

Firenock®
The Most Advanced Lighted Nock®

2014

Aerovane® 3

Aerovane® II



Success in 2013
to ensure
your success
continues in
our 2014

FIRENOCK PROVEN ADVANTAGE

New for 2014 in the Firenock Lighted Nock Line

There are now 11 styles of the original Firenock line plus 1 new style of Easton "G" nock available to fit different sizes of arrow shafts. Newly added to the original Firenock line is the advanced "J" style nock. "J" style nock has our latest patented shorter prongs in order to fit the new 2013 Mission Crossbow Trigger box with serving sizes from 0.120" to 0.165". There is no other nock on the market which can fit new 2013 Mission Crossbow Bow better than our J nock. FYI, Firenock "J3" is the lighted nock packs whereas its associated accessory packs are namely "Pjx, JR, JG, JC". With the accessory packs, J nock like other Firenock lighted nock can provide you a complete solution to your hunting or target needs.

In addition to the introduction of J nock, two new Firenock lighted nocks, Firenock "03" and "03e", have also been added. These are the lightest and smallest lighted nock systems that Firenock has ever built and you will be amazed when you hold them in hand. Firenock "03" and "03e" are built to fit arrow shafts with an ID of 0.166" and 0.165" respectively.

Field Replaceable Firenocks

Firenock nocks are high precision and high light transmission polycarbonate nock, with a patented slide and lock system. When a nock becomes worn, a new nock can be replaced by removing the circuit and reinserting it into a new one. Firenock C, D, F, J, Q, S, V and Y styles can be interchanged with the Firenock H, T and I circuits. Firenock A and L can be interchanged with Firenock N and K circuits. Firenock is not only nock replaceable, but the system can be changed according to your situation. For example, your hunting system can be field changed to an intermittent system by changing circuit H to I.

For those who don't want to shoot a lighted nock but want the advanced and extreme design of Firenock polycarbonate nocks, you can use them without the electronics.

Ultra-Mini "G" Switch

Firenock developed the industry's first ever commercial ultra-mini "G" switch (UMGS). This cutting edge UMGS technology makes accidental activation a thing of the past due to its ultra-precision. The UMGS built in our Firenock Lighted nock system senses the direction and speed of your arrow in order to control the lighted nock system. The UMGS is proudly made in the USA, ultra sonic sealed and gold plated inside for extra reliability, best sensitivity and best performance. Our UMGS gives Firenock lighted system a mean time between failure rate of not less than 12,000 cycles, or in other words, ultimate reliability and performance.

Ultra Mini Electronic System

The Firenock lighted nock system employs a custom IC circuit to achieve ultra-light weight and the IC circuit is specially treated to be blood, water and UV proof. This IC design makes our system able to stand up against everything that Mother Nature can throw at us. Firenock only adds between 9 and 15 grains of weight to your arrow depending on the style. We recommend that you re-sight your bow or crossbow to adjust for this difference in weight. According to our tests, an arrow of 390 grains leaving a bow at 260 fps would hit the target less than 1/2" lower at 20 yards, however re-sighting your bow is highly recommended. The new extreme match weights have the same weight (+/- 1 grain) as the circuit plus battery so you can use the matched weight practice nocks to re-sight your bow or crossbow to save time and money.

Ultra Bright

With today's high speed bows and crossbows, arrows and bolts can exceed speeds of 400+ fps, and with arrow shafts and bolts utilizing real-life camo patterns, eye tracking an arrow in flight becomes very difficult. With Firenock, our lighted nocks will allow you to see the flight of your arrow and even see it in your target up to 120 yards away in total darkness. You can see Firenock lights at a distance of up to 1.2 miles. This is achieved because of our high intensity and degree specific 11,000 LUX LED's, allowing you to see Firenocks under almost any lighting condition.

Extreme Shock End Caps

All 11 styles of lighted Firenocks are fitted with "Extreme Shock End Caps". They are included as standard parts in all Firenock packs for 2014. The End Caps become standard as after years of testing, we have concluded that extreme shock end caps are the best insurance policy you can have for normal arrow and crossbow speeds at over 300 fps and for long term reliable use of our lighted systems.

Cross-lock Battery Connector

Since day one, Firenock has employed its patented "Cross-lock Battery Wire Connector" to lock the battery in place. This special battery connector design eliminates the need for a heavy battery casing and can absorb damaging shock to the system that would destroy other brands of lighted nock systems. The Cross-lock Battery Connector wire makes disengagement virtually impossible. Just another reason why we have the highest level of reliability and quality products for today's demanding hunters.

EZcoil System

To fit Extreme Shock End Caps perfectly, Firenock created a simple and easy to use battery wire connector known as EZcoil. With EZcoil you only need to push the battery through the coil and do a counter turn motion and that's it. No need to twist, bend or thread the wire between the batteries any more.

Extreme Practice Weight

After extensive testing, it was concluded that our legacy practice weight will no longer function properly in today's higher speed bows and crossbows with repeated use. They may cause damage to the inside of the arrow shafts. Therefore, we invented the Extreme Practice Matched weight system. This provide a perfect match weight in size, weight, and weight distribution. All Extreme Matched Practice Weights system includes green Firenock self-contained nocks for ease of identification. (P0x, PAx, PCs, PDx, PEx, PFx, PJx, PQx, PSx, PVx, PYx) These pack comes standard with Extreme Shock End Caps. Thus there is no more hassle as to which arrow is loaded with a lighted nock or a practice nock any more as they are now color coded. (Pictures of PJx and J Firenock shown on the right)

Ultra Long Lasting

With our new low power consumption, ultra bright LED's, you can use Firenocks as a locator beacon to easily find downed game in the dark, even hours after the shot. Firenock "H" series hunting circuits will remain lighted up to 36 continuous hours and then go into "dim mode" up to 4 weeks in the field with a fresh (BL) battery. The Firenock "I" series intermittent circuit will stay lighted solid for 6 seconds and then "blink" for 5 to 7 days on a fresh (BL) battery.

Conclusion

With all of the above features, we at Firenock believe that we have the most advanced lighted nock system in the world. Our lighted nocks are the most dependable, versatile, lightest, and brightest and we have the widest choice of colors available on the market today. If you are looking for the finest quality lighted nocks then you can't afford not to use Firenock brand lighted nocks for your arrows. We are committed to develop and provide our customers with the very best equipment money can buy.



2014 FIRENOCK HIGHLIGHTS

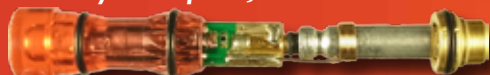
Serious About Crossbows

For 2014, Firenock offers a total of 6 styles of nocks for crossbows. With the introduction of the new shorter "J" and improved "Y" and "F" style nocks, Firenock is now able to fit every available crossbow bolt system on the market. Firenock crossbow nocks use either compression fitting nocks or dual O-ring based nocks to fit today's shafts. Both approaches will allow you to pull the nock out of one shaft and reinsert it into another. With these designs, you can even tune the bolt easily by turning the nock. Below are pictures of our complete line of crossbow nocks.

"C" style Half moon



"F" style Ten point, Excalibur



"Y" Style for CX, FMJ, and Laser IV(*)



"D" style for 0.157" to 0.167" serving



"J" style for 0.147" to 0.157" serving



"Q" style for 0.137" to 0.147" serving



What's unique about "J" nock?

With our new "J" nock, the issues revolving around the old Mission Crossbow 360 and 320 trigger box with the "D" nock and the aluminum nocks glued permanently into the Mission arrows made by Victory are eliminated. The "J" nock will also fit Black Eagle Executioner and Aerobolt 2 bolts. "J" nocks can also be used as a lighted hunting, lighted target, lighted intermittent or as a practice nock.

Besides the fitting and functional versatility of the "J" nock, it is uniquely designed with a throat and prongs to fit onto the crossbow serving. With this new design, bolts won't drop from the crossbow when the bolt is loaded as it virtually locks onto the serving. This virtual locking system also maximizes the speed and consistency of the bolt as it will leave the bow in the same way every time and store all the energy of the bolt until the very last moment of leaving the serving.

Batteries

Since the first version of Firenock, field changeable battery is one of the most important and desirable features of Firenock, so you can change your battery in field without tool when your Firenock is out of battery. We offer 3 styles of batteries. Our standard "BR" battery is the most powerful due to its low temperature operating ability, making it second to none. Because of this power, the "BR" battery has a shorter shelf life, so we only offer "BR" battery from August to December. BR battery are manufactured in July to ensure the best possible performance. Firenock also offers the ultra-long shelf life battery "BU" since 2012. The "BU" battery is the most stable battery and has a much longest shelf life among our 3 styles of batteries. BU has about 85% of the power of the "BL" battery, but with a shelf life of 20 years from the date it was manufactured. From the tests we have done since 2006, "BU" battery is the only battery we know of that can hold up to 90% of its initial power for no less than 60 months in room temperature on the shelf. While BU has a higher initial price, we still believe that our customers want it as it has a much longer shelf life and perfect for backup purpose. With proper installation, BU battery can be operable for up to 3 years compared to 1 year for a Firenock "BL" battery.

| Item Code | FNLN61 | FNLN49 | FN0019 |
|---|------------|------------|------------|
| Code name | BR | BL | BU |
| Name | Standard | Light | Ultra |
| Price for 3 with 3 pin O-rings | \$10.95 | \$10.95 | \$15.95 |
| Country of Origin | China | Korea | Japan |
| Shelf Life (month) | 8 | 36 | >144 |
| Available in time of the year | Aug to Dec | year round | year round |
| Weight (grains) | 9.00 | 8.50 | 9.25 |
| Lowest Operating Temperature (F) | -17 | -4 | -4 |
| Highest Operating Temperature (F) | 100 | 160 | 140 |
| O-ring Groove Location | middle | back | none |
| Initial Blast Rate (mA) | 168 | 133 | 80 |
| Continuous Lit Time with Firenock (2012 IC Hunting) Hrs at 65 F | 1008 | 144 | 35 |
| Initial LUX with 2012 Hunting circuits at 0" distance | 4300 | 3300 | 3000 |
| End Cap Requirement (even at below 300fps) | No | Optional | Yes |
| Failure Rate | 5% | 2% | >0.1% |

With these 3 different battery offerings, we at Firenock believe that we have offered a complete solution for our lighted nock battery needs.

"BL" is the ideal all season battery that can handle the reasonably low to the highest hunting temperatures.

"BR" is the ideal single fall season, cold weather battery that can handle temperatures as low as -17°F, and no higher than +80°F, but with a shelf life of about 12 months.

"BU" is the ultimate back up battery that you need to have in case of an emergency in the field. You can keep this in your backpack, year after year, and know that if necessary, you can change the battery very quickly.

Although some of the Firenock's batteries have longer shelf life than one year, if you install any of the 3 styles of battery on a Firenock circuit it can be drained out in one year. That is why we recommend that when the season is over you should remove the battery and store it in its original case. **It is not recommended to store Firenock batteries in the refrigerator or freezer as the defrost process will cause condensation and this will cause oxidation on the shell of the battery which will significantly decrease its usage and shelf life.**

FIRENOCK "0, 0e" (zero)

Due to the polarity of ultra slim arrows with 0.165" ID, Firenock listened and decided to offer a light nock system for this class of arrow. By mid-2012, we delivered the first shipment of Firenock "0" to the archery world. Shortly after, we recognized that the Easton arrow shaft is actually 0.1665" ID. Instead of reinventing the wheel, we now offer "0e" which is a modified Easton "G" nock to fit this model of arrow shaft.

- Complete weight with circuit, battery, O-ring, end cap and battery is 22 grains.
- Dynamic weight/FOC weight is only 12 grains
- Brightness at 0", 3600 LUX, or 120 yards under sun with no cloud or 1.2 miles in total darkness of visibility with a fresh BR battery
- Lighting time of 45 days or 6 weeks continuously with a fresh BR battery or 7 days with a BL battery.

Above is a picture of the nock when it is fully installed inside an arrow shaft. Notice the tiny extreme shock end cap with an O-ring on it. It is the smallest lighted nock system Firenock has ever designed. It comes with extreme shock end caps standard to withstand shock (Please note the stack coil system must use with extreme shock end caps in order to function properly).



WARRANTY

This service is only available in USA.

A no hassle/no questions asked refresh/side-grade service is what we believe Firenock users prefer after the 30 days unconditional warranty period had ended.

LIFETIME REFRESH/UPGRADE/SIDE-GRADE SERVICE

Firenock™ brand lighted nocks are eligible for refresh/side-grade while Firenock's Lightning Nock™ brand lighted nocks are eligible for upgrade. In other words, you can get the latest offer of Firenock circuits (any function and color) and new polycarbonate nock (any style), with a small service fee. This service is only valid when funds and a completed form are sent, along with the purchased lighted nock(s) and/or circuit(s). For this service, please do not send any accessories like O-rings and batteries to us. We cannot be responsible for anything that is not part of the refresh service. Additional accessories can be purchased along with the refresher service at list prices with no additional shipping and handling fee. For more details please visit <http://www.firenock.com> and click warranty for more information. The refresh/upgrade PDF form can also be obtained there. This service is subject to change without notice and can be terminated at any time.

FIRENOCK® 2014

24 Firenock (3-pack)

Available in the following styles and colors

- S style in (red, green or blue LEDs)
- A style in (red, green or blue LEDs)
- E style in (red, or green LEDs)
- C style in (red, or green LEDs)
- F style in (red, or green LEDs)
- V style in (red, or green LEDs)
- Y style in (red, or green LEDs)
- D style in red (hunting/h & intermittent/i)
- Q style in red (hunting/h & intermittent/i)
- J style in red (hunting/h & intermittent/i)
- O style in red
- Oe style in red

Standard 3 pack contains:

- 3 hunting(h) or blinking(i) circuits
- Last digit of the item number is the color of the LED
- 6 polycarbonate nocks
- 3 end caps, O-rings, and tool
- 3 O-rings (C & F has 24 O-rings for nocks)

Picture shown nocks installed with batteries as an example, Batteries sold separately

7 Firenock (6-pack)

All with End-caps as standard

Available in the following styles and colors

- A style Target & Hunting with red LEDs
- D style Target & Hunting with red LEDs
- E style Target & Hunting with red LEDs
- J style Target & Hunting with red LEDs
- Q style Target & Hunting with red LEDs
- S style Target & Hunting with red LEDs
- S style Target with 6 colors of LEDs

S6th pack contains:

- 6 circuits 1 each color (S6t)
- 3 hunting & 3 target circuits in red
- 18 polycarbonate nocks
- 6 end caps with o-rings
- 2 end cap installation tool

Picture shown nocks installed with batteries as an example, Batteries sold separately

5 O-ring Packs

Available in the following sizes

- OS for S style
- OC for C, or F style (30 per pack)
- OA for A style
- OE for E style
- OB for battery pin



Hydro® Adapter

Available in 2 systems

- BfF - 5/16" Fiberglass
- BfI - Internal



41 Polycarbonate nock

Available in all 11 styles and

- 7 nocks in each pack

(OC pack is needed for C/F nock to function)





11 Extreme Match Weight Packs

Available for all 11 styles of Firenock

- POx for O
- PAx for A
- PCx for C
- PEx for E
- PFx for F
- PJx for J
- PQx for Q
- PSx for S
- PVx for V
- PYx for Y

Each pack contains:

- 3 green nocks
- 3 match weights
- 3 end caps
- 3 O-rings
- 1 tool



3 Battery Packs

BR - Regular/Standard Fall

BL - Light/ 36 shelf life

BU - Ultra (>12 year shelf-life)

- 3 batteries
- 3 battery-pin O-rings



7 Extreme Shock

Battery End Cap Packs

Available for all 8 styles of Firenock

- XO for O (silver)
- XA for A (pink)
- XC for C (gold)
- XE for E (pink)
- XF for D/F/J/Q/V (gold)
- XS for S (black)
- XY for Y (green)

Each pack contains:

- 3 end caps
- 3 O-rings
- 1 tool



30 Circuit 3-Packs

Available in the following series and LED colors

- H Series (hunting circuits) for (C, D, F, J, Q, S, V, or Y)
- T Series (target circuits) for (C, D, F, J, Q, S, V, or Y)
- I Series (intermittent circuits) for (C, D, F, J, Q, S, V, or Y)
- N Series (hunting circuits) for (A, or E)
- K Series (target circuits) for (A, or E)
- EZ coil available for some



Packs

up to 9 colors



FIRENOCK INSTALLATION

By following Firenock detail installation manual which comes standard in all Firenock packs, you can be assured that your Firenock installation can be as painless and as smooth as possible. Below are manuals for Firenock D/J/QV which utilized the new EZ-Coil battery wire system while Firenock C/F uses the standard double loop lock battery wire system. With these manuals, the user is guided step by step with pictures and words to ensure easy and correct installation. For those who prefer video tutorial, Firenock installation videos are also available on the web at <http://www.firenock.com>

FIRENOCK "S" style Installation Manual (Installation video is available at <http://www.firenock.com>)

Nock/Circuit Installation and Replacement

- Align the PCB (Printed Circuit Board) with the clip and lock hole in the nock as shown (Figure 1)
- Squeeze the nock cylinder as shown in Figure 1 to allow the PCB to be inserted into the nock as it passed over the clip and lock tabs.
- Insert the PCB all the way till a distinctive click is heard or felt.
- The battery must remain installed during nock replacement without it, damage to battery wire connector may occur.
- Squeeze the nock cylinder by hand as shown in figure 1 to release the circuit board anchor.
- Hold the circuit board with the battery installed and pull the circuit board gently out from the nock.
- Repeat step (c2) and insert the circuit board LED first into the nock by holding the circuit board.

