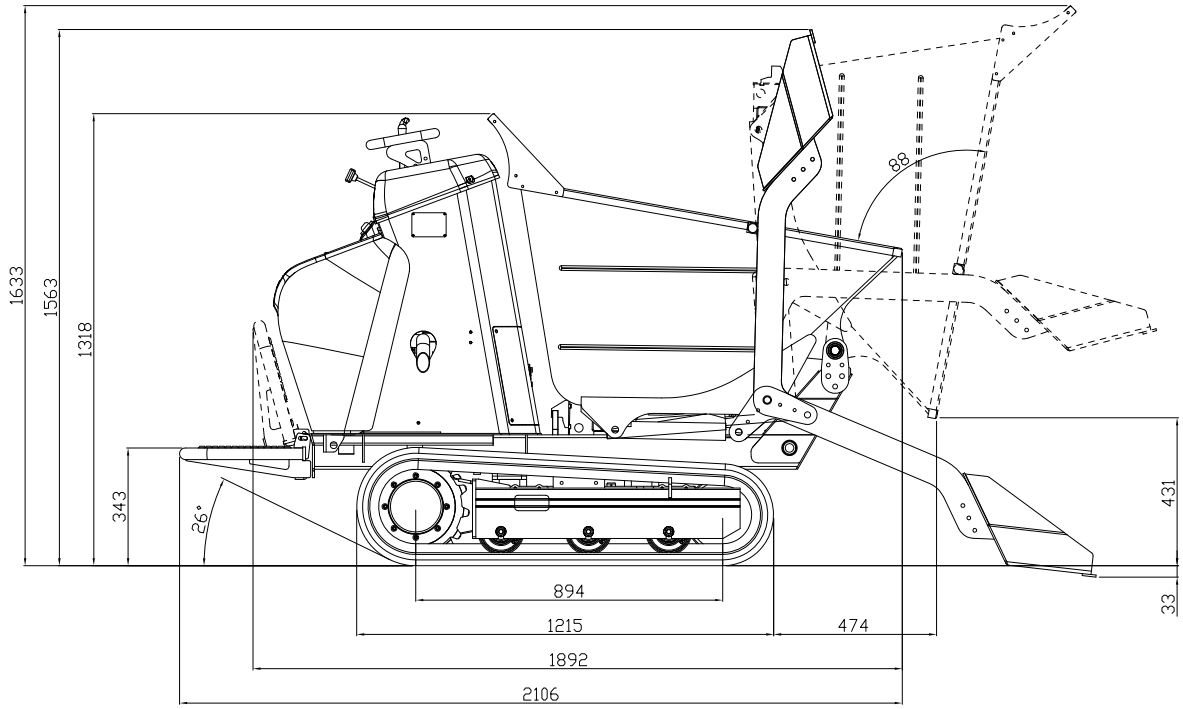
UNDERCARRIAGE
Track width .....180 mm
Rollers per side .....3 + slide
Translation speed .....2,6 - 3,8 km/h
Hydraulic extension (only for extendable version) .....758/1058 mm

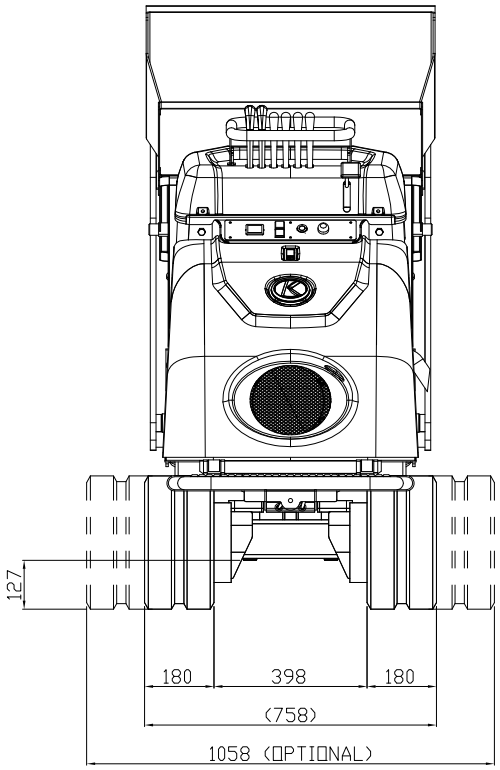
OPERATING WEIGHT
Operating weight without operator (fixed undercarriage) .....735 kg
Operating weight without operator (extensible undercarriage) .....656 kg

PERFORMANCE
Max slope front and side .....15°
Capacity .....700 kg

Sound pressure level at operator's ear .....92 dB (A)
Sound pressure level measured .....100 dB (A)
Sound pressure level guaranteed .....101 dB (A)

