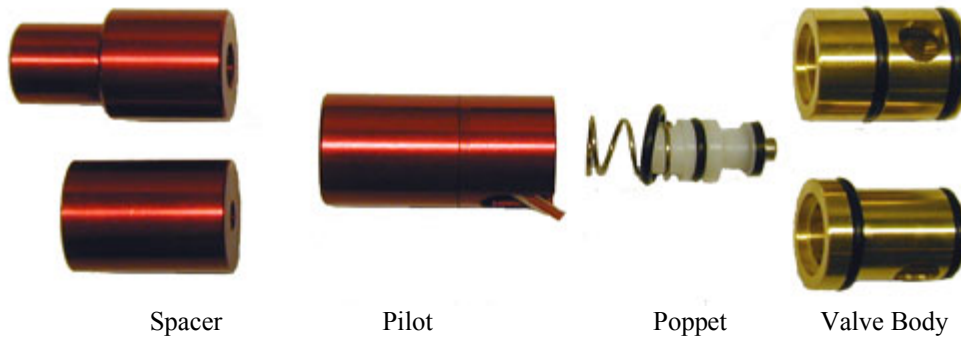


# MQ2-Valve Instructions

## A. Contents of Package

- Instruction Sheet
- MQ2-Valve, consisting of a spacer, pilot, and valve body assembly



## B. Different Types of Gun

- Instructions specific to the Karnivor are in [BLUE](#)
- Instructions specific to 11/16" body Trilogies, Black Magics, and AKA guns are in [GREEN](#)

## C. Prepare Your Marker for Installation

You will need to disassemble certain parts of your Autococker before you install the MQ2-Valve. This section will walk you through each step. DE-GAS YOUR MARKER AND REMOVE THE AIR SYSTEM BEFORE BEGINNING THE INSTALLATION! MAKE SURE THE MARKER IS UNLOADED! EYE PROTECTION SHOULD BE WORN AT ALL TIMES.

### STEP 1. REMOVE THE GRIP FRAME

- Consult your e-grip's product manual for instructions.
- Remove the sear / solenoid and associated hardware from your e-grip. These parts are not necessary with the MQ2-Valve.

### STEP 2. REMOVE THE HAMMER AND MAIN VALVE

- Remove the following parts from the lower tube of your marker, if applicable: valve, valve spring, jam nut, valve setscrew, and hammer assembly. Standard Autocockers will require a valve tool. [Disassemble the ICS hammer assembly.](#) Save the IVG, valve setscrew, and cocking rod for reassembly. Consult your marker's manual for additional help.
- [In the case of 11/16" WGP guns, inspect the valve setscrew to ensure the 1/4" diameter end that sticks into the valve body does not interfere with the poppet. It may be necessary to grind down the tip of the screw.](#)

## D. MQ2-Valve Installation

### STEP 1. INSERT VALVE BODY

- Push poppet back and forth in the valve body to ensure it is not stuck.
- [Apply grease to the external o-rings.](#)
- Insert the valve body with the poppet and spring in place as shown in the picture. Make sure the o-ring at the rear of the valve body and the spring stay in place after inserting into the gun body.
- Align the hole of the valve body with the hole in the gun body
- [11/16" valve bodies have a larger hole that should face toward the bolt.](#)
- [Install valve setscrew. Do not over tighten, as parts damaged during assembly will not be covered by the warranty.](#)



### STEP 2. INSERT PILOT

- Feed the wire of the solenoid thru the body and out the slot where the sear lug would normally be.
  - Gently insert the pilot into the marker body while pulling the remainder of the wire thru the slot.
- BE CAREFUL WHEN INSERTING THE PILOT. SHEARED WIRES ARE NOT COVERED UNDER THE WARRANTY!
- Align the wire and the slot in the solenoid spacer with the slot in the body.

