

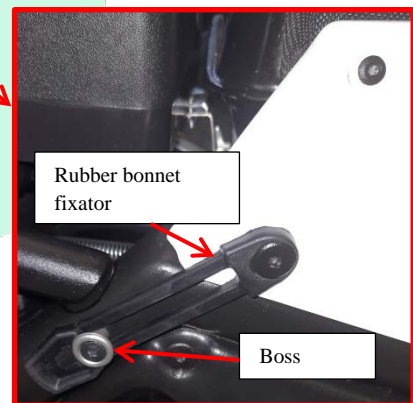
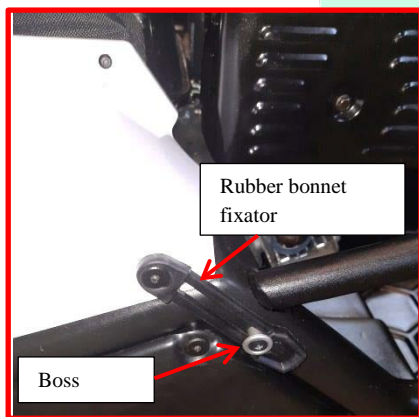
# Installation of the Predator 420 CC engine on the underframe with the reverse gearbox.

## 1. Dismantle the underframe with reverse gearbox

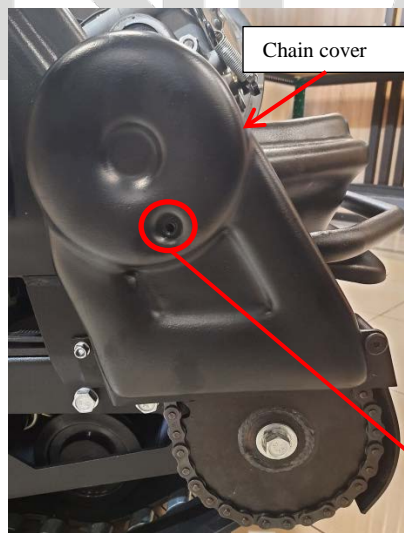
1. Take the box with spare parts out of the Tinger-Dog boot.



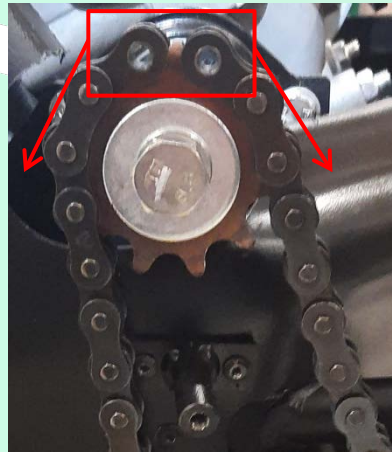
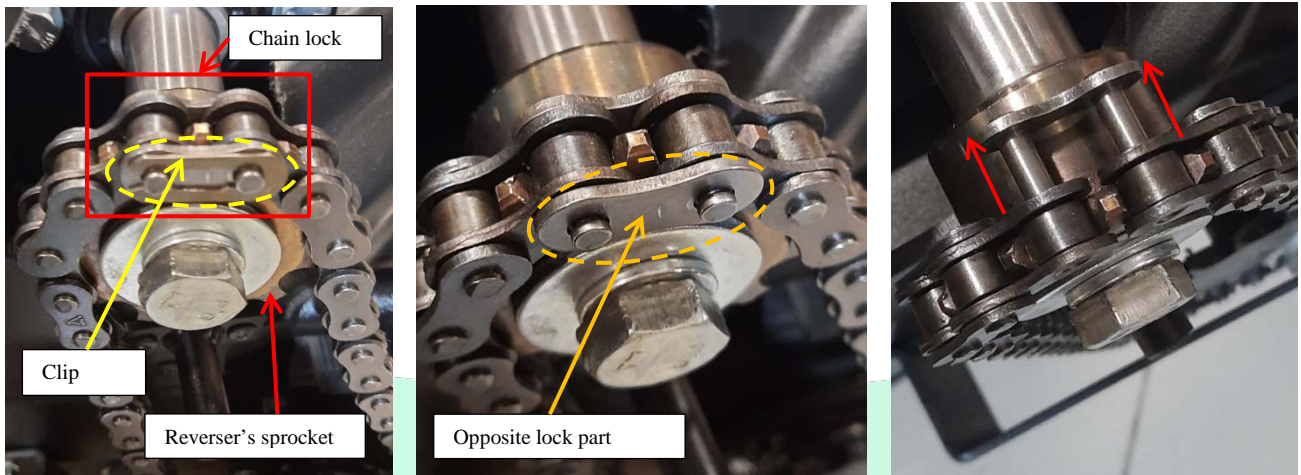
2. Detach bonnet rubber fasteners from the bosses on the frame at the left and right sides. Demount the bonnet.



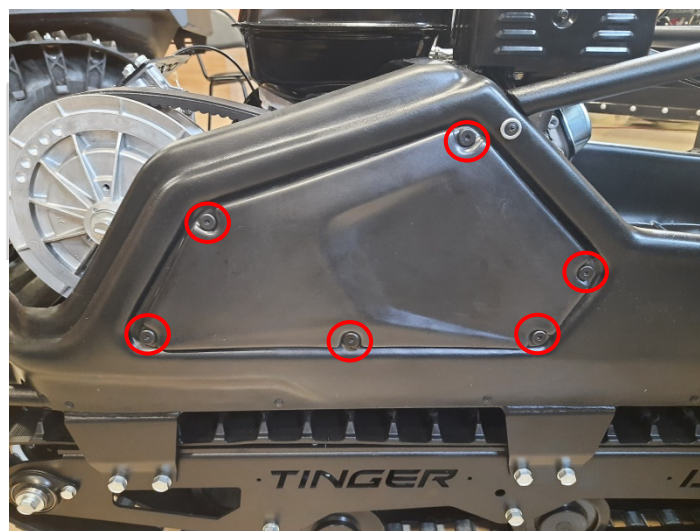
3. Demount the chain cover, untwisting 1 screw with inner hex by the hex key.



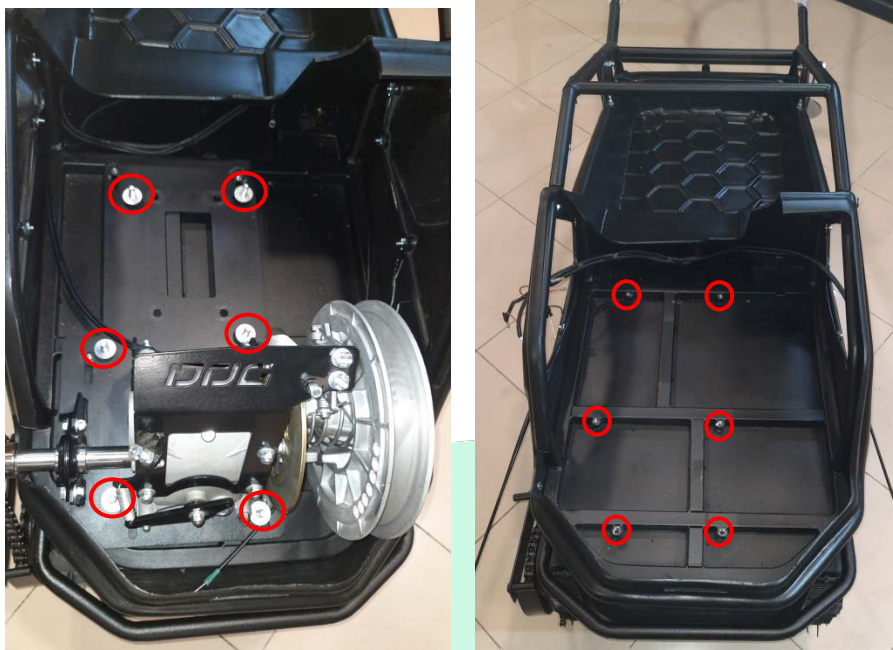
4. Take the chain out from the reverse gearbox sprocket. For that, demount the clip from the lock, then dismantle the opposite lock part and take the lock out of chain links.



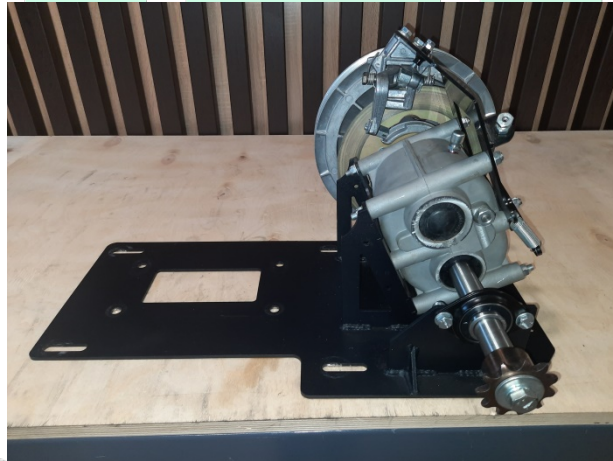
5. Untwisting 12 screws with inner hex that are connecting side parts to the body, by hex key  $\varnothing$  4mm, demount the side parts from the towing sled body.