Vibrations transmitted to the operator's hand/arm system during
normal off-road use of the machine (HAV) .....Aw 2,14 m/s^2
Vibrations transmitted to the operator's body as a whole during
normal off-road use of the machine (WBV) .....Aw 0,61 m/s^2

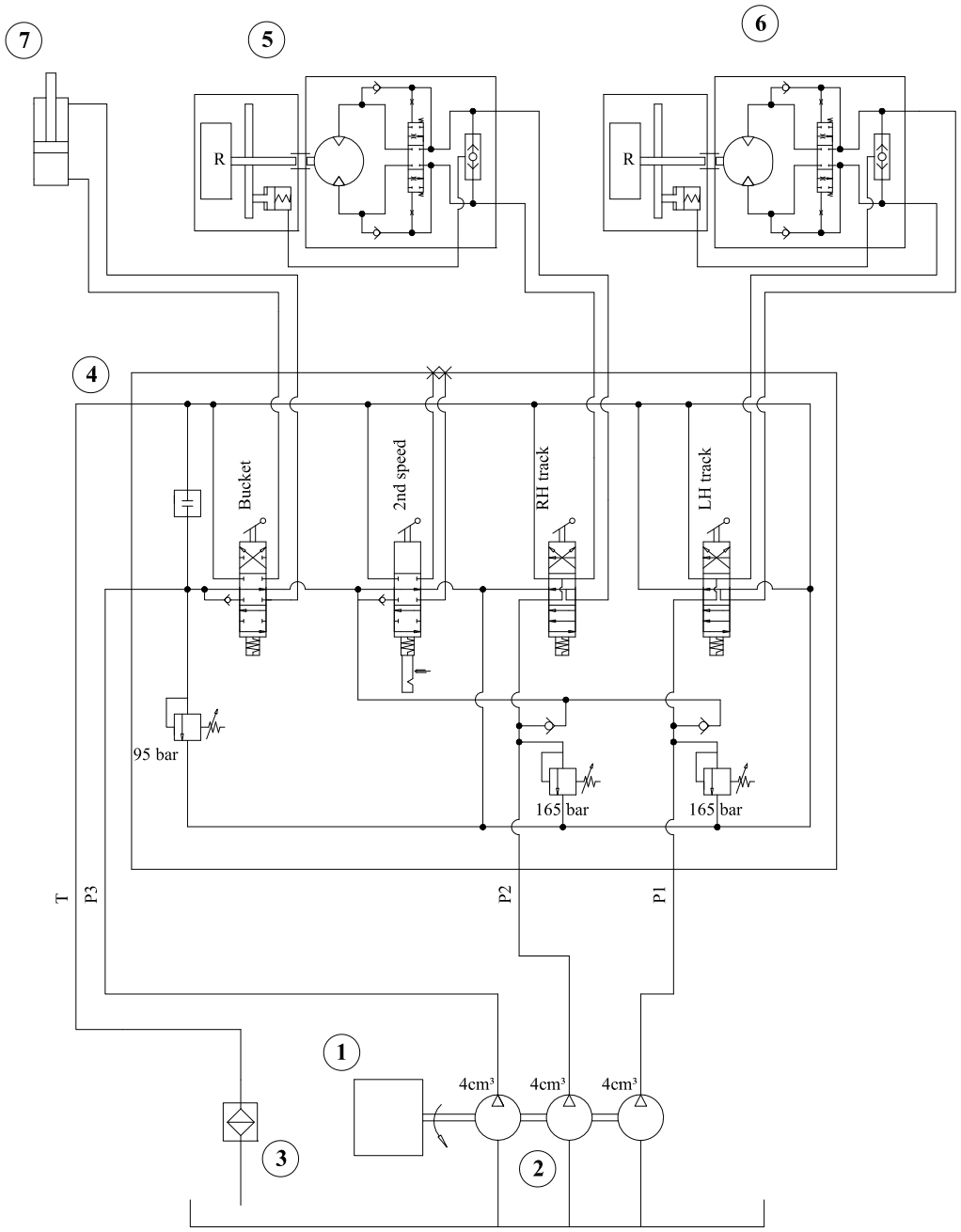




Dimension reported in this drawing are nominal.Real value of each dimension can be influenced by tollerance in the manufacture of the component, play in the connections, elastic deformations due to the effects of forces.

