



**SHERP**

USER MANUAL

**ALL-TERRAIN VEHICLE**

**SHERP**

User Manual



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# INTRODUCTION

SHERP Ltd. thanks you for ATV SHERP purchase. To construct and manufacture this all-terrain vehicle long-term scientific and design work was held including tests in the most difficult climatic conditions which confirmed the ATV overall high efficiency factor, diesel engine efficiency, long life components and high reliability.

In case of ATV disrepair, maintenance necessity and for ordering the spare components or answering your questions, contact the manufacturer or the dealer.

User Guide is designated to describe ATV technical characteristics, as well as operating and maintenance recommendations.

User Guide is applied for all-terrain vehicle modifications.

You are recommended to read this Guide very attentively to correctly handle ATV and maintain it.

SHERP Ltd. introduces constantly new manufacture developments, improving the ATV design, therefore, some data and illustrations in this issue may differ from the actual configuration of your vehicle.

**Regular maintenance of your ATV in accordance with this Guide and service book will provide its reliable operation.**

«QUADRO INTERNATIONAL LLC» website: [www.sherp.ca](http://www.sherp.ca)



### **WARNING!**

The ATV is a high-risk vehicle, therefore, do not:

- operate the vehicle if intoxicated by alcohol or drugs;
- maintain the faulty vehicle;
- maintain without a first aid kit.



### **WARNING!**

Before operation starts, and every 10 engine hours it is necessary to lubricate the wheel drive chain. Swiveling device chain should be lubricated every 5 hours, and every time water gets into vehicle.



PRECAUTION MEASURES





# 1. PRECAUTION MEASURES

Before operation starts, the Driver shall complete training and study this User Guide. Operating the ATV by an untrained Driver can lead to injury or death.

The Driver's age shall be not less than 19.

While operating the ATV, always meet the Guide, texts on warning labels and Traffic Code requirements.

Always use the seat belt and fasten it tightly.

While operating, always hold your legs on pedals, and hands – on control levers.

Do not get out of the cab and the passenger compartment when moving.

While parked or stopping you shall pull up the ATV hand brake.

Do not look out from the windows and hatches when moving.

Do not modify the ATV structure.

Do not allow to operate the vehicle if person is intoxicated by alcohol or drugs.

Before the start and when moving through water, follow the safety precautions and procedures described in the corresponding Section.

The all-terrain vehicle shall be equipped with fire extinguisher and first aid kit.

It is recommended always to keep tool kit for emergency repairs in the ATV.

All floor, panels, parts of covers and guards shall always be secured in special places to prevent damage by ATV parts moving.

While moving all passengers must sit in the intended areas and fastened with seat belts.

Do not overload the ATV. When operating an overloaded ATV handling and passability are reduced.

Do not exceed the maximum speed when driving on unfamiliar or rough terrain in order to avoid injury and damage.

Some terrain and slopes are impossible to cross by ATV "SHERP", do not try to move around the area, if you are not sure that you will overcome it.

Avoid prolonged movement on roads with asphalt and concrete pavement. In turns, tires will slip, causing accelerated wear.

## **1.1 Safety Equipment**

ATV is equipped with protective devices for the safe operation:

- safety belts: check the safety belt anchorages (for both passengers and Driver) and ensure tape and lock damage are absent;
- The Driver's cab must be equipped in accordance with requirements of this Guide, all fasteners shall be tightened. The cab has a safety arch;
- User Guide: shall be in the cab;
- warning labels: shall be replaced if damaged;
- handrails: shall be replaced if damaged;
- hand brake: shall be in good condition.



## **WARNING!**

When driving ATV, always remember about safety. ATVs often occur on unknown and dangerous areas. The Driver is fully responsible for passengers, cargo and ATV safety, as well as for route selection.

### **1.2 Safe Operation**

Carefully following maintenance and operation rules is your best protection against accident and injury. Please read this Section attentively and understand its requirements before operating all-terrain vehicle.

ATV is a superpassing and compact vehicle. Due to the ATV's sophisticated and reliable design it can be used in a variety of conditions, various soils, from high to very low temperatures typical for Far North areas. Consequently, both Driver and passengers are exposed to danger connected with the use of the ATV off-road and on terrain with different soil cover. Such conditions are usual for the ATV operation.

The ATV is equipped with an internal combustion engine which produces heat and exhaust gases. Any exhaust gases can cause illness or death, therefore, always stop the engine before you start daily or periodic maintenance, before refueling, greasing, repairing or cleaning.

Do not open the expansion tank cap when engine is running or immediately after its stopping. Otherwise, hot coolant can escape from the tank. Wait more than 10 minutes before opening the plug until engine gets cool.

Fully relieve pressure in the fuel system, lubrication and cooling systems before removing or disconnecting any pipes, fittings or components associated with them.

Be ready for possible emergence of liquid or gas under pressure when disconnecting any device from the system. Oil or fuel at high pressure may cause injury.

Remember about the environmental and ecological protection. Before you drain any fluids, determine the correct disposal method. Follow environmental regulations during disposal of motor oil, fuel, coolant, hydraulic fluid, filters and batteries.

To carry out any maintenance work on terrain vehicle, always use proper tools in good condition. You shall figure out how to use it properly before you start to work.

The ATV warning labels provide directives on safety and care. Spare labels can be ordered from the manufacturer, dealer or service center.

Before you start to operate, the ATV shall be working complete, and operational. Check all the elements mentioned in columns "5" and "10" in maintenance table.

ATV can be operated safely by a qualified Driver only. To obtain a permit to drive the vehicle Driver shall not use drugs or alcohol reducing his attention or coordination. If the Driver takes medicines on prescription, he shall obtain doctor's permission to drive the ATV.

The driver must obtain practical skills for ATV driving.

Driver training shall include theoretical training and practical part on driving skills.

An inexperienced Driver shall start driving on the site, where there are no strangers, buildings, constructions and other obstacles and use all controls until he learns to drive ATV confidently, using all possible conditions of the topography.

The Driver shall be aware of the limitations provided for ATV use (for example, maximum angles of obstacles and descents overcome).

Loading shall be placed evenly and as low as possible.

Be careful when moving along the inclined plane in ATV loaded. Heavy freight with a high center of gravity reduces the ATV stability and can overturn it.

Be ready to shift passengers and freight forward or ask your passengers to leave all-terrain vehicle during the ascent.

Fasten the cargo so that it does not shift when driving.

### **1.3 Fire Prevention**

ATV has nodes and elements heated to high temperatures under normal operating conditions. Main excessive heat sources are the engine and exhaust gases outlet system. If damaged or used incorrectly, electrical equipment may become source of arcing, sparks and ignition places.

Flammable dust (leaves, straw, pine needles, etc.) shall be cleaned regularly. The accumulation of flammable debris increases the risk of fire. Empty ATV as often as possible to avoid accumulation of dust and lubricants. Flammable debris in engine compartment can cause a fire!

Do not use the ATV in locations where the exhaust gases, arcs, sparks or hot components may contact with combustible materials, explosive dust or gases.

Cab, engine compartment, cooling and exhaust gases systems shall be regularly inspected and, if necessary, cleaned in order to avoid the danger of overheating and fire.

Check the fuel lines, oil lines, hoses and fittings for damage and leaks. Do not store exhaust materials in the ATV, keep an outlet pipe clean. Observe the rules for handling coolant, brake fluid, lubricants and other liquids when filling the corresponding systems. Do not use gasoline or diesel fuel for cleaning parts. Use commercially available inflammable liquids.

Do not use ether or any other starting fluids for starting the engine. These start substances can cause an explosion, injury of both the Driver and others.

Do not warm up the engine with an open fire and do not come to open fire in the clothes soaked in oil.

Before performing welding works, clear ATV, turn off the general accumulator switch and disconnect the batteries, and place battery positive terminal at ground. Cover rubber hoses, electric cables, batteries and other flammable parts with refractory cloth. During welding works keep fire extinguisher as close as possible to the place where welding is done.

Provide sufficient ventilation during painted parts welding, painting or grinding. Wear antidust respirator while grinding for the reason that the formation of toxic gas and dust is possible.

Remember where fire extinguisher and first aid kit are located, and learn how to use them. You can buy fire extinguisher from a dealer or service center.







# TECHNICAL DESCRIPTION



## 2. TECHNICAL DESCRIPTION

The ATV "SHERP" and its modifications are vehicles intended for off-roads of the public transport network and having the ability to move through deep snow cover, as well as on soils with poor bearing capacity and water-logged ones, including marshes.

All-terrain vehicles are capable of overcoming deep snow cover with low lifting properties and waterlogged (to fluid and current state), clays, sandy loams, terrain compartments covered with organic layer (slurry or divor), and natural and man-made slopes and falls with grass to 35°, trenches and dump pits up to 0.5 m (1.6 ft) deep (high) and up to 0.5 m (1.6 ft) wide (long), and, also, water barriers up to 100 m (328 ft) long with standard wave height up to 0.4 m (1.3 ft).

Off-road vehicles provide operation at an ambient temperature of 253K (-40 ° C) (-40°F) to 313K (+ 40 ° C) (104 °F) and relative humidity up to 98% at a temperature of 298K (+ 25 ° C) (77 °F).

### 2.1 Technical Characteristics

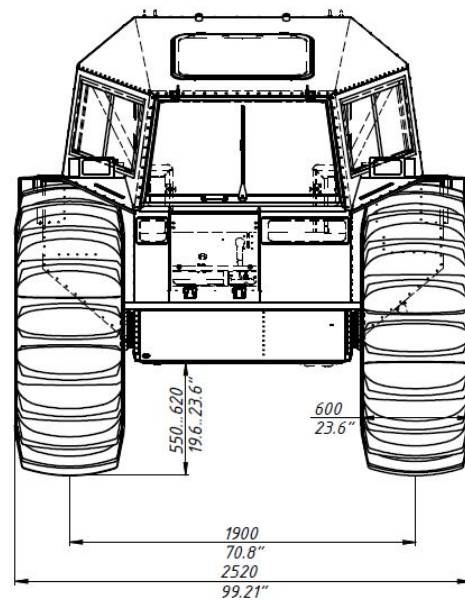
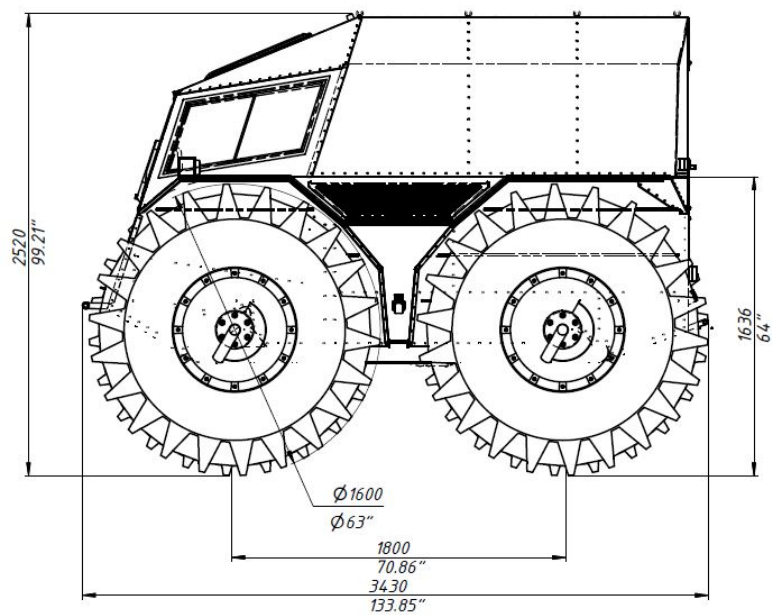
According to classification by GOST R 50943-2011, ATV are wheeled self-propelled vehicles.

