TRACK BUGGIES

AT14F & AT14S

SAFETY & OPERATIONS MANUAL

Manual Part #: 065300 | Revision: I
Language: English | Original Instructions

For your own safety and protection from personal injury, carefully read, understand, and observe the safety instructions described in this manual. Keep this manual or a copy of it with the machine at all times.

AT14 Track Buggy

SAFETY - OPERATIONS MANUAL

This manual covers the products listed below:

Part No.	Description
066604	BUGGY, AT14F, 14CUFT POLY FIXED
073370	BUGGY, AT14S, 14CUFT POLY SWIVEL

Allen Products are covered under one or more of the following patent numbers:
U.S. Design Patents: 344,736; 400,542; 400,544; 402,998; 402,999; 403,332; 404,041; 404,042; 410,931; 413,127; 416,564; 465,897; 466,909; 474,203.
U.S. Utility Patents: 5,108,220; 5,238,323; 5,328,295; 5,352,063; 5,405,216; 5,476,342; 5,480,257; 5,480,258; 5,533,831; 5,562,361; 5,567,075; 5,613,801; 5,658,089; 5,685,667; 5,803,658; 5,816,739; 5,816,740; 5,890,833; 5,934,823; 5,967,696; 5,988,938; 5,988,939; 6,019,433; 6,019,545; 6,048,130; 6,053,660; 6,089,786; 6,106,193; 6,857,815; 5,288,166; 6,582,153 B1, 7,108,449; 7,114,876; 7,316,523; 7,690,864 B2
Canadian Patents: 2,039,893.

Printed in U.S.A.

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Limited Warranty

I. LIMITED WARRANTY & LIMITATION OF LIABILITY

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

TWO YEARS FROM END USER'S DATE OF PURCHASE, SUBJECT TO THE EXCEPTIONS AND SHORTER WARRANTY PERIODS DESCRIBED HEREIN.

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

1. Allen's obligation and liability under this warranty are limited to repairing or replacing parts if, after Allen's inspection, there is determined to be a defect in material or workmanship. Allen reserves the choice to repair or replace.
2. All warranty-related parts must be purchased in advance through an Allen dealer. The parts will be made available to the Allen Distributor, Dealer, or Rental Center from whom the End User purchased the product.
For machines being prepared, a warranty request form and/ or RGA request form must be submitted to AEC after the repairs are completed.
3. Replacement warranty parts, installed in the product, are warranted only for the remainder of the warranty period of the product as though they were the original parts.
4. BATTERY POWERED PRODUCTS ARE WARRANTED FOR ONE YEAR FROM END USER'S DATE OF PURCHASE.
5. Allen does not warranty engines or batteries. Engine warranty claims should be made directly to an authorized factory service center for the particular engine manufacturer. Batteries are not warranted due to unknown treatment during transport, etc., and any battery claims should be directed to the battery manufacturer.
6. Allen's warranty does not cover the normal maintenance of products or their components(such as engine tune-ups and oil & filter changes). The warranty also does not cover normal wear and tear items(such as belts, tires, blades, pans and other consumables).
7. Hydraulic Component's are required to be maintained per Allen's mandatory service intervals in each machines owners manual. OEM Allen hydraulic filters and consumables are required to service machines during the warranty period. Failure to use OEM Allen hydraulic filters will result in denied warranty.
8. Allen's warranty will be void if it is determined that the defect resulted from operator abuse, failure to perform normal maintenance on the product, modification to product, alterations, or repairs made to the product without the written approval of Allen. Allen specifically excludes from warranty any damage to any trowels resulting from a drop or impact to the rotors.
9. Impact damage to gearboxes is not covered under the Allen warranty and is deemed customer abuse.
10. Impact damage to trowels in any way is not covered under the Allen Warranty and is deemed customer abuse. (Example: Dropping a machine)
11. Allen will pay shop labor on warranty items at the Allen Shop Labor Rate in existence on the date of the warranty claim. An Allen labor chart will determine the time allowed to complete a repair and will govern the shop labor hours that will be allowed.
12. Allen will credit the cost of ground freight on warranty replacement parts after approval of the warranty claim. No warranty replacement parts will be shipped air-freight at the expense of Allen. Allen does not pay any inbound freight.
13. ALLEN ENGINEERING CORPORATION'S WARRANTY POLICY WILL NOT COVER THE FOLLOWING: TAXES; SHOP SUPPLIES; ENVIRONMENTAL SURCHARGES; AIR FREIGHT; TRAVEL TIME;LOSS OF TIME;INCONVENIENCE;LOSS OF RENTAL REVENUE; RENTAL COSTS OF EQUIPMENT USED TO REPLACE THE PRODUCT BEING REPAIRED;LOSS OF USE OF THE PRODUCT; COMMERCIAL LOSS; OR ANY OTHER CHARGES WHATSOEVER OR ANY LIABILITIES FOR DIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGE OR DELAY.
14. ALLEN ENGINEERING CORPORATION MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED. THIS LIMITED WARRANTY IS IN LIEU OF THE WARRANTY OF MERCHANTABILITY AND FITNESS. THERE ARE NO OTHER WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION ON THIS DOCUMENT.
15. No Allen employee or representative is authorized to change this warranty in any way or grant any other warranty unless such change is made in writing and signed by an officer of Allen Engineering Corporation.
16. Warranty claims must be submitted within 30 days from the date of failure.
17. Once a warranty claim has been submitted, AEC has up to 90 business days to process the request.
18. Standard service part warranty will not exceed 90 days from the date of purchase. Exceptions to this are:
#1 Gearboxes: 1year warranty from date of purchase.
#2 Electrical Components: 30 day warranty from date of purchase. This applies to wiring harnesses, transmitters, ECUs, display screens, and toggle switches.
19. All purchased components are subject to the inspection and warranty of the respective manufacturer. This inspection may extend beyond 90 days.
20. If warranty is suspected do not disassemble any hydraulic or electrical components. Failure to comply with this instruction will lead to denial of a warranty claim.

Information Contained in this Manual

This manual provides information and procedures to safely operate and maintain the Allen Machine.

For your own safety and protection from personal injury, carefully read, understand, and observe the safety instructions described in this manual. Keep this manual or a copy of it with the machine at all times.

Always operate this machine in accordance with the instructions described in this manual. A well maintained piece of equipment will provide many years of trouble free operation.

This manual is divided into the following sections:

SECTION 1 SAFETY

SECTION 2 OPERATIONS

SECTION 3 SERVICE

Complete any warranty requirements as specified by the engine manufacturer in their instructions found inside the manual box located on the operator's control panel.

Your engine is not manufactured by Allen Engineering Corporation, Inc, and therefore is not covered under Allen Engineering Corporation, Inc warranty.

Your engine manufacturer should be contacted if you wish to purchase a parts manual or a repair manual for your engine.

Refer to enclosed owners engine manual for complete O&M instructions. See your battery manufacturer for battery warranty.

Dealer Information

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

Place Allen Dealer information below for future reference.

Dealer Name: _____

Phone #: (____) - ____ - _____

Address: _____

City:_____State:_____ Zip:_____

Salesman: _____Mobile Phone _____

Additional Comments: _____

_____

_____

Ordering Parts

The Parts Manual contains illustrated parts lists for help in ordering replacement parts for your machine. Follow the instructions below when ordering parts to insure prompt and accurate delivery:

1. All orders for service parts - include the serial number for the machine. Shipment will be delayed if this information is not available.

2. Include correct description and part number from the PARTS manual.

3. Specify exact shipping instructions, including the preferred routing and complete destination address.

4. DO NOT return parts to AEC without receiving written authorization from AEC. All authorized returns must be shipped pre-paid.

5. When placing an order, please contact the AEC dealer nearest you.

NOTE

All information, specifications, and illustrations in this manual are subject to change without notice and are based on the latest information at the time of publication.

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Model Number - Serial Number Codes

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

Model Number
AT14 S or F

Series
Swivel or Fixed

Track Buggy
AT14

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

Serial Number Example:
T14 10 16 001

Sequence Number

Year

Month

Series

Unit Identification Plate Location:

An identification plate listing the model number and the serial number is attached to each unit and is located on the lower inside face of the console. See image below for serial number plate location. This plate should not be removed at any time.

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

FILL IN FOR FUTURE REFERENCE

Model Number:_____

Serial Number:_____

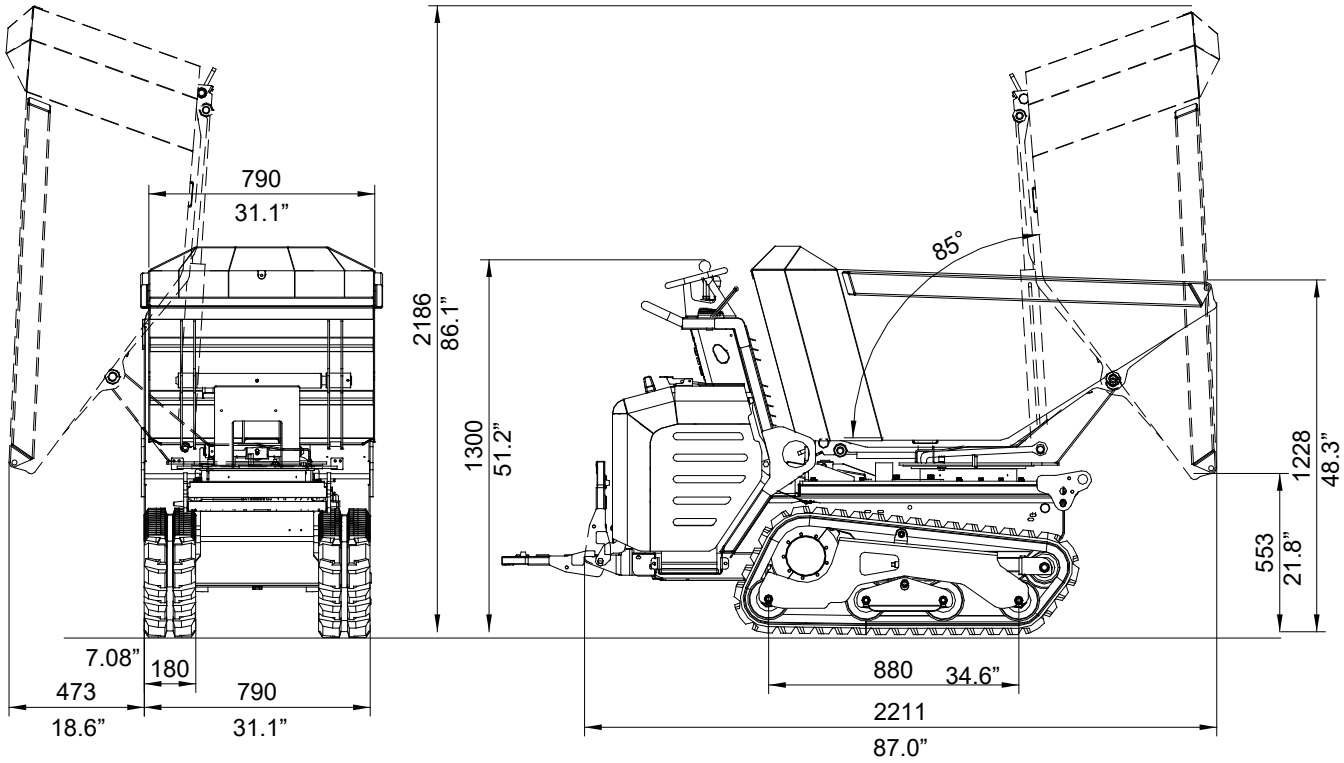
Date Purchased:_____

Purchased From:_____

Technical Specifications

		Swivel	Fixed
Operating weight (without operator)	Kg	699	644
	lbs	1,540	1,420
Operating capacity	Kg	810	952
	lbs	1,785	2,100
Load capacity: - heaped (SAE Standard)	m^3	0.58	
	ft^3	20.4	
- flat: sand	m^3	0.48	
	ft^3	16.9	
liquid	m^3	0.4	
	ft^3	14.1	
ENGINE			
Petrol Engine		HONDA GX630	
Maximum engine rotation speed	rpm	3600	
Max. power at maximum speed	HP/Kw	20.8 / 15.5	
Transmission		Hydrostatic	
Transmission pumps with variable displacement pistons	n°	2	
Total capacity	l/min.	29x2	
Services gear pump	n°	1	
Capacity	l/min.	7	
Max. operating pressure for driving	bar	230	
Max. operating pressure for services	bar	160	
Maximum speed:	Km/h	4.5 / 9.0	
	mph	2.8 / 5.6	
Separate track steering system		Hydrostatic	
Rubber track tensioning		spring + adjusting screw	
Width of the rubber track	mm	180	
	in	7.08”	
Specific ground pressure: - empty/loaded	Kg/cm^2	-	
Max. gradient when fully loaded	max %	See pg 24-26	
REFUELING			
Fuel tank capacity	lt	9	
	gal	2.37	
Hydraulic oil tank capacity	lt	18	
	gal	4.75	
Pumps overload pressure	bar	20 – 22	
Noise emission level at 3000 rpm	dBA	101	

Dimensional Specifications



Machine Dimensions [L x W x H]:

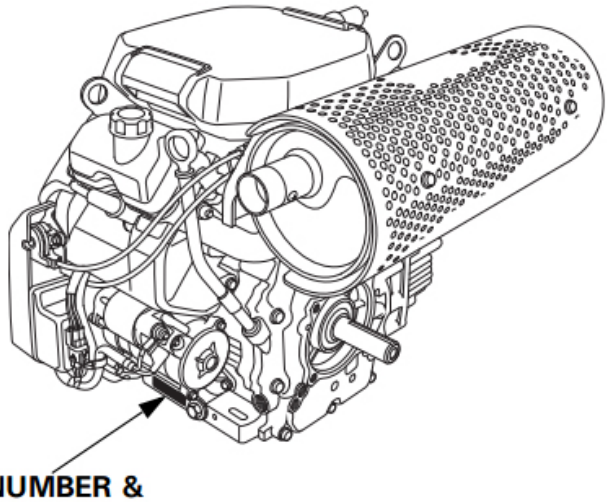
- AT14F - 98 x 31.5 x 52.5 in (248.9 x 80 x 133.4 cm)
- AT14S - 98.4 x 31.5 x 54 in (250 x 84.5 x 137.1 cm)

Engine Specifications

Engine Type	**Honda GX630, Air-cooled 4-stroke OHV**
Bore x Stroke	**78 X 72 mm**
Displacement	**688 cm3**
Net Power Output*	**20.8 hp (15.5 kW) @ 3,600 rpm**
Net Torque	**35.6 lbs ft (48.3 Nm) @ 2,500 rpm**
PTO Shaft Rotation	**Counterclockwise (from PTO shaft side)**
Compression Ratio	**9.3:1**
Lamp/Charge coil options	**2.7A, 17A, 26A**
Carburetor	**Horizontal type, two barrel butterfly valve, internal vent**
Ignition System	**Digital CDI with variable ignition timing**
Starting System	**Electric**
Lubrication System	**Forced lubrication**
Governor System	**Mechanical**
Air cleaner	**Dual element**
Oil Capacity	**2.1 US qt (2.0l)**
Fuel	**Unleaded 86 octane or higher**
Dry Weight	**96.8 lb (44 kg)**

Engine Serial Number Information

Record the engine serial number, type and purchase date in the spaces below. You will need this information when ordering parts and when making technical and warranty inquiries.