Note: Do not over-press the nock while inserting and removing the circuit board as nock may break/crack.

Battery Installation & Replacement

Caution: Do not allow the battery pin to contact battery wire connector as it may lead to discharge of the battery completely.

Note: Battery should be removed from the PCB if not use for over 30 days or will be dained out in 1 year.

Installation & Removal (EZCoil design)

- Thread the battery-pin O-ring on the pin of the battery (Figure 2)
- Insert the battery into the EZcoil with a counter clockwise action till the battery O-ring touches the battery and the pin connector on each end (Figure 3)
- Rotate the battery counter clockwise and pull the battery out gently away from the EZcoil (Figure 4)

Installation & Removal (Dual Loop design)

- Thread the battery-pin O-ring on the pin of the battery (Figure 2)
- Insert the battery into the front loop of the battery wire connector while leaving the end loop hanging outside (i.e. Let the front loop open to allow the battery to pass through). (Figure 5)
- While inserting the battery, rotate the battery counterclockwise. The wire of the front loop will ride the battery head and fit itself well inside the neck of the battery (Figure 6)
- Wrap the end loop onto the battery and ensure the front loop locks onto the neck of the battery (Figure 7)
- Roll the included O-ring/rubber band into the battery's midtask groove, if NO end cap is used (Figure 8)
- Remove the O-ring on the battery body from the battery if present.
- Unhook the end loop of the battery wire connector to allow the first loop to open as above (Figure 5)
- Rotate the battery clockwise and pull the battery out gently.

Note: Over-angle to open the battery wire connector can cause the battery wire connector to break and/or cause a micro crack on the circuit board.

Firenock Installation

- Rotate and push the nock down into the shaft till flush to the end of the nock cylinder.

Note: With extreme shock battery end cap installed, one may encounter resistance on the very end of pushing the Firenock into the arrow. This is usually caused by the battery end hanging on the edge of extreme shock battery end cap. Keep rotating while pushing Firenock in with slight pressure should allow the battery to roll into the end cap and allow the nock to be push flush to the end of the nock cylinder. Forcefully pushing the nock into the shaft or shot Firenock with a gap between the nock cylinder will usually result in bent battery.

Firenock Deactivation (Hunting & Blinking system)

- Align the lighted nock perpendicular to a hard surface.
- Lift the arrow no less than 6 inches (15 cm) from the surface.
- Hold the arrow motionless in mid air for 6-8 seconds.
- Drop the arrow to allow the arrow to hit the surface nock first via gravitational force. (Figure 9)
- Upon impact, the light shall shut off automatically.
- If light does not shut off, repeat Step (b - d) and raise the distance in 2-inch (5 cm) increments until the Firenock shuts off.

Note: Counter top, concrete floor, truck bed, hard wood floor are samples of hard surface. If the Firenock does not shut off after the free fall distance is as high as 20 inches (51 cm), and it is within warranty period, please send in your Firenock for warranty replacement.

Firenock Deactivation (Target system)

The light will shut off automatically in 17 (+/- 2) seconds.

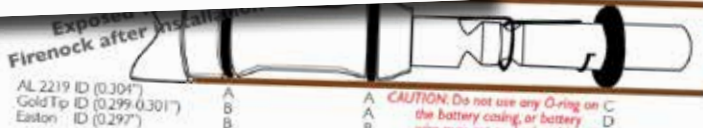
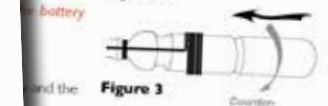
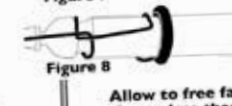
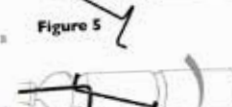
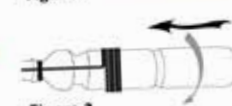
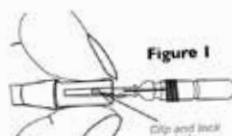
Firenock Activation

Shooting from any bow which can assert to not less than 65G to the arrow when launched or drop nock (see Firenock deactivation).

Extreme Shock Battery End Cap Installation

- Remove the nock from the arrow.
 - Remove broadhead/field tip.
- Note:** Back pressure can cause glue to not set if broadhead or field point is not removed.
- Screw the aluminum battery end cap onto the nylon screw (Fig 10)
 - Roll the O-ring onto the groove from the tip of the end cap, if there are 2 grooves the 2nd groove is where the O-ring need to be (Fig 11)
- Note:** If you decide to use gel type super glue, please practice inserting the end cap first before applying glue inside the arrow shaft to ensure that you can insert the end cap within a few seconds.
- Clean the inside of the shaft with acetone via a Q-tip, then let dry.
 - Apply a bead of glue to the inside surface of the shaft (Recommended glue types: any super glue gel, Goat Bull™ and 5 minutes epoxy, or slow set epoxy if you need more time to work).
 - While the glue is still wet, insert the battery end cap, with pointed side first into the arrow shaft. The O-ring ensures that most of the glue is pushed to the back behind the battery end cap.
 - Push the nylon screw until the screw head is flush with the flush arrow shaft (Fig 12)
 - Place the arrow with nock side down till glue dried to ensure glue set around the O-ring.
 - Try to tighten the nylon screw a little, if it feels finger tight, the battery end cap is installed properly.
 - Wait till glue totally dries.
- Note:** It is recommended to let the glue dry over night, as vapor of super glue can form film on battery and/or battery positive wire holder and render both non-conductive.
- If you do not want to wait, tape over the battery and connectors to prevent glue vapor depositing over the battery and the connector and render the battery and Firenock useless.
- Unscrew the nylon screw from the shaft. (Fig 13) if the end cap is still loose, repeat step (f) thru (k) as above.
 - Follow the rest of the installation manual that comes with your Firenock/Lightning Nock: "S" style to complete the installation of your lighted nock.

CAUTION: Do not install any O-ring on the battery casing, the battery-pin O-ring is always needed.



CAUTION: Do not use any O-ring on the battery casing, or battery wire may get pushed and break if you had installed ESBEK.

Firenock 20131019D

FIRENOCK® AEROVANE® JIG

Firenock's High-Tech Aerovane Fletching Jig

The incredibly precise and accurate Aerovane Fletching Jig is a remarkable unit. It is CNC machined from high grade aluminum, brass and stainless steel and built to the absolute closest tolerances. The Aerovane Jig is designed to work with most clamps available today and utilizes a standard magnetic holding system for helical and straight fletch.

The accessories are precision made which including a 303 stainless steel clamp, laser alignment module, 4-axis adjustable neck and interchangeable chuck and hook system for fletching all sizes of shafts. There are also optional kits to provide ever more capability for the Aerovane Jig. The Aerovane Jig's index is made of level 2 type 3 hard coated CNC aluminum mated with an ABEC#5 ceramic ball bearing for perfect alignment and smoothness. The matched support hook also features 2 ball bearings which allow the arrow to be fully supported for smooth operation. To further secure the arrow shaft in place, the Aerovane Jig utilizes triple O-rings plus a special wedge design to ensure perfect arrow holding while fletching. The dual magnet design allows precision angle adjustment. Each magnet is supported by independent, 1mm per turn, stainless machine cup screws that can be tightened by hand for fine adjustment and then firmly locked down using an Allen key.

More Index choices

Aerovane Jig generally comes with 4 index as its standard configuration, this allows one to fletch 2 and 3 vanes perfectly. The current 4 index provides 0°, 120°, 180°, and 240°. As many customers have asked for an index to fletch other configurations such as 3 vanes and TAC arrows, we now offer an optional 7 index system which has 0°, 60°, 90°, 120°, 180°, 240°, and 270° which allows one to do many other configurations with ease. The 4 index will be phased out as production ran out and the 3 index will be the new standard configuration at 0°, 120°, and 240°.

Compatibility with most available clamps

The Aerovane Jig is designed to be compatible with most magnetic base jig clamps on the market. Although Firenock does make an excellent 303 stainless precision Aerovane Clamp, we do not make any helical clamp specific to the Aerovane Jig. Thus your investment in clamp(s) will not be wasted as they are fully compatible with the Aerovane Jig.

The Aerovane Clamp

There are many magnetic based clamps available for sale; however almost none of them could satisfy today's demanding hunters. Firenock has developed Aerovane clamp. It is made of high precision die cast 303 stainless steel, precision machined for a straightness up to 0.001" and has a 1/16" straight bar built in as part of the clamp. For the pivot point, we utilized zirconia ceramic ball bearings for extra smooth, durable and virtually rust free operation. The

thick spring system with self-align- ment capabilities provides a good hold on any vanes. The clamp is also made shorter to better fit today's popular shorter vanes, but can still fletch vanes as long as 3.75". Perfectly easily be done with the Aerovane Clamp.

Complete Package

Firenock offers the Aerovane Jig in many packages. For The ultimate set, it includes the Aerovane Jig, Aerovane Clamp, 7+1 sets of chuck and hook combinations, 4-axis fully adjustable neck, base, Laser, water level, long vane adapter. While the enthusiast set only have the body, neck, clamp and one set of hook and chuck which has been our number seller. For those who just are on a budget and/or want the bare essential to start, one can purchase the bare jig body, one set of chuck & hook set and use their own vane clamp and be under \$150.00 investment.

Interchangeable Chucks and Hooks

Interchangeable chucks and hooks assist in obtaining perfect arrow alignment on the jig. The interchangeable chuck sets are tapered to provide zero play. The ball bearing arrow support hooks are color-coded to match with color-coded Firenock Extreme shock end caps for ease of size identification. Firenock now offers (Pictures above shown from right to left): an adjustable chuck, an adjustable hook, fixed chuck for 0.166", 0.204", 0.230", 0.244", 0.285", and 0.300" sizes to cover every shafts available. The fixed size chucks are made of 303 stainless with 3 sets of O-rings for perfect alignment and solid grabbing of arrows. Fixed size chuck is great for production environment as it is made for speed and ease of use. For those who want maximum flexibility and ease of re-fletching; the adjustable chuck and hook system is what one wants to use to cover 0.115" to 0.667" shaft sizes.



All the hook sets are also available with the slide ability to do offset up to 1.5 degree to the right. This allows one to set offset without the need to adjust the magnets and be quite precise (+/-0.25 degree due to eyeballing). The laser engraved slide hook has 4 markings and should bottom out at 1.5 degree at maximum setting. It is a fantastic addition for those who shoot slower speed arrow and/or use other vanes besides Aerovane. An improved Pin chuck is also added mid year 2013 so the pin nock users can use the Aerovane Jig even they have glue in pin bushings.

Precision Water Level

To ensure perfect alignment of the adjustable hook to the chuck, an optional precision water level is added to Aerovane Jig line. It is needed with arrow where a uni-bushing is used or when is used with an adjustable chuck. The level can be hooked on the arrow from the side and is extremely compact. It is made of 6061-T6 AL and supported via 4 ball bearings to ensure no sticking to the shaft. This together with the jig built in bull-eye level makes impossible to be possible as perfect alignment of an arrow on a jig is now possible.

2-in-1 Carrying Case

We will be offering a new Aerovane Jig 2-in-



compartments water-cut camo carrying case. This full protection carrying case allows an archer to travel to the remotest places. For those who want to travel light, the jig case can easily be separated into 2 pieces and be carried by the upper half only. This design allows the archer to pick and choose how much gear to take with them to any destination. There are even room for glue, q-tips, extra vane and small bottle of acetone.

Laser Alignment Module

The Aerovane Laser Alignment Module was developed to make aligning and re-fletching a single vane simple and fool-proof on the Aerovane jig. The high precision lens optics system produces a fine, straight laser line of 0.25 - 0.55mm. To achieve perfect alignment, best precision and ease of use, the Aerovane laser module is designed to be mounted about 75 mm right above the Aerovane Jig's chuck via the 2 holes with 2 screws, with which the laser line will span from the base of the clamp alignment line to the valley of the hook set at the top of the jig. With this optional laser module, perfect single vane re-fletching (1/4 to 1/16 of a degree accurate) can be done via any vanes that is already installed on the arrow by eyes.

With this laser line alignment tool, one can precisely achieve perfect alignment from a perfect center line. When the vane is in perfect alignment, one can see a crisp red laser line imposing on the fletched vane as the laser line passing through the gap between clamp and shining on the arrow on the jig. After years of struggling by finding the right suppliers while listening to our customers, we have come up with the best and with no compromise on the Laser Alignment system. This ultra thin laser will allow you to re-alignment an arrow to within 1/4 of a degree by copying the alignment of the next vane on the arrow to the jig's index. As most customers may not shot Aerovane, our 2 x 4 way adjustable neck is required to adjust of angle and position of vane. By utilizing 2 X 4 way adjustable neck, plus a single plane laser rotational adjustment, it is believed that our fletching jig system can handle any possible vane position and copy it to the index.

Long Adapter

Aerovane Jig Adapter is made from CNC Aluminum then silver plated. This adapter comes with a stainless hook screw washer as a kit. This length to what is able to standard Aerovane Jig. This adapter makes Aerovane Jig able to handle longer vane and feather up to 5.25". This adapter is compatible with nearly all versions of Aerovane Jig. This also function with every version of the hook set which perfect a c -

Vane

Jig

Adapter

is made

from CNC

Aluminum

then silver

plated.

This adapter

comes with

a stainless

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Feather

Long Vane/Feather

Adapter is made

from CNC Alu-

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AEROVANE® II *New spin in the Arrow Flight Revolution*

2014 is going to mark the 6th year for the Aerovane system. Over the last few years we've added a number of new products to make Aerovane a complete and perfect package. The highly precise Aerovane jig addresses the imperfections of most competitor's jigs. Custom formulated glue has been developed so that you can have a more precise, physically and chemically mated glue for the lowest weight and highest bonding ability to fletch Aerovanes as well as any other vanes onto whatever arrow or bolt you use in a perfect way. Aerovane II has been improved with a new configuration with both sides of the vane having identical texturing to make the vane material more evenly distributed on both ends of the vane and to make the vane straighter even with an airfoil built into it.

Aerovanes are not vanes but wings:

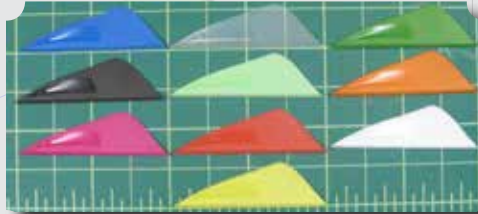
- Works best with worn out Whisker Biscuits arrow rest as it has the thick frontal end to open the bristles and allows the vane to pass with minimal drag.
- Has very little bending, flapping or fluttering due to structural integrity and material hardness (true ultra slim pyramid design).
- Uses airfoil technology to induce greater rotation to the high drag system that traditional "Helical" fletch utilizes (under Firenock testing conditions).
- Has a true owl wing frontal design (Modeled after the only bird that flies with no sound).
- Formulated to easily bond with super glue. e.g. Firenock AG0600, Goat-tough, Loctite Ultra Gel Control.
- Utilizes true airfoil design (continuous change of thickness and curved surface).
- Is made of a very rigid material for structural rigidity and for maximum steering.
- Does not generate much noise when shot.
- Has higher down range speed than most common vanes.
- Has minimum drag (Must be fletched straight).
- Has concave feature to achieve minimum surface to air drag.
- Works with bow with reasonably straight nock travel.
- Has minimum delta wing surface vortex, thus less drag.
- Has a wind channel for structural flexibility.
- Will function well most rests currently on the market.
- Has minimum 1st or 2nd stage turbulence.