The all-terrain vehicle can be stored out of garage. Temperature limit of reliable engine start using start facilitation tools is no lower than minus 40 ° C (-40°F).

## 2.2 All-Terrain Vehicle, general view



All-terrain vehicle "SHERP"



Dimensions of ATV "SHERP"

### 2.2.1 Main ATV Technical Characteristics

Characteristics	Data
Overall dimensions, mm (in):	
- length	3400 (133.85)
- width	2520 (99.21)
- height	2520 (99.21)
Maximum speed on off-roads, km/h (mph)	40 (25,5)
Dry mass, kg (lb)	1300 (2866)
Maximum mass, kg (lb)	2500 (5511)
Wheelbase, mm (in)	1800 (70.86)
Axle track, mm (in)	1900 (70.80)
Ride height, mm (in)	550..600 (19.6...23.6)
Tires	1600×600-25"
Engine	Turbodiesel Kubota V1505-T / E3B
Automotive alternator	40 A (optionally 60 A)
Automotive batteries	2 items: 12 V, 40 A·h

Characteristics	Data
Gear box	Mechanical, 5 step
Fuel tank volume, L (gal)	58 (15.3)
Fuel expense, L/h (gal/h)	2 (0.52)
Axle configuration	4×4

### 2.3 ATV's Structure

All models of ATV "SHERP", generally, consist of the following main components: powertrain, transmission, control system, electrical equipment and bodywork.

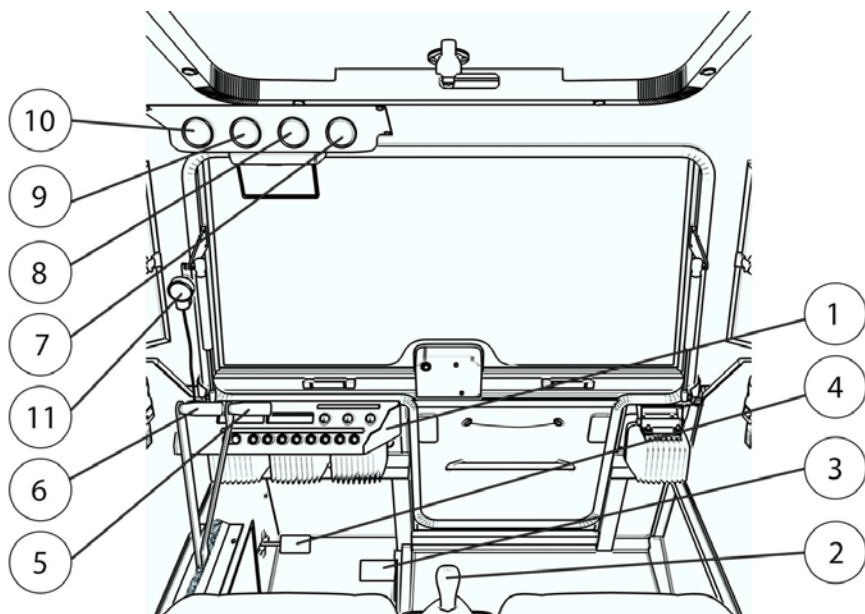
The Driver's cab includes the driver's and passenger's seat, seat belts, inner lining with sound- and heat-insulating materials, the front windshield and side (all open) glass, dashboard, front door serving as a support during entering and exiting the cabin, foot and hand controls.



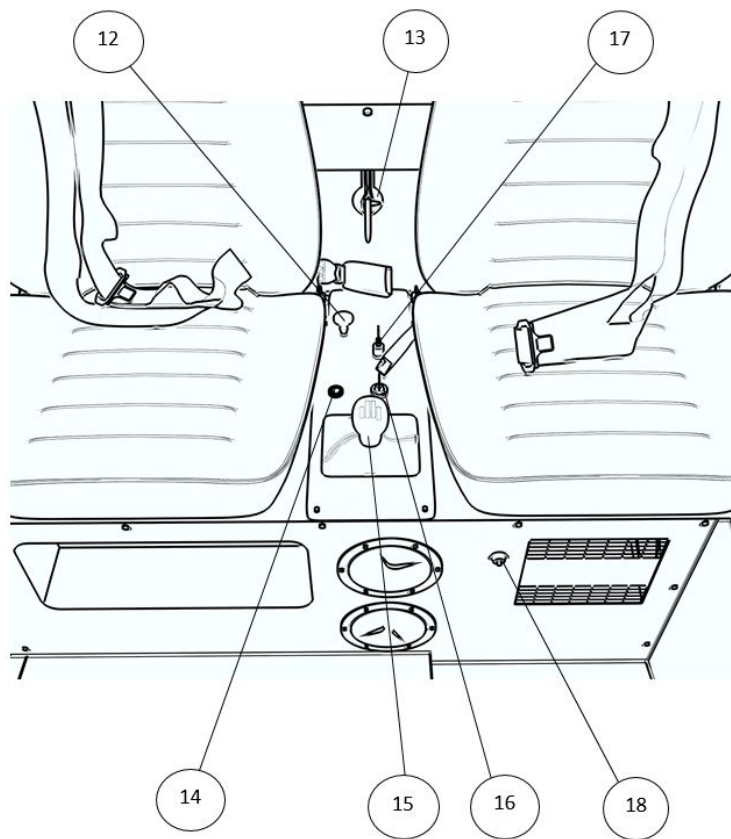
## 2.4 Controls and Devices

Before operating ATV, the Driver shall study all ATV controls location and purpose.

### Location of Controls and Cab Devices



- 1 – dashboard panel;
- 2 – transmission selection lever;
- 3 – accelerator pedal;
- 4 – clutch pedal;
- 5 – lever of steering control R;
- 6 – lever of steering control L;
- 7 – temperature sensor;
- 8 – fuel sensor;
- 9 – voltmeter;
- 10 – engine hour meter;
- 11 – tire pressure indicator;



12 – emergency stop;

13 – handbrake;

14 – battery selection key;

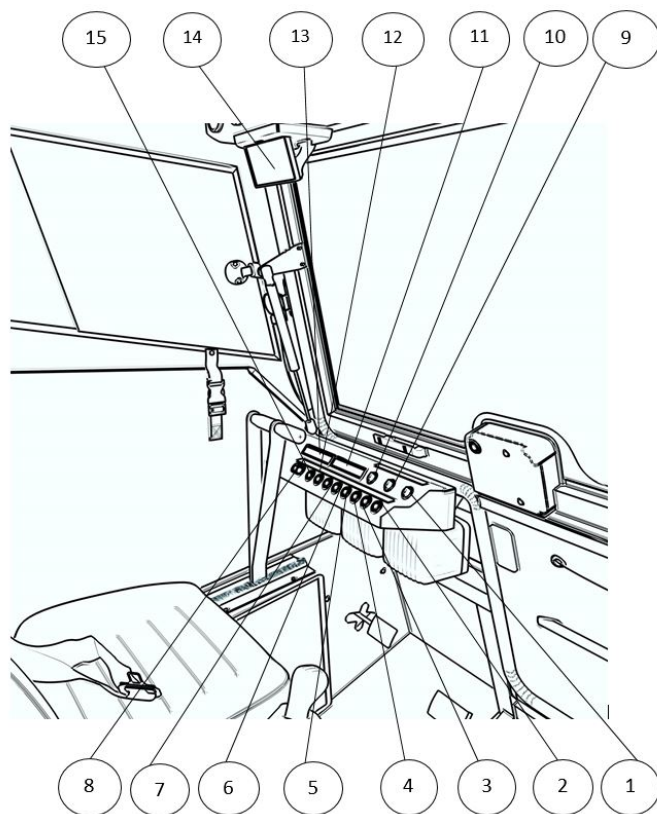
15 – gear stick (lever);

16 – ignition switch;

17 – battery disconnect switch;

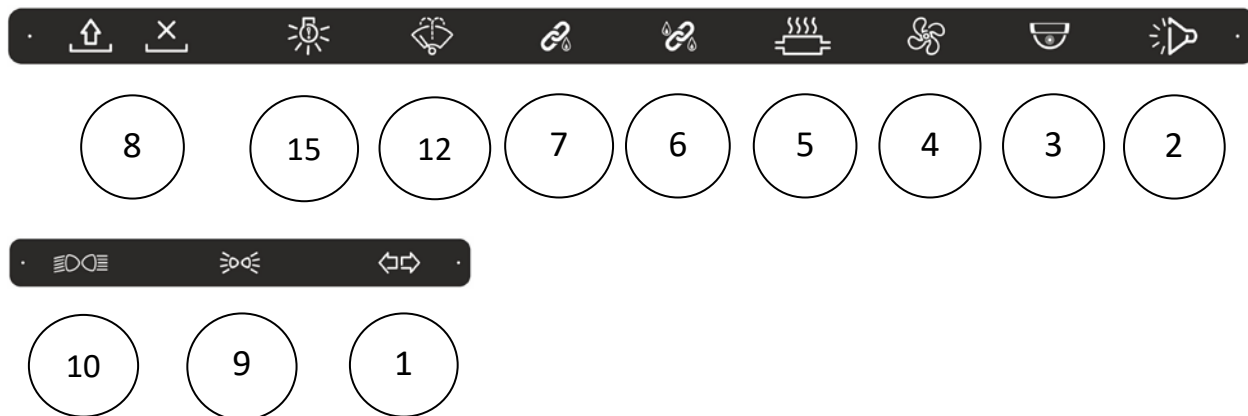
18 – wheel inflating valve;

## Switch Panel

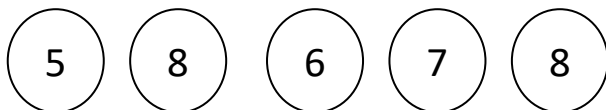
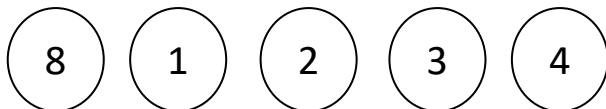
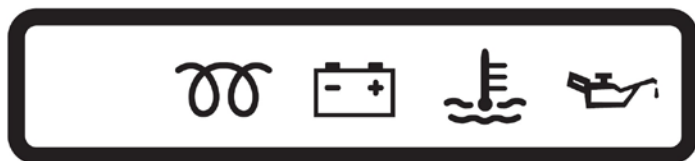


- 1 – turn signal switch;
- 2 – horn;
- 3 – rear camera switch;
- 4 – fan switch;
- 5 – heat switch;
- 6 – main chain lubrication;
- 7 – steering chain lubrication;
- 8 – air inflating ON/OFF;
- 9 – position lights switch;
- 10 – selection of upper/lower beam light;
- 11 – indicator lights;
- 12 – windscreen washer;
- 13 – indicator lights

Pictographs above key buttons facilitate the ATV operation. Explanation of pictographs is provided hereunder



Explanation of pictographs on the LED buttons lamp panels, is provided hereunder (see pictures above, pos. 11, 13):