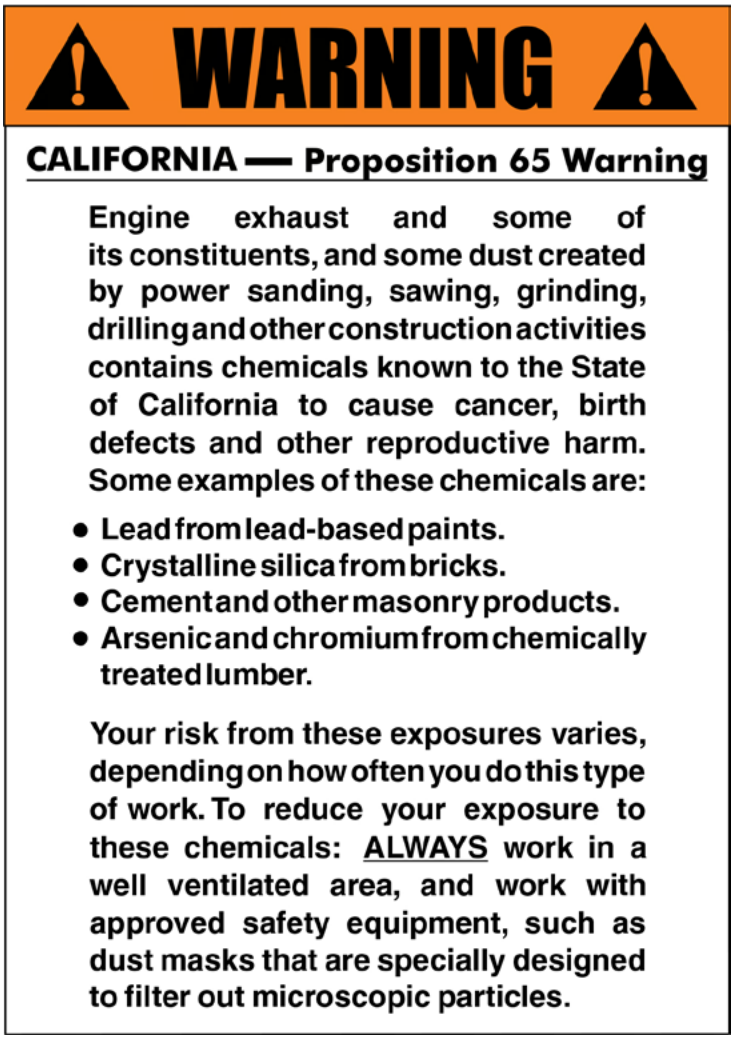
SERIAL NUMBER &
ENGINE TYPE LOCATION

Engine serial number: __ __ __ __ – __ __ __ __ __ __ __

Engine type: ___ ___ ___ ___

Date Purchased: _____ / _____ / _____

SECTION 1: SAFETY



WARNING

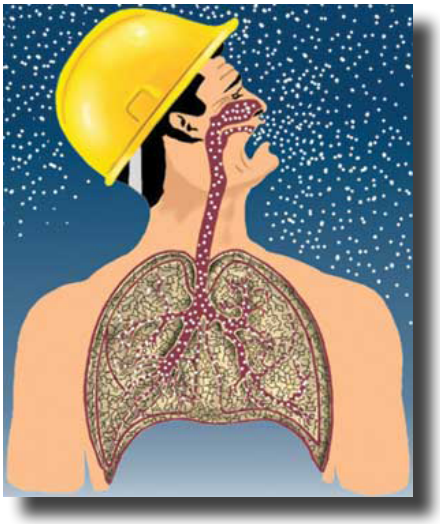
CALIFORNIA — Proposition 65 Warning

Engine exhaust and some of its constituents, and some dust created by power sanding, sawing, grinding, drilling and other construction activities contains chemicals known to the State of California to cause cancer, birth defects and other reproductive harm. Some examples of these chemicals are:

- Lead from lead-based paints.
- Crystalline silica from bricks.
- Cement and other masonry products.
- Arsenic and chromium from chemically treated lumber.

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: ALWAYS work in a well ventilated area, and work with approved safety equipment, such as dust masks that are specially designed to filter out microscopic particles.

Federal Regulations Respiratory Hazards



⚠ WARNING

RESPIRATORY HAZARDS

Grinding/cutting/drilling of masonry, concrete, metal and other materials can generate dust, mists and fumes containing chemicals known to cause serious or fatal injury or illness, such as respiratory disease, cancer, birth defects or other reproductive harm. If you are unfamiliar with the risks associated with the particular process and/or material being cut or the composition of the tool being used, review the material safety data sheet and/or consult your employer, the material manufacturer/supplier, governmental agencies such as OSHA and NIOSH and other sources on hazardous materials. California and some other authorities, for instance, have published lists of substances known to cause cancer, reproductive toxicity, or other harmful effects.

Control dust, mist and fumes at the source where possible. In this regard use good work practices and follow the recommendations of the manufacturers or suppliers, OSHA/NIOSH, and occupational and trade associations. Water should be used for dust suppression when wet cutting is feasible. When the hazards from inhalation of dust, mists and fumes cannot be eliminated, the operator and any bystanders should always wear a respirator approved by NIOSH/MSHA for the materials being used.

⚠ WARNING

SILICOSIS WARNING

Grinding/cutting/drilling of masonry, concrete, metal and other materials with silica in their composition may give off dust or mists containing crystalline silica. Silica is a basic component of sand, quartz, brick clay, granite and numerous other minerals and rocks. Repeated and/or substantial inhalation of airborne crystalline silica can cause serious or fatal respiratory diseases, including silicosis. In addition, California and some other authorities have listed respirable crystalline silica as a substance known to cause cancer. When cutting such materials, always follow the respiratory precautions mentioned above.

Do not operate or service the equipment before reading the entire manual. Safety precautions should be followed at all times when operating this equipment. Failure to read and understand the safety messages and operating instructions could result in injury to yourself and others.

SAFETY NOTES

The four safety notes shown below will inform you about potential hazards that could injure you or others. The safety notes specifically address the level of exposure to the operator and are preceded by one of four words: DANGER, WARNING, CAUTION or NOTICE.

⚠ DANGER	Indicates a hazardous situation which, if not avoided, **will** result in death or serious injury.
⚠ WARNING	Indicates a hazardous situation which, if not avoided, **could** result in death or serious injury.
⚠ CAUTION	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
NOTICE	Addresses practices not related to personal injury.

Safety Symbols

Potential hazards associated with the operation of this equipment will be referenced with hazard symbols which may appear throughout this manual in conjunction with safety notes.

Symbol	Safety Hazard
	Lethal exhaust gas hazards
	Explosive fuel hazards
	Burn hazards
	Rotating parts/crush hazards
	Pressurized fluid hazards
	Hydraulic fluid hazards

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

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

For more information contact an Authorized Service Center.

Allen Engineering Corporation reserves the right to make changes without prior notification.

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

Caution is the principal factor in preventing accidents and injuries.

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

- Before starting the engine, make sure that there are no people near the vehicle, especially children.
- It is strictly forbidden to transport or lift people.
- **Do not** use the vehicle unless you are physically fit.
- **Do not** drink alcoholic beverages while at work.
- This vehicle is not approved for road circulation.
- **Do not** use the vehicle on steep slopes but only on ground with a gradient that is less than the limits indicated further stated in this manual (pg 24, 25).
- It is strictly forbidden to abandon the vehicle while the engine is running or with the ignition key inserted. The engine must always be stopped.
- It is strictly forbidden for minors to use the vehicle.
- **Do not** use the vehicle in closed or poorly ventilated areas: exhaust fumes are toxic and could be seriously harmful to the body and may even be fatal.
- The vehicle must be refueled with the engine switched off. **Always** keep away from flames and **do not** smoke.

General Safety (Cont'd)

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

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

• It is strictly forbidden to remove the safety devices installed.

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

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

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

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

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

⚠ WARNING

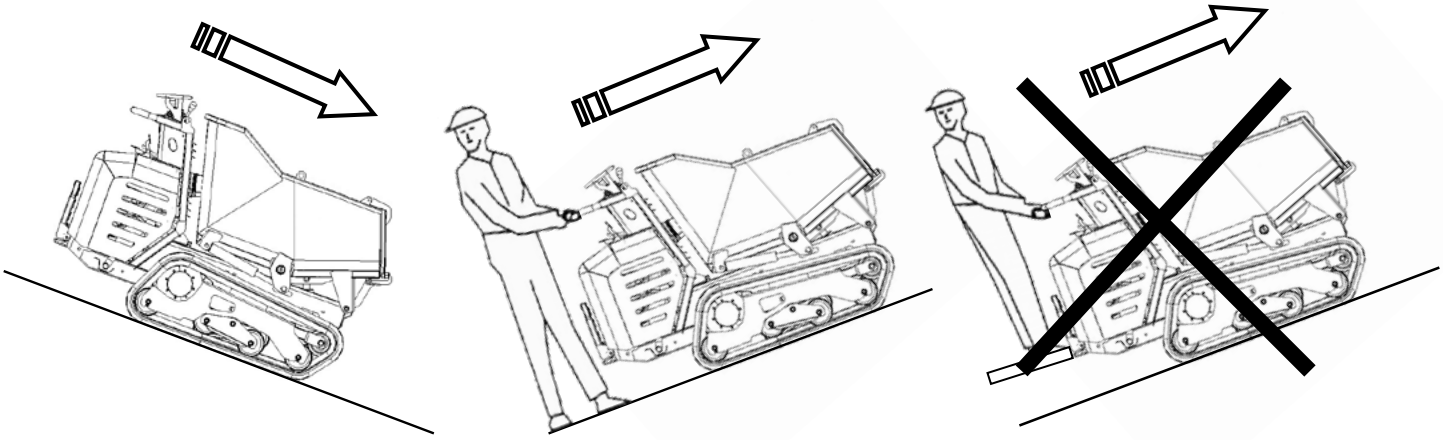
The present manual contains the information required to run the machine. Contact the Manufacturer for any spare parts, accessories or information you might require. The tracked buggy fit with bucket or open dump body serves to carry and dump materials. The materials being handled must comply with the characteristics of the equipment currently being used.

- **Avoid abrupt movements**. All movements and maneuvers must be performed with utmost care and while running at a slow speed.
- **Check the work area**. Make sure that it is free and that there are no unauthorized persons around. Also check that no one enters or passes within the machine operating range.
- **In case of operating anomalies** while moving the various mobile parts of the machine, turn the engine off immediately.
- **Never** perform any checks, controls or maintenance operations with the engine running.
- **Never** transport or lift anyone except the operator.
- **Never** move over terrain that has both a lateral and longitudinal slope. The terrain must be solid and compact.
- When hoisting and transporting the machine, follow the instructions given in this manual (page 29).
- Before starting up the machine, make certain that the load has been positioned correctly in the dump body.
- When moving over a slope, whether moving forward or in reverse, always make certain that the weight is evenly balanced. If the unit has a bucket, set it in a position that improves stability.
- Before tipping the hopper or loading bucket, check that the loaded material can slide freely. If the hopper or loading bucket are lifted with the material blocked inside stability may be lost, therefore this operation is prohibited. This situation is riskier if lifting and unloading is carried out laterally.
- The machine can be used for unloading on ground with a gradient lower than 25% (both lateral or longitudinal). It is prohibited to unload where there is a longitudinal and lateral slope present at the same time.
- Lifting of the loading bucket for unloading, must be carried out very slowly to prevent swinging, which could cause the machine to tip over.
- Before lifting the load, check that the material contained in the loading bucket has been positioned in a way to prevent its accidental escape during movement.
- If the loading bucket is also equipped with a shovel, it must be positioned as high as possible, to prevent it from interfering with the remaining structure when tipping over.

Operational Safety (Cont'd)

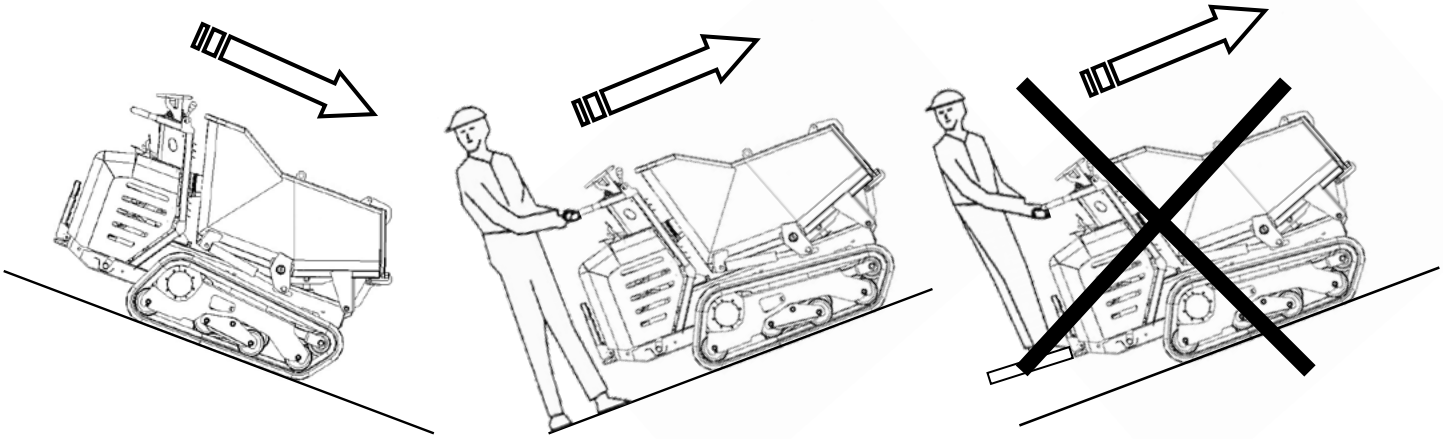
- The machine can be used for unloading on land with a gradient lower than 25% (longitudinal) and 18% (lateral). It is prohibited to unload where there is a longitudinal and lateral slope present at the same time.
- Move the loading system upwards only when the machine is at a standstill (it is not traversing).
- It is prohibited to traverse with the system lifted, even if only by a few centimeters with respect to the chassis.
- Before lifting the loading bucket and tipping it is necessary to check that this will not interfere with other objects, in particular with electric cables etc.
- Only use the high tipping system with friable material. On tipping the loading bucket it is necessary to check that the material really does slide downwards.
- Take great care during the unloading phase. If in doubt lower the loading bucket again and check that the material moves freely. If the material is blocked, try to unblock it with the loading bucket in a low position, otherwise the machine may tip over, crushing the operator and causing damage.

