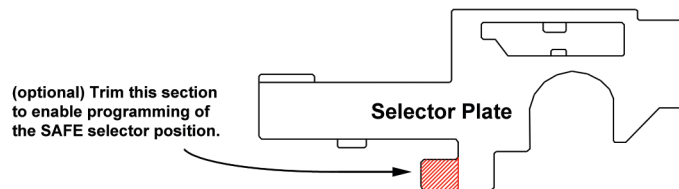


**SPECTRE INSTALLATION:**

- 1) Open the gearbox and remove the stock wiring harness and cutoff lever.
- 2) Install the Spectre FET into the gearbox and screw it down tightly. Do not use the cutoff lever screw to secure the board as it will interfere with the sector gear.
- 3) For proper cycle detection, shim the sector gear as close as possible to the cycle detection switch underneath it, and make sure the sector gear does not grind against the switch's solder joints (too close).  
**Be sure to shim BOTH sides of the sector gear otherwise it might slide away from the switch and cause misreads.**
- 4) Apply grease to the sector gear's cutoff cam to prevent wear on the cycle detection switch.
- 5) Route the power and motor wires through the gearbox as shown in the above diagram. Note that the motor wires coming out of the gearbox are now REVERSED so the motor in the grip will need to be reversed too.
- 6) The installation is complete and the gearbox can now be closed.

**OPTIONAL:**

- The anti-reversal latch can be removed, but may require the motor braking setting to be enabled to prevent gear reversal noises. Also precocking will no longer be possible and therefore need to be kept disabled.
- To enable use of the SAFE selector position as a third programmable fire select, modify the selector plate as shown below. This will permanently disable the mechanical locking of the trigger when the fire selector is on SAFE, so only perform this modification if you are certain you want three programmable selector positions.



## Troubleshooting

Problem	Checklist
No response on trigger pull AND no motor buzz.	<p><b>Battery may be completely drained.</b></p> <ul style="list-style-type: none"> <li>Try recharging or replacing the battery.</li> </ul> <p><b>Possible short circuit in the wiring.</b></p> <ul style="list-style-type: none"> <li>Try running the motor with the FET and wiring entirely outside the gearbox. Do this by manually holding down the selector switches and tapping the trigger switch. If the motor now runs then check for any tears in the wiring and insulate any that are found.</li> </ul> <p><b>Empty mag detection switch is engaged.</b></p> <ul style="list-style-type: none"> <li>Make sure the inserted magazine is not empty.</li> <li>Check if the empty mag detection switch or the levers that engage it are stuck.</li> </ul>
Only fires full auto AND continues firing for 0.5s after trigger is released.	<p><b>Sector gear not engaging the cycle detection switch.</b></p> <ul style="list-style-type: none"> <li>Shim the sector gear closer to the switch. Make sure to shim both sides of the sector gear so it does not slide away from the switch.</li> </ul>
Wrong firing mode on one or more selector positions.	<p><b>Wrong fire modes selected during programming mode.</b></p> <ul style="list-style-type: none"> <li>Recheck the programmed settings using the app.</li> </ul> <p><b>Selector plate not engaging the fire select switches.</b></p> <ul style="list-style-type: none"> <li>Try manually holding down the selector switches and pull the trigger. If the fire modes are correct then the selector plate is likely off-spec. If the AEG is a clone, try replacing the selector plate with an official Tokyo Marui selector plate.</li> </ul>
Semi fire always cycles twice.	<p><b>If precock is ON: precock timing is set too high for your setup.</b></p> <ul style="list-style-type: none"> <li>Lower the timing setting in programming mode.</li> </ul> <p><b>If precock is OFF: the motor is taking too long to fully stop.</b></p> <ul style="list-style-type: none"> <li>Try enabling or increasing the motor braking setting in programming mode.</li> </ul> <p><b>If braking is already ON: the motor is in need of maintenance or replacement.</b></p> <ul style="list-style-type: none"> <li>Clean the motor's internals and replace the motor brushes if they are worn down. Replacing the motor with a more powerful one will also improve the braking function.</li> </ul>
Stops firing and/or motor begins to buzz repeatedly.	<p><b>1 buzz per second: low voltage / gearbox jam / torn wiring / poor wire connection</b></p> <ul style="list-style-type: none"> <li>Try recharging the battery and make sure voltage monitoring is not set too high.</li> <li>Make sure the gearbox is not jammed and has sufficient torque to cycle the gearbox.</li> <li>Check wires for any torn insulation that might be shorting against the gearbox shell.</li> <li>Check battery and motor connectors for any broken solder joints.</li> </ul> <p><b>2 quick buzzes: digital fuse tripped by high current draw (not due to short circuit)</b></p> <ul style="list-style-type: none"> <li>Make sure the gears are not shimmed too tightly and motor height is not set too high, otherwise the increased load on the motor would also increase current draw.</li> <li>Increase digital fuse setting or use a higher torque gearset or motor.</li> </ul> <p><b>3 quick buzzes: FET has overheated</b></p> <ul style="list-style-type: none"> <li>Try disabling or decreasing the motor braking setting in programming mode.</li> </ul> <p><b>4 quick buzzes: sector gear not engaging the cycle detection switch</b></p> <ul style="list-style-type: none"> <li>Shim the sector gear closer to the switch. Make sure to shim both sides of the sector gear so it does not slide away from the switch.</li> </ul>
Country or playing field requires AEG to be locked to semi-only.	<ol style="list-style-type: none"> <li>Locate the area on the circuit board with the text "SEMI LOCK" or "SL". Next to this text are two empty solder pads side-by-side.</li> <li>Bridge these two solder pads to lock the AEG to semi-only regardless of the programming settings. Removing the solder bridge will remove the lock.</li> </ol>
How to perform a factory reset.	<ol style="list-style-type: none"> <li>Disconnect the battery from the FET.</li> <li>Hold down the trigger and connect the battery. The motor will emit 4 quick buzzes indicating the FET entered programming mode.</li> <li>Do NOT release the trigger. Continue holding the trigger for 5 seconds until the motor emits a long buzz indicating a successful factory reset.</li> <li>Release the trigger and disconnect the battery to exit programming mode.</li> </ol> <p><b>Additional trigger inputs without exiting programming mode may cause settings to change. Make sure to exit programming to avoid accidental setting changes.</b></p>

## Limited Warranty

BlackTalon Concepts warrants for 3 years after purchase that its products will be free from defects in material and workmanship. BTC will repair or replace any product which is found to be defective under normal use and service, without charge. BTC's obligation to repair or replace shall be the purchaser's sole and exclusive remedy under this warranty.