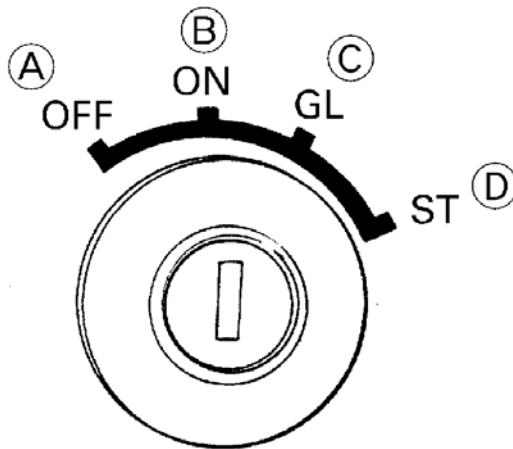
1 – heat plug is ON; 2 – battery is discharged; 3 – water temp overheating; 4 – no oil pressure; 5 – tire inflating is ON; 6 – emergency light is ON; 7 – upper beam light is ON; 8 – icons are not engaged and are OFF;

## Ignition Lock

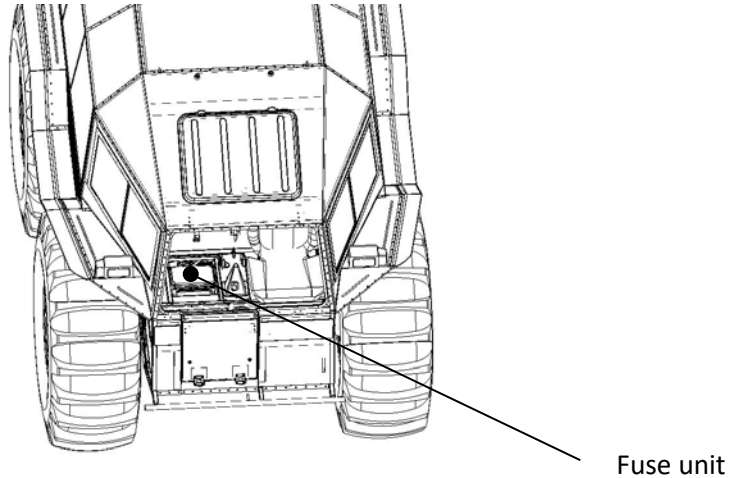
/Ignition lock has four positions:

- "OFF" – switched off;
- "ON" - ignition, fuel pump and control devices are switched on;
- "GL" - the engine glow plugs are switched on (non-fixed intermediate position);
- "ST" - starter is switched on (non-fixed utter position).

Ignition lock positions scheme:



## Fuses and Additional Equipment Panel



Fuse unit is under the passenger seat

### Side, Dipped-Beam and Long-Range Light Switches

These lighting devices can work both together and separately.

Side lights and hazard warning lights can be switched on without the key in ignition lock. To start their work switch on the battery switch, packet switch and press the selected switch.



### **WARNING!**

To prevent batteries discharge, do not use power-intensive devices when engine is switched off for more than 2 hours.

#### **Windshield Wiper Switch**

The switch has three positions:

- "OFF";
- "low-speed wiper is ON";
- "high-speed windshield wiper is ON".



### **WARNING!**

To prevent wiper motor or brush damage, do not use them if they are frozen to windshield. Before using the wiper remove the frost by a scraper, also make sure the brush is not frozen to glass.

#### **Turn Signal Switch**

The turn signal switch has three positions:

- "OFF" – middle position;
- "left turn indicators are ON" – utter left position;
- "right turn indicators are ON" – utter left position.







# CHARACTERISTICS OF MAIN PARTS AND AGGREGATES



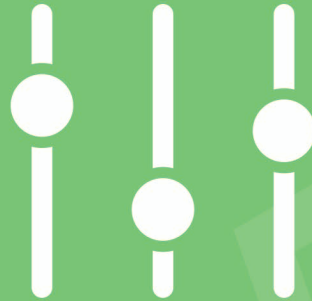
### 3. CHARACTERISTICS OF MAIN PARTS AND AGGREGATES

ENGINE	
Model	Kubota V1505-T
Type	Diesel, with turbocharger, in-line, 4-cycle with injection into swirl chamber type E-TVCS
Total displacement, L (in <sup>3</sup> )	1,498 (91.41)
Maximum housepower, kW (hp)	33,0 (44,2)
Maximum torque, N·m (kgf·m) (ft·lb)	118 N·m 12 kgf·m 87 ft·lb
Maximum bare speed, rpm	3200
Grease system	Combined with fluid-oil heat exchanger
Fuel system	Forced by the high pressure fuel pump and the electric fuel pump with cleaning by the first and final filters
Exhaust gases system	Gas release through exhaust manifold with turbocompressor and spark arrestor

Cooling system	Liquid, of closed type with the forced coolant circulation
<b>TRANSMISSION</b>	
Clutch	Friction single-plate dry
Gear box	<p>Fivespeed.</p> <p>Main gear: cylindrical, bevel</p> <p>Gear ratios:</p> <p>1st gear – 3.636</p> <p>2nd gear - 1.95</p> <p>3rd gear – 1.357</p> <p>4th gear - 0.941</p> <p>5th gear - 0.69</p> <p>Reverse - 3.53</p> <p>Main gear - 4.1</p>
Universal joint	Double-cardan universal joint
Clutch brake	Clutch brake steering
Drive	All-wheel chain drive (chains 16B-1, ISO 606)

<b>CONTROLS AND OPERATING SYSTEMS</b>	
Fuel supply	Foot accelerator
Skid steer and brakes	Two clutch brake levers
Hand brake	Disc, hand control
<b>ELECTRICAL EQUIPMENT</b>	
Electrical system, V	12
Type of the electrical equipment	DC. Two wire output.
<b>BODY</b>	
Cab	Frame-panel; body-on-frame construction method
Frame	Tubular, welded body-on-frame





MAIN DATA FOR ADJUSTMENT  
AND CONTROL





## 4. MAIN DATA FOR ADJUSTMENT AND CONTROL

Parameters	Measurement ranges
Lashes in valve operating mechanisms on cold (18...20°C) (64...68°F) engine, mm (in), within range	0,145...0,185 mm 0.005...0.007 in
Minimum rotation frequency of the crankshaft, min <sup>-1</sup> within	800...900 min <sup>-1</sup>
The oil pressure in the engine lubrication system with an oil temperature of 85°C (185°F) and the engine speed of 3200 min <sup>-1</sup> , kPa (kg / cm <sup>2</sup> ), (psi) within	196...441 kPa 2,0...4,5 kg / cm <sup>2</sup> 28,4...63,97 psi
The minimum oil pressure in the engine lubrication system with an oil temperature of 85°C (185°F) and the rotation frequency of the crankshaft 900 min <sup>-1</sup> , kPa (kg / cm <sup>2</sup> ), (psi), no less than	49 kPa 0.5 kg / cm <sup>2</sup> 7,1 psi
The liquid temperature in the cooling system of the engine warmed up to ambient temperature of 20 ... 300C (68...572°F), full loading and the speed is 40 km / h (25 mph), 0°C (32°F), and with maximum torque 40 km / h (25 mph), 0°C (32°F)	95°C 203°F

Cooling fluid level in coolant tank on old engine shall be on mark specified	On mark
Break fluid level in braking system tanks and hydraulic drive system for declutching	20 ... 40 mm (0.78...1.57 in) from the upper edge of the tank filler necks
Break fluid level in clutch brake system tank	50 ... 60 mm (1.96...2.36 in) from the upper edge of the tank filler neck
Free travel of the clutch pedal, mm (in), within	35...55 mm 1.37...2.16 in
Slack of drive transmission chains, mm (in), not more	20 mm 0.78 in
Free control lever handles travel, mm (in), not more	15 mm 0.59 in



ATV'S OPERATION



## 5. ATV's OPERATION

### 5.1 Pre-Operation Check and After-Operation Services

- check the engine oil level and add when necessary;
- check the coolant level and add when necessary (engine shall be cold);
- remove dust (leaves, needles, etc.) from the radiator suction grille and the engine duct grille and from engine compartment;
- check tires for damages, check tire pressure accuracy (depending on specified conditions of use);
- check clutch brake and wheel drive chain tension and lubricate, tighten and lubricate, if necessary
- check gauges and warning indicators;
- check warning labels for damages. Replace if worn or damaged;
- check seat belt condition;
- check main brake system, hand brake, engine and transmission;
- be sure to drain water from the hold after driving in water.

## 5.2 Preparation of ATV for Operation

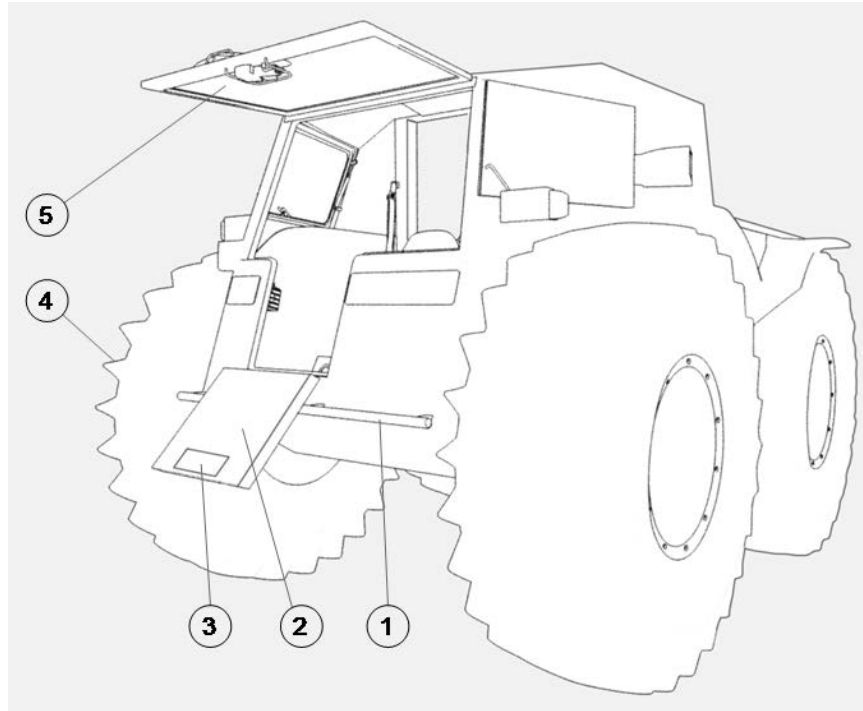
Before ATV operation, make the following actions:

- check commodity accompanying documents number compliance with ATV ratings;
- check and, if necessary, fill ATV with fuel seasonable;
- start the engine, warm it up and, with the engine running, check devices operation.

In all ATV preparations for moving, perform ATV control and check:

- fuel availability and level in the tank (if necessary, top up);
- coolant level in coolant system (if necessary, add)
- brake fluid availability in main braking cylinders and clutch hydraulic drive cylinder (if necessary, add);
- wheels and tires condition;
- hearing system condition;
- light and alarm devices operations;
- cabin screens, head and rear lamps, etc.

### 5.3 Entrance and Exit from ATV Cabin



1 – front bumper; 2 – front door; 3 – door handle; 4 – wheel flange / tread change; 5 – windscreen



**To enter the ATV's cabin:**

- open the windshield up to the stop;
- pull the handle to open the front door, lowering it down all the way to the bumper;
- put the leg on the opened door in the place of the handle inlet;
- take and hold the doorway frame by hands and enter the cab so as not to catch its internal contours by your head;
- take Driver or passenger seat.

**WARNING!**

To avoid injuries, clean the inside door surface from mud and oil residues.