UPHILL OR DOWNHILL - LOADED



30° MAX **30° MAX**

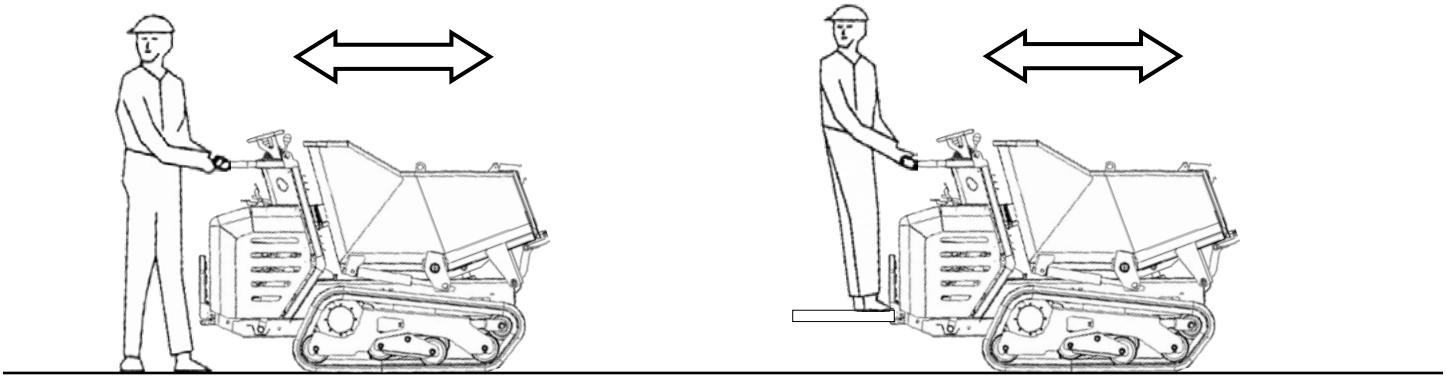
UPHILL OR DOWNHILL - EMPTY



30° MAX

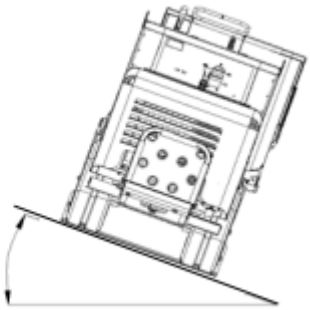
25° MAX

FLAT GROUND - EMPTY



UPHILL OR DOWNHILL, EMPTY AND LOADED

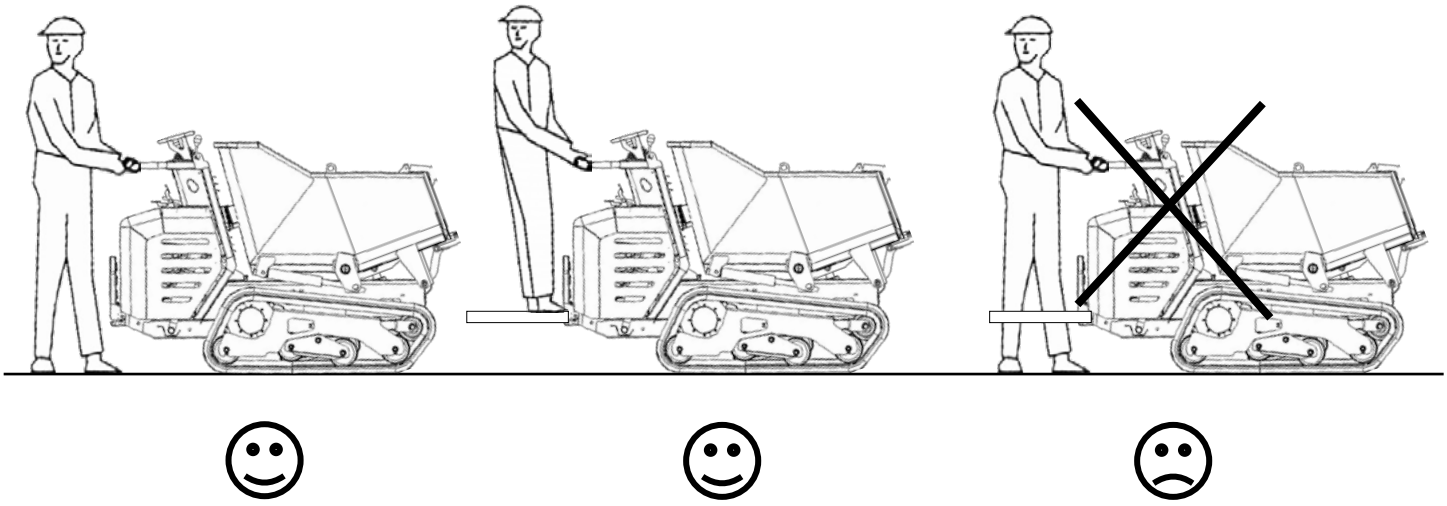
MAX 22 %



Operational Safety (Cont'd)

USING THE OPERATOR PLATFORM:

- The PLATFORM must be LIFTED (max. height) with the OPERATOR on the GROUND.
- The PLATFORM must be LOWERED with the OPERATOR ON IT.
- Under no circumstances is the operator to drive while the platform is lowered.



Refueling Safety Information & Instructions

Internal combustion engines present special hazards during operation and fueling. Read and follow the warning instructions in the engine owner's manual and the safety guidelines below. Failure to follow the warnings and safety guidelines could result in severe injury or death.

Refueling Safety:

- DO NOT smoke when refueling the engine.
- DO NOT use fuel that is more than 90 days old. Use of unmixed, improperly mixed, or fuel older than 90 days, (stale fuel), may cause hard starting, poor performance, or severe engine damage and void the product warranty.
- DO NOT refuel a hot or running engine.
- DO NOT refuel the engine near an open flame.
- ALWAYS refill the fuel tank in a well-ventilated area.
- ALWAYS replace the fuel tank cap after refueling.
- ALWAYS keep the area around the muffler free of debris such as leaves, paper, cartons, etc. A hot muffler could ignite the debris and start a fire.

Refueling Safety Information & Instructions (Cont'd)

To refuel the AT14 Track Buggy:

⚠ DANGER

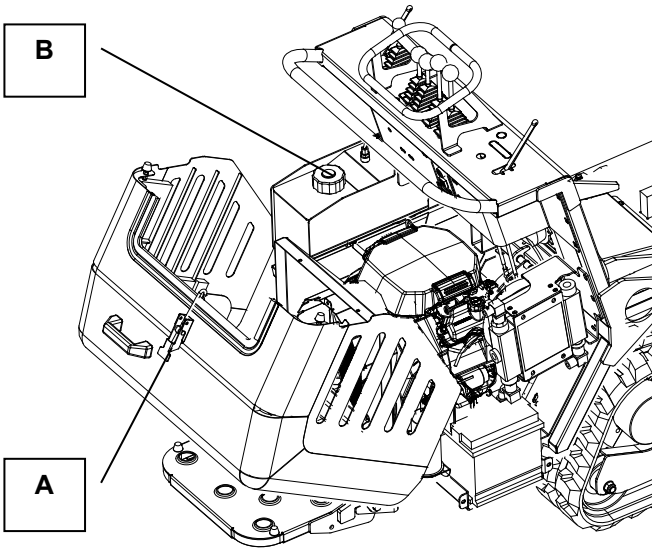
- **Refueling Safety**

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

  Fuel tank capacity (unleaded fuel): 3 GAL / 11.35 L

- Fuel Filler Cap Location

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



AT14 Fixed: 1,420 lb / 644 kg

AT14 Swivel: 1,540 lb / 699 kg

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

- Lower the load bucket slightly to release the two hooks located on the sides of the dump body: the other two are positioned on the sides of the driving position (see figure).
- Close off the lifting area and prohibit unauthorized people from entering. Do direct the load over people or things and make sure that the area where the un/loading operations are performed is clear from any obstruction (power cables, telephone line, etc.).
- It is strictly forbidden for people to pass or stand under the suspended load.

Lifting and Transportation Safety (Cont'd)

Lifting and Transportation Safety Continued:

- Use cables or chains rated for the weight to be lifted: when empty and fit with bucket, the machine weights approximately 630 Kg. The machine fitted with high tip skip weights approximately 770 Kg.
- Hook the vehicle from the 4 points provided and proceed with the lifting operations; avoid sudden movements and use very low lifting speeds.
- Lift the vehicle and place it on the transport vehicle, then anchor it properly by inserting and blocking wedges at the ends of the tracks on the flatbed.
- If necessary, secure the vehicle to the flatbed with steel cables of adequate capacity.
- Unload the vehicle by following the steps in inverse order and adopting all the necessary safety precautions to safeguard the personnel involved and the vehicle itself.

⚠ CAUTION

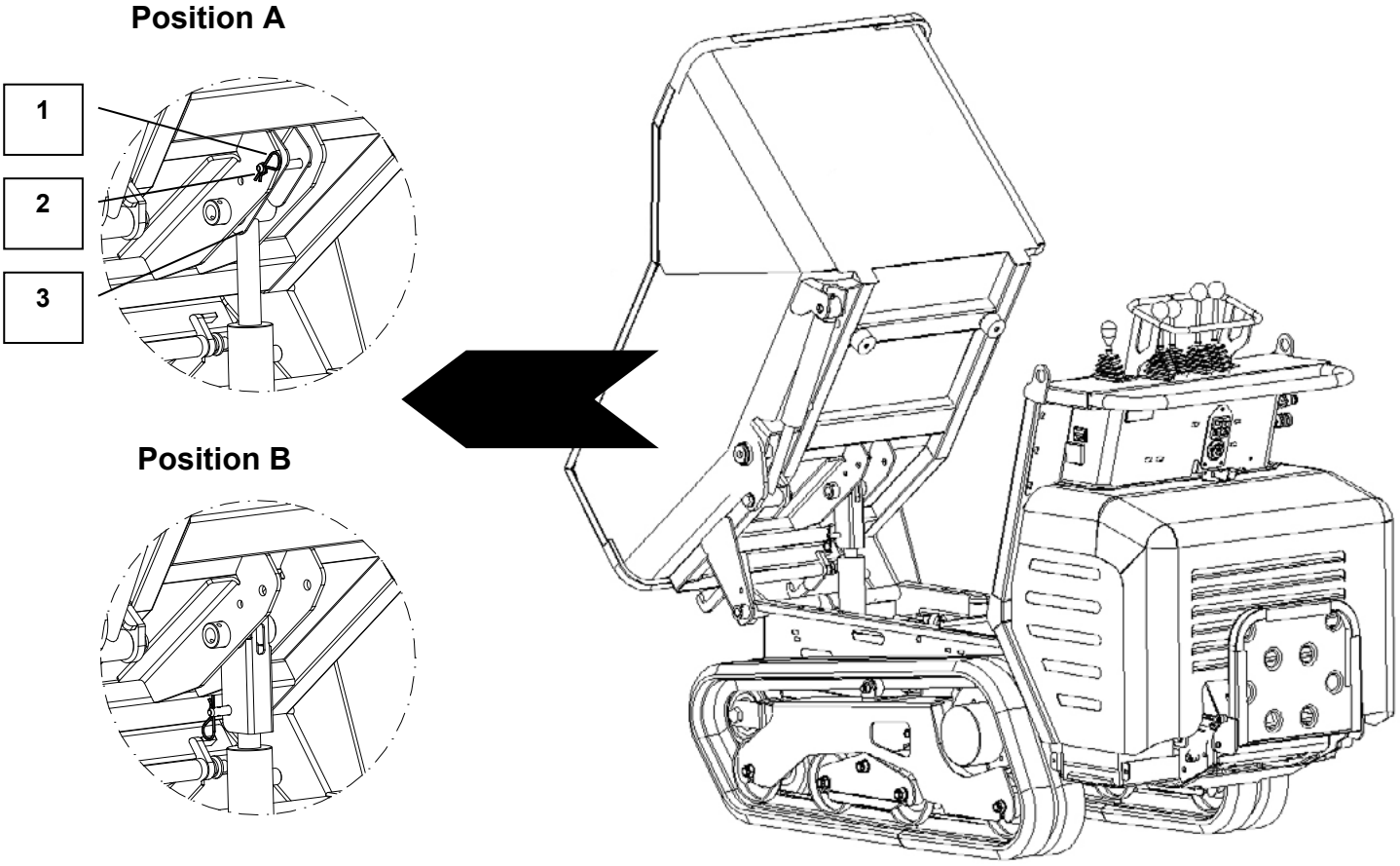
It is recommended to close the fuel valve every time the vehicle is transported or handled in order to prevent causing harm or damage.

⚠ WARNING

Given its functional characteristics, the machine has some pinch points (descent of the body onto the frame and track) and some shearing points (dump body hatch). For this reason, particular care must be taken during these movements. Never insert arms or body parts inside these areas.

⚠ WARNING

In case of maintenance, the raised body must be blocked with a special safety item supplied with the machine, that must be inserted on the lifting cylinder ram moving it from position A to position B, as shown in the figure on page 31.



To insert the safety lock make the following operations:

1. Disconnect the split pin ”1”;
2. Unthread the pivot “2”;
3. Rotate the safety lock “3” till enveloping the liner of the lifting cylinder of the body (see “Position B”);
4. In this position reinsert the blocking elements, pivot and split pin, as shown in the picture “Position B”.

