INSTALATION AND USER MANUAL

AIRSOFT SYSTEMS

www.airsoftsystems.com

ASCU2

With Gen.3+ Technology

ATTENTION! PLEASE READ CAREFULLY THIS INSTRUCTION AND USER MANUAL BEFORE YOU PROCEED WITH THE INSTALLATION OF THE ASCU.

What is the ASCU?

The ASCU is a electronic module which when installed in an airsoft electric gun, drastically improves the way the gearbox cycles and the realism in imitating the functions of a real weapon.

The ASCU monitors the actual position of the sector gear, the fire selector and the trigger. All the information is passed to the Electronic Control Unit, which analyzes it and controls the firing of the AEG by an active brake MOSFET.

The ASCU makes every standard AEG with Marui type of gearbox ver.2 to work exactly as the most expensive and sophisticated airsoft rifles on the market, like the professional class of training weapons.

The ASCU system monitors the operation of the AEG in any time, and no matter how fast you tap the trigger, the AEG will always complete the full cycle, no matter if you shoot in Semi or Full Auto mode. After each shot or burst the piston will stop in its foremost position.

With the installation of the ASCU, the Anti Reversal Latch (ARL), which is often a cause of gearbox jams, is no longer needed . (The ARL can remain AEG where is used a set-up of low power motor with low power spring, or High Speed motor with low power spring)

The ASCu has an integrated Low Drain Protection, which is specially designed to keep LiPo batteries from damage. LiPo, NiMH, and NiCd batteries from 7,4 V to 12 V can be used safely with the ASCU and there is no need to program or set up battery type used by any means. The ASCU automatically recognizes the battery type and voltage, even if the battery is not fully charged.

The ASCU will also stop the AEG firing if any mechanical problem occurs to the gears in the AEG, which protects the internals of the gearbox from further damage.

The ASCU Gen.3 is easy to install in all AEGs with Ver.2 gearbox. In most of the models there is no need for any modification of the original parts of the airsoft rifle, nevertheless some models may need some minor and easy to do, modifications of some parts in order make the installation easier.

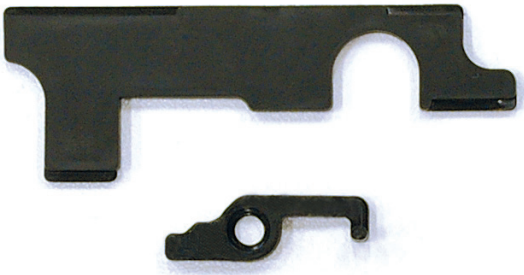
WARNING!
Please read carefully this Instruction manual before proceeding with the instalation. We strongly recommend that the ASCU to be installed by an experienced airsoft technician.

IMPORTANT: The ASCU works properly only with motors with strong magnets. With weak magnet motors the active brake will not be effective.

The ASCU kit includes:
- ECU board + Mosfet Board with Wires
- Selector Plate
- Improved Cut-Off Lever
- Insulation sticker
- Heatsink syringe
- Instruction Manual

Tools needed:
- Set of Philips screwdrivers.
- Super-Glue.

Tools that may be needed:
- Set of small files



The Airsoft Systems Cut-Off Lever is made from a very-strong polymer (stronger than Zinc alloy) with very low friction coefficient and deigned to improve the work of the ASCU.

Bonus Parts:
- Trigger Extention
- Tappet plate delayer.

ASCU INSTALLATION STEPS.
***Before installation check on www.airsoftsystems.com for any updates!**

WARNING! If you are not familiar with the AEG's gearbox internals and you do not have good gearbox repair experience, please do not proceed with the installation and turn to your nearest airsoft service.

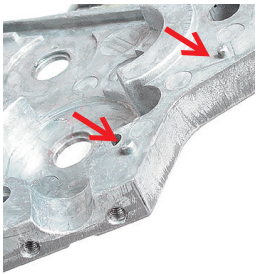
1. Remove the gearbox from your AEG by following the standard procedures.

2. Open the gearbox and remove the cylinder together with the piston and the spring. Remove the gears and the anti-reversal latch and the selector plate. Unscrew and remove both parts of the trigger safety lever. Unscrew the switch assembly and remove it together with the wiring.

Gearbox Maintenance Tip: If your gearbox has a lot of grease inside and over the gears, clean it and lube the gears, and their axis with thin layer of silicone grease. Apply a thin layer of lubricant only to the contact surfaces. Over lubricating can result in drop of Rate of firing and malfunction of the gearbox.

