ATC
ARCHERY TOOLING CORP.

SPIKEPRESS™ Slider

Crossbow Master Plus

QBD
Quick Bow Draw
Fine Tuning Machine

MODEL 360° BOW VISE
ATC 360°

SLIDER Crossbow Compression Capability

Archery Tooling Corporation

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(12) **United States Patent**
Gouramanis

(10) **Patent No.: US 9,599,427 B1**
(45) **Date of Patent: Mar. 21, 2017**

(54) **ARCHERY BOW PRESS LIMB SUPPORT APPARATUS, SYSTEM AND METHOD**

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(72) Inventor: **Georgios Gouramanis**, Lindenhurst, NY (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(22) Filed: **Mar. 30, 2016**

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F41B 5/14 (2006.01)

(52) **U.S. Cl.**
CPC ***F41B 5/1449*** (2013.01)

(58) **Field of Classification Search**
CPC F41B 5/1449
USPC 124/1, 86
See application file for complete search history.

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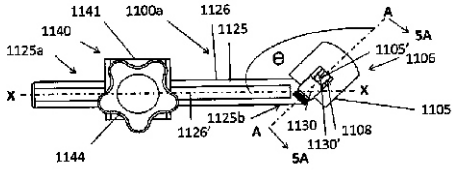
(Continued)

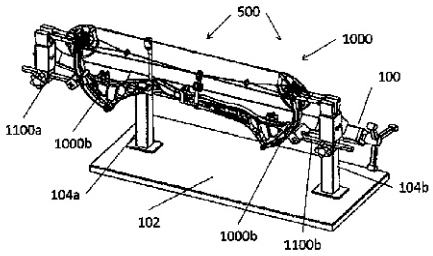
Primary Examiner — Alexander Niconovich
(74) *Attorney, Agent, or Firm* Carter, DeLuca, Farrell & Schmidt, LLP

(57) **ABSTRACT**

An archery bow limb support apparatus supporting the limbs of an archery bow during pressing includes a bow limb interfacing support member defining a directional axis of contact with a bow limb and a bow limb interfacing support shaft member assembly including a shaft defining an axis extending from a proximal end to a distal end. The shaft member assembly defines an angle less than 180 degrees between the directional axis of contact of the bow limb interfacing support member and the axis of the shaft. The archery bow limb support apparatus interfaces with a bow press and a bow limb during pressing of the limbs of an archery bow. An archery bow press and bow limb support system includes a bow press and at least one archery bow limb support apparatus. A method for supporting bow limbs includes providing a bow press and archery bow limb support apparatuses.

26 Claims, 30 Drawing Sheets





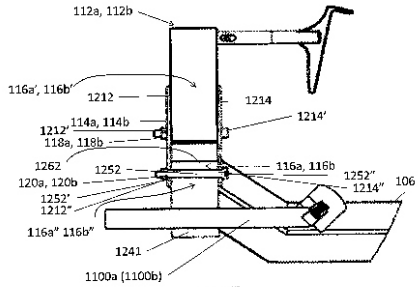


FIG. 15F

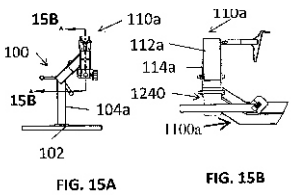


FIG. 15A

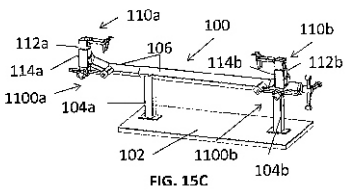


FIG. 15B

FIG. 15C

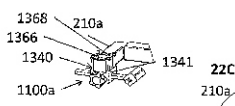


FIG. 22C

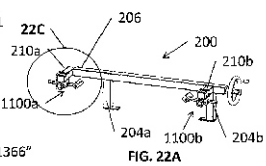


FIG. 22A

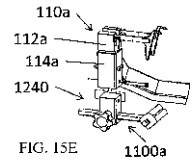


FIG. 15E

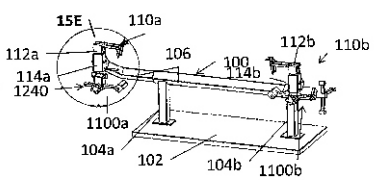


FIG. 15D

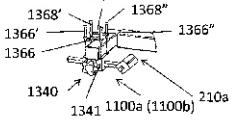


FIG. 22B

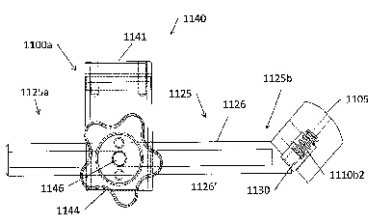


FIG. 17

SPIKEPRESS SLIDER, CROSSBOW MASTER, QBD AND ATC VISE
INSTRUCTION MANUAL

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SPIKEPRESS AND QBD INSTRUCTION MANUAL

US Patent # 9,719,750 B2
US Patent # 9,599,427 B1

DESCRIPTION:

The **Spikepress** frame consists of two parts made from square steel tubing, the telescopic arm and the main frame. The screwing mechanism consists of a 7/8-6 threads per inch powerful acme thread screw, accompanied with a solid bronze acme thread nut. The screw housing has a combination of a bronze bushing and a thrust-bearing mechanism for a smooth rotation under pressure. Also included, is an 8" diameter hand wheel with a revolving handle.