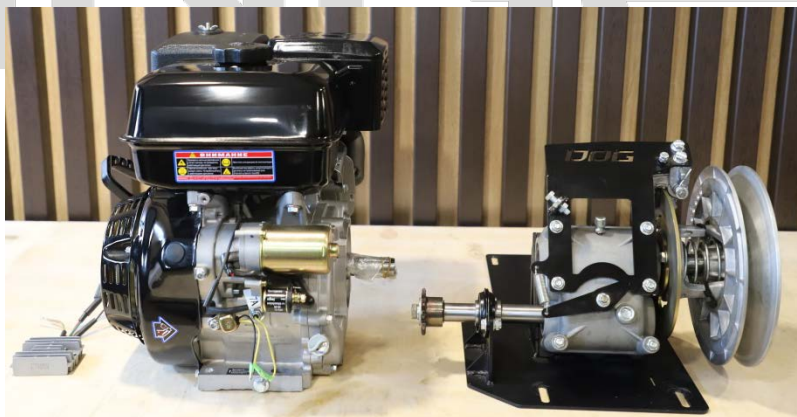
6. Unscrew the bolts that are anchoring the underframe with the reverse gearbox to the frame.



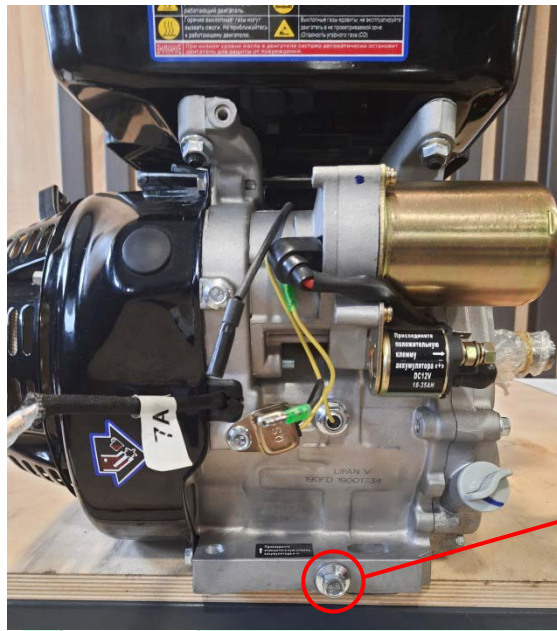
7. Extract the underframe with the reverse gearbox from the engine compartment and put them on the table for further locksmith works.



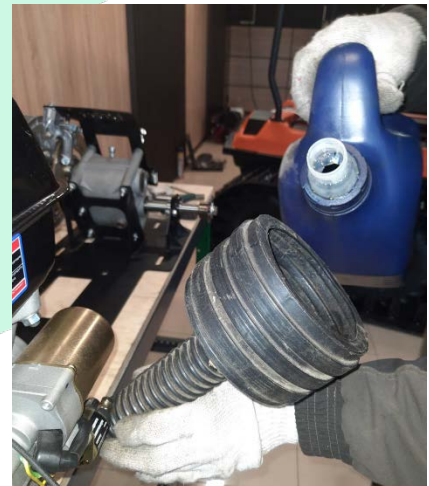
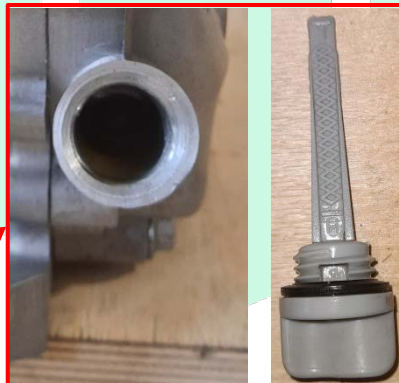
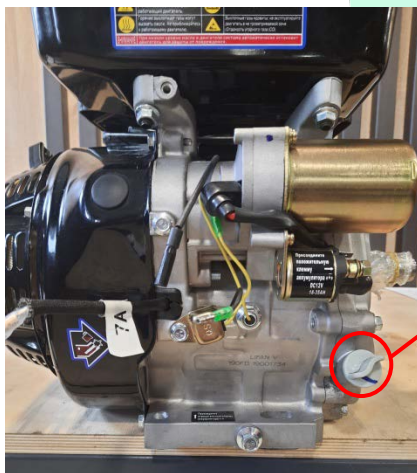
8. Put the Predator 420 CC engine on the locksmith table near the underframe.



9. Unscrew the plug from the drain aperture and drain the transportation oil from the engine out into the tray. Screw the plug of drain aperture back.

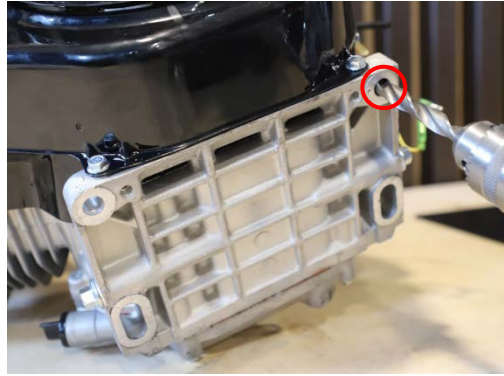
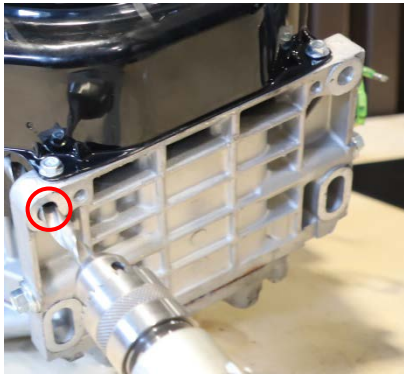


10. Unscrew the oil filler plug, pour required volume of oil according to the instruction, that is attached to the engine. Twist oil filler plug on.



11. Turn the engine over on a side that way to have free access to the engine fastener apertures. Drill the holes by the  $\varnothing 12$  mm drill bit as shown on the picture below.

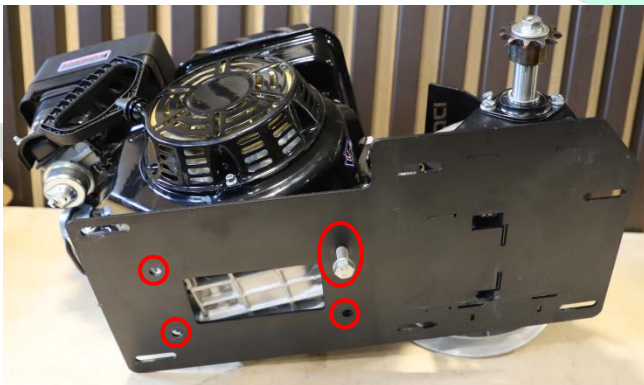




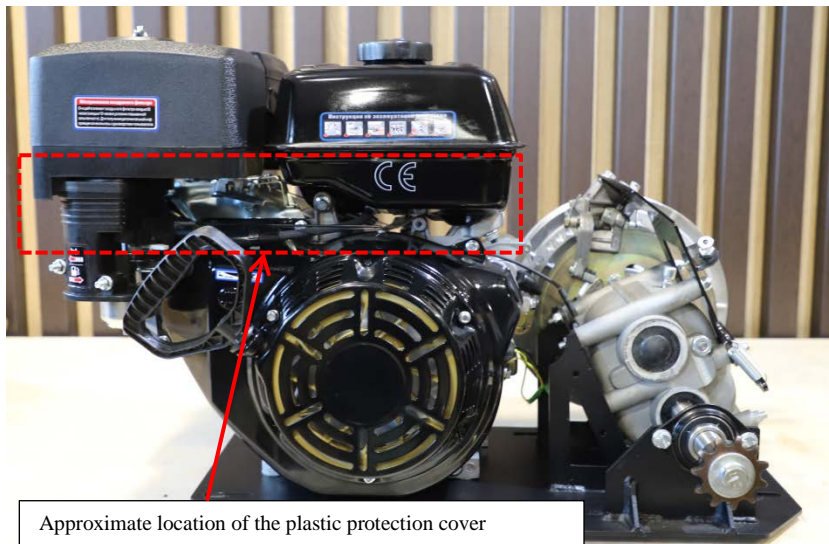
12. Align the engine fastener apertures with the underframe aperture that way, the engine will locate at the transmission discs side. Anchor it using the fasteners from the package №1 «Fasteners kit»:

- Bolt M12x45 DIN 933 – 4 pieces;
- Washer M12 DIN 125 – 8 pieces;
- Screw nut M12 SC DIN 985 – 4 pieces.