**To exit the ATV's cab:**

- stop the engine;
- stop the ATV with hand brake;
- unfasten the seat belt;
- remove the key from ignition lock to prevent all-terrain vehicle use by unauthorized persons;
- get out of the cab in reverse sequence to entrance.

### **Emergency Exit from the Cab**

Emergency exit from the cabin can be through the aperture located behind the Driver's and passenger's seats above engine compartment, then through the body and its door.

If your ATV is equipped with hatches, they can also be used for emergency exit.

## **5.4 Engine Start**



### **WARNING!**

Some engine parts may heat up.

The engine can release hot exhaust gases.

Keep fuels and lubricants at the safe distance.

If possible, avoid starting the engine on slopes.

Do not use ether or any other fluids to start the engine, for it may cause serious damage.



### **WARNING!**

When starting the engine after a long storage (more than 3 months), first pull the handle of the emergency brake and, holding it for about 10 seconds, switch on the starter.

During this time the working lubrication pump will supply the oil to every engine part. Return the handle to its initial position.

#### 5.4.1 Engine Start (normal):

- press the accelerator pedal to about half of its full stroke;
- insert the key in the ignition lock and turn it to position «ON» (switched on);
- turn the key in the ignition lock to position «GL» (preheating);
- press the clutch pedal;
- turn the key in the ignition lock to the position «ST» (Starting). The engine should start.

After the engine starts, immediately turn the key to the neutral position «ON» (switched on).

##### **Note**

If oil pressure indicator is still on, immediately stop the engine and check:

- if there is enough engine oil;
- if the engine oil has dirt in it;
- if the wiring is faulty.

Warm up the engine at medium speed without loading.



##### **WARNING!**

If oil pressure indicator still reddens or fades slowly, immediately ask your service center to diagnose and repair it.

If engine does not start in 10 seconds after the starter switch is set at «ST» (Starting), wait for another 30 seconds and then begin the engine starting sequence again. Do not allow the starter to run continuously for more than 20 seconds.

#### **5.4.2 Cold Weather Starting**

If the ambient temperature is below -5°C (23°F) and the engine is very cold, start it in the following manner:

- press the accelerator pedal to about half of its full stroke;
- insert the key in the ignition lock and turn it to position «ON» (switched on);
- turn the key in the ignition lock to position «GL» (preheating) and hold the key in this position until the glowplug on the instrument panel goes out (about 10 s) ;
- press the clutch pedal;
- turn the key in the ignition lock to the position «ST» (starting). Engine should start. After the engine starts, immediately turn the key to the neutral position «ON» (switched on).

If engine does not start in 10 seconds after the starter switch is set at «ST» (starting), wait for another 30 seconds and then begin try to preheat and start the engine again. Do not allow the starter to run continuously for more than 20 seconds.

Warm up the engine not only at low temperatures but also at high ambient temperatures. An insufficiently warmed-up engine can shorten its service life.

### 5.4.3 Engine Stop:

- take your leg off the accelerator pedal (engine automatically goes into idle mode) and let it run for a while;
- turn the key in the ignition lock to «OFF» (STOP). Engine will stop.



#### **WARNING!**

When engine runs within the rated output range, the color of exhausted gases remains colorless.

If, at sharp accelerator pressing, the rotation speed increases to maximum level, exhaust gases may be tinted a dark color slightly which is not a sign of the engine failure.

If the engine constantly works with the dark exhaust gases, it may lead to its failure.



#### **WARNING!**

Immediately stop the engine if:

- engine suddenly slows down or accelerates;
- unusual noises suddenly appear;
- exhaust gases suddenly become dark;
- oil pressure warning indicator lights up or the temperature gauge registers the emergency coolant temperature or the audio signal is heard;
- reverse engine operation took place.

#### 5.4.4 Reverse Engine operation (Crankshaft Rotation in the Opposite Direction)

Reversed engine operation during crankshaft rotation in the opposite direction must be stopped immediately since engine oil circulation is cut quickly, leading to serious problems.



#### **WARNING!**

Reversed engine operation start signs:

- lubricating oil pressure drops sharply. Oil pressure warning indicator lights on.
- since the intake and exhaust sides are reversed, sound of engine changes, and exhaust gases will come out of the air filter.
- loud knocking sound is heard (denotation).

Remedies:

- immediately set the engine stop the engine by handling emergency brake lever
- after the engine stops, check the air filter, intake rubber tube and replace these parts, if necessary.

## 5.5 ATV's Break-In Period

ATV's reliability, durability and efficiency depend on of running the details of nodes and aggregates in the initial period of operation (break-in). The duration of break-in period for new ATV is 20 engine hours. It is recommended to pass areas with heavy traffic conditions (deep mud, swamps, steep slopes, etc.) at saving modes.

### **Before the break-in:**

- follow the steps identified in columns "5" and "10" of maintenance table;
- check the batteries and, if necessary, clean the terminals and grease them;
- check and, if necessary, tighten the external thread connections;
- listen to the engine and check the indicators of control devices for compliance with established standards.

In the break-in period, the maximum speed is limited to 30 km/h (18,6 mph). The payload must not exceed 75% of the maximum payload.

It is not recommended to exceed the average crankshaft speed during engine start and warming-up.

### **New ATV Break-In Procedure**

During the initial 20 hours break-in, follow these procedures:

- find a terrain with sufficient dimensions, having the sand soil, dirt roads, etc., and the natural inclines and slopes most complying to ATV's operating conditions requirements;
- at low ambient temperature start moving after complete engine warming up;
- do not overload the vehicle, pull the control levers smoothly, without jerks, alternately clicking on them making the necessary maneuvers and turns. Allow the brakes to cool down for some time moving in a straight line. Repeat slow turns, and let the brakes cool off again, moving in a straight line. This will grind brake pads to brake discs and clutch brake discs;
- avoid long-term operation of unloaded engine, under maximum or minimum speed modes;
- use clutch pedal smoothly;
- check screw connections state and tighten them in time.

If the engine operates within the rated power, exhaust gases remain colorless, but if, by sharply pressing the accelerator pedal the speed increases to maximum values, exhaust gases can be slightly darkened which is not the reason for engine emergency stop.

## 5.6 General Cases of ATV Moving

Proper ATV's driving is one of the most important conditions for increasing its service life and trouble-free operation. All-terrain vehicle breakaway is possible only after engine is warmed up and test scores are checked. While moving, constantly observe devices scores.



Of particular importance is the right choice of internal pressure in the tires. The specific value of the internal pressure while driving on the off-roads is selected by the Driver depending on bearing capacity type and soil, snow, waterlogged terrain state. In this case the tire pressure should provide the ATV with the passability under such conditions.

The recommended tire pressure for the most typical driving conditions.

Road conditions	Recommended tire pressure, kgf/cm <sup>2</sup> (psi)
Paved roads	0.1...0.2 (1.4...2.8)
Dirt roads	0.08...0.15 (1.37...2.74)
Sand, tillage	0.07...0.1 (0.99...1.4)
Waterlogged terrain, virgin snow	0.03...0.08 (0.42...1.37)

According to the table, before starting it is necessary to install correct internal tire pressure.

The initial transmission in the gearbox when taking off is selected depending on ATV's loading and road conditions.

Gear shift must be carried out with the clutch disengaged by smoothly pressing the gear lever.

Reverse gear can be shifted only after ATV's complete stop.

After a long stay at very low ambient temperatures it is recommended to drive at least 1 km (0,62 miles) in second gear. Herewith the engine shall work with the average crankshaft rotation speed in order for lubrication in the transmission to heat and become less viscous which is necessary for the normal operation.

ATV Deceleration should be done smoothly, avoiding sharp braking. The wheels should not slide when braking, as in this case the braking effect reduces essentially and tires wear increases. On a slippery road, strong and sharp braking can cause ATV's skid. When ATV is parked apart from the pressed hand brake, first gear shall be put in.

## **5.7 Peculiarities of ATV's Driving under Tough Road Conditions**

### **5.7.1 Operation in Remote Areas**

To travel long journeys or trips to remote areas be sure to have with you:

- first aid kit;
- survival set of tools;
- protective clothing and footwear;
- waterproof matches;
- flares;
- means of communication;
- adequate supply of fuel;

- extinguisher;
- set of basic tools and spare parts.

Before heading out to the remote area, it is necessary to perform ATV's complete inspection, adjustment and lubrication. Go only with vehicle being in good condition.

Equipment and supplies shall be selected taking into account climatic and weather conditions.

In remote areas follow safe driving rules. Detour the area which may be insurmountable.

### **5.7.2 Driving on Ascents and Descents**

When performing all-terrain vehicle breakaway on lifts, descents and hillsides clutch shall be thrown in a little before gears fully break off.

Sharp and long ascends should be overcome in one of the lower gears (depending on ascent steepness and length).

Before ascending it is necessary to select the gear, which ensures necessary pulling force on the wheels without gearshifts and stops. If ascent could not be passed, it is necessary to descend the ATV in reverse slowly, without any acceleration, with reverse gear switched.

On the slopes the ATV's speed shall be maintained depending upon surface state and visibility, slope steepness and descend length. Try not to disengage the engine, clutch

or gear. Coasting on a steep slope is not allowed. The crankshaft high rotate speed shall not be allowed. If necessary, operating brakes should be applied without disengaging the clutch.

### **5.7.3 Overcoming the Ditches, Roadside Channels and Moats**

The ditches, roadside channels and moats should be passed at a low speed. If front wheel impact is possible, do not pass the obstacles straight off. When passing ditches and moats, geometric parameters of the ATV's passability shall be taken into account.

### **5.7.4 Driving on Sandy Areas, Tillage and Virgin Snow**

Depending on soil or snow cover density, it is necessary to select the appropriate tire pressure. Gears shall be chosen depending on specific traffic conditions, it is better to use higher gears.

It is necessary to observe ATV's smooth moving, avoiding jerks and stops. Turn smoothly making large radius without reducing speed. While moving in a column, drive ahead following the track of front ATV with a distance of not less than 40 ... 50 m (131...164 ft).

Before moving along deep fresh snow, Driver shall balance the loading in off-road vehicle so as to provide maximum possible loading on rear wheels. It is practically impossible to change the gear from a lower to a higher when driving on deep fresh snow. Therefore, it would be reasonable to use the forward-rearward motion to roll the take-off area of

approximately 20 m (65 ft) long and to start the movement from it in the gear providing for reliable engine work on the peak torque, and to drive it along the whole section of deep fresh snow.

If the wheels started slipping, it is recommended to move backwards and try to bypass tough road part. If you don't allow the long wheelspin, the vehicle may practically always move backwards.

#### **5.7.5 Driving on Waterlogged Terrains**

In case of skillful driving the ATV is able to overcome all kinds of waterlogged areas.

It is recommended to overcome the waterlogged terrains using the shortest ways and with the biggest vegetation cover density. The corresponding tire pressure shall be inflated.

#### **5.7.6 Passing Water Barriers**

The ATV is able to pass water barriers afloat. It shall be done carefully, without jerks and any sharp turns.