7.2 HYDRAULIC SYSTEM LAYOUT

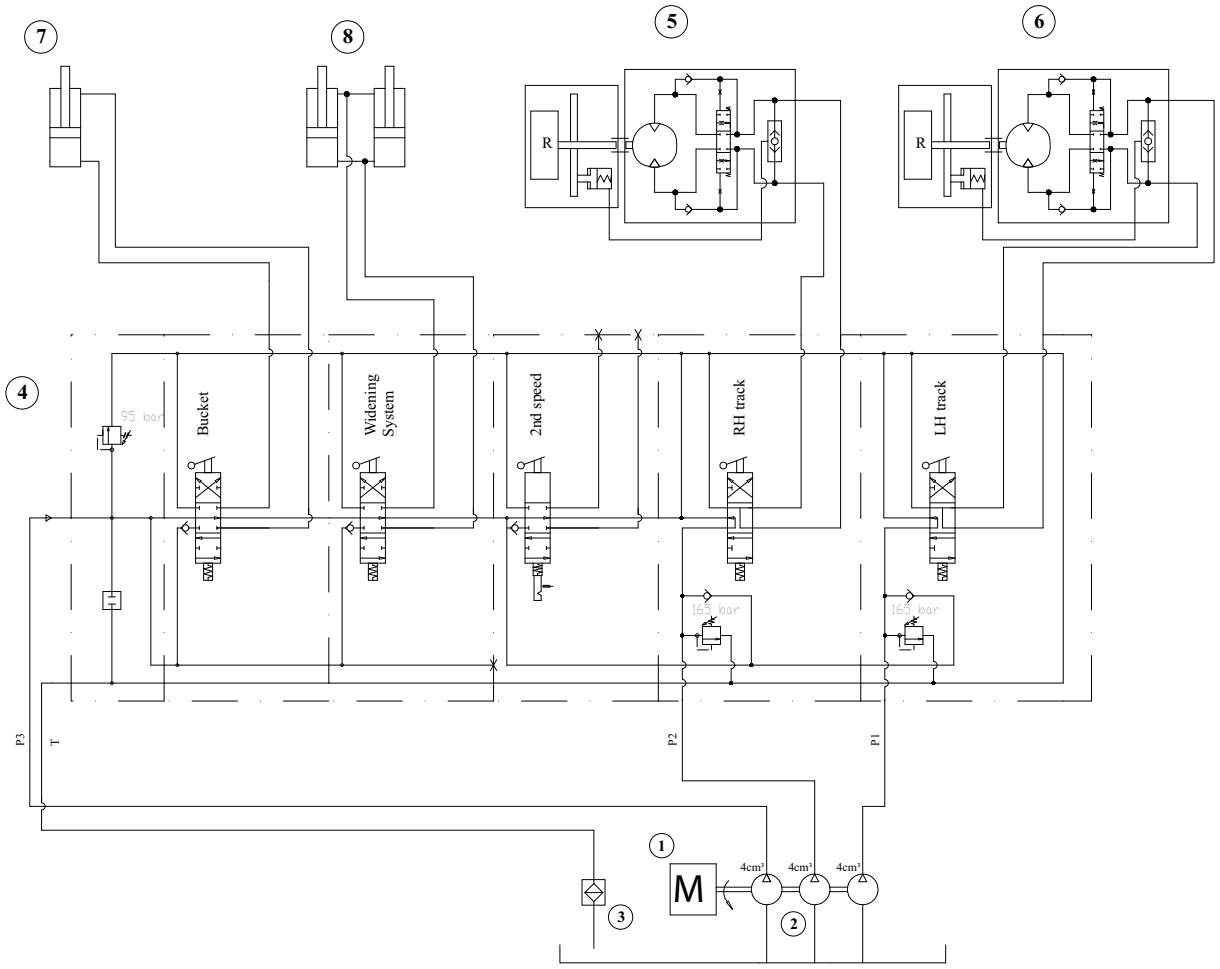
7.2.1.1 STANDARD SKIP VERSION WITH FIXED UNDERCARRIAGE



KEY

1 - Engine KUBOTA
2 - Triple gear pump
3 - Oil filter
4 - Distributor
5 - Gearmotor right track
6- Gearmotor left track
7- Skip