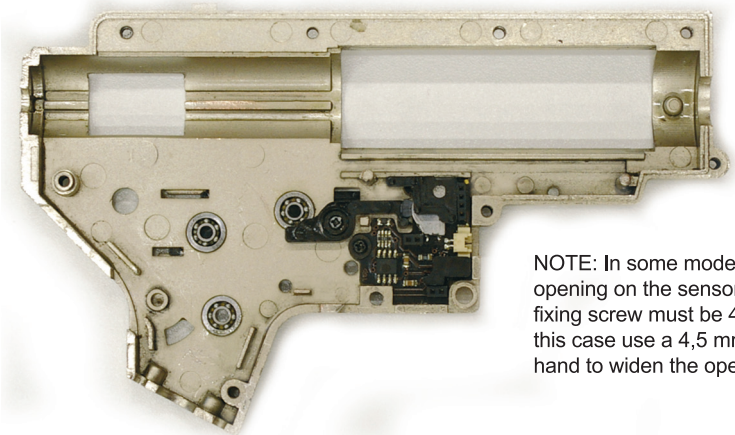
3. At this point check the gearbox shell for any sharp edges in the way of the wires. If there are any, round them with a small file. Clean the gearbox shell from any dirt and grit. Check also the receiver for any sharp edges in the wires way, and if there are any, round them with a small file. All sharp edges in the wires way must be rounded because they can cut through the wires insulation and damage the ASCU.

File off all wire-pushing notches on the gearbox shell as they can pinch through the wire insulation.



4. Remove the cut-off lever, and replace it with the polymer cut-off lever provided with your ASCU Gen.3+.

5. Separate the ECU and the Mosfet of the ASCU. In the place of the original switch group put the ECU Board. Be careful to place the cutoff lever under the lever of the cut-of sensor - exactly as shown on the picture below. Fix the Sensor Unit by screwing back the screw that was used for the original switch assembly.

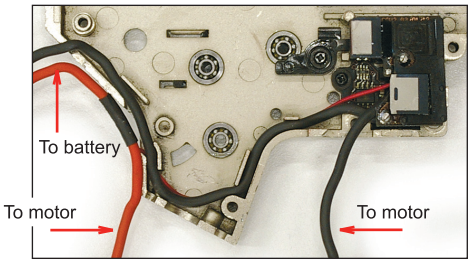


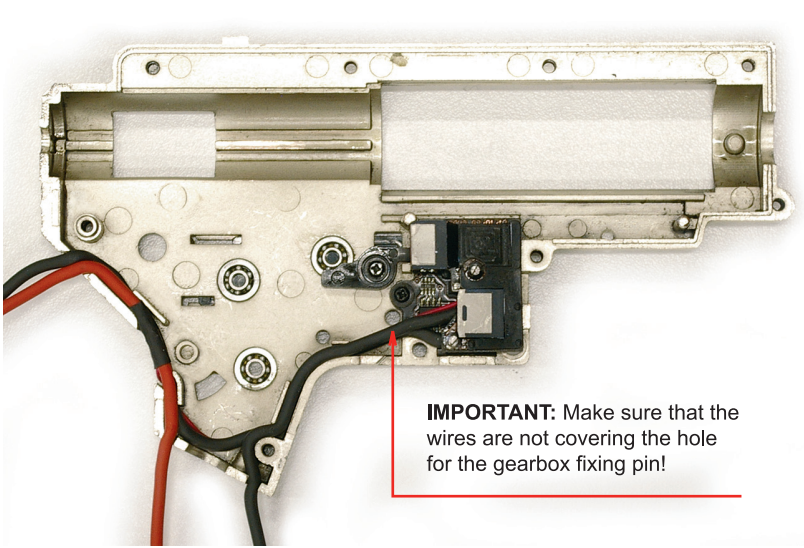
NOTE: In some models the opening on the sensor plate for the fixing screw must be 4,5 mm, In this case use a 4,5 mm drill by hand to widen the opening.

6. Place over & connect the ASCU Mosfet to the ECU. **Be carefull to connect accurately the connecting pins of the ECU and Mosfet Boards.**

7. Place the two thin red wires in the wire channel in the gearbox shell exactly as shown on the picture.

8. Place the Black wire connecting the ASCU to the battery (Tamiya) connector, and place it in the wire channel of the gearbox shell, over the two thin red wires.





9. Place the thick red wire in the wire channel over the black wire as shown o the picture. Be careful not to damage the insulation of the wires.

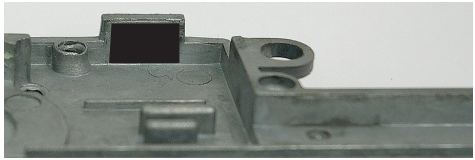
10. Take the other Black wire, that connects the ASCU to the Motor and place it in the wire channel of the gearbox shell as shown on the picture.

