

Deadlywind HP U3 Ion/XE installation instructions.

Doc. Version 1.0 –June 2010

To verify that you have the HP U3, look into the threaded hole in the back of the stalk. If there is a set of smaller threads further up inside, then you have the HP U3 version. This version is universal and can be installed in both the Ion and Ion XE versions of the gun. If you do not see this smaller section of thread, then you might have a different version of the HP bolt. Please visit www.deadlywind.com for installation manuals for other HP versions.



(Arrow pointing to smaller second set of internal threads.)

Parts list of the HP U3 bolt kit:

- a) –Blue colored stalk
- b) –Silver colored bolt tip
- c) –Black rubber tip insert
- d) –Orings: 3x on the stalk, 2x on the bolt tip

For the Ion specifically, you will use the following parts: (see page 2 for instructions)

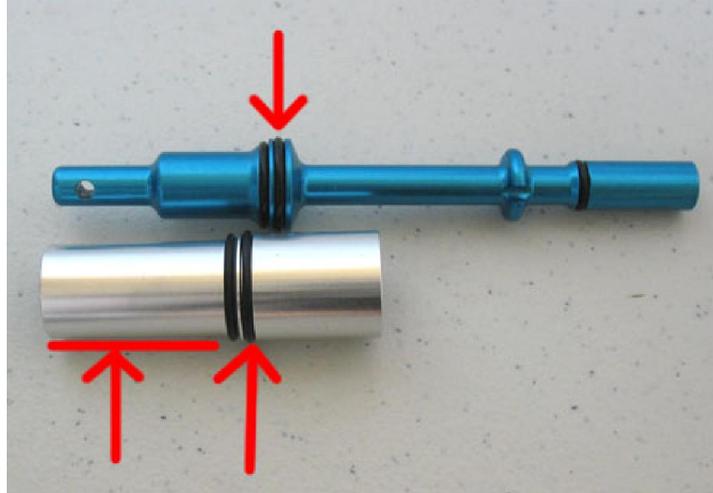
- i) –Large black air ring. This part is not critical, but helps air flow a bit more smoothly
- ii) –Larger shorter black flat head screw (1/4-28)

For the Ion XE specifically, you will use the following parts: (see page 4 for instructions)

- x) –Smaller longer silver colored flat head screw (#8-32)
- y) –Thin black washer
- z) –Split wire ring

Deadlywind HP U3 Ion specific installation instructions.

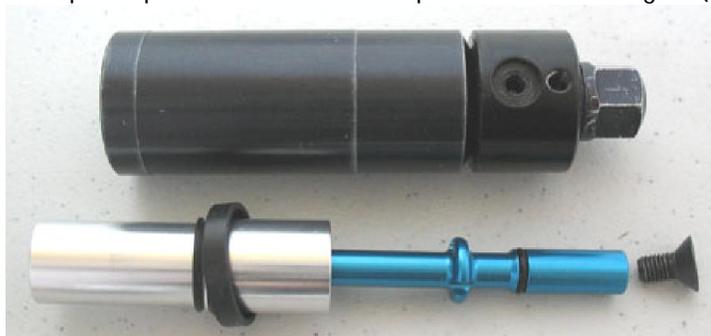
1) Start off by lubing the bolt and stalk. The red arrows point to the three areas that require lube. They are: the largest O-ring on the stalk, the largest O-ring on the Bolt tip, and the outside of the entire "nose" section of the bolt tip.



2) Disassemble your Ion (please refer to your Ion owner's manual for help with this if needed). Remove the existing bolt and bolt stop disk from your Ion Firecan.



3) Locate the required parts listed under Ion specific install on Page 1 (a-d and i-ii).



4) Install the large black plastic air ring into the front of the firecan. This part takes the place of the gap left by the bolt stop disk which was removed with the stock bolt earlier. It can go in either way, but only one way is correct. The "thinner" wall side should go in first.

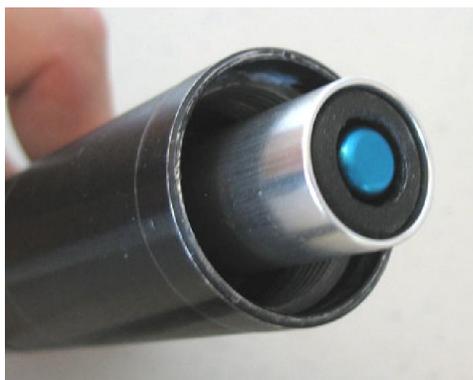


5) Slide the stalk all the way in, and screw the larger black flat head screw in from the back. It should seat down positively. No O-ring or Threadlock is needed on the screw. Tighten it down with two Allen wrenches- one through the cross-hole in the nose of the stalk to keep it from turning, and the other in the head of the tail screw to tighten it.