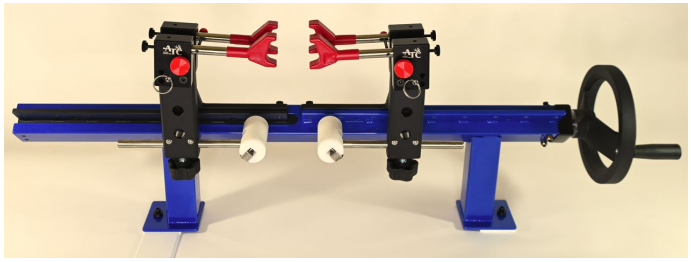
The bow press should be mounted **securely** on a bench using the two holes on the both feet of the press. From hole to hole it has a 24" distance.

The **Spikepress Slider** has four pin **r**etainers (two left and two right) made of steel and are powder coated. Each retainer has two holes ½" diameter to accept the pins (spikes). The one hole is horizontal and the second is 20 degrees above the horizontal position. The snap-on method and the quick exchange of the pins, allows the switching to different types of pins i.e. crossbow pins, insanity pins or "L"- shaped pins. The pins have a slip fit in the retainer so they can be relocated according to the type of bow you are pressing. It is equipped with the **Limb Guards** to assist with the pressing of beyond parallel limb bows.

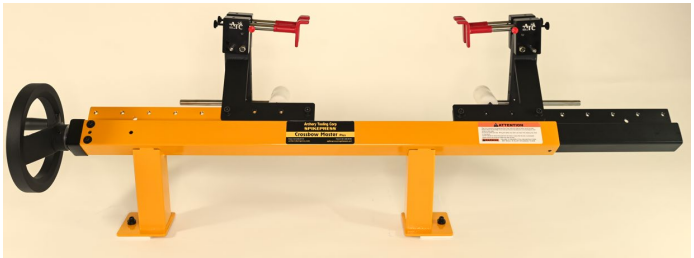
The **Crossbow Master Plus** is capable of pressing any crossbow or compound bow. It also has four pin retainers (two left and two right) made of aluminum and are black anodized. They can rotate 12 degrees up or down to accommodate different types of bows. It is also equipped with the **Limb Guards** to assist with the pressing of beyond parallel limb bows.

Minimum maintenance is required on the Spikepress bow presses. Periodically, a quick inspection of the screw mechanism is suggested. By turning the hand wheel, open the bow press 12 to 18 inches. Remove the two mounting screws on the frame that are holding the screw mechanism. By pulling the hand wheel you will be able to slide out the screw mechanism all the way to the knot, attached to the end of the telescopic arm, in order to inspect it. Lubricate if needed.

SPIKEPRESS *SLIDER*



CROSSBOW MASTER PLUS BLUE

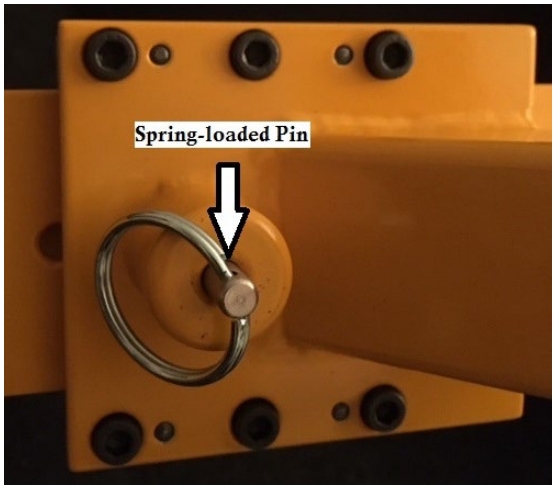


CROSSBOW MASTER PLUS YELLOW

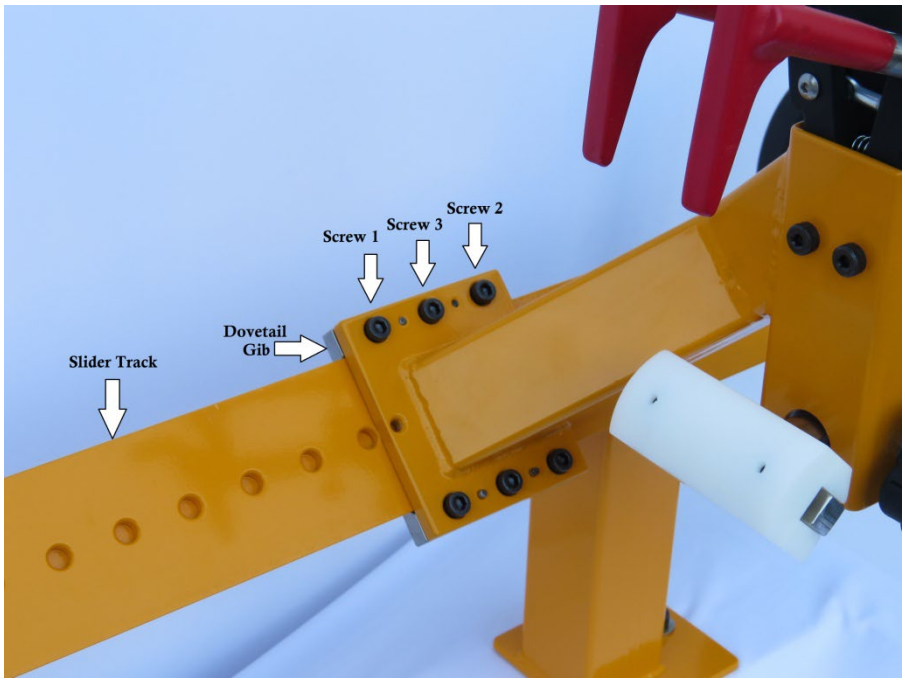
SPIKEPRESS *SLIDER*:

The Spikepress Slider is ATC's 2018 model which is similar to the Classic model with the exception of the sliding arm. The main objective of the new design is to be able to use the same bow press for any compound and any crossbow on the market.