SECTION 2: OPERATIONS

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SECTION 2 OPERATIONS

Starting Instructions

Before Starting, Check the Following:

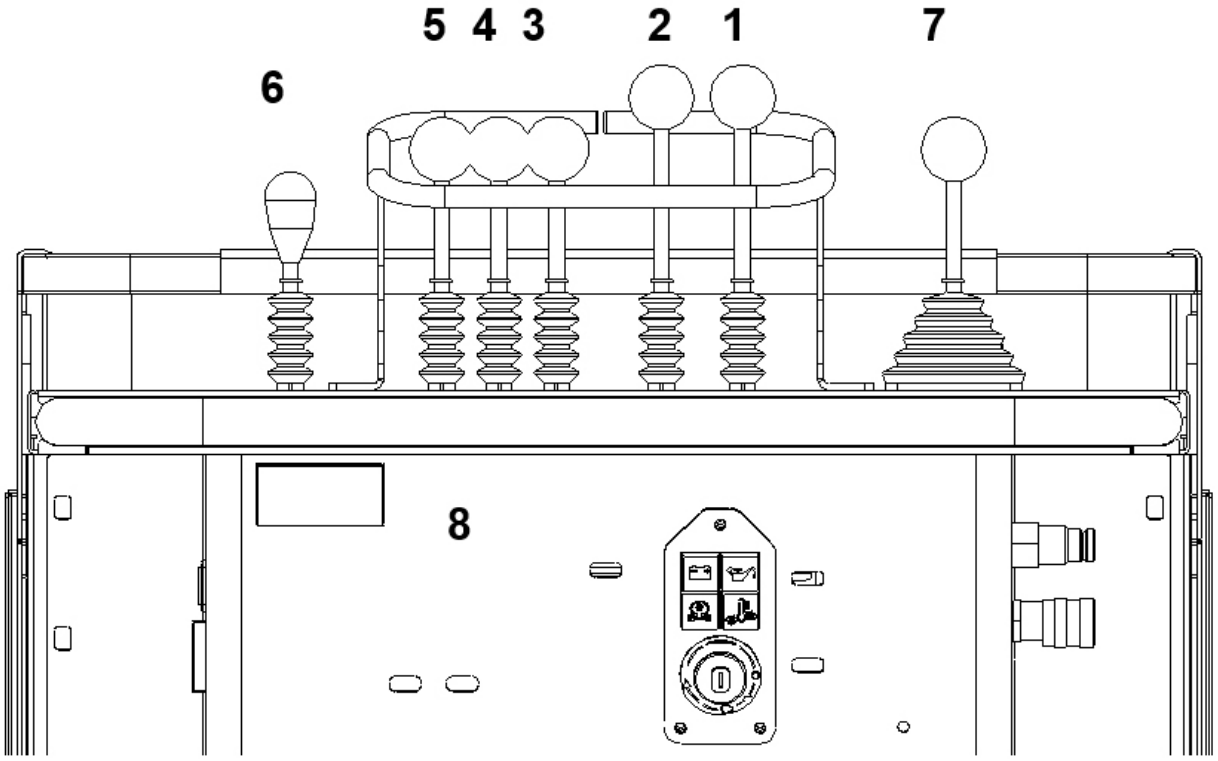
- Check engine oil, fuel, and hydraulic oil levels
- Check that there is no carryover fluid from the fuel feed circuit and hydraulic oil circuit or from other elements in an oil bath
- Check the condition of the hydraulic hoses
- Check that there are no obstruction in the tracks and other machine parts
- Check the condition of the tracks
- Check the electrical system sheaths and cables
- Ensure that the machine controls are not gripping or seizing

Start up Instructions:

1. Before starting the engine, ensure that the accelerator (Lever # 6 on pg 35) is at its midpoint.
2. Pull the “STARTER” air lever **S** to the intermediate position if the engine is warm and if the engine is cold pull the lever out to the START position.
3. Then turn the key **F** clockwise towards position 1 to start the engine. The key will return to the 0 position automatically. Next push the “STARTER” air lever back in to the RUN position.
4. For a COLD start, pull the “STARTER” lever out to the START position and put the accelerator lever to halfstroke
5. **Stop the engine** by bringing the accelerator lever to the lowest setting and press the **P** button

⚠ CAUTION

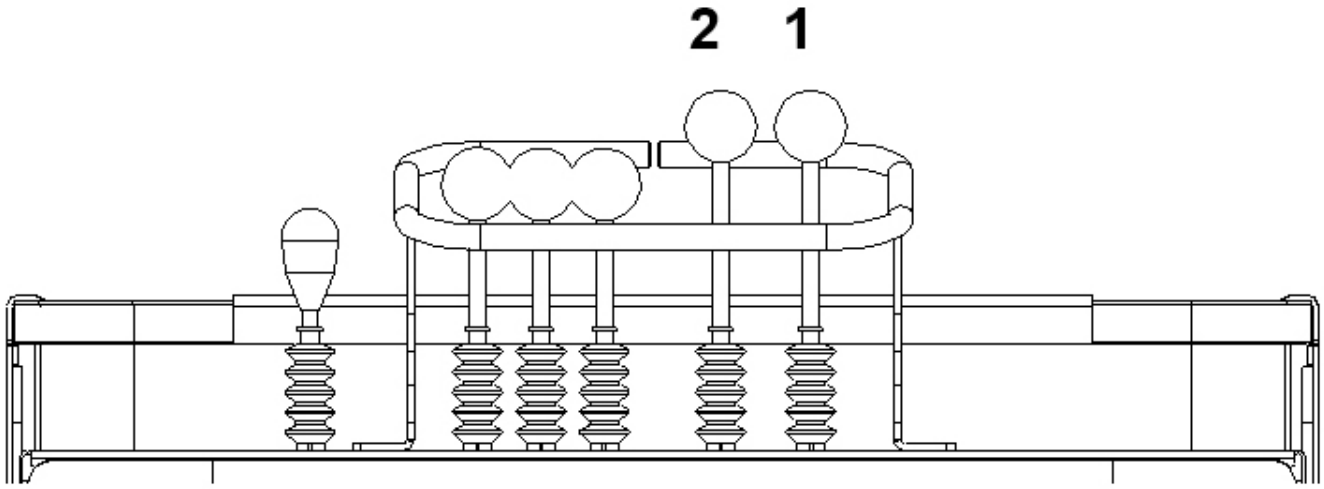
Do not hold the key switch F for more the 5 seconds, if the engine does not start wait 10 seconds before turning the key switch again.



1. RIGHT TRACK DRIVE CONTROL LEVER
2. LEFT TRACK DRIVE CONTROL LEVER
3. LOAD BUCKET UP-DOWN LEVER
4. LOADING BUCKET ROTATION LEVER
5. DRIVING LEVER FOR THE LIFTING OF THE UNLOADING SKIP
6. ACCELERATOR LEVER
7. P.T.O. CONTROL LEVER
8. DRIVING HANDLE BAR

General Operating Instructions

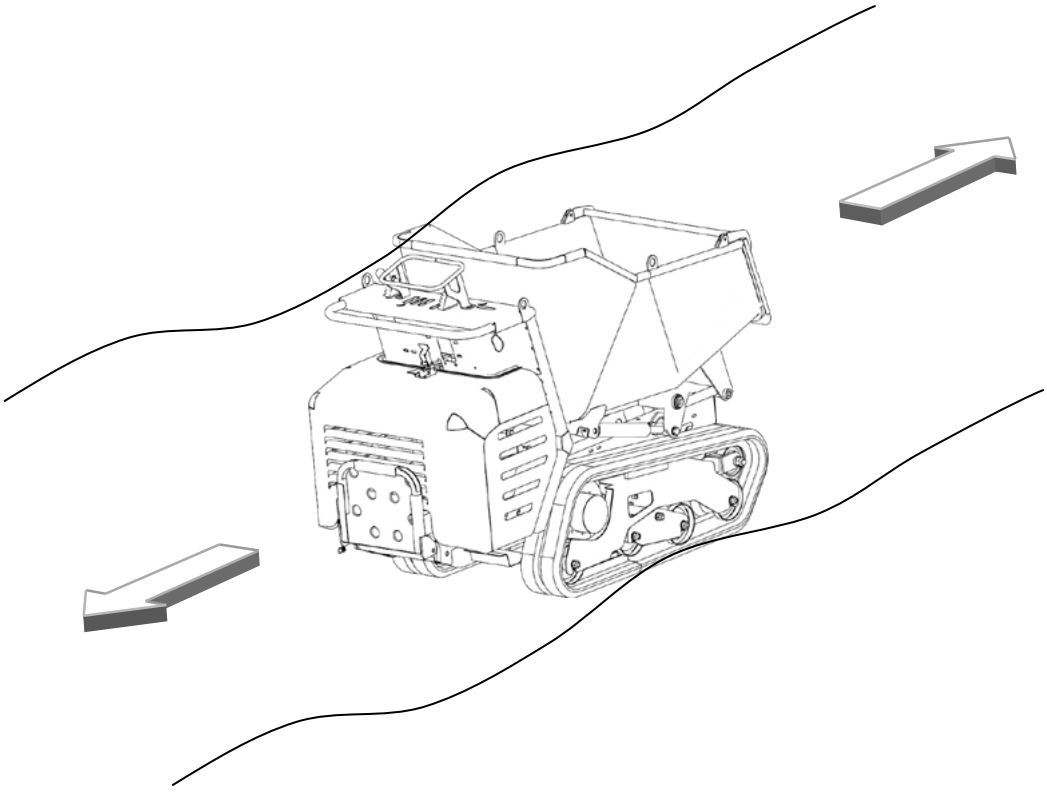
The vehicle drive is activated via levers “**1**” and “**2**”.



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

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

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



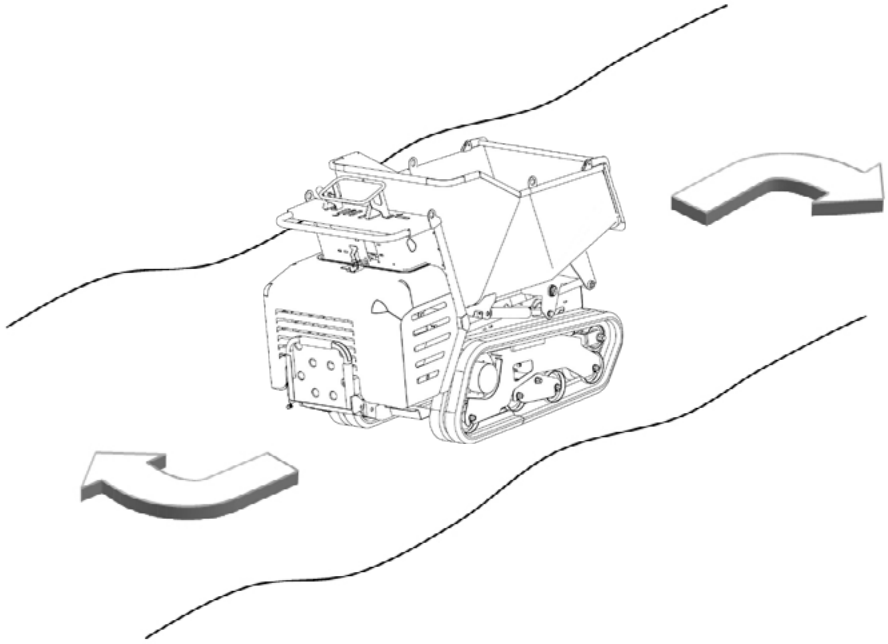
NOTE: When turning it is recommended to not COUNTER STEER, see page 36.

STEERING FORWARD TO THE RIGHT:

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

STEERING BACKWARDS TO THE RIGHT:

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



STEERING FORWARD TO THE LEFT:

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

STEERING BACKWARDS TO THE LEFT:

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

NOTICE

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

General Operations (Cont'd)

VEHICLE USE

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

- Avoid sudden turns and changes in direction while driving on the road, especially on rough and hard ground, bumpy and sharp ground or with high friction. Under these circumstances **DO NOT COUNTER STEER; turn only one track to go round a bend, both while driving as well as when stationary**.
- While driving, prevent the tracks from coming into contact with protrusions and parts with sharp and pointed edges.
- Prevent the tracks from coming in contact with oils, solvents, fuel or other corrosive materials; otherwise, clean and wash immediately.
- Prevent prolonged use of the vehicle in marine areas or in a salty environment, as this enhances the detachment of the metal core from the rubber.
- Due to the basic characteristics of the rubber that the track is made of, it is recommended to use it in temperatures ranging from **-25°C to +55°C, -13°F to 131°F**.
- Do not leave the tracks exposed to the elements for prolonged periods; sudden climate changes will enhance premature aging.
- Any wear on the transmission wheels can cause abrasions or the metal core of the tracks to emerge; these must be promptly replaced.

TROUBLESHOOTING

BROKEN STEEL ROPES OF THE TRACK

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

WORN OR BROKEN METAL CORES

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

DETACHED METAL CORES FROM THE RUBBER

- Excessive abrasion of the inner sides of the track with the guide rollers (excessive and sudden steering and counter steering).
- Worn and entangled sprocket while turning.

⚠ CAUTION

The anomalies listed on page 36 require the damaged track to be replaced immediately.

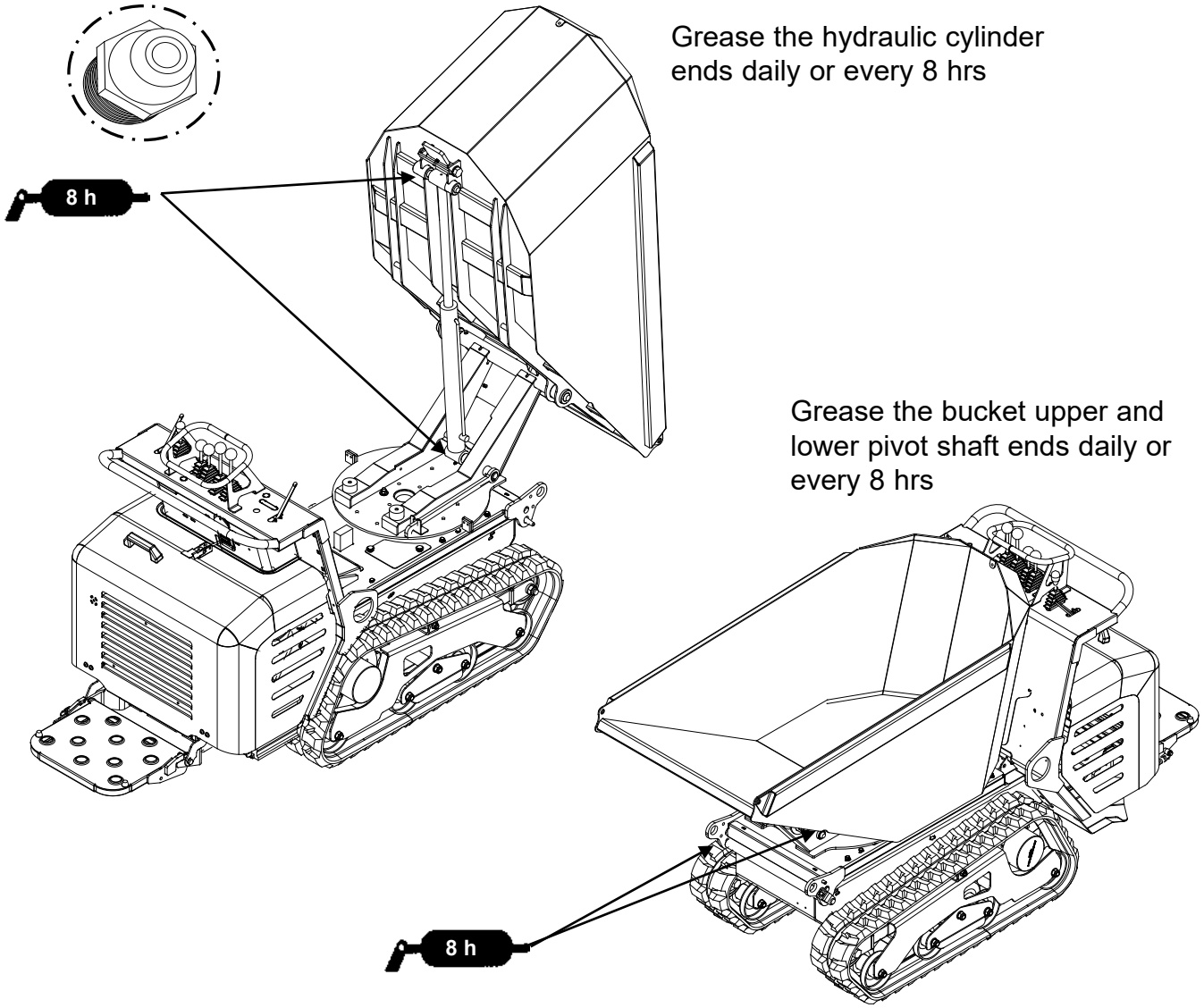
ABRASIONS OR TEARS DUE TO FATIGUE OR EXTERNAL FACTORS

- Generally, these problems are caused by the way the vehicle is used or the environment in which the work is carried out. These changes in the track can be reduced but not eliminated by using the vehicle with care and responsibly. **It is recommended to replace it even if the tread is reduced to about 2 to 5 mm.**
- Abrasions, tears and cuts on the outer surface of the track (that in contact with the ground) are more often due to contact with sharp stones or cutting material (metal sheets, glass, nails, brick chips, etc.).