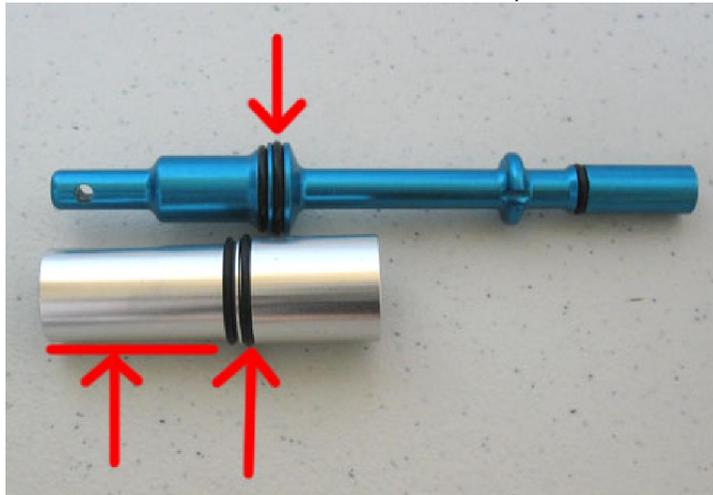
6) Slide the HP bolt tip onto the stalk as shown with the rubber insert facing forward. To ensure that the stalk is secured centered in the firecan, spin the firecan in your hand and watch the nose of the stalk. If the stalk moves around while it spins, then it might need to be "tweaked" some to get it centered. Simply push it the direction it needs to go. It might require a bit of force. Keep re-checking each time.

Re-install the firecan into the Ion. Enjoy!
Please see page 6 for tuning and troubleshooting.



Deadlywind HP U3 Ion XE specific installation instructions.

- 1) Start off by lubing the bolt and stalk. The red arrows point to the three areas that require lube. They are: the largest O-ring on the stalk, the largest O-ring on the Bolt tip, and the outside of the entire "nose" section of the bolt tip.



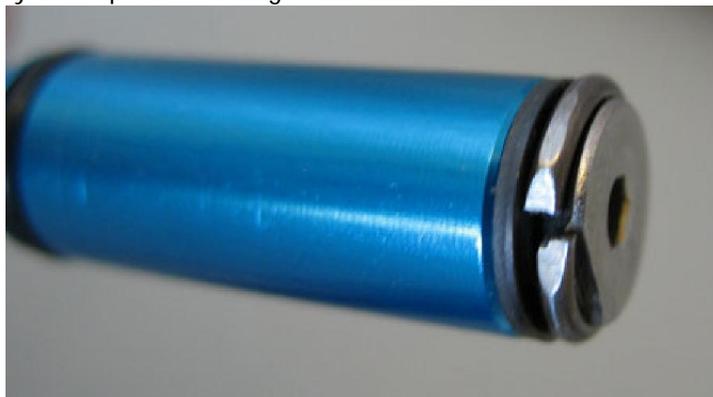
- 2) Disassemble your Ion (please refer to your Ion owner's manual for help with this if needed). Remove the existing bolt and tail plug from your Ion Firecan.



- 3) Locate the required parts listed under Ion specific install on Page 1 (a-d and x-z).



4) If it is not already installed, locate the #8-32 silver flat head screw, split wire ring, and thin black washer. The thin black washer should be against the tail of the stalk and the split wire ring should be against the head of the screw. The screw may have a slot or a flat cut into the head, this is normal. lightly run the screw down until the wire ring and washer do not have much slop in them. The next step will require a bit of trial-and-error to get right, so it is not critical how lightly the screw is run down at this point. Try to keep the wire ring and the washer centered with the stalk for now.



6) Carefully try to slide the tail of the stalk into the Ion XE tail cap. If it does not want to get started into the hole, then the screw might be tightened too far, in which case loosen it a little bit. Keep repeating until the stalk will lightly slide into XE tail cap hole. We are looking for a light friction slide. **WARNING- If the screw is too tight at this point and the stalk is forced into the hole, the XE tail cap hole can become scored and you will not be able to use a stock bolt anymore!!** Once you get a light friction slide into the XE cap, slide the stalk all the way in until it bottoms out. Now try "snap-spinning" the stalk on the nose clockwise with your fingers. It should eventually "grab" and get tight. (if it never grabs, then remove the stalk and tighten the screw just a little and try again). Once it does grab, then slide an Allen wrench through the cross-hole in the nose of the stalk and **while keeping force holding the stalk into the tail cap,** tighten the stalk down. It should be able to be tightened down pretty firm, but do not go overboard.