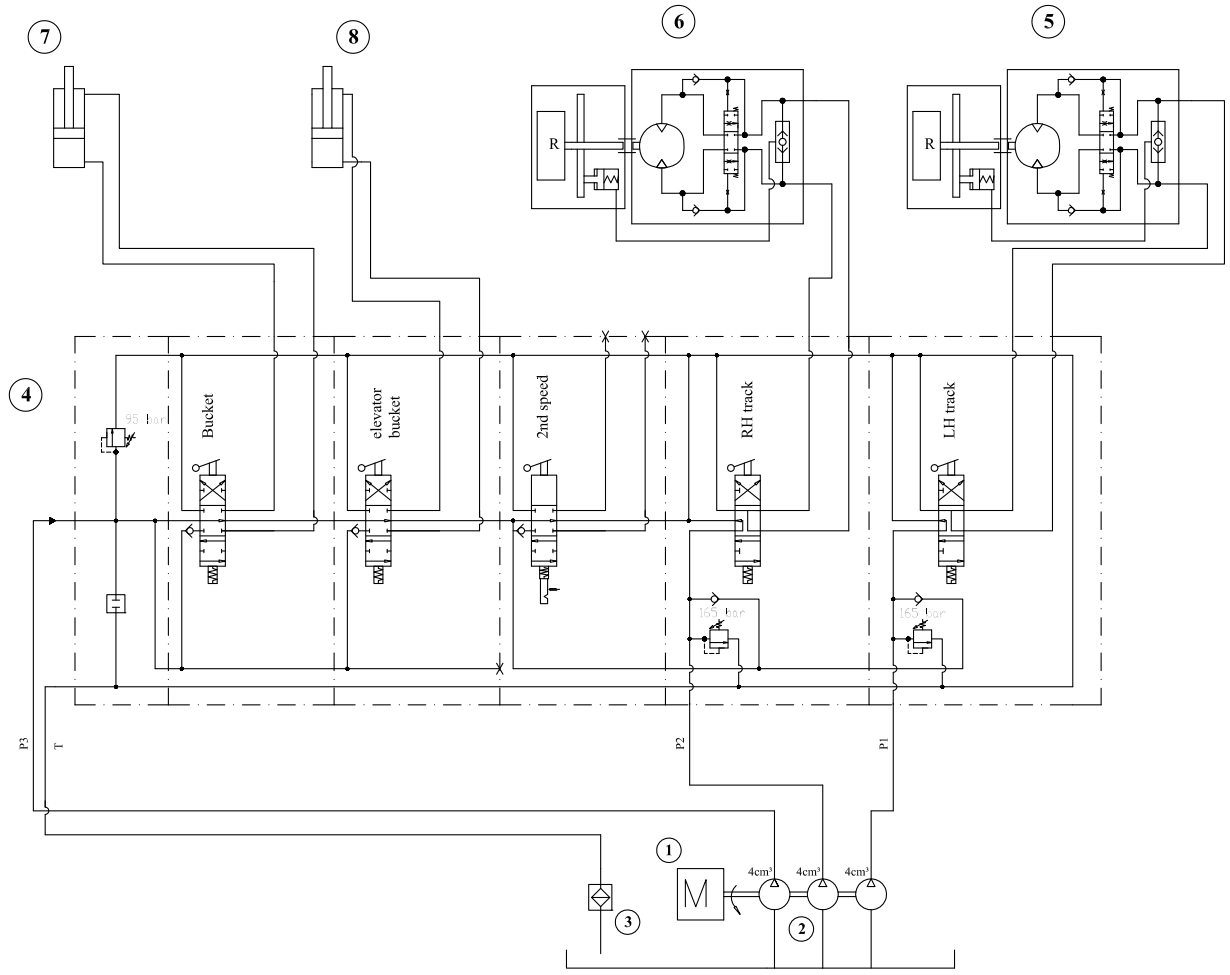
7.2.1.2 STANDARD SKIP VERSION WITH EXTENDABLE UNDERCARRIAGE



KEY

1 - Engine KUBOTA
2 - Triple gear pump
3 - Oil filter
4 - Distributor
5 - Gearmotor right track
6 - Gearmotor left track
7 - Skip
8 - Widening system