Moving by floating, as well as into and out of the water such conditions shall be followed:

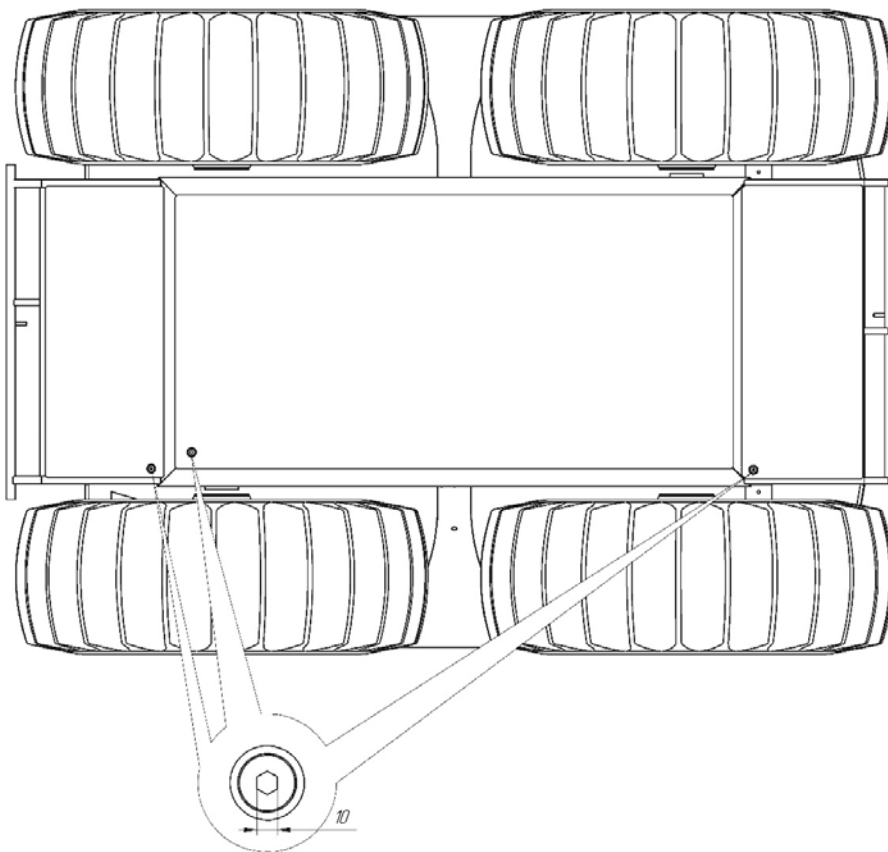
- always wear a life jacket before overcoming water barriers;
- avoid afloat in strong wind and/or waves;

- in the place of entering the water, bank shall be free of stones and other obstacles. Move into the water along a smooth descent. After entering the water, stop and check the vehicle for leaks;

- do not try to overcome wide water barriers. If possible, stay close to bank;

- in case of leakages go ashore. Drain the leaked water by unscrewing the kingston valve plugs and eliminate the leakage cause;

- to go ashore choose relatively flat spot, free of rocks and other obstacles. Direct the all-terrain vehicle so that front wheels get out of water simultaneously.



Location of kingpin valves at ATV's bottom

## **5.8 Tires**

Pneumatic ultralow pressure tires 160×600-25", TU U 22.1-19133330-002:2013, designed to be used at all-terrain vehicles, working predominantly under off-road conditions.

### **5.8.1 Peculiarities of the Tire Structure**

Tubeless tire 1600×600-25" consists of rubber-cord tire frame with beads and tread. The tread has a pattern consisting of trapezoidal protrusions.

### **5.8.2 Tires Mounting and Demounting Instructions**

#### **5.8.2.1 General Provisions**

Mounting tires on the drive wheel can be performed by a qualified installer in compliance with generally accepted mounting safety regulations. Only serviceable, clean and dry tires and rims can be mouted.

Before installation, tires stored at temperatures below 0°C (32°F) shall be kept at temperatures above 0°C (32°F ) for 3 ... 5 hours.

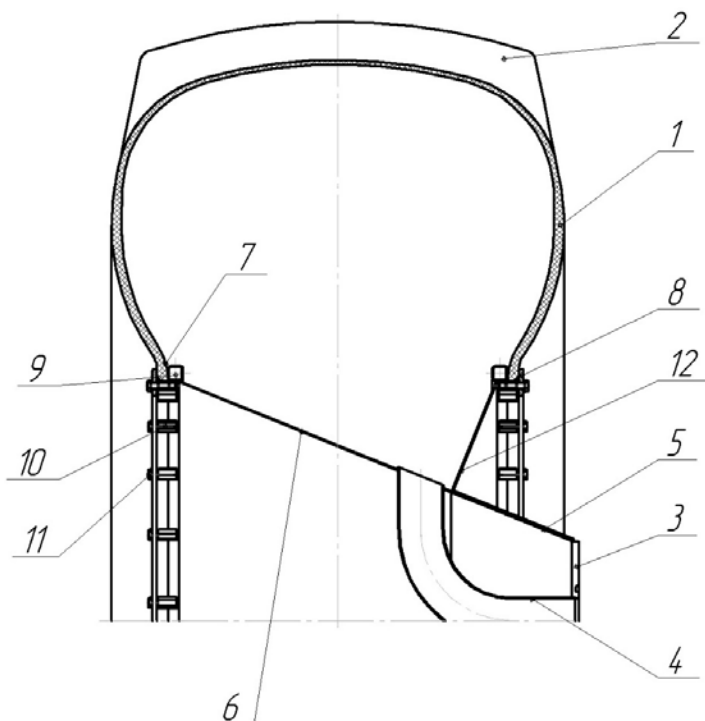
Before mounting, tires shall be inspected outside and inside. Any stuck foreign object in the tire shall be immediately removed.



**The following tires may not be mounted and operated:**

- with stretched (distorted) beads, metallic bead ring fracture or destruction;
- with layering in the tire frame;
- with tread separation;
- with frame plies damages;
- under prolonged impact of petroleum products (oil, gasoline, kerosene, petroleum), or other substances that cause rubber swelling;
- with through tire damages;
- with blisters on the sealing layer;
- with cords and rubber layering;
- with translucence of yarn through the rubber.

Through damages shall be repaired with the help of tubeless tire repair kit in compliance with instruction attached.



Wheel and tire assembly 1600× 600-25"

- 1 – tire;
- 2 – tire tread;
- 3 – flange;
- 4 – exhaust gases supplying and discharging pipe;
- 5 – inside wheel cone;
- 6 – outside wheel cone;
- 7 – tire bead;
- 8 – beadlock;
- 9 – frame;
- 10 – threaded nut;
- 11 – screw;
- 12 – cone.

Do not install wheels with deformations, cracks, burrs and rust of the wheel parts contacting with tire, as well as cracked welding joints in wheel cones.

Wheel surfaces contacting with tire shall be cleaned of rust and painted with lacquer for metal.

### 5.8.2.2 Wheel Tire Mounting Tool:

- tire iron – 2 pcs.;
- wrench S = 13 - 2 pcs.;
- torque wrench S = 13 - 1 pc.;
- technical screw M8 × 40 - 4 pcs.

### 5.8.2.3 Installation Order

- remove pinch rings from gear (if installed when gear was delivered);
- put tire with its side wall on clean platform or floor surface. Lift frame with cones and put it fully inside the tire (with frame lapsed), first, with one bead seat, then, the other, helping, if necessary, with tire irons;
- put tire upper screw on frame top mounting surface;
- put beadlock above by combining holes to screws with holes in frame. Put technological screws into diametrically opposite bead lock holes and start them in thread bushes. By gradually tightening technological screws perform bead lock and frame preliminary tightening. As far as bead lock approaches frame, put standard short-cut screws with clouts into free holes tightening them gradually. After standard screws with clouts are put into all free holes change four technological screws with standard ones. Standard screws final tightening shall be performed in criss-cross sequence with torque wrench of moment 17...20 N·m (12,5...14,8 ft·lb). After screws are finally tightened, lashes between bead lock and a frame are not allowed;

- turn gear and repeat preceding operations for other tire bead;
- force air into tire to pressure 0.6 kgf per  $\text{cm}^2$  (8,53 psi) with the help of device installed on gas inlet and outlet pipe, and using soap emulsion check air outlet absence in tire and frame coupling sites and disk cones welding joints. Acceptable gas pressure drop in tire for 24 hours – 0.02 kgf per  $\text{cm}^2$  (0,28 psi);
- remove the device and install gear with tire onto all-terrain vehicle transmission drive hob and tighten tire nuts with moment 245...313 N·m (180,7...230,9 ft·lb). For uniform tightening nuts shall be tightened next to one;
- start engine and force tire with emissions.

#### **5.8.2.4 Tire Demounting**

The tire removing shall be performed in the reverse sequence to tire mounting.

### **5.8.3 Tire Inspection during Operation**

Tire durability and reliability are determined by following the operating modes established norms and proper tire maintenance.

#### **5.8.3.1 Operating Modes Norms**

Acceptable tire pressure for most typical driving conditions is given in the table.

Following the operating norms given in the table and the operation rules the tire operating capacity, the tread pattern wear limit (residual bump height in the middle of the link rail not less than 1 mm (0,039 in) is not less than 20 000 km (12 427 miles).

The warranty service time of tires is 3 years from the expiry date on condition of following the operating rules.

**It is not recommended to drive along paved and dirt roads at the internal tire pressures less than it is given in the table.**

Tire designation	Maximum tire loading, kN (kg) (lb)	Internal tire pressure, due to the maximum loading, kPa (kg/sm <sup>2</sup> ) (psi)	Maximum speed, km/h (mph)
160×60-25"	6.37 kN 650 kg 1433 lb	25 kPa 0.25 kg/sm <sup>2</sup> 3,62 psi	40 km/h 25 mph

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Note: Permissible operating pressure can be 10 kPa (0.1 kg/sm<sup>2</sup>) (1,45 psi)

#### **5.8.4 Tire Maintenance**

Before driving the ATV it is necessary to:

- check internal tire pressure and, if necessary, after starting the engine to bring the pressure to norm. Internal pressure measurement shall be controlled with manometer installed in the cab;
- carefully inspect tires and wheels and remove stuck foreign objects (stones, nails, etc.);
- repair small through tire damages using the tubeless tire repair kit. Depending on the size and type of the damage, repairing can be performed without demounting or removing the tires in accordance with instructions supplied with the kit;
- check the tightness and presence of all the bolts fixing the beadlocks. In case individual screws are absent in their place, put the new ones;
- check the wheel attachment to the hubs and, if necessary, tighten the nuts;

#### **5.8.5 Adjusting Tire Internal Pressure**

The ATV's design allows at any time while engine is working (during moving or stops) to adjust tire pressure by supplying exhaust gases into the tubular sealed frame with their following passing through the special pipes and internal hub cavities to all the wheels.

For tire pumping it is necessary to:

- open tire pump valve;
- press the tire inflation key button» (left);
- if necessary, increase engine rotation rates by pressing the accelerator pedal;
- control pressure using tire pressure indicator;
- press the tire inflation key button» (right);
- close tire pump valve.



#### **WARNING!**

To prevent fire, do not ride with constantly activated pumping system.

## **5.9 Chain Drive**

Care for roller chain shall provide, possibly, longer life cycle and exclude jumping and chain stopping.

Chain and chain transmission care operations include chain grease, tightening control, lock attendance, damaged links change.

To avoid chain wheels stripping and move failures, change the links if:

- chain adjust does not manage with chain slack;
- chain packs up because of corrosion and lack of grease;
- chain is strained and overlaps chain wheels teeth.

### 5.9.1 Driving Chain Removal

- stop engine and set KPP (gearbox) lever to neutral mode;
- put all-terrain vehicle on foot steps so that wheels do not touch ground;
- remove safety cover from served chain side;
- turn wheel until joining link appears;
- remove snap lock of joining link. Remove chain link outer plate and retract joining link;
- remove the chain;
- assemble the chain in reverse order.