11. Replace the gears. **Rotate by hand the sector gear and check if the cut-off lever is moving properly and if it activates the cut-off sensor lever. At the bottom position of the cut-off lever and the cut-off sensor, there must be a small gap between them.**

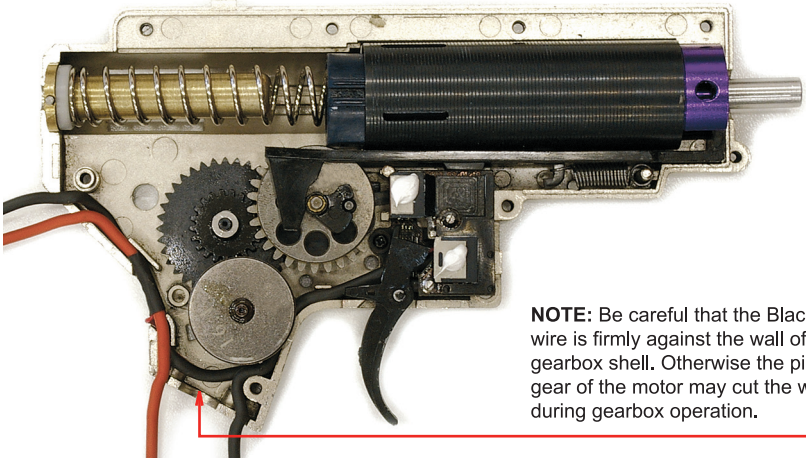
WARNING! Do NOT reinstall the anti-reversal latch and the trigger safety lever! You do not need them anymore.

***Anti-reversal latch may be reinstalled only if you use a low power magnets motor.**

12. On the other gearbox shell stick the black sticker provided with your ASCU as shown on the picture. Make sure to clean and degrease the area before applying the sticker.



13. Replace the cylinder together with the piston and the tappet plate. Reconnect the tappet plate spring. Replace the trigger with its spring.



NOTE: Be careful that the Black wire is firmly against the wall of the gearbox shell. Otherwise the pinion gear of the motor may cut the wires during gearbox operation.

14. With the provided Heat-sink syringe apply a drop of paste on top of the Mosfet transistors.

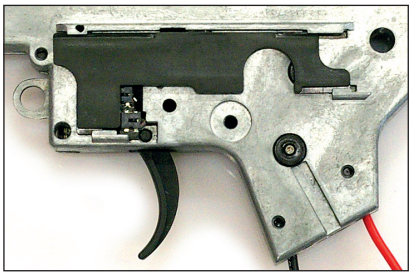
15. Insert the main spring and the spring guide. Check again that all wires are in place and the hole for the receiver pin is clear.

16. Close the gearbox.

17. Install the Selector Plate provided with your ASCU

18. Insert the gearbox in the lower receiver. **Check the opening for the gearbox pin for any obstructions and if it is properly aligned. Replace the gearbox pin.**

19. Install the grip and the motor. **Make sure to adjust the motor tension correctly.**



As there are slight differences in the triggers between the different manufacturers, if your trigger is not engaging the trigger switch properly, then you can use the provided trigger extension:

Installation: Take the trigger. Clean its top front part and degrease it. Using a tiny drop of Super Glue fix the Trigger Extension provided with your ASCU to the front of the trigger as shown on the picture.

WARNING! If changing the Tamiya connector to Deans /T-connector/ make sure to keep the correct polarity. If the polarity is switched the ASCU will burn instantly and this will not be covered by the warranty.

READ BEFORE USING YOUR AEG WITH ASCU!

AIRSOFT SMART CONTROL UNIT
USER MANUAL

The ASCU Gen.3 has 4 selectable modes of function:
1. Single fire + Combined 3 round Burst and Full Auto. (Factory setting)
2. Single Fire + Full Auto
3. Single Fire + 3 round Burst
4. Single Fire only.

CHOOSING BETWEEN MODES:

Coosing Fire Mode:
Set the fire selector to "Safe", then connect the battery, and within 3 seconds move the fire selector to "Full Auto" and pull the trigger. A long beep will indicate that you are now in "Program mode".

A Beep sequence will start: one beep for mode-1; two beeps for mode-2; three beep for mode-3 and four beeps for mode-4. Once you hear the number of beeps for the desired mode, pull the trigger and the mode will be selected. A single beep will indicate that the mode has been selected and the AEG is ready to operate.
The ASCU will remember the last chosen mode and will keep it until another mode is selected. Disconnecting of the battery does not affect the selected mode.

The ASCU is ready to work together with the ASHU with Empty Magazine Detecting function. The second program mode is used when the Hop-Up unit is installed in order to activate it. If you do not have the ASHU unit installed do not enter in this mode. The ASCU is factory preset to work without it.

If you have the ASHU installed then you need to enter in the second program mode to activate it.

* You can order the ASHU from the same daeler from which you have ordered your ASCU.