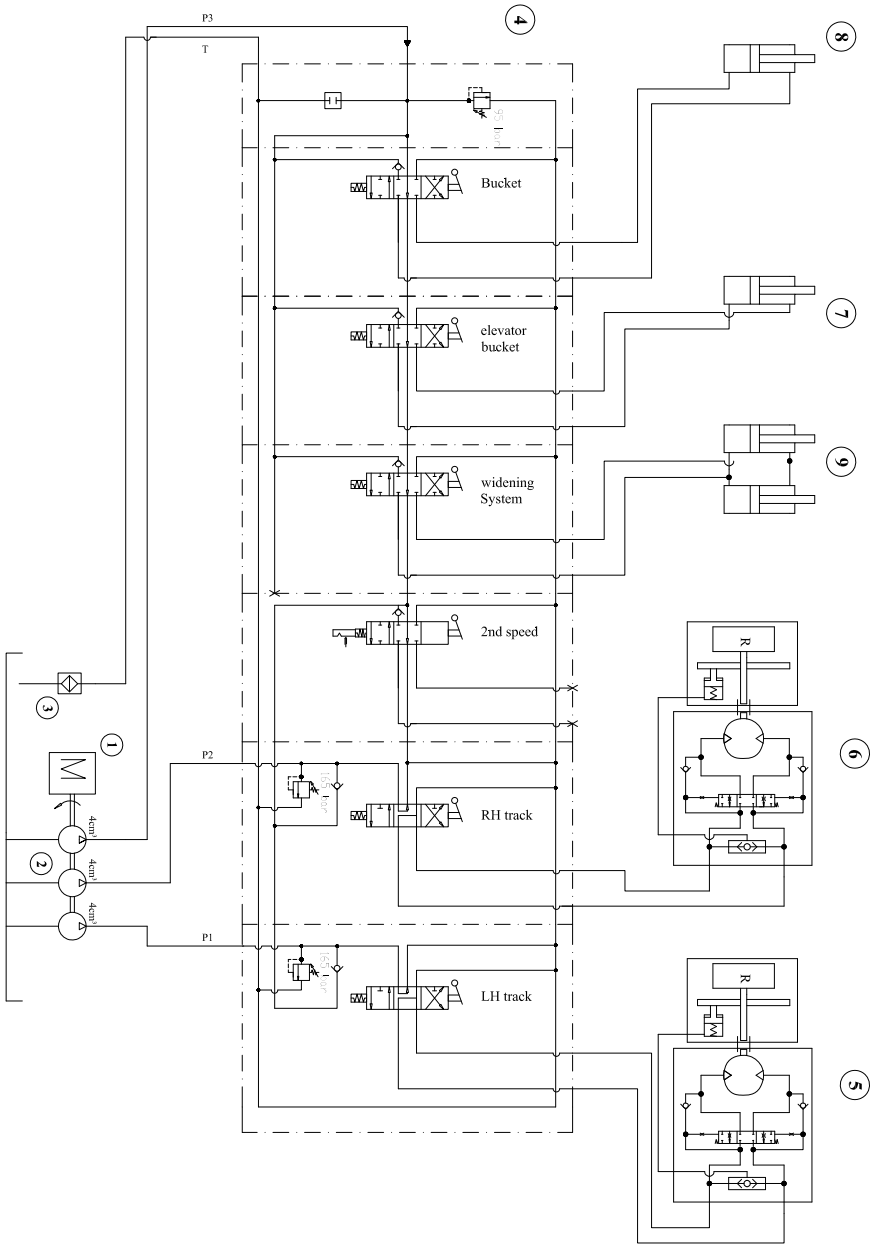
7.2.2.1 HI-TIP VERSION WITH FIXED UNDERCARRIAGE



KEY

1 - Engine KUBOTA
2 - Triple gear pump
3 - Oil filter
4 - Distributor
5 - Gearmotor left track
6 - Gearmotor right track
7 - Tilt skip
8 - Lift skip

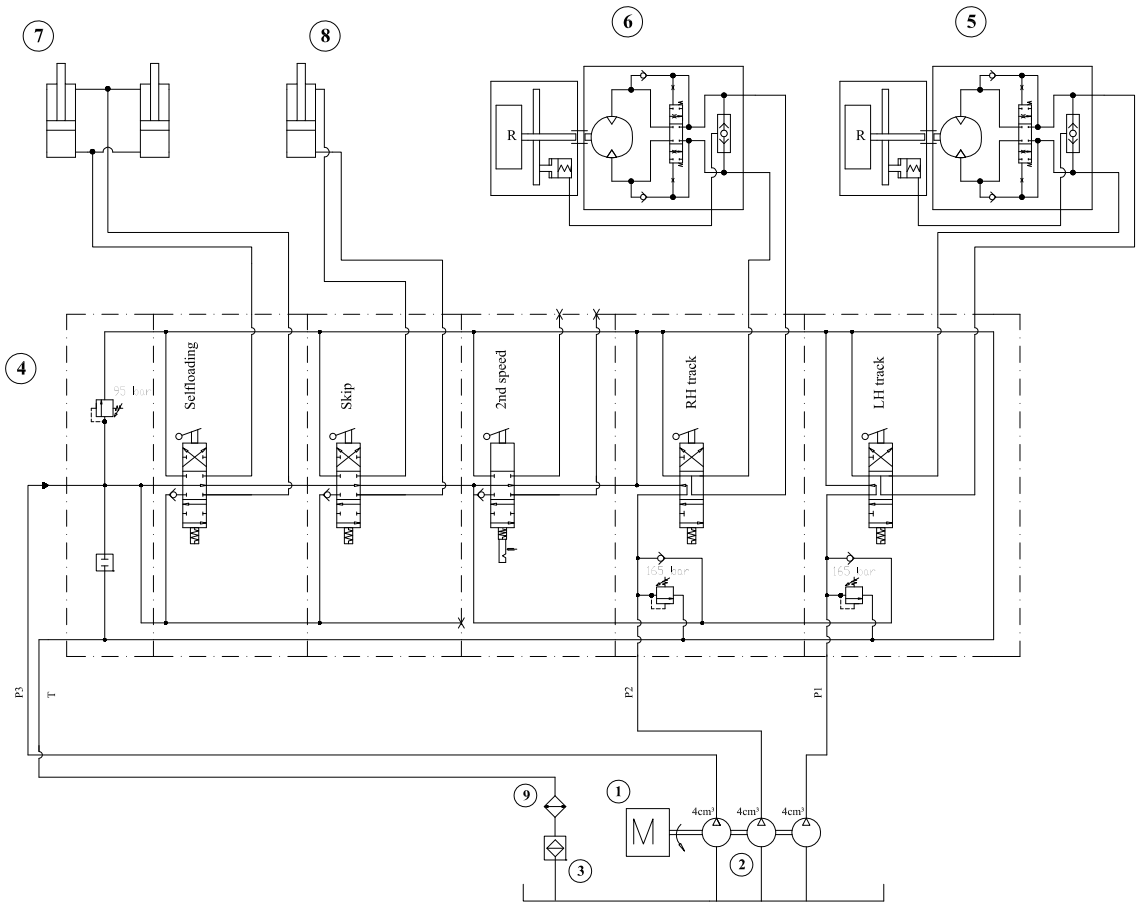
7.2.2.2 HI TIP VERSION WITH EXTENDABLE UNDERCARRIAGE