What is happening here is the light friction fit we are looking for is the split wire ring springing out into the bore of the hole in the XE tail cap. When we "snap-spin" the stalk clockwise, the head of the screw inside is tightening slightly until it grabs against the split wire ring. Once it grabs, the screw starts to tighten into the tail of the stalk, expanding the split wire ring outward, and securing it into the bore of the hole in the XE tail cap. **You must keep holding the stalk and tail cap together to ensure that the stalk is secured at the correct place in the very bottom of the hole.** To ensure that the stalk is secured centered in the talk cap, spin the tail cap in your hand and watch the nose of the stalk. If the stalk moves around while it spins, then it might need to be "tweaked" some to get it centered. Simply push it the direction it needs to go. It might require a bit of force. Keep re-checking each time. Re-install the XE tail cap into the Ion XE. Enjoy!

Please see page 6 for tuning and troubleshooting.

Deadlywind HP U3 Tuning and troubleshooting instructions.

Tuning procedure:

The goal with this and any other Ion bolt is to run the lowest dwell without getting low and inconsistent velocity. If the dwell is way too high, you will see very stable velocity but the marker will use lots of air per shot. If the dwell is too low, air is not wasted, but the bolt will start returning before the ball is up to full velocity, causing low and inconsistent shots.

Different Ion boards use the word "Dwell" differently. The stock Ion board starts at a base dwell number and allows you to adjust up from there in increments of 1/2 ms. Aftermarket boards may or may not start at a base dwell, and most will increment in 1ms, or change from 1/4, 1/2, or to 1 depending on how large the number is. If you use a QEV your dwell could be 2x to 5x times lower than without a QEV. A fresh battery will make the solenoid more snappy and will operate differently than when using a weaker battery.

Dwell- Because of all of the variations listed above, there is no "one correct dwell". You will need to find your dwell and go from there. The typical advise is to start low and go up until your velocity no longer substantially increases, and then add a couple more for a safety zone. Dry-firing tells very little... you will need to test with paint and a chrono.

Pressure- Start around 130 psi and go from there to get your desired velocity.

Pressure/Dwell relation- The higher your pressure, the slightly lower you can run your dwell. This setup can give better efficiency, but will be harder to keep consistent. This combo is also harder on paint and can cause ball breaks if the pressure is too high.

Troubleshooting:

- There is air leaking down the barrel:

- i. Check the nose and inside rear part of the bolt for scratches and/or debris.
- ii. Make sure the bolt stalk is close to centered.
- iii (or is that iv?). Check/replace the bolt stalk O-ring.

- Gas vents when firing, but the bolt does not move:

This is usually due to the main "sail" o-ring on the bolt (the largest of the two O-rings) not sealing correctly inside the Ion. This can be cause by an incorrectly sized O-ring, a damaged O-ring, or the stalk not being centered in the firecan or tail cap. If the stalk is not mounted centered, then it will push the bolt tip off to one side and allow air to bypass the sail O-ring on the bolt. To ensure that the stalk is secured centered in the tail cap, spin the fire can or tail cap in your hand and watch the nose of the stalk. If the stalk moves around while you spin it, then it might need to be "tweaked" some to get it centered. Simply push it the direction it needs to go. It might require a bit of force. Keep re-checking each time it is tweaked until it is centered.

"How it works":

Here are some cutaway views of an earlier version of the HP bolt (thus the gold and black colors). Notice that at rest the ball cannot roll back into the deep cup face of the bolt. A ball that starts in the same place every time has a better chance of being shot more consistently. Also, if a ball is allowed to roll back into the cup face of a bolt, the next ball in the stack above it can be pushed down slightly in front of the ball, so when shot, can cause ball breaks and inconsistent shots.



As the bolt moves forward, it cradles the ball with the deep cup face and minimizes "ball-stack-bobble". "ball-stack-bobble" is when there is a gap between the ball being chambered and the lip of the bolt. A gap here gives the next ball in the stack a place to blip down into between the ball and the bolt lip and can cause ball breaks and interfere with the bolt travel, causing inconsistent shots.



Near the end of the bolt stroke, the O-ring on the bolt stalk exits the bore inside the bolt and allows the air in the fire chamber to flow forward through the bolt. The HollowPoint is designed to try to maintain air flow consistency through the bolt for an efficient shot.