Aerovane II Specific Characteristic

- Works the best with arrow speed no less than 290 FPS.
- Has 3 different surface texturing zones for mini turbulence and for wide range of air speed.
- For best result, fletch with Aerovane jig or Bitzenburger jig straight clamp with Aerovane tool installed.

Physical Aspect of Aerovane II

- Weighs 0.42 gram / 6.48 grains.
- Length 50mm/1.967"
- Height 14mm/0.55"
- Comes in 10 colors: White, Red, Green, Blue, Pink, Orange, Clear, Black, Yellow, and Lime



Aerovane can fly with broad-head?

Aerovanes are great for both target and broad-head flight. The inherited high spin design of Aerovane would easily stabilize a broad-head tipped arrow faster than traditional vanes & feathers. With that said, one must however take into consideration the ultra spin rate of the Aerovane, and look at the cross section of the broad-head. The more it pushes air, the worst it will fly. Some of the expandable broad heads may not work well with the Aerovane II, because the vane spins the arrow so much it can deploy the blades in flight. With the Aerovanes fixed blade broad heads can also be used, even as big as 1 3/8 inch cut fixed blades. All truly secure expandable blade broad heads are good with Aerovanes

The broad heads giving the great results are:

- Hartcraft with Trophy I blade
- NAP: Nightmare, Thunderhead Edge, Thunderhead Razor, Spitfire Edge, Braxe, and Spitfire Maxx.
- Rage Extreme
- Slick trick (100)
- Smoke: Ramcat
- Trophy Ridge: Meat Seeker 3 blade

Aerovane Fletching procedure

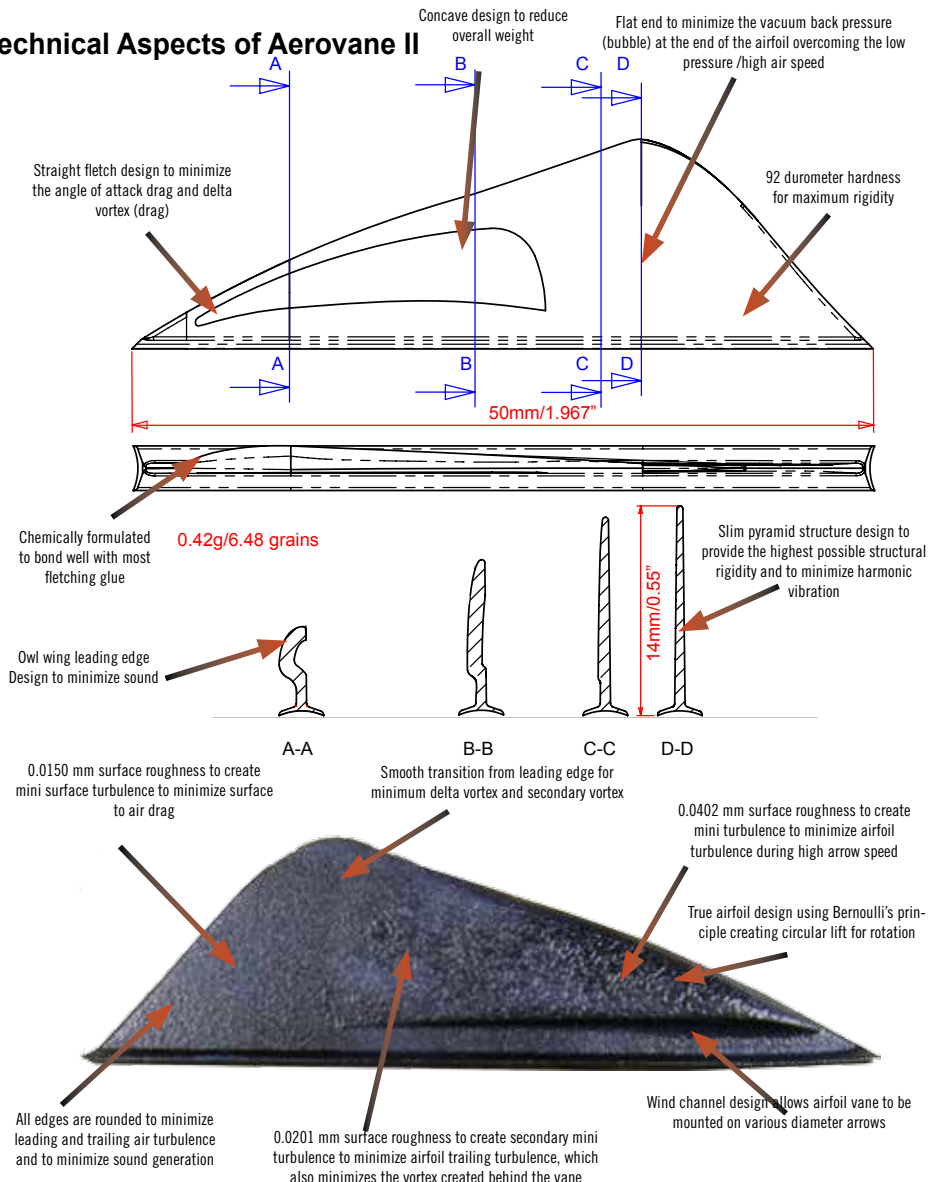
To Fletch Aerovane, the following material are needed;

- a) Aerovane(s)
- b) Arrow shaft(s)
- c) a precision index vane jig
- d) a bottle of 500 centipoises (cP) or higher viscosity super glue (e.g. Firenock Aerovane glue AG0600)
- e) 2 bottles of 100% pure Acetone (generally available at Wall-Mart cosmetic section); one large, one small.
- f) Q-tip that does not have plastic or synthetic material in it
- g) Tiny glass cup for the Q-tip to dip into (optional)
- h) a roll of paper towel

Procedure

- 1) Thoroughly clean the surface of the shaft(s) by dipping the shaft(s) into the large bottle of 100% pure acetone.
- 2) Swirl the shaft inside the large acetone bottle for a few time to loosen all particles and dissolve all possible contaminate on the shaft(s).
- 3) Wipe dry with clean paper towel.
- 4) Let air dry then surface of the shaft(s) is ready for fletching.
- 5) Insert the Aerovane in a vane clamp.
- 6) Dip one end of the Q-Tip into the small acetone and wipe down the base of the vane from one end to the other.
- 7) Take the dry end of the Q-Tip and wipe dry the vane with the same direction as above.
- 8) Apply a small bead of glue down the length of the vane base.
- 9) Place the back end of the clamp against the inner wall of the jig just above the arrow.
- 10) Slowly lower the clamp until the magnets grab hold of the clamp.
- 11) Firmly push the clamp all the way to the arrow, and hold it down for no less than 5 seconds, and allow the allotted time depending on the type of glue you are using. (Firenock Aerovane Glue AG0600 setting time is ~9 seconds under Aerovane Jig pressure without use of any primer)
- 12) Open the clamp to free the vane from the clamp and rotate the vane away from the clamp while the clamp is still on the magnet.
- 13) With the vane away, slide the clamp away from the jig and away from the magnet at no less than 45 degree from the magnet.
- 14) Repeat step 5 - 15 for the next vane.

Technical Aspects of Aerovane II



To learn more about Aerovane
Installation please visit
<http://www.Firenock.com>

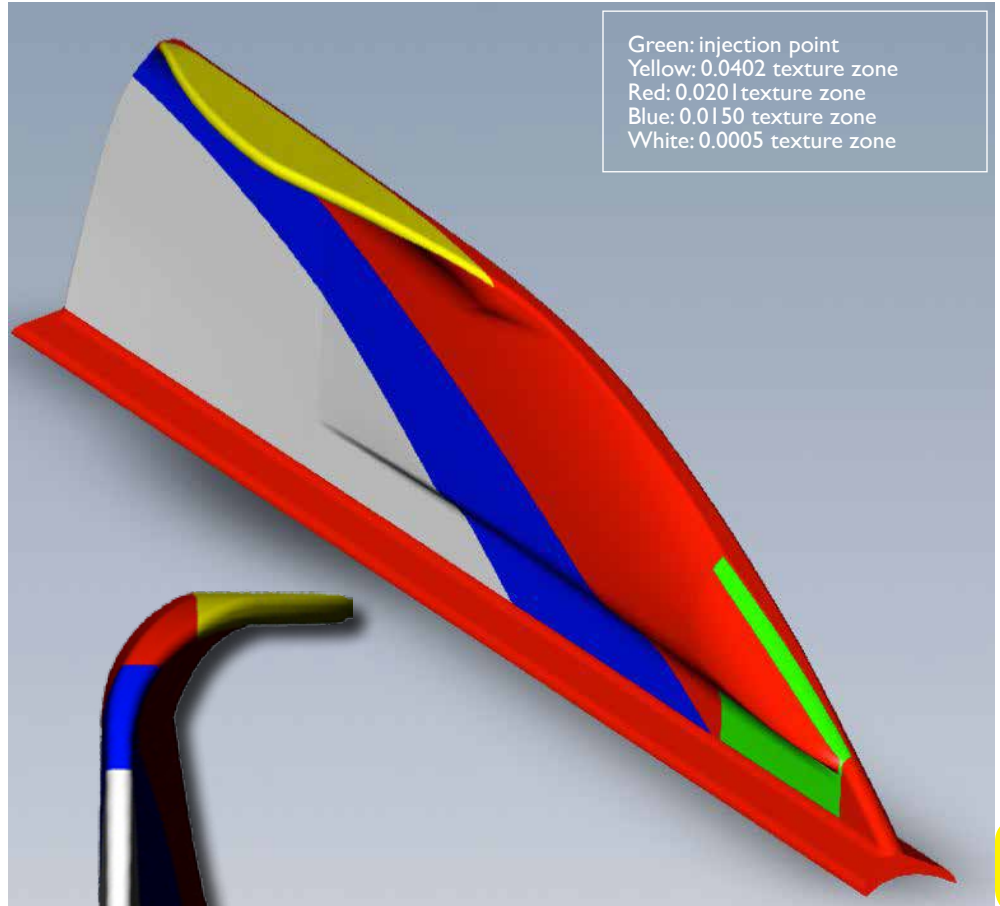
Flight Revolution Again **AEROVANE® III**

During the development of Aerovane in 2008, a lot about aerodynamics and arrow-dynamics were not fully understood. With extensive wind tunnel testing¹, we could now understand some of the real effects of wind on vanes. An interesting finding that we have found out is that concepts like, polished surfaces would decrease friction drag, were simply not true. What we have found out instead is specific rough surface can decrease friction drag while the vane is actually flying in the air.

In addition to prolonged in-house wind tunnel testing and experience from making Aerovane II, we have the pleasure to consult low-speed airfoil experts like Professor Michael Selig of the University of Illinois at Urbana Champaign (UIUC) in order to make Aerovane III even better. Aerovane III is designed to have multiple texture zones. This design also takes Aerodynamic Elasticity Memory (AEM) factor to an point which making Aerovane III to generate sideways lift and consequently increasing arrow spin. Furthermore we have increased the thickness of the Aerovane II in order to provide the most appropriate AEM factor (i.e. as well as to make fletching the Aerovane III much easier.

The Specifications, differences and similarities between the Aerovane II and Aerovane III are:

- Has 10mm in height, 29% shorter than Aerovane II.
- Weighs about 4.5 grains or just over 30% lighter than Aerovane II.
- Integrates air flow base texture zoning compare to vertical texture zone.
- Includes four different texture zone
- Incorporates a winglet to improve the aerodynamics and reduce induced drag.
- Has a larger total airfoil surface area to compensate for shorter in height so that it can have the same total lift and corresponding spin torque as Aerovane II.
- Due to AEM when the arrow with Aerovane is turning, the frontal section of Aerovane will bend towards the rotation while the tail section will bend away from the rotation which results in the angle of attack of the wing being at the most efficient angle base on speed. This is engineered based on the IZOD factor of the plastic to make AEM at its best.
- Integrates the same proven vertical structure and same slim pyramid design to reduce wobble and flutter when in flight, and uses the same 92 durometer hardness plastic for the construction.
- Uses the same aspect ratio of the delta wing frontal area to reduce sound in flight.
- Can be fletch with all version of Aerovane jig and Aerovane clamp due to the wide internal opening width of Aerovane clamp.
- Has close to 30% reduction in crosswind signature which translates into much better ability to cheat crosswind. Base on what was known with Aerovane II, one should expect to be able to hit a target at close to 35 mph crosswind at 35 yards with archery projectile at 320fps as compared with 25 mph crosswind at 35 yards with Aerovane II with the same projectile.



- Works as slow as 280 fps when fletch straight.
- With 1.5 degree off set can work on arrow as slow as 160- fps for 3D/target.
- Aerovane III comes in 10 colors like Aerovane II.
- Best vane for 3D and target

The broad heads giving the great results are:

- Hartcraft with Trophy I blade
- Slick trick (100)
- Smoke: Ramcat with Aerovane III blade (when available)

¹Firenock and its associates has built its own wind tunnel testing equipment for Aerovane testing.



PAPS (Professional Arrow Preparation System)

Firenock has been building ultra high performance crossbow arrow since 2010 and in 2010, we have first introduced the AeroBolt I, one of our high performance crossbow arrows. During the development of Aerobolt, We learned that arrow shafts are needed to be spine measured, spine indexed, spine matched, chamfer (a procedure to unleash the full potential of AeroInsert-A), squared, cut, marked, and many other arrow preparation procedures are required in order to shoot good archery projectile.

Without these fine basic arrow preparation procedures, shafts will not be good enough for further preparation such as installing insert, nock, or vane. In other words, without the above fine arrow preparation procedures, it is impossible to build ultra high precision, high performance archery projectile. In order to make these fine procedure easy to do and to make them perfect, We, Firenock took the first simple step and introduced the APS in 2011. APS is a compact, high precision 3 in 1 tool and it is high precision and user friendly. But Firenock has not stopped at this stage as the requirement and specification of AeroBolt II has significant increased, thus there is a need of a new tool to perform higher specification requirement and to make acquiring data of each shafts in a fast, accurate and effective way. At first, we like many others, we had custom built a few precision spine locator machine using off-the-shelf parts, however, its result was not what we would be called ideal. Thus PAPS was born for our own production need and we believe PAPS will satisfy the most discrete archery projectile builder too. Like all products which Firenock has designed and built, there are no compromise and it must be obsessed to every detail.

The PAPS is built in the same approach like Aerovane Jig. PAPS is again a high precision piece of tool and will come with a range of accessories to fulfill archery's need. For 2014, the basic model will be launched, it will consist of 3 components (supports, tower, track).

1) The Supports (the custom ball bearings)

On the present market, most spine locator tool, used off-the-shelf ball bearing to support and rotate the shaft. Using off-the-shelf ball bearing seems to be a good idea, but Firenock thinks this off-the-shelf ball bearing is not the best solution and we think we have overlooked this small important component. Firenock think this small component, ball bearing, is more important and critical than what most usually can think of. Thus Firenock has designed and built a special custom ball bearings to make ball bearings to contact and to interact with the shaft perfectly, smoothly and freely. For off-the-shelf ball bearing, it has a straight edge fixed outer diameter and a fixed inner diameter (the hole). This typical design of ball bearing has two fundamental problems:



- As the contact surface of ball bearing with the shaft is flat, when a shaft bends, the shaft actually is resting on the edge of the ball bearing and thus the shaft as well as the center of ball bearings are under uneven pressure. This issue is even worst when the shaft is pressed harder and the ball bearings can even stop rotating and the rotation of the shaft can become very hard.
- The typical hole in the middle of the ball bearing means it is required to be fastened via a screw in order to snug fit the ball bearing to the mount / jig. As the screw are typically not specific designed and built for the system to the system, the tolerance of the system will go higher due to the tolerance issue of different makers. These 2 issues make us to

build and develop custom ball bearings even at high cost. The PAPS custom ball bearing has a unique angle variable crown outer edge and pre-built ready to mount stud center system. With the angle variable crown outer edge, there is less pinch pressure on the shaft. In other words, the shaft can ride on the custom ball bearing smoothly and freely / all the time perpendicular to the center of the custom ball bearings even the arrow shaft is strongly pressed and bent.