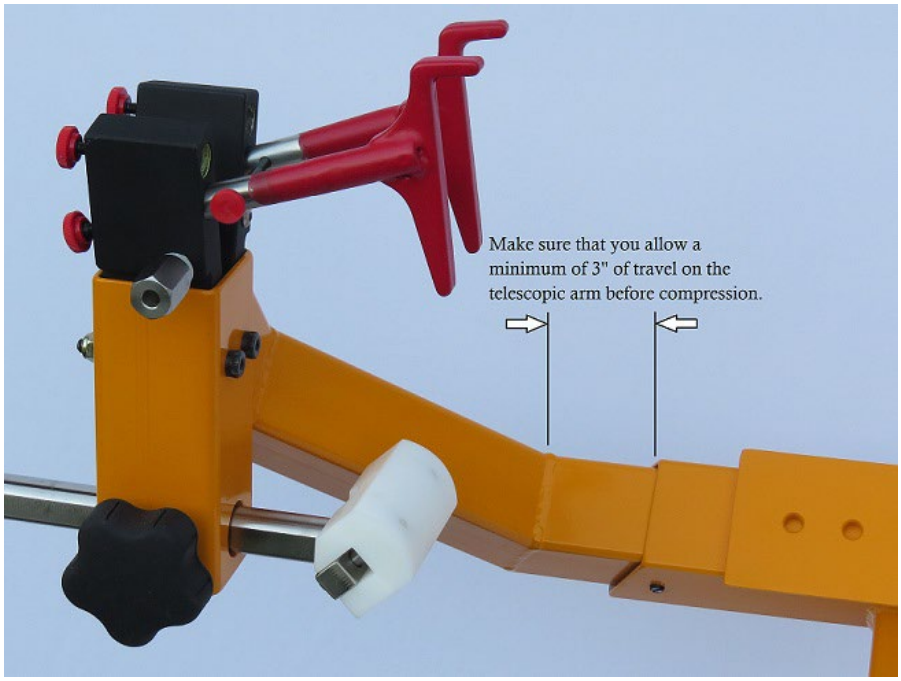
The right-hand arm is mounted on a track (slider) which allows you to position the arm all the way to the left of the press, in order to press crossbows with a very short axle-to-axle distance. The track is built with a dovetail configuration which ensures powerful and accurate holding of the arm. The arm is also equipped with a stainless steel spring-loaded pin which automatically engages with a hole on the track at the desirable position to prevent the arm from slipping in the event that the operator neglects to tighten the screws at the base of the arm.



There are six screws in all holding the arm. The bottom three should stay permanently locked to the dovetail gib. Use the provided 3/16 Hex Ball-End Screwdriver to change the position of the arm. Loosen the three screws on the top, in the order of left (screw #1), then the right (screw #2), then the center (screw #3). Once you loosen the center screw, push the screw down with the driver to disengage the gib. Pull the spring-loaded pin from the ring and slide the arm to the desired position. Although there are holes one inch apart on the slider, there are most likely only three (3) positions where this arm will be used. One being all the way to the right of the frame for compound bows, the middle section for typical crossbows and all the way to the left for short axle-to-axle crossbows such as the Ravin.



Make sure that you allow a minimum of three inches of travel on the telescopic arm before any compression.



SPIKEPRESS SLIDER ASSEMBLY INSTRUCTIONS

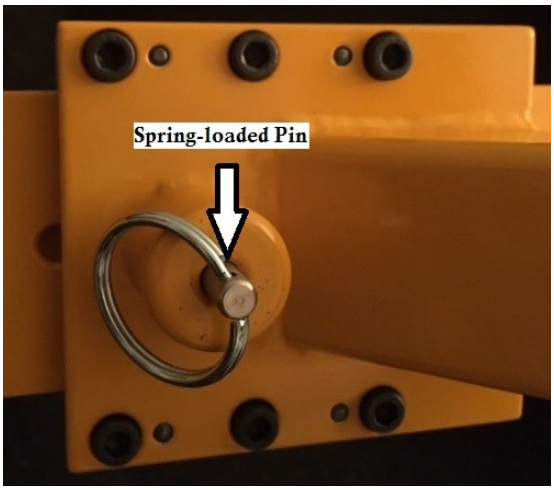
1. For secure shipping, the Spikepress Slider may be shipped disassembled. We recommend going through certain steps in order to make the assembly easy.

1. Secure the Spikepress on a workbench by drilling two 3/8" diameter through-holes, 2 ½" to 3" from the edge of the bench, 24" apart for the 5/16" mounting screws provided.

2. Install the hand wheel onto the lead-screw.

3. Remove foam tubing, which is for transport purposes only, from the main frame ensuring the black plastic buttons stay in place. At this point insert the telescopic arm firmly until you feel contact with the screw. By using the hand wheel, center the lead screw to engage with the nut mounted on the telescopic arm. When you feel engagement, begin rotating the hand wheel in order to retract the telescopic arm.

4. Allow enough space between the telescopic arm and the Slider so you can install the sliding arm by pulling the spring-loaded pin to allow the engagement.