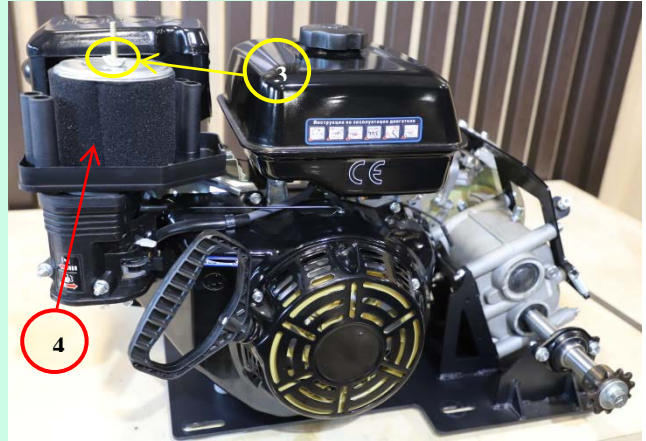
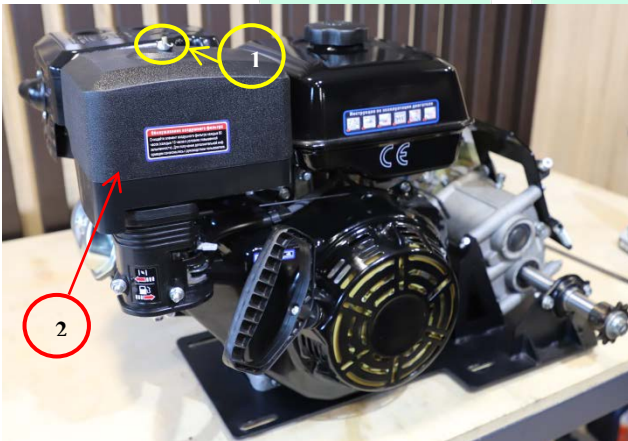
Return the underframe with the engine in native vertical position.



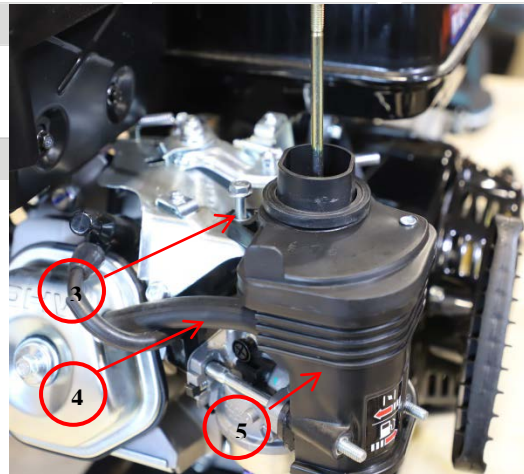
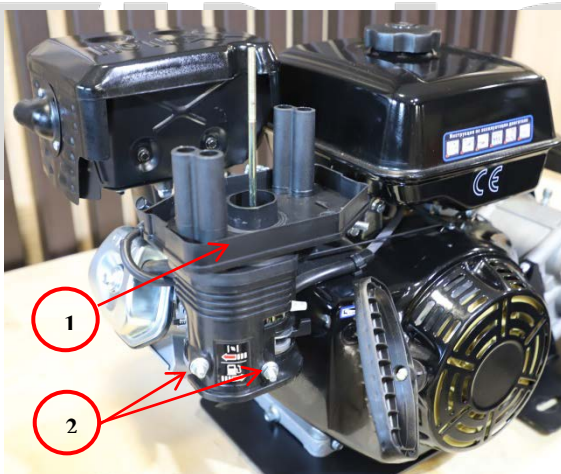
13. In presence of plastic cover attached to the bottom part of the engine and air filter, demount it.



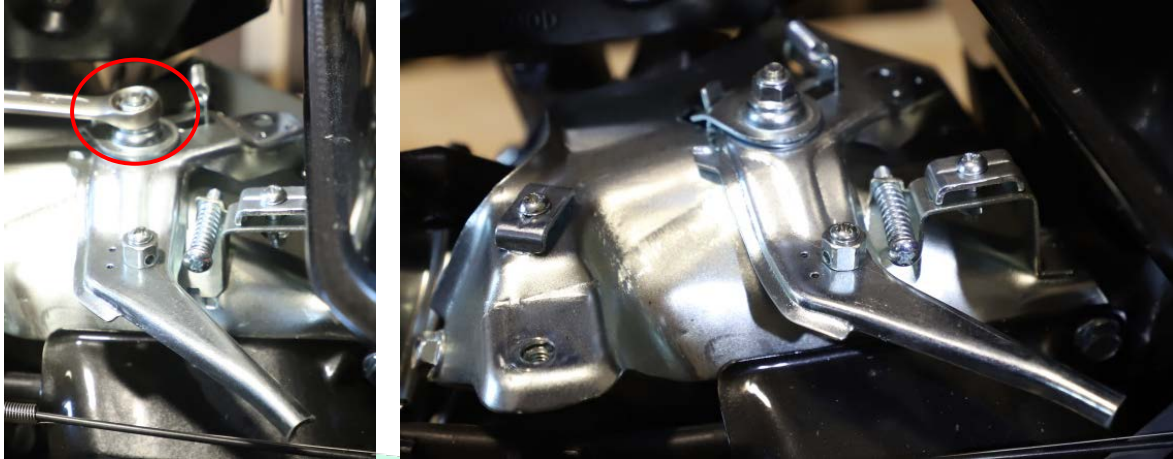
14. Unscrew the wing-nut (1) and demount the air filter cover cap (2). Then unscrew the wing-nut and dismantle the air filter from the stud (4).



15. Dismantle the air filter fastener (1). Unscrew the manifold fastener nuts (2), twist the bolt out (3) from the rear part of the intake manifold and detach the hose from it (4). Demount the manifold (5).



16. Weaken the throttle valve control lever that way, it will easy return back to the original position. Step 25mm aside from lever edge, mark the place of edge you have to saw and saw it off. The final result:



17. Demount the air choke control lever. Drill two holes on the lever: 1<sup>st</sup> one from the lever's edge to the center of aperture 5mm, 2<sup>nd</sup> one from the lever's edge to the center of aperture 10mm. Use the  $\varnothing 2$  drill bit.



18. Return the air choke control lever at the original place.



19. Install the manifold at the original place, anchor it by bolts. Connect the hose.



20. Install the two M6 sleeve-nuts from the package № 1 «Fasteners kit» on the studs near the manifold.

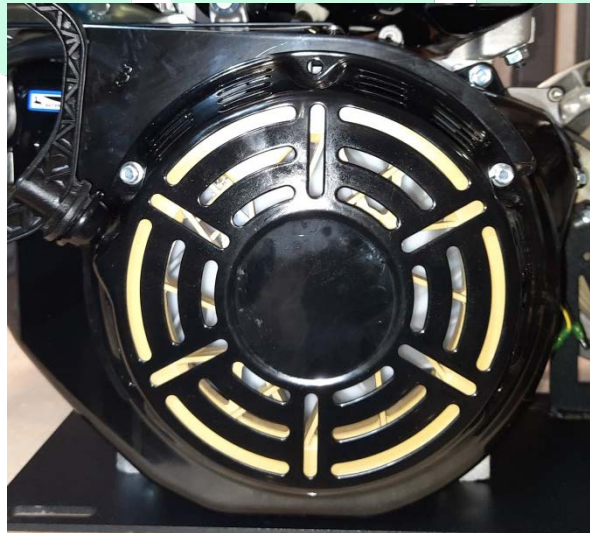
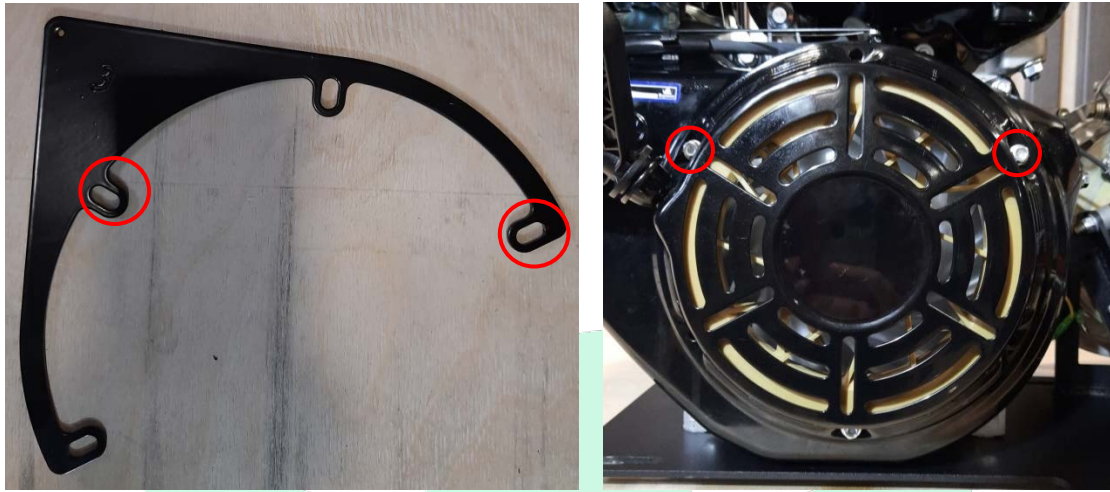


21. Take the two M6x10 DIN 933 bolts from the «Fasteners kit» package №1 out. Take the plate of throttle choke cable out of the «Remote choke kit» package № 2. Install the plate on the M6 sleeve-nuts with the two M6x10 DN933 bolts.