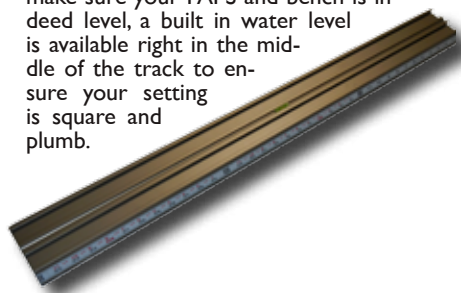
PAPS can has 6 custom ball bearings installed in the system which this specification has never been seen in many other spine finding tool which they are mostly utilizing 4 hooks only. The 6 custom ball bearings system can provide 3 linear points (2 ball bearings per linear point) for the shaft to bend against. The 3 linear points system can bring out the highest precision of PAPS while can allow minimum contact points with the shaft. The support system of the PAPS is very similar to what is developed for APS. The only difference is that the bearings on the PAPS is our custom angle variable crown stud bearing (see above for more). PAPS will come standard with 2 supports (4 custom ball bearings system)

2) The Tower (the spine locator)

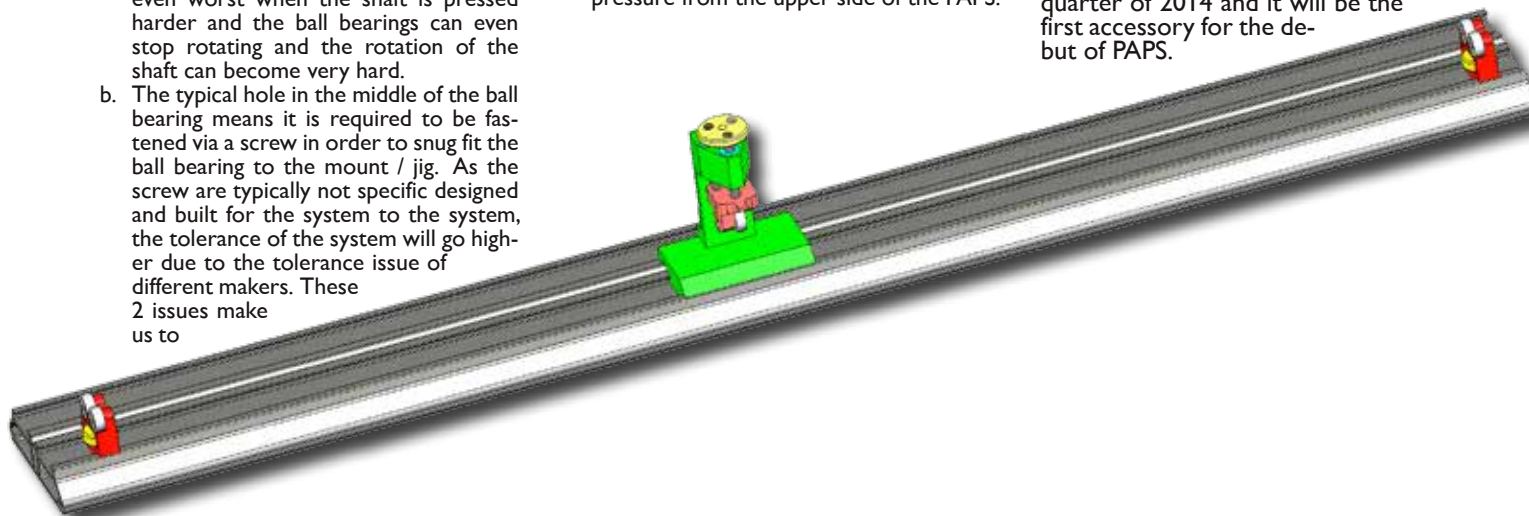
The big piece in the middle of APS is the tower, it is the spine locator. The spine locator consists of 3 linear bearings in order to provide a perfect perpendicular contact points between custom ball bearings and shaft. With this design, PAPS can provide absolute pressure to the exact center of the shaft to be tested. This also minimize the horizontal pressure that may form when pressure is applied onto the shaft while doing spine reading. Furthermore, the pressure tip of the tower consists 2 custom ball bearings in order to ensure perfect even perpendicular pressure from the upper side of the PAPS.

3) The Track

PAPS track is longer than APS's and it is 36 inch long. The 36 inch long track consists of a double track and with a triple box design. The track is extremely durable as it is made of 7000 series aluminum, finished with type 2 level 3 hard anodized finish and is made in USA. To ensure stability even long track, the bottom of the track has six 3M ultra stable stoppers installed, so one will not worry that PAPS is not stable to work. Along the track, PAPS has an easy to read measure tape (in inch) is for ease of measurement. To make sure your PAPS and bench is indeed level, a built in water level is available right in the middle of the track to ensure your setting is square and plumb.



Starting mid December 2013, there will be video(s) to show features, details and how to use PAPS on youtube.com. In coming years, there will be optional accessories available for selection for PAPS. PAPS will be a serious system for professional and serious arrow builders and will be a professional arrow building and preparation system. As per our plan, we shall make accessories like vibration module for spine locating, multiple dial meter, arrow cutting saw with angle grinding ability, vacuum attachment for the cutting and grinding wheel, a micrometer anchor for precision arrow shaving and laser indicator module for spine indexing. Regarding vibration generator module, we shall have it ready in the first quarter of 2014 and it will be the first accessory for the debut of PAPS.



PAPS(Vibration Generator) & APS

Vibration Generator Module for PAPS

The vibration module is the first companion accessory for PAPS. With this accessory, your PAPS should be able to find the dynamic spine of the shaft automatically with ease. In the past, fishing rod makers or experienced archers use their hands to rotate the shaft on a jig and then feel the highest and lowest spine of the shaft. Now with vibration module, there is no more subjective feeling to locate the highest and lowest spine of the shaft. This accessory will significantly improve the precision in locating the dynamic spine of the arrow.

The working principle of vibrator module is simple, the vibration module will generate a wave of energy into the PAPS. With this wave of energy, the shaft will vibrate and rotate itself to a position in which the lowest spine of the shaft will be on the top and the highest spine will be at the bottom.



The vibration module is a high tech and high precision piece of equipment. Its case is precision CNC machined brass alloy material. Inside the metal case, it has a digital component to control operation time and vibrating frequency of micro motor. The timer can even be specific tuned according to the time period and energy requirement to locate the spine of the shaft. To operate the vibration module, one just needs to press the red button located on the side the case. With one push of the button, a short burst of wave energy will be added to the system according to the preset time and power. After the vibration, the arrow will rotate itself with the highest at the bottom and lowest spine on the top. With vibration module, one can be confident that each shaft is spined correctly, accurately, without subjective judgment, and it only takes seconds, not minutes on each shafts.

The vibration module can also be used as the weight for spine deflection reading. Based on rough calculation, the module plus the floating part of the tower of the spine locator, it should equal to 1.92 lbs. When the dial indicator module becomes available, one can use this module as part of the total weight needed for exact spine reading based on AMO standard.

Arrow Preparation System

APS is made to address all of the imperfections and shortcomings of today's arrow preparation tools on the market. In the past, to prepare an arrow for assembly, you usually use an arrow squaring tool, then another tool to square the other end after the arrow has been fletched, then a spinner to make sure it is concentric by mass. With APS, you can assemble arrows easily and accurately with a single tool. APS is a high precision, all-in-one tool to do all of the jobs and is designed and engineered with hunters in mind.

APS is a unique track based system with 2 supports (standard) there is also an optional 4 supports for the arrow and each support employs 2 high precision dual ball bearings to ensure smooth and accurate arrow assembly. To ensure precision, the ball bearing support is made with custom built brass shoulder screws so the ball bearings will be perfectly aligned on the support with no lateral movement. If the ball bearings did wear out, you just need to replace them and the APS will again provide perfect alignment.

The grinding surface is achieved by using commonly available adhesive back sandpaper (like 3M sandblaster sandpaper). You simply cut a piece to the proper size and stick it to the sanding block. We recommend 150 grit double sided sand paper for carbon and aluminum and 220 grit on inserts. When using aluminum shafting, we recommend changing the sandpaper often because of the filing characteristics of aluminum when grinding.

For those who prefer a table/bench mounting system, APS has a built-in center line indicator so it is extremely easy to drill multiple center holes perfectly to mount it on a working bench or next to a stationary shop vac for a professional arrow building environment.

Since 2013 we have made extra supporting blocks as options for those who prefer more supports for pro shop level work. For each additional supporting block it is \$25.00 and can be bought on-line at <http://shop.firenock.com> or at one of our authorized dealers.

Pictures on the right shows

- 1) APS at its basic form with sand paper on block
- 2) APS use on back of arrow with vane fletched
- 3) APS use on ends of arrow with or without insert
- 4) APS use as an arrow spinner or rough spin finder.
- 5) APS with 4 supporting blocks for arrow with lighter spine for archers who prefer a more support feel and working environment.

(Licensed under U. S. Patent No.7,013,772)



FIRENOCK® AEROVANE® GLUE AG0600 & AGOGEL

AG0600

There are thousands of glues on the market and many are specially made for fletching. Firenock, however, could not find a perfect glue to match with the fletching of Aerovanes. In order to address this, Firenock formulated a glue and put it in a just right, squeezable bottle with a luer-lock system to achieve micro gluing successfully. This new glue will set Aerovanes on an arrow in just 9 seconds and allow the arrow to be ready to shoot in 12 seconds - if the Aerovane Fletching System (Aerovane Jig and Aerovane Clamp) is used. In short, the high performance of the glue is not only about the glue itself, but also the tools which are used to fletch the Aerovanes. Nevertheless, this

magical, it is purely chemical as it's a CA glue with no preservatives. Due to this reason, Firenock Aerovane has significantly stronger bonding power than any other glue available on the present market according to our test. In return of stronger bonding power, Firenock Aerovane Glue has a defined shelf life of 1 year which is unlike other glues that may have a 2 to 3 years shelf life. To ensure you get the Firenock glue fresh and usable, an expiration date is clearly stated on the packaging so you know how good and fresh your glue is.

Not only will the high performance and quality of the AG0600 glue thrill you, but AG0600 is 100% dissolvable in acetone which makes cleanup of your arrows after fletching or re-fletching your arrow much easier. Just dip the arrow into acetone for a while after removing the vanes and then wipe the arrow with a tissue. Your shaft is now ready to be re-fletched without damage to the arrow. We recommend you get the 100% acetone in places like Wal-Mart's cosmetic section as the acetone there will generally be fresh. Remember though, the bottle of acetone used to dip an arrow in to dissolve the glue will be contaminated, so we recommend that you have 2 bottles of acetone. One for dip cleaning and one for fine cleaning. It will only take 6 ppb (parts per billion) of acetone to make AG0600 glue lose over 50% of its glue holding ability, so don't try to clean the gluing tip with acetone and reuse the tip. This is also why AG0600 only comes in a small bottle, if acetone is accidentally introduced; only a small bottle is contaminated and rendered useless.

AGOGEL

In addition to AG0600 we have now developed a new super glue gel to address the issue of gluing end caps for Firenocks and for fletching helical vanes. Similar to AG0600, AGOGEL is a single component CA, but in GEL form with low viscosity. AGOGEL technology bonds most surfaces with gaps up to 0.2 mm in seconds. AGOGEL contains no solvent and has low viscosity, which makes it very thick and easy to apply in tricky places that require the glue not to flow. Additionally, this glue requires no mixing or heating and can be used on a wide variety of material.

Like AG0600, AGOGEL is a CA with no preservatives, so it has a shelf life of 1 year and has an expiry date on the packaging as well. Also like AG0600, it is 100% acetone dissolvable so cleanup is quick and easy.

To make AGOGEL as effective and high performing as AG0600, a special syringe is used. The syringe is fitted with an industrial grade luer-lock system which allows the GEL to be almost air tight with the cap on. It also allows the GEL to be precisely applied while fitted with the tip. Each package comes with 3 - 24 gage plastic luer-lock application tips. The luer-lock tip is meant for a single time use, so please use a new tip each

time. For extra tips you can purchase a package of 12 of them for \$9.95 on-line at <http://shop.firenock.com> or at one of our authorized dealers. Note: It will only take 6 ppb (parts per billion) of acetone to make AGOGEL glue lose over 50% of its glue holding ability, so don't try to clean the gluing tip with acetone and reuse the tip. This is also why AGOGEL only comes in a small bottle, if acetone is accidentally introduced; only a small bottle is contaminated and rendered to be useless.

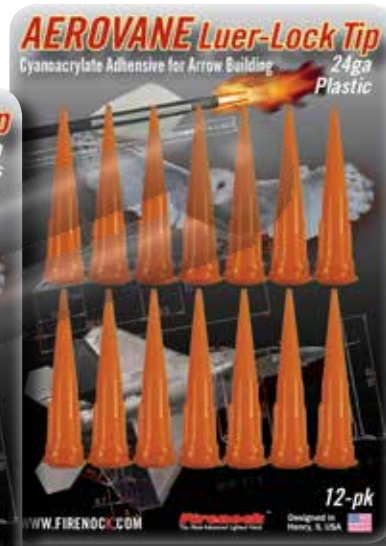


new specially formulated glue will still work great on other vanes and with other jigs. This product from Firenock is called AG0600.

AG0600 is a type of cyanoacrylate (CA) glue which will set in 9 seconds and be ready to shoot in 12 seconds with the help of the high powered magnet (constant pressure) of the Aerovane fletching system. The glue comes in a 20 gram (1oz) squeezable bottle with a luer-lock system which allows the precise amount and application of glue to be used. The luer-lock system also eliminates contamination of the glue from repeated use of the glue, as the tips are replaceable for AG0600 and also maintains the condition of the glue as a cap can be put on to make the bottle almost air tight while the glue is not being used.

While 20 grams seems like a small amount, in fact, due to the micro gluing ability, you should be able to fletch about 50 dozen arrows per bottle when you use it as part of the Aerovane fletching system. This is an increase of about 60% over our old glue bottles. The luer-lock system used is a high-end industrial system which allows you to utilize an ultra-precise glue application system. The luer-lock system comes standard since 2013 on the AG0600 bottles of glue. A 12 piece replaceable 28 gage stainless steel tip pack is also available for \$9.95 on our website <http://shop.firenock.com> or at any of our authorized dealers. Note: It will only take 6 ppb (parts per billion) of acetone to make AG0600 glue lose over 50% of its glue holding ability, so don't try to clean the gluing tip with acetone and reuse the tip. This is also why AG0600 only comes in a small bottle, if acetone is accidentally introduced; only a small bottle is contaminated and rendered useless.

The secret of high performance of AG0600 glue isn't



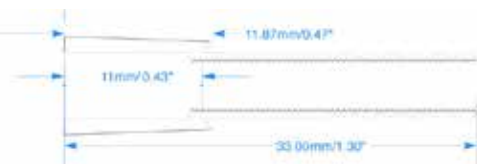
AeroInsert™ -A, AeroOutsert™ AERO Systems

AEROINSERT™-A (Angle [A])

AeroInsert-A takes arrow performance to an all new level, by auto strengthening the forward end of the arrow shaft and making it concentric with a straight forward arrow installation process (U.S. Pat. Pend). AeroInsert-A strengthens the forward end of an arrow by forcing the front end of the arrow shaft at an angle. The reverse angle collar on the back of the insert will force it to mate with the shaft end with every shot. The design will force this pressure from impact to be confined, and eliminate the mushrooming effect of standard style inserts and arrow shafts. By simply squaring the shaft and making sure the shaft does not go over the outside of the insert, the arrow will be concentric, even if it is not when first installed. The continuous shooting/pounding of the arrow, with the reverse taper back side of the insert is what causing the insert to self center.



The special feature of the AeroInsert is that it offers automatic concentric technology that has never been seen in the archery industry. AeroInsert-A is offered in 2 sizes, both size inserts are CNC machine made from 7075-T5 aluminum. The AeroInsert-AA is specially made to address the needs of smaller diameter shafts from 0.202"-0.204" internal diameter. For Example: Gold Tip Kinetics smaller or equal to 300 spine; any Axis arrow, Any MFX arrow, or arrows that can fit the "A" nock from Firenock, X nock from Easton, or Gold Tip Accutough nock. They are hard anodized in black with Firenock laser markings.



Most inserts for slim arrow shafts are good at their best, where the neck of the point and the threads might be off concentrically from the arrow insert, and the tip itself. All archers want to glue the insert into the arrow and hope that it aligns well enough to make the arrow fly with acceptable accuracy. More recently, so called "hidden" insert and in/outsert system O-ring were used to slide onto the neck of some arrow tips. Though these "hidden" inserts slightly helped alignment, they offer no long term solution as the arrow inserts could still be misaligned. There are always tolerance issues and it's difficult to glue perfectly while concentricity the insert.