For the interest of protecting the fine-adjustment screws, the pin retainers are not assembled on the bow press.

There are two springs managing the pin retainers, so they always remain in the open position and centered to the housing. Remove the shoulder bolts from the pin retainer housing. Place the set of pin retainers over the housing area and then continue by compressing the springs in order to place inside the housing area. When they are inserted, secure them with the shoulder bolts provided. Repeat the above with the other side of the bow press.

Note: It is easier to compress the springs on the pin retainers during installation if they are kept open.

IMPORTANT SAFETY MEASURES AND INSTRUCTIONS:

- **Always reduce the poundage of your bow per the bow manufacturer's recommendations when using any bow press.**

- **Do NOT over-press your bow. Refer to bow specs for the axle to axle distance. String and cables only need to be loosened in order to be removed. Over-pressing may result in limb failure.**

- **Do NOT attempt to remove the axles from the limbs or cams while the bow is compressed. Always remove the string and cables, take the bow out of the press, and place it on your workbench before removing the axles or cams from the limbs.**

- **Wear safety glasses when operating any machinery.**

READ AND UNDERSTAND THE SPIKEPRESS INSTRUCTION MANUAL BEFORE USING THE PRESS!

HOW TO USE THE SPIKEPRESS:

The Spikepress has a unique system which offers a quick set-up for different bow types by the simple exchange of pins when needed. The pin retainers have two positions to receive the pins, the horizontal position and the 20-degree position. This combination accommodates different limbs and pocket angles.

The horizontal position is recommended for pressing parallel limb and beyond bows with the assistance of the limb guards.

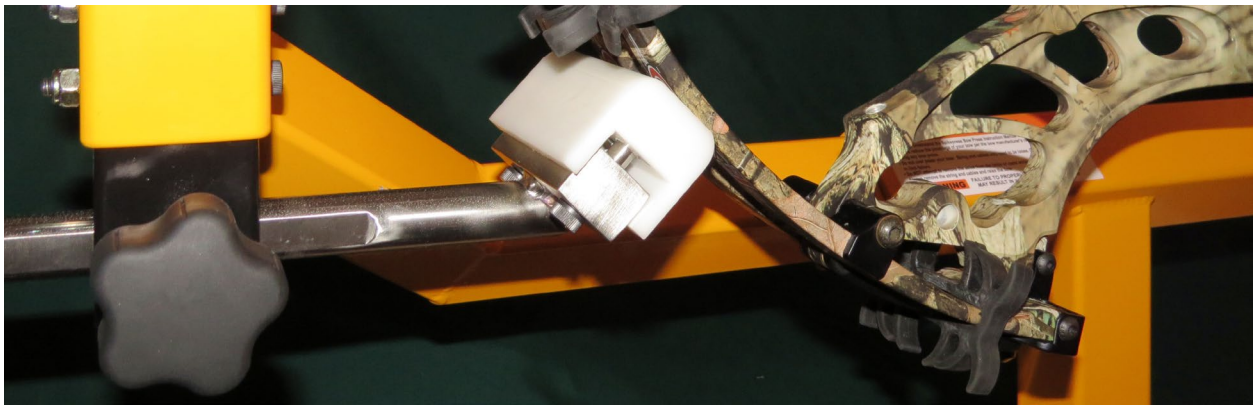
The 20-degree position is used mostly with the L - pins to press older bows. In this position the limb guards are not necessary.

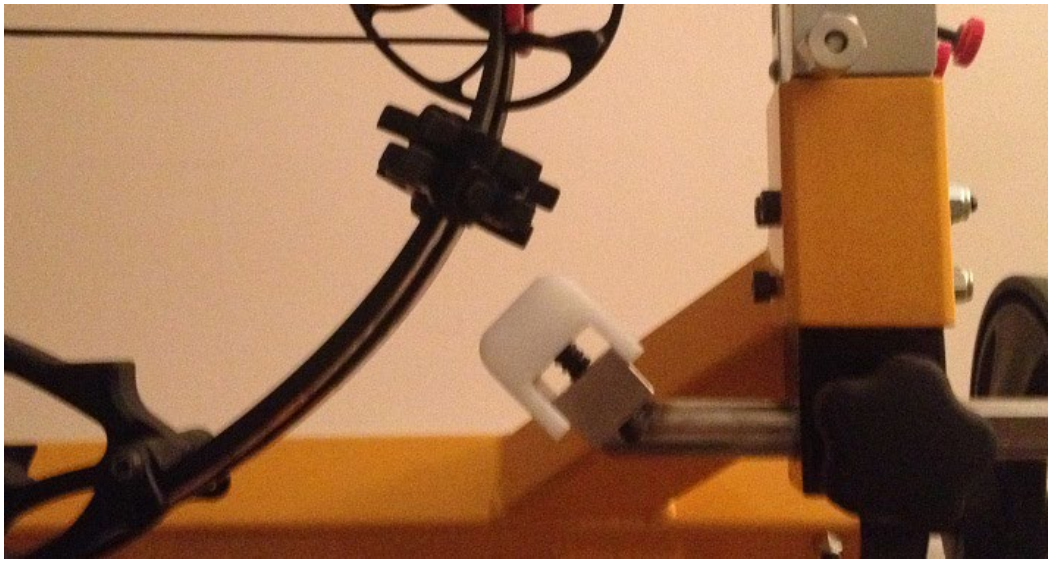
Fine adjustment screws are located on the retainers to manually off-set the pins when needed.

Caution: Always begin pressing a bow with the fine adjustment screws backed-off, insuring that the pins are resting at the bottom of the bores of the retainers.