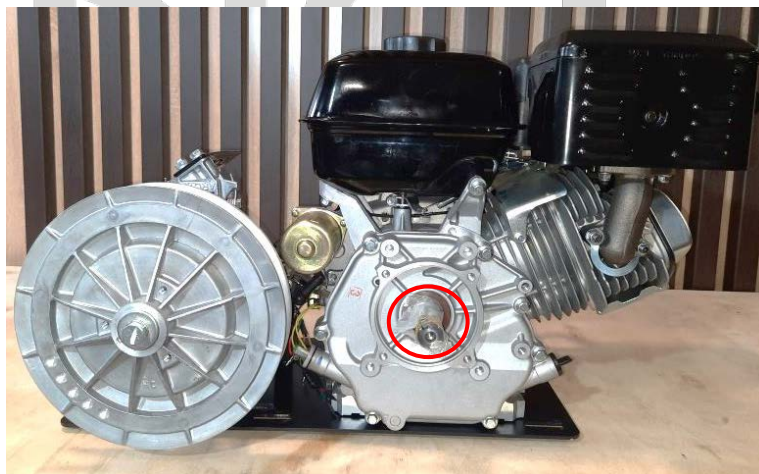
22. Take the spring fastener plate out from the «Spring retainer kit» package № 3. Unscrew the two top bolts, that are anchoring manual starter cap and weaken the bottom bolt. Install the plate behind the manual starter cap. Look after the left bottom edge of the plate will not out of the manual starter cap. Screw the bolts up.

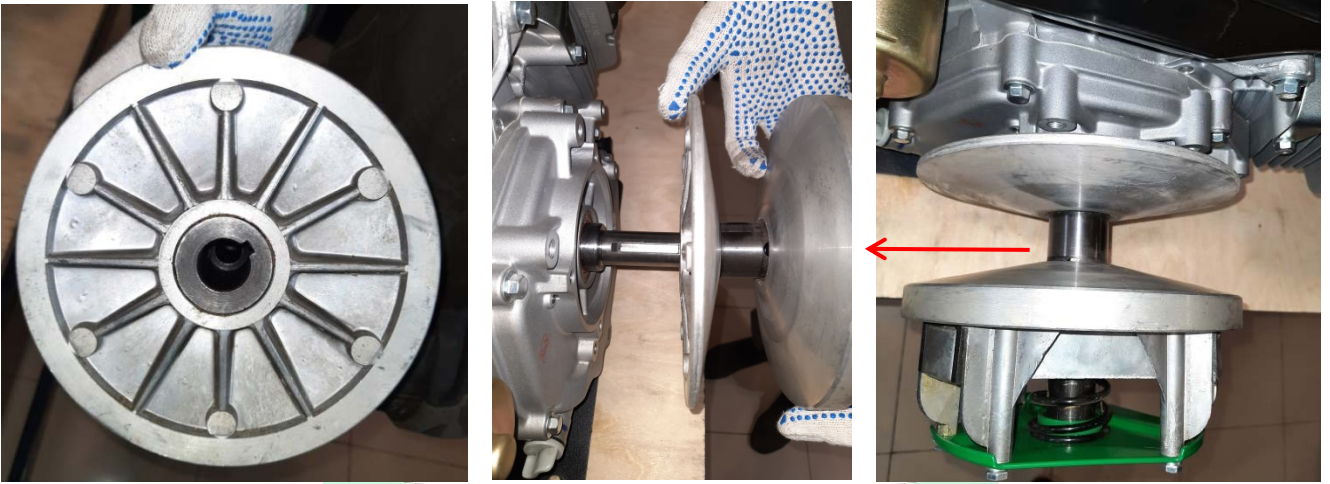


23. Take the M6x25 Din 933 bolt, the two M6 DIN 125 washers and the M6 self-counter screw nut out from the «Fasteners kit» package №1. Take the voltage rectifier out from the Engine spareparts kit and anchor it to the top fastener aperture of the reverse gearbox. Voltage rectifier wirings must locate at the manual starter side.



24. Prepare the engine shaft for CVT installation. There is a key in shaft's groove. Take the Safari CVT out from the box. Aligning the CVT groove with shaft groove and holding the key, install the CVT on the shaft till stop.





25. Take the 12x110 7/16"-20 UNF bolt, the M12 DIN 125 washer and the M12 DIN 127 engraved washer out from «Fasteners kit» package №1. Anchor the CVT on the engine using fasteners that are listed above.



26. Take the CVT belt out of the box and dress it on the CVT. Install the belt on the discs by tightening the belt and rotating the movable disc opposite the clock arrow movement.



27. Locate cables and wires aside the body of towing sled as shown on the picture. Cables and wires should not prevent the underframe mounting operations.



28. Install the unit on the towing sled. Due to the big weight of the parts, the carrying and shifting parts operations are recommended to produce with a companion.

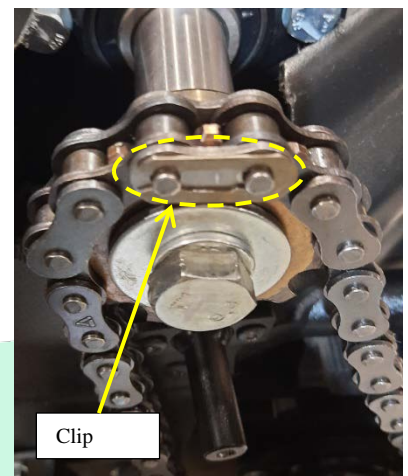
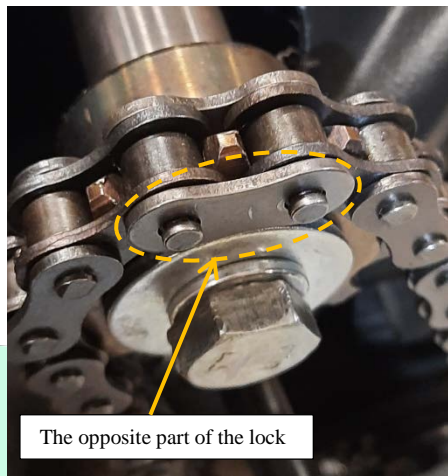
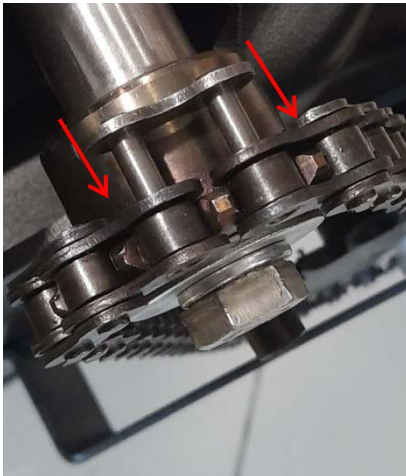


29. Take the fastener that is connected to the frame. Wear the bolts in the apertures of the underframe and tighten them, thereby pressing the underframe to the frame.



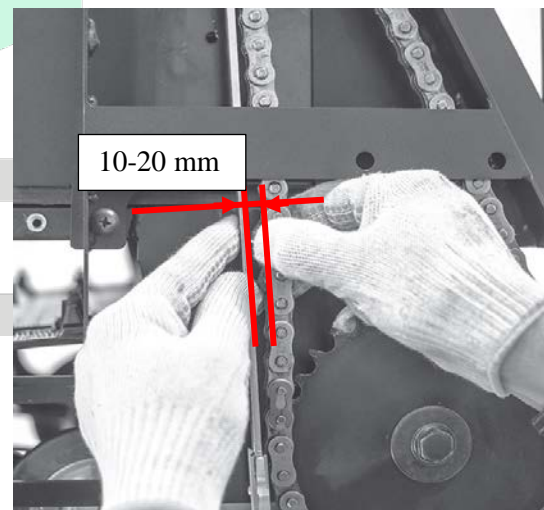
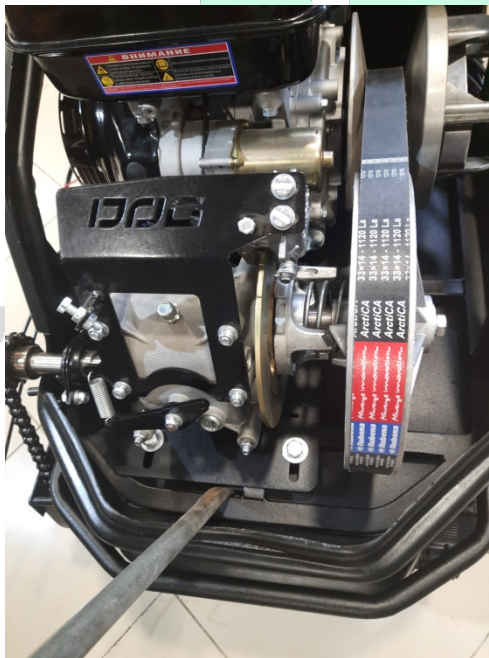
# TINGER

30. Install the chain on the reverse gearbox driven shaft's sprocket in the given order: install the lock in chain links, install the opposite lock side and install the clip by rounded edge along the movement way.