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

SECTION 3: SERVICE

GREASE POINTS



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

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

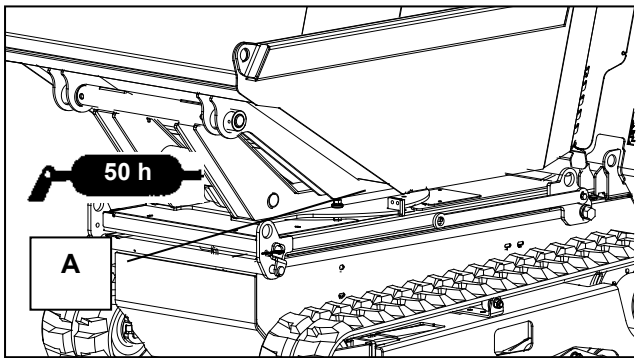
NOTICE A thorough inspection and constant greasing allow the vehicle to operate perfectly efficient and safely.

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

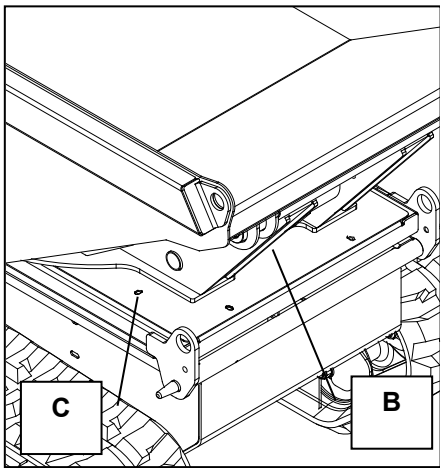
General Maintenance - Grease Points (Cont'd)

Swivel Slew Ring Grease Instructions. Follow the steps below for the complete greasing procedure:

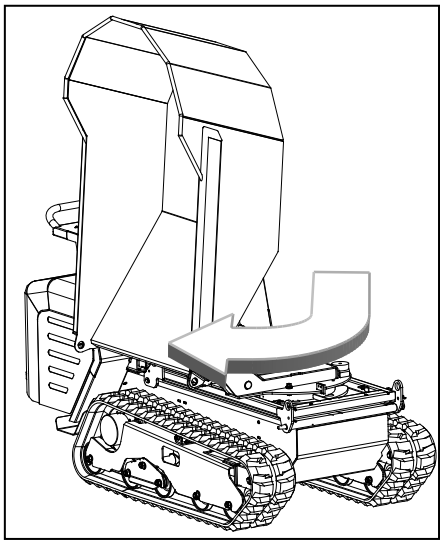
The slewing ring "A" that rotates the loading bucket must be regularly greased (every 50 hrs) to maintain optimal conditions for use



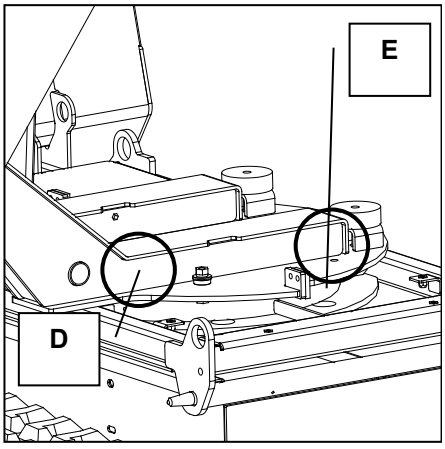
Remove the casing "B" by loosening the 4 screws "C"



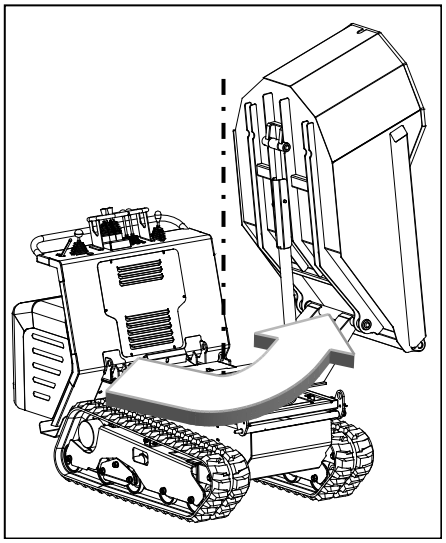
Tilt the loading bucket, insert the safety hook ("Safety Retainer Positioning" on page 31) and turn the bucket completely to the right as shown in the figure



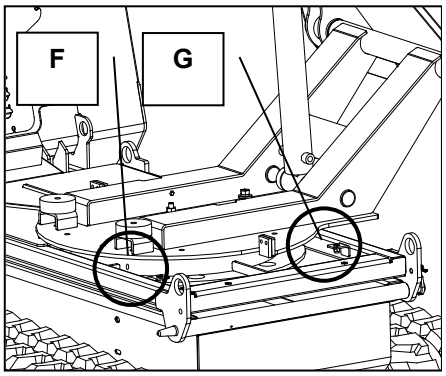
Grease the rotation slewing ring through the 2 greasing points “D” and “E”, making sure to apply more grease to the front left point “E”.



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



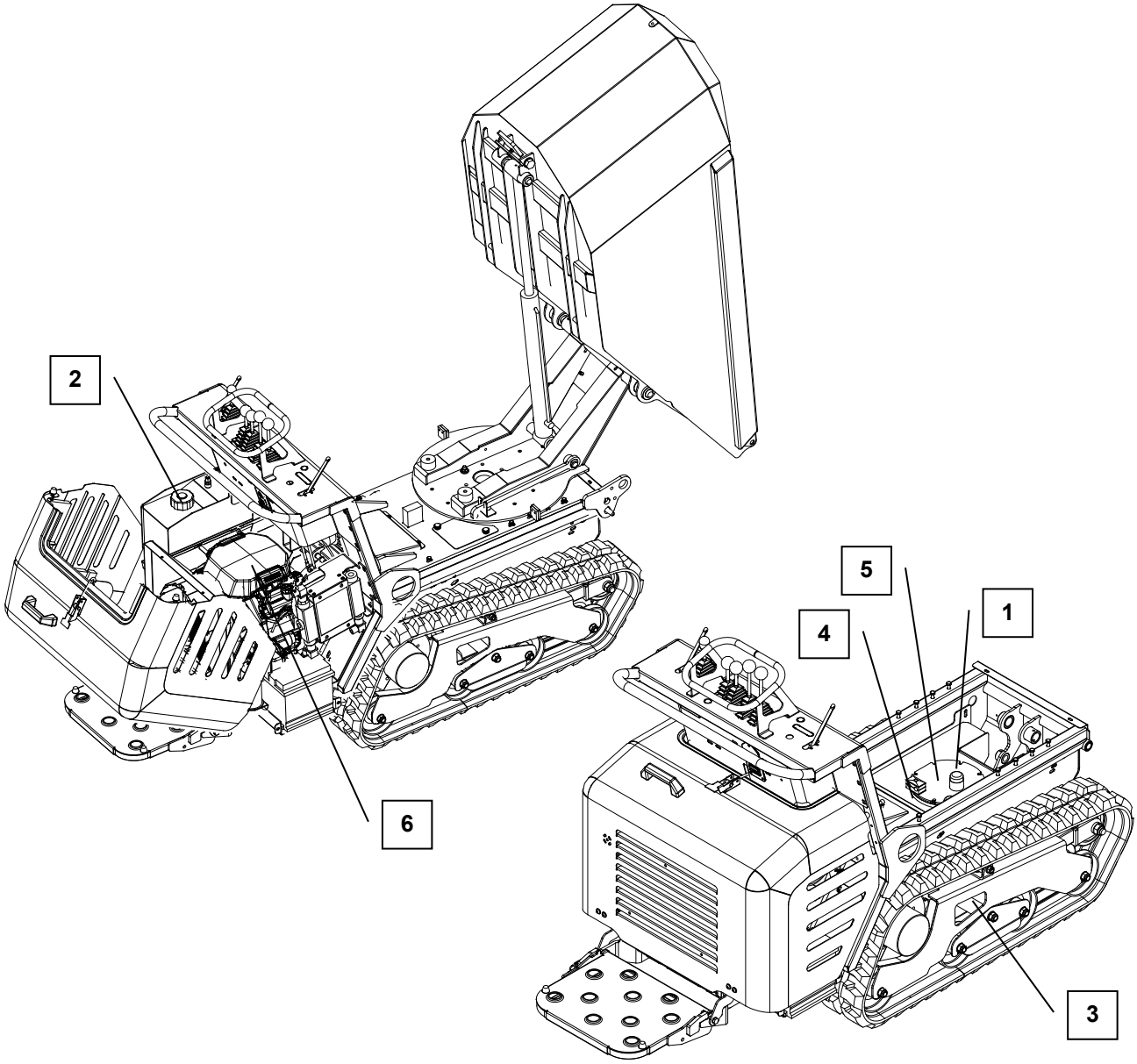
Grease the rotation slewing ring through the 2 greasing points “F” and “G”, making sure to apply more grease to the front right point “F”.



Repeat the greasing procedure again and lastly turn the bucket several time to the left and right to help distribute the grease evenly over the entire surface of the slewing ring.

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

General Maintenance - Hyd. Oil & Fuel



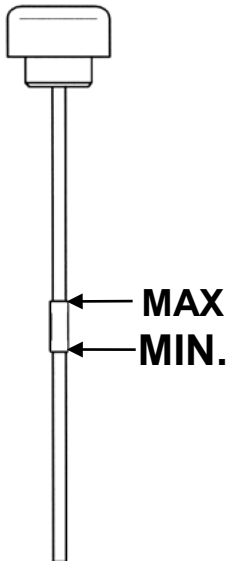
Machine Components:

1. HYDRAULIC OIL TANK FILLER CAP
2. FUEL FILLER CAP
3. TRACK TENSIONING DEVICE
4. HYDRAULIC OIL INTAKE FILTER (065258)
5. DISCHARGE HYDRAULIC OIL FILTER (065259)
6. AIR FILTER (064832)

NOTE: FULL AT14 FILTER ELEMENT SERVICE KIT PN 082067

- 064831 (ENG OIL FILTER)
- 064832 (ENG AIR FILTER)
- 064833 (FUEL FILTER)
- 065258 (HYD RETURN (INTAKE) CARTRIDGE)
- 065259 (HYD SUCTION (DISCHARGE) FILTER)

1 – HYDRAULIC OIL TANK FILLER CAP



Complete oil change is **18.0** L, 4.75 gal. Use 46 Weight Hydraulic Oil.

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

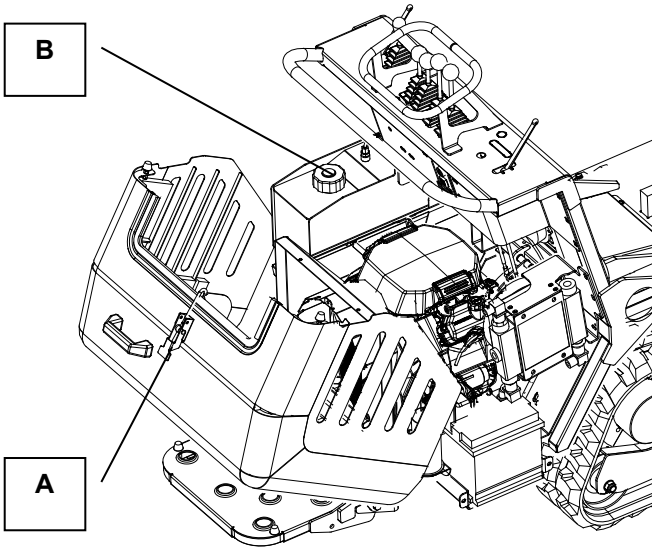
To fill or top up, check that the oil is between the min. and max. levels on the dip stick incorporated in the screw down cap. This control must be performed with the bucket raised (cylinder extended) and the machine on a flat surface.

ALWAYS KEEP THE LEVEL BETWEEN MINIMUM AND MAXIMUM

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

2 – FUEL FILLER CAP

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



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

Fuel tank capacity (unleaded fuel): 3 GAL / 11.35 L

Track Tensioning

3 – TRACK TENSIONING DEVICE

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

TIGHTENING THE TRACKS

With use, the tracks tend to loosen.
When operating with loose tracks, they tend to slip over the driving wheel teeth causing it to jump its housing or to work in precarious fashion, damaging and causing wear to the housing.
Never allow this situation to occur. To restore correct track tightness, proceed as follows:

Set the machine on a flat surface with compact ground, better on an asphalt or stone pavement. Lift the machine and set it on blocks or supports rated for the weight of the machine so that the tracks are approximately **100 mm (3.93")** off the ground.
Measure the track midline vs. the horizontal line; the reading must not be more than **5 mm (.19")**.

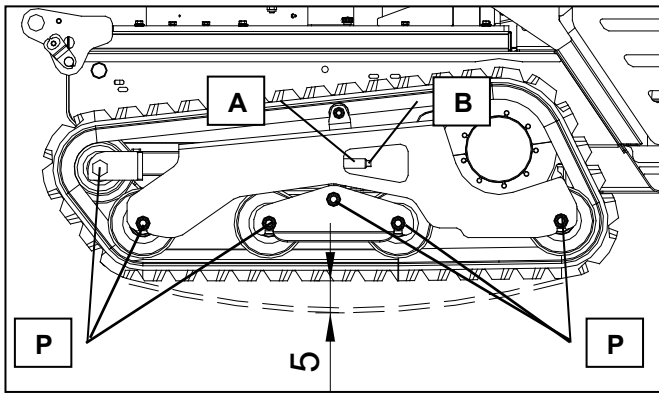
If the distance is greater, proceed as follows:

– loosen lock nut "**A**".
– tighten screw "**B**" until the correct tightness is restored.
– lock screw "**B**" tightening lock-nut "**A**" thoroughly.

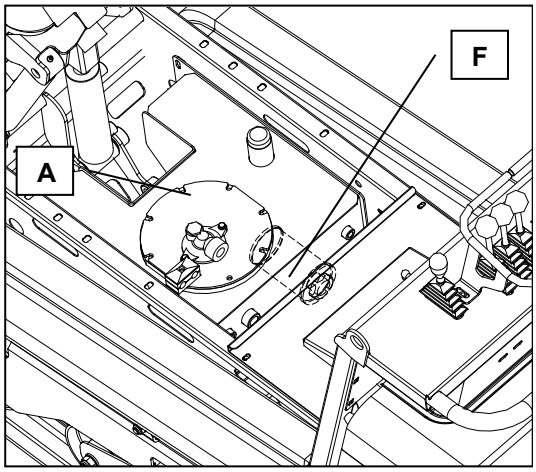
At this point, track tightness has been restored to the original tension found with new tracks.
Run the track blank for a few minutes so that it can settle in. With the track not running, check that the track tightness is correct. Then raise the machine and set it on the ground. It is now ready to use.

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

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



4 - REPLACING THE HYDRAULIC OIL INTAKE FILTER
(Intake HYD filter PN 065259)
The filter is located inside the hydraulic oil tank (see picture).