Choosing Hop-Up Mode:
Set the fire selector to "Safe", then connect the battery, and within 3 seconds move the fire selector to "Semi" and pull the trigger. A long beep will indicate that you are now in "Program mode".

A Beep sequence will start:
1. one beep for ASHU deactivation
2. two beeps for ASHU activation.
3. Three beeps for ASCU activation in automatic Bolt-Catch release mode.
After Choosing mode by pressing the trigger a long beep will indicate that the programing is over and the AEG is ready to be used.
The ASCU will remember the last chosen mode and will keep it until another mode is selected. Disconnecting of the battery does not affect the selected mode.

USING YOUR AEG WITH ASCU GEN.3

1. Connecting the Battery. After 3 seconds a single beep signal will indicate that the battery is connected and the AEG is ready for use.

2. When the fire selector lever is on "SAFE" the AEG will not fire when the trigger is pulled.

3. When the fire selector lever is on "SEMI" the AEG will fire a single shot each time the trigger is pulled.

4. When the fire selector lever is on "AUTO" and the trigger is pulled the AEG will fire fully automatic until the trigger is released, or 3 round burst ,or a single shot, dependent on which fire program mode the ASCU is set.

5. When the battery is depleted, the AEG will stop firing and you will hear a double beep signal. Change the battery with a charged one.

Never leave your Airsoft Electric Gun with ASCU stored with the battery connected!
Always disconnect the battery when the Airsoft gun is not used, stored or transported.
Comply to all Airsoft Safety Rules at all times!

TOUBLESHOOTING

The ASCU is designed to monitor the parameters in which your AEG works in. If by any reason mechanical or electrical failoire the AEG does not work within the normal parameters, the ASCU will stop it and inform you for that with a double beep signal.

Malfunction	Possible reason	What to do
When battery is connected there is no a peep signal.	Bad battery or AEG cable plug	Check the plugs.
	Bad or no connection of one of the wires with the motor	Check the motor connections with the black and red wires
	Short circuit of wires.	Check all wires. After the short-circuit is fixed the ASCU will resume normal function
When the fire selector is on "SEMI" or "AUTO" the AEG wont fire.	No connection between the ECU and the Selector plate.	Check the selector plate.
When the fire selector is on "SEMI" the AEG fires in auto.	Misplaced selector plate.	Check the selector plate assembly.
When the fire selector is on "SAFE" the AEG fires.	Misplaced selector plate.	Check the selector plate assembly.
The AEG makes only few automatic shots and stops, no matter if the selector is on "SEMI" or on "AUTO"	The cutoff lever is not moving, or not installed properly, or broken.	Check the cutoff lever. If it is not moving freely ad lubricant if it is damaged - change it.
The AEG stops firing with a double beep signal when the battery is charged	The motor is overtightened.	Regulate the motor regulating screw
	The gears are overtightened.	Check the shimming.
	The motor is underpowered.	Change it with more powerful motor.
	The battery is damaged.	Check with another charged battery.
	A broken or worn gear.	Change the gear.
The gears backspin after the shot.	Weak motor magnets.	Change the motor with one with stronger magnets. If there is no option to change the motor, install back the anti-reversal latch.
The wires get hot during firing	Loose connection to motor or battery.	Check all wire connections.
	Bad battery.	Change the battery.
	Bad Motor.	Change the motor.

As there are a lot of AEG producers, and no matter that **all** of them are producing AEGs with gearboxes that are clones of the Tokyo Marui ver.2, some times there are very small difference in dimensions and shapes of some parts.

For any other problems send your AEG to the nearest authorized service.
For complete list of authorized services check on *www.airsoftsystems.com*

For updates and other information check on www.airsoftsystems.com and the technical support forum.

WARRANTY

The ASCU has a 12 months warranty for product defects. All ASCU with production defect will be replaced by Airsoft Systems.

2 YEARS EXTENDED WARRANTY:

All ASCU kits that are instilled in our distributors service and have their warranty cards stamped by the service are receiving 1 extra year warranty.

WARRANTY VOID IF: the ASCU is modified by the user, or any of its parts is damaged due to bad installation, bad handling, submerging in water, use with batteries with voltage higher that 12V, and damaged wires.

RETURN AND REPLACEMENT:

All defective units must be returned to Airsoft Systems or their distributor in their original packing and warranty card. Replacement units will be returned within 45 days from the date they are received in Airsoft System's factory.
Airsoft Systems does not take any responsibility for delays and losses due to the post or courier services. Shipping back replacement units by mail / post service without insurance is free of charge. Shipping back replacement units by courier express service with insurance will be charged.

Owners name: _____

Date of instalation: _____ Authorized service signature and stamp: _____

Airsoft Systems Ltd. is not taking any responsibility for damages, injuries and accsidents resulting in the use of the ASCU or a Airsoft Electric Gun with installed ASCU.