While AeroInsert-AS is specially made to fit arrows of standard size that have ID (inside diameter) of 0.244" to 0.246" (aka "S" nock size) and due to its size it is neither anodized nor laser marked. AeroInsert-AA is 18.0 grains and AeroInsert-AS is 10.5 grains. For those who prefer a heavier FOC, AeroInsert-AA is also available in stainless steel at 51 grains.

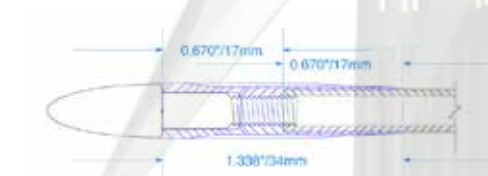
In the case of high powered bows and most slim style inserts, when an arrow shaft is cut perpendicular to its length, a weakness is created at the end that impacts the target. When an arrow insert is positioned at the end of

an arrow shaft, upon impact, extreme force is applied to the end of the shaft at its weakest point. Since the end of the shaft is flat, and the collar on the insert is flat, this force is allowed to go out radically from the arrow, causing the front end of the arrow shaft to mushroom as the arrow insert is forced backwards. With an in/outsert system, although they address some of the issues, the fact is that it makes removing an arrow from a target very difficult.

AeroOutsert™ (for slim arrows)



AeroOutserts™ are made of high quality forged 7075-T5 aluminum to address the needs for ultra-thin arrow requirements. AeroOutserts take arrow performance to an all new level as AeroOutserts protect and strengthen the new generation of ultra-arrow shafts without adding much weight due to our Blood Channels™ (U. S. Pat. Pen.). AeroOutserts also allow you to use conventional arrow points instead of proprietary ultra-thin components.



AeroOutserts outperform insert/half-inserts, common 0.166" size arrow insert/half-inserts are only half as good at best compared with AeroOutserts as the neck of the point and the threads might be off concentrically from the insert/half-insert and of the tip itself. This is because all ID based components may not be concentric with the arrow shaft as the wall thickness of the arrow shaft may not be perfectly equal because of a center-less grind which is usually used for this class of arrow. Thus, arrow shafts installed with insert/half-inserts can't achieve perfect concentricity while those installed with AeroOutserts can, as the AeroOutsert uses the outer diameter of the arrow shaft for installation.

AeroOutserts also out compete traditional outserts which suffer from a perimeter wedging effect while the AeroOutserts Blood Channel is designed to minimize this effect. The Blood Channel is a plurality of axial slots which are machined over the outer perimeter of the AeroOutsert and these axial slots gradually taper inward towards the center line of the AeroOutsert. The feature of Blood Channel relief, the pressure built up over the outer perimeter of the arrow, thus reducing the wedging effect. This feature allows you to pull out the arrow from a target easily while reducing weight with minimum effect on strength.

AeroOutsert Installation Tips

Experience with installing AeroOutserts on various arrows confirmed that some of the manufacturer's published arrow OD (outside diameter) sizes are only base line references, which can vary as much as 0.004" or 0.11mm. Case in point, the Victory VAP is pub-

lished as 0.245" OD but actually measures as 0.248" which actually fit the 6.31mm AeroOutsert best, but not the 0.245" (6.22mm) AeroOutsert as published. In the case of the Easton Injexion 480, within a dozen shafts that we tested and measured, they can vary from 5.836mm to as large as 5.864mm OD; which makes 5.83mm the correct ordering size as you can always make the shaft smaller by lightly sanding it.

Based on tests that were done, we feel the best way to install an outsert system is to first get the closest AeroOutsert towards the outside diameter of the arrow. Then try to dry fit every shaft to find the best fit of each shaft with each AeroOutsert. For the really tight fitting ones, lightly sand the outside diameter of the shaft until it barely fits. As long as you do the sanding by turning the shaft and holding ultra-fine (220grit or finer) sand paper over it, the shaft's concentricity should not be off after sanding. After sanding, dip the sanded end of the shaft in pure acetone. Cleaning the inside of the AeroOutsert with a Q-tip dipped in acetone is found to be the best starting point with any AeroOutsert gluing installation process. For ultra-tight fitting ones, AG0600 glue works best, however any fresh CA type of glue (super glue) should work. For looser fitting AeroOutserts, use a slow set (24 hour) epoxy and keep turning it while standing the arrow on end to help to keep the arrow and the AeroOutsert concentric. You should stand the arrow upright after you have made sure that the AeroOutsert is concentric with the shaft by spinning it and then let the glue cure. If you just lay the arrow on its side while using slow set epoxy with a loose fit, the shaft will fall towards one side inside the AeroOutsert after it was glued and it will no longer be concentric.

Below is the technical drawing and fit for the most common 0.165" to 0.166" ID shaft's outside diameter and the OD of AeroOutsert that will fit each. Please note that the sizes shown are for reference only, actual size of the shaft's OD can vary from production batches and experience has shown it can vary significantly among manufacturers - even among a single dozen shafts. The only sure way to know is to actually measure your shafts before ordering, or contact a Firenock Authorized dealer who can install them for you as they should have all sizes in stock, and have the experience to deal with the variance.

| Brand | Name | Spine | OD (in) | OD (mm) | AOA | Note | Update on | ID (in) | gr/inch |
|---------------|----------------|-------|---------|---------|------|------|-----------|---------|---------|
| Black Eagle | Deep Impact | 300 | 0.249 | 6.32 | 6.33 | | 07/03/13 | 0.165 | 11.00 |
| Black Eagle | Deep Impact | 350 | 0.240 | 6.10 | 6.12 | | 07/03/13 | 0.165 | 9.60 |
| Black Eagle | Deep Impact | 400 | 0.233 | 5.92 | 5.89 | | 07/03/13 | 0.165 | 8.60 |
| Black Eagle | Deep Impact | 500 | 0.228 | 5.79 | 5.77 | | 07/03/13 | 0.165 | 7.60 |
| Black Eagle | Deep Impact | 600 | 0.223 | 5.66 | | N/A | 07/03/13 | 0.165 | 7.00 |
| Black Eagle | Deep Impact LD | 250 | 0.240 | 6.10 | 6.12 | | 07/03/13 | 0.165 | 9.50 |
| Black Eagle | X-Impact | 300 | 0.231 | 5.87 | 5.89 | | 08/13/13 | 0.165 | 8.10 |
| Black Eagle | X-Impact | 350 | 0.228 | 5.79 | 5.77 | | 08/13/13 | 0.165 | 7.40 |
| Black Eagle | X-Impact | 400 | 0.221 | 5.61 | | N/A | 08/13/13 | 0.165 | 6.70 |
| Black Eagle | X-Impact | 500 | 0.214 | 5.44 | | N/A | 08/13/13 | 0.165 | 5.80 |
| Bloodsport | HT1 | 300 | 0.255 | 6.48 | | N/A | 05/02/12 | 0.165 | 11.70 |
| Bloodsport | HT1 | 350 | 0.246 | 6.25 | 6.31 | | 05/02/12 | 0.165 | 10.20 |
| Bloodsport | HT1 | 400 | 0.238 | 6.05 | 6.06 | | 05/02/12 | 0.165 | 9.80 |
| Bloodsport | HT1 | 500 | 0.231 | 5.87 | 5.89 | | 05/02/12 | 0.165 | 8.20 |
| Bloodsport | HT1 | 600 | 0.223 | 5.66 | | N/A | 05/02/12 | 0.165 | 7.10 |
| Bloodsport | HT1 | 700 | 0.220 | 5.59 | | N/A | 05/02/12 | 0.165 | 6.50 |
| Bloodsport | HT1 | 800 | 0.215 | 5.46 | | N/A | 05/02/12 | 0.165 | 6.00 |
| Bloodsport | HT1 | 900 | 0.211 | 5.36 | | N/A | 05/02/12 | 0.165 | 5.30 |
| Bloodsport | HT1 | 1000 | 0.209 | 5.31 | | N/A | 05/02/12 | 0.165 | 5.10 |
| Deer Crossing | SD Hunter | 300 | 0.251 | 6.36 | 6.33 | * | 09/04/13 | 0.165 | N/A |
| Deer Crossing | SD Hunter | 350 | 0.247 | 6.28 | 6.31 | | 09/21/13 | 0.165 | 10.10 |
| Deer Crossing | SD Hunter | 400 | 0.237 | 6.01 | 6.06 | * | 09/05/13 | 0.165 | 9.43 |
| Deer Crossing | SD Hunter | 500 | 0.231 | 5.85 | 5.89 | * | 09/05/13 | 0.165 | 8.27 |
| Easton | AC Injexion | 330 | 0.242 | 6.15 | 6.15 | | 02/03/13 | 0.166 | 10.50 |
| Easton | AC Injexion | 390 | 0.235 | 5.98 | 5.97 | | 02/03/13 | 0.166 | 9.50 |
| Easton | AC Injexion | 450 | 0.230 | 5.84 | 5.83 | | 02/03/13 | 0.166 | 8.60 |
| Easton | Carbon ONE | 500 | 0.226 | 5.75 | 5.77 | | 10/10/13 | 0.167 | 7.61 |
| Easton | Carbon ONE | 550 | 0.222 | 5.64 | | N/A | 10/10/13 | 0.167 | 7.03 |
| Easton | Injexion | 330 | 0.244 | 6.19 | 6.22 | | 02/03/13 | 0.166 | 10.10 |
| Easton | Injexion | 400 | 0.236 | 5.98 | 5.97 | | 02/03/13 | 0.166 | 8.90 |
| Easton | Injexion | 480 | 0.230 | 5.83 | 5.83 | | 02/03/13 | 0.166 | 8.30 |
| Victory | VAP | 250 | 0.247 | 6.27 | 6.31 | | 08/04/13 | 0.1655 | 9.70 |
| Victory | VAP | 300 | 0.239 | 6.07 | 6.06 | | 07/02/13 | 0.1655 | 8.90 |
| Victory | VAP | 350 | 0.232 | 5.89 | 5.89 | | 11/13/12 | 0.1655 | 8.10 |
| Victory | VAP | 400 | 0.227 | 5.77 | 5.77 | | 02/03/13 | 0.1655 | 7.10 |
| Victory | VAP | 450 | 0.224 | 5.69 | | N/A | 11/13/12 | 0.1655 | 6.80 |
| Victory | VAP | 500 | 0.218 | 5.54 | | N/A | 11/13/12 | 0.1655 | 6.10 |
| Victory | VAP | 600 | 0.213 | 5.41 | | N/A | 11/13/12 | 0.1655 | 5.40 |
| Victory | VAP | 700 | 0.215 | 5.46 | | N/A | 11/13/12 | 0.1655 | 5.70 |
| Victory | VAP | 800 | 0.213 | 5.41 | | N/A | 11/13/12 | 0.1655 | 5.10 |
| Victory | VAP | 900 | 0.213 | 5.41 | | N/A | 11/13/12 | 0.1655 | 5.60 |
| Victory | VAP | 1000 | 0.210 | 5.33 | | N/A | 11/13/12 | 0.1655 | 5.20 |

* Indicated it should be measured first as none has been physically measured

AERO Systems: AeroPoint, AeroBushing, AeroInsert-D, & AeroTarget Concept

AeroPoint™ (FACT)



AeroPoint (U.S. Pat.) takes arrow performance to an all new level by effortlessly concentrically aligning the arrow point. Although new materials with greater strength, lighter weight arrows and aerodynamic vanes have all helped to increase performance, there has always been an issue with dynamic forces on the arrow itself, and the consistent alignment of the arrow tip.

Arrow point alignment has been good except for where the neck of the point and the threads may not be concentrically aligned with the arrow insert, or the tip itself. All that archers could do was to screw the arrow tip into the arrow insert and hope that they would align well enough to make the arrow fly with acceptable accuracy. More recently, an O-ring was compressed between the base of the arrow tip and the arrow insert. Though this has helped with the alignment of the broad-head blades at the front of the arrow and the vanes at the rear of the arrow, it did nothing to help concentrically align the head itself.

AeroPoint uses 2 O-rings that are positioned on the neck of the arrow point and just above the thread to concentrically align the entire point as it is screwed into the arrow insert. Another benefit of using 2 O-rings is the prevention of the arrow tip from loosening during repeated use.

For 2014 we added 85 and 125 grain AeroPoints to our current 45 and 100 grain AeroPoints. The 45 grain 9mm AeroPoint is specially designed to be used on target arrows that are 22/64" and 23/64" OD with AeroInsert-D and a short inner carbon tube to form a carbon hybrid insert system. With this system, there is no longer a weight penalty by using the Firenock AeroPoint and you should expect significantly straighter arrow flight with the target arrow, as this system reduces the in-flight oscillation of the arrow and allows the arrow to go into gyro spin much faster. For 2014, all 7 AeroPoints have been upgraded to stainless steel 45 HRC to ensure it will break before it bends to guarantee absolute confidence in its concentricity. This self-concentric technology - Firenock AeroPoint Concentric Technology (FACT) - will eliminate most of the spin testing you need to do to make sure an arrow is balanced, as this system will self-concentric the point every time. This technology can be found in broad-heads that has the Firenock FACT compliance wording on its packaging as spin balance is even more important and critical for broad-head flight.

AeroBushing™



AeroBushing (U.S. Pat. Pend.) are made from high quality CNC machined 7075-T5 aluminum to address the needs for an ultra-lightweight and consistent arrow on the nock side. Traditionally uni-bushings are made with bar stock and screw machines to achieve approximately fit, so the average target archer, will use material like a plastic bag to "shim fit" the bushing and insert a nock in it to shoot. This approach is far from accurate and consistent. Not to mention the standard weight of the uni-bushing and nock system usually weigh between 20-25 grains. AeroBushing utilizes the same approach of Firenock nock's force compression system but does it in reverse. Instead of a round collar, the collar that goes into an AeroBushing is actually square. This shape will force the arrow to be concentric with the bushing and since the bushing is machined, it can guarantee concentricity with the nock. This approach also has another major advantage, it is significantly lighter. Unlike a normal bushing of 23/64" size which is about 12 grains, the AeroBushing-23 weighs just under 7 grains.

| Name | Arrow(s) that should fit for each size | Weight |
|---|--|--------|
| ABU23A Black Eagle Challenger, Carbon Express CXL, Easton Fat Boy | ~7 grains/0.46 gram | |
| ABU25A Gold Tip X Cutter | ~9.4 grains/0.61 gram | |
| ABU26A Gold Tip 30X | ~11 grains/0.72 gram | |
| ABU27A Black Eagle Magnum, Easton Full Bore | ~13 grains/0.86 gram | |

AeroBushing is also different by using a totally different size nock than standard uni-bushings. For 23/64 size, instead of the usual "G" or "S" nock, AeroBushing uses the Firenock "A" style nock. We believe that the "A" style nock is the most ideal nock for target archery. First, it is super lightweight. At 4.85 grains it is lighter than most 0.166" ID nocks. From the molding point of view, it has the most advanced nock throat, which means it gives the best arrow-to-string contact there is. Thus the final weight of the entire system is only about 12 grains complete.

For 2014, 2 more sizes of AeroBushing are offered besides the ABU23A and ABU27A. The new ABU25A and ABU26A will be the first sizes that come equipped with our new Umbrella-Cap design. This patent pending design is to address the possibility of the back of an arrow being hit by another arrow (commonly referred to as a "robin hood") and cause the carbon fiber of the arrow to fray. The details of this design can be seen in the technical illustration of ABU23A above. ABU23A and ABU27A will also utilize this design when it is time for the next production.

AeroInsert™-D (Hybrid/Dual [D])

AeroInsert-D (U.S. Pat.) is a hybrid/dual insert for 11/32" and 23/64" Arrow sizes and also crossbow bolts. AeroInsert-D concentrically aligns the arrow insert to the arrow while strengthening the arrow shaft without adding extra weight.

This is done by using an additional carbon tube to add length to the insert. For example, the carbon tube is 4 inches. By extending it 4 inches, the insert itself becomes concentric and improves the straightness with the arrow shaft. Next, it strengthens the spine of the arrow, which makes it much stronger without a weight penalty. Since it adds the extra spine, the arrow straightens out much sooner than before. Another benefit of the lengthened insert is that there is a larger gluing surface than before. More gluing surface is an advantage as, upon impact, it is common for the insert to dislodge from the arrow, which then forces the tip and insert rearward into the arrow shaft, and causes the arrow to mushroom.