31. Moving the underframe backward to the movement way, regulate the chain tension. A normally tightened chain will have a sag of 10-20 mm at the middle between the sprockets. The sag is less than 5mm affects to the faster chain stretch, as result- fast sprockets worn out. Too stretched chain might fly down from the sprockets during the run. Slack chain should be tightened. During the exploitation, the chain extends and the distance between sprockets changes. If the regulate length range of the chain is not enough, the chain should be replaced. Forbidden to short the chain by eliminate one or more chain links.

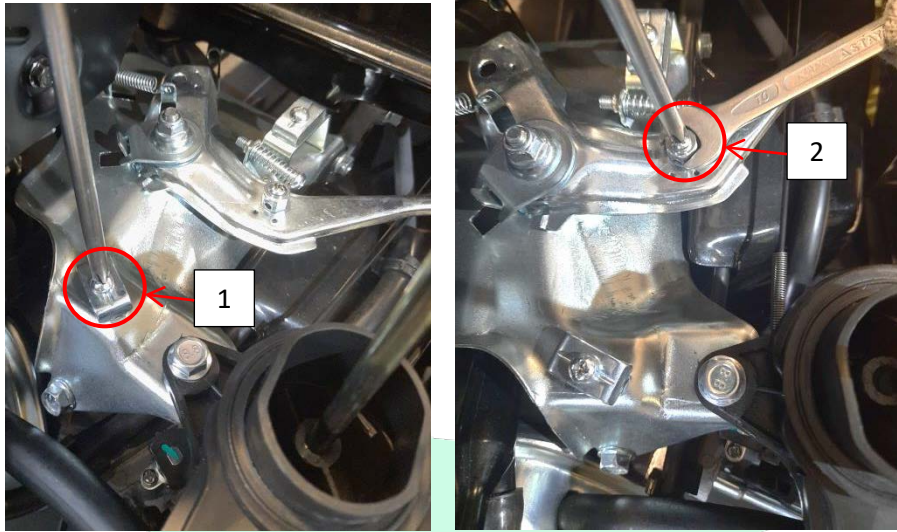
Move the underframe to tighten or to weaken the chain.



32. Tighten the bolts, that fasten underframe to the frame of the towing vehicle.

33. Spread the throttle cable with green braid end from the engine compartment through the central aperture at the body of the towing vehicle to the boot section. Demount the protection case of the air filter and intake manifold. Weaken the cable cover fastener (1) and the cable fastener (2). Guide the

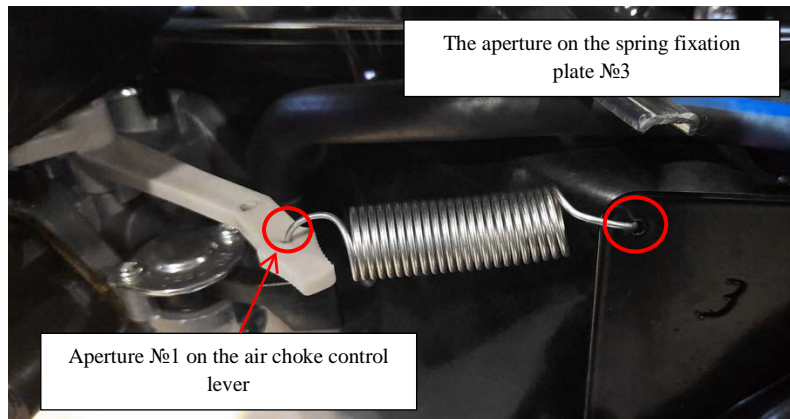
throttle cable through the cable cover fastener and through the cable fastener. Tighten the fasteners. Install the air system parts in reversed order.



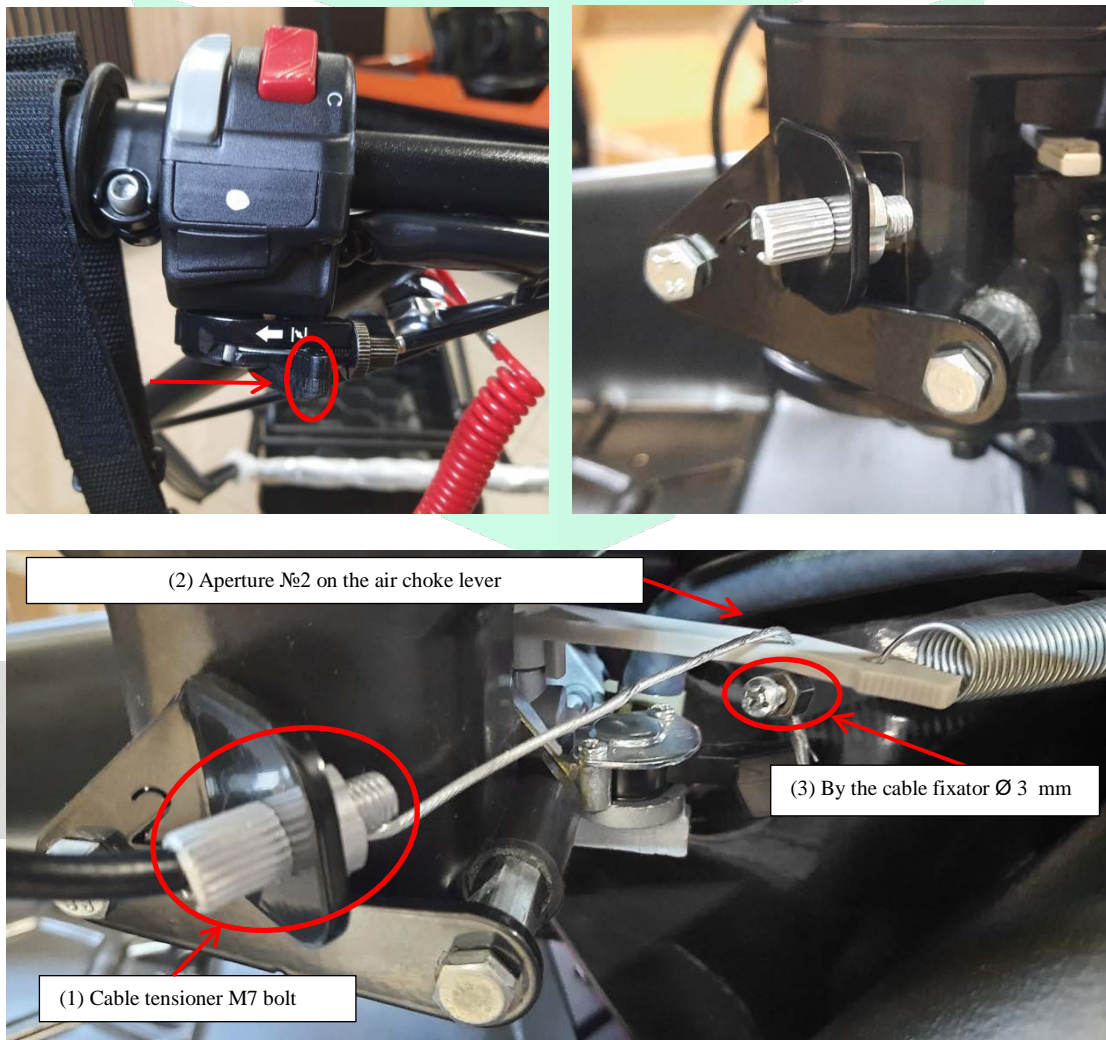
34. Take the M7 cable tensioner bolt and 3mm cable fixator and Ø14 mm spring out of the «Springs and retainers kit» package №6. Connect the throttle choke cable with yellow braid.



35. Anchor the one end of the Ø14 mm spring to the aperture in spring fixation plate №3, the opposite end to the aperture №1 at the air choke control lever.