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

Remove the oil tank cover by loosing the screws "**A**", unscrew the filter "**F**" and replace it with another having the same characteristics:

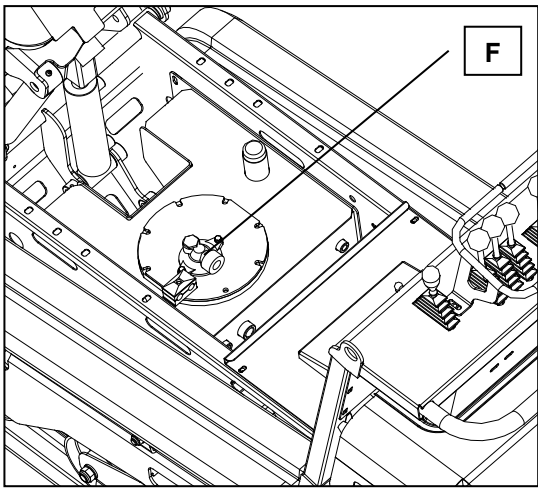
Degree of filtration: 30 micron
Nominal flow rate: 25 l/min.

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

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

THE OIL MUST ONLY BE DISPOSED OF AT AUTHORIZED COMPANIES.

5 - REPLACING THE DISCHARGE HYDRAULIC OIL FILTER
(Discharge HYD filter PN 065258,
full filter kit with hardware 9808005)



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

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

Unscrew the filter "**F**" and replace it with another having the same characteristics:

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

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

THE OIL MUST ONLY BE DISPOSED OF AT AUTHORIZED COMPANIES.

Engine Air Filter

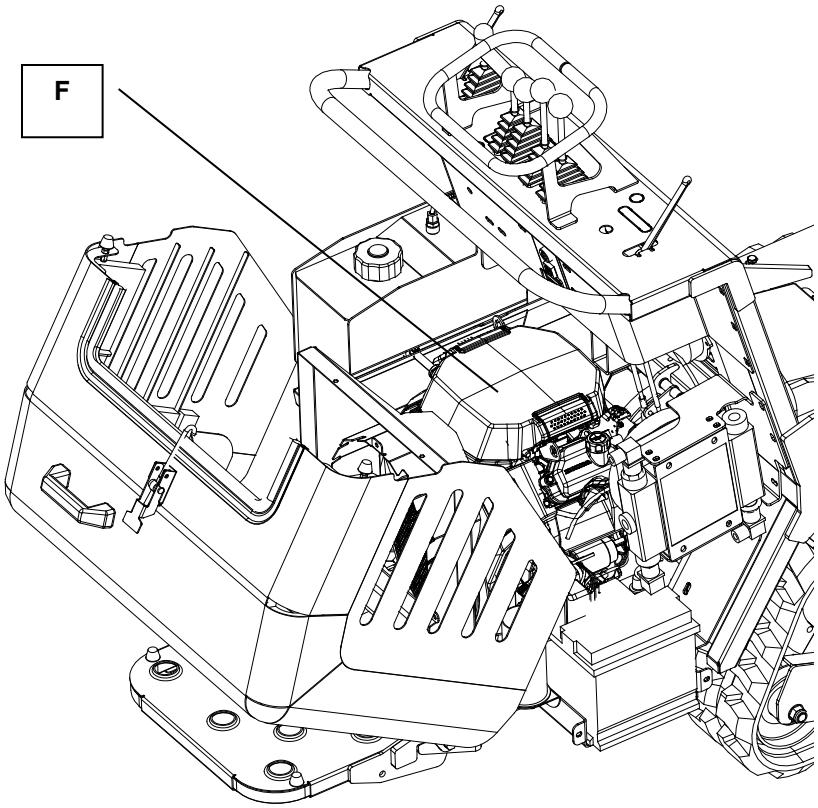
6 - REPLACING THE AIR FILTER (Filter PN 064832)

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

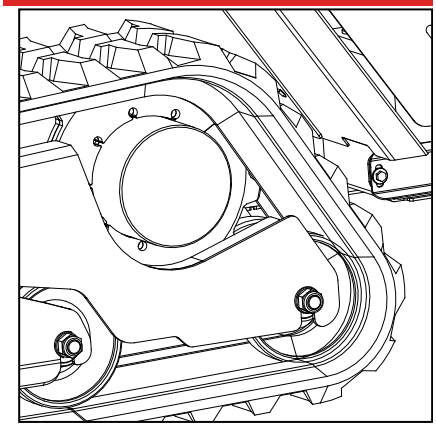
To clean the cartridge, it is sufficient to remove the top cover, remove the cartridge and clean with compressed air. Do not use solvents, brushes or rags to prevent damage to the cartridge.

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

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



WHEEL GEARS



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

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

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

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

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

INSPECTING, FILLING AND CHANGING THE OIL IN THE WHEEL GEARS

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

⚠ CAUTION

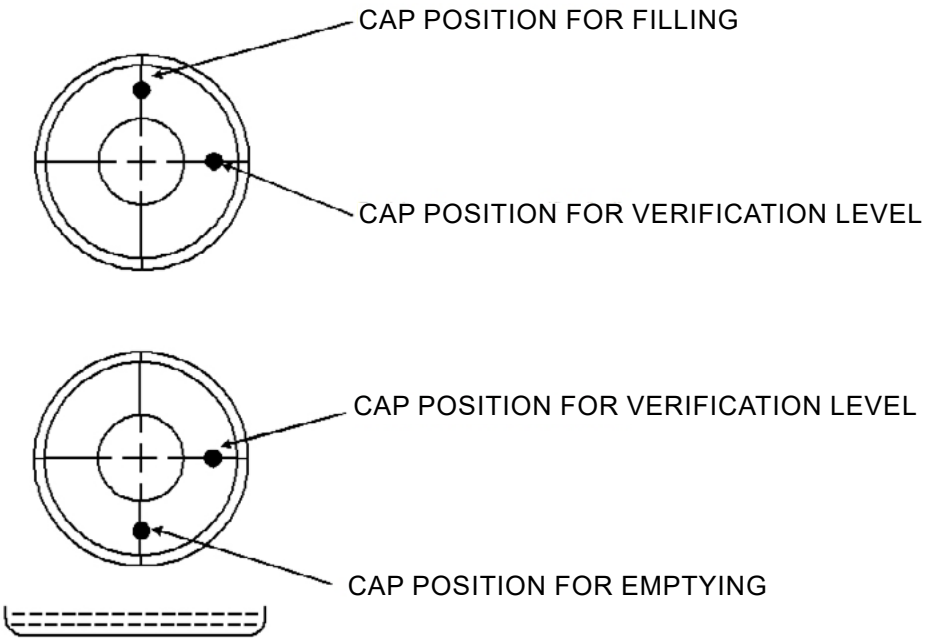
TOPPING UP MORE THAN 10% OF THE TOTAL AMOUNT MAY BE INDICATIVE OF A LEAK IN THE REDUCER.

- **The oil must be changed after the first 100 hours of operation.**
- **It must then be changed after 2000 hours of operation or once a year.**
- **Capacity of each reducer:** 0.5 L, 0.132 gal [Use API GL-5 SAE 90 Gear Oil.]

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

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

Wheel Gears (cont'd)



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

The vehicle must be level and horizontal and the engine OFF when verifying the level, topping up, refueling and emptying.

Insert an adequately sized container under drain plug to collect the oil.

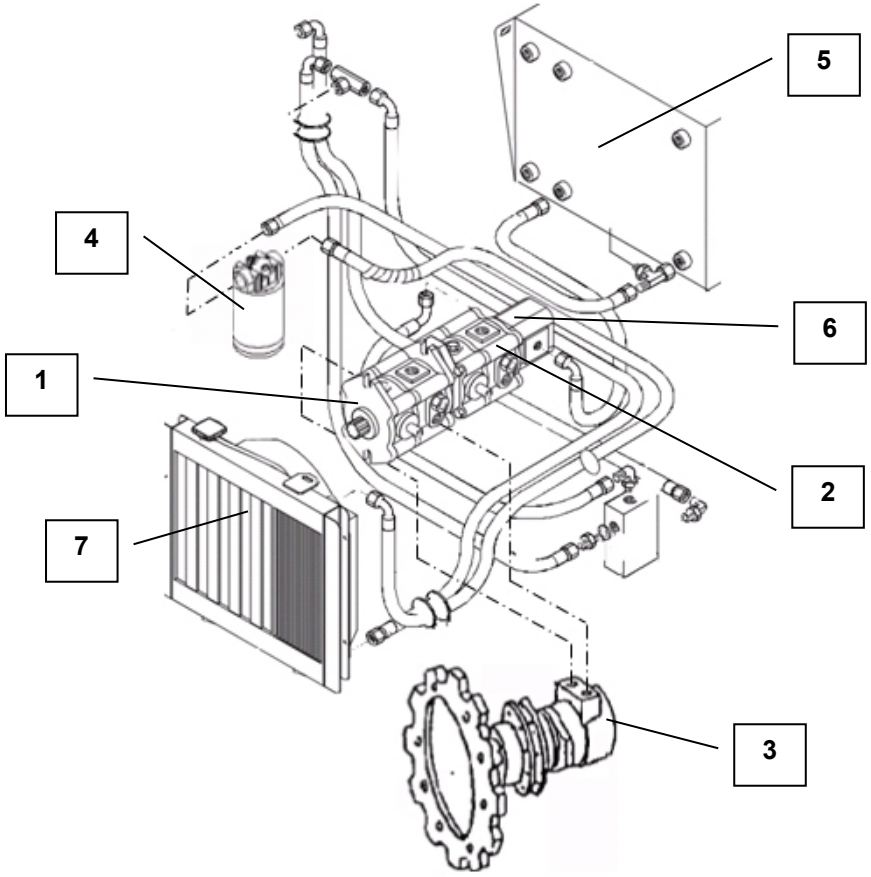
DO NOT DISPOSE OF USED OIL IN THE ENVIRONMENT.

OPERATION	COMPONENT INVOLVED	HOURS FOR FIRST REPLACEMENT		
		50	100	200
REPLACE	Oil intake filter cartridge (069946)	●		
	Discharge oil filter cartridge (065259)	●		
	Air filter cartridge (064832)			●
	Hydraulic oil			●

OPERATION	COMPONENT INVOLVED	FREQUENCY OF SUBSEQUENT REPLACEMENTS (in hours)					
		8	50	100	200	500	1000
CLEANING	Track	●					
	Loading bucket	●					
	Pump body protection compartment	●					
	Hydraulic oil tank						●
	Air filter cartridge		●				
INSPECTION AND RESTORE (if necessary)	Track tension		●				
	Hydraulic oil			●			
REPLACE	Oil intake filter cartridge (069946)					●	
	Discharge oil filter cartridge (065259)					●	
	Air filter cartridge (064832)				●		
	Hydraulic oil						●
CLEANING	Grease points	●					

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

HYDROSTATIC TRANSMISSION SYSTEM

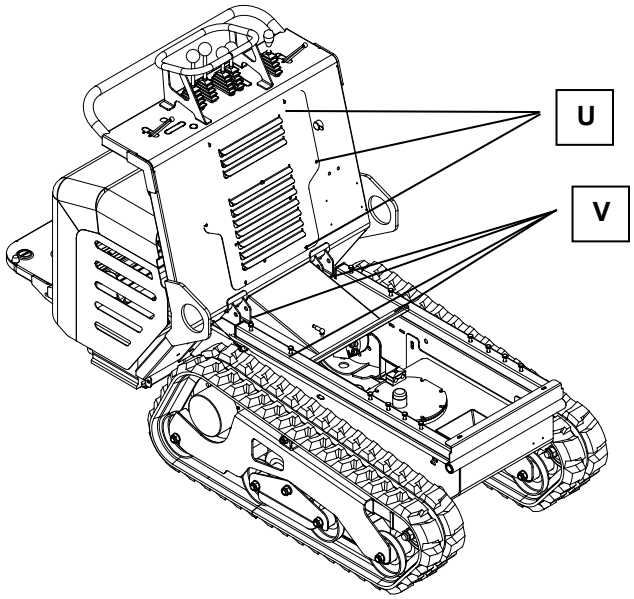


1. RIGHT TRACK HYDRAULIC PUMP
2. LEFT TRACK HYDRAULIC PUMP
3. DRIVE GEARMOTOR
4. DISCHARGE OIL FILTER (069946)
5. HYDRAULIC OIL TANK AND OIL INTAKE FILTER (065259)
6. SERVICE HYDRAULIC PUMP
7. WATER/OIL COOLER

PUMPS MAINTENANCE

In order to service the pump and the hydraulic valve once the body is tipped and safely blocked, loose the screw "**U**" and "**V**" and then remove the protection carters

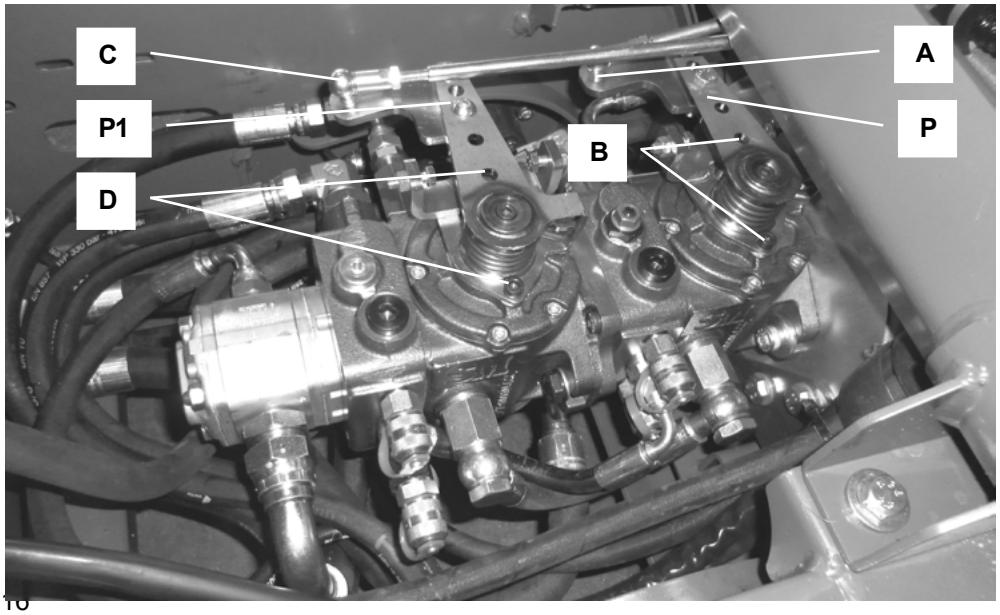
After finishing the necessary maintenance, refasten the panels and tie the screws.



ADJUSTMENT AND ZERO SETTING OF THE HYDRAULIC PUMPS

The track control levers on the control panel automatically return to zero (neutral position), independently of the revolutions of the engine.

If the machine moves slowly forwards or backwards, or rotates slightly, in spite of the fact that the levers are in neutral, it will be necessary to regulate one or both the pumps driving the tracks.