AeroInsert 22/64" size is made in 2 versions; one is made of 303 stainless



steel and weighs 50 grains, and the other is made of 7075-T5 aluminum and weighs 17 grains. This allows you to customize your weight with speed and kinetic energy in mind. For example, we can make an Aerobolt II to weigh from 380 grains completed all the way up to 1000 grains by using the different inserts and the amount of carbon used in the system. Using the insertion carbon tube method works very well with high speed crossbows and 3D target arrows. Most crossbow bolts and common 3D arrows use the 0.300", 0.315" ID shafts which have a spine that's not quite up to par. Some have increased wall thickness of these arrows but have also added unnecessary weight in the process. Others use a tapered shaft, where the front is larger than the back, and others claim a dual spine arrow is achieved by wrapping sequences of composite. With AeroInsert-D, it achieves a stronger spine without a weight penalty. It also changes the dynamic spine of the arrow (the behavior of the flex of the arrow). For example, the standard 22" Aerobolt II has an 8" insert. Therefore, the last 14" of the arrow flexes while the front 8" doesn't. Since the flex has been cut by 40%, the recovery of oscillation increased 300%. Based on the numbers, an average crossbow bolt will oscillate at around 15 yards. Aerobolt II, which uses the AeroInsert-D and an 8" carbon tube, oscillates around 15 feet. The recovery is three times faster.



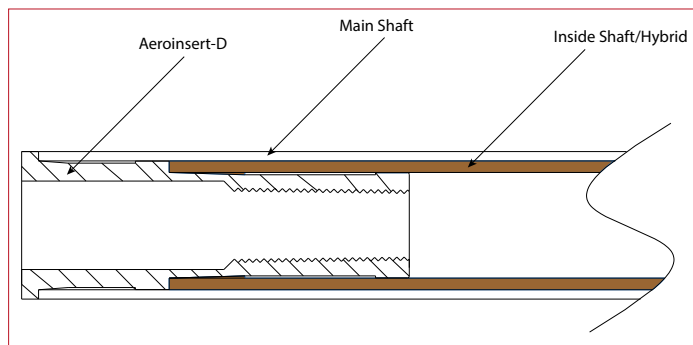
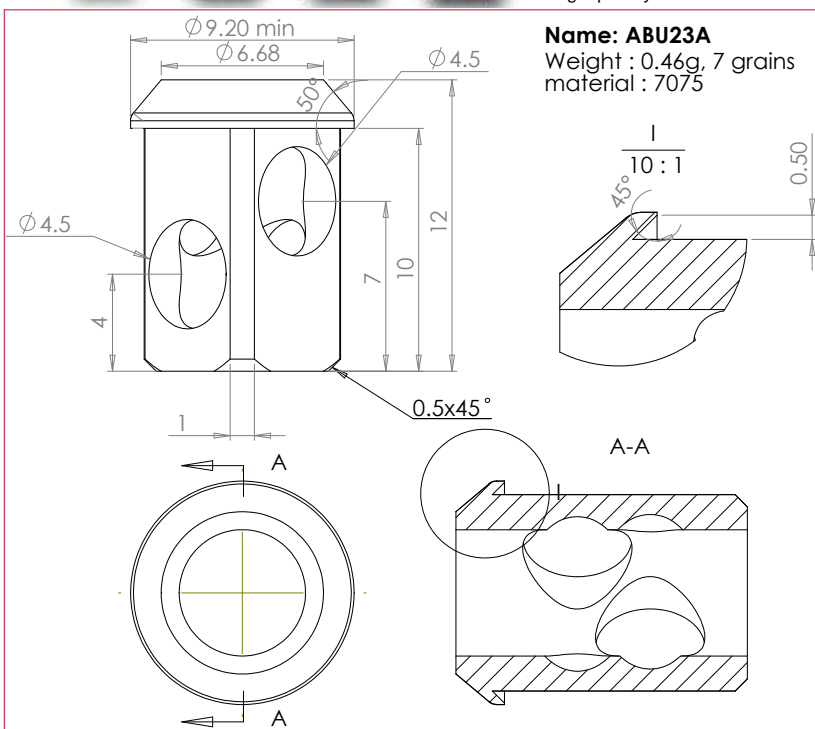
AeroInsert-D also has a very big impact on target shooting using the 11/32" and 23/64" size arrows. Using the carbon tube with AeroInsert-D and the 45 grain 9mm AeroPoint, you can achieve a total point weight without the penalty of not knowing if the point is concentric or not. For more information, you can read the AeroTarget concept paragraph.

AeroTarget Concept System

We at Firenock believe that we can now approach the 22/64" and 23/64" target arrows with a complete system that is unique to the target archer's need. With our AeroInsert-D, our "V" style nock, AeroBushings with "A" style nock, and a 55 grain arrow point, all of the components for the 2 most common target arrows, the 22/64" and 23/64" arrows can be furnished entirely by us.

For 22/64" you can use our "V" nock at the back, and have a short piece of carbon which has a 0.246" ID and 0.298" OD, Firenock AeroInsert-DA, and a 55 grain AeroPoint. With this set up, we can substantially stiffen the front section of the arrow with no weight penalty and be able to form a lot more durable front end of the arrow. Due to a removable point, you can replace the point at any time. Because it is an AeroPoint, our patented ability to have the point be concentric to the shaft makes it ideal for rough target/prolong usage.

For 23/64" arrow size, besides what is done for the front of the arrow, you can utilize our new AeroBushing system which weighs about 12 grains (bushing and nock), not to mention this system utilizes the best fitting and most precise polycarbonate nock that Firenock has produced - our "A" nock - which weighs about 5 grains. The front end component's technical drawing is below.



The Ultimate Crossbow Arrow **AEROBOLT II**

Why AEROBOLT™ II is This Price & Built This Way?

Most people will find that many crossbow bolts perform well. But why is AeroBolt II better than the competitor's bolts? Why is the price of AeroBolt II significantly higher? Why did Firenock build the AeroBolt II like this? To provide these answers, a short review of the research and development of AeroBolts is needed. Then we will discuss the design approach and review the technologies that have been employed in the development of AeroBolts. With this information we believe you will be convinced that AeroBolts are unique and the outstanding performance of the AeroBolt is worth the price. Also, with a better understanding of AeroBolt II technologies, you should understand what you can expect and what the most you can achieve from shooting AeroBolt II.

Back in 2009 Jim Kempf of Scorpyd crossbows requested a heavier spine crossbow bolt due to the introduction of the RDT165 Crossbow, the concept of AeroBolt was born and built. AeroBolt I was based on the Gold Tip Laser II, Laser III, and other Gold Tip shafts and we utilized a Gold Tip Series 22 insert.

At the time, the AeroBolt I was nothing more than gluing a piece of Gold Tip 0.298" shaft into a Laser II or Laser III with a Gold Tip Series 22 insert. This process gave Jim the bolt he needed at the time as this process gave the crossbow bolt a much heavier spine, and it lessened the issue of not locating the spine due to dual shaft construction. During the testing of this arrow, quite a few interesting observations and results were discovered. This led us to develop new concepts, break through manufacturing processes, improvements in design, and we were granted at least 4 U. S. patents which were utilized in the current AeroBolt II series of crossbow bolts.

Never Harden 2 Part Epoxy

When the first AeroBolt was made, the use of ULTRA low CA glue was the original idea. It was because so little glue was needed to be applied, so there was no way for it to break. But after a few shots, the CA based glue just cracked and caused layer separation of the carbon. This was observed by the inconsistency of a single arrow at point of impact. The more that the arrow was shot, the worse it became. After dissecting the shaft, it was found that the CA was indeed cracked leading to not only layer separation, but the CA glue became powder and made the situation even worse as the arrow flexed more due to the cracks.

A variety of glues were tested ranging from Super Glue, CA GEL, 5, 10 and even 30 minute epoxy, but they all failed with time. Through the tests, we did discover that the longer the glue time, the better the results. These results coincided with the theory of glue failure due to fracture from the flex of an arrow during launch; which leads to carbon layer separation; which caused inconsistent spine; and finally ended up with inconsistent flight.

After discussing this with our glue supplier, a rarely used, super expensive 2-part epoxy was suggested and tried. This epoxy is exactly what is needed as it will be flexible even when it is totally cured. Furthermore, it allows us to have close to 2 hours of work time. We then discovered an issue in assembling the AeroBolt with this glue; this epoxy has high cP (i.e. does not flow and spread well). To assemble with an inner shaft as long as 13", the usual apply and spread method doesn't work. A vacuum assisted vertical gluing process was developed. This approach allows us to apply the glue perfectly and evenly between the 2 shafts even at long spread distance.

Spine Indexing & Matching

The Firenock AeroBolt II was designed based on the concept of multiple shaft construction with the effect of spine cancellation. Spine cancellation minimizes the effect of the dominant arrow shaft's spine effect. As spine effect seems to be eliminated due to the two shaft construction, spine indexing seems not to be important. We have offered spine indexing since 2011 as part of our standard manufacturing process. Firenock feels that AeroBolt II is the ultimate crossbow bolt and spine indexing has proven to be important, so it is still a part of our standard process.

Harmonic Dampening AeroBolt

Harmonic Dampening is the sole reason why AeroBolt is so superior in performance and so deadly accurate. Harmonic Dampening was observed when the first AeroBolt was shot. The oscillation of the AeroBolt stopped after only about 5 to 10 feet rather than the standard 60 feet (approximately) when other arrows and bolts are shot. Why this happens was discussed by many archery experts, but no one could provide a definite answer. The answer was found out when material science experts were consulted.

How they explained it was that when an arrow is shot out of a bow, oscillation would occur for its initial 20 yards of flight, based on the physical characteristics (lighter/heavier spine, longer/shorter arrow) and at about 20 yards, oscillation stops and full gyro spin occurs.

Use of AeroInsert-D

The inherent issue of using a Gold Tip Series 22 insert was observed when we started to build AeroBolts. The Gold Tip insert is short and does not have a lot of gluing surface. A result of the small gluing surface was that cracks developed in the shaft right behind the insert when the bolt was shot at an extreme angle. With the understanding of this issue, Firenock made AeroInsert-D in order to solve this issue. AeroInsert is not just a metal insert, it's a hybrid insert, which, is a metal insert that is inserted into a carbon tube. This hybrid insert is then inserted into the crossbow shaft. Below are the features of Firenock AeroInsert-D:

- Large gluing surface. As AeroInsert-D is long, it can provide a larger gluing surface than conventional inserts. As the gluing surface is larger, force can be distributed more evenly and less stress will be asserted on the carbon shaft.
- Small run out. As AeroInsert-D has a long carbon shaft, its run out is virtually zero. It is simple to understand, as when longer surfaces are slid over each other, the less run out it would have. In the case of the TAC 15's 26" long bolt, the carbon shaft of the AeroInsert-D can be as long as 13.5".

Use of Professional Arrow Preparation System

To locate the spine of an arrow, most use the RAM Spine Finder machine. The unfortunate fact is that it takes too long to spine an arrow and it is not reliable. Most shaft spine-indexing machines are not meant for production use, thus Firenock believed that a more specific machine should be built. So we did it. By the beginning of 2014, we will be offering the PAPS (Professional Arrow Preparation System). PAPS will be a very sophisticated machine with many add-ons. One of the add-ons, which we believe is what most want, is our vibration induced auto spine finder/indexer. Unlike typical machines, the auto spine finder/indexer is meant to find the softest side of an arrow automatically within 5 seconds.

We believe that locating the softest side is more important than the hardest side as an arrow will flex towards its softest side when it is launched. This is because an arrow will flex toward the lowest resistance side. The hardest side only shows the hardest spine rating which IMHO is not critical for arrow accuracy. The average spine is what indicates how an arrow will flex and dictates the arrow in flight oscillation, but the initial launch is always based on the softest side of an arrow.

Gluing instead of mechanical fastening

This is because the front end of the arrow will encounter an extreme amount of force and vibration in an unpredictable direction upon impact. With material like a carbon tube, which has high modular strength, low weight, low loop strength and low surface puncture resistance characteristics; mechanical inserts will actually help to focus the force and vibration upon impact and can cause damage to the shaft's inner surface. In many cases, catastrophic failure of an arrow using mechanical inserts is often seen. For safety and reliability, spreading the force over a large surface is the best way to resolve this problem, thus Firenock developed the hybrid insert system. Our hybrid insert is long, made of carbon and Firenock glued the hybrid insert system into the arrow to make a perfect fit in order to spread the force and vibration upon impact.

FACT (Firenock Arrow Concentric Technology)

From long discussion with archery arrow experts like Randy White and Tim Gillingham, one issue became obvious - the degree of concentricity. In other words, concentricity of arrow, concentricity of bow and concentricity between arrow and bow. In the present market, according to Firenock research, there isn't a crossbow bolt or arrow rest that can provide enough concentricity to ensure the accuracy of an arrow. With the AeroInsert-D, we believe that the insert-to-shaft concentricity has been addressed, but the concentricity of the point/broad-head has not been addressed. For a vertical bow, broad-head tuning and using glue in points can improve concentricity and accuracy due to the effort made to ensure that the highest focused mass is concentric to the entire arrow. Simply put, you need to ensure that the point/broad-head be concentric to the entire arrow in order to improve accuracy. This importance of concentricity led Firenock to develop a U. S. patent for AeroPoint, which is known in the industry as FACT.

AeroConcept approach of Building Arrow

Since AeroBolt uses 2 different types of carbon tubing to form the arrow, the arrow will fly better (the more different the 2 carbon tubes are, the better). AeroBolts also have a higher spine and oscillate less. The result of gluing 2 different tubing together makes the magic; the oscillation cycles of the dominant shaft are shortened by the inner shaft.

Conclusion

From the above, we have established that AeroBolt II or AeroBolt II with the hybrid insert system can make the arrow oscillate less. With Aerovane, AeroBolt II can use less FOC and uses lift instead of drag to spin an arrow. The combination of a hybrid insert system and Aerovanes means AeroBolt II during flight will oscillate less and stabilize faster and achieve gyro spin faster. Achieving gyro spin means less energy is lost from oscillation and all of the energy is stored in the arrow to make for a flatter flight and a more accurate arrow.

AeroBolt™ II-200 (AB20)

The AB20 crossbow bolt (U.S. Pat.) is offered from 20" to 26" and is designed and engineered for maximum flight stability and maximum speed just like the AB25 (AeroBolt I), but with a stiffer primary shaft that has a spine of 0.200" and an inner spine of 0.350". The 26" AB2-200 without any metal part of the hybrid insert, weighs 300 grains. It has an amazing 0.001" shaft straightness. The front is about 0.060" and the back is 0.200".

AeroBolt™ II Dragon Slayer (ABDS)

The ABDS crossbow bolt (U.S. Pat.) is the big brother of the AeroBolt II and was new for 2013. It is offered in any length from 16" to 26". It is designed and engineered for maximum momentum and penetration. Unlike any other crossbow bolt, it has a 0.092" thickness of carbon throughout its entire length. Instead of one inner and partial shaft configuration, it has 2 inner shafts that run most of the length of the bolt. The inner 2 shafts are engineered to support the insert and Firenock AeroInsert-DS and Firenock's newly designed 0.246" profile extreme shock end cap to fit the Firenock F, Q, D, and J nocks. With this design, every single component on the arrow is supported by no less than 2 shafts, and in some cases all 3 shafts. With a 26" shaft, the expected total weight (excluding point/broad-head and nock) is going to be about 750 grains with 3 Aerovane II. This configuration makes this arrow the ultimate African big game crossbow shaft, as many African range game laws have stated that no less than 1,000 grain archery arrows for taking the African big 5 are permitted. From our field staff report, it is also found that it is the best shaft for the huge wild boars that roam the lower states, like the 700 lbs. plus hogs in Georgia and Texas.

| | | | |
|--|--|-----------------------|---------|
| Firenock AEROBOLT II | | ■ 200 ■ Dragon Slayer | |
| The Most Advanced Lighted Nock | | Insert: | Weight: |
| Firenock AeroInsert, AeroPoint Technology, with unique Multi-Spine/Zone design | | | |
| FLEX IT FIRST for safety, visit www.firenock.com | | Date: | Length: |
| Multiple US and International Patent Pend. Pat. 7,837,580 B2, Ph. (915) 790-1695 | | | |

AeroRest Form factors, colors, and finish for 2014

AeroRest Technical Tour

AeroRest with its C frame configuration is designed to be unique and far advanced in the material usage to achieve the security of a full containment rest since it was first launched in 2013. Since then, Firenock has made several improvements to the original version and now the 2014 model is sure to thrill every archer and hunter for its set-up, usage and design without sacrificing its accuracy or material usage.