#### **WARNING!**

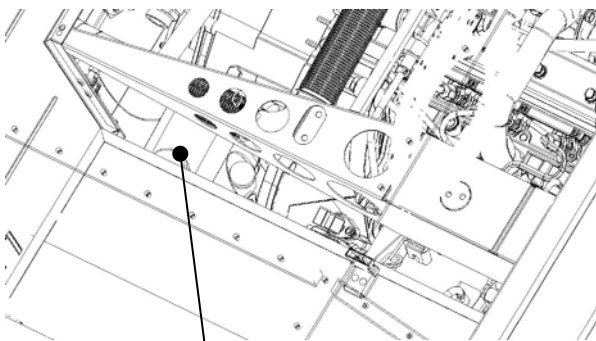
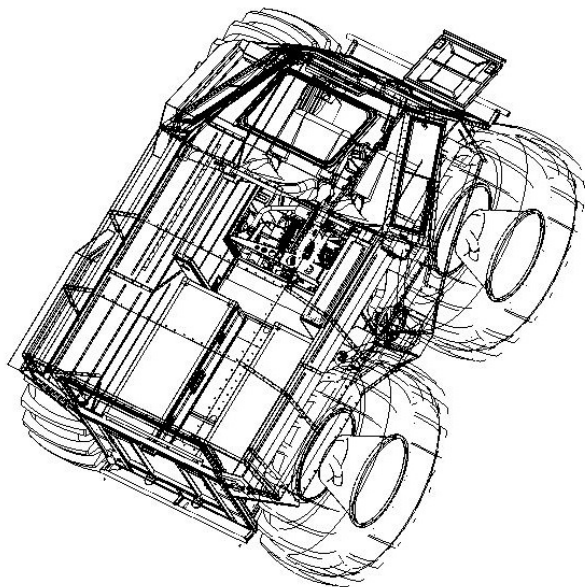
Wheels drive chains joining links, as well as steering gear chain lock shall be oriented to machine center line side.

**Chain grease is performed by application of air-oil grease XADO MOTTEC Chain Grease RALLY or analogue every 10 operation engine hours. Steering gear chain grease shall be performed every 5 engine hours.**

A chain lubrication system is installed on some models. For chain lubrication, drive on low gear with engine running at idle speed over a flat surface, pressing the corresponding



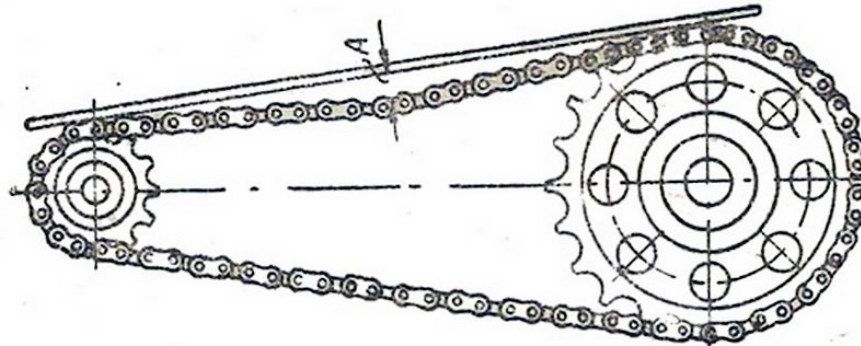
key button of the lubrication chain system activation (e.g. wheel drive chains or steering unit chain) within 5 to 10 sec. to lubricate the steering unit chain and 30 to 40 sec. to lubricate wheel drive chains.



Oil tank for chain  
lubrication system

In order to provide smooth operation of the lubrication system, fill in the special tank near the gear box unit with the transmission oil SAE 75W-90 (API: GL-4, GL-4/5)

## 5.9.2 Steering Gear and Wheels Drive Chains Tightening Adjust

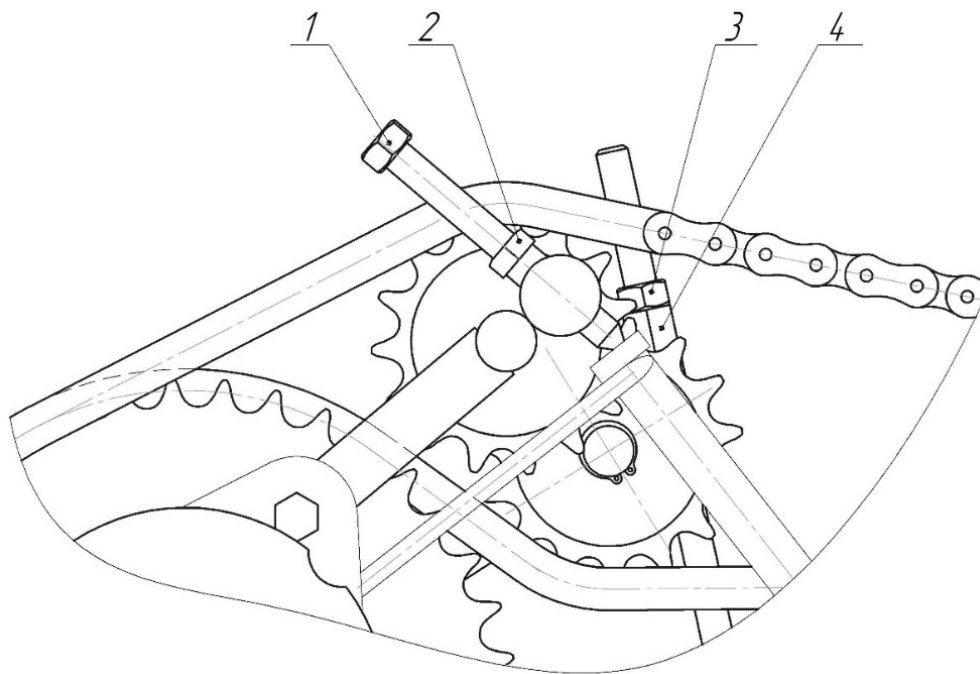


Chain tightening check. A — cross breaking.

### 5.9.2.1 Wheels Chains Tightening

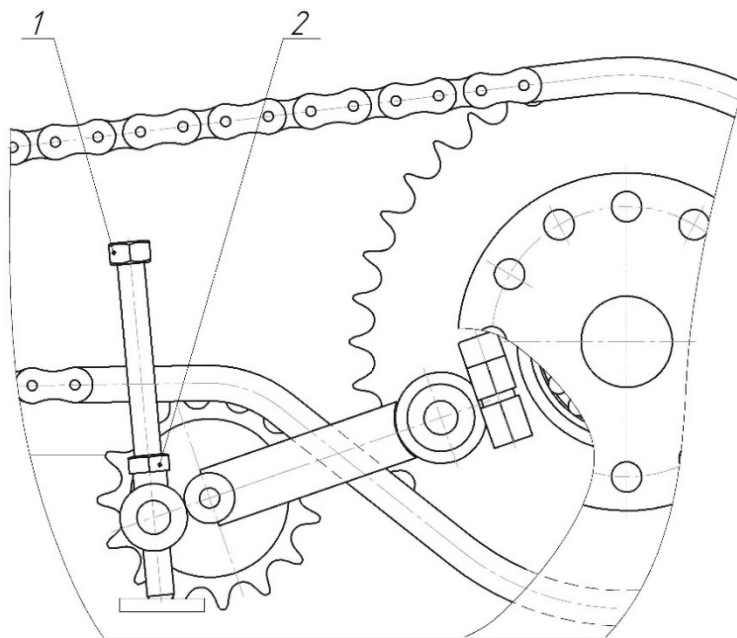
Chain tightening system comprises of tightening roller, tightening screw (nut) and safety nut. If chain is worn out, tightening mechanism is adjusted as follows:

- release the safety nut;
- by turning adjusting screw (nut), wait until top chain arm slacks to not more than 10...15 mm (0.39...0.59 in);
- tighten the safety nut.



Front wheels chains tightening adjusting

1 – front left wheel chain tightening adjust screw; 2, 3 – safety nut; 4 –front right wheel chain tightening adjust nut



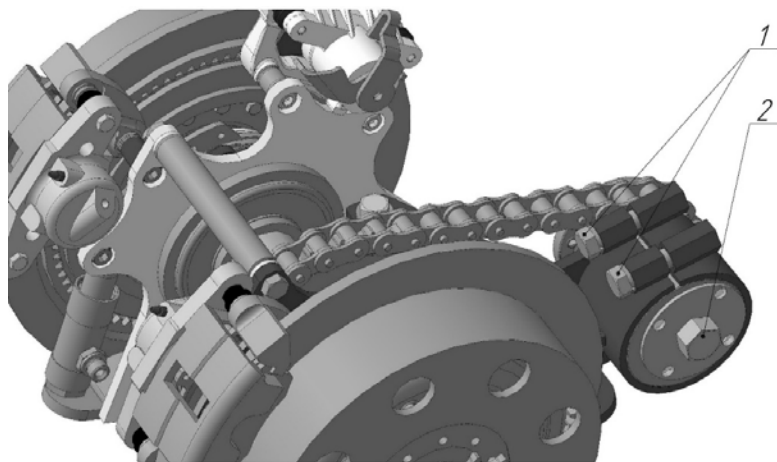
Rear wheels chains tightening adjusting

1 – chain tightening adjust screw; 2 – safety nut

### 5.9.2.2 Steering Gear Chain Tightening

Steering gear chain tightening system comprises of excentric tightener and mounting clip with two tightening screws. If chain is worn out, tightening mechanism is adjusted as follows:

- release screws;
- by turning excentric with hexagon, wait until chain slacks to not more than 8...12 mm (0.3...0.47 in);
- tighten the screws with moment 35...40 N·m (25,8...29,5 ft·lb);



1 Steering gear chain tightening adjusting

2 1 – excentric tightening mechanism screws; 2 – chain tightening adjust hexagon.



#### **WARNING!**

Check drive chains tightening after first 2 hours of operation, then every 10 hours when performing chains grease.

## **5.10 All-Terrain vehicle Towing**

Before towing all-terrain vehicle gearbox lever shall be put in neutral mode.

All-terrain vehicle can be towed by rigid towline.

## **5.11 ATV's Transportation**

All-terrain vehicle is transported by railway, air, water, automobile transport and on trailers.

When transporting all-terrain vehicle, following actions shall be done:

- set first gear in gear box;

- set hand brake;

- fasten all-terrain vehicle on platform with steel wires 3...5 mm (0,118...0,196 in) in diameter, chains or tension cables. The latter cannot touch tires.

## **5.12 ATV' Storage**

All-terrain vehicle shall be stored technically sound, fully equipped and specially prepared to state that guarantees its safety and readiness in terms specified.

All-terrain vehicles not planned to be maintained during more than two months are subject to storage (preserving).

Volume, conservation materials, works sequence and organization performed during all-terrain vehicle preparation and storage is defined by Automobiles Storage Guide, and GOST 9.014-78 and OST 37.002.001-70. Storage conditions group "8" according to GOST 15150-69.

Before operation, all-terrain vehicle to be stored shall be depreserved (remove grease from external surfaces with soft cloth, check generator drive belt tightening, fill all-terrain vehicle with cooling fluids, oils and fuel, adjust power system, start engine and perform control run during which aggregate, mechanisms and control and measuring devices operation shall be checked and damages detected shall be eliminated).