ATC Limb Guards: US Patent # 9,599,427 B1

The limb guard is another important component of the Spikepress. The main purpose of this component is to prevent the bow, especially the parallel limb and beyond bows, from sliding out when the bow is pressed. Another function is to hold the bow under low pressure so that the operator can use the bow press as a bow vise to do minor work. The **ATC Limb Guards** are equipped with a Delrin spring-loaded pad to retain pressure on the limb and also protect the limb from any damage.





How to use the *Angled* L- Pins:

Shown in the photo below is the **Angled L - Pins**. These pins are made to be used for parallel limb and beyond bows in combination with the **ATC Limb Guards**. The limbs guards would prevent the bow from sliding out of the press as the operator presses the bow. These pins are equipped with an alignment screw.

The one pin is slotted to allow the operator to off-set the pins using the fine adjustment screws to accommodate different bow types. The **Angled L - Pin** part is off-center to allow more clearance by the cam area. They are coated to protect and create friction on the limbs. A **Short Angled Pin** is also available to be used with bows equipped with a draw limb stop.

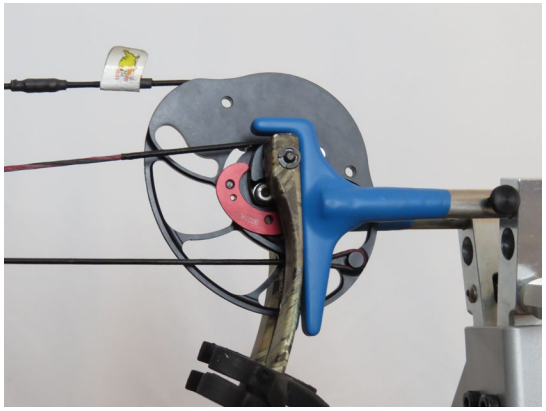
With the aid of this pin, there is no need to remove the draw stop in order to relax the string. **WARNING**: This short Angled Pin should never be used if you plan on taking the bow down complete!!! Four of the **Angled L-Pins** should be used for this application.

REPLACING THE RUBBER COATING ON SPIKEPRESS COMPONENTS

To replace the rubber coating on your Spikepress components, use "Plasti Dip" made by Performix. You can purchase this from The Home Depot, Lowes, Ace Hardware or McMaster Carr.

The best thing to do is to strip the old coating. Once you have done that, you should dip it three different times letting each coat dry between coatings. Make the first coat thin using a thinner (picture attached of the brand). The other two coats should be thinned-out as well allowing the excess material to drip off for an even coating. For more information, visit the Performix website at https://plastidip.com/our-products/plasti-dip/.

How to use the L - Pins:



Shown in this picture is the **L - Pins**. A **Short Pin** is also available to be used with bows equipped with a draw limb stop. They are coated in blue in order to differentiate from the Angled "L"- Pins and to protect the bow limbs. These pins are made to be used to press the bow from the tip of the limbs, especially the **older** compound bows. They can also be used for parallel limb bows in combination with the **ATC Limb Guards**. The limbs guards would prevent the bow from sliding out of the press if the operator over-presses the bow. These pins are equipped with an alignment screw.

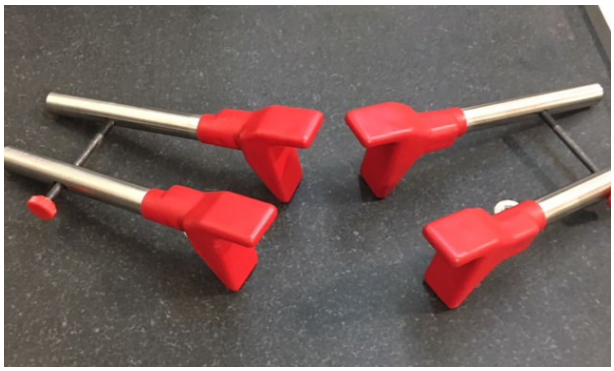
The one pin is slotted to allow the operator to off-set the pins using the fine adjustment screws to accommodate different bow types. The **"L"** part is off-center to allow more clearance by the cam area. The pins could be used in different positions, horizontal or the 20 degree position, depending on the type of bow you are pressing.

BowTech Custom Pins:

Archery Tooling Corp. has developed custom-made pins to be used specifically to press the BowTech Insanity, Experience, RPM 360, Prodigy, Boss, Fanatic, BTX, Reign and any other future bows that are equipped with similar provisions.

We utilize the existing holes on the bearing housing of these bows. The custom-made pins we offer engage with the bow in four locations securely. Once you engage the pins, you can begin the process of pressing the bow.

Wide L-Pins (Bowtech Realm, Hoyt, PSE & Crossbows):



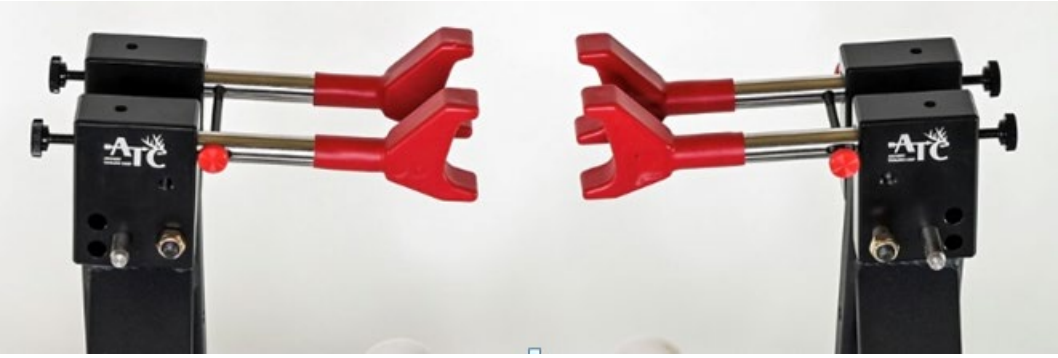
These pins are designed to apply even pressure on the entire width of the limb to avoid twisting, particularly when you are taking the bow down completely and putting it back together or replacing cams or axels. The rubber coating and use of ATC limb guards prevents the bow from slipping out of the press.

