PATENT PENDING

Air System

The F1 system is designed to operate with input pressure between 40 and 130 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.

Installation

The best results are usually obtained when the replica body and gearbox are the same brand and model.

Preparation

Before installing the F1, the unused components must be removed from the gearbox and the remaining grease should be cleaned out. In most cases, the only remaining parts will be the trigger, safety mechanism, selector plate, spring guide (if applicable) and cutoff lever (if applicable). Keep the mounting screw from the AEG trigger contacts as this will be used to mount the PolarStar switchboard in the same location.

Switchboard and Cylinder

Once the gearbox has been prepared, install the switchboard into the gearbox shell and secure it using the screw saved from disassembly. For V2 installations, ensure proper clearance between the selector plate and the microswitch by sliding the plate back over the microswitch manually. If the plate catches on the microswitch housing, use a gear shim to space the board away from the gearbox shell to give the plate proper clearance over the housing while still engaging the switch.

Place F1 in the cylinder window of the gearbox and plug the solenoid wires into the Poppet switchboard port. The ports on rifle specific switchboards are labeled P = Poppet, N = Nozzle and T = Trigger (when applicable). For kits with a Universal Plugboard the ports are labeled CON1 = Nozzle, CON2 = Poppet, CON3 = Selector, CON4 = Trigger.

If the spring guide is needed to secure the buffer tube, reinstall it in the gearbox, otherwise it can be omitted. The spring guide can be manipulated more easily during reassembly if the bolt from the stock/buffer tube is threaded into the rear. Make sure that end of the spring guide does not reach past the end of the solenoid end caps. Without proper clearance between those parts, the spring guide will cause damage to the solenoids when the gearbox is reassembled.

Reinstall the trigger and trigger spring. Route the airline and wire harness out of the gearbox and carefully replace the other half of the gearbox shell making sure that no wires are pinched between the halves. Once the gearbox is reassembled it can be installed into the replica body.

Alignment

Once the gearbox has been installed in the replica body, verify that the nozzle is aligned with the hopup and inner/outer barrels. This can be done by looking down the barrel with a flashlight. If the nozzle is not centered within the barrel some shimming of the gearbox may be required.

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

Velocity and Dwell Adjustment

To correctly adjust the dwell, first set your dP to the maximum setting of 99 and then adjust your air pressure until the desired velocity is reached with the BB weight you will be using. Start reducing the dP until you see the velocity decrease or become noticeably inconsistent. This indicates that air flow is being shut off before the BB reaches the end of the barrel. Finally, increase the dP until the velocity returns to where it was originally set and then set the dP 2 higher than that point as a safety buffer to account for any inconsistencies. The system is now using the minimum amount of air required to achieve the desired velocity with that BB weight. If the pressure or BB weight is changed, repeat this process.

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.

Disassembly and Maintenance

F1 units can be disassembled for maintenance by unscrewing the front cylinder and removing the internal components. For more information and video tutorials please visit the system's product page at http://polarstarairsoft.com.

Most issues can be resolved/avoided by properly cleaning the system as any dirt or debris that is introduced to the system through the air line can cause the system to leak or malfunction. Most commonly this would result in the nozzle locking forward and continuously venting air through the nozzle after a shot is fired. Or, a small amount of air leaking through the nozzle as soon as the air line is connected while the nozzle remains in the back position. In either situation, the issue must be related to air bypassing one or more of the o-rings on the nozzle.

On the F1 there are three o-rings on the outside of the nozzle. Typically such an issue can easily be corrected by performing routine cleaning/maintenance if it is simply debris that has gotten into the system. Often times the debris can get trapped under one of these o-rings which is why it is important to remove the o-rings and clean them instead of simply cleaning the outside of the nozzle.

As explained in the cleaning/maintenance video, wash the o-rings off with dish soap and water to remove any small bits of debris. Also, wipe clean the grooves of the nozzle itself with a clean cloth to remove any small bits of debris from them as well. Sometimes it only takes a very small piece of debris in just the right place to cause an issue so it might not be something that is readily apparent when you inspect the nozzle so we recommend cleaning everything. Once everything is clean and dry, reinstall and lubricate the o-rings with more grease before reassembling. We recommend TechT Gun Sav grease for lubrication. Traditional AEG gear grease or any type of oil should not be used.