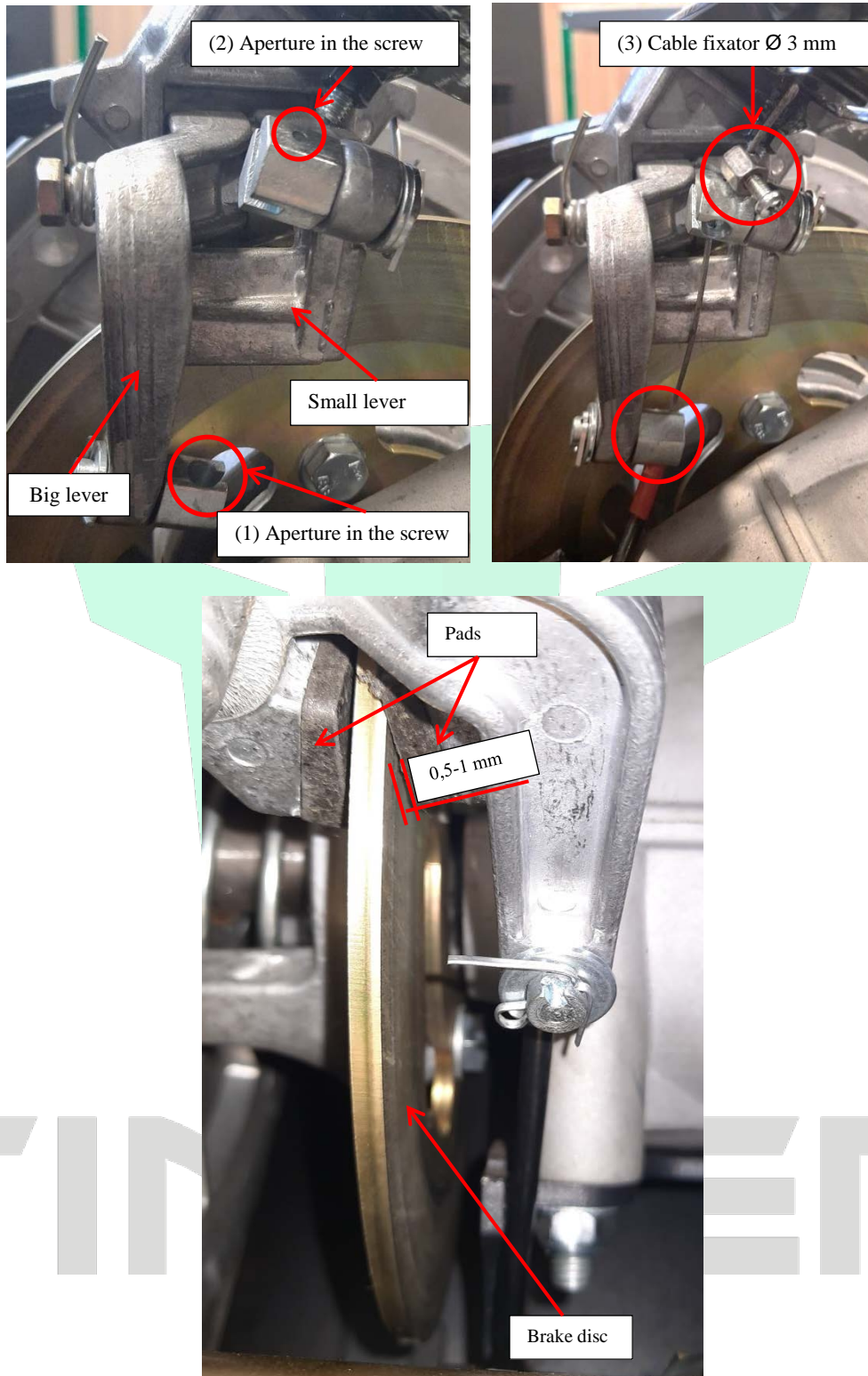


36. Turn the control throttle choke lever on the handbrake switch to the right (in “OFF” position). Install tensioner bolt in throttle choke cable plate №2. Pass the choke cable through the tensioner cable (1), then through the aperture №2 at the lever (2) and then fix the end of the cable by the Ø 3 mm cable fixator (3).

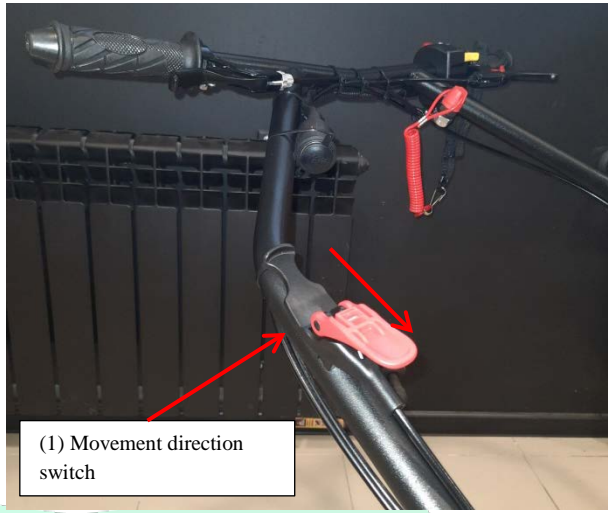


37. Take the Ø 3 mm cable fixator out from the «Springs and retainers kit» package №6. Spread the brake cable with the red braid's end at the frame along the engine compartment up to the brake support. Pass the cable through the slot in the screw with the hex head on the big lever (1), then pass the cable through the aperture of the bolt with the hex head at the small lever (2). Pull the levers to each other as closer as it possible- the 0.5-1 mm slot must be created between the brake disc and pads. Fix the cable by the Ø3 cable fixator and return the levers to the original position (3).

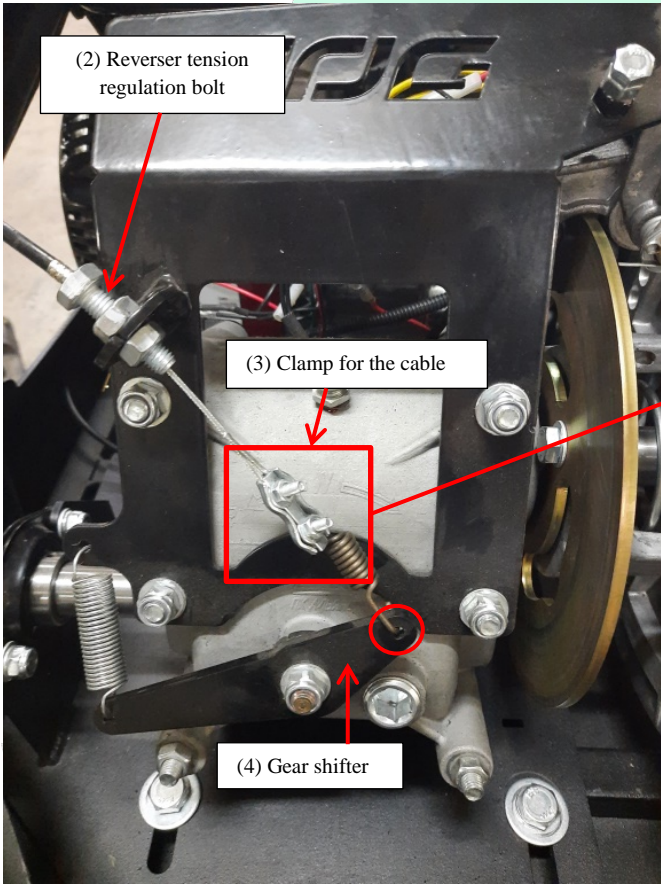




38. Take the  $\varnothing 10\text{mm}$  spring and the clamp for the  $\varnothing 2\text{ mm}$  rope out of the «Springs and retainers kit» package №6. Place the reverse gear switch on the handlebar (1) ahead relatively the movement way of the towing vehicle. Guide the cable through the tension regulation bolt of the reverse gearbox (2), then bend the cable around the stud on the rope clamp and fix it by the washer and by the screw nut (3). Hook the one spring edge on the second stud on the rope clamp and fix it by the washer and screw nut (3). Pass the second spring hook through the gearbox shift aperture (4).