Mathews Blade Pins:

The Mathews Blade Pins are designed specifically for Mathews and Mission Bows. The blade configuration allows access to the cam area. Made of 303 stainless steel.

Custom Crossbow Pins:

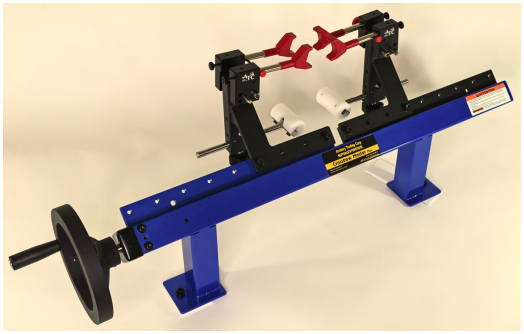
For use with TenPoint, RAVIN, CenterPoint, and Wicked Ridge Bows.

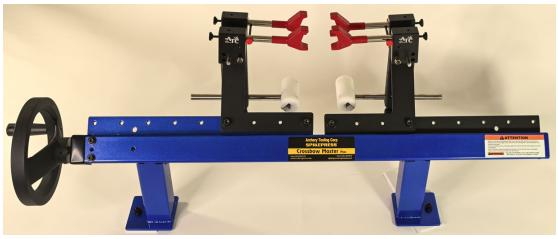


Omen Pins (and similar bows):

Designed for beyond parallel bows with wide limbs.

CROSSBOW MASTER PLUS





The **Crossbow Master Plus** is designed to cover the needs of pressing crossbows. It allows the bow technician to be close to the hand wheel when working on a crossbow while operating the bow press.

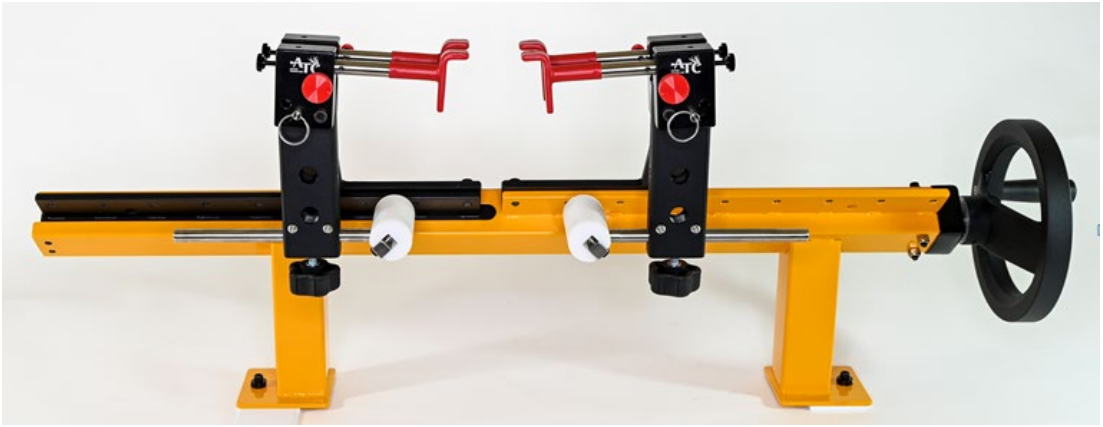
This model is also capable of pressing any compound bow due to the ability to relocate both arms to the desired position. This press is equipped with the new design of the pin retainers. They have three different positions for the appropriate applications and limb designs. They are also equipped with **Limb Guards** to secure and prevent bows from slipping out of the press.

Crossbow Master Plus Capabilities:

- Pressing any crossbow
- Pressing any compound bow

Crossbow Master Plus Options:

- Draw board
- String making
- Bow vise



Quick **Reference Guide for Operating the Spikepress Slider Bowpress**

- **Load the bow** onto the Spikepress Slider from **under**, not from the top of the pins (fingers). It is faster and easier.

- Make sure the **fine adjustment screws** on the pin retainers are **backed off**. Do not use the screws to off-set the pins so that there is contact on all 4 limbs. **They are uneven due to the cam lean.** Allow the bowpress to press the limbs evenly (if you off-set the pins, you will end up bending the screw that holds the 2 pins together).

- The long screw keeping two fingers together is **not** to adjust the spread between them, it is to keep them **parallel** to each other.

- The holes in the **horizontal position** on the **pin retainers** are to be used mostly for parallel or beyond parallel limb bows.

- When using the **bottom hole on the pin retainer, it creates a 20° angle.** This position is to be used for general purpose pressing, because it provides a positive pocket for the bow in order for it would not slip out of the press. Also, there is more contact between the limb and the rubber coating, so the coating lasts much longer.