Hydrostatic Transmission System Maintenance (cont'd)

To adjust the pumps and obtain zero setting, proceed in the following order:

- Position the machine on a flat horizontal surface;
- Unscrew the axle bolt on the control cable from the regulating poles "**A**", "**C**" or both;
- Gently loosen screws "**B**", "**D**", or both of them, using the hexagonal key no.5 to release the break on the adjustment plate "**P**" or "**P1**" or both;
- Position the plate "**P**", "**P1**", or both, in such a way that they lock the tracks and therefore stop the machine;
- Tighten screws "**B**", "**D**" or both, in this position, ensuring the machine is completely immobile;
- Reassemble the axle bolt on the control cable onto the respective parts of the regulating poles "**A**" and "**C**", checking that the speed level of the cable is correct and maintaining the stop position.

⚠ WARNING

DO NOT INSERT HANDS, PARTS OF THE BODY OR TOOLS IN THE FAN LOCATED ON THE RADIATOR AS IT STARTS AUTOMATICALLY.

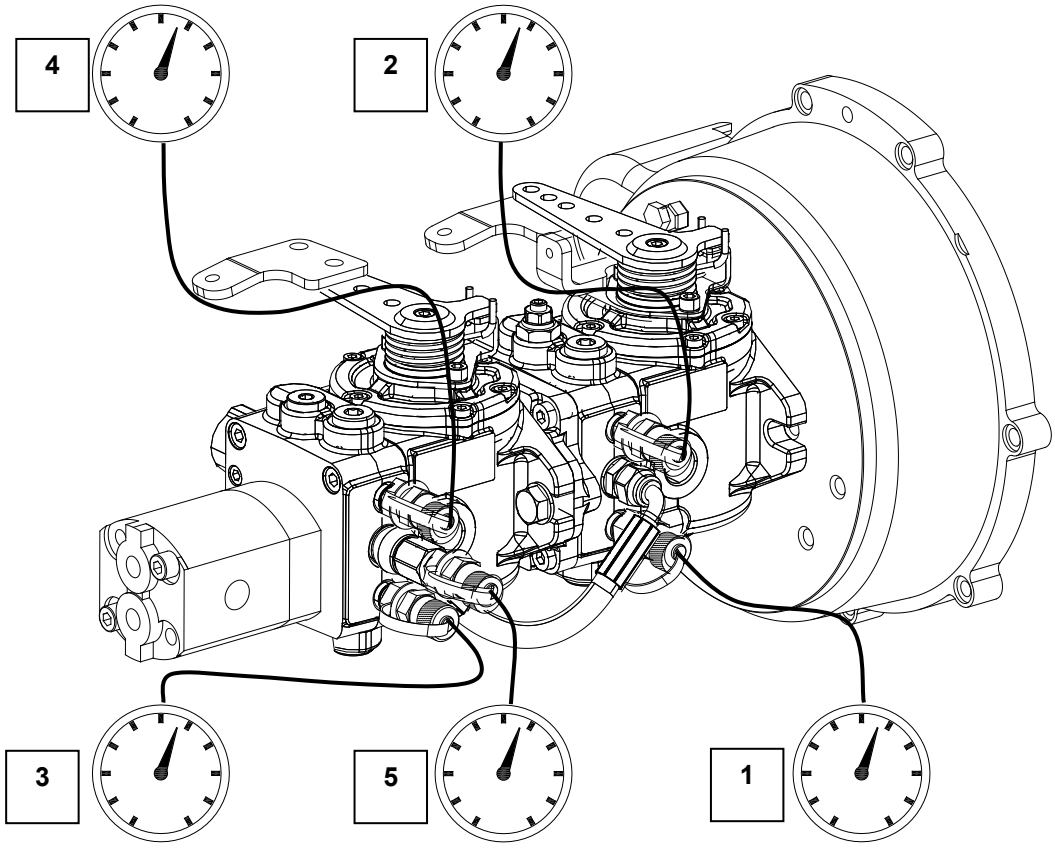
NOTICE

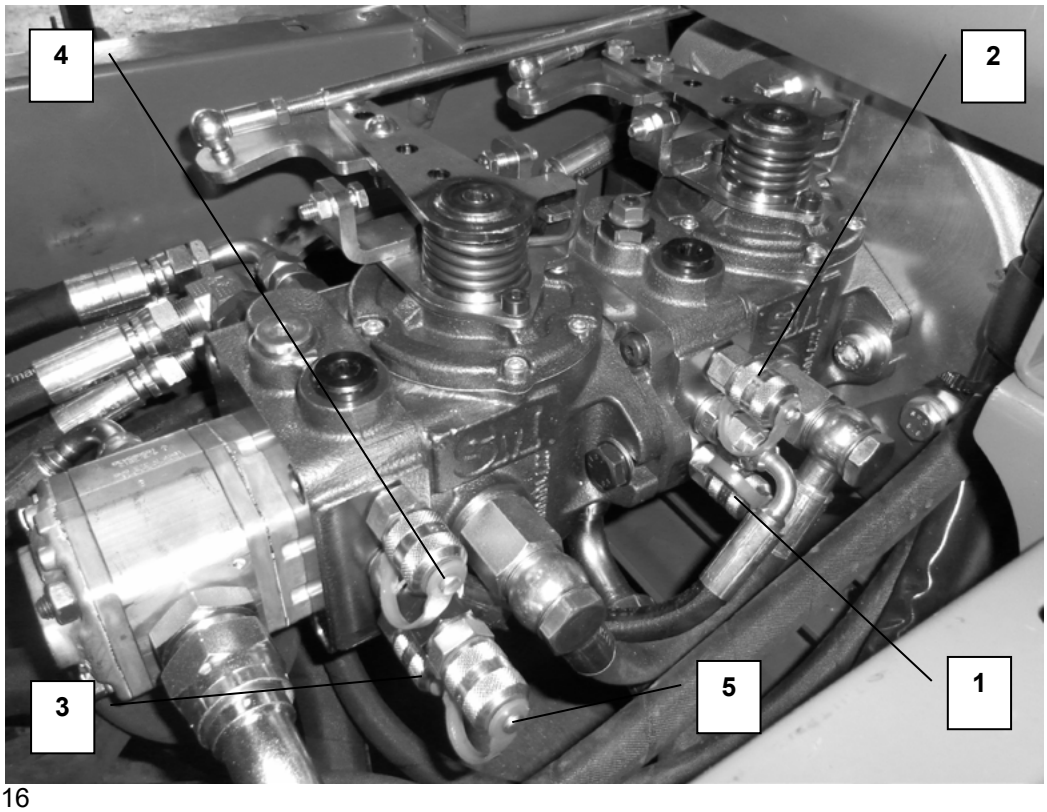
For proper use of the machine it is recommended to bring the hydraulic oil to work temperature by leaving the engine to idle and slightly accelerated for about 5 – 10 minutes.

NOTE: IN CASE OF ANY DIFFICULTIES OR DOUBTS, IT IS ADVISABLE TO CONTACT AN AUTHORIZED SERVICE CENTER

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

CHECK MAX. PRESSURE OF HYDROSTATIC TRANSMISSION SYSTEM





Hydrostatic Transmission System Maintenance (cont'd)

- With the vehicle stationary and the engine off, connect no.4 **400 bar** full scale gauges to points **"1", "2", "3"** and **"4"**, start the endothermic engine and bring it to the max. power allowed *(3200 rpm for the petrol engine and 3600 rpm for the diesel engine)*.
- Operate the drive lever corresponding to the track to the service of which the gauge has been connected, taking care to block the piloted track and progressively bringing the drive lever completely forwards or backwards.

GAUGE POSITION	CORRESPONDING GEAR	RELATIVE TRACK	PRESS. TO BE READ
1	forward	right	**220 ÷ 240 bar**
2	reverse	right	
3	reverse	left	
4	forward	left	

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

⚠ CAUTION

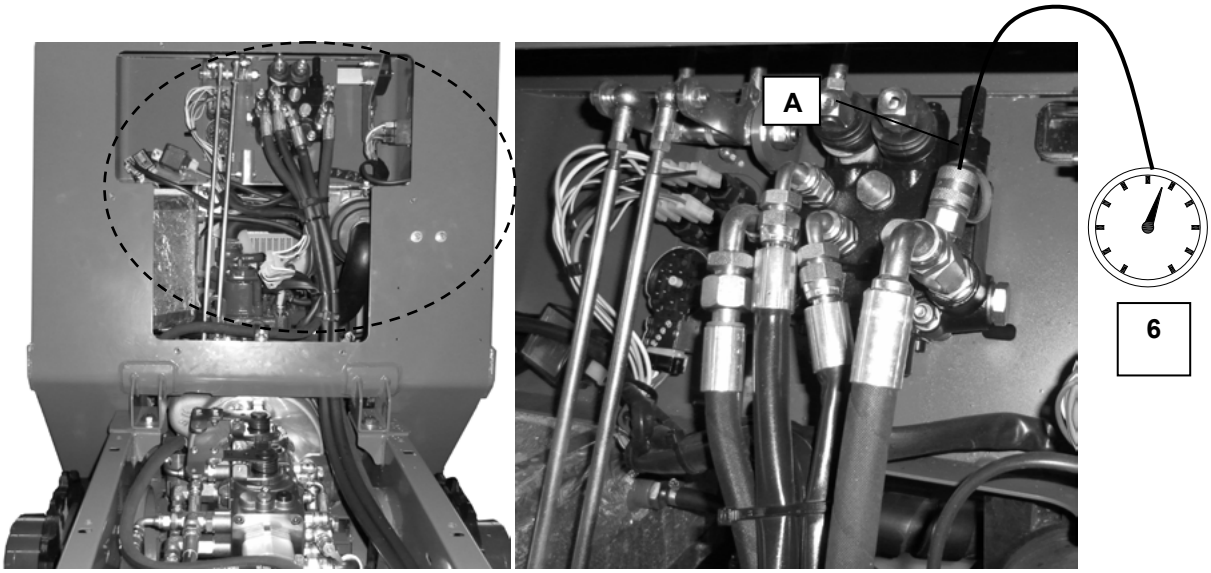
WHEN TESTING THE 4 SERVICES, THE BOOST PRESSURE READ AT POINT **"5"** MUST REMAIN UNALTERED, RANGING BETWEEN THE LIMITS INDICATED BELOW **(22 – 24 bar)**.

CHECK CHARGE PUMP PRESSURE

- With the machine stopped and engine off, connect up a pressure gauge with bottom scale value **40 bar** to point **"5"** after which start the engine and run at max.rpm.
- Under these conditions, the shown pressure should be **between 22 and 24 bar**.

GAUGE POSITION	FUNCTION	PRESS. TO BE READ
5	Charge pump	**20 ÷ 22 bar**

CHECK MAX. PRESSURE OF THE HYDRAULIC SYSTEM SERVICE PRESSURES



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

- With the vehicle stationary and the engine off, connect a **250 bar** full-scale gauge to position **"6"**
- Start the engine and bring it to a speed of about 2600 rpm (ACCELERATOR LEVER = ¾ OF HE MAX. RANGE) then read the pressure indicated on the gauge
- If the detected pressure differs from the calibration value **(160 bar)** by over 5 bar, restore it by acting on the adjusting screw **"A"** at the end of the distributor pressure relief valve.

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

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

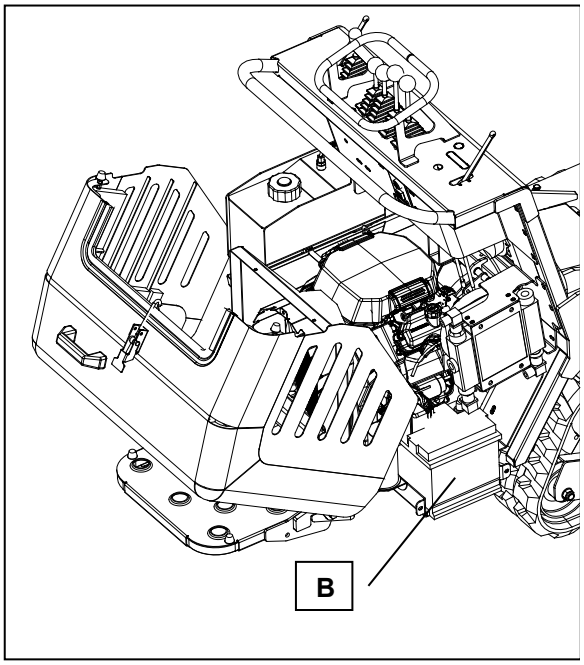
It is also advisable to have the above mentioned checks and inspections carried out by an authorized workshop and always in compliance with the instructions provided by the TECHNICAL SUPPORT DEPARTMENT.

GAUGE POSITION	PRESS. TO BE READ	FULL SCALE GAUGE	TYPE	RPM
6	190 ± 5 bar	250 bar	¼" G	2600 rpm

General Maintenance - Electrical System

ELECTRICAL SYSTEM

Battery **“B”** is found under the bonnet, on the left side.



BATTERY SPECIFICATIONS:

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

A - IGNITION KEY

B - BATTERY

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

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

⚠ CAUTION

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

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

Always make sure the filler caps are closed perfectly.

Do not drain the battery completely.

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

The used battery must be disposed of by an authorized Company or personnel.
THE LIQUID INSIDE THE BATTERY IS HIGHLY CORROSIVE. PROTECT YOUR EYES AND HANDS WHEN CHECKING AND RESTORING THE LEVEL.

RISK OF BURNS!
RISK OF SCALDING!!

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

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

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

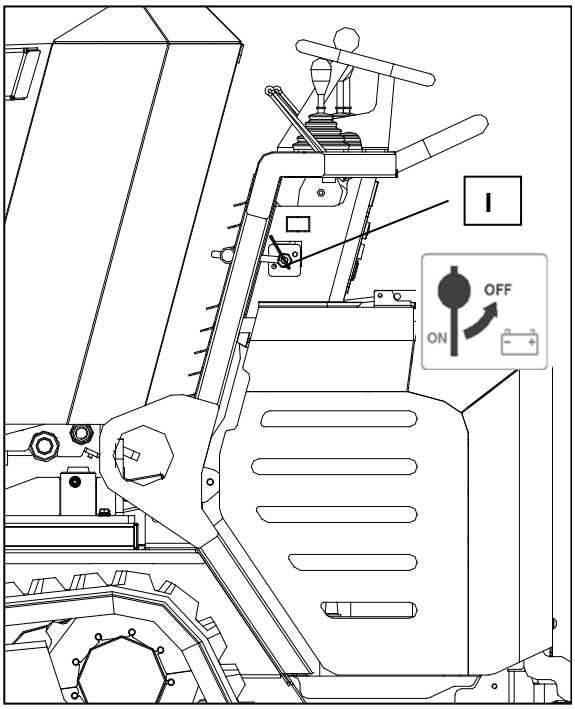
Keep metal tools and objects away from the battery poles as these may short-circuit the terminals and pose a risk of burns.

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

When parking the machine for a long period of time at low temperatures, the battery should be protected or stored in a dry and protected area.

REMOVE THE COVERING BEFORE IGNITION; FIRE HAZARD.

The machine is equipped with a **switch "I"** located on the left side of the machine, it makes it possible to disengage the battery if any **EMERGENCY** required it or if stopping the machine for a long period of time (more than 4 hours). Always contact Authorized Workshops for recharging.