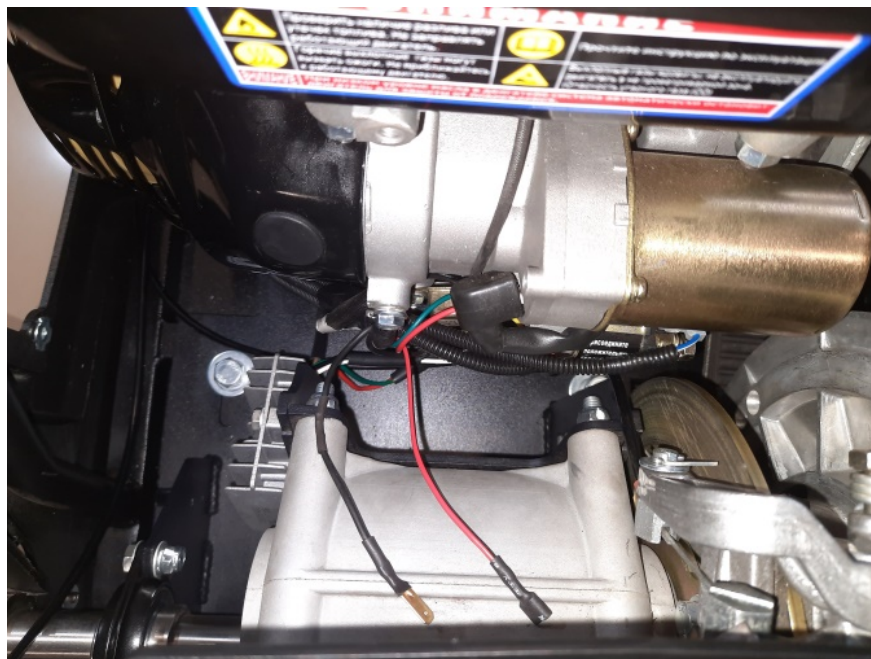


(1) Movement direction switch

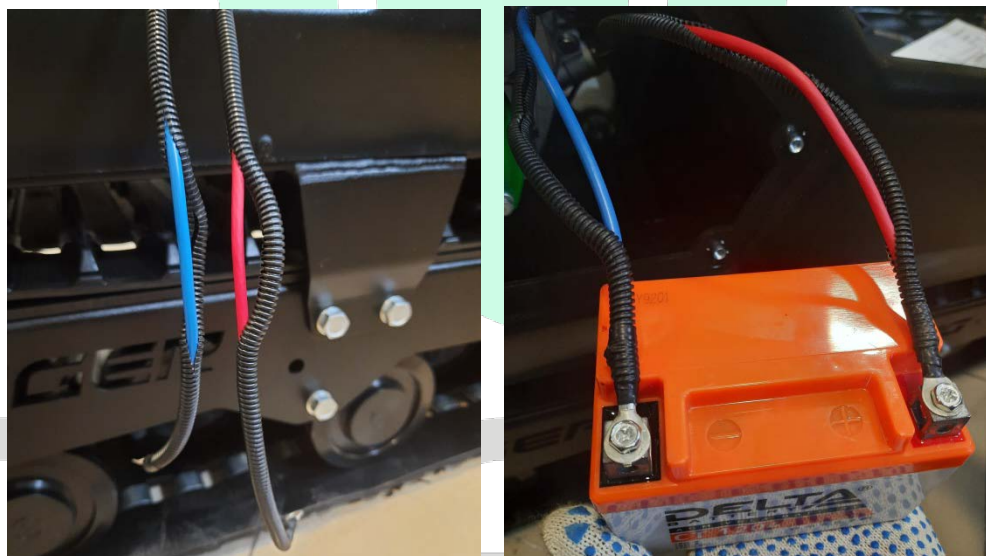


WHEELER

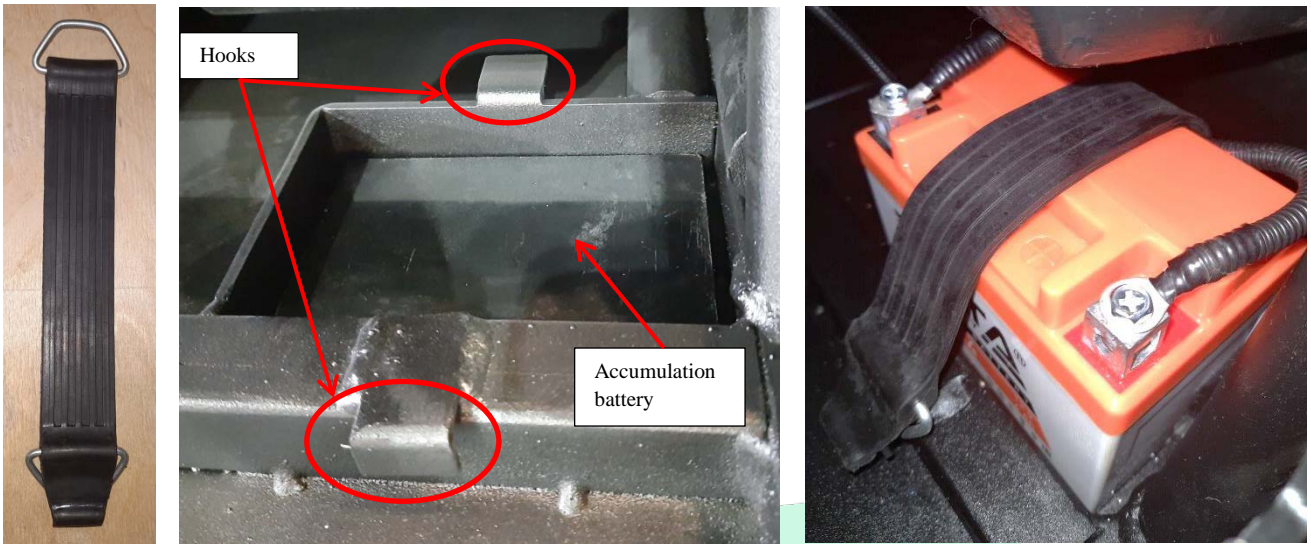
39. Connect the wires according to the electrical scheme.



40. Connect wires to the accumulation battery terminals by the given way: the red wire in the corrugation to the «+» terminal. Connect the blue wire in the corrugation to the «-» terminal.



41. Install the accumulation battery at the engine compartment behind the CVT. Take the accumulation battery fastener belt out of the package №7. Anchor the fastener belt with a tongue to the hook behind the accumulation battery. Anchor the belt hook at the front of the battery to the hook by tightening the the belt tongue.



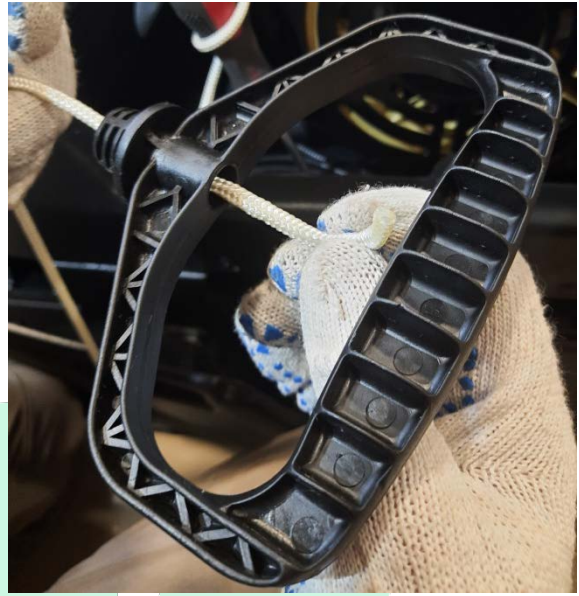
42. Tighten the manual starter cable, create a loop by the cable. To prevent the cable's reeling, put the screwdriver or other corresponding tool into the loop.



43. Take the knot out of the starter handle, untie it and take it out.



44. Pass the cable through the aperture at the right side cap, and then into the starter handle. Tie the knot and hide it in the handle.



45. Take the tool out of the loop and untie the loop. Holding the side cap and handle, return the cable back to the place.

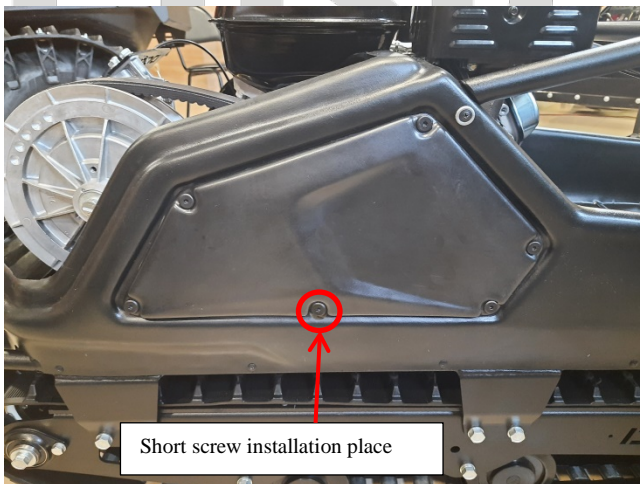
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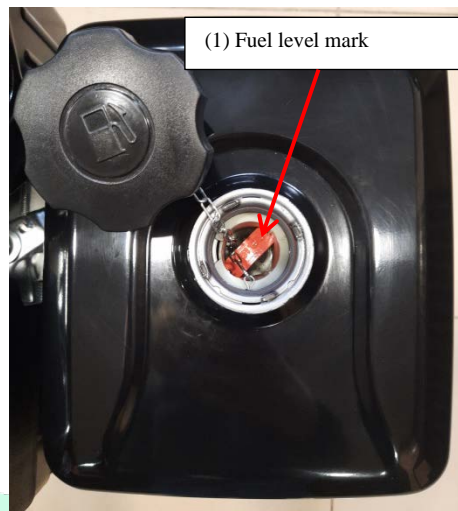
46. Install the side cap, using the screws with inner hex.