KEY

1 - Engine KUBOTA
2 - Triple gear pump
3 - Oil filter
4 - Distributor
5 - Gearmotor left track
6 - Gearmotor right track
7 - Lift skip
8 - Tilt skip
9 - Widening system

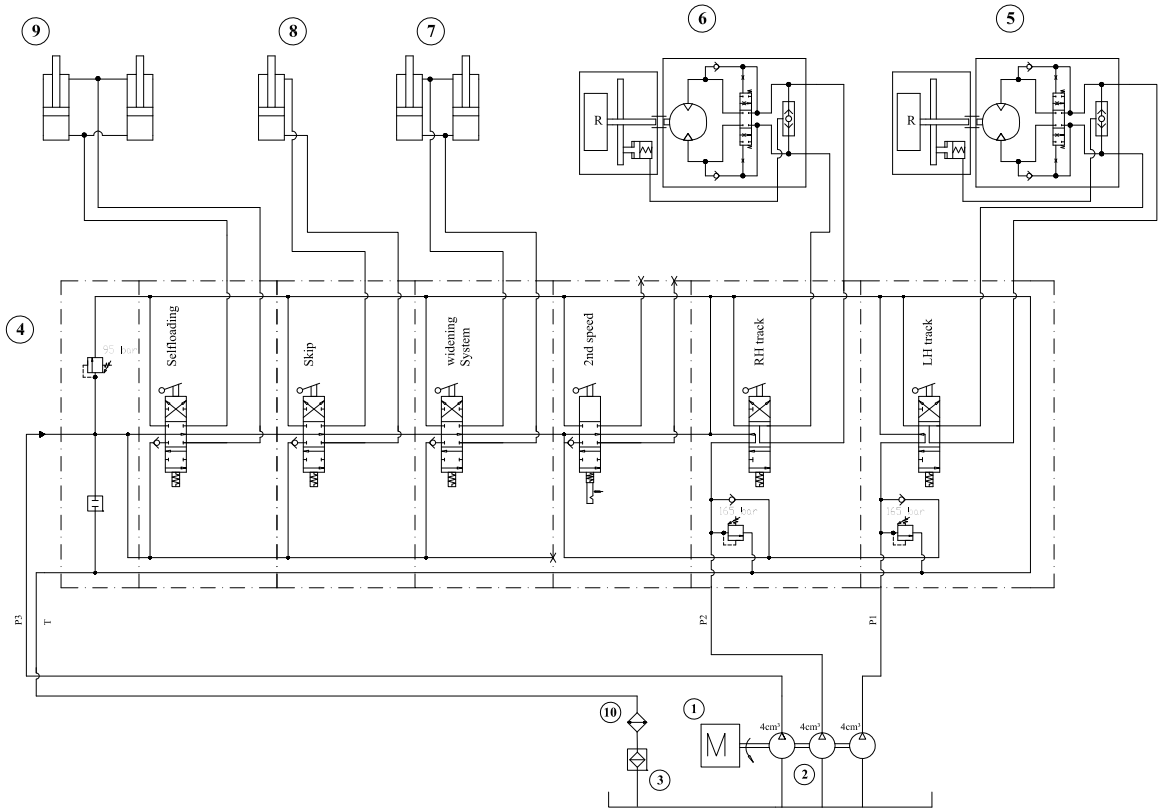
7.2.3.1 SELFLOADING VERSION WITH FIXED UNDERCARRIAGE



