



**HYDRA™**

**GEN 2**

**OWNER'S MANUAL**



**WOLVERINE AIRSOFT**

[www.wolverineairsoft.com](http://www.wolverineairsoft.com)

## **Welcome to the Wolverine Airsoft HPA Family!**

Your HYDRA HPA engine kit comes with following contents in the package. Please ensure that all components of the package are present and undamaged.

### **All packages contain:**

HYDRA HPA Engine  
Gen 2 Premium FCU  
Grip Line  
HYDRA patch  
O-Ring Kit

### **These kits also contain:**

#### **GG M14, T97, T21**

Universal Wiring Kit  
14" Wire Harness

#### **TM M14**

Trigger Board  
14" Wire Harness  
Spacer and Screw

#### **RS SVD**

Universal Wiring Kit  
18" Wire Harness

#### **P90**

Trigger Block  
Custom Wire Harness  
Solenoid Jumper  
Screw Kit

#### **F2K**

Trigger Block  
Custom Wire Harness  
Solenoid Jumper  
Screw Kit

#### **PDR**

Trigger Block  
Custom Wire Harness  
Solenoid Jumper  
Screw Kit

#### **Thompson**

P90 Cylinder  
Universal Wiring Kit  
14" Wire Harness

## **Important Safety Information**

This product is not a toy. Adult supervision is required. This product is intended for use by those 18 years of age or older. Misuse or careless use of airsoft guns may cause serious injury, especially to the eye[s], or death. Eye and mouth protection designed for airsoft guns must be worn at all times by the user and any person within range. Read the instructions and owner's manual for this product and for your airsoft gun prior to use. The buyer and the user of this product and airsoft guns have the duty to obey all local, state, and federal laws.

Important: modifying your airsoft gun with this product may alter its accuracy and range. User of this product may make your airsoft gun dangerous up to 200 meters.

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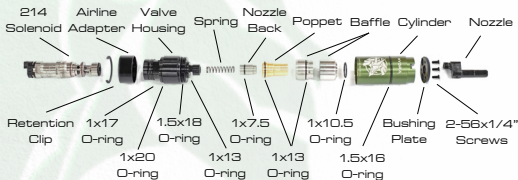
### **Don't Forget to Register Your Warranty!**

Your HYDRA HPA Engine is backed by Wolverine Airsoft's limited warranty. Scan the QR code or visit [www.wolverineairsoft.com/warranty](http://www.wolverineairsoft.com/warranty) to read our full warranty and register your HYDRA HPA engine.



## Getting Started

Your HYDRA HPA engine is a precise instrument containing many individual components. Before you begin, please see the diagram below and familiarize yourself with each component.



## Specifications

Pressure Operation Range: 60-140 PSI  
 Voltage Operation Range: 6-8V  
 Muzzle Energy: .5J-3J [Setup Dependant]  
 ROF: 5-35 RPS

**Note: Never exceed the specified operating pressure of 140 PSI. Doing so may damage the product.**

## Installation

The process of installing the HYDRA HPA engine can vary greatly depending on your replica. To make it easier, we have a variety of videos available online specific to a common gun platforms.

Please scan the QR code or visit [www.wolverineairsoft.com/documentation](http://www.wolverineairsoft.com/documentation).



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## Tuning

Tuning refers to the process of electronically adjusting the engine's dwell for maximum performance and efficient air usage.

Dwell is a measurement of the length of time that the solenoid valve is opened, allowing air to flow from the air tank to propel the BB. For maximum efficiency the dwell time must be set precisely to provide just enough air to carry the BB to the end of the barrel. If the dwell time is too high, air will be wasted out the end of the barrel with each shot. If the dwell time is too low, velocity will be inconsistent, causing inaccuracy.

Please refer to the Premium FCU owner's manuals at [www.wolverineairsoft.com/documentation](http://www.wolverineairsoft.com/documentation) for detailed tuning instructions.



## Maintenance

Regular maintenance on the HYDRA HPA engine should be performed every 25-50k rounds depending on the conditions it is being used in. The dustier and dirtier the conditions, the more frequently it should be serviced.

Items needed:

- Small Phillips screwdriver
- 3/16" Allen Wrench
- Snap ring pliers
- O-ring compatible lubricant. [We recommend TechT GunSav]
- Medium strength Thread-lock. [We recommend Blue Loctite.]