### STEP 3. INSERT SPACER

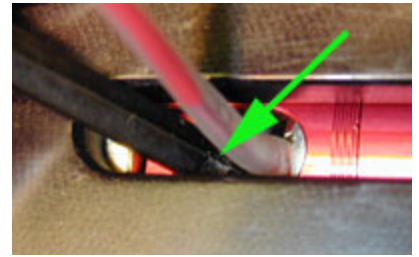
- Insert the guide rod spacer with the hollow end toward the IVG.
- [Karnivor owners should insert the narrow end of the Karnivor spacer into the IVG, clamping the plastic bushing in place.](#)

#### STEP 4. TIGHTEN IVG

- Use an allen key to keep the Pilot from rotating while threading IVG back into the marker. The IVG needs to be as tight as the original valve jam nut in order to seal the front of the MQ2-Valve. Apply more torque if the holes in the valve and body do not line up.

**IF THE PILOT ROTATES, THE WIRES COULD BE SHEARED OFF! SHEARED WIRES ARE NOT COVERED UNDER THE WARRANTY!**

- In the case of 11/16" valves, tighten the IVG until the pilot touches the valve body, then an additional 1/8 turn.



#### **E. Reassemble Your Marker**

##### STEP 1. REASSEMBLE BODY

- Reinstall the valve setscrew flush with the bottom of the body if not already installed. Do not thread in more than necessary.
- Reinstall bolt and backblock
- Thread your cocking rod thru the back block and into the rod guide. Threadlocker will be necessary. This is only to stabilize your back block so it does not rotate and snap your pump arm. The cocking rod may be shortened if desired.
- **Cut off the front, larger diameter part of the ICS rod, leaving a 1.50" long (including threads) stub. Thread into backblock.**
- For half and mid block cockers (Black Magic, aftermarket conversions), cut down the end of the bolt pin that normally engages the hammer so it does not protrude into the bottom tube.

##### STEP 2. RE-ASSEMBLE THE GRIP FRAME

- Consult your e-grip's product manual for instructions
- Thread the wires through the opening left by the sear components. Avoid pinching the wires when installing the grip frame. Plug the MQ2-Valve solenoid into the board where the sear tripper solenoid used to be.
- **Karnivor users may need to cut down the beaver tail screw to avoid damaging the IVG.**

#### **F. Tuning Your Marker**

##### STEP 1. MQ2-VALVE

- Set the sear solenoid dwell time to 4 ms (SON/shot). Race frame users will need around 7ms due to their lower voltage.
- Set your marker's pressure to between 250 and 320 psi. If you over pressurize the valve a pressure release seal will start to hiss. Lower the pressure and the seal will re-seat.
- Chronograph your gun to the desired speed by adjusting the input pressure to your marker (via your main regulator). If your desired velocity is not reached by increasing your pressure, ie, the relief valve starts hissing, then lower the pressure and raise the solenoid dwell by 1 ms.
- If operation at low pressure is necessary (below 300 psi), remove the white washer on top of the solenoid plunger spring inside the Pilot. Operating pressure will depend on the volume in front of the valve, so a mini body may need the spacer, while an AKA Merlin body may not.

##### STEP 2. BLOWBACK

- Set the bolt solenoid delay (CDEL/dwell) to a low number and chamber a ball. Place another ball in the feedneck.
- Fire once in a safe direction and observe the amount of blowback. Increase CDEL/dwell/BON until the blowback is under control. A ball must always be in the chamber and feedneck for this test to work
- Repeat as needed.

##### STEP 3. SHOOTDOWN

- Increase your bolt close time (COFF/close) until no shootdown is noticed.
- Pull trigger rapidly or use full auto with no paint. Listen for a difference in sound between the first and second shots.
- If the first and second shots sound different, increase COFF/close.

##### STEP 4. RATE OF FIRE

- Set bolt solenoid on time (CON/load) to any value. It only controls the rate of fire when the eye is off and is not critical to the operation of your marker.
- Cocking pressure can be set to any value desired. The timing procedure must be repeated if cocking pressure is changed. We have determined that 60 psi is optimum for a 3/8" bore ram.

Experience has shown that most MQ2-Valve shootdown problems are timing related. Make sure you follow these instructions carefully and check that your tank is screwed in all the way.

Warranty policy: 1 year for the original purchaser against manufacturing and assembly defects. 60 days on all seals for the original purchaser. Damage resulting from faulty installation practices or operation beyond reasonable parameters will not be covered. Buyer must obtain warranty service through the original seller.

See [www.kajohnson.com/page/mqv](http://www.kajohnson.com/page/mqv) for additional technical information.

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