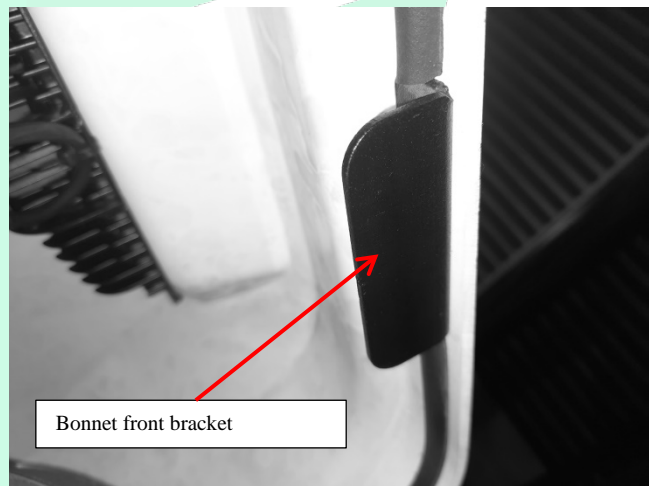
47. Anchor the left side cap, using screws with inner hex. Set the screw at the central bottom aperture, this screw is shorter than other 10 mm screws.



48. Unscrew the cap of the fuel tank. Pour fuel in till the mark level (1). Screw the cap up.



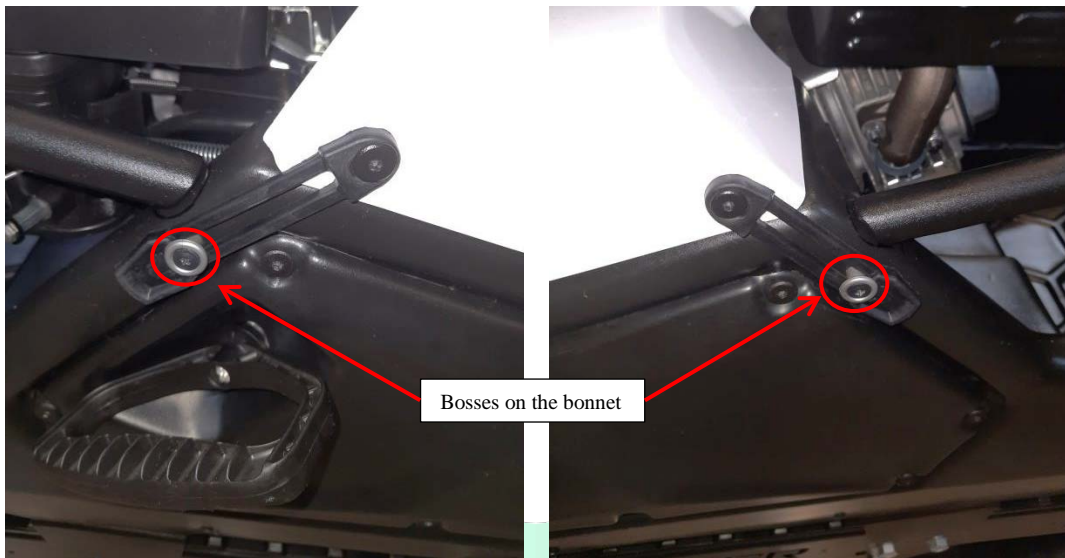
49. Install the bonnet onto the body of the towing vehicle: set the front bonnet bracket into the body slot at the front part.



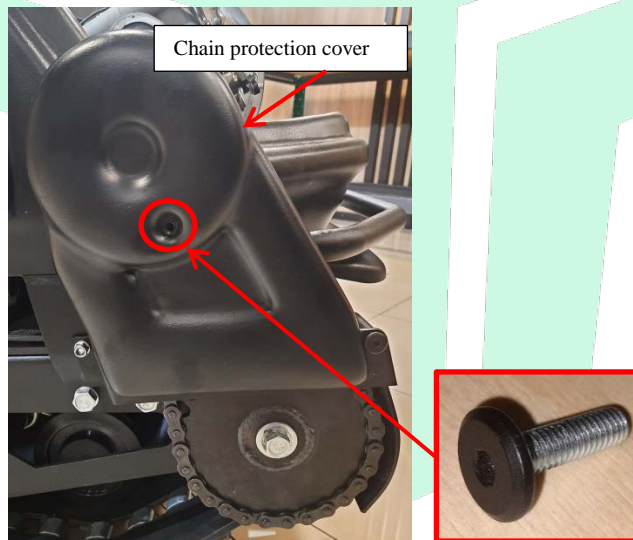
50. While holding the bonnet, connect the headlight to the connector's wirings of the voltage rectifier. Connect the red wire from the headlight to the red wire on the voltage rectifier connector.



51. Rubber fixators on the bonnet are anchoring to the bosses on the bonnet.

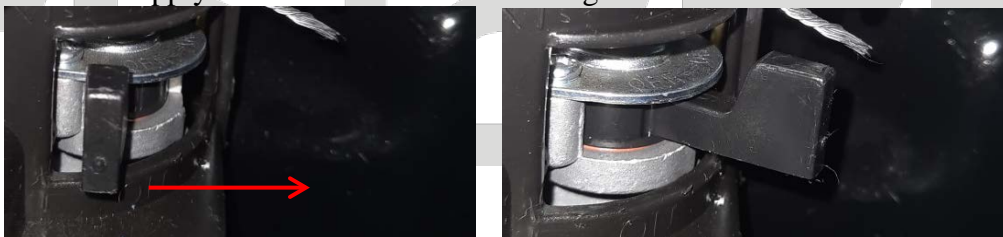


53. Install the chain protection cover on the bracket and anchor it by the screw with inner hex.



54. Operate the first engine start of the towing vehicle:

1. Open the fuel supply valve- turn the lever to the right.



2. Press the brake handle till stop and set the red handbrake to the right.





3. Open the throttle valve- turn the control choke handle to the left.



4. Apply power to the engine –move apply power switcher on the handlebar switch to the lower position.



5. Wear the emergency engine switch belt on the hand.

TINER



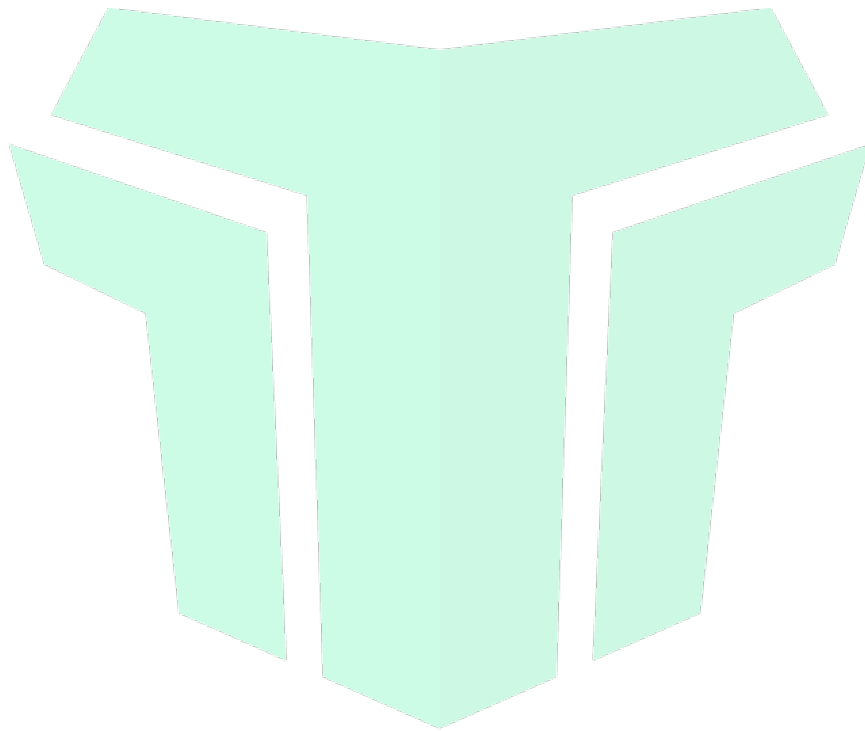
6. Start the engine: press the yellow trigger of electrical starter on.



7. Close the choke- turn the choke control handle to the right. During «cold start», 60 seconds is required. Wait till the engine will get warm and then turn the choke switch off.



8. Regulate the acceleration handle's idle speed running while engine works. To do that, weaken or tighten the choke controlling lever on the engine.
9. To begin the movement, clench the brake handle and the handbrake automatically turns off. Release the brake handle and smoothly rotate the acceleration handle.



TINGGER