KEY

1 - Engine Kubota
2 - Triple gear pump
3 - Oil filter
4 - Distributor
5 - Gearmotor left track
6 - Gearmotor right track
7 - Self loading bucket
8 - Tilt skip
9 - Hydraulic cooler

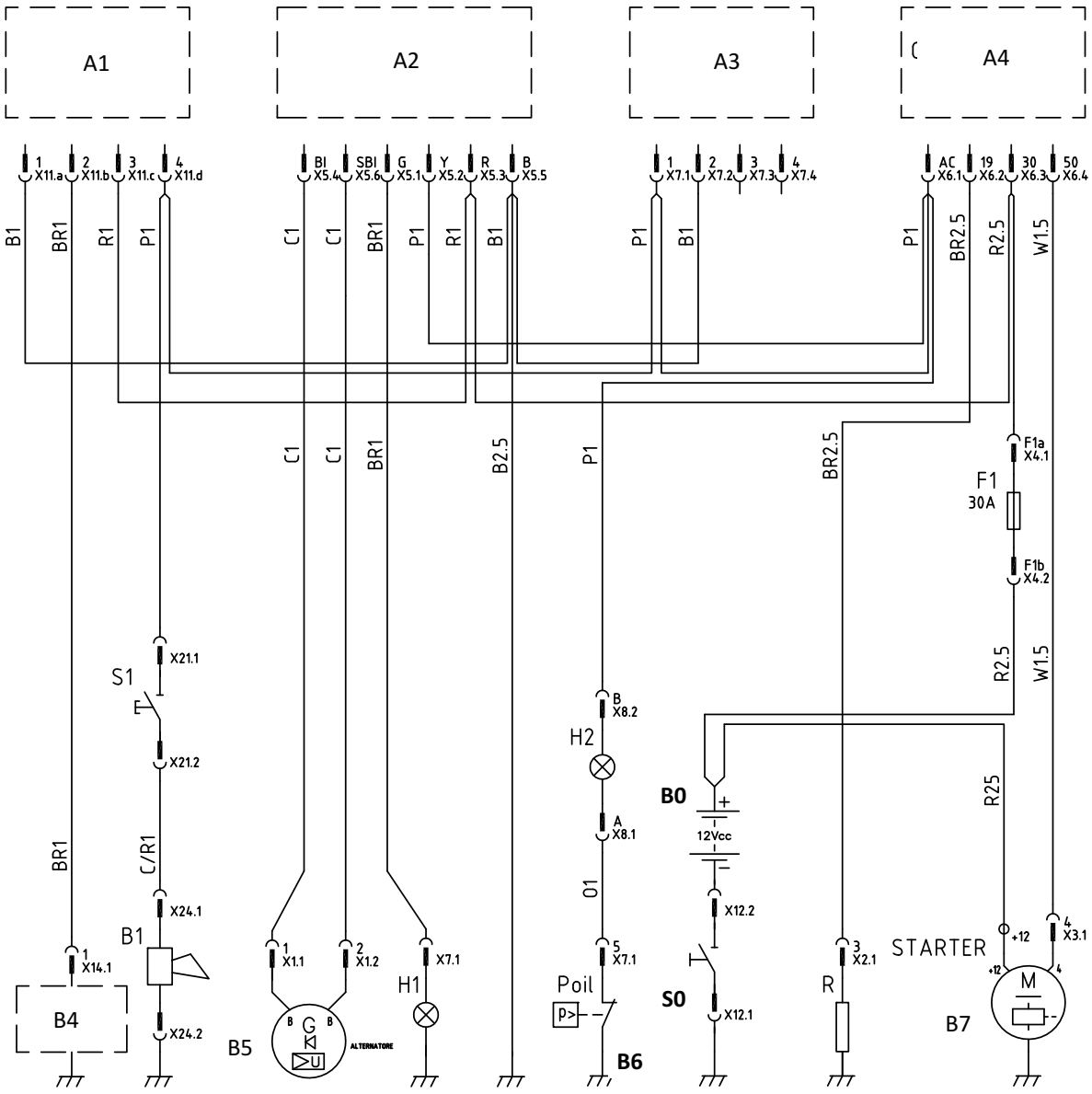
7.2.3.2 SELFLOADING VERSION WITH EXTANDABLE UNDERCARRIAGE



KEY

1 -
2 - Triple gear pump
3 - Oil filter
4 - Distributor
5 - Gearmotor left track
6 - Gearmotor right track
7 - Widening system
8 - Tilt skip
9 - Self loading bucket
10 -Hydraulic cooler