Begin by disassembling your HYDRA unit by unscrewing the two halves counterclockwise.



Remove the three Phillips-head screws as shown and remove the bushing plate. Note which opening in the bushing plate your nozzle uses. For more information, see **Nozzle Plate Configurations** on Page 10.



Disassemble the nozzle and cylinder assembly by inserting a 3/16" Allen Wrench into the rear of the assembly and unscrewing counterclockwise.



Next slide the baffle off of the poppet and pull out the spring. Pay close attention to the 1mm x 10.5mm O-ring around the poppet and do not lose it. You will need it for reassembly.



Remove the retention ring from the valve housing.



Separate the solenoid and valve housing by unscrewing the solenoid counterclockwise. For solenoid maintenance, please refer to our separate Solenoid Cleaning Guide at [www.wolverineairsoft.com/documentation](http://www.wolverineairsoft.com/documentation)



Separate the valve housing, lubricate the four O-rings as shown, and then re-assemble the valve housing.



Reassemble the valve housing, solenoid and retention clip.





Clean the threads on the nozzle and nozzle back. Apply a small drop of thread-lock on the nozzle threads.

Insert the 3/16" Allen Wrench into the nozzle back and then reassemble the nozzle back, poppet, baffle and 1mm x 10.5 O-ring, lubricating each O-ring in the process.

Insert the assembled nozzle back, poppet and baffle into the rear of the cylinder. Then insert the nozzle into the front of the cylinder and thread the nozzle back onto the nozzle. Screw clockwise to tighten.

Next, place the spring into the back of the nozzle as indicated.

Finally, align the spring with the cup on the valve body and push the valve body into the cylinder. Screw the two halves of the unit back together clockwise.



## Nozzle Plate Configurations

| <b>Nozzle</b> | <b>Nozzle Orientation</b> | <b>Plate</b> | <b>Hole Location</b> |
|---------------|---------------------------|--------------|----------------------|
| G&G<br>M14    | Above<br>Center           | 2            | GGM14                |
| RS<br>SVD     | Below<br>Center           | 2            | SVD                  |
| G&G<br>F2000  | Above<br>Center           | 2            | SVD                  |
| Type 97       | Below<br>Center           | 1            | T97                  |
| P90           | Above<br>Center           | 2            | GGM14                |
| PDR           | Below<br>Center           | 2            | PDR                  |
| TAR 21        | Below<br>Center           | 1            | TAR                  |

## Troubleshooting

| Symptom  | Possible Solution   |
|--|---|
| Gun always fires in semi regardless of selector switch position                                    | <p>The selector plate is not engaging the selector switch and will need material added to permit proper operation. Contact WA or a qualified technician for assistance.</p> <p>-The burst setting is set to semi-auto</p> |
| Gun always fires in burst regardless of selector position  | <p>-The selector plate is always engaging the selector switch and will need material removed to permit proper operation. Contact WA or qualified tech for assistance</p>  |
| In burst the gun fires one BB and then continues to cycle/blow air down the barrel but no bbs fire | <p>-Rate of Fire (ROF) is set too high. Reduce ROF to allow the action time to cycle and load bbs.</p>  |
| Inconsistent/Low velocity  | <p>-Dwell is set too low, -Damaged O-rings</p> <p>-Air nozzle is too short and not providing adequate seal at the hop up bucking. Contact WA or qualified tech for help.</p>  |
| The valve cycles/releases burst of air but no bbs fire   | <p>-Non-feeding magazine</p> <p>-Air nozzle is too long</p> <p>Contact WA or qualified technician for assistance</p>  |
| Nothing happens when trigger is pulled   | <p>-Dead battery</p> <p>-Trigger is not properly engaging the trigger switch. Open gearbox and manually press the trigger switch to see if solenoid fires. If not, contact WA or qualified tech for help.</p>             |
| Poor air efficiency  | <p>-Dwell is set too high, -Damaged O-rings</p> <p>-Air nozzle is too short and not sealing at the bucking</p> <p>-System air leak, check for audible signs of leak point.</p>  |

## **Need professional help?**

To find a retailer close to you visit:  
[www.wolverineairsoft.com/dealers](http://www.wolverineairsoft.com/dealers)



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