# TECHNICAL MAINTENANCE





## **6. TECHNICAL MAINTENANCE**

Technical maintenance is designated to keep all-terrain vehicle on the go and is considered preventing measure taken in an orderly fashion. Following frequency and quality performance of full-scale technical maintenance is the utmost provision of all-terrain vehicle technical readiness, reliability and long life cycle. Absence of necessary equipment and complex stationary or movable technical maintenance means is not a reason for volume, frequency and maintenance conditions to be changed. If mechanisms failures, abnormal noises, hammerings or vibrations, and adjust violations and other failures are detected, driver shall immediately take measures aimed at eliminating them regardless of next technical maintenance term.

You are not allowed to maintain out-of service all-terrain vehicle or one without due technical maintenance.

### **6.1 Technical Maintenance Types and Frequency**

All-terrain vehicle technical maintenance includes control and diagnostic, grease, adjust and other works. Frequency and types of works performed during technical maintenance are given in table below:

No	Operation Name	Frequency, Engine Hours						
		5	10	50	100	200	400	800
1	Check tightening and grease steering gear chain	x						
2	Check tightening and grease leading wheels drive chains		x					
3	Check engine oil level and add more, if necessary		x					
4	Check cooling fluid level and add more, if necessary (on cold engine)		x					
5	Remove rubbish (leaves, needles, etc.) from heater suction grill, air path grill and in engine area		x					
6	Check tires integrity and that pressure in them is correct (depending on maintenance conditions expected)		x					
7	Check tightening moments of wheels screw joints to hobs <sup>1</sup>		x	x				
8	Check control and measuring devices and light indicators operating state		x					

No	Operation Name	Frequency, Engine Hours						
		5	10	50	100	200	400	800
9	Check that warning tables damages are absent. Change worn out or damaged ones		x					
10	Check safety belts state		x					
11	Check main braking system, hand brake operation, engine and transmission operation capacity		x					
12	Check gear box oil level			x				
13	Check oil level in steering gear hydraulic system tank. Add more, if necessary			x				
14	Change engine oil <sup>2</sup>			x	x			
15	Change oil filter element in engine grease system <sup>3</sup>			x		x		
16	Check fuel lines and fixing strips to them. Change damaged ones, if necessary			x				
17	Check pipelines, fixing strips to them and emissionss flow change-over cock in tires force system			x				

No	Operation Name	Frequency, Engine Hours						
		5	10	50	100	200	400	800
18	Check steering gear fastening screws tightening and tighten more, if necessary			x				
19	Check/adjust fan belt tightening				x			
20	Check batteries wires and terminals. Grease the terminals				x			
21	Grease universal-joint bearings					x		
22	Check heater, expansion tank pipes and other cooling system elements on fastening and integrity reliability					x		
23	Check/adjust clutch pedal free travel					x		
24	Change engine air filter element					x		
25	Adjust main braking system and steering gear control. Grease rotating and moving surfaces. If necessary, change brake shoes					x		
26	Adjust hand brake control					x		
27	Change filter element of fuel secondary and primary filters						x	

No	Operation Name	Frequency, Engine Hours						
		5	10	50	100	200	400	800
28	Remove tankage from fuel tank						x	
29	Change engine fan belt						x	
30	Clean external heater surface. Check if heater is fastened properly						x	
31	Change oil and filter in steering gear control hydraulic system <sup>4</sup>						x	x
32	Check engine drive valves thermal gaps							x
33	Change oil in gear box							x
34	Grease slip joints, quill bearings and steering gear frictions outlet release bearings							x
35	Check/tighten all-terrain vehicle outer screwed joints							x
36	Change exhausting system							x
37	Check power lines for damage and snugged down joints absence	Every year						
38	Change cooling fluid in engine cooling system	Every two years						

No	Operation Name	Frequency, Engine Hours						
		5	10	50	100	200	400	800
39	Change braking fluid in braking system and hydraulic drive system for declutching	Every two years						
40	Change engine cooling system pipes and fixing strips to them							
41	Change fuel lines and fixing strips to them							
42	Change tires force system pipes and fixing strips to them							
43	Check/change batteries							

<sup>1</sup> Operation is performed first time after 10 operation engine hours and then in every 50 operation engine hours.

<sup>2</sup> Operation is performed first time after 50 operation engine hours and then in every 100 operation engine hours.

<sup>3</sup> Operation is performed first time after 150 operation engine hours and then in every 200 operation engine hours.

<sup>4</sup> First change is performed in 400 operation engine hours. Then change is to be performed every 800 operation engine hours.

## 6.2 Filling Volumes, Petroleum Products and Lubricants

Junction Point Name	Filling Name	Filling Quantity, l (Number of Points)	Filling, Grease Frequency	Note
<b>FUEL</b>				
Fuel tank	Diesel fuel EURO GOST R52368-2005 (EN 590:2004)	58	If necessary	



ENGINE OILS				
Engine	<p>Engine oil of API quality degree: not less than CD.</p> <p>SAE viscosity grade:</p> <ul style="list-style-type: none"> <li>- 0W-30 (from minus 30°C till plus 20°C (-22°F...68°F));</li> <li>- 0W-40 (from minus 30°C till plus 35°C (-22°F...95°F));</li> <li>- 5W-40 (from minus 25°C till plus 35°C (-13°F...95°F));</li> <li>- 10W-30 (from minus 20°C till plus 30°C (-4°F...86°F));</li> <li>- 10W-40 (from minus 20°C till plus 35°C (-4°F...95°F));</li> <li>- 15W-40 (from minus 15°C till plus 45°C (-5°F...113°F));</li> </ul>	6.7	<p>First: in 50 operating engine hours.</p> <p>Following: every 100 operating engine hours.</p>	<p>If necessary, bring to level. Oil change shall be performed on heated engine after drainage hole is open. Wait not less than 10 minutes.</p>

TRANSMISSION OILS				
Transmission case	SAE 75W-90 (API: GL-4, GL-4/5) from minus 40°C till plus 45°C (-40°F...113°F)	3.3...3.5	Every 800 operating engine hours	Perform the check on cold gear. Level shall be not lower than at dipstick level. If necessary, bring to level.
CONSISTENT GREASES				
Universal-joint bearings	Grease Mobil Grease XHP 222 or Lithol-24 GOST 21150-87	2 points	Every 200 operating engine hours	
Door locks, door lock keepers	Grease Mobil Grease XHP 222 or Lithol-24 GOST 21150-87	4 points	If necessary	
Battery terminals	Grease Mobil Grease XHP 222 or Lithol -24 GOST 21150-87	6 points	Every 100 operating engine hours	
Transmission chains and friction steering gear chain	Grease XADO MOTTEC Chain Grease RALLY or analogue	5 points	Every 10 operating engine hours	

			Steering gear mechanism every 5 engine hours	
Slip joints, quill bearings and clutch steering gear retraction release bearings	Grease Mobil Grease XHP 222 or Lithol -24 GOST 21150-87		Every 800 operating engine hours	Wash and grease the bearings
<b>OPERATING FLUIDS</b>				
Engine cooling and cab heater system	Solution of 50% of nonfreeze agent G11 and 50% of distilled water	6	Change every two years	If necessary, bring to level
Hydraulic drive system for steering gear control	Hydraulic oil DEXRON III	4	Change every two years	If necessary, bring to level
Braking system and hhydraulic drive system for declutching	DOT 4	0.6	Change every two years	If necessary, bring to level

## Engine Oil Level Check



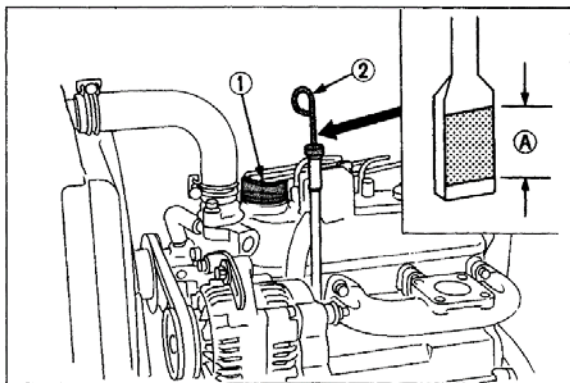
### WARNING!

To avoid personal injury, be sure to stop the engine before checking oil level and changing engine oil.

### Note

Be sure to inspect the ATV's engine, locating it on a level surface. If placed on descent, accurate oil quantity may not be measured.

Check the engine oil level before starting or more than 5 minutes after stopping the engine.



To measure the level take the oil level gauge out, wipe it dry and reinsert it. Then take out the dipstick again and check the oil level.

1 – oil filter plug;

2 – oil level gauge;

A – engine oil level within this range is proper

If the oil level is too low, remove the oil filter plug, and add new oil to the prescribed level.

After adding oil, wait more than 5 minutes and check the oil level again. It takes some time for the oil to drain down the oil pan.

## Engine Oil Change

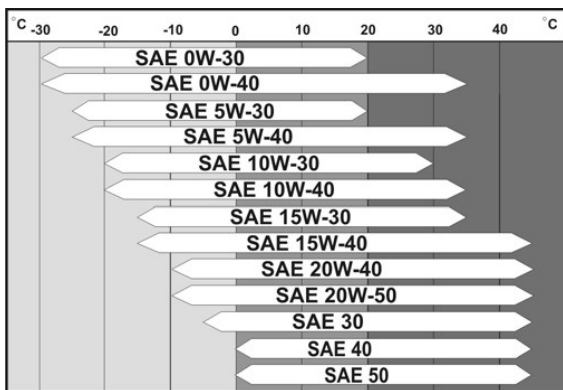


### **WARNING!**

**Be sure to stop the engine before changing engine oil.**

Engine oil is performed as follows:

- remove oil level dipstick;
- set the pump hose into the dipstick neck all the way to the bottom of crankcase and pump out waste oil;
- insert the dipstick into the neck;
- pour new oil through the filling neck. Screw the neck cap to its place.



### Note

Engine oil shall have properties of API CD classification CD grades or higher and SAE viscosity grade in accordance with the ambient temperature, in which all-terrain vehicle is mainly operated.

### Oil Filter Element Change



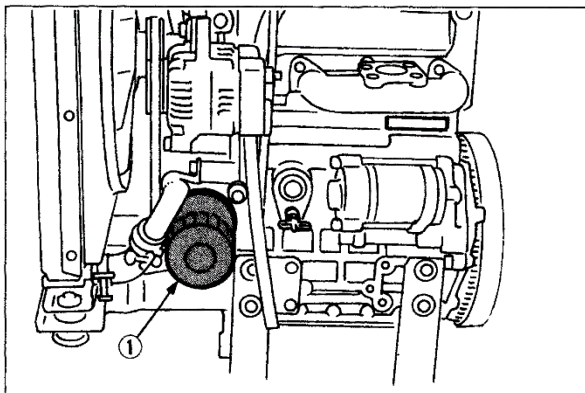
### WARNING!

To avoid injury, be sure to stop the engine before changing oil filter element. Allow engine to cool down sufficiently, because oil can be hot and cause burns. +

Follow the next order for replacing:

- unscrew the old filter element with a special wrench;
- apply a film of oil on the gasket for the new filter element;

- screw the new filter element by hand. When the gasket contacts the seal surface, tighten the element enough. Do not use a wrench, otherwise, it is possible to tighten the filter element too much.



1 – oil filter element

After the new element has been changed, engine oil level normally decreases a little. Thus, run the engine for a while and check for oil leaks through the seal before checking engine oil level. Add oil, if necessary.