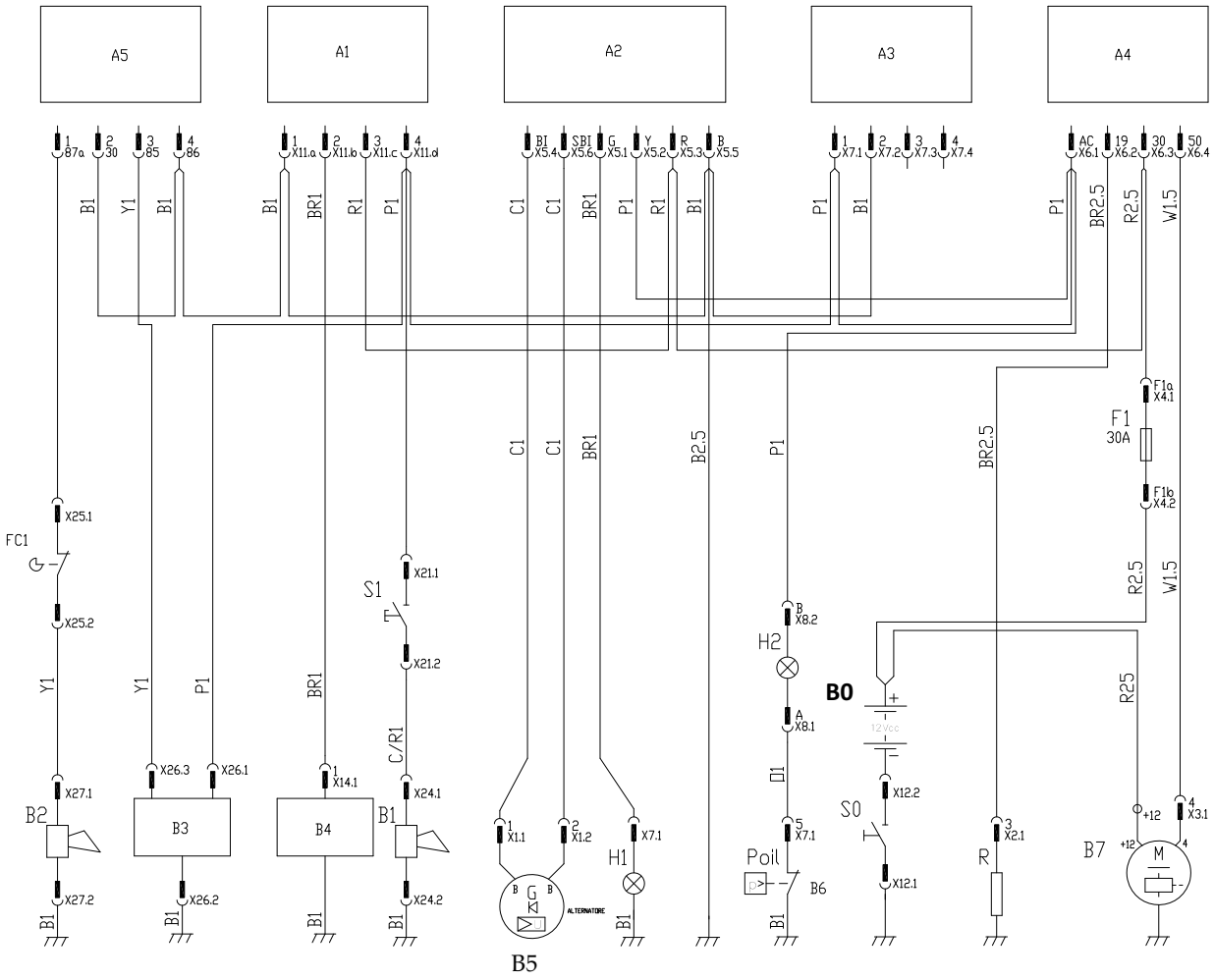
7.3 ELECTRIC SYSTEM LAYOUT STANDAR SKIP E SELFLOADING VERSION



KEY:

B1 acustic signaler
S1 acoustic signaler push botton
F1 general fuse
B4 engine stop
S0 battery switch
H1 battery charge indicator light
H2 oil pressure indicator light
B5 alternator
B6 engine oil pressure sensore
B7 starter
R glow plugs
A1 engine stop timer
A2 regulator
A3 counter
A4 ignition switch
B0 battery

7.4 ELECTRICAL SYSTEM LAYOUT HI TIP VERSION



KEY:

A5 relay
B1 acustic signaler
B2 beeper
S1 acoustic signaler push botton
FC1 contact sensing
F1 general fuse
B3 tilt indicator
B4 engine stop
S0 battery switch
H1 battery charge indicator light
H2 oil pressure indicator light
B5 alternator
B6 engine oil pressure sensore
B7 starter
R glow plugs
A1 engine stop timer
A2 regulator
A3 counter
A4 ignition switch
B0 battery

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