In terms of uniqueness, AeroRest utilizes 3 and 2 finger configurations with 2 ball bearings inside to enable the arrow to have a maximum of 3 points contacting the rest (i.e. minimum arrow contact surface with the rest). For advanced material usage, AeroRest utilizes titanium components to achieve lightness and a rust free rest. Most components have a level 2 type 3 ceramic coating to ensure toughness and durability. The magic of AeroRest lies within each of the three fingers which contain 2 ceramic ball bearings and a beryllium copper mini spring.

The ball bearings inside each finger have 2 different size ceramic ball bearings and a tension spring to allow micro-tension adjustments between the arrow and the fingers. The beryllium copper mini tension spring is made micro-adjustable as the slot at the end of the spring tension plug is micro-threaded and equipped with a brass flat head screw.

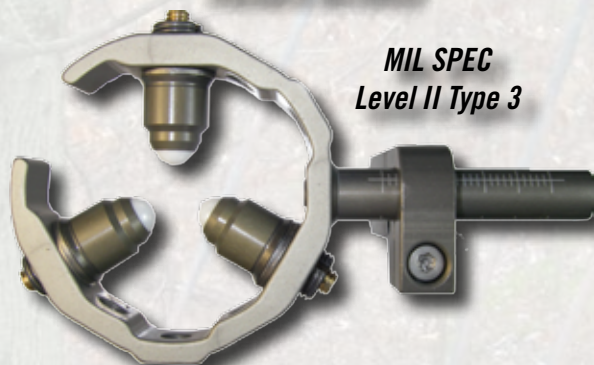
The ceramic ball bearings are all high spec ABEC#5 ceramic which ensures smooth operation and accuracy of the system and of course smooth and accurate shooting. This is due to ceramic's super hard surface that only generates minimum friction even while rubbing it with great force, thus there is close to zero friction generated between the surface of the arrow and the rest. Plus the total arrow contact with the ceramic ball bearings is designed not to exceed $+0.000,0/-0.000,2$ " which translates to 0.000,000,4 square inches per ball bearing. Furthermore, due to the hardness and light weight of the Si3N4 or ZrO2 ceramic ball bearings, the greatest possible friction surface area between the three ball bearings and the lips of their hard anodized aluminum cup retainers are virtually close to zero.

For the titanium components, the mounting screw of the support and the spacers are all titanium made to ensure lightness and a rust free rest. In the past, precise amounts of titanium spacers were required to fine tune the height of the fingers to match the outer diameter of the arrows. In 2014, with the new 92 frame, fine tuning with spacers is made easy as to allow acceptance of different sized arrows without needing to add or remove spacers for absolute precision. This feature can fit arrows with only a slight adjustment of vertical and/or horizontal height of the rest by using the micro-adjust itself.

The 2014 AeroRest has been coated with Silicon Carbide which is a coating as hard as ceramic to ensure durability and lightness even with aluminum construction. For the micro-adjust version of AeroRest, components are laser marked for easy reading and fade proof markings. Also, with a Silicon Carbide coating, especially on the inside of each finger, smooth operation of the ball bearings and the durability of the system is ensured as the cup retainers are Type/Level 3 hard anodized MIL-A-8625 aluminum, which means their surface hardness is similar to ceramics.

The new design of the AeroRest and the new specifications not only keeps friction generation between an arrow and the AeroRest at a minimum, AeroRest is going to reach new heights in terms of uniqueness and performance. We are now confident that AeroRest 2014 will be the lightest, most adjustable, lowest noise arrow rest on the market based on Firenock's testing conditions. We sold out of our 2013 AeroRest and we believe that we will do the same with our new 2014 model.

Standard AeroRest



**MIL SPEC
Level II Type 3**

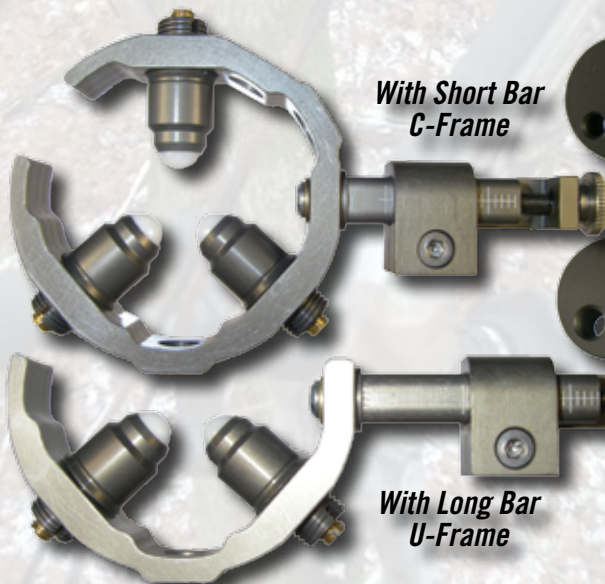


CAMO Finish

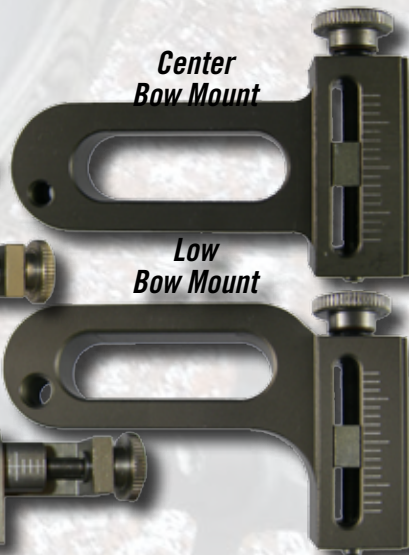
Micro Adjust AeroRest



**With Short Bar
C-Frame**



**With Long Bar
U-Frame**



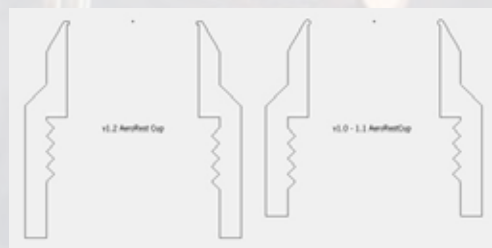
**Center
Bow Mount**

**Low
Bow Mount**

AeroRest™ (Full Containment Rest Without the Wear)

2014 AeroRest Improvements

1. AeroRest is designed to have the highest tolerance, uses the highest grade material and encompasses no less than 2 U.S. Patents. For 2014 we are incorporating a new design and improvements.
2. All standard AeroRests now come with the side bar permanently pre-glued to the C-frame to avoid any gluing issue.
3. The containment cup for the balls are now square instead of round. After extensive research on the non-sticking cup, we found a better solution for 2014. Instead of trying to make a PERFECT round pinpoint cross section, we now go in exactly the opposite direction. A PERFECT 90° point edge is used. After a type 2 level 3 hard anodized coating is done, the 90° edge forms a perfect micro ball at the very end. The tolerance of this new design far exceeds what v1.0 and even v1.1 with Teflon coating. The cross sections of the 2 cups are below. To give more adjustment, the new cup is also 0.75mm longer for large range of spring tension adjustment.



Additional Improvements on

AeroRest Micro-Adjust

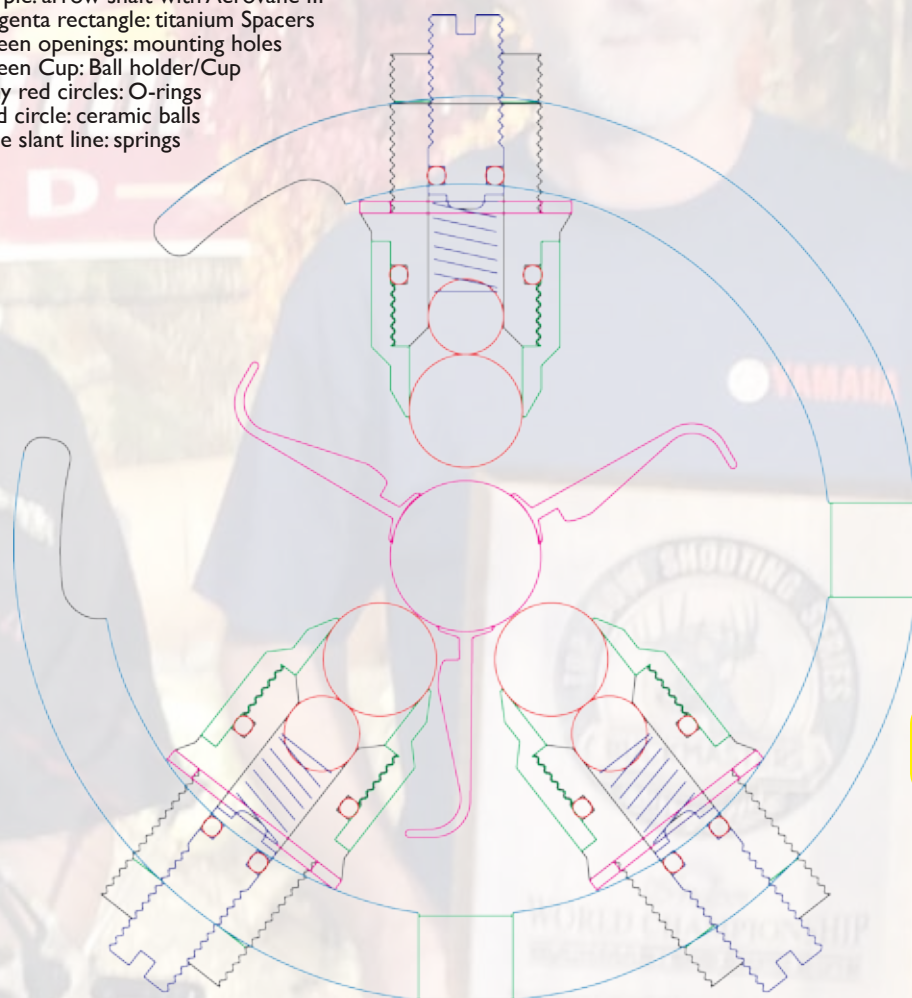
1. The lower 2 fingers are now at 96° apart instead of 120°. With this configuration you will no longer need to be concerned with how precise you need to use the Titanium spacers on arrows from 4mm to 12mm OD which significantly improves ease of set up. We now only suggest the basic 3 configurations on all common hunting arrow sizes for the bottom 2 fingers. However, you can still ultra-fine adjust the rest if desired, but it's no longer an necessity for optimum set up.

| | |
|-----------------|-------|
| Standard size | 1B 1A |
| Slim size | 2B 2A |
| Ultra thin size | 3B 3A |

2. For the micro-adjust AeroRest, we have listened to our customers and changed the side mounting bar secure system to a compression square fit system. A specially sourced high pressure Torx screw is used instead of a brass nut to secure the side bar to the frame. This absolutely guarantees that the side bar will not move in any way, shape or form.
3. 2 different length side bars are included with the Micro-Adjust AeroRest. The short one will fit the thinner risers like the PSE Money Maker or most Hoyt bows that use TAC risers, while the 4mm longer one will handle thicker riser bows, especially the new Mathews bows.
4. A drop side bow mount is available as an option to address issues with bows that need to be tuned with a lower position of the arrow rest. With the new lower bow mounting bracket, the rest can be adjusted 9mm lower than our standard center AeroRest Micro-Adjust bow mount

Basic Engineering Diagram of AeroRest Micro 96° frame

- Blue plug: brass spring tension adjuster
- Purple: arrow shaft with Aerovane III
- Magenta rectangle: titanium Spacers
- Green openings: mounting holes
- Green Cup: Ball holder/Cup
- Tiny red circles: O-rings
- Red circle: ceramic balls
- Blue slant line: springs



TAC AeroRest

1. The frame was redesigned to fit every generation of TAC crossbows
2. The supporting tower is now taller to make adjustments easier on the TAC AeroRest.
3. It comes pre-set for TAC arrows ready to shoot from the factory.
4. It also utilizes the new and improved cup design for a the cups for better support while still maintaining the upper 2 cups for easy arrow drop in from the top.



iBowSight™ (The Bow Sight for the iPhone Age)

iBowSight is an engineering masterpiece that combines industry leading metal fabrication, highest end electronics, customized software, bow hunting knowledge, and the next level of user interface all merged together to build a solid performing video bow sight. iBowSight utilizes today's highest performance smart phones, the iPhone 4 and/or iPhone 4S, coupled with an App that transforms an iPhone into a bow sight with capabilities that have never been seen. In a nutshell, iBowSight consists of four components: A bow sight mounting bracket, an iPhone, the iBowSight App, and a lens correction system. These four components not only make a cutting edge bow sight, but can also take advantage of the iPhone's video recording capabilities from within the iBowSight App. For the current release - version 1.15, the feature set is detailed in the App section below. Due to form factor, the iPhone 5, 5C and 5S will not work as it is too long and there is no room for the arrow below the phone. It is the same for the new iPod touch. More importantly, the iPhone 5 series outer case, unlike the iPhone 4 and 4S, does not have a definite anchor position like the stainless band which is present in the iPhone 4 and 4S.

iBowSight Bracket

To mount the iPhone 4(S) effectively, reliably, securely, and quickly a clamp system with 2x8 (16) holding points has been designed. This system allows the user to mount and remove the iPhone from the bracket in less than 15 seconds while maintaining the same position, $\pm 0.001"$ from -4F to +120F for the first 1,500 insertion. The bracket is made of precision CNC machines 6061-T6 with MIL spec Level III natural hard anodized and all fasteners are made of GR2 titanium Torx flat head for lightest, and most secure mounting.



Users can purchase brackets as desired for individual bows and simply move their iPhone 4 and 4S to their bow of choice. Additionally, iBowSight allows users to create multiple profiles, up to 1,200 to meet the needs of the current bow in use. This means each profile can be set up individually and even be specific to the brand and length of the arrow being shot. One has the ability to build and tune these specific profiles to get within $\pm 0.001"$ of an inch even in extreme temperatures. The beauty of these profiles is that they can be precisely recalled at an instant time after time.

The mounting bracket can have up to 5 vertical positions and 4 horizontal positions to get the rough center position of the sight on the bow. Fine adjustments are done with the iBowSight App (more details can be found in the iBowSight App section). To make this a true sight system, the mounting bracket is pre-drilled to give up to 3 mounting positions on the bow and have a pre-tapped holes for a bow quiver. The back of the bracket is also pre-drilled to accommodate for future accessories and comes standard with a removable accessory mounting bar.

We have discovered that not all bows on the market are made for iBowSight. For iBowSight to work, the number one assumption is that the bow sight mounting position is perfectly square with the arrow shooting position. iBowSight can do adjustments on the X and Z axis, but if the bow riser is bent inward, it cannot be easily corrected unless a precision shim is used under the iBowSight mount. Generally any bow riser that is not fully machined and squared when it comes out of the factory, cannot be used with iBowSight effectively. It's unfortunate that not all bow risers are made with the tight tolerances that are required by iBowSight to function. We are compiling a list of bow risers that have proven to be well machine and square to make setting up iBowSight a simple process.

iBowSight Lens

For ultimate compatibility, the iBowSight bracket is pre-tapped to accept a standard screw mount lens system. With this feature, iBowSight owners can pick and choose a wide variety of lenses such as: wide angle, fish eye, telephoto, optical correction, and even fully customized optics according to their will. In the near future, Firenock will offer one correction lens for both the iPhone 4 and 4S. The lenses will be 5-layered, dual reflective Keplerian designed lenses which are typical refraction telescope lenses. A Keplerian design lens is chosen as a single focal plane producing a much better image quality at a low cost.

Currently Firenock has sourced a budget correction lens (standard 8x telephoto lens) for \$29.95 as a stand-alone product or part of your iBowSight bracket purchase. A better quality lens will be available in the near future as the popularity of the iBowSight increases. To ensure this, we have teamed up with a top optics company and hopefully we can provide you with a lens that allows you to use iBowSight from 25 minutes before sunrise until 25 minutes after sunset rather than the current 3-5 minutes before and after. This is due to the low 66.67% light transmission ability of the budget lenses.