- The **angle pins** are made to be used for the **beyond parallel limb bows** with the aid of the **limb guards**. These pins can also be used on other types of bows but **must** be used in the 20° position, therefore, you end up with a 5° positive angle which provides the pocket mentioned above.

- The **limb guards** should be used whenever it is possible, especially on beyond parallel limb bows. The knobs should be tight.

- There are six screws holding the **adjustable arm** on the Spikepress Slider. The three on the bottom should remain tight. The three on the top should be loosened up to reposition the arm, but they should be **always** be tightened and snug at a desired position. That is safety insurance and also helps the alignment of the two arms, left and right.

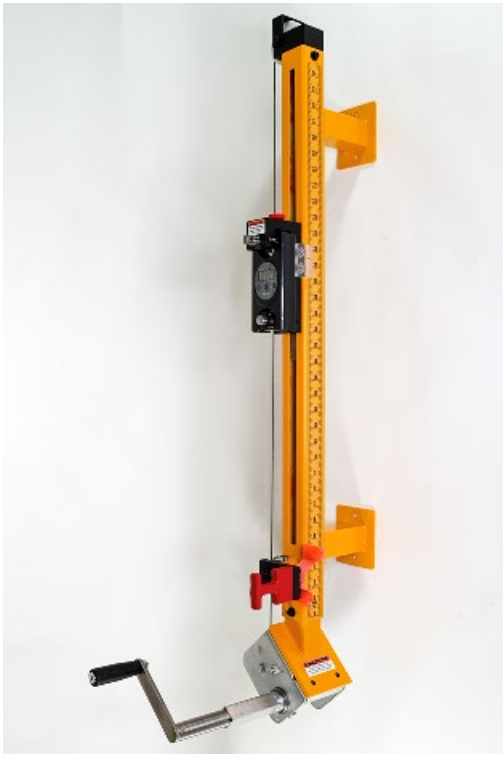
- Please refer to the Instruction Manual for further details and instructions.

Caution: The Spikepress makes pressing a bow or a crossbow effortless, but you should never forget that the 70 to 150 pounds on the loaded limb could be very dangerous. Take every precaution for your safety!

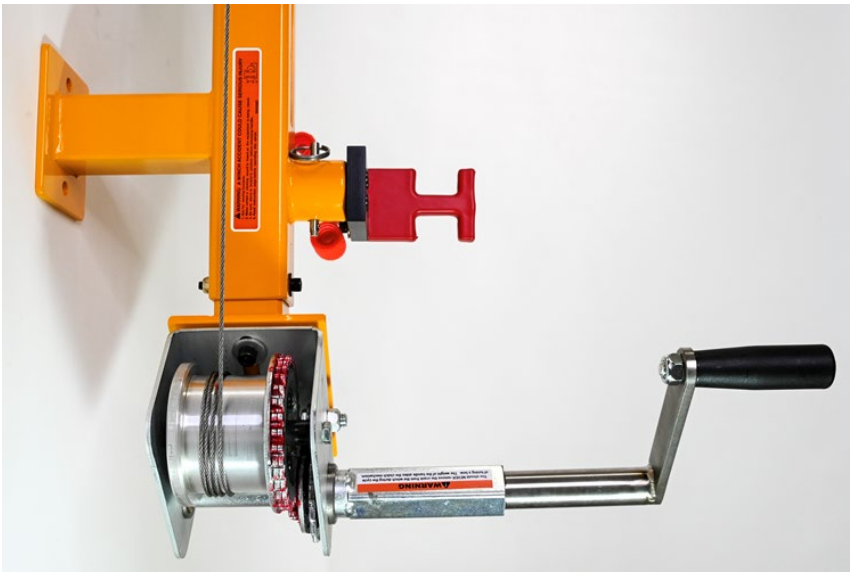
EXCALIBUR CROSSBOW PRESS

This mechanical device is designed primarily to assist the bow technician to change the string and cables on the Excalibur crossbow. It is capable of handling any of their models, including the TwinStrike. It can also be used for the same purpose on vertical youth bows. Another purpose for this mechanical device is to check timing and poundage on various crossbows. It is made of steel tubing, powder-coated, and we use an acme thread screw with an 8" aluminum hand wheel to aide with the high poundage of crossbows.

Quick Bow Draw Tuning Machine



Digital Scale



3 to 1 Ratio Winch with Auto Clutch

Installation Instructions:

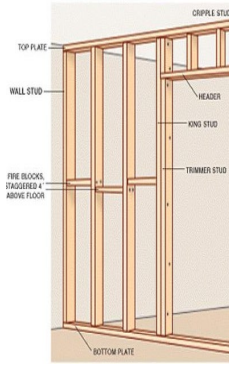
The Quick Bow Draw Tuning Machine (QBD) is designed to be mounted vertically on a secure structure, such as a beam or a wall stud. If you choose to mount it onto a wall, you must locate the wooden 2" x 4" stud.

In the event that the location of the 2" x 4" stud is not convenient, we recommend using 3/4" plywood and securing this plywood on the wall using two of the studs which typically are 16" apart. Once the plywood is secure, then you are able to mount the QBD Tuning Machine onto the plywood at the desirable location. See Figure below.

The height of the mounting depends on personal preference. We recommend mounting the QBD in a comfortable position for you to be able to turn the crank with ease. Mounting screws are provided

When the QBD is installed, and after you remove the locking screw, inspect the cable pulley located at the top of the QBD to make sure the cable is inside the track before operating the crank.

There is a screw on the left-side of the frame locking the scale mount to the frame marked with a **WARNING** tag stating that the screw should **NOT** be removed before the QBD is **permanently** installed.