Wipe off any oil sticking to the machine completely.

## Fan Belt Tightening Adjust



### WARNING!

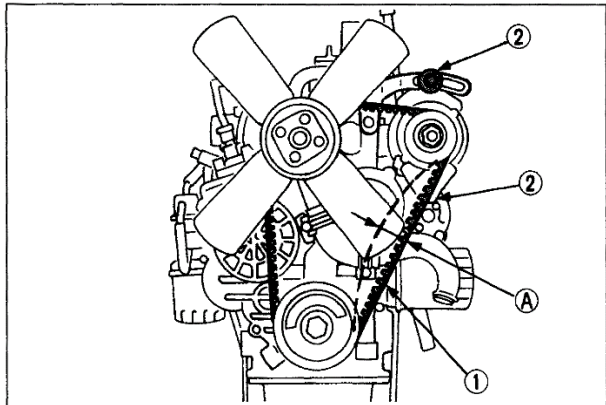
To avoid injury, be sure to install ATV on a horizontal surface, stop it with hand brake, stop the engine and remove the ignition key from ignition lock before checking belt tension.

To check belt tension:

- stop the engine and remove the ignition key;
- apply moderate thumb pressure between pulleys with moderate effort;
- A-deflection shall be within 7 ... 9 mm (0.27...0.35 in);
- if tension is not enough, loosen the alternator mounting screws, using a lever placed

between the alternator and the engine block, move the generator to provide the desired belt tension;

- if damaged, replace a fan belt.



- 1 – fan belt;
- 2 – screw and fan fastening nut;
- 3 – deflection when the belt is pressed in the middle of the span



## Coolant change

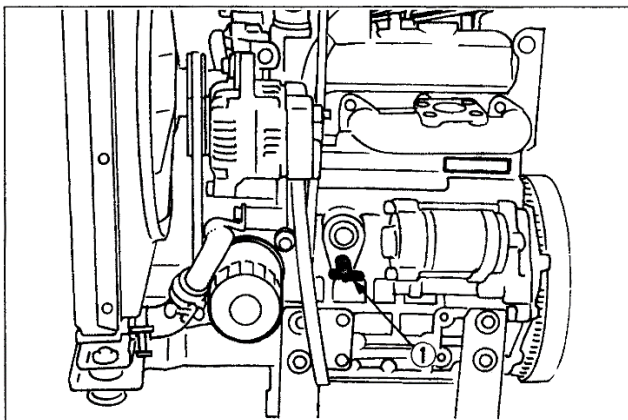


### **WARNING!**

To avoid injury, do not remove the expansion tank cap while coolant is hot.

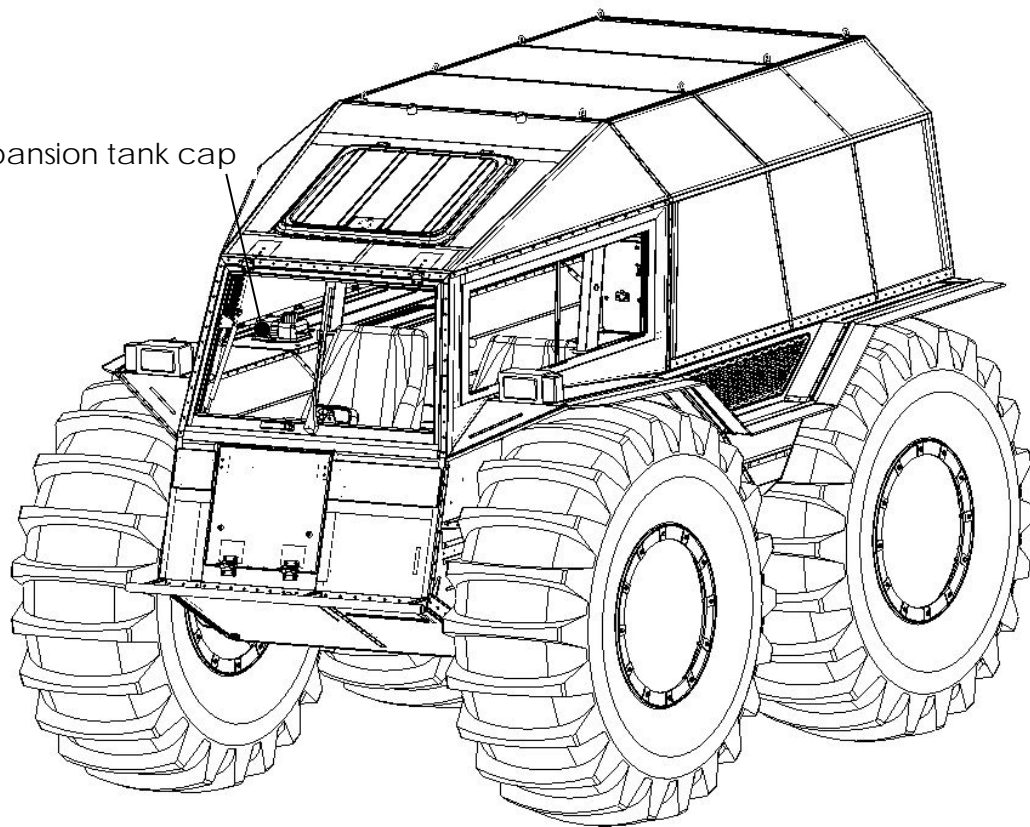
To change the coolant:

- set the heater valve in an open position;
- unscrew the expansion tank cap;
- place some container underneath, open the valve on the engine block and wait until the coolant completely drains.



1- coolant drain valve

Expansion tank cap



## **Adding Coolant**

To add coolant:

- set the heater valve in an open position;
- unscrew the expansion tank cap;
- place some container underneath, open the valve on the engine block and wait

until the coolant completely drains.

- add the solution of 50% G11 antifreeze with 50% distilled water to a level of 10 ... 15 mm (0.39...0.59 in) above the middle of tank



RATINGS

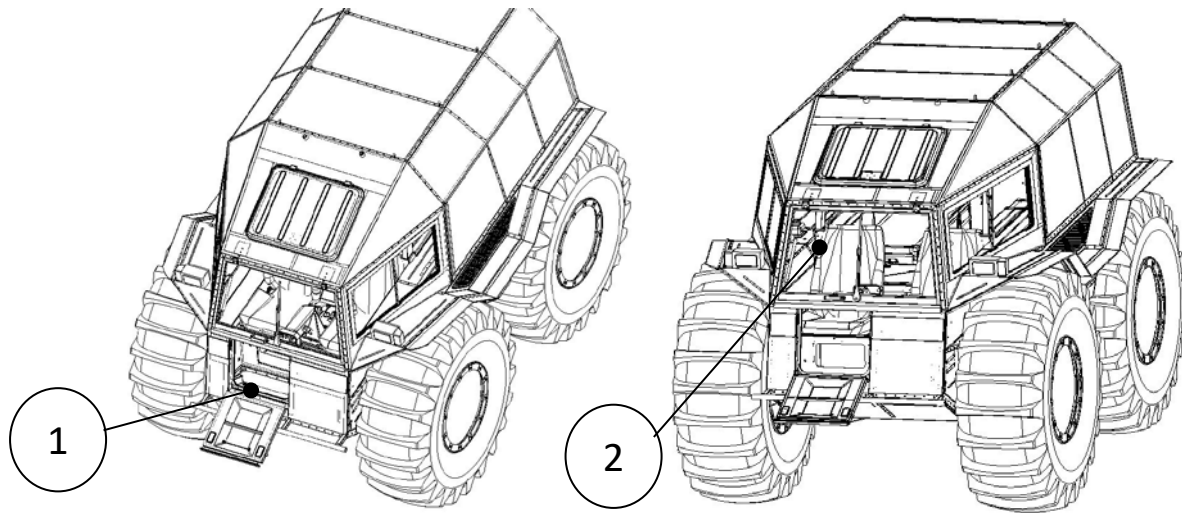


## 7. RATINGS

ATV's ratings include vehicle identification numbers and numbers of its component parts - the body and the engine.

ATV's identification number (VIN) is engraved on the frame tube in the cab.

ATV's VIN plate is located on the rear of the cab.



1 – ATV's VIN location; 2 – ATV's identification plate location

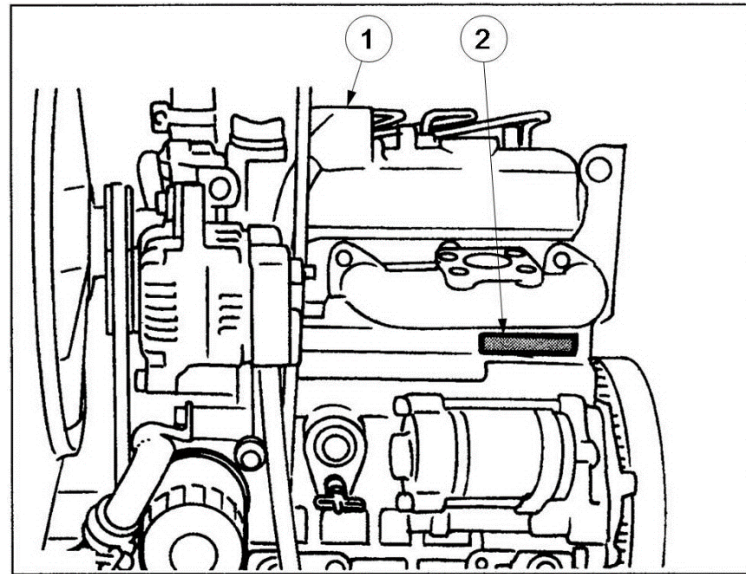
Example of ATV's manufacturer identification plate:



On the identification plate, the following designations are applied:

- manufacturer: "QUADRO INTERNATIONAL" LLC.;
- model;
- all-terrain vehicle identification number (VIN);
- ATV's total allowable weight;
- ATV's maximum allowable front axle loading;
- ATV's maximum allowable rear axle loading.

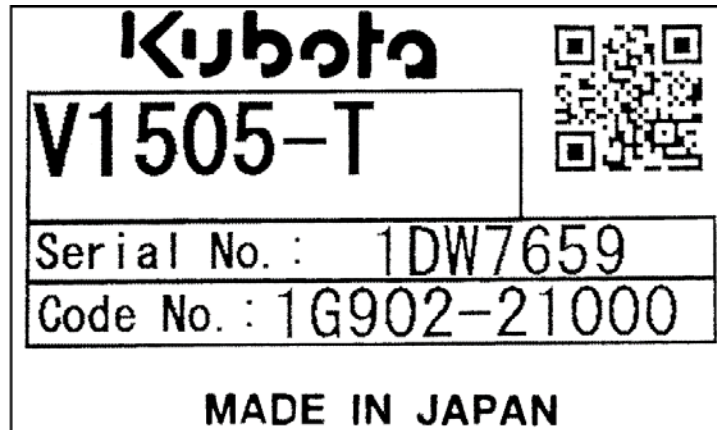
Engine model and serial number are engraved on the upper part of the cylinder block and are duplicated on the manufacturer's plate located on the cylinder block cover.



1 – engine manufacturer identification plate location; 2 – the engine model and serial numbers location.



Example of engine engine manufacturer identification plate:



The table contains the following information:

- manufacturer's name;
- matrix code with the information about manufacturer's code and serial number;
- engine model;
- serial number;
- manufacturer's code;
- country of origin.

## NOTES



# SHERP

USER MANUAL