Troubleshooting

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

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

Machine Cleaning Procedure

When cleaning the machine, please adhere to the following information to ensure proper cleaning and to keep the machine in the best condition possible.

Power Washing Procedure:

NOTICE

- Ensure that the water pressure is below 2000 PSI (14 MPa)
- Always keep the water temperature below 180°F (80°C)
- Use a spray nozzle with at minimum 40° wide spray angle
- Keep the nozzle at least 1 foot (300mm) away from the machine
- Avoid spraying water on the engine and electronic components. Examples include electronic displays, lights, switches, wiring, etc. The electronic components may be damaged if water is sprayed on them.
- Keep a perpendicular angle (90°) when cleaning over a decal.
  - Holding nozzle of a pressure washer at an angle different from 90° may lift the decal from the machine.
- Recommended using a safe cement dissolver, **BACK-SET** or similar**,** to remove hardened concrete.
- It is **NOT** recommended to use chemicals such as:
  - Muriatic Acid
  - Hydrochloric Acid
  - Hydrofluoric Acid
  - Sulfuric Acid
  - Phosphoric Acid
- To prevent build-up of concrete on the machine, use **BODY GUARD** or similar protection wax.

Filter Cleaning Procedure:

- Remove air filters and blow out with compressed air, **NOT** to exceed 80 PSI.

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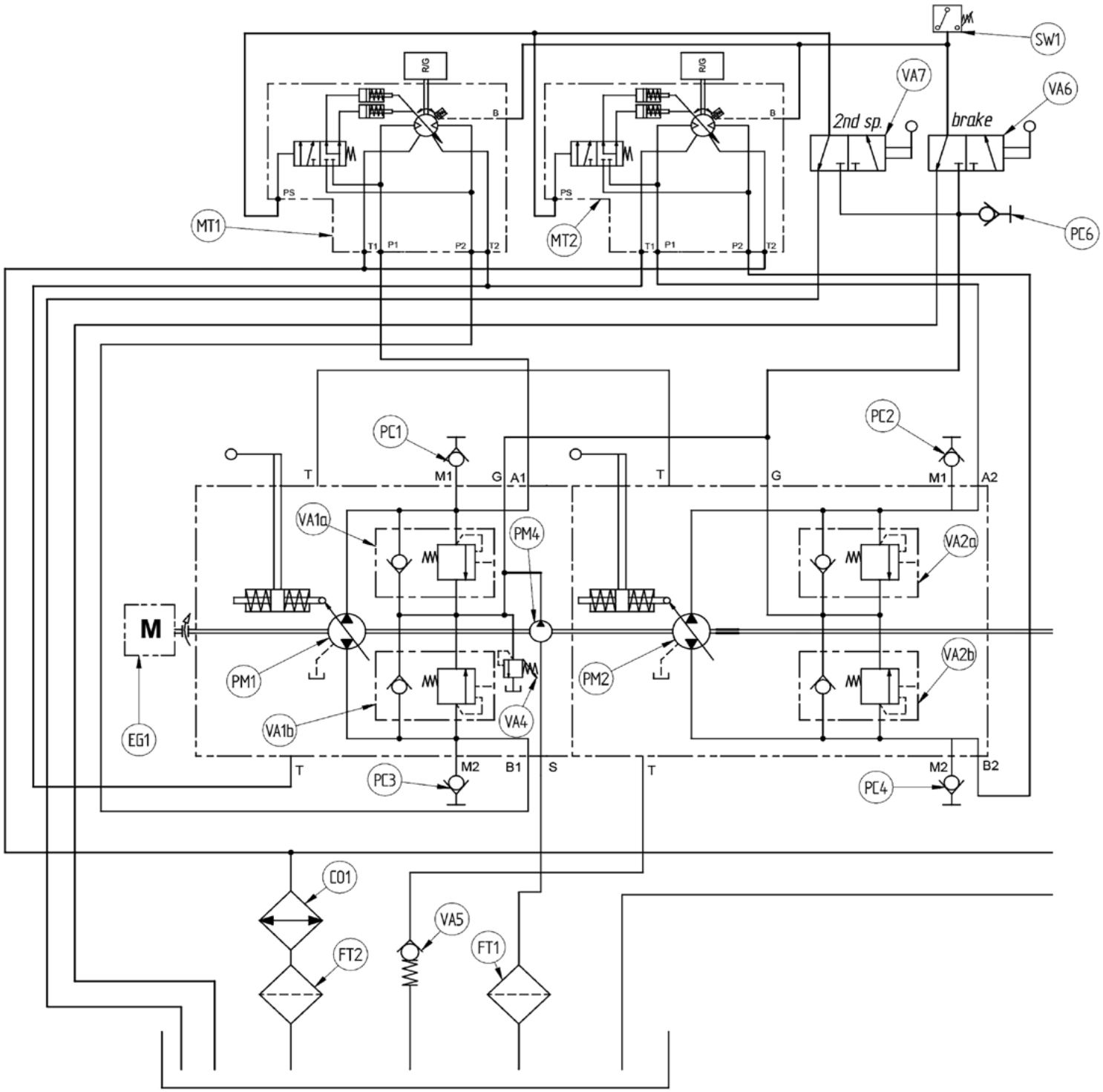
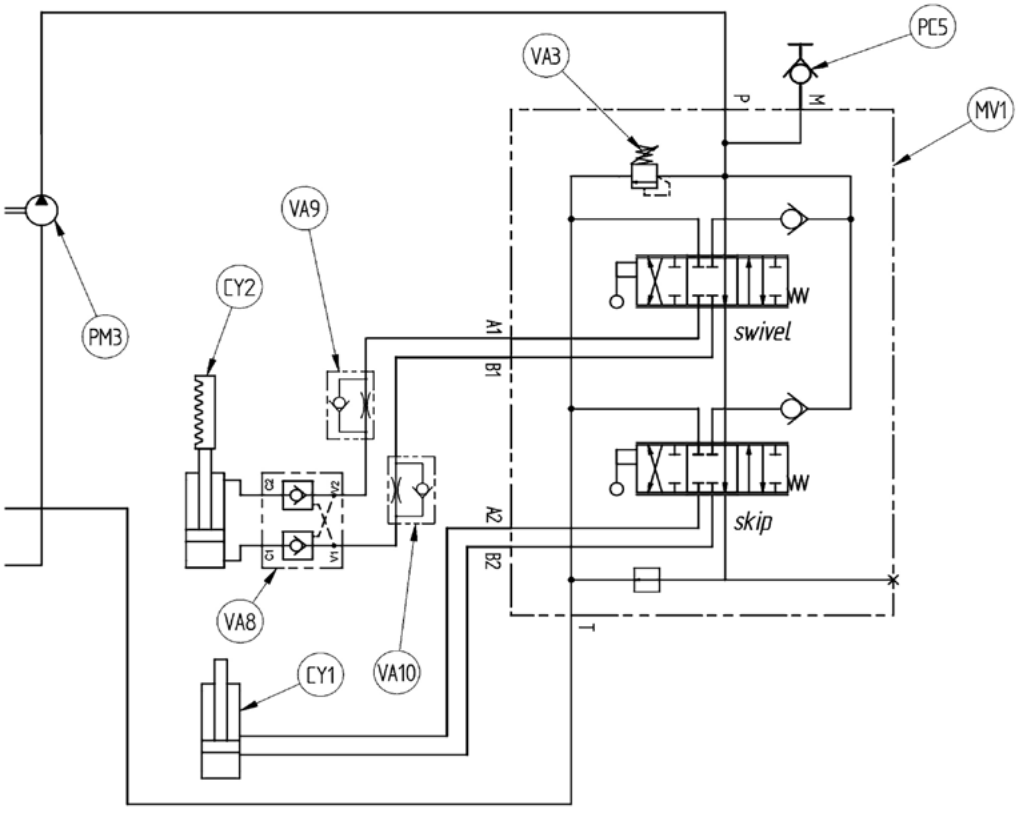
Hydraulic Schematic

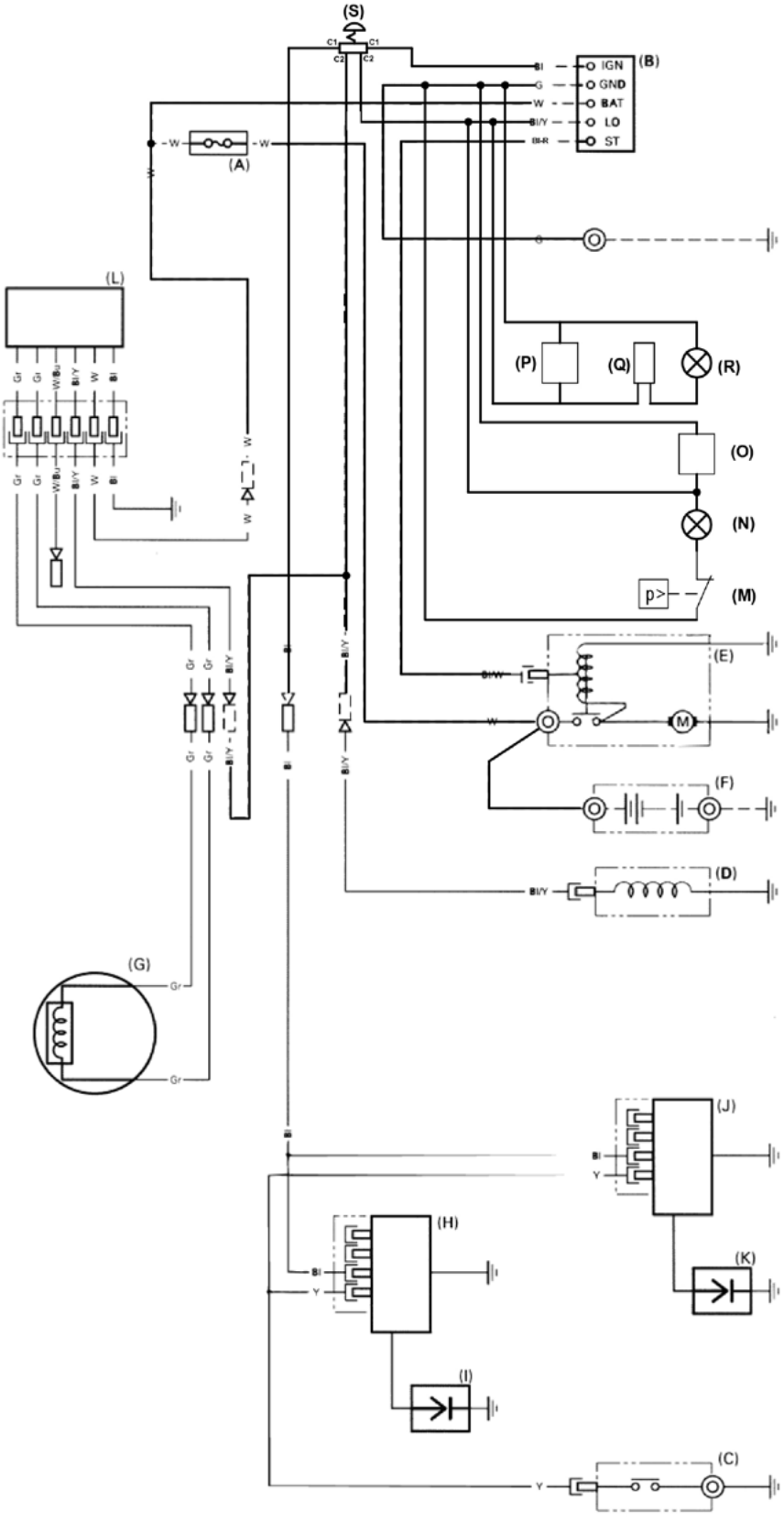


Hydraulic Schematic (cont'd)

Pos.	Part	Technical specifications
CO1	Cooler	
CY1	Cylinder	50x30x480 - dumping
CY2	Cylinder	45x25x168 - swivelling
EG1	Engine	15.5 kw @ 3600 ± 50 rpm
FT1	Suction filter	30 μm
FT2	Return filter	90 μm
MT1	Piston motor	8,7 - 14,72 cc - right track
MT2	Piston motor	8,7 - 14,72 cc - left track
MV1	Main valve	Services
PC1	Pressure check	Right track - forward
PC2	Pressure check	Left track - forward
PC3	Pressure check	Right track - backward
PC4	Pressure check	Left track - backward
PC5	Pressure check	Services
PC6	Pressure check	Charge pump
PM1	Piston pump	8 cc - right track
PM2	Piston pump	8 cc - left track
PM3	Gear pump	2.0 cc - services
PM4	Charge pump	5 cc
VA1a	Relief valve	230±10 bar - right track forward
VA1b	Relief valve	230±10 bar - right track backward
VA2a	Relief valve	230±10 bar - left track forward
VA2b	Relief valve	230±10 bar - left track backward
VA3	Relief valve	160±5 bar - services
VA4	Relief valve	20 ÷ 22 bar - charge pump
VA5	Check valve	1.5 bar
VA6	Valve	Brake
VA7	Valve	2° gear
VA8	Pilot oper. Check	ratio=6:1 - cracking 3 bar
VA9	One-way restrict.	ø 0,6 mm
VA10	One-way restrict.	ø 0,8 mm
SW1	Pressure switch	Brake



Electrical Schematic



WIRE COLORS

Bi	BLACK	Br	BROWN
Y	YELLOW	O	BLACK
Bu	BLUE	Lb	LIGHT BLUE
G	GREEN	Lg	LIGHT GREEN
R	RED	P	PINK
W	WHITE	Gr	GRAY

NOTE FOR TWO-COLORED WIRES:

G/Y --> YELLOW WITH GREEN DOTS

G-Y --> YELLOW WITH A GREEN LINE

	IGN	GND	BAT	LO	ST
OFF					
ON	○—○		○—○		
ST	○—○		○—○	○—○	

ITEM	DESCRIPTION
A	Main fuse
B	Ignition switch
C	Oil level switch
D	Fuel cut solenoid
E	Starter motor
F	Battery
G	Charge coil
H	Ignition coil
I	Spark plug
J	Ignition coil
K	Spark plug
L	Regulator
M	Pressure switch
N	Warning light
O	Hourcounter
P	Fan
Q	Flow control
R	Warning light
S	Emergency stop

MANUAL REVISION DETAIL			
REVISION #	**REVISION DATE**	**REVISION REFERENCE #**	**REVISION BY**
-	09/2016	Initial Release	AW
A	07/2017	-	AW
B	05/2018	18-002, 18-027, 18-030, 18-031, 18-036	MW
C		MN 18-036	MW
D	01/2019	MN 18-019, 18-063, 18-082, 18-108, 18-112, 18-133, 18-203, 18-229, 19-003, 19-011	MW
E	01/2022	Updated Covers	MK
F	06/2022	Split Manual & Updated Safety Information	MK
G	01/2025	Pg. 49 Updated Gear Oil Information	MK
H	02/26	Updated warranty policy 2026	MK
I	04/26	Corrected OP/Parts to Safety/OP in Titles. Corrected Hyd filter PNs.	MK

AEC FACTORY & HEADQUARTERS

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

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