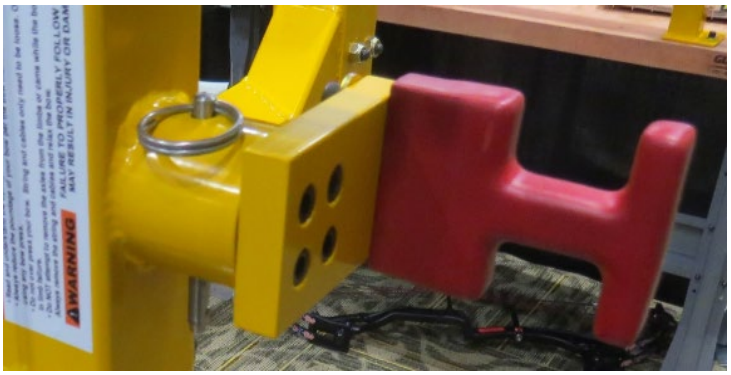
QBD Operational Instructions:

This is a tuning machine that enables a technician to mechanically draw the bow from a brace height to full draw, without torquing the riser and be able to reverse and go forward at any point without having to release the winch mechanism. The winch is equipped with an auto-break system (clutch) which enables the operator to do that especially at the critical point of the draw stops touching. The winch is equipped with a 3 to 1 ratio mechanism which makes this process very quick.

The tuning machine is also equipped with a digital scale with different modes and settings. The scale is positioned on the QBD advantageously in order to be at eye-level during the process. It is also equipped with a mechanism so that it can be disengaged if it is not needed for the application.

Also included is a measuring scale which indicates the draw length at any time during the process of drawing the bow.

Another great feature of the QBD is the right or left-handed riser hook-up. This feature ensures that the bow draw has been done correct by taking into account the off-set of the grip.



CAUTION: When you are at a full draw on a bow with a high let-off, the weight of the riser could allow the bow to drop and get loose from the riser hook-up. In these cases, you should maintain a hold on the riser against the riser hook-up or you could use a Velcro strap (provided) and strap the riser to assure the riser stays attached to the hook.

Replacing Batteries in the Scale:

Remove the hook axle, and then the hook pin (see below). You should be able to swing the scale to one side or the other and access and replace the batteries on the back side of the scale. We recommend keeping the original packaging of the digital scale in the event it would need to be replaced by the manufacturer.

Disabling the Scale:

You can disable the scale by screwing the red-knobbed screw all the way down (see below). This screw would block the hook pin from putting load on the scale, as the scale is not always needed.

- **When you zero the scale be sure there is no object hanging from the hook.**
- **If your scale does not display weight, try to back-up the screw with the red knob.**

Calibrating the Draw Length Device:

With the aid of a tape measure, set the string hook 22" apart from the riser hook-up, for instance 22" measuring from the hook to the bottom of the red riser hook-up, where the bow's handle will be resting. Once that is set, mark the indicator plate with a permanent marker to point to 23 ¾".

Now the measuring device is set to measure an AMO draw length. You should always draw the bow from the string, **NOT** the D-Loop. This would assure an accurate draw length measurement.

Warning: We recommend never drawing the bow from the D-Loop when using the QBD. The D-Loop would give you a false draw length measurement and if it breaks, it could cause personal injury and damage to the bow.

AMO/ATA Draw Length

The AMO/ATA draw length is what manufacturers use to rate their bows and is the draw length that is printed in the bow's specs. Unfortunately, the way that the AMO length is measured can be a bit confusing because it is not an exact measurement. AMO/ATA draw length is the distance from the pivot point of the bow (this is the forward most point in the grip area) to the center of the valley at full draw plus 1 3/4 inches.

Important:

When operating the QBD and after finishing the task, leave a load on the cable by keeping the scale and mounting holder off the bottom.

That will ensure tension on the cable at all times which helps the cable to wind on the hub without overlapping (see photo below). Also, by keeping it off the bottom, the zeroing of the scale is more accurate.

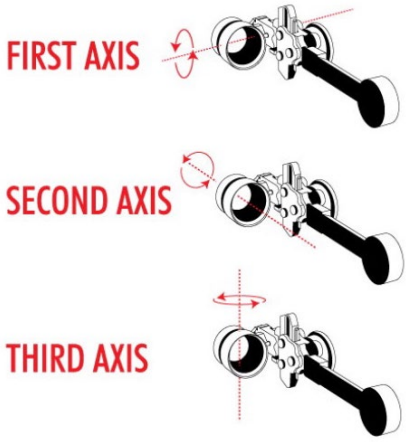
Periodically, you should grease the gears.

ATC Bow Vise



The ATC Vise is a product of Archery Tooling Corporation and ismanufactured here in the U.S.A.

The vise is made of 6061-T6 aluminum and finished with black powder-coating and black anodizing. It has the capacity of rotating 360 degrees in any direction to allow you to view your bow in different positions. You can switch from a vertical position to a horizontal position with ease.



The base has the provisions for leveling the shaft when you mount the vise onto your bench. That would enable you to set the THIRD AXIS.

The base measures 4 x 6 and the overall height is 12 inches. The height is also adjustable. The clamping parts are made of PVC soft tubing and white Delrin material to protect the limbs of the bow.

REMEMBER, SAFETY COMES FIRST!

USE SAFETY GLASSES ANY TIME YOU OPERATE ANY TYPE OF MACHINERY

YOU MUST SECURE PRODUCTS BEFORE OPERATION

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