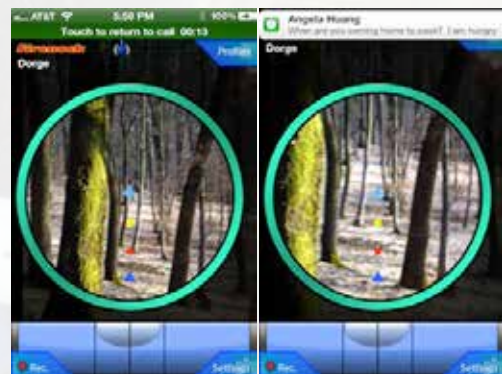
After 2 years of searching, we believe by mid year 2014, we believe we will be able to deliver a lens that is at least 90% light transmission rate for the archery who would like to use the iBowSight at all legal hunting hours. This lens will be design and made in US. More detail of this lens will be announced at the ATA and on our facebook page when the project progresses.

iBowSight App

As planned and promised, the iBowSight App has been available on the iTunes AppStore since December 24th 2011. Here is the link to purchase the iBowSight App at the iTunes store [iBowSight]. The iBowSight App transforms the iPhone into a high precision bow sight. It also leverages the iPhone's advanced electronics and iOS 5 to make the iBowSight a hunting video camera which archer can film every shot and store them into the internal memory of the iPhone. The video is recorded in 720p and 1080p when using the iPhone 4 and iPhone 4S respectively.

Shortly after March 5th 2013, a free update to iBowSight should be available via download for current iBowSight users. Since v1.15 is so significantly different from previous version, please delete your old App and download and install the new version. The new features of v1.15 are described as below:

- Triangular range finder is part of the feature set of v1.15. When activated, the yardage based on angle and height will be displayed in the middle of the screen right above the ring. Just enter the height in feet from the archer's shoulder to the ground on the screen. If the distance is less than 20 yards or the water level is tilted beyond the level 1 alert, messages like "out of range" or "unreliable" will be displayed instead of calculating the horizontal distance. The height of the archer's shoulder to the ground as entered will always be displayed on the upper right hand corner just under the current profile name.
- A setting selection button is added to the profile description window to allow user to select single pin /multi pin sight configuration.
- A mode for single pin set up with slide tape is available. This allows user to switch between a single pin distance slide tape configuration and traditional multi-pin configuration.



- When in single pin mode, the current slide set position yardage will be displayed on the upper right hand corner of the screen notifying in what position the pin was last placed.
- When in single pin mode, a faint yellow line will be displayed on the furthest left edge of the screen. By placing your finger on the yellow line, a slide bar will appear which showing choices of shape and color of pins along with preset distances. As your finger moves up and down the yellow bar, the pin calculated yardage will be displayed to make selecting the specific yardage simple and effortless.
- The sight ring can be sized from 0.3" radius to an edge to edge radius of 2.1".
- The sight ring has up to 2.6 million color choices.
- The sight ring can be micro-adjusted in increments of 5/652 and/or 3/326" depending on rounding.
- Each pin size can be adjusted from 0.012" radius to 0.240" radius.
- Each pin has up to 2.6 million color choices.
- Each pin can have its own shape besides a standard dot. For version 1.0 there is a total of 9 shapes to start with.
- One can add up to 7 pins to the sight screen.
- There is built in digital zoom from 1.0X based on internal optics to 4.0X based on an increment of 0.01X.
- 3rd axis adjustment is available to accommodate the most demanding and specific sight set up.
- Built in water level for visual bow leveling. The thickness of the level can be adjusted and so can the location of the level. By pinching the level one can make it thinner according to one's choice.
- Sight levels are indicated by different ring colors. Example: One can set the ring color to be green (color A) when leveled and red (color B) when the bow is tilted. Thus one can look at the ring color change instead of the water level to confirm if the bow is leveled. The sensitivity of this indicator can be adjusted from 1 degree to as much as 20 degrees.
- A second level of bow tilt alert (a directional pointing arrow) is displayed when a set angle of bow tilt is reached. Besides, the change of ring color, an arrow will be shown to indicate the correction direction.
- One can have the option to set the sight as an automatic pendulum sight or one can set the pendulum from 0 to 90 degrees. When set at 90 degrees, the sight is a full pendulum sight and only one pin will show until the sight is above 90 degree. When the pendulum is set at 0 degrees, it means the Pendulum sight is deactivated. This feature allows the best of both systems. In pendulum mode, the choice of sight pin shape and color are totally independent from the original pins, however, the reference position of the pendulum sight is still based on the first sight pin which usually is the 20 yard pin. Therefore, setting the first pin in use is critical for the pendulum sight option to function properly. The system also allows one to adjust the radius of the pendulum sight virtually so it can be adjusted to accommodate the slowest to fastest bow with no ill effects when one decides to use the full pendulum capability. Even with the fastest bow on the market one has the ability to use a full pendulum to sight in at long yardages.

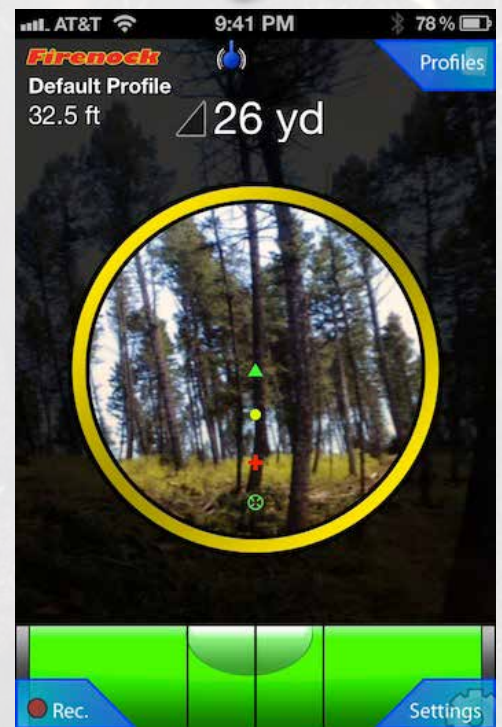


Actual Screen Shots of iBowSight in Action

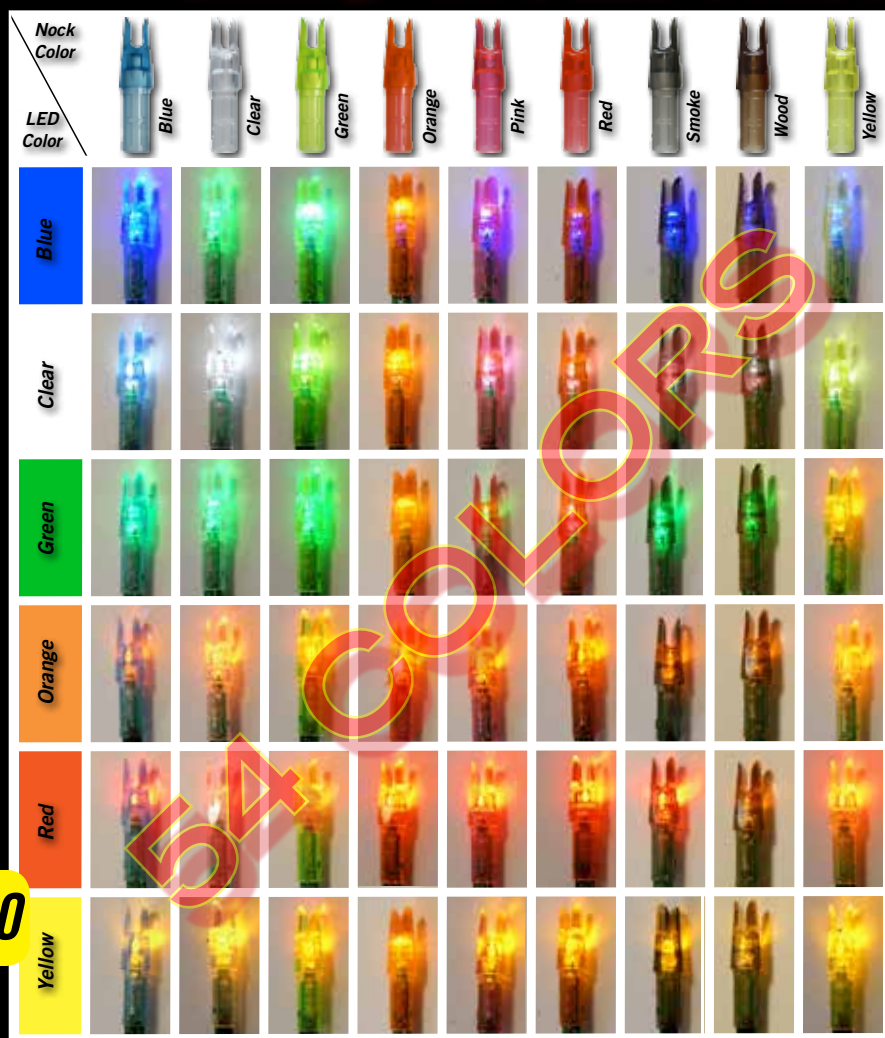
- Can hold up to thousands of storable profiles in memory (each profile can have its specific name, range finder setting including height, video instant on setting, pendulum on setting, bow name, arrow name, arrow length, point weight, and other parameters settings)
- Operational indicators: at the very middle top of the Application screen, there is room for 4 mini icons to show which options are active. (Currently only 2 are available to the user in v1.10 to v1.15)
 - Red dot: Recording function is on
 - Blue pendulum: Pendulum function is on
 - Yellow vibration line: Tilt vibration alert is on (not yet functional in this version)
 - White fan lines: Laser range finder in use (not yet functional in this version as accessories are needed)
- 100% iOS7 compatible, and fully supports iMessage, so when you receive a text message there is NO interference with the target acquisition process at all.
- The title bar is back so you can look at your battery level, signal level/Airplane mode, time, and blue tooth status.
- Ability to disable the flash while filming in low light.



- True multitasking ability and full compliment with iOS iMessage system are done since v1.1. You can receive Text and switch to talk while aiming. The only 2 things that cannot be done is to take video while talking. Below are screen shots of app while receiving text and while talking via blue tooth.
- Unified control setting screen for faster and more logical function settings since v1.13 update to 7 sections on v1.15.
- Auto pin movement in Single Pin, Auto Range Finder mode, with which the pin will move base on found distance via triangular range finder and pin setting. Since the system is base on result of triangular range finder, the maximum distance that can be range by the system even with extreme height is 80 yards since v1.15
- Allow left hand user to lock the phone into left hand mode so the screen will not swing back and fore from right hand to left hand mode when the bow is horizontal. v1.15
- True 3rd axis adjustment as all pins will not travel base on the new plum line via 3rd axis setting. v1.15
- The naming of the profile and the technical data has its own window instead of crowding the setting window.



The only lighted nock system that let you field-change Battery, Nock, LED Color, and Circuit function



Firenock Nock Fit List

Firenock "0,0e"(zero) will fit slim arrow shafts with an ID of 0.165" - 0.1655":

Black Eagle: Deep Impact, X- Impact
Harvest Time/Blood Spot: HT-1
Easton: AC Injexion, FMJ Injexion, Injexion (0e, Easton G nock modified)

Firenock "A" will fit slim graphite shafts with ID of 0.202" - 0.204":

Beman: Team RealTree MFX™, Classic MFX™, BLACK MAX™, MAX-4™
Black Eagle: Rampage
Carbon Express: Edge, Piledriver™ Extreme
Easton: Hunter A/C Super Slim, ST Axis Full Metal Jacket, ST Axis Full Metal Jacket Campo, ST Axis Full Metal Jacket Dangerous Game, ST Axis Realtree APG, ST Axis Mossy Oak Obsession, ST Axis, ST Axis Junior, A/C/C 3-28/390 (ID: 0.205")*

Gold Tip: Kinetic Hunter, Kinetic Pro, Kinetic XT

Trophy Ridge: Blast, Crush, Halfire, Wrath

Firenock "C" & "F" fit crossbow arrows with an ID of 0.297" - 0.304":

Barnett: same as Easton
Bowtech: Striker Bolt
Camx: Accuspine
Easton: Carbon Realtree Power Bolt, Carbon Power Bolt, 2219
Firenock: AeroBolt II-200, AeroBolt-Dragon Slayer
Gold Tip: Laser II, Pro Laser II, Laser III, Laser III Pro
TenPoint: Pro Elite
Black Eagle: Executioner, Zombie Slayer
Beman: ICS Thunderbolt®
Carbon Impact: Ultra Bolt XLT 22
Victory: Crossbow Bolt

Firenock "D, J, Q" will fit 0.298"-0.30" inside diameter crossbow arrow that need/

prefer a full containment nock and a specific throat size to nock onto the serving:
Serving size: 0.155"-0.165" Carbon Force: Tac 10, Tac 15, Mission MXB360
Serving size: 0.145"-0.155" Mission MSXB320, Barnett, Darton, BowTech StrikeZone
Serving size: 0.135"-0.145" Scoryd, Parker

Firenock "E" will fit medium arrow shafts with an ID of 0.229" - 0.232":

Alaska Bowhunting: GrizzlyStik (ID 0.212")*
Arrow Dynamic: Nitro Stinger (ID 0.211")*
Easton: ACC Pro Hunter, A/C/C 3-49/390, Aftermath, ION, Pink ION, Da'Touch, Hexx, ST Epic Realtree HD Green, ST Epic, ST Carbon Excel, Bloodline, Wildthing, Traditional Only, can also fit A/C/C 3-39/440

11+1 styles to fit every archery projectile¹

(ACTUAL SIZE OF LIGHTED NOCK SHOWN)



Firenock "S" style nock fits standard arrow shafts with ID of 0.242" - 0.246":

Arrow Dynamic: .395 Mag
Beman (ICS): Bowhunter, Hunter Elite, Hunter, Camo Hunter, Hunter Junior, Venture, Energy
Black Eagle: Carnivore, Zombie Slayer

Cabela's: Carbon Hunter, Stalker Extreme Carbon, Outfitter Series

Carbon Xpress: AMPED-XS 30, Aramid KV, Carbon Rebel, Carbon Rebel Hunter, Heritage, MACH 5™, Maxima™, Maxima™ 3D Select, Maxima™ Blue Streak, Maxima™ Blue Streak Select, Maxima™ Hunter, Maxima™ Hunter KV, Mayhem™, Mayhem™ Hot Pursuit, Mayhem™ Hunter, Mutiny, Piledriver™, Piledriver™ Hunter, Predator II, Terminator Hunter, Terminator Lite, Terminator Lite Hunter, Terminator Lite Select, Terminator Select Hunter, Terminator XP, Thunderstorm, Thunderstorm SE, Whitetail

Carbon Impact: Stealth XLT, Trophy Hunter, Carbon youth

Carbon Tech: Cheetah, Panther, Rhino, Whitetail

Deer Crossing: Hunter

Easton: Carbon Storm, Flatline Surgical, Flatline, LightSpeed, Lightspeed 3D, Power-Flight, Excel & Epic pre-2008, A/C/C 3-60/340*, 3-71/300*

Forge: Extreme Kevlon

Gold Tip: Pro Hunter, XT Hunter, Expedition Hunter, Falcon, Traditional XT, Traditional Hunter, Big Game 100+, Ted Nugent Signature, Velocity, Warrior

Harvest time Archery/Blood Spot: HT-2

High Country: Speed Pro

PSE: Carbon Force, X-Weave, X-Weave Pro

Red Head (Bass Pro Shop): Carbon Fury, Carbon MAX2, Carbon Maxx, Carbon Hunter, Carbon Supreme, Carbon Supreme Lite

Vapor: Predator, Predator Pro, Hunter, Hunter Pro, Pro Black, Pro Whitetail, Whitetail, Carbon Aluminum .400*, Carbonwood, Wayne Carlton Signature, Vapor Jets

Victory: V-Force, V-Force HV

30.06 Archery: Tom Nelson Signature Arrow

Firenock "V" will fit 22-Series graphite shaft with ID of 0.299" - 0.301":

Gold Tip: Ultralight Series-22, Ultralight Series-22 Pro

Victory: VX-22, VX-22HV

Firenock "Y" will fit crossbow arrows with ID of 0.284" - 0.286"

Carbon Express: Aramid KV®, Maxima® KV Hunter, Hunter, Maxima® Mayhem, Pile Driver, Surge, CX™

Easton: FMJ Crossbow Arrow

Gold Tip: Laser II Kinetic, Laser IV (shave off all ridges to fit)

Parker: Redhot™