



## Air System

The Fusion Engine system is designed to operate with input pressure between 80 and 120 PSI using either HPA (High Pressure Air) or Nitrogen. A suitable air system will be required. This includes a compressed air tank, regulator(s), remote line and fittings.

## Preparation

The Fusion Engine is a complete drop-in replacement for the original AEG gearbox. If you are dropping an engine into a rifle other than what the engine comes configured for (e.g. M4, AK), then you will need to have the trigger, safety and selector components from the AEG's original gearbox to install onto the Fusion Engine in order for the engine to correctly interface with the rifle's body and controls. Also, since the length of the air nozzle generally varies per model, you will most likely need the rifle specific nozzle for that make and model (e.g. VFC SCAR-H).

## Installation

Follow the same steps to install the Fusion Engine as you would with the AEG's original gearbox. On some models (e.g. AK-47) a hole will need to be drilled in order for the air line to exit the model. While our engine is designed to original TM spec, not all manufacturers design their rifle models to the exact same specifications. Therefore some models may require minor modification to fit perfectly depending on the design of that particular model. The most common modification required for V2 systems is shimming the engine in the receiver so that the nozzle is properly aligned in the barrel or modifying the selector plate for correct interaction with the selector assembly.

## Alignment (V2)

Once the engine has been installed in the replica body, verify that the nozzle is aligned with the hop-up and inner/outer barrels. This can be done by looking down the barrel with a flashlight.

### **MAKE SURE THE RIFLE IS UNLOADED AND DISCONNECTED FROM ANY AIR SOURCE WHEN CHECKING ALIGNMENT**

If the nozzle is high, you can install a spacer in-between the rear of the engine and the receiver to pivot the engine forward and lower the nozzle when the buffer tube is tightened down. If the nozzle is low, you can install a spacer in-between the cylinder and the solid side plate (lower frame) of the engine to lift it up. This is done by removing the screw under the front cylinder and pivoting the cylinder up away from the solid side plate.



If the nozzle is off to the left or right then it could be from either the engine not being centered in the lower receiver, the upper receiver not aligning with the lower receiver, or the barrel not being aligned with the upper receiver. You can first try loosening the stock and grip and manually pushing the engine over towards center. Then tighten the grip and stock again while keeping pressure applied to the engine. If this does not correct the alignment, the use of shims may be needed to push the engine away from the side of the receiver.

### Selector Interface (M4/M16)

Different manufactures can hold different tolerances in their models so sometimes the alignment of the selector switch assembly is slightly different from others. If this happens you may not be able to switch between the fire modes correctly or possibly not go into full auto or go into safe. Most commonly the mechanical safety will not fully disengage the trigger when moving the selector from safe to semi so that the trigger "snags" on the first pull or acts like the safety is still engaged. You can first try replacing the selector plate on the Fusion Engine with the original selector plate from the AEG. If this does not correct the issue, the Fusion Engine selector plate can be modified.



These issues are caused by the contact plate area on the selector plate being narrower than on the TM spec selector plate which is provided with our engine. Therefore it would not interface with the safety block correctly until the selector plate was modified so that the safety block will complete disengage when switching between safe and semi. The above pictures illustrate how the front of the contact plate is modified to correct this issue. It is best to remove a little material at a time using a grinding wheel or file following the profile as shown and reinstalling the engine to test. You may have to do this a couple of times until enough material has been removed to allow proper function of the selector switch.

### Velocity Adjustment

There are two primary methods of adjusting velocity with the Fusion Engine. Large adjustments are made by changing the air nozzle to one with either a smaller or larger bore. This effectively shifts the velocity adjustment range down or up respectively. There are currently 6 color coded nozzle bores available. Fine adjustments are made at the final stage regulator by adjusting pressure within the 80-120 PSI operating range.

Velocity and cyclic rate are independently adjustable; however, due to the nature of pneumatic systems the maximum potential cyclic rate is related to input pressure. As input pressure is increased, the maximum potential cyclic rate will also increase.

### Maintenance

It is recommended that our systems be disassembled, cleaned and lubricated every 30,000 to 50,000 shots. We recommend TechT Gun Sav grease for lubrication as it is specifically formulated for High Pressure Air applications. Traditional AEG gear grease or any type of oil should not be used.



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